

THE AUSTRALIAN NAVAL ARCHITECT



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August 2014



Australia's sail training ship *Young Endeavour* underway off the News South Wales Coast in July
(RAN Photograph)

THE AUSTRALIAN NAVAL ARCHITECT

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Cover Photo:

HMA Ships *Brunei*, *Labuan* and *Tarakan*
departing Cairns Harbour in formation for the
last time after serving the RAN for four decades
(RAN photograph)

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on the

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From the Division President

A time for change?

Although spring is not very evident in the air as I pen these words, a time for change does seem to be upon us — touching our professional lives in many ways.

RINA's first non-UK based President has just been elected, reflecting the international nature of our Institution, as does the recent establishment of new branches across Asia. As your Section committees have already been advised, our new President, Bruce Rosenblatt, intends to visit as many of us here in Australia as possible in the coming months and I am sure you will all make him welcome and give him an understanding of the current status of the shipbuilding and offshore industries in Australia, and the position of our profession within them.

We are also seeing change at the Section level where the technical programs are being focussed on the current and future needs of our members. I see this particularly in my home state of Western Australia where both our WA Section and the WA Branch of the IMarEST have recently relocated their alternate monthly technical meetings from Fremantle to Perth and the majority of the topics from marine to offshore, reflecting the current employment and interest of, in particular, our younger WA naval architects at the present time. This sort of flexibility is key to our relevance as a professional institution and I wholeheartedly support it.

There is also change for *The Australian Naval Architect*, with this issue being published online in colour as well as the normal black-and-white hard copy. I hope you take the opportunity to browse both versions and look forward to your considered feedback as to how we should proceed for future issues.

So what else is changing? By the time you read this issue, the Division Council will have made our initial submission to the current Senate Inquiry into Naval Shipbuilding and will have met with senior Defence representatives to voice our concerns regarding continuity of work and the retention of skills within Defence and the defence industry. You may well say that this does not represent change, but at least it may be some small progress.

Perhaps, if we cannot engineer effective change that provides continuity of naval shipbuilding in Australia, then we may need to change our own focus. It may well be the correct decision that supply vessels for Navy and recent acquisitions for other government institutions are sourced abroad, but they will all have to be supported from here. I do not subscribe to the view that you can only effectively support the vessels here if they have been designed and built here. Certainly, that makes the support challenge easier, but the alternative is by no means impossible and would have to be well worth the effort. A typical design-and-build program may last five or so years, but a typical support program will be anything from twenty years upwards, surely providing the desired potential continuity for skills retention and enhancement.

I also feel that there are opportunities to introduce some of the better aspects of commercial vessel support to government fleets. In my own niche of the industry the experience is that commercial fleets typically run higher

operating hours than comparable government fleets, in a competitive environment where every day out of service is a straight hit to the bottom line — a wonderful inducer of innovative and cost-effective solutions — but perhaps this is a topic for another day.

Finally, as always, I am available for discussion and comment on any topic of relevance to Australian naval architects by email at jimb@austal.com or telephone 0418 918 050.

Jim Black

Editorial

In his column the President talks of change — something which is always part of our life. There is change afoot for *The Australian Naval Architect* also. The last change, the move from an A5 to an A4 journal, feels like only yesterday but it is actually nearly thirteen years since we made that change.

In addition to the hard copy which arrives in the post, *The ANA* also appears on the RINA website as a downloadable PDF. Both the hard copy and the web copy are published in black and white. Whilst we would like to be able to publish *The ANA* in full colour as a hard copy, the Australian Division simply cannot afford it.

For some time now, members have had the option of receiving the RINA journals which are published in London as a hard copy or as a digital edition which can be viewed online as a high-resolution full-colour publication and a significant number of members have chosen this option. The Australian Division Council feels that it is time for a trial to see whether Australian Division members would like to receive *The Australian Naval Architect* in this way also. The largest cost in the production of *The ANA* is printing and postage. The additional cost of producing a full-colour digital edition is small and significant cost could be saved if at least a proportion of the members in Australia decide to go digital.

For this edition, a digital edition should be available on the RINA web site by the time you receive the hard copy. Members will be notified by email of the URL to access the electronic version, which will be open to anyone. There is a survey form with this edition and members are urged to complete the survey and send it to Rob Gehling, Australian Division Secretary, by post or email so that we can decide whether digital is the way to go for the future.

For the time being, at least, the usual PDF version will also appear on the RINA website, but it is probable that it will be phased out in favour of the high-resolution full-colour edition in the future.

At present, colour is the only change to *The ANA*. The layout remains the same — it is conservative but readable — but perhaps that is a view of a conservative editor!

The news from the Sections is shorter than usual in this edition. Apart from the problem of a shortage of contributions by the due date from some Sections, half of the production team had a very well-earned holiday in Europe in the lead up to production. *The ANA* is produced by volunteers and we are shortly to begin the journal's nineteenth year. How time flies.

John Jeremy

LETTERS TO THE EDITOR

Dear Sir,

I was intrigued by an article which I recently read in *The Australian* that detailed Australia's search to find a contractor to design a \$40 billion submarine project that was described as "Australia's biggest project ever". The project was conceived in 2009 as a plan to replace the soon-to-be-retired Collins-class boats, and it was decided that the size of Australia's fleet would be doubled to 12 and that they would be built in Australia. What is more, Australia's coastline and other factors mean that we require a design of submarine that doesn't exist yet or is, at least, extremely rare. This means that for "Australia's biggest project ever" we will build to designs that have not yet been tested, so there is little room for error.

There is a limited number of countries which are experienced in submarine design, and the size and importance of the project coupled with the sensitivities involved with anything military meant that, for a time, it appeared that ThyssenKrupp, the experienced German group, was the only company willing and able to take on the job. However, Swedish company Saab explosively announced their return to submarine building and want Australia's design project to help get it started. Saab's return to submarine building has been quite extraordinary and has involved workshops that invoke Swedish patriotism on ThyssenKrupp submarine builders in an attempt to win them over. The Swedes do have a long history in submarine building and, in fact, designed the Collins class, so they present a good option.

One interesting prospect, although it appears unlikely, is that Australia would design the submarines ourselves. We have yet to design anything similar and, considering the size and expense of the project, it seems foolhardy to take any unnecessary risks so early in the piece. Curiously, however, there was enthusiastic design work done in Adelaide that was quickly dismissed as too costly. Perhaps the prospect of domestically-designed submarines deserves at least a little more consideration?

Regardless, it appears as if there are very exciting times ahead for submarine building in Australia.

Samuel Free
UNSW Student

Dear Sir,

I am writing to propose an undergraduate boatbuilding competition in Australia. I had this idea after I watched a television series called *The Scrapheap Challenge*. It is an engineering game show where two teams are challenged to build a specific machine with whatever materials they can find in a scrapyard. In this show, the teams have to first source their raw materials, then come up with a concept, and build their machine. I thought that it would be interesting if we could organise a similar event that revolves around boatbuilding.

The aim of the event would be to create an interactive platform where undergraduates are exposed to the ship/boat building processes and industry. Through the building process, students get to know more about the basic principles of naval architecture, like buoyancy and stability.

The proposed event could be held annually at suitable scrapyards in Australia, and the nearest participating university can help by playing host to the participants. There would be a different theme for the competition each year, and some of the interesting themes could include *swamp-boat*, *high-speed kayak* as well as *three-man tug*. The competition could be conducted over a two-day period and, on Day 1, the teams can be given up to ten hours to build their boat. On Day 2, these individual boats would be put through a series of tests and a panel of judges would decide the winning boat as that which best fits the category. The intended participants for this competition would be undergraduates from various universities around the world, as this will maintain a common competing ground. However, this is not limited only to students who are pursuing a naval architecture degree. As long as the student has passion and an interest in the construction and building of a boat, they are welcome to join. In fact, students from other streams might be able to provide new ideas and insights to boat building. In terms of sponsors, we could approach various scrapyards, recycling companies and ship/boat building firms.

This proposed event also has various benefits for the participants and the sponsors. Firstly, after going through the design-and-building process, the students would learn more about the various materials and building processes. This hands-on experience would prove beneficial for the participants. Secondly, the competition can be regarded as a 'green' event, as it will promote recycling and reuse of materials. Lastly, with limited resources and various constraints, the participants would be forced to come up with innovative ideas to build their boat. The industry might be able to tap into these new ideas to gain breakthroughs in the naval architecture field.

This is a brief concept of the proposed competition, and I am sure that it can be improved further. I really hope that the industry takes this proposal into consideration and, hopefully, the event will be organised one day.

Bing Zheng Ho
UNSW Student

Dear Sir,

Oosterschelde is a restored Dutch three-masted topsail schooner, and completed her second global circumnavigation in May this year. Having had the opportunity to join the crew on her Hobart-to-Sydney voyage in September last year, I applauded the news of her successful arrival in Rotterdam.

Built in the Netherlands in 1918, *Oosterschelde* is the last remaining representative of a large fleet of schooners which sailed under the Dutch flag at the beginning of the 20th century. Her history is rich, having operated as a commercial vessel under Dutch, Danish, and Swedish flags. Throughout her service life, she underwent a number of significant structural conversions and, ultimately, spent her last commercial years as a Swedish motor-coaster operating in the Baltic Sea. In 1988, she was reclaimed by the Rotterdam Sailing Ship Foundation and restored to her former glory. The restoration was no small task, and was shared between three maritime museums and several specialised design offices. Now making her living as a historical sailing ship,

Oosterschelde is a monument to Dutch shipbuilding and maritime navigation under sail.

During my brief 12 days on board last year, I was exposed to the unpredictable maritime environment. Like most who venture across Bass Strait under sail, we encountered its notoriously unpredictable and powerful weather systems. In what seemed like seconds, a storm front crept over the horizon astern and engulfed us, causing us to gybe unexpectedly. Once caught by a 70 knot gust of wind, the reefed main and mizzen sails swung violently above our heads, ultimately breaking free of their preventers, and snapping their booms like twigs!

As a result of the damage, we were unable to change tack, and were forced to venture further and further out to sea doing 10.5 knots under bare poles. Shortly afterwards, we found ourselves nearing the shipping lane, and on a collision course with a tanker. Fortunately for us, we were able to establish radio contact and avoid any further complications.

Although not the sort of excitement most might wish for (certainly not my mother!) I consider myself fortunate to have had the experience. With hindsight, the opportunity afforded a tangible appreciation of the magnitude of forces that a ship withstands (and fails to withstand), as well as the modes of ship response in such hostile maritime environments.

Now, as a third-year student of naval architecture, I find myself looking back on my experiences on board *Oosterschelde* as an invaluable tool of conceptualisation when it comes to the classroom. To this day, I am still continuing to discover the nuanced reasoning behind curious details that confused me while on board.

After all, as our Dutch captain, Gerben Nab, often said, “Je leert elke dag iets nieuws!” (“You learn something new every day!”)

Alistair Smith
UNSW Student

Dear Sir,

I would like to congratulate the Royal Australian Navy (RAN) on the addition of *HMAS Canberra*, the Landing Helicopter Dock (LHD) vessel, to their fleet. This is a powerful strategic improvement to Australian capabilities at home and beyond. However, I find it quite puzzling that a Spanish design and construction was chosen despite the antiquity of the Spanish navy. If my memory of naval history is correct, the battle of Trafalgar (1805) was the end of Spanish and French naval capabilities for the next 200 years. Combat-proven designs have great advantages over those whose specifications are ink on paper. I sincerely hope that those in charge of the replacement of the Collins-class submarines will consider German designs (such as the 209-class) which have been proven in combat and are currently operational in the Israeli navy (as the Dolphin class). American, British or even Swedish designs are robust and proven in combat.

The importance of the RAN submarine fleet cannot be overstressed. Shallow-water as well as deep-water submarine warfare capabilities are crucial in the defence of Australian sovereignty. The rise of new global powers, especially those investing in long-range naval capabilities (such as aircraft carriers), could potentially strike and capture localised strategic interests (such as commodities). The decline of old powers and allies is imminent, as history has taught. In the next decades the power balance is likely to shift and, therefore, Australia must maintain its capability to defend its soil. He who rules the sea rules the world or, at least, can defend his home.

Dov Sobel
UNSW Student



Oosterschelde sailing from Sydney after the International Fleet Review last year
(Photo John Jeremy)

NEWS FROM THE SECTIONS

New South Wales

Committee Meetings

The NSW Section Committee met on 17 June and, other than routine matters, discussed:

- SMIX Bash 2014: Sponsors are being sought, and ticketing via the Internet will be trialled.
- Advertising of Positions Vacant: Such advertising will not be done via email contact lists.
- TM Program: Presentations for September and October to be confirmed.

The next meeting of the NSW Section Committee is scheduled for 18 August.

Reliability-centred Maintenance in a Maritime Environment

Rob Gay of PriceWaterhouse Coopers gave a presentation on *Reliability-centred Maintenance in a Maritime Environment* to a joint meeting with the IMarEST attended by twenty-nine on 4 June in the Harricks Auditorium at Engineers Australia, Chatswood.

Reliability-centred Maintenance is a structured discipline which ensures that systems and equipment achieve their inherent reliability by specifying maintenance which is both technically feasible and worthwhile in terms of risk and economics.

Historically, maintenance schedules have been drawn up on the recommendations of manufacturers, who may have little concept of the maritime environment, and use the traditional thinking that all equipment life is based on a “bath-tub” curve.

This presentation challenged the traditional thinking and provided a different perspective for the maritime environment.

It is expected that Rob’s presentation will be written up in the November issue of *The ANA*.

45 m Shallow-draft Pusher Tugs

Neil Edwards of Edwards Marine Services gave a presentation on *45 m Shallow-draft Pusher Tugs Building at Uzmar Shipyard in Turkey for South America* to a joint meeting with the IMarEST attended by thirty-two on 2 July in the Harricks Auditorium at Engineers Australia, Chatswood.

One of the highest-grade iron-ore deposits in the world is located at Corumbá, in the western Brazilian province of Mato Grosso do Sul and is owned by Brazilian steelmaker Vale’. The only problem is that the mine is a long way from the coast and the only viable means of transporting the ore is by barge along 2500 km of the Rio Paraguay and Rio Parana river systems to the port of San Nicolás de los Arroyos, on the Parana River in Argentina. Hidrovias do Brasil has been contracted by Vale’ to construct a new generation of pusher tugs and barges to tranship the ore.

The eight new heavy-fuel-oil burning diesel-electric pusher tugs fitted with three azimuthing thrusters were designed by Robert Allan and are being built in Turkey by Uzmar. The

vessels are the most modern and sophisticated in service on the river system and incorporate many new design features with regard to the hull form and propulsion system. River navigation is subject to many factors not usually encountered by seagoing vessels, such as seasonal weather and flow, draft limitations, varying depths and the regulatory requirement for a “crash stop” function to stop the pusher tug and barges within two convoy lengths, and these all required careful consideration at the design stage. The vessels are not capable of operation in the open sea and are shipped from Turkey to Argentina two at a time on a heavy-lift ship. The first two vessels are in service already, and the second two will leave the yard in July.

The presentation provided detail on the design and construction, and feedback from the first vessels in service.

It is expected that Neil’s presentation will be written up in the November issue of *The ANA*.

Ballast Water Treatment

Selwyn Oliveira of Alfa Laval gave a presentation on *Ballast Water Treatment* to a joint meeting with the IMarEST attended by twelve on 6 August in the Harricks Auditorium at Engineers Australia, Chatswood.

This presentation provided an insight into the issues with ballast water and treatment of the ballast water without the use of chemicals.

Once introduced into a new environment, non-native species have the potential to reproduce quickly, thereby devastating local ecosystems, economies and even human health. To combat this problem, the International Maritime Organisation has adopted the Convention for the Control and Management of Ship’s Ballast Water. This convention defines ballast water treatment requirements to be phased in over the coming years.

PureBallast from Alfa Laval is an easy-to-use ballast-water treatment system that ensures full compliance with the requirements of IMO and Port State Control. It is the first ballast-water treatment system without chemicals to have received full Ballast Water Type Approval in strict accordance with IMO standards.

It is expected that Selwyn’s presentation will be written up in the November issue of *The ANA*.

Phil Helmore

Victoria

The Victorian Section of the RINA has held a number of technical meetings throughout the first half of 2014. These meetings have been held jointly with IMarEST. An overview of these presentations follows.

A New Approach to Submersible and Underwater Vehicle Designs

In February, Ron Allum provided a fascinating presentation on the design and development of a one of a kind submersible, designed to carry one person to the bottom of the Mariana Trench, a depth of 11 000 m. On 26 March 2012, James Cameron piloted the submersible *Deepsea Challenger*, 11 kilometres down to the bottom of the

Mariana Trench. *Deepsea Challenger*'s co-designer, builder and pilot Ron Allum told the story behind the construction of the submersible, the technical challenges faced and breakthroughs made. His talk covered the development of the structural syntactic foam Isofloat® which provided the vehicle's chassis and flotation, the pressure-tolerant electronic systems including battery and propulsion devices, and his more-recent designs and innovations which are now available for submersible and unmanned underwater vehicle (UUV) applications.

Ron also discussed how the lessons he has learned can be applied in the broader realm of 21st century submergence operations, where manned and unmanned vehicles are required to perform increasingly-sophisticated tasks in deeper more-challenging environments. These lessons are particularly poignant for Australia, a continent surrounded by some of the deepest water in the world.

Fatigue Life Assessment of the Armidale-class Patrol Boats

In May, Teresa Magoga, from the Defence Science and Technology Organisation, presented a fascinating overview of the work which DSTO is currently undertaking in support of the Armidale-class patrol boats. The Royal Australian Navy operates a fleet of 14 Armidale-class patrol boats (ACPBs) which are constructed from marine-grade aluminium alloys. Fatigue is one of the most critical failure modes in determining the life of an aluminium naval vessel.

DSTO is conducting a research program into the structural integrity of aluminium naval vessels. The program incorporates the development and application of advanced numerical modelling and simulation tools, experiments on scaled models, and full-scale trials. As part of this research program, DSTO has installed a structural monitoring system onboard one of the ACPBs.

The presentation described the method of estimating the fatigue life of the ACPB using onboard monitoring data. Strain time records are signal conditioned, and then reduced to stress spectra using the rainflow counting method. The cumulative-damage theory and Eurocode 9 fatigue resistance data is then applied to the stress spectra to estimate the fatigue damage incurred at strain-gauge

locations. After identification of critical areas of the structure via finite-element analysis, the stress ratios between the strain gauge locations and the critical areas are determined. The stress ratios are then applied to the stress spectra measured at the strain-gauge locations to determine the fatigue life at the critical joints of interest. Lastly, to inform the structural and operational management of the vessel, the operational profile (e.g. vessel speed, sea state and loading condition) is related to the structural response.

High Level Capability Analysis of Submarine Platforms

In July, Karl Slater, from the Defence Science and Technology Organisation, presented an overview of the work which DSTO is conducting in order to provide a high-level capability analysis of naval platforms. The procurement of a new class of submarines is a significant undertaking for any country. As with all major procurement projects, the correct definition of the requirement set and a clear understanding of the cost drivers serve to de-risk the entire program. Further to understanding the cost drivers, procurement agencies must be able to dissect proposals put forward by industry to enable comparative assessments to be made.

DSTO is currently developing an Integrated Platform Systems Model (IPSM) to enable high-level performance analysis of submarine platforms to be carried out across multiple design configurations and option sets offered by different manufacturers. An application of this work is research into the influence of changing operational requirements on sub-system integration risks, design trade-offs, and the flexibility of different configuration options. The presentation described how DSTO have worked with QinetiQ GRC to develop a fully-parametric generic submarine design, within the Paramarine naval architecture design suite, which is representative of a modern SSK and is capable of being remotely modified by the DSTO IPSM tool. The presentation described the background and scope of the project, and outlined how such modelling can be used to analyse and assess the high-level capability of submarine platforms.

Karl Slater

THE AUSTRALIAN NAVAL ARCHITECT

**Contributions from RINA members for
The Australian Naval Architect
are most welcome**

Material can be sent by email or hard copy. Contributions sent by email can be in any common word-processor format, but please use a minimum of formatting — it all has to be removed or simplified before layout.

Photographs and figures should be sent as separate files (not embedded) with a minimum resolution of 150 dpi. A resolution of 300 dpi is preferred.

COMING EVENTS

NSW Technical Meetings

Technical meetings are generally combined with the Sydney Branch of the IMarEST and held on the first Wednesday of each month at Engineers Australia, 8 Thomas St, Chatswood, starting at 6:00 pm for 6:30 pm and finishing by 8:00 pm. The program of meetings for remaining for 2014 (with exceptions noted) is as follows:

- 3 Sep Phil Helmore, University of NSW
Performance of Propellers in Off-design Conditions
- 1 Oct Peter Little, Carnival Cruise Lines
Cruise Ships
- 4 Dec SMIX Bash

Contract Management for Ship Construction, Repair and Design

Fisher Maritime's widely-respected three-day training program, *Contract Management for Ship Construction, Repair and Design*, will be available in Perth, WA, on 12–14 November 2014, and in Auckland, New Zealand, on 18–20 November 2014.

This program is a lessons-learned one, not a theoretical course on contract management. It bears a lot of "scar tissue" from marine contractual disasters. It is designed for:

- Project Managers (yards and owners)
- Contract Managers and Specialists
- Newbuilding Shipyards, Repair Yards
- Fleet Managers
- General Managers of Shipyards
- Financial Managers (Yards and Owners)
- Ship Conversion Specialists
- Naval Architects, Marine Surveyors
- Federal, State, and Provincial Agencies
- Ferry Operators (Public and Private)
- Naval Shipyards
- Owner's Representatives
- On-Site Representatives
- Major Equipment Vendors
- Marine Superintendents
- Consultants and Attorneys

The presenter, Dr Kenneth Fisher, is recognised worldwide as the leading authority on the development and management of complex contracts and specifications for ship construction, conversion, repair and design. He is author of the 2004 RINA publication, *Shipbuilding Specifications: Best Practices Guidelines*, and of the 2003 SNAME publication, *Shipbuilding Contracts and Specifications*. As an arbitrator, expert witness, consultant and instructor for more than 30 years, he brings clarity and organisation to an otherwise-complex set of management requirements unique to the maritime industry.

For details of topics covered, visit www.fishermaritime.com/publications/pdf/cm.pdf, and for registration, visit www.fishermaritime.com/projecttraining/registration.html and click on the button for *Register for our AUST/NZ Programs*.

SMIX Bash 2014

The fifteenth SMIX (Sydney Marine Industry Christmas) Bash will be held on Thursday 4 December aboard the beautifully-restored *James Craig* alongside Wharf 7, Darling Harbour, from 1730 to 2130. The Bash is organised jointly by the IMarEST (Sydney Branch) and RINA (NSW Section). It is a Christmas party for those involved in various marine industries and activities based in the Sydney area and further afield.

Bookings are now open, and should be made through the Trybooking website, www.trybooking.com. Search for SMIX and follow the prompts. Payment is only accepted by Visa or Mastercard.

Alternatively, you may pay by cheque by completing the form (mailed with this issue) and returning it, together with your cheque, to the RINA (NSW Section) Treasurer, Adrian Broadbent at 27 Manning St, Queens Park NSW 2022.

There is a maximum limit of 225 attendees on *James Craig*, and we have had to turn away members and friends in previous years; so you are encouraged to book early.

HPYD5 Conference

The High Performance Yacht Design Conference HPYD5 will take place in Auckland, NZ, between 10 and 12 March 2015 as part of the Volvo Ocean Race stopover.

Papers were invited on all topics relating to the design of high-performance power and sailing yachts, including:

- structural design and analysis;
- performance prediction;
- wind-tunnel and towing-tank testing;
- computational methods;
- hull and appendage design; and
- regulations and rating rules.

Abstracts were due on 1 July and final papers are due on 1 October 2014. All papers will be reviewed by an international technical panel.

An exciting development is that an agreement has been reached with SNAME (Chesapeake Section) and Ecole Navale (Innov'Sail) to provide a coordinated rolling three-year program of high-quality yacht technical conferences. See www.hpyd.org.nz for more details.

Pacific 2015 IMC

The Pacific 2015 International Maritime Conference, organised by the Royal Institution of Naval Architects, the Institute of Marine Engineering, Science and Technology, and Engineers Australia, will be held on 6–8 October 2015. However, due to re-construction of the Sydney Conference and Exhibition Centre at Darling Harbor, the venue will be at the Sydney Conference and Exhibition Centre at Glebe Island.

Initial details are on the website www.pacific2015.com.au.

GENERAL NEWS

Naval Shipbuilding Developments

On 6 June the Minister for Defence, David Johnston, announced the first set of key initiatives in the Government's long-term strategic naval plan. Further steps in the strategic naval plan will developed as part of the process of developing next year's White Paper.

We are moving now to address the most urgent capability shortfalls created by Labor.

Replenishment vessels

Replenishment vessels are essential to support sustained naval deployments. The RAN's current replenishment ship HMAS *Success* is in urgent need of replacement and HMAS *Sirius* only provides limited replenishment capability.

The Minister stated that, in light of the urgent need to forestall a capability gap in this crucial area, the current low productivity of shipbuilders involved in the AWD program, and value for money considerations, the Government has given first pass approval for Defence to conduct a limited competitive tender process between Navantia of Spain and Daewoo Shipbuilding and Marine Engineering (DSME) of South Korea for the construction of two replacement replenishment vessels based on existing designs.

"The Navy is in urgent need of large support vessels that we assess are beyond the capacity of Australia to produce competitively at this stage. In this instance it would not serve anyone if we were to provide a challenge to industry that was beyond its capabilities."

"Competition between these two experienced shipbuilders is the best way to ensure delivery of capable, cost-effective vessels in the time frame required," Senator Johnston said.

Bringing forward work on future frigates

The Government has also agreed to bring forward preliminary design work to ensure that Australia maintains the necessary capabilities to retain the option of building the future frigate in Australia. This work will focus on continued production of the current AWD hull, suitably adapted and utilising capabilities from the cutting-edge Australian companies CEA Technologies Australia and SAAB Combat Systems. Further decisions on the future frigate will be taken in the context of the 2015 Defence White Paper.

The Government has committed \$78.2 million to bring forward the preliminary engineering and design work necessary to keep open the option of building the future frigate in Australia. In parallel, the Government is reviewing Australia's shipbuilding requirements, capabilities and capacities in order to inform a long-term strategic naval plan which provides the ADF with leading-edge capabilities and Australian taxpayers with value for money.

"Naval shipbuilders and Unions must understand that naval shipbuilding in Australia is at a critical crossroads. Demonstrating that the AWD Program is able to provide value for money will be a crucial test for the Australian shipbuilding industry. No responsible Government could consider providing further work to an industry that is performing so poorly," Senator Johnston said.

Pacific Patrol Boat

The Government has brought forward an open competition for Australian industry to construct more than 20 replacement Pacific Patrol Boats. This important project will boost the maritime-security, resource and fishery-protection capabilities of partner countries in the South West Pacific and generate additional work for yards around Australia.

"These will be steel-hulled vessels designed to support fisheries, Exclusive Economic Zone enforcement and other maritime-security missions," Senator Johnston said.

Naval Capability Plan

As part of its 2015 Defence White Paper the Government will announce further steps in its Naval Capability Plan. This plan will provide for an enterprise-level shipbuilding plan which will bring together navy capability requirements, available resources, and recommendations around Australian industry requirements.

ASC Welcomes Naval Shipbuilding Announcements

ASC has welcomed the Commonwealth Government's decision to address capability issues for the Royal Australian Navy and to begin the long-term revitalisation of the naval shipbuilding industry.

ASC also strongly supports the Government's decision to accelerate the future frigate program and its commitment to fund engineering and design work which will further strengthen Australia's domestic shipbuilding capacity.

ASC is focused on ensuring the global competitiveness of Australia's shipbuilding industry and the valuable contribution it makes to the nation's skills base and its economy. ASC is also committed to demonstrating that the future frigate program can be executed to the quality and cost their customer expects and requires.

ASC says that the decision to give first-pass approval for a tender process involving two design options for auxiliary ships recognises the value of the original solution identified by ASC to best meet the RAN's requirements. The Aegir 18A design, one of the options for the new ships, was developed in 2013 by ASC with partners BMT Design and DSME. They look forward to continuing their relationship with these partners.

As well as providing the required capability for the RAN, construction of the auxiliary ships would also provide one opportunity for ASC to maintain their Adelaide workforce.

ASC says that they will continue working with the Federal Government to understand future opportunities to retain that key shipbuilding workforce and capability.

Pacific Patrol Boat Program

More details of the \$2 billion Pacific Patrol Boat (PPB) Program were revealed by the Foreign Minister, Julie Bishop, and the Defence Minister, David Johnston, on 17 June

"The Pacific Patrol Boat Program is an important pillar of the Australian Government's commitment to working with



One of the existing Pacific patrol boats, the Vanuatu Police Maritime Wing patrol boat, RVS *Tukoro*, escorting HMAS *Parramatta* into Vanuatu during a recent visit (RAN photograph)

our regional partners to enable cohesive security cooperation on maritime surveillance, including fisheries protection and transnational crime,” Minister Bishop said.

“Defence will replace the current fleet of patrol boats for all current PPB members with the addition of a new member, Timor-Leste (East Timor), which has been invited to join the program, providing evidence of Australia’s growing defence cooperation program with that country,” said Senator Johnston.

“The current fleet of 22 patrol boats which were given to 12 Pacific island countries from 1987 to 1997 is now approaching the end of its service life.

“This new program will involve the construction of more than 20 steel all-purpose patrol vessels, which will considerably enhance the maritime security of our Pacific and regional partners,” he said, adding: “Australia has a

fundamental strategic interest in the security and stability of Pacific island nations.”

Senator Johnston said that the rugged Australian-made patrol boats are worth \$594 million with through-life sustainment and personnel costs estimated at \$1.38 billion over 30 years.

In the coming months, discussions will be held with PPB states on the individual allocation of patrol vessels. Replacement patrol boats will be offered to all current participating states, including Papua New Guinea, Tonga, Solomon Islands, Fiji, Tuvalu, Kiribati, Samoa, Vanuatu, Federated States of Micronesia, Palau, Republic of Marshall Islands, Cook Islands and new member, Timor-Leste.

Under the program, Defence will undertake an open tender for the procurement which includes an option for ongoing sustainment and crew training.

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<http://www.fishermaritime.com/contr-mngmnt-ausnz.html>

Locations:

Perth: 12-14 November 2014

Auckland: 18-20 November 2014



ASC Submarine Maintenance Contract

ASC Pty Ltd announced on 8 August that it had been awarded an extension to the In-service Support Contract (ISSC) for the RAN's Collins-class submarines.

ASC's Interim Chief Executive Officer, Stuart Whiley, said that ASC would continue to perform all maintenance work on the Collins-class submarines at its headquarters at Osborne in Adelaide in South Australia, and Henderson in Western Australia.

Mr Whiley said the new phase of the ISSC is recognition of the significant work that ASC and its submarine enterprise partners — the Defence Materiel Organisation and the RAN — have undertaken to improve the availability and reliability of the fleet.

"ASC has embarked on a transformation of the submarine maintenance program with our enterprise partners, with a view to achieving global benchmarks," said Mr Whiley.

"Central to this is the new two-year full-cycle docking (FCD), or major maintenance work, that has begun with HMAS *Farncomb* at ASC in South Australia this month.

"This will see the submarines move from a cycle of eight years in the water and three in maintenance, to 10 years in the water and two years in maintenance.

"The immediate benefit will be more sea days and less time spent in maintenance.

"The change and efficiency required to effectively reduce the length of the FCD by one-third has been substantial, and has touched every part of our maintenance operations."

Key supporting initiatives have included:

- Introduction of a circumferential hull cut to enable easier access to the submarine and more-efficient removal of the diesel engines.
- Construction of a new Maintenance Support Tower at ASC's South Australian facility to provide better access and house key resources and facilities around the boat.
- Remediation of the supply chain and the establishment of a rotatable pool of spare parts.

Stuart Whiley said ASC was firmly focussed on delivering on its commitments to its customer.

HMAS *Rankin* Back to Service

ASC recently completed the Full Cycle Docking (FCD) for HMAS *Rankin* in South Australia.

The submarine was completed early against the agreed integrated master schedule, or contracted date.



The ASC team which worked on HMAS *Rankin*'s FCD
(Photo courtesy ASC)



HMAS *Farncomb* arriving at ASC North to commence her full-cycle docking
(Photo courtesy ASC)

HMAS *Rankin* leaves the FCD more capable than planned, with several configuration changes added to the original work scope during the activity.

Significantly, this is the last submarine to complete her FCD under the old system, with the new 10+2 FCD schedule now in effect for HMAS *Farncomb*'s two-year FCD.

HMAS *Rankin*'s FCD successfully demonstrated key initiatives required to support a two-year FCD to improve performance in the readiness, execution, monitoring and close-out of work.

FFG Maintenance Contract Signed

On 6 July the Minister for Defence, David Johnston, announced that Thales Australia Ltd had been awarded the Navy's Adelaide-class guided missile frigate (FFG) Group Maintenance Contract.

Senator Johnston said that the contract is for an initial period of four-and-a-half years with the potential for contract extensions to an anticipated value of \$130 million.

"If contracted quality and service-level requirements are met and efficiencies are achieved, then the contract can be extended to the ship-withdrawal-from-service dates," Senator Johnston said.

Senator Johnston said that this was the second of the grouped-asset, long-term, performance-based contracts for the repair and maintenance of the Navy's major surface ships.

Planned work on the frigates will be undertaken at Navy's Garden Island facility in Sydney.

"It demonstrates the Government's commitment, through the Defence Materiel Organisation, to apply innovative contracting practices to get the best outcome for the Navy, for industry and for every Australian taxpayer."

"We have always recognised that the grouping of ship repair and maintenance work offers the potential for real savings by reducing the administrative burden of per-event tender contracting, providing greater certainty of revenue streams and work effort, and promoting better planning."

Senator Johnston said that the design of the contract will provide both industry and the Navy with greater certainty and stability in the repair and maintenance of the guided-missile frigates.

HMAS *Arunta* Sails Again

A significant milestone has been achieved in the Anti-Ship Missile Defence (ASMD) Upgrade Programme with HMAS *Arunta* setting sail for her sea acceptance trials at the end of June. The Chief Executive Officer of the Defence Materiel Organisation (DMO), Warren King, and the Chief of Navy, VADM Ray Griggs, AO, CSC, RAN, together congratulated all those involved in the programme.

Mr King said that the ASMD Project will deliver a capability providing an improved level of self defence against modern anti-ship missiles for the Royal Australian Navy's Anzac-class frigates. *Arunta* was the second of the eight Anzac frigates to complete the upgrade.

"This has been achieved by successfully integrating the Australian-designed CEA phased array radar with an upgraded SAAB combat management system," Mr King said.

"This is a world-class capability which was proven by HMAS *Perth* with successful missile firings off the coast of Hawaii in September 2013."

Mr. King said that the ASMD Upgrade Programme, which also includes major maintenance and repair work, is continuing with HMAS *Anzac* due to undock and commence



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HMAS *Arunta* underway again after the completion of her ASMD upgrade in Western Australia
(RAN photograph)

Harbour Acceptance Trials in July, and the remaining five ships to be upgraded by 2017.

“I acknowledge that the success of the programme has been due to the outstanding efforts and collaboration by BAE Systems, SAAB, CEA Technologies, Navy, the DMO, and the Defence Science and Technology Organisation,” Mr King said.

VADM Griggs joined Mr King’s praise for the program’s success.

“This programme provides the Anzac class and the Navy with a capability that is world class and will be a contributing feature of our ability to fight and win at sea,” VADM Griggs said.

During the last eighteen months, every compartment within HMAS *Arunta* has been affected, with more than 30 000 m of fibre-optic cabling laid. A substantial maintenance package was also completed to ensure compliance with the tenets of seaworthiness.



HMAS *Ballarat* securing alongside HMAS *Anzac* at Fleet Base West on 7 August. HMAS *Anzac* is undergoing Harbour Acceptance Trials as her major ASMD refit draws towards completion. The ship’s company of *Ballarat* transferred to *Anzac* prior to their ship being moved to Henderson for the start of her ASMD refit
(RAN photograph)

Missile Upgrade for RAN

Royal Australian Navy warships will be better protected against the threat of anti-ship missiles following a decision which opens the way to equip the ships with an upgraded version of the Evolved Sea Sparrow missile system, the Minister for Defence, Senator David Johnston, announced on 29 June.

Australia has elected to continue its participation in the NATO Sea Sparrow Consortium's Evolved Sea Sparrow Missile (ESSM) program which commenced in 1990.

Senator Johnston said that the first-pass approval for the upgraded 'Block 2' version of the Evolved Sea Sparrow missile would lead to a significant boost in Australia's ability to defend its fleet against the next generation of anti-ship missile threats by delivering a more sophisticated ship self-defence missile to the Navy. The Block 2 upgrade will primarily focus on developing improvements to the missile's guidance system.

"The Government is committed to ensuring the safety and effectiveness of Royal Australian Navy operations. The upgrade of the Evolved Sea Sparrow missile system follows on from a number of complementary Anzac-class frigate upgrade projects," the Defence minister said.

Senator Johnston said that the Block 2 missiles would be fitted to Anzac-class frigates and Hobart-class destroyers.

The Government will sign a Memorandum of Understanding with the NATO Sea Sparrow Consortium, and funding of around \$300 million has been allocated to support Australia's participation in the development of the missile upgrade.

Participation in the consortium at this level strengthens Australia's international relations with NATO, in particular with the United States, through Australia sharing the risks and costs associated with developing the upgraded Block 2 missile.

"These arrangements will also offer significant opportunities for Australian industry to compete for work in the development, production, integration and through-life support of the upgraded Block 2 missiles," Senator Johnston said.

"The Government expects to make a final decision on procurement of upgraded ESSMs around 2020. The Government is keen to ensure that every ESSM Block 2 missile that is eventually produced will provide work for Australian industry," Senator Johnston said.

The countries that form the NATO Sea Sparrow Consortium are Australia, Belgium, Canada, Denmark, Germany, Greece, Netherlands, Norway, Portugal, Spain, Turkey and the United States.

Putting the AWD back on Track

On 4 June the Minister for Finance and the Minister for Defence announced plans for dealing with a range of unresolved structural and systemic issues with the \$8.5 billion Air-warfare Destroyer program.

Significant schedule delays and cost overruns prompted the establishment of an independent review into the air-warfare destroyer program in December 2013.

Since then, the Auditor General has also released a comprehensive review of aspects of this program, which also pointed to cost overruns at that time of over \$300 million and various governance, capability and productivity issues.

The review, led by former US Secretary of the Navy, Professor Don Winter, has provided the Government with an independent assessment of the program's costs, schedule and quality of performance, as well as identified a range of solutions.

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The Review report identified several causes for the cost and schedule issues, including problems with:

- the initial program plan;
- inadequate government oversight;
- the Alliance structure's capacity to manage the project and deal effectively with issues if and when they arose; and
- the performance and capabilities of ASC and major subcontractors.

The Ministers stated that the Government is totally committed to putting this important Defence project back on track and to stopping the growing cost and schedule overruns by implementing the recommendations for a Reform Strategy made by the Winter Review.

The Reform Strategy will:

- improve shipbuilding productivity at the air-warfare destroyer shipbuilder, ASC, and its subcontractors, BAE Systems, Forgacs and Navantia;
- include the urgent insertion of an experienced shipbuilding management team into ASC; and
- after augmented shipbuilding capacity has been put in place, pursue the reallocation of blocks between shipyards to make the AWD program more sustainable.

The Ministers added the project to the 'Projects of Concern' list and on 19 June they appointed Greenhill & Co Australia Pty Ltd as commercial adviser, and Ashurst Australia as legal adviser, to assist with the reform strategy.

AWD Progress in Adelaide

During June, ASC Shipbuilding received the first blocks for the second air-warfare destroyer from subcontractor Forgacs, and the keel blocks for the third ship, which were constructed by Navantia, have arrived from Spain. Teams in the shipyard also completed PO2 work on Block 111 — the first Ship 2 block to complete this phase of outfitting in the yard. The block is due to be consolidated with block 415 to form Grand-block 8.

Accommodation work on the first ship, *Hobart*, is underway with significant progress made on the fit out of areas including office spaces, dining areas and lounge spaces. Other significant work in *Hobart* includes the shaft installation and alignment which began at the end of May.

The first of three 60 Hz power converters has been powered up and commissioned for the first time. These converters are particularly important for the project as they will supply shore power to the ships in the coming months.

The Combat Systems teams achieved key milestones including the conclusion of the Communications and Information Systems (CIS) Integration — Activity 2 in the CIS Integration Facility at Techport. This is the formal integration of all seven CIS product groups to confirm that they operate as a combined, robust and reliable subsystem.



A block for the second AWD, the future HMAS *Brisbane*, undergoing work in the shipyard
(Photo courtesy ASC)

Austal Lays the Keel of Cape Wessel

On 4 July 2014, the keel-laying ceremony for the Cape-class patrol boat, *Cape Wessel*, was held at Austal's Henderson facility in Western Australia. *Cape Wessel* is the seventh of eight 58 m patrol boats which Austal is designing, building and supporting for the Australian Customs and Border Protection Service (ACBPS).

Austal was awarded the contract for the design, construction and through-life support of these ships in August 2011. The eight 58 m aluminium monohulls are due to be delivered between March 2013 and August 2015.

Keel-laying traditionally marks the first significant milestone in a ship's construction, in this case the placing of the first module for hull assembly. Although Austal's design and manufacturing approach is thoroughly modern, the ceremony retained long-held shipbuilding traditions. This included placing three specially-minted coins under a keel block as a symbol of good fortune and to bless the ship. These coins will be removed just prior to the patrol boat's launch.

The three coins were placed by Anthony Flynn, Deputy Commanding Officer of *Cape St George*, Rodney McMahon, CCPB RPT OSM and Matthew Klingberg, CCPB Platform Systems Manager — Austal. The keel block was formally positioned by two of Austal's high-achieving apprentices, David Murphy and Alex Watts.



The keel block was formally positioned by two of Austal's high-achieving apprentices, David Murphy and Alex Watts
(Photo courtesy Austal)



The Austal-built Australian Customs and Border Protection Service patrol boat *Cape Byron* showing her paces. *Cape Byron*, the second of the class, was delivered four weeks ahead of schedule
(Photo courtesy Austal)



Matt Klingberg, CCPB Platform Systems Manager; David Murphy, Apprentice – Austal; Anthony Flynn, Deputy Commanding Officer of *Cape St George*; Rodney McMahon, CCPB RPT OSM; and Alex Watts, Apprentice – Austal
(Photo courtesy Austal)

Future USS Montgomery launched by Austal

On 6 August 2014, Austal USA successfully completed the launch of the future *USS Montgomery* (LCS 8). The Littoral Combat Ship (LCS) is a fast, agile, focused-mission platform designed for operation in near-shore environments yet capable of open-ocean operation. This vessel is the second of ten 127 m Independence-variant LCS-class ships that Austal was contracted to build for the US Navy as prime contractor under the \$US3.5 billion block buy in 2010.

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Craig Perciavalle, Austal USA's President, commented, "We are very proud to launch the ship named after the capital of Alabama, especially since the greatest shipbuilders made it happen right here in Mobile, Alabama". Mr Perciavalle added, "The LCS program continues to progress very well as we continue to see marked improvement in performance from ship to ship; a testament to the commitment our incredible team of shipbuilders have in continuous improvement and cost reduction, and the pride we have in building high-quality, highly-capable high-speed warships for the US Navy."

With the assistance of Berard Transportation and BAE Systems' Southeast Shipyard, the launch of *Montgomery* was conducted in a multi-step process which involved lifting the entire 1600 t ship almost 1 m in the air, moving it approximately 121 m onto a moored barge adjacent to the assembly bay, then transferring the LCS to a floating dry dock, BAE's *Drydock Alabama*. The floating dry dock was submerged with *Montgomery* entering the water for the first time. The ship is now moored in the Mobile River in front of Austal USA's facility, where it will undergo final outfitting and activation before sea trials and delivery to the Navy.

The LCS program is busy at Austal USA, with five ships currently under construction. *Jackson* (LCS 6) was christened in March and is preparing for sea trials later this year; *Gabrielle Giffords* (LCS 10) is being assembled in preparation for launch later this year; and construction is well underway in Austal's Module Manufacturing Facility (MMF) on *Omaha* (LCS 12) and *Manchester* (LCS 14), with *Tulsa* (LCS 16) starting in early August.

Austal, as prime contractor, is teamed with General Dynamics Advanced Information Systems (GD-AIS) for the Independence-variant LCS program. GD-AIS is the ship systems integrator, responsible for the design, integration and testing of the navigation systems, C4I, and aviation systems.

Austal has also been contracted by the US Navy to build ten 103 m JHSV's under a 10-ship, \$US1.6 billion contract. Three of the ten have already been delivered. Austal continues to make steady progress on the JHSV program as USNS *Fall River* (JHSV 4), which recently completed acceptance trials, prepares for delivery to the Navy in the northern autumn. *Trenton* (JHSV 5) is to be launched in September. Construction on *Brunswick* (JHSV 6) is also well underway.

Fourth JHSV Completes Acceptance Trials

The fourth Joint High Speed Vessel (JHSV) built by Austal USA completed its Military Sealift Command (MSC) acceptance trials in the Gulf of Mexico in July.

The trials of USNS *Fall River* (JHSV-4) were overseen by the US Navy's Board of Inspection and Survey (INSURV) ahead of a final round of testing later this year and of acceptance into the MSC.

"Each ship of this class leverages lessons learned from previously-delivered vessels," said Strategic and Theater Sealift Program Manager, CAPT Henry Stevensin. "JHSV 4 is no exception — and completion of these trials is a testament to the program's stability and maturity."



The future USS *Montgomery* emerging from her building hall at Austal's Mobile shipyard as she is transferred to a barge for launching
(Photo courtesy Austal)

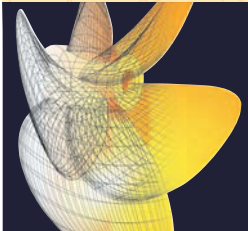
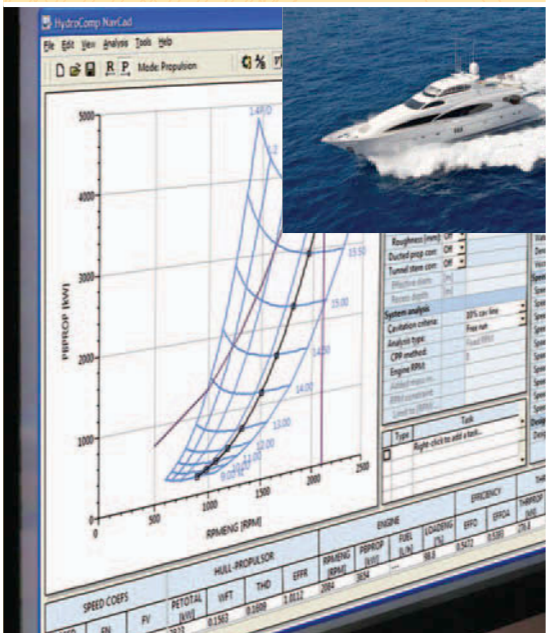


Austal-built ships at work. USS *Coronado*, and USNS *Millinocket* at sea together during the recent RIMPAC 2014 multi-national exercise in the Pacific
(US Navy photograph)

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The aluminum catamarans were originally developed as a joint program with the Army to create high-speed connectors for troops and material with an eye toward the Pacific. The MSC eventually took over the ten-ship, \$US2.5 billion program.

JHSVs have a range of 1200 n miles, can transport up to 600 t of troops and material and can cruise at 35 kn. The ships are operated by a crew of 22 MSC civilians.

The first ship, USNS *Spearhead* (JHSV-1), was accepted last year. The third JHSV, USNS *Millinocket* (JHSV-3), took part in the recent RIMPAC 2014 maritime exercises.

MV *Thaiyak* Delivered by Strategic Marine

Strategic Marine has delivered the on-station vessel *Thaiyak* to the Australian Customs and Border Protection Service (ACBPS).

The vessel was launched from Strategic Marine's facility in Vietnam in March this year and was officially accepted in Fremantle, Western Australia, by representatives of Australian Customs and Border Protection Service on 23 June 2014.

The 40 m on-station vessel, built at Strategic's multipurpose shipyard in Vung Tau, Vietnam, is designed for flexible self-sufficiency and long-term deployment at Ashmore Reef, an external territory of Australia, 450 n miles west of Darwin in the Indian Ocean.

The vessel will be a strong physical presence in the Ashmore Reef Marine Reserve and surrounding environmentally-sensitive areas, acting as a deterrent for illegal activities and will serve as a platform for scientific and environmental research in these areas. The vessel also has the capacity as a temporary holding facility for 24 additional passengers.

This is new territory for ACBPS, as it marks the first time the authority has commissioned a ship for commercial use outside of Australia.

The order was awarded last year following a successful tender prepared between Gardline Australia Pty Ltd, Strategic Marine, the builder of the new vessel, and McAlpine Marine design Pty Ltd.

Among the vessel's technical specifications are twin Caterpillar C32 970kW main engines, Twin Caterpillar C9 149 kW generators and a 149 kW bow thruster.

The vessel is also fitted with two Norsafe davits capable of at-sea launch and retrieval of two 7.5 m ship's boats. The vessel has a nominal draft of 2.4 m and beam of 11.5 m with an economical cruising speed of 10 kn and a top speed of 12 kn. There is accommodation for 17 crew and 24 passengers, with a short-term holding capability of an additional 25 passengers on sheltered deck space.

Eric Haun

New Program to Strengthen Defence Research

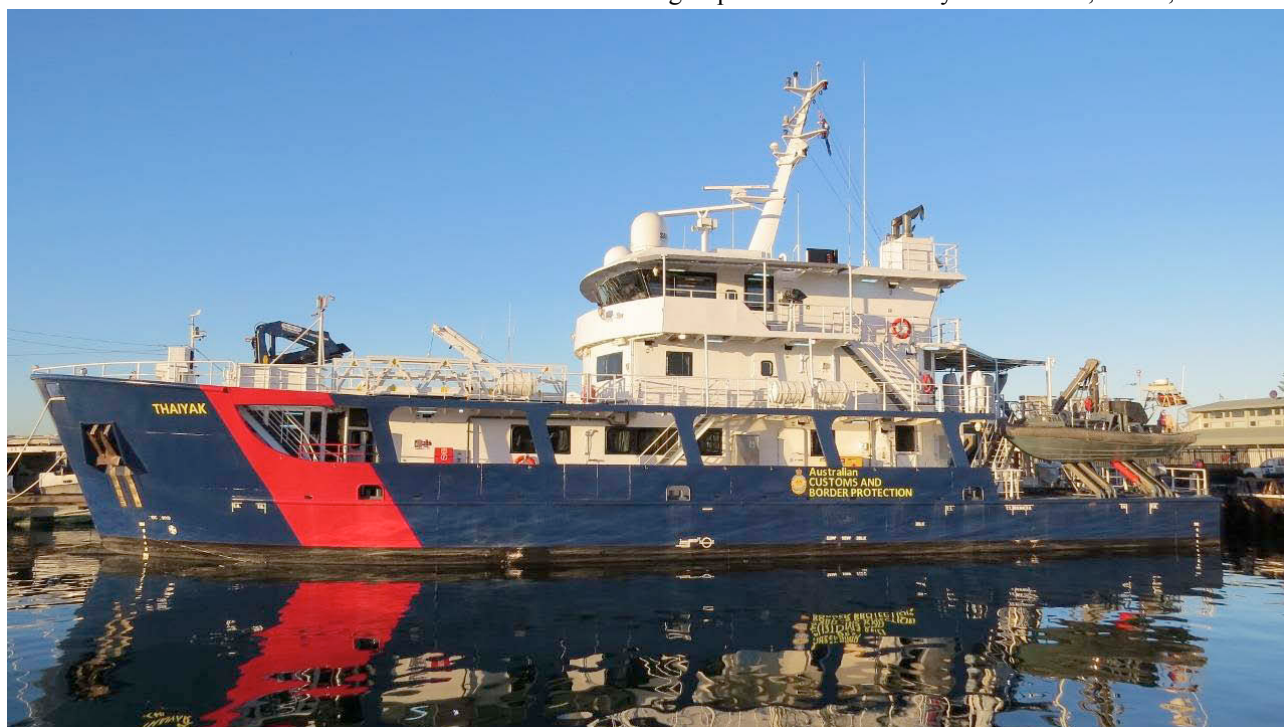
A new partnership program between the Department of Defence and the innovation sector, launched on 23 July, will strengthen and enhance the impact of Defence science research in Australia.

The Defence Science Partnerships program, led by the Defence Science and Technology Organisation (DSTO), will enable Australian universities to work in a coordinated way with Defence and national security agencies on collaborative research projects.

The program complements DSTO's Industry Alliance program which forges closer collaborative research and development activity with industry.

"This program provides a uniform model for universities to engage with Defence on research projects and ensures a consistent approach to intellectual property and cost sharing," Chief Defence Scientist, Dr Alex Zelinsky said.

The program was developed in consultation with a working group from the University of Adelaide, RMIT, Australian



MV *Thaiyak*
(Photo courtesy of Strategic Marine)

National University, University of Queensland, University of New South Wales, Monash University, Charles Darwin University and University of Tasmania.

Involvement in the program will enable universities to leverage funding from DSTO and other sources, and share research infrastructure.

“The program’s strength lies in its potential to harness Australia’s world-class research and better align it to Defence priorities through increased collaboration and a greater sharing of resources and infrastructure,” Dr Zelinsky said.

“Through the partnerships program, we will work with our university partners to also promote careers in science, technology, engineering and mathematics (STEM) and increase the number of STEM students.”

The program will play an important role in fostering a more robust innovation system.

“A healthy innovation system can be facilitated by organisations such as DSTO engaging in the university sector to help shape research directions and national capabilities in priority technology areas for end-users,” Dr Zelinsky said.

End of an Era

The RAN’s three remaining Landing Craft Heavy (LCH) auxiliary vessels put on a proud display of thanks to the Cairns community, sailing in formation from the city’s harbour on 21 July.

This was the last time HMA Ships *Brunei*, *Labuan* and *Tarakan* will sail together in the port they have called home for nearly thirty years.

Commanding Officer of *Brunei*, LCDR Matthew Richardson,

said that the formation exit marks the start of the ships’ decommissioning voyages.

“The first of the Balikpapan-class ships arrived in Cairns in the mid-eighties. Since that time, they have been an enduring presence in the region.

“Today’s departure is the last time the community will see us sail as a group. The ships will be decommissioned at a ceremony in Cairns in November,” LCDR Richardson said.

Following the departure, the landing craft conducted training and transit to Cowley Beach for a final beach landing. The ships then parted company for visits to Bundaberg, Bowen, Ballina, Lord Howe Island, Norfolk Island, Noumea and Honiara.

Reflecting on their years of service, LCDR Richardson said that the auxiliary vessels have provided essential support to the Australian community.

“Over their forty years of service, the landing craft have provided an important sea-lift capability,” he said.

“They’ve been the backbone of many deployments to the Solomon Islands, Bougainville and East Timor. They were there to help Darwin after cyclone Tracy in 1974 and more recently, they assisted Queensland in the clean up after Cyclone Yasi in 2011.”

“While it will be sad to see them retired, it is an exciting time, as Navy prepares for the new Canberra-class LHDs,” LCDR Richardson said.

Until recently, the Royal Australian Navy operated six Balikpapan-class vessels out of Cairns and Darwin. HMA Ships *Wewak*, *Balikpapan* and *Betano* were decommissioned in December 2012. All had been built by Walkers Ltd at Maryborough in Queensland and were commissioned between 1971 and 1974.



The Royal Australian Navy's three remaining Landing Craft Heavy (LCH), HMA Ships *Brunei*, *Labuan* and *Tarakan*, depart Cairns Harbour in formation for the last time
(RAN photograph)

Defence Science and Technology Accord with Japan

The Defence Minister, David Johnston, has hailed as “an important milestone” the signing on 8 July of an agreement with Japan deepening bilateral defence science and technology cooperation.

Australia’s Prime Minister, the Honourable Tony Abbott MP, and Japan’s Prime Minister, His Excellency Mr Shinzo Abe, signed the *Agreement between the Government of Australia and the Government of Japan Concerning the Transfer of Defence Equipment and Technology* at a ceremony in Canberra, attended by the Minister for Defence, Senator the Hon. David Johnston.

“This is an important milestone in the Australia-Japan defence relationship, and an integral part of the broader efforts to strengthen our strategic partnership,” Senator Johnston said.

The Agreement will facilitate deeper bilateral defence science, technology and materiel cooperation, allowing Australia and Japan to work together more closely to identify potential areas of future research interest and mutual benefit. Security and defence ties between Australia and Japan have grown considerably since the 2007 signing of the Joint Declaration on Security Cooperation.

“This Agreement is an important milestone in Australia’s defence relationship with Japan and will underpin broader efforts to deepen our practical defence engagement,” Prime Minister Abbott said at the signing ceremony at Parliament House.

Australia’s first cooperative defence science and technology project with Japan is the Marine Hydrodynamics Project. The main work on this project will be conducted by Australia’s Defence Science and Technology Organisation (DSTO) and Japan’s Technical Research and Development Institute (TRDI).

“Japan is a country world renowned for its defence science and technology capabilities,” Senator Johnston said, adding: “The Marine Hydrodynamics Project is a welcome first step in defence science, technology and materiel cooperation for Australia and Japan.”

18 m Catamaran Resort Ferry from Alloy Boats

In June, Alloy Boats launched an 18 m catamaran resort ferry for service on the east coast of peninsula Malaysia.

The customer’s principal goal (apart from the highest possible specification for the cheapest possible price) was to run the vessel without air conditioning. To comply with that requirement, the passenger cabin was fitted with heavy insulation, opening windows, forward and side vents and an aft-door arrangement with a grille only. The result is reasonably good when underway, but the laws of thermodynamics say that when it’s 33°C and 95% humidity outside then it cannot be less than 33°C and 95% humidity inside. In typical local fashion, customers want it to look, sound and feel like air-con, but not cost like air-con.

The vessel is fitted with two Doosan L126 medium-duty engines, a simple mechanical engine that has proven to be highly reliable and cost-effective to service. Most other

items of equipment were imported and are equivalent to class or NSCV standard, with a particular emphasis on fire and evacuation safety (courtesy of the builder, not the authorities).

The whole design was limited by a maximum transport height of 5 m. All of the upper-deck items (wheelhouse, bulwarks and railings) were bolted on and fitted just before launch. The electrical and hydraulic systems were made with harnesses and junction boxes for fast completion. As with all vessels from Alloy Boats, the engines were dry started before launch and the vessel was able to navigate unaided immediately after launch, with just five days between launch and delivery. Manually-adjustable interceptors help to offset the trim from the deep propeller tunnels.

The lightship was exactly as predicted and the vessel achieved 26 kn in the delivery condition and, like all catamarans, steers like a brick at speed. To put a price peg in the sand, the contract price was in the order of AUD 770 000.

Principal particulars of the new vessel are

Length OA	18.4 m
Length WL	17.5 m
Beam moulded	5.95 m
Depth	2.22 m
Draft	1.20 m loaded
Displacement	light 20.1 t
	loaded 28.2 t (72 pax)
Crew	4
Passengers	72
Fuel oil	2270 L
Fresh water	500 L
Main engines	2×Doosan L126TIM medium duty each 294 kW at 2100 rpm
Gearboxes	Dong-I DMT150H
Reduction ratio	1.83:1
Propellers	2×ZF-FPS 762 mm diameter 5-blade NiBrAl
Speed	23 kn loaded at 100% MCR 20 kn loaded at 75% MCR
Range	370 n miles at 20 kn with 10% reserve
Construction	Marine-grade aluminium
Certification	Marine Department Malaysia 20 n miles offshore

Greg Cox



Cabin seating on 18 m catamaran ferry
(Photo courtesy Greg Cox)



18 m catamaran ferry under way
(Photo courtesy Greg Cox)

Perry Irwin from One2three Naval Architects

The first in another series of three police patrol boats was launched in June; the second order after the success of the first three-boat delivery in 2007. Built by Aluminium Boats Australia in Queensland and designed by One2three, the vessel can launch and retrieve a 7 m RHIB in seconds for added police operational ability and has sufficient crew accommodation for longer time at sea.

Powered by two MTU Series 60 engines, the vessel met weight and speed requirements on trials.

The second and third vessels are due to be launched in the coming months.

Principal particulars of *Perry Irwin* are

Length OA	25.08 m
Length measured	23.99 m
Beam (ex. sponson)	7.80 m
Depth	3.17 m
Draft	1.39 m
Personnel	28
Fuel (day)	7720 n miles
(long range)	2200 n miles
Fresh water	1500 L
Sullage	1000 L
Main engines	2×MTU Series 60
Propulsion	2×propellers
Speed (service)	20 kn
(maximum)	25 kn
Construction	Marine-grade aluminium
Flag	Australia
Class/Survey	DNV/MSQ



Perry Irwin on trials
(Photo courtesy One2three Naval Architects)

HDPE Elevated Work Platform Barge from One2three Naval Architects

July saw the launch of the latest collaboration between One2three and Aquatruck, a 7.5 m HDPE Elevated Work Platform (EWP) barge built by Aquatruck in Tasmania. The HDPE hull and tubes offer extremely high resistance to abrasion and damage, even against oyster growth at piles. The elevated work platform, which is hydraulically powered, allows access to bridges, wharves, pylons and shore-side structures for maintenance. The arm has a vertical reach of 5 m and extends 3 m transversely. With a 200 kg load on the platform at this worst-case location, the vessel passes full NSCV 2C stability requirements with a beam of 3.5 m.

Principal particulars of the HDPE Elevated Work Platform Barge are

Length OA	7.78 m
Length WL	7.47 m
Beam OA	3.49 m
Depth	1.21 m
Draft	0.53 m
Crew	3
Fuel oil	400 L
Main engines	2×Yamaha 30 kW outboards
Speed	10 kn
Construction	High-density polyethylene
Tube specification	630 mm OD x 24.1 mm WT



HDPE Elevated Work Platform Barge built by Aquatruck
(Photo courtesy One2three Naval Architects)

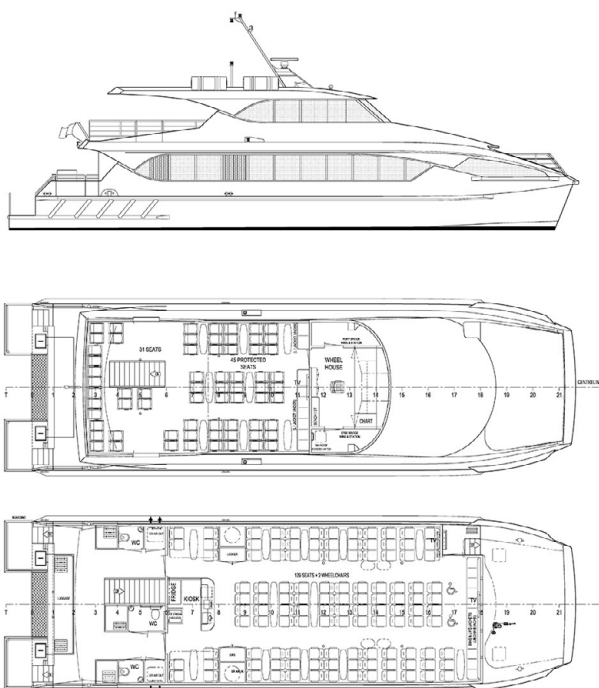
Cougar II from One2three Naval Architects

Production is nearing completion on *Cougar II*, a 24 m catamaran ferry designed by One2three Naval Architects and building at Aluminium Boats Australia in Queensland. Following the success of the similar *Kingfish* for Cruise Whitsundays launched in July 2013 (also produced by the collaboration of One2three and ABA), *Cougar II* will serve as a tourist and commuter ferry in Fiji. The vessel features sizable luggage space, main-deck kiosk, televisions and varied seating arrangements to allow for the comfort for travellers as well as large windows to take advantage of the surrounding scenery.

The ferry is fitted with two Yanmar 6AY-WGT engines, each delivering 680 kW at 1940 rpm, which is an increase from the power on *Kingfish* to satisfy the longer operational routes in Fiji.

Principal particulars of *Cougar II* are

Length OA	26.19 m
Length WL	25.00 m
Beam OA	7.84 m
Depth	2.75 m
Draft	1.16 m
Passengers	200
Crew	3
Fuel oil	5000 L
Fresh water	1000 L
Sullage	1000 L
Main engines	2×Yanmar 6AY-WGT
Propulsion	2×propellers
Speed (service)	21 kn
Generators	Caterpillar C4.4
Construction	Marine-grade aluminium
Flag	Fiji
Class/Survey	DNV/MSAF



General arrangement of *Cougar II*
(Drawing courtesy One2three Naval Architects)

28 m Wave-piercing Catamaran Ferry from One2three Naval Architects

A contract has been signed between One2three Naval Architects and Evolution Commercial in Western Australia to construct a 28 m aluminium ferry for operation by Ferry Co. Ltd in Taiwan. Designed with speed and economy in mind, the vessel is a wave-piercing catamaran with rugged design for offshore operations.

The ferry is designed to full Lloyd's Register class and is based on a GA proposed by SFM provided to Evolution Commercial by the client. With a conventional seating layout allowing for efficient use of passenger space, the vessel will serve as a commuter ferry for up to 200 people on each journey.

Principal particulars of the new ferry are

Length OA	28.50 m
Length WL	28.22 m
Beam OA	8.64 m
Depth	3.08 m
Draft	1.10 m
Passengers	200
Crew	6
Fuel oil	9000 L
Fresh water	500 L
Sullage	500 L
Main engines	2×MTU 12V2000 M84
Propulsion	2×Rolls Royce 40A3 jets
Speed (service)	32 kn
Generators	2×Kohler 20EOZD 1-Phase
Construction	Marine-grade aluminium
Flag	CR
Class/Survey	Combined LR and CR

Georgia McLinden

Baru Gorgona from Incat Crowther

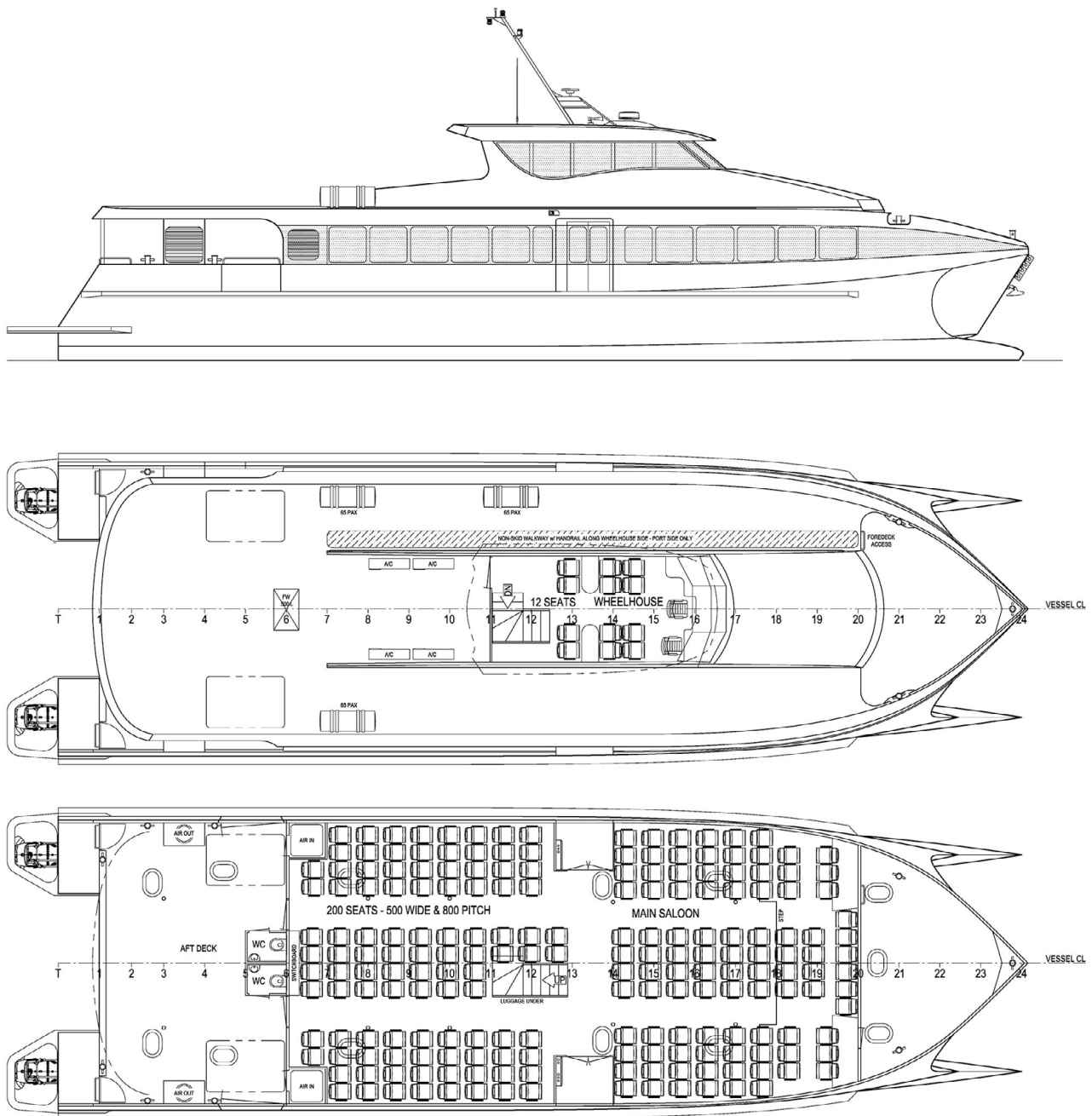
Incat Crowther has announced the launch of *Baru Gorgona*, the first of a new series of twelve UT4000 monohull fast supply vessels to be built by ETP Engenharia Ltda in Rio de Janeiro, Brazil. Additionally, Incat Crowther has signed a contract to supply the design of six further UT4000 FSVs to be built at Arpoador Engenharia Ltda in Rio de Janeiro, Brazil.



Baru Gorgona alongside
(Photo courtesy Incat Crowther)



Baru Gorgona under way
(Photo courtesy Incat Crowther)



General arrangement of 28 m wave-piercing catamaran ferry for Evolution Commercial
(Drawing courtesy One2three Naval Architects)

The vessel's design has been optimised to comply with the UT4000 Fast Supply Vessel specification. Ship's fuel is in excess of 40 000 L, with a cargo fuel load of 90 000 L. There is also capacity for 91 000 L of cargo fresh water.

The vessel is dominated by an expansive aft deck of 225 m² of usable area, planked with hardwood and protected by sturdy cargo rails.

An additional 30 m² of cargo area is provided inside the main-deck cabin, allowing for the carriage of items out of the elements, such as food and other supplies. Also housed in the main-deck cabin are wet-room and laundry facilities.

The upper-deck wheelhouse includes an aft-facing control station, allowing for safe and efficient manoeuvring.

Below decks there are six cabins accommodating 11 crew, as well as a mess, galley and bathrooms.

Baru Gorgona is powered by a quartet of Cummins QSK 50 main engines, each rated at 1342 kW @ 1800 rpm. Propulsion is by way of fixed-pitched propellers, whilst two 112 kW electric tunnel bow thrusters will enhance manoeuvrability. The vessel has a service speed of 21 kn.

Incat Crowther's extensive experience in the offshore supply field will ensure that these vessels comprise a fleet of class-leading vessels which are rugged, efficient and profitable.

Principal particulars of *Baru Gorgona* are

Length OA	48.0 m
Length WL	46.1 m
Beam OA	9.50 m

Depth	4.25 m
Draft (hull)	1.70 m
(propeller)	2.10 m
Crew	11
Ship's fuel	44 600 L
Ship's fresh water	9000 L
Cargo fuel	90 600 L
Cargo fresh water	91 000 L
Deck area	225 m ²
Deck strength	3.0 t/m ²
Main engines	4×Cummins QSK 50 each 1342 kW @ 1800 rpm
Propulsion	4×5-bladed propellers
Speed (maximum)	25 kn
(service)	21 kn
Generators	2×Cummins QSM 11 each 280 kW
Construction	Marine-grade aluminum
Flag	Brazil
Notation	✱1A1 HSLC (BRA) R1 Service 2 E0

Reef Ranger from Incat Crowther

Incat Crowther has announced the delivery of *Reef Ranger*, a 24 m long-range catamaran patrol vessel, built by Marine Engineering Consultants on the Gold Coast, Qld. The vessel will fulfil the day-to-day tasks of managing the Great Barrier Marine Park. Operational roles include compliance monitoring, park management, diving and research operations.

According to the Queensland Government, *Reef Ranger* is more cost-effective and twice as fast as the vessel it replaces. The vessel will patrol the 348 000 km² Great Barrier Reef World Heritage Area. Queensland National Parks Minister, Steve Dickson, said of the new vessel "The new boat can operate away from port for 12 weeks, has a range of up to 2000 n miles and speeds of up to 25 kn, and can carry up to 28 people on day operations, so it really will give us the freedom to spend more time on those activities which protect the reef and support the tourism industry."

At the centre of *Reef Ranger*'s cost-effective design is an excellent combination of deadweight, functionality and performance. Typical of Incat Crowther's high-volume workboat hull, the vessel offers a greater capacity and operational envelope, whilst maintaining excellent fuel economy.

As well as being efficient and capable, *Reef Ranger*'s environmental credentials are bolstered by the implementation of numerous technologies. These include extensive solar panels, high R-value insulation, zoned air conditioning, and window blinds and shutters to reduce the impact of the Queensland sun.

The extensive solar array takes advantage of modern lithium-ion batteries to reduce the use of diesel generators, both in operation and whilst at anchor at night, and allows the vessel's diesel generators to remain shut down overnight. With an intelligent control system which combines power from both generators and solar panels, running costs are reduced, as are the costs of maintaining the generators.

The vessel's aft deck houses a cradle for a 6 m RIB which



Port bow of *Reef Ranger*
(Photo courtesy Incat Crowther)

is capable of being launched and retrieved at speeds of up to 6 kn and in seas of up to 3 m. Storage capacity is provided aft for 1500 L of unleaded petrol for use on the RIBs.

The main-deck cabin features a large wet room, mess with seats for 15 personnel, a large galley and pantry, lounge area, computer workstations and two twin cabins. Doors to the side decks provide safe and easy access around the vessel.

The upper deck features two twin cabins, a bathroom, power-tools store and cold store. Aft is a barbecue area, a 4.5 m RIB with crane and the vessel's cargo space. An additional eight crew are accommodated in twin cabins in the hulls.

Reef Ranger is powered by a pair of 670 kW diesel engines. Following an intensive sea-trial optimisation of the propulsion train, the vessel is capable of a maximum speed of 25 kn, with efficient cruising during patrol work at between 12 and 20 kn.

Principal particulars of *Reef Ranger* are

Length Measured	23.99 m
Length WL	24.79 m
Beam OA	8.50 m
Depth	3.60 m
Draft (hull)	1.30 m
(maximum)	1.90 m
Crew	14 (2B) 28 (1C)
Fuel oil	12 000 L
Fresh water	4000 L
Sullage	2000 L
Main engines	2×670 kW
Propulsion	2×5-bladed propellers
Speed (maximum)	25 kn
(service)	20 kn
Generators	2×Northern Lights M65C2
Solar Panels	80 m ² 8 kW
Batteries	144.8 kWh lithium-ion bank
Construction	Marine-grade aluminium
Flag	Australia
Notation	NSCV 2B (14 pax) 1C (28 pax)

Epicure from Incat Crowther

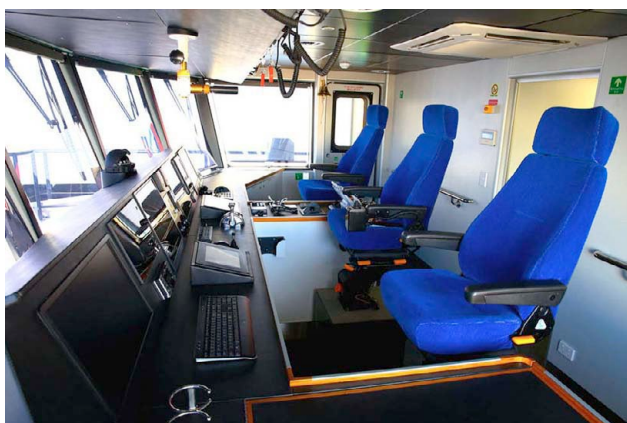
Incat Crowther has announced the launch of MV *Epicure*, a spectacular dinner cruise vessel operating on Sydney Harbour. The vessel, built by Aluminium Boats Australia in Queensland, has been delivered to Epicure, a brand of the Spotless Group.



Main-deck cabin on *Reef Ranger*
(Photo courtesy Incat Crowther)



Solar panels on *Reef Ranger*
(Photo courtesy Incat Crowther)



Wheelhouse on *Reef Ranger*
(Photo courtesy Incat Crowther)



Stowage for 4.5 m RIB on *Reef Ranger*
(Photo courtesy Incat Crowther)

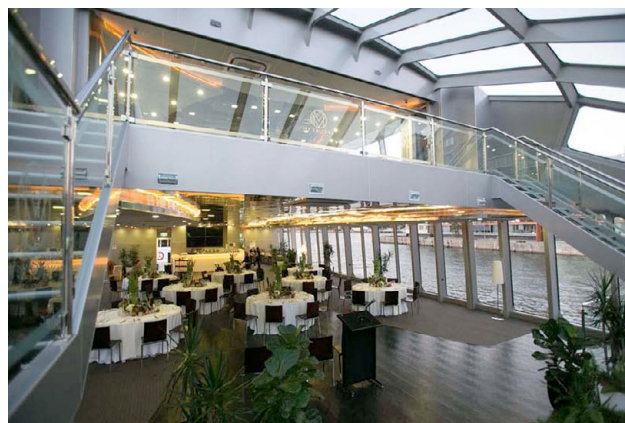
Incat Crowther were approached to create a stand-out vessel catering to the high-end market. In response to the brief, Incat Crowther developed a heavily-glazed vessel focused on a large forward atrium. This arrangement allows guests to board via the foredeck whilst crew operations can take place on the aft end of the vessel, keeping “back-of-house” operations out of sight from “front-of-house” guests.

Upon boarding the vessel’s main deck and entering the atrium, guests are greeted by a set of open stairs to the saloon deck, which features an indoor/outdoor cocktail lounge. This area can be opened up to the side decks by sliding partitions.

Above this is the sky deck, featuring outdoor lounge seats and bar, with a small wheelhouse forward.



Starboard bow of *Epicure*
(Photo courtesy Incat Crowther)



Atrium and dining area on *Epicure*
(Photo courtesy Incat Crowther)

The two upper-deck spaces allow the operator to gather guests for refreshments, whilst the main-deck dining area is prepared for dining service. The separation between decks also lends itself to corporate events such as product launches. The main deck features floor-to-ceiling glazing, combining with the forward atrium and pillarless design to afford views of Sydney Harbour unparalleled on a dinner cruise vessel.

Below decks, there is a full commercial galley with dedicated areas for food preparation, cooking and storage, including a large cool room. At the forward end of the hull are ladies’ and gents’ toilet spaces.

Bridal and green rooms are also provided below decks, as well as a crew locker room and bathroom.

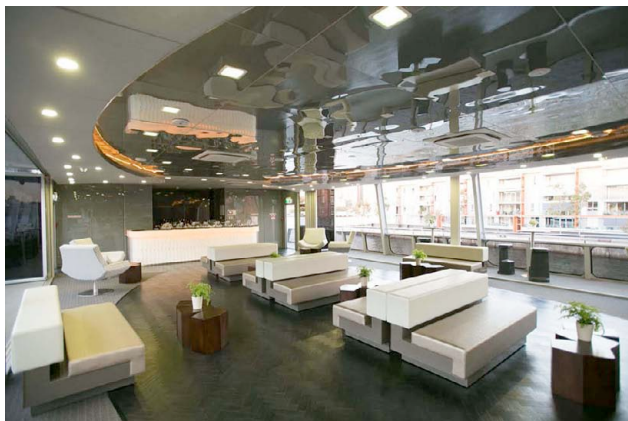
All interior spaces are finished to a high standard, befitting the quality of food and wine served on the vessel.

Epicure is powered by a pair of Scania DI13 main engines, each producing a modest 294 kW, enough to propel the vessel to cruise speeds up to 10 kn. A pair of Scania DI13 357 kVA generators provide electrical power.

Epicure was developed in a very short period of time, designed and built in just seven months, with the shipyard implementing new build techniques and a round-the-clock schedule to meet the deadline.

Principal particulars of *Epicure* are

Length OA	36.50 m
Length measured	34.99 m
Length WL	34.40 m
Beam OA	12.50 m
Depth	3.75 m
Draft (hull)	2.00 m
(maximum)	3.00 m
Passengers	350 (Class 1D)
	450 (Class 1E)
Crew	30
Fuel oil	10 000 L
Fresh water	5000 L
Sullage	8000 L
Main engines	2×Scania DI13-080M
	each 294 kW @ 1800 rpm
Propulsion	2×propellers
Generators	2×Scania DI13 357 kVA
Speed (service)	6 kn
(maximum)	10 kn
Construction	Marine-grade aluminium
Flag	Australia
Class/Survey	NSCV/USLC Class 1D/1E



Cocktail lounge on *Epicure*
(Photo courtesy Incat Crowther)

Amaroo from Incat Crowther

Incat Crowther has announced the launch of *Amaroo*, a 24 m catamaran whale-watching vessel for Amaroo Cruises of Forster, NSW, who recently celebrated 35 years in operation.

Built by Aluminium Marine in Queensland, *Amaroo* is the third Incat Crowther-designed vessel for the operator. The long-standing relationship began in 1981 with the design of *Amaroo II*, and continued with the 1998-built *Amaroo 2000*. The cornerstone of Amaroo Cruise's success has been the operation of functional, simple and robust vessels, offering exceptionally-low running costs.

Amaroo Cruise's daily dolphin- and whale-watching cruise route presented technical challenges. Consisting of a loop

around Wallis Lake before sailing under a low bridge and entering the ocean, it called for balancing a low-draft hull for lake operation with strong ocean-going seakeeping, whilst keeping air draft to a minimum.

Incat Crowther developed a vessel four metres longer than the previous vessel, yet drawing no more water. She features a fully-loaded navigational draft of 0.85m, a figure normally only achieved by waterjet-driven vessels. With targeted weight savings, wide hulls and carefully-developed propeller tunnels, the shallow draft was achieved without compromising performance or economy.

As with *Amaroo 2000*, the superstructure is isolated from the hull on resilient mounts, allowing a two-beam structure which further reduces the height of the vessel. Foredeck access has been improved with the installation of a door pocket forward, allowing passengers to walk around the forward structural beam via a safe, level passageway.

Much to the delight of the operator, the isolated deckhouse and optimised propulsion and structure combine to deliver exceptional noise and vibration characteristics. Extensive use of glass and an innovative low-profile engine ventilation system gives the cabin great natural light and gives excellent visibility.

Amaroo accommodates 101 passengers inside, with a kiosk located aft in the cabin. There are additional spaces for up to five wheelchairs. The foredeck is configured for standing passengers, with a single bench seat. The upper deck features seats for 70 passengers, as well as the helm station. An improvement over previous vessels, this affords the captain superior visibility and frees up the front of the main deck for whale-watching passengers. A foldable bimini cover can be collapsed for transit under the bridge at high tide.

Amaroo is a "next generation" vessel, meeting the latest NSCV regulations for access, including 2 m × 1.6 m lavatory, wide aisles and dedicated priority seats and wheelchair spaces.

The vessel is powered by a pair of Yanmar 6HYM-WET main engines. In sea trials, she achieved a top speed in excess of 27 kn, and has a service speed of 25 kn.

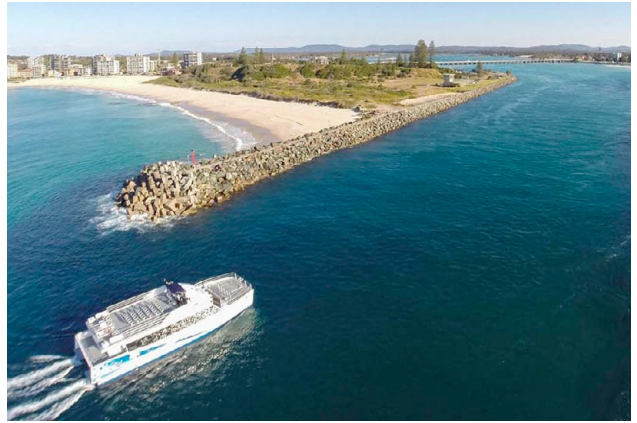
Principal particulars of *Amaroo* are

Length OA	23.9 m
Length WL	23.2 m
Beam OA	7.50 m
Depth	1.95 m
Draft (hull)	0.65 m
(maximum)	0.85 m
Passengers	147
Crew	3
Fuel oil	4000 L
Fresh water	800 L
Sullage	1000 L
Main engines	2×Yanmar 6HYM-WET
	each 441 kW @ 2100 rpm
Propulsion	2×propellers
Speed (service)	25 kn
(maximum)	27 kn
Construction	Marine-grade aluminium
Flag	Australia
Class/Survey	NSCV Class 1C

Stewart Marler



Amaroo on trials
(Photo courtesy Communicae Professional Photography)



Amaroo coming home
(Photo courtesy Imagery Motion Works)



Amaroo manoeuvring
(Photo courtesy Imagery Motion Works)



Main-deck cabin on Amaroo
(Photo courtesy Communicae Professional Photography)

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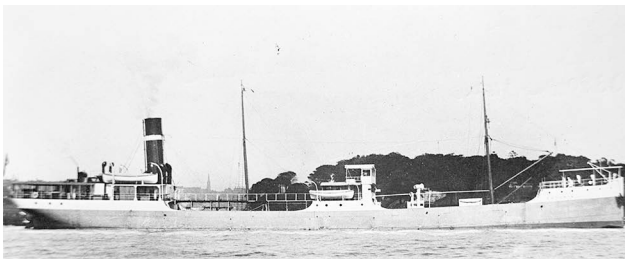
REPLENISHMENT SHIPS FOR THE RAN

John Jeremy

The recent decision by the Commonwealth Government to invite restricted tenders overseas for two new replenishment ships for the Royal Australian Navy is the latest step in a long story of replenishment ship acquisition for the RAN, which, over the last half century, has been characterised by delay and policy change.

The Australian Fleet Unit which arrived in Sydney Harbour for the first time just over 100 years ago did not include any vessel intended to resupply the new warships. Of course, it was not until World War II that reliable techniques were developed for the resupply of ships underway at sea. Nevertheless, the short range of the early, mostly coal-fired, ships meant that specialised ships were soon required to enable fuel, ammunition and other supplies to be provided when and where needed.

Shortly after the outbreak of World War I, two commercial oil tankers were chartered for naval service. One, *Murex*, was soon returned to her owners, but *Esturia* operated in Australian waters as a parent ship and oiler for the RAN's destroyers until 1917 when she was taken over by the Admiralty. Other ships requisitioned or chartered included McIlwraith McEacharn's *Koolonga* which served as a supply ship and collier for Australian ships during the early operations in New Guinea, and later accompanied HMAS *Australia* in the Pacific during the search for the German Pacific Squadron. The Union Steamship Company's *Aorangi* became a supply ship in September 1914 but was returned to her owners in May 1915.



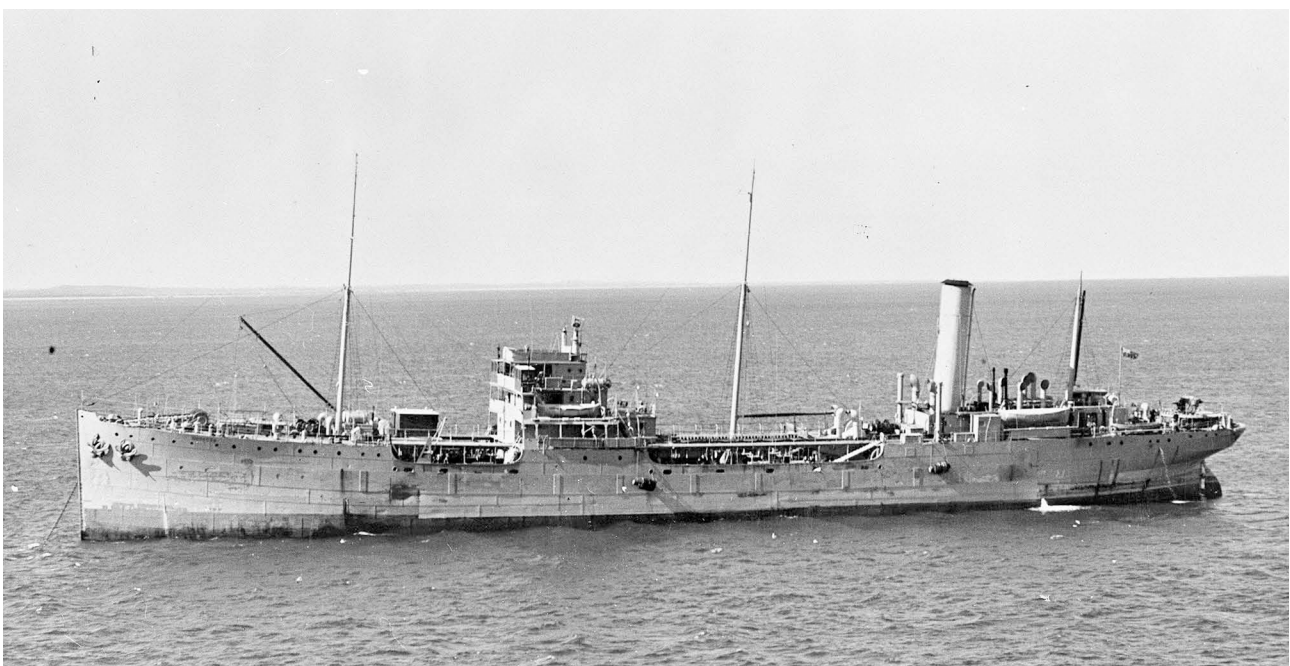
Esturia
(RAN Historical Collection)

During the war, two ships were ordered specifically to supply RAN warships. The fleet oiler *Kurumba* (with a cargo capacity of 4042 t) was ordered from Swan Hunter in 1915. On completion in January 1917, she was manned by a British crew and served with the Royal Navy for the remainder of the war. She came to Australia in 1920 and served as a fleet oiler until 1948.

The second new ship was the collier *Biloela* which was ordered from the Commonwealth Naval Dockyard at Cockatoo Island in Sydney. Having a 10 223 t full-load displacement, she could carry 4073 t of coal, 1120 t of oil, 1182 t of general stores and 305 t of water. *Biloela* was completed on 5 July 1920. She was designed in Australia and most of the materials and equipment used in her construction were bought from Australian sources. She was also the first ship to be built with Australian-made steel. With the phasing out of coal as a fuel for RAN ships she was sold into commercial service in March 1931.

During World War II, in addition to *Kurumba*, the RAN operated a number of ex-commercial ships as supply and support vessels. The small motor tanker *Aase Maersk* operated as a fleet attendant tanker for the RAN in the Pacific, and the 17 666 t displacement tanker *Bishopdale*, built for the Royal Navy in 1937, was made available on loan to the RAN in April 1942 and operated in the Pacific until she was returned to the RN after the war. *Bishopdale* had replaced the smaller *Falkefjell* which, after being requisitioned by the Admiralty, was made available to the RAN between December 1941 and April 1942.

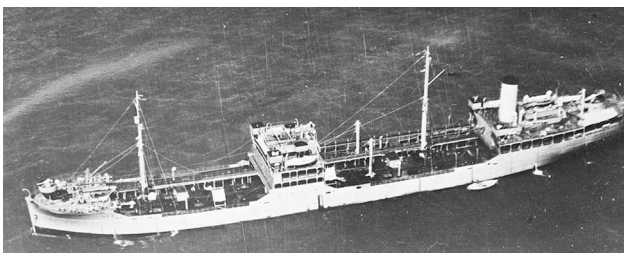
Kurumba was sold in 1948, but mobilisation plans for the RAN then being developed included a fleet tanker, plans for which were submitted to Cabinet in August 1951. In



Kurumba
(RAN Historical Collection)



The naval collier *Biloela* rounding Bradleys Head in Sydney Harbour, outbound
(Dufty photograph, J C Jeremy Collection)



Bishopdale
(RAN Historical Collection)

the event of mobilisation for war, the tanker was to be supplemented by some 12 ex-commercial vessels as stores and repair ships. The tanker was approved and ordered later that year from Britain, construction in Australia then being considered as likely to take too long.

The new tanker was built to the latest British design then being constructed for the Royal Fleet Auxilliary (RFA). *Tide Austral* was launched in September 1954 and was completed the following year. The cost (£3.13 million) had exceeded the estimate by 20 per cent, and with no likelihood then of mobilisation, the RAN tried to sell the ship. In March 1955 the Admiralty offered to crew and operate the ship as part of the RFA, an offer which was accepted. *Tide Austral* served with the RFA until September 1962 when she was commissioned into the RAN as HMAS *Supply*. On arrival in Australia, *Supply* was refitted at Cockatoo Island in Sydney over Christmas 1962, when the extent of wear and tear from her seven years of service soon became evident, with a continuing list of repair work held over to future refits. Clearly, early replacement was desirable but, in the event, HMAS *Supply* was to remain in service much longer than planned and was not decommissioned until December 1985 when thirty years old and after 23 years service in the RAN.

HMAS *Supply* was essentially a tanker capable of replenishing warships underway at sea and had a full-load displacement of 26 473 t. During a major refit in 1970 she was fitted to carry AVGAS in a forward fuel tank in order

to be able to supply the needs of the Grumman Tracker anti-submarine aircraft then being carried by the RAN flagship, HMAS *Melbourne*.



HMAS *Supply*
(RAN photograph)

As early as June 1964, the RAN developed staff requirements for a ship to replace HMAS *Supply*. The new ship was intended to be a much more capable replenishment ship, able to supply not only fuel and water but also ammunition, stores and spares to RAN fleet units. Cabinet approved the acquisition of a fleet replenishment ship (AOE) in November 1964 but, due to higher priorities in the Defence budget, the ship was removed from the program in October 1965. The project gained life again in May 1969 when the RAN sought approval for the construction of two fast combat support ships (AOE) — one to be delivered in 1977 and the second in around 1980 to replace HMAS *Supply*. Cabinet approval to proceed with the first ship was given in July 1969.

The design of the AOE was developed in Australia, with assistance from Y-ARD in Glasgow, and it was originally based on commercial standards and was similar in size to the destroyer tender, HMAS *Stalwart*, also Australian designed



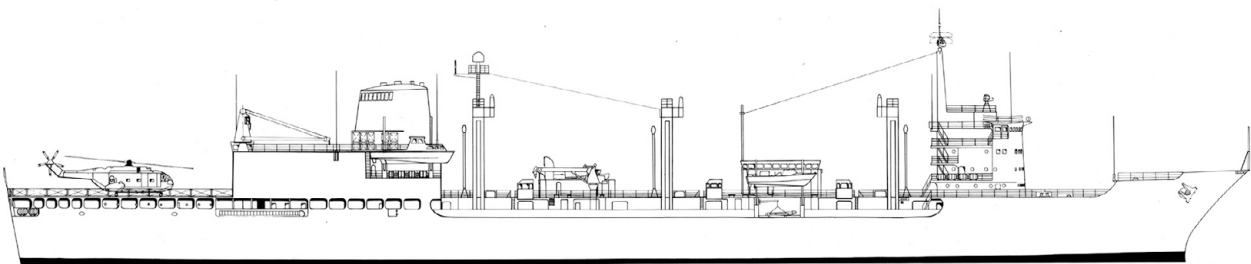
HMAS *Supply* at sea off Sydney with HMAS *Torrens* alongside
(RAN photograph)

and built at Cockatoo Island in Sydney between 1964 and 1968. As the design was developed, the size and complexity of the ship grew. The final design was to full naval standards (including for shock). The ship was to have a gas citadel and a washdown system for NBCD protection and space for self-defence gun and missile armament. At 19 992 t full-load displacement, HMAS *Protector* was to be able to supply stores, spares, food, guided missiles and ammunition, diesel oil, AVCAT and fresh water. Six replenishment stations for solids and liquids were to be fitted.

The design of the ship was delayed by the need to change the selected main engines but, in advance of the contract, most of the structural working drawings and many of the outfit drawings were completed and some 1500 t of steel had been ordered and delivered to her intended builder, Cockatoo Dockyard, by mid 1973. The Government had changed in December 1972 and a review of the project, the cost of which had risen considerably above the original estimate, resulted in the ship being cancelled in August 1973.

After the cancellation of the AOE, a review of the requirements in June 1974 lead to a proposal to acquire a fleet underway replenishment ship of lesser capability for completion by 1980, in time to replace HMAS *Supply*. The ship (of a type designated AOR) was to be built to an existing, proven design to reduce technical risk and four Australian shipbuilders and twenty-seven overseas yards were invited to register interest. Ultimately the competition was narrowed to a design from the Netherlands and a design offered by Direction Techniques des Construction Navales (DTCN) of France. The latter was accepted, and a project definition study was conducted during 1976. The ship offered was an export version (PR EXP 1) of the French Durance-class replenishment ship. Cabinet approved the construction of AOR 01 in August 1977.

The following month, Defence abandoned any consideration of building the ship in Australia and began negotiations with DTCN for the construction of the ship in France but, following representations by Cockatoo Dockyard that it be



The fast combat support ship HMAS *Protector* as she appeared when cancelled in 1973
(Cockatoo Dockyard drawing)



AOR 01, *Success*, at full power during Contractor's Sea Trials in December 1985
(Cockatoo Dockyard photograph, J C Jeremy collection)

given the opportunity to tender for the ship, the Government approved that change of direction. Finally, in October 1979 a fixed-price contract was signed with Cockatoo for the construction of AOR 01, with an option for a second ship (AOR 02) within five years on the same terms.

Not long after work began, major problems arose. The shipbuilder had not built a large ship for some years and, in addition to the acquisition of new equipment for the yard, a considerable expansion of the workforce was required which proved difficult, despite the recession of the early 1980s. A considerable number of tradesmen had to be recruited from overseas. It was, however, the technical problems which finally overwhelmed the project. Adapting the working drawings for the second French ship of the class (*Meuse*), in order to build a non-existent version (PR EXP 1), incorporating 41 Australian design changes and 140 material substitutions, proved to be a far-from-trivial task, and the project suffered delay and extra costs as these problems arose.

Finally, the contract was completely renegotiated on a fixed-price incentive basis, reference to the baseline ship (PR EXP 1) was abandoned and the specification redefined. This process took three years but, finally, progress could be made with the ship and HMAS *Success* was launched in March 1984 and completed in April 1986. Despite the problems with the contract, the trials of the ship confirmed the wisdom of the original design selection and the quality of the French design. The Australian changes integrated well and in subsequent service the ship has proved to be a fine asset, if challenging from a support perspective as she has aged.

The RAN still wanted a second ship but, by the time the contractual problems with AOR 01 had been resolved, funding had expired for AOR 02. The builder offered to fund the construction of the ship and lease it to the Commonwealth, but Treasury threw cold water on that suggestion — the Commonwealth could borrow money cheaper than a commercial company and the answer was no!



HMAS *Westralia* in 2005
(RAN photograph)



HMAS *Sirius* off the coast of Yeppoon, Queensland, during Exercise Talisman Saber 2013
(RAN photograph)

In 1989 the opportunity arose to acquire a second replenishment ship when the RFA's tanker *Appleleaf* became available. This ship had been built as *Hudson Cavalier*, a commercial tanker, in 1975 and laid up on completion. Bought by the British Government in 1979 she was converted into a replenishment ship and commissioned as RFA *Appleleaf*. The RAN leased the ship for five years (by then an acceptable practice) and purchased her outright in 1994. As HMAS *Westralia*, she was intended to serve until 2009.

The 2000 Defence White Paper included plans for both RAN replenishment ships to be replaced in due course with purpose-built ships — *Westralia* in 2009 and *Success* in 2015. The plan for new afloat support capability became Project SEA 1654, but another consideration was to further change these plans. In April 2001 an amendment to MARPOL Regulation G13 was issued. This amendment required commercial tankers of *Westralia*'s type and age to be retired from service by September 2006. Whilst the MARPOL Convention does not apply to naval vessels, the risk of an accident to the single-hull vessel and the consequent public fall-out was not acceptable. Moreover, after 2006, *Westralia* might not be recognised by a classification society and could fall 'out of class'.

Reflecting changing defence priorities and budget limitations, the revised Defence Capability Plan of November 2003 saw the budget for a replacement for *Westralia* drop from some \$450 million (for a fully-capable replenishment ship) to only \$140 million. The solution became the acquisition and conversion of a modern commercial tanker in time to replace *Westralia* by the end of 2006. A standard panamax-sized double-hull tanker of 37 000 dwt under construction for a Greek owner in Korea and launched in April 2004 was selected. The tanker *Delos* was purchased, immediately on completion from her Greek owners.

Whilst preparations were made for the ship's conversion for RAN service, *Delos* was leased for 14 months to Teekay Shipping Singapore for commercial service.

The contract for the conversion of *Delos* was subsequently placed with Tenix and the majority of the conversion was undertaken at the common-user facility at Henderson in Western Australia. The completed ship was delivered by Tenix on 7 August 2006 and she was commissioned as HMAS *Sirius* on 16 September 2006.

Today, HMAS *Success* and HMAS *Sirius* provide the RAN with replenishment-at-sea capability on both sides of Australia. HMAS *Success* is ageing and her continuing maintenance is costly. HMAS *Sirius* is relatively new, but as a converted commercial tanker she does not have the capability of a purpose-designed naval underway replenishment ship. The Government has now decided that these ships should be replaced by two new vessels — either built in Spain based on the design of the Spanish Navy's *Cantabria* (which spent much of 2013 serving with the RAN), or built in Korea to a design by BMT of the United Kingdom. The story continues.

References

1. Bastock, J. (1975), *Australia's Ships of War*, Angus and Robertson, Sydney.
2. Jeremy, J. (2013), *The Island Shipyard: Shipbuilding at Cockatoo Island 1870 to 1987*, Sydney Harbour Federation Trust, Sydney.
3. Donohue, H. (1996), *From Empire Defence to the Long Haul: Post-war Defence Policy and its Impact on Naval Force Structure Planning 1945–1955*, RAN Maritime Studies Program, Department of Defence, Canberra.
4. Jeremy, J. (1990), *Naval Shipbuilding: Some Australian Experience*, Working Paper No. 205, Strategic and Defence Studies Centre, Australian National University, Canberra.
5. Gillis, K. (2008), *Getting Sirius: A Project Manager's Story*, Defence Materiel Organisation, Department of Defence, Canberra.

EDUCATION NEWS

University of New South Wales

Undergraduate News

Thesis Conference

The School has now moved to having a Thesis Conference in each Semester, due to the increasing number of mid-year starts. At the undergraduate thesis conference on 4 June the following presentations by naval architecture students were made:

Yang Du *Radius of Gyration of Ships*

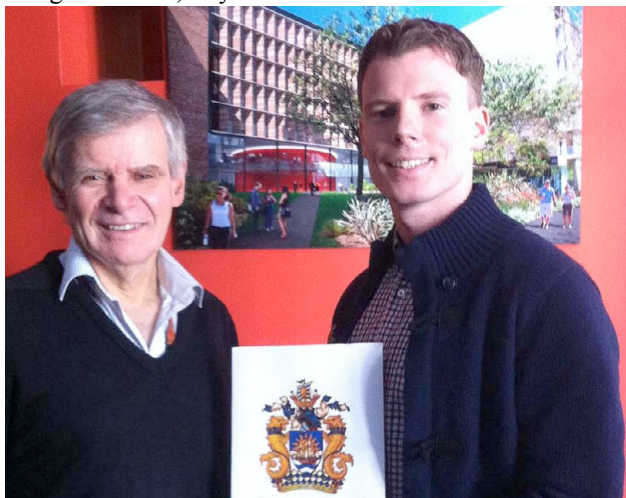
Raymond Fagerli *A Numerical Resistance
Prediction Method for Trimarans*

Zijian Gao *How well does the Holtrop and Mennen
Method Predict Resistance and Powering?*

Ming Fang *Resistance Prediction for Catamaran
Hullforms*

RINA-DSTO Award

RINA and the Defence Science and Technology Organisation jointly offered an award of \$125 and a certificate for the best presentation at the Thesis Conference by a student member on a naval architectural project. Assessment was made on the basis of marks awarded by School staff. The award went to Raymond Fagerli for his presentation on *A Numerical Resistance Prediction Method for Trimarans*. The certificate and cheque have both arrived, and were presented to him by Naval Architecture Stream Coordinator, Phil Helmore, Congratulations, Raymond!



Phil Helmore presenting the RINA-DSTO Award
to Raymond Fagerli
(Photo courtesy Lawry Doctors)

Graduation

At the graduation ceremony on 12 June, the following graduated with degrees in naval architecture:

Bradley Abdilla Honours Class 2 Division 1

Li Chen Honours Class 2 Division 1

At the graduation ceremony on 18 June, the following graduated with degrees in naval architecture:

Braden Holgate Honours Class 2 Division 1

Georgia McLinden Honours Class 1



Phil Helmore (L) with Bradley Abdilla
at UNSW Graduation Ceremony on 12 June
(Photo courtesy Julie-Ann Abdilla)



Phil Helmore (L) with Georgia McLinden
at UNSW Graduation Ceremony on 18 June
(Photo courtesy Marcus Conway)



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"Where will our knowledge take you?"



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Prize-giving Ceremony

At the prize-giving ceremony on 12 June, the following prizes were awarded in naval architecture and presented by the Naval Architecture Stream Coordinator, Phil Helmore:

The Royal Institution of Naval Architects (NSW Section) Prize for the best academic performance by a student in Year 1 of the Bachelor of Engineering program in Naval Architecture to Anton Vinukurov.

The Royal Institution of Naval Architects (NSW Section) Prize for the best academic performance by a student in Year 2 of the Bachelor of Engineering program in Naval Architecture to Alistair Smith.

The Royal Institution of Naval Architects (NSW Section) Prize for the best academic performance by a student in Year 3 of the Bachelor of Engineering program in Naval Architecture to Muhammad Syahmi Hashim.

The Royal Institution of Naval Architects (Australian Division) Prize and Medal for the best ship design project by a student in the final year to Raymond Fagerli for his design of a 33 m high-speed catamaran to operate as a ferry and sightseeing tour boat carrying up to 210 passengers plus 6 crew on short voyages and tourist day trips in partially-smooth waters, operating out of Esperance, WA.

The David Carment Memorial Prize and Medal for the best overall performance by a naval architecture student in the final year to Georgia McLinden.

Congratulations to all on their fine performances.



Anton Vinukurov (Year 1 Prize) with Phil Helmore
(Photo courtesy Dianne Augee)



Alistair Smith (Year 2 Prize) with Phil Helmore
(Photo courtesy Dianne Augee)



Muhammad Syahmi Hashim (Year 3 Prize) with Phil Helmore
(Photo courtesy Dianne Augee)



Raymond Fagerli (RINAAD Prize and Medal) with Phil Helmore
(Photo courtesy Dianne Augee)



Georgia McLinden (David Carment Prize and Medal)
with Phil Helmore
(Photo courtesy Dianne Augee)

Graduates Employed

Our 2014 graduates are now employed as follows:

Bradley Abdilla Thales Australia, Garden Island, Sydney
Li Chen NID, Sydney
Braden Holgate Evaluating opportunities***
Georgia McLinden One2three Naval Architects,
 Sydney

Thesis Topics

Among the interesting undergraduate thesis projects newly under way are the following:

Automated Drawing of Marine Screw propellers

Production of the drawing of a propeller from a set of data is no mean feat, either manually or in a CAD program. Previous theses have looked at automating the drawing of MARIN B-Series propellers from the boss details and blade offsets using ProEngineer, Catia and AutoCAD.

Tom Boddy is extending the work by modelling the propeller in Rhinoceros software and then automating the drawing process. There are many ways in which the work can be extended, including

- extension to MARIN Ka series propellers;
- extension to other CAD programs, such as SolidWorks; and
- investigation of 3D printing for rapid prototyping.

One advantage of the modelling process is that, in addition to the drawing, the mass and polar moment of inertia (for use in torsional vibration calculations) can be readily calculated within the software.

Optimisation of Sailing Yacht Performance

With the plethora of underwater appendages available to sailing yachts, including canting keels, foils, boards, tabs and the like, getting the combination of the dimensions of each to give the best result on all points of sailing can be challenging. A gain with one can mean a loss with another, and the trade-offs need to be analysed carefully.

Andy Green is conducting a CFD investigation to investigate the effects of changing the dimensions and locations of the principal appendages on a generic super-maxi hull which is known to perform well.

Students Meet Industry Night

Around 350 students from the School of Mechanical and Manufacturing Engineering and the School of Photovoltaic and Renewable Energy Engineering attended a very successful Students Meet Industry Night on 26 May in the Scientia. Representatives of the student societies MechSoc and ReSoc were responsible for the planning and organisation of the function which attracted over 30 companies and professional organisations. Students were able to browse the company stands and find out more about graduate and vacation work programs.

Post-graduate and Other News

70th Birthdays of Em/Profs Moan and Faltinsen

Emeritus Professor Lawrence Doctors was recently invited to attend the events to honour the achievements of two Norwegian academics.

A two-day celebratory seminar was arranged by the Nor-



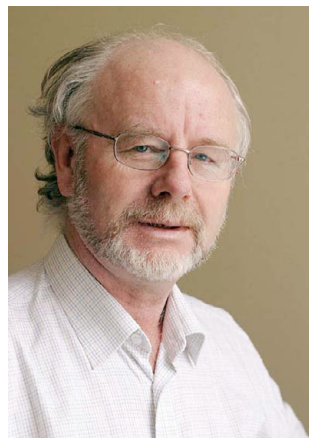
Students Meet Industry Night in the Scientia
(Photo courtesy Glenn Choy***)

wegian University of Science and Technology (NTNU) and the Norwegian Marine Technology Research Institute (MARINTEK), in Trondheim, Norway. This took place on 19 and 20 May 2014. The purpose of this event was to mark the seventieth birthdays of Emeritus Professors Torgeir Moan and Odd Magnus Faltinsen. Between them, these two academics have graduated around 90 doctoral students and have produced almost 1000 technical publications, including many books.

The celebrations consisted of a set of presentations by 33 leaders in the field of ship hydrodynamics and ship structures. Most of the presentations were made by their doctoral students — these persons now holding high-level positions in academia and industry, in all parts of the world.

In addition, a gala dinner to mark the occasion was attended by approximately 300 guests. These guests included almost all of the doctoral graduates, as well as many academic and personal friends of Professors Moan and Faltinsen.

Lawrence Doctors



Em/Prof. Odd Faltinsen
(Photo courtesy Lawrence Doctors)



Em/Prof. Torgeir Moan
(Photo courtesy Lawrence Doctors)

Australian Maritime College

AMC Students Test Design Skills on International Stage

A team of maritime engineering students overcame a series of setbacks including a fire, lost rudder and puncture-causing collision to return home triumphant with two awards from an international boat-design competition.

The Australian Maritime College Autonomous Technologies (AMCAT) team took out second place in the endurance category and won the best technology award in the lightweight boat division at the inaugural HYDROcontest in Switzerland in July.

The five-day competition, held on the banks of Lake Geneva in Lausanne, saw 120 university students in 13 teams battle it out for the title of “fastest and most energy-efficient hydrofoil boat”. The countries represented were Switzerland, France, Brazil, Colombia, Australia and the Netherlands.

AMCAT designed a radio-controlled hydrofoil catamaran which showed great promise at the start of the competition, achieving the fastest qualifying time leading in to the semi-finals of the lightweight division.

“We had the fastest time of 2 min 36 s over the 600 m course — that’s an average speed of close to 14 km/h with a maximum speed of 19.7 km/h,” team member Reuben Kent said.

The team managed to maintain a constant state of foiling for almost the whole qualifying race, but disaster struck in the semi-finals when the vessel got stuck on a buoy. This ruled

them out of the finals but left the door open for a podium finish in the endurance race.

“We caught fire, lost a rudder and were punctured in a collision, plus we were given a drained battery for our race start; however, we still somehow placed second. It was a dramatic day on the lakeside in Switzerland,” Reuben said.

“Then we received the best lightweight boat technology award, so we’ll be returning to Tasmania, proud to be engineers and thirsty for future race results. It was a great team effort and we’d like to thank everyone who helped us get to the competition, including our mentors, Ben French and Jonathan Binns, and sponsors AMC, Austal and the Royal Australian Navy.”

The seven students competing in the event were Mitch Pearson, Reuben Kent, Isak Bowden-Floyd, Curtis Armstrong, Sam Smith, Cameron Templeton and Greg Swalwell.

The aim of the HYDROcontest is to test the technologies which could be used in the boats of today and tomorrow.

“HYDROcontest is more than just a simple regatta — it is also an amazing showcase of research and innovation in maritime transport,” Hydros CEO, Jeremie Lagarrigue, said.

“Thanks to advances in energy efficiency, we can now design maritime transport differently, reducing the use of energy from fossil fuels and exploiting the potential of sustainable natural resources. HYDROcontest demonstrates how this can be done.”



The AMCAT team with their award-winning catamaran
(Photo courtesy AMC)

AMC Full Steam Ahead to Convert *Cartela*

A team of maritime engineering students is playing a key role in restoring one of Australia's most historic vessels to its former glory.

MV *Cartela* is the country's oldest continuously-licensed passenger vessel. She was 100 years old in 2012 and has been berthed at Hobart's Brooke Street Pier while her new home at Franklin wharf is being upgraded.

The vessel was given to the not-for-profit company Steamship Cartela Limited, which is coordinating her restoration as part of a bigger development to turn the Franklin Wharf into an historical vessel repair facility and tourism drawcard.

AMC Design Project Coordinator, David Harte, said that a group of naval architecture and marine and offshore engineering students were researching the plan to convert the vessel from diesel to steam power for their final-year design project.

"*Cartela* is a significant vessel in terms of Tasmanian history and she is to go back to her absolute original configuration. She had a Plenty & Co. steam engine which was upgraded in the 1950s during the age of diesel engines, but now the aim is to go back and have a fully-restored original-configuration ship," Mr Harte said.

"A project like this involves a lot of consulting with rules and regulations and seeing how a 100-year-old vessel is going to fit into the current rule cases."

In addition to the five-member design project team, another two students will undertake work experience placements with the Steamship Cartela Trust as part of AMC's Co-operative Engineering program.

These students will provide drawings, renders and animations for the restoration team which they can use to build a visual database to showcase the project and what

they are aiming to achieve to potential investors and other stakeholders.

Mr Harte said that there were a number of benefits to working on a realistic restoration project.

"We always talk about coming up with the next great thing, but restoring something like this is also a huge challenge because they have to be able to apply today's rules to an historic vessel and come up with solutions to make it work," he said.

"There's a lot of negotiating and understanding in this project for the students — and they can go down and physically see the ship — the beauty is this that is in Tasmania."



Design project team members Elliot Khoo, Jeffrey Roberts, Anish Dherai, Benjamin Ong and Jack Osborne
(Photo courtesy Chris Crerar)



An early 1950s photograph showing *Cartela* on the Derwent River
(Photo courtesy Steamship Cartela Limited)

Offshore Warehouse Concept set to Revolutionise Transshipping Industry

Research under way at the Australian Maritime College could help save billions of dollars in port infrastructure, dredging and transshipping costs.

Traditional transshipment involves an export vessel, such as a Capesize bulk carrier, mooring as close to the mining operation as its draught allows, and being loaded by smaller feeder vessels. This project looks at using a floating harbour transhipper (FHT) which acts as an 'offshore warehouse' to meet the growing demands for coastal transshipment in the mining sector and commercial port operations.

PhD candidates Nick Johnson and Lauchlan Clarke are working with industry partner Sea Transport Corporation (STC) to refine and test the FHT concept, which is the first of its kind in the world. The three-year project has received a \$420 000 Linkage grant from the Australian Research Council and STC.

"Transshipping is about transferring large volumes of cargo as quickly and cheaply as possible from remote areas with limited infrastructure in as wide a range of weather conditions as possible," Nick said.

"Traditionally, the transfer of bulk ore cargo takes place over a couple of weeks, with the feeder vessels running back and forth between a small port and the moored export vessel. The difference with what we're looking at is that the FHT will act as an offshore warehouse, allowing the feeder vessels and export vessel to work on their own continuous schedules.

"The FHT will be able to carry about 60 per cent of the capacity of a Capesize export vessel, so when the export vessel comes in and moors to the FHT, it can immediately start transferring goods. While this is happening, the feeder vessels can be discharged either to the FHT stockpile or directly to the export vessel — it reduces downtime and is a more cost-effective operation."

The FHT, estimated to be worth around \$US90 million, is approximately 315 m long and features an enclosed conveyor system to facilitate the transfer of the bulk product from the feeder vessel into its own stockpile, and from this stockpile to the export vessel. Using an enclosed conveyor system eliminates spillage and allows for dust-free transshipment, reducing impact on the surrounding environment and any nearby residential areas.

The FHT system aims to significantly reduce transshipment delays caused by inclement weather by greatly reducing the relative motions between the FHT and the feeder vessel. This is achieved by mooring the feeder vessel inside a well dock at the aft end of the FHT, rather than the side-by-side method used in traditional transshipping.

Nick is researching the operational limits of the system and quantifying the sea states in which it can operate.

"The feeder vessel is sheltered inside the FHT well dock, and my job is to calculate the sea states in which it can dock and leave the dock, and whether there are scenarios where it should stay in dock until it is safe to leave. I'm also looking at the limiting sea states to transfer goods from the FHT to the export vessel when they're moored to each other," he said.



Maritime engineering PhD candidates Lauchlan Clarke and Nick Johnson with the model of the floating harbour transhipper
(Photo by Bret Salinger, courtesy AMC)



An artist's rendering showing the transfer of iron ore from the floating harbour transhipper to the export vessel
(Image courtesy AMC)

This scenario-modelling work will be completed by computer in tandem with rigorous physical experimental testing in AMC's model test basin.

Lauchlan's area of research focuses on the water flow which is produced when the feeder vessel enters or exits the FHT well dock.

"The well dock is always open to the ocean and, when the feeder vessel enters, the majority of the water in the well dock has to be displaced. I'll be looking at innovative solutions to minimise any negative effects on the manoeuvrability of the feeder vessel, such as using vents to allow the water to escape the well dock as the feeder vessel enters," Lauchlan said.

"As soon as you've got water moving in a very enclosed area like that, the interaction between the structures is massive, and to understand something about the science of that will

be challenging. I'm using a numerical technique called smoothed-particle hydrodynamics, which is a relatively undeveloped technique that hasn't been applied to anything like this before, so it's a novel approach to a novel problem."

The project has huge potential to minimise the environmental impact of bulk product export (such as iron ore, bauxite, coal and grain) and save billions of dollars in onshore infrastructure costs thanks to offshore warehousing.

It eliminates the need for major dredging and earthworks to enable access to coastal ports, and has generated a great deal of interest among mining companies around the world.

Lauchlan and Nick join the team of AMC chief investigators Dr Jonathan Duffy, Dr Irene Penesis, Dr Shinsuke Matsubara, Prof. Neil Bose and project leader, Dr Gregor Macfarlane, who will all work closely with their collaborators at STC.

The FHT design has already won two awards, including the Lloyd's List award for innovation in 2012, and last year a paper co-authored by STC and AMC won the Australian Division of the Royal Institution of Naval Architects Walter Atkinson Award.

This paper, judged as the best in a maritime journal within Australia during 2012–13, described how the FHT concept is not only a viable solution for mining exports, but can also be adapted to provide an operationally-effective solution for military and emergency response duties.

"The FHT has raised considerable interest as a low-capital cost solution for bulk export cargoes, and 33 companies including port operators, mining companies and grain exporters are in serious dialogue with STC, with four letters of intent received to date," STC Managing Director Ross Ballantyne said.



Conducting physical tests of the FHT system in AMC's model test basin
(Photo courtesy AMC)

STEAM YACHT ENA MOVES TO MELBOURNE

The beautiful steam yacht *Ena* has recently been relocated from Sydney to Melbourne. Designed by Walter Reeks and built by Watty Ford in Berrys Bay for Thomas Dibbs, *Ena* was launched in late 1900 and began steaming on Sydney Harbour in 1901. *Ena* has a displacement of 70 t and is 35.4 m long overall with a beam of 5.05 m.

A classic Edwardian steam yacht, *Ena* was used for day trips on Sydney Harbour until World War I. She was requisitioned by the Royal Australian Navy on 13 January 1917 to become a patrol boat in Torres Strait and was renamed HMAS *Sleuth*. She later became a tender to the training ship HMAS *Tingira* in Sydney and was sold by the government in 1920. Several owners followed until she went to Tasmania to work as a trading vessel in 1933. In 1940 a new owner converted her for fishing and scallop dredging. Renamed *Aurora* she continued as a fishing vessel until she was sunk in the D'Entrecasteau Channel on 4 March 1981 after hitting a rock. She was salvaged four months later.

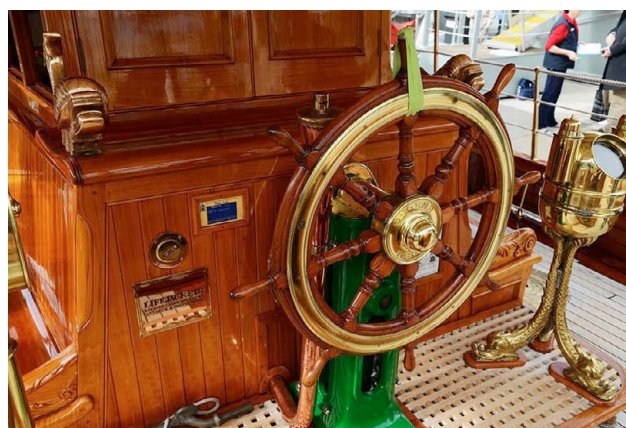
In 1982 *Ena* was rescued by a syndicate of Sydney businessmen and brought home. She was subsequently rebuilt and magnificently restored under the direction of shipwright Nick Masterman.

The restoration was completed in 1986 at a cost of over \$2 million and she was restored to near her original condition but also to meet modern survey requirements for passenger charter work in enclosed waters.

Ena circumnavigated Australia in 1986–87 for the America's Cup in Fremantle and, on return, was used as a charter vessel until 1989, when one of her owner's companies went broke. Sold by the receiver, *Ena* was only occasionally used on the harbour until she was recently bought by Warwick Turner of Melbourne. She is now safely in the southern capital offering exclusive cruises on Port Phillip Bay and the Yarra River.



The immaculate upper deck of *Ena*
(Photo John Jeremy)



Dazzling brightwork for the helmsman
(Photo John Jeremy)



Ena underway on Sydney Harbour during a farewell cruise on 31 May 2014
(Photo John Jeremy)

INDUSTRY NEWS

Saab Acquires ThyssenKrupp Marine Systems AB

On 29 June the defence and security company Saab entered into an agreement with ThyssenKrupp Industrial Solutions AG regarding the acquisition of ThyssenKrupp Marine Systems AB (TKMS AB, formerly Kockums).

This acquisition is in line with Saab's ambition to increase its capabilities in the naval domain. This move further strengthens Saab's status as a comprehensive supplier of military systems.

In April 2014, Saab and ThyssenKrupp Industrial Solutions AG signed a non-binding Memorandum of Understanding regarding the acquisition of the Swedish shipyard TKMS AB with operations based in Karlskrona, Malmö and Muskö, Sweden. The parties have now agreed that Saab will acquire TKMS AB.

TKMS AB will be integrated into Saab's business area Security and Defence Solutions.

"We are looking forward to welcoming Kockums and its personnel to Saab. This acquisition marks the start of a new era in Kockums' notable history. The knowledge that the employees possess for developing and producing submarines is unique and strengthens all of Saab," said Saab's President and CEO Håkan Buskhe.

"Integration and development efforts will now begin to ensure that operations reach their full capacity. It is important to achieve synergies with Saab's current naval business. This process must be allowed to take its course but, at the same time, we begin deliveries of development, maintenance and production work to the Swedish market," said Gunilla Fransson, Head of Business Area Security and Defence Solutions.

TKMS AB designs, builds and maintains naval systems such as submarines and surface vessels. Other products include air-independent propulsion (AIP) systems based on Stirling technology, submarine rescue vehicles and mine counter measures systems. The company has approximately 900 employees and supplies systems and products to the navies of Sweden, Australia and Singapore.

Thales Australia Acquires IMARCS

Thales has expanded its product portfolio by acquiring the Integrated Maritime Coordination and Surveillance System (IMARCS) from Austal.

IMARCS is a maritime command-and-control system which integrates Automatic Identification Systems (AIS), GPS and radar into a single picture of the operational environment. This situational-awareness picture can be shared end to end — from small boat to patrol vessel to headquarters in a single real-time network.

The acquisition also signifies a closer working relationship between Thales and Austal for the delivery of the Australian Customs Cape-class patrol boats, and subsequent synergies regarding the Royal Australian Navy's Armidale-class patrol boat fleet and their replacements.

IMARCS offers naval, coast guard, law enforcement and search-and-rescue organisations:

- real-time situational awareness;
- integration and coordination of sea, air and coastal assets;
- management of maritime jurisdictions;
- search and rescue (SAR) coordination; and
- safe and effective boarding operations.

IMARCS is currently being delivered as part of the Cape-class patrol-boat program for the Australian Customs and Border Protection Service.

Chris Lloyd, Vice President for Maritime & Aerospace Activities at Thales in Australia, said: "Thales recognises the increasing demand for maritime situational awareness across all security and military operations. The IMARCS product provides a good fit with the existing Thales portfolio of maritime mission solutions. Thales looks forward to working closely with Austal in delivering the Cape-class program and pursuing future opportunities together."

Graham Backhouse, Austal President and General Manager, said "Having successfully developed and integrated IMARCS into the early Cape-class vessels, Austal is delighted that Thales has acquired the system and will leverage its expertise to enhance this capability".

A Good Year for BMT

BMT Group Ltd (BMT), the leading international design, engineering and risk-management consultancy, has announced a solid financial performance for the year to 30 September 2013. Although market conditions have been challenging, BMT secured revenues of £163.3 million, an increase of 5% year on year, with underlying operating profits of £11.3 million, a proportion of which has been distributed to the staff through the company's profit share schemes.

David McSweeney, BMT's Finance Director explained "BMT now earns more than two-thirds of its income from non-UK customers, illustrating the truly global nature of our operations. The year has seen some of our markets, particularly in the defence and mining sectors, cool and the highly-complex, technically-demanding nature of certain projects has required additional investment. Moving forward, our order book is higher than last year's notably strong level. This suggests that recovery is continuing in most of our markets and gives us confidence that BMT can continue to prosper in the niche high-value markets in which we operate."

Comprising 25 operating companies, involved in activity across 10 markets in over 25 countries, the BMT group continues to concentrate on its core maritime-focused offering. Highlights for the year include the acquisition of Verweij & Hoebee, a leading provider of both blue-water (coastal) and brown-water (inland) hull and machinery (H&M) surveys in Europe and the opening of new offices across a number of regions.

BMT secured a number of Liquefied Natural Gas (LNG) projects, including cost and feasibility studies at sites in Pipavav Port, India, and was subsequently selected for engineering design work and an environmental impact assessment.

The strategy to 'internationalise' BMT's structural integrity monitoring business continued with further investment in Brazil, as well as increased levels of sales and contract-support resources in Europe and South East Asia. Recent acquisitions in Western Australia have also proved effective, giving BMT a strong presence from which to promote further growth in oil-and-gas-related activities, especially in the environmental-services market.

Leveraging its expertise in managing complex projects from many industry sectors to support the provision of efficient, reliable and effective services across the government sector, BMT further demonstrated its success through a number of major new framework and project wins during the year in the UK, Canada and Australia. These included the Government Crown Commercial Service's (CCS) ConsultancyONE Framework, which is becoming the de facto procurement route for the provision of business and management consultancy contracts of values between £100,000 and £2 million.

Furthermore, BMT's careful investments in the long-term success of the business are already proving valuable. Just one example is ship design, where its increased capabilities have seen the organisation, this year, complete the detailed design of the new tankers for the Royal Fleet Auxiliary and win a similar project for the Royal Norwegian Navy — both based on an innovative BMT design concept.

Peter French, BMT's Chief Executive, commented "As we grow, so too does the need to invest in expanding our capabilities across the group – from developing the project-management expertise required to deliver larger contracts to ensuring that we have the staff and offices to meet growing

global demand for our expertise. Our challenge is to maintain our commitment to innovation and research, while matching up to the requirements of running an increasingly-large business. By continuing to invest in the future, we ensure that we are well positioned to continue our growth and to further enhance the quality of delivery to our customers."

Wärtsilä Design Contract for Arctic Operations

On 7 August Wärtsilä announced that a second confirmed design contract for Wärtsilä's new series of arctic platform supply vessels had been signed. This latest order is for a multi-purpose platform supply vessel (MPSV) being built by Tersan Shipyard in Turkey on behalf of US-based Tidewater Inc., the leading provider of offshore service vessels to the global energy industry. The vessel will be operated by the Norwegian Troms Offshore Supply Group, a 100% owned subsidiary of Tidewater. There is an option for a further three similar vessels.

A key element in the award of this contract was Tidewater's requirement for a compact design but with a high deadweight giving maximum cargo capacity. Operational efficiency and reduced fuel consumption were among the other reasons why the Wärtsilä solution was selected. The vessel is designed to fit three 8-cylinder in-line Wärtsilä 26 main engines, propulsion systems, a ballast-water-management system, and inert gas generators. The vessel is scheduled for delivery in 2016.

"Once again, Wärtsilä Ship Design's deep understanding of the complexities involved in operating in the harshest climatic conditions, and its ability to produce a design which



An impression of the Norwegian Navy's replenishment ship to be built by DSME in Korea to a BMT design.
BMT will also design one of the contenders for the RAN's new replenishment ships
(Image courtesy BMT)

fully meets the customer's expectations has been rewarded with a significant order. Wärtsilä's total solution capability, combining a strong and efficient design with fuel-saving propulsion, is increasingly important in the market for ice-class vessels," said Riku-Pekka Hägg, Vice President, Ship Design, Wärtsilä Ship Power.

The Wärtsilä design means that the ship will be strengthened and equipped for arctic conditions, with the hull and propulsion in compliance with DNV ice class ICE 1A. This verifies that the vessel has sufficient strength, power, and equipment to operate in arctic areas. Furthermore, the vessel will be readied for cold-climate conditions according to the DNV DEICE class. This notation includes requirements for maintaining safety and vessel operability in ice, under icing conditions, and at low temperatures.

The vessel is also prepared for advanced subsea operations with an active heave-compensated construction crane with 150 t capacity which can be quickly and easily fitted when required. For the same reason, the vessel has a helicopter deck which would usually be needed during extensive subsea construction activities. These features make the vessel a state-of-the-art Multipurpose/Subsea/Construction PSV.

General Particulars

Length OA	89.1 m
Length BP	80.1 m
Breadth moulded	22.0 m
Depth to 1st Deck	9.0 m
Main engines	3 × Wärtsilä 26 engines, each 2720 kW
Main propulsion	2 × 3000 kW azimuthing thrusters



This new Wärtsilä Ship Design multi-purpose platform supply vessel is being built by Tersan Shipyard in Turkey on behalf of US-based Tidewater Inc.
(Image courtesy Wärtsilä)

THE AUSTRALIAN NAVAL ARCHITECT ***TRIAL OF DIGITAL EDITION***

This issue of *The ANA* is also being made available in a colour soft-copy digital edition.

Members will be advised by email of the URL through which the soft-copy can be accessed.

The email will include a survey which members are urged to return to me to enable the Australian Division Council to gauge the interest of the members in receiving the digital edition and to evaluate whether it is feasible to make future issues available in this manner.

Rob Gehling
RINA Australian Division Secretary
rina.austdiv@optusnet.com.au

MEMBERSHIP

Australian Division Council

The Council of the Australian Division of RINA met on Wednesday 19 June 2014 by teleconference based in Perth. The Division President, Jim Black, chaired the meeting. Some of the more significant matters raised or discussed during the meeting are outlined as follows:

New Council Members

This being the first Council meeting following the Division's Annual General Meeting, the President welcomed Mike Mechanicos, Kalevi Savolainen and Karl Slater as members nominated by the ACT, Victorian and WA Sections respectively. He also expressed appreciation for the contributions made to Council by the retiring members, Ian Laverock, Lance Marshall and David Sherwood.

Naval Shipbuilding

The Division had written to the Minister for Defence in February this year, expressing concern at the peaks and troughs in the manpower needs of naval shipbuilding due to the project-specific nature of the workload. This was particularly important in relation to the development and retention of technical skills for application to future projects. Since no response to this letter had been received, Council agreed that I should write again to the Minister, seeking an indication of the Government's view of the future in this area.

On a related matter, Council noted that the Senate Economics References Committee would be seeking submissions to its inquiry into the naval shipbuilding industry. Council would seek to consolidate input from members into any such submission, which would relate to the inter-relationship between our profession and all sectors of industry to which our members are related.

Survey re Possible Soft-copy Distribution of *The Australian Naval Architect*

Council considered a paper on this subject aimed at adapting to the current requirements of members and advertisers, while hopefully reducing the considerable cost of its production and distribution. As a result of these discussions, this issue of *The ANA* is offered in colour soft-copy on a trial basis to inform members on what a soft-copy would look like, and to enable them to make an informed decision as to whether they would prefer a soft copy to the present hard-copy distribution.

An important aspect of the possible changes is that the soft-copy version would be in colour, which will hopefully be more attractive to advertisers.

Members are urged to return the survey which will be emailed to them with details of how to access the soft copy, to enable Council to evaluate the feasibility of issuing future editions of this journal in soft copy and in colour. This decision will be dependent on savings being achieved by a significant proportion of members opting to receive soft-copy rather than continue with hard-copy.

PACIFIC 2015 IMC

Council considered a paper on initial preparations for this Conference, concentrating on setting-up the administrative and financial arrangements necessary for its organisation.

The Australian Naval Architect

The Walter Atkinson Award for 2014

Council noted that nominations for the Award would close within a month of the meeting and urged Sections in particular to nominate eligible papers for consideration. The Walter Atkinson Award assessment committee was re-established and requested to make a recommendation to the next Council meeting with a view to making the Award presentation before the end of the year.

Next Meeting of Council

The next meeting of the Australian Division Council will be held on Wednesday 24 September at 1400 Eastern (1200 Western) Standard Time.

Subsequent to the June meeting, the new President of RINA, Bruce Rosenblatt (our first non-UK President) has expressed his wish to visit the Division and the technical meetings of as many Sections as possible to meet members. This visit will involve expenditure of considerable time and resources by Bruce, so members are urged to give appropriate priority to making those sacrifices worthwhile. As we go to press, it looks as though the visit could be at the end of February and beginning of March 2015. If the visit eventuates, his schedule will necessarily give priority to the larger Sections and it will not be possible to visit all Sections. However, I will provide further information to Section Secretaries as more detailed arrangements are made, and would urge all members to note this period in their diaries.

Rob Gehling
Secretary

RINA Transactions

Keith Harper has a set of RINA Transactions from 1955 to 1976 which he is happy to give to anyone who will provide them with a good home. Are you interested in completing (or starting) your collection? Then email Keith directly at dolphins13@tpg.com.au.

Continuing Professional Development

Continuing Professional Development (CPD) is the systematic maintenance, improvement and broadening of knowledge, understanding and skills, and the development of the personal qualities, necessary to carry out professional and technical duties throughout a member's working life.

Continuing Professional Development will therefore enable the member to:

- Update professional competence, so that practice is fully in line with current requirements.
- Develop personal and management skills.
- Broaden experience leading to new career opportunities.

Continuing Professional Development can be achieved through a range of activities, both in and outside the workplace, which are related to members' careers as professional engineers. The types of activity which contribute towards members' Continuing Professional Development and their obligations as a member of the Royal Institution of Naval Architects are described in the RINA publication *Guidance on Continuing Professional Development* available at www.rina.org.uk/guidance_notes.html.

All Fellows, Members and Associate Members who are in or seeking active work are required to take all reasonable steps to maintain and develop their professional competence and knowledge after election. The Institution requires that members achieve a minimum of 35 hours of CPD activity per annum. However, it is expected that most members will exceed this amount.

The Institution requires that CPD activities should be authenticated either by mentors, employers or the providers of CPD. Some informal learning activities may be self-authenticated. The roles of the mentor, employer and the Institution in assisting members to achieve their CPD are described in the *Guidance* document.

The Institution places an obligation on its members to plan and record their CPD and to produce evidence of their CPD achievement. The Institution may request to see a member's CPD Plan and Record at any time, and when upgrading class of membership.

RINA Council and Committee Members

To keep members up-to-date with who is doing the hard yards on their behalf in Australia, current council, section and committee members are as follows:

Australian Division

President	Jim Black
Vice-president	Tony Armstrong
Secretary	Rob Gehling
Treasurer	Craig Boulton
Members nominated by Sections	
	Adrian Broadbent (NSW)
	Antony Krokowski (Qld)
	John Lord (ACT)
	Karl Slater (Vic)
	Alan Muir (Tas)
	Kalevi Savolainen (WA)
	Graham Watson (SA&NT)
Members elected or appointed by Council	
	Mike Mechanicos
	Tony Armstrong
	Danielle Hodge
	Craig Hughes
	Vesna Moretti
	Jon Pattie
	Mark Symes

ACT Section

Chair	Bruce McNeice
Deputy Chair	Ray Duggan
Secretary	Joe Cole
Assistant Secretary	Martin Grimm
Treasurer	Claire Johnson
Nominee to ADC	John Lord
Members	Richard Dunworth
	John Lord
	Tim Lyon
	Mike Mechanicos

NSW Section

Chair	Alan Taylor
Deputy Chair	Valerio Corniani
Secretary	Anne Simpson
Assistant Secretary	Nathan Gale

Treasurer
Nominee to ADC
Auditor
TM Coordinator
Members

Adrian Broadbent
Adrian Broadbent
Sue-Ellen Jahshan
Phil Helmore
Craig Boulton
Graham Taylor

Queensland Section

Chair	Peter Holmes
Deputy Chair	Tommy Ericson
Secretary	Mark Devereaux
Treasurer	Gillian Carter
Nominee to ADC	Antony Krokowski
Members	Doug Matchett
	James Stephen
	Jon Pattie

South Australia and Northern Territory Section

Chair	Graham Watson
Deputy Chair	Malcolm Morrison
Secretary	Danielle Hodge
Treasurer	Danielle Hodge
Nominee to ADC	Graham Watson
Members	Neil Cormack
	Peter Dandy
	Nik Parker
	Adam Podlezanski
	Jan Verdaasdonk

Tasmanian Section

Chair	Jonathan Binns
Secretary	Mark Symes
Treasurer	Jonathan Duffy
Nominee to ADC	Alan Muir
Members	Guy Anderson

Victorian Section

Chair	Andrew Mickan
Secretary	Lance Marshall
Treasurer	Trevor Dove
Nominee to ADC	Karl Slater
Members	Joseph Cook
	Siobhan Giles
	Colin Johnson
	Karl Slater

Western Australian Section

Chair	Matthew Williamson
Deputy Chair	Gerard Engel
Secretary	Malcolm Waugh
Treasurer	Troy Munro
Nominee to ADC	Kalevi Savolainen
Member	Tim Brazier
	Yuriy Drobyshevski
	Ben Fell
	Vesna Moretti
	Mike Priestly
	Kalevi Savolainen

The Australian Naval Architect

Editor-in-chief	John Jeremy
Technical Editor	Phil Helmore
Referee	Noel Riley

Safety Group

In recess

Walter Atkinson Award Committee

Chairman and three members appointed each year by the Australian Division Council

RINA London

Board of Trustees	Rob Gehling
Council Members	Jim Black (<i>ex officio</i>) Rob Gehling
Safety Committee	Rob Gehling
High-speed Vessels	Tony Armstrong

RINA/Engineers Australia Joint Board on Naval Architecture

Members	Jim Black Rob Gehling
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National Professional Engineers Register Naval Architecture Competency Panel

In recess

Pacific 2015 IMC Organising Committee

Chair	John Jeremy
Members	Adrian Broadbent Stuart Cannon Tauhid Rahman (representing IMarEST)

Changed contact Details?

Have you changed your contact details within the last three months? If so, then now would be a good time to advise RINA of the change, so that you don't miss out on any of the Head Office publications, *The Australian Naval Architect*, or Section notices.

Please advise RINA London, *and* the Australian Division, *and* your local section:

RINA London	hq@rina.org.uk
Australian Division	rina.austdiv@optusnet.com.au
Section	ACT rinaact@gmail.com NSW rinansw@gmail.com Qld m-dever@hotmail.com SA/NT danielle.hodge@defence.gov.au Tas mfsymes@amc.edu.au Vic andrew.mickan@dsto.defence.gov.au WA rina.westaus@gmail.com

Phil Helmore

Stuart Ballantyne Honoured by the University of Strathclyde

At its recent graduation ceremony in Glasgow, The University of Strathclyde recognised Stuart Ballantyne's many decades of service to the global maritime industry by awarding him an Honorary Doctorate in Science. Dr Ballantyne is the CEO of Sea Transport Corporation, based in Runaway Bay on Queensland's Gold Coast.

The University of Strathclyde awards Honorary Degrees to recognise exceptional service and contribution to academic inquiry and the advancement of learning, the University and to society, nationally and/or internationally. Honorary graduands have demonstrated an affinity with the University's purpose as a "Place of Useful Learning" with an ambition to make the world better educated, more prosperous, healthy, fair and secure. Through their life's work they are role models for students, graduands, staff and the wider community.

As a teenager, Stuart was described by his mother as "incredibly stupid", by his father as "a dreamer!" He left Scotland to go to Australia as a 14-year-old and then ran off to sea at 16 because his mother kept smacking him behind the ear for no apparent good reason, and he had to share a bedroom with two brothers, so it seemed like a good idea. He is now a ship designer, ship owner, port owner, columnist, humorist and self-confessed ship-a-holic. Stuart's group of companies employs over 55 staff, including many naval architects and engineers. They have sold their innovative designs to over 46 countries.



Stephanie Dawson, Dr Stuart Ballantyne and Prof. Dracos Vassalos at the University of Strathclyde's recent graduation ceremony
(Photo courtesy Stephanie Dawson)

Stuart first studied at the University of Strathclyde in the 1970s and returned to complete a Master of Philosophy in naval architecture in 2000. He has previously received seven international awards for services to the marine industry. His Honorary Doctorate was presented by Dracos Vassalos, Professor of Maritime Safety and Director of the Ship Stability Research Centre.

VALE COLIN ROBERT HUTCHINS

It is with sadness that *The ANA* records the passing of Colin Robert (Bob) Hutchins, a long-time member of RINA, on 11 December 2013 at the Southern Cross Residential Care Facility, North Turrumurra, Sydney, at the age of 92. Bob's career extended for a period of over 40 years with the then Department of Navy, now the Department of Defence (Navy).

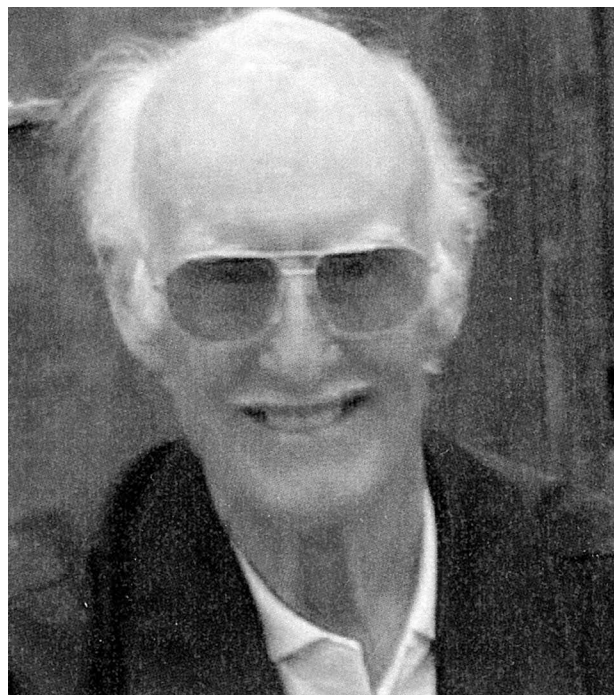
Bob was born in Perth on 2 September 1921 and then moved to Melbourne as a young child, and from there to Sydney in his early teens. Bob married his wife, Betty, in Sydney in early October 1947. The first Hutchins family home was in Double Bay, and they later moved to Lane Cove where Betty died in 1977.

Bob started his illustrious career in 1937 as an apprentice Boatbuilder and Shipwright at the then Garden Island Naval Dockyard in Sydney. On completing his apprenticeship in 1942, he was awarded the Admiral Bernard Prize for the best apprentice to complete his apprenticeship in that year. As a result of winning this prize, Bob was selected to join the Ship Drawing Office to commence his career as an assistant ship draughtsman.

While working in the drawing office, Bob studied part-time for his Leaving Certificate and, later, for his Diploma in Naval Architecture at the Sydney Technical College. These studies were successfully completed in 1951. Soon after, he was appointed as a senior draughtsman which then led to him being recognised as a naval architect in the late 1950s.

As a naval architect in the Ship Drawing Office at Garden Island, Bob was involved with many of the major ship refits and conversions undertaken by the dockyard at the time. In late 1956, Bob and his family travelled to the UK to take up a three-year posting as the Australian Naval Construction Liaison Officer with the UK Ministry of Defence (Navy) in Bath.

Upon his return to Australia in January 1960, Bob spent twelve months in Melbourne at Navy Office. After his Melbourne sojourn, he returned to Garden Island in January 1961 for a short time, and was then transferred as Superintending Naval Architect to the staff of the General Overseer and Superintendent of Inspection, East Australia Area, at Woolloomooloo.



Bob Hutchins

As a last-stop career job before retiring in 1980, Bob held various Production Superintendent positions at Garden Island. After retirement, Bob married his second wife, Jean, from Perth in 1986 and they lived in West Lake Shores, Adelaide, until Jean died in 2007. Bob continued to live in Adelaide until late 2012. Health necessitated him moving back to Sydney in late 2012 to be closer to his daughters. His health deteriorated in the last year of his life and he eventually died generally due to old age. He was a keen golfer.

Bob is survived by his two daughters, Elizabeth and Shirley, and their families.

*Brian Robson
Keith Harper*

NAVAL ARCHITECTS ON THE MOVE

The recent moves of which we are aware are as follows:

Bronwyn Adamson has moved on and has taken up the position of Chief Engineer on a 60 m motor yacht based in Nice, France, and operating in the Mediterranean and Caribbean Seas.

Roger Best moved on from INTECSEA a year ago and has taken up the position of Principal Naval Architect with Woodside Energy in Perth.

Tom Bromhead moved on from Schlumberger two years ago and took up the position of Operator with Vause in Roma, Qld. He has recently moved on within Vause, and

has taken up the position of Wireline Field Engineer in Roma.

Grant Brunson moved on from Clough Oil and Gas many moons ago and, after some time as Senior Project Engineer with Woodside Energy in Perth, has now taken up the position of Offshore Workpack Manager with Chevron in Perth.

Werner Bundschuh has moved on within the Maritime Safety Queensland branch of the Department of Transport and Main Roads and has taken up the position of Director Vehicle and Vessel Standards in Brisbane.

Li Chen, a recent graduate of the University of New South Wales, took up a position as a drafter with NID, a manufacturer of mogul and starch equipment, in Sydney, but has now moved on to form his own company, A Secret Business, which does 3D printing and website, marketing and advertising designs. He has also had the time to obtain his MED3 and Coxwain's certificates.

Yuriy Drobyshevski moved on from Icon Engineering many moons ago and has taken up the position of Technical Advisor and Lead Naval Architect at INTECSEA in Perth.

Derek Gill has completed his MBA degree and, a year ago, took up the position of General Manager AWD Operations at ASC in Adelaide.

Jordan Glanville moved on from BMT Design and Technology three years ago and, after some time with Tulow Oil in Ghana, took up the position of Project Engineer with TEK-Ocean Energy Services in Melbourne. For the past year he has also taken up the position of Subsea Engineer with Chevron, currently working on the Gorgon and Jansz field heavy-lift and tie-in work.

Glenn Green moved on from a 36-year career in the Royal Australian Navy three years ago and took up a position as a marine engineer with Trident/Shell onboard their LNG tankers. Two years ago he moved on again and took up a position with PTT Exploration and Production as an engineer onboard the FPSO *Montara Venture* in the Timor Sea. With the offshore oil-and-gas roster of about 20 weeks work a year, he now considers himself semi-retired!

Yasuhiro Hayashi, a recent graduate of the University of New South Wales, has moved on from Burness Corlett Three Quays Australia and has taken up a position as a naval architect with Japan Marine United Corporation in Hiroshima, Japan, working in the Engine-room Design Section. Friends can find out more about the company at <https://www.jmuc.co.jp/en/>.

Mike Henderson-Kelly moved on from London Offshore Consultancy many, many moons ago and, after some time at CUEL in Thailand, Icon Engineering, AMOG Consulting, Crondall Energy Consultants and SapuraClough, has now taken up the position of Engineering Manager at SapuraKencana Petroleum Berhad in Selangor, Malaysia.

Jamie Howden has moved on from the Anzac System Program Office and has taken up a position with SO3 ME Systems, contracting to the Amphibious and Afloat Support Group (AASGRP) at Garden Island in Sydney.

Chris Hughes has moved on within Lloyds' Register Asia, and has taken up a business development position in the Shanghai, PRC, office.

Sean Ilbery moved on from Lloyd's Register six years ago and has taken up the position of Yacht Manager with Ocean Independence in Lenham, Kent, United Kingdom.

Martin Jaggs moved on from the Department of Transport in Victoria two years ago and has taken up the position of Manager Maritime Incident Management with Transport Safety Victoria in Melbourne.

Zoran Jaksic has moved on from Rolls Royce Australia and has taken up the position of Project Engineer at Thales Australia at Garden Island in Sydney.

Claire Johnson has moved on within the Directorate of Naval Platform Systems of the Department of Defence, and has taken up the position of naval architect in the Hydrodynamics Technology Section in Canberra.

Simon Kelly has moved on from BAE Systems and has taken up the position of Chief Engineer Marine/Naval Architecture with Jacobs in Melbourne.

Jude Kennedy has moved on from the Defence Materiel Organisation and has taken up the position of Shipbuilder Certification manager at ASC Pty Ltd in Adelaide.

Richard Liley has moved on within Austal Ships and has taken up the position of Production Manager in Fremantle.

Brett Longmuir has moved on from Australian Maritime Technologies and has taken up the position of Senior Naval Architect at ThyssenKrupp Marine Systems Australia in Melbourne.

Shaun Phelps has moved on in the Sea Transport Solutions organisation and has taken up the position of Design Manager in Coomera, Qld.

Adam Schwetz moved on from Brisbane Shipworks many moons ago and has taken up the position of Director at Schwetz Design in Perth.

Dusko Spalj moved on from TAFENSW a year ago, and is now consulting as Adria Marine Consulting in Sydney.

Gayoung Suh has moved on from STX Offshore and Shipbuilding Co. in Seoul, Korea, and has taken up a position as a naval architect with John Butler Design in Sydney.

Piotr Sujkowski moved on from Germanischer Lloyd many moons ago and joined INTECSEA in Perth where, after several other positions, he has now taken up the position of Vice President Floating Systems.

Samantha Tait has moved on from BMT Design and Technology and has taken up the position of Naval Business Manager at Frazer-Nash Consultancy in Melbourne.

Elliot Thompson has moved on within Navy Engineering Division of the Department of Defence and is now on a six-month industry placement with DNV GL in Sydney as part of the Civilian Engineer Development Program (CEDP).

Ivy Zhang has moved on from the Australian National Maritime Museum and has taken up a position as Junior Design Engineer in the Marine Department of Premier Composite Technologies in Dubai, UAE.

This column is intended to keep everyone (and, in particular, the friends you only see occasionally) updated on where you have moved to. It consequently relies on input from everyone. Please advise the editors when you up-anchor and move on to bigger, better or brighter things, or if you know of a move anyone else has made in the last three months. It would also help if you would advise Robin Gehling when your mailing address changes to reduce the number of copies of *The Australian Naval Architect* emulating boomerangs.

Phil Helmore

FROM THE ARCHIVES



In this edition of *The ANA* we report on the recent move of the magnificent 113 year-old steam yacht *Era* from Sydney to her new home in Melbourne. This photograph shows her nearly 100 years ago (in 1917) as the patrol vessel HMAS *Sleuth*. At that time she was armed with a 3-pounder gun and had a complement of 10
(RAN Historical Collection)

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Lloyd's Register has built a reputation for providing independent assurance of safety and reliability to the world's navies. We help you ensure that hull, machinery and essential systems are designed, built, installed and maintained to meet the required safety standards through life.

**Learn more about our global network –
go to www.lr.org/naval**

Image courtesy of Navantia
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Register**

LIFE MATTERS