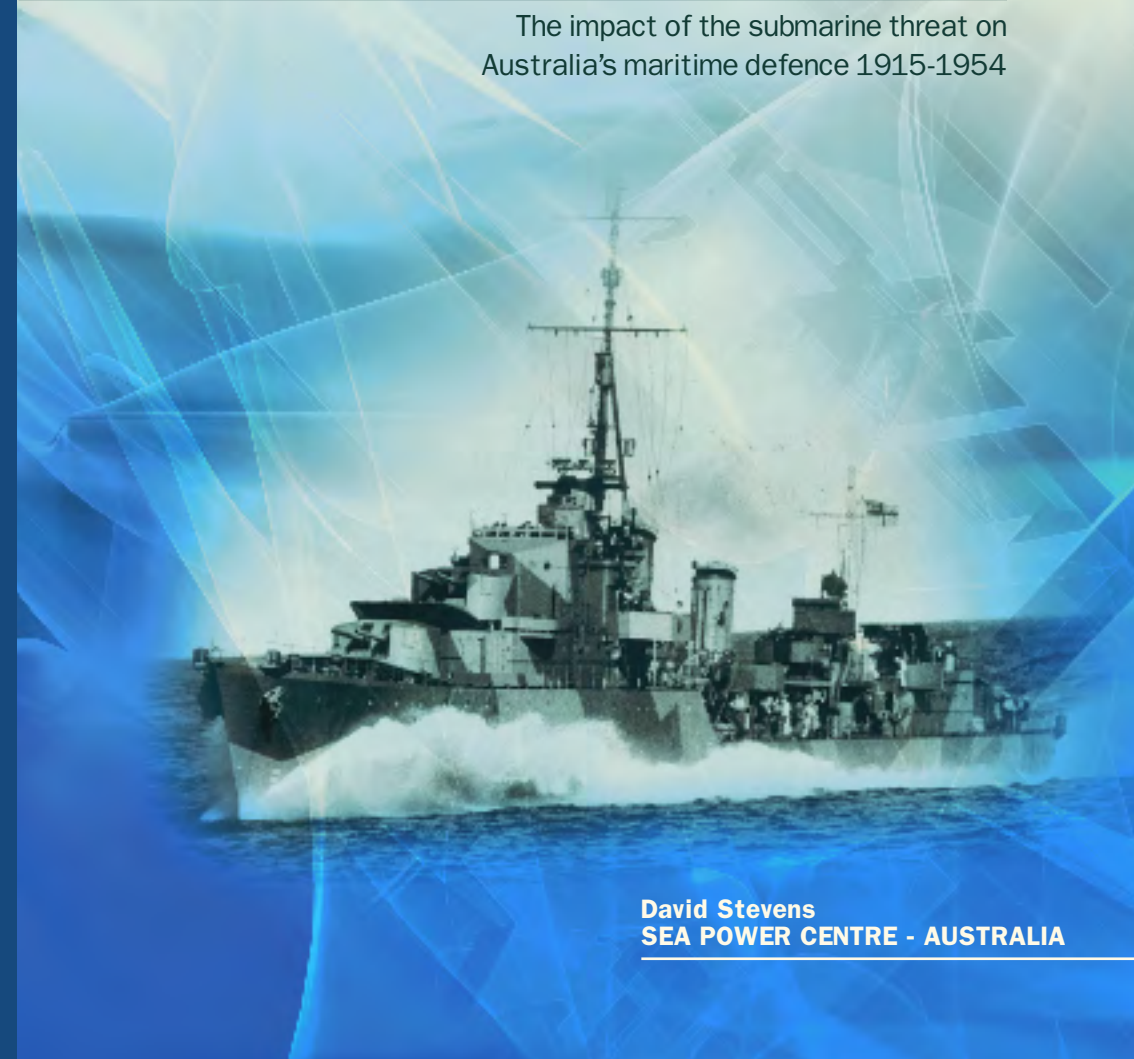


A Critical Vulnerability

The impact of the submarine threat on Australia's maritime defence 1915-1954



David Stevens
SEA POWER CENTRE - AUSTRALIA

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Comment on this paper or any inquiry related to the activities of the Sea Power Centre – Australia should be directed to:

Director Sea Power Centre – Australia
Department of Defence
CANBERRA ACT 2600
Australia

Telephone: +61 2 6127 6512
Facsimile: +61 2 6127 6519
Email: seapower.centre@defence.gov.au

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Australia's Maritime Defence
1915 –1954

DAVID STEVENS
Sea Power Centre – Australia

Royal Australian Navy
Sea Power Centre – Australia

Papers in Australian Maritime Affairs

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Notes on Author

David Stevens is an officer in the RANR and has been the Director of Strategic and Historical Studies within the Sea Power Centre - Australia since 1994. He is the author or editor of a number of publications on maritime strategy and naval history: *The Royal Australian Navy in World War II* (1996, 2nd Edition 2005); *In Search of a Maritime Strategy: the maritime element in Australian defence planning since 1901* (1997); *U-Boat Far From Home* (1997); *Maritime Power in the 20th Century: the Australian experience* (1998); *Prospects for Maritime Aviation in the 21st Century* (1999); *Southern Trident: Strategy, History and the Rise of Australian Naval Power* (with John Reeve, 2001); the third volume in the Australian Centenary History of Defence: *The Royal Australian Navy* (2001); *The Face of Naval Battle* (with John Reeve, 2003); and *The Navy and the Nation* (with John Reeve, 2005).

Abstract

This monograph examines the impact of the submarine threat on Australia's maritime defence from 1915 to 1954 and seeks to assess the RAN's effectiveness in dealing with the trade defence problem over this period. It deals with the way the threat was perceived; the way it was used to influence the military and political decision-making process; and how realistic that perception was. It also looks at the practical measures taken by Australian authorities in response to the threat. These cover various aspects of tactical and operational thinking, command and control, and equipment procurement decisions.

Arising without warning during the First World War, the threat posed to Australian shipping by submarines marked the first time the RAN had to seriously consider the relative proportion of assets devoted to local defence as opposed to out-of-area operations. Australia's naval administrators, however, proved incapable of providing an adequate response. In the postwar period, the Australian Navy faced the additional problems experienced by a small navy in coming to terms with rapidly evolving technology in times of severe financial constraint. Nevertheless, by 1939 the RAN had a core anti-submarine capability available and this provided the foundation for wartime expansion.

Because of imperial commitments and obligations, the outbreak of the Second World War again raised the problem of where the RAN could dispose its assets for best effect, and this remained an issue until the start of the Pacific War determined the priority for local defence. Thereafter both Japanese and German submarines operated in Australian waters with a broad spectrum of effects that have never been adequately analysed or understood. Looked upon as alternative maritime strategies, both these efforts brought to the fore significant weaknesses in Australia's existing maritime defence doctrine.

Until the end of 1945, anti-submarine warfare had been a secondary naval capability, and a responsibility usually delegated to reserve forces. But during the postwar period, the threat posed by Soviet submarines became the basis for the RAN's force structure and, more fundamentally, the rationale for the continued maintenance of a navy in an era of strategic nuclear deterrence. This understanding had far-reaching effects that would colour the RAN's view of its role and responsibilities until at least the 1980s.

Contents

| | |
|---|------|
| Notes on Author | viii |
| Abstract | ix |
| Abbreviations | xiv |
| Chapters | |
| 1. Introduction | 1 |
| 2. The First World War - 1915-1918 | 8 |
| 3. Frustrations and Failures - 1919-1930 | 41 |
| 4. Preparations for War - 1930-39 | 77 |
| 5. Training and Manpower Issues - 1937-39 | 113 |
| 6. Responses to the Submarine Threat - 1939-42 | 144 |
| 7. The First Japanese Campaign - 1942 | 179 |
| 8. The ASW Crisis - 1943 | 216 |
| 9. The German Campaign - 1944-45 | 257 |
| 10. ANZUM, ANZUS and ASW - 1946-54 | 287 |
| 11. Conclusions | 326 |
| Appendices | |
| I. 'Japanese Submarines and Trade Operations', 9 August 1928 | 338 |
| II. 'Future Enemy Submarine Strength', 4 May 1943 | 340 |
| III. 'Possible Landing of Enemy Agents from Submarines or Communication with Them', c. August 1943 | 342 |
| IV. 'Probable Form and Scale of Attack', November 1951 | 344 |
| V. Enemy Submarine Operations in the Waters Surrounding Australia, 1942-45 | 349 |
| VI. Monthly Review of Shipping Operating Within South-West Pacific Sea Frontiers, May 1943 | 361 |
| VII. Australian Convoys Statistics and Designations | 363 |
| VIII. Anti-Submarine Harbour Defences in Australia and New Guinea, July 1944 | 365 |
| IX. RAN Asdic Sets and A/S Weapons, 1917-54 | 367 |
| X. Personnel Statistics | 370 |
| Index | 371 |

List of Tables

| | | |
|-------|---|-----|
| 2.1 | Australian Coastal Patrol, 1917–18 | 27 |
| 3.1 | Australian Requirements for Aircraft and Dedicated A/S Vessels, 1919 | 49 |
| 3.2 | CID Assessment of Australian Requirements for Auxiliary A/S Vessels, 1926 | 62 |
| 4.1 | Submarines Built, Building or Projected, 1930 | 78 |
| 4.2 | Australian Requirements for Auxiliary A/S Vessels, 1934 | 85 |
| 4.3 | Planned Distribution of Australian Specialist A/S Vessels, 1938 | 100 |
| 4.4 | Australian Requirements for Specialised A/S Vessels, March 1938 | 102 |
| 4.5 | Australian Requirements for Auxiliary A/S Vessels, 1939 | 106 |
| 5.1 | Predicted RAN A/S Branch Establishment, August 1937 | 118 |
| 5.2 | Predicted RAN A/S Branch Establishment, April 1938 | 123 |
| 6.1 | Australian A/S and M/S requirements, July 1940 | 150 |
| 6.2 | Approved Construction and Requisitioning of Small A/S & M/S Vessels for the RAN, September 1939–December 1940 | 153 |
| 6.3 | Planned Disposition of A/S Vessels in the Event of an Eastern War, May 1941 | 167 |
| 6.4 | Disposition of RAN A/S Escorts, December 1941–January 1942 | 172 |
| 7.1 | Proposed Disposition of A/S Craft, 8 April 1942 | 190 |
| 7.2 | Disposition of RAN A/S Craft, May–July 1942 | 198 |
| 8.1 | Disposition of RAN A/S Craft, December 1942–March 1943 | 228 |
| 10.1 | A/S Equipment Intended for Various A/S Ships, August 1951 | 311 |
| 10.2 | Actual Defence Expenditure, 1945–54 | 315 |
| VII.1 | Australian Coastal and New Guinea Convoys | 363 |
| VII.2 | Comparison of Shipping Losses, 1939–45 | 364 |
| VII.3 | Australian Convoy Designations, World War II | 364 |
| IX.1 | RAN Asdic Sets, Planned or Fitted, 1922–54 | 367 |
| IX.2 | RAN A/S Weapons, Planned or Fitted, 1917–54 | 369 |

List of Figures

| | | |
|-----|--|-----|
| 4.1 | War orders for HMA Squadron, February 1938 | 98 |
| 5.1 | Distinguishing badges of the Submarine Detection branch | 117 |
| 6.1 | Anti-submarine responsibilities in the RAN, 1940 | 159 |
| 6.2 | Submarine sightings in Australian and surrounding waters, 1939–41 | 160 |
| 7.1 | ABDA and ANZAC areas, January 1942 | 181 |
| 7.2 | Destruction of <i>I-124</i> by HMAS <i>Deloraine</i> , 20 January 1942 | 184 |
| 7.3 | South-West Pacific Area, April 1942 | 189 |
| 7.4 | Sydney Harbour A/S defences, 1942 | 192 |
| 7.5 | Principal east coast convoy routes, 1942–43 | 196 |
| 7.6 | Destruction of RO-33 by HMAS <i>Arunta</i> , 29 August 1942 | 204 |
| 8.1 | Supply lines to New Guinea, 1942–43 | 225 |
| 8.2 | South-West Pacific sea frontiers organisation, 1944 | 229 |
| 8.3 | Attack on Convoy O.C. 86, 11 April 1943 | 232 |

| | | |
|-------------------------|---|-----|
| 8.4 | The attack on Convoy G.P. 55, 16 June 1943 | 234 |
| 8.5 | Australian A/S Branch - organisation and responsibilities, June 1943 | 244 |
| 9.1 | RAAF Command, 1944 | 265 |
| 10.1 | Assessment by Captain Gatacre of forces required to counter the Soviet submarine threat, 1949 | 301 |
| 10.2 | Plan for the A/S defence of sea communications in the ANZAM Region, May 1952 | 305 |
| List of Photographs | | |
| | SS <i>Kowarra</i> , sunk by <i>I-26</i> , April 1943. | 7 |
| | Long-range submarine <i>U 86</i> on display after the Armistice. | 8 |
| | An Australian destroyer with observation balloon. | 8 |
| | HMA Squadron during postwar exercises. | 46 |
| | HMAS <i>Oxley</i> and HMAS <i>Otway</i> alongside HMAS <i>Platypus</i> . | 54 |
| | Launch of HMAS <i>Bathurst</i> . | 105 |
| | Training at HMAS <i>Rushcutter</i> . | 129 |
| | The corvette HMAS <i>Deloraine</i> . | 144 |
| | HMAS <i>Karang</i> i laying the boom defence in Darwin Harbour. | 144 |
| | HMAS <i>Yandra</i> , auxilliary A/S vessel. | 157 |
| | Depth charge attack in the Mediterranean. | 157 |
| | Japanese submarine <i>I-123</i> . | 202 |
| | <i>Dureenbee</i> wrecked after the attack by <i>I-175</i> . | 202 |
| | Australian assessment of <i>I-21</i> 's deployment. | 216 |
| | RAN asdic operators. | 223 |
| | <i>U 862</i> on passage in South East Asian waters. | 268 |
| | Asdic dome, HMAS <i>Anzac</i> (II). | 289 |
| | Naval Board, 16 February, 1949. | 293 |
| | An anti-submarine Navy. | 326 |

Abbreviations

| | |
|------------|---|
| 1NM | First Naval Member of the ACNB |
| 2NM | Second Naval Member of the ACNB |
| 3NM | Third Naval Member of the ACNB |
| A/A | anti-aircraft |
| ABDA | Australian-British-Dutch-American (area) |
| ACAS | Assistant Chief of the Air Staff |
| ACH | area combined headquarters |
| ACNB | Australian Commonwealth Naval Board |
| ACNS | Assistant Chief of the Naval Staff |
| ADF | Australian Defence Force |
| AMC | armed merchant cruisers |
| AMS | Australian minesweeper (<i>Bathurst</i> class corvette) |
| ANZAC | Australia and New Zealand (area) |
| ANZAM | Australia, New Zealand and Malaya (arrangement) |
| ANZUS | Australia, New Zealand and the United States (treaty) |
| AOC | Air Officer Commanding |
| AOR | air operations room |
| ARL | Admiralty Research Laboratory |
| A/S | anti-submarine |
| A/S CO | anti-submarine control officer |
| ASV | air-to-surface vessel (radar) |
| ASW | anti-submarine warfare |
| A/T | anti-torpedo |
| BAD | British Admiralty Delegation |
| <i>BdU</i> | <i>Befehlshaber der Unterseeboote</i> (CinC of Submarines) |
| BDV | boom defence vessel |
| BPF | British Pacific Fleet |
| CA | heavy cruiser |
| CAS | Chief of the Air Staff |
| CCAS | Commodore Commanding the Australian Squadron |
| CCCCF | Commodore Commanding China Force |
| CCS | Captain/Commodore-in-Charge, HMA Naval Establishments, Sydney |
| CDH | Combined Defence Headquarters |
| CinC | Commander-in-Chief |
| CINCPAC | CinC Pacific Fleet |
| CID | Committee for Imperial Defence |
| CL | light cruiser |

| | |
|--------------|--|
| CMDR | commander |
| CNO | Chief of Naval Operations |
| CNS | Chief of the Naval Staff |
| CO | commanding officer |
| COMANZAC | Commander ANZAC Force |
| COMSOUWESPAC | Commander South-West Pacific Forces |
| CSWPSF | Commander South-West Pacific Sea Frontiers |
| CTF | commander task force |
| CVL | light aircraft carrier |
| CWR | central war room |
| DAWOT | Director of Air Warfare, Organisation and Training |
| DCNS | Deputy Chief of the Naval Staff |
| DD | destroyer |
| DE(N) | Director of Engineering (Navy) |
| DNI | Director of Naval Intelligence |
| DNO | District Naval Officer |
| DSC | Director of Signals and Communications |
| DTSR | Director of Training and Staff Requirements |
| FRUMEL | Fleet Radio Unit Melbourne |
| GHQ | general headquarters |
| GR | general reconnaissance (aircraft) |
| HA/LA | high/low angle (gun) |
| HDA | harbour defence asdics |
| HDML | harbour defence motor launch |
| HF/DF | high frequency direction finding |
| HMAS | His (Her) Majesty's Australian Ship |
| HMIS | His Majesty's Indian Ship |
| HMS | His (Her) Majesty's Ship |
| HSD | higher submarine detector |
| IJN | Imperial Japanese Navy |
| <i>KTB</i> | <i>Kriegstagebuch</i> (war diary) |
| MHQ | Maritime Headquarters |
| ML | motor launch |
| M/S | mine-sweeping |
| MSF | mine-sweeping flotilla |
| NAP | Naval Auxiliary Patrol |
| NCS | naval control of shipping |
| NEI | Netherlands East Indies |
| NOIC | naval officer in charge |
| non-sub | non-submarine |
| OAS | offensive air support |
| OIC | officer in charge |
| PWSS | Port War Signal Station |
| RAAF | Royal Australian Air Force |
| RACAS | Rear Admiral Commanding the Australian Squadron |

| | |
|--------|---|
| RAF | Royal Air Force |
| RAIC | Rear Admiral in Charge |
| RAN | Royal Australian Navy |
| RANR | Royal Australian Navy Reserve |
| RANVR | Royal Australian Navy Volunteer Reserve |
| RCN | Royal Canadian Navy |
| RN | Royal Navy |
| RNR | Royal Navy Reserve |
| RNVR | Royal Navy Volunteer Reserve |
| RNZN | Royal New Zealand Navy |
| R/T | radio telegraphy |
| SBLT | sub-lieutenant |
| SD | submarine detector |
| SDI | submarine detector instructor |
| SIGINT | signals intelligence |
| SNO | senior naval officer |
| SO | senior officer |
| SS | steam ship |
| SUBRON | submarine squadron |
| SWPA | South-West Pacific Area |
| SWPSF | South-West Pacific Sea Frontiers |
| TF | task force |
| USN | United States Navy |
| USS | United States Ship |
| W/T | wireless telegraphy |

Introduction | 1

As a result of the element of surprise by which it is characterised, the submarine—apart from the direct naval successes which it is sought to obtain by its use—exercises a great influence upon the military and strategical position, because the enemy must everywhere reckon with its appearance, and is influenced in a correspondingly high degree in his strategical decisions and military operations.

The U-boat Commander's Handbook, 1943 edition.¹

Since the very beginnings of European settlement, Australia's size and geographic setting have dictated the importance of sea communications to both the national economy and defence. All routes to, from, and around Australia pass either on or over the sea and in the early twenty-first century, seaborne trade still accounts for more than 80 per cent of all Australian imports and exports by value and over 97 per cent by volume. Many domestic industries also rely upon sea transport for their survival. Until recent times coastal shipping was the primary means of transport between most parts of Australia and it continues to be indispensable for the transportation of large volumes of strategically important raw materials around the continent.² 'Further than any other of the great land masses from her markets in time of peace and from her Allies in time of war', Australia is most definitely a maritime nation.³

For most of the last century, this more general understanding provided the context for official assessments of defence threats to Australia. Strangely, however, scholars have made few attempts to examine critically how successful Australia has been in formulating its maritime defence. Neglect of this question highlights the serious weaknesses and gaps in our understanding of how the nation's primary instrument of maritime security, the Royal Australian Navy (RAN), has operated. The official histories have naturally concentrated on broad narratives of specific wars, while the few recent academic studies of Australian naval history have tended to focus on social issues or controversial incidents. In conceptual terms this wider social and historical context is obviously important, but no study of the RAN has yet drawn together the environmental limits that are increasingly considered fundamental to a functional understanding of modern navies. As James

Goldrick, one of the few serious students of the subject, has argued, 'No responsible historian can now describe naval policy or even the minutiae of naval operations without regard to the political, economic and technological environments within which navies must operate and the constraints which those environments imply for naval planners'.⁴

This monograph aims to address some of the neglected factors identified by Goldrick and other leading naval historians, particularly the parameters imposed by doctrinal and technological issues, by examining the impact of the submarine threat on Australia's maritime defence from 1915 to 1954. The examination of a threat, at times perceived, at other times actual, serves to throw light on many other areas of Australian defence policy and planning. National security policies, whether independently based or forming part of an alliance relationship, can only be appropriate if they are based on an accurate assessment of threats to national interests. Although there is often an element of inventing the threat to support expenditure, threat perceptions can reveal much about a nation's understanding of its vital interests and critical vulnerabilities. Of course, previous writers have often touched upon this area of Australian defence historiography, but they have invariably concentrated on broad strategic issues, rather than the practical problems of dealing with an adversary's specific capability. This is not to suggest that the submarine threat was consistently the most likely threat to Australian interests or the most dangerous; nevertheless, it offers a number of interesting features.

First, and integral to the conceptualisation of this study, is that the implicit threat to commerce posed by an adversary's submarines has required action in both distant and, more importantly, local waters. Australia has a long history of seeking defence partnerships with 'great and powerful friends' and its naval commitments to allies have been an important element in collective security arrangements. The difficulty is to maintain an appropriate balance and, as Professor Geoffrey Till has observed, the dilemma over the allocation of assets between local defence and global Allied strategy 'has been the leitmotiv of Australian naval policy' throughout the twentieth century.⁵ This problem arises directly from Australia's unique geographical circumstances, settlement history, and small-to-middle power status, and continues to be a factor in the defence debate between the two major political parties. Yet, notwithstanding its enduring importance, the problems and practice of Australian local maritime defence have so far received comparatively little study. An examination of the submarine threat therefore serves to balance the more common assessments that have concentrated on the RAN's predilection for

out-of-area operations under Allied command and ignored activities in local waters under Australian control.

Second, most public discussion on direct security threats to Australia has been related to events which have never occurred or were highly unlikely to occur. For example, despite its higher public profile, having examined the practical problems of an armed invasion, no nation has ever seriously contemplated such action against Australia. By comparison, during both world wars the enemy has attempted to conduct a dispersive commerce war or *guerre de course* against Allied global maritime trade.⁶ This has meant both a direct threat to a variety of Australian economic and military interests, and the close involvement of Australian maritime forces in protection operations. In this context the threat posed to Australian commerce by an adversary's submarines has particular relevance. Not only has the threat been a significant and enduring factor in defence planning, but between 1942 and 1945 Axis submarines regularly operated in Australian waters. Far more than the activities of enemy surface raiders or aircraft, submarine attacks were spread widely around the coast and took place over a significant period of time. These activities therefore allow an examination of Australian combat performance throughout this period and the far rarer perspective of an adversary's perceptions of Australian defences.

Third, the submarine threat to Australia covered all levels of maritime operations from the tactical to the strategic and in a manner far broader than that traditionally associated with a war against maritime commerce. Just as trade protection operations required the employment of a range of strategies, weapon systems and materiel to deal with a variety of enemy threats, submarines might have functions other than attritional tonnage warfare. Indeed, although over the four decades considered by this study, the submarine threat grew from one directed against seaborne commerce to one that could conceivably include the nuclear devastation of Australian cities, the enemy's most significant achievements during the Second World War came more from the indirect influence of his campaigns. This was most obviously apparent in the diversion and containment of Australian resources.

Fourth, the RAN's reaction to the submarine threat illustrates in a very pragmatic way the way naval authorities thought and acted in the broader context of national strategy, defence coordination and political influence. With some justification, the early Australian Navy has been portrayed as a small service formed largely in the British image and heavily reliant on Admiralty

advice. Having adopted a fleet and operational concepts virtually unchanged from the Royal Navy in 1913, anti-submarine warfare (ASW) was the first new capability that the RAN sought to introduce as an independent service. Thereafter the submarine threat had always to be considered when developing the Navy's equipment fits and warfighting roles. It thus offers a useful window into some of the wider issues of security policy that surrounded Australian force structure and capability decisions.

Finally, and more practically related to the RAN's intellectual development, from the very beginning ASW has required the integration of tactical, operational and strategic thought in a manner far in advance of any other area of naval warfare. The doctrinal differences that arose between the Navy and the Royal Australian Air Force (RAAF) in responding to the submarine threat are perhaps the best pointers to this aspect. However, equally important to operational effectiveness and the longer term trend towards greater self-reliance in defence was the coordination of scientific and industrial effort. The fact that too little integration of these varied elements took place until after 1945 illustrates just how difficult this process was for a small defence force, and provides further insights into the domestic and international context of the times. Hence, from both a naval and wider defence perspective, the impact of the submarine threat deserves detailed consideration, particularly when assessing the achievements of maritime forces within the overall setting of Australia's strategic policy.

In taking a chronological approach, this study falls naturally into four parts. The first examines the emergence of a new and unexpected threat only four years after the re-building of the Australian Navy from its colonial beginnings and while its major units were engaged overseas in a global war. The possibility that German U-boats might operate locally forced the fledgling naval organisation to confront issues of readiness and local defence that had never before been adequately examined. The second part, encompassing chapters three to five, looks at the RAN's inter-war struggle to introduce a new warfighting capability and bring it to an adequate state of effectiveness as part of the overall preparations for Australia's maritime defence. During this period, when the relationship with the Royal Navy was at its closest, both navies had to cope in short order with financial cutbacks, international disarmament, and economic depression. Yet, if it hoped to remain a competent and valuable adjunct to both imperial and national defence, the far smaller RAN still had to stay abreast of rapid advances in the doctrine and technology of maritime warfare.

The third part, extending through to chapter nine, covers issues of mobilisation and technical developments from 1939 to the entry of Japan into the Second World War. This is followed by discussion of the practical experience of submarine and anti-submarine operations in Australian waters. The latter section includes some preliminary analysis of a campaign that, at its peak, involved more than a third of the RAN's resources in men and tonnage, yet even today remains largely ignored. It is worth noting here that local ASW operations have never received more than cursory official study. Unlike its major allies, the Australian Navy did not see the need to undertake operational studies of wartime experience, and the literature published in Australia since 1945 has been restricted almost exclusively to narrative accounts and personal reminiscences.

Critical to any more general understanding of the Australian experience is that many facets of the local ASW campaign were unique and hence, in several aspects, not directly comparable with the anti-submarine situation existing elsewhere. This lessens to some extent the specific value of the wider literature on the underwater aspects of the Second World War, where the natural tendency has been to focus on either the successful US campaign in the Pacific or the pivotal Battle of the Atlantic. The undersea battle in the Tasman Sea was not simply a scaled-down version of these larger struggles. ASW in Australia's local waters was far less a statistical game and, even when compared with other geographically confined theatres, there remain important and often fundamental distinctions. The Canadian experience of coastal convoys and inshore operations, for example, embraced not only discrete national vulnerabilities and different concepts of operations by the opposing forces, but also entirely different conditions of geography, bathythermography, and oceanography. The limitations of this broader context mean that this present study can only be regarded as a beginning, and many of the issues surrounding the Australian campaign, including those of emerging technology, policy, strategy, tactics and training, each warrant a more thorough analysis than can be provided here.

The final part of this study briefly examines the postwar period up to the mid-1950s. This looks at the impact of the Second World War experience and the early Cold War years on Australian strategic assessments, war planning and naval force structure, and ends with the Commonwealth Government's 1954 decision to make ASW the Navy's major warfighting task. This decision influenced the way the Australian Navy thought and operated for almost three decades, and can certainly be marked as a crucial juncture in its history.

A number of appendices have been included to better illustrate particular points. The first four provide examples of official assessments of the scale of the submarine threat to Australia before, during and after the Second World War. Because of their secrecy, submarine operations have always been subject to fantasy, and the mythology of Australia's war abounds with tales of submarine involvement in the sinking of the cruiser HMAS *Sydney* (II), clandestine landings, coastal supply dumps, and secret communications. Appendix III offers a contemporary assessment of some of these issues and offers some useful background on Allied and Japanese intelligence capabilities. Appendix V tabulates all known enemy submarine operations off the Australian coast between 1942 and 1945, while Appendix VI provides a snapshot of the Allied shipping situation off the Australian coast in May 1943, the peak of the Japanese submarine campaign. Wartime convoy statistics and designations are covered in Appendix VII, and these are followed by an extract from a 1944 review which illustrates the immense scale of the anti-submarine defences installed in Australian ports. Appendix IX provides a list of all asdic sets and anti-submarine weapons fitted or planned for RAN ships during the period under consideration, while Appendix X provides some figures to show the extent of Australia's wartime anti-submarine training commitment.

Notes

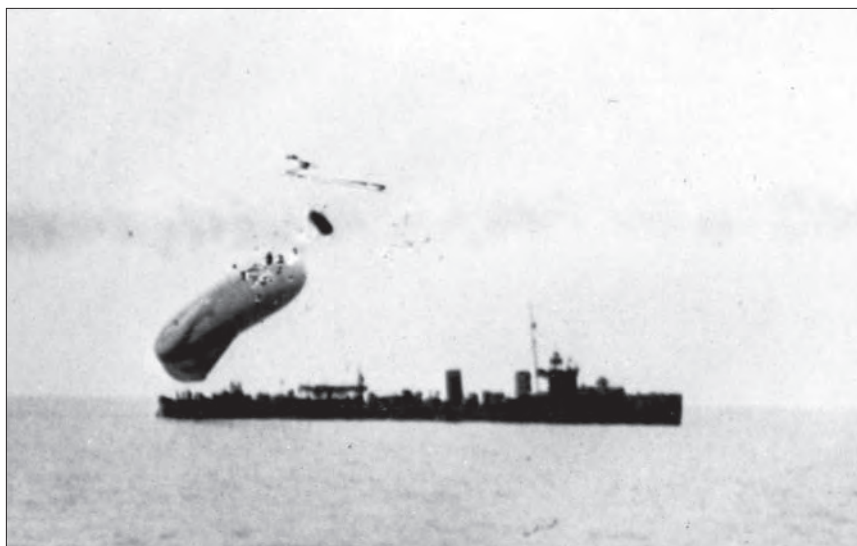
1. *The U-boat Commander's Handbook* (Gettysburg: Thomas Publications, 1989, reprint of USN translation of 1943 edition), p. 18.
2. M. Ganter, *Australian Coastal Shipping: the vital link*, Papers in Australian Maritime Affairs No. 3 (Canberra: Maritime Studies Program, 1998), pp. 5–12.
3. Paper, 'The postwar defence of Australia', 27 October 1943, NAA: MP 1185/8, 1855/2/549.
4. J. Goldrick, *No Easy Answers: The Development of the Navies of India, Pakistan, Bangladesh and Sri Lanka 1945–1996*, Papers in Australian Maritime Affairs No. 2 (New Delhi: Lancer, 1997), pp. iv–v.
5. G. Till, 'Review of *U-boat Far From Home*', in *The Journal of Strategic Studies*, January 1998, p. 140.
6. For an historical overview of the *guerre de course* strategy, see S.W. Roskill, *The Strategy of Sea Power: Its Development and Application* (London: Collins, 1963), pp. 40–2.



SS *Kowarra*, sunk by *I-26*, April 1943.
(RAN)



Long-range submarine *U 86* on display after the Armistice.
(RAN)



An Australian destroyer with observation balloon.
(RAN)

The First World War – 1915-18 | 2

Fully appreciate [Admiralty's difficulties] but in present conditions a submarine would paralyse sea communication here. Responsibility in regard to [Troop] Transports also serious.

Australian Commonwealth Naval Board, 20 February 1918.¹

The submersible warship, powered by hand and armed with a buoyant mine, made its first appearance as a naval weapon during the American War of Independence. In 1776 the *Turtle* is thought to have made an unsuccessful attack on a British warship in New York harbour. The submarine remained, however, an ineffective oddity for more than 100 years. Not until the last quarter of the nineteenth century were designers provided with solutions to two fundamental problems. The marriage of a capable weapon—the self-propelled torpedo—and a means of air independent propulsion—the electric motor—removed many of the earlier operational constraints. Technological and tactical innovation gathered pace, and the submarine began its rise as an effective weapon of naval war. The first decade of the twentieth century witnessed the widespread acquisition of submarines as maritime nations sought to make use of the type's revolutionary combination of stealth and lethality.

By August 1914 there were over 400 submarines built or being built worldwide, belonging to some 20 individual navies. Yet despite, or perhaps because of this widespread ownership, there was still no consensus on how submarines might best contribute to naval strategy. Even the British Royal Navy, further advanced than most and possessor of the largest submarine fleet, could not agree on the submarine's proper role. For some in the service the preference was for small coastal submarines which could assist in the defence of the British coast. Others saw a need for larger patrol submarines, vessels which could enforce a close blockade of Germany. A third group favoured building very large and fast fleet submarines. These could accompany battlefleets as an integral part of their power, and as a partial substitution for battleship strength. By contrast the German Admiralty, having only a few submarines (or U-boats) available, thought they might best be used for reconnaissance—or offensively, to reduce the superiority of the British battlefleet.²

If a consensus on submarine employment existed, it was that submarines would primarily be useful in engagements against an enemy's capital ships. The likely protagonists did not anticipate a long-lasting war. Both the Royal and Imperial German Navies had given enthusiastic institutional support to a limited 'Mahanian' concept of sea power.³ Hence, a naval power hoping to inflict serious injury on the British Empire would immediately 'attempt to neutralise our naval superiority and, if possible, wrest from us the command of the sea.'⁴ Most officers in the Royal Navy expected a decisive battle as soon as hostilities began. Although the theories of several strategic schools—notably the French *Jeune École*—in the latter part of the nineteenth century had advocated a concentration against British maritime trade, a dispersive war against commerce or *guerre de course* was a relatively slow affair. Such a campaign did not fit neatly into the 'offensive' naval strategy as exercised by battlefleets. Floating commerce might be the critical vulnerability of a maritime power, but Mahan's dictum regarding the inability of the *guerre de course* to achieve a decision seemed clear:

It is not the taking of individual ships or convoys ... that strikes down the money power of a nation; it is the possession of that overbearing power on the sea which drives the enemy's flag from it ... and which by controlling the great common, closes the highways by which commerce moves to and from the enemy's shores. This overbearing power can only be exercised by great navies.⁵

In any case, naval planners expected merchant vessels to be far more difficult to attack successfully than warships. A series of international agreements had already imposed considerable constraints on submarine warfare. In particular, the Prize Regulations laid down in the 1907 Hague Convention required merchantmen to be first stopped and searched. They could be captured if directly supporting the war effort, but sunk only if passengers and crew were first placed in a position of safety.⁶

The intention to adhere to legal conventions, and the submarine's doctrinal role as an arm of the fleet, ensured that initially it would remain an ineffective weapon against trade. A submarine was simply too small to carry a prize crew or accommodate prisoners, while, to stop and search a ship, the submarine would have had to reveal its presence, and hence forgo the safety provided by its invisibility. In 1913 the British Admiralty rejected a proposal to use submarines to sink merchant ships without warning.⁷ A year later the Commander-in-Chief (CinC) of the Imperial German Navy still considered their use against merchantmen 'uncivilised'.⁸ The impetus to revise this

perception and turn the submarine into an anti-commerce weapon nevertheless originated in Germany.

Unrestricted submarine warfare

The British Empire declared war after German troops marched into Belgium on 2 August 1914. Despite their hopes for a quick victory the German Army's initial turning movement was stopped and turned back. Thereafter, both sides essentially lost their freedom to manoeuvre and settled down to a campaign of attrition. By October the opposing armies manned a Western Front that extended continuously from the Swiss border to the North Sea with little prospect for short-term change. Naval authorities had meanwhile proven unwilling to risk their fleets except in the most favourable circumstances, thereby failing to fulfil the expectations of traditional navalists. All parties soon understood that the struggle was going to last far longer than first predicted. Henceforth the maintenance of economic and industrial strength would be an essential determinant of victory. In consequence added importance was given to theories of commerce warfare and the untested potential of submarines.

The distant blockade imposed by the British on the European continent at the outbreak of war defined contraband in somewhat broad terms. The Germans protested its legality, but by November 1914 the Royal Navy's efforts had virtually halted all trade between Germany and neutral countries. The German Admiralty saw a counter-blockade as the best way to retaliate. British maritime superiority in the North Sea created difficulties for surface commerce raiders, but U-boats could appear or disappear at will and thus pose a far more elusive threat. The German naval staff argued that Britain, through its heavy-handed actions, had already demonstrated a disregard for international law and therefore proposed that their U-boats should cease to exercise restraint in their dealings with merchant ships. By attacking both neutral and Allied ships without warning the U-boats would also achieve the deliberate intimidation of merchant crews.

The turning point occurred on 4 February 1915 when the Germans proclaimed the waters surrounding the British Isles a war zone within which all commerce would be destroyed.⁹ The German press already predicted the U-boats' war-winning potential, and their initial successes did not disappoint. When the war began Germany had only 10 relatively modern U-boats on hand and 16 more under construction. In the first five months of isolated and unproductive attacks, they had sunk only 3369 tons of Allied shipping.¹⁰ In February 1915

however, sinkings totalled 22,000 tons, rising steeply to 89,000 tons in March and 127,000 tons in May.¹¹

Although virtually every German U-boat attack had taken place in the North Sea, the losses had a far wider impact. Despite Allied propaganda portraying the campaign in terms of German barbarity, the vulnerability of undefended merchant vessels could not be disguised, nor the weakness of existing anti-submarine (A/S) measures. Even in far-off Australia, the start of Germany's first unrestricted U-boat campaign effectively changed long-held perceptions of a maritime threat.

Australian threat perceptions before 1915

Following Federation in 1901, Australians found themselves the possessors of a sparsely populated island nation, remote from allies, and faced with the problem of protecting a lengthy coastline with minimal local resources. In terms of a continental defence strategy, threat perceptions regularly swung between the fear of outright invasion and sporadic attacks upon coastal cities. Throughout the second half of the nineteenth century a series of Russian war scares had sparked substantial public and parliamentary discussion on the problems posed by an enemy surface raider bombarding colonial ports and holding them to ransom.¹² At the other extreme, China's large and expanding population was often thought to be looking enviously towards Australia's empty spaces. By the beginning of the twentieth century, Japan's southward expansion and its growing military strength had again raised the spectre of an Asian invasion, particularly since the Commonwealth's unifying White Australia Policy placed it in direct conflict with Japan's expectation of equal treatment for its citizens.

In spite of these fears, the existence of long and exposed sea-lanes to overseas markets had been another, and usually more realistic cause for local concern. Between 1860 and 1913, the value of global trade increased almost sixfold. The British Empire claimed more than a quarter of this market and possessed the largest merchant fleet in the world. The long-distance Australian trade played its part. Massive exports of gold in the 1850s diversified into the export of high-quality primary produce as more land was opened up to farming and steamships made the transport of perishable goods economically viable. By 1900, the total tonnage of annual arrivals and departures in Australia ports had reached 23.6 million tons.¹³ Over the next six years, the value of Australian overseas trade almost doubled to £100 million annually. Just four years after Federation Prime Minister Alfred Deakin had reminded the Governor-General

that Australia could not ignore its maritime economic interests: 'Nowhere are maritime communications more important than to Australia, seeing that our dependence upon sea carriage is certain to increase rather than diminish as population and production advance.'¹⁴

The threat to trade seemed most likely to come from long-range armoured cruisers. Over the previous decade France and Russia in particular had acquired large numbers of these ships and developed doctrines which called for systematic and global commerce warfare. Such developments heightened Australian feelings of vulnerability and increased calls for improvements to the existing local defence force of ex-Colonial naval vessels. Notwithstanding Australian fears, British naval strategy had for many years revolved around the tenet that 'the sea is all one'.¹⁵ It followed that there must be a single imperial navy supported for the common good by all areas of the British Empire. If maintained as the world's strongest naval power, Britain could extend 'her naval protection not only to the Home-land and to her most distant component parts in the farthest seas, but also to all commerce sailing under the British flag.' Only the occasional raider might succeed in eluding imperial vigilance and reach Australian waters. So long as the vessel remained out of sight of land a cruiser might pursue 'her depredations on trade with some small prospects of success', but the combination of modern communications and British maritime supremacy would give the vessel 'short shrift' immediately its position was revealed.¹⁶

By the time of the 1909 Imperial Conference, however, the British Admiralty recognised that 'other considerations than those of strategy alone must be taken into account.'¹⁷ Australian sentiment did not accord with a simple contribution of money or materiel to imperial defence. Many found little comfort in local dependence on a navy whose primary purpose was to seek out and destroy a distant enemy's fleet. They worried that at a moment critical to Australian interests, British warships might withdraw to address imperial objectives in another theatre. Various proposals had been made to establish an effective local naval defence, and the Commonwealth's senior naval officer, Captain William R. Creswell,¹⁸ had already done much to foment dissatisfaction with earlier naval agreements. The Admiralty proposal to establish an Australian Fleet Unit, agreed to at the 1909 conference, represented something of a compromise. The plan filled the Admiralty need to broaden the naval defence burden, while still satisfying Australia's domestic sensibilities. Armoured and unarmoured cruisers formed the core of the Fleet Unit and these could provide trade defence either independently or as part of an imperial

fleet. The cruisers were in turn supported by destroyers and submarines, and these were suitable for local defence.¹⁹ After initial doubts, Creswell seemed pleased with both aspects. Built upon the existing force, the renamed Royal Australian Navy (RAN) would be powerful enough to ensure the safety of Australia's commerce against hostile cruisers, while the possibility of these cruisers threatening ports would be 'so remote as to be hardly worth considering.'²⁰

Once war with Germany began, the secure passage of Australian shipping became even more important, both to support the Empire's war effort with men and foodstuffs and to maintain the Commonwealth's economy.²¹ As Creswell had always warned:

Australia's vulnerable point is her trade, practically all water borne. Australia depends for her daily business on the security of her interport, interstate, and oversea waterways and commerce. Australian trade flows in arteries exposed to view—outside her skin. Directly the flow is seriously blocked Australian business must be paralyzed.²²

Economic control of Australian shipping rested with the Commonwealth Shipping Board, but responsibility for safeguarding it at sea and in harbour remained with the RAN's governing authority, the Australian Commonwealth Naval Board (ACNB). However, by mid-1915 the Naval Board had few assets left available in local waters. The German Pacific Squadron had been destroyed off the Falkland Islands in December 1914 and the Royal Navy—with RAN assistance—had gradually hunted down those other German warships still abroad. In consequence the threat from surface raiders had, for the time being, been eliminated. There had therefore seemed few valid objections to allocating Australian forces to imperial interests overseas. Indeed, the Australian Government had always intended to pass control of the RAN to the Admiralty in wartime, and it subsequently agreed to send most of its cruisers and destroyers to operate in European and Asian waters under British command. 'The young Australian Navy' one naval officer recalled, 'was scattered over the seven seas, and at one and the same time Australian Ships were at Fiji, New Guinea, on the coasts of Australia, at German East Africa, in the North Sea, at Halifax, Nova Scotia, and on the coast of Brazil; surely a wonderful distribution for such a small Fleet.'²³

The state of Australian naval intelligence

The unrestricted German campaign of 1915 found the ACNB with no greater appreciation of submarine capabilities than any other naval authority, and being remote from the latest developments, perhaps less than most. Not yet supported by a strong staff, and having little local experience, the Naval Board was by its nature heavily dependent on Admiralty advice.²⁴ A constant stream of communications passed between the two naval authorities on diverse matters of equipment, policy, and strategy. Furthermore, few, if any, of the naval staff had ever been to sea on a submarine. Previous discussions concerning the type had almost exclusively centred on their role in Australia's coastal defence, rather than in any threat they might pose. In fact Creswell, a modernist, who for years had warned of the potential for even small enemy forces to paralyse Australian trade, had focused entirely on the surface threat, and been quite dismissive of submarines.²⁵ Since 1905, in the context of acquiring submarines for Australia, he had argued—quite reasonably—that they were still experimental: weak in stability, seakeeping, range, area defended, and capability for night operations.²⁶

Visionaries had certainly remarked that any future war would be fought in the air and underwater, but Creswell's was not an isolated opinion. With a range of only 3000 nautical miles (nm) the first Australian submarines, *AE1* and *AE2*, had done nothing to alter preconceptions. Acquired with the Fleet Unit as assets suitable for local defence, the submarines had been alternately towed by a surface warship for much of the 12,000 nm delivery voyage to Australia. After their arrival in May 1914 both submarines had gone straight into refit. Repairs and maintenance were not completed until after the outbreak of war, and by April 1915 both craft had been lost, the first to accident and the second to enemy action. During this brief period, the submarines had spent almost no time exercising, and the Australian fleet had gained only limited familiarity with their capabilities. Consequently, in 1915 the wider RAN understood neither the rapid advances made in submarine tactics and technology, nor the difficulties involved in dealing with submarines.

The Navy's most knowledgeable man on submarine matters, and naval defence in general, was almost certainly Creswell's assistant, Commander Hugh Thring.²⁷ Thring had come to Australia in early 1913 after a distinguished intelligence career in the Royal Navy, yet even his perception did not extend to viewing the submarine as a threat to commerce. Described by one contemporary observer as a 'clever, silent well-informed man',²⁸ Thring had assessed submarine capabilities as part of his pre-war attempts to define an

appropriate maritime strategy for Australia. By July 1913 he and the Second Naval Member, Captain Constantine Hughes-Onslow,²⁹ had produced a comprehensive strategic assessment and scheme for naval defence in the face of a threat from the north.³⁰ In this scheme, intelligence gathering became the most important tactical role for the RAN, with submarines and seaplanes acting as the eyes of the fleet. Both these types, Thring concluded, were 'excellently adapted for defensive warfare'.³¹

Thring's experience also allowed Creswell to set up a comprehensive naval intelligence system, and their efforts enabled Australian operations to be fully incorporated into the broader imperial network before the start of the war.³² Thring subsequently became Director of War Staff and, with Creswell finding his role increasingly burdensome, the Admiral became heavily reliant on Thring's advice on any matters involving intelligence or local defence plans.³³ Creswell's other main source of intelligence and technical information was the senior Australian Naval Representative in London, Captain Francis Haworth-Booth.³⁴ During the early war years he provided regular fortnightly reports that were both lucid and wide-ranging. Unfortunately, Haworth-Booth was working virtually alone, and once most RAN warships moved to European waters, his reports tended to become bogged down in administrative detail. Thereafter, he seldom found time to address specific issues of threat in Australian waters.

The Australian response in 1915

The war experience to 1915 hardly suggested a pressing need for the RAN to consider a local submarine threat. German maritime strategy still focused on the High Seas Fleet, which was designed for a tactical battle within 100 nm of Helgoland Island.³⁵ In early 1915 Germany had only 13 ocean-going U-boats in service and of these not more than five were available for operations.³⁶ Germany had not based U-boats in the Far East before the war and, having insufficient numbers to enforce a blockade of Britain, there was little chance of sparing any for the long voyage to Australia. Even had a U-boat managed to reach Far Eastern waters, it could not hope to operate further without adequate support facilities. With the capitulation of German New Guinea in September 1914, the capture of Tsingtao by the Japanese in November, and German East Africa under effective blockade, Germany no longer had access to a viable naval base outside home waters.

There were few specific anti-submarine measures that the Naval Board could have taken in any case. The RAN had adopted its warfare capabilities directly

from the Royal Navy and equipment did not yet exist that could master the two fundamental problems of ASW: detection and destruction. Admiralty investigations to determine the presence of a submerged vessel had so far produced only indifferent results. The use of electric or magnetic apparatus to indicate the presence of submarines showed no promise of becoming practical, and wire sweeps and indicator nets could provide only a general indication of position.³⁷ In 1915 an actual sighting of the submarine still provided the sole means of accurate location. Likewise, despite experiments dating back to 1902, the Royal Navy had found no effective method of destroying an invisible target that could move in a third dimension. No matter how large the explosive used, it appeared nearly impossible to detonate a charge close enough to cause damage to a submarine's hull. Fixed harbour defences remained the only direct response to the threat and, in practice, submarines operating submerged in open waters proved virtually immune to countermeasures.

Nevertheless, the absence of the RAN's main strength overseas combined with reports of U-boat successes in European waters to enhance a local atmosphere of concern. Fixed coastal batteries designed to counter surface raiders, offered no protection against an unseen enemy, and rumours of submarines in Australian waters began to circulate. Accurate analysis and assessment may have allowed the ACNB to dismiss these rumours out of hand, but matters were seldom so clear.³⁸ Notwithstanding Thring's work in setting up a formal reporting system, and the regular summaries from Haworth-Booth, the Naval Board was often poorly served with intelligence. The Admiralty typically had its own priorities. The local concerns of the ACNB, remote from the critical struggle in British waters and with its major warships already under Admiralty control, did not rate among the highest. Lacking up-to-date details on enemy intentions, the Board cast its net wider and often placed undue reliance on the foreign press. Memories of the competition for colonial expansion before the war were still vivid and the Australians were suspicious of Dutch and American sympathy for Germany.³⁹ As late as 1916 Thring would warn Creswell that assistance or basing facilities for submarines could be provided in either the Dutch East Indies or on the Pacific coasts of North and South America.⁴⁰

Certainly in 1915 this kind of support was not so far fetched as might be imagined. German plans existed to encourage rebellion in India with arms smuggled from California via Batavia (Djakarta). The Australians were aware of reports that one of the gun-running vessels carried the parts of a 'knocked

down' submarine.⁴¹ An American newspaper article added further details, claiming that Germany had already established a submarine base in the Pacific. The ACNB obviously took these reports seriously for, on 27 July 1915, it asked the Admiralty to comment on the supposed German base.⁴² The Board's telegram suggested no specific location, but sought advice on whether the RAN should take any special protective measures. The Admiralty's rather brief reply recommended against the adoption of anti-submarine measures in response to 'unconfirmed rumours', but agreed to the forwarding of papers and drawings dealing with the boom and net defence of harbours.⁴³

Booms and nets, which posed a physical barrier to a submarine's entry, offered only a partial solution, however, and did nothing to protect commerce on the high seas. The Naval Board was in a difficult position, for although remote from the latest developments in Europe and subordinate to the Admiralty, it still held responsibility for the defence of shipping on the Australia Station. 'The appearance of German Submarines on one of the Trade Routes in the East' the Board opined, was a possibility, 'Reports are continually received from American sources of German arrangements for this object.'⁴⁴ Ignoring the initial rebuff, the ACNB felt it advisable to prepare plans. In October 1915 it asked London for information on the latest methods of attacking submarines.

While awaiting a reply the Board set to work preparing its own local seaward defence arrangements. Unwilling at this stage to seek the recall of units abroad, the RAN first began an examination of existing resources. District naval officers (DNO) in each state were first instructed to tabulate details of small steam vessels up to 1000 tons and large motor launches capable of carrying a light gun forward.⁴⁵ By 'earmarking' vessels suitable for armed patrol work the ACNB planned that operations could begin with the least possible delay should circumstances change. In December 1915 the DNOs received further orders to have all necessary details worked out and instructions prepared for the rapid mobilisation of the force.⁴⁶

Second, the Naval Board drafted orders for the conduct of merchant ships in Australian waters. These were also distributed to local naval authorities in December 1915. The instructions were to be issued when the necessity arose, and provided basic information on submarine design and tactics, and the action to take after a sighting at sea.⁴⁷ Unfortunately, the orders contradicted Admiralty advice that had been available in Australia since at least May 1915.⁴⁸ Less than helpful comments included: 'Some submarines are armed with a gun, but this is an inferior weapon, incapable of inflicting serious injury upon

an iron steamer manned by a resolute crew', and 'All submarines carry torpedoes, but their supply is limited, and they will be very averse to firing them at merchant vessels.' Nevertheless, if a ship was unlucky enough to be struck by a torpedo: 'there will generally be ample time for the crew to escape in the boats.'⁴⁹ Rather than a well-considered source of advice, the instructions appear more an attempt to instill confidence in merchant masters.

Recognising the problem, the Navy soon produced an addendum.⁵⁰ This admitted that the torpedo was the preferred weapon against merchant ships and that experience in the North Sea had demonstrated the effectiveness of submarine guns. Additional details concerning lookouts and evasive manoeuvring were also provided, but the basic method of dealing with a submarine had not changed. On sighting a submarine every ship was instructed to first attempt an escape, a tactic made difficult by the speed advantage a submarine running on the surface had over most merchant vessels.

The third and final element in the RAN's anti-submarine response concerned the local defence of ports and harbours. Using the drawings supplied by the Admiralty, the ACNB began planning for the rapid manufacture of anti-submarine nets, although even this proved more difficult than expected. Port Jackson, for example, required an outer boom between North and South Head stretching 1590 yards and another inner boom covering 1340 yards between South and Middle Head.⁵¹ In December 1915, the General Manager at Sydney warned that, of the steel wire rope, flat bar iron, chain cable, anchors, shackles, thimbles and timber required for a boom and net defence 'only the timber is likely to be procurable at short notice—and that is considered somewhat doubtful.'⁵² Particularly perplexing was the provision of flexible steel wire rope. Nets required immense quantities and none was yet manufactured in Australia.⁵³ Commander Thring later observed that the provision of a boom defence for even one port was beyond Australian resources.⁵⁴ The only feasible solution would be to obtain all necessary material from Britain, but here the ACNB again ran into problems of priority. Only a few months previously London had refused the Board's request for some other vital defence equipment. As Haworth-Booth explained in one of his regular reports home:

...since the outbreak of hostilities it has been almost impossible to place such orders..., everything that is not immediately connected with the war has to be put aside, and I do not think it is any exaggeration to say that every Shipping and Manufacturing Firm of any importance is carrying out Government War Orders under difficulties of shortage of skilled labour.⁵⁵

Although not the last time Australia would be on its own when it came to defence manufacturing, on this occasion the consequences were not immediately serious. The perception of a local submarine threat to Australia passed as rapidly as it had developed. After strong political pressure from the United States and other neutrals, in September 1915 the Germans abandoned their first unrestricted campaign against shipping. Merchant ship losses dropped to manageable proportions and the British Prime Minister reassured the House of Commons that the submarine danger was over. In December the Admiralty sought to further play down Australian fears. Rumours of U-boats in the Far East were dismissed as the products of 'German agents in order to cause alarm' and should be attached no great importance.⁵⁶ The Admiralty's priorities, rather than any local threat assessment, again became the ACNB's paramount concern. Shortly thereafter all Australian reserves of naval guns from three-pounder and upwards were withdrawn for use in the United Kingdom.⁵⁷

Surface raiders

There is no record of the Admiralty's promised memorandum on anti-submarine methods ever having reached Australia. Subsequent correspondence instead demonstrates an erratic flow of information, with the ACNB often left to flounder. Regardless of this uncertainty, the Admiralty's attempts at submarine countermeasures had still made little progress. Trials with explosive sweeps and indicator nets had produced no successes and the mine was almost the only weapon U-boat crews had to fear. Moored mines, however, had to be laid in large numbers, could not be used in deep water, and were most effective off an enemy base. Surface ships still needed a weapon of precision, and research into suitable howitzers and bomb throwers was underway.⁵⁸ The latter was the predecessor of the depth charge thrower, but these did not arrive in the British fleet until early 1916 and, until 1917, their usefulness was not properly appreciated. Even then their success rate without some practical means of underwater detection would remain low, since the standard pattern depth charge had to explode within three metres to destroy a U-boat.

The U-boats for their part dutifully adhered to a policy of restricted submarine warfare, and sinkings per boat declined accordingly. The U-boat building program continued to receive a high priority, however, and with German losses at an acceptable level the number of operational boats increased. Throughout 1916, the monthly total of Allied merchant tonnage lost continued to climb steadily. The area of U-boat operations also continued to expand and successes

achieved off the American coast encouraged the Germans to seriously consider worldwide operations. New construction plans already included large U-cruisers with designed ranges from 20,000 to 25,000 nm and a heavy gun armament.⁵⁹ The isolation of Britain was still the highest priority, but the German Admiralty examined the extension of U-boat operations to the Indian Ocean and included the possibility of ‘blockade of distant countries’.⁶⁰ Although the German naval staff expected these operations to be very effective, plans could not progress until they could solve the problems of supply and basing facilities. Groups of German merchant ships providing afloat logistics support offered one innovative answer, and there were hopes of establishing *Etappe* (naval base) Manila with 12 vessels and *Etappe* Batavia with eight.⁶¹ But while the British blockade endured, this could remain only a future option.

In the meantime, the Germans sought to maintain widespread pressure on British commerce through a renewal of surface raider operations. During January and February 1916 *Möwe* demonstrated that the Royal Navy was unable to prevent a lone raider operating successfully in the Atlantic and revived fears of more distant deployments. As commerce sailed unprotected within the boundaries of the Australia Station, Thring was not slow to see the implications. In February 1916, he warned Creswell that the importance of the transport and trade routes in local waters ‘might well decide the Germans to attempt an attack.’⁶² As a partial solution, Thring provided the Admiral with an outline of his proposed organisation for a ‘Trade Route protection scheme’. This plan entailed naval patrols off the main Australian shipping focal areas—identified as Fremantle, Leeuwin, Albany, Cape Nelson, Gabo Island and Sydney—but immediately posed a problem. With most of the its fleet and suitable guns overseas, the RAN could only implement the scheme if the British agreed to return some Australian ships from service on the China Station.

Protocol did not allow a direct request by the ACNB. Instead the Commonwealth Government asked for ‘consideration [by the] Admiralty as to the advisability’ that certain vessels be recalled to Australian waters.⁶³ If approved, the inquiry continued, Australia would establish a system of armed patrol craft in conjunction with the warships. Since the British had just invited the Japanese to patrol the Strait of Malacca and assist in protecting Indian Ocean trade routes they were sympathetic to the Australian request.⁶⁴ Before much could be done, however, CinC China found the Japanese vessels unsuitable and asked to retain the Australian ships.⁶⁵ The ACNB quietly concurred but, having assessed that a threat was more likely to come through

the Indian Ocean, it suggested that the Australian flotilla be split, with one division of three destroyers off Borneo rotating every six months with the other off Albany in Western Australia.⁶⁶

The 1917 U-boat campaign

After the indecisive engagement at Jutland in May 1916 the German fleet commander, Admiral Reinhard Scheer, was left in no doubt that even the most successful fleet action would not force Britain to make peace. He recommended instead 'the defeat of British economic life' through submarine action.⁶⁷ The German Admiralty also pressed for resumption of an unrestricted campaign, but diplomatic arguments, which stressed the potential consequences of widening the war, prevailed for most of 1916. Not until the end of the year did the need to overcome the stalemate on land overcome the protestations of those opposed to the naval staff. The German Kaiser, attracted by arguments that unrestricted submarine warfare would defeat Britain within six months, ordered the campaign to resume on 1 February 1917.⁶⁸

Allied shipping losses again rose, although almost entirely caused by an increase in operational U-boats rather than the unrestricted campaign.⁶⁹ From 328,000 tons sunk in January 1917 to 520,000 tons lost in February, sinkings then reached a peak of 883,000 tons in April.⁷⁰ The Germans anticipated that a sustained rate of 600,000 tons destroyed per month would be sufficient to starve Britain into surrender. This was a significant underestimate, but the U-boats probably never came closer to bringing victory. Allied ships were sunk faster than they could be replaced, and the deterrent effect kept many neutral ships in port. For the Admiralty, and soon the British Cabinet, the submarine issue became the war's deciding factor.

Like its more general attitude to sea power, the Admiralty still saw the primary naval role in ASW in offensive terms, and continued to base its policy on ingenious technical countermeasures, area patrols and hunts.⁷¹ The Royal Navy had also become attuned to the abstract idea of 'sea lanes', and often appeared to argue that it was these rather than individual ships which needed protection.⁷² Merchant ships were armed for self-protection and dispersed over the sea routes, but the Admiralty consistently resisted the introduction of a general convoy system. The opponents of convoy presented various grounds in support of their position. They argued that convoys offered a better submarine target, were difficult to control, inefficient in carrying power, and in any case required an impossibly high number of escorts.⁷³ Underlying these arguments, however, was the belief that convoys were essentially

defensive. They must therefore be inefficient as a means of combating U-boats because they tied up valuable anti-submarine craft that would be better employed on offensive tasks.

The Australian response and the identification of a submarine threat

The Admiralty's policy, although having little effect on the U-boat's success, at least showed characteristic determination. But in Australia, despite reports that another enemy surface raider was loose in the Atlantic, 'credible rumours of a German plot to establish a submarine base ... in Malaysia',⁷⁴ and occasional reports of submarine sightings off remote coasts,⁷⁵ the Naval Board maintained only the simplest of countermeasures. Some redeployment had occurred and, of the warships on the Australia Station in early 1917, one obsolescent protected cruiser patrolled off Cape Leeuwin to guard the western approaches, while the three destroyers operated off the east coast to patrol the area of greatest shipping concentration. These vessels still had no anti-submarine weapons other than their guns, and the armament of any surface raider would have outranged even these. As well, the ACNB had made no further efforts to provide harbour protection and, with the exception of the Army-controlled coastal artillery, the only other naval defences were small-scale—and unarmed—observation and mine-sweeping (M/S) services off Sydney, Fremantle and Melbourne.⁷⁶

The concerns expressed in 1915 had dissipated during 1916 and, before the renewed German campaign, 'the Board had insisted [to the Admiralty] that there was no panic, no feeling of danger, no desire to ask for more protection.'⁷⁷ Certainly, the majority of Australian politicians showed no great interest. The areas declared unsafe by the Germans were the Mediterranean and the eastern Atlantic, conscription was the issue uppermost in the public's mind and thoughts of local naval defence arose only rarely. A prominent exception was Labor Opposition member W.G. Mahoney. His prime concern was the government proposal to ship half of Australia's iron and steel output to Britain and he argued that the material would be better used on local merchant ships, destroyers and fast cruisers. In December 1916 he had told Parliament of press reports of 'super-submarines', and suggested that there was nothing to prevent them from operating from a secret base in South America and crossing the Pacific.⁷⁸

The German announcement of unrestricted submarine warfare, and the Admiralty's subsequent prohibition on the dispatch of Australian troopships until it became possible to provide suitable escorts, reignited Mahoney's

interest. In February 1917 he argued in Parliament that the Commonwealth Government should be doing everything possible to construct more ships 'to defend Australia in Australian waters'.⁷⁹ The newly formed Nationalist Party had clearly enunciated their attitude the same day. When asked by the Opposition if the safety of troops being sent from Australia could be guaranteed, Prime Minister W.M. 'Billy' Hughes simply replied that he could give no such reassurance. He fell back instead on a familiar Australian refrain: 'the eternal vigilance of the British Navy is our only guarantee.'⁸⁰

Hughes was correct, although the troop convoys from Fremantle did not receive escort until May 1917.⁸¹ British (and Japanese) cruisers thereafter provided almost all naval protection in the Indian Ocean. But the Prime Minister's confidence was misplaced if he expected the Royal Navy to provide direct assistance in local defence. Still failing to control the enemy's U-boats in home waters, the Royal Navy had little time for specific Australian concerns. Considering that fears of abandonment had in part created the perceived need for an independent Australian Navy, the complacency demonstrated by the ACNB and Commonwealth Government is puzzling.

Unquestioning faith in British seapower may offer a partial explanation, but a clue is also contained in the incompetent performance of the first Minister for the Navy, Jens August Jensen, and what one historian has described as the Board's 'sharp decline as a decision making body' after 1915.⁸² Despite his position as Chairman, Jensen attended only one of the 14 Naval Board meetings between mid-1916 and the time he left the portfolio in 1917. Jensen regularly failed to consult or ignored the Board's advice, traits that so incensed Creswell that he offered to resign. Further reducing Board cohesion was an ongoing conflict between Creswell and the Third Naval Member, Captain Clarkson.⁸³ Jensen not only did nothing to resolve this squabble, but also chose to deliberately exploit it. Jensen's successor, Joseph Cook, showed little more interest, and the situation became so bad that in 1918 a Royal Commission included the Navy in the terms of its investigation into Defence administration.⁸⁴

With these problems within the Board and at ministerial level Creswell left much of the thinking on local defence issues to his assistant, Commander Thring, who at the same time struggled with the plethora of daily administrative matters involved in running a navy.⁸⁵ The German threat in a variety of guises continued to exercise his attention, and Thring's perception of Australian unpreparedness offers an interesting contrast with that of his

service and political masters. Despite his earlier setbacks, Thring persistently argued for a regular armed patrol service at major ports. When by January 1917, Creswell had still not taken action, Thring made very clear his concerns of a submarine attack in local waters. 'Should such an attack occur', he warned,

... we have no nets, no water planes and too few armed craft to be able to take any action which could give hope of success.

It would be necessary to stop the movements of shipping in the threatened area.⁸⁶

The military authorities had offered to lend the RAN some field guns and Thring again suggested that the ACNB set up an organisation for taking up, arming, manning and sending to sea craft from different ports. He made no mention of disguise, but hoped that enemy submarines might be tempted to stop and attack one of these craft and hence be destroyed themselves. Thring's preference for patrol operations places him squarely among the vast majority of naval officers at the time and in accord with the British Admiralty's prevailing doctrine. Thring's minute passed via Captain Gordon-Smith,⁸⁷ the Second Naval Member, on its way to Creswell. Under the title 'The Submarine Menace' Smith attached his own more detailed, and at times contradictory, comments:

I consider that the only port in danger is Sydney: the situation there is serious. There is nothing to prevent a submarine coming in submerged and sinking every ship in the harbour by torpedoes.

Without nets or anti submarine explosives I do not think we can prevent them. Possibly the ships might be raised and repaired.

In Melbourne all ships would have to take refuge up the Yarra which should be blocked by a lighter made unsinkable by being filled with empty casks.

I presume Fremantle could be similarly blocked. Hobart would have to cease to exist as a port.

Albany, Brisbane and Adelaide could also be blocked in a similar manner to the Yarra.

Ships proceeding to sea should do so in convoys escorted 250' [miles] to sea by destroyers. They should then separate.

Ships should approach harbours and enter during night. We should take advantage of the unlimited 'space' surrounding Australia. Bass Straits [sic] should not be used.

We cannot hope to patrol our coasts.

Great Britain has 500 motor launches, 200 destroyers and goodness knows how many fishing boats to patrol a small area for a large number of enemy submarines.

We should have to patrol an enormous area for a few submarines with a few, 20 or so, old and slow patrol vessels.⁸⁸

As do Thring's, Smith's views offer an interesting appreciation of the threat a few, or even just one, enemy submarine might pose to Australian trade. But the Second Naval Member's comments are also noteworthy by arguing for both the importance of convoy and the futility of attempting undirected patrol operations. Although both officers maintained different views on what the RAN should do, the apparent threat to commerce at last moved Creswell to action. In January 1917 he called an urgent meeting of the Naval Board to consider the matter with a view 'to making such preparations as appeared necessary.'⁸⁹

Clashes of personality notwithstanding, one of the few historians to examine Australian naval administration has observed that the ACNB usually carried out its business with 'a directness of expression, a keenness to bring a question to finality, a pragmatic approach ...and a strong reluctance to change a decision once it had been given.'⁹⁰ The Board's subsequent prevarication over anti-submarine measures and local defence illustrates a less determined side. On 19 February 1917, the ACNB concluded that a general danger to Australian trade existed and put in place a more definite system of coastal patrol (see Table 2.1). Yet, to define specific countermeasures went beyond the ability of its members. The CinC China had lately recommended that Australian destroyers should be trained in the use of rapid sweeps and depth charges, but having neither gear nor information the RAN had found this impossible.⁹¹ ASW was already a complex science and the pace of technological developments had far outstripped the supply of information to Australia. Hampered by this lack of specialist knowledge the ACNB could only consult the Admiralty. In an almost pleading conclusion, the letter remarked:

There are no Officers here who are acquainted with the latest methods of anti-submarine warfare. If it is considered that danger may arise, it is submitted that instructions for making the necessary gear (such as rapid sweeps, indicator nets, depth charges, etc.) as well as an Officer or Officers who can give information as to its use, should be sent to Australia.⁹²

Struggling to control a logistics crisis stemming from the worst shipping losses of the war, and far more urgent American requests for anti-submarine information, the British were in no hurry to reply.⁹³ The Admiralty, moreover, was already under intense scrutiny after government criticism of its handling of countermeasures and failure to adopt a general system of convoys.

Table 2.1 – Australian coastal patrol, 1917-18

| | 1917 | Remarks | 1918 | Remarks |
|------------------------------------|----------------------------------|-------------------------------|---|--|
| Cooktown to Sydney | | | 1 armed yacht 1 motor boat | |
| Sydney to Cape Howe | | | 1 light cruiser | to July |
| Bass Strait | 2 destroyers | February-June | 1 auxiliary M/S | from May |
| Port Phillip | 1 torpedo boat | | 1 torpedo boat | |
| Spencer Gulf | 1 gunboat | | 1 gunboat 1 light cruiser | to July July onwards |
| Fremantle/ Western Australia | 1 protected cruiser 1 cruiser | from February June-October | 1 protected cruiser 1 steamer 2 ketches | April-July July onwards Broome- Wyndham |
| Torres Strait | 1 motor boat 1 armed yacht | from February | 1 cruiser | to October |
| New Guinea waters | 1 steamer | | 1 steamer | |

Source: Jose, *The Royal Australian Navy*, pp. 372-3.

The introduction of convoys and shipping control measures

Prior to December 1916 and the creation of the combined Anti-Submarine Division of the Admiralty, no one staff area had dealt with the U-boat threat as a single problem.⁹⁴ In April 1917 the British War Cabinet concluded that there was still insufficient coordination between the Admiralty's anti-submarine efforts, and even urged the Prime Minister, David Lloyd George, to investigate.⁹⁵ Stung by the criticism and desperate to reduce losses the Admiralty at last approved trials of an oceanic convoy system. At the same time the Royal Navy introduced other shipping control measures to increase the efficiency of the declining tonnage available.

The effects of these measures were certainly spectacular. Rather than convoys providing a larger target, they proved only slightly easier to find than a single merchant ship, and with fewer independent sailings the U-boats discovered the seas suddenly empty. If an enemy commander did finally sight a convoy, he found it surrounded by escorts, and offering only a brief opportunity to attack.⁹⁶ Aircraft also began to demonstrate their worth and, although never armed with a lethal anti-submarine weapon, when acting as escorts they

helped prevent successful attacks. Their presence around a convoy consistently forced the Germans to dive and hence prevented the U-boats from using their superior surface speed to manoeuvre into an attack position. The sinking of merchant ships declined accordingly. The loss rate of ships in convoy eventually fell to less than 1 per cent, compared to average losses of over 12 per cent among independent vessels in April 1917.⁹⁷

The Naval Control of Shipping (NCS) system took time to expand, however, and the changes wrought had not become apparent when, in May 1917, the British responded to the Australian plea for anti-submarine information. Although in the Admiralty's opinion the local threat to Australian commerce had not altered since 1915, if Allied merchant tonnage was to be organised on a worldwide basis then the assistance and cooperation of the ACNB would undoubtedly be essential. The British reply should therefore be viewed primarily as part of its attempts to increase Allied shipping efficiency, rather than specific encouragement to local Australian defence. It nevertheless contained some support for antipodean anti-submarine measures, noting that the Admiralty 'thought [it] desirable that an organisation for counteracting submarines should be established.' Furthermore:

The Lords Commissioners ... are inviting ... the Commonwealth Naval Representative to consult with the Admiralty Departments concerned as regards the supply and organisation of various technical anti-submarine devices about which the Naval Board have made inquiry.⁹⁸

Notwithstanding this encouragement, the continuing U-boat crisis in European waters soon resulted in a further reduction in Australian defences. The widespread introduction of the convoy system found the Admiralty struggling to provide sufficient escorts and, on 9 May 1917, the Australians received an urgent British request for the assistance of the three RAN destroyers still on the Australia Station.⁹⁹ Despite the ACNB's recent conclusions on a general threat to local trade, the Australians not only agreed, but also hinted that they could make available the three other destroyers still in South-East Asia. The full flotilla of six destroyers reached the Mediterranean in August 1917 and subsequently engaged in anti-submarine patrol and escort operations in the Adriatic. As Creswell's only condition on the destroyer's deployment was to suggest that a British cruiser might be allocated to Australian coastal patrol work, it would appear that he had again dismissed the local submarine threat.¹⁰⁰

Yet in London, Haworth-Booth was receiving somewhat conflicting signals. As the Admiralty had promised, on 18 May 1917 the Directors of the Anti-Submarine Division granted him an interview. The Naval Board's questions were again discussed and all agreed on the present improbability that the Germans would send submarines to the Far East. The British nevertheless highlighted that the latest U-boats were much larger than earlier designs, a feature which 'has undoubtedly rendered it possible for these larger craft to extend their operations to Australian waters.' With this premise accepted, the Admiralty considered it 'very desirable that the Commonwealth should at once prepare to meet such eventualities.'¹⁰¹ Thereafter the British provided the Naval Board with detailed recommendations for the protection of merchant shipping and complete descriptions and drawings of the various anti-submarine devices then in existence.¹⁰² The Admiralty listed its suggested measures in order of importance:

- (a) establishment of a Department to undertake the organisation, central control and protection of all shipping in Australian Waters;
- (b) establishment of definite Sub-Centres or Areas, responsible for the local control and protection of shipping;
- (c) organisation of a rapid system of communication between the Central Control, Sub-Centres, auxiliary services and shipping;
- (d) appropriation, training and organisation of personnel for administration and manning;
- (e) establishment or extension of defences at the principal ports, refuge harbours and important areas of trade routes. Defences to include; boom nets, mine-sweeping, patrol and drifter service;¹⁰³
- (f) taking up and equipment of vessels for the above services; and
- (g) establishment of a Naval Air Service to work in conjunction with the Patrol Service.¹⁰⁴

Australian considerations

The Commonwealth Shipping Board, and the ACNB through its system of DNOs and sub-DNOs, already provided the organisational framework for the central control of Australian shipping. Captain Clarkson, the Third Naval Member, even doubled as Deputy Chairman of the Shipping Board. Nevertheless, the breadth and totality of the scheme proposed by the Admiralty seems to have caught Creswell by surprise. Having recently agreed to the dispatch overseas of the Australian destroyer flotilla, he could hardly be expected to turn around and advise his Minister that a local threat existed. The scheme would also need a substantial allocation of funds and, although the Navy received money more freely than in peacetime, the Department was

already under notice to reduce expenditure. Creswell was quick to reduce the scale of the proposals, remarking that ‘the provision of the defences proposed here ... are not in my opinion likely to be required in these waters. The vast areas involved in any general scheme make it necessary to confine anti S.M. measures to immediate neighbourhood of ports.’¹⁰⁵

Creswell then asked for his assistant’s comments. Nine months had passed since Thring last stirred the Naval Board into action. In the Atlantic there was now no question that shipping losses had dropped substantially. This reduction, however, had been an immediate effect of the ocean convoy, and most coastal shipping remained unescorted. In truth the U-boat crisis remained unresolved and only slowly did British authorities realise that many avoidable losses still occurred in coastal areas.¹⁰⁶ Since the Royal Navy still employed its available aircraft and many surface craft on patrol duties, it is hardly surprising that Thring had not altered his perspective. In an uncharacteristically long and somewhat rambling minute, he repeated many of his earlier arguments. Thring noted the impossibility of providing boom defences, the absence of RAN ships overseas, the scarcity of other suitable vessels, and Australia’s general lack of preparation should an enemy submarine be deployed. He concluded by placing the responsibility for assessing matters squarely at the feet of the Naval Board, but made it very clear that he recommended a mobile defence:

It would seem that the establishment of a naval air service provided with one or more fast craft to carry seaplanes and motorboats with depth charges would be the most effective counter-submarine weapon for Australia at present. It is not possible to establish local services for protecting all the ports of Australia.¹⁰⁷

Thring’s suggestion did nothing to change Creswell’s opinion that the defences proposed by the Admiralty were excessive. A naval air service would not come cheaply and Australia did not have the capacity to undertake the manufacture of aircraft. The only concession made by the First Naval Member was to order the extension of observation services to Albany and Adelaide.¹⁰⁸

The final U-boat assault

In European waters, meanwhile, the Germans had made adjustments to their U-boat operations. They probed for weak spots and began an intensive inshore campaign. Furthermore, and as Haworth-Booth had been warned, the Germans expanded the activities of their large, long-range U-boats. The U-cruisers allowed operations to extend to the Azores, Canaries, the African west coast, and the east coast of North America. Results were not spectacular, but again demonstrated to the world that the U-boats were increasing their reach.¹⁰⁹

In Australia, however, it was the economic consequences of the German campaign, rather than any strategic extension, which most worried the government. Hughes regarded these effects as ‘most serious’ and, in July 1917, reminded Parliament of the Commonwealth’s contract to ship 600,000 tons of wheat to Britain each month. The Prime Minister had purchased 15 British steamers in 1916 to help clear Australian wheat harvests but, according to Hughes, the Allied shipping shortage had meant that not one bushel of wheat moved in June 1917, and other products were ‘heaping up’.¹¹⁰ Australian merchant ships had not been immune to submarine attack in the Atlantic,¹¹¹ and the solution as Hughes saw it was to keep them out of that ocean. He suggested further support for local shipbuilding while reducing the mileage Commonwealth ships had to steam by sending them across the Pacific to the western coast of America rather than via the Indian Ocean. Once in America the trans-continental railway system could take Australian products to the Atlantic and thence to Great Britain. Hughes, though, was being completely unrealistic. Overland transport could only ever substitute in a minor way for shipping capacity.

Within Navy Office, however, there were others with a more immediate and local view of threats. The loss of SS *Cumberland* off Gabo Island in July 1917 and the disappearance of SS *Matunga* off New Guinea in August brought their anxieties to a head.¹¹² The German surface raider *Wolf* had caused both the capture and sinking, but the Naval Board did not become aware of the enemy’s identity until January 1918. In the interim there had been some confusion, as the ACNB seemed reluctant to admit that an enemy vessel could have reached southern waters without its knowledge. *Cumberland* had signalled that she had hit a mine, but the first underwater investigation concluded that the cause had been an internal explosion. The Naval Board continued to favour sabotage as a cause and delayed ordering a mine-sweep until October 1917.¹¹³ Where the mines had come from remained unclear, but at least some within Navy Office suggested that a U-boat had been the culprit, perhaps operating from a base in the Netherlands East Indies (NEI).¹¹⁴ In support, the proponents noted the sighting of a submarine off Colombo in March and the subsequent discoveries of small minefields in that area. Another nine incidents ranging from reports of German activity at Bali to unknown aircraft seen off the Australian coast, provided ‘links forming a strong chain of evidence.’¹¹⁵

Clearly the lack of concrete intelligence then available within Navy Office helped to create uncertainty. But the possibility that a submarine might be active worried Thring far more than the threat posed by a surface raider. Not

put off by Creswell's rejection of his previous recommendations, Thring attempted to force the issue by playing up the economic consequences. Without any form of mobile or harbour defence, he argued that the appearance of a submarine would lock shipping up in ports until a destroyer force could arrive from overseas. Thring predicted a delay of perhaps two months before shipping could resume and concluded: 'I submit that Government should understand the position in order that preparations may be made to lessen the difficulties which a cessation of sea communication would create.'¹¹⁶

The government remained well aware of the seriousness of the U-boat situation in Europe.¹¹⁷ However, for Creswell to bluntly admit to Australia's defencelessness was another matter. At the same time he relied on Thring's continued support, so could not simply dismiss his apparently reasoned concerns. Creswell did the easiest thing and passed the matter on to the rest of the Naval Board for consideration. The ACNB met on 3 December 1917 and, although no details of the discussions have surfaced, Thring's arguments apparently forced a substantial change in policy. Indeed, Haworth-Booth received clear notification the following day:

With reference to possibility of an enemy submarine appearing in these waters suggest that probability is increasing because of increase in size, possibility of obtaining sailing vessel to carry supplies, absence of any anti-submarine vessels here and possibility of destroyers being withdrawn for some months from Mediterranean or elsewhere if submarine appeared here.

No guns, depth charges, nets, seaplanes or material for making booms available here.

Suggest that some guns, depth charges and indicator nets also a fast seaplane carrier would form useful defence if considered necessary.

Naval Board request Admiralty advice if gear should be sent from England.¹¹⁸

This was a substantial shopping list and it took Haworth-Booth until late January 1918 to complete investigations. Although Haworth-Booth made no comment on the change, the Admiralty had reverted almost completely to its earlier stance. While appreciating Australian concerns, and keeping the situation constantly under review, the British saw the probability of enemy submarines visiting Australian waters as 'extremely remote'.¹¹⁹ Furthermore, if the enemy chose such action the Admiralty was practically certain that the RAN would receive warning sufficient to introduce appropriate protective measures. The credibility of the Admiralty's views needs to be acknowledged, particularly in comparison with Thring's increasing apprehensions. Still, for

the British, a powerful motivation existed in their shortage of anti-submarine equipment. 'All materials are so urgently required [in] this country that supply of anything not absolutely essential is deprecated' the Admiralty advised, and the only positive suggestions they offered were for the RAN to manufacture its own depth charges and improvise boom defences of the most important harbours.

Thring had not been idle in the interim. Unfortunately, the guns he had planned to borrow from the Australian military were too small to outrange the latest German U-boat weapons. He had nevertheless managed to acquire sufficient weapons to arm four of the fastest coastal ships, three trawlers and six other ocean-going small craft. Depth charges, if he could obtain them, would provide additional weapons in these craft and in the few RAN ships that still provided local patrols.¹²⁰ Thring had also discovered that a great quantity of disused four-inch tramway cable was available, and with this he hoped to attempt some form of boom defence.¹²¹

In March 1918, however, he drastically reduced the scale of his defence recommendations.¹²² Booms, minefields, magnetphones, submerged nets and seaplanes were, Thring felt, not needed under existing conditions. The cause of this change of heart remains unclear, but from subsequent correspondence it seems that Thring at last realised that he had no hope of obtaining approval for a comprehensive anti-submarine defence. By sacrificing the costly items, he may have believed he had more chance of retaining the less expensive suggestions. In any case he now recommended taking advantage of the newly established shipping control organisation to prepare some of the faster coastal vessels for service, either as patrol craft or for convoying against submarines. The RAN would not take these vessels away from their normal employment, but would provide them with guns and gun crews, and use them only when required.

Notwithstanding the Admiralty's less than enthusiastic response, and Thring's backtracking on equipment, the ACNB and naval staff were undoubtedly taking the U-boat threat more seriously than ever before. In a general atmosphere of heightened concern, a senator warned Parliament of the Allies' inability 'to cope with the submarine menace',¹²³ American press reports again predicted a German submarine campaign in the Pacific,¹²⁴ and the Australians repeatedly pressed the British for reassurance.¹²⁵ Following one of the most despairing pleas yet made by the Naval Board, the Admiralty at last agreed to supply 20 suitable guns and ammunition, 500 depth charges and one set of release gear

to use as patterns.¹²⁶ For a time even Creswell found the matter compelling, and after receiving Thring's latest proposals ordered another 'urgent' meeting of the ACNB.¹²⁷

The meeting was something of a turning point, finally resulting in an anti-submarine plan, but still demonstrating the Board's basic impotence. The ACNB agreed that without an adequate defence the appearance of an enemy submarine would probably force all coastal shipping into harbour, with potentially disastrous consequences for Australian commerce and industry. Without Admiralty support, however, the Board could see no prospect of obtaining additional resources from the Commonwealth Government. At present, Creswell argued, he could not even justify expenditure on booms.¹²⁸ If the Admiralty was wrong, the best the RAN could hope for was to arm some vessels and keep the most important coastal traffic going.¹²⁹ The plan devised involved using three larger patrol vessels for service in the focal areas at Thursday Island, Bass Strait and off Fremantle. The larger vessels would be supported by greater numbers of small, lightly armed craft, divided between the different ports and available at short notice to escort slow merchant ships. Faster merchantmen would be armed with heavy guns and rely on their speed to sail without escort. The Naval Board would supply the Admiralty's depth charges to all armed vessels, including the fast merchant ships.¹³⁰ Although these measures were relatively inexpensive, the Board also agreed on the importance of acquiring seaplanes, and intended to use these for anti-submarine patrols off the principal ports.

The additional gear had yet to arrive from Britain, but a succession of problems demonstrated that the RAN's plans still required refinement. In April 1918 the Admiralty advised that they could spare neither aircraft nor aircrew, nor instructors in anti-submarine equipment. Haworth-Booth recommended that training a suitable Australian rating could solve the latter deficiency,¹³¹ but this would further delay the acquisition of an ASW capability. As for seaplanes, the British suggested that these be sought from America, with pilots perhaps provided by other Commonwealth authorities.¹³² Demonstrating failure at a more basic planning level, however, the naval staff had neglected to consult with the Commonwealth Shipping Board. Although it had no objection to arming merchant ships, the Shipping Board did impose a rather fundamental caveat, noting that 'it must be distinctly understood that the fact of a gun being on board must not determine the nature of the employment of the ship, which must be in those trades where she is most required.'¹³³ If naval authorities could not direct escort and patrol operations the scheme would have no hope of being effective.

Armistice

The RAN's problems were not insoluble, and some further plans were advanced, but as the war situation improved, the urgency for local defence measures gradually disappeared. In June 1918, the Naval Board asked shipping companies for construction plans to allow the preparation of 'Dazzle' camouflage schemes.¹³⁴ In July, the Board considered whether to begin training merchant crews in anti-submarine measures and make minor modifications to improve the lookout in their vessels. Clarkson thought not, and cited the heavy cost and the element of doubt that still existed.¹³⁵ Creswell disagreed:

- (1) It has not been suggested that action is necessary now.
- (2) The cost is by no means heavy; it is scarcely appreciable.
- (3) Unfortunately the element of doubt is only solved by heavy losses occurring.
- (4) I consider that at least all the Masters of the large intercoastal lines and their Officers should be thoroughly informed as to the action necessary and the work they will be called upon to do in the advent of submarines to these seas.¹³⁶

It was perhaps the most clear and sensible statement he had made on the subject during the war, but Creswell's interest was again waning. A week later, with the vessel carrying the Admiralty equipment only a fortnight from Australia, the naval staff had taken no steps to prepare or even identify the ships to be armed.¹³⁷ Once reminded of the omission, Creswell simply asked for the names of four ships commonly operating on the east coast.¹³⁸

On 11 November 1918, the signing of the Armistice brought the fighting in Europe to an end. The U-boats had failed to arrive in local waters, but the state of Australia's naval defence should have given the ACNB little cause for self-congratulation. After more than three years of procrastination the RAN had made virtually no progress towards the introduction of effective anti-submarine measures. The guns and depth charges sent by the Admiralty had not been fitted, and training in procedures had yet to begin. The patrol and escort scheme was still under discussion, and the project to begin a Naval Air Service had already foundered on grounds of cost and duplication with the Military Air Service.¹³⁹ Other than short boom defences for the protection of dry docks the Board had arranged for the defences of no Australian harbour.¹⁴⁰ Even Creswell's intended course of anti-submarine instruction for merchant officers failed to eventuate, while bickering over who should pay ensured that the plans for dazzle painting were never implemented.¹⁴¹

Considering his pre-war clamouring for local naval defence it is interesting to see how poorly Creswell dealt with the submarine issue. Although some historians have alluded to his 'masterful handling' in balancing matters of immediate Australian concern against the larger matters of a naval war,¹⁴² the U-boat threat—albeit overestimated—found Creswell out of his depth. The U-boats may not have ventured out of the Atlantic, and the Germans may have never been in a position to implement their plans for floating bases, but this does not excuse the ACNB's lack of initiative and vacillation. Having accepted that a threat existed in 1917 the Naval Board was surely obligated to do its utmost in devising and implementing countermeasures. In Creswell's words: 'instant readiness for service is the "*sine qua non*" of a navy for an island country.'¹⁴³ After 1915 the submarine threat, in perception if not in practice, demonstrated that the RAN was not in instant readiness for service in its own waters. As we will see a succession of compounding factors ensured that the Navy could not rectify this situation in the short term.

Notes

1. Telegram, Australian Commonwealth Naval Board (ACNB) to Captain Haworth-Booth (Australian Naval Liaison Officer, London), 20 February 1918, NAA: MP 1049/1, 1920/0128.
2. N.A. Lambert, 'The Influence of the Submarine Upon Naval Strategy 1898-1914', PhD thesis, Oxford University, 1992, pp. 186-9.
3. See H.H. Herwig, 'The Influence of A.T. Mahan Upon German Sea Power', in J.B. Hattendorf (ed.), *The Influence of History on Mahan* (Newport: Naval War College Press, 1991), pp. 67-80; and A. Gordon, *The Rules of the Game: Jutland and British Naval Command* (London: John Murray, 1996), pp. 316-17. Notwithstanding this commonly accepted view of Mahan and seapower, Jon Sumida's recent treatment has determined that many traditional assumptions about Mahan's arguments are in need of revision. See J.T. Sumida, *Inventing Grand Strategy and Teaching Command: The Classic Works of Alfred Thayer Mahan Reconsidered* (Washington: Wilson Center Press, 1997).
4. 'Report of the Committee of Imperial Defence on the question of a general scheme of defence for Australia', May 1906, Public Record Office (PRO): ADM 116/1100.
5. Cited in W.E. Livezy, *Mahan on Sea Power* (Norman: University of Oklahoma Press, 1947), p. 47.
6. J.B. Hattendorf, 'Maritime Conflict', in M. Howard (ed.), *The Laws of War* (New Haven: Yale University Press, 1994), pp. 98-115.
7. Lambert, 'The Influence of the Submarine Upon Naval Strategy 1898-1914', p. 187.
8. W. Jameson, *The Most Formidable Thing* (London: Rupert Hart-Davis Ltd, 1965), p. 137.
9. P. Halpern, *A Naval History of World War I* (Annapolis: United States Naval Institute (USNI) Press, 1994), p. 293.
10. R.M. Grant, *U-boats Destroyed* (London: Putnam, 1964), p. 17.
11. H. Pemsel, *A History of War at Sea* (Annapolis: USNI Press, 1979), pp. 161-2.

12. See R. Nicholls, 'Colonial naval forces before Federation' in D. Stevens and J. Reeve (eds), *Southern Trident: Strategy, History and the Rise of Australian Naval Power* (Sydney: Allen & Unwin, 2001), pp. 125-39.
13. F. Broeze, *Island Nation* (Sydney: Allen & Unwin, 1998), p. 90.
14. Letter, Deakin to Governor-General, 28 August 1905, *Commonwealth Parliamentary Papers (CPP)*, 1906, No. 98.
15. Memorandum, prepared for the 1902 Colonial Conference, 7 August 1902, document 10, in N. Tracy (ed.), *The Collective Naval Defence of the Empire, 1900-1940* (London: Navy Records Society, 1997), p. 18.
16. Paper, 'Australian Naval Defence', 1 May 1906, PRO: ADM 1/8905, 23758, pp. 90, 95.
17. 'Admiralty Memorandum' for the Imperial Conference on Defence, 20 July 1909, PRO: CAB 37/100/98.
18. Vice Admiral Sir William Rooke Creswell, KCMG, KBE, RAN (1852-1933), First Naval Member (1NM) ACNB 1911-18.
19. See N. Lambert, 'Sir John Fisher, the fleet unit concept, and the creation of the Royal Australian Navy' in Stevens and Reeve, *Southern Trident*, pp. 214-24.
20. 'Captain Creswell's views on result of Imperial Conference', 16 November 1909, in G.L. Macandie, *The Genesis of the Royal Australian Navy: A Compilation* (Sydney: Government Printer, 1949), p. 252.
21. Statement by Senator Senior, *Commonwealth Parliamentary Debates (CPD)*, 24 January 1918, p. 3502.
22. Remarks by Creswell, 1 September 1913, NAA: MP 1049/1, 15/054.
23. H. J. Brennan and E. Kingsford Smith, 'The War Cruises of HMAS *Melbourne* and *Sydney*, 1914 to 1918', unpublished manuscript held by NHD, Canberra, p. 1.
24. In 1915 Navy Office included a secretariat and branches dealing with reserves, construction, finance, stores and works. The naval staff included a captain as Creswell's assistant and a commander for transport duties.
25. M. White, *Australian Submarines: A History* (Canberra: Australian Government Publishing Service (AGPS), 1992), pp. 9-13.
26. Report by Creswell to Parliament, 12 December 1905, *CPP*, 1906, No. 66; and Memorandum, Creswell to Minister of State for Defence, 2 September 1907, in Macandie, *Genesis of the Royal Australian Navy*, pp. 200-201.
27. Captain Walter Hugh Charles Samuel Thring, CBE, RAN (1873-1949), Director of War Staff 1915-18.
28. Diary of G.E. Morrison, an adviser to the Chinese Government and keen observer of Australian personalities, 3 January 1918. Cited in letter, R. Lamont to author, 25 November 1994.
29. Rear Admiral Henry Constantine Hughes-Onslow, RN, Second Naval Member (2NM) ACNB 1912-13.
30. See I. Cowman, 'The Vision Splendid: Australia, Naval Strategy and Empire, 1911-23', in D. Stevens (ed), *In Search of a Maritime Strategy: the maritime element in Australian defence planning since 1901* (Canberra: Strategic and Defence Studies Center, 1997), pp. 43-66.
31. 'Report on the naval defence of Australia', 5 July 1913, NAA: MP 1587/1, 186AK.
32. 'Report on the Naval Intelligence Service June 1918', NAA: MP 1049/1, 18/0325.
33. B. Nicholls, *Statesmen and Sailors: Australian Maritime Defence 1870-1920* (Balmain: published by the author, 1995), p. 206.
34. Rear Admiral Sir Francis Fitzgerald Haworth-Booth, KCMG, RN (1864-1935), Naval Advisor to the High Commissioner for Australia in London 1911-20.
35. H.H. Herwig, 'The Failure of German Sea Power, 1914-15: Mahan, Tirpitz, and Raeder Reconsidered', in *International Historical Review*, January 1988, pp. 81-2.

36. R. Gray (ed.), *Conway's All the World's Fighting Ships 1906-1921* (London: Conway Maritime Press, 1985), p. 137.
37. Report of 19 January 1912, cited in F.M. Mason, *The Evolution of the Osprey*, a history of A/S in the Royal Navy, written in 1938 and reproduced by HMS *Osprey* in 1942, p. 3.
38. Rumours of enemy aircraft 'too numerous to be neglected, however unlikely' were also widespread in Australia. See A.W. Jose, *The Royal Australian Navy, Official History of Australian in the War of 1914-1918* (St. Lucia: University of Queensland Press, 1987, reprint of 1943 edition), p. 373.
39. P. Overlack, 'Australasia and Germany, challenge and response before 1914', in D. Stevens (ed.), *Maritime Power in the Twentieth Century: the Australian experience* (Sydney: Allen & Unwin, 1998), pp. 22-39.
40. Minute, Thring to Creswell, 4 February 1916, NAA: MP 1049/1, 16/047.
41. Jose, *The Royal Australian Navy*, pp. 208-32.
42. Telegram, ACNB to Admiralty 27 July 1915, NAA: MP 1049/1, 1920/0128.
43. Letter, Admiralty to ACNB, 27 August 1915, NAA: MP 1049/1, 1920/0128.
44. Letter, ACNB to Admiralty, 31 October 1915, NAA: MP 1049/1, 1920/0128.
45. Letter, ACNB to all DNOs, 15 October 1915, NAA: MP 1049/1, 18/0335.
46. Letter, ACNB to all DNOs, 7 December 1915, NAA: MP 1049/1, 18/0335.
47. Letter, ACNB to all commands, 7 December 1915, NAA: MP 1049/1, 15/0284.
48. Telegram, ACNB to all commands, 17 May 1915, NAA: MP 1049/1, 15/0284.
49. Booklet, 'Confidential Instructions To British Merchant Ships In Australian Or East Indies Waters With Reference To German Submarines', Department of the Navy, Melbourne, 20 November 1915, NAA: MP 1049/1, 15/0284.
50. 'Addendum No.1', issued 25 November 1915, NAA: MP 1049/1, 15/0284.
51. Chart of Sydney, undated, NAA: MP 1049/1, 1920/0128.
52. Letter, General Manager Sydney to Commodore-in-Charge Sydney, 14 December 1915, NAA: MP 1049/1, 1920/0128.
53. Minute, Smith to Creswell, 26 October 1915, NAA: MP 1049/1, 1920/0128.
54. Minute, Thring to Creswell, 1 November 1917, NAA: MP 1049/1, 1920/0128.
55. Naval Representative's 79th Report, 1 August 1915, NAA: MP 1049/1, 15/0158.
56. Letter, Admiralty to ACNB, 20 December 1915, NAA: MP 1049/1, 1920/0128.
57. Minute, Thring to Creswell, 1 November 1917, NAA: MP 1049/1, 1920/0128.
58. Mason, 'Evolution of the Osprey', pp. 4-5.
59. The Project 46a U-cruiser was designed with a surfaced range of 20,000 nm at 6 knots. None of these boats had been completed by the end of the war. However, the converted cargo U-boats, *U151-157*, which had a range of 25,000 nm at 5.5 knots, entered service in 1917.
60. Memorandum, 'Concerning means for prosecuting an economic war of destruction against England', from Naval Staff to the Kaiser, 6 January 1916, cited in E. Rössler, *The U-boat: The evolution and technical history of German submarines* (London: Arms and Armour Press, 1989), pp. 63-4.
61. See T.R. Philbin, *The Lure of Neptune: German-Soviet Naval Collaboration and Ambitions 1919-1941* (Columbia: University of South Carolina Press, 1994), p. 81.
62. Minute, Thring to Creswell, 4 February 1916, NAA: MP 1049/1, 16/047.
63. Cable, Governor-General to Secretary of State for the Colonies, 5 February 1916, NAA: MP 1049/1, 16/047.
64. Cable, Secretary of State for the Colonies to Governor-General, 8 February 1916, NAA: MP 1049/1, 16/047.
65. Telegram, Admiralty to ACNB, 21 May 1916, NAA: MP 1049/1, 16/047.
66. Jose, *The Royal Australian Navy*, pp. 227-8.

67. Cited in Herwig, 'The Failure of German Sea Power', p. 83.
68. Halpern, *A Naval History of World War I*, pp. 335–9.
69. E. Grove (ed.), *The Defeat of the Enemy Attack on Shipping 1939–45* (London: Naval Records Society, 1997, reprint of 1957 Naval Staff History), p. 4.
70. Pemsel, *A History of War at Sea*, p. 162.
71. Grove, *The Defeat of the Enemy Attack on Shipping 1939–45*, p. 4.
72. Memorandum, Admiral Sir John Jellicoe to War Cabinet, 27 April 1917, cited in A. Marder, *From the Dreadnought to Scapa Flow*, Vol. 4 (London: Oxford University Press, 1969), p. 68.
73. K. Rich, 'Why was the Admiralty Reluctant to Introduce Convoy as a Counter U-Boat Strategy in World War One?', in *Naval Review*, Vol. 81, No. 4, October 1993, pp. 328–33.
74. Jose, *The Royal Australian Navy*, p. 310.
75. In June 1916 a group of Aborigines sighted what appeared to be a submarine near Napier in the Broome district of Western Australia. See F. Cain, *The Origins of Political Surveillance in Australia* (Sydney: Angus & Robertson, 1983), p. 79.
76. Minute, Thring to Creswell, 1 November 1917, NAA: MP 1049/1, 1920/0128. For an account of Australian coastal precautions, see Jose, *The Royal Australian Navy*, pp. 377–89.
77. *ibid.*, p. 311.
78. *CPD*, 13 December 1916, p. 9717.
79. *CPD*, 8 February 1917, p. 10358.
80. *CPD*, 8 February 1917, p. 10325.
81. Jose, *The Royal Australian Navy*, p. 418.
82. S. De Witt Webster, 'Creswell, the Australian Navalist', PhD thesis, Monash University, 1976, p. 277–9.
83. Vice Admiral (E) Sir William Clarkson, KBE, CMG, RAN (1859–1934), Third Naval Member (3NM) ACNB 1911–22.
84. The Commission concluded that from April 1915 the ACNB had 'practically ceased to exercise its functions as a Board'. See *CPP*, 1917–19, Vol. IV.
85. R. Lamont, entry on Thring, in J. Ritchie (ed.), *Australian Dictionary of Biography 1891–1939*, Vol. 12 (Melbourne: Melbourne University Press), p. 222.
86. Minute, Thring to Creswell, 16 January 1917, NAA: MP 1049/1 1920/0128.
87. Captain A. Gordon-Smith, RN, 2NM ACNB 1914–17.
88. Minute, Smith to Creswell, 17 January 1917, NAA: MP 1049/1, 1920/0128. Emphasis in original.
89. Remarks by Creswell, 17 January 1917, NAA: MP 1049/1, 1920/0128.
90. Hyslop, *Australian Naval Administration 1900–1939*, pp. 41–2.
91. Letter, ACNB to Admiralty, 21 February 1917, NAA: MP 1049/1, 1920/0128.
92. Letter, ACNB to Admiralty, 21 February 1917, NAA: MP 1049/1, 1920/0128.
93. See letter, Captain Marred to F.D. Roosevelt, 5 February 1917, in M. Simpson (ed.), *Anglo-American Naval Relations 1917–1919* (London: Naval Records Society, 1991), p. 14.
94. Marder, *From the Dreadnought to Scapa Flow*, Vol. 4, p. 69.
95. Halpern, *A Naval History of World War I*, p. 360.
96. K. Dönitz, *Memoirs: Ten Years and Twenty Days* (London: Weidenfeld & Nicolson, 1959), p. 4.
97. Halpern, *A Naval History of World War I*, pp. 364–5.
98. Despatch from Secretary of State, 12 May 1917, NAA: MP 1049/1, 1920/0128.
99. Jose, *The Royal Australian Navy*, p. 310.
100. Jose, *The Royal Australian Navy*, p. 311.
101. Letter, Haworth-Booth to ACNB, 25 May 1917, NAA: MP 1049/1, 1920/0128.
102. Letter, Haworth-Booth to ACNB, 10 July 1917, NAA: MP 1049/1, 1920/0128.

103. The Drifter Service worked the electrical contact mines and indicator nets.
104. Letter, Haworth-Booth to ACNB, 20 July 1917, NAA: MP 1049/1, 1920/0128.
105. Remarks by Creswell, 28 September 1917, NAA: MP 1049/1, 1920/0128. Emphasis in original.
106. Grove, *The Defeat of the Enemy Attack on Shipping*, pp. 4–5.
107. Minute, Thring to Creswell, 1 November 1917, NAA: MP 1049/1, 1920/0128.
108. Remarks by Creswell, 2 November 1917, NAA: MP 1049/1, 1920/0128.
109. Jameson, *The Most Formidable Thing*, pp. 229–30.
110. *CPD*, 12 July 1917, p. 131.
111. See Jose, *The Royal Australian Navy*, pp. 478–539.
112. See R. Bromby, *German Raiders of the South Seas: The naval threat to Australia/New Zealand 1914–17* (Sydney: Doubleday, 1985), pp. 140–59.
113. Jose, *The Royal Australian Navy*, pp. 358–61.
114. Minute, (illegible) to Thring, 10 October 1917, NAA: MP 1049/1, 18/0416.
115. *Wolf* also laid the minefields off Colombo. See Bromby, *German Raiders of the South Seas*, pp. 133–4.
116. Minute, Thring to Creswell, 27 November 1917, NAA: MP 1049/1, 1920/0128.
117. *CPD*, 23 January 1918, p. 3409.
118. Telegram, ACNB to Haworth-Booth, 4 December 1917, NAA: MP 1049/1, 1920/0128.
119. Telegram, Haworth-Booth to ACNB, 30 January 1918, NAA: MP 1049/1, 1920/0128.
120. Telegram, ACNB to Haworth-Booth, 20 February 1918, NAA: MP 1049/1, 18/0416.
121. Minute, Thring to Creswell, 25 February 1918, NAA: MP 1049/1, 1920/0128.
122. Minute, Thring to Creswell, 19 March 1918, NAA: MP 1049/1, 18/0416.
123. *CPD*, 23 January 1918, p. 3409.
124. ‘U-boats For Pacific’, the *Argus*, 11 February 1918.
125. Telegram, Haworth-Booth to ACNB, 13 February 1918, NAA: MP 1049/1, 1920/0128.
126. Telegram, ACNB to Haworth-Booth, 20 February 1918, NAA: MP 1049/1, 1920/0128.
127. Remarks by Creswell on minute, Thring to Creswell, 19 March 1918, NAA: MP 1049/1, 18/0416.
128. Minute, Creswell to Thring, 26 March 1918, NAA: MP 1049/1, 1920/0128.
129. Minute, Thring to Creswell, 12 August 1918, NAA: MP 1049/1, 18/0416.
130. Paper, ‘Protection of Coastal Shipping Against Submarines’, March 1918, NAA: MP 1049/1, 18/0416.
131. Telegram, ANLO to ACNB, 30 April 1918, NAA: MP 1049/1, 1920/0128.
132. Letter, Admiralty to Official Secretary Commonwealth of Australia, 26 April 1918, NAA: MP 1049/1, 18/0416.
133. Letter, Commonwealth Shipping Board to ACNB, 10 July 1918, NAA: MP 1049/1, 18/0416.
134. Various correspondence, June 1918, NAA: MP 1049/1 18/0289.
135. Minute, Clarkson to Creswell, 31 July 1918, NAA: MP 1049/1, 18/0416.
136. Minute, Creswell to ACNB, 1 August 1918, NAA: MP 1049/1, 18/0416.
137. Minute, Thring to Creswell, 9 August 1918, NAA: MP 1049/1, 18/0416.
138. Remarks by Creswell, 10 August 1918, on minute, Thring to Creswell, 9 August 1918, NAA: MP 1049/1, 18/0416.
139. *CPP*, 1917–1919, Vol. IV.
140. Remarks by Thring, 1 November 1917, NAA: MP 1049/1, 1920/0128.
141. Various correspondence, June–August 1918, NAA: MP 1049/1, 18/0289.
142. Webster, ‘Creswell, the Australian Navalist’, p. 253.
143. The *Argus*, 20 October 1920.

Frustrations and Failures

– 1919-30

3

It appears to me that the Naval Board would be open to a charge of grave omission if not even the nucleus of an anti-submarine organisation were formed in peace time.

Assistant Chief of Naval Staff, 14 October 1926.¹

Maritime operations from 1914–18 did not provide the long-expected clash of battlefleets. Jutland had been a disappointment on that account, and many shared the British First Sea Lord's 'feeling of incompleteness' that the war had ended without the opportunity to win a decisive surface engagement.² Yet, for other naval officers such feelings were irrelevant. According to these men, the U-boat menace was the war's 'outstanding feature'. Not only had the German attack on sea communications 'come within a short distance of being the decisive factor', but it had achieved far wider ramifications through the disproportionate diversion of personnel, materiel and energy away from 'the main war areas'.³ By September 1918, just 148 U-boats had forced the employment of well over 5000 Allied vessels on anti-submarine duties. Moreover, the threat had required a multi-faceted defence system. Previously unthought of levels of integration had been necessary from naval elements as diverse as local defence authorities, experimental establishments, the control of shipping organisation, intelligence, and maritime aviation. For the Royal Navy and by implication the RAN, the war had opened up entirely new areas for professional analysis.

The immediate postwar period found the RAN the recipient of a number of surplus British warships and confident of its primary status in defending Australian interests. Direct threats still ranged from intermittent raids through to outright invasion, but remained '*prima facie* a naval problem'.⁴ Furthermore, the growing importance of Pacific and Indian Ocean commerce meant that Australia could expect interference with its shipping in almost all defence contingencies. An expansionist Japan had been an Australian bogey for many years and, after 1918, it easily slipped back into the role vacated by Germany. Indeed, the developing strength of the Imperial Japanese Navy (IJN) offered capability far superior to the German East Asiatic Squadron of 1914 and far stronger than any counter from local resources.⁵ Hence, the view prevailed

that the Commonwealth could not ensure national security without the support of the Royal Navy. Confounding an appropriate Australian response, however, the government persistently failed to enunciate a naval policy. Instead, for much of the inter-war period the RAN struggled to identify an appropriate role and, in particular, whether to allocate limited resources to local defence or to the support of imperial strategy.

The state of ASW after the First World War

In spite of the U-boat's success in cramping the usefulness of the British Grand Fleet's battleships, and the Allied reliance on ASW to maintain oceanic communications, the end of the war and entrenched service beliefs meant that any general interest in the submarine threat tailed off dramatically. Public opinion was overwhelmingly against the submarine as a weapon, while in professional naval circles uncertainty lingered as to its usefulness and specific wartime role. The U-boats had after all been defeated and, within the Admiralty, the campaign against Allied shipping was more often seen as a fundamental cause of Germany's loss, rather than as a pointer to future operations. After linking America's timely intervention to the introduction of unrestricted warfare, a 1919 memorandum predicted that surface raiding was destined to become more important than submarine operations in future conflict.⁶ Indeed, with the rapid demobilisation of reserve officers and ratings—who had performed most wartime ASW duties—the danger existed that their hard-won knowledge would simply disappear. Only strenuous efforts by the Royal Navy's authority on anti-submarine measures, Captain H.T. Walwyn,⁷ persuaded the Admiralty to continue detection experiments and maintain four 'P' boats—a small, cheap, destroyer design—in commission as trials craft.⁸

As 'Captain A/S', Walwyn's command included the A/S School and Depot at Portland and its scientific support, the Admiralty Research Laboratory at Teddington. Within these establishments lay the Royal Navy's answer to any future submarine threat.⁹ Although many naval professionals attributed their recent victory over the U-boats to control procedures alone and 'without the assistance of any detecting device whatever',¹⁰ at the peak of the crisis attempts to locate and hold contact on a submerged submarine had absorbed the largest proportion of the scientific ability of the Allied powers. Ultimately, the British Isles alone hosted 29 anti-submarine research centres.¹¹

Of course, much of the experimental technology had failed to fulfil expectations, but the regular introduction and modification of equipment pointed to the future dependence of naval warfare on formal scientific research. During the

last months of the war, moreover, researchers finally achieved significant advances in electro-magnetic and acoustic detection methods. Swayed by these developments, the Admiralty planned the 'creation of a small and efficient anti-submarine organisation equipped with scientific detection devices for use with organised methods of hunting.'¹² Having soon accepted the reality of a postwar climate of economic constraint, their Lordships in effect placed their faith in a not very large permanent establishment, but one that preserved the core of capability and thus remained available for quick and economical expansion.

In practical terms, the Admiralty envisaged a layered defence based on three different devices. The first of these, the hydrophone, relied on an operator listening for the unique sounds made by a submarine's engine. It could be used as part of a fixed shore-based defensive system or dangled over the side of a drifting ship. By late 1918 the British had established 21 hydrophone stations around the coast while also equipping several thousand vessels of the auxiliary patrol. Hydrophones began as non-directional instruments, but even the relatively sophisticated directional hydrophone could give no indication of a target's range. A more fundamental weakness, however, was that as a passive system, detection depended on an indiscreet target. By using slow speed, quiet routines, and insulating the machinery from the hull, a skilful submarine commander could minimise his chances of discovery. Indeed, despite the success attributed to hydrophones during the war, later research found that of the U-boats sunk by the auxiliary patrol, only one had been heard before sighting.¹³

The second device was another passive system, and made use of indicator cables laid on the seabed and connected in turn to a shore station. The loop system, as it was known, worked by detecting the electro-magnetic disturbance caused by the passage of a submarine's steel hull above the cable, and displaying this variation on a continuous trace in the operating station.¹⁴ Although almost impossible for a submarine to evade, the system was only suitable for fixed harbour defences.

Consequently, the Admiralty placed most hope in the last detection device, commonly known by its acronym 'asdic'.¹⁵ Similar to a hydrophone, an asdic made use of underwater acoustics, but was based on high frequency echo ranging, and hence was an active rather than a passive sensor system. It could be fitted as part of a harbour defence, but the Navy expected asdic's prime application to be in surface vessels. The device consisted of an oscillator built

up of quartz discs and fitted in a circular steel frame. In use, the operating vessel lowered the oscillator through a trunk open to the sea until it protruded below the hull. Protected from damage by a dome, the oscillator acted both as a transmitter and receiver. Since the speed of sound through water was known, the target's distance could be measured by the time it took for an echo to return to the source.¹⁶ The asdic operator could also train the oscillator in the horizontal plane and thus the combined system at last made feasible the accurate location of a submerged submarine in terms of both range and bearing from the equipment.

The Royal Navy fitted the first standard asdic set, the Type 112, in some of the Portland 'P' boats in 1920.¹⁷ The ocean is largely an opaque medium and, although the inherent variables in seawater influenced performance, early experiments in good conditions produced detection ranges of 3000–4000 yards. Assuming the realisation of its full potential, asdic clearly offered the scientific detection device so eagerly sought by the Admiralty. More beguiling, however, to a service 'whose greatness (allegedly) lay in its readiness to assume the offensive' asdic provided the ideal means for a surface vessel to resume an attacking role.¹⁸

Expectations were certainly high that solving the problems of detection and tracking would permanently reduce the danger of a submarine threat on a scale comparable to the recent war. In 1919 one major report for the RAN blithely predicted that the submarine's offensive power would 'be rendered largely ineffective' during the next decade.¹⁹ Unfortunately the Admiralty did not back up its reliance on scientific accomplishment with adequate operational analysis. The Royal Navy never produced a comprehensive critique of the U-boat crisis, and many lessons were either lost or misunderstood. Promulgated statistics, for example, failed to link U-boat kills with the destroying unit's operational task. Consequently, the effectiveness of convoy escorts as offensive assets became hidden.²⁰ Compounding the error, the Admiralty neglected to correlate the number of operational U-boats with the number of ships sunk. Easily fixed in the common memory, the German decision to wage unrestricted warfare instead became closely, but incorrectly, linked with the increase in sinkings achieved after February 1917. Thus the role of the convoy became primarily associated with unrestricted warfare, and logically it followed that 'restricted U-boat warfare does not present a serious problem and can be easily countered by patrolling, independent routing and arming of [merchant] ships.'²¹

The RAN and ASW

The ACNB may have achieved little in local defence terms during the war, but RAN vessels had gained some exposure to integrated ASW operations during their time in European waters. With their return to Commonwealth control on 1 August 1919 some of this experience came back to Australia. The light cruisers took part in several unsuccessful searching sweeps through the North Sea, while the destroyer flotilla assisted in maintaining the blockade of U-boats in the Adriatic.²² Still, although an Adriatic patrol ‘seldom passed without an enemy submarine being discovered and chased’ the RAN failed to catch any.²³ The destroyers also took part in Mediterranean Sea escort duties and made a number of depth charge attacks in defence of their convoys.²⁴ Notwithstanding these escort operations and their role in preventing the successful prosecution of submarine attacks, there can be little doubt that ‘offensive’ measures remained the prominent memory. Certainly the author of the RAN’s World War I history, while highlighting the number of assets required for the anti-submarine campaign and rejecting the patrolling of traffic routes as ‘worse than useless,’ made no effort to seriously analyse anti-submarine policy. Rather, A.W. Jose stressed the disadvantages of convoy in modern warfare, and supported the belief that ‘merely convoying merchant ships’ delivered the initiative to the enemy, ‘allowing [their] submarines to come and go with impunity except at the moment they attacked.’²⁵

The fitting of some RAN destroyers with captive observation balloons and hydrophones represented the only attempt to advance the Navy’s submarine detection capability during the war.²⁶ But although the details of advances in more technical location methods remained closely guarded secrets, the Admiralty did not exclude the Australians. Before the war’s end, the British provided the Navy Minister, Sir Joseph Cook, and Captain Haworth-Booth, with a tour of their facilities at Hawkcraig. The establishment acted as headquarters for the new Hydrophone Service and the visitors examined the latest instruments and received a lecture on countermeasures. The insights impressed at least Haworth-Booth with the rapid progress and ‘remarkable results achieved’.²⁷

Although the RAN attempted to remain abreast of these technological advances, the 1920s would be more often marked by a succession of confusing and contradictory advice, frustrations and failures. The first obstacle was the Navy’s lack of a scientific and industrial base and hence a general lack of technological understanding. Australian ships’ companies still operated ‘off-the-shelf’ British equipment and there had been little scope, or indeed need,

to experiment with innovative solutions. Second, unlike the Navy's other executive branch qualifications—navigation, signals, torpedo and gunnery—ASW could turn to no inherited tradition. Even in Britain the first annual 'long' A/S course—one that provided a formal sub-specialist qualification—did not begin until 1919.²⁸ The RAN's warships had conducted their anti-submarine operations on an *ad hoc* basis, and Australian officers and ratings had yet to undergo a thorough course of specialist training.



HMA Squadron during postwar exercises.
(RAN)

Finally, ASW was not the only new discipline to evolve during the Great War, and it could not be viewed in isolation. Aircraft, for example, although an important adjunct in dealing with submarines, would also be essential for coastal patrol and in meeting a direct attack on Australia.²⁹ The Naval Board had therefore expended considerable energy in attempting to establish a Naval Air Service. In practice the scale of the war and its effects had overwhelmed the small naval staff in Melbourne,³⁰ and development priorities, in what remained a relatively modest service, undoubtedly needed review. In 1919, the government determined to resurvey the whole question of Australian naval defence and invited the Royal Navy's former First Sea Lord, Admiral of the Fleet Viscount Jellicoe of Scapa,³¹ to assist.

The Jellicoe Report

Jellicoe's tour of inspection lasted from May to August 1919, and his four-volume report covered a wide swathe of strategic and organisational issues relevant to Australian security.³² Its overall purpose was to frame recommendations for the strategy to be adopted for the British Empire and the Royal Navy in the Far East. The resulting report was not totally original, as Commander Thring had actually developed much of its strategic rationale during the period 1914 to 1918, and his successor as Director of War Staff, Captain Francis Hyde,³³ was attached to Jellicoe's staff, but it was still the most comprehensive evaluation of Australian naval policy completed between the wars.

Jellicoe confirmed the Australian view that the old international order had changed, that the global centre of gravity had moved to the Pacific, and that Japan stood out as the most likely threat to the British Empire. Not surprisingly, he argued that the maintenance of the Empire's sea power in the Far East offered the best means of checking Japanese adventurism, and his report is best remembered for its grandiose scheme for an Imperial Pacific Fleet. Jellicoe, however, did not limit his discussion solely to battlefleets; he also looked at local defence measures and made a point of regularly remarking on the vulnerability of trade and sea communications to modern weapons. Significantly, he highlighted that war experience had 'shown that submarines can operate successfully at immense distances from their bases' and that this necessitated 'the provision of defence against this type of attack in all parts of the Empire.'³⁴

Jellicoe had been First Sea Lord during the darkest days of the U-boat crisis and the Admiralty's reluctance to introduce a general convoy system owed much to Jellicoe's belief that the Royal Navy possessed insufficient escorts.³⁵ He expressed similar views in his Australian report. Although Jellicoe began his chapter on trade protection by remarking that merchant shipping was best protected by convoys,³⁶ he expected these to be used against the oceanic surface threat, with an escort provided by light cruisers and armed merchant cruisers (AMC). Only passing reference was made to a coastal convoy system. Despite the strategic importance of Australia's iron ore traffic between Port Augusta in South Australia and Newcastle in New South Wales, Jellicoe concluded 'the naval forces proposed in this report would not be adequate to protect and convoy this trade against determined submarine attack.'³⁷

Jellicoe instead remained wedded to the value of local hunting patrols for ASW and his report recommended the distribution of more than 30 'P' boats or old destroyers around Australia's major commercial hubs and his proposed fleet bases (see Table 3.1). These would be supplemented by naval air patrols, while a group of six destroyers would patrol the Torres Strait. Neither the surface vessels nor aircraft, however, would be available to protect commerce:

Only limited provision is made ... to screen Merchant Ships into harbour against torpedo fire from submerged submarines; as it is assumed that arrangements will be made by the Peace Conference to guard against the recurrence of the illegal methods of warfare practised by the Germans during the recent war...³⁸

Hence, the only 'legitimate targets' for enemy submarines would be the escorting cruisers, and it was these that would be met and screened by the local 'P' boats.

Jellicoe admitted that ASW was now an 'important branch of the service', but he recognised also that the RAN needed time before it could provide its own training. Having confirmed the dearth of local resources and knowledge, he then explained that officers trained in anti-submarine measures

... should not only be thorough experts in all submarine detection apparatus and able to supervise the training of *personnel*, but should also study the question of hunting and destroying submarines in all its aspects, and be able to suggest developments of apparatus from the sea-going point of view.³⁹

Notwithstanding his failures regarding the implementation of escorted convoys, Jellicoe had played a major part in overturning the Admiralty's pre-war antipathy to science. As First Sea Lord he had formed the combined Anti-Submarine Division to deal with both operational as well as technical countermeasures.⁴⁰ Jellicoe, as one recent assessment suggests, 'sought a clinical solution for every problem', and he seems to have well understood that naval professional skills and procedures offered only a partial answer to the submarine.⁴¹ In Australia, he foreshadowed the necessity for local experiment and research and recommended the formation, 'when funds are available', of a 'scientific body to deal primarily with anti-submarine and other problems, and secondarily with general naval questions of a scientific nature, particularly with reference to the Pacific.'⁴²

Table 3.1 – Australian requirements for aircraft and dedicated A/S vessels, 1919

| | Aircraft | A/S Vessels | Remarks |
|-------------------------------|--|-------------------------|---|
| Cockburn Sound/ Fremantle | 1 sqdn. flying boats (2 in war) | 8 'P' boats | Fleet Base. Patrol augmented by suitable local craft. |
| Albany | | 2 'P' boats | Plus all suitable local craft. |
| Adelaide | 1 sqdn. flying boats | 4 'P' boats | |
| Port Phillip/ Melbourne | 1 sqdn. flying boats, $\frac{1}{2}$ sqdn. reconnaissance | 4 'P' boats | Increased to 6 'P' boats when circumstances permit. |
| Hobart | | suitable local craft | 2 'P' boats when circumstances permit. |
| Sydney | | 6 'P' boats | Fleet Base. Reduced to 4 'P' boats if Fleet Base moved to Port Stephens. |
| Newcastle | | suitable local craft | 2 'P' boats when circumstances permit. |
| Port Stephens | $\frac{1}{2}$ sqdn. flying boats | 4 'P' boats | Fleet Base. |
| Brisbane | | 2 'P' boats | Patrol augmented by suitable local craft. |
| Sewa Bay (Normanby Island) | 1 sqdn. flying boats | 2 'P' boats | Fuelling Base. Patrol intensified with the help of the Screening Flotilla when the fleet is present. |
| Bynoe Harbour | | 4 'P' boats | Fleet Base. |
| Torres Strait | | 6 destroyers | |

Source: The *Jellicoe Report*, pp. 184–201.

Postwar cutbacks

Jellicoe never expected the Commonwealth to finance a satisfactory defence in the short term, but in the general push to reap the dividends of peace there was neither the political nor military will in Australia to unconditionally accept any of his recommendations. The admiral's examination of Empire naval defence was likewise completely inconsistent with Britain's postwar national policy. Committed to domestic economic rehabilitation, on 15 August 1919, the British Cabinet approved the 'Ten-Year Rule' which directed that the services base their preparations on the assumption that there would be no

major war in the next decade. The 'rule' was automatically renewed each year and not abandoned until 1932. In the interim it effectively gave the Treasury the upper hand in limiting British defence spending. Although the Australian Government did not adopt its own ten-year rule, like its counterparts in the other dominions it was understandably focused on reducing the country's massive war debts while taking every opportunity to delay or avoid presenting any form of defence policy. Indeed, the international move towards disarmament combined with the pressing need to reduce government expenditure, presaged not only the postponement of schemes involving additional cost, but also the retrenchment of existing forces. The government immediately cut the RAN to the bone, and the Navy's formal response to the 1920–21 estimates set the tone for the next 20 years: 'Naval defence as outlined in this statement cannot be regarded in any way as adequate for the defence of the country, and for this we must rely on the British Navy.'⁴³

Although the British and Australian governments failed to act on Jellicoe's main recommendations, they agreed with his conclusion that Japan posed a serious threat to imperial interests in the Far East. The Admiralty subsequently drew up a War Memorandum on the possibility of conflict between Japan and the British Empire. In March 1921, the new First Naval Member and Chief of Naval Staff (CNS), Rear Admiral Grant,⁴⁴ met at Penang with the commanders of the China and East Indies Stations to discuss the implications. Since there would be no combined Imperial Pacific Fleet, they agreed that in the event of war a strategy to despatch the Main Fleet from Home and Mediterranean waters to the Far East was the most suitable guarantee of Empire defence.⁴⁵ The scheme was based on the Royal Navy's traditional philosophy that the seas were one. Hence the main fleet would not only be available to concentrate and sail to the scene of greatest need, but also simultaneously provide distant cover for trade protection operations. In order for the main fleet strategy to work, however, the Royal Navy needed a regional base that could hold out against the Japanese until the fleet arrived from European waters, and then sustain its future operations. Like Jellicoe, the three flag officers considered Singapore to be 'the key to the British naval position in the Pacific' and urged that it be made impregnable. They estimated that the base would have to endure a 'defensive period' of two to three months before the arrival of the main fleet, during which time the RAN's cruisers and submarines would take on a diversionary role against the Japanese Navy. Meanwhile, the RAN's light units would provide local defence in Australian waters.

Staffing arrangements within Navy Office were formalised and expanded in 1920, with its work thereafter including the collection, evaluation, and

dissemination of intelligence, the preparation of plans, the study of war and doctrine, and the conduct of operations. The existence of a naval staff meant that the Board could at times develop an Australian perspective on local naval problems and present opinions independent of the Admiralty. However, in truth staff numbers remained too small for such an important range of tasks.

In March 1920, Rear Admiral Grant had asked London for all available information on plans of ‘craft, nets, wires, fittings etc. considered essential for fixed defences of harbours against hostile submarine.’⁴⁶ Grant was the first Royal Navy officer to assume command of the RAN and, attempting to benefit from the Admiralty’s own retrenchment plans, he hoped to obtain Britain’s most recent anti-submarine schemes together with any surplus stores. Failing to obtain these as a gift or on a repayment basis, he asked for samples to guide local manufacture. The Admiralty had nothing to spare, but it did provide some provisional notes on the local defence of harbours that the ACNB duly brought before the Australian War Council.⁴⁷ With funding already slashed, however, and the government beginning a long period of ‘groping in the dark’ as regards naval defence, the Council took no action.⁴⁸

At sea, the fleet had completed some basic exercises with the six ‘J’ class submarines provided by the Royal Navy in 1919, but fuel restrictions soon hampered further training.⁴⁹ Meanwhile the Naval Board was again moved to consider appropriate local defence measures. In July 1921 the Admiralty drew the RAN’s attention to a forthcoming memorandum on ‘scales of attack’. The British had compiled the document to assist naval authorities in deciding the extent of submarine and other countermeasures required in various imperial ports. Already, however, the ascendancy of external factors over professional military judgement was practically unassailable. The ACNB could hardly expect to gain support for additional local expenditure when even the Admiralty’s advice concluded that the British Government ‘will doubtless modify or adjust the views therein expressed so as to accord with political considerations and financial limitations.’⁵⁰

The Washington Conference

The effects of this climate of constraint were similarly evident at the Washington Conference of 1921–22. The major powers ostensibly attended to ease increasing naval rivalry and bring stability to East Asia, but financial imperatives were paramount. In a briefing paper, the Committee of Imperial Defence (CID) admitted that the basic aim of the British delegation was ‘to achieve the largest possible reduction in the expenditure in armaments.’⁵¹

The threat posed by submarines played a large part in formulating this position. Although the Versailles Treaty prohibited the emasculated German Navy from possessing U-boats, other nations had quickly forgotten their earlier moral indignation and already included large submarine fleets in their shipbuilding plans. The Admiralty consequently found itself in the interesting role of recommending a comparable construction program—on British figures the most expensive of all warships to produce per ton—while continuing allocation of substantial resources to countermeasures.⁵² Not surprisingly, the Empire's official policy in this and later conferences was not only to press for the total and final abolition of submarines, but also to insist 'at all costs upon absolute freedom in regard to the character and number of ...antisubmarine warfare craft.'⁵³

The British expended considerable effort in arguments that the submarine was a purely offensive asset, and a useful weapon neither for those weak in naval strength, nor a suitable means to defend maritime communications; but the other delegations remained unconvinced. Germany's U-boats had shown the way. For the weaker naval powers such as France and Italy, submarines formed an integral part of any strategy to mount a credible and cost-effective maritime defence.⁵⁴

Even Japan, relatively strong in capital ships, saw submarines as a valuable ancillary, and their delegate presented similar arguments regarding the 'positive defensive capabilities of the submarine.'⁵⁵ Later, chafing under the inferior battlefleet ratio accorded by the conference, the Japanese would find partial compensation in plans to use large, high-speed submarines to relentlessly wear down the American fleet in its voyage across the Pacific.⁵⁶ Many historians are therefore inclined to think that the Japanese always intended to use their submarines against warships. At first, however, the Japanese submarine force expected to undertake distant scouting and commerce destruction as roles of equal importance.⁵⁷

During the war the wide-ranging U-boats had attracted much discussion among Japanese naval officers and the IJN received seven boats as postwar reparations. The vessels arrived in Japan in 1919, followed shortly thereafter by several German U-boat specialists. Construction gathered pace and, by the time of the Washington Conference, Japan's improved submarine capabilities had already aroused Australian concern. In spite of Japanese arguments that, as a remote country, its 'submarines could not constitute a menace to any nation',⁵⁸ the Commonwealth's representative, Senator George Pearce, warned that Japan's latest designs had an unrefuelled operational

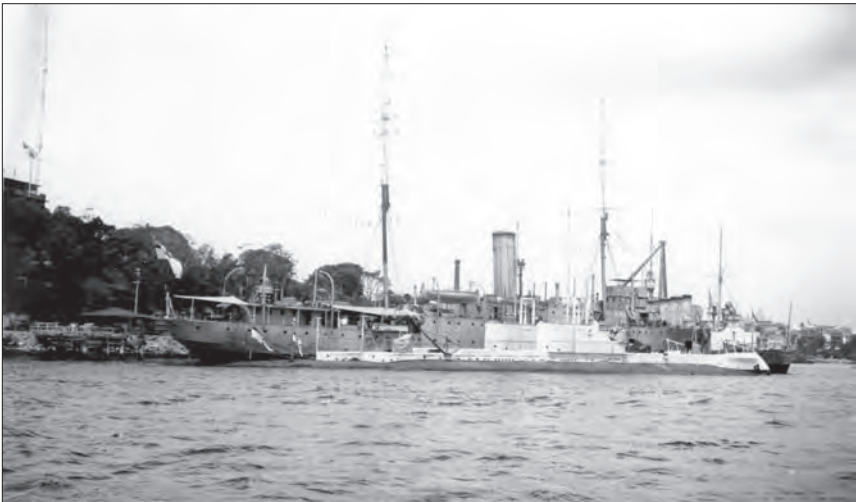
radius of 10,000 nm.⁵⁹ The postwar distribution of Germany's Pacific territories had made Japan and Australia neighbours at the equator, and much of the discussion in Washington concerned the use and importance of mid-ocean islands as fortified naval bases. Yet, with such long-range boats the IJN did not need to use intermediate bases, and could operate off Sydney even from home waters. Since a total ban was evidently impractical, Pearce instead proposed the outlawing of all submarines with offensive potential—permitting the construction only of those with a local defence role. The senator was not alone. The United States supported his proposal and the British Naval Section advocated the limitation of all submarines to small coastal types.⁶⁰

Such fine-tuning, however, was already beyond the reach of the national representatives. By the end of the conference the principal naval powers had agreed to limit the size and numbers of their capital ships, while cruisers were limited to a maximum displacement of 10,000 tons and a main armament of eight-inch guns. The British could console themselves only that the agreements included no limitations on anti-submarine vessels, and that the delegates had signed a supplementary treaty controlling submarine activity.⁶¹ This latter agreement—although it never became binding since France refused to ratify the treaty—re-established rules for the destruction of merchant ships and reaffirmed that an attacking submarine must ensure the safety of passengers and crew before their ship could be sunk. As it remained impractical for submarines to observe these rules while attacking commerce, the agreement, if upheld, again effectively prevented the use of submarines against open-ocean trade.

The RAN's first A/S qualified officers

The Washington Treaty had failed to limit submarines and, by restricting only capital ships, there is an argument that it simply enhanced the combat value of other vessels. Moreover, there remained many in naval and military circles who did not lay undue stress on the moral and ethical considerations arising from the resolutions, nor the somewhat doubtful value of world public opinion.⁶² Still, while admirals and generals are trained to assume the worst, politicians must be more sanguine. Officially, there was general satisfaction with the Washington outcomes. Despite Senator Pearce's observations about Japanese submarines, the Commonwealth Government argued that by prohibiting the fortification of Pacific territories, Japan would be prevented from mounting a surprise attack on Australia. The Treaty had meant the abrogation of the existing Anglo-Japanese alliance, but Prime Minister Hughes gave Australians an assurance of peace for the next 10 years.⁶³

The ACNB, which was under the naive impression that the earlier budget cuts had anticipated the results of the Washington Conference, soon found the RAN called upon to absorb a further reduction. From £3,091,138 in 1921/22, the naval estimates were reduced to £2,457,250 in 1922/23. By July 1922, the Australian Navy could sustain in commission only three light cruisers, three gift destroyers (*Anzac*, *Stalwart* and *Swordsman*) and the depot ship, HMAS *Platypus*. With limited steaming and exercise time available, basic seamanship and fleetwork came before thoughts of commerce protection and convoying. In fact, the RAN's senior seagoing officer, Commodore John Dumaresq,⁶⁴ had already declared that his fleet was 'strategically impotent and tactically inefficient...' and that in war 'trade would probably have to take its chance ...'⁶⁵ Finding additional funds for anti-submarine measures was unlikely, and the acceptance of depth charges as a normal part of a ship's armament marked the RAN's only practical advance in capability.



HMAS *Oxley* and HMAS *Orway* alongside HMAS *Platypus*.
(RAN)

Nevertheless, the ACNB had taken steps to improve professional knowledge. Since at least 1921 the Board had ordered Australian officers in the United Kingdom to ‘closely engage’ with Royal Navy ASW developments and, in 1923, it agreed to send Lieutenants J.C. Esdaile⁶⁶ and H.G. Melville⁶⁷ to undertake the fourth long A/S course.⁶⁸ By 1924 both these officers had qualified; Esdaile was ranked first among the course of seven members and remained in England on the staff of the A/S School, while Melville returned to Australia.⁶⁹ Melville’s appointment to the naval staff in Melbourne came at an opportune time, for a more general resurgence of concern for Australia’s maritime security had reignited the Board’s interest in anti-submarine matters.

Imperial maritime strategy and rearmament plans

By the time of the 1923 Imperial Conference suspicions were already aroused that the ‘bright hopes’ for peace raised in Washington and by the League of Nations would not be completely fulfilled.⁷⁰ The new Prime Minister, Stanley Bruce, recognised that international developments had muddied Australia’s strategic outlook, and his own analysis convinced him that the Commonwealth’s defence problem was primarily naval. Rejecting invasion as impossible, two contingencies attracted his attention: a minor raid by enemy cruisers and interdiction of Australia’s international trade.⁷¹ The Admiralty had also convinced Bruce that the battleship remained the decisive factor in naval warfare. It followed that since Australia could not afford even one such vessel, the combined British Empire remained the Commonwealth’s natural ally. The scheme that grew out of the 1923 conference thus reconfirmed that the timely dispatch of the main fleet provided the ultimate guarantee of Pacific security, but still recognised the responsibility of each portion of the Empire for its own local defence.⁷²

Looking back from the fall of Singapore in 1942, historians have found it easy to condemn the plan to make the base impregnable but, viewed in the context of the severe financial constraints faced by Britain and the dominions in the early 1920s, it did have logic. Certainly, the economic and strategic advantages of continued British protection made reliance on Empire defence the only credible option for Australia. Nevertheless, weaknesses in the scheme were soon readily apparent. Britain’s Conservative government lost the December 1923 elections and what little understanding there was of Australia’s position in London soon faded. The new Labour administration thereafter announced that it would not proceed with the Singapore base and would instead put resources into home defence. Within a year, the Conservatives were back in power and work on the base resumed, but the pattern had been set. Plans

were constantly changed, delays were common, and the resources provided for the project never matched the expectations and promises. Yet, it was unthinkable for Britain to admit that its navy might be incapable of coming to the aid of the Empire, and few in that country wished to consider what might occur if simultaneous threats arose in both Europe and the Far East. Nor was it in the interests of successive Australian governments to question too closely the strategy. As one analysis has astutely observed, the dominions 'consumed the security provided by others, producing for themselves only those increments of security that politics and finance permitted, and commitment and status demanded.'⁷³

For most of the interwar period the direct consequence of the main fleet strategy was to focus Australian defence thinking on the construction of an advanced fleet base at Singapore, and how best to contend with the 'defensive phase' before the main fleet arrived. Except for the Navy, Australia's armed forces retained primary responsibility only for local defence and the Army and Air Force naturally tended to concentrate on their role against a direct attack.⁷⁴ The Navy, however, had not only to defend maritime Australia, but also retained the broader—albeit often meagre—role of contributing support to the Empire. All imperial naval forces in the Western Pacific were expected to work together to delay and harass a Japanese expedition against Singapore.⁷⁵ Furthermore, the ACNB—as a local CinC for the British Admiralty—continued to hold responsibility for all maritime trade on the Australia Station. When it left Australian waters this trade immediately passed into areas controlled by the CinC of either the China, East Indies or New Zealand Stations. The ensuing need for a general understanding of resources and trade movements served to bind the RAN even tighter into the imperial perspective.

The importance of the battlefleet might be undiminished but, to the British naval staff, cruisers were the warships needed for trade defence, and 'a cardinal point of British naval policy.'⁷⁶ Constrained by disarmament and the need for economy, the Admiralty found its cruiser-building program constantly falling behind demands. The dominion navies offered a useful means of reducing this weakness. Accordingly, at the 1923 Imperial Conference, British authorities advised Australia to build more cruisers. Destroyers, on the other hand, were

... essentially a fleet weapon and are uneconomical for local defence or escort duties. Those which Australia now possesses might well be retained temporarily, used for the peacetime training of officers and men, and for local defence, but it is not recommended that any more be required.⁷⁷

A substantial increase in the Australian naval estimates for 1924–25 partially reflected local acceptance of Admiralty advice. Parliament subsequently authorised a naval building program that extended over five years and involved an additional £1,000,000 over the 1923–24 estimates. Special appropriations for new naval construction totalled nearly £8,000,000 and included two 10,000-ton heavy cruisers, two long-range submarines, and a seaplane carrier. In announcing the plan Bruce remarked that, while Britain’s capital ships would deter any country sending a great expeditionary force against Australia, the new cruisers would counter raids by minor forces. Although he did not anticipate ‘trouble with Japan’ the Prime Minister also tabled figures that demonstrated Japan’s growing cruiser and submarine numbers.⁷⁸ Bruce did not reveal the implications of this data, but he probably intended only to draw attention to the relative decline in British naval strength. The new Australian cruisers were designed for oceanic operations against surface commerce raiders and would be of little use in countering a submarine attack. Notwithstanding this lack of assets, with the return of the RAN’s first qualified ASW officer the ACNB apparently felt ready to re-examine the neglected problem of appropriate underwater countermeasures.

Australian anti-submarine policy

Between the wars the Royal Navy’s anti-submarine experiments and training were concentrated at the Portland Establishment—commissioned as HMS *Osprey* in April 1924—and its contemporary reports confirm that all aspects were still very much under development.⁷⁹ Nevertheless, these reports remained in Britain and the most recent advice from Captain J. Robins,⁸⁰ the RAN’s then representative in London, again stressed the advances achieved in capability. Robins was undoubtedly enthusiastic, concluding in mid-1924 that, with loops and asdic, submarine detection ‘has now got to a great measure of perfection.’ As such, asdic equipment had remained practically unchanged for the last year and, if ordered soon, would ‘not change sufficiently in the next few years to waste.’ Robins even raised the possibility of setting up an Australian version of Portland, stressing that such an establishment need not be expensive. The RAN needed only an old submarine that ‘could dive for intervals of half an hour’, two old destroyers and some ‘not very expensive plant.’⁸¹

Some members still wished to wait and see how the technologies developed, but the ACNB apparently found it difficult to ignore such promising assessments. The Board was aware that British methods of submarine detection were ahead of those of any other nation and that the RAN held a

unique and privileged position of access. Because of its status as Australia's only naval port, the ACNB first planned to take action to improve Sydney's defences. In August 1924, it informed the Admiralty that the 1925–26 estimates included provision for one experimental four-loop station and the necessary instruments.⁸² This was only a tentative step, however, and before going further the Board deferred to Admiralty advice on the broader issue of anti-submarine policy. The RAN subsequently drafted an outline proposal for the British, and the following January a conference took place in London to consider the foundation of an Australian anti-submarine organisation. The Admiralty's answer reached Melbourne in April 1925 and provided the first clear statement of an appropriate local regime for doctrine, manning and equipment.⁸³

The report began by highlighting the paramount importance of maintaining the secrecy of asdic and then provided a list of appropriate aims. Like the Royal Navy, the RAN needed an anti-submarine organisation capable of expansion in response to changing requirements. Unlike the Royal Navy, the RAN had no need to consider the A/S defence of a battlefleet or an open-ocean convoy. Hence the Admiralty foresaw only three major tasks: first the protection of bases; second the protection of convoys in coastal waters; and third the provision of a force capable of striking at a hostile submarine once its position became known. Trials with the Portland flotilla had already determined that a successful submarine hunt required at least two asdic-equipped vessels. To allow spare capacity for rest and refitting, however, Portland declared three vessels to be the minimum viable asdic 'unit'. The Admiralty therefore suggested that the RAN should fit its three commissioned destroyers (*Anzac*, *Success* and *Tasmania*) with asdic and use these as a training flotilla and as a seagoing striking force. They estimated the total cost of fitting each destroyer as £4000–£5000, and added—probably with an eye to the recent and heated Australian debates over the construction of the heavy cruisers in the United Kingdom—that the fitting of asdic equipment might be undertaken locally.

To man their asdic sets the destroyers needed a minimum of one lieutenant (A/S) and 13 Submarine Detector (SD) ratings (12 SDs and one instructor). The Admiralty had insufficient qualified ratings for its own purposes but, in another significant concession, agreed to provide the personnel until replaced by trained members of the RAN. This arrangement also provided some additional advantages for the Australians since, by obtaining loan personnel, the RAN would maintain access to the latest developments. The Admiralty,

though, was not yet supportive of either an Australian scheme for the supplying and laying of loops or for a local A/S school, and harboured some doubts over local security measures. Both the former elements, it argued, were expensive and loop operations still needed further refinement owing to “perturbations” which cannot yet be balanced out.⁸⁴ The British suggested instead that the RAN provide for harbour defence with hydrophones and look to the RAN Reserve (RANR) to operate them. Initial training could therefore be done with gramophone recordings at the existing Torpedo School at Flinders Naval Depot. More importantly, in the Admiralty’s view, this arrangement would keep training in asdic methods securely at sea and ensure only authorised personnel gained exposure to the latest advances. This was a necessary requirement since secrecy still limited the peacetime operation of asdics to active service ratings.

Having dealt with the business raised by the ACNB, it remained only to identify a suitable asdic-training target. Unfortunately, this was probably the most difficult aspect for a small navy to rectify, and one that would take the RAN almost another three decades to finally overcome. In 1925, the RAN had no submarines in commission. The six ‘J’ class boats had paid off in 1922 as an economy measure and were already in various stages of disassembly. The two ‘O’ class submarines, HMAS *Oxley* and *Otway*—ordered in 1924 as part of the new naval construction program—were not expected to commission until 1927. Yet the Admiralty’s report highlighted the requirement for a submarine to work constantly with the destroyers if the flotilla was to retain asdic efficiency. The British were not unaware of the RAN’s constraints and suggested caution:

No difficulty is anticipated in providing 3 sets of asdic gear by January 1926 but it is not desirable to fit them in view of the fact that submarines as targets will not be available, ratings will not be trained and that improvements will probably be effected in the gear at a later date.⁸⁵

Action—delayed

The RAN readily accepted the British report as a basis for future anti-submarine policy, but it was less willing to accept any delay. Only a month after receiving the Admiralty’s advice, the new CNS, Rear Admiral Hall-Thompson,⁸⁶ approved the inauguration of anti-submarine training at an early date. The Naval Board consequently set aside £22,740 in the 1925–26 estimates to finance the scheme.⁸⁷ The Board also agreed to establish a hydrophone school at Flinders Naval Depot by January 1926 and asked the Royal Navy for eight SD ratings

to start off the new branch.⁸⁸ The three destroyers were each to receive asdic during their next annual refit and thereafter formed into an 'Asdic Hunting Flotilla'. All would be ready for service by April 1926, while finances even allowed the fitting of a fourth destroyer during the following year as a spare vessel. To provide a target the Board planned to recommission the submarine *J7*—which had survived as an electrical power generator at Flinders and was still largely intact—purely for use as a training vessel.

Both in Australia and the United Kingdom, however, naval operational plans outpaced the development of appropriate technology. Despite the promising assessments, most anti-submarine equipment remained experimental. The British did not lay their first postwar loop until the end of 1923, while the first standardised destroyer asdic set, Type 114, only began testing in 1922.⁸⁹ The development of asdic sweeping methods and tactics, moreover, did not begin properly until April 1924, when Portland completed the first full flotilla installation.⁹⁰ Early trials revealed problems with the noise set up by the canvas dome protecting the asdic transducer and this initially limited searching speeds to less than 15 knots.⁹¹ Since the Admiralty had a particular interest in providing high-speed battlefleet screening, this limitation became a major concern.⁹² During 1925, Portland trialed the Type 115, a completely new set designed for wide angle sweeping and fitted with a streamlined steel dome.⁹³ Sweeping speeds thereafter reached 20 knots, but the dome had a tendency to crumple. Until modifications could overcome this problem, the Admiralty had to delay plans for a wider asdic fit.

In response to the ACNB's relatively comprehensive scheme, the Admiralty suggested that the RAN delay the purchase of asdics and loops until the end of 1926 when more definite information would become available.⁹⁴ Similar advice followed concerning hydrophones. These the Admiralty also regarded as experimental and, for the RAN, even 'a hydrophone school was not justified at present.'⁹⁵ This sudden change in attitude raised no comment, but the ACNB was nevertheless quick to make use of Lieutenant Melville's local expertise. Demonstrating some small measure of independence, the Board argued that the acquisition of a carefully trained 'sound memory' required constant practice, and that since different hydrophones varied only slightly in their reproduction of engine characteristics, current types would allow adequate training.⁹⁶ The Australians went ahead and ordered the apparatus for RANR training, but had little option other than to accept the Admiralty's advice on asdics and loops. The Naval Board thereafter agreed to defer purchase until January 1927.

The new 'O' class submarines were the first of their type to be fitted with asdics, and several Australian ratings were already undergoing training to operate the sets.⁹⁷ With the delay in acquiring destroyer asdic sets, however, the Board postponed action to inaugurate training for surface ship operators. Nevertheless, to increase expertise both at sea and ashore, the ACNB determined that the RAN needed at least two qualified A/S officers permanently in Australia. In 1925, the Board selected Lieutenant S.H. Spurgeon⁹⁸ as the third RAN candidate and he graduated in 1927 at the top of the Portland course.⁹⁹ The ACNB, meanwhile, sent Melville to Britain to keep up to date with techniques and equipment, and appointed the recently returned Lieutenant Esdaile to Navy Office 'pending developments'.¹⁰⁰

Local defence planning

As we have seen, the Royal Navy viewed destroyer ASW primarily in terms of battlefleet protection. Although escorted convoys might be necessary for protection in an unrestricted submarine campaign, such measures were generally to be avoided.¹⁰¹ Echoing earlier doctrine, advocates of a 'vigorous fleet action' were already arguing that escorting merchant ships was a diversion of naval strength from military duties.¹⁰² Assuming a restricted enemy offensive, it remained only to provide for fixed defences and active anti-submarine measures to protect vessels in ports and their approaches. Yet, except for discussion on loops and hydrophones, this aspect had been noticeably absent from the correspondence between Melbourne and London. The Admiralty, however, did plan for the requirement and, as during the recent war, expected to employ large numbers of trawlers or other small craft on patrol duties.

Classified as auxiliaries and also suitable for use as minesweepers, the vessels were to be requisitioned at short notice, manned by reserves, fitted with asdics 'or some other means of submarine detection', and armed with depth charges and a deck gun.¹⁰³ Portland was already working on a suitable portable asdic, but the provision of the vessels had far wider implications. Here the CID, the Empire's principal advisory body on all defence matters, again entered the debate. Despite simultaneously arguing that 'aggressive action on the part of Japan is not a contingency seriously to be considered',¹⁰⁴ by 1925 the CID had promulgated detailed plans for the 'Requirements for Auxiliary anti-submarine Vessels ... in the event of War in the East'.¹⁰⁵

The ACNB must have been at least partially aware of the planning concerning the provision of auxiliary vessels. In September 1925, Hall-Thompson wrote

to London regarding the requisitioning of British trawlers, and he followed this with a request for up to 50 trawlers during the first nine months of a Far Eastern war.¹⁰⁶ Nevertheless, the RAN apparently intended to use these vessels primarily as minesweepers, and the arrival in early 1926 of the CID's anti-submarine recommendations came as something of a surprise. Titled 'The anti-submarine defence of Australian Ports' (CID Paper No. 249-C), the report recommended that the RAN acquire no fewer than 75 asdic-fitted auxiliary vessels.¹⁰⁷ A port's anti-submarine defence requirements depended on geographical position, local characteristics, and the relative importance of the port from a naval and mercantile point of view. The vessels were therefore apportioned between Australia's nine most important ports and focal areas, with the force further divided into hunting units of three vessels each (see Table 3.2).

Table 3.2 - CID assessment of Australian requirements for auxiliary A/S vessels, 1926

| | Vessels | Units |
|-------------|---------|-------|
| Port Darwin | 9 | 3 |
| Fremantle | 9 | 3 |
| Albany | 9 | 3 |
| Adelaide | 12 | 4 |
| Bass Strait | 9 | 3 |
| Melbourne | 6 | 2 |
| Sydney | 9 | 3 |
| Newcastle | 9 | 3 |
| Hobart | 3 | 1 |
| Total | 75 | 25 |

Source: AWM : AWM 124, 3/133.

The CID's report also covered fixed seaward defences and recommended indicator loops at Australia's three most vulnerable ports: Albany, Sydney and Darwin—all of which were deemed accessible to an enemy submarine. The implications of the report thus included extra vessels and equipment, a substantial increase in active and reserve service personnel, and additional fittings and adaptations for existing ships. Not surprisingly, it caused considerable consternation in Melbourne. The proposals not only entailed significant extra expenditure, but also the report's authors had failed to consult

with either the ACNB or 'Captain A/S' at Portland. The Board sought further insights and asked Commander D.W. Boyd,¹⁰⁸ a British loan officer, for comments. Although not an A/S specialist, Boyd did have recent experience at the Admiralty. His response highlights the difficulty the Australians must have had in weighing up conflicting information and determining appropriate action.

Boyd correctly pointed out that asdic sets suitable for auxiliary vessels did not yet exist, but summarily dismissed loops, hydrophones, and hunting units for a variety of technical and tactical reasons. The use of hydrophones, for example, he felt 'definitely unsound' since a submarine could remain silent, while a single vessel would cause an enemy 'to dive just as surely as a flotilla'.¹⁰⁹ This left the RAN with little more than eyesight and indicator nets as a means of submarine detection, but Boyd did raise the somewhat neglected role of aircraft. This was something close to the Board's heart. Having only recently lost the argument over the establishment of an independent air force—the RAAF, a force already determined to establish its own single service doctrine—the Board's members were still unsure how much cooperation they could expect.¹¹⁰ Boyd certainly left no doubt on the need for collaboration. Two aircraft constantly off Sydney during daylight, he remarked, would ensure that no submarine could approach, and this was 'a particular case where an aeroplane carries out its proper function.'

Since Lieutenant Esdaile had only recently arrived back from Portland, the Board also asked for his opinion. He began scathingly by remarking 'that no officer with any knowledge of the details of modern anti-submarine work would have made several of the recommendations.'¹¹¹ Esdaile, however, highlighted environmental rather than operational deficiencies. For example, the loop positions suggested by the CID were unsuitable, and the RAN as yet knew nothing of asdic efficiency in Australian waters. The latter was a particularly important point. Factors as diverse as temperature, aeration, tidal disturbances and salinity were already known to cause scattering and dispersion of sound waves in sea water, and hence adversely affect the efficient working of asdic. Even in home waters the Royal Navy admitted that the collection of sufficient data to make reasoned predictions of asdic performance would be a slow and laborious process.¹¹² Off Australia's vast coastline, the variables were undoubtedly even greater, and Esdaile suggested that before the RAN spent any money it should conduct local experiments. Asdics, moreover, required a target for training practice and reserve personnel were still not cleared to operate the sets. Concluding that these disadvantages did not apply to

hydrophones, and that they could be fitted more quickly to patrol craft, Esdaile went so far as to favour this equipment for Australian conditions.

The divergence in opinions undoubtedly confused the Naval Board's members. They readily agreed on the need to find a more economical means of harbour defence, but decided to seek Admiralty clarification before making any final recommendations to the Minister. Of note, they tended towards Esdaile's rather than Boyd's beliefs and, in their letter to London, likewise opined on the local advantages of hydrophones.¹¹³ Nevertheless, the Board also identified an interest in asdic for open-ocean screening—both for fleets and convoys—and raised the need to study the acoustic properties of the wider waters of the Australia Station as 'a matter of great importance'. Despite the Admiralty's antipathy, the ACNB's appreciation of ASW issues had begun to broaden, but its members also recognised that any further delays might result in the loss of the funds already set aside. Their solution was to get the money to London by immediately ordering material up to £21,000 and, after obtaining a sample of loop cable and asdic, deferring the remainder of the order pending the results of the Admiralty's trials.¹¹⁴

Plans for Australian experiments

The Naval Board expected that these steps would allow the RAN to start local experiments and, in February 1926, it alerted the Admiralty to a revised proposal to fit a Type 114 asdic in a single RAN ship.¹¹⁵ Matters were rarely so straightforward, however. A suitable target remained critical for the trials, and the recommissioning of *J7* was no longer an economic proposition. Furthermore, a lack of funds in the repair and refit vote prevented the fitting of any warship with asdic in the 1926–27 financial year. Hence the RAN's plans continued to move right and soon revolved around the arrival from Britain of the two 'O' class submarines during the second half of 1927. The trials vessel had also undergone a change. With so few destroyers in commission the commander of the Australian Squadron—downgraded from a Fleet in 1926—felt reluctant to disrupt his practice and exercise program, and nominated instead the submarine depot ship, HMAS *Platypus*. *Platypus* was not only cheaper to operate, but would have needed to accompany the submarines around Australia in any case. In addition, the installation eventually decided upon for the destroyers might be a considerable improvement on the Type 114, and 'it is desirable that Destroyers have the latest fitted set.'¹¹⁶

The ACNB's focus on the need for local trials achieved some results. The Admiralty warmly welcomed an experimental fit in *Platypus* and remarked that 'the experience gained by this vessel in exercise with the submarines ...

will be of great value to Their Lordships as well as the Australian Naval Board.¹¹⁷ Their Lordships, however, did not take their position solely in anticipation of special difficulties in working asdics in Australian waters. The Royal Navy was already compiling a series of global 'asdic charts' to identify localities where asdics were unreliable and non-submarine (non-sub) echoes frequently encountered. Investigations into the salinity and temperature of Australian waters would therefore merely form part of the overall database. This did not reduce the importance of the study, however, and to assist the ACNB, the Admiralty ordered the Director of Scientific Research to provide the necessary apparatus and instructions.¹¹⁸

Of greater relevance in the meantime were the purely practical problems imposed by the RAN's determination to acquire unproven equipment. The Admiralty continued to recommend against large-scale expenditure, and warned that the expected progress with the development of loops and hydrophones had not been realised.¹¹⁹ Notwithstanding this advice, by the end of 1926 the Naval Board had allocated £24,115 for 15 miles of indicator loop cable and instruments, a shore hydrophone station, and four sets of asdic equipment. But even within the RAN these plans did not receive support from all quarters.

Australia's efforts to establish a scheme of collective Empire naval defence at the 1926 Imperial Conference were unsuccessful.¹²⁰ Yet this did not alter the Australian intention to standardise defence preparations whenever possible, nor the RAN's underlying philosophy of naval cooperation.¹²¹ After reviewing the drawings for *Platypus's* modifications, Commodore Hyde, Commodore Commanding the Australian Squadron (CCAS), argued that since Australia could not defend itself alone, the Commonwealth should direct all support towards assisting the Royal Navy.¹²² This support, he continued, should be through the provision of cruisers and fuel stocks, which were best suited to imperial naval tasks. Money spent on subsidiary services Hyde regarded as wasted, as the service was likely to be appropriated to 'local defence' at the critical moment.

Hyde's dismissal of local defence and his views regarding the primacy of the cruisers were not unusual, and the maintenance of a cruiser force adequate for imperial cooperation was undoubtedly the RAN's driving priority between the wars.¹²³ Although trade protection was a primary task for the cruisers, ASW was not a cruiser function, and therefore would always struggle for recognition and resources. Since only the Royal Navy was large enough to

accommodate subsidiary missions, it followed that the British should take full responsibility for anti-submarine experimental work on all overseas stations. Particularly, Hyde added with misguided acumen, as an asdic service was 'probably not required in Home Waters in the next war.' Once asdic had fulfilled its promise the RAN could then import it 'cut and dried'.¹²⁴

Insofar as Japan remained the primary threat, and the Pacific the most likely theatre for imperial naval operations, Hyde had a point. Nevertheless, the ACNB managed to maintain its wider perspective. Although the Admiralty had yet to make such an announcement, the Board replied that it expected the British to fit all new destroyers and cruisers with asdics, and that to achieve 'real co-operation' between the Royal Navy and RAN, all training—including anti-submarine—must be conducted along similar lines.¹²⁵ Since the barely viable RAN had little choice but to integrate closely in time of serious conflict, this argument had considerable merit.

Another false start

Imperial interoperability may have been sufficient reason to equip the RAN's destroyer flotilla with asdic, but the requirements of local and harbour defences were more complicated. The ACNB certainly had no doubts that the appearance of a submarine threat would overstretch the RAN. While discussing the importance of the RAN's acquisition of the submarines *Oxley* and *Otway*—a procurement Hyde also opposed—the Assistant Chief of Naval Staff (ACNS), Commander Baillie-Grohman,¹²⁶ highlighted the pronounced 'dispersion of naval resources and effort which is imposed ... by a well-directed and vigorous submarine offensive.'¹²⁷ After taking into account the diverging opinions of the CID, the Admiralty, CCAS, and their own local advisers, the Board's members agreed on the need to hold a conference to discuss the problems.

The conference convened at Navy Office in November 1926 with Commanders Baillie-Grohman and Boyd, and Lieutenant Esdaile in attendance.¹²⁸ Having accepted that, despite their value, asdics were currently limited to destroyers, the group then rejected the acquisition of both hydrophones and loops, the former because shore stations were still at an experimental stage, and the latter due to their uncertainty of working, lack of 'moral effect' and expense. Escort operations received no consideration and the three officers focused on what they felt were more offensive measures. They confirmed the need for an asdic trial and concluded that 'auxiliary patrol craft fitted with depth charges and properly disposed so as to force a submarine to dive, together with seaplanes and indicator nets...' best met Australia's local defence needs.¹²⁹

The new CNS, Rear Admiral W.R. Napier,¹³⁰ concurred. On 19 January 1927, he approved the fitting of *Platypus* with a Type 114 asdic 'in order to form a small nucleus of an anti-submarine service in the RAN.'¹³¹ Two days later, he agreed to defer both the order for loop cable and further work on the Sydney hydrophone station.¹³² Soon the RAN began earmarking local craft for use as auxiliary A/S vessels. But despite these efforts the Navy could not avoid its sensitivity to external factors. Shortly after Napier's approval the Admiralty recommended that the ACNB postpone fitting *Platypus* until after the trials of the latest Type 117 asdic.¹³³ If these were successful, the Admiralty pointed out, the Type 114 would be obsolescent, and it now regarded as 'inadvisable' any intention 'to fit an experimental set to a ship of the Australian Navy.'¹³⁴ Further confounding Australian planning, the Admiralty could offer no information on the supply of equipment for the destroyers. The British did not even intend preparing drawings until 'the standardisation of a set of instruments for fleet screening becomes a practical proposition.'

Unfortunately, the Type 117 failed to fulfil the promise of its forerunner and, in practice, the Royal Navy was in no better position than the RAN. Although the Admiralty would shortly make provision to fit asdics in all future construction destroyers, it was forced to defer the decision on which set to install.¹³⁵ Nevertheless, the British had provided no explanation for the delays, and the ACNB had only the reports of Australia's naval representative in London for guidance. After his latest tour of Portland, this officer, Captain J.B. Stevenson,¹³⁶ reported on the unsatisfactory performance of hydrophones and confirmed that the Admiralty now regarded them as 'practically useless for Naval purposes.'¹³⁷ Stevenson, however, remained optimistic about asdics and referred to the tendency for domes to collapse at speed as the primary ongoing difficulty. Of interest, he also commented on the Admiralty's anxiety regarding the supply of suitable quartz crystals which, when set in motion by high-frequency currents, were the source of the ultrasonic waves used by asdic. Brazil was the only known source, and Stevenson suggested that the Commonwealth's Department of Scientific Research might devote some attention to the matter. Stevenson's final insight concerned loops. After citing some progress and plans for trials in Singapore, he remarked that the ACNB might induce the Admiralty to undertake further trials in Australian waters.

In this period of uncertainty, involvement in trials and production was probably the RAN's best hope of maintaining touch with British developments, but nothing came from Stevenson's suggestions. The Admiralty managed to maintain its Brazilian quartz supplies and built up an adequate reserve stock

before the outbreak of the Second World War. Since the ACNB had as yet no plans to attempt local production, it did not pursue an Australian source for the crystals until after the war began.¹³⁸ In the meantime the Board dutifully accepted its temporary inability to acquire a submarine detection capability. In June 1927, the Naval Board postponed all schemes for fitting asdics until the Admiralty decided on an appropriate type.¹³⁹

The threat detailed

By 1928, when the three Australian Service Chiefs of Staff prepared a paper titled 'An appreciation of war in the Pacific', the only progress made in anti-submarine measures was in the local production of depth charges.¹⁴⁰ The paper maintained the traditional imperial perspective on maritime strategy. Australia's ultimate security lay with the supremacy of the Royal Navy and 'local defence by naval forces must be subordinated to concerted measures designed to allow the British Fleet to concentrate its maximum strength at the decisive point wherever that may be.'¹⁴¹ This outlook offered firm support to the maintenance of the cruiser force as a contribution to an imperial operation, but little hope for those attempting to provide an adequate defence closer to home. The more general protection of trade, while not ignored, never fitted easily into either one of these two extremes. There were always overlapping considerations and, since the threat would be posed by a variety of enemy assets, no simple solution.

The 1928 appreciation dismissed as impractical a serious attempt by Japan to strangle Australia's seaborne commerce. It argued that awareness of the British fleet's imminent arrival in the Far East and factors of distance and time would act to partially immobilise the IJN's core strength. Nevertheless, while awaiting the British the Japanese would enjoy a great preponderance of force, and the Australian Chiefs therefore agreed on the certainty that the enemy would make extensive raids on overseas trade routes together with local ports, cities and coastal shipping. Japan's attacks might be brief, and they might use only their older warships, their embarked aircraft or submarines, yet they could still expect to cause 'very grave inconvenience and loss'.¹⁴²

Enemy submarines formed only part of the threat identified by the paper, but they received more attention than either surface warships or aircraft. Senator Pearce had highlighted the Japanese trend towards acquiring ocean-going submarines at the Washington Conference, and the intervening years had not mollified Australian concerns. Subsequent Japanese designs had focused almost exclusively on those suitable for both fleet operations and independent

reconnaissance of distant waters.¹⁴³ The combination ‘of large size and ... particularly large cruising radius’ made these submarines eminently suitable for Australian operations and,¹⁴⁴ in an attached annex, the 1928 paper detailed for the first time the possible extent of a Japanese submarine attack on local trade.¹⁴⁵

The Great Depression

Listing both assessed Japanese strength and likely areas of operations, the 1928 appreciation marked the progression of the submarine threat from one of general fear to a more detailed statement of enemy capability. Yet, the succession of delays followed by the onset of the Great Depression in 1929 ensured that appropriate countermeasures remained beyond the RAN’s reach. *Platypus* never received asdic and, after spending most of 1928 under repair, *Oxley* and *Otway* did not finally reach Australia until February 1929. Their operating cost and role in Australian defence had been the subject of intense debate before their arrival and, as financial resources dwindled, their retention received little support. In May 1930, both craft paid off into reserve. The two submarines had, however, carried out a limited exercise program with the RAN’s surface ships during the second half of 1929. For detection purposes the squadron relied on the aircraft operated by the seaplane carrier HMAS *Albatross* and, although the attack claims made by both sides were hardly conclusive, aerial observation in calm weather achieved some success in detecting ‘periscopes, oil slicks or even occasionally the dived submarines.’¹⁴⁶

The now Lieutenant Commander Melville succeeded Esdaile as squadron A/S officer in 1928, and may have had some influence on exercise planning during this brief period of submarine availability. Nevertheless, the government’s desperate measures to economise on defence expenditure had an impact on both equipment and personnel, and Melville was invalided from the service in 1930. The ACNB had sent no-one on the 1928 long A/S course, and the Royal Navy cancelled the next two courses in part due to the lack of success in developing a suitable destroyer asdic set.¹⁴⁷ Hence, the RAN retained only two qualified A/S officers and thereafter allowed the position of squadron A/S officer to lapse. Elsewhere within the Australian Navy only a few ex-submarine ratings retained any asdic experience.

Notwithstanding the preparation of some anti-submarine schemes on paper, a similar lack of practical progress existed with respect to local defence measures. For the RANR, upon whom much of the responsibility would fall, there existed no anti-submarine training organisation capable of expansion,

no indicator loops for harbour defence, and no trawler asdic sets for the auxiliary patrol service. In fact, the RAN's investigations had revealed that most Australian small craft were unsuitable and that without appropriate equipment those few adaptable to service could offer only slight 'resistance to a determined attack by a ...submarine.'¹⁴⁸

In May 1930, a concerned staff officer warned the then CNS, Vice Admiral W.M. Kerr,¹⁴⁹ that there existed 'no means of protection against submarines for any port in Australia except a limited number of depth charges and contact mines.' The officer suggested that the Naval Board seek an update of the information in CID 249-C and at the very least place a practice indicator loop off Sydney as part of the Harbour Defence Scheme. Yet money for any purpose was scarce and the ACNB found it hard to justify another sideline. On the one hand, any available funds might be better expended on the seagoing squadron, on the other 'the Squadron, without at least one submarine proof base is limited in its activities and can be harried off the map by a few submarines.'¹⁵⁰ Unable to decide, the Naval Board once more turned to the Admiralty for advice.

The response came back only slowly and contained little to inspire confidence. The Australians were advised that a sub-committee was revising CID 249-C, and that loops remained in a 'state of transition'. Likewise shore asdic installations were still experimental and the Admiralty had still taken no decision on the type of asdic suitable for auxiliary A/S vessels. Not surprisingly, the letter concluded:

My Lords are therefore of opinion, more especially in view of the financial stringency in Australia, that it would be premature at this stage to undertake anything in the way of training or provision of material.¹⁵¹

The advice made little difference; the Commonwealth Government allowed no money for the anti-submarine defences of local ports in the 1930-31 estimates. Kerr hoped eventually to acquire a small flotilla of modern sloops for local mine-sweeping and anti-submarine duties,¹⁵² but the ACNB had already diverted all money previously set aside for ASW to other purposes.

Notes

1. Minute, Commander Baillie-Grohman (ACNS) to Rear Admiral Napier (CNS), 14 October 1926, NAA: MP 1049/9, 2026/5/147.
2. Cited in P.M. Kennedy, *The Rise and Fall of British Naval Mastery* (London: Allen Lane, 1976), p. 251.
3. Paper, 'Brief outline of Asdic History', 1924, PRO: ADM 186/444, 42747.
4. H.D. Wynter, 'The Strategical Inter-relationship of the Navy, the Army and the Air Force: An Australian View', in *The Army Quarterly*, Vol. 14, 1927.
5. Report, 'Japan and the Alliance', 18 May 1920, NAA: MP 1049/1, 20/0256.
6. Cited in E. Andrade, 'Great Britain, the Submarine and Naval Limitations', in W. Roberts (ed.), *New interpretations in naval history: selected papers from the Ninth Naval History Symposium* (Annapolis: USNI Press, 1991), p. 67.
7. Vice Admiral Sir Humphrey Thomas Walwyn, KCMG, CB, DSO, RN (1879–1957), Captain A/S 1918–22.
8. Mason, 'The Evolution of the Osprey', p. 16.
9. Portland was the principal site for asdic development, but until unification in 1927, HMS *Vernon* and a part of the Mine Design Department undertook the development of hydrophones, loops and indicator nets.
10. Paper, 'The Future of Submarine Warfare', by CO HMS *Rocket*, 30 January 1924, PRO: ADM 116/3164, 42661.
11. Halpern, *A Naval History of World War I*, p. 343.
12. Paper, 'Brief outline of Asdic History', 1924, PRO: ADM 186/444, 42747.
13. See R.M. Grant, *U-boats Destroyed: The Effect of Anti-Submarine Warfare 1914–1918* (London: Putnam, 1964), p. 159.
14. Mason, 'The evolution of the Osprey', p. 7.
15. Although usually linked to the initials of the Allied Submarine Detection Investigation Committee, Willem Hackmann has argued that 'asdic' stands for 'pertaining to the Anti-Submarine Division (or 'Anti-Submarine Division-ics)'. See Hackmann, *Seek & Strike*, p. xxv. 'Asdic' was superseded by the American term 'sonar' in the early 1950s.
16. The speed of sound and hence the measurement of distance depends on water density. Water density in turn depends on salinity, temperature and depth. A change of speed as sound propagates results in refraction, or bending of the beam. Since asdic/sonar equipment operates near the surface, performance is also influenced by the ambient noise generated by wind and wave action, sea life and man-made sources. For an accessible discussion of underwater acoustics, see W.J.R. Gardner, *Anti-Submarine Warfare*, BRASSEY's SEAPOWER: Naval Vessels, Weapons Systems and Technology Series: Vol. 11 (London: Brassey's, 1996), chapter 5.
17. Mason, 'Evolution of the Osprey', p. 9.
18. S. Roskill, *Naval Policy Between the Wars, I: The Period of Anglo-American Antagonism 1919–1929* (London: Collins, 1968), p. 536.
19. 'Report of Admiral of the Fleet Viscount Jellicoe of Scapa on Naval Mission to the Commonwealth of Australia (May–August 1919), HMS *New Zealand* at Sydney, 12 August 1919' (hereafter the *Jellicoe Report*), p. 158.
20. Grove, *The Defeat of the Enemy Attack on Shipping*, p. 4.
21. Grove, *The Defeat of the Enemy Attack on Shipping*, p. 3.
22. All U-boats operating in the Mediterranean were based in the Adriatic. Between November 1917 and November 1918 the Otranto Barrage claimed every Allied craft that could be collected and operations included every measure that could be adopted to destroy

- submarines on passage through the Strait of Otranto. However, the Barrage resulted in the destruction of only one submarine, and prevented the passage of none. For a narrative of RAN destroyer operations in 1917–18, see L.J. Lind, *HMAS Parramatta* (Garden Island: Naval Historical Society of Australia, 1974), pp. 48–68.
23. Jose, *The Royal Australian Navy*, p. 318.
 24. In contrast to the Otranto Barrage, Mediterranean convoy escorts, though inadequate in number, destroyed eight U-boats between December 1917 and November 1918. See article, 'The Effect of Convoy Escort on U-boat Operations', *Admiralty Maritime Intelligence Review*, November 1953, p. 21.
 25. Jose, *The Royal Australian Navy*, pp. 299, 314, 316.
 26. The vessel carrying the balloon directed a consort to act as the 'killer' of the submarine when sighted and demonstrated an early awareness of the need for cooperative hunts.
 27. Naval Representative 108th Report, 28 August 1918, NAA: MP 1049/1, 1918/013.
 28. The 'long' A/S course consisted of two terms at the Royal Naval College Greenwich followed by 76 working days at Portland. PRO: ADM 186/444, 42747.
 29. *CPP*, No. 65, 'Naval Defence. Statement by Minister for the Navy Explanatory of the Naval Estimates, 1920–21', 23 September 1920, p. 6.
 30. In January 1919 the RAN War Staff and Intelligence Branch comprised one captain and two lieutenant-commanders. The Air Service Branch comprised one wing commander and an assistant.
 31. Admiral of the Fleet Earl Jellicoe GCB, OM, GCVO, RN (1859–1935), First Sea Lord 1916–17.
 32. *Jellicoe Report*, p. 20.
 33. Admiral Sir George Francis Hyde, KCB, CVO, CBE, RAN (1877–1937), commanded HM Australian Squadron 1926–29, 1NM ACNB and CNS 1931–37.
 34. *Jellicoe Report*, p. 6.
 35. Halpern, *A Naval History of World War I*, p. 355.
 36. *Jellicoe Report*, p. 214.
 37. *Jellicoe Report*, p. 187.
 38. *Jellicoe Report*, p. 215.
 39. *Jellicoe Report*, p. 80.
 40. Hackmann, *Seek & Strike*, pp. 12–13.
 41. Gordon, *The Rules of the Game*, p. 18.
 42. *Jellicoe Report*, p. 80
 43. Cited in paper 'The RAN - the interwar period 1919–1939', undated, NHD: general file 218.
 44. Admiral Sir Edmund Percy Grant, KCVO, CB, RN (1867–1952), 1NM ACNB and CNS 1919–21, CinC Australia Station 1921–22.
 45. I. Cowman, *Dominion or Decline: Anglo-American Naval Relations in the Pacific, 1937–41*, (Oxford: Berg, 1996), p. 16.
 46. Telegram, Grant to Captain Littlejohns (Naval Representative, London), 15 March 1920, NAA: MP 1049/1, 1920/0128.
 47. Remarks by Grant on letter, Littlejohns to ACNB, 6 May 1920, NAA: MP 1049/1, 1920/0128.
 48. Letter, Prime Minister Hughes to the British Government, cited in A. Wright, *Australian Carrier Decisions: The acquisition of HMA Ships Albatross, Sydney and Melbourne*, Papers in Australian Maritime Affairs No. 4 (Canberra: Maritime Studies Program, 1998), p. 8.
 49. T.M. Jones, *Watchdogs of the Deep* (Sydney: Angus & Robertson, 1935).
 50. Letter, Admiralty to Official Secretary Commonwealth Offices, 14 July 1921, NAA: MP 1049/1, 1920/0128.

51. M.G. Fry, 'The Pacific Dominions and the Washington Conference, 1921-22', in E. Goldstein and J. Maurer (eds), *The Washington Conference, 1921-22* (Ilford: Frank Cass, 1994), p. 24.
52. Andrade, 'Great Britain, the Submarine and Naval Limitations', in Roberts, *New interpretations in naval history*, p. 77.
53. Letter from Churchill to Balfour, cited in Douglas, 'The Submarine and the Washington Conference of 1921', in *Naval War College Review*, Vol. 26, 1974, p. 93-4.
54. B.R. Sullivan, 'Italian Naval Power and the Washington Disarmament Conference of 1921-22', in Goldstein and Maurer, *The Washington Conference, 1921-22*, pp. 220-48.
55. Douglas, 'The Submarine and the Washington Conference of 1921', p. 91.
56. S.A. Asada, 'From Washington to London: The Imperial Japanese Navy and the Politics of Naval Limitation, 1921-1930', in Goldstein and Maurer, *The Washington Conference, 1921-22*, p. 160.
57. For an examination of Japan's early plans for submarine employment, see C. Boyd and A. Yoshida, *The Japanese Submarine Force and World War II* (Annapolis: USNI Press, 1995), p. 5.
58. US Senate document, *Conference on the Limitation of Armament at Washington, 1922*, p. 562, cited in Douglas, 'The Submarine and the Washington Conference of 1921', pp. 92-3.
59. Fry, 'The Pacific Dominions and the Washington Conference, 1921-22', in Goldstein and Maurer, *The Washington Conference, 1921-22*, p. 87.
60. Andrade, 'Great Britain, the Submarine and Naval Limitations', in Roberts, *New interpretations in naval history*, p. 69.
61. E.O. Goldman, *Sunken Treaties: Naval Arms Control Between the Wars* (University Park: The Pennsylvania State University Press, 1994), pp. 293-5.
62. See for example, report by Department of Defence, 'The seriousness of the situation in the Pacific from the point of view of the defence of the Commonwealth', 23 May 1922, NAA: MP 1587/1, 218A1.
63. Wright, *Australian Carrier Decisions*, p. 8.
64. Rear Admiral John Saumarez Dumaesq, CB, CVO, RN (1873-1922), Commodore and Rear Admiral Commanding Australian Fleet 1919-22.
65. 'Appreciation of Strategic Situation' by Commodore Dumaesq, 11 February 1921, NAA: MP 1049/1, 21/099.
66. Captain (A/S) James Claude Esdaile, CBE, RAN (1899-199?), staff of RN A/S School 1924-25, 1930, Navy Office 1926, 1927, 1934, Squadron A/S Officer 1926-7, Chief Staff Officer Navy Office 1938-39.
67. Lieutenant Commander (A/S) Henry Gordon Kerr Melville, RAN, staff of RN A/S School 1927-28, Squadron A/S Officer 1928-29, invalided from the Service 1930, appointed to the Emergency List 1942, staff HMA A/S School 1942-43, OIC HMA A/S School 1943-45.
68. Paper, 'Anti-submarine warfare in Australian waters', by Commander Spurgeon, June 1943, NAA: MP 1049/5, 1932/3/8.
69. Letter, Captain Robins (Naval Representative, London) to ACNB, 15 July 1924, NAA: MP 1049/9, 2026/5/118.
70. G. Hermon Gill, *Royal Australian Navy 1939-1942*, Australia in the War of 1939-1945 (Sydney: Collins, 1985, reprint of 1957 edition), p. 13.
71. Wright, *Australia's Carrier Decisions*, pp. 11-13, 22.
72. Gill, *Royal Australian Navy 1939-42*, pp. 13-15.
73. Fry, 'The Pacific Dominions and the Washington Conference, 1921-22', in Goldstein and Maurer, *The Washington Conference, 1921-22*, p. 87.

74. J. McCarthy, *Australia and Imperial Defence 1918-39: A Study in Sea and Air Power* (St. Lucia: University of Queensland Press, 1976), p. 13.
75. Paper, 'The Type of Squadron for the Royal Australian Navy', 8 March 1937, NAA(ACT): A5954/1, 1058/5.
76. Roskill, *Naval Policy Between the Wars, I*, p. 350.
77. Admiralty paper presented at 1923 Imperial Conference. Cited in paper, 'The Type of Squadron for the Royal Australian Navy', 8 March 1937, NAA(ACT): A5954/1, 1058/5.
78. Wright, *Australian Carrier Decisions*, p. 12.
79. See, for example, Annual A/S Report, 1925, PRO: ADM 186/444.
80. Captain John F. Robins, RAN, Naval Representative, London 1922-24.
81. Letter, Robins to ACNB, 15 July 1924, NAA: MP 1049/9, 2026/5/118.
82. Cited in minute, from Commander Binney (ACNS), 'Summary of position with regard to Asdics, Loops and Hydrophones in RAN', c. 1925, NAA: MP 1049/9, 2026/5/147.
83. 'Proposed Australian anti-submarine organisation', report of conference held 7 January 1925, NAA: MP 1049/9, 2026/5/147.
84. Annual A/S Report, 1925, PRO: ADM 186/444.
85. 'Proposed Australian anti-submarine organisation', report of conference held 7 January 1925, NAA: MP 1049/9, 2026/5/147.
86. Admiral Sir Percival Henry Hall-Thompson, CB, CMG, RN (1874-1950) 1NM ACNB and CNS 1924-26.
87. Four sets of asdic - £16,000, one set loops - £1740, submarine detector equipment - £5000.
88. Minute, from SO(2) to Hall-Thompson, 1 May 1925, NAA: MP 1049/9, 2026/5/147.
89. Mason, 'Evolution of the Osprey', p. 13.
90. Hackmann, *Seek & Strike*, pp. 204-5.
91. Annual A/S Report, 1925, PRO: ADM 186/444.
92. Report, 'Progress in Torpedo/Mining, A/S and allied subjects 1926', PRO: ADM 186/457.
93. Hackmann, *Seek & Strike*, pp. 129-30.
94. Letter, Admiralty to ACNB, 19 June 1925, cited in minute, 'Summary of position with regard to Asdics, Loops and Hydrophones in RAN', c. 1925, NAA: MP 1049/9, 2026/5/147.
95. Letters, Admiralty to ACNB, 3 & 15 August 1925, cited in *ibid*.
96. Letter, ACNB to Stevenson (Naval Representative, London), 20 August 1926, NAA: MP 1049/9, 2026/5/118.
97. Report, 'A/S Service in RAN', 1 October 1926, NAA: MP 1049/9, 2026/5/147.
98. Captain (A/S) Stanley Herbert Spurgeon, DSO, RAN, staff of RN A/S School 1928, 1932, Squadron A/S Officer 1934-35, 1937, Director ASW 1943-44.
99. Report, ACNB to Stevenson, 23 July 1926, NAA: MP 1049/5, 1968/2/45.
100. Report, ACNB to Stevenson, 30 December 1925, NAA: MP 1049/5, 1968/2/45.
101. Roskill, *Naval Policy Between the Wars, I*, p. 536.
102. L.J. Glasson, 'The Development of the Submarine: Its Effect on British Naval Strategy 1910-1945', in the *Journal of Naval Science*, Vol. 1, No. 2, p. 153.
103. Paper, 'Requirements of Minesweeping and Auxiliary anti-submarine Vessels at various Empire Ports in the event of War in the East', 12 March 1925, AWM: AWM 124, 3/132.
104. Cited in McCarthy, *Australia and Imperial Defence 1918-39*, p. 19.
105. Paper, 'Requirements of Minesweeping and Auxiliary anti-submarine Vessels at various Empire Ports in the event of War in the East', 12 March 1925, AWM: AWM 124, 3/132.
106. A.J. Ochmann, 'The Corvette Building Programme of the Royal Australian Navy', BA(Hons) thesis, UNSW, ADFA, 1997, Chapter 1.

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114. Remarks on minute, Baillie-Grohman to Hall-Thompson, 9 February 1926, NAA: MP 1049/9, 2026/5/147.
115. Letter, ACNB to Stevenson, 27 February 1926; minute, SO(3) to Baillie-Grohman, 20 July 1926, NAA: MP 1049/5, 2026/5/60.
116. Minute, Baillie-Grohman to Hall-Thompson, 24 February 1926, NAA: MP 1049/5, 2026/5/60.
117. Admiralty memorandum, 29 June 1926, NAA: MP 1049/5, 2026/5/60.
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119. Paper, 'anti-submarine service in RAN', 1 October 1926, NAA: MP 1049/9, 2026/5/147.
120. See document 217, in Tracy, *The Collective Naval Defence of the Empire, 1900–1940*, pp. 415–8.
121. McCarthy, *Australia and Imperial Defence 1918–39*, p. 104.
122. Letter, Hyde to ACNB, 2 September 1926, NAA: MP 1049/5, 2026/5/36.
123. See for example, paper 'Composition of The Royal Australian Navy and Tentative Suggestions for its Simplification and Co-operation with the Admiralty', 5 December 1929, PRO: ADM 116/2807.
124. Letter, Hyde to ACNB, 2 September 1926, NAA: MP 1049/5, 2026/5/36.
125. Memorandum, 'Remarks on anti-submarine service', Baillie-Grohman to Napier, 15 January 1927, NAA: MP 1048/5, 2026/5/36.
126. Vice Admiral Harold Tom Baillie-Grohman, CB, DSO, OBE, RN, ACNS 1925–27.
127. Minute, by Baillie-Grohman, 10 September 1926, cited in White, *Australian Submarines*, p. 158.
128. Remarks by Napier on minute, Baillie-Grohman to Napier, 14 October 1926, NAA: MP 1049/9, 2026/5/147.
129. Report of conference held 29 November 1926, NAA: MP 1049/9, 2026/5/147.
130. Admiral William Rawdon Napier, CB, CMG, DSO, RN (1877–1951), 1NM ACNB and CNS 1926–29.
131. Remarks by Napier, 19 January 1927, NAA: MP 1049/5, 2026/5/36.
132. Remarks by Napier on minute, 21 January 1927, NAA: MP 1049/5, 2026/5/39.
133. See Hackmann, *Seek & Strike*, pp. 166, 183.
134. Letter, Admiralty to Official Secretary for the Commonwealth of Australia, 27 April 1927, NAA: MP 1049/5, 2026/5/36.
135. Report, 'Anti-submarine Policy', 1928, PRO: ADM 186/461, 42747.

136. Rear Admiral John Brian Stevenson, CMG, RAN (1876–1957), Naval Representative, London 1925–27, 2NM ACNB 1927–28.
137. Report, Stevenson to ACNB, 12 May 1927, NAA: MP 1049/5, 2026/5/57.
138. See D.P. Mellor, *The Role of Science and Industry*, Australia in the War of 1939–1945 (Canberra: Australian War Memorial, 1958), p. 112.
139. Remarks by Commander Farquahar-Smith (ACNS), 6 February 1928, NAA: MP 1049/5, 2026/5/36.
140. Report, ACNB to Captain Feakes (Naval Representative London), 27 June 1928, NAA: MP 1049/5, 1968/2/45. By 1930 Australian industry had manufactured 613 Depth Charge Mk III, PRO: ADM 116/2787.
141. Paper, 'Appreciation War in the Pacific', 1928, NAA: MP 1185/8, 1846/4/363.
142. Paper, 'Appreciation War in the Pacific', 1928, NAA: MP 1185/8, 1846/4/363.
143. See Boyd & Yoshida, *The Japanese Submarine Force and World War II*, pp. 15–19.
144. Paper, 'The seriousness of the situation in the Pacific from the point of view of the defence of the Commonwealth', c. 1927, NAA: MP 1587/1, 218 AI.
145. See Appendix I.
146. White, *Australian Submarines*, p. 162.
147. The reinstitution of the long A/S course coincided with the going to sea of the improved Type 119 set in 1931. See 'Survey of A/S Training in the Past' in the 1946 annual A/S report, PRO: ADM 189/66.
148. Minute, SO(2) to Kerr, 16 May 1930, NAA: MP 1049/5, 2026/5/57.
149. Admiral Sir William Munro Kerr, KBE, CB, CBE, RN (1876–1959), 1NM ACNB and CNS 1929–32.
150. Minute, SO(2) to Kerr, 16 May 1930, NAA: MP 1049/5, 2026/5/57.
151. Letter, Admiralty to ACNB, 20 October 1930, NAA: MP 1049/5, 2026/5/90.
152. Paper, 'Future of HMA Submarines and General Naval Policy for Australia', by Kerr, 22 July 1930, PRO: ADM 116/2807.

Preparations for War

– 1930-39

4

The fast vessels needed for escort against submarine attack cannot be improvised...

Lord Jellicoe, *The Submarine Peril*, 1934.¹

Between 1922 and 1929 Japan, France, and Italy together laid down 105 new submarines. The British found this construction rate alarming and, at a succession of disarmament conferences, consistently stressed the fundamental importance of the Empire's economic and global interests and the need 'to keep the highway of the seas open for trade and communication.'² Publicly, imperial authorities still sought the abolition of submarines but, having failed with their previous attempts, by the time of the 1930 London Naval Conference the British delegation moved instead to limit them rigidly to defence requirements in numbers and size. They hoped, moreover, to revive the unratified Washington Agreement to regulate undersea warfare. Britain, together with the United States, began the London Conference proposing the limitation of submarine fleets to a total of 60,000 tons. France and Italy, however, continued to oppose restrictions, while Japan with 66,068 tons already in commission demanded an increase to at least 77,900 tons to cover vessels under construction (see Table 4.1).

Conference discussions again revolved around whether the submarine was 'the defensive weapon of the lesser navies' or 'a barbarous instrument of war'.³ But unlike earlier attempts, on this occasion the delegations sacrificed some 'national autonomy' in the interests of 'international agreement'.⁴ A compromise was reached and for the first time imposed treaty limitations on submarines as a class of vessel. Qualitatively these included placing a maximum displacement of 2000 tons on each boat, a maximum deck armament of a 5.1-inch gun and a life before replacement of 13 years. Furthermore, in a separate Three-Power Pact—involving the British Empire, the United States and Japan—each party agreed to submarine parity, restricting their completed tonnage by December 1936 to 52,700 tons. Finally, all nations agreed to re-establish firm rules for attacking merchant ships which, although less comprehensive than those formulated at Washington, still made a campaign against commerce impractical.⁵

Table 4.1 – Submarines built, building or projected, 1930

| Tonnage | British Empire | United States | Japan | France | Italy |
|---------------|----------------|---------------|-------|--------|-------|
| 2000 and over | 1 | 3 | - | 1 | - |
| Under 2000 | 65 | 125 | 71 | 98 | 57 |
| Total | 66 | 128 | 71 | 99 | 57 |

Source: *CPP*, 1929–30, No. 107, 'Report of the Limitation of Naval Armament Conference held at London January – April 1930', 30 July 1930.

Within the Royal Navy the implications of the agreements for ASW were twofold. First the Admiralty saw no reason to reconsider its emphasis on fleet protection when considering anti-submarine policy. Destroyers provided fleet screening, and the more efficient they became in ASW, the easier it would be to wield the primary instrument of naval power. The second implication was interlaced with the first. Assuming a reduced oceanic threat to commerce and the efficient protection of the battlefleet, then the primary sub-surface threat would remain constrained to ports and their approaches. In effect, this reinforced the understanding that anti-submarine measures were primarily an aspect of local defence and that any future campaign would be fought in relatively shallow water.⁶

The British reconfirmed and extended their commitment to the 1930 rules at the 1935–36 London Conference and, by 1937, more than 30 nations had agreed to abide by the regulations.⁷ That year the Admiralty confidently reported to the Shipping Defence Advisory Committee that unrestricted submarine attack on trade was unlikely.⁸ But for the British Empire it was a hollow victory. Regulation would play little role in the strategic concepts of the coming total war, and national self-interest invariably maintained priority. Convenience notwithstanding, efforts to regulate simply masked the danger posed by foreign re-armament programs and in practice made any attempt to highlight weaknesses in anti-submarine policy that much harder.

Of particular concern in the Pacific theatre, the Japanese delegation had withdrawn early from the London Conference, leaving the remaining delegations to 'haggle over a vestigial and meaningless limitations system.'⁹ The Japanese Navy's shipbuilding policy after December 1936 ignored qualitative restrictions in all classes of warship. Each successive submarine type introduced improvements in technology and capability. By 1939 the IJN was building the largest and most heavily armed production submarines in

the world. The *Jensen* Type A1 (*I-9* to *I-11*) was credited with a surface displacement of 2919 tons (submerged 4149 tons), and a cruising range of over 16,000 nm. These boats carried 18 torpedoes, a 5.5-inch gun and a floatplane for reconnaissance.

More ominous in Europe was the post-1933 resurgence in German naval power. The British at first accepted what seemed limited rearmament proposals in the hope that the Germans would peg their demands. Even most of the Admiralty staff supported the 1935 Anglo-German Naval Agreement, which at last recognised Germany's right to rebuild a submarine fleet.¹⁰ The treaty fixed the strength of the German fleet at 35 per cent of that of the Royal Navy, while their submarine service could be up to 45 per cent or up to parity should it be deemed desirable by the Germans and the British agreed. But the Germans were not starting from scratch, and had managed to maintain some limited U-boat design and production experience. Preparations were already so far advanced that the launching of the first of the new U-boats, *U 1*, took place three days before the signing of the 1935 agreement.¹¹

RAN war plans and ASW

Australia had little more than observer status at the interwar disarmament conferences, but the Commonwealth delegate at the 1930 London Conference, the Minister for Trade and Customs, J.E. Fenton, had again spoken in support of the abolition of submarines.¹² The ACNB maintained a healthy interest in international developments, but the relationship between politicians and senior naval personnel remained tense over a variety of disciplinary and funding issues, hindering the development of an effective naval policy.¹³ Much has since been made of the fact that senior RAN officers were seconded from the Admiralty and must therefore have held British rather than Australian perspectives on the strategic situation. This greatly oversimplifies the circumstances. They may have been imperfectly adapted, but the seconded officers could and generally did develop naval policies that reflected genuine attempts to meet national and not specifically British interests. Indeed, when combined with the direct technical assistance received from the Admiralty, the warping of the RAN, if any, must be judged as largely favourable in its effects.¹⁴

Naval opinion had always doubted that international agreement could eliminate the submarine threat, but the combination of legal limitations, financial stringency and prevalent doctrinal thinking, combined to ensure the neglect of local A/S measures. Like the Royal Navy, the RAN often failed

to emphasise the importance of trade protection as a naval function at the tactical level. The importance of trade, especially imperial trade, still occupied the attention of Admiralty and Navy Office planners, but surface raiders—which could be engaged with main gun armament—rather than submarines were expected to form the main threat.¹⁵ More significant in the Australian context was that issues of local defence tended to be pushed to the periphery when hard decisions were required. Hence ASW continued as just one more unfunded capability. Notwithstanding the 1928 threat assessment as expressed by the naval staff in late 1932: ‘the possible threat of submarine attack does not warrant the expenditure of money when there are so many arms of the service with prior claims.’¹⁶

The RAN nevertheless claimed to include an anti-submarine capability in support of its role in imperial strategy. The employment the Admiralty envisioned for the Australian Squadron underwent some changes during the early 1930s but, by the beginning of 1932, included the reinforcement of the British China Fleet by the two 8-inch gun cruisers, HMAS *Australia* and *Canberra*, the seaplane carrier *Albatross*, and the destroyer flotilla. Thereafter the cruisers would protect the lines of communication to the north and east of Singapore while the other vessels operated closer to the naval base.¹⁷ British planning anticipated Japanese mining and submarine activity, and *Albatross* and the destroyers, the Admiralty informed the ACNB, ‘would be most usefully employed ... in countering or reporting any steps the Japanese might be taking to contest the passage of the Strait of Malacca by the British Main Fleet.’¹⁸

In fact, the Admiralty had declared the prime task of the Australian destroyers to be the anti-submarine screening of the cruisers as early as the 1930 Imperial Conference.¹⁹ At that stage the RAN’s War Orders forecast a ‘Java-Darwin Patrol’ for *Australia* and *Canberra*, but the ACNB had never been entirely happy with the escort arrangements.²⁰ The cruisers’ endurance was some five times that of the destroyers, and the regular departure of the latter to refuel would have significantly hampered effective operations. Patrols in the vicinity of Singapore removed much of the handicap. Even if not employed continuously with the cruisers, by operating with *Albatross* the naval staff agreed the destroyers would be ‘very useful for anti-submarine operations’.²¹ The reasoning behind this encouraging assessment is hard to uncover. Although the destroyers carried depth charges, these remained their only anti-submarine equipment. During the straitened years of the Depression, moreover, normally only one or two destroyers were maintained in commission. At best their performance as a flotilla in coordinated operations would have been marginal.

Clearly, it was the two heavy cruisers, with their powerful gun armament, imposing presence and long endurance that remained the RAN's core force. Just as importantly one rotated as squadron flagship. So, while the officers responsible for squadron navigation, gunnery, torpedo and signals matters were on board and able to catch the Commodore's or Rear Admiral's attention, after Lieutenant Commander Melville's departure, no officer took a similar interest in anti-submarine prowess. Without detection equipment, targets, or branch structure, ASW in the RAN remained very much a hollow capability.

Lieutenant Commanders Esdaile and Spurgeon, meanwhile, continued to move through a variety of sea and shore postings and until 1938 remained the RAN's only immediate source of professional expertise. The matter of local A/S defence finally returned to the ACNB's agenda at the end of 1932. The specific trigger is unknown, but it occurred just after Spurgeon returned to Australia from instructional duties at *Osprey*. In October the Naval Board invited both Spurgeon and Esdaile to contribute to a discussion on the anti-submarine protection of Australian ports.

The problem reviewed

The Board had asked Spurgeon to draw up a developmental scheme for the meeting, but Esdaile took the lead in subsequent discussions. He was not sanguine, repeating that the auxiliary A/S vessels planned for requisition would be ineffective without asdic, and that the RANR officers expected to command them had no knowledge of ASW. Yet, according to Esdaile, the resource implications were not high. He estimated the cost of a suitable asdic set at about £700, explained that it could be fitted in a week, and argued that operation was quite simple with no great technical knowledge required. Esdaile then turned his attention to the port of Sydney and warned that its geographical situation and lack of defences effectively encouraged an enemy attack. He reiterated the need for a loop system and argued that it would not only improve operational efficiency by cueing asdic-fitted vessels to contacts, but also act as an effective deterrent. Esdaile again expressed his confidence in the technology, adding that loop operation was extremely simple, detection efficient and watch-keepers quickly trained.²²

Those attending the meeting raised no objections, and while concluding that no start should be made 'until the situation warranted it' and 'money could be made available', they agreed that the RAN's first priority should be the acquisition of appropriate auxiliary asdic sets, followed by the provision of a loop system. Thereafter, by fitting at least one of the sets to a suitable vessel,

the Navy could begin reserve training. Although a trawler asdic had yet to enter British service,²³ and Esdaile had grossly underestimated the cost and difficulties involved, the meeting had at least served to raise the profile of ASW. Of longer term significance it had also included a recommendation that Esdaile and Spurgeon prepare an up-to-date scheme for local A/S defence.

The formulation of an anti-submarine scheme

The two officers had completed their report by February 1933, and it makes for an interesting comparison with Esdaile's 1926 criticisms of CID Paper 249C. Although deliberately limited in scope, the new paper represented the RAN's first full, internal, anti-submarine study, and was thus something of a watershed. Most important, with time for reflection, Esdaile and Spurgeon did not stop at fixed and mobile defences, but examined the demands on materiel and manning. The report's major constraint was the decision to accept the Admiralty as 'the sole authority for advising as to what classes of hostile ships may reasonably be expected to attempt to enter certain waters, and whether the attempt to enter such waters would be made.'²⁴ Consequently, the authors ignored the 1928 threat assessment, made no attempt to identify the scale of submarine attack in local waters, and made only minor changes to the nine Australian ports already identified by the CID. In order of defence priority, these were now listed as Albany, Darwin, Sydney, Newcastle, Melbourne, Fremantle, Brisbane, Adelaide and Hobart.

The report broke the local A/S problem into two phases. The first concerned defence of shipping within a harbour, while the second examined an attack in the approaches. Mobile defences remained the priority, with an auxiliary A/S flotilla of four asdic vessels required on 'outer patrol' off each port to escort shipping. Accepting the CID's earlier advice—that submarines could only conceivably enter Albany, Darwin and Sydney—Esdaile and Spurgeon likewise limited fixed defences to loop systems at these three locations.²⁵ Nevertheless, to allow investigation of loop crossings concurrently with escort operations, the defences at these ports also required another two vessels on 'inner patrol'. The total requirement for asdic-fitted vessels was thus 42. Although smaller than the CID's suggested organisation, the authors admitted that this was still a very large burden on the RAN. The only consolation they could offer was that full implementation need not begin until the outbreak of war.

The report went further than a detailed listing of resource requirements. Having taken a considerably more practical approach than earlier assessments, the authors chose to stress the unique nature of ASW. They noted in particular

that an effective capability could not be rapidly acquired, and that the RAN could expect difficulties in setting it to work. These problems were not insurmountable, but even something as simple as the local electric tramway could interfere with the sensitivities of a loop system.²⁶ In effect Esdaile had expanded on his theme of seven years earlier, with the clear implication that unless the RAN made a start on locality investigations and training, the service would not be ready when needed. The report concluded that trials should begin in Sydney, with the first asdic-fitted trawler then visiting the other Australian ports in turn. The lack of an RAN submarine remained a handicap, but Esdaile suggested that a static ‘standard target’—particularly if laid in a tideway—could provide adequate training for harbour craft and ‘in conjunction with surface ship targets provide sufficient data to determine efficiency.’²⁷

An official policy on the acquisition of asdics during this period—as distinct from specialist advice—is not apparent in the available documentation, but Esdaile’s superiors had clearly become far more conservative in their approach. Presumably due to their broadening awareness of the high level of training required in the absence of a mobile target, the ACNB felt unwilling to push for asdic ‘until either submarines or artificial substitutes were available.’²⁸ Yet, whatever the details, funding endured as the fundamental capability constraint, and the RAN had to wait until 1936 before work on any of the report’s recommendations began.²⁹

Plans for auxiliary A/S vessels

Australia’s anti-submarine policy did not develop in isolation and, while the ACNB counselled caution, the Admiralty progressed broader operational and strategic planning. By 1933 the Royal Navy had no doubt that anti-submarine measures were a rearmament priority, and its policy dictated fitting asdic into all new construction destroyers and submarines, as well as many auxiliary craft. In due course the whole of the destroyer force was to be so fitted.³⁰ Furthermore, as part of its overarching strategy for a war in the Far East, the Admiralty sought to review the numbers of anti-submarine craft needed in various parts of the Empire. Critical to this assessment were appreciations of Japanese strategy, based on the size of the enemy’s treaty-limited submarine fleet together with their construction and training capabilities.

Though clearly based on the CID’s earlier assessments, by 1934 Admiralty plans accepted the impossibility of providing an efficient auxiliary A/S force at all Empire ports on the outbreak of war. Having predicted that the Japanese would first concentrate on harassing the passage east of the Main Fleet together

with large-scale operations against Hong Kong and Singapore, the Admiralty sought instead to concentrate forces where the immediate need existed. This scheme gave priority to naval ports and, in particular, those along the Main Fleet's deployment route to the Far East. Since the finite enemy fleet would be fully engaged in these early operations, British planners felt that IJN submarines would not mount more than occasional attacks on mercantile ports until after the Main Fleet's arrival at Singapore. Even then, they did not expect 'distinct pressure' until after the Japanese could supplement their submarine fleet with a large program of wartime construction. The training of crews, rather than the building of submarines, would be the main enemy constraint, and the ensuing delay would allow the British to gradually build up local defence forces.³¹

The British thus planned a graduated response to the threat, and one that would not require full implementation until the war situation demanded. Anti-submarine activities during the 'precautionary period', between the receipt of the warning telegram and the outbreak of war, would be governed by the number and type of small craft within the pre-war organisation. 'Stage I' requirements, which followed the outbreak of war, would be met by the addition of vessels immediately requisitioned. 'Stage II' would be an intermediate period of expansion and lead to 'Stage III', when full resources became available.³² Like the Japanese effort against commerce, the requirements of this final stage would necessitate extensive new construction and war-trained personnel. Trawler type vessels, however, were far easier to construct and man than submarines.³³ They would thus cause relatively less impact on the British Empire's overall war effort.

The Admiralty at first planned to complete Stage I solely from locally obtained resources. The Australian situation was not unique, however, and it soon became apparent that no overseas command had made sufficient progress towards acquiring vessels or instituting training.³⁴ As we have seen, the RAN already hoped to obtain additional minesweepers from British home waters and, since at least 1927, the Royal Navy had planned to dispatch overseas some 100 asdic-fitted trawlers on the outbreak of war.³⁵ The highest priority ports and their allocation of auxiliaries included: 40 vessels for Singapore, Penang and Hong Kong; 25 for ports in Ceylon, Aden and Burma; and 13 for the Suez Canal/Red Sea area. The Australia Station ranked fourth with an allocation of 23 trawlers. A further two vessels were to arrive in Australia as part of a second batch of 100 craft taken up within the first few months of war.³⁶ Together, the 200 trawlers brought all Empire ports up to Stage II

requirements (see Table 4.2). Clearly, Australia’s anti-submarine defence would depend heavily on Admiralty reinforcement. Until the trawlers arrived, local auxiliary A/S vessels could only ‘operate as best they can with gun and depth charge.’³⁷

The overall plan also depended on the availability of sufficient asdic sets, and for most of the 1930s this remained a fundamental weakness. The decay in British industrial and technical skills after the Great War ensured that the Admiralty had great difficulties implementing any of its interwar rearmament schemes.³⁸ Delays in development meant that the Royal Navy could not introduce the first simplified asdic set—the Type 122—until 1933. Only 10 were supplied to the trawler reserve before the Type 123 superseded it in 1934. The Type 123 eventually became the standard set in auxiliary vessels, but at first the Admiralty authorised only 20 prototypes. Not until 1938 did it propose an additional bulk order of 100 sets, or even issue detailed fitting instructions for the sets, depth charge throwers, rails and guns needed in requisitioned vessels.³⁹ Even then, the Admiralty did not expect production delays in one vital component to be overcome until the end of the year.⁴⁰ The Naval Board must have had some awareness of the Admiralty’s problems but, despite the reinforcement scheme’s obvious local limitations, had yet to encourage any greater sense of concern or urgency in the RAN.

Table 4.2 – Australian requirements for auxiliary A/S vessels, 1934

| | Stage I | Stage II | Stage III |
|-------------|---------|----------|-----------|
| Port Darwin | 3 | 6 | 11 |
| Fremantle | 4 | 6 | 8 |
| Adelaide | 3 | 6 | 6 |
| Bass Strait | 9 | 9 | 18 |
| Melbourne | 3 | 3 | 6 |
| Sydney | 3 | 6 | 6 |
| Newcastle | 4 | 6 | 8 |
| Brisbane | 3 | 4 | 6 |
| Total | 32 | 46 | 69 |

Source: PRO: ADM 116/4002.

Strategic perceptions

Technical problems offer only a partial explanation for the delays in trawler asdic, and it is also necessary to consider anti-submarine policy in the wider context of naval thinking. It is generally understood that the global naval balance was calculated according to relative strength in capital ships. Unlike the behemoths, auxiliary vessels were relatively quick to requisition or build, and could be manned at short notice by reserves. When combined with British strategic guidance that no substantial war could be expected within 10 years, one should not be surprised that the battlefleet maintained centre stage and pushed both trade protection and local defence measures to the wings.⁴¹ Hence, despite the paper plans to reinforce overseas ports, even the time required to dispatch and then work-up the auxiliary A/S vessels was regarded as a secondary matter and did not appear as a possible delaying factor in the Main Fleet's movement schedule to the Far East.⁴²

While imperial rhetoric continued to hold up the imperial navy as the 'shield of Empire', it should be no more surprising that the Commonwealth remained happy to rely on its deterrent value. Preoccupied with reducing taxation and balancing the budget, the Australian Government was certainly not keen to finance a comprehensive defence scheme.⁴³ In fact, as one contemporary naval observer remarked, 'There was no real desire or intention to do more than pretend to make provision for defence.'⁴⁴ Permitting the emasculated RAN to cooperate closely with imperial schemes thus fulfilled both the political imperative for an independent contribution to Empire defence and allowed the government to avoid looking too closely at specific inadequacies. In 1933, Defence Minister Pearce was able to identify Australia's greatest strategic vulnerability and shift responsibility elsewhere, all within a few lines:

To people who have not made a study of war, aggression signifies a direct attack upon the country. . . . But there is a far greater and more probable threat against the Australian people, and that is an attack on their trade. . . . Against attack on her sea-borne trade we have only one defence,—an efficient and powerful Empire Navy—and it is clear that Australia must rely on the power of the Navy to defend her against aggression.⁴⁵

Unknown to Pearce, however, in Britain the National Government was shortly to place its defence emphasis upon air strength rather than naval power. Consequently, by 1938 the Royal Air Force (RAF) had risen to first service in terms of defence allocation, and as Professor Kennedy has observed, the Royal Navy's 'claim to be the Senior Service had . . . been rejected.'⁴⁶

An understanding that the strategic priorities of Britain and Australia were again moving further apart would come to the players only gradually. Germany did not replace the Far East in British strategic policy until late 1934, and it took far longer for the Admiralty to regard the weak German Navy as more than a distraction.⁴⁷ Furthermore, for much of the period the British refused to share significant intelligence with Australia.⁴⁸ Most exchanges were purely factual, little consultation took place, and the Commonwealth only received indication of the United Kingdom's policy on any great question 'after it [was] finalized, agreed and almost unalterable.'⁴⁹ The Naval Board also knew that without the full support of the Admiralty and British Government they would not get their recommendations passed by their own Defence bureaucrats and politicians.⁵⁰ Consequently the ACNB generally argued that by dispatching the RAN's most modern ships to Singapore, Australia was directly contributing towards its own security and employing its naval forces to their best advantage.⁵¹ Certainly, the interwar RAN had only limited scope to exercise strategic initiative.

There were, of course, times when the Australians did make known their concerns. At the 1934 Singapore Naval Conference—held to coordinate the war orders of the China, East Indies, Australia and New Zealand Stations—the British expected flag officer discussions to focus on the concentration of naval forces and the defence of Singapore. Australia's local defence measures remained a national responsibility and so did not rate a mention on the agenda, while the protection of trade before the Main Fleet's arrival was placed well down the list of items for discussion.⁵² The CNS, now Vice Admiral Sir Francis Hyde, represented Australia and was not happy to find that the 'Report of the Conference' had, for all practical purposes, been drawn up before his arrival. The senior Admiral and Chairman, Admiral Sir Frederick Dreyer,⁵³ apparently 'got something of a shock when he found that Admiral Hyde ...was not in agreement on many points, and wished them and many others on which they only partially agreed, to be discussed fully.'⁵⁴

One of these points concerned the lack of preparedness in the matter of anti-submarine measures for trade protection. Prevailing Admiralty doctrine did not expect an escorting vessel to prevent a torpedo attack on a mercantile convoy. The expectation was rather that the act of firing would serve to localise the submarine, which would then be sunk during the subsequent asdic hunt. Unable to sustain the heavy losses imposed, the adversary would be forced to abandon his campaign and 'the object will ultimately be achieved by moral effect.'⁵⁵ Notwithstanding the Admiralty's overestimation of asdic efficiency

in hunting operations, the German withdrawal from the Atlantic in May 1943 would demonstrate that attritional tactics did have some validity against a European foe.⁵⁶ In the Pacific, however, the unique character of the Japanese submariner was already well established and might require a different approach. As the final report of the Singapore Conference warned:

If we went to war with Japan now, her 62 submarines would for a considerable period have as free a field as if asdics (the only efficient counter to the submarine) had never been invented. We remember that in 1917 the submarine in the hands of officers, many of whom suffered from nerves, came within an ace of bringing England to her knees, and are of the strongest opinion that no expense should [be] spared in anti-submarine measures in order to meet the modern submarine in the hands of men who have no fear of death.⁵⁷

Likewise, although the Australian Cabinet confirmed local defence only needed to be sufficient against raids, there still remained nagging doubts over the Commonwealth's economic vulnerability, and specific concerns that imperial authorities might not be making adequate preparations to defend Australian commerce. As early as the 1932 Ottawa Conference—called by the Canadian Government to deal with the economic problems of peace and imperial preference—the Australian delegation had made a point of bringing up the protection of trade in wartime as a fundamental strategic issue.⁵⁸ The following year, in its first major defence statement, the newly elected United Australia Party again raised the subject. Prime Minister Joseph Lyons highlighted that the volume of the Commonwealth's coastal trade was actually slightly larger than its overseas trade, and even accepted the need to strengthen coastal and short-range defences.⁵⁹

Loan destroyers, sloops and rearmament

The 1934 Singapore Conference prompted some action in the Far East. Specifically, the discussions had highlighted the inadequate strength of the naval forces maintained in the area and, as a result, each squadron agreed to enhance its degree of preparedness.⁶⁰ For the RAN this meant increasing cruiser and destroyer ammunition stores, including depth charges, from peacetime levels up to a full war outfit. Unfortunately, funding constraints ensured that there was neither a comparable increase in the practice ammunition allowance, nor any practical means of increasing anti-submarine proficiency.⁶¹

The RAN nevertheless managed to enhance its force structure at comparatively little cost. In 1934, the flotilla leader HMAS *Stuart* and four 'V & W' class

destroyers (*Vampire*, *Voyager*, *Vendetta* and *Waterhen*) arrived in Sydney to replace the existing destroyer flotilla. The vessels represented a loan rather than a gift or purchase, and their transfer followed a suggestion made by the CID in October 1932 and gratefully accepted by the Australians.⁶² Although also of First World War vintage, the five vessels had been kept in reserve and were in good order as the Royal Navy had earmarked them for wartime anti-submarine work. Moreover, they were larger and more powerful than the vessels they replaced and would be useful in a variety of escort roles. Still, they were not yet fitted with asdic, and as the Defence Minister would shortly be informed, warships were ‘comparatively valueless’ for ASW unless fitted with a set.⁶³ Notwithstanding this limitation, the ACNB made the most of the opportunity and immediately appointed Spurgeon to *Stuart* as executive officer. In 1935 he found an additional role in the re-established position of squadron A/S officer.

The RAN had started down the rearmament path, but there remained a long way to go. On the positive side, by 1933 the Government’s tight financial program had resulted in a £6 million budgetary surplus. In December that year, the Minister for Defence, Senator Pearce, announced the first in a series of rearmament programs. As might be expected the RAN received the largest share, with one of the more significant items the provision of £280,000 for a locally built sloop. Although a sloop was not a specialised A/S vessel, the ACNB saw it as an effective training platform and hence a useful peacetime adjunct to the squadron.⁶⁴ Nevertheless, the acquisition still reflected imperial rather than specifically Australian planning considerations. The Admiralty regarded sloops as useful general-purpose escorts and minesweepers, and suggested that these and cruisers might be the ‘best and most economical contribution the Commonwealth could make to the common naval defence of the Empire.’⁶⁵

Outside the service the vessel’s role generated little interest. One politician doubted whether the ship was necessary—suggesting that it would be better to build merchant ships—but most discussion concentrated on the employment opportunities provided by local construction.⁶⁶ Presumably to reinforce this perception and divert potential criticism, another ministerial statement in May 1934 announced the construction of a further sloop in Australia simultaneously with the decision to build a modern light cruiser in the United Kingdom. The sloops, soon to be known as HMAS *Yarra* and *Swan*, displaced 1060 tons, had a top speed of 16.5 knots and were similar to the British *Grimsbey* design. Like the destroyers and cruisers they carried depth charges, but their

main armament was intended primarily for defence against air and limited surface attack.

The other two services also benefited from increased spending but, as Lyons had forecast, with far greater emphasis on the seaward defence of ports. The revised Army estimates went towards the provision of fixed coastal and anti-aircraft guns, while RAAF augmentation included funds to expand the naval cooperation flight.⁶⁷ The Naval Board still felt that the new construction program for seagoing vessels was insufficient. Ignoring the Admiralty's suggestion to improve seaward defences, the ACNB delayed the acquisition of a reserve of equipment for fitting into requisitioned vessels. As late as June 1936, in response to a ministerial query, the Naval Board reported that it had made no provision for seaward defence in its existing program.⁶⁸

Advances in doctrine and RAAF cooperation

The lack of asdic and appropriate targets remained the main practical barrier to an Australian anti-submarine organisation, but the Navy did continue with its doctrinal development. Most important was the realisation that local naval measures could not deal effectively with the sub-surface threat on their own. Intelligence reports had identified the improving capability of Japanese submarines and the growing number that could carry aircraft. Thus, in addition to a port and its approaches, anti-submarine defence needed to expand to include those outer areas necessary to prevent enemy airborne reconnaissance.

By the mid-1930s, the RAN had adopted a layered but integrated anti-submarine defence, a unique achievement for a dominion navy and an important indication of its intellectual development. Seaward defence in the vicinity of a port would consist of mobile surface patrol, either independently, or in conjunction with fixed defences. In the port approaches, auxiliary A/S vessels would assure the safety of shipping through surface escort. Overlapping and extending further out to seaward would be an air search regime combined with offensive surface action against any submarines sighted. The need to cooperate with RAAF aircraft and hunt in outer areas away from a port in turn pointed to the need for specialised A/S vessels. The craft to be requisitioned for local defence would neither be fast enough nor offer adequate command and control facilities. Hence, the RAN still envisaged the employment of skilled 'striking forces', organised and trained specifically for ASW and based close to the expected submarine operating areas.

Like its overestimation of asdic effectiveness, there is a general perception that between the wars the British Admiralty disregarded the role of aircraft in ASW.⁶⁹ While neither observation is entirely unfounded, one should not overstate the case. The topic of 'Aircraft co-operation' was regularly raised in the annual Royal Navy reports.⁷⁰ Certainly, RAN planners recognised aircraft cooperation as vital. In particular, though air and naval activity of any kind might hamper submarine operations, trials had shown that asdic's relatively short initial detection range of 1500 yards still made it an inefficient search tool.⁷¹ Consequently, Admiralty advice and RAN staff deliberations reiterated that submarines would have little difficulty in evading asdic once they became aware of the approach of A/S vessels. The key to offensive action instead lay in the ability to sight and localise the intruder and, in the absence of the cueing information provided by a torpedo attack, this could only be expected from aircraft.⁷² Only after the submarine had been localised could asdic-equipped vessels effectively take over the hunt.

Unfortunately, the continued debate over the correct balance between Empire defence and local defence, and struggles for limited finance had done little to engender an atmosphere of cooperation between the services. Since at least 1925, the Chief of the Air Staff (CAS) had claimed that air power alone could control Australia's sea communications.⁷³ At various times the RAN found its independent existence threatened as the RAAF pushed hard to assume the Navy's traditional role as Australia's first line of defence. 'The ideal of an Australian Navy has nothing really to recommend itself as a national institution', began one assessment:

With the big developments in Naval Disarmament policies, it is hardly justified, having regard to the financial position, and the marked advantages of employing a British Squadron, when the greater and only duty is co-operation with the British Navy. The opportunity is now open to the Australian Nation to develop the Air Force as a national institution of primary importance.⁷⁴

Comments like these demonstrated little appreciation of the problem or of the breadth of the RAN's tasks, but the Navy had never been good at explaining its independent functions. At a meeting on 20 March 1930, the Chief of the General Staff likewise proposed abandoning the RAN in favour of a return to a system of monetary payments to Britain. This idea gained political favour as the Great Depression worsened. Fortunately for the RAN, the Labor administration as a whole supported the policy of participation in Empire Defence and the maintenance of the RAN as an independent—albeit token—contribution towards that defence.

But even more divisive, as it turned out, was the relatively unsophisticated nature of the RAAF's doctrine. Air power has invariably been portrayed as an essentially offensive weapon, and the RAAF based its independent role on the ideal of the massive application of airborne firepower and the physical destruction of any threat posed to Australia.⁷⁵ Missions deemed 'defensive' were not afforded a high priority. As such, and despite a 1932 Cabinet decision that Australia's total air strength should be governed only by naval and military requirements, cooperation in the wider defence of sea communications developed only fitfully.⁷⁶

The Air Board, for example, expected RAAF maritime reconnaissance operations to be directed mainly at watching and furnishing timely information on the approach of any large enemy fleets from the north. The Naval Board, on the other hand, held that the primary role of the RAAF's general reconnaissance (GR) aircraft must be to defend trade, and as war approached sought assurance of close cooperation.⁷⁷ The Air Board appeared anxious to assist, but would not accept the principle of specifically allotting aircraft for one operational function, preferring instead the freedom to move aircraft to wherever the threat existed. The Air Board also noted its unwillingness to believe that the Service Chiefs, in consultation, would not agree on the most efficient disposal of forces.⁷⁸ The Navy was not so confident, but decided to let the matter rest. As a result, many issues surrounding doctrine, procedures, and command and control remained unresolved at the outbreak of war.

The first Australian asdic sets

RAN anti-submarine plans were evolving, nonetheless, and it remained only for equipment capability to catch up. A not unexpected recommendation of the 1934 Singapore Conference had been that the RAN should equip all its destroyers with asdic.⁷⁹ Despite this intention, it was actually a cruiser that acquired the first set. In late 1934, the Admiralty recommended the fitting of a Type 121 asdic in HMAS *Sydney*, the 6-inch gun cruiser then under construction in England. The total cost, including structural alterations, came to approximately £4000 and represented a relatively small increase to the building cost of £1.45m.⁸⁰ The Royal Navy had introduced the Type 121 in 1931 as a destroyer hunting and attack set, and at the time it marked a major advance in technology. Fitted with a mechanical distance finder, the Type 121 was the first set with fully gyro-stabilised electrical training (making it independent of the ship's yawing) and a retractable streamlined dome.⁸¹

The Naval Board sought Spurgeon's comments on the Admiralty's proposal, and he replied that the primary use of asdics would remain in local defence vessels and destroyers. Although cruisers and sloops might also need asdic, this would occur only if they should come within striking distance of a submarine.⁸² Hence the advantages accruing to the RAN were seen not so much in providing the capability in *Sydney*, although it would assist with navigation, as in the more general information provided by trials and training in Australian waters. Furthermore, by using the set as a guide, Spurgeon expected the equipment to assist with later attempts to fit other sets locally.

As the Singapore Conference had shown, Admiral Hyde had changed his mind on the usefulness of a squadron A/S capability since his term as CCAS in 1926.⁸³ In November 1934 he reported to Sir Archdale Parkhill, the new Defence Minister, that the Naval Board attached 'considerable importance' to the proposal to fit *Sydney* and strongly recommended the asdic installation.⁸⁴ To forestall any objections based on the lack of a local submarine, Hyde reversed the ACNB's previous policy and added recent Admiralty advice that operators could obtain effective results from other types of asdic target. Although lacking detail, this answer seems to have successfully deflected further political probing. Nevertheless, within Navy Office the issue of targets remained unresolved. Various options were discussed including the arrangement of a regular exercise program with submarines from the China Station.⁸⁵

Parkhill approved the proposal to fit *Sydney* with asdic, but the cruiser did not receive the Type 121. Instead, in 1936 she became the first British ship fitted with the Type 125 set. This was essentially the same as the Type 124 destroyer asdic (itself an update of the Type 121), but with the attack range recorder replaced by one designed for echo sounding.⁸⁶ As we have seen, the RAN's close relationship with the Royal Navy allowed privileged access to advanced equipment, and the *Sydney* fit represented another step in a wider experimental program aimed at determining the tactical need for a defensive cruiser asdic.⁸⁷ Owing to its deeper draught, *Sydney*'s Type 125 was quite successful both as an asdic-on 13 June 1940 the cruiser claimed a kill on a sub-surface contact located by 'position and depth'—and an echo sounder, but it remained an oddity. The set was fitted in only one other warship, the survey vessel HMS *Stork*, and there is no evidence that the RAN ever employed *Sydney* in any serious experimental role.⁸⁸

Instead the sloops *Yarra* and *Swan* assumed the mantle of trials vessels, although this occurred outside the squadron's regular exercise program and only after they began equipping with asdic in July–August 1938.⁸⁹ Having entered service in 1936 and 1937 respectively, the sloops at first operated as independent commands, training reservists from the capital cities in mine-sweeping, gunnery and seamanship. While still without asdic, ASW training was described as 'rudimentary at best'.⁹⁰ When sets were finally acquired the solution bore similarities to the *Sydney* experience. The Admiralty provided the unique Type 126 set, comparable to a Type 123, but adapted as a deep-water echo sounder through the fitting of a reflecting plate in the dome and the use of a combined range and echo-sounding recorder.⁹¹ Both British and Australian documents, however, continued to refer to the sets as Type 123 and the modifications did not limit effectiveness.

Increased local defence measures

Meanwhile, and somewhat erratically led by the Opposition leader, John Curtin, calls were still growing in Australia to increase spending on local defence. As always, public details on the expected threat tended to be sparse, and Curtin also urged the equal importance of expenditure on social services. Rather than enemy submarines or surface raiders, Curtin concentrated on the perennial fear of invasion and major bombing raids.⁹² Privately, government leaders had also begun to have misgivings. In the face of the worsening international situation, they stepped up the defence program pending consultations at the Imperial Conference in July 1937.⁹³

The British were aware of the increasing demands to provide for local defence and, to maintain Australian support, attempted to emphasise their strengths rather than their weaknesses. They reiterated their intention to get the Main Fleet to Singapore and, while admitting the delay might now be three to six months, expressed complete confidence in the island's capacity to hold out for that period if necessary. The conference discussions have since been euphemistically described as being 'injudiciously optimistic rather than disingenuous'.⁹⁴ The practical result, however, was the continued failure by Australian authorities to appreciate both the limits imposed by Britain's own lack of preparation for war and the shift in imperial strategic priorities to the European threat posed by Germany. Officially, Australia determined to continue 'a blending of Empire Defence and Local Defence on the lines of her present policy.'⁹⁵ The assessment remained that it would be impossible for Australia to deal with Japan single-handed, yet the vulnerability of local ports endured as a highly visible weakness.

The tide had nevertheless turned. In 1935 the ACNB arranged for hydrographic surveys of the proposed harbour loop sites and then submitted the results to London for confirmation. The Admiralty made no objection and, by May 1937, had provided details on the manufacture, operational life, laying, and estimated costs of loop cable.⁹⁶ In the same year, the Admiralty agreed to provide training for a RAN officer in boom defences, arranged for the visit of a specialist officer to examine local measures, and subsequently undertook the design of the Fremantle and Darwin defences.⁹⁷ The Australian defence estimates approved in September 1937 again increased naval expenditure. In addition to improving cruiser effectiveness, the budget finally made provision for an anti-submarine organisation, the latter designated by the ACNB as giving effect 'to measures which have as their object the strengthening of the local seaward defences of Australia.'⁹⁸ Government authorisation extended to detection equipment, anti-torpedo (A/T) booms, and three seaward defence vessels, together with a local A/S School to cater for the increased reserve-training load.

The subsequent equipment order included ten Type 123 asdic sets for auxiliary A/S vessels, five Type 127 sets to equip *Stuart* and the 'V & W' destroyers as escort vessels, indicator loop equipment for Sydney, Darwin and Fremantle, and training equipment for the A/S School.⁹⁹ The ACNB estimated the total cost at £93,425, of which £65,625 represented the loop equipment.¹⁰⁰ Financial provision also included an increased allowance for the specialist training of permanent officers and ratings, and in 1938 Lieutenant G. Knox¹⁰¹ became the first RAN officer in 10 years to graduate from the Portland long A/S course. Finally, to provide an immediate capability enhancement, the ACNB authorised the conversion of the survey sloop HMAS *Moresby* to anti-submarine duties.¹⁰²

In expectation of the government announcement, preparations within Navy Office had been underway for some months. The Director of Signals and Communications (DSC), Captain E.H. Harvey, RN, submitted the draft equipment order to the acting First Naval Member, Commodore G.P. Thomson¹⁰³ on 27 October 1937 and had it approved the same day.¹⁰⁴ The Admiralty's response was equally swift. By the end of November, the British had confirmed that most of the equipment could be provided before the middle of 1938. Their only comment on the Australian order was to suggest the additional acquisition of six mobile targets at £990 each.¹⁰⁵ A series of design problems—the targets were at first too small to give a reasonable echo size—had meant these were yet to reach production but, with the arrival of a new First Naval Member on 1 November 1937, the ACNB felt ready to accept the risk.¹⁰⁶ The appointee, Vice Admiral Sir Ragnar Colvin,¹⁰⁷ had previously been

President of the Royal Naval College at Greenwich and was familiar with the latest thoughts on naval training. As he remarked the following January: 'Mobile targets are the next best thing to an actual submarine' and without them 'asdic operators cannot reach even a moderate standard of efficiency.'¹⁰⁸

Of final interest, the Admiralty's reply had noted an increase of £15,375 in equipment costs over the RAN's approved estimates. Finances were still extremely tight and, added to the additional cost of the mobile targets, this increase might have caused cancellation of the program or, at the very least, further delays. Fortunately, there remained £18,000 of the money earmarked for destroyer asdics in 1924 still available in London.¹⁰⁹ How the RAN managed to retain this surplus through a period of extreme financial stringency remains unexplained, but the Naval Board appears to have regarded its discovery as a windfall rather than as a hidden reserve.

Preparations and loop systems

The RAN hoped to fit the destroyer asdics as soon as practicable, the modifications being similar to a British package already underway for selected 'V & W' class vessels in their own fleet.¹¹⁰ The ten trawler sets were another matter, as most would not be needed until the outbreak of war. There remained, however, a mismatch between resources and requirements. The Admiralty had recently increased the Australian Stage I requirement to 34 auxiliary vessels and, at least on paper, expected all these to be fitted out in Australian ports. The ACNB subsequently allocated one set to the first of the proposed seaward defence vessels, which was due to become the Boom Working/RANR training vessel in Sydney, and another set to the proposed A/S School. They divided the remaining sets between Sydney (5) and Fremantle (3), confirming these as the most important ports.¹¹¹

Sydney similarly received priority for indicator loop equipment, but the forecast arrival of shore station instruments and cables in the second half of 1938 offered further evidence of lapses in planning. In May, just two months before the delivery of the instruments, Esdaile—since March 1938 the senior commander on the naval staff—warned Colvin that the RAN had yet to acquire land on which to erect a shore station.¹¹² The ACNB had investigated possible sites as far back as 1927, and even made tentative arrangements with the Military Board to acquire land at South Head, but since that time the Army had made many alterations to its coastal defences.

The Naval Board took rapid steps to rectify the situation. It selected Spurgeon to reconnoitre the site in conjunction with a representative of the Military Board.¹¹³ When operational, the Sydney indicator loop system was to consist of two units each comprising three loops operating from a single shore station, and the two officers agreed that a vacant emplacement on the highest point of South Head Military Reserve offered the best control position (see Figure 7.4).¹¹⁴ Although Fremantle had yet to be fully investigated, by June 1938 the naval staff had concurred to the Sydney site and recommended that Darwin's loop station should be situated at East Point.¹¹⁵

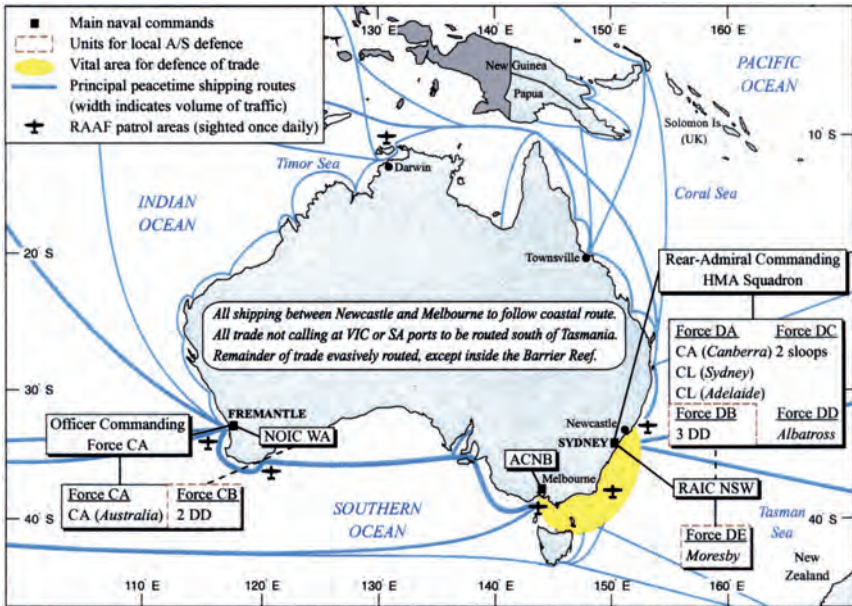
Revised war orders and wider ASW issues

Meanwhile, the naval staff continued their analysis of anti-submarine plans in the wider Australian area. With the expected acquisition of an enhanced capability and the political push to give greater attention to local defence, there was undoubtedly a shift in the direction of RAN operational planning. This was a shift, moreover, that was assisted by a fundamental change in the wartime tasking of the major units. Prompted by continuing uncertainty as to when, or even if, the Commonwealth Government would release Australian warships, in 1938 the Admiralty decided to remove their role in the immediate reinforcement of Singapore. Subsequently the RAN's first object in a war against Japan became the defence of trade in Australian waters and to act as a deterrent against coastal raids.¹¹⁶

The RAN's revised war orders divided the squadron between the east and west coasts with command allocated to RACAS and Commodore Western Australia respectively. Naval opinion held that the cruisers were quite capable of dealing with surface raiders alone, so the destroyers lost their primary squadron tasks of providing either a close anti-submarine screen or an extended reconnaissance capability. The naval staff instead opted to concentrate all vessels with an anti-submarine role where they would most likely be required and decided their control could best be exercised directly by the respective area commanders (see Figure 4.1).¹¹⁷

Thereafter, Australian planners identified three primary anti-submarine duties: local defence, striking forces and convoy escort.¹¹⁸ Local defence still consisted of patrol in the approaches to harbours and the escort of ships entering and leaving. So long as the enemy waged his submarine campaign in accordance with international law, local defence would be the primary duty undertaken by all RAN A/S vessels. The organisation of 'striking forces' was in contrast classified as an offensive mission, but considered a secondary duty, and

Figure 4.1 – War orders for HMA Squadron, February 1938



Source: NAA: MP1049/9, 1933/2/114.

dependent on there being sufficient surplus vessels with a specialised A/S capability. The third duty, convoy escort, would only be necessary if, contrary to international law, the enemy decided to adopt unrestricted submarine warfare. In this case auxiliary A/S vessels would solely carry out local defence duties, leaving the sloops and destroyers to be employed as convoy escorts. Similarly the only 'striking forces' retained would be those not required as convoy escorts.

This was the theory, but the boundaries between local defence, trade protection and offensive operations were already blurring and showed that flexibility in the employment of vessels would definitely be needed. It is also important to note that the institution of convoy was not automatic. Although they offered protection to the participants, the formation of convoys was an intricate business that required an intimate knowledge of local and overseas shipping movements, tight control, and a far greater workload from NCS staff.¹¹⁹ The Naval Control Service Manual was unequivocal: 'though convoy is the ideal

form of protection against certain forms of attack, it entails delays of ships, dislocation of port facilities and complicated organisation.¹²⁰

By using diversified routing, opening new routes or diverting ships on their assigned routes, naval authorities hoped to actively avoid enemy attack without the institution of convoys. Evasive routing thus remained the first and most fundamental measure for the protection of trade, and convoys would be adopted only if sinkings became excessive and sufficient escorts were available. Nevertheless, recognition of the value of convoy and the preference for the escort role over purely offensive operations represented one of the more fundamental statements of anti-submarine doctrine. This policy was equally applicable to both air and surface forces, but as we will see it became a source of continuing friction between the RAN and RAAF.

ASW planning and new construction

The RAN still needed to integrate its plans into those of the Admiralty, but rather than ‘Stages’, the naval staff divided the progression of the RAN’s anti-submarine campaign into ‘Phases’. Phase I would last from the outbreak of war until the first batch of auxiliary A/S vessels were commissioned and worked up. During this period the priority ports were listed as Sydney, Melbourne (including Bass Strait), Fremantle, Newcastle, Brisbane, Adelaide and Hobart. Darwin was omitted, as the latest Admiralty war orders for the Far East envisioned the basing of a Royal Navy destroyer flotilla in the north as part of a Timor Sea patrol. The port’s naval defence, therefore, would not rest with the Naval Board, but with an Admiralty-appointed Flag Officer.¹²¹

Phase II extended from the end of Phase I until the enemy adopted unrestricted submarine warfare. Thereafter the ACNB would institute convoy sailing and base striking forces at ports in the same priority order as Phase I. Phase III would begin once trade was in convoy and sufficient convoy escorts were available on the Australian shipping routes. At their existing strength the RAN’s specialist A/S vessels would be distributed to the three priority areas shown in Table 4.3. However, the discussions that took place within Navy Office and with the Admiralty in the late 1930s left no doubts concerning the RAN’s overall shortage of appropriate craft.

Table 4.3 – Planned distribution of Australian specialist A/S vessels, 1938

| Phase | Base | Vessels | Duties |
|-------|--------------|---|---------------------|
| I | Sydney | <i>Stuart</i> and 2 destroyers | local defence |
| I | Melbourne | <i>Yarra</i> <i>Swan</i> <i>Moresby</i> | local defence |
| I | Fremantle | 2 destroyers | local defence |
| II | as above | as above | A/S striking forces |
| III | as necessary | as above | A/S convoy escorts |

Source: NAA: MP1049/5, 2026/2/152.

Notwithstanding the priority still accorded battlefleet operations, the 1935 Abyssinian crisis had brought home to the Admiralty the danger of confining the fitting of asdics to fleet destroyers and submarines. Not only was the existing focus on auxiliary A/S vessels and local defence an inadequate response to the submarine threat, but after war broke out it would be ‘many months’ before sufficient specialist A/S forces were available for open-ocean trade protection.¹²² The wider acceptance of ASW as a worthy role for permanent naval forces was still some way off, but some indications appeared that previous perceptions were changing. For the RAN, one of the first of these signs was the Admiralty’s 1937 recommendation that, in addition to vessels suitable for service in the decisive theatre of the war, the Australian Squadron should comprise further specialist vessels for service against submarine activities in local waters.¹²³

The RAN had yet to make a decision on the level of A/S capability required by a new vessel, but a £50,000 provision existed in the 1936–37 estimates for advance work. A more fundamental question, however, concerned the type of vessel to acquire. Both the Admiralty and ACNB agreed that cruisers were Australia’s primary naval requirement, but they disagreed on the type best suited for local ASW. The Naval Board initially wanted destroyers because of their versatility, but the Admiralty suggested two additional sloops (now reclassified as escort vessels), somewhat redesigned to provide a greater degree of anti-aircraft protection.¹²⁴

Still, no-one doubted the need for further construction or, more importantly, that local requirements should in future take priority over imperial. In February 1938 even Captain John Collins,¹²⁵ more usually portrayed as ‘vigorous Anglophile’,¹²⁶ warned that Australia’s immediate needs were for the local defence of port approaches and coastal sea-lanes. Collins had spent the years 1933–34 in the Admiralty Plans Division where he had been responsible for planning the seaward defences of Empire ports. He was therefore very familiar with the Admiralty’s plans to requisition hundreds of vessels for local defence duties. Appointed ACNS and Director of Naval Intelligence (DNI) in January 1938, he claimed to have been somewhat surprised to find that the RAN had no corresponding pool.¹²⁷ In concluding that the RAN needed at least 18 new coastal A/S craft, Collins cautioned that ‘we are proceeding uneconomically by contemplating building a few more ocean-going escort vessels.’¹²⁸

Others in Navy Office went still further. In March 1938, Esdaile highlighted that even during Phase II the available specialist vessels were both too few and too widely separated to be a real menace to enemy submarines. Taking this phase as a basis for calculation, and not including requisitioned auxiliary A/S vessels, the naval staff estimated that the RAN needed 42 specialised vessels to establish an effective system of ‘striking forces’. As Esdaile remarked on the file:

This calculation gives a number which, at present, it is quite impossible even to consider ... the conclusion to be drawn is that for any money expended on new vessels the aim should be to obtain the greatest number of vessels that are capable of performing efficiently the A/S duties required of them. An elaborate gun and torpedo armament is not required by A/S vessels working in Australian waters.¹²⁹

The problem was the classic one of quality versus quantity, for the estimated numbers were far in excess of programming considerations. Destroyers possessed high speed and good manoeuvrability and, when fitted with asdics and a large depth charge armament, made good striking units, but their manpower-intensive gun and torpedo armament made them inefficient as escorts. By contrast, sloops could play a useful general purpose escort role, but their comparative slowness and large turning circle made them less suitable when employed as striking forces, and again they were uneconomical in their armament manning.

Table 4.4 – Australian requirements for specialised A/S vessels,
March 1938

| Area | Main base | Operating bases | Number of vessels |
|---------------------|-----------|--|-------------------|
| Sydney | Sydney | Sydney Newcastle Port Kembla | 9 |
| Bass Strait | Melbourne | Melbourne Corner Inlet Twofold Bay Launceston | 15 |
| Southwest Australia | Fremantle | Fremantle Albany | 6 |
| Brisbane | Brisbane | Brisbane | 3 |
| Adelaide | Adelaide | Adelaide Gulf Ports | 6 |
| Hobart | Hobart | Hobart | 3 |
| Total | | | 42 |

Source: NAA: MP1049/5, 2026/2/152.

The Naval Board sought Admiralty advice on an economical specialised design but, chiefly for reasons of poor sea keeping and heavy armament, rejected the *Black Swan*, *Kingfisher* and improved *Halcyon* classes proposed. The Munich crisis, however, brought home the dangers of further procrastination. Thereafter, the short-term availability of expertise and equipment counted for far more than an agreed level of capability. Although Captain Collins had earlier compared the solution to using a ‘steam hammer’ to crack nuts, the sloops *Yarra* and *Swan* accorded with Admiralty advice and represented a proven Australian construction capability.¹³⁰ After brief consideration within Navy Office the ACNB selected a repeat of *Swan* as the nearest approximation to meeting conflicting requirements.¹³¹ The government subsequently approved two additional sloops, HMAS *Parramatta* and *Warrego*, with completion expected by early 1940. A separate decision to augment the destroyer force required further lobbying. The RAN wanted four destroyers but, in the face of competing requirements from the other two services, could only obtain government authorisation for two. In January 1939, the ACNB ordered a pair of modern ‘Tribal’ class vessels, powerfully armed for both surface and sub-surface warfare.

Auxiliary A/S vessels and expansion plans

So long as the force of purpose-built vessels was insufficient, an expansion in the role of auxiliary A/S vessels was unavoidable. Notwithstanding Collins's comments, the RAN had maintained regular checks on the state of Australia's merchant fleet. A survey by Spurgeon in early 1938 confirmed that a number of small vessels could be spared for war work without any appreciable loss of trade.¹³² There remained considerable limitations, however. First, although the Stage I numbers were satisfactory, many vessels could only be regarded as makeshifts until better craft became available. This applied particularly to those earmarked for local A/S 'escort' duties (previously called 'outer patrol') where they would need a deck gun.¹³³ Second, the RAN had made no arrangements for meeting Stage II requirements from local resources, or for replacing losses.¹³⁴ Hence, despite the shift towards local defence the RAN still remained heavily reliant on Admiralty support. Finally, Spurgeon had noted that manpower needs would be greater than anticipated, and that RANR crews would therefore require merchant service assistance to man the earmarked vessels.

The identified ACNB requirement to replace and augment the vessels requisitioned during Stage I rapidly evolved into a request for the design of a 'simple and easily constructed general purpose local defence vessel', one suitable for non-naval shipyards to build locally.¹³⁵ Tentative specifications described a craft of about 500 tons, with a top speed not less than 10 kts, an endurance of at least 2000 nm, and an armament comprising a 4-inch gun, two depth charge throwers, and two depth charge chutes. To ensure its versatility the vessel was also to be capable of working a minesweep. In July 1938, the ACNB sought Admiralty guidance on matters such as dimensions and equipment, but they expected RAN engineering staff to prepare all working drawings. Considering that Navy Office remained a small organisation already involved in a myriad of other projects this would be a major undertaking.¹³⁶

Designing a local defence vessel

As we have seen, the 1937–38 developmental program contained appropriations for three seaward defence vessels. The ACNB had approved the names *Kookaburra*, *Koala*, and *Kangaroo*, and planned to build each as 'Boom Defence Vessels' (BDV), employed in the laying and maintaining of A/S and A/T booms at Sydney, Darwin and Fremantle. A later decision not to proceed with the A/T net in Fremantle reduced the BDV requirement to two. The RAN fitted the first completed vessel, *Kookaburra*, with cable gear and employed her laying the indicator loop system in Sydney, but the ungainly

looking BDVs were not a popular project, and as one staff officer remarked 'the less money we lock up in these immobile defences the better.'¹³⁷

The new A/S School required a tender permanently allocated and, since no suitable vessel currently existed, it made sense for the third BDV, *Kangaroo*, to instead become the prototype for the proposed local defence vessel. In July 1938, the ACNB set the Director of Engineering (Navy) (DE(N)), Engineering Rear Admiral P.E. McNeil,¹³⁸ to the task, and within a fortnight he reported back that a 500 ton vessel fitted with asdic and alternative depth charge or mine-sweeping gear could be built for the £100,000 available.¹³⁹ By means of a quite remarkable in-house design effort, a month later McNeil had provided preliminary plans for comment and had them virtually complete by February 1939.¹⁴⁰

The vessel's revised displacement stood at 680 tons, with speed increased to 15.5 knots and range extended to 2850 miles. With two 4-inch guns, asdic, and depth charges or sweeping gear, the proposed vessel had become a small sloop rather than a local defence craft. Although still too slow to fulfil the specialised anti-submarine requirement, the designers expected good manoeuvrability and a performance about midway between the average small merchant vessel and a destroyer. The estimated cost had increased by only £10,000 and McNeill was clearly proud of his branch's work, remarking that it represented 'the smallest type in which reasonable seagoing qualities and speed for the purposes in view can be combined.'¹⁴¹

Perhaps more importantly, in view of the need for local construction, was that except for armament, navigation instruments, electric cable and boiler tubes, the vessel could be repeated from Australian resources.¹⁴² The ACNB had yet to receive an Admiralty reply to its letter of the previous July, but the Second Naval Member saw no reason to wait in view of 'this excellent design'.¹⁴³ The Admiralty's advice finally arrived in March 1939 and contained plans for two separate anti-submarine and mine-sweeping trawlers, the *Basset* and *Mastiff* classes respectively.¹⁴⁴ Finding these either too slow and unhandy for anti-submarine work or too deep draught for mine-sweeping, DE(N) argued that the proposed *Kangaroo* not only met both requirements better, but could also perform the escort task. The ACNB agreed and found no reason to alter materially the general design.¹⁴⁵

Before the Naval Board could authorise construction, however, a signal from London advised of a change in Admiralty planning. To ensure that the Darwin boom could be worked at all times, the British asked for the permanent



Launch of HMAS *Bathurst* in 1940.
(RAN)

allocation of two BDVs, thus returning the total RAN requirement to three vessels.¹⁴⁶ With the Admiralty still expected to base destroyers in Darwin, the ACNB was in no position to argue. *Kangaroo* reverted to her original BDV specification, and although one staff officer remarked that he would have preferred that the vessel carry ‘a heavier armament for engaging a S/M carrying 2–5.2” guns (Japanese cruiser type)’, the vessel lost any direct anti-submarine role.¹⁴⁷ Instead it became an essential component of harbour defence and, after its completion in February 1940, *Kangaroo* began the laying of the indicator loop systems at Fremantle and Darwin.

Notwithstanding this setback, the design effort for what Captain Thomson expected to be a ‘very useful little ship’ had not been wasted.¹⁴⁸ The question of building one or more prototype vessels had, however, become a separate subject and contingent to the normal procurement process. Consequently, the ACNB did not receive government approval for the construction of the first seven vessels—later known as the *Bathurst* class Australian Minesweepers (AMS)—until September 1939.¹⁴⁹

The eve of war

In early 1939, the Admiralty released a revised assessment on the provision of auxiliary A/S vessels in the event of war in the Far East.¹⁵⁰ The deteriorating European situation received scant attention and the assumptions made concerning Japanese strategy remained virtually unchanged from those of 1934. Planning accepted that Japan would retain the initiative, and stressed the need for the Empire's defensive plans to stay ahead of the enemy's capacity for offence. For Australian trade, the most likely threat would come from enemy cruisers, supported by one or two capital ships, but also including extensive submarine operations.

Policy still dictated two asdic craft as the minimum force for an efficient daylight hunt. A 'unit' of three thus remained the basic tactical grouping, which allowed one vessel spare for rest and refit. A double unit comprised two pairs and one spare vessel. As a comparison between Tables 4.2 and 4.5 illustrates, the Admiralty's assessment of Australia's total requirements had also not substantially altered since 1934, but it did better reflect the RAN's thoughts on an appropriate distribution.

Table 4.5 – Australian requirements for auxiliary A/S vessels, 1939

| | Stage I | | | Stage III | | |
|---------------------------|--------------|--------------|---------------|--------------|--------------|---------------|
| | single units | double units | total vessels | single units | double units | total vessels |
| Darwin | 2 | - | 6 | 3 | - | 9 |
| Fremantle | 2 | - | 6 | 3 | - | 9 |
| Adelaide | 1 | - | 3 | 2 | 1 | 11 |
| Melbourne and Bass Strait | 2 | - | 6 | 5 | - | 15 |
| Sydney | 2 | - | 6 | 3 | - | 9 |
| Newcastle | 1 | - | 3 | 1 | 1 | 8 |
| Brisbane | 1 | - | 3 | - | 1 | 5 |
| Hobart | 1 | - | 3 | 1 | - | 3 |
| Total | | | 36 | | | 69 |

Source: NAA: MP1185/8, 2026/10/604.

The ACNB's dependence on the Admiralty for an adequate allocation of auxiliary vessels remained, but paradoxically, increased tensions with Italy in the eastern Mediterranean and Red Sea helped rather than hindered Australian expectations.¹⁵¹ Unwilling to risk all elements of the main fleet via the Suez route, the Admiralty decided to send those naval forces in the western Mediterranean and home waters to the Far East via the Cape of Good Hope.¹⁵² In consequence the Australia Station's requirements for auxiliary craft moved up ahead of those in the Red Sea and Suez. Although still behind the primary ports in Malaya, Hong Kong and Singapore, and the secondary ports in Burma, Ceylon and Aden, the shift in priority eased some of the RAN's earlier concerns over the provision of adequate numbers.¹⁵³

Notes

1. Lord Jellicoe, *The Submarine Peril* (London: Cassell, 1934).
2. 'Memorandum on the position at the London Naval Conference of His Majesty's Government in the United Kingdom', NAA: MP 1587/1, 304F.
3. Roskill, *Naval Policy Between the Wars, II: The Period of Reluctant Rearmament 1930-1939* (London: Collins, 1976), p. 59.
4. R.G. O'Connor, *Perilous Equilibrium: The United States and the London Naval Conference 1930* (Kansas: Kansas University Press, 1962), p. 128.
5. Andrade, 'Great Britain, the Submarine, and Naval Limitations', in Roberts, *New interpretations in naval history*, pp. 67-79.
6. See G.D. Franklin, 'A Breakdown of Communication: Britain's Over Estimation of Asdic's Capabilities in the 1930s', in *The Mariner's Mirror*, Vol. 84, No. 2, May 1998, pp. 210-11.
7. R.D. Burns, 'Regulating Submarine Warfare, 1921-41: A Case Study in Arms Control and Limited War', in *Military Affairs*, April 1971, pp. 56-9.
8. Glasson, 'The Development of the Submarine', p. 153.
9. D.C. Evans and M.R. Peattie, *Kaigun: Strategy Tactics and Technology in the Imperial Japanese Navy, 1887-1941* (Annapolis: USNI Press, 1997), p. 298.
10. Roskill, *Naval Policy Between the Wars, II*, p. 303.
11. K. Wynn, *U-Boat Operations of the Second World War, Vol. I: CareerHistories, U 1-U 510* (London: Chatham Publishing, 1997), p. 3.
12. Roskill, *Naval Policy Between the Wars, II*, p. 59.
13. See, Sears, "'Something peculiar to themselves'?: A Social History of the Executive Branch Officers the RAN, 1913-1950'.
14. See, Stevens (ed.), *The Royal Australian Navy*, (Melbourne: Oxford University Press, 2001), p. 79.
15. Roskill, *Naval Policy Between the Wars, II*, p. 226.
16. 'Summary of Naval Staff Meeting', 19 October 1932, NAA: MP 1049/9, 2026/5/118.
17. R. Jones, 'Singapore and Australian Naval Policy, 1919-40', in *Journal of the Australian Naval Institute*, Vol. 16, February 1990, pp. 25-32.
18. Letter, Admiralty to ACNB, M.02799/31, 19 April 1932, NAA: MP 1049/9, 1933/2/72.

19. CID Paper E(30)5, 'British Commonwealth of Nations Naval Policy 1930', cited in minute, SO(2) to Kerr, 8 October 1931, NAA: MP 1049/9, 1933/2/72.
20. Letter, ACNB to Admiralty, 9 October 1931, NAA: MP 1049/9, 1933/2/72.
21. Minute, SO(2) to Kerr, 8 October 1931, NAA: MP 1049/9, 1933/2/72.
22. Summary of Naval Staff Meeting, 19 October 1932, NAA: MP 1049/9, 2026/5/118.
23. Nevertheless a small ship asdic had been trialed in 1927 with promising results, PRO: ADM 186/461, 42747.
24. HMAS *Australia's* submission 290/196/1, 7 February 1933, NAA: MP 1049/9, 2026/5/118.
25. Sixty-two miles of cable and 12 personnel were required at Darwin and 30 miles of cable and 15 personnel at Sydney. With the exception of the officer in command and an A/S specialist officer all other personnel were to be reservists.
26. HMAS *Australia's* submission 290/196/1, 7 February 1933, NAA: MP 1049/9, 2026/5/118.
27. The standard target hung from a buoy. By laying the static target in a tideway, the ebb and flow of the tidal stream imparted frequency shifts on the asdic's returned echo indistinguishable from actual movement. See minute by Spurgeon, 15 November 1934, NAA: MP 1049/9, 2026/5/118.
28. Letter to Esdaile from a senior officer of HMS *Osprey*, cited in R. Worledge (ed.), *Contact! HMAS Rushcutter and Australia's Submarine Hunters, 1939-1946*, (Sydney: Anti-Submarine Officers Association, 1994), p. 4.
29. See J. Goldrick, 'Selections from the Memoirs of Captain James Bernard Foley, CBE, RAN (1896-1974)', in N.A.M. Rodger (ed.), *The Naval Miscellany, Vol. V* (London: George Allen & Unwin for The Naval Records Society, 1984), p. 513.
30. Report, 'A/S Policy', 1934, PRO: ADM 186/515, 42747.
31. Paper, 'Minesweeping and A/S craft required at various Empire ports at home and abroad in the event of war in the Far East', 1934, PRO: ADM 116/4002.
32. By 1938 the RN estimated the number of A/S vessels required for local defence in an Eastern War as Stage I - 111, Stage III - 422. For a European war the figures were respectively 200 and 357. See 'Memorandum on A/S Policy Regarding the Use of Asdics', TD 1/38, c. 1938, PRO: ADM 1/12140, 42661.
33. See paper, undated, PRO: ADM 186/515.
34. Admiralty secret memoranda, 'Auxiliary A/S Vessels', March 1934, AWM: AWM 124, 3/134.
35. Paper, undated, PRO: ADM 186/461, 42747.
36. The Admiralty allocated the second 100 trawlers to ports in India, South Africa, New Zealand, the West Indies and the Canadian Pacific coast. Home waters and West Africa were listed as the last priority.
37. Admiralty secret memoranda, 'Auxiliary A/S vessels', March 1934, AWM: AWM 124, 3/134.
38. Kennedy, *The Rise and Fall of British Naval Mastery*, p. 287.
39. Hackmann, *Seek & Strike*, pp. 168, 428-9.
40. 'Memorandum on A/S Policy Regarding the Use of Asdics', TD 1/38, c. 1938, PRO: ADM 1/12140, 42661.
41. Roskill, *Naval Policy Between the Wars, II*, p. 228.
42. See 'Time Factor', in Admiralty Letter, M.00625/37, War Memorandum (Eastern), January 1938, NHD: SNHO papers 1939, p. 19.
43. Memorandum by Attorney-General and Minister for Defence, submitted to Cabinet 15 February 1932. Cited in paper, 'Naval Air Requirements', June 1933, NAA: MP 1049/5, 1821/2/78.

44. Goldrick, 'Selections from the Memoirs and Correspondence of Captain Foley', in Rodger, *The Naval Miscellany*, p. 513.
45. Statement by Minister for Defence, 25 September 1933, NAA: MP 1587/1, 218X.
46. Kennedy, *The Rise and Fall of British Naval Mastery*, p. 286.
47. W.K. Wark, *The Ultimate Enemy: British Intelligence and Nazi Germany, 1933-1939* (London: I.B. Tauris & Co, 1985), p. 127-8.
48. Gobert, 'The Evolution of Service Strategic Intelligence 1901-1941', p. 60.
49. Speech by Viscount Bruce of Melbourne in the House of Lords on 13 February 1948 and based on his experience as Prime Minister. Cited in 'Commonwealth Relations' in *Admiralty Maritime Intelligence Review*, March 1948, p. 24.
50. Goldrick, 'Selections from the Memoirs and Correspondence of Captain Foley', in Rodger, *The Naval Miscellany*, p. 515.
51. See minute, SO(2) to Kerr, 8 October 1931, NAA: MP 1049/9, 1933/2/72.
52. Agenda for 1934 Singapore Conference, 20 September 1933, NAA: MP 1049/9, 1990/2/251.
53. Admiral Sir Frederick Charles Dreyer, GBE, KCB (1878-1956), CinC China 1933-36.
54. Goldrick, 'Selections from the Memoirs and Correspondence of Captain Foley', in Rodger, *The Naval Miscellany*, p. 515.
55. CB 3002(30), c. 1930, PRO: ADM 186/481.
56. For the influence of the perceived effectiveness of asdic on naval policy, see Roskill, *Naval Policy Between the Wars, II*, p. 306.
57. 'Report of the Singapore Conference', 24 January 1934, PRO: ADM 116/3121, p. 7.
58. Paper prepared for Ottawa Delegation, 17 June 1932, NAA: MP 1185/8, 1846/4/34.
59. D. Cowie, 'The Defence of Australasia' in *The Army Quarterly*, Vol. XXXVI, April 1938, pp. 70-9.
60. Admiralty letter M.0831/34, 1 February 1935, NAA: MP 1049/9, 1990/2/251.
61. In 1936 the cruiser allowance was 14 depth charges, with two to be expended annually for practice. The destroyers allowance was eight and two respectively. Letter, ACNB to Admiralty, 12 March 1936, NAA: MP 1049/9, 1990/2/251.
62. Paper, 'The Type of Squadron for the Royal Australian Navy', 8 March 1937, NAA(ACT): A5954/1, 1058/5.
63. Minute, Hyde to Minister, 20 November 1934, NAA: MP1049/9 2026/5/118.
64. Advice to Minister from Kerr, c. 1930. Cited in 'The Type of Squadron for the Royal Australian Navy', 8 March 1937, NAA(ACT): A5954/1, 1058/5.
65. Admiralty memorandum, 3 February 1936, quoted in *ibid*.
66. *CPD*, 25 May 1933, p. 1816.
67. Cowie, 'The Defence of Australasia', p. 74.
68. Paper, 'The Type of Squadron for the Royal Australian Navy', 8 March 1937, NAA(ACT): A5954/1, 1058/5.
69. See Glasson, 'The Development of the Submarine', p. 154.
70. See 'Anti-Submarine Policy', 1938, PRO: ADM 186/551, 42747.
71. 'Anti-Submarine Policy', 1939, PRO: ADM 189/116, 42747.
72. Admiralty letter M.01009/39, 13 February 1939, NAA: MP 1185/8, 2026/10/604.
73. Stephens, *Power Plus Attitude*, p. 28.
74. 'Essay No.1: Economy in Defence', 1930, NAA (ACT): A5954/1, 39/6, p. 3.
75. The RAAF still maintains that ASW (or undersea warfare) is a subset of offensive air support (OAS). See AAP 1000, *Fundamentals of Australian Aerospace Power*, 4th Edition (Canberra: Aerospace Centre, 2000), p. 183.
76. See C.D. Coulthard-Clark, *The Third Brother: The Royal Australian Air Force 1921-39* (Sydney: Allen & Unwin, 1991), pp. 215-23.

77. Minute, SO(3) to Colvin (CNS), 3 August 1938, NAA: MP 1049/5, 1821/2/78
78. Letter, Air Board to ACNB, 17 February 1939, NAA: MP 1049/5, 1821/2/78.
79. Paper, 'Proposals for reinforcement of China Fleet', 1934, PRO: ADM 116/3121, p. 7.
80. Minute, Hyde to Minister, 20 November 1934, NAA: MP 1049/9, 2026/5/118.
81. Prior to the introduction of a mechanical distance finder in 1931, ranges had been determined manually by means of a stopwatch. See Hackmann, *Seek and Strike*, p. 197.
82. Minute by Spurgeon, 15 November 1934, NAA: MP 1049/9, 2026/5/118.
83. See Chapter 3.
84. Minute, Hyde to Parkhill, 20 November 1934, NAA: MP 1049/9, 2026/5/118.
85. Worledge, *Contact!*, p. 4.
86. 'Annual Report of HM A/S Establishment', 1936, PRO: ADM 186/527.
87. See Hackmann, *Seek and Strike*, p. 220.
88. The set was suitable for depth sounding in both oceanic and shallow waters and was able to follow ship-launched torpedoes to see if they were running true. For trials results, see PRO: ADM 186/540, 42747 and ADM 186/526.
89. Minute, Commander Parker (Naval Assistant to 2NM) to Thomson (2NM), 7 April 1938, NAA: MP 151/1, 600/201/2017.
90. A.F. Parry, *HMAS Yarra 1936-1942: The Story of a Gallant Sloop* (Garden Island: The Naval Historical Society of Australia, 1980), p. v.
91. In the RN the Type 126 was superseded almost immediately by the Type 127, a set specially designed for the newly introduced escort sloop. See Hackmann, *Seek & Strike*, p. 216.
92. H.P. Frei, *Japan's Southward Advance and Australia: From the Sixteenth Century to World War II* (Melbourne: Melbourne University Press, 1991), p. 132.
93. McCarthy, *Australia and Imperial Defence*, pp. 135-42.
94. B.N. Primrose, 'Australian Naval Policy, 1919 to 1942', PhD thesis, ANU, 1974, p. 271.
95. Minutes of Council of Defence Meeting, 17 December 1937, NAA: CRS AA 1971/216.
96. Worledge, *Contact!*, p. 3.
97. Gill, *Royal Australian Navy 1939-1942*, p. 127.
98. Minute, ACNB to the Minister, 1 December 1937, NAA: MP 151/1, 600/201/2017.
99. Minute, Commander Harvey (DSC) to Thomson (CNS), 27 October 1937, NAA: MP 1049/5, 2026/5/162. The underwater components of Types 123 and 127 were the same. The difference was in the control arrangements, the Type 123 being worked mechanically from a magnetic compass, while the Type 127 was a gyro controlled set with greater amplification and housed in a cabinet on the bridge.
100. Sydney required 120,000 yards of cable, Darwin and Fremantle 164,000 yards.
101. Lieutenant Commander (A/S) George Frederick Edmund Knox, RAN, staff of HMS *Osprey* 1938-39, Head of Base Staff Australian A/S School 1941-43.
102. *Moresby* had been originally designed for the RN as an A/S sloop, but was acquired by the RAN in 1925 for survey operations.
103. Rear Admiral Sir George Pirie Thomson, CB, CBE, RN (1887-1965), 2NM ACNB 1937-39. Admiral Hyde had died in office on 28 July 1937.
104. Minute, Harvey to Thomson, 27 October 1937, NAA: MP 1049/5, 2026/5/162.
105. The Johnston mobile A/S target was designed to submerge then proceed on a pre-arranged course or circuit. See 'Memorandum on A/S Policy Regarding the Use of Asdics', TD 1/38, c. 1938, PRO: ADM 1/12140, 42661.
106. See 'Annual Report of A/S Establishment 1936', PRO: ADM 186/527.
107. Admiral Sir Ragnar Musgrave Colvin KBE, CB, RN (1882-1954), 1NM ACNB and CNS 1937-41, Naval Advisor to the High Commissioner for Australia in London 1942-44.

108. Remarks by Colvin on minute, Harvey to Colvin, 18 January 1938, NAA: MP 1049/5 2026/5/162.
109. Minute, Harvey to Colvin, 18 January 1938, NAA: MP 1049/5 2026/5/162.
110. Minute, Collins (ACNS) to Colvin, 30 March 1938, NAA: MP 1049/5, 2026/4/38.
111. Minute, Harvey to Colvin, 21 January 1938, NAA: MP 1049/5, 2026/5/162. Two of the Fremantle vessels were to be fitted out in Adelaide.
112. Minute, Esdaile (SO(A)) to Colvin, 5 May 1938, NAA: MP 1049/5, 1855/6/30.
113. Letter, ACNB to Spurgeon (DNO NSW), 27 May 1938, NAA: MP 1049/5, 1855/6/30.
114. Letter, Spurgeon to ACNB, 2 June 1938, NAA: MP 1049/5, 1855/6/30.
115. Minutes of Naval Staff Meeting, 15 June 1938, NAA: MP 1049/5, 1855/6/30.
116. 'War Orders for Officer Commanding HMA Squadron', January 1939, NAA: MP 1185/8, 1933/2/110.
117. Memorandum, Collins to Colvin, 10 June 1938, NAA: MP 1049/5, 2026/2/152.
118. Memorandum, Esdaile to Colvin, June 1938, NAA: MP 1049/5, 2026/2/152. RN policy included fleet protection and A/S training as two further responsibilities. See, 'Memorandum on A/S Policy Regarding the Use of Asdics', TD 1/38, c. 1938, PRO: ADM 1/12140, 42661.
119. NCS staff coordinated berthing and bunkering, sailing and assembly instructions, harbour movements and notice for steam, and the convoy conference and orders. See M. Bailey, 'The Australian role in the development of a worldwide Imperial trade control and naval intelligence system', in Stevens, *Maritime Power in the 20th Century*, p. 81.
120. CB 01764 (26), cited in 'Report of the Singapore Conference, 1934', Enclosure B, PRO: ADM 116/3121.
121. Admiralty Letter, M.00625/37, War Memorandum (Eastern), January 1938, NHD: SNHO papers, 1939.
122. Annual report on A/S Branch, c.1939, PRO: ADM 186/547, 42747.
123. Paper, 'The Type of Squadron for the Royal Australian Navy', 8 March 1937, NAA(ACT): A5954/1, 1058/5.
124. The menace of air attack had led to a modification in the Admiralty's policy concerning the use of escort vessels. When given a useful gun armament they were to be retained close to the convoy they were escorting, even though this would decrease their ASW value. See 'Anti-Submarine Policy', 1937, PRO: ADM 186/541, 42747.
125. Vice Admiral Sir John Augustine Collins, KBE, CB, RAN (1899–1989), ACNS 1938–39, 1NM ACNB and CNS 1948–55.
126. J. Grey, 'The RAN in the Era of Forward Defence, 1955–75', in Stevens, *In Search of a Maritime Strategy*, p. 105.
127. J. Collins, *As Luck Would Have It: The reminiscences of an Australian sailor* (Sydney: Angus and Robertson, 1965), pp. 52, 70.
128. Paper, 'A plea for smaller sloops in larger numbers', by Collins, February 1938, NHD: general file 191C.
129. Memorandum, Esdaile to Colvin, June 1938, NAA: MP 1049/5, 2026/2/152.
130. Paper, 'A plea for smaller sloops in larger numbers', February 1938, NHD: general file 191C.
131. Memorandum, Esdaile to Colvin, June 1938, NAA: MP 1049/5, 2026/2/152.
132. Minute, Thomson to Colvin, 19 December 1938, NAA: MP 1049/5, 2026/2/191.
133. Vessels on A/S 'patrol' duties (previously called 'inner patrol') would only carry depth charges.
134. Letter, ACNB to Admiralty, 19 July 1938, NAA: MP 1049/5, 2026/2/191.
135. Letter, ACNB to Admiralty, 19 July 1938, NAA: MP 1049/5, 2026/2/191.

136. In July 1938 the Engineering and Construction Branch had a staff of seven plus three temporary draughtsmen.
137. Minute to Colvin, 28 July 1938, NAA: MP 1049/5, 2026/2/191.
138. Rear Admiral (E) Percival Edwin McNeil, CB, RAN (1883–1951), DE(N) 1932–42, 3NM ACNB 1940–43.
139. Remarks by McNeil, 28 July 1938, on minute to Colvin, 28 July 1938, NAA: MP 1049/5, 2026/2/191.
140. Minute, McNeil to Colvin, 31 August 1938, NAA: MP 1049/5, 2026/2/191.
141. Minute, McNeil to Colvin, 17 February 1939, NAA: MP 1049/5, 2026/2/191.
142. Minute, McNeil to Colvin, 3 February 1939, NAA: MP 1049/5, 2026/2/191.
143. Minute, Thomson to Colvin, 15 February 1939, NAA: MP 1049/5, 2026/2/191.
144. Letter, Admiralty to ACNB, 31 December 1938, NAA: MP 1049/5, 2026/2/191
145. Minute by McNeil, 14 March 1939, NAA: MP 1049/5, 2026/2/191.
146. Letter, LCDR(P) Perry (Naval Liaison Officer, London) to Secretary Department of Defence, 20 June 1939, NAA: MP 1049/5, 2026/11/320. Eventually four BDVs were constructed.
147. Remarks on *ibid*.
148. Minute, Thomson to Colvin, 15 February 1939, NAA: MP 1049/5, 2026/2/191.
149. Minute, by McNeil, 14 March 1941, NAA: MP 1049/5, 2026/11/320.
150. Admiralty letter M.01009/39, 13 February 1939, NAA: MP 1185/8, 2026/10/604.
151. W. Murray, 'The Role of Italy in British Strategy 1938–39', in the *Royal United Services Institute Journal*, September 1979, pp. 43–9.
152. S. Moorewood, 'Protecting the Jugular Vein of Empire: The Suez Canal in British Defence Strategy, 1919–1941', in *War & Society*, Vol. 10, No. 1, May 1992, pp. 81–108.
153. Remarks by Colvin, 14 April 1939, on covering minute to Admiralty letter M.01009/39, 13 February 1939, NAA: MP 1185/8, 2026/10/604.

Training and Manpower

Issues – 1937-39

5

... none of these proposed measures for developing an anti-submarine force will be of the least use unless the necessary Asdic personnel be trained to a moderate state of efficiency and kept in that state.

Australian Commonwealth Naval Board, March 1936.¹

In the previous chapters we have discerned some of the financial, technical and doctrinal difficulties associated with the introduction of a new capability. Running throughout this discussion, though, have been the closely related issues of training and manpower. Indeed, unless equipment is maintained and operated efficiently a capability cannot be considered effective. These factors were well understood by the ACNB, but the anti-submarine organisation also introduced the added complication of a completely new branch. It is now appropriate to examine how the RAN dealt with some of these non-materiel aspects.

The Australian Navy has produced few historical studies of its own, but one completed in 1994 claimed that the interwar RAN had no broad appreciation that operator efficiency determined the effectiveness of asdic.² This is manifestly incorrect, particularly when the discussions over the provision of appropriate asdic targets are recalled. Yet it would also be incorrect to believe that the provision of adequate manpower and training had secured attention equivalent to materiel issues. Despite the Naval Board's rhetoric, the RAN of the 1930s suffered from what remains a common procurement problem into recent times, and tended to brush aside matters not directly associated with the provision of equipment. In practice, the ACNB maintained a somewhat *laissez-faire* policy towards manpower, consistently, yet increasingly unrealistically, placing its faith in the Admiralty's ability to make-up any Australian shortfalls.

The Submarine Detection branch

Responsibility within the ACNB for personnel issues rested with the Second Naval Member and for the period under consideration this remained Captain G.P. Thomson. For a variety of reasons Thomson did not receive a staff assessment of manpower requirements for the intended Australian Submarine Detection branch until August 1937. This was well after the cruiser *Sydney* received the first RAN asdic set, but still in advance of the fits in the sloops *Yarra* and *Swan*. The report when it arrived was quite thorough and, in addition to the manpower establishment, Thomson's staff had also included the costs of training during the three remaining years of the existing defence program.³ At an estimated £12,000, including passage to and from England and course costs, the total does not seem excessive in terms of capability acquisition. Nevertheless funds remained scarce and the naval staff seldom overlooked opportunities for savings.⁴

Thus far the most significant factor delaying the establishment of the new branch had been the absence of equipment in the seagoing squadron. The RAN had not required asdic operators since the withdrawal of the two 'O' class submarines in 1930 and, without asdic-fitted vessels, the ACNB could neither put in place a suitable branch structure, nor offer promotion prospects to its members. Behind the practical difficulties, however, there remained the understanding that ASW was primarily a local defence problem. Reserve personnel would therefore undertake most wartime anti-submarine duties and, for most of 1937, an expectation of war was not so imminent as to make their effective mobilisation a priority planning issue.

Hence, although by the end of 1937 preparations to establish the new Australian A/S School at Sydney were well underway, courses were not due to begin until January 1939. The site chosen at Edgecliff was already a RAN Reserve Depot and the ACNB intended training there to be confined to reserve personnel.⁵ The new branch would also need a core of permanent personnel but, at least for the first year, qualification training for these men would continue to be conducted in the United Kingdom.⁶

Training schemes and branch structure

Not surprisingly, considering its dependence on the Royal Navy for qualification training and the necessity of maintaining commonality, the Naval Board hoped to introduce reserve training along similar lines to that carried out at *Osprey*. The Board received details of the British syllabus and training

scheme in January 1938 and, without appropriate expertise in Melbourne, passed the Admiralty's letter to RACAS, Rear Admiral Lane-Poole,⁷ for comment. The Admiral in turn sought the advice of Commander Esdaile, who remained serving in the flagship. The combined response indicated that the Admiralty scheme could be adopted for the RAN with little modification. The training of officers for auxiliary A/S vessels was the only significant exception, but this aspect again offers a useful illustration of local constraints.⁸

The Royal Navy intended to place its auxiliary A/S vessels under the command of those RNR skippers who had undergone a short (nine-day) anti-submarine course as part of their peacetime training. During war, 'groups' of auxiliary A/S vessels would be commanded by RN (retired), RNR or RNVR commissioned officers who had undergone an 18-day peacetime course. These qualifying courses did not mark the end of training. ASW was recognised as both a science and an art and, while efficient detection of a submarine depended initially on the capabilities and experience of the operators, '...to achieve the destruction of the submarine in the ensuing operations, GOOD TEAM WORK IS ESSENTIAL between the Asdic operators and the Officers on the bridge and also between individual ships engaged in the operations.'⁹

Hence the qualification courses were expected only to make an officer fit to begin the regular and constant training essential for the successful prosecution of anti-submarine operations. Here the comparatively small physical size of the United Kingdom provided assistance for, after qualification, officers could still collect at training centres at frequent intervals.

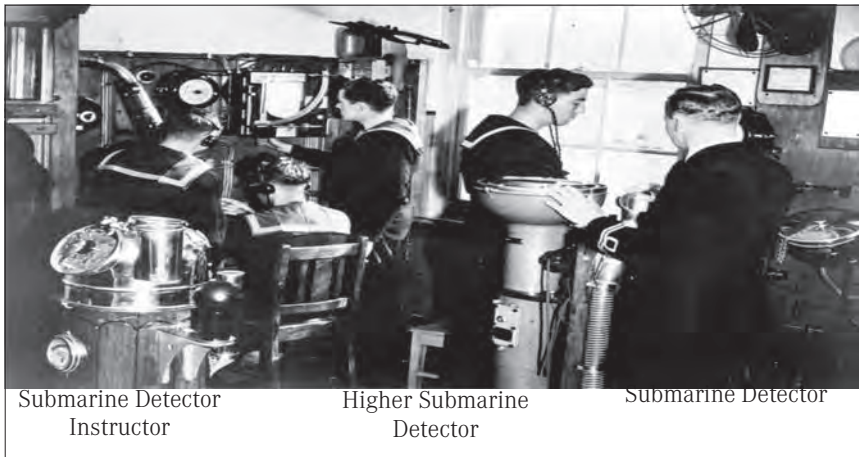
Australia by contrast possessed only small, widely dispersed forces, making continuation training for prospective commanding officers—either RAN (retired) or RANR (seagoing)—extremely difficult. Admiral Lane-Poole proposed, therefore, that rather than a qualified commander, each auxiliary A/S vessel should instead carry a qualified RANR A/S Control Officer (A/S CO). These officers could then carry out the training laid down by the Admiralty for 'group officers' and have the best opportunity to practise and maintain their efficiency.¹⁰ The corollary was, as Thomson later noted, that all RANR asdic personnel (then expected to total 100, including ratings) must be obtained from Sydney.¹¹ Only in Sydney could the A/S School centralise training and offer the necessary practice during weekly evening drills. The ACNB was thus forced to accept that anti-submarine forces in other Australian ports would not gain experience in local conditions until after the outbreak of war.

The Naval Board felt similarly constrained regarding the qualification training of active service personnel. Although much valuable time would be lost by continuously sending officers and ratings to the United Kingdom, only overseas could they gain experience in the detection and tracking of an actual submarine, which the Royal Navy regarded as essential in the final stage of training.¹² The RAN consequently placed great faith in the future success of the Admiralty's mobile asdic targets and, once the squadron gained experience with these, RACAS hoped that at least some active service training would be brought back to Australia.¹³

Echoing its reasons for adopting the British training scheme, the ACNB likewise had no intention of modifying the Royal Navy's existing branch structure.¹⁴ The RAN Submarine Detection branch thus included three non-substantive ratings (see Figure 5.1). These in ascending order of qualification included Submarine Detector (SD), Higher Submarine Detector (HSD) and Submarine Detector Instructor (SDI). Manning policy intended that the majority of asdic operating time should be performed by the SDs and their course therefore focused on practical experience against actual submarine targets. Although also expected to be operators, policy decreed HSDs would, in addition, be fully acquainted with the upkeep of sets. SDIs, as their qualification implied, were required to fulfil the supervisory and training role.

The ACNB released the Naval Order seeking volunteers for the new branch from eligible able and leading seamen in September 1937.¹⁵ Offering an added incentive, the order included advice of substantial additional qualification pay.¹⁶ By December the selectors had accepted 24 suitable able seamen, and all but one of these left Australia shortly thereafter to join up with a Royal Navy SD course. The course lasted 39 days and, since the Naval Board expected this first group to form the core of the new branch, the naval staff planned for their return immediately after obtaining six months seagoing experience in the Portland A/S flotillas. Subsequent groups, however, would follow the period of sea experience with the 67-day HSD course. Noting the prolonged absence from home, with no allowance for accompanying families, periods of overseas service were not necessarily an incentive to ratings. The Board understood this limitation and therefore expected selected ratings to undertake the nine-month SDI course during a second period abroad.¹⁷

Figure 5.1 – Distinguishing badges of the Submarine Detection branch



Source: Admiralty, *Manual of Seamanship*, Vol. 1 (London: HMSO, 1937, reprinted 1942).

Manpower requirements

The manning estimates submitted to Thomson in August 1937 calculated the RAN's requirements at 72 active service A/S personnel.¹⁸ The complement for any particular vessel was based primarily on the anticipated physical limitations of efficient asdic operating time,¹⁹ and the total provided sufficient qualified ratings to man all planned asdic-fitted vessels, the A/S School, and still allowed a small pool of spare personnel (see Table 5.1). The RAN was starting virtually from scratch, however, and staff planning already accepted that the branch would not reach its total establishment until January 1941.

In fact, in August 1937 the RAN possessed only six qualified SDs and these were borne two each in *Sydney*, *Yarra* and *Swan*. Three Royal Navy exchange ratings made up the immediate deficiency, and provided an SDI in *Sydney* and two HSDs, one each in *Sydney* and *Yarra*.²⁰ Although for a few years vacancies in the higher ratings would continue to be filled by obtaining men on loan from the Royal Navy, planned expansion of the Australian branch was dependent on the steady qualification of SDs. The Naval Board therefore set initial requirements at two qualifying courses per year, each of approximately 16 students.

Table 5.1 – Predicted establishment of RAN SD branch, August 1937

| | SDI | HSD | SD |
|-----------------------------|-----|-----|----|
| 2 cruisers | 1 | 6 | 6 |
| 5 destroyers | 1 | 15 | 15 |
| 2 sloops | - | 2 | 4 |
| Trawler Instructional Staff | 3 | - | - |
| A/S School | 1 | - | - |
| Spare | - | 9 | 9 |
| Total | 6 | 32 | 34 |

Source: NAA: MP 151/1, 600/201/2017.

It soon became clear that branch numbers required modification, particularly in the higher skill levels. Having at first accepted that the harbour loop systems would be an RANR responsibility in wartime,²¹ the Naval Board subsequently decided that this equipment required greater expertise. Similarly, to cover all reserve training both ashore and afloat, the A/S School required additional permanent service staff. More than balancing these additions, however, the Board took into account that the second 6-inch gun cruiser, HMAS *Hobart*, would arrive without asdic.²² Consequently, in December 1937, the ACNB revised the SD branch requirements to 61 ratings (nine SDIs, 25 HSDs and 27 SDs). To accommodate these changes Thomson suggested that the RAN reduce the size of future SD classes to twelve.²³

Discussions acknowledged the possibility of acceleration, but only Thomson's naval assistant, Paymaster Commander C.A. Parker,²⁴ seems to have argued that the build-up should be undertaken as 'quickly as possible, and as a necessary preparation for war.'²⁵ Certainly, comments from the squadron indicate that there was still no sense of urgency. Presumably continuing to receive Esdaile's advice, Lane-Poole supported a long-term approach. Having assumed that, with the delivery of mobile targets, the local A/S School would eventually train both active service and reserve personnel, RACAS suggested that from January 1940 each class of SD candidates should be sent to British and Australian courses alternately. He argued, furthermore, that neither group should complete the HSD course until they had proved themselves efficient in the RAN. This method had clear advantages in terms of self-sufficiency, but would delay the RAN reaching full HSD strength until the middle of 1943, while sufficient SDIs would not be available until early 1946. To alleviate complement deficiencies in the meantime, Lane-Poole proposed both further

loans from the Royal Navy and making use of acting SDs who had received on-the-job training afloat.²⁶

The Admiralty had earlier agreed to maintain four HSD ratings on loan and furnish a further limited number to the RAN 'if and when required'.²⁷ Yet, qualified personnel were also a scarce commodity in Britain,²⁸ and acceptance of RACAS's suggestions would place clear limitations on squadron capabilities if war came before the end of 1945. In effect the scheme relied heavily on Admiralty goodwill and an unproven asdic target. The Naval Board was nevertheless satisfied and generally concurred on the details.²⁹ Within a matter of weeks, however, the pace of Australian rearmament forced a further reconsideration and, by the end of February 1938, Thomson accurately foresaw that future personnel 'numbers will need to be swelled by new construction.'³⁰

Training vessels

Although the provision of practical asdic experience remained a continuing problem for a small navy, the proposed RAN training scheme faced comparable difficulties in the provision of sufficient ships. Whether exercising with submarines or mobile targets, all personnel required intensive and continual sea training, not only to maintain operator alertness, but also to achieve what modern instructors would refer to as 'situational awareness'. The Naval Board had initially selected the BDV *Kookaburra* to form part of the anti-submarine training establishment. But, although useful, *Kookaburra* would also have important maintenance commitments on the Sydney boom defences. The vessel was also designed for employment in sheltered conditions, and her operations off the coast would therefore be severely weather limited.

Thomson brought up the problem in February 1938 and, having determined that the A/S School required at least two tenders, felt the only practical solution would be to base the entire RAN destroyer flotilla at Sydney. Thereafter the destroyers would be used for asdic training in the same way as the Portland A/S flotilla, with RACAS limiting fleet work with the remainder of the Squadron and gunnery practices to programmed exercise periods at Jervis Bay.³¹ Perhaps because action would not be required until the end of the year, the implied limitation in effectiveness in other warfare areas does not seem to have disturbed the new First Naval Member, Admiral Sir Ragnar Colvin. His comment on the paper simply remarked 'So far so good.'³²

In practical terms there was little possibility that the destroyer flotilla could be employed as Thomson had suggested. The squadron relied on the destroyers

for a wide range of support and operational roles, while fleet exercise areas extended to the area off Hobart. Even the Army and RAAF had regular call on the destroyers for towing gunnery targets in air and military exercises.³³ More fundamentally, however, the RAN's manning state remained critical and, as we have seen, the Navy maintained only one or two destroyers in commission for most of the 1930s. Consequently, although in June 1937 the ACNB received Ministerial approval to fit HMAS *Voyager* with asdic and make it available for sea training, by October the Board had accepted that just one destroyer could not meet the training needs of both the squadron and the A/S School. The Naval Board therefore made arrangements to bring another destroyer, HMAS *Vendetta*, into service.³⁴ In January 1938, she assumed the anti-submarine training role.

Officer requirements

The ACNB had a scheme for training active service ratings in place by early 1938, but it had yet to appreciate the full extent of core branch requirements. Specifically, despite the intention to introduce an entirely new branch with its own training school, unique equipment and operational tactics, the Board had made almost no progress towards introducing an appropriately trained leadership. As we have seen, the interwar Navy revolved around gunnery, and an A/S qualification was still not a 'fashionable' specialisation among officers in either Australia or Britain.³⁵ In the Royal Navy the entire Submarine Detection branch remained a 'Cinderella'³⁶ and, in spite of policy statements that clearly recognised the value of asdics, the branch's importance had 'ebbed and flowed with the degree of success attending the developing asdic sets.'³⁷

By the mid-1930s, though, Admiralty policy at least attempted to appoint a qualified A/S officer to as many asdic-fitted vessels as possible, with a minimum requirement of one A/S officer in each asdic-fitted flotilla.³⁸ No such conception existed in the RAN's initial planning. Instead the ACNB intended to have only one A/S officer at sea, most likely in one of the sloops. Since overseeing the inauguration of the A/S School required another qualified officer, the naval staff at first suggested that the RAN needed only two specialist A/S officers in total.³⁹ Unfortunately, even the provision of two such men was beyond the RAN's in-house capacity. The lack of priority attached to the sub-specialisation during the 1930s meant that Lieutenant Knox remained the only officer undergoing training and the Naval Board did not expect him to qualify until August 1938. Similarly to the SD course, his graduation would then be followed by two years' exchange service to ensure he gained some practical experience.

The policy of neglect had left Esdaile and Spurgeon as the RAN's only officers with an A/S qualification but, as commanders, both were regarded as too senior to resume sub-specialist appointments.⁴⁰ Consequently, in January 1938 the ACNB passed a request to the Admiralty for two Royal Navy A/S officers, one in exchange for Knox on qualifying and the other in exchange for a non-specialist RAN lieutenant. Because the two sloops would not be fitted with asdic until June, and RANR courses would not begin until early 1939, the Naval Board felt that they would not need either officer until the second half of 1938. Discussions with London did raise the possibility of a third officer for the destroyer flotilla but, as these vessels were only gradually recommissioning, the Board determined that an additional appointment, if needed at all, would not be required before April 1939.⁴¹

In response to the RAN request the Admiralty issued a Fleet Order calling for a volunteer—a Lieutenant Commander (A/S) beyond the age of promotion—to be loaned to the RAN for two and a half years to supervise the fitting out of a new A/S School in Sydney.⁴² The selected officer, and apparently the only volunteer, was Lieutenant Commander Harvey Newcomb,⁴³ then serving as Senior Instructor at *Osprey*. It was a fortunate selection, nevertheless. Newcomb's leadership and technical skills were perfectly matched to the RAN's requirements and since, in addition to developing the Anti-Submarine branch, he was also largely responsible for establishing the Radar and Electrical branches, his influence on the Australian Navy's development should not be underestimated.⁴⁴ London advised Melbourne that Newcomb would arrive in Australia in November 1938, followed soon after by the seagoing officer, Lieutenant A. Gracie.⁴⁵

Expansion plans

In the meantime, Spurgeon accepted a brief appointment as DNO in Sydney prior to sailing to the United Kingdom in July 1938 for the Boom Defence Course, while Esdaile left the squadron in March to return to Navy Office as Chief Staff Officer (SO(A)). The timings of these appointments were not ideal and again illustrate the constraints imposed on the RAN by the Naval Board's earlier decisions. For example, the moves would leave no A/S officer available in Sydney to supervise the complex task of installing the first Australian-fitted asdics. This undertaking was starting to grow, and installations planned for the second half of 1938 included not only *Yarra* and *Swan*, but also their sister sloops HMS *Wellington* and *Leith* from the New Zealand Station. The Admiralty had made full use of New Zealand facilities for many years, but it

made sense to carry out the limited number of asdic modifications in Australasian waters in the same locality.

Despite these difficulties, the appointments were important for career progression, and Esdaile's can be seen as something of a milestone in naval defence planning. His new duties included acting as liaison officer with the Central Defence Secretariat and, working in connection with the current Naval Development Plan, he was well placed to influence improvements in local defence.⁴⁶ Soon after his arrival in Melbourne, Esdaile took action to identify matters outstanding with the harbour loop systems and expressed his considered concerns over the shortage of specialised A/S vessels.⁴⁷ He likewise worked hard to tackle many of the outstanding issues surrounding manpower and training.

In April 1938, Thomson's assistant, Commander Parker, suggested that the Naval Board ask London to bring forward Lieutenant Gracie's appointment, both to provide tactical expertise in the sloops and to supervise the asdic fits. Acting somewhat at odds with the new mood of expansion, Parker added that the RAN should also confirm that it no longer required a third officer for flotilla duties.⁴⁸ Although agreeing with the urgency to have a specialist officer in the Sydney area, Esdaile strongly disagreed with both the terms of Gracie's appointment and Parker's argument rejecting the need for a third officer. Rather than immediately man one of the sloops, he recommended that the Naval Board appoint Gracie to the cruiser *Sydney* and re-establish the position of squadron A/S officer. Esdaile evidently recognised an immediate need to gather some prestige for the new branch and thus felt willing to accept the short-term absence of a billeted specialist in the smaller ships. He also argued that the RAN required a third officer for the training destroyer as soon as it was fitted with asdic, concluding that, without this additional specialist, the RAN could not begin effective reserve training.⁴⁹

Esdaile's arguments were accepted, and Gracie arrived in Australia on 1 July 1938 to take up his appointment as squadron A/S officer in *Sydney*. However, Spurgeon's posting overseas was also delayed, and consequently the ACNB ordered him, rather than Gracie, to supervise the fitting of asdic sets and the preparatory work in connection with setting up the A/S School. In addition to advancing Gracie's appointment, the Admiralty also agreed to send a third A/S officer, Lieutenant G.S. Corlett,⁵⁰ by January 1939 for appointment to the training destroyer. His exchange officer was to be the RAN nominee on the 1939 long A/S course, although the ACNB still found it difficult to find

candidates. The only suitable officer had volunteered for navigation, but as Parker observed: ‘The need for a navigator is probably not so urgent as that for A/S.’⁵¹

By the end of his first month in Melbourne, Esdaile had also prepared a detailed paper providing a revised estimate of numbers and training policy for the active service personnel of the Submarine Detection branch. Although reverting to the previous intention to man the loop systems exclusively with reserves, the RAN’s expected expansion pushed the total requirement up to seven officers and 82 ratings (see Table 5.2).

Table 5.2 – Predicted establishment of RAN SD branch, April 1938^a

| | A/S Officers | SDI | HSD | SD |
|--------------|----------------|-----|-----|----|
| A/S School | 1 | 2 | 2 | - |
| Tender | - | - | 1 | - |
| 3 cruisers | 2 ^b | 1 | 9 | 9 |
| 5 destroyers | 1 ^c | 1 | 15 | 15 |
| 2 sloops | 1 | - | 2 | 4 |
| 2 new sloops | 1 | 1 | 2 | 4 |
| Spare | 1 | 2 | 4 | 8 |
| Total | 7 | 7 | 35 | 40 |

Source: NAA: MP 151/1, 600/201/2017.

- Notes: a. Actual strength of the RAN on 25 February 1938 was 377 officers and 3962 ratings.
 b. One A/S officer for the 6-inch cruiser squadron and one as squadron A/S officer.
 c. In *Voyager* for flotilla duties.

To build numbers up to this level Esdaile drafted a training plan that would meet the ‘full present requirements’ by 1941 for SDs, 1944 for HSDs and 1947 for SDIs.⁵² In the interim the RAN required the services of at least 11 British ratings until January 1940 and eight thereafter. Esdaile admitted to some constraints. First, the reduction in British assistance was dependent on the start of HSD training at the Australian A/S School. Second, should Australian authorities order mobilisation at any time before 1947 the RAN would still need to depend on reduced complements and greater use of acting SDs (three SDIs, eight HSDs, 20 SDs and 28 acting SDs). This fall-back position would, however, allow asdic-fitted ships to carry out their anti-submarine functions efficiently for short periods.⁵³

There were several more serious limitations contained in Esdaile's plan that remained unremarked. Until at least 1942, RANR training was entirely dependent upon ratings from the Royal Navy, and even 'minimum' mobilisation required at least 12 British ratings if ordered before January 1940 and seven if ordered later.⁵⁴ Esdaile, furthermore, evidently assumed that any war would be of short duration, for he predicted that the Australian A/S School would close on mobilisation so the staff could man asdic sets afloat—a precarious basis on which to base a wartime expansion plan. Still, Thomson accepted Esdaile's scheme without much comment, his only concern being that the RAN should 'work up to 7 A/S officers' rather than have them in place in the near future.'⁵⁵

Initially at least, the Admiralty agreed with the ACNB's plans for placing ratings on future courses and obligingly offered 10 additional loan personnel (three SDIs and seven HSDs) who would take passage in *Hobart* on its Australian delivery voyage.⁵⁶ The RAN readily accepted, but rather than allowing the first course of Australian SD ratings to remain in England for their six months' sea experience, Thomson agreed to a suggestion that they should also return.⁵⁷ Had they stayed the additional expense would have been only some £80 each, yet the decision was made purely on economic grounds. It says much about the prevailing attitude in Melbourne that even this small saving was worth the loss of practical submarine time.

The pace of development in the lead-up to war forced an almost continuous reassessment of manning requirements. By March 1939, allowances had to be made for the planned construction of the two 'Tribal' class destroyers and six small motor A/S boats, yet recent Admiralty reductions in escort vessel complements allowed the total number of active service ratings to increase only slightly to 84 (eight SDIs, 35 HSDs and 41 SDs). Still, the pace of higher qualification remained agonisingly slow and, although the RAN had 47 SDs trained or under training, by early 1939 it possessed only one HSD and no instructors.

Furthermore, as mobilisation became imminent, the Naval Board had to decide whether to risk reducing the RAN's immediate readiness by continuing to send SD candidates to England. With a course for 12 ratings due to start in July 1939, Esdaile remarked that the RAN could not begin the local training of SDs and HSDs until June 1940.⁵⁸ Limiting factors included both the availability of a submarine and the delivery of training equipment to the A/S School.⁵⁹ With equipment taking up to 12 months to reach Australia, Thomson was even more pessimistic:

Personally I feel that the sooner we can build up a body of trained SDs, the better, because if we have any surplus on mobilisation they could be used to back up the relatively inefficient RANRs. But, more important still, I don't think we shall anything like be ready to begin HSD and SD training in June 1940. To arrange for more submarines will in itself require lengthy negotiations... I think it would be the safest plan to send these 12 ratings to England as originally intended and estimated for.⁶⁰

A practical test

The RAN had meanwhile asked the Admiralty for the fourth and fifth qualified A/S officers. The ACNB suggested that one should be appointed to the third and last 6-inch cruiser, HMAS *Perth*, when it commissioned in Britain in July 1939, while the other should arrive in Australia in mid-1940 for the first of the new escort vessels, HMAS *Parramatta*.⁶¹ Similar to the third officer, the fifth was a simple exchange with an RAN officer due to commence the *Osprey* course in 1940, who would then serve for at least two years with the Royal Navy.⁶² The fourth placement, however, would again be in exchange for a non-specialist Australian officer.

Unhappily for the RAN, this latest request coincided with the steadily worsening international scene in Europe. The pace of German rearmament had already forced the British Chiefs of Staff to reconsider their priorities and, in September 1938, the Munich crisis pushed consideration of Pacific affairs firmly into the background. The Admiralty's reply was at least courteous, noting 'the need for assisting the Royal Australian Navy in their A/S expansion programme' but regretting that '...the number of A/S officers required would cause too serious a drain on the Royal Naval A/S officers at present available.'⁶³ The British immediately cancelled Newcomb's appointment to Australia and, although willing to continue the exchange program on a like-for-like basis, indicated they were not inclined to accept further non-specialists. This again left the RAN with only two qualified A/S officers and, perhaps recalling the Naval Board's earlier plan, the Admiralty suggested that one should be allocated to the cruisers and the other between the four sloops.

For a brief period it may have seemed that the ACNB had left its preparations too late, for without an officer in either the A/S School or training destroyer, all the Board's qualification plans for the RANR would have collapsed. Fortunately, the Munich crisis was short-lived, the status quo was soon reaffirmed, and the British graciously allowed Newcomb's original appointment, and that of Lieutenant Corlett, to stand. One positive effect of the crisis was the experience gained during the partial mobilisation of forces.

Nevertheless, the fragile nature of the RAN's anti-submarine capability did not go unnoticed and, as a small added precaution, the Naval Board advised its London liaison officer that should a war in the Far East appear imminent, all Australian SD ratings should return home by the quickest route.⁶⁴

The incident also provided a clear indication that the Admiralty's conception of the revived German Navy had advanced from distraction to menace. This aspect must surely cast doubt on Newcomb's later claim that his reinstatement was solely due to the political promise of 'peace in our time'.⁶⁵ As the prospect of a European war became more likely, the Admiralty faced the urgent practical need to establish additional sources of trained manpower.⁶⁶ Although undoubtedly sincere in its efforts to assist the RAN establish an effective anti-submarine organisation, the Admiralty was fully aware of the Royal Navy's own shortages, and its motives were unlikely to be based solely on altruism and traditional ties. Although the existence of an Australian A/S School may not have greatly influenced the Royal Navy's pre-war expansion plans, the products of RAN training would soon be gratefully received and rapidly assimilated.

Proposals for practical training in Australia

The Admiralty had already taken other important steps to relieve the RAN's practical training problems. Acutely aware of the difficulties caused by the lack of an Australian submarine,⁶⁷ in May 1938, the British advised that a boat from the China Squadron might soon be made available.⁶⁸ In short order the CinC China offered the ACNB the use of a submarine leaving Singapore in September to visit and exercise with ships from both the Australia and New Zealand Stations. This was far too soon for the RAN's purposes, and Thomson suggested that the squadron would not be ready until early 1939.⁶⁹ Esdaile agreed, pointing out that as yet there were neither sufficient asdic personnel to justify a visit, nor were *Sydney*, *Yarra* and *Swan* properly equipped to carry out exercises. Some asdic equipment had been fitted, but the parts to convert them into fully functional anti-submarine sets had been delayed and were not expected until December 1938. Esdaile suggested that March 1939 was a more suitable date for the submarine visit, and the Naval Board duly signalled this back to CinC China.⁷⁰

In the interim Esdaile continued to take the lead in efforts to bring the new capability into effective service. The A/S School was due to complete in December 1938, followed by the Sydney loop station early in 1939. Both would then be available for training purposes.⁷¹ The BDV *Kookaburra* remained under

construction and, in addition to carrying the trawler Type 123 asdic for reserve training, she would also deploy and recover the RAN's mobile targets. By July 1938, Esdaile had drafted for Thomson the most comprehensive training scheme so far produced.⁷² Although having far wider implications than previous efforts, it is clear that Esdaile at least was determined to institute a program that could remain independent of European developments. Somewhat optimistically, the plan included a proposal to devote one of the new sloops almost entirely to anti-submarine training and suggested an annual two to three-month deployment of three submarines from the China Station.

Thomson's response was cautious and demonstrated far more thought than his earlier suggestion concerning the re-tasking of the destroyer flotilla. He advised of his willingness to accept the scheme in principle, but felt that so much depended on external factors—the date of arrival of asdic sets, progress in the A/S School, experience obtained with the first submarine, etc.—that it remained too early to establish a detailed program. Thomson also doubted that a sloop could be made available without disorganising the normal RANR training program in gunnery and mine-sweeping. Finally, he questioned whether the RAN was yet in a position to forecast future submarine requirements. This was particularly so, since no Australian officer had the experience to advise on submarine maintenance needs after the 4200 nm trip from Hong Kong. Thomson's solution, agreed to by Colvin, was to defer any action until early 1939 and then attempt to integrate the anti-submarine syllabus into *Yarra* and *Swan*'s regular training program.⁷³

Differing priorities and program planning

Thomson had shown that not everyone in Navy Office shared Esdaile's priorities and the new RACAS, Rear Admiral W. Custance,⁷⁴ likewise had his own ideas on squadron readiness requirements. Still, although gunnery effectiveness maintained precedence, the reappointment of a squadron A/S officer had encouraged some wider interest in ASW. By September 1938, Gracie had prepared squadron A/S orders and, after being advised that a submarine would be available for exercises in the new year, Custance suggested that the two light cruisers, *Sydney* and *Hobart*, should take part.⁷⁵ At the time of the submarine's visit, the squadron's major units would be completing a stay in Tasmania, and RACAS proposed that the ACNB arrange an exercise during the passage to Melbourne in a convenient area at the eastern end of Bass Strait. The submarine's time was limited, however, and Custance's initial enthusiasm had the potential to reduce the training available for other units. Delays in equipment delivery provided a suitably politic solution. Informed

that *Hobart* would not receive asdic before March 1939, RACAS agreed that the submarine's passage time to and from Bass Strait could not be justified solely to carry out exercises with *Sydney*.⁷⁶

Meanwhile, Esdaile was having problems justifying even a modest exercise period off Sydney. Although the ACNB expected *Kookaburra* and *Vendetta*, with classes of RANR trainees embarked, to take part, Esdaile was surprised to find that he needed to argue a separate case for the inclusion of *Yarra* and *Swan*. Since all these vessels would be fitted with versions of the same trawler asdic, he reiterated the importance of the RANR ratings, who would operate this set in the auxiliary A/S vessels, gaining realistic practice. *Kookaburra* and *Vendetta* alone could not provide the contact time required, and the participation of the sloops would also provide valuable experience for their permanent service ratings and officers. Esdaile concluded, as bluntly as he could, that the officers needed maximum practice, 'to enable their ships to function as A/S vessels in war. This is the only opportunity they will have for obtaining this practice without which "Yarra" and "Swan" will have little value as A/S vessels.'⁷⁷

Partially overcoming the limited view of ASW still prevailing in Melbourne, Esdaile was successful in his push for the wider participation of non-reserve personnel. Yet at the same time he recognised the need to balance longer term requirements with immediate readiness. For example, the absence of *Sydney* from the programmed exercise meant that her six newly trained SD ratings would be unable to participate. Thomson suggested that they should be drafted to *Vendetta* before the squadron sailed.⁷⁸ Esdaile disagreed, and argued that the Navy should not allow *Sydney's* asdic to remain out of action during her three-month cruise. After all, he added, the SDs were only newly qualified and thus had at least some recent experience with submarines.⁷⁹

The formation of the anti-submarine establishment

In September 1938, the ACNB agreed that the Captain-in-Charge, HMA Naval Establishments, Sydney (CCS), should administer the RAN's anti-submarine establishment. The organisation would be divided into two separate elements, the first, comprising the school at Rushcutters Bay and the South Head loop station, would come under the officer-in-charge (OIC) A/S School, Lieutenant Commander Newcomb. The second element, comprising *Vendetta* and *Kookaburra*, would come under the newly appointed senior officer A/S vessels.⁸⁰ Thereafter the main events relating to the opening of the school came in quick succession.



Training at HMAS *Rushcutter*.
(AWM: 305940)

On 16 November 1938, the first call for volunteers for the renamed Anti-Submarine branch appeared in the *Sydney Morning Herald*. The notice advised that the RAN had written to the Royal Motor Yacht Club seeking 50 Sydney residents ‘with some knowledge of the sea’.⁸¹ A month later, local newspapers published a more general call for volunteers with ‘perfect hearing’.⁸² On 22 November, the Naval Board promulgated the Commonwealth Navy Order announcing the decision to create an anti-submarine establishment at Sydney.⁸³ Four days later the Board transferred *Vendetta* to the administrative command of CCS, followed by *Kookaburra* on 28 February 1939.⁸⁴ Subsequently, all establishment personnel were borne on the books of the depot ship HMAS *Penguin* (ex-*Platypus*) with *Vendetta* and *Kookaburra* commissioned as depot tenders.⁸⁵

Newcomb had arrived in Sydney on 24 November 1938 and, in view of the rapidly expanding responsibilities of the position of OIC A/S School, was immediately promoted acting commander. On arrival at the school he found the main construction work of the new buildings practically complete, with eight rooms allocated for anti-submarine training. Nevertheless, the school

required not only classrooms, but also all the paraphernalia of what was then cutting edge technology. In addition to examples of asdic types and their mechanical gear, there would eventually need to be attack teachers,⁸⁶ procedural teachers,⁸⁷ and echo sounding installations, together with countless smaller items of electrical equipment for demonstration purposes.⁸⁸

The school also needed instructional and maintenance personnel, but again the RAN's attempt to rapidly acquire a capability posed problems. Further analysis by Thomson's staff had determined that the earlier manpower estimates had been unduly optimistic. Planned reserve requirements had soon grown to 66 officers and 168 ratings and, to cope with the increased training load, the Naval Board asked that nine additional Royal Navy senior ratings accompany Newcomb. The Admiralty attempted to assist, but in view of its own shortage could release only three SDIs and three HSDs. Immediate squadron requirements, however, meant that two of these ratings were drafted to the destroyers, leaving the school still badly understaffed. The RAN could only provide initial supplementation with six SD-qualified able seamen, but because of their lack of experience, Newcomb could only use them as sweepers and sentries.⁸⁹

The ACNB's call for volunteers produced few officers from the existing members of the RANR, but some 400 applications were received from outsiders. After a series of interviews and aptitude tests, the selectors, including Newcomb, narrowed the candidates down to 62 and entered them as members of the RANVR.⁹⁰ The new A/S School commissioned on 13 February 1939 and the first RANVR class of 12 officer students began four days later. Then followed 28 days of continuous instruction in electronics, asdic theory, duties of an A/S CO, hunting and attacking routines, operating and maintenance procedures. A Type 123 set had been installed in February but, without a procedural or attack teacher for synthetic training, all practical aspects had to be taught in *Kookaburra* and *Vendetta* using merchant ships as targets. *Vendetta's* A/S CO later recalled that this was not ideal:

... we used British Commonwealth ships to show trainees what an [asdic] echo was like and the doppler effect. To avoid suspicion and breaching security we exercised flag signalling with these ships and this provided the classes with another aspect of naval life. As A/S training, it was not terribly good as we could never show them how to conduct a proper attack.⁹¹

The Merchant Service was apparently equally unimpressed by the constant distractions.⁹² Despite these limitations, 10 RANVR officers from the first

A/S CO course passed out satisfactorily in March 1939. Thereafter, each officer was required to attend one night of refresher training per week and one day each month at sea practising operating procedure.⁹³ Forty volunteers were similarly selected to undergo the training for reserve ratings, and 11 began their instruction on 20 February 1939. The first course lasted 19 (later extended to 21) days and included instruction in arithmetic, operating procedure, asdic theory, tuning the set and maintenance routines. Post-qualification training was similar to that required for the officers.

The RAN's first major anti-submarine exercise and trials period

The first A/S courses suffered the normal headaches associated with the beginnings of a new curriculum, but managed a significant advantage over later wartime courses, in that they had the rare opportunity to practise against an actual submarine. By January 1939, the CinC China had confirmed the allocation of the submarine HMS *Phoenix* for an Australian visit. The Naval Board directed the CCS, Captain H. Phillips,⁹⁴ to arrange the training program and issue the necessary orders. However, it was Esdaile's groundwork and Newcomb's experience that ensured the RAN obtained maximum operational benefit. In addition to the two training vessels, the instructions to Phillips requested the inclusion of *Yarra*, *Swan*, *Wellington* and *Leith*, and even these were to carry such extra 'officers and ratings of the RAN, RANR and RANVR as may be required.'⁹⁵ Adding another noteworthy milestone, the exercise period included two formal and fully recorded asdic trials. The first trial aimed to determine whether the presence of the reflecting plates in *Yarra* and *Swan*'s asdic domes imposed performance limitations. The second, involving the ex-survey vessel *Moresby*, tasked it to investigate the possibility of determining a submarine's depth by using its Type 758N magnetostriction echo sounding gear.

Phoenix began its Australian program on 28 February 1939, and over the next four weeks it provided a succession of basic anti-submarine tracking exercises. Asdic time available to each ship varied from 27.5 hours for *Leith* to 9.5 hours for *Yarra*, but ratings were exchanged to ensure an equal sharing of experience. On average the active service ratings each obtained two and a half hours' submarine in contact time while the 36 reserve personnel each obtained one hour. Undoubtedly brief, this practice could hardly be regarded as sufficient for the operators, let alone the A/S officers charged with carrying out a hunt.⁹⁶ *Vendetta* and *Kookaburra* provided another 40 hours of practical asdic time using surface ships as targets.⁹⁷

Still, in spite of its short length and the lack of tactical training,⁹⁸ for the fledgling RAN anti-submarine organisation, the visit had been invaluable. As Newcomb remarked:

The necessity for more frequent visits of a Submarine or Submarines is obvious, the lack of A/S training of ratings being painfully apparent. Exercises using surface craft are better than no exercises at all, the Mobile Target will probably be better than Surface Craft, but neither can ever approach the Submarine in exercise value.⁹⁹

Both trials were also successful, with *Yarra* and *Swan* recording no apparent asdic limitations and *Moresby* obtaining submarine contacts at depths of 85 ft and 100 ft.¹⁰⁰ For the RAN the visit had been a 'tremendous' benefit enthused Newcomb, but this was the beginning rather than the end of the matter. He included in his report a plea for adequate follow-up training, without which 'a large portion of this value will be lost'.¹⁰¹

More important in the longer term than the brief period of practical training was the identification of technical deficiencies. Having instructed and observed throughout the exercise, Newcomb found that all the RAN's asdic installations were in poor condition. Frequent equipment breakdowns during the first week had resulted in the loss of considerable exercise time. Notwithstanding Spurgeon's supposed involvement during fitting, Newcomb attributed the failure to lack of qualified supervision during installation, together with deterioration of the gear in transit, subsequent disuse, and the lack of operator experience.

The exercise's final achievement was to highlight the need for research into Australia's unique acoustic environment. Despite the succession of warnings delivered previously by Esdaile, the RAN had been slow to collect data on local operating conditions. As a result, even the well-frequented waters off Sydney offered surprises. During the exercises with *Phoenix*, Newcomb found unexpected currents and severe temperature gradients, together with operating conditions greatly dependent on the prevailing wind direction. The difference was reflected in the ranges obtainable from asdic. In the waters surrounding the British Isles, alerted detection ranges of 2000 yds were not uncommon,¹⁰² but in the deeper waters off the New South Wales coast the poor acoustic conditions resulting from a strong southerly wind could reduce the detection range of a submarine at 85 ft depth to only 500 yds.

Commenting on Newcomb's observations, Captain Phillips observed that 'if such conditions occur at certain times at Sydney, it is probable that equally bad conditions may occur at other points round the coast of Australia where submarines may be expected to operate in war.'¹⁰³ He recommended that the RAN carry out investigations in the focal areas off Darwin, Cape York, Cairns, Brisbane, Newcastle, Sydney, Bass Strait and Port Phillip—yet it was already too late. The Australian Navy entered World War II with virtually no further knowledge of its local sub-surface operating environment.

Constraints on progress

In compiling his post-exercise report, Newcomb took the opportunity to comment on the progress made by the RAN towards fulfilling the planned anti-submarine establishment. The situation with RANVR officers he reported as satisfactory. Sufficient suitable candidates were available and the high qualification rate exhibited by the first course indicated that the A/S School would meet training requirements. Newcomb reported less progress with the RANR ratings where comparatively few volunteers had come forward. The shortage, he hoped, would be a short-term problem, caused apparently by a particular Australian desire to see how the early classes fared under the school's essentially British staff. More worrying was that only four out of the 11 members of the first course had passed. Bad conditions for operating at sea and a lack of instructional apparatus ashore would, Newcomb concluded, continue to produce poor results.

Yet again we can see that authorities had underestimated the infrastructure required for effective training. Although the A/S School expected the installation of a Type 123 Attack Procedure Table in June 1939 with more apparatus on order, the sea-training component remained a fundamental constraint on throughput. By Newcomb's estimate, a single vessel could provide not more than six officers and 10 ratings each day with useful training. The RANR SD qualifying and RANVR officers' courses each needed nine ship days per month, while reserve continuation training required a further 14 ship days. If the ACNB wished to bring home overseas training, then not only would the A/S School require expansion, but Newcomb would also need at least another 12 ship days for the RAN SD course and 10 for the HSD qualifying course.

In sum the A/S School needed at least two asdic-fitted ships constantly available: one with the auxiliary A/S vessel's Type 123 for reserve training, and the other with the destroyer's Type 127 for active service personnel. In

1939 the A/S School did have two training vessels and *Vendetta* was due to be equipped with both asdic sets, but *Kookaburra* was not a seagoing vessel, and once war came would be preoccupied with its BDV role. Another tender was necessary and Newcomb suggested that it should be either a destroyer or preferably a sloop, since the latter could simulate the movements of a trawler, but the converse did not hold true.

A second major constraint, and perhaps the most critical long-term factor, remained the availability of a submarine. The permanent allocation of two ships would allow them to use each other as an asdic target, and the two mobile targets would be of assistance, but Newcomb was adamant that these measures would only be suitable for initial training. Making no allowance for future expansion or ship availability, Newcomb calculated that he needed at least 32 submarine days over a 10-week period each year. Even this, he admitted, left the RAN with an inferior system, since

... a rating who has the opportunity of operating with a Submarine twice a month throughout the year, will be infinitely superior to one who operates 24 times in 2 months with a Submarine, and then spends 10 months operating on synthetic submarines.¹⁰⁴

Nor would the provision of more submarines from the China Station necessarily solve the problem, for a third constraint on RAN training was the lack of qualified instructional staff. The movements of a submarine and surface ships in close proximity involved a high degree of risk and Newcomb recognised that a qualified A/S officer should be embarked in each surface ship during an exercise. Since he had already found himself involved in setting up all aspects of the RAN's anti-submarine organisation, including loop laying, and faced an increasing mountain of administrative paperwork, he knew that he would rarely be available. The exchange lieutenant recently appointed to *Vendetta* would likewise be fully employed instructing his HSD class. This left only the squadron A/S officer, who obviously needed to concentrate on operational matters. Thus the school urgently required at least one additional lieutenant.

Just as necessary, however, would be an increase in the number of qualified senior sailors. By January 1939 the ACNB had tasked the A/S School with qualifying 234 reserve officers and ratings, each of whom would then require continuation training. As the school could handle no more than 40 officers and ratings simultaneously this meant training must continue at least six nights per week. The posting of yet another of his HSDs to sea had left Newcomb with only three instructors, each of whom already faced a 73.5-

hour working week.¹⁰⁵ Although his staff were ‘keen on making a success of the A/S Branch in Australia’, Newcomb admitted that they viewed their future with a certain amount of concern.¹⁰⁶ The Naval Board had made no allowance for leave or future expansion and the problem could not easily be solved. Newcomb doubted that the Royal Navy could supply any more suitable ratings while, in view of the RAN’s rapid expansion, the majority of qualified Australian ratings remained young and inexperienced. Not surprisingly, Newcomb classified his instructor shortage as ‘acute’ and, although he stopped short of suggesting that his staff could not undertake the task, asked that the RAN financially recognise the hardship imposed by the peacetime training load.¹⁰⁷

Captain Phillips concurred in the majority of Newcomb’s concerns and added his own comments where appropriate. He was particularly supportive regarding the need for more submarine time and, to reinforce the point, suggested that a visiting boat might also be used to make a start on asdic investigations around the coast. Phillips likewise flagged the issue of RAAF cooperation and, for perhaps the first time, the need to include aircrew training requirements when allocating submarine practice time. In his conclusions Phillips highlighted *Kookaburra*’s limitations as a tender and the additional squadron commitments still imposed on *Vendetta*. Since without another training platform the RAN could not expect to commence active service courses, he suggested that the destroyer HMAS *Waterhen* be brought forward as a tender. Without her, ‘seagoing training will become even more of an impossibility’.¹⁰⁸

The problem in context

If the Naval Board was serious in its attempts to establish a credible anti-submarine capability, one might have expected such blunt conclusions to have an impact. Esdaile certainly agreed with both Phillips and Newcomb and, if anything, was even more forthright in his warnings. The instructional load, Esdaile pronounced, was both unreasonable and undesirable and the staff of the A/S School should be immediately increased.¹⁰⁹ He also supported the need for three seagoing tenders and, since the new escort vessels had yet to complete, agreed that *Waterhen* offered the only immediate solution.¹¹⁰ Backed by his additional research, Esdaile’s summary appeared a rational and well-considered assessment. He had heeded both intra and inter-service requirements, and had highlighted both the ACNB’s expressed desire and the RAN’s immediate need to establish an efficient organisation. As the Navy’s most experienced A/S officer, his opinion presumably carried some weight. Still, Esdaile had not taken full account of the broader RAN situation.

Before passing to Admiral Colvin, the collected reports on the *Phoenix* exercise went to the ACNS, Captain John Collins. As Colvin's senior professional naval adviser, Collins wielded significant influence over developments. Appreciating that the RAN's overall manning state remained acute, he was not to be easily swayed:

Whilst fully concurring in the importance of A/S training, I suggest we must be careful not to provide the staff 'ideal' at the expense of other activities. In a small service it is generally necessary, in order to maintain a proper balance, to accept certain disabilities in all activities. Provision of the 'ideal' in any one would mean total neglect of another.¹¹¹

Collins was aware that other training establishments could equally make a case for increased facilities and, as a gunnery specialist, remarked that the RAN's gunnery effectiveness would likewise benefit from the acquisition of radio-controlled air and surface targets. Yet these items were currently beyond the RAN's means. Collins felt that a practical working basis for A/S training could be achieved with two tenders and one submarine, and could not recommend the removal of another destroyer from the squadron. He further proposed to defer the question of *Yarra* or *Swan*'s employment with the A/S School until the new sloops, *Warrego* and *Parramatta*, were completed. Collins nevertheless suggested that, once completed, one of the new 'prototype' local defence vessels might be available as a tender.

To underscore his concerns Collins had already requested that Esdaile compile an approximate comparison between numbers of personnel under training, submarines available, and A/S tenders in use, at both Portland and at Sydney.¹¹² Esdaile was happy to oblige and began by pointing out that a broader comparison of sea training would provide a better analogy since, although both establishments carried out qualifying courses and experiments, Sydney had the additional burden of periodical training.¹¹³ On this basis the Royal Navy had between 60 and 96 officers and ratings under training each day, and required the use of five to eight A/S vessels. Available at Portland were 15 A/S vessels and eight submarines.¹¹⁴ In comparison, Sydney expected a daily total of 10 to 24 trainees, but possessed only two tenders, with no allowance for leave or refit. Esdaile concluded by stressing again that '2 A/S vessels are the minimum that can proceed to sea when neither submarine nor mobile targets are available.'¹¹⁵

Admiral Colvin, however, would make the final decision and the First Naval Member agreed with Collins. The German threat was clearly uppermost in

his mind, for he noted on the file that ‘the A/S problem in these waters is not as serious as at home. We must not expend an undue portion of our still limited [illegible] effort on it.’¹¹⁶ The Naval Board nevertheless resolved to provide some additional assistance to the A/S School. The appointment of a non-specialist petty officer to lecture on seamanship, and the transfer of Lieutenant Corlett from *Vendetta*, greatly eased the shortage of instructors. By September 1939, 62 RANVR officers and 32 RANR ratings had received an A/S qualification.¹¹⁷

The situation at the outbreak of war

Meanwhile, the Naval Board had advised the Admiralty of the results achieved with *Phoenix*.¹¹⁸ Having highlighted the benefits, the ACNB noted that in future an even larger number of vessels would take part and provided a tentative forecast of submarine requirements. By the end of 1939 the RAN expected asdic sets to be fitted in all three of the light cruisers and another two destroyers (*Voyager* and *Vampire*). During the same period the number of qualified reserve personnel would have expanded to approximately 200. Annual training requirements would thereafter occupy one submarine for two periods, each of two months. By 1940–41, however, the RAN would have another four asdic-fitted destroyers (*Stuart*, *Waterhen* and two ‘Tribal’ class) and the six ‘motor A/S boats’. Together these forces would need two submarines for two training periods, each of four months a year. Whether the Admiralty could have fulfilled the Australian request will remain an open question, for the British Empire’s declaration of war against Germany in September 1939 ensured that most development plans were rapidly overtaken by more immediate needs.

For at least the first year of the war, imperial maritime requirements tended to rate more highly than those associated with Australia’s local defence. Yet, despite the precarious nature of the RAN’s anti-submarine training program, this trend did not mean the contraction of training or the complete withdrawal of British assistance. In fact, the Naval Board quickly determined that room remained for considerable expansion in qualification training. Shortly after the war’s outbreak it offered the Admiralty 12 reserve officers and 12 ratings every two months from the RAN’s A/S School. The Admiralty not only accepted, but also requested as many qualified officers as possible and 20 SDs per month.¹¹⁹ The herculean efforts of Newcomb and his staff allowed the RAN to more than fulfil these expectations. Claims have since been made that 10–20 per cent of the asdic personnel serving in British ships in the Battle of the Atlantic were trained at HMAS *Rushcutter*¹²⁰ while, by 1945, Australian naval officers filled most of the higher instructional posts in the United Kingdom’s own anti-submarine schools.¹²¹

This, however, remained several years in the future, and in September 1939 the state of anti-submarine readiness in Australia should have given the ACNB considerable cause for concern. Local naval authorities, for example, had only earmarked sufficient auxiliary A/S vessels to complete Stage I of the expansion plan and had made little progress with fixed defences at Australia's three most vulnerable ports.¹²² Although the RAN had organised a Boom Defence Service in April 1939 and local industry had finally begun the manufacture of wire rope, by September only an A/T baffle at Fremantle had been completed. The Naval Board did not expect the full boom defences at Fremantle and Darwin to begin installation until June 1940, while Sydney's boom would not be completed until mid-1942. The situation with indicator loop systems was only slightly better. Those at Sydney and Darwin were in place, but Fremantle's would not be ready until early 1940 and testing was in no case complete.

Within the squadron, meanwhile, the posting ashore of Corlett had denuded the destroyer flotilla of expertise, leaving Gracie in *Sydney* as the RAN's sole seagoing A/S officer. Although the cruiser at least had its unique Type 125 asdic, Gracie was not in a good position to closely observe the designated anti-submarine groups, which had been formed from the available escort vessels and destroyers. At the outbreak of war these groups immediately moved to take up their war stations in the focal areas off Australia's south-east and south-west coasts.

The first test of the Navy's anti-submarine organisation was not long delayed. On 9 September 1939 two boys reported sighting a submarine off Broken Bay and authorities sent *Stuart*—then on A/S patrol off Sydney Heads—to investigate.¹²³ Soon after arrival the destroyer's asdic operator detected a moving contact, and in what later became known as the 'Battle of Terrigal' *Stuart* completed the RAN's first depth charge attack of the Second World War. Two more attacks took place during the night but, uncertain of the results, the destroyer continued to search. Exercising due caution, authorities closed all ports between Newcastle and Port Kembla to outward-bound traffic. The next day the RAAF flew a dawn visual search out to 70 nm from the coast, while *Waterhen* assisted *Stuart* in its asdic hunt.

A bottomed target was eventually found but classification remained difficult. Only after divers were sent down was it positively identified as a series of sheer-faced, rock outcrops. The apparent movement had been caused by tidal eddies. Those who carried the burden of classifying asdic contacts usually erred on the side of safety, and of course for inexperienced crews the

temptation to over-classify a contact was even greater. The incident at Terrigal would be the precursor of countless other ‘non-sub’ attacks during the war,¹²⁴ but it was also a renewed pointer to the uncertainty created by even the vaguest of submarine threats. Reflecting the greater immediate need for experience at sea, Lieutenant Corlett was thereafter withdrawn from the staff of the A/S School to return to flotilla duties.

Notes

1. D.C. Reddin, ‘How It All Began’, in Worledge, *Contact!*, p. 4.
2. Burgess, *A History of Convoys and the Role of Convoys Today*, (Sydney: Maritime Trade Section, RAN Surface Warfare School, April 1994), p. 10.
3. Minute, Commander Parker (Naval Assistant to 2NM) to Thomson, 4 August 1937, NAA: MP 151/1, 600/201/2017.
4. Total naval expenditure over the three year period was: 1936–37 - £2,577,383, 1937–38 - £2,960,291 and 1938–39 - £4,497,638. Unfortunately it has not been possible to isolate the proportion of the naval vote devoted to training. See ‘Estimates of Expenditure 1937/38’, NAA: MP 151/1, 464/211/476.
5. Notes on the establishment of HMA A/S School collected by the A/S Officers Association.
6. Minute, undated, NAA: MP 1049/5, 2017/2/7.
7. Vice Admiral Sir Richard Hayden Owen Lane-Poole, KBE, CB, RN (1883–1971), RACAS 1936–38, retired list 1939.
8. Letter, Lane-Poole to ACNB, 23 January 1938, NAA: MP 1049/5, 2002/2/63.
9. ‘Memorandum on A/S Policy Regarding the Use of Asdics’, TD 1/38, c. 1938, PRO: ADM 1/12140, 42661. Emphasis in original.
10. Letter, Lane-Poole to ACNB, 23 January 1938, NAA: MP 1049/5, 2002/2/63.
11. Minute, Thomson to Colvin (1NM), 1 February 1938, NAA: MP 1049/5, 2002/2/63.
12. See ‘Memorandum on A/S Policy Regarding the Use of Asdics’, TD 1/38, c. 1938, PRO: ADM 1/12140, 42661.
13. Letter, Lane-Poole to ACNB, 23 January 1938, NAA: MP 1049/5, 2002/2/63.
14. The first RN SD qualifying course had been held in 1920 with the distinguishing badge introduced in 1930. See Mason, ‘Evolution of the Osprey’, p. 17.
15. Commonwealth Naval Order No. 151, NAA: MP 151/1, 600/201/2017.
16. Daily qualification pay was 1/6s for SDIs, 9d for HSDs and 6d for SDs, which were similar to RN rates. Standard RAN daily pay rates were in the order of 7/- for able seamen and 8/- for leading seamen.
17. Minute ACNB to Thorby (Minister for Defence), 1 December 1937, NAA: MP 151/1, 600/201/2017.
18. Minute, Parker to Thomson, 4 August 1937, NAA: MP 151/1, 600/201/2017.
19. To remain efficient a SD rating was only expected to operate for one hour at a time. Two ratings were therefore required on watch at the same time so that they could operate in turn. For continuous operations three watches would be required and hence a minimum complement of six SD ratings.
20. Minute, Parker to Thomson, 23 November 1937, NAA: MP 151/1, 600/201/2017.

21. Auxiliary Service Personnel who, if possible, were also to have received training in the UK, would man the loops in peacetime. Peacetime complements: Sydney - 6, Darwin - 5, Fremantle - 5. Wartime: Sydney - 23, Darwin - 13, Fremantle - 13.
22. *Hobart's* Type 132 asdic had been reallocated to HMS *Newcastle* before delivery. See, NAA: MP 1049/5, 1903/2/361.
23. Minute Parker to Thomson, 21 December 1937, NAA: MP 151/1, 600/201/2017.
24. Paymaster Captain Charles A. Parker, OBE, RAN (1879-1965), Naval Assistant to 2NM 1937-46.
25. Minute Parker to Thomson, 21 December 1937, NAA: MP 151/1, 600/201/2017.
26. Acting SDs were candidates selected as suitable for the branch, but who had yet to commence shore training. Letter, Lane-Poole to ACNB, 11 February 1938, NAA: MP 151/1, 600/201/2017.
27. Letter, ACNB to Lane-Poole, 3 February 1938, NAA: MP 151/1, 600/201/2017.
28. The RN did not expect to make up its shortage in SD ratings until 1940-41. See 'Memorandum on A/S Policy Regarding the Use of Asdics', TD 1/38, c. 1938, PRO: ADM 1/12140, 42661.
29. Naval Board Minute, 8 March 1938, NAA: MP 151/1, 600/201/2017.
30. Remarks by Thomson, 22 February 1938, on minute Parker to Thomson, 17 February 1938, NAA: MP 151/1, 600/201/2017.
31. Minute, Thomson to Colvin, 1 February 1938, NAA: MP 1049/5, 2002/2/63.
32. Remarks by Colvin on minute, Thomson to Colvin, 1 February 1938, NAA: MP 1049/5, 2002/2/63.
33. Report, Phillips (Captain-in-Charge HMA Naval Establishments Sydney) to ACNB, 13 April 1939, NAA: MP 1049/5, 2002/2/63.
34. Minute, Collins (ACNS) to Colvin, 25 October 1938, NAA: MP 1049/5, 2002/2/63.
35. Rear Admiral G.V. Gladstone, 'Foreword', in Worledge, *Contact!*, p. viii.
36. P. Gretton, 'Officer Specialisation in the Royal Navy', in *The Naval Review*, Vol. 69, January 1981, p. 50.
37. Article, 'Survey of A/S Training in the Past', PRO: ADM 189/66.
38. See Franklin, 'A Breakdown in Communication: Britain's Over Estimation of Asdic's Capabilities in the 1930s', p. 212.
39. Minute, Harvey to Thomson, 6 January 1938, NAA: MP 151/1, 600/201/2017.
40. Esdaile was promoted Commander in 1933, Spurgeon in 1937.
41. Minute, Harvey to Thomson, 6 January 1938, NAA: MP 151/1, 600/201/2017.
42. Newcomb, 'Some personal reminiscences', in Worledge, *Contact!*, p.11.
43. Captain (A/S) Harvey Mansfield Newcomb, RAN (1899-1991), Senior Instructional Officer *Osprey* 1937-38, OIC HMA Anti-Submarine School 1938-43, CO HMAS *Rushcutter* 1943-47.
44. See obituary 'Captain H.M. Newcomb', in *Naval Historical Review*, September 1992, pp. 6-8.
45. Lieutenant Commander (A/S) Alexander Gracie, RN, HMAS *Sydney* 1938-40, staff of HMA A/S School 1940-41.
46. Biography of Esdaile, in *The Navy*, April 1949, p. 20.
47. See Chapter 4.
48. Minute, Parker to Thomson, 4 April 1938, NAA: MP 151/1, 600/201/2017.
49. Remarks by Esdaile, 5 April 1938, on minute Parker to Thomson, 4 April 1938, NAA: MP 151/1, 600/201/2017.
50. Lieutenant Commander (A/S) Geoffrey S. Corlett, DSC, RN, HMAS *Vendetta* 1939, staff of HMA A/S School 1939, HMAS *Stuart* 1939-40.
51. Minute, Parker to Thomson, 7 April 1938, NAA: MP 151/1, 600/201/2017.

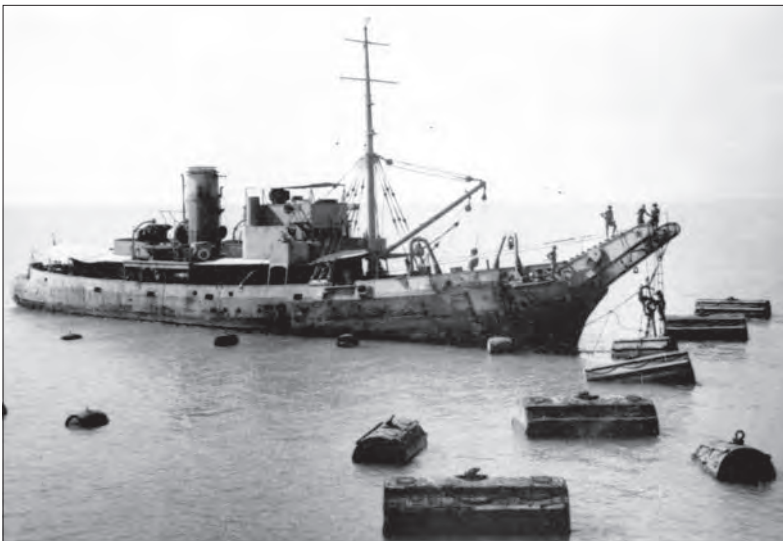
52. Minute, Esdaile to Thomson, 26 April 1938, NAA: MP 151/1, 600/201/2017. Emphasis in original.
53. RN policy in 1938 was to train sufficient ratings to meet mobilisation requirements by 1940. At this stage the branch was expected to include over 1,300 ratings. See Mason 'Evolution of the Osprey', p. 19.
54. Minute, Esdaile to Thomson, 26 April 1938, NAA: MP 151/1, 600/201/2017. Emphasis in original.
55. Remarks by Thomson on minute, Parker to Thomson, 16 May 1938, NAA: MP 151/1, 600/201/2017. Emphasis in original.
56. Draft ACNB memorandum, undated, NAA: MP 151/1, 600/201/20117.
57. Minute, Parker to Thomson, undated, NAA: MP 151/1, 600/201/20117.
58. Minute, Esdaile to Thomson, 28 March 1939, NAA: MP 151/1, 600/201/2017.
59. Letter, Phillips to ACNB, 14 February 1939, NAA: MP 1049/5, 2002/2/63.
60. Minute, Thomson to Colvin, 3 April 1939, NAA: MP 151/1, 600/201/2017.
61. Draft ACNB memorandum, undated, NAA: MP 151/1, 600/201/20117.
62. In July 1939 the ACNB decided that Lieutenant L.M. Hinchliffe, RAN, should undertake the course beginning in January 1940. Minutes of the ACNB, 19 July 1939, NAA: A2585/1, 1931/1941.
63. Letter, Admiralty to ACNB, 6 September 1938, NAA: MP 151/1, 600/201/20117. At the beginning of 1939, eighty-two RN officers had qualified in A/S, though due to wastages only some 65 were available for A/S specialist appointments. See 'Survey of A/S training in the Past', PRO: ADM 189/66.
64. Message, Defence Secretary to Paymaster Lieutenant Commander Perry (Naval Liaison Officer, London), 28 September 1938, NAA: MP 151/1, 600/201/20117.
65. Newcomb, 'Some personal reminiscences', in Worledge, *Contact!*, p. 12.
66. See Roskill, *Naval Policy Between the Wars, II*, pp. 240-4.
67. See 'Anti-Submarine Policy', 1939, PRO: ADM 189/116, 42747.
68. Letter, Admiralty to ACNB, 6 May 1938, NAA: MP 1049/5, 2002/2/63.
69. Remarks by Thomson, 24 June 1938, on letter, Admiralty to ACNB, 6 May 1938, NAA: MP 1049/5, 2002/2/63
70. Remarks by Esdaile, on message, CinC China to ACNB, 13 July 1938, NAA: MP 1049/5, 2002/2/63.
71. Reddin, 'How it all Began', in Worledge, *Contact!*, p. 9.
72. See minute, Thomson to Colvin, 25 July 1938, NAA: MP 1049/5, 2002/2/63.
73. Minute, Thomson to Colvin, 25 July 1938, NAA: MP 1049/5, 2002/2/63.
74. Rear Admiral Wilfred Neville Custance, CB, RN (1884-1939), RACAS 1938-39.
75. Letter, Custance to ACNB, 4 September 1938, NAA: MP 1049/5, 2002/2/63.
76. Letter, Custance to ACNB, 29 November 1938, NAA: MP 1049/5, 2002/2/63.
77. Minute, Esdaile to ACNS, 4 October 1938, MP1049/5, 2002/2/63.
78. Remarks by Thomson, 9 December 1938 on letter, Custance to ACNB, 29 November 1938, NAA: MP 1049/5, 2002/2/63.
79. Minute, Esdaile to Thomson, 12 December 1938, NAA: MP 1049/5, 2002/2/63.
80. G. Hermon Gill, 'Anti submarine School, Sydney' papers of the official historian, AWM: AWM 69.
81. Anon, 'HMA Anti-Submarine School', in Worledge, *Contact!*, p. 20.
82. Instructors notes, 'History of the TAS Branch RAN', HMAS *Watson*, c. 1980s, p. 13.
83. Commonwealth Navy Order, No. 190 of 1938.
84. Commonwealth Navy Order, No. 36 of 1939.
85. Commonwealth Navy Order, No. 35 of 1939.

86. The attack teacher comprised the control equipment of an asdic set together with an attack table. It allowed an officer under training to order course and speed changes of his 'ship' in response to an artificial echo produced in the trainee operator's headphones.
87. The procedural teacher provided operators with practice in using their asdic sets. It allowed the instructor to introduce an artificial echo into the set.
88. Letter, Newcomb to Phillips, 30 March 1939, NAA: MP 1049/5, 2002/2/63.
89. 'History of the TAS Branch RAN', p. 14.
90. The RANR was largely made up of professional merchant seamen and the lack of volunteers was apparently caused by the requirement for them to revert to the RANVR, which was open to all suitable candidates.
91. L.M. Hinchliffe, 'LM Hinchliffe', in Worledge, *Contact!*, p. 233.
92. Obituary, 'Captain H.M. Newcomb', p. 6.
93. Weekly instruction was not confined to A/S refresher training and included a wide variety of naval subjects including, seamanship, navigation and service customs and traditions.
94. Vice Admiral Sir Henry Clarmonth Phillips, KBE, CB, RN (1891-1968), Captain-in-Charge HMA Naval Establishments Sydney 1938-39.
95. Letter, ACNB to Phillips, 25 January 1939, NAA: MP 1049/5, 2002/2/63.
96. For a discussion of exercises, trials, tactics and A/S efficiency at this period, see Franklin, 'A Breakdown of Communication: Britain's Over Estimation of Asdic's Capabilities in the 1930s', pp. 205-7.
97. Letter, Newcomb to Phillips, 3 April 1939, NAA: MP 1049/5, 2002/2/63.
98. Of note, tactical instructions for A/S escorts did not yet exist. These would have provided escorts with pre-planned actions to take when prosecuting a submarine. See Glasson, 'The Development of the Submarine', p. 154.
99. Letter, Newcomb to Phillips, 3 April 1939, NAA: MP 1049/5, 2002/2/63.
100. Report, Phillips to ACNB, 13 April 1939, NAA: MP 1049/5, 2002/2/63.
101. Letter, Newcomb to Phillips, 3 April 1939, NAA: MP 1049/5, 2002/2/63.
102. In comparison with Australian coastal waters, UK waters tend to be shallower and isothermal, resulting in less diffraction of the asdic beam.
103. Report, Phillips to ACNB, 13 April 1939, NAA: MP 1049/5, 2002/2/63.
104. Report, Newcomb to Phillips, 3 April 1939, NAA: MP 1049/5, 2002/2/63.
105. Minute, Esdaile to Colvin, 24 May 1939, NAA: MP 1049/5, 2002/2/63.
106. Letter, Newcomb to Phillips, 30 March 1939, NAA: MP 1049/5, 2002/2/63.
107. The ACNB's response has not been found.
108. Report, Phillips to ACNB, 13 April 1939, NAA: MP 1049/5, 2002/2/63.
109. Esdaile suggested the school needed seven instructors (three officers and four ratings) increasing to nine (four officers and five ratings) once the training of active service personnel began.
110. Minute, Esdaile to Colvin, 24 May 1939, NAA: MP 1049/5, 2002/2/63.
111. Minute, Collins to Colvin, 29 May 1939, NAA: MP 1049/5, 2002/2/63.
112. Remarks by Collins, 26 May, 1939, on minute Esdaile to Colvin, 24 May 1939, NAA: MP 1049/5, 2002/2/63.
113. Minute, Esdaile to Colvin, 26 May 1939, NAA: MP 1049/5, 2002/2/63.
114. In fact, in early 1939 the Portland training flotilla consisted of 20 A/S vessels. See 'Survey of A/S training in the Past', PRO: ADM 189/66.
115. Minute, Esdaile to Colvin, 26 May 1939, NAA: MP 1049/5, 2002/2/63.
116. Remarks by Colvin on minute, Collins to Colvin, 29 May 1939, NAA: MP 1049/5, 2002/2/63.
117. Anon, 'HMA Anti-Submarine School', in Worledge, *Contact!*, p. 22.
118. Letter, ACNB to Admiralty, June 1939, NAA: MP 1049/5, 2002/2/63.

119. Newcomb, 'Some personal reminiscences', in Worledge, *Contact!*, p. 14.
120. In 1940 the A/S School became known as HMAS *Rushcutter*.
121. See Rear Admiral Gladstone, 'Foreword', in Worledge, *Contact!*, p. viii; Admiral Sir Guy Royle, *DIT: The RAN Bulletin*, July 1945, p. 46; 'Review of Naval Effort and Activities', 31 October 1945, NHD Canberra.
122. Minute, Commander Martin (Director of Plans) to Colvin, 29 June 1940, NAA: MP 1049/5, 2026/14/73.
123. Gill, *Royal Australian Navy 1939-1942*, pp. 69-70.
124. One practical result on this occasion was a recommendation that echo-sounding equipment should be fitted in destroyers as an aid in classifying whether an asdic contact on the bottom was a 'sub' or 'non-sub'. Unfortunately, with the dispatch of the destroyers overseas the matter was left in abeyance. Minute, from Director of Plans to Captain Getting (DCNS), 24 December 1941, NAA: MP 1587/1, 321D.



The corvette HMAS *Deloraine*.
(RAN)



HMAS *Karangi* laying the boom defence in Darwin Harbour.
(RAN)

Responses to the Submarine Threat – 1939-42

6

If Japan enters the war against us, the submarine threat becomes a grave one, she having a large number of vessels and well placed bases available.

Assistant Chief of Naval Staff, 18 July 1940.¹

There was little chance that Germany would send submarines to the Far East in the early months of World War II. The dearth of large, long-range U-boats and lack of overseas bases posed immediate hurdles that would take some time to overcome.² Germany was far more likely to unleash its heavy surface raiders and armed merchant cruisers. Yet even these could not arrive on the Australia Station until they had evaded the imperial naval forces stretched out along the oceanic trade routes. Aware of the enemy's relatively small submarine arm, the Australian naval staff accurately predicted that Germany would first concentrate its efforts on a quick victory in Europe. Only if events did not go to plan did the RAN expect a more widely dispersed undersea effort.³

The greater concern within Navy Office was that Japan might take advantage of the situation. Although direct intervention might be the worst case, there were other equally unpalatable possibilities. In late 1939 Adolf Hitler gave his approval to the leasing of U-boat bases in the Pacific and, for at least the first year of the war, Melbourne received repeated warnings that the Japanese might provide these bases or allow the Germans to crew Japanese submarines.⁴ Equally disturbing, in November 1939 the Soviets—recently allied in the Hitler-Stalin non-aggression pact—allowed the Germans to establish a naval base on the Soviet Arctic coast and might also offer Pacific basing rights.⁵ The new ACNS, Captain Joseph Burnett,⁶ believed that either situation would offer excellent facilities for submarine 'operations in Australian waters'.⁷ As a result the RAN faced the perennial Australian dilemma of maintaining a prudent balance between forces that could be spared for imperial commitments and those that must be retained for local defence.

With only a few units at the ACNB's disposal, accurate and current intelligence would be vital. However, although the Empire's naval intelligence chiefs cooperated closely, RAN intelligence activities were still only slowly

developing. At the highest levels of government the attitude prevailed that Australia should not duplicate the work of analysis already undertaken in Britain.⁸ In consequence, while the main task of the Australian intelligence services was to monitor Japanese activities, the nation remained heavily dependent on British assessments and slow to discern clear indications that Japan might soon threaten the Commonwealth.⁹

The destroyers depart

The experience of the First World War had shown that no single method or activity adequately addressed the entire problem of trade defence. Protection of merchant shipping required a combination of measures, most of which had as their basis the Admiralty's global Naval Control Service (NCS) system. In this, the Australian Naval Board continued to play an integral part. On 26 August 1939 the Admiralty was authorised to adopt compulsory control of movements of all British merchant ships.¹⁰ On 27 August, the ACNB likewise initiated a NCS. Making good use of reservists, the system was activated smoothly and quickly started operations. The Naval Board, or rather its representatives in each port, thereafter supervised shipping movements, issued routing instructions, and ensured merchant ships were properly equipped.¹¹

Despite the unlikelihood of an immediate submarine presence, the threat posed by an invisible enemy imposed little margin for error and ensured that the Navy investigated all incidents. Lack of experience and fears over their vulnerability made merchant vessels particularly prone to false sightings. On 14 September 1939, a French steamer reported an attack by two torpedoes just 15 miles off Broken Bay.¹² The naval authorities in Sydney sent *Swan* to investigate. An all-night search not surprisingly proved negative, but there can be no doubt that the naval crews took the threat seriously.¹³ The ACNB, however, was soon satisfied that enemy submarines posed no immediate danger and sought to reduce local commitments. By the end of September it had discontinued the routine A/S patrol off Sydney, with no intention of renewing the task until there were firmer indications that enemy submarines were operating. Of more pressing concern to the Board was the expectation that, in accordance with general Empire strategy, Australia's major warships would shortly be placed under imperial control. Hence the ACNB readily supported an immediate Admiralty request for the loan of the RAN's five destroyers for service outside the Australia Station.¹⁴

The RAN's dispositions were subject to political influence and not purely at the Naval Board's discretion. Fully aware of the scarcity of anti-submarine vessels remaining in local waters, the Commonwealth Government at first harboured some misgivings, but a minute from Admiral Colvin apparently settled the matter. Clearly stating his views, the First Naval Member stressed 'that the submarine menace in Australia was now negligible and that the best means of cooperating in Empire Defence was to send the destroyers to the Mediterranean.'¹⁵ A letter to Prime Minister Robert Menzies from the British High Commissioner, Sir Geoffrey Whiskard, provided further reassurance. Internally, the Admiralty freely admitted that the Far East was very weak in anti-submarine craft,¹⁶ but the Australian Premier was advised that, should Russia or Japan intervene and their submarines operate in local waters, then either the RAN destroyers would return or suitable British ships would be provided.¹⁷ The Australian Cabinet was also willing to allow the detachment of a light cruiser for the East Indies Station in addition to the destroyers, provided that she remain east of Suez. By late October 1939, *Hobart* and the five destroyers were working out of Singapore.

Structural alterations in the destroyers had been made, and electric cables run, but the Type 127 asdic sets ordered in 1937 had not yet arrived. Consequently, all five vessels sailed for active service still fitted with the Type 123 trawler set. Moreover, most of the crews were reservists and the destroyers' rapid mobilisation and departure had left little time for work-up. In Singapore they managed to arrange a week of exercises with the submarine HMS *Rover*, but for many of the asdic operators it remained their first experience with a live target and an uncertain basis on which to proceed to war.¹⁸

Despite their lack of training, for the next two years the Australian destroyers were employed by the Royal Navy on a wide variety of escort, patrol, evacuation and resupply tasks. Under the inspired leadership of officers like Captain H.M.L. Waller of *Stuart*, they promptly gained considerable experience and an enviable reputation for professionalism. In the Mediterranean much of the threat came from the air, but with Italian submarines to contend with from June 1940, and German U-boats from September 1941, ASW gradually formed an increasing proportion of the effort. On 30 November 1940, the Italian submarine *Gondar* became the RAN's first ever solo submarine kill, sunk by *Stuart* off the Egyptian coast.¹⁹

Local defence measures

In Australia meanwhile, efforts to complete preparations for an adequate naval defence proceeded in fits and starts. At first there seemed little evidence that the Commonwealth intended either a serious commitment to the European theatre, or to provide adequate insurance against conflict spreading to the Far East.²⁰ The Naval Board held its first wartime meeting on Saturday 9 September 1939. The last of 12 agenda items noted the urgent need for small craft for mine-sweeping and anti-submarine duties and the members determined to submit an urgent minute for the Minister's consideration.²¹

Although the ideal requirements for anti-submarine and mine-sweeping vessels were not identical, the Board held realistic expectations, and maintained that it was 'better to obtain acceptable vessels quickly than to wait for the ideals which may be too late.'²² The AMS or 'corvette' design developed in early 1939 fitted the bill as a 'reasonably satisfactory compromise' and the ACNB estimated that seven vessels to this plan plus another 27 requisitioned civil craft would fulfil initial requirements for both duties.²³ The War Services Program approved by the War Cabinet in September agreed, but took care to note that the provision of local defence vessels was made only on the basis of Australian requirements for the prosecution of a European war.

A deliberate government campaign to stress 'business as usual' did little to engender a feeling of impending threat among Australians and, well into 1940, most seemed content to regard the war as a distant problem.²⁴ The ACNB maintained its watch on events closer to home, but were apparently content with preparations. Certainly, they gave no further impetus to fixed defences in local waters or made any particular effort to solve the longer term shortage of A/S officers. In January 1940, the Board recommended that only one of the six officers to be sent to undertake specialist courses in the United Kingdom that year should qualify in ASW.²⁵

Faced with their own growing threat from German U-boats, the Royal Navy was somewhat less complacent. Having used the results of equipment trials rather than training exercises to develop asdic policy,²⁶ the Admiralty soon found that prewar predictions concerning the number of escorts required for convoy protection were hopelessly optimistic.²⁷ The expected early success against the U-boats was not achieved and by May 1940 the prolonged struggle of the Battle of the Atlantic was well underway. Finding itself hard-pressed in European waters, the Admiralty sent a letter to all British naval authorities in the Indian Ocean and China seas, warning them of the urgent need to consider an increase in the number of small craft for mine-sweeping, anti-submarine,

and patrol duties at defended ports.²⁸ Effectively revising its interwar planning, the Admiralty now admitted to great difficulty in providing any of these craft from home waters should the war spread to the Far East.

No similar warning has been found addressed to the ACNB, although it is unlikely that this indicates a deliberate omission. In any event, it was not until June 1940 that the Naval Board determined to begin its own review of local naval defences. Consequently, the War Cabinet did not formally examine the situation until August. The immediate stimulus by this stage was not a warning, but rather the British admission that, with the entry of Italy into the war and the fall of France, it was no longer possible to divert major naval forces from the Mediterranean.²⁹ The prewar doubts attached to the dependence of Australian security on imperial support had for some been vindicated. Yet although the absence of the key element of the 'Main Fleet Strategy' was the most public repercussion of the British declaration, less obvious was the loss to Australia of the 25 trawlers to be provided for local defence under Stage II of the Far East War Plan.³⁰

At its meeting of 14 June 1940 the Naval Board had agreed to prepare another statement for the Navy Minister, setting forth the need for additional auxiliary A/S and M/S vessels 'to be taken up at once'.³¹ A minute written subsequently by Captain Burnett, highlighted the perceived danger:

... all our plans have been based on Naval operations in Far Eastern waters taking place (after an initial period) under cover of a main fleet at Singapore. This is not now the case, and Australia's sea communications are therefore open to attack from major units of the Japanese fleet including large numbers of submarines and minelayers. This must alter the nature of the Naval war in these waters from an offensive one to a defensive one, at least for a long period. We must maintain our sea communications as much as possible, and a considerable part will be played in this connection by the maintenance of security from mining and submarines off all defended ports and in focal areas. The accomplishment of this task may well play a decisive part in Australia's ability to win through.³²

In short, the absence of the British main fleet meant that Japan would have sufficient naval superiority to concentrate superior surface forces simultaneously with a widely dispersed attack on trade. Should Japan decide to adopt this strategy the RAN faced an almost hopeless task.³³ Patrols of all Australian trade routes would be impossible and even greater reliance would fall upon local defence and the activities of the NCS system.

Despite this recognition that circumstances had substantially altered, Navy Office did not extend its concern to embrace an immediate re-examination of the Far East War Plan. Burnett pointed out that the plan set down full Australian requirements as 76 A/S vessels (64 at ports and 12 escorts) and 77 minesweepers (69 at ports and eight fast sweepers).³⁴ But this total would only be needed after Japan actually entered the war. Until that time only increased insurance would be necessary, and this meant ensuring that the RAN had the ability to expand rapidly its numbers both of ships and trained personnel. Burnett believed this could be achieved with a total of just 59 vessels (see Table 6.1).

Table 6.1 - Australian A/S and M/S requirements, July 1940

| Duty | A/S | M/S |
|---------------------------------|-----------|-----------|
| Sydney | 3 | 3 |
| Newcastle | 2 | 3 |
| Brisbane | 3 | 3 |
| Darwin | 6 | 3 |
| Fremantle | 3 | 3 |
| Adelaide | 3 | 3 |
| Bass Strait | 3 | 3 |
| Port Phillip | - | 3 |
| Hobart | - | - |
| A/S Striking Force | 3 | - |
| Instructional ship | 1 | - |
| Fast Minesweepers (20th MSF) | - | 8 |
| Total | 27 | 32 |

Source: NAA: MP 1049/5, 2026/11/320.

The Naval Board agreed and, since 34 vessels were either under construction or already taken up, they agreed another 25 to be the minimum additional requirement against the possibility of Japanese intervention. Local naval defences were to be improved where practical, yet with the continuing caveat: 'without prejudice to our main efforts'.³⁵ As such the naval staff seems to have given no detailed consideration to the problem of filling the gap left by the missing Admiralty vessels. Broad proposals took the place of well-developed alternatives. These simply declared that the defences of ports would

be strengthened ‘as quickly as practicable’,³⁶ or made unhelpful statements to the effect that local defence vessels needed to be increased ‘as much as local facilities will allow’.³⁷

In fairness, however, the ACNB really had few options. Although further requisitioning was one possibility, there were conspicuous limitations. Once again, the earlier surveys had been overly optimistic. Investigations had since shown that many of the vessels selected for anti-submarine duties were unsuitable, for reasons that included low speed, shallow draught, lack of stability and age.³⁸ There remained, moreover, a finite number of vessels on the Australian register.³⁹ The 20 auxiliary M/S vessels requisitioned by the RAN had already made an impact on the intrastate carriage of cargo and the fishing industry. By October 1940 the RAN had requisitioned all serviceable trawlers on the register.⁴⁰ Likewise six of the seven vessels initially designated for auxiliary A/S duties had already been taken up, and most vessels otherwise suitable were engaged in specialised trades—such as the North Coast Dairy Industry—that offered minimal scope for substitution.⁴¹ A less capable vessel, for instance, could not replace one that normally carried a refrigerated cargo.

Avoiding undue dislocation of the coastal trade was something the Naval Board had constantly to keep in mind. Since internal transport by either rail or road was both uneconomic and slow, the domestic economy relied heavily upon coastal shipping.⁴² In fact, before the war the total weight of goods carried by sea was some 18 times greater than all other transport methods combined.⁴³ There was also the larger strategic picture to consider. Whether or not shipping suffered disruption, in the event of a Japanese war, Australian planners expected the nation’s fragmented and multi-gauge railway system to be taxed to capacity with military requirements. Put simply, there would be no reserve available for the carriage of civil cargo. Equally limiting, the expected introduction of petrol rationing would force the cessation of interstate heavy road traffic. In these circumstances the nation as a whole would place even more reliance on small, coasting vessels to carry on essential commercial and communication services.⁴⁴

The net result was that additional local defence vessels would almost all have to come from new construction, at least until the situation became desperate. The building of A/S trawlers to an Admiralty design was briefly considered but, due to their slow speed and deep draught, was rejected in favour of further AMS vessels.⁴⁵ In consequence, on 29 August 1940, the War Cabinet approved a further 13 A/S vessels and 12 minesweepers, 17 of which were to be new construction.⁴⁶

Naval construction

New construction imposed its own set of problems, with little scope for flexibility should further expansion become necessary. Notwithstanding RAN pressure to begin building as early as possible,⁴⁷ Cockatoo Dockyard did not lay the keel of the first AMS vessel until February 1940, and the Naval Board discovered that even this relatively straightforward project would take at least 10 months to complete.⁴⁸ Further slowing deliveries to its own navy, Australia had soon graciously offered to assist with urgent orders for the British and later the Indian governments.⁴⁹ Following the ACNB's recommendation, in April 1940 the War Cabinet specified that the first seven vessels under construction for the RAN, although acquired for 'local defence purposes', were to be handed over to the Admiralty.⁵⁰ Australian requirements were to be met from subsequent construction.

There were also innate limitations within the Australian shipbuilding industry. These included restrictions imposed by powerful trade unions which, like the general population, were in no way gearing up for total war. Continual industrial problems and restrictive work practices further delayed an output already constrained by the lack of qualified labour.⁵¹ When he placed the orders, the Navy Minister, A.G. Cameron, predicted an output of two AMS per month throughout 1941, and the completion of the program by the end of that year. The lead vessel, HMAS *Bathurst*, was commissioned on 6 December 1940, but Admiral Colvin was warned to expect only seven AMS within the next 12 months—seventeen fewer than the original estimate.⁵²

Despite their inefficiencies, not all the delays could be blamed on the shipyards and their workers. Increasing German air raids on the United Kingdom made the delivery of specialised equipment, particularly asdic, slow and uncertain. The program was further dependent on the supply of steel and machinery from sub-contractors. Cameron had again announced that local engineering firms would be able to match or exceed requirements.⁵³ But once more, planners had underestimated the difficulties, notably the impact of other urgent defence requirements. By March 1941 the RAN had just three AMS in commission, and the early delivery of future vessels could only be achieved by 'giving the materials required for the construction of Australian Minesweeping vessels the first priority of supply, and a position in advance of the remainder of the Defence programme.'⁵⁴ Although the start of enemy surface raider activity in October 1940 further highlighted the shortage of local defence vessels, no such adjustment was forthcoming.

The new corvettes were fitted with both A/S and M/S equipment, but previous plans had called for them to be employed almost exclusively on anti-submarine duties. Hence, when the Germans employed mines to begin their anti-shipping campaign in Australian waters, the RAN found it difficult to mount a sufficient response. In December 1940 Colvin agreed that all AMS vessels might be employed on mine-sweeping duties ‘until a greater S/M threat exists’.⁵⁵ Further easing the situation, the British accepted that the RAN could retain the first four corvettes on Admiralty account until replaced by new construction. As a final measure the War Cabinet sanctioned the requisitioning of another nine coasters as auxiliary M/S vessels (see Table 6.2).⁵⁶

Table 6.2 – Approved construction and requisitioning of small A/S & M/S vessels for the RAN, September 1939–December 1940

| | New construction | Requisitioned A/S vessels | Requisitioned M/S vessels | Total |
|--|------------------|---------------------------|---------------------------|-------|
| Australian requirements September 1939 | 7 (all A/S) | 7 | 20 | 34 |
| Additional Australian requirements August 1940 | 17 (13 A/S) | - | 8 | 25 |
| Additional Australian requirements December 1940 | - | - | 9 | 9 |
| Admiralty requirements | 20 | - | - | 20 |
| Indian requirements | 4 | - | - | 4 |
| Total | 48 | 7 ^a | 37 | 92 |

Source: NAA: MP 1049/5, 2026/11/320.

Note: a. Only six auxiliary A/S vessels were actually taken up.

Delayed equipment delivery had a direct impact on the AMS construction program, but the shortage of asdic sets continued to have far wider ramifications. The Naval Board not only attempted to satisfy local and imperial commitments, but also struggled to balance future manning requirements against its immediate defence responsibilities. Thus the requirement to fit out the A/S School to allow HSD training competed simultaneously with the need to complete the asdic outfits in the new sloops *Parramatta* and *Warrego*. The other two sloops, *Yarra* and *Swan*, were already due for long refits and, with the destroyers overseas, the Board had little room for manoeuvre. By mid-1940 only one fast A/S vessel remained available for escort duties

anywhere in Australian waters.⁵⁷ Nevertheless, on 25 June Admiral Colvin convinced the War Cabinet that local naval strength might be further reduced.⁵⁸ At the end of July *Parramatta* arrived in Aden for duties with the Red Sea Force, followed by *Yarra* in October.

This last deployment was made possible by the commissioning of *Warrego* on 22 August, and the final completion of the sloop's A/S outfit demonstrated the lateral thinking that was sometimes required. By May 1940 the five Type 127 sets ordered for the destroyers had at last arrived in Sydney. Since these vessels were overseas the Admiralty asked if the Naval Board intended to fit the sets, and if not, if they and the accompanying spares could be urgently returned. The ACNB arranged for one of the sets to be split, thus completing both *Warrego's* installation and providing sufficient equipment to begin the local training of HSDs. The Board offered the Admiralty the remaining sets, but added that if used for the RAN destroyers, then it would appreciate the return of their existing Type 123 sets for local use.⁵⁹

Local production of equipment

The accommodation of Admiralty needs remained a priority, but the ACNB did not ignore the parlous state of anti-submarine equipment in Australia. In June 1940, the RAN's Director of Plans, Commander W.H. Martin,⁶⁰ met with Commanders Esdaile and Newcomb to discuss the local manufacture of asdic. They concluded that most components, or suitable substitutes, could be manufactured in Australia.⁶¹ The meeting then tasked the A/S School to report on the practicalities and a newly recruited engineering officer, Lieutenant R. Allsop,⁶² began the investigations. Shortly thereafter the ACNB advised London of the possibility of Australian asdic manufacture for local use, and for the Admiralty if so required.⁶³ Facing their own difficulties in increasing asdic production, the British offered no objection.

The Naval Board requested complete manufacturing specifications for both the Type 123 and Type 128 asdics, but had already decided that the former was best suited to the RAN. The Type 128 was undoubtedly a superior system,⁶⁴ but the Board felt that its local manufacture was too dependent on the supply of equipment from Britain.⁶⁵ Orders for Type 128 gyros and alternators, for example, would take at least 12 months to fill. In contrast, the Type 123 could be operated without a gyro as a relative bearing set and a substitute alternator could be made locally. Furthermore, the Type 123 was to be the standard fit in auxiliary A/S vessels and, unless the government authorised further new construction, the remaining 37 vessels to complete the full Far Eastern War Plan would have to come from requisitioning.

A somewhat confusing succession of correspondence soon altered the Australian plans. First the Admiralty suggested that a better solution for the RAN's asdic needs would be to combine the transmitting and receiving gear of the Type 123 with the underwater fitting of the Type 128. At a RAN staff conference in October, the participants agreed, noting that the Type 128's retractable dome was better suited for use in the heavy seas prevalent around the Australian coast.⁶⁶ But, having just authorised 10 modified sets at a cost of £35,500, the ACNB was informed of a problem. Restating its own policy of fitting Type 128, the Admiralty pointed out that the greater draught of the Type 123 posed an unacceptable danger if the AMS were required to carry out simultaneous anti-submarine and mine-sweeping operations. The ACNB was in no position to disagree and, since the Admiralty had confirmed that the Type 128 could also be operated without a gyro, immediately accepted the set as the RAN's standard AMS asdic.⁶⁷ Ten sets were to be manufactured in the first instance, and the Board ordered the A/S School to organise and arrange for all aspects of production.⁶⁸ The ACNB did not alter its policy of fitting Type 123 into future auxiliary A/S vessels, but how it expected to obtain the additional sets remains unclear.⁶⁹

Plans to expand the A/S School were already in hand, and space was found for the local production officer, drawing office and test room.⁷⁰ But delays in obtaining the manufacturing specifications from Britain and in obtaining certain items of equipment, meant that initial orders were not placed until the beginning of 1942. Australian industry subsequently produced almost complete Type 128B sets, together with other diverse items of asdic and echo-sounding equipment. This was no small task. By one estimate over 320 specifications and 5600 individual drawings required preparation, and by the end of hostilities some 170 local companies were involved in repair or manufacture.⁷¹ In 1942, Lieutenant Commander H. Melville returned to the RAN as OIC A/S equipment production and thereafter as OIC A/S School.⁷² By 1945 his small team had not only executed repairs to almost the complete range of asdic sets, but also had redesigned British components that had proven unsatisfactory for use in tropical waters.

Nor was asdic the only item of anti-submarine equipment manufactured or modified in Australia. By September 1945 the RAN had produced some 24,000 depth charges, and many of these incorporated alterations to reflect the differing local requirements for shallow water, quick sinking and aircraft operations. Furthermore, although a proposal by Esdaile to develop an 'A/S (explosive) paravane' was rejected,⁷³ the RAN did design two other original

weapons. The first of these was a 'midget' depth charge developed at Navy Office and supplied to ships for use against midget submarines and human torpedoes. Designated the Type 'M', approximately 3600 were produced during the war. The second weapon derived from a late war requirement for a small anti-submarine charge able to be towed by small craft. Development began in 1944 in conjunction with the Council for Scientific and Industrial Research (Aeronautical Division).⁷⁴ Known as the 'TOAD', a prototype device in the form of an underwater kite had achieved satisfactory results before the end of hostilities caused the requirement to be cancelled.⁷⁵

Expansion in A/S training

While local production progressed, Commander Newcomb also attempted to cope with a further increase in his duties brought on by the outbreak of war. By mid-1940 some seven different types of asdic were either fitted or on order for the RAN,⁷⁶ 100,000 yards of indicator loop cable had been laid,⁷⁷ and any thoughts of closing down the A/S School on mobilisation had long since disappeared. Newcomb's responsibilities included the simultaneous training of two qualifying courses (officers and ratings), maintenance of all Sydney A/S installations, and the supervision of all asdic fits and sea trials. He had received no additional staff, wartime courses had been lengthened, and the shortage of training equipment had resulted in the staggering of daily instructional periods between 0830 and 2130 hours. The staff had to complete drills in the servicing of equipment outside these times.

Further expansion plans were already underway. On 13 May 1940, the War Cabinet agreed to the importance of accelerating war measures, and made specific reference to the training of additional naval personnel for overseas service.⁷⁸ Newcomb warned that the A/S School had already reached its limits, and in a forthright letter the Naval Board was reminded that it had yet to approve a War Complement.⁷⁹ An increase was soon approved, but the only means of expansion was to appoint as instructors the RANVR officers the school had recruited and trained in 1939-40.⁸⁰ The first to return was Sub-Lieutenant H. Middleton, RANVR who had been on the fourth A/S CO course and had only qualified in June 1939.⁸¹

There still remained no provision for leave or sickness, but the additional staff allowed overall trainee numbers to increase and HSD courses to begin as soon as the school installed the Type 127 asdic equipment. Subsequently A/S trainee output exceeded local requirements by approximately 50 per cent and the surplus continued to be made available for service in the Royal



HMAS *Yandra*, auxilliary A/S vessel.
(RAN)



Depth charge attack in the Mediterranean.
(RAN)

Navy.⁸² In spite of the demanding nature of the arrangements, the standard of instruction remained high and the Admiralty confirmed that Australian-trained SD ratings were 'very satisfactory'.⁸³ RAN personnel would continue to be sent overseas until increased local requirements brought about by Japan's entry into the war forced the suspension of the program in 1942.⁸⁴

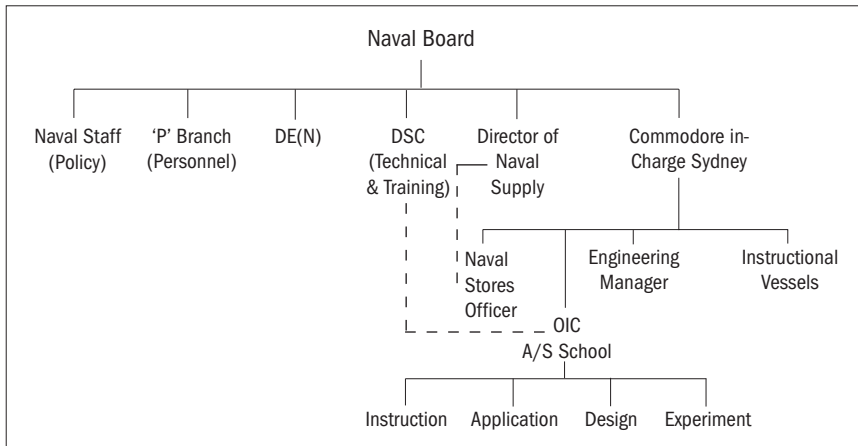
The absence of a submarine remained the main disadvantage in comparison with the British training scheme. Courses were extended to six weeks to compensate, but a realistic asdic target was still urgently required. In April 1940, the ACNB received notice that the two mobile targets ordered in early 1938 had at last entered production. The Naval Board planned to manufacture a further eight targets in Australia, and Newcomb expected no difficulty with construction.⁸⁵ Drawings and specifications were ordered, but the Admiralty then advised that such a small production run was not sufficient to justify local manufacture. Consequently the Board agreed to order the additional targets from England.⁸⁶ Two Johnston mobile targets finally arrived in July 1941, but no record of their subsequent performance has been found and their utility appears to have been limited. As such, local forces continued to suffer from a lack of practical A/S training, and this difficulty was not overcome until the arrival of American submarines during the first half of 1942.⁸⁷

Organisation

In general the Australian Navy coped well with its wartime expansion, and eventually arrived at workable solutions to most problems. Yet the lack of firm direction in anti-submarine matters pointed to some underlying organisational obstacles. Unlike the Admiralty, a separate anti-submarine section within Navy Office did not yet exist, and the long and tortuous channels of communication between the technical and policy areas in Melbourne and the training and squadron organisations in Sydney caused many unnecessary delays. In theory, the Director of Signals and Communications (DSC) was the officer responsible for technical and training matters concerning anti-submarine equipment, with the naval staff left to deal solely with matters of policy. In the lead-up to war, however, Commander Esdaile had been the senior staff officer, and there had been a natural tendency to refer all anti-submarine related matters to the naval staff. While Esdaile remained in Melbourne this *ad hoc* arrangement was workable, but in late 1939 he was appointed to the staff of the Commodore-in-Charge, Sydney. Despite his many new responsibilities, Navy Office continued to forward requests for Esdaile's advice on technical matters.⁸⁸

The need for improvement was clear and the solution arrived at was to establish a more formal chain of responsibilities (see Figure 6.1). This reorganisation made far better use of the existing functional areas. The DSC again became responsible for all purely technical and training matters concerning asdics and loops, but he was thereafter allowed to correspond directly with Newcomb on these matters.

Figure 6.1 – Anti-submarine responsibilities in the RAN, 1940



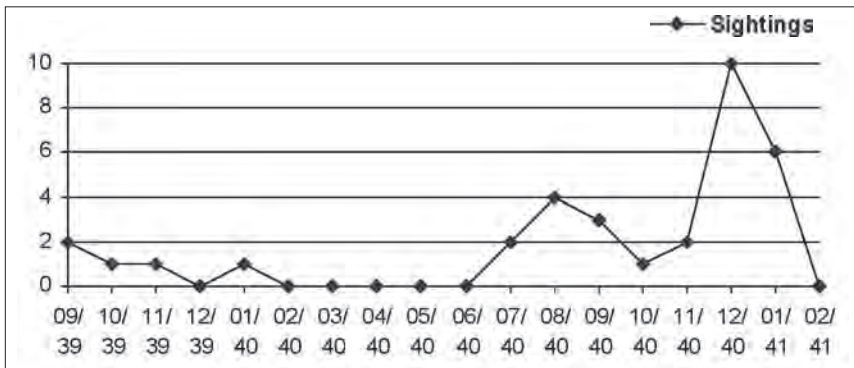
Source: NAA: MP 1587/1, 312D.

Submarine sightings

After the initial flurry of excitement caused by the declaration of war, reports of submarine activity in Australian waters had tailed off. Yet the worsening turn of events after mid-1940 and increasing public calls for action seem to have had an effect on the number of suspicious sightings. At least some justification existed. Although Italy’s surface forces could be disregarded east of Suez, the *Regia Marina* (Italian Navy) did have six submarines based on Massawa in the Red Sea. Intelligence suggested it was just possible that one of these could operate off south-west Australia with the help of a mother ship.⁸⁹ Later, Vichy French submarines were also considered a possible threat.⁹⁰ Then in September Japan signed the Axis Pact and, during the remainder of 1940, reports of submarine activity showed an appreciable increase (see Figure 6.2). By December the number of submarines supposedly spotted, particularly from the air, gave rise to concerns that the Naval Board might not be taking the possibility of enemy activity seriously.

On 22 January 1941, the Minister for Air, John McEwen, informed the War Cabinet that naval authorities had dismissed eight separate reports in the previous month. The Navy, McEwen continued, had each time argued that the presence of a submarine was doubtful in the relevant localities. The War Cabinet called upon Admiral Colvin to provide an explanation at their next meeting. In his response the Admiral reassured members that no reports were taken lightly, and that those mentioned by the Minister did not represent the total the RAN had received. In every case the contact had been thoroughly investigated and further action considered inappropriate. The underlying problem was that aircrew and intelligence authorities consistently overestimated the effectiveness of air reconnaissance, but on this occasion Colvin admitted that, though improbable, the presence of submarines was not impossible.⁹¹

Figure 6.2 - Submarine sightings in Australian and surrounding waters, 1939-41



Source: 'Submarine Activity in SWPA', AWM: AWM188, 6.

Note: Many more suspicious sightings were reported; those noted above are only those deemed significant enough to have been recorded in a postwar review.

Not that the Navy could have done much in most of the situations reported. Many of the sightings were either very vague or days old by the time authorities were alerted. Usually a search would have been useless after such a delay. Those reports that did lend themselves to analysis more often came from qualified observers or asdic-fitted vessels, but almost all of these were considered to be whales, shoals of fish, or outcrops of rock. On 14 February, after very careful consideration of all incidents, the RAN concluded that the

‘Navy does not discount the possibility that submarines may be in Australian waters, but there is as yet no conclusive evidence that they are.’⁹²

Reports of submarines continued throughout the remainder of 1941, but in fact the Australia Station remained free of enemy incursions until the German auxiliary cruiser *Kormoran* appeared off Western Australia in November. Official historian G. Hermon Gill, a wartime RANVR officer, concluded that the search for possible submarines afforded useful practice to untrained ships, and served to keep the whole question of the submarine threat alive.⁹³ This may be so, but the RAN’s best ships were still overseas, and the Naval Board still favoured increased support for Britain as Australia’s best strategic option. Where the suggestion originated is unclear, but an official policy statement released in December 1940 ordered the media to make no further reference to rumours of enemy submarines sighted in local waters.⁹⁴ It is tempting, but purely conjectural, to imagine that this policy aimed to keep the public mind firmly focused on events further afield.

Strategic planning and trade defence

As planned, evasive routing was the first reaction to the threat posed by enemy surface raiders and, during 1940, Australian control authorities dispersed merchant ships over the ocean trade routes. The ACNB accepted these measures, together with general naval patrols, troopship escort and mine-sweeping where appropriate, as sufficient protection while most activity took place outside the Australia Station. But authorities were also taking measures to improve the British Empire’s defence planning in the event of Japanese aggression. In Australia’s case, this included greater consideration of a direct threat to the Commonwealth.

The RAN played its part, although, with the Royal Navy’s role in Singapore’s defence temporarily supplanted,⁹⁵ the Australian Navy was not always in step with the Army and RAAF. In August 1940, Captain Burnett examined Australian defence under three general headings: defence of vital territory; defence of outlying territories and ports; and, defence of trade.⁹⁶ Having noted the almost certain preponderance of Japanese naval forces in support of a landing force, Burnett readily admitted that defence of vital Australian territory would depend mainly on the land and air forces available. Likewise, the defence of outlying ports and territories was not considered a practicable role for the RAN. This left the defence of trade; but, after remarking that the most important trade routes were off the southern coasts, Burnett concluded that these would receive a fair measure of protection simply because of their distance from the

threat. Although not stated explicitly, Burnett had implied that, in the event of a Far Eastern war, the RAN's major units would not have much to do in local waters. Its pre-war objective of defending trade notwithstanding, in 1940 elements within the RAN still supported a far grander strategic view.

This perception is further illustrated by papers submitted to the October 1940 Singapore Conference, held to prepare a 'tactical appreciation of the situation in the Far East'.⁹⁷ Here, a joint paper by Australia's Chiefs of Staff identified the defence of Singapore and the holding of Malaya as 'of greater ultimate importance than the Middle East'.⁹⁸ Presented at the same conference, however, was a RAN plan that declared that moves in the Far East must 'not interfere more than necessary with our effort in winning the war against Germany and Italy in Europe and the Middle East'.⁹⁹ Despite overwhelming Japanese strength, the RAN held that the enemy was not likely to attempt an attack 'in force (i.e. invasion of Australia)' until both Singapore and the NEI had fallen. Since this would involve inherent delays, the Navy's main strategic concern remained 'the maintenance of vital sea communications' to the primary theatres of war.¹⁰⁰ The routes the RAN identified, though, were not those north to Singapore, but those east and west from Australia to the United Kingdom and the Middle East.

Certainly, many of the RAN's senior figures had wholeheartedly adopted the Royal Navy's traditional global view of sea control, and their preferred tasking rested with the protection of troops and war materiel rather than trade defence. The views of the RACAS, Rear Admiral Jack Crace,¹⁰¹ were unequivocal. While admitting that some form of escorted group sailing was the only way to successfully combat the submarine menace, he believed his forces were entirely inadequate to meet the requirement:

It is clear ... that with the forces at our disposal or even with cruiser reinforcements and without cover in the Far East, the protection of Trade in Australasian waters is impracticable. In these circumstances our object as selected must be regretfully discarded.¹⁰²

Crace represented the more extreme side of the argument and Colvin did not support his position.¹⁰³ Nevertheless, at the Singapore Conference the RAN suggested that a program of minimisation would protect trade in the waters to the north of Australia. Elsewhere both coastal and overseas shipping would need to rely on the minimal cover the RAN could provide in focal areas, but even here protection 'would depend considerably on air support'.¹⁰⁴

It is too simplistic to claim, as some historians have done, that senior RAN officers held British rather than Australian perspectives on the strategic situation. Nevertheless, at times the RAN's support for a global strategy seems to have blinded it to the fact that Australia's terminal ports were, in truth, an integral part of the 'vital sea communications' the service aimed to preserve. Regional priorities could not be so easily ignored. An important conclusion of the Singapore Conference was that the minimum naval forces necessary in Australian waters could be provided only by the return of all forces then serving overseas.¹⁰⁵ The Australian War Cabinet agreed and, in November 1940, expressed 'grave concern' at the vulnerable situation revealed in the Far East.¹⁰⁶ Consequently the RAN put renewed effort into all aspects of regional naval defence. This included both better planning for trade protection and the acceptance of additional escort commitments to Malaya.

Trade protection plans

In January 1941, Rear Admiral Crace and New Zealand's Chief of Naval Staff, Commodore W.E. Parry, produced a joint naval defence plan for the Australia and New Zealand Stations.¹⁰⁷ In general their trade protection proposals still envisaged reducing overseas trade as much as possible by abandoning some routes and finding alternatives for others. Ocean-going shipping that remained would be routed far to the south. To reduce the number of overseas ships proceeding to and from ports north of Sydney, cargo was to be trans-shipped to coastal vessels.¹⁰⁸ Japanese submarines were expected to pose the main danger off the coast. Enemy surface vessels were more likely to operate further out, on the overseas sea routes and away from shore-based aircraft.¹⁰⁹

The ACNB passed the details of the plan to the Australian Shipping Control Board and also to Sir Thomas Gordon, the local representative of the British Ministry of Shipping.¹¹⁰ Gordon was forthright in his rejection of the proposals. They would work, he pointed out, only if production and exports were concentrated on the south and west coasts. Although Tasmania, Western Australia and South Australia together exported some 45 per cent of all commodities, the total of refrigerated cargo was less than 20 per cent.¹¹¹ Yet the most essential requirements in Britain and the Middle East were perishable foodstuffs, and the coastline 'which will mostly be affected by [the enemy] would unfortunately be our most productive area, that is from Sydney to Cairns.' Queensland, for example, would provide almost 100 per cent of the beef and sugar and 94 per cent of the butter to be exported in 1941. The coastal and overseas shipping networks were interconnected, and hence anything that interfered with or prevented a free flow of trade between and from the eastern states would bottle up perishable cargo and dislocate the export trade.

The ACNB had invested much staff effort between the wars studying trade patterns and establishing its role in the NCS system.¹¹² Gordon's response must, however, cast doubt on the depth of the RAN's understanding. Specifically, the Navy had failed to appreciate that a campaign of disruption could impact on both coastal and overseas shipping networks and, since the systems were complementary, each would have to receive an equivalent level of protection. Consequently, by March 1941 the Naval and Shipping Boards had begun a more detailed series of discussions on the protection of coastal shipping. For ease of administration they divided the coast into four separate zones: Sydney-Cairns, Newcastle-Spencer Gulf (South Australia), Adelaide-Fremantle and Melbourne-Launceston. Since a convoy system was not believed practicable within the northern reefs, the remainder of the coast was not initially considered. In any case, the shortage of RAN vessels made close escort in most zones impossible. Protection would instead come from stringent cargo limitations, with infrequent sailings and ships calling at intermediate ports to obtain immediate security if necessary.

Stopping the movement of shipping in a threatened area was a basic NCS measure, but it was only a temporary expedient and did not suit every situation. The vital Newcastle-Spencer Gulf zone, for example, embraced Australia's largest concentration of urban centres, industrial strength and mineral wealth, and contained the greater proportion of interstate shipping. Echoing Jellicoe's 1919 report, this area was identified as a critical Australian vulnerability and both parties agreed that it was here that the RAN should focus its defence efforts. But, as the Shipping Board pointed out, despite the employment of all available cargo vessels there was already insufficient tonnage for the carriage of essential bulk commodities such as coal, coke and iron ore. Hence although sailings might be regulated to conform 'to convoy requirements or such protection as the Navy might provide ...the utility of the [merchant] Fleet would [in consequence] be substantially decreased.'¹¹³

Also noteworthy at this point is that no Australian authority was planning to cope with any long-term disruption. In particular, although cargo estimates were to be pared down to 'bare essentials', no allowance had been made to build up satisfactory reserve stocks of necessary commodities before the situation became serious. In considering this issue the Shipping Board argued that 'In the past, the various States have been able to carry on for several weeks during strikes with greatly depleted tonnage.' Australia's reserve stocks became the subject of a separate conference, but the matter revealed a strategic weakness that was never satisfactorily resolved. The implications became all too obvious once an enemy campaign actually began.

Threat estimations and the start of coastal convoy planning

By the end of April 1941, the RAN at last had a new Far Eastern War Plan.¹¹⁴ It contemplated the return of all Australian warships from overseas, and even foresaw the basing of an American naval squadron in Darwin. However, the plan did not yet reflect the discussions with the Shipping Board, nor did it address the specific issues of a campaign against shipping. So long as Singapore and the NEI held out, the worst Australia might expect was intermittent bombardment or a ‘sharp cruiser-borne raid’.¹¹⁵ The threat from submarines received cursory treatment, but the plan did provide an updated appreciation of the local defences required in various threatened ports. Within two days of the war’s outbreak, all available sloops and AMS vessels would concentrate at either Sydney or Melbourne for anti-submarine duties. Convoys were not mentioned, but within a fortnight an anti-submarine striking force would be available to deploy wherever needed.

More detailed dispositions and the expected scale of the threat were finally outlined in a naval planning paper released in May 1941. Although this remarked that no enemy submarines were currently known to be operating, it predicted that ‘If Japan enters the war, we can reasonably expect one S/M to be operating simultaneously in each of the S.E., S.W., and Northern areas.’¹¹⁶ The threat was seen to be immediate, with all asdic-fitted vessels to be employed on anti-submarine duties at the commencement of hostilities. By this stage the ACNB had been watching the course of events in the Atlantic for some time and held no illusions over asdic efficiency or the type of submarine campaign the enemy might wage. Allied losses of merchant vessels were increasing and, of particular note, the paper at last accepted that the institution of an escorted convoy system was the best method of providing protection to vulnerable shipping on the Australian coast. Ten-day timetables were drawn up for 7-knot convoys, with priority given to the NSW-Spencer Gulf region.¹¹⁷

By mid-1941 Japan’s increasingly belligerent actions left little doubt that it was moving inexorably towards war with the United States and Britain. In July an Australian Joint Service Planning Directive admitted that, no matter what her major course of action, Japan would realise the value of operations in the Australian theatre to contain Allied forces.¹¹⁸ In addition to sporadic raids, Japan would almost certainly make use of its naval superiority to isolate Australia through harassment of the Commonwealth’s maritime communications. Enemy submarines formed only part of this perceived threat, but they were seen as the assets most suited to such distant operations.

Escort numbers

The shortage of escort vessels remained the fundamental weakness in any prospective Australian response. Although the ships serving overseas might return, the destroyers were again expected to spend much of their time providing anti-submarine protection for the cruisers.¹¹⁹ The cruiser force meanwhile, even if occasionally operated in a local defence role, could not 'be taken into consideration in local defence planning' since it would be fully involved with the additional escort commitments accepted at the Singapore Defence Conference.¹²⁰ Anti-submarine forces available to the RAN amounted to just two sloops, two AMS, *Moresby* (again employed primarily on surveying duties) and six auxiliary A/S vessels. Nevertheless, planners envisaged five separate escort groups, based at Brisbane (three vessels), Sydney (five), Melbourne (one), Fremantle (two) and Darwin (two British AMS). The vessels within a group were not expected to work together. Instead one vessel would be provided for each convoy while the remaining vessels were employed in port protection, rest or maintenance.¹²¹

As an interim solution the ACNB again sought to extend the retention in Australian waters of the first four Royal Navy corvettes. These would be released to the Admiralty once four RAN vessels were in commission and worked up. Since further requisitions were still to be avoided, additional construction remained the only other method of expanding local escort numbers. The new building program grew by another 12 AMS in July 1941. Also approved were six vessels of another type that were originally proposed as 'large corvettes', but were eventually constructed as 'River' class frigates (see Table 6.3).

The frigates were built to an Admiralty design and embodied the not inconsiderable sum of Atlantic war experience. Far more capable than the AMS, they featured greater endurance and speed, together with enhanced anti-aircraft and anti-submarine capabilities. A frigate, however, also took far longer than a corvette to construct and Australian building times remained embarrassingly slow.¹²² Furthermore, there remained the shortage of commercial tonnage to factor into any proposed naval construction program. Australian industrial and agricultural interests were already feeling the pinch brought about by the global loss of merchant hulls, and they would not allow the RAN to monopolise shipbuilding.¹²³ After a special investigation into the whole shipbuilding industry the Commonwealth Government placed orders for eight merchant ships in March 1941. Thereafter, analysts estimated combined merchant and naval building to have absorbed all Australian

Table 6.3 – Planned disposition of A/S vessels in the event of an Eastern War, May 1941

| Disposition | Existing RAN vessels | Auxiliary vessels | | New Construction Program | | |
|-------------------------|----------------------|-------------------|-----|--------------------------|--------------|---------------------------|
| | | M/S | A/S | Approved AMS | Proposed AMS | Proposed 'large corvette' |
| Darwin | | 4 | | 3 | | |
| Fremantle | | 4 | 2 | 2 | | |
| Adelaide | | 3 | | 2 | 1 | |
| Melbourne & Bass Strait | 3 sloops | 8 | 3 | 3 | 1 | 3 |
| Sydney | 3 DD | 4 | 2 | 2 | 1 | 3 |
| Brisbane | 2 DD 1 sloop | 2 | | 2 | 1 | |
| Newcastle | | 3 | | 2 | | |
| Hobart | | 2 | | | 2 | |
| Moresby | | 2 | | | | |
| Rabaul | | | | | 3 | |
| Kembla | | 2 | | 2 | | |
| Torres Strait | | | | 2 | 1 | |
| 20th MSF | | 2 | | 4 | 2 | |
| Total | 5 DD 4 sloops | 36 | 7 | 24 | 12 | 6 |

Source: NAA: MP 1185/8, 2026/2/419.

construction facilities, with no space available until the end of 1943.¹²⁴ Even proposals from the Admiralty and the Indian Government to build further escort vessels were rejected on the grounds of Australia's own desperate shortage. The construction of small craft was another matter, however.

The decision to afford priority to coastal convoys not only marked a significant change in the RAN's plans for AMS employment, but also meant a reduction in the mobile protection that could be afforded to ports and harbours. Some assistance with inshore work might be provided by the Naval Auxiliary Patrol (NAP), but this remained a volunteer force that made use of enthusiastic local yachtsmen. Although the ACNB had maintained plans to acquire six motor A/S boats before the war, it had later cancelled the procurement because other measures were available. Nevertheless, in October 1941 the new First Naval Member, Vice Admiral Sir Guy Royle,¹²⁵ forwarded a submission to the

War Cabinet that recommended the construction of eight asdic-fitted motor boats to a new design at a cost of £242,000.¹²⁶ These craft would help to replace the AMS in inshore roles and could be constructed in yards not suitable for larger vessels. Initial plans distributed them two each in Darwin, Fremantle, Sydney and Port Moresby.¹²⁷ The Navy selected a British design and the RAN eventually acquired 28 of the 50-ton Harbour Defence Motor Launches (HDML) between 1942 and 1944.

Joint service operations

With so few national assets available, there was no question that the three Australian armed services would need to cooperate. In August 1939, the Defence Committee had acknowledged that even the limited regional threat posed by the German Navy would require a maximum effort by the RAAF's operational strength.¹²⁸ Despite the inter-service difficulties referred to in Chapter 4, by the outbreak of war overarching agreement had at least been reached that the defence of sea communications was a combined naval and air function. This was a function, moreover, that included both the defence of trade and offensive action against enemy sea-borne forces. At this most general level, the RAAF understood its role to be reconnaissance and attack, while the RAN accepted an offensive and defensive role against enemy vessels.¹²⁹ The Army for its part secured the bases from which the other two services operated.¹³⁰

Several moves had already been made to impose a joint service framework, and during 1940 and 1941 the Service staffs worked to create the machinery for combined operations. At the strategic level the three Service Chiefs were expected to direct the major dispositions of forces through the Central War Room (CWR) in Melbourne, and by direction of the War Cabinet, the CWR was placed on a full-time basis on 27 February 1941. At the operational level, an Area Combined Headquarters (ACH) was set up in each of the four Australian operational areas.¹³¹ Here the individual area naval and air commanders could expect to exercise operational control and coordinate the forces needed for the defence of trade.¹³² At the lower end of the scale, coordination of forces allocated to the immediate defence of a port or vital area would be exercised through a Combined Defence Headquarters (CDH).¹³³

The RAN, though, found that it did not fit neatly into this arrangement, particularly with respect to the operational level of command. To begin with the Navy had few major assets, and operated with a more centralised command organisation than the other two services. The First Naval Member, through

the ACNB, exercised control of the principal naval units, and as yet no subdivision of sea areas existed within the limits of the Australia Station. Local naval authorities existed—consisting of DNOs¹³⁴ and naval officers-in-charge (NOICs)¹³⁵—but they had responsibility only for mine-sweeping and anti-submarine units designated as part of the local defence forces.¹³⁶ There was thus a requirement for the local naval authority to act through both the CDH and the ACH.

Wartime changes in command and control will be discussed later. But on a more practical level, collaboration between the RAN and RAAF had not appreciably advanced in the first years of the war. The search for ‘phantom submarines’ had provided some cooperative searching exercises,¹³⁷ but both services seemed determined to view joint operations from a single-service perspective. To an even greater extent than the RAN, the RAAF had focused its operational training on the threat from cruisers and armed merchant raiders. The RAAF’s ‘Standing Reconnaissance Instructions’ were based on the system adopted by the RAF and, as with Coastal Command, anti-submarine tasks were subordinated to reconnaissance.¹³⁸ Squadron training in ASW was minimal and RAAF intelligence on the subject meagre. A paper written in October 1940, for example, noted that although Japan could employ ‘upwards of 30 submarines, attacks in the S.E. and S.W. of Australia would be uneconomical.’¹³⁹ In support of this argument the writer used ongoing Atlantic experience and assessments that no German submarine had yet operated more than 2000 miles from its base. The paper showed no comprehension that Japanese submarines were designed for long-range Pacific operations, and might not be employed solely in a German-style tonnage campaign.

Single-service doctrinal thinking that influenced both technical and operational matters did not help. Again following the RAF’s lead, the RAAF’s main interest in radar was for coastal air defence and fighter direction. Developmental efforts were therefore concentrated on long wavelength air warning equipment rather than the shorter wavelength equipment needed for surface search. Although the fit of a prototype ASV (air-to-surface vessel) set in Hudson reconnaissance aircraft began in August 1940, the equipment was at first regarded as a curiosity. On the night of 23 December 1940 an aircraft located an object thought to be a submarine off Wollongong, but most crews remained sceptical, if not dismissive, of the equipment. A postwar study by the RAAF later admitted that until mid-1942 Squadrons fitted with ASV more often used it improperly or not all.¹⁴⁰

Of immediate concern to the RAN in 1941, however, the RAAF had yet to determine its air protection policy for convoys. As an institution, the Air Force preferred not to be tied to close escort in an ostensibly 'defensive' posture. Hence during the period of surface raider operations it had made maximum use of its aircraft for distant reconnaissance, and only the most important troopships had received continuous air cover.¹⁴¹ Still, in spite of the air effort, searches had produced no enemy detections. This failure was attributed to the inexperience of both aircrews and directing staff but, for the RAAF, the most important failing

... lay in the simple mathematics of the problem. It was depressingly clear that the vastness of the area in which the enemy operated its few surface vessels computed against the quite inadequate number of aircraft ... showed the odds to be heavily in favour of the enemy.¹⁴²

Operating with far more aircraft in a far smaller area, anti-raider patrols by RAF Coastal Command likewise never intercepted a raider, and in neither air force was the underlying doctrine adequately questioned.¹⁴³ The raiders achieved their success by deliberately avoiding action and preying on independent, virtually defenceless shipping. Hence, according to postwar analysis, the best solution lay, not in 'disappointing and tedious patrols',¹⁴⁴ but in concentrating mercantile tonnage into convoys and providing them with the greatest possible air and surface escort.¹⁴⁵

The RAN had not yet adjusted to its own convoy doctrine, so at this stage there was little pressure to try to convert the RAAF. The Naval Board nevertheless appreciated the need to improve the level of inter-service consultation. During the second half of 1941 the naval staff arranged a series of meetings with the air staff to discuss trade protection. At the first meeting in August the RAN presented its plan to run a ten-day coastal convoy cycle within five areas stretching from the Barrier Reef south to Fremantle.¹⁴⁶ Overseas convoys were also included, as the RAN expected to institute these on the trans-Tasman, Melbourne westbound, and Fremantle westbound routes.¹⁴⁷ The RAAF immediately pointed out that its 42 Hudson reconnaissance aircraft were dispersed all around the coast, and that to provide even one aircraft per convoy would almost entirely absorb its resources. The Air Force conceded that occasional anti-submarine searches might be possible, but that 'Anything in the nature of daily routine patrols is quite impractical.'¹⁴⁸

Aware of its own difficulties in providing escorts the RAN was not unsympathetic to the RAAF position. In July 1941, the Navy had determined that convoys routed well clear of the Cape Leeuwin focal area would not require surface escorts.¹⁴⁹ Propitiously, at their first meeting the two services concluded that convoys could dispense with all anti-submarine protection when west of Melbourne. This immediately released several aircraft and two escort vessels for duties on the east coast, where the Shipping Board hoped to increase the flow of cargo between Newcastle and Melbourne. In consequence the naval staff prepared a further plan providing for one convoy per week north of Sydney, and sailings between Newcastle and Melbourne at intervals of three and four days. The RAN thereafter expected to distribute its 11 existing anti-submarine escorts between Brisbane (three), Sydney (five) Melbourne (one) and Fremantle (two).

War in the Pacific

Continued tinkering notwithstanding, these plans had not fundamentally altered when the Pacific War finally broke out on 7–8 December 1941. The RAN's four surviving prewar destroyers (*Waterhen* had been sunk) had indeed returned from the Mediterranean. But two, *Voyager* and *Stuart*, would be refitting until February and March 1942 respectively. *Vendetta* was similarly refitting in Singapore and not due to complete until April, while *Vampire* was allocated to the China Station. *Moresby*, moreover, had again resumed full-time survey duties. Thus on 9 December 1941, the RAN still had only 11 anti-submarine craft available. These were immediately ordered to take up their war stations, their duties being 'to provide escort for coastal convoys and anti-submarine protection of focal areas' (see Table 6.4).¹⁵⁰

The first submarine alert after the declaration of war against Japan was not long delayed. On the night of 9 December, several observers heard the sounds of unexplained gunfire off the south coast of New South Wales. Rear Admiral Crace ordered the 6-inch cruiser HMAS *Perth* and Free French destroyer *Le Triomphant* to the area, while the newly commissioned AMS HMAS *Deloraine* sailed from Jervis Bay to carry out an anti-submarine patrol off Port Kembla. An air search by three Hudsons from Richmond began at dawn.¹⁵¹ As before, all searches proved negative.

As an urgent action the three Australian Chiefs of Staff—Royle was represented by his deputy—produced another appreciation concerning the defence of Australia.¹⁵² They considered as 'probable' a variety of Japanese attacks ranging

from raids to invasion, but concluded that attacks on Australia's sea communications 'must be expected constantly'. Although the Secretary of the Defence Department, Sir Fredrick Shedden, refused to endorse this appreciation—claiming that it paid insufficient attention to the protection of south-eastern Australia—it had been quite accurate in its assessment of Japanese intentions against sea communications.¹⁵³

Table 6.4 - Disposition of RAN A/S escorts, December 1941–January 1942

| Vessel | Commissioned | Position 11 Dec 41 | Expected movement 11 Dec 41 | Actual disposition 21 Jan 42 |
|--------------------------|--------------|-----------------------|-----------------------------------|------------------------------------|
| <i>Swan</i> (sloop) | 21/1/37 | Sydney | to Brisbane | Darwin |
| <i>Warrego</i> (sloop) | 22/8/40 | Sydney | to Brisbane | Darwin |
| <i>Lithgow</i> (AMS) | 14/6/41 | Sydney | remain Sydney | Darwin |
| <i>Mildura</i> (AMS) | 23/7/41 | Sydney | remain Sydney | Sydney |
| <i>Warrnambool</i> (AMS) | 23/9/41 | Sydney | to Melbourne | to Darwin 5/2/42 |
| <i>Deloraine</i> (AMS) | 22/11/41 | work-up | | Darwin |
| <i>Katoomba</i> (AMS) | 17/12/41 | | | Darwin |
| <i>Townsville</i> (AMS) | 19/12/41 | | | to Darwin 5/2/42 |
| <i>Colac</i> (AMS) | 6/1/42 | | | to Darwin |
| <i>Rockhampton</i> (AMS) | 21/1/42 | | | to Brisbane |
| <i>Geelong</i> (AMS) | 16/1/42 | | | to Fremantle |
| Requisitioned vessels | | | | |
| <i>Bingera</i> | 5/2/40 | Sydney | remain Sydney | Sydney |
| <i>Wyrallah</i> | 2/9/40 | Fremantle | to Sydney | Sydney |
| <i>Yandra</i> | 22/9/40 | Fremantle | to Sydney | Sydney |
| <i>Kybra</i> | 30/9/40 | Sydney | to Brisbane | Brisbane |
| <i>Heros</i> | 12/1/40 | Fremantle | remain Fremantle | Fremantle |
| <i>St. Giles</i> | 15/1/40 | Sydney | to Fremantle | Fremantle |
| Total vessels | | 11 | | 17 |

Sources: AWM: AWM 54, 242/6/15; NAA: MP 1185/8, 1804/2/85.

An operation order, signed on 22 December 1941 by Admiral Isoroku Yamamoto, CinC of the Japanese Combined Fleet, contained detailed plans for the destruction of Allied sea traffic. Specifically, Yamamoto ordered a 'Commerce Destruction Unit' to operate in the Pacific as opportunities arose after the outbreak of war. After the fall of the Philippines, Malaya and NEI in southern 'First Phase' (DAI ICHI DAN) operations, this unit was to 'carry out a vigorous campaign of destruction of sea traffic in the INDIAN Ocean and AUSTRALIA Areas.'¹⁵⁴ Japanese naval forces allocated to the mission included two submarine squadrons that totalled approximately 14 boats. Although it

had taken Germany almost a year to move to a policy of unrestricted commerce warfare in the North Sea, the Japanese intended no such restraint. Other than in the waters around Japan and Russia, and South America south of Peru, the IJN's boats would carry out 'unlimited submarine warfare'.

On the outbreak of the Pacific War the Naval Board's immediate reactions were to concentrate its anti-submarine forces in Fremantle and Sydney, suspend trans-Pacific sailings, and route ships bound for the United Kingdom via the Cape of Good Hope. The RAN then paused to reconsider its measures. The ACNB still expected the Japanese to be busy with operations in northern waters for some time, and therefore concluded that the immediate scale of attack on shipping at Fremantle and on the east coast would remain small.¹⁵⁵ By 13 January 1942 it had directed that independent sailings in the Tasman Sea were to be resumed.¹⁵⁶ Darwin in contrast, was not only closest to the threat, but also 'our only main fleet operating base for allied Naval forces at the Eastern end of the Malay Barrier.'¹⁵⁷ The provision of anti-submarine measures at Darwin therefore assumed priority. The indicator loop system had been in operation for more than a year, and two harbour defence asdics (HDA) were in place, but the ACNB quickly approved further enhancements to the boom defences. Furthermore, by mid-January the Board had moved the majority of the RAN's best anti-submarine units to the north.

The first positive evidence that Japanese submarines were operating in waters adjacent to Australia was already available. On 4 January 1942 a surfaced submarine attacked and sank the British merchant vessel *Kwantung* south-east of Java. Within a week the Allies had lost another seven vessels in the NEI area to submarine attack.

Notes

1. Minute, Burnett (ACNS) to Colvin, 18 July 1940, NAA: MP 1049/5, 2026/11/320.
2. In September 1939 Germany had only two of the larger Type I (6700 nm range) and seven Type IX (8100 nm) U-boats in commission.
3. Minute, Burnett to Colvin, 18 July 1940, NAA: MP 1049/5, 2026/11/320.
4. 'German U-Boat Bases and Refuges in the Far East', 28 August 1945, PRO: ADM 223/51.
5. Philbin, *The Lure of Neptune*, p. 91.
6. Captain Joseph Burnett, RAN (1899–1941), ACNS 1939–41.
7. Minute, Burnett to Colvin, 18 July 1940, NAA: MP 1049/5, 2026/11/320.

8. B. Winter, *The Intrigue Master: Commander Long and Naval Intelligence in Australia, 1913–1945* (Brisbane: Boolarong Press, 1995), pp. 34, 49.
9. Gobert, 'The Evolution of Service Strategic Intelligence 1901–1941', p. 62.
10. Roskill, *Naval Policy Between the Wars, II*, p. 481.
11. See Bailey, 'The Australian role in the development of a worldwide Imperial trade control and naval intelligence system 1919–39', in Stevens, *Maritime Power in the 20th Century*, pp. 81–3.
12. Gill, *Royal Australian Navy 1939–1942*, p. 70.
13. Diary of R.A. Pullin, HMAS *Swan*, entry 14 September 1939, HMAS *Cerberus* Museum.
14. NID War Diary 27 September 1939, cited in Gill, *Royal Australian Navy 1939–1942*, p. 74.
15. Gill, *Royal Australian Navy 1939–1942*, p. 75.
16. Minute, from RN Director of Plans, 13 November 1939, PRO: ADM 1/15321.
17. Gill, *Royal Australian Navy 1939–1942*, p. 76.
18. See B. Reeve, 'The Scrap Iron Flotilla: A Personal Account', in *Journal of the Australian Naval Institute*, October/December 1998, p. 28.
19. Between 27–29 June 1940 *Voyager* took part in the sinkings of the Italian submarines *Liuzzi* and *Uebi Scebeli*. Other successful RAN A/S actions in the Mediterranean area included: *U 127* sunk by HMAS *Nestor* on 15 December 1941; HMAS *Quiberon's* half share in sinking the Italian *Dessie* on 28 November 1942; and HMAS *Wollongong's* share in sinking *U 617* on 11 September 1943. *U 559* sank HMAS *Parramatta* on 27 November 1941.
20. See P. Hasluck, *The Government and the People 1939–1941*, Australia in the War of 1939–1945 (Canberra: AWM, 1952), pp. 161–93.
21. Minutes of ACNB, 9 September, 1939, NAA(ACT): A2585/1, 1931/1941.
22. Paper by Minister for the Navy (Cameron), War Cabinet Agendum, 82/1940, 30 July 1940, NAA: MP 1049/5, 2026/11/320.
23. Paper, 'Construction and Requisitioning of Small Anti-Sub. & M/S Vessels for the RAN', 1 April 1941, NAA: MP 1049/5, 2026/11/320.
24. See Hasluck, *The Government and the People 1939–1941*, pp. 193–203.
25. Minutes of the ACNB, 25 January 1940, NAA(ACT): A2585/1, 1931/1941.
26. Franklin, 'A Breakdown of Communication: Britain's Over Estimation of Asdic's Capabilities in the 1930s', pp. 205–7.
27. In 1934 the Admiralty reduced the number of escorts required for a single convoy of up to 20 vessels from four to two, largely on account of these being fitted with asdics. Report, 'A/S Policy', 1934, PRO: ADM 186/515, 42747.
28. Letter, Admiralty to CinC East Indies, CinC China, NOIC Colombo, NOIC Penang, RA Malaya and Commodore Hong Kong, 15 May 1940, PRO: ADM 1/15321.
29. Telegram, UK Government to Commonwealth Government, 28 June 1940, NAA: MP 1587, Box 4, 52W.
30. There appears to have been some confusion in Navy Office over the exact figure. In late June Commander Martin (Director of Plans) noted the number as 25, which agrees with prewar correspondence. A few weeks later Burnett reported the figure as 50, though he may have meant the total Stage II figure. See minutes, Martin to Colvin, 29 June 1940, NAA: MP 1049/5, 2026/14/73, and Burnett to Colvin, 18 July 1940, NAA: MP 1049/5, 2026/11/320.
31. Minutes of the ACNB, 14 June 1940, NAA(ACT): A2585/1, 1931/1941.
32. Minute, Burnett to Colvin, 18 July 1940, NAA: MP 1049/5, 2026/11/320.
33. See 'Appreciation by Rear Admiral J.G. Crace, RACAS, on "War with Japan"', HMAS *Perth*, 12 October 1940, NAA: MP 1049/5, 2026/2/382.

34. By 29 June 1940 the number of auxiliary A/S vessels required by the RAN for a Far Eastern War was: Stage I - 34, Stage II - 53, Stage III - 64.
35. Paper, 'Appreciation', 18 June 1940, NAA: MP 1185/8, Box 14, 1945/2/6.
36. Draft message, ACNB to NZNB and various Far East naval authorities, August 1940, NAA: MP 1185/8, 1945/2/6.
37. Paper, 'The Strategic Situation' August 1940, NAA: MP 1185/8, Box 14, 1945/2/6.
38. Minute, Martin to Colvin, 29 June 1940, NAA: MP 1049/5, 2026/14/73.
39. The number of steamships engaged on Australian interstate and coastal services reduced from 154 in 1938-39 to 114 in 1941-42. See Paper, 'Development of Australian Merchant Shipping in Inter-War Years', AWM: AWM 69, 23/25.
40. Minute by McNeil (DE(N)), 28 October 1940, NAA: MP 1049/5, 2026/11/320.
41. AWM: AWM 69, 23/25.
42. In 1936-37 interstate shipments totalled 6,501,393 tons as against 418,279 tons transported interstate by rail. *ibid*.
43. Appreciation, 'Japanese submarine movements', May 1943, AWM: AWM 54, 622/5/4.
44. See minute, Martin to Colvin, 29 June 1940, NAA: MP 1049/5, 2026/14/73.
45. Letter, Paymaster Commander Perry (Naval Liaison Officer, London) to ACNB, 25 July 1940, NAA: MP 1049/5, 2026/14/73.
46. Paper, 'Construction and Requisitioning of Small Anti-Sub. & M/S Vessels for the RAN', 1 April 1941, NAA: MP 1049/5, 2026/11/320.
47. Minutes of the ACNB, 17 November 1939, NAA(ACT): A2585/1, 1931/1941.
48. The AMS were constructed to merchant ship practice.
49. See paper, 'Construction and Requisitioning of Small Anti-Sub. & M/S Vessels for the RAN', 1 April 1941, NAA: MP 1049/5, 2026/11/320.
50. War Cabinet Minute, 29 April 1940, NAA: MP 1049/5, 2026/11/320.
51. Paper by Minister for the Navy, War Cabinet Agendum, 82/1940, 10 June 1940, NAA: MP 1049/5, 2026/11/320.
52. Minute, Martin to Colvin, 16 December 1940, NAA: MP 1049/5, 2026/11/320.
53. Paper by Cameron, War Cabinet Agendum, 82/1940, 10 June 1940, NAA: MP 1049/5, 2026/11/320.
54. Minute, A/DE(N) to Rear Admiral McNeil (3NM), 14 March 1941, NAA: MP 1049/5, 2026/11/320.
55. Minute, Martin to Colvin, 16 December 1940, NAA: MP 1049/5, 2026/11/320.
56. Minute, Martin to Colvin, 27 November 1940, NAA: MP 1049/5, 2026/11/320.
57. Minute, Martin to Colvin, 28 May 1940, NAA: MP 1587/1, 321D.
58. Gill, *Royal Australian Navy 1939-1942*, pp. 116-18.
59. Minute, Martin to Colvin, 28 May 1940, NAA: MP 1587/1, 321D. The Type 127 was eventually fitted to the destroyers.
60. Commander William Harold Martin, RAN (1903-42), Director of Plans and Assistant to ACNS 1939-40.
61. Minute, Martin to Colvin, 15 June 1940, NAA: MP 1587/1, 321D.
62. Lieutenant Commander (E) R.C. Allsop, RANVR, FSMPE, FlInstRE, A/S Design and Local Production Officer at HMA A/S School 1940-43.
63. Minute, Martin to Colvin, June 1940, NAA: MP 1587/1, 321D.
64. Although 20 Type 128 sets and their associated gyros were on order for the Admiralty's AMS, the Australian vessels were expected to receive the Type 123, and 29 of the latter (24 for the AMS plus five spares) were on order.
65. Remarks on minute, Thomson to Colvin, 16 March 1939, NAA: MP 1049/5, 2002/2/63.
66. Minute, Martin to Colvin, September 1940, NAA: MP 1587/1, 321D.
67. Minute, Martin to DDE(N), 6 October 1940, NAA: MP 1587/1, 321D.

68. Minute, Martin to Colvin, 4 October 1940, NAA: MP 1587/1, 321D.
69. Minute, Martin to DDE(N), 6 October 1940, NAA: MP 1587/1, 321D.
70. Minute, Martin to Colvin, 2 October 1940, NAA: MP 1587/1, 321D.
71. See Newcomb, 'Some personal reminiscences' and 'Local Production', in Worledge, *Contact!*, pp. 15, 53-77.
72. In 1943 Newcomb became CO HMAS *Rushcutter*, and everything attached to *Rushcutter* came under his jurisdiction.
73. Paper 'Development of A/S Paravane', Director of Plans to Captain Nichols (DCNS), 26 April 1943, NAA: MP1587/1, 321D.
74. For a history of the CSIR, see J. Wisdom, *A History of Defence Science in Australia* (Melbourne: Defence Science and Technology Organisation, 1995), pp. 17-39.
75. Report 'Summary of RAN War Activities', Department of the Navy, 31 October 1945, p. 54.
76. Report, 'A/S Sets-Royal Australian Navy', c. July-August 1940, NAA: MP 1587/1, 312D.
77. Paper, 'Local Defence and Protection of Shipping', 4 September 1940, NAA: MP 1049/5, 2026/2/382.
78. Gill, *Royal Australian Navy 1939-1942*, p. 116.
79. Letter, Muirhead-Gould (Commodore-in-Charge, Sydney) to ACNB, 20 May 1940, NAA: MP 1049/5, 1944/2/109.
80. Letter, ACNB to Muirhead-Gould, 18 July 1940, NAA: MP 1049/5, 1944/2/109.
81. Lieutenant (A/S) H.S. Middleton, RANVR, staff of HMA A/S School 1939-44.
82. War Cabinet Agendum No. 155/1942, NAA(ACT): A5954/69.
83. Newcomb, 'Some personal reminiscences', in Worledge, *Contact!*, p. 17.
84. By October 1942, 148 officers and 352 ratings had left Australia with A/S qualifications. In February 1945, 116 A/S Officers and 30 ratings were still serving overseas. Department of the Navy, 'Review of RAN War Effort and Activities', 20 April 1943, p. 40, and 28 February 1945, p. 47.
85. Minute, Martin to Burnett, May 1940, NAA: MP 1587/1, 312D.
86. Minute, Martin to McNeil, 14 October 1940, NAA: MP 1587/1, 312D.
87. 'Review of RAN War Effort and Activities', 28 February 1945, p. 47.
88. Minute, Martin to Colvin, July 1940, NAA: MP 1587/1, 312D.
89. Gill, *Royal Australian Navy 1939-42*, p. 115.
90. See P. Hore, *HMAS Sydney II: The cruiser and the controversy in the archives of the United Kingdom*, Papers in Australian Maritime Affairs No. 9 (Canberra: Sea Power Centre, 2001), p. 46.
91. Gill, *Royal Australian Navy 1939-42*, p. 70.
92. NID War Diary, 2 February 1941, cited in 'Japanese Submarine Activities in the SWPA', AWM: AWM 188, 6. Emphasis in original.
93. Gill, *Royal Australian Navy 1939-1942*, p. 70.
94. Letter from Publicity Censorship Liaison Officer, 14 December 1940, NAA(ACT): AAC309.28.
95. Following the British decision to maintain their naval forces in the Mediterranean to contain the Italian Fleet, the reinforcement of Malaya had depended on military and air strength. See telegram, UK Government to Commonwealth Government, 28 June 1940, NAA: MP 1587, Box 4, 52W.
96. Paper by ACNS, 'Far Eastern Naval Appreciation', August 1940, NAA: MP 1185/8, Box 14, 1945/2/6.
97. Paper, 'Singapore Conference', 14 October 1940, NHD: SNHO file 1940.
98. 'Report by Australian Chiefs of Staff', 'Singapore Conference', 14 October 1940, NHD: SNHO papers, 1940.

99. Paper, 'Australian Naval Plans', 'Singapore Conference', 14 October 1940, NHD: SNHO papers, 1940.
100. See Cable, Churchill to Menzies, 10 August 1940, NAA: MP 1049/5, 2026/2/382.
101. Admiral Sir John Gregory Crace, KBE, CB (1887-1968), commanded HM Australian Squadron 1939-42.
102. 'Appreciation of the situation by the Rear Admiral Commanding HM Australian Squadron on "War with Japan- initial stages"', 12 October 1940, NAA: MP 1049/5, 2026/2/382.
103. Remarks by Colvin, on Crace's paper.
104. Paper, 'Australian Naval Plans', 'Singapore Conference', 14 October 1940, NHD: SNHO papers, 1940.
105. Paper, 'Far Eastern Defence', 1 May 1941, NAA: MP 1185/8, 1855/2/265.
106. Gill, *Royal Australian Navy 1939-1942*, p. 268.
107. Paper, 'War with Japan - 1941', 1 February 1941, NAA: MP 1049/5, 2026/2/382.
108. Letter, ACNB to Gordon (British Ministry of Shipping), 11 February 1941, NAA: MP 1185/8, 2027/2/202.
109. Paper, 'Disposition of A/S and M/S vessels', May 1941, NAA: MP 1185/8, 2026/2/419.
110. Minute, Dechaineux (Director of Plans) to Burnett, 10 February 1941, MP1185/8, 2027/2/202.
111. Letter, Gordon to ACNB, 14 February 1941, NAA: MP 1185/8, 2027/2/202.
112. Bailey, 'The Australian role in the development of a worldwide Imperial trade control and naval intelligence system 1919-39', in Stevens, *Maritime Power in the 20th Century*, pp. 72-7.
113. Memorandum, Commonwealth Shipping Board to ACNB, 10 March 1941, NAA: MP 1185/8, 2027/2/202.
114. Paper 'Far Eastern War Plans', 30 April 1941, NAA: MP 1185/8, 1945/2/7.
115. 'Washington Staff Conversations', War Cabinet Minute, 15 May 1941, NHD.
116. Paper, 'Disposition of A/S and M/S vessels', May 1941, NAA: MP 1185/8, 2026/2/419.
117. Seven knots represented a realistic appreciation of the average speed sustainable by a group of coastal merchant vessels.
118. 'Operational Planning Directive No. 1', enclosure to JPC Report No. 20, 18 July 1941, NAA: MP 1049/5, 1855/2/430.
119. Paper, 'Disposition of A/S and M/S vessels', May 1941, NAA: MP 1185/8, 2026/2/419.
120. 'Operational Planning Directive No. 1', enclosure to JPC Report No.20, 18 July 1941, NAA: MP 1049/5, 1855/2/430.
121. Paper, 'Disposition of A/S and M/S vessels', May 1941, NAA: MP 1185/8, 2026/2/419.
122. The fastest Australian-built *River* class took 16 months and eight days to complete, the best time by a Canadian shipyard was five months three days and by a British shipyard seven months five days. See D.K. Brown 'Atlantic Escorts 1939-45', in S. Howarth & D. Law, *The Battle of the Atlantic 1939-1945* (London: Greenhill Books, 1994), p. 457.
123. See S.J. Butlin and C.B. Schedvin, *War Economy 1942-1945*, Australia in the War of 1939-1945 (Canberra: AWM, 1977), pp. 216-46.
124. See Ochmann, 'The Corvette Building Programme of the RAN, 1939-1944', pp. 31-2.
125. Admiral Sir Guy Charles Cecil Royle, KCB, CMG, RN (1885-1954), CNS and 1NM ACNB 1941-45.
126. Minutes of the ACNB, 2 October 1941, NAA(ACT): A2585/1, 1931/1941.
127. 'Operational Planning Directive No. 1', enclosure to JPC Report No. 20, 18 July 1941, NAA: MP 1049/5, 1855/2/430.
128. Minutes of Defence Committee, 27 August 1939, NAA(ACT): A2031.
129. Paper, 'Co-ordinated Control of Operations and Intelligence', 19 February 1941, NHD: general file 2.

130. 'Operational Planning Directive No. 1', enclosure to JPC Report No. 20, 18 July 1941, NAA: MP 1049/5, 1855/2/430.
131. ACHs were first established in the focal areas of Melbourne (South-Eastern), Townsville (North-Eastern), Darwin (North-Western) and Fremantle (South-Western). Perth later took the place of Fremantle, and Sydney was added.
132. Each ACH also included a Combined Operational Intelligence Centre (COIC) which provided area intelligence, including details of merchant ships' movements.
133. CDH's were initially established at Sydney, Melbourne, Hobart, Adelaide, Fremantle, Darwin and Port Moresby.
134. DNOs existed in Victoria, South Australia, and Tasmania.
135. Commodore/Rear Admiral-in-Charge at Sydney and Fremantle, NOICs at Brisbane and Darwin. NOICs were later established in Port Moresby, Thursday Island, Townsville, Newcastle and Port Kembla.
136. 'Operational Planning Directive No. 1', enclosure to JPC Report No. 20, 18 July 1941, NAA: MP 1049/5, 1855/2/430.
137. Gill, *Royal Australian Navy 1939-42*, p. 70.
138. See Grove, *The Defeat of the Enemy Attack on Shipping, 1939-1945*, pp. 21-27.
139. Paper, 'Appreciation of the Employment of the RAAF in the Defence of Australia', October 1940, NAA: MP 1185, 1821/2/248.
140. Paper, 'An account of the development and use of radar in the RAAF', by Wing Commander A.G. Pither, December 1946, AWM: AWM 54, 810/2/2.
141. Gillison, *Royal Australian Air Force 1939-1942*, p. 131-2.
142. *ibid.*, p. 133.
143. Grove, 'Defeat of the Enemy Attack On Shipping', p. 22.
144. Gillison, *Royal Australian Air Force 1939-1942*, p. 132.
145. Grove, 'Defeat of the Enemy Attack On Shipping', p. 226.
146. Barrier Reef-Brisbane, Brisbane-Sydney, Sydney-Melbourne, Melbourne-Adelaide and Adelaide-Fremantle.
147. Agenda for meeting of 15 August 1941, NAA(ACT): A1196, 1/501/399.
148. Minute from DCAS, 11 August 1941, NAA(ACT): A1196, 1/501/399.
149. 'Plans for the Employment of Naval and Air Forces of the Associated Powers in the Event of War with Japan', July 1941, NAA: MP 1185/8, 1855/2/365.
150. 'Defence of Australia', appreciation by Australian Chiefs of Staff, 10 December 1941, AWM: AWM 54, 242/6/15.
151. RAN Daily Narrative, 10 December 1942, NHD.
152. 'Defence of Australia', appreciation by Australian Chiefs of Staff, 10 December 1941, AWM: AWM 54, 242/6/15.
153. See letter, Shedden to Curtin, 8 December 1941, NAA(ACT): A5954, 5555/10.
154. Combined Fleet Ultrasecret Operation Order 7, 22 December 1941, AWM: AWM 56, ATIS LDT No. 39, Pt. VIII.
155. Minute, Commander Dechaineux (Director of Operations) to Royle, 21 January 1942, NAA: MP 1185/8, 1804/2/85.
156. RAN Daily Narrative, 14 January 1942.
157. 'Chiefs of Staff Appreciation-Defence of Australia and Adjacent Areas', 15 December 1941, NAA(ACT): A5954, 5555/10.

The First Japanese Campaign – 1939-42 | 7

The spectacle of some 5,000,000 Anglo-Australians, with an Army splendidly equipped, unable to prevent the burning of a cargo of wool in sight of Sydney Heads, is only the ordinary consequence of a policy of naval impotence.

Captain W.R. Creswell, Naval Commandant Queensland, February 1902.¹

The simultaneous Japanese offensive against British, Dutch and American possessions in the Asia-Pacific region brought about a fundamental change in Australia's strategic situation. The Commonwealth's political and military authorities did not want, and certainly could no longer afford, to act in isolation. Even with heavy units such as the cruisers *Australia* and *Hobart* hurrying home from distant stations, there were too few Australian ships to form a truly capable independent naval formation and too many tasks for them to do. After initial fears that Australia might be left to defend the local area without assistance, far greater exertions were made to ensure the unity of Allied aims and efforts in the Pacific. As Prime Minister John Curtin reiterated whenever possible, the nation's interests and safety could best be preserved by Australia's acting 'as a channel through which men and material from the United States could be moved into the South West Pacific theatre.'²

The Japanese also recognised the likelihood that Australia would become a major base for Allied operations. On 10 January 1942, a conference at Imperial General Headquarters agreed to cut the lines of communication leading east and west from Australia, and to use the IJN to seal off the Commonwealth from the Anglo-American powers.³ The Japanese, however, also faced difficulties brought about by a prewar strategy upset by unexpected developments. The IJN's traditional strategy of attrition followed by a decisive battle had been converted into a high-risk emphasis on the offensive. The unanticipated speed of their conquests soon meant that the Japanese had occupied an area larger than their capability to control. Thereafter, the need to consolidate and strengthen their position behind a long defensive perimeter turned a planned short war into a prolonged attritional struggle, one that the Japanese could not hope to win.

This change in strategy also affected the IJN's ability to conduct a *guerre de course* simultaneously with major fleet operations. Notwithstanding their 'Second Phase' (DAI NI DAN) plans to attach more importance to commerce destruction,⁴ the conflict in resource priorities meant that the Japanese campaign against Allied sea communications began and continued in a desultory fashion. Lacking an appropriate doctrine, the 40–45 operational submarines the IJN possessed became locked into a general pattern of piecemeal employment.⁵ The Japanese submarine force was nevertheless an élite service arm, and as an Allied intelligence report later explained, its existence would continue to pose one of the major threats to maritime operations in the Pacific:

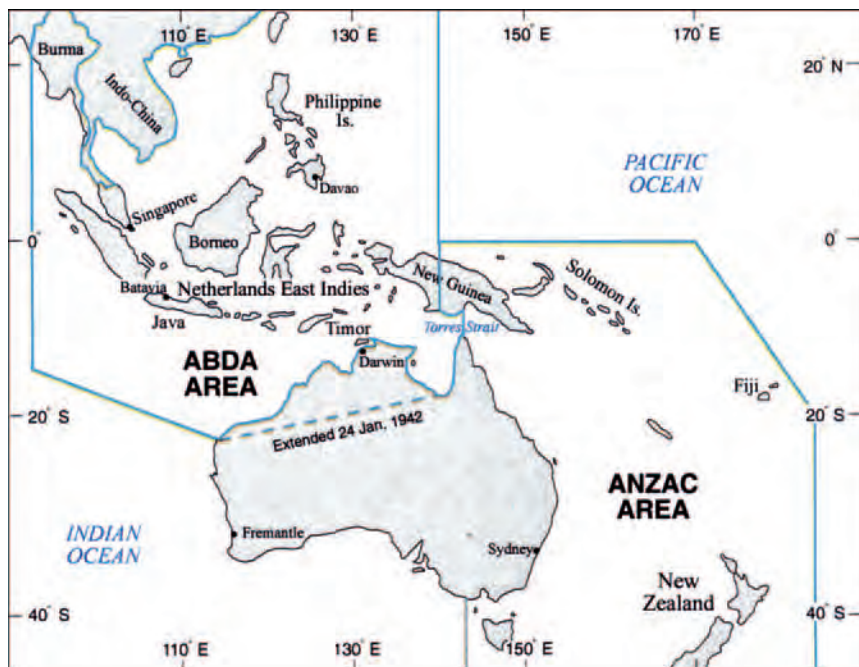
The use of submarines is particularly fitted to the Japanese temperament. The Japanese warrior is patient, believes in waiting for a favorable opportunity to take the offensive, understands the value of surprise attacks and is determined to die rather than surrender. The Japanese take pride in the assurance that this spirit pervades their submarine force.⁶

ABDA and ANZAC areas

Among the newly allied Pacific powers, confusion over boundaries and responsibilities was rife, and discussions on joint command and consultation arrangements continued throughout the first months of 1942. Australian interest naturally centred on the ABDA (American–British–Dutch–Australian) and ANZAC (Australia and New Zealand) areas (see Figure 7.1). These areas divided the Australia Station and differed not only geographically, but also administratively for, although ABDA was intended to be a joint service command, ANZAC in contrast was a purely naval arrangement.

ABDA initially excluded the whole of continental Australia, but on 24 January it was expanded to include Darwin and Australia's north-west coast, easing the existing uncertainty on that front.⁷ The ABDA naval commander (ABDAFLOAT) was a USN officer, Admiral T.C. Hart, but beyond strategic direction he had no intention of issuing detailed operational orders. Darwin instead came under a British authority, Commodore Commanding China Force (CCCCF), the now Commodore J.A. Collins at Batavia. CCCC had all British (including Australian) naval forces in the ABDA area under his immediate command. His responsibilities included providing escorts and arranging the routing of the convoys carrying personnel and supplies to the NEI and Singapore.⁸ Objects of Japan's immediate offensive, these areas faced the brunt of the enemy's first submarine attacks. With no shortage of targets, most attacks took place against independent shipping. On 28 February, however,

Figure 7.1 – ABDA and ANZAC areas, January 1942



Source: Gill, *Royal Australian Navy 1939-42*, p. 520.

the Japanese submarine *I-158* attacked a convoy escorted by *Yarra*, *Wollongong* and HMIS *Jumna*. A tanker was badly damaged, and although *Wollongong* made what her commander hoped was a successful counterattack, the submarine escaped.⁹

Despite their commitments elsewhere, there were already 11 American destroyers in the ABDA area. This relative preponderance caused some brief discussion in Melbourne on the merits of redeploying the RAN's anti-submarine forces back to the sparsely defended east and west coasts. Nevertheless, the naval staff recognised that ABDAFLOAT would still have considerable difficulty in providing sufficient escorts. In any case the ACNB retained responsibility for the escort of Australian supply ships through to Darwin, and as the Director of Plans, Commander E. Dechaineux,¹⁰ tactfully pointed out, 'it is considered both unwise and impolitic to withdraw any of our A/S forces from Northern Australian waters.'¹¹

Developments occurred simultaneously in the ANZAC area. Here Australia's Chiefs of Staff expected to be included in the general sphere of operational activity of the USN's Pacific Fleet. Although willing to give the CinC Pacific Fleet (CINCPAC), Admiral C.W. Nimitz, USN, strategic direction of the RAN, they were at the same time reluctant to hand over control of all Australia's seagoing forces. The inclusion of most of the Commonwealth's population and resources in the ANZAC area made it a particular national concern, and local defence had at last become an issue of major significance. The Australian Chiefs naturally felt that the ACNB retained the best knowledge of the routing of ships and enemy intelligence on the Australia Station. They therefore hoped to retain responsibility not only for the Navy's local defence forces, but also for the protection of Australia's coasts and shipping, the latter as a specific function under the Commonwealth Government.¹²

This thinking lay behind the Australian response to the recommendation from the US Combined Chiefs of Staff that an ANZAC force be established under American command.¹³ Included in the RAN's initial assignment of ships to the force were to be three cruisers, three AMCs, two destroyers and eight A/S vessels, while the remainder of the seagoing force (two light cruisers, two destroyers and three sloops) would be allocated to ABDA. Australia's Chiefs of Staff concurred in the proposals with the exception of the eight A/S vessels.¹⁴ Since ABDA had been allotted three sloops, and the two ANZAC area destroyers would not be available until April, anti-submarine forces left under Australian control would total only six AMS vessels and six auxiliaries. This, the Australian Chiefs pointed out, was in spite of the vessels being 'essential for protection of coastal shipping and keeping focal areas round important ports clear of submarines.'¹⁵

The American reply made it clear that the Commander ANZAC Force would be responsible for the protection of all coastal shipping in the area, but that he would deal through an appropriate Australian subordinate.¹⁶ Although the role of the ACNB, either within or outside the ANZAC organisation, remained unclear, the need to expedite the implementation forced a decision. On 29 January 1942 the Naval Board agreed to the allocation as originally suggested by the Americans.¹⁷ Admiral Royle expected some initial complications, but hoped that matters would 'readily adjust themselves'.¹⁸

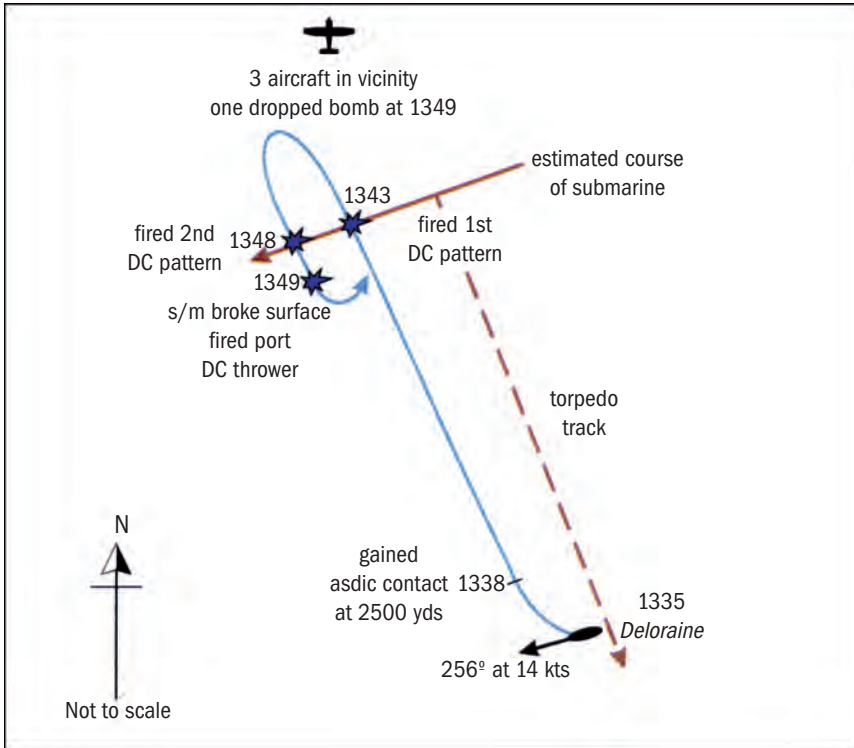
The RAN's first local submarine kill

Japanese offensive plans included the mining of important points in Australian waters as soon as opportunities presented. Having received orders 'to hinder passage by the enemy',¹⁹ in early January 1942 four boats from Submarine Squadron (SUBRON) 6 sailed from Davao in the southern Philippines. From 12–18 January these submarines separately laid three minefields in the approaches to Darwin, and another at the western entrance to Torres Strait. They then moved to the waters off Darwin on patrol and picket duties. Although specialised minelayers, the submarines were relatively old, slow and unwieldy, and their mines achieved no successes.²⁰ The mission was notable instead for the loss of the submarine *I-124* to the AMS, *Deloraine*.²¹

On the morning of 20 January two USN destroyers were escorting an oiler to Darwin when their charge reported that a number of torpedo tracks had passed close astern. One of the destroyers gained a fleeting sonar contact and dropped two depth charges before losing the echo. The Americans then continued their passage and passed details of the attack to Darwin. In response NOIC Darwin ordered his three available corvettes, *Deloraine*, *Katoomba* and *Lithgow*, out to search the area. *Deloraine*, which had only arrived in Darwin the previous day, was first to approach the scene and, having nimbly evaded a torpedo, managed to gain and hold an asdic contact from 2500 yds (see Figure 7.2). The initial depth charge attacks were accurately delivered, the submarine briefly broke surface and the corvette thereafter observed large bubbles of oil and air. Then for over 12 hours the immobile submarine was subjected to the attentions of all three AMS vessels. The small patrol vessel HMAS *Vigilant* ferried out more depth charges as the corvettes expended their stocks.²²

Deloraine's first or second attack had almost certainly crippled *I-124*, and the subsequent enthusiasm to 'plaster' the wreck reflected not just a desire to be 'in at the kill', but also the very real problems of determining whether or not a kill had been made. Experience in the Atlantic had shown that oil and air bubbles were often a false indication of a submarine's demise, and that significant wreckage and human remains were some of the few reliable proofs. Asdic conditions in the relatively shallow isothermal waters were good, but an additional problem in this case were numerous 'non-sub' echoes from the seabed and hence the difficulty of accurately coordinating the tactical plots in the attacking vessels. This confusion resulted in initial claims that three submarines had been destroyed. The sinking was soon overshadowed by the Japanese raids on Darwin, but remained a significant achievement in a period of Allied failure. More importantly, it demonstrated to the RAN that the training

Figure 7.2 – Destruction of I-124 by HMAS Deloraine, 20 January 1942



Source: NAA: MP 1185/8, 1932/3/51.

system was working and that the corvettes represented an effective capability. Asked by the Naval Board for his opinion on which of the attacking vessels should be credited with the kill, Commander Newcomb replied with characteristic magnanimity:

It is submitted that the A/S operations of HMA Ships DELORAINÉ, KATOOMBA and LITHGOW, especially the former, have shown a very satisfactory degree of efficiency, observing that no instructional practice has been available on actual S/M's and that in turn this efficiency reflects considerable credit on Lieutenant H.S. Middleton, RANVR and CPO W.C. Beer, RN of HMA A/S School who have been largely instrumental in the A/S instruction of the Commanding Officers, 1st Lieutenants and A/S C.O.'s respectively of the above ships.²³

Japanese intentions and deployments

By February 1942 the Japanese had completed their occupation of the NEI and made Darwin untenable as an Allied fleet base. Should they continue their advance in the Pacific, the enemy would soon be astride Australia's lines of communication and once there would be well positioned to prevent the future use of other local bases for Allied counter-offensives. In these circumstances Port Moresby assumed even greater importance to both the Allies and the Japanese. It offered not only a strong position on the flank of Japanese movements from the Mandated Islands or NEI, but also acted as a threat to the advanced Japanese base at Rabaul.²⁴

Although American forces had begun to arrive, Australia's Chiefs of Staff were not optimistic.²⁵ They agreed that the Japanese had already gained control of most of the raw materials they needed for the successful prosecution of the war and noted that the enemy's naval supremacy had not been seriously weakened. The predicted campaign against Australian merchant shipping had not yet begun, but the Chiefs stressed again that, whatever strategic course the Japanese adopted, widespread attacks against shipping could be expected in both the Indian and Pacific Oceans. Notwithstanding these local fears, the deployment of enemy submarines would remain cautious.

During the period of retreat the Allies were almost entirely reliant on radio intelligence for an insight into Japanese moves. In contrast, as the Japanese advanced, their principal source of intelligence was from submarines reconnoitring close inshore, normally using their own embarked aircraft. Many supposed submarine sightings had already been made, but the first such dedicated mission against Australia was not until 7 February 1942, when *I-25* sent its aircraft over Sydney. Flights then followed over Melbourne on 26 February and Hobart on 1 March.²⁶ A Japanese report of the mission was later intercepted by Allied intelligence, but there is no record that either the submarine or its aircraft were ever detected by local defences. There is certainly no indication that Australian measures hampered the submarine's activities, although its commander was in any case already constrained by orders not to attack any warship smaller than a cruiser, or any merchant vessel of less than 5000 tons.²⁷

The first confirmed reports of submarine activity in southern waters instead came from Western Australia. On 3 March 1942, the steamer *Narbada* reported that it had been shelled by a submarine only 90 nm west of Fremantle. A few

hours later SS *Tongariro* reported another unsuccessful shelling in the same area. In each case the attacker was *I-3*, a member of 'C' SUBFORCE of the Japanese SUBRON 7. The six boats that formed the squadron had sortied from Staring Bay in Sulawesi at the end of February. Three were assigned to patrol duties off Western Australia on the usual overseas shipping routes, while the remainder swept south of Java and then operated to the northward off Cocos Island.²⁸ The operation was surprisingly unproductive and resulted in only two sinkings, the small Dutch freighter *Parigi* sunk on 1 March off Fremantle, and the *Siantar* sunk two days later north-west of Shark Bay.²⁹

Rather than merchant vessels, at this point the Naval Board's main interest in the west was the movement of the battleship HMS *Warspite* during its passage to Trincomalee from Sydney. Alerted by the Japanese attacks, the ACNB directed the British battleship to refuel in Spencer Gulf rather than Fremantle.³⁰ Assisted by recently arrived USN and USAAF (United States Army Air Force) aircraft, RAAF Western Area was already engaged in seaward A/S patrols, and the first air attack against a submarine occurred on 2 March 1942. Unfortunately this attack was against the American boat USS *Sargo* which, having failed to identify herself, was severely damaged.³¹ Off Australia's east coast security patrols were also underway. On 24 March, two aircraft reported the sighting of a surfaced submarine 50 nm east of Stradbroke Island.³² Two bombs were dropped and the submarine submerged.³³ The ACNB broadcast a warning to commercial shipping and ordered the auxiliary A/S vessel, HMAS *Kybra*, to escort two freighters about to leave Brisbane.³⁴

The South-West Pacific Area

For the ACNB, the shortage of escorts remained the primary constraint on setting up an effective anti-submarine defence. Since no help could be expected from the United Kingdom, and American forces were unlikely to come under Australian control, it examined other options. *Moresby* had been re-armed as an A/S escort during January, while the possibility of Canadian cooperation also received attention. In their assessment of 29 January 1942, the Chiefs of Staff had agreed

... that our main weakness which can possibly be remedied by assistance from Canada, is our lack of means to counter the threat of intensive submarine attack against supply routes across the Pacific and to the NEI. Accordingly the most useful immediate contribution Canada can make to Australia is to provide anti-submarine craft: both small craft for operating in the approaches to our main ports and anti-submarine craft with good sea-going qualities to assist in ocean escort.³⁵

The request for ships was passed, together with several other suggestions for help, to the Canadian Prime Minister,³⁶ but a favourable response was not likely. The Royal Canadian Navy (RCN) had already embarked on its own urgent expansion on a proportionately far larger scale than those of either the Royal Navy or RAN.³⁷ The Canadian escort building program alone had ordered 70 'Flower' class corvettes from 16 Canadian shipyards between 1939 and 1941. It may have been the very size of this expansion that encouraged the Australians to consider making a request. But the Canadians had been engaged in the close escort of Atlantic convoys since September 1939, and just two weeks before the Australian assessment had faced the first wave of U-boats in their own waters. By late 1941, as one Canadian historian has written, the RCN's corvettes 'steamed from Canadian shipyards directly into battle against the best of Germany's submariners.'³⁸ The only ships they might possibly spare were six minesweepers under construction for Admiralty account on the Pacific coast, and these had insufficient endurance.³⁹

Particular Australian concerns were, in any case, soon absorbed into the larger Allied picture. On 1 February 1942, Vice Admiral H.F. Leary, USN, assumed command of all naval forces in the ANZAC Area, as Commander ANZAC Force (COMANZAC).⁴⁰ Leary intended initially to set up his headquarters in Wellington or afloat, but soon found that the existing naval organisation in Melbourne was better provided with 'communications, intelligence and operational facilities'.⁴¹ Any separation from Melbourne would have also cut all direct contact with the RAAF, a significant constraint on joint operations. By mid-March Leary had established himself in the same building as Admiral Royle, and thereafter used RAN operational and intelligence staffs supplemented by his own. As the Australians had feared, COMANZAC's promulgated responsibilities included the protection of coastal shipping. Moreover, the American was solely accountable to the CinC US Fleet, Admiral E.J. King, and therefore the only control the Commonwealth could exercise over Leary's activities was through the Australian Minister in Washington.⁴²

Areas and responsibilities remained subject to change, however, and in April 1942 both ANZAC and ABDA were superseded. The new arrangements placed Australia and New Zealand in different commands, but did incorporate all Australian waters within the one South-West Pacific Area (SWPA) (see Figure 7.3). Thereafter, General Douglas MacArthur, with his appointment as Supreme Commander SWPA, assumed unified control of all land, sea and air forces and exclusive strategic and operational responsibility for Australia's defence. Vice Admiral Leary, meanwhile, became one of MacArthur's three component

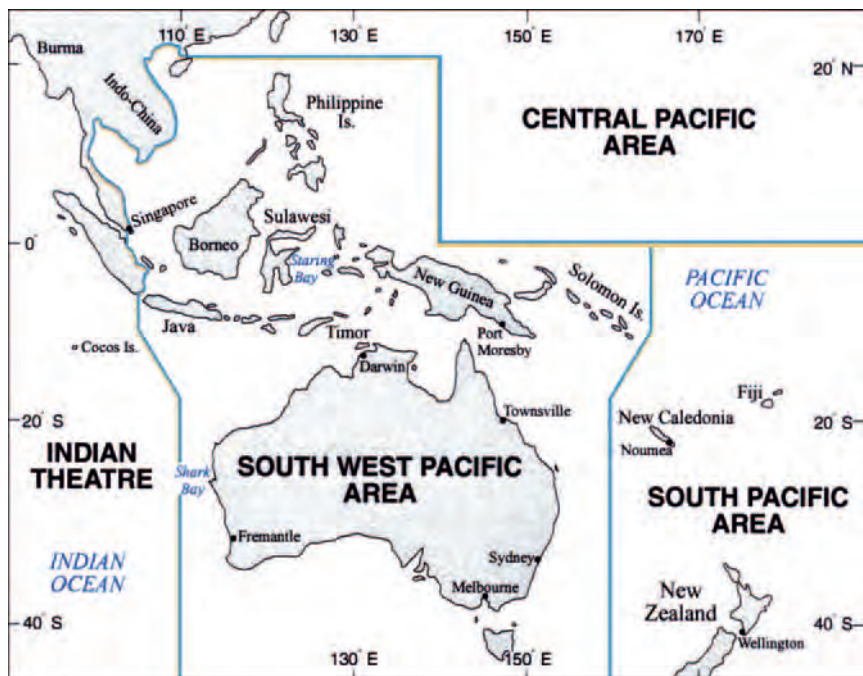
commanders as Commander South-West Pacific Forces (COMSOUWESPAC). His responsibilities covered all naval operations in the SWPA and included the operational control of RAN units in the area and the maintenance of sea communications.⁴³

The ACNB had had no escorts under its operational command since the beginning of February 1942 and, having relinquished control, the Naval Board might easily have been left as a purely administrative authority, thereafter only responsible for naval facilities and the support of operations afloat. Such a role, though, would have suited neither the aspirations of the Australians, nor the maintenance of a workable security relationship with the United States. Furthermore, as the Americans would later admit, they did not know enough about coastal defence and the running of convoys to carry out the duties efficiently themselves.⁴⁴ Leary at least, soon agreed that local authorities could better handle matters of direct Australian concern. Consequently, through delegation by CANFSWPA, Royle regained an operational role, and accepted responsibility for the protection of coastal shipping and convoys in Australian waters. The process was gradual, however, and although Leary allowed the Naval Board to issue the orders, initially he retained operational control of all AMS vessels.⁴⁵

With both Allied and Japanese attention focused on Port Moresby the defence of sea communications to and from mainland Australia had assumed a high priority and special convoys to transport troops and supplies to New Guinea were introduced as early as January 1942. The ACNB had never intended to institute coastal convoys until an actual threat materialised, but troopship convoys represented a priceless asset and had always received the maximum possible protection. Even before December 1941 this had included designated anti-submarine escort in local focal areas. The New Guinea convoys were regarded as complicated movements that required careful control of escorts between Townsville and Port Moresby, and in the event were controlled by NOIC Townsville under the broad direction of the Naval Board.⁴⁶ Successful implementation highlighted the advantages of local control, and raised questions about the existing policy that centralised operational control in Melbourne of all AMS operations.

Although administrative control of AMS vessels remained with the NOIC of their base port, the NOICs still only possessed operational control of local defence vessels. The AMS blurred the distinction, however, as they were employed in both local defence roles and as ocean-going escorts. In practice,

Figure 7.3 – South-West Pacific Area, April 1942



Source: Gill, *Royal Australian Navy 1942-45*, p. 30.

neither Leary nor Royle could always be aware of the duties performed by an escort at any given moment. The authorities in Melbourne would certainly not be aware of local availability due to minor defects or routine maintenance. Moreover, the timings of escorts for convoys were difficult to control from a distance, particularly when several commitments arose in quick succession.⁴⁷ Hence, delays would inevitably arise and signal traffic increase. After mild protests from NOIC Fremantle and Darwin, in May 1942 the policy changed to allow both operational and administrative control of AMS vessels to remain with the local NOIC.⁴⁸ Thereafter, COMSOUWESPAC provided overall direction and left the Naval Board to allocate individual craft. Within Navy Office the Deputy Chief of Naval Staff (DCNS)⁴⁹ became responsible for local anti-submarine defence, including convoys, while the Director of Plans accepted responsibility for day-to-day operations.

Allied assistance

By early April 1942, the RAN destroyers *Stuart* and *Voyager*, as well as eight USN destroyers were available for Australian escort duties. The arrival of Allied help and the deletion of Noumea, which was included within the adjoining South Pacific Area as an Australian responsibility, partially relieved the scarcity of vessels and allowed a more even distribution of assets. Subsequently the naval staff determined that no additional auxiliary A/S vessels were required and recommended that HMA Ships *Heros* and *St. Giles* could be reconverted to tugs, of which there was also a local shortage.⁵⁰ By May 1942 *Kybra* had similarly been removed from escort duties and was instead assigned to the A/S School as the training ship.

Table 7.1 - Proposed disposition of A/S craft, 8 April 1942

| Port | Present | Future |
|----------------------|-------------------------|-------------------------|
| Fremantle | 4 USN destroyers | 4 USN destroyers |
| | 4 AMS | 4 AMS |
| Adelaide | 1 AMS | |
| Melbourne | 1 AMS (refit) | 1 AMS |
| | | 1 aux. A/S |
| Sydney | 2 RAN destroyers | 2 RAN destroyers |
| | 4 USN destroyers | 4 USN destroyers |
| | 1 sloop (refit) | |
| | 3 AMS (1 in refit) | 2 AMS |
| | 3 aux. A/S (1 in refit) | 3 aux. A/S ^a |
| Brisbane | 1 sloop | 2 sloops |
| | 2 AMS (1 in refit) | 2 AMS |
| | 1 aux. A/S | 1 aux. A/S |
| Townsville & NE Area | 1 US gunboat | 1 US gunboat |
| | 2 AMS | 3 AMS |
| Darwin | 4 AMS | 4 AMS |
| Noumea | 1 AMS | 2 AMS |
| | 1 aux. A/S | |
| Total vessels | 36 | 36 |

Source: NAA: MP 1185/8, 1804/2/85.

Note: a. Includes HMAS *Doomba*, which was requisitioned as an auxiliary M/S vessel but converted to A/S duties in June 1942.

The arrival of American forces also assisted Australian anti-submarine preparations in other practical ways. On 20 April 1942, one of the first (if not the first) exercises took place that involved RAAF aircraft and live submarine targets in local waters, when the old USN submarines *S.41* and *S.39* operated off Sydney Heads. Providing more training in recognition than in tactical procedures, only one of the eight aircraft proved capable of accurate estimation of the submarines' size. The lessons promulgated on completion were hardly momentous, but did reflect the general lack of experience. One remarked that submarines at periscope depth were 'extremely difficult to sight even in calm water'. Another related 'the realisation hitherto not known of the rapidity with which a S/M can submerge to a depth which renders it completely invisible from aerial observation.'⁵¹

Another Japanese reconnaissance mission

The fine-tuning of local command and control arrangements coincided with the Japanese deployment of *I-29* for another reconnaissance mission to the east coast. Although unaware of this specific operation, Allied authorities had been warned to expect an increase in submarine activity as part of the enemy offensive against Port Moresby that would soon culminate in the Battle of the Coral Sea.⁵² Between 7–10 May, RAAF reconnaissance aircraft from Townsville separately sighted five submarines off the North Queensland coast. Several attacks were made and one crew even optimistically described their target as 'a large black submarine flying what appeared to be a Japanese flag.'⁵³ It is unlikely that any of these widely spaced attacks were against *I-29*, nor do existing records confirm attacks against other enemy or even friendly submarines. A final verdict is impossible, but an increased state of alertness and an understandable desire for excitement—on what were normally long and uneventful patrols—accentuated the human tendency to accept data that fitted a preconceived picture.

The first positive indication of *I-29*'s presence instead came on 16 May when it shelled the Soviet merchant ship *Wellen* off Newcastle. The vessel radioed for help and return fire from the Russians persuaded the submarine to break off the action. In response to the warning the Naval Board suspended all merchant sailings from Sydney and Newcastle for 24 hours, while NOIC Sydney, Rear Admiral Muirhead-Gould,⁵⁴ ordered all available anti-submarine craft to carry out a searching sweep. RAAF Eastern Area instituted a separate parallel track search using four aircraft from Richmond the following day.⁵⁵ Following the already established pattern, both air and surface searches proved negative. The threat, however, remained. Muirhead-Gould immediately

reinstated the anti-submarine patrol off Sydney Heads and provided northbound troop convoys with the strongest possible escort. Less than two days after the attack five ships carrying 4735 troops to Port Moresby sailed from Sydney protected by two destroyers and two AMS vessels.⁵⁶

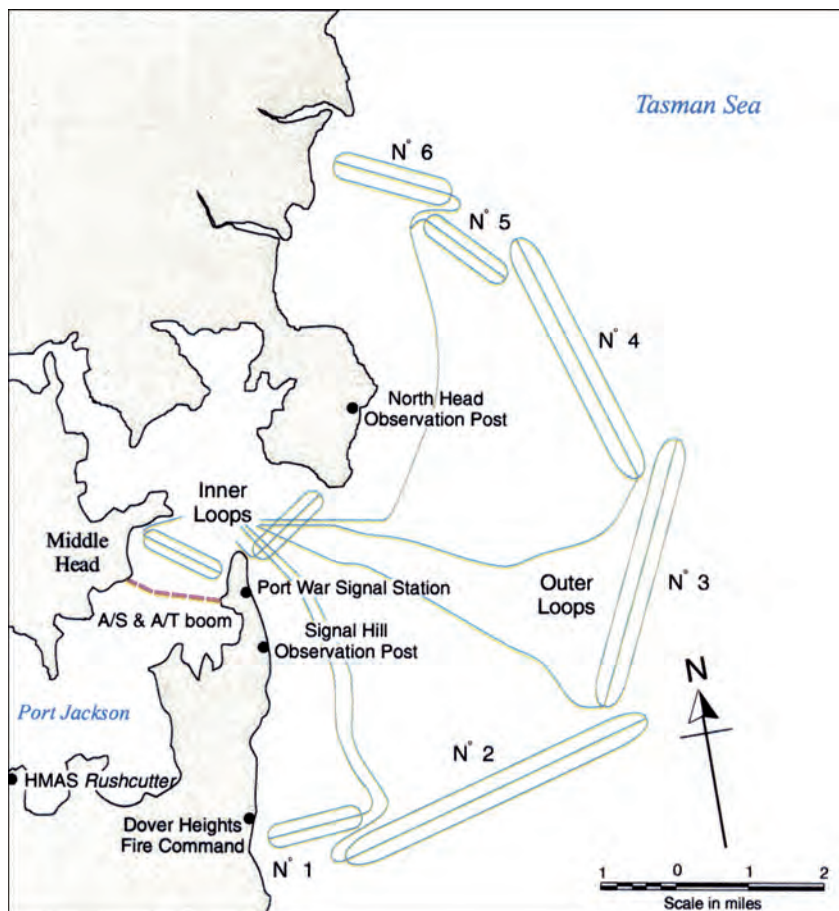
The appearance of an enemy submarine off the east coast also stirred interest in Canberra. On 30 May the Advisory War Council reviewed coal stocks in each state and considered the capacity of the railways to transport coal in the event of interruption or stoppage at sea. In his advice to the Council, Admiral Royle firmly stated that sea transport would continue, and that when required he would have no difficulty in arranging coastal convoys.⁵⁷ The problem, though, was not with the naval arrangements but rather with the continued shortage of carrying capacity. By May 1942, the Victorian gas works only had sufficient coal for six weeks' production, while the South Australian railways had barely four weeks' supply. Similarly, the eastern states already held a huge amount of cargo destined for Western Australia, an accumulation they saw no immediate prospect of moving.⁵⁸

The midget submarine attack on Sydney

The reconnaissance by *I-29* was partly in preparation for future Japanese offensives. In particular, the four submarines of the Eastern Detachment of the Second Special Attack Flotilla (*I-21*, *I-22*, *I-24* and *I-27*) awaited a decision on whether Suva or Sydney should be subject to a surprise attack. By using midget submarines the Japanese aimed to successfully penetrate a naval harbour and impede the build-up of Allied warships in the South Pacific. Before his attack on *Wellen*, *I-29*'s commander had spent some time observing naval patrols off Port Kembla, and then on 23 May he ordered his aircraft to conduct a flight over Sydney. The pilot reported the presence of battleships and cruisers in the harbour and Sydney thus became the priority target. The raid by three midget submarines took place on the night of 31 May/1 June 1942.

In Australia evidence of increased enemy submarine activity had continued to mount. On the eve of the Sydney attack, a summary and assessment by CINCPAC predicted commerce raiding against the US-Australian supply route.⁵⁹ In the week before the raid the New Zealand Naval Board reported two High Frequency Direction Finding (HF/DF) fixes on enemy vessels in the Tasman Sea. The last fix on 29 May pointed to a single submarine operating only 35 nm from Sydney. Because all available A/S vessels and reconnaissance aircraft had already been disposed to provide cover for troop convoys, no searches were ordered off Sydney until the day after the raid.⁶⁰

Figure 7.4 – Sydney Harbour A/S defences, 1942



Sources: NAA: MP 1049/5, 2026/14/265; Gill, *Royal Australian Navy 1942-45*, p. 69.

In October 1940, the RAN's Director of Plans, Commander Martin, had assessed Sydney's anti-submarine defences as 'reasonably secure',⁶¹ but 19 months later there still remained room for improvement. The fixed defences comprised six outer and two inner loops, an HDA placed inside the Heads as a 'last line of defence', and an A/S-A/T boom to physically prevent entry or attack (see Figure 7.4). Unfortunately, only the centre section of the boom had been completed, and gaps of up to 400 metres existed at each end. In addition, on

the night of the attack two of the outer indicator loops were out of action. Consequently signatures from the midgets were only obtained on one of the inner loops, but even these were not recognised by the loop operators until after the attack had begun.⁶² Available mobile defences included the auxiliary A/S vessel HMAS *Yandra* which was in the loops area, a channel patrol boat on station at the boom's West Gate, and four NAP boats at Farm Cove. The course and results of the Japanese attack have since been the subject of several detailed studies.⁶³ It is sufficient to note here that the fixed and mobile defences accounted for one midget each, while the fate of the remaining craft—which carried out an unsuccessful attack on the moored cruiser USS *Chicago*—remains unknown.

That Sydney's boom defences were incomplete when put to the test raised some questions within Navy Office, but in part this reflected practical difficulties rather than any lack of interest. In fact, in the wake of the attack the Director of Naval Ordnance, Captain L.A. Spooner,⁶⁴ identified a certain overenthusiasm. 'Boom defences', he advised Royle, 'are at present being planned with little regard to the material, buildings, personnel and craft required, and moreover, with little consideration of the time factor.'⁶⁵ He went on to list three complete and 23 incomplete projects involving 34.22 miles of A/S and A/T booms, baffles and spars in 12 Australian mainland ports, Port Moresby and Noumea. With imperial and Australian resources already stretched, the bulk of material needed to come from the United States and completion was likely to take many years. When finished Australia's defences would undoubtedly be comprehensive, but Spooner highlighted the ongoing burden on RAN resources, and concluded by noting that there were only 25 boom defences in the rest of the British Empire of which 18 were in Britain.⁶⁶

The introduction of coastal convoys

In the period following the midget attack the Japanese mother submarines began their own offensive. Traffic analysis of intercepted signals soon identified the enemy as two divisions of SUBRON 8, and four weeks later intelligence also revealed that the squadron had begun its return to the Marshall Islands.⁶⁷ Although short-lived, the effort had been effective. During the first fortnight Australian authorities recorded more than 20 submarine-related incidents. These included seven separate torpedo and gun attacks on commerce that resulted in three ships sunk and two damaged. Enemy activity stretched from the central New South Wales coast down to Gabo Island in the south, and on 8 June two submarines each bombarded the cities of Newcastle and Sydney. The latter operation was aimed successfully at creating 'an air of

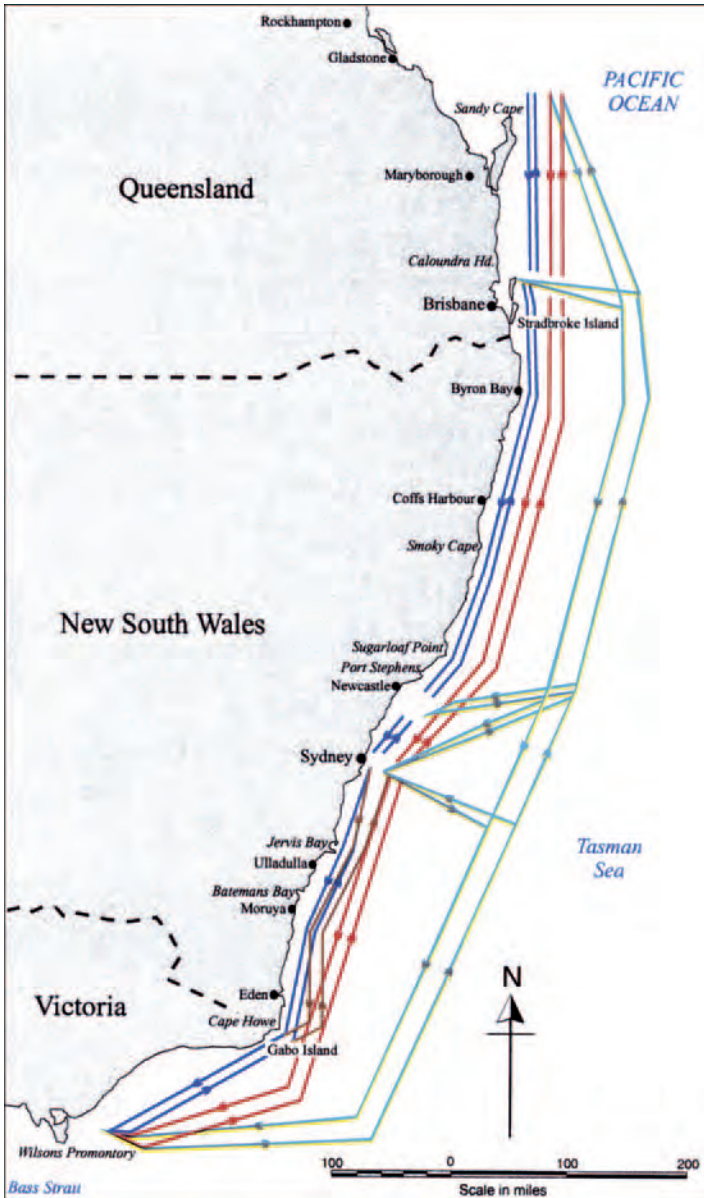
disquiet'.⁶⁸ When asked why A/S vessels had not been available to hunt the bombarding submarines, Royle answered that they were still being used for the escort of troops to Port Moresby.⁶⁹

The coaster *Iron Chieftain*—with a full cargo of coke—had been sunk on 3 June only 27 nm east of Sydney, and the limitations of re-routing shipping off the Australian east coast immediately became clear. For coastal shipping the only choice was to move further out to sea, but this was not an option for smaller vessels with a limited bunker capacity. Furthermore, at some point all ships still had to enter or leave harbour creating fairly obvious choke points. With enemy submarines operating with apparent impunity in Australia's most important maritime focal area, the Naval Board turned to its previously planned response. On 4 June, the Board ordered the suspension of all merchant ship sailings between Adelaide and Brisbane with the exception of Adelaide–Melbourne and Melbourne–Tasmania traffic. The order also warned of the impending introduction of a convoy system on the two coastal routes Melbourne–Newcastle and Sydney–Brisbane. Furthermore, trans-Tasman sailings from Sydney and Brisbane were to be escorted in convoy out to 200 nm from the coast, with a similar arrangement for escorts meeting westbound ships.⁷⁰

The first two coastal convoys sailed on 8 June. Convoy G.P.1 (Sydney–Brisbane) consisted of nine merchant ships escorted by the new 'Tribal' class destroyer HMAS *Arunta* and the AMS HMAS *Kalgoorlie*. Convoy C.O.1 (Newcastle–Melbourne) included five ships escorted by the American destroyer USS *Selfridge* and the AMS HMAS *Rockhampton*.⁷¹ An interlocking system of coastal convoys was thereafter established which soon stretched from Melbourne to Townsville (see Figure 7.5). The particulars of the system were changed regularly, but it began with C.O./O.C. designated convoys sailing twice each week in both directions, and P.G/G.P convoys sailing once per week.⁷²

All vessels over 1200 tons and with speeds less than 12 kts were ordered to sail in convoy, while vessels under 1200 tons were required to proceed independently on inshore routes.⁷³ Vessels of 12 kts or over proceeded independently on normal routes, but clear of convoys, and did not sail during the hours of darkness. Ships sailing independently were to zig-zag when within 200 nm of the coast, except when inside the Barrier Reef or in the approach channels to ports. Until the ACNB considered that coastal masters were competent to take charge, only naval officers were appointed as convoy commodores.⁷⁴

Figure 7.5 - Principal east coast convoy routes, 1942-43



Source: NAA: MP 1049/5, 2026/12/600.

Troop convoys to New Guinea had run whenever needed, and had therefore been provided with any escort available. The coastal system, however, ran routinely and so required escorts on a more formal basis. In May 1942, the Naval Board had only one escort available for coastal convoy duties, but on 3 June additional A/S vessels were temporarily allocated to Melbourne (one), Sydney (nine) and Brisbane (two). The priority to provide troop escort remained, but with American help the Naval Board expected the escort total to rise to 16 vessels by the end of June. Thereafter the Navy expected that all convoys should have at least two surface escorts and some air escort throughout their voyage.

To make the most effective use of assets, schedules were arranged whenever possible so that escorts were detached from their convoy to join another heading in the opposite direction at an appropriate mid-way point. Thus the escort for a G.P. convoy would normally detach and join a P.G. convoy at Caloundra Head. Australian warships generally constituted most of the escorts, but the remainder were a constantly changing mix of American, Dutch, British, Indian and Free French vessels. In contrast with the plans made the previous year the Naval Board decided not to arrange designated escort groups. Since ships were at a premium the same vessels would seldom be together, hence there would be few opportunities for group training. Instead, the ACNB regarded each ship as an independent command, with operational control vested in the local naval authority.⁷⁵ The disposition of anti-submarine craft in mid-1942 is depicted in Table 7.2, and the distribution clearly shows the priority accorded to specific focal areas.

MacArthur moved his General Headquarters (GHQ) to Brisbane at the end of July 1942 and Leary necessarily followed. Two months later Vice Admiral A.S. Carpender, USN, succeeded Leary as COMSOUWESPAC. Despite these changes the Naval Board still maintained close contact. Direct teleprinter communication linked Brisbane and Melbourne, and this was supplemented by a daily air courier service.⁷⁶ Royle also ensured that a RAN liaison officer remained on Carpender's staff. But the American clearly wanted to exert his authority in MacArthur's primary area of interest—the North East Area. In one of his first acts on taking up command, Carpender informed Royle that he would assume control of all convoys proceeding to New Guinea. Strangely, specific details were not promulgated, but COMSOUWESPAC's control was intended broadly to cover shipping in support of military operations, and generally assumed to extend north from Brisbane.⁷⁷ As Carpender could only exercise control through the NOICs, close Australian naval involvement was still guaranteed.

Table 7.2 - Disposition of RAN A/S vessels, May-July 1942

| Disposition | May | June | July |
|------------------------|--|-------------------------|-------------------------|
| Fremantle | 2 RAN DD | 1 RAN DD | 1 RAN DD |
| | 3 AMS (1 RN on passage to Eastern Fleet) | 4 AMS | 4 AMS |
| Adelaide | 2 AMS | - | - |
| Melbourne | - | - | 1 aux. A/S |
| Flinders Naval Depot | - | 1 aux. A/S (training) | 1 aux. A/S (training) |
| Sydney | - | 2 RAN DD | 2 RAN DD |
| | 1 sloop | <i>Moresby</i> | <i>Moresby</i> |
| | 2 aux. A/S | 3 aux. A/S (1 training) | 3 aux. A/S (1 training) |
| | 3 AMS | 6 AMS | 3 AMS |
| Brisbane | - | 2 sloops | |
| | 2 AMS | 6 AMS (1 building) | 3 AMS |
| | 2 aux. A/S (1 training) | | |
| Townsville for NE Area | 1 sloop | | 2 sloops |
| | 4 AMS | 1 AMS | 4 AMS |
| Newcastle | - | 1 aux. A/S | - |
| Darwin | 4 AMS | 4 AMS | 4 AMS |
| Noumea | 1 aux. A/S | - | - |
| | 1 AMS | - | - |
| Unallocated | | | 3 AMS |
| Total | 28 | 32 | 32 |

Source: NAA: MP 1185/8, 1804/2/85.

Escort and harbour defence activities

Life on board the escorts was always physically demanding and commonly boring. Results were usually unquantifiable and, from the evidence of General MacArthur's daily communiques, seldom seen as worthy of public recognition.⁷⁸ Yet, the work remained essential to the safe operation of the convoy system. The corvette *Kalgoorlie*'s Report of Proceedings for June 1942 provides a typical example of the routine.

Kalgoorlie began the month in Sydney. She was first employed on an A/S loop patrol off the Heads, and then on a stationary A/S sweep in the West Channel. Relieved by HMAS *Whyalla* on 3 June, *Kalgoorlie* moved to Port Kembla where she again carried out a stationary A/S sweep. On 5 June the corvette escorted the SS *Echunga* to Port Kembla from sea after the merchant vessel had reported being chased by a submarine.⁷⁹ In the process *Kalgoorlie* carried out a depth charge attack against a fleeting asdic contact. The corvette was in Newcastle during the submarine bombardment and then escorted convoy C.O.1 to Melbourne. Returning with another convoy to Sydney, *Kalgoorlie* remained in harbour for less than 24 hours before she escorted an eastbound Tasman convoy with *Stuart*. On 17 June another asdic contact generated an attack. The next day the Tasman convoy dispersed and *Kalgoorlie* returned to Sydney independently. After three days alongside the corvette sailed with *Arunta* to escort a convoy to Brisbane. After 12 hours in Brisbane a southbound convoy brought the escorts back to Sydney on 28 June. During the month *Kalgoorlie* had spent 434 hours underway and steamed 3791 miles, but without hard evidence the crew could not even be certain that either of the two contacts attacked was actually a submarine.⁸⁰

The escort task involved a range of professional seamanship activities and responsibilities, and at least these continued whether or not a submarine was detected. There were far fewer opportunities for shore-based forces to distinguish themselves. The attack on Sydney had shown the necessity for alertness in harbour defence, and had engendered a more general feeling of alarm. Nevertheless, local defence personnel were unfamiliar with the threat and on the whole lacked professional skills. A typical example of how easily confusion could arise is provided by the ‘Action at Newcastle Port Entrance’ on the evening of 14 June 1942.

The incident began badly when a message from the Port War Signal Station (PWSS) Newcastle, that claimed a submarine had entered the harbour, was mistakenly attributed to the PWSS Adelaide. The correct originator was soon revealed, but not before HMAS *Toowoomba*, which had sailed from Adelaide that afternoon, was ordered by the Naval Board to ‘return with all despatch’. Meanwhile, in Newcastle periscopes had been identified by both military searchlight crews and an RAAF patrol boat. Shots were fired from a variety of shore-based weapons. All defensive forces were then summoned to their stations and a naval search began with five NAP boats, an auxiliary A/S vessel, a tug, and the RAAF patrol boat. Clearly not wishing to be removed from the action ‘A Military Representative’ was allowed on each boat ‘to drop Mills Bombs, hoping to make the submarine disclose its whereabouts.’⁸¹

The search found nothing, but the earlier evidence clearly suggested an actual sighting. The question remained 'of what?'. Ricochets from the action had caused some £75-£100 damage, so it is not surprising that the military authorities remained convinced it was a submarine. The shallow depth, however, precluded the possibility of anything but a midget. Naval opinion in both Newcastle and Melbourne remained sceptical and instead suggested some form of sea life.⁸² The port was nevertheless a vital industrial centre and thereafter Muirhead-Gould instituted added precautions to protect the docks and steelworks.

Reports of enemy submarine activity continued to abound and made coordination of action by the Naval Board extremely difficult. The day before the Newcastle incident, the naval staff had received a report of two submarines sighted off northern New South Wales, various reports linked to the sinking of the SS *Guatemala* off Sydney, and word of an object resembling a submarine sighted by a military sentry 60 miles south of Fremantle.⁸³ Clearly, not every sighting or detection generated equivalent action, but few were completely disregarded. A formalised system of classification assisted objective assessment. The system gave each report 'which may be true' a grading that included both reliability of the source (graduated A to E) and the probability of observation (graduated 1 to 5). Thus 'A1' indicated a completely reliable source accepted as true, while 'E5' indicated a possible but most improbable report by an unintelligent observer.⁸⁴

Of course, the fog of war meant that even high confidence reports could be mistaken. This is well illustrated by an incident on the evening of 20 June 1942, when the merchant vessel *Port St. John* reported being fired upon by an enemy submarine. For COMSOUWESPAC and the Naval Board the first indication came from Sydney radio, which at 1840 reported the receipt of an 'SSSS' submarine warning message from a position 30 nm south-east of Jervis Bay.⁸⁵ Twenty minutes later the ACNB broadcast a general warning to all shipping in the area. Within an hour the corvette HMAS *Whyalla* had left Sydney for the scene of the attack, patrols had been increased within the harbour and another five warships had been brought to immediate notice for steam. Two hours later several aircraft joined in the search, but the incident was already over. At 2020, *Port St. John* broadcast that the flash she had seen was possibly lightning. After checking the authenticity of the message the Naval Board cancelled all action.⁸⁶

The second Japanese wave

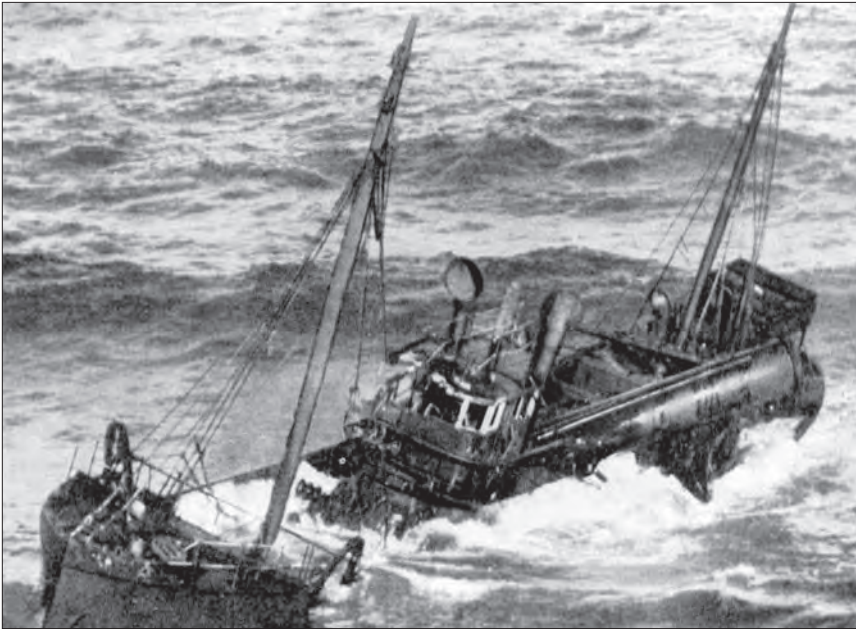
The last confirmed attack by the first wave of Japanese submarines occurred on 12 June 1942 and, by 24 June, an intelligence summary reported ‘a considerable falling off in submarine sightings.’⁸⁷ Consequently, on 15 July the CWR ordered the cessation of all routine coastal convoys.⁸⁸ Having failed to take Port Moresby by sea, however, the Japanese landed on the north coast of Papua on 21 July in an attempt to take the town by land. To support this renewed offensive, the commander of the Submarine Force, Vice Admiral Teruhisa Komatsu, IJN, ordered the operations begun by the Eastern Detachment to continue.⁸⁹

In late July Allied intelligence estimated that six Japanese submarine squadrons were in the South Pacific, of which at least one, SUBRON 3, was off New South Wales as a replacement for SUBRON 8. Based on this identification, six submarines were thought to be in the local area.⁹⁰ Further analysis of radio traffic soon revealed that SUBRON 3 was split into two divisions and that only one of these was off Australia.⁹¹ On 31 July, a combination of traffic analysis and HF/DF located the commander of SUBRON 3, Rear Admiral Chimaki Kawano, IJN, in Bass Strait.⁹² Between 20 July and 3 August Kawano’s submarines sank another four ships and severely damaged two more. One of the latter, the trawler *Dureenbee*, had to be abandoned. Then, on 4 August, came a demonstration that the Japanese could operate even in the remotest parts of Australian waters. The passenger ship *Katoomba*, on its way to Adelaide, signalled that it had been shelled at the western entrance to the Great Australian Bight. The attacker was *I-32*, on passage from operations off New Caledonia to Penang by way of southern Australia. This night attack lasted for three hours, but a combination of evasive steering and return fire from the *Katoomba*’s stern gun—manned by RAN ratings—thwarted the submarine’s efforts.⁹³

In response to the renewed attacks the CWR ordered the reintroduction of routine coastal convoys on 22 July.⁹⁴ The USN, though, had already withdrawn its destroyers and with six RAN vessels since employed between Townsville, Port Moresby and Milne Bay, the lack of escorts on the east coast prevented regular weekly sailings on the Sydney–Brisbane route. Consequently, these convoy sailings remained subject to the availability of escorts until early September.⁹⁵ August, however, also saw the struggle around Guadalcanal intensify, and to strengthen their forces in the Solomons the Japanese ordered their submarines off eastern Australia to redeploy. By 10 August Allied signals intelligence had revealed that the boats were departing.⁹⁶ The withdrawal



Japanese submarine *I-123*.
(RAN)



Dureenbee wrecked after the attack by *I-175*.
(RAN)

marked a lull in Japanese operations on the east coast, but sporadic reports of submarine activity were received during the remainder of the year. This time the Naval Board made no move to reduce protection measures. Moreover, at the northern end of the Australian supply line the land campaign in New Guinea continued. Closer to their advanced bases, operations in this theatre allowed the Japanese to employ their shorter ranged 'RO' type submarines.

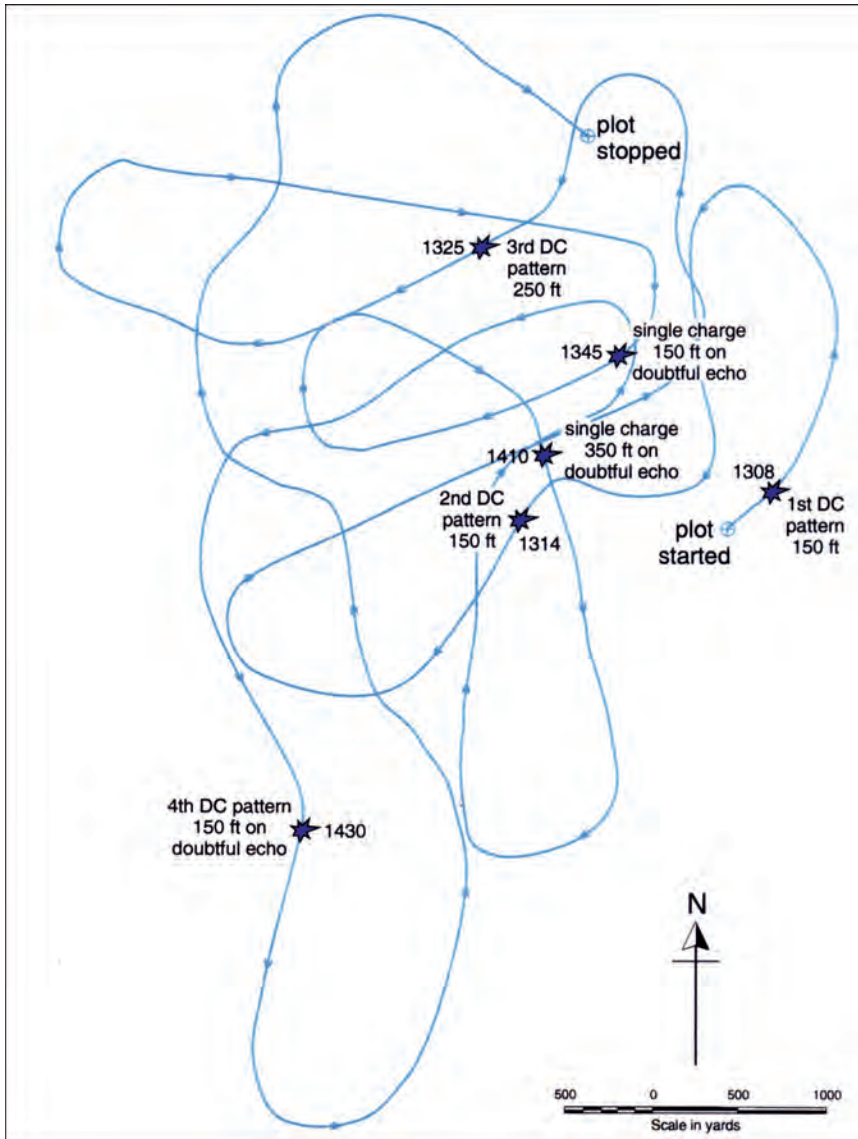
The destruction of RO-33

Just before midday on 29 August 1942, the Burns Philp vessel *Malaita* sailed for Cairns having unloaded a cargo of troops and supplies at Port Moresby. The destroyer *Arunta* provided the escort and took station ahead as soon as the merchant vessel was out of the approaches. The destroyer had just begun zig-zagging when at 1222 a torpedo fired by RO-33 struck *Malaita* on the starboard side. *Arunta* immediately reduced speed to 15 knots and began an asdic search. The destroyer first gained contact at 1305 at a range of 500 yards and carried out a deliberate depth charge attack.⁹⁷ Contact was gained on four further occasions over the next one and a half hours, and by the last attack *Arunta* had dropped 35 of her 46 depth charges (see Figure 7.6). The destroyer continued to sweep the area until dark but found no other evidence of its quarry. *Arunta* then assisted the badly listing *Malaita* to a safe anchorage. The destroyer returned to the scene two days later and encountered a large patch of oil. Bubbles of oil were still coming to the surface and these convinced *Arunta's* captain that the submarine had been destroyed.⁹⁸

Commander Newcomb at the A/S School received copies of all ASW incident reports and contact plots. For each he produced an independent assessment and disseminated the lessons learned. On this occasion Newcomb 'noted and concurred in' all *Arunta's* actions and movements, and agreed that a submarine had almost certainly been sunk.⁹⁹

Although *Arunta's* success provided further evidence that locally trained and equipped ships could be effective in ASW, other factors had a far greater impact on Japanese activities. In late 1942 the success of Allied attacks against Japanese surface supply lines forced the enemy to begin submarine cargo-carrying operations to Guadalcanal and New Guinea (see Figure 8.1). By mid-December, of the 31 submarines of the 'Advanced Force' in the South Pacific, only two were available for operations, 11 were undergoing repair and maintenance and the remainder were earmarked for transportation duties.¹⁰⁰

Figure 7.6 - Destruction of RO-33 by HMAS Arunta, 29 August 1942



Source: NAA: MP 1185/8, 2026/4/112.

Elsewhere, Japanese submarine operations remained lacklustre. In November 1942 the 30th Submarine Division—which had been operating along the coast of India—moved its base to Surabaya in Java and was assigned to operations in northern Australian waters. The Allied build-up in Australia had started to make an impact and Japanese commanders reported the ‘enormous pressure’ exerted by the Allied naval and air forces operating from Darwin. Accordingly, the Japanese determined to frustrate further operations by ‘throwing [their] entire strength’ into the struggle.¹⁰¹ As was so often the case with Japanese plans after mid-1942, discourse far exceeded both action and effect. There was a slight increase in air attacks against Darwin during November, but in December a deployment to the Arafura Sea by three submarines to engage ‘in surface communications destruction warfare’, achieved no notable results.

The Australian transport problem

By the end of 1942 Japanese submarines had sunk 14 ships in the waters surrounding Australia. Only one vessel, *Guatemala*, had been sunk while in convoy, and it had been straggling.¹⁰² On 10 August 1942, Royle accurately stated that enemy submarine tactics ‘on the whole were not clever’.¹⁰³ Merchant masters had defended their vessels aggressively and several submarines had failed to press home their attacks. There is no question that the Japanese plan to cut Australian sea communications had so far failed. Cargo continued to move and during 1942 a total of 252 separate convoys, made up of 1672 ships, had run between Australian and New Guinea ports.¹⁰⁴ This was a creditable effort, and a demonstration of Allied ascendancy in the continuing contest for sea control, yet an examination of other evidence shows that Australian measures were only a qualified success.

When assessing the impact of a submarine campaign it is not sufficient to simply add up the tonnage lost. The effects of the German anti-shipping campaign, for example, continued until the end of the war, long after the commander of the U-boat force, *Grossadmiral* Karl Dönitz, realised that he had lost the race to sink more shipping tonnage than the Allies could build. In the Japanese case it is essential to appreciate the overall shortage of Australian transport capacity. ‘The great problem here’, explained one senior US Army Officer to a Washington colleague in 1942, ‘is one of transportation... The whole continent of Australia is as undeveloped as the central United States was before the Civil War.’¹⁰⁵

Thus, to the 14 ships lost to submarine action one must add the five that were damaged and needed repair. These placed added stress on the limited

construction facilities available. Only the dry docks in Sydney and Melbourne could deal with major underwater repairs and, although shipbuilding was never abandoned, urgent repairs always took priority.¹⁰⁶ The numbers of vessels handled between July and December 1942 illustrates the extent of the problem. Excluding warships, 1506 vessels required repairs due either to routine maintenance or enemy action. Of these 222 were docked.¹⁰⁷ Even so, many American ships were only temporarily patched to allow their return to ports in the United States. Australian ships, such as *Malaita*, had to wait for up to three years before work could begin.¹⁰⁸

Sinkings and damage by submarines had a direct impact on transport resources, but there were related factors, which could reduce both potential and actual carrying capacity. Chief among these was the convoy system itself. Convoys have historically increased the safety of individual ships from enemy attack, but they have also involved an increased risk of damage or loss through collision. Merchant masters, after all, were not normally experienced in steaming and manoeuvring their vessels only 600 yds apart. Since convoyed vessels had dissimilar turning characteristics, and a convoy steamed darkened and without radar, the formation posed a real danger to its participants. No precise figures are available, but in July 1942 at least five vessels were damaged in two separate collisions between north and southbound convoys.¹⁰⁹ The reports of the Commonwealth Salvage Board similarly recorded 'a sharp rise in the number of strandings and collisions' in the second half of 1942.¹¹⁰ In total there were 41 ship casualties in the second half of 1942, and of these only seven were the direct result of enemy action. Despite the activities of the Salvage Board, the majority of these casualties became total losses.

At times convoyed ships have also been less efficient than those independently routed.¹¹¹ The period ships have spent waiting in port for a convoy to form, and the enforced reduction of speed to that of the slowest ship has resulted in a longer period between loading and unloading. The British accepted a 20 per cent reduction in efficiency for planning purposes after the experience of World War I.¹¹² American figures produced after World War II claimed a reduction as high as 31 per cent.¹¹³ No definitive figures were ever produced based on Australian convoys, and at least one study has declared the task impossible.¹¹⁴ But in July 1942, after one month of operation, Royle reported to the War Cabinet that convoys had reduced seaborne tonnage by only 7.5 per cent.¹¹⁵ He had based this figure on the 23-day cycle between Melbourne and Brisbane which showed that tonnage carried had dropped from 404,619 tons to 373,967 tons. The Australian Shipping Board later alleged that the

average reduction was 40 per cent. The Navy retaliated that the worst reduction had taken place in June 1942 (22 per cent), and that by August increased efficiency had lowered the figure to 13.5 per cent.¹¹⁶ Of particular interest, however, was the RAN's claim that the inefficiencies were caused not so much by the system, as by ships missing convoys because of crew trouble, or sailing partly loaded due to slow cargo handling.

These last two points were symptomatic of continued Australian industrial problems, and of a war economy that had altered the usual cargo flow between ports. Exacerbated by a shortage of wharf labour and inadequate dockyard facilities, the rate of loading and discharging had been in decline since 1939.¹¹⁷ Measures to reduce turn-around time were attempted, but the transport of war supplies invariably took priority and even these often took weeks to discharge.¹¹⁸ The priority accorded military cargo not only meant the use of unusual ports, but also the unusual loading of ships. Thus, vessels intended for the bulk trade might be tasked to carry large quantities of small fragile packages, and at the same time handle hundreds of vehicles.¹¹⁹ *Kowarra*, sunk in April 1943, carried a strange mix that included two torpedoes in addition to a full cargo of sugar.¹²⁰

These stowage problems undoubtedly reduced handling efficiency, as did the actions of the characteristically bellicose maritime unions. In addition to regular stoppages over pay and conditions, claims were made that organised pilfering had greatly increased losses at ports.¹²¹ The cargo pillaged normally consisted of items easily used or sold, including foodstuffs, tobacco and petrol, all of which were destined for the forward areas. Of more interest to this study, however, was the psychological effect of enemy action on civilian seamen. In 1943, the RAN admitted that it was not the only arbiter on the routing of convoys, and that crew demands also imposed limitations.¹²² Should a ship miss a convoy, but receive permission to sail independently, the crew would in most cases refuse to accept the risk.¹²³ Similarly, despite standing authority for faster ships to sail independently, and use their speed to pass well outside submarine danger areas, their crews often displayed a reluctance to sail.¹²⁴ In mid-1943, during the peak period of submarine attacks, even the Prime Minister noted the marked increase in seamen who had sought compassionate release because—so they said—their wives had suddenly become dangerously ill or were about to give birth.¹²⁵ During this period coastal ships delayed on account of crew trouble averaged 6.3 per month, but the rate dropped to 3.2 per month when the main threat had passed.¹²⁶

The combined effect of these influences on Australian transport capacity was daunting. After losses to sinkings and through requisitions, the Australian ocean-going fleet totalled only 145 vessels in mid-1942, down from 240 vessels in September 1939. To maintain an acceptable balance between military and civilian transport requirements was an almost impossible task. In June 1942, the Chairman of the Shipping Board again warned the Advisory War Council of the great difficulty in maintaining coal and iron ore traffic. This was a situation that had been 'accentuated by recent losses of tonnage due to enemy action.'¹²⁷ In August, Curtin likewise took pains to explain the crisis to a meeting of the state premiers:

So far no serious damage has been done on land, but the loss of ships has accentuated the already heavy strain on our coastal shipping resources. Steps are being taken with the object of procuring additional shipping from overseas, not only to provide essential coastal services for our wartime industry but also to supply the needs of Allied Forces in this area, but ...there is a grave shortage of ships everywhere.¹²⁸

The effectiveness of Australian anti-submarine measures

The effectiveness of the measures undertaken by the RAN and RAAF to maintain sea use in 1942 may also be questioned. The two submarines sunk by the RAN had both been at the extremities of the Australian area of interest. Off the vital east coast no submarine had yet been positively detected by patrols, nor had any been successfully localised or engaged by those units directed to search after an attack. The lack of positive results was no doubt disappointing to the escorts, but reflected the hard reality of ASW. Enthusiasm could not replace the lack of expertise, and the number of attacks conducted bore little relation to practical success. For example, on 6 July 1942 both HMAS *Wilcannia* and the corvette HMAS *Launceston* made a series of depth charge attacks on a suspected submarine detected off Sydney Heads. Torpedo tracks and a periscope had been seen and the hydrophone effect was very strong.¹²⁹ Each ship separately claimed the enemy as sunk, but Muirhead-Gould needed more proof, noting that 'the story is very circumstantial and ...there is no evidence of destruction.'¹³⁰

The Air Force similarly made many attacks on suspect contacts, usually with more publicity and less requirement for evidence of a kill. As early as 9 June 1942 the RAAF credited its patrols with 'one s/m destroyed, 5 believed sunk and 1 damaged'.¹³¹ On 12 June, Australian newspapers carried an official report that supposedly confirmed that over the previous 10 days 'certainly seven

and probably nine' submarines had been destroyed off the coast.¹³² On 29 July, a Beaufort added to the confirmed total, having claimed the destruction of a submarine off Gabo Island.¹³³ On this occasion later research has confirmed that the target was an enemy submarine, *I-11*, but it received only superficial damage.¹³⁴ In fact, despite official RAAF claims, aircraft never sank or even seriously damaged a submarine in Australian waters.¹³⁵ Although initially good for morale, overly optimistic reports did nothing to improve aircrew efficiency. Instead, the attacks reinforced a misplaced confidence in the effectiveness of offensive sweeps as opposed to escort work.

Success in ASW was (and remains) difficult to verify, and optimistic exaggeration was common in all theatres. A more telling reflection on the effectiveness of RAAF measures was the number of gunnery attacks carried out by Japanese submarines. Surfaced attacks could only take place when the submarine commander believed he had little to fear from aircraft, and were rarely carried out by U-boats in the North Atlantic theatre after 1940. Off the Australian east coast and New Guinea at least eight such attacks were reported during 1942, including three during daylight. The longest was a five-hour running battle on 9 June between the SS *Orestes* and *I-24* that began only 90 miles south of Sydney. Although 'continually peppered with shrapnel', *Orestes* survived the encounter.¹³⁶

By the time of the attack on *Katoomba* in August these types of incident had generated sufficient concern to initiate a heated exchange of correspondence between the Minister for Commerce, W.J. Scully, and the Minister for Air, A.S. Drakeford. The Chairman of the Maritime Industries Commission, Mr Justice de Baun, began the exchange when he reported the belief 'current amongst all seamen' that no aerial assistance of any description had been dispatched to *Katoomba*,¹³⁷ despite the fact that the attack had been lengthy, and had occurred close to the coast. Scully forwarded his concerns to Drakeford, who countered that the attack was at night—when submarines could not be seen—and at a fair distance from land. De Baun remained unconvinced. He had stated more than once that ships steaming independently off the coast would at all times be within range of air assistance, and had used this information to settle several industrial disputes.¹³⁸ For the Maritime Industries Commission to admit that ships not normally in convoy might be in particular danger of attack would cause not only embarrassment, but also an increase in industrial action.

Drakeford again assured Scully that to dispatch an aircraft to *Katoomba* would have been futile, but that when attacks occurred at night an aircraft would be

in the vicinity at first light wherever possible. Emphasising that, at the end of 1942, radar was still not in widespread RAAF use, Drakeford added that 'equipment is now being tested in England by means of which aircraft will be enabled to locate submarines at night ... when it has been perfected it will be made available for installation on aircraft in Australia.'¹³⁹ Meanwhile the Air Force would continue daylight sweeps over coastal waters, and the Minister for Air remained confident that this was an appropriate response.

Perhaps the most considered summary of Australian anti-submarine measures in 1942 was contained in an Army intelligence report.¹⁴⁰ Although this managed to conclude on a positive note—by noting that anti-submarine techniques were being developed—the comparative inexperience of the RAN and RAAF in ASW remained the key point of the assessment. The report highlighted, moreover, the specific difficulties which had impacted on Australian efficiency: evasive routing had proved impossible to any significant degree; the number of escort vessels remained limited; and the RAAF suffered from a shortage of aircraft and the latest equipment. Although not all these problems reflected institutional failure, more damning was a comment on administrative problems. The report made specific mention of those arising from the continued separation of RAAF and RAN operational headquarters.

Inter-service cooperation

This last point was both cause and effect of a continued absence of seamless inter-service cooperation. The Australian command and control system had proven unable to keep pace with the changing operational environment. Despite the arrival of American forces and the imposition of an Allied strategic command, no moves had been made to review the Australian CWR and ACH organisations. Not until July 1942 did the newly appointed Air Officer Commanding (AOC) RAAF Command, Air Vice Marshal W.D. Bostock, suggest that, with the advent of MacArthur's Supreme Command, the need for the CWR should be reviewed.¹⁴¹ Bostock noted that the CWR was not regularly used by either the Army or the Navy and had become purely an Allied air force operations room. With MacArthur's move to Brisbane even this function ceased. Thereafter the control of air operations was centralised in an air operations room (AOR) established at GHQ in Brisbane.¹⁴²

A similar situation existed in relation to the trade defence functions of the ACHs. Although the various area headquarters at times passed intelligence directly to the convoy escorts, the Navy and Air Force had tended to act independently in the allocation of assets. The RAN continued to exercise

operational control either centrally from Melbourne or through the NOICs in their own naval establishments.¹⁴³ Bostock recommended that in future the ACHs become AORs and be accepted as the equivalent of an air force operational headquarters. The RAN agreed, and the naval representative became the Naval Liaison Officer, but because executive authority remained separated this change did nothing to bring about the closer coordination of trade defence operations.¹⁴⁴ Rather, it effectively institutionalised the separation of shipping protection responsibilities. Parallels may be seen with the British and Canadian experience of air/sea cooperation, but the Australian services seemed even slower to learn from the lessons of the Atlantic battle. Certainly, no efforts had yet been made to assign air units to a coastal command similar to the United Kingdom's 'Western Approaches'.

Thus the situation that existed at the end of 1942 exhibited many of the worst features of joint service operations. The naval and air effort was dispersed with each commander acting individually, issuing his own executive orders, and running two separate shipping plots. Furthermore, despite their setbacks at sea and on land the Japanese were not in any sense defeated. They retained a strong and competent submarine force and had proved capable of operating it at any point around the Australian coast. In sum, the limited tactical experience the RAN and RAAF had gained during 1942 could not compensate for wider organisational failings and Australian defences were not well prepared for a resumption of the Japanese submarine effort.

Notes

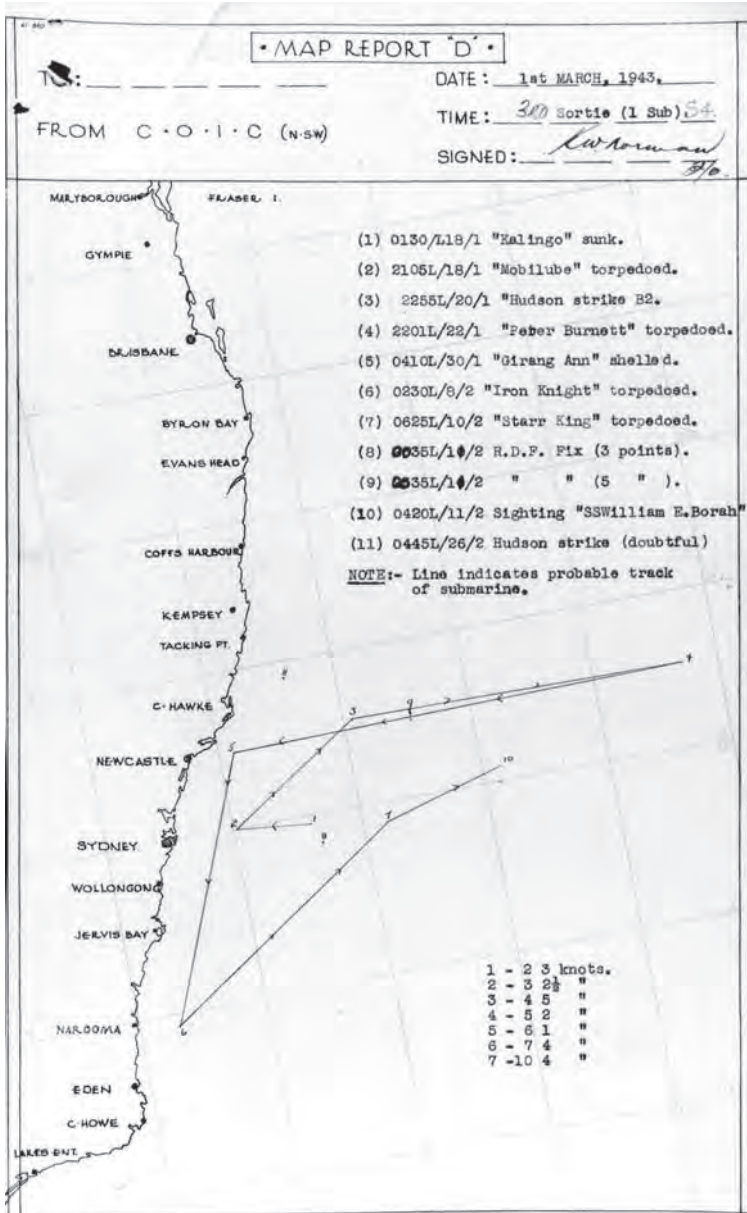
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2. Cablegram, Curtin to Australian Minister, Washington, 2 January 1942, NAA: MP 1049/5, 1937/2/368.
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10. Captain Emile Frank V. Dechaineux, DSC, RAN (1902-44), Director of Plans 1941-42.
11. Minute, Dechaineux to Royle, 21 January 1942, NAA: MP 1185/8, 1804/2/85.
12. Report, 'Proposals for Naval Operations in ANZAC Area', by Chiefs of Staff, 17 January 1942, NAA: MP 1049/5, 1937/2/368.
13. Message, British Admiralty Delegation (BAD) Washington to ACNB, 25 January 1942, NAA: MP 1049/5, 1937/2/368.
14. Cablegram, Naval Attache, Washington to Royle, 26 January 1942, NAA: MP 1049/5, 1937/2/368.
15. Message, ACNB to BAD Washington, 27 January 1942, NAA: MP 1049/5, 1937/2/368.
16. Message, Muirhead-Gould (Commodore-in-Charge, Sydney) to ACNB, 27 January 1942, NAA: MP 1049/5, 1937/2/368.
17. Message, ACNB to Muirhead-Gould, 29 January 1942, NAA: MP 1049/5, 1937/2/368.
18. Message, Royle to BAD Washington, 31 January 1942, NAA: MP 1049/5, 1937/2/368.
19. Combined Fleet Ultrasecret Operation Order No. 7, 22 December 1941, AWM: AWM 56, ATIS LDT No. 39, pt. VIII.
20. M. Hashimoto, *Sunk: the story of the Japanese submarine fleet 1942-1945* (London: Cassell and Company, 1954), pp. 39-40.
21. T. Lewis, *Sensuikan I-124* (Darwin: Tall Stories, 1997).
22. Narrative, 'Operations Against Enemy Submarine', 23 January 1942, NAA: MP 1185/8, 1932/3/51.
23. Letter, Newcomb to ACNB, February 1942, NAA: MP 1185/8, 1932/3/51.
24. Paper, 'Defence of Australia', February 1942, NAA: MP 1049/5, 1855/2/431.
25. Paper, 'Defence of Australia', February 1942, NAA: MP 1049/5, 1855/2/431.
26. D. Stevens, 'The role of radio intelligence in the anti-submarine war around Australia 1942-45', in *Journal of the Australian War Memorial*, October 1994, pp. 23-30.
27. Report, *USN Technical Mission in Japan*, S-17, 'Japanese Submarine Operations', p. 12.
28. Report, 'Japanese Submarine Operations, 23 January 1942-25 March 1942', USNA: RG 457, Entry 9002, SRH-64, p. 27.
29. D. Jenkins, *Battle Surface: Japan's Submarine War Against Australia 1942-44* (Sydney: Random House, 1992), p. 144-7.
30. RAN Daily Narrative, 4 March 1942.
31. Narrative, 'RAAF Maritime Trade Protection', AWM: AWM 54, 81/4/41, p. 65.
32. War Diary, HMAS *Brisbane*, 1 February-30 June 1942, AWM: AWM 52, 14/60/7.
33. No confirmation from Japanese sources has been found and the target may have been a whale.
34. RAN Daily Narrative, 25 March 1942.
35. Paper, 'Australian-Canadian Cooperation in the Pacific', by Chiefs of Staff, 29 January 1942, AWM: AWM 54, 243/6/15.
36. Canadian High Commissioner to Prime Minister, 24 January 1942, Canadian National Archives: RG 24, Volume 3830 1037-1-20 Volume 1.
37. The RCN expanded at six times the rate of the RN; by contrast the RAN only grew at twice the RN rate. See W.J.R. Gardner, 'An Allied Perspective', in Howarth & Law, *The Battle of the Atlantic 1939-1945*, p. 521.
38. See M. Milner, *The U-boat Hunters* (Annapolis: USNIP, 1994), p. 7.
39. Joint Planning Sub-Committee Memorandum, 28 February 1942, Canadian National Archives: RG 24, Volume 3830 1037-1-20 Volume 1.
40. Message, ACNB to Crace, 1 February 1942, NAA: MP 1049/5, 1937/2/368.

41. Message, Leary to King (CinC US Fleet), 14 February 1942, NAA: MP 1049/5, 1939/2/368.
42. Message, ACNB to CinC Eastern Fleet, 13 March 1942, NAA: MP 1049/5, 1939/2/368.
43. Directive to Supreme Commander SWPA, 15 April 1942, NAA (ACT): A5954/1, Box 563.
44. See 'Report on a Visit to Australia, March 6th–28th, 1944', by Captain A. Hillgarth (Chief of Intelligence Staff, Eastern Fleet), PRO: ADM 178/330, 53596.
45. Message, ACNB to all NOICs, 19 May 1942, NAA: MP 1185/8, 1804/2/85.
46. Minute, Dechaineux to Leary, 29 May 1942, NAA: MP 1185/8, 1804/2/85.
47. Minute, Dechaineux to Royle, 11 May 1942, NAA: MP 1185/8, 1804/2/85.
48. Message, ACNB to all NOICs, 29 May 1942, NAA: MP 1185/8, 1804/2/85.
49. The appointment of ACNS was renamed DCNS in 1941.
50. Minute, Dechaineux to Leary, 8 April 1942, NAA: MP 1185/8, 1804/2/85.
51. Paper, 'Submarine Data', AWM: AWM 54, 505/6/2.
52. See War Diary, Combat Intelligence Unit Pacific, USNA: RG457, Entry 9002: Studies on Cryptology, SRH 278, p. 0019.
53. 'RAAF Maritime Trade Protection', p. 71, 215.
54. Rear Admiral Gerard C. Muirhead-Gould, DSC, RN (1889–1945), Commodore-in-Charge, Sydney 1940–42, Flag Officer-in-Charge, Sydney 1942–44.
55. 'RAAF Maritime Trade Protection', p. 72.
56. NOIC Sydney War Diary, 1 May–31 July 1942, AWM: AWM 78, 48/1.
57. Minutes of AWC, 30 May 1942, NAA(ACT): A2682/1, Vol. V.
58. Butlin & Schedvin, *War Economy 1942–1945*, p. 225.
59. 'CINCPAC Enemy Activities File' April–May 1942, USNA: RG457, Entry 9002: Studies on Cryptology, SRH 272, p. 122.
60. RAN Daily Narrative, 30 May, 2 June 1942.
61. Minute, Martin to McNeil, 14 October 1940, NAA: MP 1587/1, 312D.
62. BR 1736, Naval Staff History, *War with Japan: The Campaigns in the Solomons and New Guinea*, Vol. 3 (London: Historical Section Admiralty, 1956), p. 13.
63. See Jenkins, *Battle Surface*.
64. Captain Lancelot A.W. Spooner, OBE, RN, Director of Naval Ordnance, Torpedoes and Mines 1939–42.
65. Minute, Spooner to Royle, 6 July 1942, NAA: MP 1185/8, 1855/3/318.
66. Two BDVs were required to maintain each mile of moored A/S net, and in addition to its crew each vessel required six senior sailors trained in boom defence work.
67. 'CNO summary of Japanese naval activities', 29 June 1942, USNA: RG457, Entry 9015, SRNS 0077.
68. Jenkins, *Battle Surface*, p. 247.
69. Minutes of AWC, 11 June 1942, NAA(ACT): A2682/1, Vol. VIII.
70. ACNB message, 1049Z, 4 June 1942, cited in paper 'Coastal Convoys', in the 'Papers of the Official Historian G. Hermon Gill', AWM: AWM 69, 23/32.
71. RAN Daily Narrative, 4 June.
72. A list of Australian convoy designations is provided in Appendix VII.
73. This was soon modified to allow ships with a speed of less than 8 kts to proceed independently on inshore routes. Thereafter the minimum speed for coastal convoys was 7 kts.
74. ACNB message, 1517Z, 6 June 1942. Naval Commodores were withdrawn in August, see ACNB message, 0736Z, 14 August 1942, Gill, 'Coastal Convoys'.
75. Letter, Navy Office 030683, 3 June 1942, NAA: MP 1049/5, 2026/14/279.
76. 'Review of RAN War Effort and Activities', 20 April 1943, p. 21.
77. Message, COMSOUWESPAC to ACNB, 12 September 1942, AWM: AWM 69/82.

78. See letter, Royle to Carpenter, 18 February 1943, NAA: MP 1049/5, 2026/10/1499.
79. The attacker was *I-24*.
80. HMAS *Kalgoorlie*, Report of Proceedings, June 1942, AWM: AWM 78, 179/01.
81. RAN Daily Narrative, 14 June 1942.
82. Remarks on 'Report from Military Intelligence', 17 June 1942, NHD: SNHO papers, 1942.
83. RAN Daily Narrative, 14 June 1942.
84. 'RAAF Maritime Trade Protection', p. 205.
85. A ship suspecting a submarine attack would immediately broadcast 'SSSS' together with a time and position report.
86. RAN Daily Narrative, 21 June 1942.
87. GHQ SWPA, 'COIC Weekly Summary', 24 June 1942, NHD: SNHO papers, 1942.
88. Message, CWR to ACH Melbourne, Sydney and Townsville, 0725Z 15 July 1942, AWM: AWM 69/82.
89. 'Submarine operations in Second Phase Operations', Part I, p. 40.
90. 'CNO summary of Japanese naval activities', 29 June 1942, USNA: RG457, Entry 9015, SRNS 0102.
91. 'CINCPAC Intelligence Bulletin', 27 July 1942, USNA: RG457, Entry 9020, SRMN 013.
92. 'CINCPAC Intelligence Bulletin', 31 July 1942, USNA: RG457, Entry 9020, SRMN 013. Kawano was embarked in the submarine *I-11*.
93. Report, 'Attack on Katoomba', undated, NAA: MP 1587/1, 158E.
94. Message, CWR to all ACHs and the ACNB, 0810Z, 22 July 1942, AWM: AWM 69/82.
95. Message, from ACNB, 1116Z, 25 August 1942, AWM: AWM 69/82.
96. 'CINCPAC Intelligence Bulletin', 10 August 1942, USNA: RG457, Entry 9020, SRMN 013.
97. A 'deliberate' attack was carried out to ensure accuracy in weapon delivery. When speed of reaction was the priority, a vessel would conduct an 'immediate' or 'urgent' attack.
98. Minute, CO *Arunta* to ACNB, 9 September 1942, NAA: MP 1185/8, 2026/4/112.
99. Minute, CO *Rushcutter* to ACNB, 6 October 1942, NAA: MP 1185/8, 2026/4/112.
100. See 'Submarine Operations in Second Phase Operations, April 1942 to March 1943', pp. 41-2.
101. 'Submarine Operations in Second Phase Operations', p. 55.
102. The convoy was C.O.2, and consisted of five vessels escorted by USS *Perkins* and HMAS *Whyalla*.
103. Minutes of PM's War Conference, 10 August 1942, NAA(ACT): A5954/1, Box 669.
104. See Appendix VII.
105. Statement made on 26 February 1942 by the Chief of Staff of the US Forces in Australia, Brigadier-General S.J. Chamberlain, cited in Powell, *The Shadow's Edge*, p. 102.
106. Article, 'Wartime Ship Repairs in Sydney', in *Admiralty Maritime Intelligence Review*, March 1949, p. 35.
107. Paper, 'Shipbuilding and ship repairs in Australia', Department of Munitions, January 1943, NAA(ACT): A5954, Box 563.
108. A.H. Young, 'Shipbuilding and Ship Repairs in Wartime', c. 1946.
109. Reports of Proceedings, HMAS *Doomba* and HMAS *Kalgoorlie*, July 1942, AWM: AWM 78, 100/1 and 179/1.
110. Butlin & Schedvin, *War Economy 1942-1945*, p. 222.
111. See, Grove, *The Defeat of the Enemy Attack on Shipping 1939-1945*, p. 308.
112. See Bailey, 'The Australian role in the development of a worldwide Imperial trade control and naval intelligence system', p. 69.
113. C.M. Sternhell and A.M. Thorndike, *Antisubmarine Warfare in World War II*, OEG Report No. 51 (Washington: Operations Evaluation Group, 1946, reprinted July 1977 by the Center

- for Naval Analyses), p. 111. British sources argue that although convoy reduced delivery rates by 10-14 per cent, independent shipping suffered a comparable reduction due to sailing restrictions and evasive routing, see Grove, *The Defeat of the Enemy Attack on Shipping 1939-1945*, pp. 66-7,
114. Butlin & Schedvin, *War Economy 1942-1945*, p. 232.
 115. War Cabinet Agendum 289/42, 4 July 1942, NAA(ACT): A2682/1, Vol. V.
 116. Butlin & Schedvin, *War Economy 1942-1945*, p. 232. Elsewhere this source cites estimates of tonnage reduction as high as 50 per cent.
 117. See the 'Papers of the Official Historian, G. Hermon Gill', AWM: AWM 69, 23/16.
 118. For evidence of delays, see D. Barbey, *MacArthur's Amphibious Navy* (Annapolis: USNI Press, 1969).
 119. Anon, *War Service of the Merchant Navy: A record of the participation of the merchant ships of Huddart Parker Ltd.* (Melbourne: Huddart Parker Ltd, 1951), p. 45.
 120. Report, USS SC-747, 25 April 1943, NAA(ACT): AA1969/100, 6/2/21.
 121. *The Age*, 5 August 1942.
 122. Minutes of AWC, 29 April 1943, NAA(ACT): A2682, Vol. VI.
 123. Report, 'Protection of Shipping on the Coast of Australia', June 1943, NAA: MP 1049/5, 1932/3/8.
 124. Butlin & Schedvin, *War Economy 1942-1945*, p. 223.
 125. Message, Curtin to Shedden, CAB 173, 25 May 1943, NAA(ACT): 40/31/383.
 126. 'CSWPSF Records', NHD, Canberra.
 127. Minutes of the AWC, 11 June 1942, NAA(ACT): A2682/1, Vol. V.
 128. Minutes of PM's War Conference, 10 August 1942, NAA(ACT): A5954/1, 669.
 129. Hydrophone effect (HE) referred to the detection of noise caused by a submarine's propellers.
 130. RAN Daily Narrative, 7 July 1942.
 131. Intelligence Report, HQ 1 Australian Corps, 9 June 1942, AWM: AWM 54, 423/11/132.
 132. The *Canberra Times*, 12 June 1942. This total includes the four (sic) midgets claimed to have been sunk in Sydney Harbour. Japanese claims of success were more subdued. On 28 July Tokyo Radio reported five ships sunk or damaged between 20 June and 16 July off the Australian coast. See the *Age*, 29 July 1942.
 133. NID War Diary, 29 July 1942, AWM: AWM 69, 23/3.
 134. The attack only caused some cracks in the wooden decking. See Jenkins, *Battle Surface*, pp. 259-61.
 135. RAAF claims were consolidated in 'Australian War Effort' (10th ed.), 31 August 1945, p. 113, copy held by RAAF Air Power Studies Centre, Canberra.
 136. 'Report of Interview with the Master M.V. "Orestes"', 1 October 1942, NAA: MP 1587/1, 157B.
 137. Letter, Scully to Drakeford, 25 August 1942, NAA(ACT): 60/501/120.
 138. Letter, de Baun to Scully, 24 September 1942, NAA(ACT): 60/501/120.
 139. Letter, Drakeford to Scully, 5 November 1942, NAA(ACT): 60/501/120.
 140. Intelligence Report, HQ 1 Aust. Corps, 5 August 1942, AWM: AWM 54, 423/11/132.
 141. Paper, 'Co-ordinated Control of Operations and Intelligence', NHD: general file 2.
 142. Department of the Navy, 'Review of RAN War Effort and Activities', 20 October 1943, p. 22.
 143. Paper, 'Co-ordinated Control of Operations and Intelligence', NHD: general file 2.
 144. Minute, Acting Director of Plans to Nichols (DCNS), 12 July 1943, NAA: MP 1049/6, 5241/21/21.



Australian assessment of I-21's deployment.
(AWM)

The ASW Crisis – 1943

8

A Tokyo radio broadcast observ[ed] ...that Japanese submarines soon will increase their activities to the extent that the US supply route to Australia will be closed down.

CNO Summary of Radio Intelligence, 17 February 1943.¹

If 1942 had been a period of defence and consolidation, the Allies expected 1943 to mark the turn of the global tide. Logistics were still the crucial factor, and the management and protection of sea communications remained the key. At the grand strategic level the population and industrial capacity of the Western powers far exceeded those of the Axis, and Allied victory would be assured if only strategic linkages could be maintained across the oceans. This global dimension, however, also meant that individual theatres could seldom be viewed in isolation. Prime Minister Curtin had hinted at this aspect in August 1942, when he informed the state premiers that the increasing efficiency of anti-submarine measures off the American east coast had driven Germany's U-boats further south into the Atlantic. The result had been increased attacks on ships bound for Australia through the Panama Canal, with losses both of ships and their valuable cargoes of war materials.²

The Prime Minister made his statement in the context of the worldwide shipping crisis, and not until October 1943 would there be a net gain in Allied tonnage over losses from all causes.³ Unfortunately for Curtin, the sea transport and materiel requirements of the SWPA came well down the list of Allied priorities. Further hampering Australian needs, neither Admiral Nimitz in the Central Pacific nor Admiral Halsey in the South Pacific areas showed much interest in what was in effect a US Army rather than a US Navy zone. Yet SWPA war aims remained particularly vulnerable to a campaign against sea transport. Australia continued to be MacArthur's principal supply base and prosecuting the campaign in New Guinea required the unhampered movement north of men and supplies. Having virtually no internal land routes and only a few small airfields, the New Guinea campaign was solely dependent upon sea lines of communication and their control by friendly maritime forces.⁴

Australia's domestic transport system, and hence its industrial and warfighting capability, was similarly vulnerable. By January 1943 Australia had only 114 coastal vessels available for the carriage of essential civil cargo. Freight and military cargoes had already been increasingly diverted to the railways. Yet, these remained singularly 'ill-adapted to the demands of the Pacific War'.⁵ Further dislocation of shipping would throw an even greater burden on to a fragile rail system, and perhaps trigger its partial collapse. This result was well within the capability of a limited number of submarines, especially if they did not always have to sink their targets to achieve their aim. In truth, Allied success in the SWPA was far from inevitable.

Japanese submarine operations – January–February 1943

In January 1943 Allied intelligence reported that 20 Japanese submarines were active in the New Guinea–Solomons area.⁶ Admiral Yamamoto, however, had earlier decided to suspend all 'positive [submarine] operations'. The Combined Fleet's boats were instead to 'operate chiefly for facilitating the maintenance of air bases and fulfilling the constant requirement of supplies to the GUADALCANAL and BUNA areas.'⁷ These requirements were in turn superseded by a decision to evacuate Guadalcanal taken in early January. Following the end of this operation, Submarine Force 'D', which comprised four recently built *RO-100* class submarines, was disposed to conduct 'interdiction operations with a view to stopping enemy advances against the eastern sector of New Guinea.'⁸ Forewarned by intelligence, on 10 February Carpender alerted his forces to the strong probability that small Japanese submarines would be attacking shipping in the Port Moresby–Milne Bay area and ordered all convoys 'to exercise utmost vigilance.'⁹ Still, despite several possible sightings and attacks by Allied aircraft, neither side achieved anything noteworthy.¹⁰

Meanwhile, Submarine Force 'C', which consisted of the two fleet submarines *I-21* and *I-10*, had been ordered to reconnoitre Allied movements off Noumea and Sydney. Attacks on vessels were also permitted, the indirect objective being to support the withdrawal from Guadalcanal and prevent Allied reinforcement.¹¹ *I-21* sailed from Rabaul on 7 January and headed for Sydney. Maintaining radio silence throughout its passage, the submarine did not reveal itself until it sank the merchant ship *Kalingo* 100 nm off the NSW coast on the morning of 18 January. *Kalingo* had no time to transmit a distress message, and Australian authorities were not alerted until an aircraft sighted a lifeboat. Rear Admiral Muirhead-Gould instructed the duty anti-submarine vessel in Sydney, the AMS HMAS *Kapunda*, to rescue the men, leaving a motor launch to provide harbour protection in its absence.¹²

A few hours later Sydney Radio advised NOIC Sydney of an ‘SSSS’ message from the American tanker *Mobilube*. The tanker had requested immediate help after a torpedo attack just 60 nm off Sydney. With this confirmation of enemy activity the Naval Board issued a general warning to shipping in the area. Specific instructions ‘not to approach within 100 miles of the attack position during darkness’ were then sent to convoy P.G.30 and five merchant vessels sailing unescorted west bound for Sydney.¹³ At the same time Muirhead-Gould ordered a tug and four corvettes to sea, and closed Sydney, Newcastle and Port Kembla to outward-bound shipping. American authorities then offered further help and ordered two USN destroyers to sail from Sydney and assist in bringing *Mobilube* into port.

At sea looking for *Kalingo*’s lifeboat, *Kapunda* reached *Mobilube* only 20 minutes after the attack. While it awaited the salvage tug, the corvette carried out an anti-submarine patrol around the immobile tanker. The other warships cleared the harbour over the next four hours, receiving individual orders to either assist with the salvage, search for the still-missing lifeboat, cooperate with the air search, or locate and escort the merchant vessels bound for Sydney. Only training machines were available, but 10 RAAF aircraft began searching at first light from Sugarloaf Point to Ulladulla and 180 nm to seaward.¹⁴ All searches proved negative.

Despite their extensive damage both *Mobilube* and a subsequent victim of *I-21*, the Liberty Ship *Peter H. Burnett*, were salvaged. But their recovery revealed weaknesses in the salvage organisation and offered further evidence of union sensitivity. *Mobilube*’s tug was delayed for five hours while a crew and equipment were collected. For *Peter H. Burnett* the delay was far worse. The attack took place on the evening of 22 January, 85 nm east of Lord Howe Island. NOIC Sydney requested a tug but, noting the long voyage required, the Salvage Board sought first to engage some extra crewmen. Members of the Seamen’s Union were obtained, but at sailing time demanded a naval escort.¹⁵ None was available and since the tug crew still refused to sail, Muirhead-Gould supplied naval ratings. The tug left on the afternoon of 23 January only to return the next day, as the inexperienced naval firemen could not keep steam. Provided with more experienced men from an auxiliary M/S vessel the tug finally sailed on 25 January.¹⁶ The Liberty Ship did not reach port until eleven days after the attack. Neither *Mobilube* nor *Peter H. Burnett* was ever repaired and each was later declared a total loss.

During the remainder of its operation, *I-21* made another three attacks and was fixed by Allied HF/DF at least four times. The Naval Board issued the

appropriate shipping warnings on each occasion, but the submarine had no trouble finding targets.¹⁷ Moreover, in a significant development the Japanese commander demonstrated the limitations of an inadequate escort. At 0230 on 8 February he torpedoed the iron ore carrier *Iron Knight* in the 10-ship convoy O.C.68. *Iron Knight* was lead ship in the outside starboard column, with one of the two escorts, HMAS *Townsville*, only 500 yds further out. Warned by the sighting of the torpedo passing under his ship, *Townsville's* asdic operator managed to train his set in the direction of the submarine even before the weapon had hit. After briefly reporting the sound of the torpedo's wake, the operator was temporarily deafened by the explosion. The HSD then took over the search and, although asdic conditions were assessed as good, with echoes from the merchant vessels being received at ranges of up to 3000 yds, the corvette found nothing else.¹⁸ Here, as was frequently the case, the escort faced the dilemma of continuing the search or rejoining the convoy. With little speed advantage, corvettes could not afford to delay rejoining for long and the situation could only be remedied by the provision of more or faster escorts. *Townsville* resumed station on the convoy some 50 minutes after the attack, not nearly enough time for a thorough search. NOIC Sydney then ordered a more extensive search of the area with the destroyers *Le Triumphant* and HMAS *Warramunga*. But the delay was too long, and this search also proved negative, as did a sweep by four Hudsons despatched by AOR Eastern Area at first light.¹⁹

I-21's lone patrol was the most successful ever conducted by an enemy submarine off the Australian coast. The torpedoing of the Liberty Ship *Starr King* on 9 February marked the last attack, but not the end of the deployment. Although Japanese operational records are generally rare, there is again no evidence that *I-21's* commander was in any way deterred by Australian anti-submarine measures. In fact, rather than remaining quiet, on 19 February the submarine launched its aircraft for an evening flight over Sydney. Despite early radar detection of the plane, anti-aircraft fire, attempted fighter interception, a destroyer dispatched to take offensive action, and three separate air searches at dawn, both *I-21* and her aircraft escaped unscathed. The reconnaissance had detected only one cruiser at Sydney, but the brief sortie had not been wasted.²⁰ The flight was headlined in the next day's local newspapers and, although an increased awareness of threat among Sydney's population might be considered unhelpful to the Japanese, unmentioned went the news that Sydney, Newcastle and Port Kembla had again been closed to outward shipping.²¹

Australian reactions – February 1943

An increased state of alert in Australian waters continued for the remainder of February 1943. Between 11–22 February, HF/DF fixes, sightings and torpedo attacks were reported from all around the continent, and as far removed as Sydney, Wilsons Promontory in Victoria, Hervey Bay and Cairns in Queensland, Fremantle in Western Australia and Kangaroo Island in South Australia.²² Official reactions varied depending on the proximity and importance of friendly shipping, with four large troopships carrying elements of the Australian 9th Division from Fremantle to Sydney taking precedence for the provision of air and surface escort. After a civil aircraft sighted a submarine, graded B2, in the path of convoy O.C.71, AOR Southern Area first arranged a search then provided continuous air cover throughout the night.²³ Escorting convoy C.O.71 on 15 February and O.C.71 four days later, *Mildura* twice made attacks on asdic contacts gained at 800 and 2000 yds. *Townsville* and *Ballarat* each carried out similar attacks while escorting convoys on 18 February. In each of these attacks the detecting vessel assessed the presence of a submarine as doubtful, nevertheless the proximity of the convoy made it standard procedure to conduct an immediate attack, sound an alarm signal and order the convoy to make an emergency turn away from the base course.²⁴

Two days after the attack on *Iron Knight*, the NCS officer in Newcastle reported to the Naval Board on his debriefing of the convoy commodore and ships' masters. Little more was revealed about the incident, but there were some general remarks that might assist other convoys to avoid detection and attack.²⁵ In particular, despite the fine weather and clear visibility the convoy had not been zig-zagging, nor had it changed course after the hit. There had also been a general slackness regarding black-out arrangements: convoy lights had been shown to signal a routine change of course, and at least one ship had shown funnel flame. On 8 March, the ACNB released a general message advising of the lessons learned. Such post-attack advice, derived from both Australian and overseas experience, was not uncommon, although there were constraints. For example, although the ACNB continued to press for shipping to receive the best quality steaming coal, the Commonwealth Coal Commission remained largely unmoved.²⁶ The inferior Australian-sourced fuel was regularly identified as the cause of poor station-keeping by merchant ships, while excessive smoke consistently betrayed a convoy's position.²⁷

Despite the continued shortage of aircraft, RAAF activity during this period was later described as 'intense' with inner and outer anti-submarine patrols,²⁸ searches and routine patrols all along the coast. In January 1943, Eastern

Area reported 190 operations involving 412 aircraft flights. An extensive submarine hunt on 20 January, for example, involved 17 aircraft from four separate airfields, while another six aircraft were sent out as a striking force after a sighting of oil and bubbles.²⁹ Dawn to dusk escort was provided to convoys and, as far as possible, to ships sailing in groups. Yet, escort tasks still did not engender the same enthusiasm as 'offensive' missions. Often only one aircraft per convoy would be available, with the force left unattended while the aircraft travelled back and forth to base for refuelling. Aircraft also tended to operate out of sight and well ahead of the formation. This tactic sought to detect the submarine on the surface or keep it submerged, in either case preventing it from moving into an attack position. Although a sensible measure it also led to further complaints from seamen, who incorrectly assumed an absence of air cover.³⁰

Aircraft made several attacks after suspected submarine sightings but, like the RAN's asdic operators, their crews still suffered from the lack of realistic, practical training. As in every other wartime theatre, post-action analysis revealed the majority of attacks were on non-submarine targets, including friendly surface ships, sea life, and various inanimate objects. In June 1943, the RAAF Command 'Tactical Bulletin' admitted to the extent of the problem:

Few RAAF crews have ever had any great experience with enemy submarines. Indeed very few have ever even seen one of our own at sea. This is regrettable but unavoidable and until such time as we are allotted submarines for training purposes little can be done.³¹

RAAF Command also considered the provision of increased night air support for convoys. The wider fitting of radar was expected to help, but there remained other difficulties with equipment.³² During one incident on the night of 20 January, a Hudson reported an attack on a submarine 120 nm east of Newcastle.³³ The sighting received the grading B2, but the bombs failed to release and the submarine escaped.³⁴ Another attack took place on 26 February, 42 nm off Port Stephens, and is of interest as one of the few that can be directly linked to HF/DF intelligence. With the fix graded A2, AOR Eastern Area had an ASV-equipped Hudson airborne within two hours of the alert.³⁵ After a further three hours of searching the aircraft detected a possible submarine on the surface 20 nm from the expected position. In poor visibility the Hudson dropped four bombs but could not observe the results. It would not have made much difference, as the transmissions leading to this fix were most likely misidentified. *I-21* had returned to base three days earlier and no other submarines were in the vicinity.



RAN asdic operators.
(AWM 108628)

The renewed Japanese offensive – February–March 1943

Unhappily for the Australians, *I-21*'s operation heralded a more extensive underwater effort. Although a direct connection has not been identified, in late January 1943 the Germans had strongly advocated the use of Japanese submarines to destroy Allied shipping, suggesting also that the Japanese High Command should depart from its fixed policy concerning the conduct of the war.³⁶ In any event, once the Japanese had completed their Guadalcanal withdrawal a more orthodox tactical use of their submarine fleet largely replaced transportation duties.³⁷ In mid-February, despite a general slackening in Japanese naval signal traffic, Allied analysis of increased submarine traffic revealed an apparent spreading out of enemy boats for offensive and

reconnaissance patrols. On the basis of this intelligence, Washington assessed that Japanese submarine operations had entered a new phase of employment deep in the southern Pacific area.³⁸ A Japanese message decrypted in mid-March confirmed both this appraisal and a continued interest in operations off Australia.³⁹ Allied cryptanalysts did not recover the complete text of the latter report, nor the number of submarines assigned to each objective. Nevertheless, its comparative prominence showed that the Japanese considered the operation of considerable importance.⁴⁰

In fact, on 17 March the Japanese Sixth Fleet had been ordered to send most of its forces to the South Pacific to attack Allied shipping resupplying the Solomons and eastern New Guinea.⁴¹ As part of this offensive, in late February two submarines from SUBRON 1, *I-6* and *I-26*, were ordered south for special operations off Brisbane and Sydney. Their signalled instructions specifically mentioned the requirement to 'work over the enemy transport routes' and destroy communications.⁴² *I-6* arrived in Queensland waters in March 1943 to lay nine German-supplied acoustic-influence mines in the approaches to Brisbane.⁴³ The departure of the boat from Truk passed unnoticed by Allied intelligence, and only an unsuccessful torpedo attack on the two-ship convoy, B.T.44, on 17 March revealed the submarine's presence off Caloundra. The lone surface escort, HMAS *Gympie*, and an accompanying aircraft both carried out counterattacks on the torpedo launch position, but *I-6* escaped damage. The Naval Board broadcast a warning to all shipping in the area and diverted vessels where possible.⁴⁴ On this occasion the warnings may have been successful, for a review of the submarine's War Diary confirms that it made no further sightings or attacks.⁴⁵ Subsequent Australian searches nevertheless proved fruitless, and only the chance counter-detonation of a mine during a practice gun firing by *Swan* led to the discovery of *I-6*'s minefield, 11 days after it had been laid.

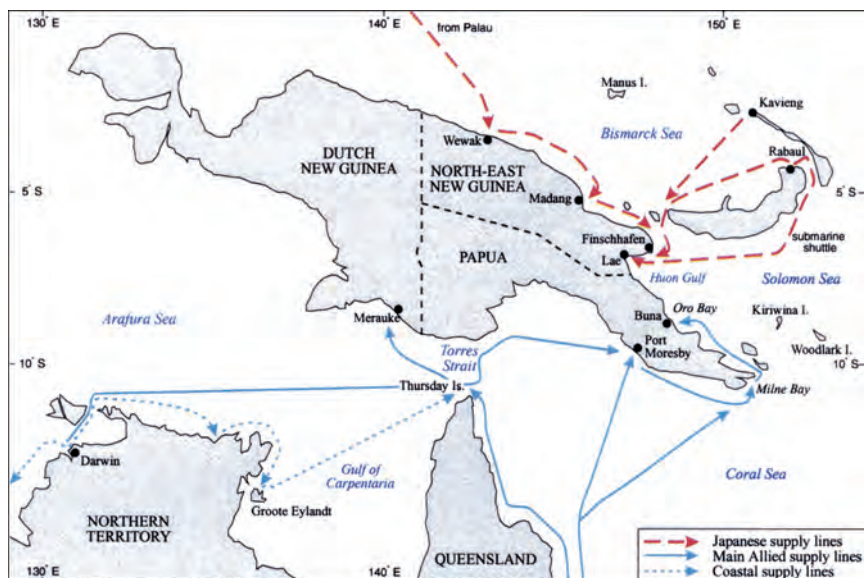
Allied transport priorities

The shortage of Allied shipping continued, and the resumption of Japanese attacks caused consternation within the Shipping Control Board and the Department of Commerce. Even without further losses or increased demands, available shipping could not cope with the amount of cargo to be moved. In February 1943, the Minister for Supply and Shipping, J.A. Beasley, again referred the Advisory War Council to the 'serious effect' the sinkings had on the maintenance of iron ore and coal shipments from Whyalla to Newcastle.⁴⁶ The Whyalla blast furnace was already working below capacity due to an inability to deliver sufficient coal.⁴⁷ Another iron ore carrier, *Zvir*, had been lost after a collision in convoy O.C.44 and the recent sinking of *Iron Knight*

simply added to the difficulties.⁴⁸ At the same time, the Director General of Munitions reported that Australia's merchant shipbuilding program was lagging 'due to the necessity of concentrating upon naval construction and the repair of ships.'⁴⁹ The Minister for the Navy and Munitions, N.J.O. Makin, could only add that it would be another three or four months before two new Australian-built merchant ships would be ready.⁵⁰

By early 1943 MacArthur's New Guinea build-up was well underway, and the North Eastern area remained the priority zone for Australian escort and survey vessels. The east coast supply line branched at its northern end to feed the ports of Darwin, Milne Bay, Port Moresby and Merauke (see Figure 8.1).⁵¹ Having reached New Guinea, supplies were then moved again by sea to forward areas. Destroyers could provide escort during the passage from Australia, but the AMS and smaller craft were preferred off coastal New Guinea, where navigational dangers often limited manoeuvrability under air attack. For example, Operation LILLIPUT (December 1942 to June 1943) involved 15 Australian corvettes and two American sub-chasers in the close escort of convoys that carried 3802 troops and 60,000 tons of supplies from Milne Bay to Oro Bay.⁵²

Figure 8.1 – Supply lines to New Guinea, 1942–43



Source: Gill, *Royal Australian Navy 1942–1945*, p. 263.

Submarine contacts were frequent and, although torpedo attacks were less common than those from the air, the threat required just as much vigilance. On 11 May 1943, SS *Van der Lijn*, which made up convoy T.N.89 on its way to Fall River, saw a torpedo cross its bows. The ship immediately altered course away from the threat. The escort, USS *SC 747*, gained a sonar contact and executed four successive attacks.⁵³ Despite an absence of evidence, the American claimed a sinking.⁵⁴ A RAAF aircraft overhead reported three torpedo tracks straddling *Van der Lijn* and considered that it would have been hit without the evasive action. Two days later *SC 747* and HMAS *Broome* formed the escort for convoy F.C.7 and reported yet another attack, with similar results.⁵⁵

These activities rarely received public recognition. Although tradition might have it that the Japanese in New Guinea were defeated by the activities of the troops ashore, it was the maintenance of sea control while simultaneously denying sea use to the Japanese which underlay Allied success. Despite the enemy's attacks not one of the nearly 190,000 Australian personnel transported to New Guinea between 1941 and 1943 was lost at sea and supplies never ceased to flow. The Japanese in contrast suffered tremendously from air and sea interdiction. Starvation and disease took a particularly heavy toll, and claims have since been made that combat deaths account for only 3 per cent of the 100,000 Japanese who died in New Guinea.⁵⁶

Changing priorities for escort construction and disposition

The provision of sufficient escort vessels was a global problem and, at the beginning of 1943, the Admiralty estimated that all the spare building capacity in the United Kingdom, USA, Canada and Australia was devoted to building ocean-going escorts.⁵⁷ If completed, these programs would produce some 1500 vessels by the end of 1945. The RAN's share was comparatively small, but by late 1942 the Navy had received approval for a total of 22 frigates. The ACNB continued to attach a high priority to the escort program, but it was already out of step with the changing nature of the war as a whole. Hence, when the ACNB raised a new staff requirement at the end of 1942 for an improved fast frigate, the Admiralty advised that there was little justification in proceeding with more than the 14 frigates due to be laid down before the end of 1943. Allied building priorities, the Admiralty noted, had been revised:

The success which has been achieved in the anti-U-boat war with the limited strength available has encouraged us to believe that with the very substantial additions both to the U.S. and Empire A/S forces next year [1944], we shall

have no further anxiety as to the course of the struggle if we cease building all A/S vessels scheduled to complete after 1st October, 1944. We hope, too, that the successful outcome of the combined strategy in 1944 will see a termination of the war in Europe and our A/S forces can then be reduced to the comparatively small force required against Japanese submarines.⁵⁸

It followed that first claim to any constructional facilities and labour should instead go to the ships and craft required for combined assault operations, and specifically, tank landing ships (LSTs). The ACNB accepted the Admiralty's advice; those frigates not already begun were cancelled and only 12 frigates (eight 'River' and four 'Bay' class) were eventually completed.

Meanwhile, the ACNB continued the struggle to meet its immediate escort commitments. All AMS vessels constructed for the RAN remained on the Australia Station but, since August 1942, the Admiralty had sought to accelerate the departure of its vessels to reinforce the Eastern Fleet. Here they would protect the Middle East supply route in the western Indian Ocean, where both the Japanese and Germans were extending their submarine operations. Reinforcements of some 24 USN submarine chasers and the RAN's ongoing building program still allowed for an increase in the SWPA's overall escort strength. But, with forces increasingly required in northern waters, the Australian east coast remained a secondary priority.⁵⁹

The new Director of Operations, Commander Storey,⁶⁰ submitted his revised dispositions for anti-submarine craft to Admiral Royle and Carpenter's Australian Naval Liaison Officer in February 1943. Storey took care to stress that 'The absolute minimum requirements of A/S escorts for coastal convoys have been allocated to Sydney, Fremantle, Brisbane and Melbourne.'⁶¹ By March the truth of this statement became clear. Royle had already informed the Advisory War Council that only by reducing the number of convoys could he increase the strength of the surface escort.⁶² The Shipping Control Board, Ministry of War Transport and US Army, however, all sought to increase the flow of cargo and pressed the Admiral for the institution of bi-weekly convoys between Sydney and Brisbane. After repeated requests the Naval Board finally conceded, but Royle was forced to ask Carpenter for the return of two corvettes from the North Eastern Area.⁶³

The increased number of AMS vessels may have provided some consolation. By March 1943, the RAN had commissioned more than 30 corvettes and the naval staff no longer found it necessary to allocate escorts on ship availability alone. More consideration could at last be given to individual capabilities (see

Table 8.1). Although their level of A/S equipment remained similar, Storey ensured that those corvettes fitted, or due to be fitted, with 4-inch HA/LA (high/low angle) guns were allocated to northern waters where the air threat was greater. Those corvettes fitted with the newly acquired 'LL' minesweepers⁶⁴ were distributed as equitably as possible between mainland Australian ports.

Table 8.1 – Disposition of RAN A/S craft, December 1942–March 1943

| Port | December 1942 | Proposed allocation | March 1943 | Proposed allocation |
|----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Sydney | 8 AMS | 6 AMS | 7 AMS | 6 AMS |
| | <i>Moresby</i> | <i>Moresby</i> | <i>Moresby</i> | <i>Moresby</i> |
| | 1 aux. A/S | 1 aux. A/S | 1 aux. A/S | 1 aux. A/S |
| | 1 M/S-A/S (RNethN) | 1 M/S-A/S (RNethN) | 1 M/S-A/S (RNethN) | 1 M/S-A/S (RNethN) |
| Brisbane | 2 AMS | 5 AMS | 5 AMS | |
| Townsville ^a | 1 RAN DD | 4 RAN DD | | |
| | 2 sloops | 2 sloops | | |
| | 7 AMS | 14 AMS | 12 AMS | 15 AMS |
| | (1 survey) ^b | (1 survey) ^b | (2 survey) ^b | (2 survey) ^b |
| | 6 USN PCs (sub chasers) | | | |
| Darwin | 2 AMS | 5 AMS | 3 AMS | 5 AMS |
| Fremantle (& Exmouth Gulf) | 2 RNethN DD | 2 RNethN DD | | |
| | 3 AMS | 4 AMS | 3 AMS | 4 AMS |
| Melbourne | - | - | 1 AMS (refitting) | - |
| | 1 aux. A/S | 1 aux. A/S | 1 aux. A/S | 1 aux. A/S |

Source: NAA: MP 1049/5, 1804/2/51.

- Notes: a. The requirements at Port Moresby, Milne Bay and forward bases were included in those allocated to Townsville. NOIC Townsville or COMSOUWESPAC then re-allocated the vessels.
- b. Survey vessels were administered by NOIC Sydney.

South-West Pacific Sea Frontiers

Command and control nomenclature and arrangements in the SWPA had remained fairly stable since July 1942, but a major change occurred in early 1943. In the Atlantic the Americans had found the British development of evasive routing techniques particularly effective. Unlike the Pacific theatre, these measures had been well integrated to ensure effective transfer of responsibility between the various command boundaries.⁶⁵ Following the USN decision to introduce similar methods into the Pacific, the theatre was divided into control areas called ‘sea frontiers’,⁶⁶ corresponding where practicable to the existing strategic subdivisions (see Figure 8.2).

Figure 8.2 – South-West Pacific Sea Frontiers organisation, 1944



Source: NHD: CSWPSF file.

Admiral Carpenter began by establishing the Australian Sea Frontiers Command on 4 March 1943.⁶⁷ Two weeks later he renamed it the South-West Pacific Sea Frontiers (SWPSF), and ordered its formal establishment as a separate command on 25 March.⁶⁸ The terms of the overarching British-United States Routing Agreement required that routing in the SWPA should be done

using the agencies available to the ACNB and operating under its direction. Responsibility as Commander South-West Pacific Sea Frontiers (CSWPSF) was therefore automatically assigned to Admiral Royle as the First Naval Member. Under the sea frontiers system Carpenter elected only to direct the protection of shipping in connection with special military operations. Royle, on the other hand, was charged with the safe conduct and routing of all coastal shipping, shipping to and from contiguous areas and routine shipping in support of military operations.⁶⁹

Thus Royle, through the Naval Board, could now exercise operational control of all escort and mine-sweeping vessels otherwise assigned to him. Where necessary, the vessels available to CSWPSF were supplemented for a specific task or period from an appropriate SWPA task force. Normally Carpenter would need to authorise the request, but on occasion Royle or his representative was given approval to make requests directly to the task group commanders. In practice, operational control of escort vessels continued to be exercised through the various NOICs. Likewise, although CSWPSF might order a convoy to sail on a definite route, it was the responsibility of the NOICs to order any convoy diversions, either before or during the passage.⁷⁰

The peak of the Japanese offensive – April–June 1943

While the Allies established the particulars of the sea frontiers system, the Japanese continued to expand their local underwater campaign. In mid-March, the CinC Sixth Fleet, Vice Admiral Komatsu, directed SUBRON 3 to the east coast 'in order to exert a greater effort toward cutting the enemy route of reinforcements ...to Eastern New Guinea from Australia.'⁷¹ The four submarines of the 22nd Division⁷² of SUBRON 3 were allocated to the task, and Komatsu assigned *I-26*, already on east coast operations, to assist.⁷³ The commander of SUBRON 3, Rear Admiral Komazawa,⁷⁴ deployed his submarines in four distinct zones from the entrance to the Barrier Reef to Wilsons Promontory.⁷⁵ This was far too large an area for the boats to cover effectively, but their dispersal would achieve, as one RAAF assessment accurately predicted, 'the maximum diversionary effect and the maximum containing of our forces along the coast.'⁷⁶

There remained no shortage of Allied targets. During May 1943, there were 172 movements by convoys or escorted single vessels, and 393 independent sailings within the SWPSF area.⁷⁷ Of this total, some 20 per cent in the entire SWPSF area and 25 per cent in east coast waters sailed in direct support of

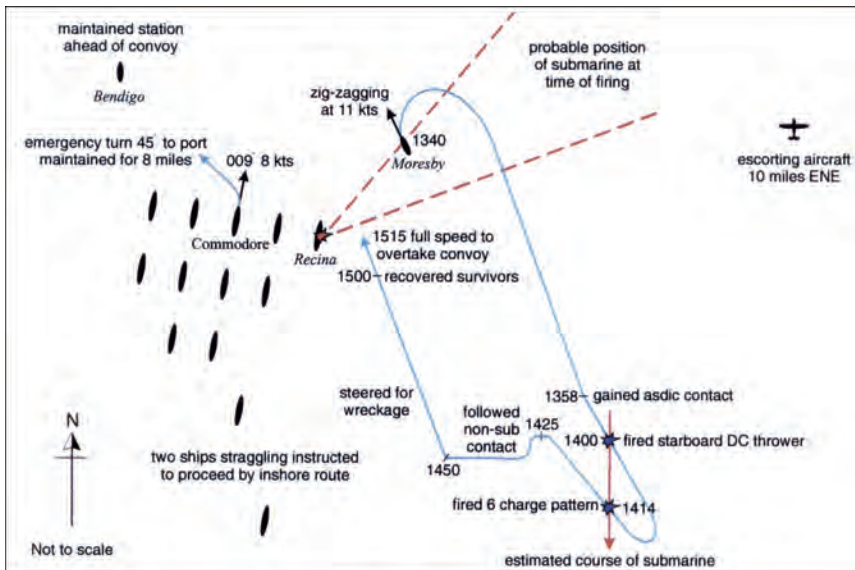
military operations.⁷⁸ The Japanese campaign extended through to June 1943 and at its peak nine ships were torpedoed within a month.

What remains remarkable in the light of postwar revelations—specifically about the importance of signals intelligence to German and American submarine successes—is that the Japanese achieved these results without a mid-ocean reconnaissance capability and without access to secret intelligence on shipping movements.⁷⁹ Geographic differences clearly played a part but, rather than intercepting specific targets like the Americans, or coordinating wolf-packs against convoys like the Germans, the Japanese tended instead to patrol a specified area, waiting on a likely route for something to turn up.⁸⁰ Most important, when one assesses the relative effectiveness of Australian anti-submarine measures and Japanese submarine capabilities, is that many of the attacks off the east coast were conducted in daylight on escorted convoys with air cover—in theory the circumstances most difficult for an enemy submarine.⁸¹ It seems that when submarines were acting singly, and simply lying in wait for targets, air cover could do little to keep the submarine down and out of range.

I-26 made the first successful attack under these conditions when it sank the steamship *SS Recina* on the afternoon of 11 April 1943. Loaded with 8000 tons of iron ore for Newcastle, *Recina* occupied the lead position in the starboard wing column of convoy O.C.86. Two warships provided surface escort, while air cover consisted of one Anson on a dawn to dusk patrol.⁸² Steaming northbound from Melbourne, the convoy had reached Cape Howe when *I-26* achieved at least one hit on *Recina*'s starboard side. Ore laden vessels had neither bulkhead subdivision nor reserve buoyancy and, once holed, could founder in less than a minute.⁸³ Witnesses variously estimated that *Recina* took between 10 and 52 seconds to sink, leaving behind only 10 survivors and 'a great cloud of reddish-brown dust'.⁸⁴

In response to the attack the convoy executed an emergency turn away, leaving the senior escort, *Moresby*, to alter course towards the threat and increase to full speed (See Figure 8.3). Within 20 minutes *Moresby* found a 'fair' asdic contact and made an immediate attack with one depth charge. The warship continued with a six-charge pattern on the regained contact 14 minutes later.⁸⁵ No results were apparent and *Moresby* then searched for another 15 minutes without success.⁸⁶ Rear Admiral Muirhead-Gould provided follow-up support and dispatched the Dutch warship *Abraham Crijnsen* as an additional escort, as well as HMAS *Townsville* to continue the search.⁸⁷

Figure 8.3 – Attack on Convoy O.C. 86, 11 April 1943



Source: NAA: MP1049/5, 2026/10/1481.

Assessments of the incident revealed a number of concerns. One of the most troubling was that excessive smoke from all but three ships had allowed the convoy to be seen from many miles away.⁸⁸ Another observation noted that the nervousness engendered by the attack had resulted in several ships in the convoy opening fire on the wreckage, their guns' crews having imagined it to be the submarine.⁸⁹ Commander Newcomb, in his review, considered that *Moresby* had turned too far initially and concluded that the escort's attacks were carried out on a 'non-sub' echo, perhaps even its own wake.⁹⁰ Suspecting that the submarine had fired from outside the anti-submarine screen the Naval Board ordered escorts to increase their standard range from convoys from 3000 to 4000 yards.⁹¹ Doubts over personnel efficiency were also raised, and appear to underlie a comment made in Muirhead-Gould's covering letter to Melbourne:

It is a matter of grave concern that this successful enemy attack should have been carried out ... and that no indication of any kind of the presence of a hostile submarine should have been noted either by the Air or Surface Escort.⁹²

Subsequent Japanese attacks followed a similar pattern, and neither the time of day, an increased number of surface escorts, nor continuous air cover appeared to make a difference. In fact, on two occasions the close spacing within the convoys seemed to assist the submarine. *Ormiston* and *Caradale* from P.G.50, and USS *LST 469* and *Portmar* from G.P.55, were each hit during daylight by different torpedoes from the same attacks. The latter incident was probably the most successful individual attack ever made by the Japanese off the Australian coast, and provided another sobering example of relative capability.

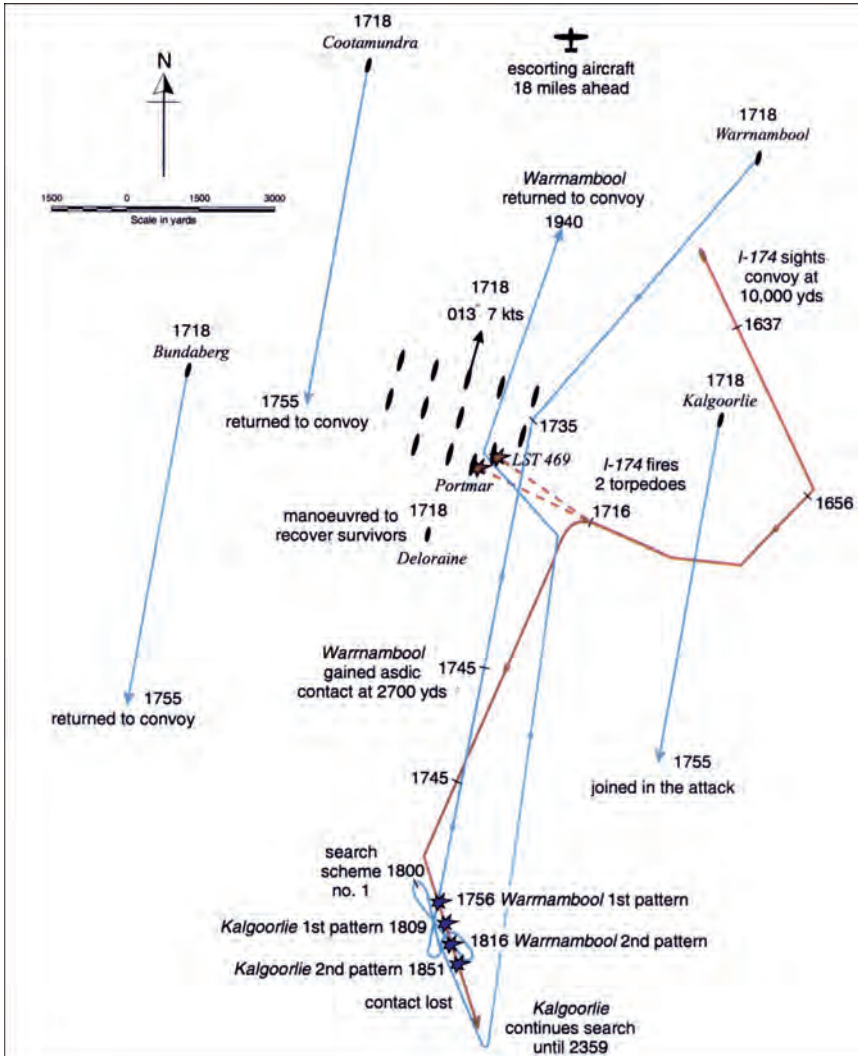
The attack on Convoy G.P.55

On the afternoon of 16 June 1943, convoy G.P.55, comprising 10 merchant ships and three LSTs, was steaming north at seven knots, 60 nm southeast of Coffs Harbour.⁹³ The attacker was the Japanese submarine *I-174*, and to achieve a firing position it had managed to penetrate a screen of five AMS and avoid an Anson providing air cover. The corvettes had lately been issued with ‘General Instructions for Escorts’ and had begun exercising a number of standard search and attack plans.⁹⁴ In addition they had recently been fitted with radio-telephone (R/T) equipment, at last allowing voice rather than visual⁹⁵ or wireless telegraphy (W/T) communication.⁹⁶ Visibility was good, but neither the Anson nor a relieving Beaufort had working radar.⁹⁷ A few days earlier the CAS, Air Marshal Jones,⁹⁸ had remarked that both visual and radar observation were ‘necessary to achieve good results’.⁹⁹

The successive explosions on *LST 469* and *Portmar* came as a complete surprise to the convoy and escorts. In response, the senior commanding officer in *Warrnambool* ordered the code word ‘Artichoke’ to initiate a pre-planned asdic search.¹⁰⁰ With the exception of *Deloraine*, which was manoeuvring to recover survivors, the corvettes reversed course to sweep back in line abreast over the submarine’s presumed position (see Figure 8.4). *Warrnambool*’s rapid reaction and shrewd choice of search to the rear of the convoy allowed it to gain an asdic contact at 2700 yds, 23 minutes after the attack. The submarine was then subjected to the attentions of both *Warrnambool* and *Kalgoorlie* for nearly two hours.¹⁰¹

The two escorts finally lost contact after conducting four deliberate depth charge attacks and, having detected the smell of distillate, they had high hopes of success.¹⁰² This is one of the rare occasions where the assessment can be checked against Japanese records, and *I-174* did report some damage, ‘but nothing to impede easy combat sailing’.¹⁰³

Figure 8.4 - The attack on Convoy G.P. 55, 16 June 1943



Sources: *I-174* War Diary; NAA: MP1587/1, 155E.

Lack of practice and too few ships to create a sufficient search scheme had allowed an opponent to escape, but Admiral Royle was confident that the submarine had been damaged and, the following day, directed Muirhead-Gould to take 'special measures' to search the area.¹⁰⁴ Three RAN vessels provided a surface presence, while on 16 June RAAF Eastern Area began a series of air searches in an 80 nm box stretching south-east from Coffs Harbour.¹⁰⁵ In the early morning of 18 June, in bright moonlight, two Beauforts on a creeping line ahead search reported that they had sighted, machine-gunned and bombed a submarine. Flares were also dropped and the crews believed that they left the target slowly circling and trailing oil. *I-174*'s war diary makes no mention of the event, but Eastern Area assessed the attacks as 'excellent' and 'probably most discouraging to enemy submarine crews.'¹⁰⁶

At the time of the Beaufort attacks *Deloraine* was less than six miles away, but failed to acknowledge repeated attempts by the aircraft to communicate.¹⁰⁷ This had been the first 'organised co-operative hunt' by the RAN and RAAF and its failure to destroy a seemingly damaged enemy caused Royle to convene a Board of Enquiry.¹⁰⁸ Headed by Muirhead-Gould's Chief Staff Officer, Captain Armstrong,¹⁰⁹ and including Commanders Newcomb and Spurgeon, the Enquiry found that a breakdown in communications had been the principal cause of the failure. Both the aircraft and the naval signal room in Sydney had made procedural errors. But Muirhead-Gould also attributed higher level responsibility. Communications issues had always occupied an important part of convoy conferences, and had often been discussed with the RAAF, yet

... they have not been implemented officially and there is still a lack of the standardised procedure which must be so well known and understood that it becomes automatic - the precept and the practice of 'Common Doctrine'.¹¹⁰

The general instructions for escorts issued in May provided a useful basis for organisation, but commanding officers felt likewise that greater efficiency, and the development of teamwork, would be achieved if escorts were concentrated in groups.¹¹¹ To encourage this aspect Muirhead-Gould suggested the RAN establish a Commander Escort Vessels Group. This was to be an officer who would organise and command the escorts generally and coordinate their tactics to achieve an acceptable level of efficiency.¹¹²

RAN and RAAF reactions – April–May 1943

The enhanced Japanese campaign had both immediate and cumulative effects. Of immediate concern, significant increases occurred in HF/DF indications,

loop crossings, ASV contacts, sightings and reported attacks.¹¹³ Although many of these were probably false, they enforced a high degree of readiness on defences. Even when faced with doubtful indications, authorities displayed a natural reluctance to take risks.¹¹⁴ Reports of *actual* damage or losses simply added to the pressure. Advised on 25 April 1943 of the sinking of *Kowarra* off Sandy Cape, the Naval Board stopped all independent sailings between Brisbane and northern ports.¹¹⁵ A few hours later a poor HF/DF fix (within 250 nm) in the same vicinity brought a halt to all independent sailings north of Newcastle.¹¹⁶ Royle then informed Carpenter that all available A/S craft were being used to augment convoy escorts at sea, and that future sailings were in abeyance until the situation cleared.¹¹⁷

Royle ordered the resumption of routine convoy sailings on 26 April, but two days later the Naval Board cancelled eight scheduled convoys between Sydney, Melbourne and Brisbane.¹¹⁸ Reasons given included the apparently high level of enemy submarine activity and the need to increase surface anti-submarine protection.¹¹⁹ After the sinking of the independent *Wollongbar* on 29 April, sailings on the inshore route north of Newcastle were again stopped, this time for four days.¹²⁰ Two weeks later, the ACNB reduced the number of convoys by half so that the number of escort vessels could be doubled to at least four per convoy.¹²¹ Such a loss of shipping capacity could not long be sustained. After representations from the Shipping Control Board and commerce authorities bi-weekly convoys were resumed in mid-May. To achieve this the Naval Board was forced to reduce the minimum number of escorts to three.¹²²

The cumulative effects of the Japanese campaign were also significant. The main naval activity in the SWPA remained the escorting of convoys and independent shipping to New Guinea.¹²³ Elsewhere, the ACNB struggled to concentrate escorts in the areas subject to the highest threat. During May 1943 an average of 4.6 surface escorts accompanied each convoy on the Melbourne–Newcastle route and 3.8 between Brisbane and Sydney.¹²⁴ Gradually, smaller anti-submarine craft such as the HDMLs became available in greater numbers and these were supplemented by numbers of the slightly larger Fairmile B design. Of necessity, the Fairmiles were at times used to boost ocean escort strength in dangerous areas.¹²⁵ More commonly, however, they were dispersed for patrols in sheltered focal areas or about intermediate ports. At the latter, only one or two ships might leave a convoy, and it was usually not appropriate to detach one of the regular escorts to provide cover.¹²⁶

The submarine threat also occupied RAAF Command and during April 1943 all possible reconnaissance aircraft were pressed into service along the coast. To meet the commitment Bostock was forced to employ three reserve squadrons, while he ordered training aircraft to carry weapons and keep a sharp lookout for submarines.¹²⁷ By May, the RAAF provided continuous air cover for all convoys and independent sailings with the exception of the area north of Brisbane.¹²⁸ In June, the Air Force stated that it had flown 537 sorties in support of 84 convoys and 45 independently routed ships and a further 165 sorties on searches and reconnaissance flights. According to a RAAF publication, in 1942 RAF Coastal Command had only managed 90 per cent of this sortie rate under its own 'defensive' program.¹²⁹ The effort required to maintain the Australian air effort was enormous, and the frequently arduous conditions took a continuous and deadly toll of men and aircraft.¹³⁰

Tactical changes were also implemented in an attempt to counter the increased level of enemy activity. RAAF intelligence assessments, having noted the larger proportion of coastal ships sunk in April and May, suggested that the Japanese campaign might be deliberately directed against inshore traffic.¹³¹ In response, the range of routine air searches was reduced to 40–80 nm from the coast, while the numbers of 'offensive night recces' around the focal points of Sandy Cape, Tweed Heads, Sydney-Newcastle and Gabo Island were increased.¹³²

The Naval Board, in contrast, sought to move convoys further off the coast and instituted a 'brown' route some 5 to 15 nm seaward of the previously used 'blue' route (See Figure 7.5).¹³³ To move the 'blue' route further inshore would have left insufficient room for the independent ships that proceeded either north or south,¹³⁴ but the 'brown' route caused a different set of problems. It was longer, and coastal shipmasters did not normally take their vessels so far to seaward. Strong westerly winds and very heavy seas made for poor headway and a very uncomfortable passage. Thereafter it became more common for ships to straggle and separate, and in July bad weather completely scattered at least one convoy. The commodore of this convoy was forthright in his warning to the Naval Board that a 'big danger of collisions' existed in such circumstances.¹³⁵

A further decline in transport capacity

Notwithstanding their intention to isolate Australia and New Guinea, there is no evidence to suggest that Japanese submarines deliberately targeted either coastal or overseas shipping. But, as Sir Thomas Gordon had predicted in 1941, disruptions and shortages had an impact on the carriage of all types of

cargo. Although the number of vessels on the coast increased slightly during 1943, any improvement in civil transport capacity was negated by the continued growth of war production.¹³⁶ By May the stock position of raw materials imported from North America was in some cases down to between one and three months' supply.¹³⁷ On 7 May, Beasley advised the Minister for External Affairs, H.V. Evatt,¹³⁸ that, unless additional shipping became available, a 'large number of manufacturing programs will become disjointed and others will have to be stopped.'¹³⁹ In June, Evatt passed a submission to the United States War Shipping Administration in Washington that warned of the serious position and Australia's fear for 'the continuance of the country as an effective arsenal, supply and repair centre.'¹⁴⁰

Of domestically sourced materials, the transport of coal and iron ore remained the most precarious.¹⁴¹ Royle had attempted to allay political and industry concerns by pointing out that 'the number of iron ore ships sunk is not exceptional nor is it out of proportion to those operating in the danger area.'¹⁴² The Admiral's optimism was not always shared. In June 1943, the Chairman of the Shipping Control Board warned the Advisory War Council that losses due to enemy action had aggravated an already serious situation.¹⁴³ In essence, the overburdened transportation system retained no slack, and the loss of even one ship could have severe repercussions for particular industries.¹⁴⁴

The shipping shortage did not ease until the end of 1943, and meanwhile essential cargoes continued to accumulate in Melbourne, Adelaide and Sydney.¹⁴⁵ Since the carriage of cargo could not keep pace with demand, CSWPSF had to exercise constant vigilance to balance the level of threat in one area against the need to limit congestion in another. Thus on 18 June 1943 Royle established convoys on the Brisbane-Gladstone route¹⁴⁶ while, the following day, merchant vessels with a speed in excess of 10 kts were ordered to sail independently for the mainland from Port Moresby and Milne Bay.¹⁴⁷ By the end of July the Naval Board further relaxed the sailing guidelines for independent vessels to increase the flow of shipping.¹⁴⁸

Despite their priority, military operations were also affected. Although all Allied service personnel safely reached New Guinea, the ships sunk by enemy submarines during 1942-43 included several carrying military equipment.¹⁴⁹ The records of 'special ships' loaded with service cargo show that they might carry between 3000 and 7000 tons of military stores ranging from heavy vehicles to fuel and explosives.¹⁵⁰ In a statement to the Prime Minister, Royle specifically regretted the equipment lost in *G.S. Livanos* when sunk off Sydney

on 20 July 1942.¹⁵¹ *Fingal*, sunk on 5 May 1943, carried some 1000 steel barrel buoys to be used for A/S boom defence.¹⁵² Attacks on specialised vessels had their own implications. The torpedoing of *LST 469* caused the last-minute loss of troops and cargo destined for MacArthur's first amphibious landing at Kiriwina-Woodlark.¹⁵³ Australian politicians were later quoted as saying that, but for the shortage of shipping, the amphibious assault on Lae in September 1943 could have taken place two months earlier.¹⁵⁴

An anti-submarine crisis?

In May 1943 Royle advised the Advisory War Council of the rapid progress made in fitting RAN escort vessels with asdic and RAAF aircraft with radar. He also offered his opinion that the intensity of Japanese attacks would reduce once MacArthur's offensive operations began.¹⁵⁵ As usual, Royle's optimism contrasted with the concerns of other key players. Commander Newcomb, for example, had already written a long report that highlighted the lack of Australian success in countering enemy submarine action, and in particular the deficiencies in escorts and their equipment.¹⁵⁶ Newcomb classified the AMS as too slow¹⁵⁷ and often incapable of operating asdic in the heavy sea conditions that prevailed off the coast.¹⁵⁸ The corvettes also lacked efficient communications, and night operations were hampered by a total lack of either illuminants or radar.¹⁵⁹ They readily displayed 'keenness and alertness', but Newcomb also questioned the efficiency of personnel.¹⁶⁰ As evidence he listed the lack of pre-arranged cooperation between escorts and convoys, poor teamwork between escorts, and the limited circulation of the latest anti-submarine information.

The matter of ASW efficiency was brought to a head by the sinking off Brisbane of the Australian hospital ship *Centaur* on 14 May, with heavy loss of life.¹⁶¹ Representatives of the maritime unions met with Curtin 10 days later. To the Prime Minister they appeared 'deeply concerned with respect to the safety of personnel', and alleged that convoys were inefficient and inflexible, the escorts very slow, and aircraft very seldom seen. Curtin was left 'impressed by the sobriety of the views', but rather than seeking service advice asked Defence Secretary Shedden to inquire whether MacArthur might supply more escorts and air cover.¹⁶² Then on 3 June Australia's elder statesman, W.M. Hughes, submitted a damning statement to the Advisory War Council.¹⁶³ He evidently had access to an expert source and, in a detailed summary, pointed out deficiencies in ASW methods and ways they might be improved.

Hughes implied that the RAN had failed to give anti-submarine defence the attention it deserved, and Royle's immediate response was characteristically defensive.¹⁶⁴ Although the Admiral went on to outline actions taken, the Council directed that he and the CAS should provide a detailed report to the next meeting. Royle sent his reply to the Navy Minister a week later. Rejecting any suggestion of neglect as being 'far from the truth' he reassured Makin that the Navy was 'fully alive to the vital importance of trade protection.' In truth, ship losses in convoy did not compare unfavourably with those elsewhere, despite 'the historical aspect of our unpreparedness.'¹⁶⁵ Royle also gave qualified support to the corvettes; he admitted to their deficiencies in speed, but noted that they had so far carried out a very useful function. The situation would soon improve, moreover, as the first of the new fast frigates was due to complete in just two months. Finally, the Admiral reminded Makin that 100 per cent protection was impossible, but that losses were being 'kept as low as our resources and capabilities permit.' Makin knew little about the workings of sea power,¹⁶⁶ but Royle's sober assessment evidently satisfied the Advisory War Council and the subject was never again raised in such detail.

Difficulties with joint and combined operations

Hughes was correct in noting that many practical problems had still to be overcome, with the lack of appropriate anti-submarine training the most fundamental deficiency. Notwithstanding the Admiralty's apparent satisfaction with Australian-trained A/S personnel, Royle had warned Cabinet that local facilities were not ideal, and that his men were not 'fully experienced and 100% efficient.'¹⁶⁷ Less charitably, in June 1943 Carpenter's Commander Escort and Minecraft Vessels (CTF 78), reported that local anti-submarine forces were far behind in the methods and objectives of ASW.¹⁶⁸ Despite the close association between the Allies in escort operations, training within the SWPA was conducted largely upon national lines. The USN had neither a permanent training ship nor a training submarine allocated to the area, however,¹⁶⁹ and although the RAN had attempted to bring the ex-Dutch submarine *K9* into service, it was in such poor condition that it only spent 31 days at sea during its time in commission.¹⁷⁰ Meanwhile, the Australian training ship *Kybra* spent much of its time either on operational duties or in refit, and was in any case not fitted with USN equipment.¹⁷¹

Furthermore, although Royle had painted Makin a neat picture of the Australian naval staff 'working in close and efficient co-operation with the U.S. Naval Staff at Brisbane',¹⁷² collaboration did not always occur so smoothly. No single

authority had exclusive control of escorts. Effort was duplicated, with vessels assigned to both the sea frontiers command and to other Allied task forces. Difficulty was also experienced in the exchange of shipping information between Royle and Carpenter and the contiguous areas. Communications westward used British codes and eastward American codes, and often the same message had to be re-encyphered in several different formats.¹⁷³

Cooperation between the RAN and RAAF was also laboured. The dispersal of effort identified in 1942 had not been corrected and continued to cause difficulties in the areas of communications, intelligence, coordination of assets, and tactics. RAAF aircraft captains, for example, were under strict instructions to limit communications and not to report a submarine unless they had actually seen one.¹⁷⁴ Not until the escorting aircraft failed to report the sinking of *Recina* did the RAAF admit that their orders were too restrictive and captains too scared to use their initiative.¹⁷⁵ Too often—as evidenced by the hunt for *I-174* in June 1943—poor communications discipline resulted in no direct communication between air and surface units, and signals had to pass through a shore station.¹⁷⁶ The continued separation of intelligence facilities also hampered close coordination. In May 1943, RAAF Eastern Area protested that the RAN HF/DF fixing organisation was only staffed during the day, thus causing unacceptable delays.¹⁷⁷ Bostock underlined this aspect in July when, in a complaint to Royle, he remarked that a nine-hour lag in naval communications had caused an air search area to increase from 7800 to 38,500 square miles.¹⁷⁸

Naval commands had their own concerns regarding the delays imposed by the Air Force command chain, and the lesser priority attached by the RAAF to trade protection. Off Queensland, for example, all requests for aircraft cooperation had to be made to AOR Eastern Area through a Naval liaison officer at Fighter Sector Headquarters, Brisbane.¹⁷⁹ But although a number of Eastern Area fighters were kept at immediate readiness, the reconnaissance bombers were not. On 1 June, it took 147 minutes before an Anson could reach the *SS Port San Pedro* after the ship had reported a submarine attack only 40 nm from Cape Moreton. NOIC Brisbane acknowledged the help of RAAF operational staff,¹⁸⁰ but he regarded this delay as typical of the existing difficulties and concluded:

In view of the increasing Submarine activity on the Australian coast it is considered that the Air Striking Force of the Brisbane Area leaves much to be desired in both quality and availability, and cannot be accounted an efficient weapon under existing conditions.¹⁸¹

RAN and RAAF differences of opinion about tactics and operations ranged from basic matters of night identification to more serious doctrinal issues.¹⁸² The RAAF's preference for 'offensive sweeps' over 'defensive' escort has already been mentioned. The RAN, while not averse to its own 'special A/S sweeps'—regularly conducting these off ports when it suspected a submarine's presence—officially accepted contemporary Atlantic doctrine. This held that an escorted convoy provided a more difficult target for a submarine and that the greater the number of escorts the more risk to the attacker.¹⁸³ Thus, when countering the Air Force's desire for increased sweeps of focal points off the coast, the Navy argued 'that the best focal point was always the convoy itself.'¹⁸⁴

In theory, RAAF patrols were also guided by the latest Atlantic convoy experience, but even here interpretations differed.¹⁸⁵ Although admitting that a great deal was achieved by putting the submarine down, the view persisted within the RAAF that 'the object of ASW is to kill the submarine wherever possible'.¹⁸⁶ Yet, at least until early 1944 the prevalent naval view in the Atlantic measured success not by submarine kills, but by 'the safe and timely arrival' of the convoy.¹⁸⁷ Likewise, the RAN claimed that coastal command policy was 'one of close escort with offensive operations carried out only by such aircraft as are available after close escort has been arranged.'¹⁸⁸ HQ Eastern Area, in contrast, pointed to the good results achieved by sweeps and continued to press for an offensive operational policy.

In June 1943, an article in the Eastern Area Operational Bulletin reinforced this preference by arguing that recent Japanese successes off Australia had 'underlined the inability of either surface or air escorts to prevent torpedoings.' Unlike German U-boats, which were forced to intercept Atlantic convoys in the open ocean, Japanese submarines simply waited on the long 'fence' of the Australian coastline. After an attack this 'fence' ensured that the enemy would be found within a limited semi-circle rather than a circle; 'in other words the area of probability [is] halved and offensive operations become so much more likely to give results.'¹⁸⁹

The formation of the A/S Division

Royle and Carpender were not unaware of the SWPA's anti-submarine difficulties, and Carpender had already proposed the establishment of an anti-submarine warfare unit under Royle's direction.¹⁹⁰ Commander Spurgeon became the first Director A/S Division in May 1943, and by the end of June had established the unit in Melbourne with a staff that included three A/S Officers (USN, RAN and RANVR) and a RAAF representative.¹⁹¹ Collocated

with, but independent of Navy Office, the Director became the highest authority for ASW matters in the SWPA (see Figure 8.5). Under the direction of CSWPSF, he was responsible for the practical and technical planning of anti-submarine measures of all kinds and controlled the dissemination of information from all sources.¹⁹²

The initial priorities set by Carpenter included the production of an agreed attack and signal procedure and of a joint anti-submarine training program for escort vessels and task forces.¹⁹³ The ACNB maintained, however, that training should continue to be conducted on independent national lines.¹⁹⁴ Apparently believing that, at least locally, the RAN had a better training capability than the USN, the Board argued that suitable publications could produce an adequate common doctrine for coordinated operations. This Australian opinion prevailed and, although personnel from USN ships visited *Rushcutter* for team training, coordinated RAN-USN training was not conducted on a regular basis. Nevertheless, by July the A/S Division had produced a draft of combined procedures. By September all newly commissioned RAN escort vessels were allowed at least three weeks' uninterrupted work-up under the direction of the newly established Commander Escort Vessels Group Sydney (Commander (D)). USN escort vessels were similarly given at least 10 days intensive training under CTF 78 on first arrival in the area.¹⁹⁵

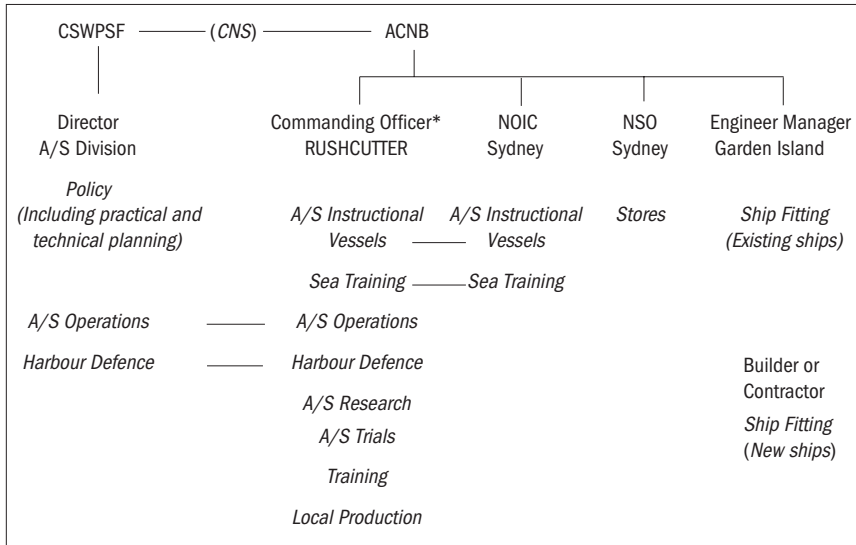
By September 1943, Royle had 41 RAN and 17 USN vessels allocated to escort duties around Australia and New Guinea. But these were still thinly spread between the various areas, and designated groups were still thought to be unfeasible. Only when more anti-submarine vessels became available did the A/S Division consider that greater protection would be possible, particularly in focal areas, and that separate striking forces could then be stationed at selected ports:

The time is approaching ...when sufficient escorts will become available to form escort groups and when this is achieved, and not until then, it will be possible to provide adequate and efficient convoy escort.¹⁹⁶

The target for March 1944 was to acquire an additional 14 RAN vessels and 30 USN destroyer escorts (DE). With these forces Spurgeon hoped to have six escort groups operating from Sydney, five from Milne Bay, three each from Brisbane and Townsville, and two from Darwin. Single escorts would be allocated to Melbourne and Fremantle. The composition of each group would

vary depending on the assets in the area, but would have averaged one frigate and four corvettes. In the major ports of Sydney, Brisbane and Townsville Spurgeon planned to base a special 'fast group' comprised of up to six DEs and six frigates.¹⁹⁷

Figure 8.5 - Australian A/S Branch - organisation and responsibilities, June 1943



Source: NAA: MP 1049/5, 1932/3/31.

Note: *Port A/S Officers were also located at Fremantle, Melbourne, Brisbane, Townsville, Cairns and Port Moresby. At Darwin the Extended Defence Officer carried out the same duties.

Air and sea cooperation

In the matter of air and sea cooperation the A/S Division was not so successful. First, aided by pressure from RAAF Command, RAAF Eastern Area managed to partially modify the previous emphasis on convoy escort. Declaring it a 'Red Letter' day, Eastern Area's July Operational Bulletin announced 'the first occasion in which an anti-submarine offensive has had full official sanction in Australia.'¹⁹⁸ The revised policy was conditional, in that air escort would continue until 'positive' evidence of a submarine's presence—such as a torpedoing—had been obtained. But, having this evidence, the AOC could 'throw an offensive coverage over the area at the expense of air escort to convoys.'¹⁹⁹

Second, despite the admitted urgency, proposals to improve the operational control of sea and air forces had made little progress.²⁰⁰ As the responsibility for the protection of trade in an area belonged to the NOIC rather than the AOC, the Navy favoured

a straight out proposal ... to Air, stating that we wish operations to be combined again for trade protection, and suggesting that as the predominating interest is naval, responsible R.A.A.F operations officers with power to control local air operations should be appointed to combined operations rooms set up at each naval headquarters.²⁰¹

Unfortunately, although both services agreed on the need to bring control closer together, neither was willing to compromise. One of the RAAF's guiding principles of air power was (and continues to be) 'unity in application'.²⁰² To ensure centralised control at the highest possible level the RAAF refused to allow an air commander to work under or in support of a naval commander.²⁰³ Despite naval arguments that a joint operations room in each area would still allow service authorities to retain individual control of their respective forces, the separation of air and naval commanders continued.²⁰⁴ As the DCNS, Captain R.F. Nichols,²⁰⁵ lamented:

There is no doubt that the [Navy's] proposed scheme would be almost ideal, but unfortunately it is not at present workable in Australia. There are a good many reasons why, ... but perhaps the most concise way of putting it is to say that until we have a Coastal Command under the operational control of the Navy, we are never likely to achieve the ideal we aim at. I can see no promise at present of obtaining a Coastal Command.²⁰⁶

Undeterred, the naval staff continued to draft proposals based on 'a policy that has been so successful in other parts of the world.'²⁰⁷ In January 1944, a joint RAN-USN conference recommended that six Catalina and six Liberator aircraft should be given up by RAAF Command for naval operational control.²⁰⁸ The resulting 'hunter-killer group' was to be organised, trained and operated as a single tactical unit. Demonstrating that members of the RAN were not immune to clinging to outdated doctrine, the naval staff argued that the 'purely defensive escort' of shipping and the 'more offensive' killer organisation, were so closely linked that it would be sensible to have the tasks coordinated under the same commander.²⁰⁹ They therefore suggested that Royle should be made responsible for the operation of the groups.

The RAAF's reaction to this suggestion is not available, but by this stage the formation of escort groups and the integration of surface and air units under

the one Australian commander no longer warranted the same priority. As Royle had predicted, sustained Allied pressure elsewhere in the Pacific hampered any further Japanese operations in Australian waters. In July 1943, two enemy submarines were diverted to the central Solomons just before reaching the Australian east coast.²¹⁰ In August, a Japanese operation order still included Australian waters as an 'operation sector for destruction of sea traffic' by submarines, but in practical terms offensive patrols had already ended.

The end of Australian coastal convoys

Beset by contradictory intelligence, Australian authorities only gradually accepted a reduced submarine threat. During June 1943 Japanese submarines were thought responsible for 19 HF/DF fixes, three sightings and two ships attacked and sunk in the north-eastern Coral Sea.²¹¹ Although enemy submarine operations in the southern Pacific were considered to be 'on a comparatively low level', activity in the Pacific and Indian Oceans was for the first time heavier than the Atlantic and Mediterranean combined.²¹² By July the Japanese were again thought to be chiefly concerned with the defence of the Solomons, but the potential threat remained and, as reported by RAAF intelligence, the next Japanese wave 'will not be indefinitely delayed.'²¹³ In August, reports again stressed the continuing importance of ASW in the SWPA, and argued that with the American advance reducing the enemy's need to supply isolated islands, more submarines might be available for a renewed offensive.²¹⁴ Nevertheless, CSWPSF took advantage of the lull in submarine activity and brought the shorter 'blue' routes for coastal convoys back into force.²¹⁵

October 1943 at first appeared to herald the long-awaited renewal of submarine operations. In the South-West Pacific and South Pacific areas, intelligence recorded at least 100 HF/DF fixes and sightings, and Allied aircraft reported seven strikes on enemy submarines. On 7 October, the AMS HMAS *Glenelg*, while escorting a northbound convoy, reported a torpedo attack off Coffs Harbour followed by asdic contacts classified as a submarine.²¹⁶ The bulk of the detected activity, however, took place in the Solomon and Bismarck Seas and, while the Japanese could have diverted submarines in these areas to eastern Australia, they made no such moves.²¹⁷

By the end of 1943 Allied attacks on Japanese air and surface communications had virtually isolated their main base at Rabaul.²¹⁸ Some 20 submarines remained there, but Allied intelligence concluded: 'It seems clear that the

enemy is so hard pressed for means of transportation that he is forced to forego attacks on our shipping in order to supply, reinforce or evacuate his troops.²¹⁹ On 8 November 1943, a letter to Admiral Carpenter pointed out that no submarine attacks had taken place on the Australian coast for a period of nearly five months and recommended that the convoy and escort system south of Brisbane be abandoned.²²⁰ Likewise, on 15 November Royle recommended to Makin that convoys cease running between Newcastle and Melbourne.²²¹

The urgent need for close naval escort was indeed further north but, to satisfy those who still retained local concerns, Royle's revised anti-submarine policy included air patrols of focal areas and the maintenance of naval and air striking forces at selected Australian ports.²²² After consultations with Makin and Curtin, on 4 December the Navy informed the Maritime Industries Commission that coastal convoys south of Newcastle would cease as from 7 December 1943.²²³

Regrettably, no-one had thought to consult the merchant crews or allay their continuing concerns about enemy submarine activity. On 13 December, the Seamen's Union advised Makin that no ship normally escorted would leave any port 'unless under the protection previously provided.'²²⁴ A telegram from Curtin requested that the union immediately man the ships, but had no effect. Only after further negotiations did the Sydney branch of the union recommend that all ships be allowed to sail.²²⁵ In Melbourne and Newcastle however, the dispute continued. Seamen from nine ships were dismissed before Curtin issued another warning on 21 December. This informed the seamen that those who failed to comply would lose their protected industry classification and thereafter be liable for military service. At a meeting the next day all seamen agreed to return to work.²²⁶

On 19 January 1944, Royle proposed the cessation of Sydney-Brisbane and Brisbane-Gladstone convoys.²²⁷ Union sensitivities remained, however, and not until 10 February could he give the order.²²⁸ In the interim, Royle relaxed the requirements for surface escort for any ships which normally sailed outside of routine convoys, south of Gladstone on the east coast of Australia and east of Cape Leeuwin on the south coast. Specific anti-submarine measures to protect shipping continued,²²⁹ but close escort on the east coast had been almost entirely abandoned.²³⁰

The cessation of Townsville-New Guinea convoys followed on 24 March 1944. Afterwards the only vessels escorted to New Guinea were combatant vessels

of cruiser size and above, troopships, naval auxiliaries over 2000 tons and tankers.²³¹ Although this marked the end of the Australian coastal convoy system, it did not mean the end of convoys in the SWPA. Responsibility for the protection and routing of shipping continued to be exercised by CSWPSF and convoys were used north of New Guinea until late 1944. Unexpected by all, however, the Japanese withdrawal marked only a temporary lull in the operations of enemy submarines off the Australian coast.

Notes

1. 'CNO, summaries (of Radio Intelligence) of Japanese naval activities', 17 February 1943, USNA: RG 457, SRNS 0310, p. 624.
2. PM's War Conference Agendum, 6/42, NAA(ACT): A5954/1, 669.
3. C.B.A. Behrens, *Merchant Shipping and the Demands of War*, History of the Second World War Civil Series (London: HMSO, 1955), chapters XIV–XVII.
4. See 'Appreciation by Australian Chiefs of Staff', in D. MacArthur, *Reports of General MacArthur*, Vol. 1 (Washington: Department of the Army, 1966), p. 26.
5. Butlin & Schedvin, *War Economy 1942–1945*, pp. 238–9, 249–50.
6. Report, 'Japanese Submarine Activity in SWPA', AWM: AWM 188, 6.
7. Japanese Monograph, 'Submarine Operations in Second Phase Operations, April 1942 to March 1943', GHQ Far East Command, 24 July 1950, p. 39.
8. 'Submarine Operations in Second Phase Operations, April 1942 to March 1943', p. 54.
9. RAN Daily Narrative, 11 February 1943.
10. See 'CINCPAC bulletins (Ultra Sigs) Daily Reviews 1.12.42/29.5.43', entry for 12 February 1943, NAA: MP 1587/1, 316A.
11. 'Submarine Operations in Second Phase Operations, April 1942 to March 1943', p. 52.
12. 'Report of Proceedings on the night of 18/19th January', by Muirhead-Gould, 23 January 1943, NAA: MP 1049/5, 2026/10/1443.
13. RAN Daily Narrative, 19 January 1943.
14. When training aircraft were used they were manned by the instructors and partly trained aircrews. See Odgers, *Air War Against Japan 1943–1945*, p. 140.
15. Letter, NSW Agents for Commonwealth Salvage Board to Deputy Chief Salvage Officer, 25 January 1943, NAA: MP 456/4, 1943/127.
16. Letter, Salvage Officer NSW to Chief Salvage Officer, 25 January 1943, NAA: MP 456/4, 1943/127.
17. RAN Daily Narrative, 26 January 1943.
18. Report, CO *Townsville* to Muirhead-Gould, 8, February 1943, NHD: general file 201a.
19. Report 'Japanese submarine activities SWPA', AWM: AWM 188, 6.
20. 'Submarine Operations in Second Phase Operations, April 1942 to March 1943', p. 52.
21. RAN Daily Narrative, 20 February 1943.
22. 'Japanese Submarine Activity in SWPA', AWM: AWM 188, 6.
23. RAN Daily Narrative, 17 February 1943.
24. Letter, Admiralty to ACNB and others, M/A/SW 2241/41, 21 October 1941, NAA: MP 1049/5, 2026/14/266.

25. Letter, NCSO Newcastle to ACNB, 10 February 1943, NAA: MP 1049/5, 2026/12/504.
26. Report, 'Protection of Shipping on the Coast of Australia', June 1943, NAA: MP 1049/5, 1932/3/8.
27. Minute, Staff Officer (NCS) to Nichols (DCNS), 4 May 1943, NAA: MP 1049/5, 2026/10/1481.
28. Patrols were classified as inner and outer by reference to the standard convoy routes. See Figure 7.5.
29. 'RAAF Maritime Trade Protection', pp. 108, 106.
30. Report, 'Protection of Shipping on the Coast of Australia', June 1943, NAA: MP 1049/5, 1932/3/8. This complaint is not borne out by the convoy commodore's reports, which regularly reported aircraft sightings, and it is more likely to reflect the views of crew members less often on the bridge.
31. 'RAAF Maritime Trade Protection', p. 219. Emphasis in original.
32. Minutes of AWC, 9 Feb 43, NAA(ACT): A2682, Vol. VI.
33. RAN Daily Narrative, 21 January 1943.
34. 'RAAF Maritime Trade Protection', p. 106.
35. RAN Daily Narrative, 26 February 1943.
36. 'CNO, Summaries (of Radio Intelligence) Japanese naval activities', Message from Japanese Ambassador Oshima, 29 January 1943, USNA: RG 457, SRNS 0291, pp. 572-3.
37. 'Submarine Operations in Second Phase Operations, April 1942 to March 1943', p. 56.
38. 'CNO, summary of Japanese naval activities', 15 February 1943, USNA: RG 457, Entry 9015, SRNS 1518.
39. Japanese message 170941, March 1943, USNA: RG 457, Entry 9002, SRH-287. The recovered text read: 'Beginning (or since) the greater part of our submarine strength will be (or has been) disposed in the RF (Samoa), RB (Fiji), RT (New Hebrides), RU (New Caledonia), DO (Australia) and DW (New Zealand) areas to inflict damage on enemy communications and to attack enemy shipping...'
40. 'CNO, summary of Japanese naval activities', 21 March 1943, USNA: RG 457, Entry 9015, SRNS 0342.
41. Sixth Fleet Secret message, No. 19064738, 19 March 1943, in 'I-6 Wartime Operations Diary', March 1943, NHC, Washington.
42. COMSUBDIV 2 message 261200, March 1943, USNA: RG457, Entry 9002, SRH-287, p. 362.
43. See, D. Stevens 'The War Cruise of I-6, March 1943', in *Australian Defence Force Journal*, September/October 1993, pp. 39-46.
44. RAN Daily Narrative, 18 March 1943.
45. 'I-6 Wartime Operations Diary', March 1943.
46. Minutes of the AWC, 9 February 1943, NAA(ACT): A2682, Vol VI.
47. Butlin & Schedvin, *War Economy 1942-1945*, p. 225.
48. Report, 'Convoy O.C.44', 17 November 1942, NAA: MP 1049/5, 2026/12/432.
49. Minutes of Defence Committee, 37/43, 23 February 1943, NAA(ACT): A2031.
50. Minutes of AWC, 9 February 1943, NAA(ACT): A2682, Vol. VI.
51. See D. Stevens, 'The Role of Maritime Power in the New Guinea Campaign 1942-43', in *Australian Defence Force Journal*, July/August 1995, pp. 19-25.
52. Gill, *Royal Australian Navy 1942-1945*, pp. 241, 269.
53. Report, 11 May 1943, NAA: MP 1049/5, 2026/12/549.
54. RAN Daily Narrative, 11 May 1943. There is no evidence of a Japanese loss on this date.
55. RAN Daily Narrative, 13 May 1943.
56. M. Parillo, 'The Imperial Japanese Navy in WWII' in J. Sadkovich, *Reevaluating Major Naval Combatants of World War II* (New York, Greenwood Press, 1990), p. 65.

57. Letter, Admiralty to Secretary Australian High Commission, 21 January 1943, PRO: ADM 1/16011.
58. Letter, Admiralty to Australian High Commission, 21 January 1943, PRO: ADM 1/16011.
59. Letter, Makin to Curtin, 7 October 1942, NAA(ACT): A5954/69.
60. Captain Arthur Stanley Storey, DSC, RAN (1909–97), Director of Operations 1942–44.
61. Minute, Storey to Royle, 25 February 1943, NAA: MP 1049/5, 1804/2/51
62. Minutes of AWC, 9 February 1943, NAA(ACT): A2682, Vol. VI.
63. Message, ACNB to COMSOUWESPAC, 1143Z/1, AWM: AWM 69, 23/32.
64. This was a magnetic influence sweep used to clear ground mines. The widely fitted Oropesa sweep was used to clear moored contact mines. See M. Griffiths, *The Hidden Menace* (Greenwich: Conway Maritime Press, 1981).
65. See S.E. Morrison, *The Battle of the Atlantic*, History of United States Naval Operations in World War II, Vol. I (Boston: Little, Brown and Company, 1988, reprint of 1947 edition), pp. 206–8.
66. Memorandum, from HQCinC Fleet Convoy Routing Section, 3 May 1943, NAA: MP 1049/5, 1844/2/12.
67. Letter, Carpenter to ACNB, 4 March 1943, NAA: MP 1049/5, 1844/2/12.
68. Letter, Carpenter to ACNB, 16 March 1943, NAA: MP 1049/5, 1844/2/12.
69. Letter, Carpenter to ACNB, 16 March 1943, NAA: MP 1049/5, 1844/2/12
70. SWPSF Merchant Shipping Instructions, 1 January 1945, NHD: SWPSF file.
71. Japanese Monograph No. 163, 'Submarine Operations in Operations Phase III', Vol. I (March to November 1943), Second Demobilization Bureau, March 1951, p. 15.
72. *I-177, I-178, I-180* and flagship *I-11*.
73. Japanese message, 3/310835/1 1943, USNA: RG 457, SRN 0006204.
74. Rear Admiral Katsumi Komazawa, IJN, Commander SUBRON 3 1942–43.
75. Report, by Major Rodgers, GHQ Far East Command, 14 Jan 1948, USNA: RG 331, SCAP-783.
76. Paper, 'Number of submarines engaged in sortie 24–28 April 1943', undated, AWM: AWM 54, 888/10/2.
77. See Appendix VI.
78. 'Monthly Review of shipping operating within South West Pacific Sea Frontiers' May 1943, NAA: MP 1049/5, 1932/3/8.
79. See Appendix III.
80. When submarine reconnaissance was unavailable, monitoring of Allied domestic broadcasting was the 'one and only source of information' on ship movements in the Pacific Ocean and was apparently of no military value. Nevertheless, wireless interception and HF/DF carried out by the Japanese in Singapore did produce fairly accurate information regarding the movements of ships in the Indian Ocean. See report on the Interrogation of RADM Chudo, 28 September 1945, AWM: AWM 54, 779/3/12.
81. Apparently only 25 ships were sunk in the whole of the Atlantic, Caribbean and Arctic, from convoys escorted by both aircraft and ships. See Glasson, 'The Development of the Submarine', p. 156.
82. Report, CO *Moresby* to Muirhead-Gould, 12 April 1943, NAA: MP 1049/5, 2026/10/1481. The aircraft's pilot claimed he was only three miles ahead of the convoy and had counted all 13 vessels only 90 seconds before the attack. See Odgers, *Air War Against Japan 1943–1945*, p. 142.
83. See letter, Master SS "AEON" to NCS Officer Sydney, 26 April 1943, NAA: MP 1049/5, 2026/12/548.
84. Report, CO Armed Guard Unit SS *Francisco Coronado* to Vice CNO, 13 April 1943, NAA: MP 1049/5, 2026/10/1481.

85. Asdic produced a beam that slanted down and forward. As a ship approached to drop the depth charge pattern it invariably lost contact as the beam moved beyond the target. A skilful submarine commander could alter course after the attacking vessel had lost contact and before it had plumbed the submarine's estimated position. See D. Zimmerman, 'Technology and Tactics', in Howarth & Law, *The Battle of the Atlantic 1939-45*, pp. 483-4.
86. *Moresby's* CO claimed his actions were primarily a counterattack, and that the urgency of rejoining his convoy precluded a deliberate hunt. Even so it still took *Moresby* three hours to catch up with the convoy. Report, CO *Moresby* to Muirhead-Gould, 12 April 1943, NAA: MP 1049/5, 2026/10/1481. For a more colourful account, see 'Cameos of the Little Ships', in *HMAS Mk II* (Canberra: AWM, 1943), pp. 120-2.
87. RAN Daily Narrative, 12 April 1943.
88. Report, CO Armed Guard Unit SS *Francisco Coronado* to Vice CNO, 13 April 1943, NAA: MP 1049/5, 2026/10/1481; an earlier convoy joined by *Francisco Coronado* had been visible at 35 nm.
89. Minute, from LCDR Swanson (Acting Director Trade Division), 30 April 1943, NAA: MP 1049/5, 2026/10/1481.
90. Report, Newcomb to Muirhead-Gould, 1 May 1943, NAA: MP 1049/5, 2026/10/1481. The 'knuckle' produced by the wake of a fast turning ship could remain in the water for a considerable period. During this time it could also provide a good asdic echo.
91. Minute, Spurgeon to Nichols, 17 May 1943, NAA: MP 1049/5, 2026/10/1481.
92. Letter, Muirhead-Gould to ACNB, 7 May 1943, NAA: MP 1049/5, 2026/10/1481.
93. For details, see D. Stevens, '*I-174*: the last Japanese submarine off Australia', in the *Journal of the Australian War Memorial*, April 1993, pp. 35-41.
94. The first references to RAN ships off the east coast exercising standard Atlantic search plans, such as 'Artichoke', 'Raspberry' and 'Zombie', occurred in May 1943.
95. Visual communication could be by flags, semaphore or flashing light.
96. W/T relied on morse code. By using voice, R/T allowed faster and more precise transmission of data.
97. P.G.50 had also received continuous air cover. As the visibility was good and the sea calm, the area intelligence officer raised the possibility that the submarine had not raised the periscope and relied on passive sonar. Report by area intelligence officer, 'Attack on "Ormiston"', undated, NAA: MP 1587/1, 157E. However, a postwar USN report indicates that the Japanese never attempted 'sound shots'. See *USN Technical Mission in Japan*, S-17, 'Japanese Submarine Operations', p. 15.
98. Air Marshal Sir George Jones, KBE, CB, DFC, RAAF (1896-1992), CAS 1942-52.
99. Letter, Jones to Shedden (Secretary AWC), 11 June 1943, NAA(ACT): A5954/1, 531/5.
100. An escort used Operation 'Artichoke' when a ship in convoy was torpedoed during the day. The plan was designed to cover the U-boats most likely firing position. Operation 'Raspberry' was used at night and designed to sweep an area in which the U-boat might have been forced to dive by illuminants, while making maximum use of radar and illuminants in case the U-boat was still on the surface. Operation 'Zombie' was the USN equivalent in both circumstances. See C.B. 04234 (2) *Atlantic Convoy Instructions*, September 1942. The author is indebted to LCDR Doug Maclean CAF, who found this reference in the Historical Section of the Canadian Defence Forces, DHIST 83/761.
101. Report, 'Submarine Attack: "SS PORTMAR" and "LST 469"', 19 June 1943, NAA: MP 1587/1, 155E.
102. *Warrnambool* was subsequently criticised by Muirhead-Gould for not carrying out a further hunt. Report, Muirhead-Gould to ACNB, 1 July 1943, NHD: SNHO papers, 1940.
103. *I-174 Senji Nisshi* (*I-174 War Diary*), Military History Department, National Institute for Defense Studies, Tokyo.

104. Letter, Muirhead-Gould to Air Vice Marshal Commanding Eastern Area, 18 June 1943, NHD: SNHO papers, 1940.
105. RAN Daily Narrative, 17 June 1943.
106. 'Eastern Area Operational Bulletin', June 1943, NAA(ACT): AA1969/100, 6/2/24.
107. Ship and aircraft were later found to be on a different frequency and the aircraft had given an incorrect visual identification. *Deloraine's* CO also admitted that after 48 hours without sleep he had been slow in getting to the bridge and had arrived after the aircraft departed. Monthly Report, HMAS *Deloraine*, June 1943, AWM: AWM 78, 97/1.
108. Report, Muirhead-Gould to ACNB, 1 July 1943, NHD: SNHO papers, 1940.
109. Commodore John Malet Armstrong, CBE, DSO, RAN, CSO NOIC Sydney 1943.
110. Report, Muirhead-Gould to ACNB, 1 July 1943, NHD: SNHO papers, 1943.
111. Monthly Report, HMAS *Warrnambool*, May 1943, AWM: AWM 78, 361/1.
112. Muirhead-Gould also hoped that this would help coordination with the RAAF. See report, Muirhead-Gould to ACNB, 1, July 1943, NHD: SNHO papers, 1943.
113. RAAF Eastern Area records note 18 submarine-related incidents in April 1943, 37 in May and 15 in June. AWM: AWM 54, 622/5/4.
114. Thus an unidentified and doubtful loop crossing at Newcastle still resulted in additional A/S patrols off the harbour during a convoy entry, while all available small craft patrolled inside. See RAN Daily Narrative, 14 May 1943.
115. Message, from ACNB, 251235Z, AWM: AWM 69, 23/32.
116. Messages, from ACNB, 251507Z and 251854Z, AWM: AWM 69, 23/32.
117. Message, CSWPSF to NOIC Brisbane and COM7th Fleet, 251924Z April 1942, AWM: AWM 69, 23/32.
118. Message, CSWPSF to various addressees, 260654Z April 1943, AWM: AWM 69, 23/32.
119. RAN Daily Narrative, 28 April 1943.
120. Messages, NOIC Sydney to NOIC Newcastle, 290109Z and 030658Z, April and May 1943, NAA: MP 1049/5, 2026/10/1508.
121. Minutes of AWC, 13 May 1943, NAA(ACT): A2682, Vol. VI.
122. Message, CSWPSF to various addressees, 120701Z April 1943 and ACNB letter 031818, 16 May 1942, AWM: AWM 69, 23/32.
123. Minutes of AWC, 13 May 1943, NAA(ACT): A2682, Vol. VI.
124. See Appendix VI.
125. For example, convoy C.O.96 sailed on 30 May 1943 with four AMS in a semi-circle ahead and two Fairmiles astern.
126. Ships dispersed from convoys for Port Kembla travelled 30 nm without escort when routed on the 'Brown' route and 24 nm when routed on the 'Blue' route.
127. Odgers, *Air war Against Japan 1943-1945*, pp. 140, 144, 148.
128. 'Monthly Summary of Shipping Within the SWPSF', May 1943, NAA: MP 1049/5, 1932/3/8.
129. Eastern Area Operational Bulletin, June 1943, NAA(ACT): AA1969/100/2, 6/5/9. The unstated difference was the far larger number of enemy submarines the RAF was operating against.
130. Throughout the Japanese campaign RAAF aircraft were lost at sea without trace. No.1 Operational Training Unit at East Sale suffered particularly heavy losses. See Odgers, *Air war Against Japan 1943-1945*, p. 145.
131. Assessment, 'Japanese Submarine Movements' by Area Intelligence Officer Eastern Area, May 1943, AWM: AWM 54, 622/5/4.
132. Assessment, 'Number of Submarines engaged in sortie 24-28 April', undated, AWM: AWM 54, 888/10/2.
133. Minute, SO (NCS) to Nichols, 9 August 1943, NAA: MP 1049/5, 2026/12/499.

134. The inshore route passed only five nm off prominent headlands, the outer convoy route passed 12 nm off. As the frontage of a convoy and escorts might extend for 5.5 nm the routes could not be brought closer together.
135. Report, Commodore O.C.109 to ACNB, July 1943, NAA: MP 1049/5, 2026/12/499. Emphasis in original.
136. At the beginning of 1943, Australian coastal shipping totalled 195,000 tons. In June, Australia asked for a further 100,00 tons. See Butlin & Schedvin, *War Economy 1942–45*, p. 477.
137. In contrast, nine to 15 months' stock had been available during the same period in 1942.
138. Hon. Herbert Vere Evatt, MP (1894–1965), Minister for External Affairs 1941–49.
139. Cable, Beasley and Keane to Evatt, PW77, 7 May 1943, document 181, in W.J. Hudson and H.J. Stokes, *Documents on Australian Foreign Policy*, Vol. 6 (Canberra: AGPS, 1975).
140. Cable 681, 12 June 1943, cited in Butlin & Schedvin, *War Economy 1942–45*, p. 477.
141. Shortages in other raw materials included limestone, zinc and lead concentrates.
142. Minutes of AWC, 13 May 1943, NAA(ACT): A2682/1, Vol. VIII. According to Royle since the inception of the convoy system only 0.85 % of iron ore ships sailing in convoy had been sunk.
143. Minutes of AWC, 11 June 1943, NAA(ACT): A2682/1, Vol. VIII.
144. For example, the sinking of *Wollongbar* on 29 April 1943 exacerbated the problems for a small fleet already reduced by requisitions and other wartime losses. The North Coast Steam Navigation Company subsequently experienced great difficulty in maintaining its coastal timber trade. Timber shipped in 1944–45 was approximately 4.3 million super feet, compared with 7.75 million super feet in 1943–44. Cited in J. Kramer, *Ships and Timber: a short history of Coffs Harbour port* (Surrey Hills: Light Railway Research Society of Australia, 1985), p. 16.
145. In June 1943 US Forces in Australia received an additional 58,000 tons of shipping for their exclusive use. By December some Canadian vessels had arrived for Australian coastal use. See Butlin & Schedvin, *War Economy 1942–1945*, p. 478.
146. Message, CSWPSF to NOIC Brisbane, 181651Z June 1943, AWM: AWM 69, 23/32.
147. Message, CSWPSF to various addressees, 190522Z June 1943, AWM: AWM 69, 23/32.
148. In future the tonnage limit for independent vessels was to be raised from 1200 to 2000 tons. The tonnage of vessels that could proceed off the NSW coast independently and at all hours was to increase similarly to 2000 tons. The minimum speed for vessels proceeding independently on off-shore routes was to be reduced from 12 to 11 kts. See letter, ACNB to Maritime Industry Commission, 30 July 1943, NAA: MP 1049/5, 2026/15/162.
149. Paper, 'Review of RAN War Effort', NAA: B6121, IT296B.
150. *William Dawes*, sunk on 22 July 1942, carried 5,576 tons of service cargo. The total included 286 military vehicles and sundry army stores.
151. PM's War Conference, 10 August 1942, NAA(ACT): A5954/1, 669.
152. Signal, NOIC Sydney to NOIC Newcastle, 070619Z May 1943, NAA: MP 1049/5, 2026/10/1491.
153. Barbey, *MacArthur's Amphibious Navy*, p. 55.
154. The *Sydney Morning Herald*, 15 November 1943.
155. Minutes of AWC, 13 May 1943, NAA(ACT): A2682/1, Vol. VIII.
156. Letter, Newcomb to ACNB, 5 May 1943, NAA: MP 1049/5, 2026/12/537.
157. On occasion convoys had to reduce speed so that the escorts could maintain station.
158. For example, storms on 19 May between Sydney and Gabo Island prevented any AMS from putting to sea. See RAN Daily Narrative, 20 May 1943.

159. When reporting the receipt of a R/T set and star shells in May 1943, the CO of HMAS *Mildura* concluded: 'These are very useful aids and will go a fair way to even up the disparity in equipment that seems to exist between the modern U-boat and the A.M.S'. See Monthly Report, HMAS *Mildura*, 1 June 1943, AWM: AWM 78, 221/1.
160. Monthly Report, HMAS *Lithgow*, May 1943, AWM: AWM 78, 206/1.
161. See C. Milligan & J. Foley, *Australian Hospital Ship Centaur: The Myth of Immunity* (Hendra: Nairana Publications, 1993).
162. Message, Curtin to Shedden, CAB 173, 25 May 1943, NAA(ACT): 40/31/383.
163. Minutes of AWC, 3 June 1943, NAA(ACT): A5954/1, 531/5.
164. Minutes of AWC, 3 June 1943, NAA(ACT): A5954/1, 531/5
165. In June Royle cited a convoy loss rate of only 0.175 % in Australian waters compared with 1.4 % in the Atlantic. Minute, Royle to Makin, 10 June 1943, NAA(ACT): A5954/1, 531/5.
166. See 'Report on a Visit to Australia, March 6th-28th, 1944', by CAPT A. Hillgarth (Chief of Intelligence Staff, Eastern Fleet), PRO: ADM 178/330, 53596.
167. Minute, Royle to Makin, 10 June 1943, NAA(ACT): A5954/1, 531/5.
168. Letter, CTF 78 to Carpenter, 27 June 1943, NAA: MP 1049/5, 1932/3/31.
169. USN submarines nevertheless continued to provide regular practical A/S training on an opportunity basis.
170. White, *Australian Submarines*, p. 175.
171. 'HMA Anti-Submarine School', in Worledge, *Contact!*, p. 33.
172. Minute, Royle to Makin, 10 June 1943, NAA(ACT): A5954/1, 531/5.
173. Memorandum, CinC US Fleet Convoy and Routing Section, 3 May 1943, NAA: MP 1049/5, 1844/2/12. At one stage, the level of classification of the USN's shipping reports from the American West Coast and Panama prevented them being seen by the Australians. To improve the situation Carpenter and Royle set up a special USN and RAN coding unit in Melbourne.
174. Despite these instructions Japanese submarine commanders found RAAF aircraft still tended to advertise their presence by frequent radio transmissions. See *Operational history of Japanese naval communications, December 1941 - August 1945*, Japanese Operational Monograph reprint (California: Aegean Park Press, 1985), p. 230.
175. Cited in Odgers, *Air War Against Japan 1943-1945*, p. 142.
176. Memorandum, CinC US Fleet Convoy and Routing Section, 3 May 1943, NAA: MP 1049/5, 1844/2/12.
177. Minute, Area Intelligence Officer to Bostock, 22 May 1943, NAA(ACT): AA1969/100/2, 6/2/22.
178. Letter, Bostock to Royle, 16 July 1943, NAA(ACT): AA1969/100/2, 6/2/22.
179. Letter, NOIC Brisbane to ACNB, 10 June 1943, NAA: MP 1049/6, 5241/21/21.
180. Inter-service contacts between individual officers were often good. Difficulties tended to occur at higher levels.
181. Letter, NOIC Brisbane to ACNB, 10 June 1943, NAA: MP 1049/6, 5241/21/21.
182. Aircraft at night were in the habit of dropping flares over convoys and escorts for identification purposes. The surface escorts complained that this had 'the effect of advertising our presence for 20 miles of our position.' See Monthly Report, HMAS *Lithgow*, May 1943, AWM: AWM 78, 206/1.
183. Report, 'Protection of Shipping on the Coast of Australia', June 1943, MP1049/5, 1932/3/8.
184. Message, Air Intelligence Officer to Senior Air Staff Officer, AOC, 22 May 1943, NAA(ACT): AA1969/100/2, 6/2/22.
185. Report, 'Protection of Shipping on the Coast of Australia', June 1943, NAA: MP 1049/5, 1932/3/8.
186. See paper, 'Surprise in attack', 22 June 1942, AWM: AWM 54, 505/6/2.

187. See A. Lambert, 'Seizing the Initiative: The Arctic Convoys 1944-45' in N.A.M. Rodger (ed.), *Naval Power in the Twentieth Century* (London: Macmillan Press, 1996), p. 152.
188. Message, Air Intelligence Officer to Senior Air Staff Officer; AOC, 22 May 1943, NAA(ACT): AA1969/100/2, 6/2/22.
189. 'Eastern Area Operational Bulletin', June 1943, NAA(ACT): AA1969/100, 6/2/24.
190. George Odgers observes that 'the key to the situation was the provision of more aircraft, and more escort vessels rather than the appointment of committees.' See *Air War Against Japan 1943-1945*, p. 149. However, this assessment ignores the underlying doctrinal problems with respect to offensive/defensive tasks.
191. The division between operational and administrative responsibilities in the RAAF caused some difficulties with the RAAF appointment. *ibid.*, pp. 148-9.
192. 'A/S School Confidential Instructions', Amendment No. 2, 9 June 1943, NAA: MP 1049/5, 1866/2/174.
193. Letter, Carpenter to Royle, 10 May 1943, NAA: MP 1049/5, 1932/3/31.
194. Minute, Spurgeon to Royle, 14 July 1943, NAA: MP 1049/5, 1932/3/31.
195. Minute, Spurgeon to Nichols, 2 Sep. 1943, NAA: MP 1049/5, 1932/3/31.
196. Minute, Spurgeon to Nichols, 2 Sep. 1943, NAA: MP 1049/5, 1932/3/31.
197. Minute, Spurgeon to Royle, 4 September 1944, NAA: MP 1049/5, 1932/3/31.
198. 'Eastern Area Operational Bulletin', July 1943, NAA(ACT): AA1969/100/2, 6/5/9.
199. This amended policy was never put to practical test. Author's emphasis.
200. See various correspondence, June-July 1943, on the RAN's endeavours to convene a conference on the matter. NAA: MP 1049/6, 5241/21/21.
201. Minute, Commander Dowling (Director of Plans) to Nichols, 12 July 1943, NAA: MP 1049/6, 5241/21/21.
202. I. MacFarling, *Air Power Terminology*, Aerospace Centre, Canberra, 2000, p. 134.
203. Letter Secretary Department of Air to Secretary Department of Navy, 1 August 1943, NAA: MP 1049/6, 5241/21/21.
204. Minute Storey, to Nichols, 16 August 1943, NAA: MP 1049/6, 5241/21/21.
205. Captain Reginald F. Nichols, RN, DCNS 1942-43.
206. Minute, Nichols to Spurgeon, 22 July 1943, NAA: MP 1049/6, 5241/21/21.
207. Minute, Storey to Nichols, 19 July 1943, NAA: MP 1049/6, 5241/21/21.
208. In the Atlantic the success of hunter-killer groups acting independently of convoys was limited to March-July 1944 and depended on extremely accurate intelligence. See Grove, *The Defeat of the Enemy Attack Upon Shipping*, p. 229.
209. Minute, Spurgeon to Royle, 26 Jan. 1944, NAA: MP 1049/5, 1932/3/31.
210. 'Submarine Operations in Operations Phase III', Vol. 1, p. 17.
211. Report, 'Japanese Submarine Activities in the SWPA', AWM: AWM 188, 6.
212. Assessment, 'Submarine Operations - August', September 1943, NAA(ACT): AA1969/100, 6/2/24.
213. 'Eastern Area Operational Bulletin', July 1943, NAA(ACT): AA1969/100, 6/2/24. The torpedoing of the cruiser *Hobart* west of Espiritu Santo on 20 July, took place outside the SWPA.
214. Assessment, 'Submarine Operations - August', September 1943, NAA(ACT): AA1969/100, 6/2/24.
215. Minute, SO (NCS) to Nichols, 9 August 1943, NAA: MP 1049/5, 2026/12/499.
216. Assessment, 'Submarine Movements During October', November 1943, NAA(ACT): AA1969/100, 6/2/24.
217. 'Submarine Operations in Operations Phase III', Vol. 1, pp. 35-40.
218. Report, 'Japanese Navy in Northern Solomons Area', undated, AWM: AWM 54, 519/1/11.
219. 'SWPA Intelligence Summary', No. 157, 20 November 1943, AWM: AWM 54, 505/4/10.

220. Letter, Captain Cruzon, USN to Carpenter, 8 November 1943, AWM: AWM 69, 23/32.
221. Letter Royle to Makin, 15 November 1943, AWM: AWM 69, 23/32.
222. Paper, 'Anti-Submarine Warfare Division Policy', 24 November 1943, NAA(ACT): 36/501/429.
223. Letters, Makin to Curtin, 20 November 1943, Minister for Defence to Department of Navy, 30 November 1943, and Department of Navy to Maritime Industries Commission, 4 December 1943, AWM: AWM 69, 23/32.
224. Letter, Seaman's Union to Makin, 13 December 1943, AWM: AWM 69, 23/82.
225. Various correspondence, 14-16 December 1943, AWM: AWM 69, 23/82.
226. 'Summary', undated, AWM: AWM 69, 23/16.
227. Letter, Royle to Makin, 19 January 1944, AWM: AWM 69, 23/82.
228. Message, CSWPSF to various addressees, 101000Z February 1944, AWM: AWM 69, 23/82.
229. Messages, CSWPSF to various addressees, 220329Z January 1944, 101005Z February 1944, AWM: AWM 69, 23/82. A/S patrols were maintained in the focal area off Sandy Cape and to seaward of the inshore shipping routes between Sydney and Smoky Cape.
230. Letter, ACNB to Chairman Maritime Industries Commission, 24 March 1944, AWM: AWM 69, 23/82.
231. Message, Royle to various addressees, 171030Z March 1944, AWM: AWM 69, 23/82.

The German Campaign – 1944-45 | 9

The sea area [off Sydney] would repay a generously planned operation with several boats.

Commanding Officer *U 862*, 27 February 1945.¹

During 1944 the Americans continued and strengthened their Pacific advance. Soon MacArthur was engrossed in his drive towards the Philippines and well past planning to defend the Australian continent.² Vice Admiral Kinkaid³ had replaced Admiral Carpenter as COMSOUWESPAC in November 1943 and, although still based in Brisbane, likewise had responsibilities far greater than local defence. With MacArthur having adopted a policy of amphibious assault to bypass Japanese strongpoints, the character of the war in the SWPA had become, in Admiral Royle's estimation, 'primarily naval'.⁴ Furthermore, Kinkaid was dual-hatted as commander of the USN's Seventh Fleet and, as he wrote shortly after arrival in Australia: 'I am interested only in the Allied Naval Forces when they are in contact with the enemy.'⁵

Still, neither Kinkaid's preoccupation, nor the Allied advance had effected a reduction in CSWPSF's responsibilities. Although Royle remained in Melbourne and remote from the centre of naval activity, each advance increased his area of responsibility, and by March 1944 one observer found him '...cheerful but unduly burdened'.⁶ Certainly, he must have found it difficult to focus on the defence of local waters. Convoys no longer sailed south of New Guinea and, though by mid-1944 Royle had more than 80 vessels suitable for anti-submarine escort under his operational control, most had moved north and closer to the scene of operations.⁷

Royle and the Naval Board were also attempting to cope with a myriad of other concerns. These ranged from the immediate problems posed by the expected arrival of the British Pacific Fleet (BPF)⁸ to the longer term creation of a balanced postwar navy. Makin, the Navy Minister, did little to defend the Service, and political neglect in favour of the RAAF and Army meant that Royle's major preoccupation was the manning of ships.⁹ Recruitment did not even meet wastage and the RAN was spread thinly, caught between a

concentration of Australian activity on the war against Japan and ‘the severe and increasing limitations on personnel and technical resources.’¹⁰

The RAN and RAAF still maintained some surface and air patrols at selected points around Australia, and held striking forces in readiness, but these were seldom front line units. In the RAN’s case they were usually vessels too small or old to be of use elsewhere, and were predominantly manned by reservists. Not that the reserves were incapable, but even the most enthusiastic commander found it difficult to forge an efficient team when tools were no longer appropriate and the appearance of even a friendly submarine was a rare event. The only anti-submarine training local defence vessels received with submarines was during the escort of USN boats to and from their patrol areas, and this had seriously reduced the standard of efficiency.¹¹ Moreover, with Japanese submarines maintaining their distance a certain amount of complacency had set in. As Air Commodore A.M. Charlesworth,¹² AOC Eastern Area, complained: ‘This has resulted in a general slackening off in procedure; [Navy] ships are seldom where they should be, and a minority of merchant ships identify themselves to aircraft.’¹³ RAAF patrols, meanwhile, had become routine—so regular that an observant enemy could have made an attack and withdrawal with little risk of discovery.¹⁴

A British perspective

Australian facilities no longer represented a key American concern, but the development of a fleet base area for the BPF was another matter. With the war in Europe winding down, Britain was determined to regain the prestige it had lost in 1942 after the fall of Singapore and henceforth play a major role in the preservation of the postwar order in the Far East. Even the Americans believed that one of the most important objectives of their foreign policy ‘must be to bring the British into the war ... in the Far East to the greatest possible extent.’¹⁵ Allied grand strategy against Japan directed that British efforts in the Pacific should be mainly at sea. After leaving sufficient naval strength in the Indian Ocean to maintain the safety of communications, all other available fleet units of the Royal Navy were to be concentrated in the SWPA.¹⁶ Administrative and support facilities were critical to the British commitment, and setting these up represented a huge strain on local resources.¹⁷ In April 1944 the Admiralty dispatched a British Naval Liaison Party (BNLP), headed by Rear Admiral C.S. Daniel,¹⁸ to assist in securing information. The BNLP undertook a wide range of planning activities including an examination of local defences, and in July they provided the Admiralty with an interim report on the state of the anti-submarine effort in the SWPA.

As regards material, the BNL discovered that the position was 'not as satisfactory as it was thought to be', which meant that asdic spares would have to be shipped from the United Kingdom for at least 12 months. The defences of Australian harbours Daniel assessed as 'adequate', but those in forward areas were a USN responsibility and 'more of a deterrent than a defence'. Notwithstanding their lack of practical experience, RAN ships were better trained than USN ships in carrying out submarine hunts, searches and attacks. Nevertheless, in comparison with the Atlantic and Mediterranean theatres, measures were 'not so highly developed' and 'anti U-boat warfare ... not pursued with the same degree of priority either by the U.S. Navy or R.A.N.' Daniel also detected little evidence of improved joint service operations. Local cooperation between ships and aircraft he assessed as poor, there were few targets available, and inferior communications made procedural training difficult. Furthermore, since 'anti-U-boat training is not treated as of major importance in the RAAF', Daniel expected little improvement.¹⁹

The report concluded that the generally poor performance of Japanese submarines and the restriction of German U-boat activities to the Indian Ocean made the general attitude in the SWPA understandable. Daniel did not, however, suggest that this policy be allowed to continue. He cautioned that the recent appointment of a new Japanese Navy Minister 'might lead to a complete reversal in strategy so far as [Japanese] U-boats are concerned.'²⁰ The enemy's submarines, Daniel warned, remained 'a potential menace which must always be reckoned with', and '...the possibility of further German support, both in U-boats and instruction, may well lead to Japanese U-boats adopting a more offensive policy on shipping at sea and in undefended harbours and bases.'²¹

Although a prudent forecast, the assessment owed much to the Royal Navy's Atlantic experience. In fact, the Japanese were still attempting to consolidate behind their defensive perimeter. The IJN had not discarded offensive submarine operations, but their doctrine remained flawed and their submarine force simply too weak to apply effective pressure on Allied sea communications.²² The Germans, though, were about to provide further support, and it was they who would continue the submarine campaign in the SWPA.

German U-boat planning

Between 1940 and 1943 the ACNB had continued to regard German U-boat operations as only a remote threat. U-boat Command had nevertheless been developing plans for operations in the Indian and Pacific Oceans since at least

1939.²³ For several reasons they had seen no need to implement them. To begin with, there were simply not enough of the large long-range U-boats available.²⁴ Second, the Germans did not wish to dilute the impact of their campaign in the North Atlantic, at least while successes were still being achieved and adequate targets were available. Third, as long as the surface raiders were applying distant pressure on Allied shipping, there was no urgent need to assist them. Finally, once they had actually entered the war on the Axis side, the Japanese proved to be less than supportive of a free-ranging German presence. They were, after all, ultimately seeking to reduce the influence of all Western powers in East Asia and regarded Indian Ocean operations as an IJN prerogative.²⁵

By mid-1943, the situation was very different. After unprecedented U-boat losses during the May convoy battles, the Germans temporarily withdrew their submarines from the North Atlantic. Having accepted that he could not stop the flow of Allied shipping, the German Navy's CinC, *Grossadmiral* Dönitz, thereafter moved to a dispersive strategy which attempted to tie down the greatest number of enemy forces. Such a course could only be regarded as a diversion rather than a main blow, but would at least allow the campaign to continue while improved submarine types were being developed. Accordingly, U-boat command actively sought distant areas in which to operate—areas where they expected Allied defences to be weaker and which would allow German strength to be conserved.²⁶ As one U-boat staff officer recalled:

In the light of the May crisis and the resulting need to seek less strongly defended areas, the Indian Ocean assumed a different aspect. Here was the only region within reach of our boats, in which according to available intelligence, shipping proceeded almost as in peace-time and where the defences lagged far behind those in the Atlantic. Thus the moment seemed propitious for extending operations further afield.²⁷

The Japanese had also reconsidered their earlier attitude. By late 1942, a succession of defeats and growing American pressure on their defence perimeter had left them in no doubt that they had embarked on a prolonged war. The Japanese still believed securing naval supremacy to be more important than a German-style tonnage war, but were willing to entertain some measure of strategic cooperation. Assistance to Germany, they reasoned, might offer their best chance of delaying defeat until achieving a compromise peace.²⁸ In December 1942, the Japanese naval staff conceded that they were anxious for another Axis naval power to make itself felt in the Indian Ocean, and were 'accordingly willing to grant either Italy or Germany a U-boat base ...along with the necessary fuel supplies.'²⁹

Japan and Germany were never able to develop or implement a common war strategy, but cooperation in the Indian Ocean through a joint submarine presence at least suited the aspirations of both partners. After operations south of Madagascar, in August 1943 *U 178* became the first U-boat to reach the Japanese submarine base at Penang. Already following *U 178* were the 11 long-range boats making up group 'Monsoon'. These suffered heavy losses during their passage through European waters, but by November four had reached the Far East. The reports sent back to Germany confirmed that opportunities were still far more favourable in the northern Indian Ocean than in the Atlantic. Dönitz therefore made the fateful decision that subsequently all long-range U-boats should be sent to the Indian Ocean as soon as they became operational.³⁰ U-boat Command continued to send boats throughout 1944 and until the end of the war in Europe. Many did not survive the Atlantic gauntlet, but at their operational peak up to 10 U-boats at a time operated from joint bases in Malaya and the NEI.³¹

The Australian operation

German U-boat operations in the Indian Ocean continued with varying success throughout the first half of 1944, and sinkings in distant areas made up more than 80 per cent of the tonnage sunk over this period.³² The U-boats at first tended to concentrate in the north-western corner of the Indian Ocean—the focal area of Allied tanker and freighter routes. However, in May 1944 one returning commander, *Kapitänleutnant* Lüdden,³³ suggested that a Monsoon boat should undertake preliminary reconnaissance of the areas south and west of Australia. In this way, if it were intended to make a surprise attack with a larger group of boats, the force could operate with a sound knowledge of the traffic and defence situation. Southern waters, Lüdden concluded, could provide a 'grand opportunity of being at last able to conduct a U-boat offensive again ... bridging the time until a new offensive in Home Waters can be undertaken.'³⁴

With attention focused on the Allied invasion of Europe, U-boat Command took no immediate action on Lüdden's recommendation. Nevertheless, the proposal resurfaced in September 1944 when the commanders of the Far East boats *U 862* and *U 168* suggested that they be allowed to operate off Australia before returning to Germany.³⁵ The commander of *U 862*, *Korvettenkapitän* H. Timm,³⁶ had been an officer in the German merchant navy before the war, and had spent some time in Australian waters in the early 1930s.³⁷ He therefore argued that he already possessed a basic understanding of the prevailing conditions.³⁸

On first glance, such an operation would hardly be an effective use of scarce assets. The U-boats that reached the Far East doubled as transports and on arrival were immediately loaded with raw materials desperately required by German industry.³⁹ Australia was not only in the opposite direction, but operations there could in no way be of direct significance to the European war. Even in the Pacific theatre, Australia could no longer be classified as a target of prime importance. However, keeping in mind the German aim of tying down Allied forces, an operation against Australia did have a certain logic. Dönitz consistently argued that Allied resources devoted to ASW were immense, and that to relinquish the U-boat war would allow these forces to join in the direct attack on Germany.⁴⁰ The sudden appearance of a U-boat in Australian waters would demonstrate to the Allies that they could not afford to lower their guard even in the remotest areas. Consequently, on 14 September 1944 Dönitz approved the Australian operation by *U 862* and *U 168*.⁴¹

Japanese planners were simultaneously exerting their own pressure for expanded U-boat operations. Japan had begun 1944 with some 75 operational submarines, more boats than it possessed in December 1941. But in the first eight months of the year the IJN lost 43 boats to Allied anti-submarine forces.⁴² During the same period, Japanese submarines managed to sink only 16 Allied merchant ships.⁴³ By September 1944, Allied intelligence routinely noted the complete absence of offensive efforts by Japanese submarines.⁴⁴ Rather than modify their doctrine, the Japanese turned to the Germans for relief.⁴⁵ In early September, the head of the Japanese Naval Mission in Berlin, Vice Admiral K. Abe,⁴⁶ asked Dönitz to increase the number of U-boats deployed to the Far East.⁴⁷ It is not certain whether the Japanese also suggested extending the operations of these U-boats into Australian waters, but any positive results derived from such operations would clearly be of primary benefit to the Japanese. Dönitz was evidently happy to assist for, at the end of September, he advised Abe that three U-boats would shortly deploy to Australia.⁴⁸

The Germans had allocated *U 537* as the third U-boat, and thereafter ensured that all three submarines received first priority for spares and equipment. Preparations were hampered by the lack of resources in the Far East but, of more fundamental import, Allied intelligence by this stage routinely intercepted and deciphered most Japanese and German naval communications. The text of Dönitz's message granting approval for the Australian operation was decrypted on the day following its transmission.⁴⁹ The British 'Eastern Fleet Intelligence Bulletin' broadcast the full text to American authorities on 17 September, and the information appeared in the FRUMEL (Fleet Radio

Unit Melbourne) daily summary on 18 September.⁵⁰ Thereafter the boats destined for Australia were regularly reported on as they moved between Japanese occupied ports. Not only were the individual U-boats accurately plotted, but the Allies could also closely follow the difficulties experienced by the Germans as they tried to match resources to boats.⁵¹

Reactions in Western Australia

Although Admiral Royle was unaware of the intended area of German operations, the proximity of their bases in the NEI to south-west Australia made deployments there seem most probable.⁵² Also missing from the intelligence appreciations was the exact nature of the mission. But the lack of defences in Western Australia and the presence of 10 British and Dutch and 41 American submarines made their Fremantle base a logical, though difficult target. The Australian port was the largest submarine base in the southern hemisphere and the second largest in the Pacific theatre. Rear Admiral R.W. Christie, USN,⁵³ the local submarine operating authority, believed that his submarines were inflicting so much damage on enemy shipping that the Japanese were bound to attempt an attack.⁵⁴ He and Royle both had access to signals intelligence information on a daily basis. Royle, however, normally dealt only with the special intelligence summaries. Christie in contrast received a much greater range of current operational material, and was first to act upon the information unwittingly provided by the Germans.

At a meeting convened on the morning of 18 September, Christie informed NOIC Fremantle, Commodore Cuthbert J. Pope,⁵⁵ and the AOC Western Area, Air Commodore R.J. Brownell,⁵⁶ of the new intelligence. Christie also presented his appreciation that the threat was directed more against submarines operating from Fremantle than against merchant shipping. He finished by warning that 'any increase in aircraft for seaward patrols could not be expected from American sources and that an increase of American anti-submarine surface craft could not be expected for at least a month, even if any were forthcoming at all.'⁵⁷

Pope had three corvettes in his area, but retained only HMAS *Dubbo* under his operational control. The other two, HMAS *Ipswich* and *Tamworth*, had been built on Admiralty account, belonged to the British Eastern Fleet and were only in Fremantle for refit. In view of his shortage of suitable A/S vessels Pope asked Royle for external assistance.⁵⁸ Subsequently CinC Eastern Fleet agreed to lend his two vessels to the ACNB when their dockyard work was completed,⁵⁹ while Royle ordered NOIC Sydney to transfer one and NOIC

Darwin three corvettes to Pope's temporary control. These latter reinforcements were to sail at best speed as soon as they were 'ready',⁶⁰ although they would be of little immediate use. NOIC Fremantle's war diary remarked: 'one had no [asdic] dome or gun, two others had defective A/S [equipment] and all required boiler cleaning.'⁶¹

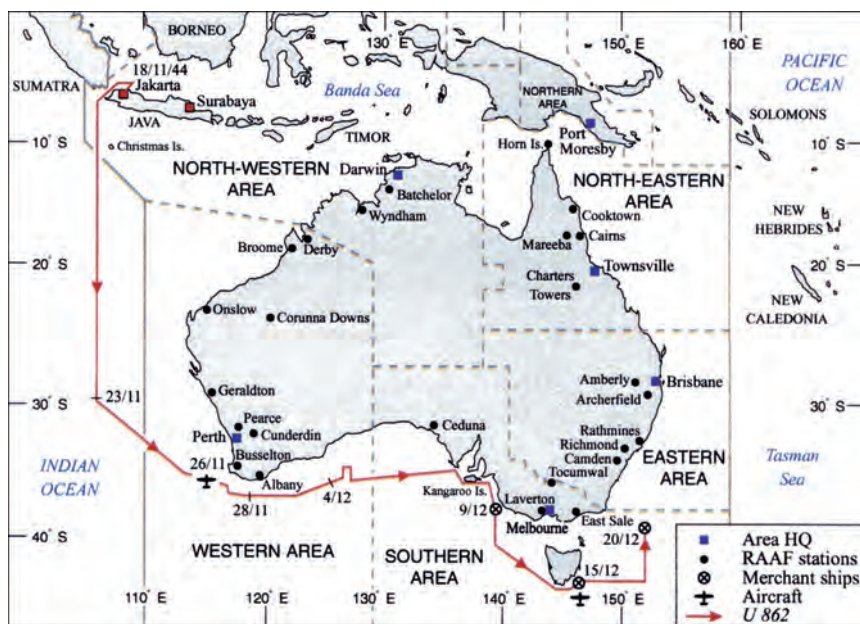
Meanwhile Christie, Pope and Brownell continued their preparations, placing port defences on alert and ensuring all Allied ships and submarines were provided with an escort when entering or leaving harbour. This was by no means routine, as no clear-cut delineation of responsibility existed between the three commanders, and any coordination was ultimately dependent upon their individual priorities. Complicating the provision of an effective defence, the prolonged absence of enemy submarine activity had caused a deliberate reduction in local anti-submarine measures.

Pope did what he could with the few assets he had left. The harbour was already protected by indicator loops, and he established patrols outside these with a combination of Fairmiles and USN coastal minesweepers. He expected these patrols to give early warning of an enemy submarine's approach and increase the torpedo firing range against anchored shipping.⁶² For offensive operations Pope formed his three corvettes, together with the USS *Chanticleer* and USS *Isabel*, into a 'hunter-killer' group under his direct operational control. The inclusion of *Chanticleer*, a submarine tender most nearly resembling a large tug, and *Isabel*, a small submarine training ship, confirms the somewhat desperate nature of these measures. As further corvettes arrived, Pope planned to establish a distant patrol 130 nm from Fremantle. Here he thought a corvette would be in a favourable position to attack a submarine surfacing to make a run in during darkness and able to render prompt assistance to any merchant ships attacked. The AMS and a few auxiliary M/S vessels also carried out 'LL' electric pulse sweeps to keep the approaches to Fremantle clear of magnetic mines.

A lack of assets similarly hampered Brownell. During the first months of 1944 the RAAF command had ordered a successive reduction in anti-submarine patrols. Since April aircraft had only provided close escort along shipping routes between Darwin and Thursday Island. The worst blow, however, came in mid-1944 when the USN withdrew Patrol Wing 10 and its Catalinas from their base near Perth.⁶³ This left the huge Western Area (see Figure 9.1), with a coastline stretching from the South Australian border to just north of Derby, without a capable anti-submarine aircraft. For its patrols Western Area retained

just 18 Beauforts belonging to No. 14 Squadron. These were based at Pearce and only 15 were considered serviceable. Nevertheless, from 19 September the squadron began carrying out what were termed ‘anti-submarine patrols of a special nature’.⁶⁴ Flown by two details, twice daily at dawn and dusk, the patrols covered an arc of 150 nm radius centred on Fremantle. They required approximately 22 hours’ flying each day and the squadron found it necessary to withdraw detachments from other areas to complete the assignment. Brownell also held three Beauforts in reserve as a striking force. The few USN aircraft still available patrolled directly over Christie’s submarine exercise area.

Figure 9.1 – RAAF Command, 1944



Sources: Gillison, *Royal Australian Air Force 1939-42*, pp. 386-7; Odgers, *Air War Against Japan 1943-1945*, p. 393; *KTB U 862*.

Royle, meanwhile, implemented measures for the wider protection of merchant shipping. From 19 September 1944, all westbound shipping to Indian Ocean ports was routed well dispersed so as not to pass less than 250 nm south of the coast between Albany and Cape Leeuwin. Ships bound for Western Australian ports were ordered to arrive during the three hours before sunset

and no navigation lights were to be burned west of 130 degrees east.⁶⁵ In consultation with Pope, Royle also considered the introduction of coastal convoys between Fremantle and Albany, but due to the shortage of escorts they decided to wait until the need developed.

The high state of alert maintained throughout the remainder of September and October ensured that authorities investigated any possible report. The presence of a suspected asdic contact or periscope sighting off Rottnest Island more than once resulted in the call-out of all available anti-submarine vessels and aircraft to conduct a search. Simultaneously the NCS system either diverted merchant ships away from the area or delayed sailings.⁶⁶ On each occasion, all exercises with Christie's submarines were cancelled and aircraft received authorisation to attack any submarines sighted. These operations, however, disrupted not only submarine training, but also aircraft maintenance.⁶⁷ Because of the adverse effect on engine hours, and an assessment that the enemy would be more likely to patrol closer to Fremantle, by November RAAF Western Area had reduced the patrol radius to 100 nm, the daily flight being conducted by one aircraft at last light.⁶⁸

The U-boats deploy

Adequate maintenance was also a German concern. The lack of appropriate facilities caused a series of delays which delayed *U 168*'s departure from Jakarta until 5 October 1944. Before continuing to the waters off south-west Australia the Germans programmed a one-day passage to Surabaya to complete battery trials. The particulars of *U 168*'s voyage were, as a matter of routine, passed to the local Japanese authorities who then, to ensure the U-boat's safety, transmitted them to remote units in the vicinity of its planned track. The details they provided included departure and arrival times, position at midnight and intended speed.⁶⁹

Unfortunately for the Germans, *U 168*'s passage details had already appeared in Allied special intelligence summaries. Christie had no intention of waiting passively for the enemy and, understanding the importance of out-of-area operations to local defence, he acted pre-emptively whenever possible. He ordered a suitably positioned submarine to attempt an intercept of *U 168* and, by dawn on 6 October, had the Dutch boat, Hr. Ms. *Zwaardvisch*, in place. The Dutch commander sighted the U-boat as expected and according to his report 'only five minutes late'.⁷⁰ A few minutes later he fired a full salvo of six torpedoes from only 900 yds and three hits ensured the U-boat's destruction. A number of survivors including the German commander were recovered for return to Australia, but the remainder had to await rescue by the Japanese.⁷¹

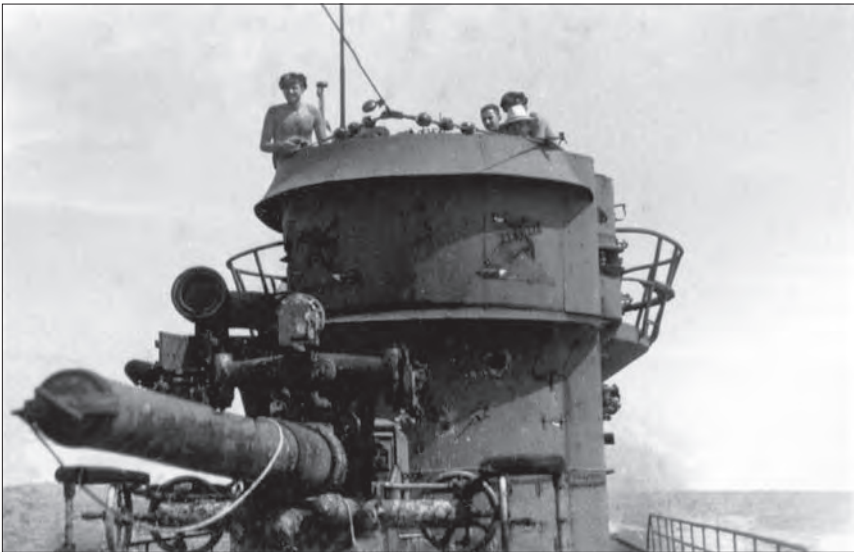
The loss in an area supposedly under Japanese control came as a shock to the Germans, and U-boat Command ordered a number of measures aimed at improving security and safety.⁷² The Australian operation, however, remained the principal offensive mission planned for the East Asia area. Despite the sinking of *U 168* the operation remained important, both as a means of offering practical support to the Japanese and as a demonstration that the U-boat arm was not yet a spent force. In early November 1944, U-boat Command ordered another boat, *U 196*, to south-west Australia as a replacement.⁷³

U 537, though, was the next boat ready to depart. It sailed from Surabaya on 9 November with orders to pass along the east coast of Bali and then proceed outward, bound for operations off north-west Australia in the vicinity of Darwin.⁷⁴ Five days before departure the Japanese Surabaya Guard Force helpfully provided complete details of the U-boat's program after leaving port.⁷⁵ Christie hurriedly drafted the appropriate orders and forwarded these to Darwin, where USS *Flounder*, *Guavina* and *Bashaw* had recently arrived from Brisbane. These three submarines were thereafter organised into a 'coordinated search and attack group', with *Flounder's* commanding officer as group commander. *Flounder's* attack took place at dawn on 10 November, only half a mile from the advised position and just as the U-boat altered course to pass through the Lombok Strait. *U 537* sank in 20 seconds without survivors.⁷⁶

U 862

Neither U-boat Command nor the Penang base expected to hear from *U 537* until near the end of its mission, and continued to send messages to the sunken U-boat until mid-January.⁷⁷ Royle was aware of the sinking, but still appears to have had difficulty maintaining an accurate appreciation of the situation. In particular it was not clear whether the three 'Australian U-boats' mentioned by Vice Admiral Abe in September included the two that Dönitz had previously scheduled to operate in the west.⁷⁸ So, although Royle had certain knowledge of the losses of *U 168* and *U 537*, as late as 29 November he informed NOICs Darwin and Fremantle that 'there are indications that two German U-boats may be operating on the West or North West coasts of Australia.'⁷⁹ Twenty-four hours later Royle sent out an addendum: 'a third German U-boat is expected to operate off the south west coast of Australia from early December.'⁸⁰ Air patrols off Fremantle were doubled, Christie's submarines were again put on the alert, and surface warships put renewed effort into anti-submarine patrols.

U 862 was one of the 'two German U-boats' mentioned by Royle with the 'third' being *U 196*. The latter sailed from Jakarta on 30 November and after passing through the Sunda Strait was due to first head west into the Indian Ocean to act as a refuelling stop for the homeward-bound *U 510*. *U 196*'s orders then directed it to operate off south-west Australia for one month before proceeding to Japan for battery renewal.⁸¹ Mechanical problems forced *U 510* to return to Jakarta and the Penang base cancelled the refuelling operation on the same day as *U 196*'s departure. Penang sent several recall orders, and a hastener on 15 December, but the U-boat failed to respond.⁸² On 22 December, U-boat Command informed all East Asian U-boats that an Allied submarine had probably sunk *U 196* shortly after sailing.⁸³ No claims were actually made by either British or American submarines and the Allies were just as baffled, although obviously grateful for the U-boat's disappearance. Most likely, it had succumbed to a marine accident.⁸⁴



U 862 on passage in South East Asian waters.
(RAN)

There remained only *U 862* to be dealt with, but *Korvettenkapitän* Timm had managed to slip out undetected from Jakarta on 18 November.⁸⁵ The U-boat remained well off the Western Australian coast during its passage south and turned towards the coast only when within striking distance of Cape Leeuwin (see Figure 9.1). Timm expected this would be a rich hunting ground, for shipping travelling in both directions would tend to cut the corner and create a local concentration of targets. He was therefore disappointed to find none, and after sighting a distant aircraft on 27 November decided not to take unnecessary risks. Timm proceeded further south and then turned east into the Great Australian Bight in the hope of finding a less well defended area.

After a week of fruitless searching for the primary shipping lane, the Germans correctly suspected that merchant ship traffic had been warned and directed away from the normal routes. Timm therefore turned his boat towards the Spencer Gulf. The western approaches to Adelaide formed a natural focal area and here there would be less possibility of re-routing shipping. On 9 December the Germans sighted the Greek steamship *Ilissos* in heavy weather just off the South Australian coast. Detecting the ship too late for a submerged attack Timm attempted to sink it with his deck gun. In the rough seas prevailing accurate fire could not be maintained and, as the ship's gunners had begun returning fire, the Germans soon decided to break off the attack.⁸⁶

The Australian response

Ordered out by AOR Southern Area, the first two Australian aircraft arrived over the *Ilissos* two and a half hours after the attack. The requirement to perform searches of probability areas and provide air cover for important shipping continued for the remainder of the month. Even without the added requirement for air cooperation associated with bushfire duties,⁸⁷ Southern Area found the increased flying load extremely heavy. Yet again the forces allocated to meet these operational commitments proved inadequate both in terms of numbers and capability, and the effort was only possible through the allocation of some aircraft from Eastern Area and the borrowing of others from maintenance and training groups. Even so, the lack of suitable operational aircraft still made a hunt to exhaustion impossible.⁸⁸ Despite the fitting of ASV, Southern Area's Ansons were found unsuited to night operations, and night searches were thereafter only conducted using three borrowed Beauforts.⁸⁹

NOIC Port Melbourne, Commander Heriot,⁹⁰ was the responsible naval authority and he had also been active. The corvettes HMA Ships *Burnie* and

Maryborough of the recently formed 21st Minesweeping Flotilla (MSF) were only 90 nm south-east of the position given by *Illissos* and intercepted the freighter about six hours after the attack. Weather conditions were exceptionally bad. The corvettes began an asdic search, but the seas were so rough that *Maryborough* found it necessary to house its dome to prevent damage.⁹¹ The two AMS vessels found nothing that night and the search continued through to the early evening of the following day. *Illissos* had by that time reached Melbourne and after interrogating several members of the crew, Heriot graded the submarine sighting 'A1'.⁹²

Australian intelligence had predicted that the U-boat would remain in the west, and as recently as 6 December the Naval Board had dismissed as unlikely an American tanker's report of a probable periscope sighted some 200 nm south of Kangaroo Island.⁹³ The attack on *Illissos* was the first definite information Royle had received, and the sudden appearance of Timm's U-boat off South Australia therefore came as something of a surprise. More importantly, the German commander still possessed the initiative, and the Australians could not be sure where he would go. The most likely site of operations appeared to be the Bass Strait focal area. The Naval Board immediately diverted two American military transports to Sydney (rather than Melbourne) and routed all merchant shipping, except local traffic, south of Tasmania. Additional measures taken included orders for ships to darken when west of 150 degrees east, to zig-zag when in southern Australian waters, to stream paravanes within the 200-fathom line,⁹⁴ and to maintain radio silence.⁹⁵

Concerns over the mining threat

In both world wars German surface raiders had mined the Bass Strait shipping routes, causing the loss of several ships. There had been no indication that *U 862* might be carrying mines, but Heriot, like Pope, ordered appropriate countermeasures. *Lismore* and *Maryborough* sailed on 12 December to carry out a precautionary mine-sweep. The western approaches to Port Phillip Bay were given first priority, then the main east-west shipping route. Heriot scheduled *Burnie* to assist from 14 December, while Royle dispatched another four corvettes from Sydney and ordered them to join in the search. Bad weather delayed completion and sweeping finally finished on 21 December with negative results. All seven corvettes returned to Port Melbourne, but Heriot ordered three to remain at four hours' notice for steam as an 'A/S and M/S striking and searching force'.⁹⁶

Timm, however, had accurately predicted where the Australians would concentrate their defences. *U 862* had detected the two searching corvettes on the night of the attack on *Illisos*, and Timm had even ordered the boat to surface in a brief attempt at identification. Having no mines aboard and still attempting to reduce risks, the knowledge that he was being hunted helped to determine Timm's next course of action. Rather than continue east he turned south and followed a route around the bottom of Tasmania. Here *U 862* came across a tanker on its way to New Zealand. Night and heavy rain made for a difficult approach, but it was the sudden appearance of an aircraft which finally thwarted the attack. Apparently mistaking the U-boat for the tanker, the aircraft attempted to exchange recognition signals and never discovered its mistake.⁹⁷ The U-boat crash-dived and escaped to the east, but soon turned back to make its way up the coast.

By 19 December, while the RAN vainly searched for mines in the west, *U 862* approached Bass Strait from the east. The following day Timm informed his crew that they were positioned on the shipping route between Melbourne and Wellington. The Germans detected a large number of targets, but in worsening weather conditions were unable to make any attacks. What made these missed opportunities particularly galling, however, was the lack of any obvious escort. After detecting yet another group of ships near Cape Howe, Timm lamented in his war diary: 'If we could only have had more boats it would have led to a *Paukensschlag* like that off the coast of America.'⁹⁸

U 862 continued north and on Christmas Eve 1944 caught up with the Liberty Ship *Robert J. Walker* in the approaches to Sydney. The first torpedo struck at 0230 and crippled the American ship. The vessel's master had received no warning of submarine activity and had ordered neither a zig-zag nor any other special precautions. In fact, he at first thought the propeller might have struck a free floating mine.⁹⁹ *U 862* intercepted the distress calls, and endeavoured to dispose of its target before assistance arrived at daylight. In just over three hours the German boat made another four torpedo attacks that finally left the vessel slowly sinking.

The RAAF search

The possibility that a mine had caused the damage to *Robert J. Walker* persisted as an idea for some time. On 27 December even Kinkaid asked Royle for his evaluation of the attack 'in view of the improbability of submarine having reached position ... without prior attack on other ships.'¹⁰⁰ Nevertheless, the Australians had not been completely unprepared. After the attack on *Illisos*

the RAAF had calculated that the offending U-boat could be in Eastern Area waters by mid-December, and offensive A/S patrols soon covered the NSW coast from Sugarloaf Point to Jervis Bay and 40 nm to seaward. From 11 December patrols were extended to Batemans Bay, one commencing at dawn and one terminating at dusk. From 14 December, RAAF intelligence estimated that the submarine could have reached the Brisbane area and patrols in Queensland were stretched to cover Double Island Point to Cape Byron and 60 nm to seaward.¹⁰¹

The first flaw in the RAAF plan appeared when the attack on *Robert J. Walker* occurred just outside the southernmost extremity of the then covered area. In fact, the first intimation of the attack came from NOIC Sydney's staff, who advised AOR Eastern Area that they had received an 'SSSS' signal.¹⁰² The RAAF expected to have some aircraft on the scene within two hours, however a succession of problems intervened. Delays in booking telephone calls due to the Christmas holiday period were compounded by prevailing serious dust storms. Three Beauforts were held on standby, but only one got airborne, and this aircraft did not arrive over the Liberty Ship until 10 minutes after the last and fatal torpedo had struck home.¹⁰³ Although Air Vice Marshal Bostock did not consider the delay excessive,¹⁰⁴ *Robert J. Walker's* master complained that the earlier arrival of an aircraft 'would in all probability have prevented the [last] torpedo hit, and the ship could easily have been towed to safety.'¹⁰⁵ By the end of the day the RAAF search had involved another 12 aircraft. Despite the intense coverage none of these aircraft made contact with the U-boat.

Charlesworth thereafter expanded Eastern Area's A/S patrols southwards to Green Cape. Along with these 'normal searches', however, were increased demands for the provision of air cover for warships and important military shipping. Eastern Area had arranged another 189 'special searches' by the time they finally abandoned the hunt on 9 January.¹⁰⁶ The RAAF described these efforts as 'searches to exhaustion', but the effects on *U 862* actually lasted much less than 24 hours.¹⁰⁷ The air coverage caused some initial tension, but by 26 December radar alerts had ceased and Timm and his crew began to relax.¹⁰⁸ The strain, moreover, also fell on the RAAF crews, and during thunderstorms on 27 December a Beaufort and its four-man crew failed to return to base.¹⁰⁹ In return, the RAAF credited its aircraft with a number of possible submarine sightings and two depth charge attacks. The last of these attacks occurred on 29 December after a pilot's sighting of an oil patch and a confirmed periscope off Moruya.¹¹⁰ Graded B2, RAAF intelligence assessed it as a highly probable contact with the U-boat. In fact, none of these sightings or attacks had taken place anywhere near the enemy.¹¹¹

The RAN search

If the RAAF felt that they had come closest to killing *U 862*, the RAN had at least not been idle. Unfortunately, even the *ad hoc* measures taken by NOIC Fremantle seemed beyond the resources of Pope's equivalent in Sydney, Rear Admiral G.D. Moore.¹¹² As recently as 22 November 1944, with no threat apparent, the RAN had paid off five A/S motor launches under NOIC Sydney's operational control. Moore's preparations before *U 862*'s arrival consisted solely of a request to Royle to re-task three motor launches.¹¹³ Instead of their existing coastal patrol duties, NOIC Sydney planned to use them for *Hobart*'s anti-submarine protection while the cruiser was in Jervis Bay working up.¹¹⁴

A torpedo from the Japanese submarine *I-11* had kept *Hobart* out of the war for 17 months, and the ship did not recommission until 7 December 1944. At the time of *U 862*'s attack on *Robert J. Walker*, *Hobart* was still at sea on 'shake-down' exercises. Cruisers were too large and unmanoeuvrable for ASW and *Hobart* retained its Type 132 asdic set only for self-protection. Royle certainly recognised *Hobart* as a liability rather than an asset in any hunt. When *Robert J. Walker* reported the enemy attacking for a second time CSWPSF ordered the cruiser to return to Sydney forthwith.¹¹⁵ As soon as *Hobart* was clear of Jervis Bay, Moore instructed the anti-submarine escort, the Fairmiles *ML 822* and *ML 829*, and the even smaller harbour defence motor launch *HDML 1341*, to proceed to the Liberty Ship's last known position.¹¹⁶ Another Fairmile, *ML 810*, joined them from Eden.

The small craft were only an interim measure, but were the best available until Moore could get vessels from Sydney. The first to reach the scene was the American patrol craft *USS PC-597*, which sailed with an RAN salvage officer embarked. Also sent from Sydney in what became known around the port as the 'Christmas Scare',¹¹⁷ were the 'Q' class destroyer *HMAS Quickmatch*, the auxiliary A/S vessel *Yandra* carrying salvage pumps, and the corvette *HMAS Kiama*. Moore ordered the first two to operate against the submarine while instructing *Kiama* to take *Robert J. Walker* in tow.¹¹⁸

Aware of the paucity of forces available to Moore, Royle had also been busy. With a succession of major ship movements underway as the BPF began its deployment to the Pacific, Royle was fortunate to have the four 'Q' class destroyers of the Royal Navy's 4th Destroyer Flotilla alongside in Melbourne. The destroyers—one, *Quiberon*, was Australian—had arrived on 24 December after screening the passage of major BPF units from Colombo via Fremantle. Early on 25 December CSWPSF informed Captain Onslow¹¹⁹ in *HMS Quilliam*

of *Robert J. Walker*'s position and ordered him to 'Take *Quilliam*, *Quiberon*, *Quality*, *Quadrant* under your orders and proceed with all despatch to area to search and hunt possible submarine.'¹²⁰

Also still in Melbourne were the three corvettes of the 21st MSF that NOIC Port Melbourne had hoped to use as a strike and search force. These were under the command of Commander Morris¹²¹ in *Ballarat* and Royle ordered them to proceed to Jervis Bay at best speed.¹²² On the way north the corvettes carried out a 50 per cent searching sweep for mines one mile either side of the inshore shipping routes from south of Gabo Island to Green Cape.¹²³ Royle ordered the four corvettes remaining in Melbourne to expedite boiler cleaning, but these were not expected to be available until 28 December. As a final measure CSWPSF ordered all merchant shipping to zig-zag between Brisbane and Adelaide, extinguish navigation lights and sail on separate north and south inshore routes.¹²⁴

Quilliam, *Quality*, and *Quadrant* sailed from Melbourne with instructions to carry out an asdic sweep passing 75 nm east of Gabo Island.¹²⁵ Captain Onslow then planned to head north at 28 kts carrying out a radar sweep through the night and to close *Robert J. Walker* at daylight on 26 December. Onslow allocated *Quiberon*, which departed a few hours later, a sweep adjacent to the 100-fathom line and instructed it to join the other three destroyers as early as possible.¹²⁶ On arrival at the scene, Onslow took command of all forces, sending *PC-597* back to Sydney, attaching *Quickmatch* to his formation and then using the five 'Q' class to carry out a coordinated asdic sweep. Since *Kiama* had a much slower searching speed, Onslow ordered the corvette to join *Yandra* and patrol between Montagu Island and Green Cape. Onslow attempted to coordinate his efforts with the RAAF patrols but found communications on the hunting frequency frustratingly poor.¹²⁷

The surface search for the U-boat continued until late on 26 December when Moore ordered it abandoned, directing the destroyers to return to Sydney while carrying out a final sweep along the 100-fathom line as they headed north. *Kiama* was similarly instructed to sweep along the 50-fathom line while the four motor launches headed back to Jervis Bay conducting a separate search closer in to the coast.¹²⁸ Working at a much slower pace, the corvettes continued mine-sweeping until 28 December. When this search also proved negative, Moore ordered their return to Sydney. The corvettes made their way slowly back up the coast anchoring in Jervis Bay overnight and leaving *Yandra* to continue a lonely patrol along the inshore routes between Sydney and Twofold Bay.

The supposed RAAF attack on 29 December forced a re-evaluation of the situation. Although the oil patch was in a position very close to where *Robert J. Walker* had sunk, NOIC Sydney presumably placed greater credence on the pilot's report of a periscope. He ordered *Quiberon*, the duty destroyer in Sydney, to proceed with all dispatch and investigate the sighting. To assist the destroyer Moore also allocated *Yandra, ML 810* still based in Eden, and the corvettes *Whyalla, Burnie, and Maryborough*, which were on passage through the area from Melbourne.¹²⁹ *Quiberon's* captain, Commander Harrington,¹³⁰ later reported ruefully to NOIC Sydney: 'In fact I made no contact with *ML 810*, HMAS *Whyalla* reported that her Asdic was out of action and *Maryborough's* was unreliable.'¹³¹

Moore, however, had already passed command of the search to Commander Morris in *Ballarat* who, with *Kalgoorlie* and *Goulburn*, had been ordered out from Jervis Bay. Harrington joined with Morris's Flotilla on the afternoon of 29 December and the combined forces swept east in formation until midnight. The weather was yet again 'most unpleasant', producing poor asdic conditions and limiting their speed of advance to only 7 kts. Even at this speed the corvettes pitched considerably and their asdic domes were frequently out of the water. The force then swept north—briefly detaching *Quiberon* to investigate a RAAF report of a disappearing ASV contact—until Moore cancelled the operation on the morning of 30 December.

The search results

U 862's brief presence had produced effects proportionately far greater than the scale of its direct activities. Already the air and surface search had been the longest and most extensive hunt for a submarine ever conducted in local waters. Yet it had found no trace of *U 862*. Excuses can be found in the weather and lack of suitable capability, and in fairness the first priority appears to have been protection of the inshore shipping routes. Nevertheless, despite more than five years of war Australia's major naval base and busiest commercial waters were still woefully unprepared for an enemy incursion. Without the fortunate presence of the 4th Destroyer Flotilla and 21st MSF—both ostensibly British fleet assets despite the presence of Australian manned ships—Royle and Moore would have been left with virtually no anti-submarine forces worthy of the name.¹³²

As for the air effort, like RAAF Western and Southern Areas, Eastern Area had discovered that the requirement to maintain striking forces in readiness and to fly regular offensive patrols left very few aircraft available for the escort

of shipping. A further reserve to carry out a serious 'hunt to exhaustion' around a submarine datum was simply beyond their capability. Once again, the tendency for aircrew to overestimate their effectiveness had resulted in an incorrect assessment of success. While the Australians were confident they were keeping the Germans terrified and out of harm's way, *U 862* had actually moved on. Unfortunately, the intelligence services could provide no clues to indicate where the U-boat might next strike. A critical shortage of military shipping still existed in the SWPA¹³³ and, further compounding what was already a dangerous situation, General MacArthur issued a directive on 27 December that allowed unloaded cargo ships to return to rear areas without escort.¹³⁴

The threat to the British Pacific Fleet

After detailed consultation with the Australians, the Admiralty had designated Sydney as the BPF's principal base. The fleet's main body, centred on four fleet aircraft carriers and a battleship, arrived in Sydney on 10 and 11 February 1945. Throughout December and January, however, other support and operational elements of the fleet had also been on the move. With the northern route through the Timor and Arafura Seas inadequately surveyed, they all came by way of southern Australia.

The exploits and subsequent disappearance of *U 862* caused some consternation among the CinC BPF, Admiral Sir Bruce Fraser,¹³⁵ and his staff. After Rear Admiral Daniel's assessment, the British had not expected to confront a U-boat in a supposedly safe rear area. The major units of the BPF were fully escorted, and the Australians did everything they could to ensure their safe deployment, but Fraser left nothing to chance. On 2 January, he bypassed the ACNB and wrote directly to Daniel, who had since been appointed commander of the Royal Navy's administrative headquarters in Melbourne, to request information on Sydney's anti-submarine defences.¹³⁶ Unsourced intelligence suggested that the U-boat might attempt to return to Jakarta through the Torres Strait, but in truth Timm could have been lying in wait almost anywhere.¹³⁷ As late as mid-January, the best Australian intelligence available to Fraser could note only that the U-boat might 'still be operating in Australian waters, as it is not due back at its base ...until the latter end of February.'¹³⁸

CSWPSF continued to arrange for the escort of important shipping using the corvettes and 'O' class destroyers whenever possible. However, with heavy commitments continuing elsewhere in the SWPA, there remained a general

lack of escorts.¹³⁹ Indeed, having recently offered several of the recently completed 'River' class frigates to the Commander Philippines Sea Frontier, Royle believed he could not afford to make a permanent allocation of vessels to local defence.¹⁴⁰ Although the ACNB soon placed the corvettes *Bathurst* and *Bowen* under NOIC Sydney's operational control it did so with the intention of retaining them in Sydney only until the submarine situation had clarified.

Rear Admiral Moore, meanwhile, attempted to set up a standing patrol along the inshore route between Newcastle and Jervis Bay using one of the corvettes from the 21st MSF. Yet even these vessels were not considered to be at a full operational state and Admiral Fraser preferred to keep them together 'because of the necessity for intensive training as a flotilla'.¹⁴¹ The corvettes were not actually transferred to the operational and administrative control of CinC BPF until 26 January, but after 10 January Fraser would only agree to their employment in an emergency for anti-submarine operations.

Several incidents provided just enough tension to keep forces alert. One of the first was an aircraft's report of a disappearing radar contact 30 nm off Newcastle on 2 January. NOIC Sydney ordered *Goulburn* to investigate, but a more worrying development appeared in an urgent signal from RAAF intelligence to RAAF Southern Area on 6 January.¹⁴² This stated that a submarine had possibly entered an area immediately east of Bass Strait and was proceeding westward. Assured that the source was 'highly reliable' NOIC Port Melbourne proclaimed a temporary area of probability 60 nm wide and 150 nm east of Hobart.

There was no merchant shipping in the area and instead Commander Heriot's initial concern was the safety of the troopship *SS Empress of Scotland*, carrying 3500 reinforcements for the New Zealand Division in Europe. Designated a 'Special Ship Class One', it had left Wellington for Hobart on 6 January with a close escort provided by *Quiberon* and *Quickmatch*.¹⁴³ RAAF Southern Area did its best to assist and allocated four aircraft to search 10 miles either side of the troopship's track during daylight hours.¹⁴⁴ *Empress of Scotland's* passage remained uninterrupted, but adding further credibility to the initial intelligence was a report on 11 January from the Liberty Ship *Alcee Fortier* that it had sighted torpedo tracks in a position 200 nm west of Hobart.¹⁴⁵

With the U-boat possibly on the move, and continuing pressure from Fraser not to involve BPF assets, Moore reduced his inshore requirement to a corvette patrol on no more than three days each week.¹⁴⁶ However, demonstrating

that even experienced teams could make mistakes, the training ship *Kybra* made a good asdic contact on 13 January 8 nm off Sydney.¹⁴⁷ *Quadrant*, *Lismore* and a Catalina were dispatched and searched until the following afternoon without success.

Another week passed before more specific intelligence concerning *U 862* became available. Sounding a little relieved, the Naval Board advised Fraser on 19 January that 'reliable information indicates that this craft is now on her way back to Javanese waters and it is therefore improbable that any enemy submarines are now operating in South East Australian waters.'¹⁴⁸ It was reliable intelligence because it had come directly from the decryption of a signal from U-boat Command to *U 862*. It was nevertheless premature in its implication that the U-boat was already safely out of the way. For the previous two weeks Timm had been operating around New Zealand, and to return to base he would have to return through Royle's area of responsibility.

The end of the German threat

Disappointed by the few targets he had found off New Zealand, Timm had already planned to recross the Tasman Sea and 'concentrat[e] on traffic north and south of Sydney'.¹⁴⁹ However, in mid-January 1945 he received orders to return immediately to Jakarta.¹⁵⁰ Allied aerial mining had made Penang untenable as a submarine base and the Germans were worried that Singapore might soon follow.¹⁵¹ In view of the urgency, *U 862* sailed directly west, but remained well south of Australia to avoid any air or sea patrols. Once past Cape Leeuwin the U-boat turned north and on 6 February stumbled across another American Liberty Ship, the *Peter Silvester*, on passage to Colombo. The attack was successful and the freighter thus had the dubious distinction of being the last Allied vessel to be sunk by enemy action in the Indian Ocean. The U-boat reached Jakarta safely in mid-February, and Timm's success encouraged him to recommend a larger operation against Sydney,¹⁵² but the suggestion came far too late to be acted upon. By the time *U 862* returned to Singapore, there remained only one operational boat in the Far East, *U 183*, and the Germans had already promised the Japanese that it would be employed off the Philippines.¹⁵³

The Australians had meanwhile attempted to maintain a track on *U 862*'s progress. Unfortunately, with imperfect intelligence they found that even the mere threat of an enemy submarine required a large and ongoing commitment. The number of local submarine-related incidents reported to CSWPSF rose to more than 20 in January, while RAAF Eastern Area made particular note of

the 'heavy' operations caused by suspected sightings.¹⁵⁴ Nor was the effect limited solely to eastern and southern Australia. On 15 January, NOIC Darwin promulgated a message stating that no fewer than seven submarines had been sighted west of Darwin. Consequently, four vessels surveying an important new channel through Scott Reef in the Timor Sea were instead detailed to carry out an asdic sweep and search.¹⁵⁵ Similarly, on the morning of 22 January aircraft made two separate sightings of a probable enemy submarine in Bass Strait.¹⁵⁶ Notwithstanding previous assessments that the U-boat was by now farther west, RAAF Southern Area responded by despatching a striking force of 11 ASV-equipped aircraft. A constant aerial patrol of coastal waters was already maintained to cover BPF movements, but owing to the continuing shortage of suitable, serviceable, aircraft only two units of the strike force actually came from Southern Area. The search continued for over 24 hours but, with *U 862* still half way between New Zealand and Tasmania, unsurprisingly it found no further trace of a submarine.

A more likely indication occurred on 28 January when the Intelligence Section, RAAF Western Area, was passed notice of a possible enemy submarine south-west of Fremantle and heading north-west.¹⁵⁷ The Beauforts of Western Area's No. 14 Squadron still maintained their daily anti-submarine patrol of the Fremantle sector, but as in Southern Area, they were now also struggling with the additional escort commitments brought on by the passage of the BPF. NOIC Fremantle requested that the RAAF act on the new intelligence. With No. 14 Squadron unable to accept any additional tasking, Western Area made use of some of the Liberator bombers belonging to the newly formed No. 25 Squadron. Between 29 and 31 January, the Liberators executed a search to 160 nm south-west and west of Cape Leeuwin.¹⁵⁸ Again no contact was made with the U-boat—which had actually passed by some 300 nm from the coast—but the Liberators had at least some idea of what to expect when a week later they were called out to search for survivors from *Peter Silvester*.

An alternative maritime strategy

The operation of German U-boats from Japanese bases in East Asia was one of the very few examples of Japanese-German tactical cooperation during the war, while the operation against Australia was probably the only serious attempt the Germans made to conduct an offensive directly intended to assist their Axis partner. The boats achieved some sinkings but were kept in check and, ultimately, the theatre was of no significance to the war's outcome. Several historians of the German war against merchant shipping have consequently argued that the Monsoon boats belonged in the Atlantic, and fairly summarised

U-boat operations in the Indian Ocean as 'misconceived, misdirected and tragically wasteful'.¹⁵⁹

Yet, such an assessment ignores the context of the times. Convinced of the righteousness of his cause, and without the benefit of hindsight, Dönitz was obliged to employ his U-boats in what he believed was the most cost-effective manner possible. Having lost the race to sink more shipping tonnage than the Allies could build, diverting Allied efforts away from areas more harmful to German interests was the only way to continue the U-boat campaign that made sense. From this perspective German operations in the Far East provide a useful example of a non-Mahanian maritime strategy in action. As Professor Till has pointed out, even with limited sinkings this

... was the traditional *guerre de course* notion of deliberately stretching the defences of a strong maritime adversary by posing a host of varying threats and ambushes against the whole of the world wide maritime communications on which that adversary depended.¹⁶⁰

U 862 was undoubtedly one of the most successful of the Monsoon boats. In the context of an alternative maritime strategy, its Australian operation deserves careful consideration, not for the number of Allied ships sunk, but because even without sinkings the threat posed by *U 862*'s presence could not be ignored. That Timm found few targets and sank only two ships was almost immaterial in this context. In fact, the day of the attack on *Robert J. Walker* was arguably the most successful of all for the U-boats in the latter stage of the underwater war. In terms of Dönitz's 'tie-down resources' strategy there were near simultaneous sinkings in the English Channel, in North American waters, and off Australia.¹⁶¹

The end of the war

The operation by *U 862* marked the last incursion by an enemy submarine into Australian waters. This was probably fortunate, for the Germans had demonstrated that, even at the end of the war, the RAAF and RAN were incapable of detecting or deterring an unsupported U-boat operating at the very limits of its capabilities. According to wartime analysis by the Royal Navy, submarines were being held in check if the rate of exchange (i.e. the number of merchant ships lost per U-boat destroyed) did not exceed three or four.¹⁶² This rate did not occur in the Atlantic Theatre until 1943. In the Pacific as a whole the rate of exchange was five ships lost for each enemy submarine destroyed during 1942, but reduced to a strategically acceptable 1.6 in 1943.

Within the confines of eastern Australian waters, however, enemy submarines consistently operated with a much more favourable exchange rate. In 1942 only one submarine was sunk for the loss of at least 10 ships, while in 1943 the Japanese sank outright another 11 ships at no loss to themselves.

Nevertheless, like the success of a submarine campaign, success in ASW cannot be measured simply by the total of sinkings achieved.¹⁶³ The aim is often to simply prevent the submarine from carrying out its mission. Moreover, in the prevailing circumstances the results achieved by the RAN and RAAF were by no means unusual. By their nature, submarines were extremely difficult to hunt, particularly without an adequate means of localisation.

Notwithstanding the many differences between the theatres, the Australian experience of success in coastal ASW does bear some overall comparison with the Canadian. Between 1939 and 1945 the RCN sank no submarine anywhere near the Canadian coast. Aware of their successes in other areas of the Atlantic and Mediterranean, the RCN had its operational research scientists conduct a comparative study. The study assessed only actual submarine hunts, rather than larger issues, but came up with a variety of reasons for the failure. The most important of these was a general lack of ‘experience and tactical training’.¹⁶⁴ Other reasons included too few assets for too big an area, the lack of shore-based operational staffs to coordinate searches, and poor asdic conditions. The majority of these factors might equally be attributed to the Australian experience, in conceptual terms if not in specific detail. Neither the RAN nor RAAF, however, thought it necessary to conduct a similar study.

Indeed, at war’s end the Australians made little or no attempt to profit from local experience. Deferring to British and American judgement, the enemy submarine campaigns were looked at as a whole and professional opinion conveniently forgot the concept of specific local vulnerabilities and the lack of Australian success. Consequently, and in common with developing trends in Britain and the United States, the Japanese submarine campaign was easily dismissed as a failure, and its local effects as ‘of no great account’.¹⁶⁵ Despite an abundance of evidence to the contrary, in 1946 the RAN’s senior staff officers concluded simply that the Japanese were ‘inexperienced in submarine warfare’ and their submarines an ‘easier target’ for anti-submarine assets.¹⁶⁶ The lessons of *U 862*’s isolated operations were likewise ignored or forgotten. For the coming generation of naval professionals, recollections of ASW would almost exclusively focus on the war-winning potential of the attritional campaigns conducted by the Germans and Americans in the Atlantic and Pacific Oceans respectively.

Notes

1. *U 862*'s short report 'Second War Patrol', 27 February 1945, NAA: B5553/1.
2. G.E. Wheeler, *Kinkaid of the Seventh Fleet* (Washington: NHC, 1995), p. 343.
3. Admiral Thomas Cassin Kinkaid, USN (1888–1972), COMSOUWESPAC and Commander Seventh Fleet 1943–45.
4. Submission 'A Review of the War Effort in the light of the Strategical Situation' to the AWC by Royle, 21 March 1944, cited in Gill, *Royal Australian Navy 1942–1945*, p. 471.
5. Letter, 15 June 1944, cited in Wheeler, *Kinkaid of the Seventh Fleet*, p. 346.
6. See 'Report on a Visit to Australia, March 6th–28th, 1944', by Captain A. Hillgarth, PRO: ADM 178/330, 53596.
7. This total included two destroyers (*Stuart* and *Vendetta*), 40 AMS, three frigates, two sloops and 35 Fairmiles.
8. See J.D. Brown, 'The forgotten bases: The Royal Navies in the Pacific, 1945', in Stevens, *The Royal Australian Navy in World War II*, pp. 100–10.
9. For a discussion of competing manpower proposals in 1944, see Wright, *Australian Carrier Decisions*, pp. 63–78.
10. Goldrick, 'Australian naval policy 1939–45', in Stevens, *The Royal Australian Navy in World War II*, p. 13.
11. Report, British Naval Liaison Party to the Admiralty, 28 July 1944, NAA: MP 1185/8 1932/3/44.
12. Air Commodore A.M. Charlesworth (1903–78), AOC Eastern Area 1943–44.
13. Odgers, *The War Against Japan 1943–1945*, p. 349.
14. The problem was not recognised until March 1945 after several exercises were carried out off Sydney with RN submarines. Narrative, see 'RAAF Maritime Trade Protection', p. 178.
15. Memoranda, Cordell Hull (Secretary of State) to President F.D. Roosevelt, 8 September 1944, cited in H.P. Willmott, *Grave of a Dozen Schemes: British Naval Planning and the War Against Japan, 1943–1945* (Annapolis: USNI Press, 1996), p. 134.
16. Gill, *Royal Australian Navy 1942–1945*, p. 465.
17. See J.D. Brown, 'The Fleet Train', in J.D. Brown (ed.), *The British Pacific and East Indies Fleets: 'The Forgotten Fleets' 50th Anniversary* (Liverpool: Brodie Publishing, 1995), pp. 88–9.
18. Admiral Sir Charles S. Daniel, KCB, CBE, DSO, RN, Head British Naval Liaison Party 1944, Vice Admiral (Administration) BPF 1945.
19. Report, British Naval Liaison Party to the Admiralty, 28 July 1944, NAA: MP 1185/8 1932/3/44.
20. This refers to the appointment of Admiral Mitsumasa Yonai in July 1944.
21. Report, British Naval Liaison Party to the Admiralty, 28 July 1944, NAA: MP 1185/8, 1932/3/44.
22. See Boyd & Yoshida, *The Japanese Submarine Force and World War II*, pp. 134–5.
23. A.W. Saville, 'German Submarines in the Far East', in *USNI Proceedings*, August 1961, p. 80.
24. The Type IXD U-boat, with a range of 31,500 nm, was designed in 1940 specifically to take the U-boat war into the far reaches of the South Atlantic and Indian Oceans. They did not begin entering service until 1943.
25. Intelligence Memorandum No. 62, 15 October 1944, OP20-G1 Memoranda to COMINCH F-21 on 'German U-boat activities October 1943–May 1945', USNA: RG457, SRMN 051A.
26. Minutes, Conference of the CinC Navy with the *Führer*, 31 May 1943, NAA: MP 1587/1, 1681.

27. Hessler, *The U-boat War in the Atlantic 1939–1945*, Vol. III, p. 15.
28. W. Rahn, 'Japan and Germany 1941–43: No common objective, no common plans, no basis of trust', in *United States Naval War College Review*, Vol. XLVI, No. 3, Summer 1993.
29. Report, 'Boat Bases and Refuges in the Far East', NID 24/T51/45, 28 August 1945, PRO: ADM 223/51.
30. Hessler, *The U-boat War in the Atlantic 1939–1945*, Vol. III, p. 48.
31. Saville, 'German Submarines in the Far East', pp. 86–7.
32. Hessler, *The U-boat War in the Atlantic*, Vol. III, p. 59.
33. *Kapitänleutnant Siegfried Lüdden, CO U 188 1942–44*.
34. 'Captured German document dealing with S/M warfare in the Indian Ocean', 6 May 1944, NAA: MP 1587/1, 167A.
35. D. Stevens, 'An Australian Paukenschlag', in *Australian Defence Force Journal*, July/August 1994, pp. 55–62.
36. *Korvettenkapitän Nikolaus Heinrich Timm (1910–74)*, CO U 862 1943–45.
37. G. Reiffenstuhl & R. Herrmann, *Kriegstagebuch von U 862* (privately published by ex-U 862 crewmembers), p. 9.
38. *Kriegstagebuch der Befehlshaber der Unterseeboote (KTB BdU)*, 14 September 1944 (Wilmington: Scholarly Resources, 1984).
39. Hessler, *The U-boat War in the Atlantic*, Vol. III, p. 65.
40. *KTB BdU*, 1 June 1944.
41. Message, BdU to Penang, 1846/14 September 1944, 'COMINCH File of U-boat Intelligence Summaries', USNA: RG457, Entry 9020, SRMN 037.
42. N. Polmar and D.B. Carpenter, *Submarines of the Imperial Japanese Navy 1904–1945* (London: Conway Maritime Press, 1986), pp. 43–8.
43. Rohwer, *Axis Submarine Successes*, pp. 272–5, 284–5.
44. Combined Operations and Intelligence Centre, 'Weekly Summary of Naval Activities', 17 September 1944, NAA: MP 1587/1, 316L.
45. Intelligence Memorandum No. 62, 15 October 1944, OP20-G1 Memoranda to COMINCH F-21 on 'German U-boat activities October 1943–May 1945', USNA: RG457, SRMN 051A.
46. Vice Admiral Katsuo Abe, IJN, Head Japanese Naval Mission in Berlin 1941–45.
47. Secret Telegram No. 842, 071550, 7 September 1944, PRO: ADM 223/271.
48. Message, Abe to Tokyo, 27 September 1944, in FRUMEL 'Periodic Summaries' 1944–45, NAA: B5553/1.
49. Remarks on message, BdU to Penang, 1846/14 September 1944, PRO: DEFE 3/736.
50. 'Declassified Traffic Intelligence Summaries of Japan Naval Forces', 17 September 1944, USNA: RG 457, SRNS 1516.
51. D. Gunton, *The Penang Submarines* (Penang: City Council of George Town, 1970), p. 33.
52. Message, NOIC Fremantle to CSWPSF, 180346ZSEP44, NAA: MP 1185/8, 2026/5/316.
53. Vice Admiral Ralph Waldo Christie, USN (1884–1960) CTF 71 (Submarines) 1942–45.
54. See 'Report on a Visit to Australia, March 6th–28th, 1944', by Captain A. Hillgarth, PRO: ADM 178/330, 53596.
55. Rear Admiral Cuthbert J. Pope, CBE, RAN (1887–1959), NOIC Fremantle 1943–46.
56. Air Commodore R.J. Brownell, CBE, MC, MM, RAAF (1894–1947), AOC Western Area 1942–45.
57. Letter, Pope to ACNB, 25 September 1944, NAA: MP 1185/8, 2026/5/316.
58. Message, NOIC Fremantle to CSWPSF, 180346ZSEP44, NAA: MP 1185/8, 2026/5/316.
59. Eastern Fleet War Diary, September 1944, NHB, London.
60. Message, CSWPSF to multiple addressees, 190900ZSEP44, NAA: MP 1185/8, 2026/5/316.

61. NOIC Fremantle War Diary, 1 October 1944 to 31 December 1944, AWM: AWM 78, 409/1.
62. Letter, Pope to ACNB, 25 September 1944, NAA: MP 1185/8, 2026/5/316.
63. Odgers, *The War Against Japan 1943-1945*, p. 349-50.
64. The 'Special Submarine Patrol Western Area' remained in operation until May 1945. Narrative, 'RAAF Maritime Trade Protection', p. 154-5.
65. Message, CSWPSF to all NOICs, 191358Z/SEP44, NAA: MP 1185/8, 2026/5/316.
66. On 29 September, for example, *Tamworth* reported confident asdic contact 11 nm north of Rottnest and made several attacks. All sailings from Fremantle were suspended and the only known incoming ship diverted to Albany. See RAN Daily Narrative, 30 September 1944.
67. The alerts each generated approximately 80 hours' additional flying.
68. 'RAAF Maritime Trade Protection', p. 155.
69. FRUMEL 'Periodic Summaries' 1944-45, 5 October, NAA: B5553/1.
70. Blair, *Silent Victory*, p. 743.
71. 'Captured German document dealing with S/M warfare in the Indian Ocean', NAA: MP 1587/1, 167A.
72. *KTB BdU*, 13 October 1944.
73. Message, Berlin to Tokyo, 4 November 1944, USNA: RG457, entry 9017.
74. 'Reports on German U-boats East of Capetown', July 1944-May 1945, OP-20-GI, USNA: RG457, SRMN 053.
75. FRUMEL Periodic Summaries, 10 September 1944, NAA: B5553/1.
76. USS *Flounder*, Report of Fourth War Patrol, US Submarine War Patrol Reports and Related Documents, 1941-45 (Washington: US Naval Historical Center, Microfilm Publication 4, 1994), ADFA: MF 33.
77. See, for example, message, Penang to *U 537*, 10 November 1944, cited in FRUMEL Periodic Summaries, 14 November 1944, NAA: B5553/1.
78. GHQ SWPA, ULTRA Intelligence Bulletins, Special Intelligence Bulletin, 6 October 1944. Copy provided to author by J. Bleakley.
79. Message, CSWPSF to NOIC Fremantle & NOIC Darwin, 290514ZNOV44, NAA: MP 1185/8, 2026/5/316.
80. Message, CSWPSF to NOIC Fremantle & NOIC Darwin, 300641ZNOV44, NAA: MP 1185/8, 2026/5/316.
81. Message, 041158 November, in 'Periodic summaries', 30 November 1944, NAA: B5553/1, Item No. 3.
82. DSD translations of cypher messages, 1945-46, NAA: B5555.
83. *KTB BdU*, 22 December 1944.
84. See A. Niestle, *German U-Boat Losses During World War II: Details of Destruction* (Annapolis: USNI Press, 1998).
85. The following details of *U 862*'s movements come from Reiffenstuhel & Herrmann, *Kriegstagebuch von U 862*.
86. Interview with AB/SG Stanley Henry Martin (DEMS gunner), December 1944, NAA: MP 1049/5, 2026/10/1771.
87. During December, two aircraft were especially earmarked for cooperation with the State Forestry Commission of Victoria.
88. A hunt to exhaustion aimed to prevent a submarine from finding an opportunity to refresh its internal air or recharge its batteries.
89. 'RAAF Maritime Trade Protection', pp. 165-6.
90. Commander Francis W. Heriot, RAN, NOIC Port Melbourne 1942-45.
91. Report of Proceedings, HMAS *Maryborough*, December 1944, AWM: AWM 78, 218/1.
92. RAN Daily Narrative, 11 December 1944.

93. RAN Daily Narrative, 6 December 1944.
94. The paravane was a towed wirecutter for defence against moored mines.
95. Gill, *Royal Australian Navy 1942-45*, p. 551; RAN Daily Narrative, 16 December 1944.
96. RAN Daily Narrative, 21 December 1944.
97. George Odgers incorrectly connects this incident with the attack on *Illissos*. See *Air War Against Japan 1943-1945*, p. 350.
98. J. Brennecke, *Haie im Paradies* (Preetz/Holstein: Ernst Gerdes Verlag, undated), p. 259. Operation *Paukschlag* was the successful German U-boat offensive off the American Atlantic coast. It began in January 1942, and in the four months it took the Americans to introduce effective A/S measures, 137 ships of almost one million tons were lost.
99. 'Interview with Murdoch Daniel MacRae', undated, NAA: MP 1587/1, 153X.
100. Message, CTF77 to CSWPSF, 271110 December 1944, NAA: MP 1587/1, 153X.
101. 'RAAF Maritime Trade Protection', p. 161.
102. Report, Eastern Area Intelligence Section to RAAF HQ, undated, NAA(ACT): 6/2/25, Box 5, 1969/100/2; RAN Daily Narrative 25 December 1944.
103. 'RAAF Maritime Trade Protection', pp. 161-2.
104. Odgers, *Air War Against Japan 1943-1945*, p. 351.
105. Gill, *Royal Australian Navy 1942-1945*, p. 553.
106. Paper, 'Possible submarine sightings off Australian coast', AWM: AWM 54 888/10/1.
107. 'RAAF Maritime Trade Protection', p. 162.
108. *KTB U 862*, 26 December 1944.
109. Odgers, *Air War Against Japan 1943-1945*, p. 351.
110. Narrative, 'RAAF Maritime Trade Protection', pp. 222-3.
111. *U 862* was already almost 150 nm out into the Tasman Sea and well outside the range of RAAF air searches.
112. Rear Admiral George Dunbar Moore, CBE, RAN (1893-1979) 2NM ACNB 1942-44, NOIC Sydney/FOIC NSW 1944-50.
113. RAN Daily Narrative, 22 November 1944.
114. RAN Daily Narrative, 18 December 1944.
115. Message, CSWPSF to *Hobart*, 241829ZDEC44, NAA: MP 1587, 153X.
116. Message, NOIC Sydney to ML's 822, 823 & 810, 241900ZDEC44, NAA: MP 1587, 153X.
117. W. Bulley, 'U 862—a coincidence', in *Naval Historical Bulletin*, Vol. 20, No. 3, February 1990, p. 3.
118. RAN Daily Narrative, 26 December 1944.
119. Admiral Sir Richard Onslow, RN, Captain (D) 4th Flotilla 1944-45.
120. Message, CSWPSF to Capt. D4, 241841ZDEC44, NAA: MP 1587, 153X.
121. Captain Franklyn Bryce Morris, OBE, RAN, CO *Ballarat* and Senior Officer (SO) 21st MSF 1944-45.
122. RAN Daily Narrative, 25 December 1944.
123. Message, CSWPSF to SO 21st MS Flotilla, 250114ZDEC44, NAA: MP 1587, 153X.
124. RAN Daily Narrative, 25 December 1944.
125. RAN Daily Narrative, 26 December 1944.
126. Message, Captain D4 to NOIC Sydney, 2506011ZDEC44, NAA: MP 1587, 153X.
127. Message, Captain D4 to NOIC Sydney, 252343ZDEC44, NAA: MP 1587, 153X.
128. Message, NOIC Sydney to Captain D4, 261141ZDEC44, NAA: MP 1587, 153X.
129. Message, NOIC Sydney to *Quiberon*, 282031ZDEC44, NAA: MP 1587, 153X.
130. Vice Admiral Sir Hastings Harrington, KBE, CB, DSO, RAN (1906-65), CO *Quiberon* 1944-45.
131. 'Report on operation of 29 and 30 December 1944', Harrington to Moore, 2 January 1945, NHD: SNHO papers, 1940.

132. Although Australia provided base support it had no say in the employment of the BPF. See P. Smith, *Task Force 57* (London: Crécy Books Ltd, 1994), p. 11.
133. Despite increases in commercial capacity, the Maritime Services Board remarked in their 1944 annual report that 'Trade at [NSW] ... ports is still seriously affected by the scarcity of shipping, and, except for two ports, there were further decreases in both the number of vessels and the tonnage of cargo handled.'
134. RAN Daily Narrative, 27 December 1944.
135. Admiral of the Fleet Lord Fraser of North Cape, GCB, KBE, RN (1888–1981), CinC BPF 1944–45.
136. Letter, ACNB to Fraser, 19 January 1945, NAA: MP 1049/5, 1855/15/2.
137. Paper, 'Enemy submarines on the Australian coast', 7 January 1945, AWM: AWM 188/40.
138. Letter, ACNB to Fraser, 19 January 1945, NAA: MP 1049/5, 1855/15/2.
139. RAN Daily Narrative, 1 January 1945.
140. RAN Daily Narrative, 5 January 1945.
141. RAN Daily Narrative, 10 January 1945.
142. RAN Daily Narrative, 7 January 1945.
143. 'Special Ship Class One' designated a vessel with 100 or more passengers.
144. RAN Daily Narrative, 6 January 1945.
145. '*U 862*', DSD translations of cypher messages 1945–1946, NAA: B5555. Intelligence continued to credit *U 862* with this attack until the end of the war.
146. RAN Daily Narrative, 10 January 1945.
147. RAN Daily Narrative, 14 January 1945.
148. Correction to letter, ACNB to Fraser, 19 January 1945, NAA: MP 1049/5, 1855/15/2.
149. *U 862*'s short report 'Second War Patrol', 27 February 1945, USNA: RG457, entry 9017.
150. FRUMEL Periodic Summaries, 22 February 1945, NAA: B5553/1.
151. See Stevens, *U-boat Far From Home*, pp. 183–4.
152. *U 862*'s short report 'Second War Patrol', 27 February 1945, NAA: B5553/1.
153. '*U 183*', DSD translations of cypher messages, NAA: B5555.
154. 'RAAF Maritime Trade Protection', p. 168.
155. RAN Daily Narrative, 16 January 1945.
156. 'RAAF Maritime Trade Protection', p. 167.
157. Gill, *Royal Australian Navy 1943–1945*, p. 553.
158. RAN Daily Narrative, 31 January 1945.
159. Saville, 'German Submarines in the Far East', pp. 80–92.
160. G. Till, 'Book Reviews', in *Journal of Strategic Studies*, January 1998, p. 140.
161. Rohwer, *Axis Submarine Successes 1939–1945*, pp. 188, 210, 287.
162. Paper, 'The U-boat Phase of the Japanese War', c. 1944, PRO: ADM 219/232.
163. Jock Gardner shows that sinking the enemy was only one of several means of ASW and, although useful, not the end itself. See Gardner, *Anti-Submarine Warfare*, pp. 7–8.
164. Milner, *The U-Boat Hunters*, p. 263.
165. Article, 'Survey of operations of Japanese submarines in Australian coastal waters during Pacific War', in *Australian Station Intelligence Digest*, 1 August 1949, p. 22.
166. Minute, to Captain Buchanan (DCNS), 1 May 1946, NAA: MP 1049/5, 2026/8/755.

ANZAM, ANZUS and ASW – 1946-54 | 10

The vital requirement is to think in terms of the future development of submarine warfare, and to evolve measures appropriate to its counter, rather than to rely on measures which have been efficacious in the past.

Commander 4th Submarine Squadron, Sydney, 7 December 1953.¹

Like other Commonwealth navies, the RAN's permanent personnel had spent most of the war in major fleet units and their active service had focused on fleet rather than trade protection operations. In 1945, the majority of A/S officers belonged to the RANVR,² and in consequence the prestige of the qualification was not particularly high.³ In fact, since 1939 only three permanent officers had graduated from the Royal Navy's long A/S course.⁴ Even in 1942, at the height of the German U-boat campaign, an Australian officer on sub-lieutenant's courses in England had found that ASW was trivialised: 'We were marked for seamanship, gunnery, torpedo, navigation and signals; ASW was just an information course, a break between the serious courses.'⁵

Hence, with the end of reserve training in 1945, and their rapid demobilisation thereafter, the RAN was again left with a bare minimum of ASW experience.⁶ Although the Australian Navy does not seem to have displayed the extremes of rejection since attributed by some historians to the RCN, there were no doubt many of the same influences at work.⁷ In sum, 'traditional' naval operations held sway: A/S officers were not generally regarded as serious contenders for senior rank;⁸ and the permanent members of the naval profession generally ignored the small ship anti-submarine war. In these circumstances, the position of ASW in the postwar warfighting hierarchy took time to establish, and not until 1948 did the first RAN officer complete the revised long 'TAS (Torpedo Anti-submarine)'⁹ course.¹⁰ Yet notwithstanding the RAN's lack of interest, during the final phase of World War II the whole science of underwater warfare had begun to change.

Advances in ASW had spurred both the Germans and Japanese to introduce innovative technical and weapons developments. By 1945 anti-ASDIC cladding, submarine-launched missiles, wakeless guided torpedoes, and air-independent

propulsion were all in various stages of production or development. The Germans, for example, designed the Type XXVI U-boat around the Walter hydrogen-peroxide gas turbine engine.¹¹ No longer forced to rely on air-breathing diesel engines to recharge its batteries, the Type XXVI was arguably the first true submarine. Capable of reaching 24 to 26 kts underwater, the Walter system never achieved wartime service, but even for conventionally powered craft, the 'Schnorkel' breathing apparatus (snort), streamlined hull design and improved batteries provided appreciable improvements in stealth, speed and manoeuvrability.¹²

As the postwar atomic tests soon emphasised, moreover, the modern heavy-hulled submarine was surprisingly tough.¹³ This feature offered not only protection, but also allowed it to cruise at far greater depths. Even as the Allied armies advanced into Germany the Admiralty warned that enemy submarines would be far harder to seek out and destroy than ever before. To many naval authorities at war's end, the U-boats were still 'to all intents and purposes undefeated at sea.'¹⁴ Advances in submarine technology came too late for the Axis powers, but they had effectively rendered obsolete, not just earlier submarines, but also most of those surface A/S forces that existed in 1945. A submarine able to exceed 15 kts underwater could manoeuvre inside a hunting ship's turning circle, and hence stay outside the firing arc of both depth charges and short-ranged ahead-thrown weapons such as Squid and Hedgehog.

In the wake of the atomic bombing of Japan, however, came an even more significant development—one that would shortly see the role of some submarine forces undergo a fundamental change. During the war, both the Germans and Americans had shown the potential for an underwater campaign to have decisive effect, but only as part of a drawn-out campaign of attrition.¹⁵ The advent of atomic weaponry offered far more immediate results. In early 1948 an Australian intelligence report warned: 'guided missiles plus atomic fission plus the modern submarine equal a weapon of strategic application as well as tactical attack.'¹⁶

The rise of the Soviet submarine threat

In the aftermath of World War II only the Soviet Union and United States could claim the status of great powers, and in the increasing global competition of the Cold War most nations rapidly aligned themselves with one or the other power bloc. Essentially a continental power, the Soviet Union possessed maritime forces better suited to local defence, but their existence provided



Asdic dome, HMAS *Anzac* (II).
(RAN)

Western navies with a partial answer to some of the hard questions posed by postwar defence commentators. With the defeat of the Axis powers some critics argued that navies had become irrelevant. The immediate threat appeared to be the Red Army advancing through Western Europe, and air-delivered atomic weapons provided a new strategic reality. Thus idealistic advocates of strategic bombing could plausibly claim that, while the use of sea power against a continental foe took time, air power in contrast could deliver an immediate 'knockout blow'.¹⁷

Other more practical analysts predicted that a short nuclear exchange might still evolve into a drawn-out conventional conflict, leaving Western victory again dependent on Atlantic resupply.¹⁸ As the commitment of ground forces to the NATO (North Atlantic Treaty Organisation) alliance grew, so too did the need to maintain secure strategic links, and theoretically the Soviets could contest Allied sea control. The submarine arm had been one of the Soviet Navy's most efficient branches during the war and its personnel were regarded as an elite. Western navies soon recognised the implications, and as early as 1946 intelligence publications described the Russian submarine fleet as of 'growing importance'.¹⁹ Although many gaps existed in their information, the Western allies calculated that the immediate postwar Soviet Navy possessed well over 200 submarines.²⁰ These, however, were old designs built primarily for the defence of Russian sea-space, and far more worrying to planners was the potential threat.

The Soviets had received 10 U-boats as their official share of the Tripartite allocation, and at least another 50 of various advanced types had been salvaged or removed in an unfinished state and towed to Russian yards.²¹ Like the Japanese in 1919, at war's end the Soviets were quick to import the best German equipment and technical personnel. The West feared that when new production began the Russians were likely to incorporate the latest German developments, and submarines which had hitherto played a defensive role, would thereafter possess an 'offensive ocean reach'.²² Indeed, at the end of 1946 the Admiralty predicted that a Soviet design with closed-cycle propulsion could well appear in significant numbers before 1949.²³ When in 1948 a Soviet Admiral spoke of an imminent program to produce 1200 new-design submarines, Western navies could not help but take note.²⁴ Adding to these concerns, the Soviets detonated their first atomic device in 1949. The following year the US Central Intelligence Agency declared that the Soviet bomb could only be delivered by submarine.²⁵

Unfortunately, in addition to the usual difficulties surrounding the collection of accurate intelligence, the Soviets habitually concealed all military activity. In the days before space-based surveillance, Western assessments of Soviet developments were heavily dependent on human sources, and often unreliable. We have already discerned how defence professionals tend towards worst-case scenarios. Assessments of the Soviet submarine threat were inclined to interpret every experiment or statement of interest as evidence of both capability and intention, and analysis of Soviet naval strategy was consistently coloured by comparisons with the recent U-boat campaign.²⁶ With the exception of the newly emerging threat of atomic weaponry, the capabilities, missions, and production rates of Soviet submarines simply replaced those of the Germans in Western intelligence assessments. Hence, from an early date the postwar Soviet submarine force cast a shadow over Western plans to repeat the World War II convoy and escort strategy and, during the Cold War, open-ocean ASW dominated virtually all Allied maritime planning.²⁷

In fact, Western intelligence completely misread the early signs, and almost two decades passed before most analysts realised that the Soviet Navy had neither the capability nor intention of embarking on a tonnage war in the early 1950s.²⁸ The Soviets did put in place an unprecedented peacetime submarine construction program, but at first they remained focused on defence of their own waters, and took far longer than expected to assimilate German technology.²⁹ But these latter facts took time to emerge. Meanwhile, the appearance of the *Whiskey* class in 1951 and *Zulu* class in 1953 offered evidence of ‘large’ and ‘very large ocean-patrol submarines ... in serial production’ and ready support to those seeking evidence of Soviet offensive intentions against Western sea communications.³⁰

Threats and Australian postwar planning

Although the Naval Board kept the future of the RAN continually under review, not until September 1943 did planning for the postwar navy really begin. Dismayed by what he saw as a lack of maritime understanding displayed by General MacArthur’s air advisors, Admiral Royle had asked for something to ‘flourish under the noses of the Chiefs of Staff and make the opponents to Sea Power read.’³¹ The completed staff paper took a remarkably self-reliant stance and used recent experience to show ‘beyond all doubt that the scheme for defence of Australia must be based, of necessity, on a strong Naval arm.’³² Australia’s naval needs, the paper found, were fourfold: maintenance of oceanic and coastal sea communications; destruction of the enemy’s sea communications; attack on the enemy’s strategic positions in combined

operations; and, defence of local bases. Priorities matched the listed order, and after noting Japan's fortunate decision not to use its submarines 'principally against our communications', the paper concluded: 'It is too much to hope that a future aggressor in the Pacific will make this mistake.' At this point the RAN had no doubt that the best defence against submarines lay in suitably escorted convoys, and the postwar navy therefore needed some 40 escort vessels, ranging from corvettes to escort carriers.

In spite of Royle's best efforts, the war had seen a much greater relative expansion in the Army and Air Force, and the Navy would not find it easy to regain its primacy in defence planning. At war's end the Army received more money, the Air Force argued that Australia's future defence was 'in the air', and Cabinet debated the need for traditional defences in the coming era of 'push-button warfare'.³³ But though militant communism soon eclipsed a possibly re-armed Japan as a cause for Australian concern, by no stretch of the imagination was a credible threat to the mainland evident. Indeed, the first postwar strategic review considered Australia to be far removed from the potential theatres of war in Europe and Asia.³⁴ Nevertheless, the unchanging circumstance of Australia's geo-strategic situation retained the negative aspects of great physical size and isolation from allies. A temporary absence of threat notwithstanding, without help Australians still felt unable to deal with a heavy sustained attack. The Commonwealth's defence policy therefore maintained its basic premise that Australia would require substantial help from allies. To both engender this obligation and promote international peace and security, Australia looked to place forces at the disposal of the British Commonwealth and the United Nations.³⁵ Local defence requirements remained, but only as a secondary consideration, and in practice collective security became the basis of national defence policy.

Consequently, in stark contrast to the prewar situation, there developed an appreciation that the Australian services needed to move away from a small core of regulars supported by a larger force of reserves.³⁶ There was not only a willingness, but also an expectation that all three services would deploy expeditionary forces overseas, and policy guidance subsequently required all forces to maintain significantly higher readiness levels. Underlying this platform, however, the understanding remained that Australia's national existence depended on the integrity of its sea-lanes, and that in time of war these might be 'seriously interrupted thousands of miles from her ports.'³⁷

The 'basic foundation of [Australia's] defence problem was the protection of the merchant ship' opined the CNS, Vice Admiral Sir Louis Hamilton,³⁸ in



Naval Board, 16 February, 1949.
(RAN)

Commodore G. Willoughby, R.N. – Fourth Naval Member.
Engineer Rear-Admiral J.W. Wishart, O.B.E. – Third Naval Member.
Commodore H.A. Showers, C.B.E., R.A.N – Second Naval Member.
Rear-Admiral J.A. Collins, C.B. – First Naval Member.
A.R. Nankervis, Esq. – Secretary, Navy Department.
R. Anthony, Esq. – Finance Member.
T.J. Hawkins, Esq. – Secretary, Naval Board.

1947.³⁹ Only by protecting its sea communications could Australia contribute to collective security, obtain overseas reinforcements, and maintain the two-way flow of commerce. Offensive air power might be 'seen as a necessary condition for victory',⁴⁰ but the need for an inclusive maritime strategy still maintained its adherents. As the Minister for Defence, John Dedman,⁴¹ later phrased it: 'Notwithstanding all the changes and developments in weapons, the British Commonwealth still remains a maritime Empire dependent on sea power for its existence.'⁴²

In spite of a virtually unchanged strategic basis, with the new emphasis on expeditionary warfare the Navy's postwar priorities had shifted. Although a wartime project to acquire a light fleet carrier had not gone ahead, in its revised warfighting concepts the RAN still hoped to base its future fleet around aircraft carriers. In the Naval Board's view, these had become the primary offensive naval unit, and their acquisition would allow the Navy to conduct independent activity against a variety of threats. Indeed, this was consistent with the force structure initially envisaged by the Defence Committee, the Government's main advisory body on defence policy.⁴³ In its 1946 report on the nature and functions of the postwar forces, the Committee recommended three major roles for the RAN. The first of these, the provision of a balanced task force centred on two carriers, would act as a contribution to Empire security. The third function also related to expeditionary warfare, and required the RAN to maintain assault shipping for combined operations with the Army. Between these two roles lay the provision of a 'sea frontier force of escort, minesweeping, harbour defence and surveying craft.'⁴⁴

The local defence of trade clearly came within the purview of the sea frontier force, but to defend sea communications further afield the Committee sought to rely on outside help. To this end, they recommended that the RAN's task force should operate in conjunction with a powerful Empire or Allied Fleet. Exactly who might contest Allied sea control had yet to be defined, but in threatening Australia's commerce the enemy might dispose 'aircraft carriers ...disguised raiders and submarines'.⁴⁵ Since only the Western Allies maintained carriers, and no obvious naval rival yet existed in the Asia-Pacific region, the depth and quality of the Committee's early threat analysis might justifiably be questioned. Still, it allowed the RAN to gain approval for naval aviation, and, by 1948, the major proportion of the defence budget (see Table 10.2). The endorsed Five Year Post-war Plan (1947-52) subsequently provided for a commissioned force which would consist of two carriers, two cruisers, six destroyers and three frigates.⁴⁶ This was not yet a fleet designed primarily for ASW, and only the three frigates had a specific role as escorts.⁴⁷

However, as the perceived Soviet submarine threat grew in the Western hemisphere, so it likewise impacted in the East and inexorably gained priority consideration. By early 1949, communist forces were close to achieving victory in the Chinese Civil War and the DCNS, Captain Gatacre,⁴⁸ had no doubts that the communist pursuit of ideological and territorial expansion was the only foreseeable threat to world peace.⁴⁹ By the time of that year's budget debate, the Navy Minister, W.J.F. Riordan,⁵⁰ could publicly declare that, in the event of war, enemy submarine attack would be 'the greatest potential threat to our sea communications'.⁵¹

A collective security strategy and the defence of sea communications

Australia, of course, did not face the Soviet Pacific threat alone. But collaborative defence plans took time to develop, and the lack of consistency in both Australian and British Far East policy in the late 1940s made matters doubly difficult.⁵² Despite Prime Minister Chifley's⁵³ 1946 declaration that Australia must make a larger contribution towards defence of the Empire's Pacific interests,⁵⁴ the Service chiefs at first expected to send their forces to support Middle East operations. At this point British planners still regarded the Far East as an unlikely theatre of war. Australia did not finally abandon the Mediterranean commitment until 1954 and, for much of the interim period, the RAN's attention was divided between regional responsibilities and the Middle East where many believed 'we should be'.⁵⁵ Gradually, however, Australian political pressure forced attention to refocus on the Far East.⁵⁶ The shift gained further emphasis as it became clearer that yet again the British could not afford to retain a significant fleet east of Suez and that in a global war the hard-pressed Royal Navy would withdraw to home waters.⁵⁷ Similarly, the USN's resources were 'not unlimited' and likely to be concentrated elsewhere.⁵⁸

Western strategy in a global war against communism specified the security of sea communications linking main support areas with combat theatres as one of its three main pillars.⁵⁹ In April 1948, Defence Minister Dedman announced that the Commonwealth's immediate and particular defence interest was the development of Australia as a main support area, and that strategic planning should 'encompass a zone vital to the security of Australia'.⁶⁰ Early the following year the government gave approval for the RAN to proceed with planning in connection with:

- (a) Delineation of a zone in which Australia assumes the initiative for defence planning in peacetime; and
- (b) Defence of vital sea communications.⁶¹

The proposed zone included certain sections of the British Far East Station, including Singapore, and after a series of high-level discussions this became known as the ANZAM (Australia, New Zealand and Malaya) Region.⁶² The boundary was agreed in 1950 and the British proposed an Allied high command structure to deal with defence planning and cooperation in the area. Consequently, in the event of war, the ANZAM Chiefs of Staff, operating through the Australian higher defence machinery, became the responsible authority. Having then defined Australia as a main support area, and the Malayan peninsula as the most likely scene of regional combat, it followed that 'the security of sea communications within the ANZAM Region is a first priority within the Region' observing, moreover, that they were 'an integral part of the Allied World Sea Communications'.⁶³

The USN connection

Wartime ties notwithstanding, in the immediate postwar period the United States displayed an unwillingness to join a Commonwealth security pact in the South-West Pacific. American authorities were, in principle, totally against entering alliances and simply did not perceive Australian security as a continuing commitment, responsibility or problem. Yet, Australian lobbying and the need to coordinate planning between the ANZAM Region and the USN's Pacific Theatre did lead eventually to the signing of the Radford-Collins Agreement in March 1951. Hamilton's successor, Rear Admiral John Collins, had been seeking to make practical arrangements with the USN's CinC Pacific since at least 1948,⁶⁴ and with British support his persistence was finally rewarded.⁶⁵ After a formal meeting with Admiral Arthur Radford,⁶⁶ Collins managed to obtain the delineation of areas for convoy escort and routing, reconnaissance, local defence and ASW operations.⁶⁷

Collins also gained agreement for a direct link between RAN and USN planners, but Australia obtained no greater influence in American planning. In fact, the United States Joint Chiefs of Staff (USJCS) held no strong views on Australian matters and left the arrangements entirely to Radford.⁶⁸ Nevertheless, from the RAN's perspective the Agreement clearly enunciated Australian responsibility for the protection of sea communications in its area of primary strategic interest and encouraged closer links with the USN. The signing of the ANZUS (Australia, New Zealand, United States) Treaty in 1951 likewise reinforced the move towards the United States. The move irritated Britain and still provided no specific role in Western strategy, but it gave Australia the formal defence alliance it had sought and ensured that the nation became fully integrated with the global alignments of the Cold War.

Australia's contribution to collective security subsequently progressed through the arrangements attendant on the Five Power Staff Agency (1953),⁶⁹ SEATO (South East Asia Treaty Organisation) (1954), and the Far East Strategic Reserve (1955) with varying levels of success.⁷⁰ The forward deployment of Australian warships was usually the most visible aspect of the Navy's contribution to these schemes, but the RAN also continued as an undiminished player in the global Allied NCS Organisation. Nevertheless, until the United States decisively rejected ANZAM planning in 1955, that planning remained the key to the RAN's view of its regional responsibilities.⁷¹ As Collins privately declared in 1954 at the end of his term as CNS: 'I have always been "an ANZAM man" ... for ANZAM is realistic whereas Five Power, ANZUS, SEATO etc. are all so indefinite.'⁷²

Sightings and intelligence

Despite the steady improvement in local intelligence services, Australian planners in the early postwar period still relied heavily on what they termed the 'authoritative view from London'.⁷³ The Naval Board likewise depended on Admiralty advice, and thus laboured under many of the same misconceptions when estimating the Soviet threat. In late 1946 the RAN was informed that the Soviet Pacific Fleet maintained 60 long-range submarines, all of which might be converted to schnorkel operations.⁷⁴ Of future concern, the potential enemy had facilities to build submarines at the Pacific ports of Komsomolsk and Vladivostok. Of more immediate interest, the recent Chinese-Russian Treaty of Friendship had resulted in the designation of Port Arthur as a Sino-Soviet naval base.⁷⁵ The availability of this ice-free port allowed year round ocean access, and hence removed one of the traditional constraints on Russian maritime operations in the Pacific.

In the general climate of international mistrust and suspicion that characterised the first years of the Cold War, it is hardly surprising that submarine sightings were again reported within the boundaries of the Australia Station. After receiving reports in April and July 1947 that a submarine and an object resembling a schnorkel had been sighted around the Solomons, RAN intelligence tentatively assessed it as one or more Soviet submarines. The advised position, they declared, being within operational range of Vladivostok, it was 'quite conceivable that the Russians might deem it desirable to send a submarine to Southern Pacific Waters for training purposes and in order to obtain experience of tropical conditions.'⁷⁶ The receipt of several similar sightings in the late 1940s added further weight to the supposition and, if given sufficient credence, would at times lead to the dispatch of an investigative frigate.⁷⁷

Indeed, the RAN had good reason to believe that the number, range and operational capabilities of Soviet submarines were increasing. At the end of 1950 in one of the most in-depth appreciations to that date, the Admiralty advised that several ocean-going submarines of the Soviet Pacific Fleet had been refitted and modernised, while a Walter type submarine might complete sea trials in 1951. Perhaps 25 of the latter were expected to be operational by 1954 as an interim measure until the Russians produced 'a true submarine propelled by atomic energy'.⁷⁸ After noting that Germany had only 26 ocean-going submarines at the beginning of the late war, the Admiralty expressed 'no reasonable doubt that the Soviet Union is expanding her submarine building capacity', and estimated a total construction potential of approximately 140 boats per year. Later in the same review came the first reports of the transfer of a large Russian submarine to China. By 1952 the Chinese Communists were believed to have 20 such submarines, probably manned by mixed Sino-Soviet crews.⁷⁹

In the 12 months to March 1952, there were at least eight alleged submarine sightings on the Australia Station.⁸⁰ Most reports originated from casual observers and received a low grading. However, unlike the possible but improbable assessments of 1917 and 1941, the ongoing war in Korea and the more general fear of communism ensured that the possibility of an 'ill-disposed snooper' accumulated far more credibility.⁸¹ As RAN intelligence concluded:

... some at least are believed to be authentic and there seems no doubt that Russian submarines have been present in our Northern waters during this period. There is no evidence to show that any form of infiltration or gun-running has been attempted, and it appears likely that these visits are part of a training programme, with possibly an additional object of finding out where clandestine fuelling bases could be established.⁸²

Notwithstanding this assessment, training and infiltration remained unlikely missions while European and American waters offered greater returns for far less effort. If deployments to Australian waters did occur then they were probably conducted for the purposes of hydrographic and oceanographic research. While the Russians still refuse to provide details of submarine operations by the former Soviet Union, their exact nature will remain impossible to verify.⁸³

The RAN and ASW

Despite the rapid evolution of the fast submarine threat, the RAN's postwar attitude to ASW took time to mature and stabilise. The image of ASW was

influenced first by the initial shift in priorities from protection of sea communications to expeditionary warfare and then, as described below, by the return to the protection of troop movements and commerce. In the papers placed before the Defence Committee in 1947 the Navy firmly classified ASW as a defensive means of warfare. More forcefully, in 1948 Collins declared it ‘a shattering blow’ when he discovered that Australia’s new carriers might ‘only’ operate ‘Trade protection type aircraft’.⁸⁴

Although early models for the carrier air wings envisaged a make-up of at least 50 per cent A/S aircraft, these types were expected to form part of a task force defensive screen or hunter-killer group. Hence, trade protection would come as a by-product rather than as a direct objective of sea control operations. In effect, the RAN accepted the practice of ASW as important, but of lesser overall priority than strike warfare. A factor underlying this perception was the prospect of the independent offensive capability embodied in the carriers. Similar to, but on a far smaller scale than the USN’s ‘attack at source’ strategy,⁸⁵ it would allow the RAN to compete directly with the strategic plans of the RAAF. As Collins explained:

If defensive measures alone could win a war then our first priority would be anti-submarine and minesweeping measures. In this event it is even probable that escort carriers and A/S aircraft would be more useful to us than our Light Fleets and Strike ‘planes. However, no war is won by defensive measures alone. We must have offensive weapons to use, particularly in relation to our commitments under the United Nations and as a member of the Commonwealth. Our Light Fleet Carriers provide the offensive weapon and must retain first priority.⁸⁶

The Fleet Air Arm (FAA) represented just one aspect of the RAN’s ASW capability, but with priority afforded to naval aviation other areas inevitably suffered. The naval budget did not expand to cover the ever-increasing cost of the carriers, and as Hamilton lamented in 1947 ‘Every other item of Naval expenditure has been cut to the bone.’⁸⁷ The end of the war had certainly not left the surface fleet in a strong position. The three surviving cruisers were obsolescent. The RAN’s war-built destroyer force—three ‘Tribals’, and five ‘Q’ class vessels on loan from the Royal Navy—carried obsolete detection equipment and weapons, and the surviving *Bathurst* class AMS were almost all in reserve and useful only for local defence. Only the eight ‘River’ (A/S) and four ‘Bay’ (A/A) class frigates mounted ahead-thrown weapons—Squid and Hedgehog respectively. But their maximum asdic operating speed of 16 kts was relatively slow, and the Admiralty had already decided that only

the new 'Limbo' Mortar Mk 10 weapon system could cope with the emerging threat posed by fast and agile submarines.⁸⁸

A review of RAN ASW proficiency, written in 1948 by the Directorate of Training and Staff Requirements (DTSR), presented a bleak view of surface capability. Having pointed out that the Soviet Far East submarine fleet had more than 100 craft, with advanced designs shortly to be introduced, DTSR observed that the RAN did not possess a single vessel capable of dealing effectively with a fast modern submarine.⁸⁹ Worse still, of the eight A/S frigates which made up the major part of the RAN's escort strength, seven were in reserve or paying off, while the eighth was employed on surveying duties with its Squid removed. To halt the capability decline the report recommended updating the armament and equipment in the frigates and 'Tribals', widespread fitting of a modern action information organisation (AIO), commissioning of additional frigates from reserve for anti-submarine training, and converting the 'Q' class to fast A/S escorts.

The review received general and rapid concurrence among the naval staff with the DCNS, Captain Gatacre, noting: 'The A/S element of a Sea Frontier Force seems to be a fundamental requirement - and an urgent one.'⁹⁰ Collins agreed that the question was overdue for consideration and approved in principle, action to determine the financial and dockyard commitments. But although he was willing to change the emphasis of the Five Year Program 'perhaps by increasing the A/S armament of some types', he had as yet no intention of reducing the RAN's offensive role.⁹¹ Echoing his thoughts when ACNS in 1939, Collins felt that the proposals for an improved surface ASW capability were 'desirable but not essential'.⁹² Writing privately to the British First Sea Lord at the end of 1948 he observed that, despite rising costs, the RAN had gained approval for virtually everything in his desired program.⁹³ Collins had nevertheless already directed Gatacre to prepare a paper looking again at the requirements for a 'balanced' fleet.⁹⁴

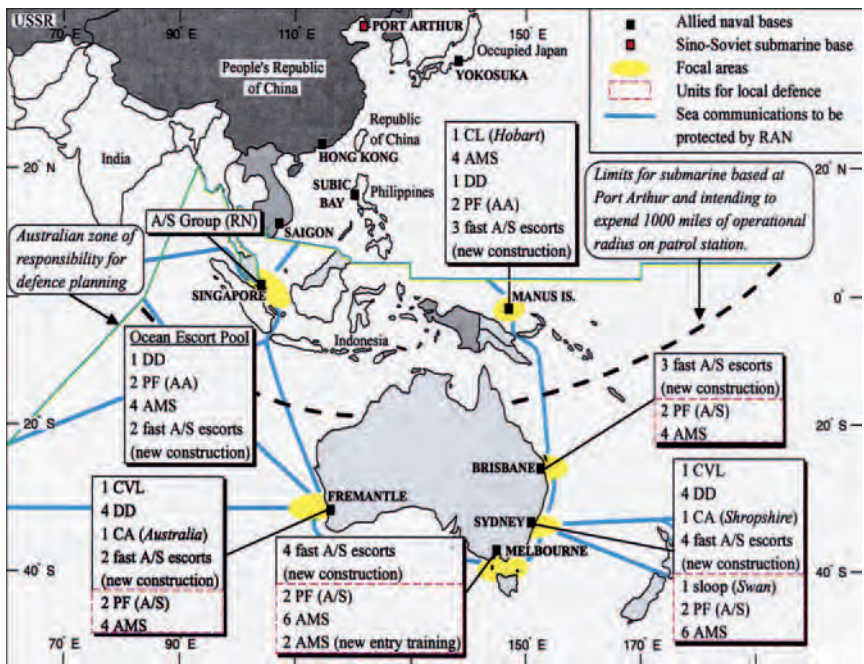
The plan for a balanced RAN

It is clear that Gatacre's understanding of naval roles and warfighting priorities was somewhat different to that of Collins. His paper could identify no credible offensive role for the RAN carriers, and rather than 'purely offensive tasks', Gatacre reminded Collins that 'defensive measures may have an important offensive aspect'.⁹⁵ Specifically, the RAN could best contribute to the general Western offensive by ensuring the safe 'despatch overseas of an expeditionary force and the "uninterrupted outward flow of the products of our main support

area.” Gatacre expected enemy submarine operations to be conducted on a generally moderate scale in local waters, but foresaw periods of intensified enemy activity at the start of the war and when important troop convoys were forming. He therefore confirmed the requirement to improve the effectiveness of existing vessels. Moreover, noting that reserve vessels from commercial sources, such as trawlers, were practically valueless against modern submarines, Gatacre added a further judgement on an appropriate level of response:

... it is obvious that the number of A/S escorts is hopelessly inadequate. ... vessels of modern fast A/S escort design is indicated [sic] as being the priority type required and 18 is considered to be the minimum required number of such vessels.

Figure 10.1 – Assessment by Captain Gatacre of forces required to counter the Soviet submarine threat, 1949



Source: NAA: MP 1185/8, 1937/2/404.

Collins again approved the paper 'in principle', but did not support the construction schedule implied by Gatacre's solution (see Figure 10.1).⁹⁶ Expecting Australian ships to remain available for employment in the Mediterranean if the ANZAM threat proved slight, he consistently played down local requirements.⁹⁷ On this occasion, he added after Gatacre's plea for more escort vessels, that 'we shall probably have to contend with 2nd XI S/M's against which our AMS may [still] be quite useful...'⁹⁸

Defence preparations

Circumstances, however, were already transpiring to ensure that a frontline power projection role for the carriers remained out of reach. The RAN's growing obligation to protect regional sea communications and the rapid increase in the size and weight of advanced carrier aircraft meant that by early 1950 even Collins was ready to accept the operational constraints imposed by the light fleet design. The carriers' primary task he thereafter defined as 'trade protection in which A/S operations play a major part and for which they are well suited.'⁹⁹ The Admiralty agreed—operations by escort carriers had played a major role in the defeat of the U-boats in mid-Atlantic from 1943 to 1944 and, in the First Sea Lord's opinion, operations by A/S aircraft would have to take precedence over defence against heavy air attack in future conflict.¹⁰⁰ Consequently, the modernisation of the carriers to take the next generation of British A/S aircraft became of particular importance,¹⁰¹ with embarked fighters required to deal only with unescorted bombers or reconnaissance aircraft.

Meanwhile, Collins allowed the naval staff to prepare an agenda for the construction of modern A/S escorts, while DE(N) prepared an outline plan for the conversion of the 'Q' class.¹⁰² Yet by this stage the limiting factors were not so much financial or higher level endorsement, as a 'lack of manpower and materials'.¹⁰³ The manning situation was acute. The gap between naval and civilian pay rates was causing a steady loss of experienced personnel and, in 1949, with an authorised ceiling of 10,450 personnel, the RAN was 1673 below establishment.¹⁰⁴ Matters were not helped by the increased standards of maintenance demanded by modern equipment. A greater proportion of ratings therefore needed higher technical qualifications, and this imposed further delays before trainees became competent.¹⁰⁵ The commissioning in 1948 of the first carrier, HMAS *Sydney*, made any additional manpower demands impracticable. To relieve the situation Collins directed initially that the 'Tribals' not be modernised, and briefly reduced the core 'Fleet Unit' to one carrier, one cruiser, three destroyers, and five frigates.¹⁰⁶

At a time when British operational analysis was predicting high levels of escort losses in a future war,¹⁰⁷ and communist gains in South East Asia were increasing international tensions, the RAN urgently required strengthening. In late 1949, Navy Minister Riordan announced that by 1952 the RAN would maintain 26 ships in commission, with 79 in reserve and an establishment of nearly 15,000 personnel.¹⁰⁸ In January 1950, the Defence Committee took a Naval Board paper containing proposals for improving the RAN's ASW capability.¹⁰⁹ Subsequently the RAN gained agreement for the full conversion of all five 'Q' class destroyers to A/S frigates, together with a gradual modernisation of the A/S capabilities of the three 'Tribals'.¹¹⁰ In May 1950 Prime Minister Robert Menzies sought British concurrence for the 'Q' conversions and advised that Australia would pay the full costs of £400,000 per vessel. Explaining the need both to modernise and enhance the RAN's A/S capability, the Prime Minister noted that his naval advisors envisaged an 'acute submarine menace in any future war...'¹¹¹ The Admiralty generously responded by making a free gift of the 'Q's and all their stores.

On 25 June 1950 the Soviet-equipped forces of communist North Korea crossed the 38th parallel and invaded the South. This overt aggression caused widespread international condemnation and immediate appeals for assistance from the United Nations Security Council. The following month, in introducing the Defence Preparations bill, Menzies referred to global events that formed a pattern of planned aggression no less threatening than the events leading to World War II. The nation must be ready for global war by 1953.¹¹² The Navy was quick to advance its requirements and, in August 1950, Cabinet approved the construction of six modern A/S frigates as part of a revised Three Year Program at a total estimated cost of £14 million.¹¹³ The new fast frigates were to be of the British 'Type 12' design, and although fewer than Gatacre had wanted, six vessels allowed at least four to be operational at any one time. Their construction would replace that of further conventional destroyers and in retrospect can be seen as a clear indication of the RAN's changing priorities. As always the threat was not the only factor influencing the procurement decision. Four *Daring* class fleet destroyers, whose primary role was surface and anti-air warfare, were already on order, and Cabinet needed to follow up their construction to ensure the continuity of work in Australian dockyards.¹¹⁴ Still, at this point even the *Darings* would incorporate a significant ASW capability.¹¹⁵

By September 1950, the Australian media was providing 'semi-official' details of Soviet submarine strategy and local countermeasures and expressing 'relief

that the public had at last been told frankly the needs of the R.A.N.¹¹⁶ By October, Collins declared himself 'fairly happy about our A/S preparations'.¹¹⁷ He was 'not so content' about Australian mine countermeasures, but in 1952 Cabinet approved the allocation of another £1.2 million for the refitting of some of the *Bathurst* class.¹¹⁸ Meanwhile, if required, minesweepers would be brought forward from reserve even before anti-submarine forces.¹¹⁹ Changes in pay and conditions and government approval to recruit in the United Kingdom also provided hope that the RAN would see some improvement in its manpower situation.

The melding of local and regional defence

Gatacre's 1949 plan had maintained the distinction between ASW forces allocated to the sea frontier force and regional defence, and this differentiation continued into 1950 when the Defence Committee considered a 'Policy and Outline Plan for the Defence of Sea Communications in Australian Home Waters'.¹²⁰ Like Gatacre, the Committee identified the submarine as the principal threat to local shipping, with minelaying as its most likely tactic. The Committee also agreed on the focal areas most likely to be targeted—the approaches to Sydney, Moreton Bay, Fremantle and Port Phillip—but with the 'Q' conversions underway these areas would in future be defended by an A/S group composed of one or two 'Q' class and two 'River' class frigates. The ports themselves would be defended by a motley collection of loop equipment, booms, nets, buoys and moorings left over from the last war. Evidently Collins's '2nd XI S/M's' were expected to predominate, for as late as 1953 measures to build up the seaward defence force still included plans to modify fishing trawlers to facilitate their conversion to ASW duties.¹²¹

Already, however, the scope of the ANZAM commitment had foreshadowed the need for a plan that better integrated all Allied maritime forces. Although not expecting an attack on anything like the scale envisaged in the Atlantic, having assumed responsibility for ANZAM sea communications the RAN did have some extended ocean and coastal shipping routes to protect. In 1950, even Collins was forced to admit that 'the size and defence requirements of the ANZAM area are rather frightening when one considers the resources available.'¹²² Later that year Australian and Allied staff officers began writing the 'Plan for the defence of sea communications in the ANZAM Region'.¹²³ The authors admitted that the plan was defensive, but believed it provided for the optimum distribution of the available forces.¹²⁴ By May 1952 the Defence Committee had approved the first edition for forwarding to the British and New Zealand Chiefs of Staff.¹²⁵

annex of the ANZAM 'parent plan'. The division of the ANZAM region into clearly defined areas assisted this process. Each area possessed its own Maritime Headquarters (MHQ) and the responsible naval and air commanders exercised joint operational control over both home and regional waters within their boundaries. The MHQs would conduct area or distant A/S operations directly,¹²⁸ while close A/S operations would be delegated to appropriate subordinate commands,¹²⁹ normally the on-scene commander or seaward defence authority.

The plan highlighted that accurate intelligence would be vital in making the most effective and economical use of all assets. Success was likewise acknowledged to depend largely upon the rapid correlation and dissemination of reports of enemy submarine activities. Within ANZAM, enemy submarines were most likely to operate in northern waters, but Australia would not be immune:

Some submarine minelaying may occur in focal areas. An occasional offensive submarine patrol may take place against shipping in the South-east and West Australian Areas and may take place rarely in the North Australian Area. ...Submarines may carry out sporadic bombardments of important coastal targets with a view to upsetting civilian morale and damaging important heavy industry. Submarines may be used for the clandestine landing of parties for sabotage and other fifth column activities, particularly in the Island Territories.¹³⁰

By 1954 intelligence estimates sought to be more specific, predicting that, in the event of war, six Soviet submarines were likely to be allocated to the South Pacific, Indian Ocean and Australian coast, which would permit one or sometimes two to operate continuously in each area.¹³¹

As always, the institution of merchant convoys would not be automatic, and these were not envisaged at all in Australian home waters.¹³² Instead, NCS authorities would impose three degrees of control depending upon whether the submarine threat was considerable, sporadic, or nil. Mercantile convoys would only be required in the first degree, and the second degree of control would normally be implemented throughout the ANZAM Region.¹³³ In the second degree most ships would adhere to routing instructions, but proceed unescorted. Consequently, rather than escort duties, the primary role of the anti-submarine forces allocated to each area was to be the 'defensive patrol of focal shipping areas'.¹³⁴ Escort would still be provided for large troop movements and particularly valuable ships, and one carrier task group was

allocated to this role on a regional basis. What is not readily apparent is whether these decisions were based on unsupported professional judgement or detailed operational analysis.

For example, although effective against submarines with a low underwater speed, concerns had already been raised that evasive routing was far less effective against the developing threat:

Previously a U-boat or group of U-boats once detected could be avoided ... and its mobility largely neutralised by keeping it under water until it could be hunted and destroyed. That will not be possible when the new submarine comes into being. Unless the enemy can be attacked and destroyed or disabled as soon as it is detected, it will be free to follow, outmanoeuvre, and attack any but the fastest of our or any other merchant fleet.¹³⁵

The higher loss rate suffered by independent ships in comparison with those convoyed was similarly not in dispute. Nevertheless, ANZAM planners apparently expected the increased cargo delivery rate predicted for independent shipping to compensate for the larger toll. Hence, they did not intend to implement the first degree of control until ship losses reached 'an appreciable figure'.¹³⁶ Yet, Admiralty studies would shortly show that the huge difference in the comparative loss rate meant that the independent delivery rate diminished so rapidly that it became less than that of the convoy delivery rate in a matter of weeks. Accordingly, any policy that delayed the institution of a convoy system would incur 'an initial reduction of deliveries more drastic than that consequent on the introduction of convoy.'¹³⁷ Furthermore, the ill effects would be felt to the end of the war, since the carrying capacity of every independent ship sunk that might have been saved in convoy, was lost for the duration.

Likewise, the Admiralty's analysis of wartime experience showed clearly that air and surface patrols for submarines were 'without significant effect'.¹³⁸ The U-boats suffered some early losses when surprised by new equipment, but soon developed effective technical or tactical countermeasures. The consistent theme was that assets employed as convoy escorts—even when inadequate—were far more effective in ASW than patrols of any description.¹³⁹ Furthermore, the success of the escorts was achieved with a far smaller expenditure of effort and greatly reduced wastage.¹⁴⁰ Many of these conclusions were directly relevant to ANZAM planning, but there is little evidence of their consideration or adoption.¹⁴¹

Defence science and research and development

The rapid rise of the Soviet threat ensured that the impetus for the development of new weapons and technology was maintained in most Western nations in the postwar period. Coupled with the government's policy of actively encouraging Australian industrial and technological capacity, the Department of Defence was encouraged to make greater use of scientific advice in the development of service equipment.¹⁴² Indeed, the Minister for Defence heralded a new era in 1947 when he announced the allocation of 13 per cent of the defence estimates to scientific development and research.¹⁴³

The synergy between scientific research and naval warfare continued to grow, but the Naval Board at first planned to continue the established practice of directly adopting British procedures and equipment.¹⁴⁴ Admiral Jellicoe's 1919 report on the need for an RAN scientific body had long been forgotten, and the naval staff were evidently unaware of the unique local factors that had so concerned Commander Esdaile between the wars. Not until the 1946 visit of the Admiralty's Director of Scientific Research were the Board's members reminded that Australian conditions were very different from those in the United Kingdom, and that it would be unwise to rely too much on the traditional connection.¹⁴⁵ A Defence Scientific Adviser was already in place, but the ACNB thereafter accepted the need for a scientist more closely acquainted with local maritime affairs. Someone who could present

... in digestible form trends in Admiralty research and development, undertaking operational research and advising on what other research could be pursued with the resources in Australia and assisting Board Members in their duties on the Defence New Weapons and Equipment Development Committee.¹⁴⁶

Defence considered the appointment of a scientific advisor to the Naval Board in 1947, but the matter was not progressed with a high priority. In the meantime, the RAN continued to suffer from a lack of recent and reliable data on modern ASW requirements. The Australian representative at the first Commonwealth TAS Schools Liaison meeting, held in October 1949, returned with a detailed report on training problems and the latest developments in equipment and weapons. Most of the problems were common to the three navies attending (RN, RCN and RAN), but of particular interest to Captain Gatacre, was the 'amount of information completely new to us...'¹⁴⁷ Rather than continuing to rely on the haphazard methods of the past, Gatacre emphasised the need to establish a technical liaison staff in Britain.

Not until March 1954 and another British visit—by the Chief Scientist of the RN Scientific Service—did the Naval Board take further action to appoint a scientific advisor.¹⁴⁸ Ministerial approval was obtained in June and the Board initially accepted an Admiralty officer on a three-year loan.¹⁴⁹ At least part of the incentive had been the Chief Scientist's offer to make available information on the Royal Navy's low frequency, long-range, passive submarine detection project, Project CORSAIR. Information-sharing was contingent on the RAN's acquiring scientific staff to conduct the necessary environmental research and development. Unfortunately, because the project was a collaborative venture with the United States, Australian nationals were initially unable to participate. The RAN thereafter decided to form its own scientific service, and in 1956 the Royal Australian Navy Experimental Laboratory (RANEL) was established to set up local experiments in underwater detection. RANEL's first task was to organise a local equivalent to CORSAIR.¹⁵⁰ The utility of scientific backing for naval development was soon apparent, and the laboratory afterwards increased the scope of its inquiry to include the operational research and analysis of all areas of naval interest.

Training

DTSR's 1948 review of ASW had argued that the RAN's A/S training was at best elementary, 'an entirely unsatisfactory state of affairs in any circumstance, and particularly so [in view of the threat]'.¹⁵¹ The sole training frigate was fitted with Hedgehog, and therefore training in modern A/S attack techniques could not be carried out afloat. Furthermore, the RAN would have to commission an additional training ship if it hoped to begin training in the broader aspects of ASW, such as coordinated searches, patrols and escort operations.

What DTSR had not mentioned was that a lack of practical submarine time had again become an issue. British submarines had made irregular visits for A/S training in Australian waters since the end of the war, but in May 1948 they were withdrawn from the Far East as an economy measure.¹⁵² Thereafter only synthetic devices were available, and within a year the ACNB declared the need for actual submarines to be both 'real and urgent'. The existing state of affairs, the Defence Minister was informed,

... causing the Naval Board considerable concern in view of the special importance of maintaining a high standard of proficiency in this sphere of training ... when our only potential enemy is in possession of a powerful submarine fleet, a substantial part of which is based in the Far East.¹⁵³

Unlike the prewar situation, an acceptable solution was readily found. The Admiralty offered to base three Royal Navy submarines at Sydney if the RAN would accept the liability for fitting out a base. The boats were to remain a British responsibility, but Australia and New Zealand would share the additional annual running costs of approximately £20,000.¹⁵⁴ In November 1949 the Admiralty re-established the 4th Submarine Squadron in Sydney and the first two submarines arrived just before the end of the year.¹⁵⁵ The first major opportunity for the RAN to regain experience with a 'live' submarine took place in New Zealand waters in February 1950. The combined exercises involved a large Australian contingent, HM Submarine *Telemachus* and the New Zealand Squadron.¹⁵⁶

These early exercises were generally elementary A/S practices for the benefit of the asdic operators. Nevertheless, as the RAN gained experience and ASW training grew in importance, the program expanded. Soon more complicated operations, such as coordinated hunter-killer and anti-harbour penetration exercises were undertaken regularly. By the time of the 2nd TAS Technical Meeting in August 1951, the A/S School had begun to compile a detailed record of asdic conditions experienced in each exercise, including the interference caused by whales and other sealife.¹⁵⁷

By this stage the value of an effective ASW capability had also achieved greater recognition within the broader naval profession. Seamen officers were told that a sub-specialisation was almost essential for a successful career in 'tomorrow's navy' and those with A/S qualifications no longer felt disadvantaged in comparison with their peers.¹⁵⁸ Certainly, plans to expand Australia's ASW capability were no longer stagnant (see Table 10.1). In 1951, planners estimated that the RAN required 17 TAS officers within three years,¹⁵⁹ and between 1951 and 1954 ten seamen officers attended the long TAS course, more than double the numbers from 1948 to 1950.¹⁶⁰ In addition to these were the FAA candidates, and in 1954 a record six RAN aircrew undertook a specialist A/S course in the United Kingdom.¹⁶¹ Local tactical development, however, had not yet begun and, while the RAAF remained something of an outsider, there were limits to what the RAN could achieve alone.

Table 10.1 – A/S equipment intended for various A/S ships, August 1951

| Ship types | No. | Asdics ^a | A/S weapons ^a |
|---------------------------------|-----|----------------------------|--------------------------|
| <i>Darings</i> - early 1954 | - | 166, 147F, 162 | Single Squid |
| <i>Darings</i> - 1955 | 4 | 170, 174, ^b 162 | Single Limbo |
| 'Tribals' modernisation | 3 | 164, 147F, 162 | Single Squid |
| 'Q' conversion - 1952 | 1 | 170, 174, 162 | Double Squid |
| 'Q' conversion - 1955 | 3 | 170, 174, 162 | Double Limbo |
| A/A frigates (Bay) | 4 | 164, 147F, 162 | Hedgehog |
| A/S frigates (River) | 8 | 164, 147F, 162 | Double Squid |
| Type 12 first-rate A/S frigates | 6 | 170, 174, 162 | Double Limbo |

Source: NAA: MP 1049/6, 5031/1/24.

- Notes: a. For an explanation of asdic types and weapons see Appendix IX.
 b. Type 177 was to replace Type 174 when developed.
 c. The two 'Battle' class were regarded as fleet destroyers, and carried asdic Types 144Q and 147F and a single Squid.

RAAF/RAN cooperation

The postwar Royal Navy was swift to admit that the Battle of the Atlantic had been won by the integration of sea and air power, with escort groups and RAF Coastal Command aircraft operating together as a team.¹⁶² In the face of a growing submarine threat, Australian planners hoped for similar cooperation between the RAN and RAAF.¹⁶³ But, as we have seen, wartime coordination had not been good, and further progress remained stymied by inter-service rivalries. The creation of the FAA in 1948 had effectively formed two separate air forces, and thereafter the RAAF was at pains to prove the inefficiency of the arrangement.¹⁶⁴ In 1954, the retiring CAS, Air Marshal Sir Donald Hardman,¹⁶⁵ went so far as to declare that the Navy had ceased to have a role, leaving the Air Force as the only service worthy of development for either defence or offence.¹⁶⁶

Hardman's claim was at least partially based on the supposed ability of the advanced Lockheed Neptune maritime patrol and A/S aircraft—which entered RAAF service in 1951—to take over trade protection responsibilities in focal areas. With some justification, the RAN remained unconvinced. Because the FAA had largely assumed the anti-shipping role, ASW had become almost the RAAF's sole maritime task.¹⁶⁷ But the highly specialised nature of the training caused particular problems when it came to aircrew drafting, and standards were not especially high.¹⁶⁸ Nor were matters helped by the

institutional dominance of fighter and bomber pilots and the RAAF's short-sighted focus on the 'war winning' potential of strategic air power.¹⁶⁹ Hence, throughout the 1950s the Navy generally perceived the maritime squadrons as very much the 'poor relation' when it came to RAAF funding and interest.¹⁷⁰ As late as 1959, the RAN would continue to examine the assumption of the RAAF's maritime function in the hope of improving cooperation and effectiveness.¹⁷¹

However, while escort duties remained generally neglected in both services, the support tasks required of FAA and RAAF A/S aircraft were also quite different. For the surface navy, ASW was normally a relatively close-in affair, and a task group commander would rely on the FAA to provide direct air support. RAAF aircraft on the other hand were employed on distant or indirect support by an area MHQ. The effect was to limit direct inter-service dealings almost solely to the staff ashore, and not surprisingly there developed a 'very large and very real difference between the FAA and the maritime forces of the RAAF, particularly in organization, operating methods, types of equipment and maintenance systems.'¹⁷²

These disadvantages were recognised by Australian planners and the postwar formation of a Sea/Air Warfare (S/AW) Committee on the British model was intended to formulate joint policy and engender the close cooperation.¹⁷³ In 1951 as a practical measure the Committee recommended that Australia again adopt British practice and establish a Joint A/S School to study common doctrine, practise joint tactics and integrate joint requirements for weapons and equipment. The Service Chiefs agreed and the following year the Australian Joint Anti-Submarine School (AJAAS) began operations at the Naval Air Station at Nowra. Functional control was vested in the Joint Directors, an RAN commander and a RAAF wing-commander, and the school subsequently became the main meeting place for RAN and RAAF maritime forces.¹⁷⁴

Courses included a Joint A/S Unit Training Course (JUC) and a Joint A/S Tactical Course (JTC),¹⁷⁵ both based on similar courses in the United Kingdom, and a one-week junior officers' course to familiarise members of both services with the basic principles of sea-air ASW. Although hampered by a lack of assets, the RAN initially provided two frigates on a semi-permanent basis together with one submarine. Later, a school flight was established for experimental and developmental purposes, consisting of at least one RAAF GR aircraft and one FAA A/S aircraft.¹⁷⁶ The development of broader policy took somewhat longer. The S/AW Committee met only rarely and, although a

1952 agreement laid down the policy for the allocation and direction of shore-based air forces, not until 1955 did the committee look at formulating a joint policy covering all matters connected with the control of sea communications.¹⁷⁷

The strategic threat

Although the first Soviet submarine with a strategic missile capability was not positively identified until 1956, the RAN had been aware of the potential threat since at least 1946.¹⁷⁸ By 1950, the Australian press was making specific reference to the local implications of the combination of guided missiles and atomic weapons in submarines.¹⁷⁹ ANZAM planners, on the other hand, continued to assume that the use of such weapons in the region was unlikely.¹⁸⁰ Hence, while remaining mindful of developments, the RAN was under no immediate pressure to shift its focus from the protection of sea communications. The strategic threat, moreover, was not one that could be readily dealt with by a small navy with a huge coastline to protect.

Nevertheless, in late 1953 the Commander of the 4th Submarine Squadron, Commander Turner,¹⁸¹ produced a paper examining the threat posed by a submarine-launched cruise missile similar to the wartime German V-1, but guided and armed with an atomic warhead.¹⁸² He estimated that practically all Australian ports and certain inland towns were vulnerable, and that an ocean arc extending 200 nm from the centre of each target constituted the likely launching area. Although this was well outside the range of normal A/S patrols, USN trials had already shown that to maintain guidance a submarine would need to remain surfaced for a considerable time before and after the launch. Turner therefore believed that continuous coverage by air and surface assets working in cooperation would be necessary. 'As far as the R.A.N. and R.A.A.F. are concerned' he concluded,

it appears that the main defence against this form of attack is to prevent the submarines from firing and controlling the missiles, and, thus, the problem is substantially the same as preventing submarines from approaching the Australian coast and from operating within the precincts of Australian Bases.

The RAN's senior staff officers thoroughly reviewed Turner's paper, and their responses provide a revealing cross-section of contemporary views on the strategic threat. The DTSR, Commander Bracegirdle,¹⁸³ agreed that the Soviets would give a high priority to the launching of guided missiles from submarines, particularly against American ports. Locally, however, he was more concerned

by the threat posed to harbours by enemy special forces landed from submarines.¹⁸⁴ The DNI, Commander Plunkett-Cole,¹⁸⁵ felt that 'although the submarine threat must be considered possible, the air threat is much more likely.'¹⁸⁶ Noting that Australia was not within easy reach of air attack and the main rationale for local air defence concerned Chinese bombers on one-way missions, this comment was somewhat strange.¹⁸⁷ The Director of Air Warfare, Organisation and Training (DAWOT), Commander Smith,¹⁸⁸ pointed out the practical difficulties of providing a constant aerial patrol off each potential target.¹⁸⁹ The DCNS, Captain Becher,¹⁹⁰ agreed that the 'ideas on patrols are not sound', and thought a greater danger would be an atomic bomb, delivered by merchant ship before the outbreak of war.¹⁹¹ Admiral Collins simply approved Becher's suggestion that Turner be commended for his well-considered contribution.¹⁹² While not the final word, the most germane comment was undoubtedly Smith's, who felt '...that the only practicable recommendation to be made on this subject, at present, is the possible intensification of A.S. training, both in the R.A.N. and R.A.A.F'¹⁹³

Delays and reductions

Unfortunately, the RAN's plans for a 'dynamic and improved force structure' and the implicit expectation of an enhanced ASW capability had already begun to unravel. The major elements rapidly became casualties of financial reality, industrial deficiencies and the Navy's overly ambitious attempt to maintain a two-carrier force. Always having regard to other defence priorities, the Defence Committee had authorised the construction of the six 'Type 12' A/S frigates in batches. The first four had been ordered in 1950 at a price estimated at £2m per ship, but the whole shipbuilding program was suffering from poor work output, cost increases and the general inability of industry to cope.¹⁹⁴ Delays in building the *Darings* meant that by late 1951 the first 'Type 12' was not expected to begin until 1953, with completion four years later.¹⁹⁵ Finding this delay 'in obtaining our basic submarine killers ... far from being satisfactory' the Naval Board looked elsewhere for supply.¹⁹⁶

Canada again provided a possible answer. Responding to NATO's pressing requirement for A/S vessels, the RCN had another large building program underway,¹⁹⁷ and the ACNB advised the Defence Committee that four fast A/S frigates could be obtained from Canada for £A13 million. This would allow two to be built in Australia to complete the six already approved, leaving the second two to be considered as a follow-up program and providing for the delivery of eight new A/S vessels in total. The Minister, William McMahon,¹⁹⁸ put the Navy's arguments to the Cabinet Committee on Defence Preparations

in March 1952, but by this stage the probable cost of the Australian-built vessels had risen to £5.1m each.¹⁹⁹ The additional costs and Australia's falling international reserves combined to make the proposal impractical.

The Korean War, increasing costs, and the backlog of approved commitments were actually causing problems for the entire Defence Program. Despite further announcements by Menzies warning of dangerous trends in South-East Asia and the imminence of global war, resources to fulfil mobilisation planning were not forthcoming (see Table 10.2). By 1952, the untenable financial situation had forced the government to extend the Three Year Program and cap total defence expenditure at £200 million per annum. The naval allocation that year was well short of the draft estimates and the Navy indefinitely postponed the construction of a number of small craft and one of the 'Q' conversions.²⁰⁰

Table 10.2 – Actual defence expenditure, 1945–54 (£m)

| | 1945 | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 |
|---------------|-------|-------|------|------|------|------|-------|-------|-------|-------|
| RAN | 35.5 | 22.1 | 18.4 | 20.5 | 16.8 | 24.6 | 37.7 | 47.3 | 45.0 | 47.2 |
| Army | 177.7 | 65.5 | 28.1 | 15.0 | 15.1 | 26.2 | 56.0 | 91.5 | 64.3 | 61.5 |
| RAAF | 94.1 | 22.8 | 18.4 | 16.7 | 11.8 | 27.7 | 48.4 | 55.3 | 48.7 | 49.3 |
| Defence Total | 322.3 | 121.6 | 71.6 | 61.1 | 54.3 | 91.0 | 159.4 | 215.3 | 189.7 | 185.5 |

Source: Donohue, *From Empire Defence to the Long Haul*, p. 183.

Strategic changes were also beginning to take effect. Effective nuclear deterrence, combined with an apparent improvement in the international outlook, heralded the trend towards a defence policy more suited to limited or cold war.²⁰¹ The Naval estimates were further restricted in 1953 and since the RAN determined that priority should go to the purchase of the advanced Gannet A/S aircraft, other areas suffered major cutbacks. The Naval Board continued to press for a two-carrier policy, but was forced to reduce the first carrier to the status of a training platform, cancel the modernisation of one 'Tribal', scrap most of the remaining *Bathursts*, give up the fourth *Daring*, and abandon outright the last 'Q' conversion.²⁰² The 'Type 12' order was maintained at just four hulls, although the two follow-up vessels were not officially cancelled until 1956.

The end of the beginning

By August 1953 the Minister for Defence, Sir Phillip McBride,²⁰³ knew he needed to establish a balanced policy within realistic resource levels and sought to do so in consultation with Australia's major allies.²⁰⁴ Geographic considerations imposed basic and important differences between the defence policy of Australia and those of Britain and the United States, but there can be no doubt that the Commonwealth's postwar strategic thinking closely followed the trend in these countries. In 1954, both allies produced defence statements which placed still greater emphasis on building up strategic air power at the expense of the naval vote.

Despite admitting that Australian forces had no real significance as a major deterrent to global war,²⁰⁵ the Menzies Government followed suit. Consequently, in April 1954 McBride announced that defence policy had been transformed from preparedness by a critical date to the capacity to maintain defence for the 'long haul'. Australia's strategic focus was firmly shifted to Malaya and the Defence Minister confirmed that 'While South East Asia is held, defence in depth is provided to Australia and there will be no direct threat, except to sea communications in the form of submarine attacks and minelaying.'²⁰⁶ In his bid to rationalise the program, McBride had argued that Australia's expeditionary forces must have a close relevance to local security and he questioned the role of a carrier task force in the local defence of trade, when shore-based aircraft could undertake the task at less cost.²⁰⁷ He concluded, therefore, that:

In view of the probable nature and scale of the attack ... it has been decided that priority should be given by the Navy to surface anti-submarine vessels, and that the responsibility for air protection at sea within range of land-based aircraft should be assigned to the Air Force.²⁰⁸

The Defence Committee had approved McBride's program as a balanced approach,²⁰⁹ but in practice the government had endorsed air power as Australia's first line of defence. Thereafter funding to the Army and RAN was cut, specifically to allow for the RAAF build-up. While the Navy suffered a 50 per cent reduction in front line aircraft and was told it could retain only one carrier, an increase of £3.5m to the Air Force in July 1954 allowed for the expansion of the existing maritime squadrons into a maritime reconnaissance wing.²¹⁰

McBride's policy statement marked the completion of the strategic reorientation of the RAN to ASW. This is not to suggest that the composition

of Australia's Cold War naval forces simply reflected strategic rather than financial considerations, but there can be no doubt that afterwards the RAN regarded ASW as its principal warfighting task. Over the next decade, the Navy would seek to introduce the anti-submarine helicopter, develop the Ikara guided missile system, reintroduce a submarine arm, and justify all these improvements, at least in part, by the need to increase its ASW effectiveness. Likewise, the RAN finally accepted the need to become heavily involved in scientific research and development to support the introduction of improved ASW systems.

While the loss of a specifically offensive role for the RAN was disappointing to some, the focus on the ASW task after 1954 in fact gave the Navy a far more practicable part to play within the Cold War global alliance. Consequently, the RAN remained consistently well placed to operate with other Western navies, most of which were also reorienting towards ASW.²¹¹ Although often only a small part of a multinational force, the RAN's professional attitude and constantly exercised contribution to collective security would subsequently provide important flow-on benefits including privileged access to intelligence and high technology.

There was also a downside, however. The acquisition of modern anti-submarine equipment was inherently expensive and, given the limits on operating costs and manpower imposed by the government, long-term plans would inevitably be based on the deployment of fewer ships than had been planned in the past. The focus on ASW also left little scope to adjust flexibly to advances in other modes of warfare, particularly the increasingly sophisticated air threat. In practical terms, while the RAN could offer a credible contribution to global war, it would often find difficulty adjusting to the less intensive maritime threats of the 1960s and 70s.²¹² Nevertheless, the die had been cast. Although moves were made to introduce a more balanced force in the mid-1960s, the directives on force structure laid down in 1954 determined the course that the RAN would largely follow for the next three decades.

Notes

1. Extract from CB 04097 (51), cited in paper, 'Defence Against Attack by Submarines Using Guided Missiles', by Commander Turner (Commander 4th Submarine Squadron), 7 December 1953, NAA: MP 1185/10, 5233/27/2.
2. During the war almost 300 RANVR officers had undertaken either the long A/S course or short A/S Control Officer course at *Rushcutter*. See Appendix X.
3. Correspondence with Captain D.J. Hamer, DSC, RAN (rtd), 23 July 1994.
4. In 1945 Lieutenants Adams, Hinchliffe and Purvis held A/S qualifications, while Lieutenant Gladstone remained on course. Similarly, in early 1945 the RCN had 104 A/S qualified officers in the fleet, all but five of them were RCNVR.
5. Correspondence with Captain Hamer, 23 July 1994.
6. Reserve training was re-introduced on 1 January 1950. In the same year a new National Service Scheme came into force to allow mobilisation commitments to be met. Naval National Service personnel formed the RANR (NS).
7. See Milner, *The U-Boat Hunters*, pp. 257-9.
8. Notwithstanding this comment, Gladstone became a rear admiral, Purvis a commodore and Hinchliffe and Adams became captains.
9. The RN combined its Torpedo and Anti-submarine branches to form the TAS Branch in October 1946. At the same time the electrical operation and maintenance of A/S equipment transferred to the new electrical 'L' Branch. The RAN followed suit in 1948.
10. Three RAN officers, did however, complete a conversion from T or A/S to TAS. See PRO: ADM 189/67, 42747 and ADM 189/66.
11. Rössler, *The U-boat*, pp. 168-187.
12. See N. Friedman, *Submarine Design and Development* (London: Conway Maritime Press, 1984), pp. 53-8.
13. 'The role of the submarine in future wars', *Australia Station Intelligence Digest*, 1 January 1948, pp. 18-19.
14. Comment by Captain Howard-Johnston, RN, Director of A/S Division, cited in Milner, *The U-Boat Hunters*, p. 255.
15. R. Keunne, *The Attack Submarine: A study in strategy* (New Haven: Yale University Press, 1965), see particularly Part II, 'A Formal Analysis of the United States and German Submarine Offensives of World War II', pp. 67-102.
16. 'The role of the submarine in future wars', *Australia Station Intelligence Digest*, 1 January 1948, p. 19.
17. G. Till, 'A review: maritime power in the twentieth century', in Stevens, *Maritime Power in the Twentieth Century*, pp. 15-18.
18. See M.A. Palmer, *Origins of the Maritime Strategy: American Naval Strategy in the First Post-war Decade* (Washington: Naval Historical Center, 1988), pp. 85-91.
19. See for example, *Admiralty Maritime Intelligence Review*, October 1946, p. 41. The NHD, Canberra holds copies of the *Admiralty Maritime Intelligence Review*.
20. J. Jordan, *Soviet Submarines 1945 to the present* (London: Arms and Armour Press, 1989), p. 23.
21. Paper, 'ASW - Review of Present Position' by Commander Marks (DTSR), 4 October 1948, NAA: MP 1185/8, 1937/2/404.
22. Baer, *One Hundred Years of Sea Power*, p. 280.
23. *Admiralty Maritime Intelligence Review*, November 1946.
24. N. Polmar and J. Noot, *Submarines of the Russian and Soviet Navies* (Annapolis: USNI Press, 1991), p. 142.

25. US Central Intelligence Agency, Information Report, 30 December 1950, cited in Polmar and Noot, *Submarines of the Russian and Soviet Navies*, p. 149.
26. For example, see *Admiralty Maritime Intelligence Review*, November 1950, pp. 27–8.
27. E. Grove, *Battle for the Fjords: NATO's Forward Maritime Strategy in Action* (London: Ian Allen, 1991), pp. 8–9.
28. Breemer, *Soviet Submarines Design Development and Tactics*, p. 81.
29. Jordan, *Soviet Submarines 1945 to the present*, p. 23.
30. Article, 'Present Production of Soviet Submarines', in *Admiralty Maritime Intelligence Review*, December 1953, p. 19.
31. Minute, Captain Dowling (DCNS) to Commander Long (DNI), 22 September 1943, NAA: MP 1587/1, 218B.
32. Paper, 'The post-war defence of Australia', 27 October 1943, NAA: MP 1185/8, 1855/2/549.
33. Stephens, *Power plus Attitude*, pp. 95–6.
34. Chiefs of Staff Committee minute 11/1946, 20 March 1946, NHD: SNHO papers, 1940.
35. Statement on post-war defence policy by J. Dedman, Minister for Defence, 4 June 1947, NAA: MP 1587/1, 218B.
36. H. Donohue, *From Empire Defence to the Long Haul: Post-war defence policy and its impact on naval force structure planning 1945–1955*, Papers in Australian Maritime Affairs No. 1 (Canberra: Maritime Studies Program, 1996), p. 1.
37. Defence Committee Minute, 19 June 1945, NAA (ACT): CRS, A2031.
38. Admiral Sir Louis Henry Keppel Hamilton, KCB, DSO, RN (1890–1957), 1NM ACNB and CNS 1945–48.
39. Letter, Hamilton to Cunningham (First Sea Lord), 18 March 1947, PRO: ADM 205/60.
40. J. McCarthy, 'Air Power as Australia's First Line of Defence, 1911–54', in Stevens, *In Search of a Maritime Strategy*, pp. 87–98.
41. Hon. John Johnstone Dedman, MP (1896–1973), Minister for Defence 1946–49.
42. Parliamentary Statement, 'Post-war Defence Policy', 4 June 1947, NAA: MP 1587/1, 218B.
43. See, Wright, *Australian Carrier Decisions*, pp. 113–18.
44. Defence Committee Minute, 19 June 1945, NAA (ACT): A2031.
45. Defence Committee Minute, 19 June 1945, NAA (ACT): A2031.
46. Paper 'Naval Defence', 1947, NHS: general file, 218.
47. Maintained in reserve against future emergency were another six frigates, and 31 AMS vessels.
48. Rear Admiral Galfrey George Ormond Gatacre, CBE, DSO, DSC*, RAN (1907–1983), DCNS 1948–50.
49. Minute, Gatacre to Collins, 5 April 1949, NAA: MP 1185/8, 1937/2/404.
50. Hon. W.J.F. Riordan, MP, Minister for the Navy 1946–49.
51. *Admiralty Maritime Intelligence Review*, November 1950, pp. 27–31.
52. M.H. Murfett, *In Jeopardy: The Royal Navy and British Far Eastern Defence Policy 1945–1951* (Kuala Lumpur: Oxford University Press, 1995), pp. 153–4.
53. Rt Hon. Joseph Benedict Chifley, PC, MP (1885–1951), Australian Prime Minister 1945–49.
54. Cited in telegram Chifley to Attlee (British Prime Minister), 3 December 1947, PRO: ADM 205/60.
55. Letter, Collins to Creasy (British Vice Chief of Naval Staff), 2 October 1951, PRO: ADM 205/86.
56. T.B. Millar, *Australia's Defence* (Melbourne: Melbourne University Press, 1969), pp. 44–5.
57. See E. Grove, *Vanguard to Trident: British Naval Policy since World War II* (Annapolis: USNIP, 1987), pp. 39–77.

58. Letter, McGrigor (British First Sea Lord) to Shedden (Defence Secretary), 3 November 1954, NAA(ACT): A5954, 46/3.
59. The other pillars were the security of air bases in the UK, Middle East and Japan, and the security of the main support areas.
60. Editorial, 'Five Year Defence Programme', in *The Navy*, June 1948, p. 22.
61. Minute, Gatacre to Collins, 30 March 1949, NAA: MP 1185/8, 1846/4/336.
62. See P. Edwards, *Crises and Commitments: The Politics and Diplomacy of Australia's Involvement in Southeast Asian Conflicts 1948-1965*, the official history of Australia's involvement in South-East Asian conflicts 1948-1975 (Sydney: Allen & Unwin, 1992), pp. 60-2.
63. 'Plan for the defence of sea communications in the ANZAM region', 8 May 1952, NAA: MP 1185/10, 5202/21/22.
64. A. Cooper, 'At the Crossroads: Anglo-Australian Naval Relations, 1945-1971', in *The Journal of Military History*, Vol. 58, No. 4, October 1994, pp. 704-5.
65. Collins was acting on behalf of both the British and Australian Chiefs of Staff.
66. Admiral Arthur William Radford, USN (1896-1973), CinC Pacific 1951.
67. Letter, UK Service Liaison Staff to British Defence Coordination Committee, 5 March 1952, NAA: MP 1185/10, 5202/21/17.
68. See letter, 'ANZAM/CINCPAC PLANNING' Major-General Cassels (Chief Liaison Officer, UK Service Liaison Staff) to the Secretary Department of Defence, 17 January 1951. Document provided by Dr Thomas-Durrell Young.
69. The Five Power Staff Agency, was an *ad hoc* meeting of the US, UK, France, Australia and New Zealand. See Donohue, *From Empire Defence to the Long Haul*, pp. 126-8.
70. See D. Lee, 'Australia and Allied Strategy in the Far East, 1952-1957', in *The Journal of Strategic Studies*, Vol. 16, No. 4 (December 1993), pp. 551-38.
71. See Thomas-Durrell Young, 'ANZUS Naval Relations, 1951-85', in Goldrick, Jones & Frame (eds) *Reflections on the Royal Australian Navy* (Kenthurst: Kangaroo Press, 1991), pp. 296-315.
72. Letter, Collins to McGrigor, 29 October 1954, PRO: ADM 250/101.
73. 'Defence Policy Review 1948', NAA(ACT): A5954, Box 98.
74. *Admiralty Maritime Intelligence Review*, November 1946, pp. 26-8.
75. *Australia Station Intelligence Digest*, 28 June 1946, pp. 22-4.
76. *Australia Station Intelligence Digest*, 1 September 1947, p. 13.
77. See *Australia Station Intelligence Digests*, 1 May 1948, p. 13, and 1 May 1949, p. 10.
78. *Admiralty Maritime Intelligence Review*, November 1950, pp. 29-30. The first Soviet nuclear submarine entered service in 1959.
79. 'Plan for the Defence of Sea Communications in the ANZAM Region, 8 May 1952, NAA: MP 1125/10, 5202/21/22. In fact, later intelligence revealed that the Chinese submarine service did not come into existence until August 1954 when the Soviets transferred two obsolete boats.
80. *Australia Station Intelligence Summary*, 21 March 1952, p. 18.
81. *Admiralty Maritime Intelligence Review*, January 1954, p. 45.
82. *Australia Station Intelligence Summary*, 21 March 1952, p. 18.
83. Interview with Captain First Rank Igor Amosov, Military History Institute, Moscow, September 1997.
84. Letter, Collins to Fraser, 7 September 1948, PRO: ADM 205/69.
85. See Palmer, *Origins of the Maritime Strategy*, pp. 21-32.
86. Minute Collins to Showers, 1 November 1948, NAA: MP 1185/8, 1937/2/404.
87. Letter, Hamilton to Cunningham, 27 November 1947, PRO: ADM 205/60.
88. Staff Requirement of October 1946, cited in March, *British Destroyers*, p. 467.

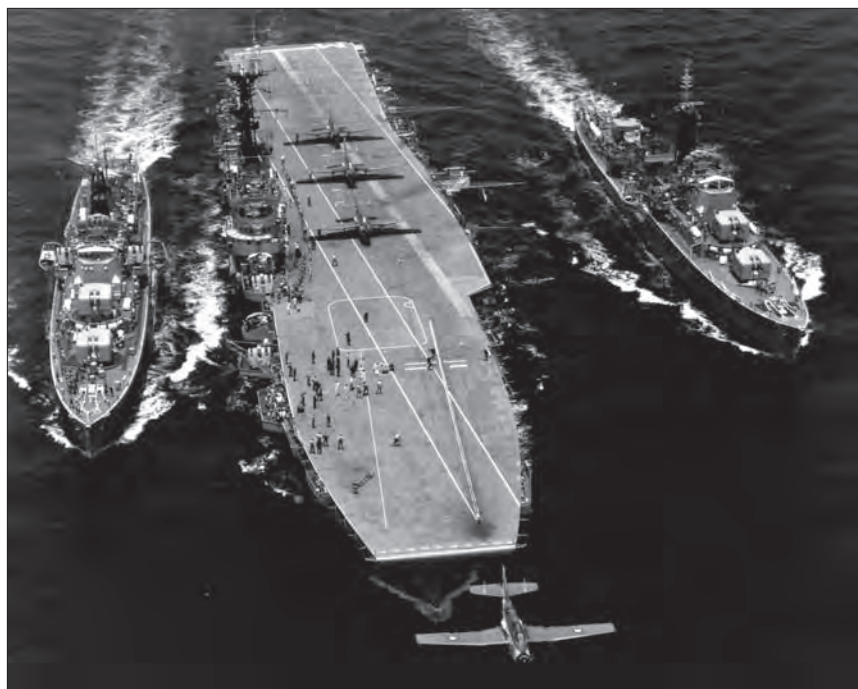
89. Paper, 'ASW - Review of Present Position' by Commander Marks, 4 October 1948, NAA: MP 1185/8, 1937/2/404.
90. Remarks by Gatacre, 4 October 1948, on paper, 'ASW - Review of Present Position' by Commander Marks, 4 October 1948, NAA: MP 1185/8, 1937/2/404.
91. Minute, Collins to Gatacre, 1 November 1948, NAA: MP 1185/8, 1937/2/404.
92. Cited in R. Pelvin, 'Review of Anti-Submarine Warfare in the RAN since 1945', unpublished, undated paper, p. 2. Copy held by NHS, Canberra.
93. Letter, Collins to Fraser, 20 December 1948, PRO: ADM 205/69.
94. Minute Collins to Gatacre, 1 November 1948, NAA: MP 1185/8, 1937/2/404.
95. Paper, 'Balanced RAN' by Gatacre, 5 April 1949, NAA: MP 1185/8, 1937/2/404.
96. The RAN Post War Plan (1947-60) had also identified the need to acquire 18 new frigates. See 'RAN Post-War Plan', NAA(ACT): A816, 52/301/245.
97. See letter, Captain F.B. Lloyd (United Kingdom Service Liaison Staff, Melbourne) to Fraser, 6 June 1951, PRO: ADM 205/86.
98. Remarks by Collins, 13 April 1949, on paper, 'Balanced RAN' by Gatacre, 5 April 1949, NAA: MP 1185/8, 1937/2/404.
99. Letter, Collins to Fraser, 27 March 1950, PRO: ADM 205/72.
100. Letter, Fraser to Collins, 27 April 1950, PRO: ADM 205/72.
101. See paper, 'Anti-submarine Aircraft for the Royal Australian Navy: Order for "Gannet" Type', Cabinet Agendum, 5121/18/2, 23 September 1952, NAA(ACT): A5954, 1364/6.
102. Remarks by Rear Admiral J. Wishart (3NM), 24 May 1949, on minute Willoughby to Showers, 4 May 1949, NAA: MP 1185/8, 1937/2/404.
103. Letter, Collins to Fraser, 20 December 1948, PRO: ADM 205/69.
104. *Admiralty Maritime Intelligence Review*, October 1949, p. 12. During 1949 the total rating strength decreased by 644.
105. Article, 'The RAN Is Preparing to Chase Submarines', in the *Sydney Morning Herald*, September 22 1950, p. 2.
106. Minute, Showers to naval staff, 31 May 1949, NAA: MP 1185/8, 1937/2/404.
107. Minute, Gatacre to Collins, 23 November 1949, MP1185/8, 1846/4/343.
108. *Admiralty Maritime Intelligence Review*, November 1949, p. 15.
109. Defence Committee Agenda 149/1949, 23 December 1949, NAA: A5799.
110. Letter, Collins to Fraser, 26 January 1950, PRO: ADM 205/72.
111. Cable Menzies to Attlee, 11 May 1950, NAA(ACT): A462, 433/19.
112. R. O'Neill, *Australia in the Korean War 1950-53*, Volume I, *Strategy and Diplomacy* (Canberra AWM and AGPS, 1981), pp. 101-4
113. Cabinet Agendum No. 151/1950, cited in letter, Naval Secretary to Secretary Department of Defence, 28 November 1951, NAA(ACT): A5799, 347/1951.
114. Letter, Naval Secretary to Secretary Department of Defence, 28 November 1951, NAA(ACT): A5799, 347/1951.
115. Minutes of 2nd TAS Technical Meeting, 16 August 1951, NAA: MP 1049/6, 5031/1/24.
116. Article, 'The RAN Is Preparing to Chase Submarines', in the *Sydney Morning Herald*, September 22 1950, p. 2.
117. Letter, Collins to Fraser, 6 October 1950, PRO: ADM 205/72.
118. *Admiralty Maritime Intelligence Review*, April 1952, p. 17.
119. 'Plan for the defence of sea communications in the ANZAM region', 8 May 1952, NAA: MP 1185/10, 5202/21/22.
120. Defence Committee Minute No 56/1950, cited in Pelvin, 'Review of Anti-Submarine Warfare in the RAN since 1945', p. 2.
121. Statement by McMahan (Navy Minister), 7 June 1953, NAA(ACT): A462/19.
122. Letter, Collins to Fraser (British First Sea Lord), 26 January 1950, PRO: ADM 205/72.

123. Letter, UK Service Liaison Staff to British Defence Coordination Committee, 5 March 1952, NAA: MP 1185/10, 5202/21/17.
124. 'Plan for the defence of sea communications in the ANZAM region', 8 May 1952, NAA: MP 1185/10, 5202/21/22, p. 3.
125. Letter, Collins to McGrigor (First Sea Lord), 14 May 1952, PRO: ADM 205/86.
126. Paper, 'Plan for the defence of sea communications in the ANZAM region', 8 May 1952, NAA: MP 1185/10, 5202/21/22, p. 106.
127. Manus was seen as a vital strategic asset that would act as an essential complement to Singapore and secure communications to the Far East against a 'North Pacific Power'.
128. Area operations attempted to deny the enemy's submarines access to large portions of the ocean.
129. Close operations aimed to defend a particular point in the ocean occupied by friendly forces.
130. JIC Melbourne Report No. 5/53, cited in paper, 'Plan for the Defence of Sea Communications in Australian Home Waters', 6 May 1953, NAA: MP 1185/10, 5202/21/22.
131. Minute, Bracegirdle to Collins, 26 January 1954, NAA: MP 1185/10, 5233/27/2.
132. Paper, 'Plan for the Defence of Sea Communications in Australian Home Waters', 6 May 1953, NAA: MP 1185/10, 5202/21/22.
133. Paper, 'Plan for the defence of sea communications in the ANZAM region', 8 May 1952, NAA: MP 1185/10, 5202/21/22, p. 118.
134. Paper, 'Plan for the Defence of Sea Communications in Australian Home Waters', 6 May 1953, NAA: MP 1185/10, 5202/21/22.
135. 'Sheldrake', 'Submarine and Anti-Submarine Today', in H.G. Thursfield (ed.), *Brassey's Annual: The Armed Forces Yearbook 1950* (London: William Clowes & Sons, Ltd, 1950), p. 123.
136. Paper, 'Plan for the defence of sea communications in the ANZAM region', 8 May 1952, NAA: MP 1185/10, 5202/21/22, p. 118.
137. For example, with a convoy delivery rate calculated at 14 per cent less than the independent rate, when the independent loss rate was 25 times greater than that of the convoy loss rate the convoy delivery rate would exceed that of independent shipping in under a month. In fact during the first two months of WWII, loss rates of independent ships in the Atlantic were 120 times greater than those experienced in convoy. This was at a time when the U-boats suffered 25 per cent torpedo failures and operated under severe political and prize restrictions. See, article, 'The U-Boat Warfare in the Second World War', *Admiralty Maritime Intelligence Review*, October 1953, pp. 24-37, 29.
138. Article, 'The Effect of Convoy Escort on U-boat Operations', *Admiralty Maritime Intelligence Review*, November 1953, p. 23.
139. The standard British work of analysis claimed that escort was eight times as effective in destroying U-boats as all other means combined. See Grove, *The Defeat of the Enemy Attack on Shipping*, p. 56.
140. Between August 1942 and May 1943 air patrols in the Bay of Biscay destroyed 14 U-boats at a cost of 148 aircraft. In contrast, aircraft on convoy escort in the Atlantic used only two-thirds the flying hours, but destroyed 30 U-boats for the loss of 23 aircraft.
141. In 1957, planners still only expected to institute merchant convoys north of the Indonesian archipelago. See 'Map 6.2: 1957 - Degrees of control for protection of shipping in war', in Stevens, *In Search of a Maritime Strategy*, p. 108.
142. See J. Wisdom, *A History of Defence Science in Australia* (Melbourne: Defence Science and Technology Organisation, Corporate Communications Network, 1995), pp. 62-3.
143. J. McCarthy, *Defence in Transition: Australian Defence and the Role of Air Power 1945-1954*, Defence Paper No. 2 (Canberra: Australian Defence Studies Centre, 1991), p. 2.

144. Cooper, 'At the Crossroads', pp. 706-7.
145. Wisdom, *A History of Defence Science in Australia*, p. 136.
146. 'Duties of Naval Scientific Adviser', cited in Wisdom, *A History of Defence Science in Australia*, p. 137.
147. Minute, Gatacre to Collins, 23 November 1949, NAA: MP 1185/8, 1846/4/343.
148. J.V.W. Hart, 'History of the RAN Research Laboratory', in *Journal of Naval Science*, Vol. 5, No. 4, 1979, p. 254.
149. Hunter, *The Development of the RAN Research Laboratory*, pp. 5-6.
150. Wisdom, *A History of Defence Science in Australia*, p. 137.
151. Minute, Marks to Collins, 26 October 1948, NAA: 1185/8, 1937/2/404.
152. Grove, *Vanguard to Trident*, pp. 48-9.
153. Letter, Riordan to Dedman, 14 July 1949, NAA(ACT): A5799, 92/1949.
154. *Admiralty Maritime Intelligence Review*, September 1949, p. 10.
155. White, *Australian Submarines*, pp. 189-90.
156. *Admiralty Maritime Intelligence Review*, May 1950, pp. 20-1.
157. Minutes of 2nd TAS Technical Meeting, 16 August 1951, NAA: MP 1049/6, 5031/1/24.
158. Correspondence with Rear Admiral J.D. Stevens, RAN (rtd), 15 June 1994.
159. Minutes of 2nd TAS Technical Meeting, 16 August 1951, NAA: MP 1049/6, 5031/1/24.
160. Research by Mr B. Mitchell of the NHS, Canberra.
161. Of genealogical interest one of the aircrew was Lieutenant C.H.C. Spurgeon, RAN, son of Stanley Spurgeon.
162. *Admiralty Maritime Intelligence Review*, November 1946, p. 38.
163. Paper, 'The Establishment of a Joint Anti-submarine School in Australia', 22 February 1951, NAA: AA5799/1, 173/1951.
164. Stephens, *Power plus Attitude*, p. 115.
165. Air Marshal Sir Donald Hardman, KCB, OBE, DFC, RAF (1899-1982), CAS 1952-54.
166. McCarthy, *Defence in Transition*, p. 20.
167. Paper, 'Assumption by the RAN of RAAF Maritime Function', by Captain D.C. Wells (Director of Plans Division), 23 April 1959, NAA: MP 1185/10, 5241/70/14.
168. A. Stephens, *Going Solo: The Royal Australian Air Force 1946-71* (Canberra: AGPS, 1995), p. 412.
169. McCarthy, *Defence in Transition*, p. 20-1.
170. Correspondence with Rear Admiral Stevens, 15 June 1984.
171. Paper, 'Assumption by the RAN of RAAF Maritime Function', by Captain Wells, 23 April 1959, NAA: MP 1185/10, 5241/70/14.
172. Correspondence with Captain Hamer, 23 July 1994.
173. Paper, 'The Establishment of a Joint Anti-submarine School in Australia', 22 February 1951, NAA (ACT): AA5799/1, 173/1951.
174. Paper, 'Assumption by the RAN of RAAF Maritime Function', by Captain Wells, 23 April 1959, NAA: MP 1185/10, 5241/70/14.
175. The JUC was a five-week course for instructing formed units of ships and aircraft in ASW, the JTC a two-week course for instructing RAN and RAAF officers in the tactical employment of sea and air forces.
176. *Admiralty Maritime Intelligence Review*, March 1952, p. 21.
177. Commonwealth Navy Order 22/52, NHD; and letter, ACNB to Rear Admiral Burrell (FOCAF), 22 March 1955, NAA: MP 1049/6, 5036/32/161.
178. *Australia Station Intelligence Digest*, 9 April 1946, p. 17.
179. See article, 'The RAN Is Preparing to Chase Submarines', in the *Sydney Morning Herald*, September 22 1950, p. 2.

180. 'Plan for the defence of sea communications in the ANZAM region', 8 May 1952, NAA: MP 1185/10, 5202/21/22, p. 106.
181. Commander E.J.D. Turner, DSO, DSC, RN, CO HM S/M Base Sydney and Commander 4th Submarine Flotilla 1954.
182. Paper, 'Defence Against Attack by Submarines Using Guided Missiles', by Turner, 7 December 1953, NAA: MP 1185/10, 5233/27/2.
183. Commander Warwick Seymour Bracegirdle, DSC** , RAN (1911-84), DTSR 1953-54.
184. Remarks by (DTSR) on Turner's paper, 26 January 1954, NAA: MP 1185/10, 5233/27/2.
185. Commodore John Plunkett-Cole, RAN (1906-??), DNI 1952-54.
186. Remarks by Plunkett-Cole on Turner's paper, 21 January 1954, NAA: MP 1185/10, 5233/27/2.
187. See, correspondence with Captain Hamer, 23 July 1994.
188. Vice Admiral Sir Victor Alfred Trumper Smith AC, KBE, CB, DSC, RAN (1913-98), DAWOT 1953-55, CNS 1968-70.
189. Twenty aircraft were required to keep at least one on patrol 24 hrs a day, and every vital target would require a similar effort.
190. Rear Admiral Otto Humphrey Becher, CBE, DSO, DSC* , RAN (1908-77), DCNS 1952-54.
191. Remarks by Becher on Turner's paper, 15 April 1954, NAA: MP 1185/10, 5233/27/2. Emphasis in original.
192. Remarks by Collins on Turner's paper, undated, NAA: MP 1185/10, 5233/27/2.
193. Remarks by Smith on Turner's paper, 21 January 1954, NAA: MP 1185/10, 5233/27/2.
194. Donohue, *From Empire Defence to the Long Haul*, pp. 69-72, 147
195. In fact, the first 'Type 12', HMAS *Parramatta*, was not laid down until 1957 and did not commission until 1961.
196. Letter, Naval Secretary to Secretary Department of Defence, 28 November 1951, NAA(ACT): A5799, 347/1951.
197. Between 1950-54 Canada laid down 14 destroyer escorts. The design was Canadian, but similar to the 'Type 12'.
198. Rt Hon. Sir William McMahon, PC, CH, GCMG, MP (1908-88), Minister for the Navy 1951-54, Prime Minister 1971-72.
199. The 'Q' conversions likewise increased in cost from £0.4m to £2m per ship and the time for conversion extended from 12 to 15 months to an average of five years. For a more detailed comparison of RAN construction/conversion programs, see Donohue, *From Empire Defence to the Long Haul*, p. 154.
200. Defence Committee Minute, 211/1952, 4 August 1952, NAA(ACT): A2031. The Navy allocation in 1952 was £47m, the draft estimates £54m.
201. Donohue, *From Empire Defence to the Long Haul*, pp. 118-20.
202. Letter, Collins to McGrigor, 28 January 1953, PRO: ADM 205/88.
203. Rt Hon. Sir Phillip Albert Martin McBride, KCMG, PC, MP (1892-1982), Minister for Defence 1950-58, for Navy and Air 1951.
204. Donohue, *From Empire Defence to the Long Haul*, pp. 136-7.
205. Paper, 'Australian Defence Policy', by ACNB, c. 1956, NAA: MP 1049/6, 5201/11/6.
206. *Defence Policy and the Programme*, statement by Minister for Defence, 10 April 1954, (Melbourne: Government Printer, 1954), pp. 1, 6.
207. Defence Committee Agendum, 31/1954, 4 February 1954, NAA(ACT): A4933, Vol. 10.
208. *Defence Policy and the Programme*, statement by Minister for Defence, 10 April 1954, (Melbourne: Government Printer, 1954), p. 6.
209. Defence Committee Agendum, 31/1954, 4 February 1954, NAA(ACT): A4933, Vol. 10.
210. Donohue, *From Empire Defence to the Long Haul*, p. 141.

211. See A. Burke, 'Anti-Submarine Warfare—A Comment', in H.G. Gelber (ed.), *Problems of Australian Defence* (Melbourne: Oxford University Press, 1970), pp. 125-31.
212. The practical experience of the Cold War actually presented the RAN with a paradox. It paid greater attention to ASW than ever before, but the period was distinguished by a lack of submarine action. What had happened was that the actual implications of global nuclear war precluded major conflict. Hence, wars were waged on the fringe and without the need for significant ASW capabilities.



An anti-submarine Navy.
(RAN)

Without control of the sea our economy stops.

Vice Admiral Sir Hastings Harrington, CNS, 1965.¹

As an island nation, the maritime environment has provided Australia's only means of maintaining strategic links with its neighbours, allies and adversaries. In like manner poor internal communications have ensured that Australia's domestic industry has remained dependent upon the uninterrupted passage of coastal shipping. Hence, throughout the period covered by this study the protection of sea communications has been a fundamental defence requirement and a key element of the RAN's professional input into Australian security planning. The complicating factor in this picture has been the need to identify the demarcation between local and wider commitments and the greater or lesser part that allies might play in providing aid and protection. There seems little doubt, for example, that a concentration on the political and strategic value of allied unity in wartime has tended to diminish the concurrent role of local defence.

The danger posed to Australian interests by the operation of enemy submarines offers one of the few instances where the rhetoric and reality of threat perceptions can be compared over a sustained period. The need to provide a counter to the submarine threat was recognised by the RAN as long ago as 1915, and the measures subsequently taken or planned provide a rare means of tracing the RAN's doctrinal thought, warfighting effectiveness and force development priorities in terms of a coherent theme. Concurrently these issues provide a useful window into some of the broader elements of Australian defence policy and strategic perceptions. This study has shown, for example, that it is no longer possible to ignore issues of local defence when examining how the Australian Commonwealth Naval Board interacted with other Australian and Allied authorities.

World War I and after

World War I demonstrated that the biggest advantage possessed by submarines was their ability to operate covertly. To put it simply, the sub-surface environment was a good place to hide, and the activities of submarines allowed

a navy to operate where its surface vessels could not. Furthermore, implicit in this stealth, was the threat of presence. With all its imperfections the torpedo-armed, diesel-electric submarine was still an extremely potent weapons system, and an adversary could not be certain where one might next appear. Thus, to the disproportionate effort already needed to detect, classify, localise and destroy an individual enemy submarine was added the requirement to establish more general protection measures.

The RAN's attempts to deal with the U-boat threat between 1915 and 1918 illustrated just how far removed from the source these effects might be felt. It did not matter that the Germans never implemented their plans for U-boat deployments to the Indian Ocean, for by early 1918 the Australian Naval Board considered the potential threat to be both real and immediate. But without the knowledge, experience, personnel, or resources to deal with an unfamiliar challenge the Board consistently failed to respond in a decisive or appropriate manner. As a result the RAN ended the war hardly better prepared to cope with a local submarine threat than it had been when the threat was first perceived in 1915. The one significant exception to this failure was the ACNB's integration with the imperial NCS system. The war had shown trade control measures to be low-cost but extremely effective against U-boats, and in the postwar period imperial and local authorities ensured that the system, if not entirely understood, was at least institutionalised. In consequence NCS became a core naval function, and survived the interwar cutbacks that elsewhere caused entire capabilities to be abandoned.

The RAN gained no wartime experience comparable to the Royal Navy's in accommodating civilian scientists in technological research, but it rapidly accepted that many of its ASW shortcomings could not be solved by traditional make-do methods. Thereafter, exposure to Admiralty postwar plans left the ACNB in no doubt that to fulfil its trade protection responsibilities it would have to begin applying scientific thought to practical warfighting skills. Nevertheless, actual progress remained haphazard. The political depth of feeling against the 'submarine menace' tended to discourage dispassionate analysis. Established naval practice also proved difficult to displace. Even the new ASW 'experts' often gave inadequate consideration to the problems involved in setting up an effective and comprehensive defence. Most limiting of all was the cost. ASW was expensive, and although the RAN attempted to remain abreast of technological advances, it had little flexibility in terms of where it could invest its limited resources. There was thus no possibility of developing an independent research and development capability, and the

general acceptance of Admiralty advice in this field, as in so many others, was almost mandatory.

The Naval Board had also to consider the prevailing dependence of Australian security on Empire defence and both the differing and evolving meanings of the term 'local defence'. For Australians in the late 1930s it increasingly meant immediate national interests, but for the British Admiralty, it more usually referred to something subordinate to imperial priorities. Consequently, the attention devoted to global issues at the expense of Australia's local situation meant that the RAN suffered from an acute shortage of escort vessels at the beginning of hostilities. Still, one must also keep in mind that the RAN's eventual acquisition of an ASW capability was almost solely due to the Royal Navy's assistance, and that the preparations this allowed before the war provided a sound framework for later expansion. If the Royal Navy had not borne the burden of the expensive and lengthy work of bringing new systems into service, the fighting element fielded by the RAN in 1939 would have been of far smaller size and considerably less efficiency.

In view of these inherent limitations, perhaps Australia's major shortcoming in terms of specifically local defence needs was the failure to integrate adequately the trade protection tasks of the RAN and RAAF. Efficiency and effectiveness both demanded the close collaboration of naval and air elements, but Australian planners made no attempt to implement a common doctrine or give the Air Force a specific responsibility for convoy escort. This was an institutional rather than a financial constraint, but given the RAAF's mantra of unity and independence, and the similar problems occurring simultaneously in Britain, there was little unilateral action that the RAN could have taken in any case. Subsequent wartime joint operations were carried out by mutual cooperation rather than unity of command principles and suffered as a result.

Notwithstanding the limits imposed by inter-service rivalry and financial cutbacks, the RAN did achieve some doctrinal progress in ASW. By the mid-1920s, the Navy was already aware that ASW was both a science and an art. Hence, it understood that anti-submarine activities were heavily dependent on human factors in addition to detailed technical and environmental considerations. But even so, the RAN gave insufficient attention to training requirements. This was again partially due to financial constraints, but it also related to the prevailing attitude that portrayed ASW as a local defence problem and accordingly the almost exclusive preserve of reservists rather than active service personnel.

World War II

Bearing in mind the slow build-up in the national commitment to total war, Australia was fortunate that World War II began in Europe. The delay gave the Commonwealth valuable time to prepare for conflict with Japan and, of particular benefit, allowed the RAN's escort building program to get underway. The handy AMS vessels were engaged in operations from the time of first commissioning in 1940 to 1941, but their value became most readily apparent after May 1942. Once the battles of the Coral Sea and Midway had largely removed the threat from enemy surface forces, Japanese submarines constituted the major threat to Allied maritime interests in the South-West Pacific Area. To its credit the RAN was swift to introduce coastal convoys, and thereafter, convoy escort became the primary focus of naval operations in Australian waters and an ongoing and critical task for local naval authorities.

Being self-sufficient in food and essentials, Australia was never in danger of being starved into submission. Heavy industry, however, relied fundamentally upon both imports and an efficient domestic shipping industry, and the Commonwealth's economy was extremely vulnerable to dispersed pressure upon key points. Even minor shipping losses had the potential to suspend manufacturing and military plans, while a concerted campaign might hope to overextend defences, disrupt the bulk of communications and reduce the nation to strategic irrelevance. This was certainly a goal within Japanese capability and reach in 1942; but, by mid-1943, with the massive influx of American aid and the increasing diversion of their submarines to transport tasks, the enemy had lost their chance.

Thus disruption, rather than complete isolation, came to form the main danger in the SWPA, and although on a far smaller scale than its Atlantic equivalent, the battle off Australia's east coast was similarly vital to Australia's war effort. Fighting well to the rear of the 'Kokoda Frontline', the SWPSF carried out its responsibilities as a subordinate command with a unity of purpose and depth of commitment that was clearly successful. ASW was not an end in itself, but it was an essential step towards achieving a sufficient level of control of maritime communications. In practice, the secure and interlocking system of convoys and the efficient control of shipping ensured that the Australian economy continued to function and that General MacArthur had access to the men and resources he needed to first halt and then push back the enemy. Certainly, if the Japanese submarine problem had not been kept under control there could have been no offensives in New Guinea and beyond. As a local example of Sir Julian Corbett's definition of command of the sea in terms of lines of communication, the 'Battle of the Tasman Sea' is probably unsurpassed.²

Unfortunately, the covert nature of enemy submarine operations hid equally the activities of Allied ASW forces, and MacArthur saw little need to acknowledge his underlying dependence on sea control. This lack of recognition made it far easier to ignore the importance of the struggle both during and after the war. Consequently, the 'Battle of the Tasman Sea' was not recorded as a battle honour and no comprehensive study was ever undertaken into the impact the Japanese submarine campaign had had on Australia or on the effectiveness of the specific ASW activities of the RAN and RAAF.

The submarine and anti-submarine campaigns

Although it would be difficult to dispute that Japanese attempts to sever Australian supply lines were a failure, it would be too simplistic to claim that the result was solely due to local anti-submarine measures. Of course, success in ASW cannot be measured simply by the killing of submarines and, in practice, it may be better to avoid or deter them; but over the course of the campaign local anti-submarine forces demonstrated few clear direct or even indirect successes. In the poor acoustic conditions encountered in eastern Australian waters, no escort ever detected a submarine before its attack, detection after an attack was very rare, and only one escort—in tropical New Guinea waters—was able to localise and sink a submarine subsequent to an asdic contact.

Indeed, although the continual interplay of measures and countermeasures encountered in the Atlantic was not a feature of the local campaign, it would still seem that the difficulties involved in detection and destruction were never really overcome. This is best illustrated by the fact that the increasing number of anti-submarine assets deployed had no corresponding effect on the rate of Japanese success. If anything, enemy submarine commanders became bolder during 1943 than they had been in 1942. Far from asdic-fitted ships acting as 'an effective deterrent round the Australian coastline',³ from the few Japanese accounts available it seems that neither surface nor air activities by Australian forces acted as more than an intermittent hindrance.

Hence, worthy of at least equal recognition in the context of the overall Japanese failure is that the allocation of enemy forces was totally inadequate to achieve their stated aims in the SWPA. The Japanese never really attempted a *guerre de course* or tonnage war on the German model, but they did make the same mistake of embarking on a one-dimensional strategy without allotting sufficient resources. Lacking adequate cooperation between the different

elements of the armed forces, the Japanese submarine arm operated virtually alone. Moreover, the enemy reduced further their underwater campaign's effectiveness through frequent decisions to use their submarines in an inappropriate manner. Although inadequate doctrine played a part, these decisions also reflected the action of overwhelming Allied maritime forces, which left the IJN with little choice if isolated Pacific outposts were not to be abandoned.

But even this tells only one part of the story for, notwithstanding Japan's inability to sustain an interdiction campaign, the impact of its submarine operations had not been negligible. Certainly, within the limited confines of the Australian campaign, IJN submariners achieved results that compare favourably with those of other nations in other theatres. Lieutenant Commander K. Matsumura of *I-21*, for example, was—in terms of merchant tonnage sunk—one of the most successful submarine commanders of the war.⁴

The submarine campaign in Australian waters also highlights two other features of interest, both of which reinforce the importance of re-examining the events in more detail. The most visible of these features was the disproportionate response enforced on the defender by the presence, or even the suspected presence, of an enemy submarine. ASW has often been described as 'asset intensive' and the impact of a campaign of interdiction does not relate simply to the number of submarines that an enemy may operate or to the sinkings they may achieve. In fact the results of the Australian campaign may more accurately be recorded in terms of diversion and containment. The Japanese certainly looked upon some of their submarine deployments as diversions and, although containment of Allied forces was not specifically mentioned, the effect was nonetheless apparent.

Nevertheless, it is the case of the only U-boat to operate in Australian waters that provides the best example of this containment effect in the context of an alternative maritime strategy, albeit only because the principal German objective—the defeat of the Allied shipping effort by a tonnage war—had already failed. The hunt for *U 862* from 1944 to 1945 occupied the attentions of more assets over a longer period than any single submarine had ever achieved before or since. The mission was ultimately irrelevant to the course of the overall war, but in the context of his strategy to divert Allied resources, *Grossadmiral* Dönitz could hardly have wished for a better result. More important, the episode highlights a local vulnerability that has gained even greater relevance in subsequent years as the number of ASW assets available

to the Australian Defence Force has decreased. No matter how sophisticated the unit, it can still only be in one place at a time. Having to balance concentration against coverage, a commander will always need to make hard decisions on where to allocate his or her priorities.

The second feature of interest relates to the indirect effects of the submarine campaign, and specifically the way these effects were felt long after the Japanese had departed Australia's coastal waters. Despite Germany's intention in 1915 to use unrestricted U-boat warfare to intimidate merchant seamen, there is little in the existing literature that analyses the success or failure of this aspect.⁵ Instead the image that has evolved from both world wars is of the stalwart but forgotten fourth service, crewed by men willing to be every bit as self-sacrificing as their naval counterparts. This was not mere propaganda for, during World War II, Allied merchant seamen did indeed suffer a higher proportional loss rate than naval personnel and received less official recognition afterwards. Yet, the activities of many of Australia's civilian seafarers between 1942 and 1944 indicate that, off the east coast, the fear of sudden, violent death was a significant factor in reducing their effectiveness. Furthermore, a reluctance to sail continued for at least six months after the last submarine attack in June 1943 and despite assurances from naval authorities that the threat had passed. The subject is too large to be considered further here, but it highlights some of the problems inherent in relying on the support of non-service personnel in a combat theatre.

The convoy question

The course of the anti-shipping campaign off the Australian east coast leaves one major question unanswered: were convoys an appropriate response to the submarine threat in the SWPA? Unfortunately, this is another area which requires further research and, since it can be viewed on a number of levels, a definitive answer remains elusive. Certainly, from the evidence of the predominantly British sources cited throughout this monograph, one might confidently expect the answer to be in the affirmative. Convoys were no easier to find than independent ships, yet they made it easier for ASW forces to concentrate and exposed the attacker to greater risk. Convoys, furthermore, although in theory less efficient than independent shipping, in wartime conditions could expect to achieve far higher delivery rates through the better survival rates accorded individual ships. As we have seen, the Royal Navy estimated that the rate of independent delivery became less than that of the convoy delivery rate in a matter of weeks, and hence recommended that convoys be introduced as soon as possible.⁶

The USN, however, also carried out a major postwar survey of ASW, and this determined that it would take six to seven months before convoyed ships would carry a higher aggregate of cargo.⁷ Consequently, from a simple supply and demand perspective, convoys were most appropriate when faced by a prolonged and determined anti-shipping campaign. The difficulty in reconciling the British and American results partially lies in the varying estimations of convoy efficiency relative to independent shipping. As was discussed in Chapter 7, the British and Americans deduced average reduction rates of 10 to 14 per cent and 31 per cent respectively. Records of Australian estimates range from 7.5 per cent to 50 per cent depending on the month and the authority providing the statistics. In a further complication, however, no supporting data has been found to show how any of these figures were derived.

Clearly, the situation that existed off the Australian east coast did not constitute a prolonged or determined campaign. Rather the threat appeared as a series of waves, and sinkings never reached the levels experienced in the North Atlantic. Nevertheless, since shipping authorities could not be certain when Japanese operations were entering a lull they were probably correct to maintain convoys throughout the campaign, particularly in view of the tactical advantages to be gained. Perhaps the only conclusive statement that can be made in this connection is that the need to maintain convoys well after the threat had departed resulted in a great deal of wasted capacity. In elementary terms, an average reduction of 20 per cent among the ships operating off Australia's east coast in mid-1943 meant that more than 222,000 tons of cargo went undelivered each month.⁸

The postwar era

The experience of the two world wars had been that the strategic value of the conventional submarine was seen primarily in terms of destruction of merchant shipping. But in Australian waters during World War II it demonstrated at least equal success at containing Allied forces. Notwithstanding unique local features, postwar Allied assessments pointed to submarines again being used to contest global maritime communications. The growing size and capability of the Soviet submarine fleet provided a worthy successor to Germany's U-boat arm and visions of a third Battle of the Atlantic held sway until relatively recent times. Faced by a desperate threat the West made far greater efforts to ensure that all aspects of ASW—scientific, tactical, operational, and strategic—were integrated in the overall campaign plan to defeat any Soviet attempt to interdict friendly shipping. Differences between the various competing factions still required to be addressed but, compared to the prewar experience, great advances were achieved.

Neglected went the fact that each navy designed its submarine arm to fulfil functions appropriate to its own (unique) military strategy and that the Soviets would take far longer than expected to absorb Germany's wartime experience. Australia was not immune to this general Western lack of perception. Although not universally welcomed within the Navy, by 1954 the RAN had officially taken up the ASW baton in the ANZAM area.

The perceived strategic need ensured that for most of the Cold War the RAN would put its greatest effort into improving its anti-submarine capability. It did so through the acquisition of specialised ships, aircraft and weapons, and it attained an admirable level of proficiency. But the ramifications for other naval roles were significant. No nation can ever hope to retain capabilities to cope with all imaginable military contingencies. As a small to medium power Australia had always to make difficult decisions about what it could afford. Although surface warships are inherently multi-role platforms, the cost of allocating and equipping them for ASW meant reducing their availability for other tasks. Whether a concentration on limited war tasking might have situated the RAN better for the reality of the Cold War and its combat operations during Indonesian Confrontation and Vietnam, is another question beyond the scope of this study.

What is clear, however, is that Australia's dependence upon maritime communications did not lessen over the period studied and that this dependence has continued to the present day. Whether examining Australia's transport task from the military or economic perspective, one cannot escape the conclusion that shipping remains the most efficient way of carrying large volumes of strategically important commodities around the coastline, and the only means of maintaining continuous access to, and support for, remote regions. Other modes of transport simply do not provide a serious alternative.

Obviously, if a threat does not exist then there is no need to develop appropriate countermeasures, but the end of the Cold War did not mean the end of the submarine threat. Stealthy diesel submarines have continued to proliferate, and the anti-submarine protection of sea communications is still a key role for Australia's maritime forces. Even today the interdiction of Australian shipping would have not only serious economic implications, but also could place in jeopardy the projection and sustainment of any Australian military response. Australia's engagement in conflict has never been determined by domestic factors alone, and the level of participation will always remain dependent on the maintenance of strategic links. These links may have to be

fought for and, although the battle for sea control takes time and preparation, there are few alternatives if Australia is serious about maintaining its place in international and regional affairs. It should therefore be of no surprise that the words of Sir Francis Bacon still remain relevant some 400 years after they were written: 'He that commands the sea is at great liberty, and may take as much and as little of the war as he will'.⁹

Notes

1. Haul Down Report by VADM Harrington, 8 February 1965, NHD: general file, F302.
2. 'Command of the sea, therefore, means nothing but the control of maritime communications, whether for commercial or military purposes. The object of naval warfare is the control of communications...' See, J.S. Corbett, *Some Principles of Maritime Strategy* (Annapolis: USNI Press 1988, reprint of 1911 edition), p. 94.
3. Brochure, *Anti-Submarine Warfare: the history of anti-submarine warfare* (Canberra: Department of Defence, 1991).
4. Matsumura is credited with destroying nine ships totalling almost 60,000 tons—44,000 tons in Australian waters. This would place him in the top 10 on the table of World War II USN submarine commanders. Most German U-boat aces achieved their successes in the first two years of the war.
5. For a World War II exception, see Behrens, *Merchant Shipping and the Demands of War*, pp. 154–77.
6. See Chapter 10.
7. Sternhell and Thorndike, *Antisubmarine Warfare in World War II*, p. 111.
8. See Appendix VI.
9. Cited in Till, *Maritime Strategy and the Nuclear Age*, p. 21.

Appendices

APPENDIX I

'JAPANESE SUBMARINES AND TRADE OPERATIONS', 1928

Source: Paper, 'Appreciation War in the Pacific', 1928, NAA: MP 1185/8, 1846/4/363.

Prepared by Naval Staff - 9 August 1928

Problem

1. Time - the present.
2. Japan is in the position of being able to base all her submarines on islands in the Japanese Mandated Territory. What interference with Imperial trade can be caused by submarines?

Forces Available

| 3. | <u>No.</u> | <u>Type</u> | <u>Endurance</u> | <u>Consumption of fuel.</u> | |
|-------|------------|-------------|------------------|-----------------------------|------------------|
| | | | | <u>On passage</u> | <u>On patrol</u> |
| | 3 | Large I's | 14000' @ 12 kts | 10.5 tons per diem | 5 tons |
| | 6 | I's | 8500' @ 12 kts | 8.6 " | 4 " |
| | 20 | L50 Class | 6000' @ 10 kts |) | |
| | 4 | Ro | 5000' @ 10 kts |) 3 " | 1.75 " |
| | <u>21</u> | L Class | 4000' @ 10 kts |) | |
| Total | <u>54</u> | | | | |

There is also one submarine minelayer with large endurance.

4. The endurance and consumptions stated in para. 3 above are based partly on actual figures given in C.B. 1815. Where definite figures are not given the endurance and consumption have been estimated by reference to the performances of British submarines of a similar type.

Bases

5. As Japan is free to use the islands in her Mandated Territory, the harbours at Pelau and Truk are considered to be the most likely bases and the distances and conclusions are worked out for these harbours.

Distances

| | | |
|--|------|--|
| 6. Pelau to Darwin | 1330 | Via Dampier and Pitt Straits and East of Tenimber Island |
| Pelau to Leeuwin | 3330 | " |
| Pelau to Colombo | 4000 | Via Lombok Strait and South of Java |
| Pelau to nearest point on Colombo-Leeuwin trade route. | 2620 | |
| Truk to Sydney | 2560 | Via Bougainville Strait |
| Truk to Brisbane | 2045 | " |

Conclusions

7. To operate against overseas trade with any success the submarines must get off Sydney or off the Leeuwin. The shortest distance to Sydney is 5120 miles and thus only 29 submarines with endurance of 6000 miles and above are available for operations against overseas trade. Of this 29, only 9 are capable of effective work on the West coast of Australia.
8. Coastal trade is mostly South of the line Fremantle-Newcastle. As the distance from Truk to Brisbane allows 4 more submarines with endurance of 5000 miles to be used off the latter port, interference off Moreton Bay or in the Barrier Reef is possible.
9. It is difficult to estimate the amount of time which the submarines will require in harbour between cruises. Anti-submarine activity while on passage to and from the patrol area will not be of anything like so intense an order as was the case with German submarines during the last war; on the other hand, the conditions at the base and during part of the passage are tropical.

Time Table

10. The following time table shows what is considered to be practicable for the submarines for a period not exceeding about 6 months. Refits, damage and gradual exhaustion of the crews will probably cause a slackening of activity after that period.

| <u>Type & Number</u> | <u>Passage</u> | <u>Patrol</u> | <u>Total Sea Time</u> | <u>Time in Harbour</u> |
|---|-----------------------------------|---------------|-----------------------|------------------------|
| <u>Leeuwin Area</u> | | | | |
| 3 large I Class | 9 $\frac{1}{4}$ days each way | 20 days | 39 days | 24 days |
| 6 I Class | 12 $\frac{1}{2}$ days each way | 8 days | 33 days | 18 days |
| <u>Result</u> 2 boats on patrol at a time | | | | |
| <u>Sydney Area</u> | | | | |
| 20 L Class | 11 days each way | 4 days | 26 days | 14 days |
| <u>Result</u> 2 boats on patrol at a time | | | | |
| <u>Barrier Reef and Moreton Bay</u> | | | | |
| 3 Fiat Class | 6.4 days each way | 10 days | 23 days | 14 days |
| <u>Result</u> 1 boat on patrol at a time | | | | |

APPENDIX II

'FUTURE ENEMY SUBMARINE STRENGTH', MAY 1943

Source: NAA (ACT): AA1969/100, 6/2/24.

1. It is desired to assess the capacity of the enemy to maintain on the E and SE coast of Australia a force of submarines at present strength (assessed provisionally at four plus).
2. At the outset this depends on an assumption - that the enemy intends to maintain a force on the coast for some time. This has apparently not been the case in the past. Evidence available to date tends to show that enemy submarines have operated in "waves" (made up of one or more sorties) and that generally one "wave" has retired before the next begins. Other evidence of enemy intentions may be available but has not been received by this section.
3. Assuming, however, an intention to maintain a force of at least 4 submarines, the following factors may be considered:

Range and Endurance. It is probable though not certain that type is I9 Class. Best available information from Washington gives these a range of 14,000 miles at 16 knots, with corresponding increase at 15 knots. This gives abundant range for long tours of duty on the coast. Past experience shows that "waves" have operated on the coast for periods of three to four weeks at a time.

Base. Available evidence tends to show Rabaul as the main operational base. The use of submarine tenders extends operations but these are not likely to be used further south than 6 deg. South at the most. Travel to and from Bass Strait therefore involves at most about 4,000 miles, leaving a margin of 10-12,000 miles for patrolling. At a high average of 250 miles per day this would give from 40-48 days available for operations. The factor most likely to cut down this operational range is the physiological effect on the crew. U.S. Navy regards Jap. submarines as overcrowded and cramped and 4-5 weeks total trip would probably be the most that a crew could take maintaining efficiency without proper exercise.

Number Available. Information on this is most sketchy. Both rate of production and sinkings are uncertain and the possibility that types other than the I9 Class are operating cannot be excluded. There are some indications that Japan has a total of about 29-30 I9 class in operation - but source is partly POW [Prisoner of War] and must be assessed accordingly. ONI 41-42 (Nov. 1942) lists 32 built and 4 building of I9 Class. Since then some have been sunk.

The calls on Jap. subs in other areas are heavy. Some must operate in the Aleutians, at least one is known to have operated in the Central Pacific (on U.S. supply routes), others are no doubt operating near the Gilberts in view of the U.S. occupation of Ellice Islands, some must be used to the E of Solomons in search of U.S. Task Forces, some are being used for running supplies to Lae, Salumaua, Yunda, Vila etc., some are being

used for experiments in carrying LC [landing craft] and even tanks and some are no doubt maintained as strategic reserves at Truk, Saipan, Jaluit and Palau. At least one has made a trip to Europe.

Further information on numbers available etc. should be held by U.S. Navy and application has been made to A.A.I.C. for an appreciation on the matter.

Conclusion

If a high priority were given by the enemy to maintaining a constant force of 4 subs. on the coast he is capable of doing so, but probably only at the expense of other operations. To do this would involve putting in four new subs every 3-4 weeks.

A change of priorities to accomplish this would probably involve reasons over and above the normal reason for sub operations on the coast - the sinking of ships. It seems likely that such a decision to change the previous plan of operations would arise from a tie-up with other contemplated plans - that is, it would be deliberately calculated to get the maximum diversion of air and sea forces from other areas and to tie down these forces for more than four weeks, in order to assist Jap operations elsewhere.

If this is correct, then a decision to maintain a force of 4 subs. over a longer period than four weeks would probably be associated with a decision to create a maximum nuisance value by shelling of important points and other such actions calculated to create public pressure for greater defending forces. Operations of this kind might give evidence of such a change of plans. It does not seem at present that ship sinkings have been large enough to justify by themselves a change of plans without considering other factors.

S. Jamieson S/Ldr.
Area Intelligence Officer.
Eastern Area
4 May 1943

APPENDIX III

'POSSIBLE LANDING OF ENEMY AGENTS FROM SUBMARINES OR COMMUNICATION WITH THEM', c. AUGUST 1943

Source: NAA(ACT): AA1969/100, 6/2/24.

There are three possibilities:-

- (a) The landing of agents by submarines.
 - (b) Communication by submarines with agents.
 - (c) A combination of both.
2. These possibilities cannot of course be dismissed but they appear fairly remote for the following reasons, inter alia:
- (a) Until recently convoys sailed on a fixed routine and on unvarying routes. At one point on the E. coast the North and South bound convoys passed twice a week. It is clear from events that no knowledge of this (which could have easily been discovered in a port such as Sydney) has reached the enemy.
 - (b) An analysis of all submarine indications and attacks in EASTERN AREA (Where most of the submarine operations have taken place) was recently made by the Intelligence Section here. It demonstrates fairly conclusively that of the five submarine sorties here, three were haphazard, seeking targets of opportunity, one was organised on a "Beat" system and was concentrated on coastal shipping and one was interrupted by the advance in the Solomons before it got under way. In all cases however, it is clear that the submarines merely waited on a likely route until something turned up. There is no evidence whatever of planned interception.
 - (c) Captured orders indicate merely a plan to reconnoitre and find the targets. Captured¹ Signals received by submarines at sea give no detailed intelligence of shipping targets.
 - (d) If agents were at work one would expect better Japanese Intelligence. In fact it is poor. The American landing on GUADALCANAL came as a surprise to the enemy. Yet it was widely talked of (in some detail) beforehand in CANBERRA and SYDNEY at least, to say nothing of FIJI where it was prepared. Captured Japanese documents (too widely spaced and too consistent to be faked) indicate extreme paucity of knowledge plus a tendency by Units to deceive their own HQ. On the side of optimism. E.g.. a captured map of AUSTRALIA showing RAAF dispositions indicates clearly that the sources are W/T derived intelligence plus a few P.O.W. reports - the total being only about 25% correct. Another captured document shows that the enemy gives the highest priority

in intelligence to W/T interception and derived information (even higher than reconnaissance). This side is pretty well developed. The intelligence reports of OKI SHUDAN HQ. Show that the priority of intelligence is:

1. Careless W/T traffic.
 2. Remarkable revelations by the Chungking Military Attache in a compromised cypher.
 3. P.O.W.
 4. Radio broadcasts.
 5. Air and submarine reconnaissance.
3. On the whole it appears that if agents were doing any useful work, some results would by now be apparent in the enormous mass of captured documents.
 4. The landing of enemy agents would not be quite so simple as it appears. If they are landed near centres of population, chances of detection of the submarine are fairly high. If they are landed on remote parts (e.g. Gulf country) they have to travel great distances to become useful and in the meantime as strangers in a remote district they are at once under suspicion from local people.
 5. All the above facts are, it is admitted, negative in nature but it must be remembered that positive evidence of any reasonably high grading is non-existent. Almost every report of flares, signalling and the like faded away when thorough interrogation is made. The greater part of all anti-submarine work in AUSTRALIA is done by this HQ. And no reasonably authenticated instance of possible communication has yet come to notice.
 6. To repeat, though the possibility cannot be dismissed the likelihood appears fairly remote.

(S. JAMIESON)
Squadron Leader,
AREA INTELLIGENCE OFFICER.

1. The word 'Captured' was added by hand after printing, presumably to disguise the use of SIGINT.

APPENDIX IV

PROBABLE FORM AND SCALE OF ATTACK, NOVEMBER 1951

Source: NAA: MP 1125/10, 5202/21/22.

NAVAL THREAT TO JUNE, 1953

1. The major threat to sea communications within the ANZAM Region will come from long range and medium range submarines. The principal methods will be by torpedo or gun attacks against shipping at sea (and possibly in harbour), and by minelaying in focal areas. Minelaying is likely to be the method most favoured by long range submarines at extreme ranges.
2. It is not possible to give an accurate estimate of the number of Long Range and Medium Range Submarines which will be allocated for operations in the ANZAM Region, but it is considered possible that the following numbers will be made available:-
 - (a) Long Range Submarines -
Two-thirds of the total number of 28 i.e. 18 approx.
 - (b) Medium Range Submarines -
One-third of the total number of 40
(excluding obsolescent craft) - 13.
3. It is expected that the Soviet Navy will use their submarines for operations as follows:
 - (a) Offensive Patrols
 - (i) Medium range submarines based on Hainan are likely to operate continuously in the Malayan area. They are likely to be particularly active in the South China Sea - Singapore - Java Sea Area. This will allow more long range submarines to be used in distant areas, particularly in South East and South West Australian waters and possibly New Zealand waters. If clandestine refuelling bases are available in Indonesia; medium range submarines could also operate in North West and North East Australian areas.
 - (ii) In South East and West Australian Areas and possibly New Zealand waters, infrequent patrols by one or two long range submarines. Long range submarines could also operate in North East and North West Australian areas.
 - (b) Minelaying
 - (i) It is expected that submarine minelaying will be carried out in focal and other areas in the Northern part of the ANZAM Region.

- (ii) It is also expected that submarines will operate at extreme ranges on minelaying missions in South East and South West Australian waters and possibly New Zealand waters,. These submarines may carry out attacks against shipping at sea whilst en route to and from their destinations, but such attacks are likely to be sporadic. It is not possible to estimate the intensity at which submarines will operate in southern waters.

Discipline and Morale

3. Discipline is strict and morale is high in the Soviet Far Eastern Fleet, particularly in the submarine branch.

Training and Efficiency

4. ...In the submarine arm, experience in World War II showed an aptitude for submarine operations which was negated by tactical inexperience and inefficiency. It is believed that Soviet awareness of these shortcomings together with external (e.g. German) aid and training is producing a yearly improvement in efficiency.

The Far East Submarine Fleet

9. The Fleet probably consists of five brigades based on Port Arthur, Vladivostok, Ulysses Bay, Sovietskaya Gavan and Petrapavlosk, with repair facilities at Nikolaevsk, and building yards at Komsomolsk, Vladivostock and possible Sovietskaya Gavan.

Numbers and types at present believed in the Far East are:

| | | |
|----------------------|-------|---------------------------------------|
| 24 Large Submarines | | 11 'L' class, 13 'S' class |
| 40 Medium Submarines | | SHCH class (including 12 obsolescent) |
| 41 Small Submarines | | 'M' class (including 11 obsolescent) |

The Far East Submarine Fleet – Operational performance Data to June, 1953

10. Performance figures for these submarines, together with those of the large 'K' and ex-German type XXI class are given below, and represent the performance data of Russian types to June, 1953, in the Far East:

| Type | Surface Endurance at max. speed. | Submerged Endurance at max. speed. | Submerged Endurance at Economical speed. | Armament |
|--------|--|--|---|---|
| 'L' | 2,000' – 17.0 knots | 8.5' – 8.5 knots | 8,000' – 8 knots | 18 x 21" Torpedoes (8 tubes) <u>AND</u> 20 mines. 1 x 3.9" L.A. gun 1 x 1.77" A.A. gun 2 m.g's. |
| 'S' | 3,400' – 20.0 knots | 9.0' – 10.4 knots | 9,800' – 10.4 knots | 12 x 21" Torpedoes (6 tubes) <u>OR</u> 20 mines. 1 x 3.9" L.A. gun 1 x 1.77" A.A. gun 2 m.g's. |
| 'SHCH' | 1,205' – 13.6 knots | 8.0' – 8 knots | 3,650' – 7.3 knots | 10 x 21" Torpedoes (6 tubes) <u>OR</u> 10 mines. 2 x 1.77" A.A. guns 2 m.g's. |
| 'M' | 700' – 14.0 knots | 8.0' – 8 knots | 2,000' – 8.5 knots | 2 or 4 x 21" Torpedoes (10 tubes) <u>OR</u> 10 mines 1 x 1.77" A.A. gun 1 m.g. |
| 'K' | 2,900' – 22.5 knots | 10.0' – 10.0 knots | 15,000' – 9.0 knots | 20 x 21" Torpedoes (10 tubes) <u>AND</u> 20 mines. 1 x 3.9" L.A. gun 2 x 1.77" A.A. guns 2 m.g's. |
| 'XXI' | 5,100' – 15.6 knots | 17.0' – 15.2 knots | 15,500' – 10.0 knots | 20 x 21" Torpedoes (6 tubes) 2 x 1.18" A.A. guns |

11. The following table sets out possible patrols of Soviet long range submarines, assuming they are based at Hainan, and that they refuel approximately 3,000 miles from base, e.g., approximately 1,800 miles from the Sydney area – in the vicinity of the Nuguria Group.

| Type | Hainan to fuelling point ($\frac{1}{2}$ snort) | Fuelling Point to Sydney area and return ($\frac{1}{2}$ snort) | Patrol on S.E. Australian Coast (using full snort) |
|-------|--|--|---|
| 'L' | 3,000 miles | 3,600 mile | 608 miles (8 days) |
| 'S' | 3,000 miles | 3,600 miles | 1,080 miles (15 days) |
| 'K' | 3,000 miles | 3,600 miles | 1,920 miles (13 days) |
| 'XXI' | 3,000 miles | 3,600 miles | 4,375 miles (30 days) |

NOTE: 3,000 miles at $\frac{1}{2}$ snort is half the endurance of the 'L' type submarine. Half endurances at $\frac{1}{2}$ snort for 'S' 'K' and 'XXI' are 3,600; 5,100 and 5,300 miles respectively. These latter types, therefore, could refuel at greater distances from their base if required.

Midget Submarines (Small Battle Units)

12. The Russians are known to have kept ex-German "Seehunds" and "Mardue" in a state of maintenance and to have been exercising with them in the Baltic Seas. Russian types of the above may be in quantity production. It is estimated that there are approximately 20 Midget Submarines in the Far East at the present time.

NOTE: The German Seehund has a submerged displacement of 15 tons (with torpedoes), length 40', beam 5'3", 2 suspended torpedoes and could dive to 165 ft. Surface endurance 250 miles at 5 knots, submerged 60 miles at 3 knots.

Methods of Increasing the Operational Range of Submarines

13. The operational range of submarines may be increased, prior to outbreak of war, by towing of fuel supplies in specially constructed "cisterns" holding approximately 60 tons of fuel. These cisterns would constitute a "fuel dump" on uninhabited points, but it is unlikely that submarines would risk detection in patrolled waters with these cisterns in tow. It is estimated that a sea-going submarine would be capable of towing three or four of these cisterns subject to calm weather and non-interference from the air.

A cistern, as mentioned above, would extend the range of sea-going submarines by approximately 3,000 miles.

14. Cargo-carrying submarines have been sighted in European waters, and it is possible that such craft will be used in the Far East as supply ships or tankers for the submarine fleet.
15. The Soviet Navy is studying German methods of replenishment of submarines from Depot ships, and it can be expected that this technique will be developed in order to increase the operational radius of submarines.
16. It is likely that fuel "dumps" will be established in Pacific and Indonesian waters.

Characteristics and Performance

17. The characteristics and performance of new Russian submarines are not known, but there is intelligence to support the following:-
 - (a) Snort - New boats are being equipped with snort, and old ones are being modified to incorporate it.
 - (b) Underwater Speed - "Streamlining of some submarines has been reported in the Baltic, Black Sea and Far East.
 - (c) Improvements in Communications - Soviet knowledge of German methods of high speed W/T transmission to avoid being "D/F-ed", and in German equipment transferred to Russia.

18. Sufficient evidence of the modification of existing submarines is now held to make it reasonably certain that a small number of Russian built boats with an underwater speed of 18 knots are now operational. No definite information is held to substantiate the existence of such a submarine in the Far East, but it is considered that by June, 1953, there is a probability of some of these boats being based in the Far East.

* * *

Torpedoes

25. The Russians attach considerable importance to the torpedo as a weapon, and there is evidence that stock piling is taking place. The overall production capacity appears to be of the order of 4,000 per year, which could be expanded if necessary. The Russians are known to employ a number of German torpedo experts, and it is assumed that they are able to produce any desired type similar to those used by the Germans in World War II. A passive-acoustic homing torpedo has been developed with a performance comparable to the German "GNAT"; and a wire-controlled guided torpedo similar to the German "SPINNE" is being progressed with some success. Considerable importance is also attached to the development of a trackless torpedo, and alternative fuels and propulsion systems are being investigated. So far as is known, only conventional H.P. air-burner-cycle and electric torpedoes are in service at the present time.

* * *

Submarine Weapons for Shore Bombardment

33. The present gun armament of long range submarine [sic] consists of only one or two 3.9" guns. The large, ex-German type submarines are streamlined and are unsuitable for fitting with conventional guns, although it is possible that they will be fitted for the firing of rockets. If German developments are followed, and 'L' & 'S' class submarines have their hulls streamlined to obtain higher underwater speed, the 3.9" guns at present fitted may possibly be replaced by rocket type weapons.
34. If the larger submarines are to be used as launching bases for guided missiles, they could not carry torpedoes, and would require structural alteration for the fitting of subsidiary guided missile equipment. At present there are no indications that submarines are being fitted to carry guided missiles for shore bombardment tasks, but this development must not be overlooked in the large slow types.

Aircraft carried in Submarine

35. No Russian submarines are known to carry aircraft, but a small aircraft could be carried by the larger classes if the 3.9" gun were removed. No development along this line has been noted.

* * *

APPENDIX V

ENEMY SUBMARINE OPERATIONS IN THE WATERS SURROUNDING AUSTRALIA 1942-45

Sources: The initial sources for this list were Rohwer, *Axis Submarine Successes* and NHC: Records of Japanese Navy, #160268, Box 86. It has been modified extensively based on correspondence with a variety of authorities and an examination of archival records.

The nature of submarine warfare, particularly the natural desire of the submariner to remain hidden, makes an accurate listing of operations and attacks extremely difficult. In the case of Japanese submarine operations, the destruction of original records, language difficulties and inconsistencies in surviving documents make matters doubly difficult. This table represents a best estimate of enemy submarine operations in the waters surrounding Australia during World War II. Due to the greater use of Japanese records it demonstrates several differences with previously published assessments. Nevertheless, many gaps remain and it should certainly not be regarded as the final word.

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks | |
|-----------|--------|-------------------------|---------------------|-----------------|----------------------|--------|---------|-----|----------------|---------------|--------------|-------|---------------------------|---------------|
| | | | | | | | Surface | Air | | | | | | |
| I-158 | Jan 42 | w/k | <i>Langkoeas</i> | 3/1/42 0145 | torpedo & gunfire | - | - | - | sunk | sunk | 7395 | - | Java Sea | |
| | | | <i>Campuijs</i> | 9/1/42 | torpedo & gunfire | - | - | - | sunk | sunk | 2380 | - | Java Sea | |
| | Jan 42 | u/k | <i>Kwantung</i> | 4/1/42 0500 | gunfire | - | - | - | sunk | sunk | 2626 | - | South of Java | |
| I-156 | | | <i>Tanibar</i> | 6/1/42 0300 | gunfire | - | - | - | sunk | damaged | - | - | South of Java | |
| | | | <i>Van Rees</i> | 8/1/42 0716 | torpedo | - | - | - | sunk | sunk | 3000 | - | South of Java | |
| | | | <i>Van Riebeeck</i> | 8/1/42 2100 | gunfire | - | - | - | - | sunk | sunk | 2263 | - | South of Java |
| | | | <i>Patras</i> | 13/1/42 | gunfire | - | - | - | - | - | damaged | - | - | SW Bali |
| I-157 | Jan 42 | u/k | <i>Djirak</i> | 7/1/42 1800 | gunfire | - | - | - | sunk | sunk | 3077 | - | Java Sea | |
| I-165 | Jan 42 | u/k | u/k | 9/1/42 0957 | torpedo & gunfire | - | - | - | damaged | u/k | - | - | Java Sea | |
| | | | <i>Benkoelen</i> | 9/1/42 1513 | torpedo & gunfire | - | - | - | - | sunk | sunk | 1003 | - | Java Sea |
| I-166 | Jan 42 | u/k | <i>Liberty Gto</i> | 13/1/42 | torpedo | - | - | - | sunk | sunk | 4979 | - | SW Lombok | |
| I-121 | Jan 42 | u/k | - | 12/1/42 | mines (39) | - | - | - | - | - | - | - | Joseph Bonaparte Gulf | |
| | | | <i>Bantam</i> | 18/1/42 2220 | torpedoes (3) | - | 1 sloop | - | sunk | miss | - | - | North of Wetar in the NEI | |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks |
|-------------|------------|-------------------------|--|------------------|-------------------|--------|----------|------|----------------------------|---------------|--------------|-------|-------------------------------------|
| | | | | | | | Surface | Air | | | | | |
| <i>F122</i> | Jan 42 | u/k | - | 15/1/42 | mines | - | - | - | - | - | - | - | Western approaches to Torres Strait |
| <i>F123</i> | Jan 42 | u/k | <i>Trinity</i> | 20/1/42 0630 | torpedoes (4) | - | 2 USN DD | hit | miss | - | - | - | Off Darwin |
| <i>F124</i> | Jan 42 | 10 | - | 18/1/42 | mines (27) | - | - | - | - | - | - | - | Off Darwin |
| | | | HMAS <i>Deloraine</i> | 20/1/42 1334 | torpedo | - | - | - | miss | - | - | - | <i>Deloraine</i> sank <i>F124</i> |
| <i>F159</i> | Jan 42 | u/k | <i>Eidsvold</i> | 20/1/42 2026 | torpedoes (6) | - | - | sunk | sunk | 4184 | - | - | Christmas Is. |
| <i>F155</i> | Feb 42 | u/k | <i>Van Lansberge</i> <i>Van Cloon</i> | 4/2/42 7/2/42 | torpedo | - | - | sunk | sunk | 1937 | - | - | Java Sea |
| | | | u/k | 13/2/42 | torpedo & gunfire | - | - | sunk | sunk | 4519 | - | - | Java Sea |
| | | | u/k | 13/2/42 | torpedo | - | - | sunk | u/k | - | - | - | North of Sunda Strait |
| | | | u/k | 18/2/42 | torpedo | - | - | sunk | u/k | - | - | - | North of Sunda Strait |
| <i>F156</i> | Feb 42 | u/k | <i>Togian</i> | 4/2/42 | gunfire | - | - | sunk | damaged but later scuttled | 979 | - | - | South of Timor |
| | | | u/k | 11/2/42 | torpedo | - | - | sunk | u/k | - | - | - | South of Sunda Strait |
| <i>F25</i> | Feb-Mar 42 | 51 | <i>Derrymore</i> | 13/2/42 | torpedo | - | - | sunk | sunk | 4799 | - | - | Solomon Is. |
| | | | - | 17/2/42 dawn | aircraft | - | - | - | - | - | - | - | Reconnaissance of Sydney |
| | | | - | 26/2/42 dawn | aircraft | - | - | - | - | - | - | - | Reconnaissance of Melbourne |
| | | | - | 1/3/42 noon | aircraft | - | - | - | - | - | - | - | Reconnaissance of Hobart |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks |
|-----------|--------|-------------------------|---------------------------|-----------------|----------------------|--------|-------------------|-----|----------------|---------------|--------------|------------------------|------------------------|
| | | | | | | | Surface | Air | | | | | |
| I-158 | Feb 42 | u/k | <i>Pijnacker Hontjck</i> | 22/2/42 | torpedo | - | - | - | sunk | sunk | 2982 | - | South of Java |
| | | | <i>Boero</i> | 25/2/42 | torpedo | - | - | - | sunk | sunk | 7135 | - | South of Java |
| | | | <i>British Judge</i> | 28/2/42 | torpedo | - | 2 sloops 1 AMS | - | - | sunk | damaged | - | - |
| U/k | Feb 42 | u/k | <i>Nam Yong</i> | 28/2/42 | torpedo | - | - | - | sunk | sunk | 1345 | - | South of Java |
| | Feb 42 | u/k | <i>Moosi</i> | 27/2/42 | torpedo | - | - | - | sunk | sunk | 913 | - | Bali Strait |
| I-153 | Feb 42 | u/k | <i>City of Manchester</i> | 28/2/42 0544 | torpedo & gunfire | - | - | - | sunk | sunk | 8917 | - | South of Java |
| | | | <i>Parigi</i> | 28/2/42 | torpedo | - | - | - | sunk | sunk | 1172 | - | South of Java |
| | | | <i>Ban Ho Guan</i> | 28/2/42 1745 | torpedo | - | - | - | sunk | sunk | 1693 | - | Off Bali |
| I-154 | Mar 42 | u/k | <i>Modjokerto</i> | 1/3/42 | torpedo & gunfire | - | - | - | sunk | 8806 | - | South of Christmas Is. | |
| I-2 | Mar 42 | u/k | <i>Parigi</i> | 1/3/42 | torpedo | - | - | - | sunk | 1172 | - | Off Fremantle | |
| I-3 | Mar 42 | u/k | <i>Narabada</i> | 2/3/42 2135 | torpedo & gunfire | - | - | - | sunk | slight damage | - | - | 90 nm WNW of Fremantle |
| | | | <i>Tronganro</i> | 3/3/42 1321 | gunfire | - | - | - | - | miss | - | - | - |
| I-1 | Mar 42 | u/k | <i>Stanjar</i> | 3/3/42 | torpedo & gunfire | - | - | - | sunk | sunk | 8667 | - | 200 nm NW of Shark Bay |
| I-7 | Mar 42 | u/k | <i>Le Maire</i> | 4/3/42 1300 | gunfire | - | - | - | sunk | sunk | 3271 | - | NW of Coocos Is. |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks | | |
|-----------|------------|-------------------------|-----------------------|-----------------|-----------------------|--------|---------|-----|----------------|---------------|--------------|-------|--|-------------------------------|--|
| | | | | | | | Surface | Air | | | | | | | |
| I-24 | May-Jun 42 | 38 | HMAS <i>Kuttabul</i> | 31/5/42 | midget | - | - | - | - | sunk | - | - | Attack in Sydney Harbour. USS <i>Chicago</i> was the target. | | |
| | | | <i>K9</i> | 31/5/42 2325 | midget | - | - | - | - | damaged | - | - | Alongside <i>Kuttabul</i> . | | |
| | | | <i>Age</i> | 3/6/42 2110 | torpedo & gunfire (4) | - | - | - | - | damaged | miss | - | - | 40 nm E of Sydney | |
| | | | <i>Iron Chieftain</i> | 3/6/42 2239 | torpedo | - | - | - | - | sunk | sunk | 481 | Iron ore | 27 nm E of Sydney | |
| | | | <i>Echunga</i> | 5/6/42 0048 | - | - | - | - | - | - | - | - | - | - | Vessel chased for one hr. 17 nm off Wollongong |
| I-27 | May-Jun 42 | 38 | - | 8/6/42 0015 | gunfire (7) | - | - | - | - | - | - | - | Attack on Sydney. One house demolished. | | |
| | | | <i>Orestes</i> | 9/6/42 0207 | gunfire | - | - | - | - | damaged | - | - | - | 30 nm south of Sydney. | |
| | | | - | 31/5/42 | midget | - | - | - | - | - | - | - | - | Destroyed in Sydney boom net. | |
| | | | <i>Barwon</i> | 4/6/42 0559 | gunfire | - | - | - | - | - | miss | - | - | - | 35 nm SSE |
| | | | <i>Iron Crown</i> | 4/6/42 | torpedoes | - | - | - | - | sunk | sunk | - | Iron ore | - | 44 nm SW of Cabo Is. |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks | |
|---------------|------------|-------------------------|------------------|-----------------|-------------------|--------|---------|-----|----------------|---------------|--------------|-------------------------------|---|--------------------|
| | | | | | | | Surface | Air | | | | | | |
| <i>I-175</i> | Jul-Aug 42 | 44 | <i>Allara</i> | 23/7/42 0715 | torpedoes | - | - | - | sunk | damaged | 3279 | sugar | 28 nm SE Newcastle | |
| | | | <i>Murada</i> | 24/7/42 0804 | torpedo | - | - | - | sunk | miss | - | - | - | 85 nm NE Newcastle |
| | | | <i>Cagou</i> | 25/7/42 | torpedo & gunfire | - | - | - | sunk | sunk | 2795 | - | - | NE Sydney |
| | | | <i>Dureenbee</i> | 3/8/42 0045 | torpedo & gunfire | - | - | - | sunk | sunk | 233 | trawler | - | - |
| <i>I-169</i> | Jul-Aug 42 | y/k | <i>Tjinegara</i> | 25/7/42 2219 | torpedoes (3-4) | - | - | - | sunk | sunk | 9227 | 500 horses & engineers equip. | 92 nm SE of Noumea | |
| <i>RO-33</i> | Jul-Aug 42 | y/k | <i>Mamutu</i> | 7/8/42 | gunfire | - | - | - | sunk | sunk | 300 | passengers | Gulf of Papua | |
| | | | <i>Malaita</i> | 29/8/42 | torpedo | - | 1 DD | - | - | damaged | 3310 | passengers | Off Port Moresby. <i>RO-33</i> destroyed by <i>Arunta</i> | |
| <i>I-165</i> | Dec 42 | 17 | - | - | - | - | - | - | - | - | - | - | Patrol of Arafura Sea | |
| <i>I-166</i> | Dec 42 | 22 | - | - | - | - | - | - | - | - | - | - | Patrol of NW Australia | |
| <i>I-165</i> | Jan-Feb 43 | y/k | - | 28/1/43 | gunfire (10) | - | - | - | - | - | - | - | Attack on Port Gregory | |
| <i>I-162</i> | Jan-Feb 43 | y/k | - | - | - | - | - | - | - | - | - | - | Reconnaissance off Cocos Is. | |
| <i>RO-100</i> | Jan-Feb 43 | y/k | - | - | - | - | - | - | - | - | - | - | Off New Guinea. | |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks | | |
|---------------|------------|-------------------------|-----------------------|-----------|-----------|--------|----------------|------|----------------|---------------|-------------------------|-----------------------|--------------------------|---|----------------------------------|
| | | | | | | | Surface | Air | | | | | | | |
| <i>RO-101</i> | Jan-Feb 43 | u/k | - | - | - | - | - | - | - | - | - | - | Off New Guinea. | | |
| <i>RO-102</i> | Jan-Feb 43 | u/k | - | - | - | - | - | - | - | - | - | - | Off New Guinea. | | |
| <i>RO-103</i> | Jan-Feb 43 | u/k | - | - | - | - | - | - | - | - | - | - | Off New Guinea. | | |
| <i>I-21</i> | Jan-Feb 43 | 47 | <i>Kalingo</i> | 18/1/43 | torpedo | - | - | - | sunk | sunk | 2047 | - | 110 nm E of Sydney | | |
| | | | | 18/1/43 | torpedo | - | - | - | sunk | total loss | 10222 | 18,454 bales of wool | 60 nm E of Sydney | | |
| | | | | 22/1/43 | torpedo | - | - | - | sunk | total loss | 7176 | 18,454 bales of wool | 420 nm E of Sydney | | |
| | | | | 22/1/43 | torpedo | - | - | - | - | - | - | - | - | - | Reconnaissance of Sydney Harbour |
| | | | | 26/1/43 | aircraft | - | - | - | - | - | - | - | - | - | 30 nm East of Newcastle. |
| <i>I-10</i> | Jan-Mar 43 | 66 | <i>Giang Ann</i> | 30/1/43 | torpedo | - | - | sunk | miss | - | - | - | 21 nm off Montagu Is. | | |
| | | | | 8/2/43 | torpedo | O.C.68 | 2 AMS Aux. A/S | sunk | sunk | 4812 | Iron ore | 150 nm E of Sydney | | | |
| | | | | 10/2/43 | torpedoes | - | - | sunk | sunk | 7176 | 3000 tons service cargo | - | Reconnaissance of Sydney | | |
| | | | - | 19/2/43 | aircraft | - | - | - | - | - | - | 500 nm NE of Brisbane | | | |
| | | | <i>Samuel Gompers</i> | 29/1/43 | torpedoes | - | - | sunk | sunk | 7176 | 5000 tons chrome ore | | | | |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks |
|--------------|------------|-------------------------|-----------------------------|-----------------|------------------|---------|--------------------------|--------------------------|----------------|---------------|--------------|-------------------------|---|
| | | | | | | | Surface | Air | | | | | |
| <i>I-6</i> | Mar 43 | 25 | - | 11/3/43 1744 | torpedoes (2) | - | - | - | miss | - | - | 60 miles NE of Brisbane | |
| | | | | 13/3/43 | mines (9) | - | - | - | - | - | - | - | - |
| <i>I-10</i> | - | u/k | <i>Charles S. Jones</i> | 17/3/43 1508 | torpedoes (3) | BT.44 | 1 AMS Ansons | 3 Ansons | miss | miss | - | - | Anson overhead at time made one counter-attack. |
| | | | | - | - | - | - | - | - | sunk | sunk | 7176 | - |
| <i>I-17</i> | Apr-Jun 43 | 65 | <i>Stanvac Manila</i> | 23/6/43 | torpedoes | - | - | - | sunk | sunk | 10245 | - | Off Noumea. Two PT boats also destroyed. |
| <i>I-25</i> | May 43 | u/k | <i>H.M. Storey</i> | 17/5/43 | torpedo | - | - | - | sunk | sunk | 10763 | tanker | New Hebrides |
| <i>I-26</i> | Mar-May 43 | 70 | <i>Regina</i> | 11/4/43 1400 | torpedoes | O.C.86 | 1 AMS, <i>Moresby</i> | Anson dawn to dusk | sunk | sunk | 4732 | 8000 tons ironstone | 20 nm off Cape Howe |
| | | | | 24/4/43 1900 | torpedoes | B.T.54 | - | - | sunk | sunk | 2125 | - | - |
| <i>I-11</i> | Apr-Jun 43 | 61 | u/k | 27/4/43 0435 | - | O.C. 90 | 2 AMS | - | - | - | - | - | 70 nm N of Gabo Is. |
| | | | | 29/5/43 | torpedoes | - | - | - | - | miss | miss | 0 | - |
| <i>I-177</i> | Apr-May 43 | | <i>Limerick Centaur</i> | 26/4/43 0104 | torpedoes (6) | G.P. 48 | 2 AMS | - | sunk | sunk | 8724 | - | 20 nm SE of Cape Byron |
| | | | | 14/5/43 0410 | torpedoes | - | - | - | sunk | sunk | 3222 | Hospital ship | - |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks | | |
|----------------|-----------------|-------------------------|------------------------|-----------------|----------------|---------------------|-------------------------|------------------|----------------|----------------|--------------|-------------------------------------|--|---------------------|-----------------------|
| | | | | | | | Surface | Air | | | | | | | |
| I-178 | Apr-May 43 | 38 | <i>Lydia M. Childs</i> | 27/4/43 0655 | torpedoes (2) | - | - | - | sunk | sunk | 7176 | Lease lend material bound for Suez. | 90 nm E of Newcastle | | |
| | | | u/k | 29/5/43 2118 | torpedoes | O.C. 95 | 4 AMS | - | miss | miss | - | - | 20 nm E of Twofold Bay | | |
| | | | u/k | 25/4/43 0100 | torpedoes (3) | - | - | - | - | miss | - | - | - | Off Brisbane | |
| | | | <i>Wollongbar</i> | 29/4/43 1036 | torpedoes (3) | - | - | - | - | sunk | sunk | 2239 | - | - | Off Port Macquarie |
| | | | <i>Fingal</i> | 5/5/43 1345 | torpedoes (3) | - | 1 DD | inner A/S patrol | - | sunk | sunk | 2137 | Service cargo | - | Off Nambucca Heads |
| I-174 | May-Jul 43 | 46 | <i>Ormiston</i> | 12/5/43 1412 | torpedoes (3) | P.G.50 | 3 AMS <i>Moresby</i> | - | sunk | damaged | - | - | Off Coffs Harbour | | |
| | | | <i>Caradale</i> | 12/5/43 1412 | torpedoes | P.G.50 | 3 AMS | - | u/k | damaged | - | - | - | Off Coffs Harbour | |
| | | | <i>Point San Pedro</i> | 1/6/43 1226 | torpedoes- (4) | - | - | - | miss | miss | - | - | 2341 tons oil, tinplate & lend lease aircraft. | 70 nm E of Brisbane | |
| | | | <i>Edward Chambers</i> | 4/6/43 1048 | gunfire (9) | - | - | - | - | 1 hit | miss | - | - | - | 40 nm ENE of Brisbane |
| | | | <i>John Bartram</i> | 7/6/43 0615 | torpedoes (4) | - | - | - | - | sunk | miss | - | - | - | 70 nm E of Sydney |
| <i>Portmar</i> | 16/6/43 1718 | torpedo | GP.55 | GP.55 | 5 AMS | 1 Beaufort, 1 Anson | sunk | sunk | 5551 | US Army stores | - | 250 nm NE Sydney | | | |

| Submarine | Patrol | Length of patrol (days) | Ships attacked | Date/time | Method | Convoy | Escorts | | Claimed result | Actual result | Tonnage lost | Cargo | Remarks |
|---------------|---------------|-------------------------|-------------------------|------------------|-------------------------|---------|---------|------------------------|----------------|---------------|--------------|----------------------------|-------------------------------------|
| | | | | | | | Surface | Air | | | | | |
| <i>I-174</i> | May-Jul 43 | 46 | USS <i>LST 469</i> | 16/6/43 1718 | torpedo | G.P. 55 | 5 AMIS | 1 Beaufort, 1 Anson | sunk | damaged | | US Army & Navy material | 250 nm NE Sydney |
| <i>RO-103</i> | | | <i>Aludra</i> | 23/6/43 | torpedo | - | - | - | sunk | sunk | 7440 | - | Solomons |
| <i>I-177</i> | Jun-Jul 43 | 42 | <i>Deimos</i> | 23/6/43 | torpedo | - | - | - | sunk | sunk | 7440 | - | Solomons |
| <i>I-180</i> | Jun-Jul 43 | 42 | - | - | - | - | - | - | - | - | - | - | Returned before reaching E coast |
| <i>I-165</i> | Sep 43 | u/k | - | - | - | - | - | - | - | - | - | - | Returned before reaching E coast |
| <i>I-165</i> | May 44 | u/k | - | - | - | - | - | - | - | - | - | - | Reconnaissance of NW Aust. |
| <i>U 168</i> | Oct 44 | 1 | - | - | - | - | - | - | - | - | - | - | Reconnaissance of NW Aust. |
| <i>U 537</i> | Nov 44 | 1 | - | - | - | - | - | - | - | - | - | - | Sunk by Hr. Ms. <i>Zivaardvisch</i> |
| <i>U 196</i> | Nov 44 | u/k | - | - | - | - | - | - | - | - | - | - | Sunk by USS <i>Flounder</i> |
| <i>U 862</i> | Nov 44-Feb 45 | 89 | <i>Itissos</i> | 9/12/44 | gunfire (3) | - | - | - | miss | miss | - | - | 130 nm SE Adelaide |
| | | | <i>Robert J. Walker</i> | 24/12/44 0230 | torpedoes (5) | - | - | - | sunk | sunk | 7180 | ballast | 85 nm S of Jervis Bay |
| | | | u/k | 27/12/44 | torpedo (1) | - | - | - | premature | - | - | - | Tasman Sea |
| | | | <i>Peter Silvester</i> | 6/2/45 2140 | torpedoes (4) & gunfire | - | - | - | sunk | sunk | 7176 | mules & military personnel | 820 nm SW Fremantle |

APPENDIX VI

MONTHLY REVIEW OF SHIPPING OPERATING WITHIN SOUTH WEST PACIFIC SEA FRONTIERS, MAY 1943

Source: NAA: MP 1049/5, 1932/3/8.

Remarks Regarding Shipping on Minor Routes

Number of intrastate voyages made (over 1000 tons):

| | |
|--|-----------|
| Queensland coast (excluding Barrier Reef - Brisbane) | 117 |
| New South Wales coast | 219 |
| Victorian and Tasmanian coast | 73 |
| South Australian coast | 78 |
| Western Australian coast | <u>25</u> |
| | 512 |

Air Cover: Air cover for Convoys and independent sailings are complete, with the exception of that provided within the area North of Brisbane, including the Coral Sea. Information forthcoming from this area has been quoted in terms of force letters which cannot be accurately identified therefore for the purpose of this review; it been accepted that all Convoys received Air Cover, independent sailings being shown only where definitely known. RAAF Command has been requested to communicate Force Letters to CSWPSE.

(See Main Shipping Routes table on next page.)

- Notes:
- Average figures used where necessary.
 - Number of Service Personnel carried in ships without surface escort:
to and from contiguous areas - 355
within SWPA - 1335

| Type of shipping | Route | Convoy Data ^a | | | | | | | Escort Data | | | Ships (over 1000 tons) sailing without surface escort ^{ab} | | |
|------------------------------|---|--------------------------|------------------|------------------|---|-----------------|--|--------------------|---|--------|------------|---|---|--|
| | | No. of convoys | Ships per convoy | Tonnage per ship | Time between completion of loading and sailing of each ship | Speed of convoy | Difference between convoy speed and service speed of each ship | Escorts per convoy | No. of convoys afforded day air cover when within range | Loaded | In Ballast | Speed | No. of ships afforded day air cover when within range | |
| Coastal | Thursday Is. - Darwin | 6 | 2.3 | 1924 | 38.6 | 7.4 | 2.2 | 1.1 | 6 | - | - | - | - | |
| | Barrier Reef - Brisbane | 18 | 4.2 | 4598 | 18.1 | 9 | 1.4 | 2.2 | 18 | 7 | - | 8.3 | - | |
| | Brisbane - Sydney | 9 | 8.9 | 3738 | 31 | 7.9 | 1.5 | 3.8 | 9 | 4 | - | 11.9 | - | |
| | Newcastle - Melbourne - Tasmania | 10 | 14.5 | 4060 | 46.1 | 7.4 | 1.8 | 4.6 | 10 | 20 | - | 9 | - | |
| | Melbourne - Tasmania - South Australia | - | - | - | - | - | - | - | - | 68 | - | 8.9 | - | |
| To and from contiguous areas | Eastern states - Western Australia | - | - | - | - | - | - | - | - | 26 | - | 10.3 | 2 | |
| | Single escorted vessels | 14 | 1 | 5900 | - | 10.6 | - | 1.2 | 14 | - | - | - | - | |
| | Pacific Ocean | 16 | 1.1 | 10 258 | - | 14.3 | - | 1 | 16 | 153 | 12 | 11.8 | 18 | |
| | Indian Ocean | 2 | 1.5 | 22 939 | - | 14.5 | 2.7 | 1.5 | 2 | 84 | 5 | 11.8 | 15 | |
| | Routine shipping in support of military operations. | 20 | 1.05 | 3081 | 8.2 | 10 | - | 1 | 20 | - | - | - | - | |
| Totals/average | Coral Sea | 25 | 2.5 | 4880 | 17.4 | 9.4 | 2 | 1.4 | 25 | 12 | 2 | 9.1 | 2 | |
| | Single escorted vessels in Coral Sea | 52 | 1 | 3395 | - | 10.1 | - | 1 | 52 | - | - | - | - | |
| | | 172 | 3.8 | 6477 | | | | 1.9 | 172 | 374 | 19 | | 37 | |

APPENDIX VII

AUSTRALIAN CONVOY STATISTICS AND DESIGNATIONS

Table VII.1 - Australian Coastal and New Guinea Convoys

| Year | Route | Convoys | Ships |
|---------------------|---------------------------------------|---------|-------|
| 1942 | Melbourne-Newcastle | 57 | 533 |
| | Newcastle-Melbourne | 58 | 605 |
| | Sydney-Brisbane | 29 | 152 |
| | Brisbane-Sydney | 29 | 99 |
| | Queensland Coastal | 38 | 116 |
| | Mainland-New Guinea | 41 | 167 |
| Total | | 252 | 1672 |
| 1943 | Melbourne-Newcastle | 92 | 769 |
| | Newcastle-Melbourne | 91 | 809 |
| | Sydney-Brisbane | 69 | 356 |
| | Brisbane-Sydney | 67 | 364 |
| | Darwin-Thursday Island | 31 | 68 |
| | Thursday Island-Darwin | 31 | 69 |
| | Queensland Coastal | 179 | 864 |
| | Sydney-Townsville | 2 | 6 |
| | Melbourne-Townsville | 4 | 18 |
| Mainland-New Guinea | 182 | 832 | |
| Total | | 748 | 4155 |
| 1944 | Sydney-Brisbane | 14 | 37 |
| | Brisbane-Sydney | 14 | 38 |
| | Darwin-Thursday Island | 43 | 73 |
| | Thursday Island-Darwin | 35 | 68 |
| | Queensland Coastal | 26 | 135 |
| | North Coast | 1 | 2 |
| | Mainland-New Guinea | 31 | 149 |
| Total | | 164 | 502 |
| 1942-44 | Total Convoys | | |
| | Coastal | 910 | 5181 |
| | Mainland-New Guinea and forward areas | 254 | 1148 |
| Total | | 1164 | 6329 |

Source: AWM: AWM 69, 23/32.

Note: The above figures do not represent all coastal and New Guinea convoys, but constitute the records of movements tabulated by the Naval Control Service. Numerous special convoys and some troop convoys are not included.

Table VII.2 - Comparison of Shipping Losses, 1939-45

| | Atlantic | | SWP Waters | |
|--|--------------|------------------------------|-------------------------|---------------------|
| | Numbers sunk | Percentage of total sinkings | Numbers sunk or damaged | Percentage of total |
| Independent ships. | 1427 | 61% | 23 | 72% |
| Stragglers. | 215 | 9% | 1 | 3% |
| Ships in convoy with surface escort only. | 691 | 29% | 4 | 12.5% |
| Ships in convoy with surface and air escort. | 20 | 1% | 4 | 12.5% |
| Totals | 2353 | 100% | 32 | 100% |

Sources: *Admiralty Maritime Intelligence Review*, October 1953; Appendix V.

Table VII.3 - Australian Convoy Designations, World War II

| | |
|-----------|---|
| B.G./G.B. | Buna to Langemak and return |
| B.V./V.B. | Brisbane to Townsville and return |
| B.T. | Brisbane to Townsville |
| C.O./O.C. | Newcastle to Melbourne and return |
| D.G./G.D. | Thursday Island to Merauke and return |
| D.T./T.D. | Darwin to Thursday Island and return |
| F.C. | Fall River to Townsville |
| G.P./P.G. | Sydney to Brisbane and return |
| N.A./A.N. | New Guinea to Admiralty Islands and return |
| N.B./B.N. | New Guinea to New Britain and return |
| O.W./W.O. | Australia to India and return |
| Q.L./L.Q. | Brisbane to Gladstone and return |
| S.N./N.S. | Sydney to New Caledonia and return |
| S.V./V.S. | Sydney to Townsville and return |
| T.N./N.T. | Townsville to Port Moresby and Milne Bay and return |

Note: This list represents only the chief convoy series and does not include numerous short term series.

APPENDIX VIII

A/S HARBOUR DEFENCES IN AUSTRALIA AND NEW GUINEA, JULY 1944

Source: NAA: MP 1185/8, 1932/3/44.

Sydney

- (a) An outer indicator loop system (five miles from the Heads).
- (b) An inner indicator loop system (between Middle and South Heads).
- (c) An A/S (anti-midget) boom between Green Point and Georges Head.
- (d) Type 135 Asdic installed in boom gate vessels (BGV).
- (e) A photo electric beam used in conjunction with (b).

Fremantle

- (a) An indicator loop system covering the approaches to Fremantle and Cockburn Sound.
- (b) An A/T (anti-torpedo)boom installed at the harbour entrance.
- (c) D/C (depth charge) throwers installed at breakwater entrances.
- (d) An A/S boom in process of installation between Garden Island and Woodman Point. (Type 135 to be installed in BGVs when selected)
- (e) Type 135 to be installed at harbour entrance on arrival of material from the UK.

Darwin

- (a) Single line A/S boom, 8ft mesh. Conversion to 3ft mesh to be completed by September 1944.
- (b) Two existing indicator loops to be replaced by five loops five miles to seaward of boom. To be completed September 1944.
- (c) Type 135 installed in one BGV.

Brisbane

- (a) Controlled minefield in deep water channel off Cowan Point and in Pearl Channel.*
- (b) Indicator loops installed between Skirmish Point and Comboyaro Point.*
- (c) Three harbour defence asdics (HDA) to the southward of the loops.*
- (d) A/S boom across Brisbane River at Bulwer Island.
- (e) Type 135 installed in BGV.
- (f) Indicator loop for midgets and photo-electric beam between Myrtletown and Fisherman Island.*
- (g) A/S boom in course of being laid between Moreton and Stradbroke Islands.*

Port Kembla

- (a) A/T and A/B (anti-boat) single line boom.
- (b) Type 135 in BGV.
- (c) (Indicator loop removed)

Albany

- (a) A/T single line boom. (BGV removed, boom under care and maintenance only)

Cairns

- (a) A/T and A/B single line boom and A type Scaffolding Defence
- (b) Barge operated gate with Type 135.

Newcastle

- (a) Inner indicator loop for midgets between breakwaters.
- (b) Controlled minefield (Observation) inshore of loop.

Port Moresby

- (a) Heavy indicator net and A type Scaffolding across entrance to Bay.
- (b) Three indicator loops inside Basilisk Passage (midgets). Inner indicator loop for midgets between breakwaters.*

Milne Bay (USN Responsibility)

- (a) A/T net defence and part indicator loop defence of Gili Gili anchorage.
- (b) Sono Radio Buoys at entrance to Milne Bay.

* Under consideration to abandon or place on care and maintenance basis.

APPENDIX IX

RAN ASDIC SETS AND A/S WEAPONS, 1917-54

Table IX.1 - RAN Asdic Sets, Planned or Fitted, 1922-54

| Type | Introduced in RN | Vessels | Remarks |
|-------|------------------|---|--|
| 114 | 1922 | Destroyer flotilla (proposed) | First destroyer asdic set. |
| 116 | 1926 | <i>Oxley, Otway</i> | Early submarine set. |
| 117 | 1927 | <i>Platypus</i> (proposed) | Probably updated 114 with Type 115 dome. Interim set only. |
| 123 | 1934 | Requisitioned vessels | Standard small craft set. |
| 123A | | <i>Stuart</i> , 'V' & 'W' destroyers, <i>Moresby, Kybra, Doomba</i> . | For structural reasons it was generally impractical to fit Type 123A in the requisitioned vessels. |
| 123Z | 1940 | AMS (proposed) | A planned Australian set utilising the receiving and transmitting gear of the Type 123 with the underwater fittings of the Type 128. Not produced |
| 125 | 1936 | <i>Sydney</i> | Type 124 (destroyer set) adapted for echo sounding. |
| 126 | 1936 | <i>Yarra, Swan</i> | Type 123 adapted as a deep-water echo sounder. |
| 127A | 1937 | <i>Parramatta</i> (?) | Specially designed for escort sloops. First set with bearing plotter. |
| 127AS | | <i>Warrego</i> . | Type 127 adapted for echo sounding. |
| 128 | 1937 | AMS | Standard WWII asdic set. |
| 128B | | AMS | Australian manufactured version of Type 128. |
| 128C | | <i>Warramunga, Arunta</i> . | No details. |
| 128CV | | <i>Bataan</i> , 'Q' class. | No details. |
| 128T | | AMS | No details. |
| 131 | 1942 | HDA | Pressure-tight gimbaled cylindrical dome mounted on tripod on seabed. Standard quartz transducer with training gear. |
| 132S | 1938 | <i>Hobart, Perth</i> | First defensive set. Large retracting dome, with two transducers (one for detection, the other for listening). Self protection set only. |
| 134A | 1941 | Channel patrol boats, Fairmiles, HDMLs. | Hand operated retractable dome, which could not be housed. Portable transducer unit. |
| 135 | 1942 | BDVs. | Transducer suspended on long shaft from gunwhale. |
| 144Q | 1943 | Frigates, Battles. | An active high frequency, short range, low powered search light set. Same underwater gear as 128. First set with automatic training. Q attachment introduced in July 1943 for maintaining contact with deep-diving submarines. |

| Type | Introduced in RN | Vessels | Remarks |
|------|------------------|--|---|
| 147B | 1943 | Battles, Frigates. | An active high frequency, short range, low powered depth finding set used with Type 144 and Squid. The RN's most sophisticated WWII A/S weapon system. |
| 147F | 1947 | Battles, Tribals (mod), Frigates (mod), <i>Darings</i> (interim). | Improved depth recorder, more powerful transmitter and improved transducer and 'sword' for use against very deep conventional submarines (1500 ft). |
| 149 | 1944 | <i>Melbourne</i> | Passive torpedo detection set. Hydrophone on forward shaft which was rotated continuously by separate motor; standard quartz aft transducer. One operator. Superseded 132. |
| 160X | 1948 | Battles (proposed) | Expected fit only. Essentially an updated 144, with two quartz transducers on separate shafts, but did not proceed beyond prototype. |
| 162 | 1948 | Tribals (mod), Frigates (mod), Battles, <i>Darings</i> , 'Q' conversion, Type 12s. | An active high frequency, short range, low powered set for classification of bottom contacts. No operators. |
| 164 | 1950 | Tribals (mod) Frigates (mod) | An active high frequency, short range, low powered search light set. Three operators. Maximum detection range 3000 yds. Controlling set for Squid. Retractable dome. Essentially an updated 160X with better bearing recorder and more efficient steering arrangements. |
| 166 | 1950 | <i>Darings</i> (interim) | Double set combining 164 with 174, one to be used for echo sweeping and the other as a hydrophone. The aim was to pick up a fast submarine making loud HE. |
| 170 | 1952 | <i>Darings</i> (final), 'Q' conversion, Type 12s | An active high frequency, short range, low powered search light set. Three operators. Controlling set for Limbo. Retractable dome. Attack set. |
| 174 | 1951 | <i>Darings</i> (final) 'Q' conversion Type 12s (interim) | An active high frequency, short range, low powered active or passive searchlight set. Two operators. Modified version of 164. Used as secondary listening set for 170 in some ships. Same dome as 170. |
| 176 | 1952 | Type 12s (final) | High frequency passive scanning set for torpedo detection. One operator. In lieu of 174 in some ships. Same dome as 170. |
| 177 | 1956 | Type 12s (final) | An active low frequency, medium range, high powered search-light set. Three operators. Median detection range 4500 yds but capability to 20,000 yds. Fitted in own retractable dome. |

Sources: Hackmann, *Seek & Strike*; Paper, 'HMA Ships in Commission and Operational Reserve, 1970', NHD Canberra; various archival sources.

Table IX.2 – RAN A/S Weapons, Planned or Fitted, 1917–54

| Type | Introduced in RN | Vessels | Remarks |
|--------------------------|------------------|---|---|
| Depth Charge Mk III | 1917 | Widely fitted | Standard WWI depth charge. Remained in service into the early years of WWII. 300 lb explosive charge fired by hydrostatic pistol. Could be rolled over the side from launching rails or fired by a thrower out to 40–60 yds. |
| Depth Charge Mk VII | 1940 | Widely fitted | Standard WWII depth charge. 290 lb explosive charge. Continuously developed to increase speed of sinking and maximum depth. |
| Hedgehog | 1941 | Frigates (Bay) | A 24-spigot mortar firing 7" diameter contact-fuzed projectiles with a 35 lb charge. Spigots were arranged to give a 40 yd diameter circle at c200 yds ahead of a stationary ship. |
| Type 'M' Depth Charge | 1943 | Widely fitted | A 'midget' depth charge developed at Navy Office in 1942 and supplied to ships for use against midget submarines and human torpedoes. |
| A/S Mortar Mk 3 (Squid) | 1943 | Tribals (mod) Frigates (River) Battles <i>Quadrant</i> | A triple-barrelled A/S mortar. Each mounting fired a salvo of three projectiles to a range of 300 yards ahead of ship within 20° either side of ship's head. Each projectile weighed 300 lbs and contained 207 lbs of high explosive. It was actuated by a clockwork time fuze, which could be preset to depths between 30–1000 ft. |
| TOAD | - | - | Derived from a late-war requirement for a small anti-submarine charge able to be towed by small craft. Development commenced in 1944 in conjunction with the Council for Scientific and Industrial Research (Aeronautical Division). A prototype device in the form of an underwater kite had achieved satisfactory results before the end of hostilities caused the requirement to be cancelled. |
| A/S Mortar Mk 10 (Limbo) | 1952 | 'Q' class <i>Darings</i> Type 12s | A triple-barrelled A/S mortar which fired a salvo of three projectiles. The mortar was all round trainable and the range variable from 400 to 1000 yds. It fired the same projectile as Squid. |

Sources: J. Campbell, *Naval Weapons of World War Two* (London: Conway Maritime Press, 1985); Paper, 'HMA Ships in Commission and Operational Reserve, 1970', NHD Canberra.

APPENDIX X

PERSONNEL STATISTICS

Source: Review of RAN War Activities, 31 October 1945, NHD, Canberra.

During the period of hostilities 1939-45, 2331 personnel were trained at HMAS *Rushcutter* in ASW.

| | | | |
|---------------|----------|-------------------------------------|------|
| RAN | Officers | Specialist course (long A/S course) | 17 |
| | | Indicator loops | 44 |
| | | Short courses (A/S CO) | 785 |
| | Ratings | SDIs | 13 |
| HSDs and SDs | | 1284 | |
| RN | Ratings | | 35 |
| Allied Forces | Officers | | 70 |
| | Ratings | | 83 |
| Total | | | 2331 |

Of the RAN personnel trained at HMAS *Rushcutter*, approximately 36 per cent served with the Royal Navy and this number comprised approximately 10 per cent of the total engaged in A/S warfare in British ships.

INDEX

- 20th Minesweeping Flotilla, 150, 167
21st Minesweeping Flotilla, 270, 274, 275, 277
4th Destroyer Flotilla, 273, 275
4th Submarine Squadron, 310, 313
- Abe, Vice Admiral K., IJN, 262
Abraham Crijnsen, Dutch warship, 231
Admiralty Research Laboratory, Teddington, 42
Advisory War Council, 192, 208, 224, 227, 238, 239, 240
air-surface vessel (ASV) radar, 169, 222, 269, 279
aircraft
 Anson, 231, 233, 241, 269
 Australian requirements (1919), 49
 Beaufort, 209, 233, 235, 265, 269, 272, 279
 Catalina, 245, 264, 278
 Gannet, 315
 Hudson reconnaissance, 169, 170, 171, 220, 222
 Liberator, 245, 279
 Lockheed Neptune, 311
 see also Fleet Air Arm; Naval Air Service
Albatross, HMAS, 69, 80
Alcee Fortier, Liberty Ship, 277
Allied Naval Control of Shipping (NCS)
 organisation, 297
 see also Naval Control of Shipping (NCS) system
Allsop, Lieutenant R., RAN, 154
American-British-Dutch-Australian (ABDA)
 area, 180-1, 187
Anglo-German Naval Agreement (1935), 79
Anthony, R., 293p
Anti-Submarine Division, Australian, 242-4
Anti-Submarine Division, British, 29, 48
anti-submarine equipment *see* asdic sets;
 hydrophones; indicator loop systems
anti-submarine measures
 advice to ACNB from Admiralty (1917), 29
 effectiveness of, WWII, 208-10
 WWI, 16-20, 33-5
 see also fixed anti-submarine defences
- anti-submarine organisation, Australian,
 128-30
 establishment of, 58-9
 structure (1940), 158-9
Anti-Submarine School, Australian *see*
 Rushcutter, HMAS
anti-submarine vessels
 Australian requirements (1919), 49
 Australian requirements (1940), 150-1
 construction and requisitioning of
 (1940), 153
 deficiencies of, 239-40
 disposition of (1942), 198
 disposition of (1942-3), 228
 frigates, 300, 303, 311, 314
 planned disposition of (1941), 167
 planned disposition of (1942), 190
 see also auxiliary anti-submarine
 vessels; Boom Defence Vessels;
 specialist anti-submarine vessels;
 training vessels, antisubmarine
anti-submarine warfare
 improvements to capability (1949-52), 302
 review of RAN proficiency (1948), 300
anti-submarine weapons, 300, 311, 369
Anzac, HMAS (I), 54, 58
Anzac, HMAS (II), 289p
appreciations
 1928, of war in the Pacific, 68, 338-9
 defence of Australia (1941), 171-2
Armstrong, Captain, RAN, 235
Arunta, HMAS, 195, 199, 203, 204
asdic sets, 43-4, 277, 367-8
 ACNB views on, 83
 effectiveness of, 63, 67
 fitted to HMAS *Sydney*, 92-3
 local manufacture of, 154-5
 shortages in WWII, 153-4
 Type 112, 44
 Type 114, 60, 64, 67
 Type 115, 60
 Type 117, 67
 Type 121, 92, 93

- Type 122, 85
 Type 123, 85, 94, 95, 127, 133, 147, 154, 155
 Type 125, 93, 138
 Type 126, 94
 Type 127, 95, 133, 147, 154, 156
 Type 128, 154, 155
 Type 132, 273
- Australia and New Zealand (ANZAC) area, 180-1, 182, 187
- Australia*, HMAS, 80, 179
- Australia, New Zealand and Malaya (ANZAM) region, 296, 302, 304, 306, 307, 335
- Australia, New Zealand, United States (ANZUS) treaty, 296, 297
- Australian Army
 base security, 168
 challenges RAN's role, 91
 seaward defence of ports, 90, 96
- Australian Commonwealth Naval Board (ACNB)
 conference on anti-submarine measures (1926), 66
 considers anti-submarine strategy (1933), 81-3
 request for Admiralty anti-submarine support (1917), 32
 response to German submarine threats (WWI), 17-20, 24-6
 responsible for sea trade protection, 14
 review of local naval defences (1940), 149-51
 seeks return of RAN ships (WWI), 21-2
- Australian Fleet Unit, 13
- Australian Joint Anti-Submarine School (AJAAS), 312
- Australian post-WWII defence planning, 291-4
- Australian Shipping Control Board, 163, 164, 165, 171, 206-7, 208, 224, 227, 236, 238
- Australian submarines
AE1 and *AE2*, 15
K9, 240
- Australian War Council, 51
- auxiliary anti-submarine vessels
 expansion plans (1938), 103
 requirements (1926), 61-2
 requirements (1934), 85
 requirements (1939), 106
- Axis Pact, 159
- Bacon, Sir Francis, 336
- Baillie-Grohman, Commander, RN, 66
- Ballarat*, HMAS, 221, 274, 275
- Bashaw*, USS, 267
- Basset*, minesweeper trawler, 104
- Bathurst*, HMAS, 105p, 152
- Beasley, J.A., 224, 238
- Becher, Captain O.H., RAN, 314
- Beer, Chief Petty Officer W.C., 184
- Boom Defence Service, 138
- Boom Defence Vessels (BDV), 103-5
- Bostock, Air Vice Marshal, 209, 210, 211, 237, 241, 272
- Boyd, Commander D.W., RN, 63, 64
- Bracegirdle, Commander W.S., RAN, 313
- British Naval Liaison Party report (1944), 258-9
- British Pacific Fleet (BPF), 257, 258, 273, 276, 277, 279
- British-United States Routing Agreement, 229-30
- Broken Bay patrol (1939), 138-9
- Broome*, HMAS, 226
- Brownell, Air Commodore R.J., 263, 264
- Bruce, Prime Minister Stanley, 55
- Burnett, Captain Joseph, RAN, 145, 149, 150, 161
- Burnie*, HMAS, 269, 270, 275
- Cameron, A.G., 152
- Canadian cooperation, 186-7
- Canberra*, HMAS, 80
- Caradale*, SS, 233
- cargo flow, between Australian ports, 207
- Carpender, Vice Admiral A.S., USN, 197, 218, 227, 229, 230, 236, 239, 241, 243, 247, 257
- Centaur*, hospital ship, 239
- Chanticleer*, USS, 264
- Charlesworth, Air Commodore A.M., 257, 272
- Chicago*, USS, 194
- Chifley, Prime Minister, 295
- Chinese-Russian Treaty of Friendship, 297
- Chinese submarines, 298
- Christie, Rear Admiral R.W., USN, 263, 264, 266
- civilian seamen, effect of enemy action on, 207
- Clarkson, Captain, 24, 29, 35
- coastal convoy system *see* convoys, coastal
- coastal patrols, Australian (1917-18), 27
- Cockatoo Dockyard, 152

- Collins, Vice Admiral John A., RAN, 101, 102, 103, 136, 180, 293p, 296, 299, 300, 302, 304, 314
- Colvin, Vice Admiral Sir Ragnar, RN, 95, 96, 119, 136, 147, 152, 153, 154, 160, 162
- combined operations, difficulties, 241–2
- command and control, of Australian joint operations (WWII), 168, 210–11
- Committee of Imperial Defence (CID), 51
Paper No. 249-C, 62, 70, 82
- Commonwealth Coal Commission, 221
- Commonwealth Department of Scientific Research, 67
- Commonwealth Shipping Board, 14, 29, 34
- convoy escort groups, 243–4
- convoy escort vessels, 226–8, 236
- convoy protection, 98–9
Australian contribution to (WWI), 28
evasive routing, 99, 161, 210, 229, 307
of troopships, 188
- convoys
and air escorts, 244, 329
brown and blue route, 237
doctrine, 170
effectiveness of, 22–3, 27, 44, 206, 333–4
Jellicoe Report (1919), 47
planning (1941), 165
risk of collision, 206
statistics (1943), 361–4
- convoys, coastal, 194–7, 201, 247–8
- Cook, Sir Joseph, 24, 45
- Corbett, Sir Julian, 330
- Corlett, Lieutenant G.S., RN, 122, 125, 138, 139
- Council for Scientific and Industrial Research (Aeronautical Division), 156
- Crace, Rear Admiral Jack, RN, 162, 163, 171
- Creswell, Vice Admiral William R., RAN, 28, 35
assessment of, 36
and local defence, 13, 14, 15, 29
and Navy Board matters, 24, 26
relationship with Commander Thring, 16, 17, 21, 25, 30, 32, 34
- Cumberland*, SS, 31
- Curtin, Prime Minister John, 94, 179, 208, 217, 239, 247
- Custance, Rear Admiral W., RN, 127
- Daniel, Rear Admiral C.S., 276
- Daniel, Rear Admiral C.S., RN, 258, 259
- Darwin
Allied fleet base, 105, 165, 166, 167, 205, 243, 267
defence of, 183, 185, 205
fixed anti-submarine defences, 95, 97, 103, 104, 138, 365
'dazzle' camouflage schemes, 35
- de Baun, Justice, 209
- Dechaineux, Captain E., RAN, 181
- Dedman, John, 294, 295
- defence expenditure, naval
interwar years, 49, 54, 57, 65, 86, 89, 95, 96, 100
post-WWII, 294, 315
- Deloraine*, HMAS, 171, 183, 233, 235
- Department of Commerce, 224
- depth charges, manufacture of, 155–6
- district naval officers (DNO), 18, 29, 169
- doctrine
anti-submarine, 90–1, 329
convoy, 170
RAAF, 92
- Dönitz, Grossadmiral Karl, 181, 260, 261, 262, 332
- Doomba*, HMAS, 190
- Drakeford, A.S., 209
- Dreyer, Admiral Sir Frederick, RN, 87
- Dubbo*, HMAS, 263
- Dumaresq, Commodore John, RN, 54
- Dureenbee*, trawler, 201, 202p
- Echunga*, SS, 199
- Empire defence vs local defence debate, 50, 55, 86, 91, 94, 329
- Empress of Scotland*, SS, 277
- enemy agents, landed from submarines, 342–3
- Esdaille, Commander, RAN, 69, 81, 115, 118, 158, 308
and manufacture of asdics, 154
at Navy Office, 61, 63, 66, 96, 101, 121, 122
training in UK, 55
and training plans, 123–5, 127, 128, 131, 135, 136
- Evatt, H.V., 238
- Far East Strategic Reserve, 297
- Far East War Plan, 149–50
- Fenton, J.E., 79
- Fingal*, 239
- Five Power Staff Agency, 297

- fixed anti-submarine defences, 365–6
see also Darwin; Fremantle; Sydney
- Fleet Air Arm, 299, 310, 311, 312
see also Naval Air Service
- Flinders Naval Depot, 59
- Flounder*, USS, 267
- Fraser, Admiral Sir Bruce, 276, 277
- Fremantle Naval Base
 fixed anti-submarine defences, 95, 96,
 97, 103, 105, 138, 365
 preparations for possible submarine
 attack (1944), 263–6
- French submarines, 77
- Gatacre, Captain G.G.O., RAN, 295, 300, 301,
 302, 303, 304, 308
- German Navy
 early role of submarines, 9–11
 Far East maritime strategy (WWI), 16
 relationship with Japan, WWII, 260–2, 279
 rise of in 1930s, 79
- German submarines *see* U-boats
- Genelg*, HMAS, 246
- Gondar*, Italian submarine, 147
- Gordon, Sir Thomas, 163, 237
- Gordon-Smith, Captain, RN, 25, 26
- Goulburn*, HMAS, 275, 277
- Gracie, Lieutenant A., RN, 121, 122, 127, 138
- Grant, Rear Admiral, RN, 50, 51
- Great Depression, effects on anti-submarine
 developments, 69–70
- Guatemala*, SS, 200, 205
- Guavina*, USS, 267
- Hague Convention (1907), 10
- Hall-Thompson, Rear Admiral, RN, 59, 61
- Halsey, Admiral, USN, 217
- Hamilton, Vice Admiral Sir Louis, RN, 292, 299
- Hardman, Air Marshal Sir Donald, 311
- Harrington, Commander, RAN, 275
- Hart, Admiral T.C., USN, 180
- Harvey, Captain E.H., RN, 95
- Hawkins, T.J., 293p
- Haworth-Booth, Captain Francis, RN, 16, 17,
 19, 29, 32, 34, 45
- HDML 1341*, motor launch, 273
- Heriot, Commander, RAN, 269, 270, 277
- Heros*, HMAS, 190
- Hobart*, HMAS, 118, 124, 127, 128, 147, 179, 273
- Hughes-Onslow, Captain Constantine, RN, 16
- Hughes, Prime Minister W.M. ‘Billy’, 24, 53, 239
- Hyde, Vice Admiral Sir Francis, RAN, 47, 65,
 66, 87, 93
- hydrophones, 43, 45, 59, 60, 65, 66
 effectiveness of, 63, 64, 67
 school established, 67
- Ilissos*, Greek steamship, 269, 270, 271
- Imperial Conference (1909), 13
- Imperial Conference (1923), 55, 56
- Imperial Conference (1926), 65
- Imperial Conference (1930), 80
- Imperial Conference (1937), 94
- Imperial Japanese Navy *see* Japanese Navy,
 Imperial
- indicator loop systems, 43, 65, 156
 Darwin, 62, 95, 105, 138, 173
 Fremantle, 95, 105, 138
 Sydney, 62, 70, 95, 96–7, 103, 138, 194,
 264
- Ipswich*, HMAS, 263
- Iron Chieftain*, coaster, 195
- Iron Knight*, iron ore carrier, 220, 221
- Isabel*, USS, 264
- Italian submarines, 77, 147, 159
- Japanese Navy, Imperial, 41
 22nd Division, 230
 30th Submarine Division, 205
 ‘C’ SUBFORCE, 186
 plans in Pacific (1941), 172–3
 relationship with Germany, WWII, 260–2,
 279
 shipbuilding policy after 1936, 78–9
 Sixth Fleet, 224
 strategy against Australia (1942), 179–80
 Submarine Force ‘D’, 218
 SUBRON 1, 224
 SUBRON 3, 201, 230
 SUBRON 6, 183
 SUBRON 7, 186
 SUBRON 8, 194, 201
- Japanese submarines, 163, 173, 247, 350–60
 attack on convoy G.P. 55, 233–5
 attack on convoy O.C. 86, 230–3
 attack on Sydney (1942), 192–4
I-10, 218
I-11, 209, 273
I-123, 202p
I-124, destruction of, 183–4

- I-158*, 181
I-174, 233–5, 241
I-21, 192, 218–20, 222, 223
I-22, 192
I-24, 192, 209
I-25, 185
I-26, 224, 230–3
I-29, 191, 192
I-3, 186
I-32, 201
I-6, 224
 impact on military operations in New Guinea, 238–9
 interwar years, 52–3, 77
 other engagements with, 185–6, 191, 194–5, 199, 201, 208, 224, 236, 246
 results (1944), 262
RO-33, destruction of, 203–4
 sightings in Australian waters, 159–61, 199–200, 220, 222
 used for transportation duties, 203
 Japanese surveillance flights, 185, 220
 Japanese threats, 90
 interwar years, 50, 52, 68, 83–4, 88, 330
 WWII, 149, 165
 Jellicoe, Earl, 46, 50
 Jellicoe Report (1919), 47–9, 164, 308
 Jensen, Jens August, 24
 Jeune École, 10
 joint operations, Australian
 command and control of, 168, 210–11, 244
 difficulties, 241–2
 Jose, A.W., 45
Jumna, HMIS, 181

Kalgoorlie, HMAS, 195, 198–9, 233, 275
Kalingo, merchant ship, 218, 219
Kangaroo, HMAS, 103, 104, 105
Kapunda, HMAS, 218, 219
Katoomba, HMAS, 183–4
Katoomba, passenger ship, 201, 209
 Kawono, Rear Admiral Chimaki, IJN, 201
 Kerr, Vice Admiral W.M., RN, 70
Kiama, HMAS, 273, 274
 King, Admiral E.J., USN, 187
 Kinkaid, Vice Admiral, USN, 257, 270
 Knox, Lieutenant G., RAN, 95, 120, 121
Koala, HMAS, 103
 Komatsu, Vice Admiral Teruhisa, IJN, 201, 230
 Komazawa, Rear Admiral, IJN, 230

Kookaburra, HMAS, 103, 119, 126, 128, 129, 130, 131, 133, 135
Kormoran, German auxiliary cruiser, 161
Kowarra, SS, 207
Kwantung, British merchant vessel, 173
Kybra, HMAS, 190, 240, 278

 Lane-Poole, Rear Admiral, RN, 115, 118
Launceston, HMAS, 208
Le Triomphant, Free French destroyer, 171, 220
 Leary, Vice Admiral H.F., USN, 187, 189, 197
Leith, HMS, 121, 131
Lismore, HMAS, 270, 278
Lithgow, HMAS, 183–4
Livanos G.S., SS, 238
 London Conference (1935–6), 78
 London Naval Conference (1930), 77–8, 79
 loop systems *see* indicator loop systems
LST 469, USS, 233, 239
 Lüdden, *Kapitänleutnant*, 261

 MacArthur, General Douglas, 187, 197, 198, 210, 217, 225, 239, 257, 276, 291, 330, 331
 Mahan, Alfred T., 10
 Mahoney, W.G., 23
 Makin, N.J.O., 225, 239, 247, 257
Malaita, SS, 203, 206
 manpower *see* personnel
 Maritime Industries Commission, 247
 maritime strategy, Australian
 interwar years, 86
 post-WWII, 294
 WWI, 15–16, 68
 see also Empire defence vs local defence debate
 maritime strategy, Imperial
 anti-submarine defence of Far East, 83–5
 interwar years, 55–6, 68, 79–80, 86
 maritime transport, domestic, 237
 cargo flow, 207
 convoy collisions, 206
 effect of military actions on civilian seamen, 207
 impact of shortages of, 192, 218, 224, 238, 330
 and unions, 207
 Martin, Commander W.H., RAN, 154, 193
Maryborough, HMAS, 270, 275
Mastiff, minesweeper trawler, 104
 Matsumura, Lieutenant Commander K., IJN, 332

- Matunga*, SS, 31
 McBride, Sir Phillip, 316
 McEwen, John, 160
 McMahan, William, 314
 McNeil, Rear Admiral, RAN, 104
 Melville, Lieutenant Commander, RAN, 55, 60, 61, 69, 81, 155
 Menzies, Prime Minister Robert, 147, 303, 316
 Merchant Service, 130
 Middleton, Lieutenant H.S., RANVR, 156, 184
Mildura, HMAS, 221
 Military Air Service, 35
 see also Naval Air Service
 minesweeper vessels, Australian requirements (1940), 150–1
ML 810, Fairmile, 273, 275
ML 822, Fairmile, 273
ML 829, Fairmile, 273
Mobilube, American tanker, 219
 Moore, Rear Admiral G.D., RAN, 273, 275, 277
Moresby, HMAS, 95, 131, 132, 165, 171, 186, 231, 232
 Morris, Commander, RAN, 275
 Muirhead-Gould, Rear Admiral, RN, 191, 200, 208, 218, 219, 231, 232, 235
- Nankervis, A.R., 293p
 Napier, Rear Admiral W.R., RN, 67
Narbada, steamer, 185
 Naval Air Service, 30, 34, 35, 46
 Naval Control of Shipping (NCS) system, 266, 306, 328
 WWI, 28
 WWII, 146, 149, 164
 see also Allied Naval Control of Shipping (NCS) organisation
 Naval Control Service Manual, 98–9
 naval intelligence
 post-WWII, 297, 298, 306
 pre-1915, 15–16
 WWI, 17, 31
 WWII, 145–6, 194, 218, 223–4, 231, 262–3
 New Guinea military operations, and sea control, 226
 New Zealand Naval Board, 192
 Newcastle, action at (1942), 199–200
 Newcombe, Commander Harvey, RN, 126, 131, 133
 appointed to Anti-Submarine School, 121, 125, 128
 and asdics, 132, 154
 assessment of ASW incident reports, 184, 203, 232, 235, 239
 establishes School, 129, 130
 lack of training resources, 134, 135
 training load, 137, 156
 Nichols, Captain R.F., RN, 243
 Nimitz, Admiral, USN, 217
 No. 14 Squadron, RAAF, 265, 279
 North Atlantic Treaty Organisation (NATO), 290, 314
- Onslow, Captain Richard, RN, 273, 274
 Operation LILLIPUT, 225
Orestes, SS, 209
Ormiston, SS, 233
Otway, HMAS, 54p, 59, 66, 69
Oxley, HMAS, 54p, 59, 66, 69
- 'P' boats, 42, 44, 48, 49
Parigi, Dutch freighter, 186
 Parker, Commander C.A., RAN, 118, 122
 Parkhill, Sir Archdale, 93
Parramatta, HMAS, 102, 125, 136, 153, 154
 Parry, Commodore W.E., RN, 163
PC-597, USS, 273, 274
 Pearce, Senator George, 52, 53, 68, 86, 89
Penguin, HMAS, 129
 personnel
 post-WWII, 302, 304
 for Submarine Detection branch, 117–19, 120–1, 123
Perth, HMAS, 125, 171
Peter Silvester, Liberty Ship, 278, 279
 Phillips, Captain H., RN, 131, 132–3, 135
Phoenix, HM Submarine, 131
 Plan for the defence of sea communications in the ANZAM Region, 304–6
Platypus, HMAS, 54, 54p, 64, 65, 69
 Plunkett-Cole, Commander John, RAN, 314
 political views on submarines, Australian, 23–4, 31, 328
 Pope, Commodore Cuthbert J., RAN, 263, 264, 266
 Port Jackson, anti-submarine defences *see* Sydney, fixed anti-submarine defences
Port San Pedro, SS, 241
Port St. John, merchant vessel, 200
Portmar, SS, 233
 Prize Regulations, 10
 Project CORSAIR, 309

- Quadrant*, HMS, 274, 278
- Quality*, HMS, 274
- Quiberon*, HMAS, 273, 274, 275, 277
- Quickmatch*, HMAS, 273, 274, 277
- Quilliam*, HMS, 273, 274
- Radford, Admiral Arthur, USN, 296
- Radford-Collins Agreement (1951), 296
- Recina*, SS, 231, 241
- requisition of vessels, impact on industry, 151
- research, development and trials, anti-submarine equipment, 42–3, 328
- Australian acoustic conditions, 132–3
- interwar years, 60, 64–5
- post-WWII, 308–9, 316
- Riordan, W.J.F., 295, 303
- Robert J. Walker*, Liberty Ship, 271, 272, 273, 274, 275, 280
- Robins, Captain J., RAN, 57
- Rockhampton*, HMAS, 195
- Rover*, HMS, 147
- Royal Air Force, 86, 169, 170
- Royal Australian Air Force (RAAF)
- air power as first line of defence, 316
 - anti-submarine patrols, 186, 208, 209, 219, 221–2, 226, 235, 237, 258, 272
 - challenges RAN's role, 91
 - command and control issues, 244
 - and convoy escorts, 244, 329
 - cooperation with RAN, 63, 90, 135, 169–71, 211, 241, 242, 311–13, 329
 - decrease in anti-submarine patrols in WA, 264, 266
 - Eastern Area, 191, 220, 222, 235, 241, 242, 244, 258, 269, 272, 275, 278
 - effectiveness against submarines, 275–6
 - Southern Area, 221, 269, 275, 277, 279
 - training exercises, 191
 - Western Area, 186, 263, 264, 266, 279
- Royal Australian Navy
- anti-submarine experience (WWI), 45
 - anti-submarine vs strike debate, 299–302
 - control passed to Admiralty (1915), 14
 - establishment of, 14
 - rearmament in 1930s, 88–90
 - war orders and plans (1938), 97–9
- Royal Australian Navy Experimental Laboratory (RANEL), 309
- Royal Australian Navy Reserve (RANR), 69, 81, 96, 103, 115, 128, 130, 131
- hydrophone operators, 59, 60
- loop systems operators, 118, 121
- training of, 124, 125, 127, 133, 137
- Royal Australian Navy Volunteer Reserve (RANVR), 130, 131, 133, 137, 156, 287
- Royal Canadian Navy (RCN), 187, 281, 287, 308, 314
- Royal Commission into Defence administration (1918), 24
- Royal Navy
- and development of Australian anti-submarine capability, 32–4
 - early role of submarines, 9–11
 - Report to RAN on anti-submarine measures (1925), 58–9
- Royle, Vice Admiral Sir Guy, RN, 171, 194, 195, 227, 239, 246, 291, 292
- and ANZAC Force, 182, 187
- and attack on Convoy G.P.55, 235, 236
- combined operations difficulties, 241
- and German submarines, 263, 267, 270, 273
- proposes construction of motor boats, 167–8
- and protection of coastal shipping and convoys, 238, 243, 245, 247, 265, 266, 277
- and South West Pacific matters, 188, 189, 197, 230, 257
- Rushcutter*, HMAS, Anti-Submarine School, 95, 104, 126, 128, 129p, 137, 153, 154, 190, 310
- equipment limitations, 133
- establishment of, 114, 128–31
- expansion of, 155
- numbers of personnel trained (1939–45), 370
- RAN-USN training, 243
- training burden, 133–7, 156
- training syllabus, 114–16
- Sargo*, USS, 186
- SC 747*, USS, 226
- Scheer, Admiral Reinhard, 22
- Scully, W.J., 209
- Sea/Air Warfare Committee, 312
- seaborne trade
- and 1907 Hague Convention, 10
 - Australia's dependence on, 12–13
- Selfridge*, USS, 195
- Shedden, Sir Fredrick, 172, 239

- shipbuilding, Australian, 152-3, 166-8, 206, 225, 226-7
- Shipping Defence Advisory Committee, 78
- Showers, Commodore H.A., RAN, 293p
- Siantar*, SS, 186
- Singapore Conference (1940), 162-3
- Singapore Naval Base, 50
- Singapore Naval Conference (1934), 87-8, 92, 93
- Smith, Commander V.A.T., RAN, 314
- South East Asia Treaty Organisation (SEATO), 297
- South-West Pacific Area (SWPA), 188, 189
- South-West Pacific Sea Frontiers, 229-30
- Soviet submarines, 301, 306, 334
- Pacific Fleet, 297-8
- threats, 288-91, 295
- specialist anti-submarine vessels
- Australian requirements (1938), 102
- planned distribution (1938), 100-2
- Spooner, Captain L.A., RN, 194
- Spurgeon, Commander S.H., RAN, 61, 81, 89, 93, 97, 103, 121, 122, 132, 235, 241, 243
- St. Giles*, HMAS, 190
- Stalwart*, HMAS, 54
- Starr King*, Liberty Ship, 220
- Stevenson, Captain J.B., RAN, 67
- Storey, Commander, RAN, 227, 238
- Stork*, HMS, 93
- Stuart*, HMAS, 88, 89, 95, 137, 147, 171, 190, 199
- submarine campaign
- assessment of enemy submarine strength (1943), 340-1
- effectiveness of, 205-6, 231, 280-1, 331-3
- enemy operations in Australian waters (1942-5), 349-60
- form and scale of attack (1951), 344-8
- naval planning paper (1941), 165
- Submarine Detection branch, Australia, 114-16, 117
- submarines
- as at 1930, 77
- early roles, 9
- Success*, HMAS, 58
- Swan*, HMAS, 89, 94, 102, 114, 117, 121, 126, 127, 128, 131, 132, 136, 146, 153
- Swordsman*, 54
- Sydney, fixed anti-submarine defences, 19, 67, 70, 81, 96, 104, 193-4, 365
- Sydney* (I), HMAS, 92, 93, 94, 114, 117, 122, 126, 127
- Sydney* (II), HMAS, 302
- Tamworth*, HMAS, 263
- Tasmania*, HMAS, 58
- Telemachus*, HM Submarine, 310
- 'Ten Year Rule', 49
- Thomson, Commodore G.P., RN, 95, 105, 114, 115, 117, 119, 124, 126, 127
- Three-Power Pact, 77
- Thring, Captain Hugh, RAN, 15, 16, 17, 19, 21, 24, 25, 26, 30, 31, 32, 33, 34, 47
- Timm, *Korvettenkapitän* Heinrich, 261, 269, 270, 271, 272, 276, 278
- Tongariro*, SS, 186
- Toowoomba*, HMAS, 199
- Torpedo School, Flinders Naval Depot, 59
- Townsville*, HMAS, 220, 221, 231
- trade protection strategies, 87-8
- ANZAM planning, 306-7
- planning (1940), 161-4
- training exercises, anti-submarine, 127-8, 131-3, 191, 309-10
- training, of personnel
- in Australia, 59-60, 123-5, 137, 156, 310
- overseas, 46, 53, 55, 69, 95, 116, 126, 148, 287, 310
- see also* Anti-Submarine School, Australian
- training vessels, anti-submarine, 60, 96, 119-20, 131, 134
- Turner, Commander E.J.D., RN, 313
- U-boats, 30-1, 35, 328, 360
- 1917 campaign, 22-3
- bases, 145, 261
- dispersive strategy, 260
- effectiveness of (WWI), 11-12, 22, 41, 44, 333
- German planning, WWII, 259-60
- interwar years, 79
- U 168*, 261, 262, 266, 267
- U 178*, 261
- U 183*, 278
- U 537*, 262, 267
- U 86*, 8p
- U 862* patrol, 267-78

- and unrestricted campaign against shipping (WWI), 20, 22
- U-boats, operations against Australia, 261–3, 266–81
- unions, maritime, 207, 219, 247
- United States War Shipping Administration, 238
- Vampire*, HMAS, 89, 137, 171
- Van der Lijn*, SS, 226
- Vendetta*, HMAS, 89, 120, 128, 129, 130, 131, 133, 135, 171
- Versailles Treaty, 52
- Vichy French submarines, 159
- Voyager*, HMAS, 89, 120, 137, 171, 190
- Waller, Captain H.M.L., RAN, 147
- Walwyn, Captain H.T., RN, 42
- Warramunga*, HMAS, 220
- Warrego*, HMAS, 102, 136, 153, 154
- Warrnambool*, HMAS, 233
- Warspite*, HMS, 186
- Washington Conference/Treaty (1921–22), 51–3, 54, 68, 77
- Waterhen*, HMAS, 89, 135, 137, 138, 171
- Wellen*, SS, 192
- Wellington*, HMS, 121, 131
- Whiskard, Sir Geoffrey, 147
- Whyalla*, HMAS, 200, 275
- Wilcannia*, HMAS, 208
- Willoughby, Commodore G., 293p
- Wishart, Engineer Rear Admiral J.W., RAN, 293p
- Wolf*, German surface raider, 31
- Wollongbar*, SS, 236
- Wollongong*, HMAS, 181
- Yamamoto, Admiral Isoroku, IJN, 172, 218
- Yandra*, HMAS, 157p, 194, 273, 274, 275
- Yarra*, HMAS, 89, 94, 102, 114, 117, 121, 126, 127, 128, 131, 132, 136, 153, 154, 181
- Zvir*, iron ore carrier, 224
- Zwaardvisch*, Hr. Ms., 266