

## Jane's Defence Weekly

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# Beyond Plan Pelorus

**The Royal Australian Navy's future strategy will see it acquire more capable individual platforms but also gain capability at the task force level. *Julian Kerr reports***

Reflecting both the introduction of new capabilities and improvements in platform support, by 2018 the Royal Australian Navy (RAN) anticipates regularly generating and deploying self-contained naval task groups capable of accomplishing the full spectrum of maritime security operations.

Under Plan Pelorus, released in April and spelling out the chief of the navy's three-year strategic intent, the RAN will seek the ability to establish sea control in two geographical locations and, after an initial surge, maintain one location of local sea control.

Presumably at least partially driven by the escort needs of the RAN's new 27,500-ton Canberra-class landing helicopter docks (LHDs), Plan Pelorus moves the operational emphasis from independent units to grouping together the combat capability of ships in task groups.



*HMAS Canberra off the north Queensland coast with five MRH90 aircraft on deck and its four landing craft deployed. (Australian DoD)*

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In addition, planning for the decade beyond Pelorus recently received a boost with the announcement in August of a continuous domestic naval shipbuilding programme intended to deliver new frigates and a new class of offshore patrol vessel (OPV) to the RAN years ahead of schedule.

Crucially, yet to be determined is the design, number, build schedule and place of construction of the conventionally powered Future Submarine that will replace the RAN's six-strong Collins-class fleet under Project Sea 1000 Phase 1/2 at an estimated acquisition and through-life support cost of around AUD50 billion (USD36.5 billion).



*Royal Australian Navy Anzac-class frigate HMAS Perth (foreground) pictured with the Republic of Singapore Navy ship RSS Stalwart and Royal Malaysian Navy ship KD Kasturi (background) in the South China Sea during Exercise 'Bersama Shield 2015' on 29 May. (Australian DoD)*

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*The first of three AWDs for the Royal Australian Navy, Hobart, was launched on 23 May. (Australian DoD)  
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Fast forward to 2018 and these assets - probably minus the third FFG - will have been joined by the first of three Hobart-class Air Warfare Destroyers (AWDs), a second LHD, 24 MH-60R maritime combat helicopters, and six MRH90 maritime support helicopters.

With the first AWD now unlikely to reach the RAN until early in 2017, the second not until mid-2018 and the third not until early 2020, the FFGs have assumed much greater importance in Plan Pelorus.



*Adelaide-class guided-missile frigate HMAS Melbourne sails past Sydney Harbour Bridge and the Opera House on its return to its base at Garden Island, following a six-month deployment to the Middle East. (Australian DoD)*

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This assumes the availability of one AWD and two FFGs, probably *Melbourne* and *Newcastle*, with the older *Darwin* being paid off.

The last of the four FFGs completed a major upgrade in December 2009, albeit four years behind schedule. This transformed them from useful anti-submarine platforms with some secondary air-defence and anti-ship capabilities to much-improved air-defence assets utilising medium-range Raytheon SM-2 Block III anti-air missiles and Raytheon's short-range RIM-162 Evolved Sea Sparrow Missile (ESSM).

In assuming the fleet area air-defence role the AWDs will also be deploying the SM-2 Block III and ESSM, but with the benefit of the Aegis Weapon System (AWS), including the AN/SPY1-D (V) phased-array radar and other greatly improved surface and subsurface sensors.

When completed, the 7,000-ton (full load displacement), 147 m-long AWDs will have a crew of 186 (including 16 aircrew), with additional accommodation available for up to 32 seariders (embarked personnel other than the crew).

As well as the Lockheed Martin Aegis Baseline 7.1 AWS and AN/SPY-1D(V), and the Raytheon Mark 99 fire-control system with two continuous wave illuminating radars, the AWDs are equipped with the Northrop Grumman AN/SPQ-9B X-band pulse Doppler horizon search radar. This performs simultaneous and automatic air and surface target detection of low-flying anti-ship cruise missiles, surface threats, and low-/slow-flying aircraft, unmanned aerial vehicles (UAVs), and helicopters.

Other major sensors include Ultra Electronics' integrated bow-mounted and towed-array sonar systems, an Ultra Electronics Series 2500 electro-optical director, a Sagem Vampir infrared search-and-track system

(also fitted to the Anzac class), two Rafael Toplight stabilised electro-optical directors and two L-3 Communications SAM Electrics X-band navigation radars.

The advanced electronic warfare suite takes in the ITT EDO Reconnaissance and Surveillance Systems ES-3701 ESM radar (also fitted to the Canberra and Anzac classes), SwRI MBS-567A communications ESM system, Ultra Electronics Avalon Systems multipurpose digital receiver, and a Jenkins Engineering Defence Systems low-band receiver.

In addition to a Lockheed Martin 48-cell Mk 41 vertical launch system accommodating the SM-2 Block III and quad-packed ESSMs, the AWDs' armament includes two four-canister Boeing AGM-84 Block II Harpoon anti-ship missile launchers; the US Navy's Mk 34 Gun Weapon System, which includes a single BAE Systems Mk 45 Mod 4 62-calibre 5-inch gun; a Raytheon Phalanx Block 1B aft-facing close-in weapon system; two ATK M242 25mm Bushmaster autocannons in Rafael Typhoon mounts; and two Babcock Mk32 Mod 9 twin-tube launchers for Eurotorp MU90 lightweight anti-submarine torpedoes.



*A Royal Australian Navy MH-60R maritime helicopter conducts functional testing of its newly fitted AN/AQS-22 Airborne Low Frequency Sonar System off the coast of Jacksonville, Florida, on 13 May 2014. As well as supporting the detection, tracking, localisation, and classification of submarine threats, the AQS-22 also performs acoustic intercept, underwater communications, and environmental data acquisition. (Australian DoD)*

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Additional anti-submarine and anti-surface capabilities are provided by a single Sikorsky/Lockheed Martin MH-60R naval combat helicopter.

Decoys include four Australian-designed and -developed Nulka active missile decoy systems and Terma Mk137 130 mm soft-kill decoy launchers.

These capabilities will be enhanced by the US Cooperative Engagement Capability (CEC), enabling each AWD to act as a part of a wider 'grid' of sensor and weapon platforms that allows similarly equipped ships to share surveillance and targeting information.

The AWDs will also be able to exchange targeting data with the Royal Australian Air Force's (RAAF's) Wedgetail airborne early warning and control (AEW&C) aircraft and, if approved by government, could later be equipped with the 375 km-range SM-6 missile to engage targets well beyond their radar horizon.

The combined diesel or gas (CODOG) propulsion system - comprising two General Electric Marine model 7LM2500-SA-MLG38 gas turbines, two Navantia-built Caterpillar 16 V Bravo diesel engine derivatives and twin controllable-pitch propellers - will give the AWDs a top speed of more than 28 kt. Their range is more than 5,000 n miles at 18 kt.

Explaining the strategic justification for the AWDs, a 2000 Defence White Paper noted that without such a capability the RAN's ships "would be more vulnerable to air attack, less capable of defending forces deployed offshore and less capable of contributing effectively to coalition naval operations".

Although that was written 15 years ago, the ships' capabilities mesh well with the emphasis placed on lethality by Chief of Navy Vice Admiral Tim Barrett, who told the Royal College of Engineering Studies in London in July that sea control was increasingly out of the reach of modern navies.

"But when sea denial delivers decisive lethality as the ultimate sanction against the adversary's attempt to access focal area, the desired strategic effect is achieved," he stated.

The same focus on warfighting capability was used by Vice Adm Barrett in April to dispel any illusions about the primary purpose of the two LHDs. First-of-class HMAS *Canberra* was commissioned in November 2014 and sister ship *Nuship Adelaide* is expected to enter service early in 2016.

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This ship-to-shore connection is vital, considering that the ADF has no amphibious vehicles and currently has no plans to acquire any.

According to Major General Gus McLachan, head of army modernisation and strategic planning, "if your vehicle will swim, you have a significantly reduced protection level once you get to the beach. I'd rather survive ashore than swim ashore".

Certification of Australia's amphibious capability, including achievement of full operational capability (FOC) for both LHDs, is scheduled to be achieved as part of the 2017 biennial joint Australia-US 'Talisman Sabre' exercise.

Plans to utilise HMAS *Canberra* in the 2015 iteration in July were dropped due to a delay in the initial delivery of the ship and the 16,190-ton LSD HMAS *Choules* being the sole RAN amphibious ship available.

As part of a beach landing operation southwest of Darwin, *Choules* embarked 250 troops from 2nd Battalion Royal Australian Regiment (2RAR). These troops form the basis of the Amphibious Ready Element (ARE): an infantry company with supporting elements and enablers that will be on 48 hours' notice to deploy.

Illustrating the forthcoming step change in amphibious capability, 'Talisman Sabre 2017' is scheduled to involve both LHDs, HMAS *Choules*, and a 2,000-strong Amphibious Ready Group (ARG) comprising 2RAR and supporting elements of artillery, armour, helicopters, logistics, and other specialised personnel.



*LHD HMAS Choules's Mexe-Float, loaded with Australian Army vehicles, sails from the stern door ramp of the ship's vehicle deck during Exercise 'Talisman Sabre 2015'. ( Australian DoD)*

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A suggestion to operate the F-35B short take-off and vertical landing (STOVL) variant of the Lockheed Martin Lightning II Joint Strike Fighter from the LHDs was quietly dropped in mid-2015 on the basis of cost and complexity, informed sources said.

Nevertheless, naval aviation's combat capabilities are on the cusp of transformation with the arrival in-country of more than half the 24 MH-60Rs being acquired under an AUD3.2 billion project to replace the RAN's 16 S-70B-2 Seahawks. Final deliveries will take place in 2016.

Training on these and the six MRH90s allocated to the RAN from a 46-strong RAN/army pool will be enhanced by a 93 m, 3,150-ton multifunction aviation training vessel due for delivery from Damen's Song Cam shipyard in Vietnam in 2017.

Modelled on the Dutch company's OPV 2400 platform, the ship will be leased by the RAN and crewed by civilians in support of the Helicopter Aircrew Training System (HATS) beginning in 2017 for navy and army personnel.

In the anti-submarine warfare (ASW) role the MH-60Rs carry the Raytheon Mk 54 lightweight torpedo and will introduce into the Anzac class, three FFGs and later the AWDs the vital low-frequency dipping sonar capability lost in the RAN when this equipment was removed from the navy's now-retired Sea King helicopters in the 1980s.

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*Fifth-of-class Anzac-class frigate HMAS Parramatta (FFH 154) docks at BAE Systems' Henderson shipyard in Western Australia on 29 April to begin its ASMD upgrade programme. (Australia DoD)*

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Should the continuous build programme proceed as announced, construction of the Future Frigate replacement for the Anzac class under Project Sea 5000 Phase 1 will begin in 2020, three years earlier than originally scheduled and just three years after completion of the final ASMD upgrade.

This is likely to see the first of the Anzacs retired around 2024 after 28 years in service, although some further capability enhancements are still likely. These include acquisition under Project Sea 1448 Phase 4B of a modern long-range air search capability to replace the existing AN/SPS-49 V(8), with the first installation expected in mid-2018. The same project will also replace the existing identification friend or foe (IFF) and secondary surveillance radar system.

To no-one's surprise the primarily ASW role envisaged for the Future Frigate in the 2012 Defence Capability Plan has been superseded by much broader requirements.

Top-level requirements for eight military-off-the-shelf (MOTS) or Evolved MOTS-design Future Frigates confirmed at a Genoa conference in February by Commodore Robert Elliot, Director General Maritime Development, Capability Development Group, included force-level ASW.

However, they also encompassed a stand-off maritime strike capability fully integrated into a joint fires network, as well as a significant task force air-defence and task group anti-ship missile defence capabilities.

Other mandated needs included accommodation for at least one MH-60R helicopter and unspecified UAVs, a 48-cell Mk 41 vertical launch system, the long-range active phased-array S, X and L-band radar suite (referred to as CEAFAR2-S/X/L) under development by CEA, "consideration" of the Saab 9LV CMS and the Aegis fire-control loop, use of modular mission payloads, and an efficient propulsion system, presumably electric, to reduce cost of ownership.



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Add to this a requirement for embarked Commander Task Group facilities and the Anzacs' replacement starts to resemble something akin to an updated AWD.

Cdre Elliott has confirmed that the option of utilising the AWD's Navantia-designed hull - itself based on that of the Spanish F-100 Alvaro de Bazan-class frigate - continues to be considered as one of the possible options for the Future Frigate, despite informed sources having told *IHS Jane's* that it has been quietly dropped for reasons of complexity and cost.

While Cdre Elliot referred in his Genoa briefing to ships in the 6,000 to 7,000-tonne range, subsequent debate in the Department of Defence (DoD) - unconfirmed but not denied - suggested the Future Frigate might be considerably smaller than the AWD.

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The CEP concept in the Australian context was first announced in February. This followed concerns that Prime Minister Tony Abbott was pushing for the early selection of Japan's 4,000-ton Souryu-class submarine for Sea 1000 Phases 1 and 2 to strengthen strategic and trade links with Tokyo.

In the CEP the Japanese government, TKMS and DCNS have been asked to propose a pre-concept design for the Future Submarine with a rough order of magnitude cost and schedule for three build options: build in Australia, overseas, or a hybrid approach.

It is likely that Japan will use the Souryu class, France a conventionally powered 4,000-ton version of the 5,300-ton Barracuda-class nuclear attack submarine dubbed the Shortfin Barracuda Block 1A, and Germany the 4,000-ton developmental Type 216 as the starting points for their pre-concept designs.

The successful contender is expected to be announced before mid-2016. The first of the new submarines must be available in the mid-2020s, presumably to avoid an expensive service-life extension for most - although not all - of the Collins class.

The number of submarines to be acquired under Project Sea 1000 1/2 has yet to be disclosed, although it is generally expected to be between six and nine.

The availability of Collins-class boats has risen dramatically since the dark days of 2010 when the RAN could, at times, muster only one fully operational submarine.

Improvements instituted following a scathing report into maintenance and management practices by John Coles, a former head of the UK Warship Support Agency, have led to a transformation of Collins-class support.



*Collins-class submarine HMAS Rankin returns to Fleet Base West in Rockingham, Western Australia, after conducting a full-cycle docking activity in Adelaide, South Australia, on 1 October 2014. (Australian DoD)*

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This includes a change in the maintenance cycle from eight years in the water and three in a full-cycle docking (FCD) to 10 years in the water and a two-year FCD.

These developments have tracked other wide-ranging enhancements to RAN engineering and ship availability stemming from the so-called Rizzo report, instituted in 2011 when it was discovered that the physical state of the RAN's two 8,534-ton ex-US Navy landing platform amphibious (LPA) ships - subsequently scrapped - had reached a point where they were unable to meet operational commitments.

Although neither has reached that stage of decrepitude, replacements are eagerly awaited for the 25,016-ton tanker HMAS *Sirius* and the 18,221-ton Durance-class oiler/replenishment ship HMAS *Success* .

In a stinging rebuke to the productivity of domestic shipyards, construction tenders for an existing design called for in June 2014 under Project Sea 1654 Phase 3 were limited to Spanish shipbuilder Navantia and South Korea's Daewoo Shipbuilding and Marine Engineering (DSME).

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