THE ROYAL AUSTRALIAN NAVY

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DEFENCE POLICY AND THE ROYAL AUSTRALIAN NAVY

The Royal Australian Navy is playing a vital role in meeting our nation's current and future defence needs. This requires appropriate and effective technology as well as highly trained professional personnel.

Australia's policy of defence self-reliance is set out in the 1987 White Paper on Defence. Defence self-reliance gives priority to the ability to defend ourselves independently with our own resources. It has three main elements:

— the maintenance and development of capabilities for the defence of Australia and its interests;

— the maintenance of alliance links with the United States;

— the promotion of strategic stability and security in our region through associations and alliances.

AUSTRALIA'S STRATEGIC SITUATION

No country in our region presently has the capability or the motivation to carry out and sustain a major attack on Australia since none has the necessary large-scale, appropriately trained and equipped military forces. Even if intentions were to change, a long period of preparation would be necessary and this could not be done in secret.

This does not, however, remove the responsibility to provide an appropriate level of defence for Australia. There is the capability within our region to carry out 'low level' actions. These include intrusion of our sea and air space and harassment of aircraft and shipping, harassment of remote settlements and offshore resource areas and attacks on northern installations and infrastructure.

These sorts of threats are most unlikely given Australia's good relations with neighbouring countries, but they could develop quickly if our presently favourable strategic situation were to deteriorate.

Because the capability to launch them exists, the ability to counter them is and must be continuously maintained in the Australian Defence Force (ADF). The ADF comprises the Royal Australian Navy, the Australian Army, the Royal Australian Air Force and a tri-Service headquarters known as HQADF.

DEFENCE IN DEPTH

Australia's self-reliant defence policy is pursued through the strategy of 'defence in depth'. This demands that we have an Australian Defence Force capable of meeting an adversary with a comprehensive range of military capabilities, both offensive and defensive. Defence in depth also emphasises maritime operations and the pursuit of materiel programs to ensure maritime capabilities remain appropriate.

The Defence Force capabilities which we are developing for the independent defence of Australia are also well suited to cooperation with the United States and neighbouring countries in joint defence exercises and other activities, within the framework of our alliances and regional associations.

Essentially, defence in depth requires that the ADF continues to develop capabilities for:

— intelligence and surveillance;

— strike and interdiction (interception and destruction of hostile forces) in our sea and air approaches; and

— land and inshore defence.

THE ROLE OF THE ROYAL AUSTRALIAN NAVY

Royal Australian Navy (RAN) capabilities are called upon in every aspect of defence in depth. The effective defence of Australia requires that our sea and air approaches to the north remain secure and our ports and coastal shipping lanes are protected.

Effective intelligence and surveillance requires that we closely monitor developments in our area of interest. Elements of the Fleet play a major role in surveillance through patrols in our sea approaches and are well equipped for anti-submarine surveillance. The entry into service of new Seahawk helicopters will considerably enhance the surveillance capabilities of the surface fleet. These helicopters are highly advanced and will operate from the guided missile frigates. They are flexible enough to be able to perform a variety of tasks including surveillance, anti-submarine warfare and weapons targeting.

Strike and interdiction calls for capabilities to intercept and defeat an adversary in our sea and air approaches. Our 12 frigates and destroyers and our six submarines make up a formidable force in regional terms. Projects presently under way will add more advanced submarines and surface ships to our fleet.

The new submarine project will give Australia a fleet of six of the world's most advanced diesel electric submarines which will provide the nation with a force which is unique in the region. These vessels are based on a Swedish design and will be built at Port Adelaide with large scale involvement by Australian industry. It is expected that the first of the submarines will enter service in the mid 1990s and the existing fleet of six Oberon Class submarines will be gradually phased out.

The RAN's surface fleet is being expanded to contain three broad levels of surface ship each intended for specific tasks.

FRONT LINE SHIPS

The first level of highly capable ships is made up of the guided missile destroyers (DDGs) and the guided missile frigates (FFGs). They are the front line surface combatants of the RAN and are equipped with sophisticated sensors and weapons. Two additional guided missile frigates are presently being built at Williamstown dockyard in Melbourne. These ships, to be named *Melbourne* and *Newcastle* respectively, will join our existing fleet of four guided missile frigates in the early 1990s.

SECOND LEVEL SHIPS

Light patrol frigates, known as ANZAC ships will form the second level of the RAN surface fleet. The ANZAC ship project, presently under way in collaboration with New Zealand will expand the RAN's surface fleet from 12 to 16 or 17 vessels. These ships will be able to operate alone, or with the DDGs and the FFGs in more intensive operations. During the period of construction our five destroyer escorts will be phased out.

THIRD LEVEL SHIPS

At the third level are the Navy's patrol boats which are suitable for coastal operations. They can undertake tasks such as the patrol of Australia's fisheries and law enforcement and

can also play a role in coastal, port and harbour defence in a defence emergency. The present Fremantle class of patrol boats will remain in service until well into the 1990s.

The Navy is also developing an effective mine countermeasures force for inshore defence operations. An anti-mine capability is important to keep coastal waters and harbours clear of mines. A new class of glass reinforced plastic minehunting catamaran is being developed in Australia for hunting mines inshore. Minesweepers are also being developed based on modifications to what are known as 'craft of opportunity', such as fishing trawlers which are suited to minesweeping tasks.

The RAN's fleet also presently includes seven amphibious vessels — a heavy landing ship and six heavy landing craft. These vessels provide sea transport for the Australian Defence Force. The fleet's capabilities have been further enhanced by the acquisition of HMAS *Westralia,* which along with HMAS *Success,* will provide under-way replenishment. The RAN is also responsible for charting one eighth of the earth's ocean area on hydrographic surveys as well as playing an important role in oceanography and maritime support for the other Services.

The Navy's ability to operate in our northern and north western coastal waters as well as the Indian Ocean is being enhanced with the development of HMAS *Stirling* near Perth as home port for half the fleet of the RAN. Already a number of destroyers, patrol boats and a submarine are based there.

Sydney Harbour is the home of the major fleet base, a submarine base at HMAS *Platypus,* a mine countermeasures base at HMAS *Waterhen* as well as a number of ancillary storage and repair facilities.

THE ORGANISATION OF THE ROYAL AUSTRALIAN NAVY

The professional head of the Royal Australian Navy is the Chief of Naval Staff (CNS). The CNS heads a full time permanent force of 15600 people and a further 4325 in the Naval Reserve. In addition there are 5100 civilian personnel employed by Navy.

The CNS administers the RAN through Navy Office in Canberra. Navy Office is organised into three divisions, one headed by the Deputy Chief of Naval Staff and two headed by Assistant Chiefs of Naval Staff. Each is responsible to the CNS for different aspects of RAN activities, from personnel management to acquisition of capital equipment. Some senior Naval officers also have responsibilites in other parts of the Defence Organisation in the development of policies for the Australian Defence Force.

The RAN's major base is Sydney where CNS is represented by two officers, the Maritime Commander and the Naval Support Commander. The Maritime Commander is in charge of ships, submarines, mine countermeasures craft, naval aircraft and operational bases.

The Support Commander is in charge of establishments and units. The Support Commander also has major responsibilities for the provision of logistic support for the fleet.

Senior officers serve as Naval Officers Commanding in Queensland, Victoria, Tasmania, South Australia, Western Australia, and Northern Australia. They are responsible for bases and ships in their respective areas.

CNS and the senior officers control the activities of the RAN through a communications network which provides contact with ships and bases all over the world.

THE ROYAL AUSTRALIAN NAVY AS A PROVIDER OF SKILLS

Today's RAN uses some of the most advanced equipment in the nation and the training of the people who use it has a very high priority, both on joining and throughout their careers. The range of careers open to women in the Navy has widened considerably in recent years and the percentage of women serving in the RAN has risen from 6 per cent in 1984 to 10.4 per cent in 1988.

The RAN's main basic training establishment is HMAS *Cerberus* at Westernport in Victoria. Trade specialists go on from *Cerberus* to gain their skills at HMAS *Nirimba,* which is also the apprentice training establishment at Quaker's Hill west of Sydney. One of *Nirimba's* functions is the training of general duties sailors who serve an initial two years, after which they can apply to transfer to a specialist branch and receive more training to serve for a longer period.

Officers receive their tertiary education at the Australian Defence Force Academy in Canberra, their naval training at HMAS *Creswell* at Jervis Bay and then as their careers progress, attend courses to develop specialised skills. Many of these are conducted at HMAS *Watson* in Sydney. Located here are the RAN Surface Warfare School and the Submarine Warfare System School. The courses which are offered at these schools are tailored for both start of career and continuation training.

The effective operation of the RAN depends upon making the most of all available human resources and this includes those men and women who serve on a part time basis. Australian Defence Force Reserves have an important role to play in the self-reliant defence of Australia and are an integrated element of the Australian Defence Force. The Naval Reserves train for control of merchant shipping, minesweeping, harbour defence and other specialised duties.

Like the other Services, the RAN is always ready to help the civilian community. This can be in the form of national development assistance such as providing charts for commercial shipping to providing relief to the victims of a natural disaster in our region.

A BRIEF HISTORY

The Colonies of New South Wales, Victoria, Queensland and South Australia raised Naval Forces which operated for four decades prior to 1901.

Concerns about defence were a driving force behind Federation and, in 1911, King George V approved the designation 'Royal Australian Navy'. The RAN initially modelled itself on the Royal Navy and played a distinguished role in Empire Defence in World War I through activity in the Indian Ocean, the Pacific, the Mediterranean, and the North Sea. World War II saw the RAN operating in all the world's oceans, and also the Navy's greatest loss, that of HMAS *Sydney* in November 1941. The RAN also saw action during the Korean War, the Malaysian Confrontation and the Vietnam War.

In 1986 the RAN celebrated its 75th year of service. Spectacular reviews were staged on both this occasion and for Australia's Bicentennial in 1988. Today the men and women of the RAN are professionally proud and determined to uphold the great traditions and high standards of the Navy.

GUIDED MISSILE DESTROYERS

The three guided missile destroyers — HMA Ships *Perth, Hobart* and *Brisbane* — are particularly versatile US built ships, generally regarded as the best balanced vessels built in modern times. Their main task is air defence of the Fleet, but they also have formidable anti-submarine and surface gunnery capabilities.

The DDGs' air defence capability is based on their Standard missile system with the launcher located near the stern, and its associated high definition radars.

Each DDG is also fitted with two Ikara missile systems. This long-range, anti-submarine system is Australian-designed and developed. The missile is automatically guided to the vicinity of a hostile submarine where a torpedo is released by parachute to home on the target.

The ships are fitted with modern combat data, sonar, radar, communications and electronic systems to provide the command with comprehensive information.

All three ships saw action in Vietnamese waters in the 1960s and 1970s where they served with distinction.

The ships underwent weapons systems updates in the late 1970s which included the fitting of modern data links and computerised data systems.

Each DDG has again been earmarked for a further update which will see the RAN maintain these frontline units until at least the late 1990s. *Brisbane,* the first, completed her update in 1988.

Perth, Hobart and *Brisbane* are the names of former RAN cruisers.

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
38	PERTH	21.9.62	26.9.63	17.7.65
39	HOBART	26.10.62	9.1.64	18.12.65
41	BRISBANE	15.2.65	5.5.66	16.12.67

Builders	Defoe Shipbuilding Co., USA
Displacement	4,720 tonnes
Length	133.2 metres
Beam	14.3 metres
Armament	Two 5 inch automatic rapid fire guns, Standard anti-air missile system, two Ikara anti-submarine missile systems, two sets triple-mounted anti-submarine homing torpedoes.
Machinery	Two GE geared steam turbines driving two shafts.
Speed	More than 30 knots
Ships Company	333

RIGHT AND OPPOSITE: HMAS *Brisbane.*

GUIDED MISSILE FRIGATES

Four guided missile frigates (FFGs), HMA Ships, *Adelaide, Canberra, Sydney* and *Darwin,* joined the RAN between 1980 and 1984.

The FFGs are long-range escort ships with roles involving interdiction, surveillance, reconnaissance, area air defence and anti-submarine warfare.

The principal weapons of the FFG are the Standard medium range anti-aircraft missile, and the Harpoon sea-skimming anti-surface missile, the latter having over-the-horizon capability. Both of these missiles are fired from the GMLS MK13 launcher carried on the forecastle.

The 76mm gun, located just forward of the funnel, has a very high rate of fire and is completely automatic.

For close-in anti-submarine work, two MK 32 triple torpedo tubes are carried, one each side amidships. For their main anti-submarine role, the FFGs are equipped with a flight deck and hangars and are capable of embarking two helicopters. The FFGs are equipped with a modern sonar system for the detection of submarines.

All ships are fitted with the Phalanx 20mm Close-in-Weapons System as a protection against anti-ship missiles such as the Exocet.

The FFGs are the first RAN ships to use gas turbines for main propulsion, and this, combined with a modern repair-by-replacement policy, permits a greatly reduced complement while allowing a very high availability for sea.

These ships can be underway from cold in less than 45 minutes, which is not possible with conventional steam-powered ships.

Two additional FFGs are being built in Williamstown, Victoria and are expected to enter service in the early 1990s. The two ships are to be named *Melbourne* and *Newcastle.*

Adelaide, Canberra and *Sydney* are the names of former RAN cruisers and an aircraft carrier *(Sydney). Darwin* is the first of its name in the RAN.

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
01	ADELAIDE	29.7.77	21.6.78	15.11.80
02	CANBERRA	1.3.78	1.12.78	21.3.81
03	SYDNEY	16.1.80	26.9.80	29.1.83
04	DARWIN	3.7.81	26.3.82	21.7.84
	Builders	Todd Pacific Shipyards, USA		
05	MELBOURNE	12.7.85	5.5.89	
06	NEWCASTLE	21.7.89		
	Builders	AMECON, Victoria		

Displacement	3,680 tonnes
Length	138 metres
Beam	13.7 metres
Armament	Harpoon anti-ship and Standard anti-air missiles, MK 92 fire control system, one 76 mm gun, one Mk 15 Phalanx CIWS, twin Mk 32 a/s triple torpedo tubes, two helicopters.
Machinery	Two GE LM 2,500 gas turbines geared to one controlled pitch propeller
Speed	More than 30 knots
Ships Company	186

ABOVE: The Harpoon anti-ship missile arms the FFG.

OPPOSITE: Guided missile frigates during exercises off the eastern coast.

DESTROYER ESCORTS

The Royal Australian Navy has five operational Australian-built destroyer escorts.

The newest, HMA Ships *Swan* and *Torrens,* have received major refits while the earlier River class ships, HMA Ships *Parramatta, Stuart* and *Derwent,* have been extensively modernised to serve well into the 1990s.

All the ships are armed with twin 4.5 inch guns which are used with digital fire control radars and computers. The guns can be used for shore bombardment or can provide fire power against air or surface targets.

Close range air and surface defence is provided by the Seacat missile system which is controlled by a separate radar and computer. The Seacat missile system was developed in Britain and has been adopted by many of the world's navies.

A submarine threat can be met by using either the Australian-designed and built Ikara anti-submarine missile system, or the triple torpedo tubes carried on all the destroyer escorts. All ships are now fitted with the Australian designed and built Mulloka sonar equipment.

Ikara is a rocket-propelled guided missile which carries a homing torpedo toward its submarine target. The torpedo is dropped into the sea by parachute and is then acoustically homed onto the submarine target.

All ships in the squadron except *Derwent* carry the names of former RAN destroyers and sloops.

Eight ANZAC Ships (light patrol Frigates) are expected to enter RAN service in the 1990s to replace the River class destroyer escorts.

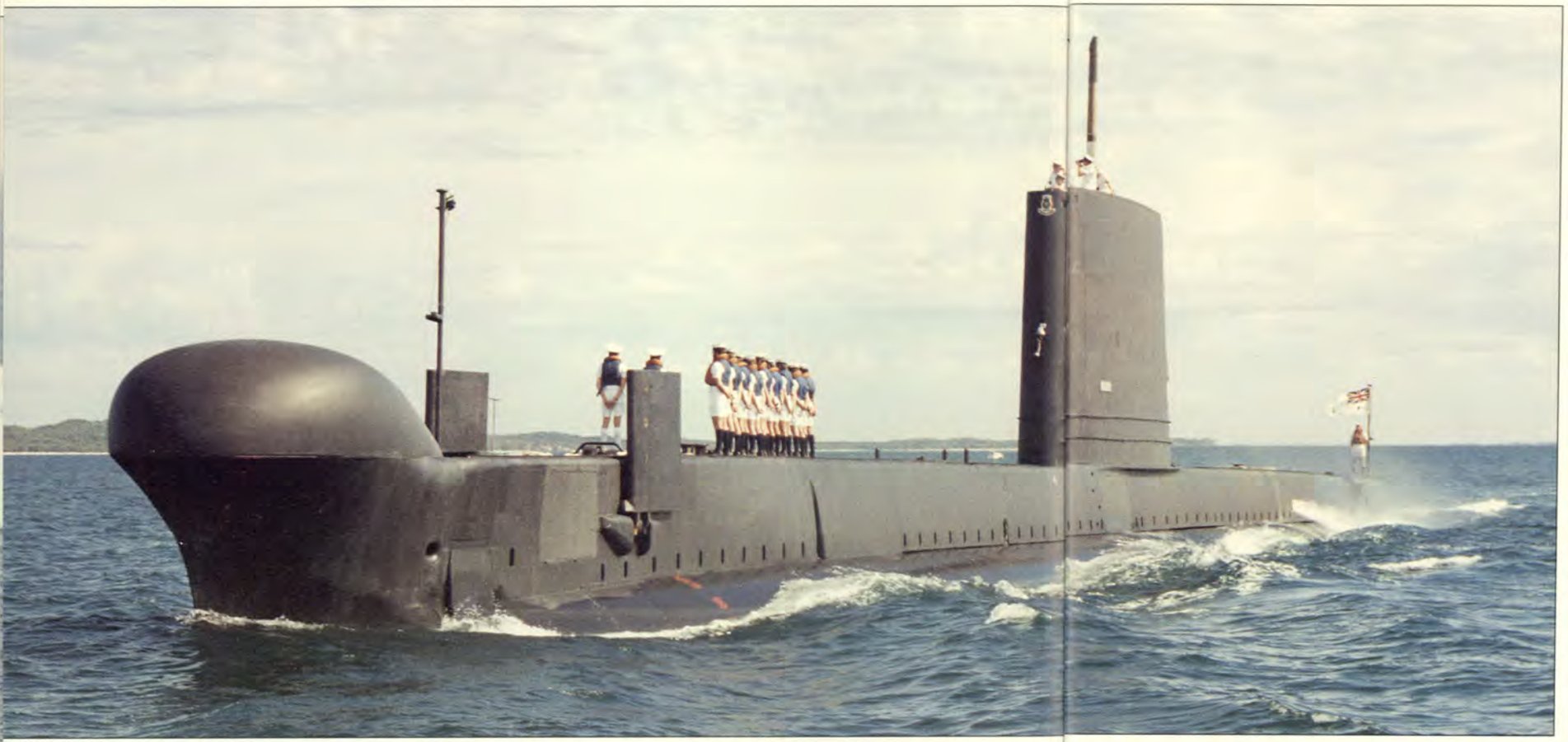
RIGHT: HMAS *Derwent.*

OPPOSITE: HMAS *Stuart* seen at speed off Western Australia.

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
46	PARRAMATTA	3.1.57	31.1.59	4.7.61
48	STUART	26.3.59	8.4.61	28.6.63
	Builders	Cockatoo Island Dockyard, NSW		
49	DERWENT	16.6.58	17.4.61	30.4.64
50	SWAN	18.8.65	16.12.67	20.1.70
	Builders	Williamstown Naval Dockyard, VIC		
53	TORRENS	18.8.65	28.9.68	19.1.71
	Builders	Cockatoo Island Dockyard, NSW		

Displacement	2,750 tonnes
Length	112.8 metres
Beam	12.5 metres
Armament	Two 4.5 inch guns in twin turret controlled by digital fire control radar and computer. Seacat anti-aircraft missile system. Ikara anti-submarine missile system. Twin triple torpedo tubes.
Machinery	Geared steam turbines developing 22,370 kw
Speed	More than 30 knots
Ships Company	250

SUBMARINES



The Royal Australian Navy Submarine Squadron provides the Fleet with modern offensive and reconnaissance capabilities.

The squadron is based at HMAS *Platypus*, North Sydney, a shore establishment specifically designed to support the submarines.

The Oberon boats are very quiet (an essential submarine attribute) and boast long endurance which is an important factor in Australia's area of interest. Each crew consists of 64 men who undergo specialist training to develop the skills needed for this demanding service. The training is primarily self-sufficient with maintenance and support of combat system software all being conducted in Australia. The primary weapons carried by the boats are the US MK48 long-range torpedoes and Harpoon anti-ship missiles. These weapons make the RAN Oberon a very capable conventional submarine.

In 1982 the RAN established a project team to select a new class of submarines to replace the Oberons in the 1990s. These new conventional submarines, based on a Swedish design, known as the Kockums Type 471, will incorporate the latest developments in submarine technology and provide Australia with a very effective force well into the next century.

In 1985 the Minister for Defence announced the intention to homeport submarines at HMAS *Stirling*, near Fremantle WA. HMAS *Oxley* has been based there since September 1987.

HMA Ships *Oxley* and *Otway* are named for earlier Australian submarines, *Ovens* and *Onslow* are named for early Australian pioneers while the name *Orion* was selected to preserve long-established links with the Royal Navy. *Otama* is an Aboriginal word meaning 'dolphin' — the symbol of the Submarine Arm.

No.	Name	Laid Down	Launched	First Commissioned
57	OXLEY	2.7.64	24.9.65	27.3.67
59	OTWAY	29.6.65	29.11.66	22.4.68
60	ONSLOW	26.5.67	3.12.68	22.12.69
70	OVENS	17.6.66	4.12.67	18.4.69
61	ORION	6.10.72	16.9.74	15.6.77
62	OTAMA	28.5.73	3.12.75	27.4.78

Builder	Scotts' Shipbuilding Greenock, UK
Displacement	2,070 tonnes
Length	89.9 metres
Beam	8.1 metres
Armament	Six bow weapon tubes capable of launching torpedoes or missiles
Machinery	Two English Electric main propulsion motors, with two Admiralty standard range diesel generators
Speed	Submerged speed more than 15 knots
Ships Company	64

LEFT: HMAS *Ovens* proceeding down Cockburn Sound to the HMAS *Stirling* fleet support facility in Western Australia.

RIGHT: The RAN's new submarine escape training facility (SETF) located at HMAS *Stirling* on Garden Island in Western Australia.

MINE COUNTERMEASURES VESSELS

Two prototype Bay Class Inshore Minehunters (MHIs), HMA Ships *Rushcutter* and *Shoalwater,* have been commissioned and are now being evaluated in Australia.

The ships are glass reinforced plastic catamarans. Each is non-magnetic and sufficiently silent not to activate acoustic mines. Both ships are fitted with a high definition sonar for minehunting and mine disposal equipment.

When a mine is located, a remotely operated mine disposal vehicle is deployed to identify the mine and if required places an explosive charge to destroy the mine.

The development of 'craft of opportunity' for minesweeping has progressed with the acquisition of three vessels. *Koraaga, Salvatore V* and *Wave Rider* are former fishing vessels which have been modified for a minesweeping role and are presently based at HMAS *Waterhen* in Sydney.

HMAS *Curlew,* another mine-countermeasures vessel, was modified in the UK before joining the Australian Fleet in 1962. She is a wooden-hulled minehunter, non-magnetic and sufficiently silent not to activate acoustic mines. Minehunting is carried out using a high definition sonar set to locate mines ahead of the ship.

When a mine is located, clearance divers go into the water to identify it and decide whether to render it safe and remove it, or to blow it up with an explosive charge which is remotely activated.

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned in RAN*
1121	CURLEW	Apr.53	6.10.53	21.8.62

Builder	Montrose Shipyard, UK
Displacement	489 tonnes
Length	46.6 metres
Beam	8.5 metres
Armament	One 40/60mm Bofors gun
Machinery	Napier diesel engines
Speed	More than 15 knots
Ships Company	38

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
M80	RUSHCUTTER	May.84	3.5.86	1.11.86
M81	SHOALWATER	Sept.85	1987	1987

Builders	Carrington Slipways, NSW
Displacement	170 tonnes
Length	31 metres
Beam	9 metres
Armament	Two 0.5 inch machine guns, two PAP 104 remote operated mine disposal vehicles
Machinery	Two Poyaud diesel engines driving two independent Schottel propulsion steering units
Speed	10 knots
Ships Company	13

BELOW: Koraaga a 'craft of opportunity' minesweeper.

OPPOSITE: HMAS Rushcutter

PATROL BOATS

In September 1977 construction began on a new class of patrol craft to supplement and in due course replace the capabilities offered by the existing Attack class boats. The new craft were built to a British design with the first constructed by Brooke Marine in England. The remaining 14 were constructed in Australia by North Queensland Engineers and Agents Ltd of Cairns, Queensland.

The first of the Fremantle class were accepted in 1979 with the last entering service in early 1985.

The patrol boats are deployed to bases around Australia's coastline at Sydney, Cairns, Darwin and HMAS *Stirling* in Western Australia. The boats fulfil a wide variety of tasks from the tropical north to the inclement waters of Bass Strait, patrolling for unlicensed fishing craft and national civil coastal surveillance. In the event of war they would be tasked to control the waters close to the Australian mainland. Due to their small size the performance of the boats is limited in rough weather. The vessels are well prepared for their patrol duties as well as for any other operational requirements. Each is equipped with high definition navigation radar, high and ultra high frequency communications equipment, gyro compasses and echo sounder. In addition, they are equipped with a satellite navigation system which enables the ship's position to be determined with great accuracy.

The Fremantle class patrol boats carry the names of the Bathurst class Australian Minesweepers which served during and after World War II.

No.	Name	Laid Down	Launched	First Commissioned
205	TOWNSVILLE	5.3.79	16.5.81	18.7.81
206	WOLLONGONG	Sept.79	17.10.81	28.11.81
207	LAUNCESTON	Nov.79	23.1.82	6.3.82
208	WHYALLA	Jun.80	22.5.82	3.7.82
209	IPSWICH	20.10.80	23.9.82	13.11.82
210	CESSNOCK	Feb.81	15.1.83	5.3.83
211	BENDIGO	Jul.81	9.4.83	28.5.83
212	GAWLER	18.1.82	9.7.83	27.8.83
213	GERALDTON	Mar.82	22.10.83	10.12.83
214	DUBBO	9.8.82	21.1.84	10.3.84
215	GEELONG	15.11.82	14.4.84	2.6.84
216	GLADSTONE	Jul.83	28.7.84	8.9.84
217	BUNBURY	13.6.83	3.11.84	15.12.84

Builder	North Queensland Engineers and Agents Ltd, QLD
Displacement	220 tonnes
Length	42 metres
Beam	7.15 metres
Armament	One general purpose 40/60mm Bofors gun, one 81 mm mortar, two 0.5 inch cal. Browning machine guns
Machinery	Two MTU 538 series 16 cylinder main propulsion engines. One Dorman 12 cylinder auxiliary propulsion engine.
Speed	About 30 knots
Ships Company	22

RIGHT: The bridge of HMAS *Dubbo.*

OPPOSITE: The Fremantle class HMAS *Bunbury* returning to HMAS *Stirling* from a patrol off the West Australian coast.

LANDING SHIP HEAVY

No.	Name	Laid Down	Launched	First Commissioned
L50	TOBRUK	7.2.79	1.3.80	23.4.81

Builder	Carrington Slipways, NSW
Displacement	5,800 tonnes
Length	126 metres
Beam	18 metres
Armament	Two 40/60 mm Bofors guns
Machinery	Two diesels
Speed	17 knots
Ships Company	130
Landing Craft	Two LCVP on davits, two LCM 8 can be carried as deck cargo
Helicopters	In support of amphibious operations
Troops	350–550

The Amphibious Heavy Lift Ship HMAS *Tobruk* was the first purpose-built major amphibious ship in the RAN.

Tobruk's design is an update of the proven British Sir Bedivere class Logistic Landing Ship (LSL). She provides the Australian Defence Force with a heavy lift capability not available in any other Australian-owned ship.

The ship is designed to carry troops, stores and vehicles and to put them ashore without the aid of port facilities. To achieve this, the ship is equipped with a 70 tonne capacity derrick and carries two small landing craft as ship's boats. *Tobruk* has two landing spots for the operation of helicopters and can discharge cargoes over bow and stern ramps. *Tobruk* can also carry two 60 tonne Army landing craft as deck cargo, or two self-propelled pontoons alongside.

In an established port, *Tobruk* can discharge cargo by its own heavy-lift derrick and cranes as well as over the bow and stern ramps onto a roll-on-roll-off terminal. If no port facilities are available, the ship can beach itself and lower the beam ramps to a beach causeway or onto pontoons, landing craft or amphibians.

Tobruk has the command and communications facilities to control all types of amphibious operations. She is equipped with a small hospital and accommodation for more than 500 troops. Her crew of 130 includes a small Army detachment.

ABOVE: An Army LC 8 landing craft is lifted from HMAS *Tobruk* by the ship's own heavy lift derrick.

LEFT: HMAS *Tobruk.*

LANDING CRAFT HEAVY

No.	Name	Laid Down	Launched	First Commissioned
L127	BRUNEI	July.71	15.10.71	5.1.73
L128	LABUAN	Oct.71	29.12.71	9.3.73
L129	TARAKAN	Dec.71	16.3.72	15.6.73
L133	BETANO	Sept.72	5.12.72	8.2.74
L126	BALIKPAPAN	May.71	15.8.71	27.9.74
L130	WEWAK	Mar.72	18.5.72	10.8.73

Builder Walkers Ltd, QLD

Displacement 316 tonnes
Length 44.5 metres
Beam 10.1 metres

Armament Two 0.5 inch machine guns

Machinery Two GE diesels

Speed More than 9 knots
Ships Company 2 officers, 11 sailors (or 2 officers, 13 sailors as survey ships)

Six landing craft heavy (LCH) are presently in service with the RAN.

The first ship, HMAS *Brunei*, joined the Fleet in January 1973. By the end of August 1973, four LCHs had been commissioned into the RAN — HMA Ships *Brunei, Labuan, Tarakan* and *Wewak*. Four others — HMA Ships *Salamaua, Buna, Betano* and *Balikpapan* were commissioned in the period up to mid 1974.

Balikpapan, the prototype LCH, was operated by the Army until September 1974. *Buna* and *Salamaua* were handed over to the Papua New Guinea Defence Force in November 1974.

These sea-going ships, all built at Walkers Ltd Shipyards, Maryborough, Queensland, are each manned by two officers and 11 sailors.

From 1985 two LCHs, HMA Ships *Betano* and *Brunei*, were allocated as interim survey ships, but in 1988 were homeported to HMAS *Waterhen* in Sydney for service as diving tenders. HMAS *Labuan*, HMAS *Tarakan* and HMAS *Balikpapan* are assigned for naval reserve training to the Brisbane, Cairns and Darwin Port Divisions respectively. HMAS *Wewak* is held in reserve in Cairns.

The ships are all named in honour of World War II amphibious operations in which RAN ships and craft placed Australian Army units ashore or performed surveys prior to the landings.

The versatile LCHs can carry the heaviest equipment in the Army inventory (up to three Leopard tanks, for example).

ABOVE: An Army fire support vehicle drives off an LCH's bow ramp onto a beachhead.

LEFT: HMAS *Betano*, one of the RAN's six heavy landing craft.

RAN IN THE 1990s AND BEYOND

TOP: The Kockums Type 471 submarine
ABOVE: The MEKO 200 Frigate

TYPE 471 SUBMARINES

The new submarines to be constructed for the RAN will be the most advanced conventional submarines in the world. The design is known as the Kockums Type 471. The six vessels will enter service from the mid-1990s and will replace our fleet of Oberon submarines.

There will be large scale involvement by Australian industry in the project, 70 per cent of the platform work and 45 per cent of the combat systems work will be done in Australia. It is estimated that at the peak of construction up to 650 jobs will be provided at the submarine construction facility in Port Adelaide. A significant amount of work associated with the project is flowing to other Australian states.

SPECIFICATIONS

Displacement	Approx. 3,000 tonnes
Length	75 metres
Speed	In excess of 20 knots
Patrol Endurance	70 days
Ships company	42
Armament	6 bow torpedo tubes firing MK 48 wire guided torpedoes, Harpoon missiles and mines

ANZAC SHIPS

The new Frigate for the Navy is the German designed Meko 200. The frigates will have an operational range of 6,000 nautical miles with a speed of better than 27 knots. These ships will be able to operate alone or with the DDGs and the FFGs in more intensive operations. During the period of construction our five destroyer escorts will be phased out.

In its operational role, the new Frigate will have an advanced package of air surveillance radar, hull mounted sonar and electronic support systems.

The ships will be able to carry the Navy's new Seahawk helicopters for anti-submarine operations.

SPECIFICATIONS

Length	118 metres
Beam	14.8 metres
Speed	27 knots
Armament	Medium calibre gun and PDMS (point defence missile system) Anti-submarine torpedo tubes
Machinery	CODCG (combination diesel or gas) system — diesel for cruise. LM 2500 gas turbine for speed.

OPPOSITE TOP: HMAS *Westralia*, pictured here as the Royal Navy Auxiliary ship *Appleleaf*, before commissioning in the RAN.

OPPOSITE : Sail Training Ship *Young Endeavour*.

SAIL TRAINING SHIP *Young Endeavour*

The brigantine *Young Endeavour* was Britain's Bicentennial gift to Australia. The Government has decided to use the ship for the benefit of Australia's youth.

The RAN operates the ship on behalf of the Young Endeavour Youth Scheme. The *Young Endeavour* has a RAN crew of nine who conduct the training program and who are responsible for the safe and efficient operation of the ship.

Voyages on the *Young Endeavour* are open to young men and women between 16 and 24. Many young Australians have already experienced this unique and rewarding challenge.

SPECIFICATIONS

Length	44 metres
Beam	7.8 metres
Draft	4 metres
Displacement	200 tonnes

HMAS *Westralia*

The newly acquired underway replenishment ship HMAS *Westralia* will soon be performing the vital role of supplying fuel for warships and helicopters. The tanker will be based at HMAS *Stirling* on the west coast where it will provide greater flexibility in the deployment of naval ships. The other underway replenishment ship, HMAS *Success*, is based in Sydney.

HMAS *Westralia* is the largest ship in the RAN and can carry over 20,000 tonnes of fuel, including several thousand tonnes of aviation fuel for helicopters. Like HMAS *Success* it will be able to transfer fuel to warships at sea while underway. To offset the cost of the new tanker, the destroyer tender HMAS *Stalwart* is being withdrawn from operational service.

HMAS *Westralia* formerly known as *Appleleaf* has been in service as an auxiliary with the Royal Navy before entering service with the RAN.

The name *Westralia* dates back to World War II when a merchant ship bearing the name was requisitioned and armed for Australia's war effort. The first HMAS *Westralia* entered Naval service as an armed merchant cruiser in January 1940 carrying out patrol and escort duties in the Indian and Pacific Oceans.

SPECIFICATIONS

Length	171 metres
Beam	26 metres
Draft max	11.9 metres
Displacement full load	40,870 tonnes
Fuel capacity diesel/aviation	20,000 tonnes plus
Refuelling rigs	
abeam	2
astern	1
Crew	60
Launched	1975
Commissioned in RAN	1989

AUXILIARY OILER REPLENISHMENT

Contemporary maritime operations demand that naval combat units be supplied with fuel, ammunition, food and stores at sea whilst underway. HMAS *Success* is designed for this task. She is capable of day and night replenishment to ships alongside and with her Wessex helicopter to other ships in company. Four main Replenishment at Sea, (RAS) stations are fitted, two of which have dual functions and can be used to transfer either fuel or solids. RAS operations are controlled from a Cargo Control Room amidships.

During solid cargo transfer the load is supported by a traveller riding on a tensioned highline between *Success* and a fixed point in the receiving ship. During fuel transfers, the highline is used to support a hose which hangs from several travelling saddles and which has a quick connecting probe to connect with the fuel receiving point in the ship being fuelled. The solids transfer stations are designed to handle sizeable loads of up to nearly 2 tonnes. The RAS system is designed to cope with the extreme demands caused by ship motion in rough weather, and works extremely well. *Success* thus enables RAN Fleet units to operate with a greater degree of flexibility and independence from shore support than has previously been possible.

The ship's company of 205 is required to operate and maintain the propulsion, replenishment and auxiliary machinery and support systems in *Success*. Providing underway replenishment support to the fleet is a challenging and continuing task requiring technical proficiency and high seamanship standards.

As would be expected in a modern warship, accommodation and recreation areas are spacious and well designed. Meals are provided from one centralised galley including a bakery. The medical centre, includes an operating theatre, infirmary and dental surgery. The ship and its cargo is protected by a variety of modern fire detection and damage control equipment.

The previous HMAS *Success* was an 'S' Class destroyer commissioned into the RAN in 1920. She operated in Australian waters and was paid off in 1930.

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
OR304	SUCCESS	9.8.80	3.3.84	23.4.86

Builder	Cockatoo Island Dockyard, NSW
Displacement	17,933 tonnes
Length	157.2 metres
Beam	21.2 metres
Armament	Three 40/60mm Bofors guns, two forward, one aft, four 0.5 inch machine guns, one utility helicopter
Machinery	Two independent propulsion systems, each consisting of a 16 PC2-5V Pielstick non-reversing medium speed diesel engine, developing 7,640 kw at 520 RPM
Speed	19 knots (full load)
Ships Company	205

ABOVE: Replenishment at sea between HMAS *Success* and an FFG.

OPPOSITE: HMAS *Success*.

TRAINING SHIP

HMAS *Jervis Bay* is the RAN's training ship. Formerly the MV *Australian Trader,* she was built in Australia in 1969 as a roll-on-roll-off, passenger-vehicle vessel for the Australian National Line. In 1977 she was sold to the RAN and modified to undertake the training role.

The vehicle and cargo-carrying capabilities of *Jervis Bay* have been retained to provide the RAN with additional logistic support capability.

Jervis Bay's primary role is to train junior officers in basic navigation and seamanship and the ship is fitted out accordingly. Modern training facilities installed include a second bridge to accommodate navigation training and a navigation classroom, equipped with two radar displays and chart tables for up to 40 trainees.

The standard of accommodation onboard is quite a departure from that normally associated with a modern warship.

Training onboard *Jervis Bay* is not restricted to RAN trainees. Most training cruises usually include a number of foreign officer trainees from South East Asian and Pacific Navies.

The ship's name perpetuates her close links with the RAN College at Jervis Bay, and also commemorates the epic battle between HMS *Jervis Bay* and the German pocket battleship *Admiral Scheer* during World War II in which the first *Jervis Bay* was sunk while protecting the convoy she was escorting.

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
GT203	JERVIS BAY	18.8.67	17.2.69	25.8.77

Builder	Newcastle State Dockyard, NSW
Displacement	8,915 tonnes
Length	135.7 metres
Beam	21.5 metres
Machinery	Two 16 PC2V 400 Crossley Pielstick engines two shafts
Speed	17 knots sustained
Ships Company	111 plus 40 trainees

ABOVE: Aboard HMAS *Jervis Bay* a radio operator performs routine ship maintenance.

OPPOSITE: HMAS *Jervis Bay.*

SURVEY AND OCEANOGRAPHIC

Surveying of Australian and Papua New Guinea waters which, combined, involve 30,000km of coastline and cover about one-eighth of the earth's surface is the mammoth task entrusted to the RAN Hydrographic Service.

The stepped-up exploitation of Australia's vast mineral resources in recent years based on bulk-handling methods, has led to the development of new ports such as Gove, Weipa, Spring Bay, Dampier and Port Hedland. The largest bulk carriers in the world now call at Australian ports and there is a continuing need for new and more accurate surveys of shipping routes and harbour approaches.

HMA Ships *Moresby, Flinders* and the new Survey Motor Launches are engaged full time on this work while HMAS *Cook* carries out oceanographic research.

Moresby, based in Western Australia, is a large modern survey ship. She operates her own helicopter and carries advanced electronic surveying equipment. The 765 tonne *Flinders,* which carries out surveys mainly in the Barrier Reef area, is based at Cairns.

TOP: HMAS *Moresby*
ABOVE: HMAS *Paluma*
OPPOSITE: HMAS *Cook*

Two LCHs, HMA Ships *Betano* and *Brunei,* were modified during 1985 to interim survey ships. These two vessels carried out inshore surveys in the north of Australia and were also based at Cairns.

Cook, fitted with the most advanced oceanographic and survey equipment, is engaged on military and civilian oceanographic research including work for the CSIRO, universities and museums.

The first of the new Survey Motor Launches, HMAS *Paluma,* was launched in Feb 89, and delivered to the RAN on 1 May 89. The three others to be named (respectively) *Mermaid, Shepparton* and *Benalla* — are scheduled for launching and commissioning later in 1989.

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
73	MORESBY	May. 62	7.9.63	6.3.64
	Builder	Newcastle State Dockyard, NSW		
	Displacement	2,340 tonnes		
	Length	95.7 metres		
	Beam	12.8 metres		
	Machinery	Three diesel engines		
	Speed	19 knots		
	Ships Company	146		

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
312	FLINDERS	Dec. 70	29.7.72	27.4.73
	Builder	Williamstown Naval Dockyard, VIC		
	Displacement	765 tonnes		
	Length	49.1 metres		
	Beam	10.1 metres		
	Machinery	Two diesel engines		
	Speed	13 knots		
	Ships Company	38		

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
291	COOK	30.9.74	27.8.77	28.10.80
	Builder	Williamstown Naval Dockyard, VIC		
	Displacement	Full load, 2,550 tonnes		
	Length	96.6 metres		
	Beam	13.4 metres		
	Machinery	Diesels, two shafts		
	Speed	17 knots		
	Ships Company	150 plus scientific staff		

No.	*Name*	*Laid Down*	*Launched*	*First Commissioned*
01	PALUMA	Feb.88	Feb.89	Feb.89
02	MERMAID	Oct. 88		
03	BENALLA	Feb. 89		
04	SHEPPARTON	Nov. 88		
	Builder	Eglo Engineering, Port Adelaide, SA		
	Displacement	305 tonnes		
	Length	35 metres		
	Beam	13.72 metres		
	Machinery	Twin screws		
	Speed	12 knots		
	Ships Company	12		

GENERAL PURPOSE VESSELS

No.	Name	Launched	First Commissioned
G244	BANKS	15.12.59	16.2.60
G247	BASS	28.3.60	25.5.60

Builder	Walkers Ltd QLD
Displacement	148 tonnes (BANKS) 180 tonnes (BASS)
Length	30.8 metres
Beam	6.7 metres
Machinery	Twin diesels
Speed	9 knots
Ships Company	10

ABOVE: Bass.

OPPOSITE: HMAS *Aware.*

The Royal Australian Navy has two general purpose ships, *Bass* and *Banks,* of the Explorer class.

Bass transferred to the Darwin Naval Base in October 1985, for use as a Naval Reserve Training ship for the newly formed Reserve unit.

In November 1985, *Banks* transferred to Sydney to undertake the navigation duties previously performed by *Bass.* This involves undertaking practical navigation training on Sydney Harbour and adjacent coastal waters. With their deep draught they are good sea-keeping vessels providing relatively stable platforms.

It is perhaps fitting that GPV's *Bass* and *Banks* have assumed navigation and training roles, tasks of which their illustrious namesakes would no doubt have approved.

RESERVE PATROL BOATS

Twenty Attack class patrol boats were built in Queensland shipyards for patrol and survey work in waters around Australia and Papua New Guinea.

A number of these vessels have since entered service with the Defence Forces of Papua New Guinea and Indonesia.

The remaining vessels, HMA Ships *Adroit, Ardent* and *Aware* were transferred to the RAN Reserve and now operate on regular training cruises.

One boat is attached to the reserve port division in Sydney, Fremantle, Adelaide, Hobart and Melbourne. During their service with the RAN the boats were used in a variety of tasks including fishery patrol and surveying duties.

Included in the ship's equipment is high definition navigation radar, high and ultra high frequency radio transmitters and receivers, gyro and magnetic compasses and echo sounders.

No.	Name	Laid Down	Launched	First Commissioned
203	FREMANTLE	11.11.77	16.2.79	17.3.79
	Builder	Brook Marine Ltd U.K.		
204	WARRNAMBOOL	30.9.78	25.10.80	14.3.81
	Builder	NQEA Ltd. Cairns For specifications see page 17		
82	ADROIT	Aug.67	3.2.68	17.8.68
	Builder	Evans Deakin Ltd, QLD		
87	ARDENT	Oct.67	27.4.68	26.10.68
91	AWARE	Jul.67	7.10.67	21.6.68
	Builder	Evans Deakin Ltd, QLD		

Displacement	149 tonnes
Length	32.6 metres
Beam	6.1 metres
Armament	*One 40/60mm Bofors gun, one 81mm mortar, a variety of light arms*
Machinery	Two diesels
Speed	24 knots
Ships Company	19

SUPPORT CRAFT

LIGHTERS

Two water fuel lighters (WFLs) and three crane stores lighters (CSLs) are operated from the Garden Island Dockyard in Sydney. One WFL, No. 8004 is homeported to HMAS *Stirling* in Western Australia and WFL 8001 is based in Jervis Bay at HMAS *Creswell*.

The three CSLs are used as stores lighters and tugs for other non-propelled Navy craft.

WATER FUEL LIGHTERS

No.	*Name*	*In Service*
8001	WARRIGAL	Oct. 84
8002	WALLABY	Feb. 83
8003	WOMBAT	Feb. 83
8004	WYGUNA	Oct. 84
	Builders	Williamstown Naval Dockyard, VIC
	Displacement	1,210 tonnes
	Length	38 metres
	Beam	10.2 metres
	Machinery	Two Harbour Master units
	Speed	8 knots
	Ships Company	5

CRANE STORES LIGHTERS

No.	*Name*	*In Service*
01	WATTLE	Aug. 72
02	BORONIA	Sept. 72
03	TELOPIA	Oct. 72
	Builders	Cockatoo Island Dockyard, NSW
	Displacement	147 tonnes
	Length	23.7 metres
	Beam	9.75 metres
	Machinery	Two diesels
	Speed	8 knots
	Ships Company	4

TORPEDO RECOVERY VESSELS

TRV 801 operates from Jervis Bay and TRV 802 from HMAS *Waterhen* in Sydney and TRV 803 from HMAS *Stirling* in Western Australia. All three vessels have been used as diving tenders and for training by the RANR.

No.	*Name*	*In Service*
801	TUNA	Jan. 70
802	TREVALLY	Sept. 70
803	TAILOR	Apr. 71
	Builders	Williamstown Naval Dockyard, VIC
	Displacement	93 tonnes
	Length	27 metres
	Beam	6.4 metres
	Machinery	Three diesels
	Speed	13 knots
	Ships Company	9

TUGS

Tammar and *Quokka* are homeported to HMAS *Stirling* in Western Australia.

The smaller *Bronzewing* class operates on Sydney Harbour from Garden Island.

No.	*Name*	*In Service*
2601	TAMMAR	Mar.84
	Builders	Australian Shipbuilding Industries WA
1801	QUOKKA	Dec. 83
	Builders	Shoreline Engineering, VIC
501	BRONZEWING	Dec. 68
502	CURRAWONG	1969
	Builders	Stannard Bros, NSW
504	MOLLYMAWK	1972
	Builders	Perrin Engineering, QLD

	TAMMAR	*QUOKKA*	*BRONZEWING CURRAWONG MOLLYMAWK*
Displacement	265	110	47 tonnes
Length	25.7	18.1	15.2 metres
Beam	8.2	5.9	4.6 metres
Machinery	Diesels		
Speed	11	9	9 knots
Ship's Company	6	6	3

ABOVE LEFT: Wallaby.
ABOVE RIGHT: Currawong.
LEFT: Torpedo recovery vessel *Trevally.*
OPPOSITE: Tammar.

NAVAL AVIATION

TOP: Sea King MK50A.
ABOVE: HS748.
OPPOSITE: Seahawk.
LEFT: Wessex MK31B
RIGHT: Bell 206-B

Since 1983 the Fleet Air Arm has changed from supporting carrier based aviation to a force that integrates more closely with destroyers at sea. With the advent of the FFG class ships and HMAS *Success* there has been a large increase in the number of helicopter capable ships in the Fleet.

The RAN has met the challenge of this transition and to complete the FFG weapon system has ordered 16 Sikorsky S70B2 Seahawk helicopters. These very sophisticated helicopters are being acquired to carry out the roles of anti-submarine warfare and anti-surface ship surveillance and targeting. The Seahawks will effectively extend the range of ship sensors and permit long-range Harpoon missile firings to be conducted over the horizon from Navy's FFGs and DDGs.

In the interim the Fleet Air Arm is maintaining essential expertise in a wide range of aircraft in several different roles. These aircraft and roles are:

Westland Sea King MK 50As are employed in anti-submarine warfare, operations in support of Army and search and rescue.

Westland Wessex MK 31Bs are used in operations in support of Army, Fleet utility tasks from HMAS *Success* and *Tobruk* and search and rescue.

Bell Kiowa 206Bs are employed in communications and survey support operations from HMAS *Moresby*.

Aerospatiale Squirrel AS 350Bs for light utility and training at sea in the FFG 7 class ships.

Hawker Siddeley HS748 aircraft, are employed in electronic warfare training in support of all three services and are also employed as personnel and stores transport support aircraft.

Jindivik pilotless target aircraft operate from Jervis Bay airfield to provide a realistic target aircraft for Navy, Air Force and Army missile practices.

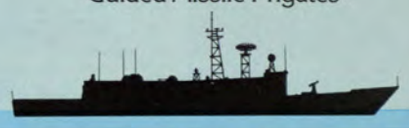
THE FLEET

The Royal Australian Navy is centred around a modern ocean going force of more than fifty combat and support ships, together with a strong Fleet Air Arm component comprising helicopters and some fixed wing aircraft. It is well armed and trained, technically advanced and possesses a comprehensive range of capabilities.

Guided Missile Destroyers

38 PERTH
39 HOBART
41 BRISBANE

Guided Missile Frigates



01 ADELAIDE
02 CANBERRA
03 SYDNEY
04 DARWIN

Destroyer Escorts

46 PARRAMATTA
48 STUART
49 DERWENT

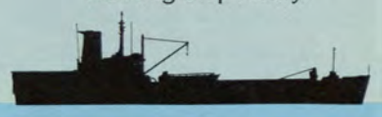
Patrol Boats

203 FREMANTLE
204 WARRNAMBOOL
205 TOWNSVILLE
206 WOLLONGONG
207 LAUNCESTON

208 WHYALLA
209 IPSWICH
210 CESSNOCK
211 BENDIGO
212 GAWLER

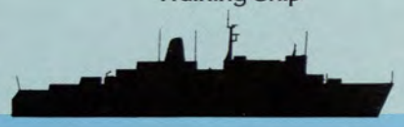
213 GERALDTON
214 DUBBO
215 GEELONG
216 GLADSTONE
217 BUNBURY

Landing Ship Heavy



L50 TOBRUK

Training Ship

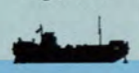


GT203 JERVIS BAY

Survey and Oceanographic Ships

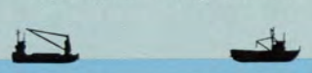
73 MORESBY
312 FLINDERS
291 COOK

Lighters



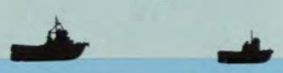
8001 WARRIGAL
8002 WALLABY
8003 WOMBAT
8004 WYGUNA

Torpedo Recovery Vessels



01 WATTLE
02 BORONIA
03 TELOPIA

Tugs



801 TUNA
802 TREVALLY
803 TAILOR

2601 TAMMAR
1801 QUOKKA

Submarines

50 SWAN
53 TORRENS

57 OXLEY
59 OTWAY
60 ONSLOW

70 OVENS
61 ORION
62 OTAMA

Mine Countermeasures Vessels

1121 CURLEW
M80 RUSHCUTTER
M81 SHOALWATER

Landing Craft Heavy

L127 BRUNEI
L128 LABUAN
L129 TARAKAN
L133 BETANO

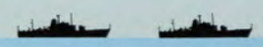
Auxillary Oiler Replenishment

OR304 SUCCESS

General Purpose Vessels

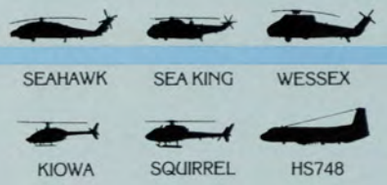
244 BANKS
247 BASS

Reserve Patrol Boats



82 ADROIT
87 ARDENT
91 AWARE

Fleet Air Arm



SEAHAWK
SEA KING
WESSEX
KIOWA
SQUIRREL
HS748

501 BRONZEWING
502 CURRAWONG
504 MOLLYMAWK

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