THE AUSTRALIAN NAVAL ARCHITECT

Volume 30 Number 2
May 2026

HMAS *Leeuwin* passes dressed ships alongside Fleet Base East at Kakadu Fleet Review
(Photo Courtesy Defence Imaging)

Foredeck view of Mogami-class frigate JS *Kumano* during Fleet Review
(Photo Courtesy Defence Imaging)

THE AUSTRALIAN NAVAL ARCHITECT

Journal of
The Royal Institution of Naval Architects
(Australian Division)
VOLUME 30 NUMBER 2
MAY 2026

Cover Photo:
Exercise Kakadu fleet sails in formation off Sydney Heads prior to Fleet Review
(Photo Courtesy Defence Imaging)

The Australian Naval Architect is published four times per year. All correspondence and advertising copy should be sent to:

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The nominal deadline for the next edition of *The Australian Naval Architect* (Vol. 30 No. 3) is Friday 17 July 2026.

The Australian Naval Architect
ISSN 1441-0125

Acting Editor in Chief: Rob Gehling AO
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Print Post Approved PP 606811/00009
Printed by Focus Print Group
Layout by Abigail Jane

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on the
World Wide Web
https://www.rina.org.uk/The-Australian-Naval-Architect-All-Issues

FROM THE DIVISION PRESIDENT

Welcoming all our Naval Architects, Maritime Engineers and eager readers of this edition of *The Australian Naval Architect* (ANA), I take this opportunity to introduce myself as the newly elected President of RINA Australian Division after Dr. Jonathan Binns decided to step down at the Division's AGM held in March after completing his first term with a commendable success. On behalf of the Division Council and Australian Division members, I thank Prof Jonathan Binns for his leadership, dedication and contribution for RINA Australian Division. The good news is that he will continue to be a part of Division Council as Immediate Past President.

Introducing myself, I commenced my career in the Merchant Navy as a seagoing Marine Engineer after graduating with a bachelor degree (BSc) in maritime studies (Ship Technology) and accomplished engineering career of 29 years since then. This spans predominantly over the commercial and defence maritime (21 years), blended with the power generation and oil & gas downstream industries. Holding three master degrees in the disciplines of professional engineering leadership, maritime engineering and petroleum technology, and being an AMSA qualified Engineer Class 1, I am a CEng, MRINA and FIEAust, CPEng in three areas of practice, namely mechanical, naval architecture and asset management. I have been proudly working for ASC Pty Ltd for almost nine years with current assignment as Senior Principal Asset Manager for Collins class submarines program.

It is a matter of great prestige for me to take control of the helm of RINA Australian Division which has been building continuously a legacy of excellence since 1954 and enjoys a special place in the RINA's global network of its branches and divisions. Being the President, I will endeavour to take our Australia Division to the next level of excellence with the support and contribution of its highly distinguished members.

RINA HQ is currently undergoing a significant transformation in terms of organisational and governance structure. This involves substantial change of leadership's direction, priorities and organisational objectives. I will endeavour to work closely with RINA HQ's leadership in an alignment with their strategic objectives and priorities in order to deliver more benefits to our members.

Being the President of RINA Australian Division, I would like to take this opportunity to share my strategic priorities which I will endeavour to work with the Division Council during my tenure in the next two years. These include:

1) Membership value – I believe that membership value is something which needs to be evolved continuously commensurate with industry trends and members' needs for their career and professional development.

2) Advocacy for the Naval Architects – I believe that Naval Architects are unsung heroes of the maritime industry who deserve recognition of their capabilities and the valuable contribution they make across every facet of the maritime industry.

In consensus with the RINA HQ and with support from the Division Council, I will endeavour to focus on initiatives which are already in place and would potentially work on some new initiatives supporting my above-mentioned strategic priorities.

Sammar Abbas

I would like to draw your attention towards a challenge which we are facing across almost all the Sections of RINA Australian Division. This is specifically the shortage of RINA members who could volunteer to fill up several vacant positions on Sections' committee. Every learned institution like ours needs volunteers to sustain and grow as they are the backbone of any institution. Volunteering offers several incentives in the professional development of our members. This includes but not limited to contribution towards CPD, leadership experience, communication and other soft skills development etc. I personally appeal to all the members of the Australian Division to consider volunteering for their sections in any capacity and contribute their part in building the excellence of their sections and eventually for our Australian Division. Furthermore, being myself a proud volunteer over the last 10 years, I believe that our volunteers need more recognition of their services. I will also endeavour to work on this area of volunteers' recognition.

From the Division Council, I would like to share with a bit of sadness that our Division's Secretary, Mr. Rob Gehling AO, has resigned from his position in May, 2026. An era of golden 17 years which Rob gave wholeheartedly to the RINA Australian Division came to an end. His unshakeable dedication and incomparable contribution is hard to describe in few words. On behalf of the Division Council and all Australian Division members, I thank him for his exceptional services and wish him all the best for his future ventures. However, the good news is that Rob will still continue his

services as the Editor-in-Chief of the ANA. I would also like to share that Mr. Stuart Cannon, one of the past Presidents of RINA Australian Division, has expressed his interest to succeed this highly critical role of the Secretary. The Division Council is considering his candidature as per the by-laws of the RINA Australian Division. Furthermore, with my recent election as the President, the position of Vice President is vacant and I seek nominations for the election to be held in the next Division Council meeting in June 2026.

I am looking forward to working with the members of RINA Australian Division at every level from Division Council through to the Sections and even at individual level if called upon.

Lastly, I thank you the members of Division Council for their trust and support in electing me as the President. I specially thank the team of editors led by Rob Gehling for their consistent efforts and dedication in producing such a prestigious publication as the ANA without any interruption and any compromise on its quality.

I wish all of you a great winter season and stay tuned for further updates in the coming editions of ANA.

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EDITORIAL

The current blockades of the Strait of Hormuz and a speech in Perth earlier this month by Rear Admiral Chris Smith, the Royal Australian Navy's Commander Australian Fleet, make it timely to bring attention to the issue of Australia's maritime resilience in both the military and civil sectors.

It is to be hoped that the Iran war and the blockades of the Straits of Hormuz are over by the time you read this, but that seems unlikely. For many of us the impact of this situation is seen in increased fuel prices and perhaps unavailability of fuel and some empty shop shelves. But the implications are much greater.

RADM Smith said that Australia needed to better understand its reliance on maritime trade and supply chains, and that greater public awareness would help drive investment in the sector. Nurturing that realisation of a maritime nation would make the country realise how dependent it was on the ocean for its supply chains. It was a mistake to assume there would be a return to stability or the status quo, and the maritime industry shouldn't plan on the basis of stability. "The era of uncontested seas is now over," he said.

We need to acknowledge that the United Nations Convention on the Law of the Sea (UNCLOS) provides that "ships of all States, whether coastal or land-locked, enjoy the right of innocent passage through the territorial sea" often referred to as within the 12 nautical mile limit. However neither Iran nor the United States have agreed to become bound by the Convention as "parties" to it, despite having agreed to its text.

Admiral Smith pointed to the various current conflicts in the world, citing that the global maritime system had developed around efficiency and just-in-time logistics, while countries including Australia, the US and the UK had reduced their merchant shipping fleets over recent decades. "We may be more dependent on the global system than at any point in our history, yet we have not fully confronted what it would take to sustain access to it during deliberate disruption" he said.

It would appear that if similar action to that taken by Iran in relation to the Strait of Hormuz were to be taken by littoral states (parties to UNCLOS) to important trading chokepoints such as Malacca Straits, Strait of Gibraltar, English Channel/North Sea, Red Sea/Gulf of Aden, Torres Strait and so on then world trade would be largely halted. Then there are the straits used for international trade that do not involve international boundaries such as the Bosphorus, Lombok Strait, Sunda Strait and Bass Strait, not to mention archipelagic states. The importance of the right of innocent passage should not be underestimated.

RADM Smith advised the conference, held by Maritime Industry Australia Limited (MIAL which was previously the Australian Shipowners Association) on "Blueprint for a Maritime Nation", that 41% of the global maritime carrying capacity is held by entities in Greece, China, and Japan. The majority of Greek and Japanese-owned shipping is foreign-flagged. Australia, by comparison, owns about 0.1% of the world's shipping fleet.

International alliances no longer provide the assurance of security, in regard to either trade or military presence, that they have in the past. In this regard RADM Smith said "Though we may not control the global system, it's important to note we are not without influence over how we access, support and sustain our place within it. There is also opportunity, as long as we recognise it early and act deliberately."

MIAL had been an active member of the Strategic Fleet Taskforce that reported to the Federal Government in 2023. In agreeing-in-principle to the Taskforce's first and fundamental recommendation, the Government acknowledged that Australian flagged vessels have higher operating costs relative to foreign flagged vessels and the cost gap is a significant reason for the decline in the number of Australian flagged vessels and that this cost gap will need to be overcome to grow the size of the Australian fleet. The response noted that Australia has a strong workplace health and safety regime, high wages, and good working conditions, factors upon which the Government will not compromise to lower the cost of Australian ships.

Given that the newbuild price of ships trading internationally is not subject to much change according to the flag state, this caveat in the Government response effectively means that the problem to be addressed in developing a

competitive Australian fleet is how to crew vessels safely but cost-competitively with crews from less-developed nations sailing under the flags of low-tax jurisdictions. So more secure and resilient shipping services for Australia appear far off, save for the introduction of special low taxation provisions for international- and inter-state Australian trading ships, together with the unlikely event of low-cost crews being provided to the owners of those ships. At present the *Shipping Registration Act 1981* requires Australian-owned ships to be registered in Australia, but perhaps there is scope for Australian-controlled ships to be registered elsewhere while being able to be called upon in times of national crisis as is presumably already the case for the Greek, Chinese and Japanese entities referred to by RADM Smith.

What does this mean for maritime engineering in Australia?

The costs of manufacturing in Australia, especially compared with established high-volume production in other countries, mean that we are unlikely to again see large merchant ships designed and built here. Similar reasoning applies to other manufacturing industries that have largely disappeared from our shores, so that rebuilding those industries will be dependent on quantifying the resulting increased costs and balancing them with a willingness to pay based on the security and resilience benefits of such Australian-based manufacturing.

These arguments also apply to Australian naval shipbuilding, in relation to which RINA has made submissions to Parliament that "there are sound reasons of national security for Australia to maintain a sustainable naval shipbuilding industry". But that is not to say the willingness of the Australian taxpayer to bear the costs of sovereign naval shipbuilding is limitless – quite the contrary as has been seen with cutting-back of the number of Hunter class frigates on order.

On the other hand, the policy of Navy acquiring only proven foreign designs has resulted in mixed outcomes, generally with extended delays and cost blow-outs to first-of-class vessels leading to reduced cost and schedule-keeping of follow-on ships. The down-side of the foreign designs is that the selected design does not necessarily fit every Australian Navy user requirement. So if the Australian naval shipbuilding industry gets its act together in terms of production and technical support it might be able to look forward to not only a strong forward work program but also the "holy grail" of tailor-making designs of future classes to fully meet Navy needs.

Before closing, we are pleased to share with you in this issue the paper by Matthew Williamson et al which was highly commended by Bob Campbell Prize judges at the Indo-Pacific IMC last year. It provides a practical contrast with the more theoretical paper by Michael Candon that won the Prize and was published in our previous issue,

Finally and on a completely different subject, we welcome Sammar Abbas as our new Division President taking over from Prof Jonathan Binns. Many of you will know that I have handed over the position of Secretary of the Australian Division to Dr Stuart Cannon, who I thank for volunteering to take over this important role. My retirement this year as Secretary was flagged several years ago. I look forward to facilitating a smooth transition to Stuart and wish him and Sammar well in leading the Division into the future. I propose to continue work on this journal for the time being while we proceed with its transition to a digital publication format.

Rob Gehling

(RADM Smith's address is reported in detail in Industry and General News – Ed.)

EDITORIAL NOTE

The news columns of this journal are mostly comprised of items replublished from news outlets with no or minimal editorial changes. The Editors therefore cannot take any responsibility for the accuracy of information provided or claims made therein.

COMING EVENTS

NSW Section

Technical presentations are generally combined with the ACT & NSW Branch of the Institute of Marine Engineering, Science and Technology and held on the first Wednesday of the month (February through October). Activities start at 18:00 for refreshments and 18:30 for the presentation, and finish by 20:00. Guests are welcome.

6 May	Rounok Saha Niloy *Multi-Concept Optimization: Challenges and Opportunities*
3 Jun	Gareth Jones, Director, Marley Flow Control *Flow Control Engineering and Maintenance Services to Defence*
1 July	TBA
5 Aug	William Jones *CCD Robotics and Automation*
2 Sep	Yi-Ting Tsou TBA
7 Oct	TBA

Qld Section

The Queensland Section is planning to conduct technical presentations in June, August, October and November (combined with End-of-Year function).

Tasmania Section

Technical Presentations. Presentations typically commence at 6:00 pm, where possible, and are scheduled on the following dates, generally aligning with the second Thursday of each month. Attendees are welcome to join in person in Hobart (Derwent Sailing Squadron) or Launceston (AMC Auditorium), or participate online via a Zoom link, which is circulated in advance of each session.

- 21 May (AGM scheduled before the presentation)
- 11 June
- 9 July
- 13 August
- 10 September
- 8 October

WA Section

WA section AGM will be held on 27 May 2026 with early planning and report preparations underway by the Committee Members. The AGM will be via MSTeams given the geographical disbursement of the WA members.

RINA Warships 2026: "Scaling the Fleet- Delivering Added Mass with Affordable Minor Warships" 30 Sep-1 Oct 26 Perth WA

Exciting news announced during Indo-Pacific 2025 was that, after the success of Warships2024 conducted in Adelaide, RINA HQ has decided to conduct their internationally recognised Warships conference in Perth, WA on 30 September - 01 October 2026 at the Optus Stadium, Burswood.

Topics will include:

- Integration of Minor Warships
- Technology to improve availability
- Autonomous Systems
- Blend of crewed/uncrewed – Optionally Crewed Systems
- Lean crewing
- Tech advancement
- More sustainable build techniques

Authors have been advised of the acceptance or otherwise of papers offered for the conference.

Indian Ocean Defence and Security Conference and Exhibition 26-28 May 2026, Perth WA

The 2026 Australian of the Year, Katherine Bennell-Pegg, is a headline speaker for the 2026 Indian Ocean Defence and Security (IODS) Conference and Exhibition to be held in Perth from 26 to 28 May. As the first professional astronaut to officially represent Australia, Ms Bennell-Pegg will deliver a conference keynote focusing on the intersection of space and defence opportunities and the future of Australia's space industry and workforce needs. Other keynote speakers for the Leadership Panel include:

- Vice Admiral Mark Hammond AO RAN - Chief of Navy
- General Sir Gwin Jenkins KCB, OBE RM - UK Chief of Naval Staff, Royal Navy
- Admiral Stephen Kohler, Commander US Pacific Forces, USN
- Vice Admiral Yasuhiro Kunimi, Vice Chief of Staff of the Japan Maritime Self-Defense Force,

The AMDA Foundation (that runs the Indo-Pacific Conference/Exhibition series) is also conducting this Indian Ocean-focused conference at the Perth Convention and Exhibition Centre 26-28 May 2026. Among a wide range of topics, it will include the following activities:

- A panel of former Australian Defence Ministers for a candid discussion of defence and strategic issues.
- Mitsubishi Heavy Industry and Mogami-class frigates update
- Strategic Shipbuilding Agreement with Austal Defence Shipbuilding Australia.
- Innovators awards and pitches
- Dedicated Careers Day program
- Trade exhibitions

WARSHIP 2026
Scaling the Fleet

Following the success of Warship 2024, with over 230 delegates, Warship 2026 is back in Australia, bringing together international experts in naval design, engineering, and innovation. The conference will focus on delivering affordable, capable minor warships and the latest technical developments shaping future fleets.

The event attracts defence professionals, industry specialists, academics, and technology experts. Delegates will hear from leading speakers, join technical discussions, and connect with fellow professionals from around the world.

Why Attend

Warship 2026 offers a unique opportunity to engage with the forefront of naval innovation:

- Discover the latest technologies and strategies for minor warships
- Join expert-led discussions on fleet development and innovation
- Connect with defence, industry, and academic leaders worldwide
- Gain insights into trends shaping the future of naval capability

Topics (including but not limited to):

- Integration of Minor Warships
- Technology to improve availability
- Autonomous Systems
- Blend of crewed/uncrewed – Optionally Crewed Systems
- Lean crewing
- Tech advancement
- More sustainable build techniques

30th Sept 2026 - 1st Oct 2026
Perth, Australia

THE ROYAL INSTITUTION OF NAVAL ARCHITECTS

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ACT Section

Containerships as Warships! - Ridiculous?

Mr. John Simmons gave a presentation to the ACT Section on 4th March entitled "Containerships as Warships? Ridiculous!". The meeting was the first one to make use of a new ACT Section venue, being the UNSW Canberra Reid campus. The meeting involved John first introducing a hypothetical scenario in which the RAN acquired a container ship that was to be designated as an Australian Defence Vessel (ADV) and used for training Navy crews in advance of delivery of the *Mogami*-class Frigates. John had made this scenario and some other pre-reading available to participants prior to the meeting to allow them to reflect on his proposal and stimulate discussion. John's concept stems back to his time with Y-ARD (Aust) when the firm was considering alternative projects in the wake of the cancellation of the RAN's proposed light destroyer (DDL), in which they were heavily involved. One project had included adapting commercial vessels to serve the Navy. John's hypothetical scenario generated great (and at times robust) discussion among attendees, and showcased the diversity of thought between attendees across both the commercial and defence sectors.

Areas of discussion included but were not limited to:

- Considerations for landing/hangaring of aircraft;
- Crew accommodation/sustainment arrangements;
- The acceptance within the RAN of the adaptation of commercial ships for naval use;
- Various aspects of survivability of naval versus commercial ships;
- Integration of weaponry, sensors, magazines and associated systems; and
- Detection by/of enemy assets (on, under and over the sea)

Cameron Whitten introduces John Simmons to the attendees at the new ACT Section venue at the Reid campus of UNSW Canberra. (Photo courtesy Martin Grimm)

The lively meeting needed to be cut short due to the requirement to vacate the venue before the Reid campus closing time, but a few attendees continued the discussion with John outside the venue afterwards. We are grateful to John for his time and enthusiasm in sharing his wealth of knowledge and experience with us.

John welcomes any further questions or critiques on his proposition and these can be directed to him through the editors of *The ANA*.

John Simmons engages with attendees during his presentation. (Photo courtesy Martin Grimm)

The Presenter, John Simmons summarised his extensive career in a series of major events that are worth repeating:

1956-62 Cockatoo Is. Dockyard marine engineering apprenticeship/tradesman during construction of HMAS *Voyager, Vampire and Parramatta,* and the refit of HM Submarine Tabard. Qualified to be a junior engineer officer of any Australian or British registered ship, and of other nations that accepted Certificates of Imperial Validity.

1962-67 Engineer officer in the Australian Merchant Navy, increased rank and qualifications. Certificates of Imperial Validity endorsed as complying with the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW) when it entered into force in 1984.

1967-71 Technical officer with the Australian Ship Building Board/Shipbuilding Division of the Australian Government Department of Transport. Completed the NSW TAFE Naval Architecture Certificate course.

1971-74 Engineer, Y-ARD (Aust.) Pty. Ltd. a subsidiary of Yarrows Shipbuilder UK. Their primary contract was the design of a destroyer for the RAN, also known as the DDL project. Member of a team of three cost estimating for that project and the AOE project. 1974-75 Technical officer Fisheries Division of the Australian Government Department of Primary Industries.

1975-97 Australian Customs Service, a variety of responsibilities, titles and commensurate ranks but always responsible for the acquisition running and maintenance of Customs vessels, the selection and training of their crews and the maintenance of crew standards.

1979 Admitted as an Associate Member of RINA

1997-2010 Marine consultant, mostly work for Australian law enforcement agencies.

Greg Swalwell and Martin Grimm

ACT Section AGM

The AGM of the section was held on-line on the evening of 21 April and followed a regular agenda of reviewing the previous AGM minutes, hearing the Chair's and Treasurer's reports before turning to electing committee members as follows:

Chair	James Loram (Cameron Whitten unavail)
Dep. Chair	David Lyons
Secretary	Greg Swalwell
Asst Secretary	Jordan Rayson
Treasurer	Lauchlan Clarke
Division Council Nominee	Xavier Ling (to replace Tamasin Welch)
Committee	Ray Duggan
	Peter Hayes
	Jeremy Nolan

A number of other business matters were briefly discussed, including proposals for future technical meetings, before Cameron closed the meeting with thanks to the outgoing, ongoing and incoming committee members.

Greg Swalwell and Martin Grimm

NSW Section

Steber 43 Hybrid Diesel Electric Workboat

Mr Alan Steber, Managing Director of Steber International based in Taree, NSW delivered a comprehensive presentation on 4 March at the Royal Sydney Yacht Squadron (and online) summarising the 70+ year history of Steber boats and their recent developments including hulls for the Blue Bottle USV and a Thales minesweeping USV. He included photos of the damage done to some of their boats by cyclones over the years as a reminder of the challenges for designers and builders. He then focused on their latest innovation, the Hybrid Diesel-Electric Workboat and their unique propulsion system.

Alan's presentation identified the hybrid propulsion arrangement with clear diagrams and photos. The 300kW propulsion electric motors are powered by batteries for the 'slow' mode or by a combination of the batteries and two 320kW diesel generators. The diesels, generators, batteries and propulsion motors are all water cooled to suit middle eastern customers. He then identified the results of comprehensive performance trials of the Steber 43 including range and speeds for each operating mode. Evaluation of the "plug-in hybrid" solution in terms of underlying benefits and limitations were discussed in detail. The sustainability and versatility of hybrid propulsion solution were highlighted and compared with other existing solutions. Alan also reinforced the benefits of their production facility located in northern regional NSW (Taree) having developed a locally-focused staff recruiting and development process.

Steber 43 Hybrid Diesel Electric Workboat
(Image courtesy of Steber International)

Trev Ruting

Industry - the "Fourth Arm of Defence"?

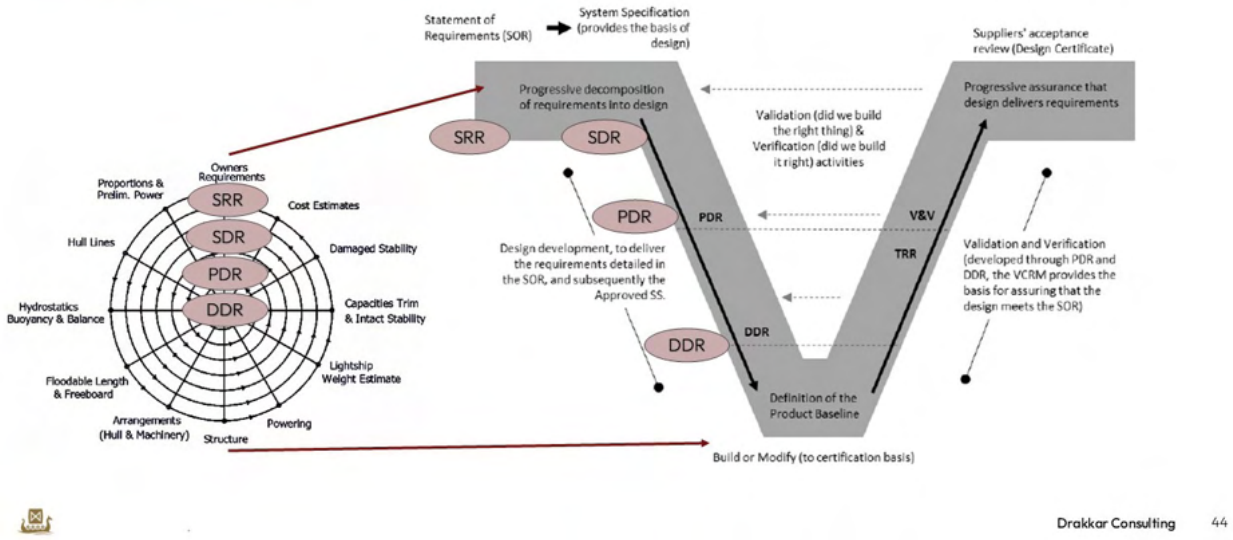
David Fogg delivered an extensive presentation on this enticing topic, on 1st April. The concept of the "Fourth Arm of Defence" considers the critical contribution the defence industrial complex makes to national security. Defence spending has been hovering near modern historical lows since the mid-1990s. In light of the risks in the current strategic environment, recent increases in defence spending may only be a start. But is our industry ready to support government outcomes at an increased level?

As we know, currently, supply of defence services is highly concentrated in a handful of "Primes", mostly subsidiary to overseas interests apart from Austal. A rise in local production output will require a much broader contribution from the commercial maritime industry, and significant growth in sovereign capability. But there are barriers, and perceived barriers, to entry into the defence market that David enunciated in a number of his many comprehensive slides, including the complexity of defence separation of 'the owner' from 'the owner's representative' during construction, in-service ILS responsibilities and the actual operators. Added to this is the complexity of acceptance of new capability including Test and Evaluation, comprehensive ILS products and services, seaworthiness, security, maintenance, certification, etc.

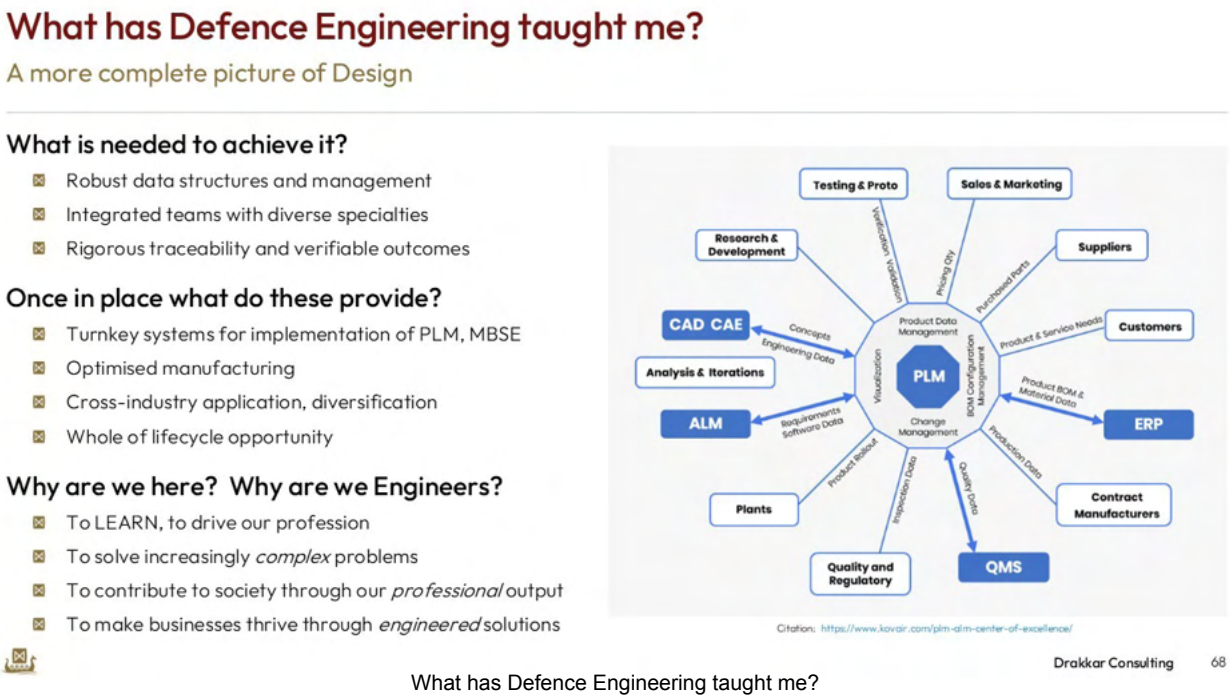
Peacetime defence procurement over the modern era has focused on developing rigorous assurance protocols, systems engineering management, system safety cases, and design for supportability considerations. Commercial organisations can see this as an "uncrossable chasm" but David supports the need for professional development of our engineers to understand the defence systems engineering and certification processes.

As system integrators, naval architects are inherently well-equipped to bridge this divide and lead an increase in industry output to meet demand, if we first understand defence outcomes and the requirements that support their achievement. It was particularly pleasing to see David's use of the traditional naval architecture design spiral that I'm sure all are familiar with, and compare it with the systems engineering "V" approach, resulting in the creation of an integrated version of the design spiral.

But after an outstanding array of some 60+ comprehensive and very educational slides, David left us with the challenges for our industry: are we prepared to meet the challenges, grasp the opportunities, and if called upon, fulfil our essential role as the fourth arm of defence?



Systems Engineering Management mapped to the Design Spiral
(Presentation slide courtesy of David Fogg, Drakkar Consulting)



What has Defence Engineering taught me?
(Presentation slide courtesy of David Fogg, Drakkar Consulting)

- How do we strategically plan for sustainable growth and evolution?
- How do we promote succession and innovation for growth in our industry?
- Are we providing an exciting career for young engineers with opportunity for ongoing R&D?
- Are we investing in Innovation? Or maximising short-term returns?

This presentation would make an excellent lecture for all 4th year naval architecture students and also all graduates joining the Department of Defence or our major defence contractors.

The presenter, David Fogg, graduated from Webb Institute in New York in 2002 with a Bachelor of Science in Naval Architecture and Marine Engineering. His early career was focused on sailing and superyachts in Australia, the US, and Europe, with notable design projects up to 85m.

In 2014, he returned to Australia to establish DBF Designs Pty Ltd and achieved accreditation as an AMSA Surveyor under the national law.

After a brief period consulting on various defence contracts, he joined a small defence contractor full-time in 2016 as their first engineering manager in Australia. In the subsequent years, he grew the team to almost 20 cross-discipline engineers, successfully tendering on and delivering numerous defence contracts in Australia and the US.

In late 2024, David left to found Drakkar Consulting Pty Ltd. The inaugural year has seen the company find a niche

David Fogg being presented with the traditional thank you gift
(Photo courtesy Ehsan Khaled)

in supporting organisations in tendering and delivering naval projects in acquisition, sustainment, and disposal.

Trev Ruting

Multi-concept optimisation: Challenges and Opportunities

Rounak Saha Niloy PhD Student AMAC Lab, UNSW, Sydney delivered a detailed presentation on multi-concept optimisation (MCO) on 6 May at the Navantia offices in Sydney. MCO is an emerging and powerful approach to design optimisation that enables engineers to concurrently identify both the most suitable design concept and its optimal variable values for specific objectives.

Unlike traditional optimisation, which focuses on refining a single concept, MCO is particularly suited to problems where concept selection is a critical part of the design process. For example, consider the optimisation of a cantilever beam with objectives to minimise weight and deflection at the free end. Instead of restricting the search to a pre-determined shape of the cross-section, one may wish to start off by considering beams with multiple different cross-sections (e.g. circular, rectangular, L-shaped, I-shaped or T-shaped cross-sections) as plausible candidate designs, each of which represents a different concept.

In the context of naval architecture and marine engineering, concept-level decisions—such as hull form type, propulsion arrangement, or structural configuration—play a decisive role in determining performance, efficiency, and life-cycle cost. For example, when designing a vessel to minimise calm-water resistance while maximising seakeeping performance, an MCO framework could simultaneously evaluate multiple hull form concepts—such as monohull, catamaran, and trimaran—alongside their geometric parameters. This approach avoids the limitation of committing to a single pre-selected concept too early in the design cycle.

In fact, some studies estimate that the decisions made during the early phases of design, including concept selection and preliminary design, impact up to 70% of the overall product life-cycle costs. While such problems are commonly encountered in practical domains, such as engineering, transportation, and product design, there has been little focus on developing computationally efficient algorithms for MCO. This is a significant barrier to the adoption of MCO in practice.

MCO has a number of advantages over traditional design approaches. First, it can lead to better design solutions by exploring a wider range of concepts and variable values. Second, it can be more efficient, as it can eliminate the need to independently and extensively iterate between different concepts. However, there are a number of challenges in developing computationally efficient algorithms for MCO. This talk discussed the challenges and opportunities in developing computationally efficient algorithms for MCO. Roanak also presented several case studies where MCO has been applied to solve real-world design problems.

Trev Ruting from presentation notice

Queensland Section

Qld AGM 26 March 2026

The Queensland Section held its AGM on 26 March 26 at which elections were held for the various positions on the Qld committee. The Committee elected for 2026 is:

Chair	Hamish Lyons
Dep. Chair	Trevor Leacy
Secretary	Trevor Leacy
Treasurer	James Stephen
Division Council Nominee	
	Nicholas Bentley
Committee	Mark Deveraux
	Tommy Ericson
	Gerard Anton
	Jalal Rafieshahraki
	Daniel King
	Tom Ryan

The AGM also identified the objective of conducting a technical presentation every second month from April, with a separate 'lead' person identified for each presentation. The aim of having a social gathering mid-year, in addition to the traditional end-of-year function was also identified. It was also decided to keep committee meetings separate to technical meetings, either 1 month before or after. The need to update the Qld Section membership list was also identified. Inputs to *The ANA* (or its successor) by the technical meeting lead were also discussed.

Trev Ruting from Qld AGM Minutes courtesy Trevor Leacy

Tasmania Section

Australian Maritime College (AMC) Careers Expo 2026

The RINA Tasmanian Section proudly participated in the AMC Careers Expo 2026, held in Launceston on 18 March 2026. The event proved to be highly successful, bringing together a wide range of industry partners and providing students with valuable insights into future career opportunities upon completing their studies at AMC.

RINA Tasmania Section presence at the expo was particularly meaningful, as it allowed us to highlight the benefits and importance of RINA membership to aspiring maritime professionals. Engaging directly with students offered an excellent platform to share knowledge, foster connections, and support their transition into the industry.

Alan Muir and Doupadi Bandara generously dedicated their time throughout the day, engaging with both students and industry representatives.

Technical Presentations

The Tasmanian Section continues to deliver a strong program of technical presentations, held alternately in Launceston and Hobart to encourage collaboration and networking between industry and academia. A summary of these recent presentations is outlined below.

Sea Archer High-Performance USV Australian Prototype: Development, Certification and Application

Levi Catton delivered a thorough presentation on the Sea Archer USV. Leidos Gibbs & Cox US team designed and built the prototype Sea Archer USV as a high-performance utility USV based on a miniaturised application of Leidos' world-leading LAVA maritime autonomy suite utilised in the USN's Ghost Fleet MUSVs. Sea Archer hull 1 was developed through 2024 and in test through 2025 operating out of Long Beach, MS.

In 2025 the Leidos AU team built a second prototype Sea Archer USV locally to progress maritime autonomy interests with Australian operators. The Leidos Gibbs & Cox AU team provides platform engineering, platform production support and physical integration services to this project. This presentation by Levi gave an overview of Sea Archer characteristics and applications, and then focussed on how the different civil and military regulatory regimes in the US and Australia have impacted on system development.

The presenter, Levi Catton, was installed as the Managing Director of Gibbs & Cox Australia in January 2020. Mr. Catton holds broad naval program experience as a professional Naval Architect, Engineering Manager and Program Director covering all phases of the naval ship capability lifecycle. He joined Gibbs & Cox Australia as a Program Director supporting the SEA5000 program in December 2018.

Previous to joining Gibbs & Cox Australia, he has held roles in engineering and acquisition management for Irving Shipbuilding on the Canadian Surface Combatant program, production engineering management for ASC Shipbuilding on the Hobart Class program, and prior roles with Thales Australia, DMO, and Navy Systems. Mr. Catton holds a Bachelor degree in Naval Architecture with Honours 1st Class from the Australian Maritime College, a Certificate in Complex Project Procurement Leadership from the University of Ottawa, and is currently studying an MBA.

The Mitigation of Pulsation in Ventilated Supercavities

This technical presentation by Dr Grant Skidmore, of DST Group, explained that when a supercavity pulsates, the walls of the supercavity begin to periodically expand and contract. This can lead to the cavity walls clipping the supercavitating body; which can be problematic for stability. The presentation discussed some of the findings related to internal cavity pressure, and near-field noise generated by experimental and computational supercavities.

The results of the acoustic study reveal that the radiated acoustic pressure of pulsating supercavities is at least 40 dB re 1 μPa greater than comparable closure regimes. For pulsating supercavities it was also found that the oscillation of the cavity walls leads to spherical spreading of the sound waves from the interface to both the near-field and far-field. As a result, the cavity interior pressure can be used as a measure of the radiated noise.

The oscillatory nature of the internal cavity pressure time history was used to develop a method to mitigate ventilated supercavity pulsation. The method was explored with a numerical model, experiments, and CFD. The method is based on modulating the ventilation rate injected into a ventilated supercavity, with the addition of a sinusoidal component.

The effect of this modulation is the ventilated supercavity being effectively driven away from the resonance frequency. A wide range of ventilation rate modulation frequencies can cause the pulsating supercavity to transition into twin vortex closure. A reduction in the radiated noise accompanies the transition from pulsation to twin vortex closure; oftentimes 35 dB re 1 μPa or more. Other modulation frequencies do not suppress pulsation, but instead shift the pulsation frequency.

The presenter, Dr Grant Skidmore, obtained his BSc in Aerospace, Aeronautical and Astronautical Engineering at Florida Tech, followed by his PhD at Penn State University where he was a graduate research assistant, concentrating on two phase flows and supercavitation. He subsequently became a post-doctoral research fellow then research assistant at the University of Melbourne before joining the DST Group as a researcher in November 2023.

Nipuna Rajapaksha and Trevor Ruting

The Value in Invaluable

Not a standard boatbuilding exercise. HEART is a sailing vessel built almost entirely from marine debris collected in Southern Tasmania — a real-world experiment in design, problem-solving, material reuse, and human determination. For naval architects, it offers a rare chance to explore what happens when conventional resources are stripped away and ingenuity takes the lead: how structure, buoyancy, function and risk are approached when the material palette is unconventional and the mission is bigger than the vessel itself. It's a story of design under constraint, waste transformed into purpose, and what becomes possible when we start seeing discarded materials differently.

This presentation was given on 21st May 2026 by Samuel McLennan, who is a Tasmanian mentor, communicator and creator with a diverse background shaped by years of global travel and lived experience. He specialises in communication, personal transformation, and helping people see new possibilities in themselves, their work, and

HEART
(Courtesy Samuel McLennan)

the world around them. Through Project Interrupt, Samuel combines environmental action with human development, inspiring people to take responsibility, create change, and live with greater purpose.

Rob Gehling from meeting notice

WA Section

RINA WA Representation at EXA & SSI

RINA had a presence at Energy Exchange Australia (EXA) and the SSI World Shipbuilding Conference. Ken Goh (WA Chair) engaged with Jim Black (Aust Div Past President) and RINA HQ on how to maximise the opportunity.

Energy Exchange Australia (EXA) is Australia's premier energy supply chain event and was held at the Perth Conference and Exhibition Centre from 10 to 12 March 2026. Formerly AOG, Energy Exchange Australia hasdecarbonisation as the core theme. Marketed this year as Exchange of Solutions - Exchange of Ideas – Exchange of Contacts the conference and exhibition was free to attend.

SSI World Shipbuilding Conference was held at the Esplanade Hotel, Fremantle, over 10 and 11 March 2026. The SSIWSC was focused on shaping the digital transformation in shipbuilding. How shipyards are building ships better and faster, how model-based sustainment may be implemented, AI process augmentation, and how to adopt innovation without risk were themes.

Large Scale Additive Manufacturing presentation

The first Technical Presentation for 2026 was given on Thursday 26 March 2026 by Michael Bakker, Managing Director of Versatile Marine & Defence. The presentation

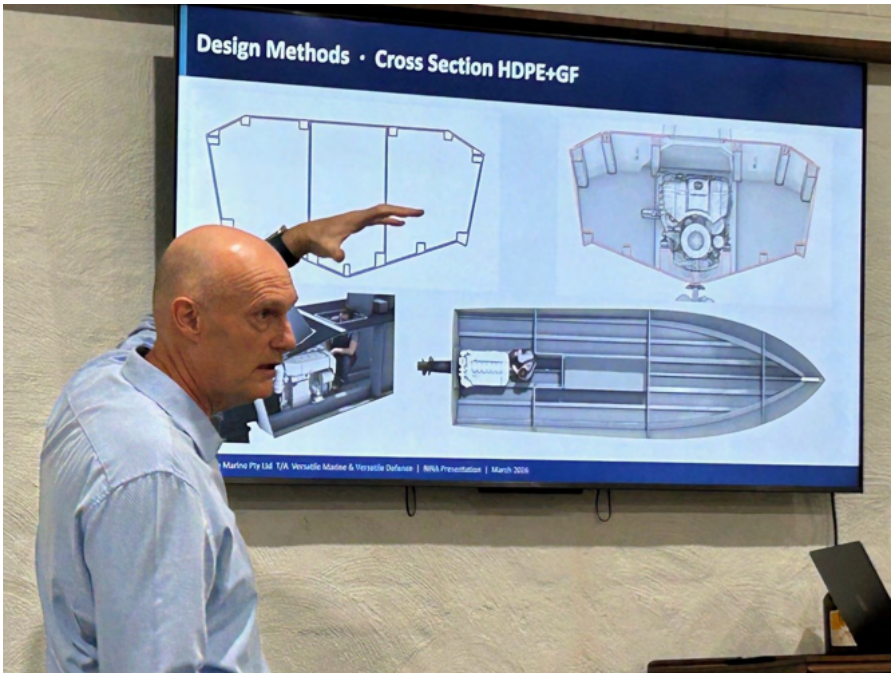
focused on Versatile's partnership with Hyperion Systems in deploying large scale additive manufacturing (LSAM) 3D printing technology for marine applications in Versatile evolving towards modern HDPE work with patrol boats. Michael fielded many questions from those in attendance and graciously offered his slides from the presentation for distribution to Members. In addition, a site visit to Versatile was offered as a follow-up.

WA Committee

Committee Meetings were held on 04 February and 04 April in the run-up to the WA Section AGM, due 27 May 2026. There is opportunity for new Committee members and support is encouraged from the WA Section. Securing a new venue, more suited to a CBD based workforce, and challenging technical presentations remain the focus for the Committee.

Yuriy Drobyshevski, a long standing Committee Member cycling in and out of many positions over past years, is stepping down at the WA Section AGM. The Chair, Committee and Members thank Yuriy for his significant contribution and wish him all the best for the future.

Mal Waugh



Michael Bakker presenting on LSAM
(Photo courtesy Mal Waugh)

Class Approved Structurally Efective Repair of Primary Hull Structure of an FPSO Using Composites

Matthew Williamson MRINA C.Eng, Hayley Johnson MEng PhD, Chris Otterbeck B.Eng, Tristan Bauer MRINA B.Eng.

1. Abstract

Composite repairs are widely used for piping and process equipment, and occasionally for temporary hull repairs. However, achieving a Class-approved, structurally effective, permanent[1] repair of primary hull structure has remained a challenge. This paper presents the first such repair implemented on an Australian FPSO. It outlines the operational context, technical approach, approval process with Class, analytical and finite element methods, material qualification, and the final installation and inspection process. The paper also highlights lessons learned and how this new development enables broader adoption of composite repairs for floating assets.

2. Introduction

Although composite technology is mature, when this repair was proposed, there were no published instances of structurally effective Class approved repairs to the primary structure of a steel hull. The reasons for the lack of implementation of composite repairs are not due to the technical capabilities of composites, but rather due to other barriers that prevent their adoption [1]. This paper seeks to address some of these barriers, mainly the lack of publicly available information on successful composite repairs and the pathway navigated to approval and implementation.

For an Australian Floating Production Storage and Offloading asset (FPSO) based on an ageing hull approaching the end of field life, the operator was interested in investigating alternatives to the traditional crop and renew “like for like” steel repairs. A composite repair would provide the operator with more flexibility to choose how to mitigate the risks of any anomalies discovered during regular inspections of the hull. As a result, Floating Solutions Consulting (FSC) in conjunction with IC Integrity (ICI) were requested to develop a composite repair with FSC focusing on the Naval Architecture and ICI the implementation.

3. Composite repair Advantages and disadvantages

Table 1 lists some advantages and disadvantages of a composite repair in this instance.

4. Details of selected anomaly to repair

The anomaly in question had the following characteristics

1. Within a Water Ballast Tank (WBT)

2. Located on the web of a longitudinal stiffener in the vicinity of midships

3. Immediately below main deck (3rd stiffener below main deck)

4. On the longitudinal bulkhead separating a Cargo Oil Tank (COT) and a WBT.

[1] In this context “permanent” means that there are no plans to replace the repair, and the inspection frequency remains the same as for the surrounding tank structure.

5. On a vessel in Class with Lloyds Register (LR).

As the anomaly did not affect a watertight boundary, the design would be purely to address structural strength concerns.

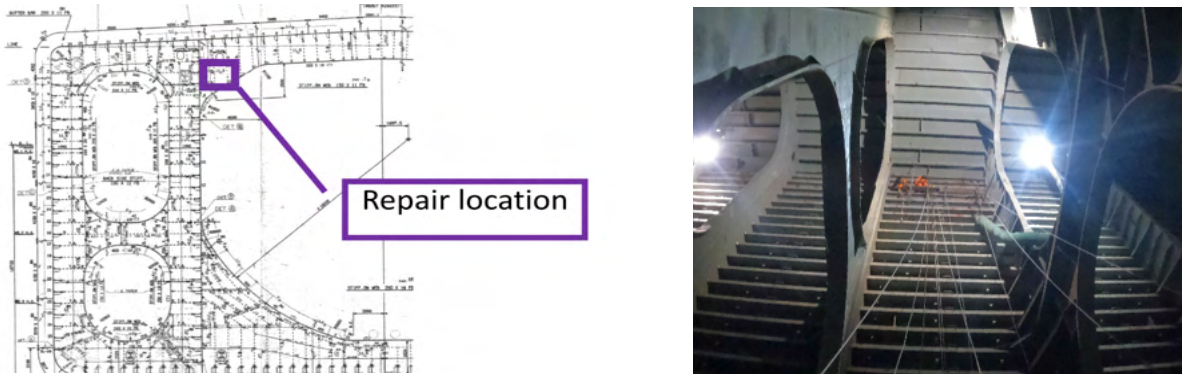


Figure 1 Midship section and the location of the repair

Advantages	Disadvantages
• The adjacent Cargo Oil Tank (COT) was able to remain operational throughout the repair process. • No hot works were required, enhancing safety—though abrasive blasting was necessary. • Watertight integrity of the boundary was not adversely affected, maintaining intact and damage stability capabilities. • The structural member is progressively strengthened during the repair, rather than being temporarily removed as is the case for steel replacement. • The repair process can be paused and resumed with minimal setbacks, offering operational flexibility. • No limitations due to reduced availability of shipbuilding-grade steel in Australia. • No impact on inspection frequency (remains that of the tank) 2.5 year tank inspection periodicity based on the vessel RBI. • Reduced manual handling issues through the avoidance of lifting of heavy steel into position • Corrosion protection of parent metal is enhanced. • Current inspection technology enables the presence of corrosion to be detected beneath the composite as well as the condition of the composite. • Weight of repair materials is significantly reduced in comparison to equivalent conventional repair methods simplifying installation.	• Stakeholders had limited prior experience with class-approved, long term, structurally effective repairs of this nature. • FPSO Class Society had not yet published specific guidelines for approving this type of repair. • Review and approval were conducted by materials specialists at Class headquarters in the UK, rather than locally in Australia. • The time required for design, review, and approval was initially undefined. • Mobilisation of subject matter experts involved long travel distances. • This was an innovative repair—first of its kind for both the FPSO and the client organisation requiring longer lead time. • The selected anomaly needed to be significant enough to warrant repair, but with low enough consequence of failure that an unsuccessful repair was not extreme

Table 1 Advantages and disadvantages of a composite repair for this FPSO

Figure 2 Anomalies as found during the original tank inspection and prior to repair

5. Design standard

In selecting the standard, it was noted that (at the time of writing) although LR had Rules and Regulations for single skin and sandwich composites for special service craft [2] and for the application of steel sandwich panels to ship structures [3] it did not have an equivalent for repairing steel with bonded composite laminates. Although the FPSO in question was in Class with LR, in this case the ABS requirements [4] were used as the basis for the submission with additional LR requirements being imposed during approval. In addition to the ABS requirements, certain elements of DNV RP C301, [5] were also incorporated for the material damage analysis in the Finite Element Analysis (FEA). This is because ABS, only considered a strength check using an allowable stress from factored material properties whereas DNV addresses the mechanisms of failure which characterise the phenomenon at the material level that then determines the mode of failure.

6. Design Documentation

Basis of Design

Prior to the analysis, a Basis of Design was developed that detailed the design intent, selected standards and method for the composite repair. This included specifying the analytical design and finite element approach for the structural analysis, as well as design input parameters such as material properties and the criteria that would be used to evaluate the designs.

Composite repair booklet

Part of the ABS requirements is to produce a composite repair booklet. This is an overarching document created to summarise the intended permanent composite repair of the stiffener. This document is used by ABS for review prior to and during

installation of the repair. The referenced documents include:

- Inspection report
- Risk assessment report
- Repair design and analysis report
- Material qualification records
- Repair installation documentation (repair specification and installation plan)
- Vessel composite repair register.

7. Analytical Calculations

Preliminary analytical calculations were carried out prior to comprehensive FEA. The composite repair analytical calculations covered a strength check of the repaired stiffener; buckling of the web; a composite-to-steel bondline (adhesive) calculation; and minimum landing requirements.

Strength check

The strength checks were based on the steel Remaining Wall Thickness (RWT) as established by the Non-Destructive Testing (NDT) measurements of the stiffener. The thinnest of averages of the measured regions was selected for the calculation.

The analytical strength calculations were aimed at reinstating the degraded steel to the equivalent strength of the as-built steel section (stiffener and effective plate of the supporting bulkhead). The stiffness was calculated for the combined steel and composite with maximum strain criteria applied.

The allowable in plane strains were derived from ISO 24817 [6]. This standard was chosen as it adopts more stringent derating factors in its allowable strain approach compared to the ABS method [4] which uses material and partial safety factors applied to the laminate failure stress. ISO 24817 was developed for pressure vessels. As such it has long-term allowable strain calculations derived for more damage prone unidirectional laminates. The standard therefore incorporates high safety factors with the purpose of limiting any damage growth. The standard also provides a simple way of calculating long-term allowable strains based on design life at the laminate level, as opposed to the ply level damage mechanics approach in DNV C501 [7] (which is more suited to FEA). Finally, ISO 24817 has been used extensively and successfully for decades by ICI and the composites industry in general. As such it is widely recognised and accepted for composite repair design.

A local buckling check was also performed for both the composite-only and for the combined steel plus composite section. The composite-only check uses specific design formulae for discrete laminated orthotropic plates or panels of composite shapes for the prediction of plate buckling strength for the length of the repair [5]. Other simplified equations based on steel design [8] were also used to check the combined steel plus composite web.

Adhesion check

To effectively transfer the load from the steel into the composite there are two main design check requirements:

- Minimum landing length, ensuring adequacy to transfer the load from the healthy steel into the composite.
- Bondline strength, which is an adhesion check to ensure the bondline can transfer the load in the landing region without failure.

The minimum landing (distance from the edge of the defect to the end of the repair) is derived from [6] and ICI plate repair design empirical equations based on the thickness of the steel substrate and the size of a through-wall defect. However, for significant loads and generally for structural repairs, additional adhesion checks are required. The capacity of the bondline to transfer the load is not only linked to the thickness of the steel and landing length available but also the thickness of the composite repair and the properties of the epoxy adhesive.

Two adhesion checks were performed. The first method assumed an average shear stress across the bondline as per Equation 21 of ISO 24817, [6]. This follows a similar approach to LR's "Rules for the Application of Sandwich Panel Construction to Ship Structure" [3].

The second method [9] considered the variation of the bondline stress which results in a more accurate result, particularly where higher loads are involved. It used fracture energy principles and calculated a detailed peeling and shear stress profile at the critical edge of the landing. This method is normally used when the in-plane loads being transferred through the bondline into the composite are very high. It is a more advanced theory based on the analysis of the thin adhesive layer at the interface between the repair and the substrate.

8. Finite Element Analysis

For this vessel there was an existing full cargo hold global FEA model that had been accepted by Class in support of the development of a Risk Based Inspection plan (RBI). From this global FEA model, a sub model of the anomaly location

within the WBT was developed using Abaqus finite element software. An adjacent frame bay exhibiting higher principal and Von-Mises stresses, with the same plate and stiffener combination, was chosen to perform the analysis. This was to ensure the proposed composite repair would be suitable for other similar anomalies within the tank, where the area for repair would see an equivalent or lower stress. The FEA methodology was based on a Class C Repair as per ABS, for critical repairs [4]. Where ABS recommendations were limited in detail, references were made to external sources including DNV-RP-C301 [5] and DNV-ST- C501 [7]. The FEA analysis was carried out to verify that the bonded composite repair design can adequately reinstate the structure to withstand any static and buckling loads for its remaining service life.

The ABS requirements for FEA [4] describe two ways of obtaining the Design Allowable Stress - by structural analysis full-scale component (panel) tests or material properties with adequate safety factors. In this case, the latter was used to obtain the allowable stresses and strains using coupon tests for the failure mechanism design criteria (see section 11 for testing details).

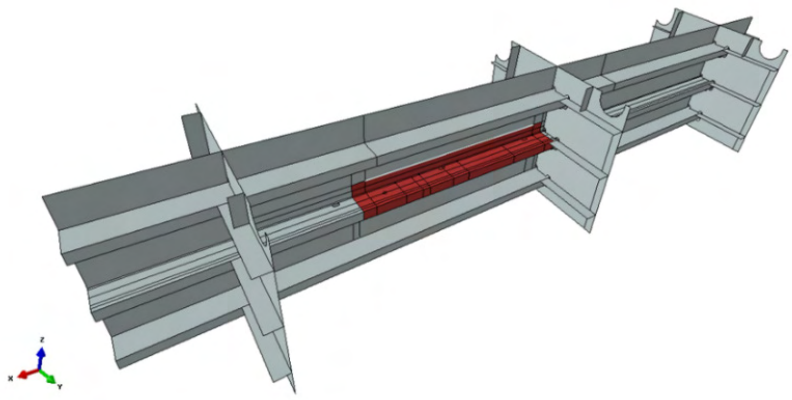


Figure 3 Composite repair modelled on the LL02 stiffener in between frames 73 and 74

The FEA sub-model imported into Abaqus was first validated for the steel-only case, then compared to the steel-with-composite repair. The model was sized to keep the repair away from boundaries while allowing fine mesh resolution in the repair zone and capturing stress changes in nearby structures. The steel, bondline and composite layup was modelled as a composite section with general purpose reduced integration shell elements. The laminate was checked for matrix cracking, delamination and full failure [7] [6]. The bondline was assessed separately using maximum strain criteria for adhesive failure and maximum transverse shear stress criteria for cohesive failure [8].

9. Repair Risk Assessment

The ABS guidelines [4] require a risk assessment for the repair. Due to the optimised way in which the structural integrity of the asset was being managed, a full Failure Mode Effects and Criticality Analysis (FMECA) [10] had already been done for all the anomalies in that compartment. Furthermore, given that the asset was subject to a Class approved RBI for the hull, this meant that a structural risk assessment acceptable to Class already existed with only minor adjustment required for the repair details.

The risk assessment for the anomaly, covered failure modes such as de-bonding, patch or substrate failure, and degradation of materials (given that the life of repair was required to be a minimum of 10 years to match the life of the asset).

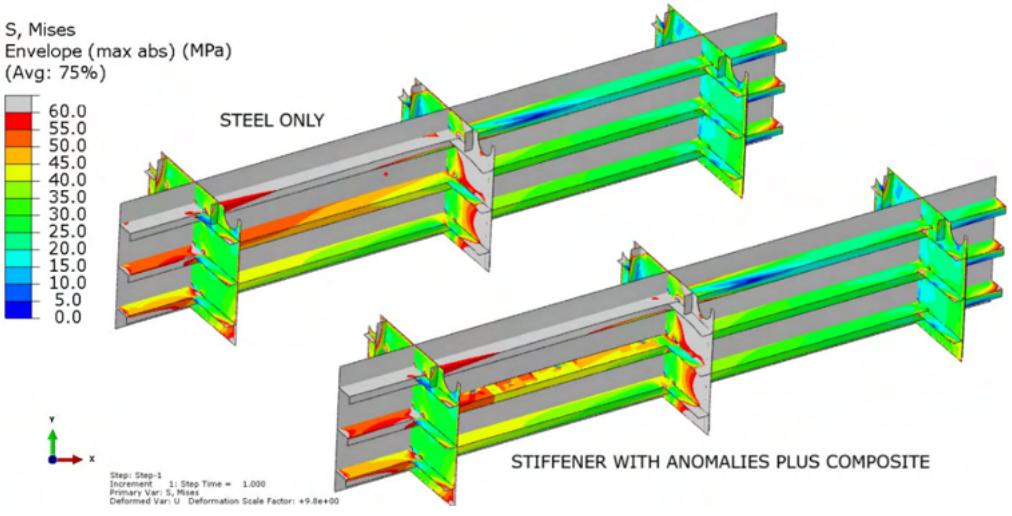


Figure 4 Steel-only model against the composite repair model

10. Design / Repair Details

The composite used for the repair is Technowrap™ SRS-HA carbon/epoxy quad-axial quasi-isotropic laminate. It was applied as a flexible fabric wet-out with an epoxy resin in an uncured state and then cured at ambient temperature with vacuum consolidation.

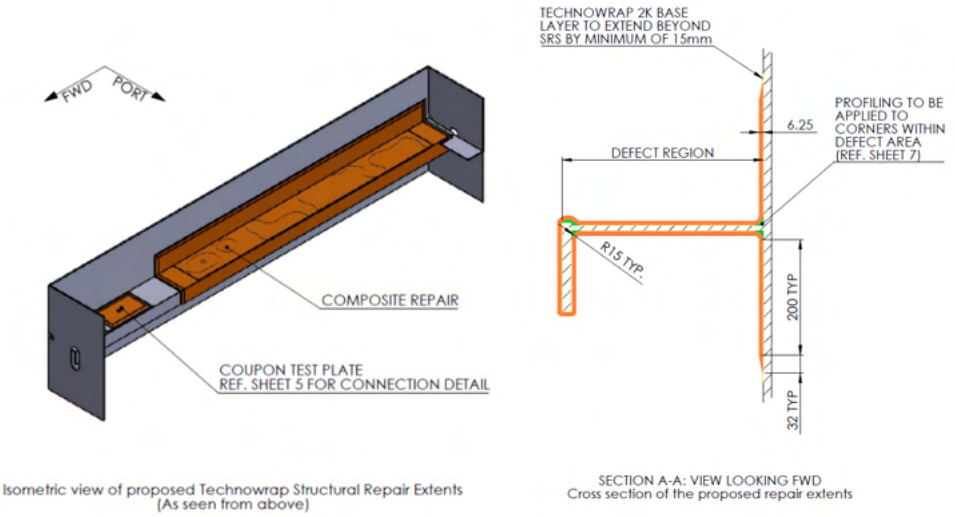


Figure 5 General arrangement and layup of repair

11. Testing

As part of the review and approval process, additional material qualification tests were required by LR. These related to validation of some design values used (the high ambient versus low ambient epoxy resin systems), and the ageing properties of the final layup.

Validation of HA epoxy design values

The Technowrap™ SRS carbon laminate is available in various epoxy resin systems, developed for a range of working temperatures. The Technowrap™ epoxy system used for the repair was the HA (High Ambient), suited to warmer climates. Tensile test data existed for the Technowrap™ SRS laminate with the 'LT' low ambient epoxy resin system (which only differs in the hardener used) but not for the HA. Although both resin systems are very similar, additional tensile testing was completed of the Technowrap™ SRS-HA to ISO 527-4 [11].

Similarly, the in-plane shear modulus and strength also had to be validated for the SRS-HA in accordance with ASTM D7078 [12].

Figure 6 Photo of Class witnessed test where the samples were tested to destruction

Quantifying ageing properties

Aged and non-aged tests were carried out for the laminate and for the laminate bonded to steel (ageing means that the samples were immersed in salt-water at a predetermined temperature over a period to reflect in-service conditions).

As part of the review and approval process, LR requested additional ageing tests, above what is specified by ABS (which is a conditioned lap-shear test for the bondline). The tests were a repeat of the tensile and in-plane shear coupon tests but using salt water pre-conditioned SRS-HA samples. The coupons edges were coated with a resin and were placed in salt-water tanks maintained at a steady 50 deg C for 1000hours prior to immediate testing [12].

A third set of tests were carried out to compare aged versus non-aged flexural properties of the composite repaired steel, as per ASTM D7264 [13]. The aged samples were prepared in the same way as the other tests. The intention is to compare the results to those from a laminated plate installed inside the 2P tank near the stiffener repair (this "traveller" plate will become available after the next tank inspection).

Pull off adhesion test

The strength of the epoxy adhesive used to bond the composite to the steel, was tested during the repair campaign in the form of dolly pull-off adhesion tests in accordance with ASTM D4541 [14]. An epoxy adhesive layer was applied to a section of the steel adjacent to the repaired stiffener, having been surface prepped in the same way as the repaired region, and allowed to cure before testing.

12. Practical Application

As the anomaly location was ~25m above the tank floor, this repair was done entirely through the use of rope access, avoiding heavy and extensive scaffolding access setups. The site works consisted of surface preparation (descaling, soluble salt removal and abrasive blasting), geometry profiling and anomaly verification before the stepped laminate wet lay-up application and consolidation.

At the same time, a number of welded repairs were being undertaken in the tank. This required managing, as the surface preparation methods for the composite repair were incompatible with welding happening simultaneously.

Solvent (water and acetone) washes were managed to prevent impacts to simultaneous welding works within the tank while ensuring acceptable soluble salt levels. Dry abrasive blasting then provided the necessary surface cleaniness and profile across the repair extents.

Wet out of the fibre laminates was completed outside of the tank then transferred directly for lay-up and consolidation under vacuum. The wet-out material flexibility easily accommodated variations in site geometries and tolerances during the layup.

The application was repeated in steps until the final repair thickness was achieved, with visual inspections and ambient condition monitoring completed before each subsequent lamination progressed. Finally, the repair perimeter was coated to avoid corrosion developing at the edge of the repair.

Given the location of the asset, temperature and humidity was at the upper end of the acceptable range and had to be closely monitored. Together with the repair size (3.6m wide and 1.5m long), application on ropes and ambient conditions of >35°C. This required application in sections to remain within resin working times.

Midway through the application of the required layers, the asset was demobilised due to inclement weather (tropical low) and subsequent maintenance shutdown. Although the repair was not complete, this did not affect the structural capability of the vessel since unlike a steel repair, installation of the composite did not compromise the "as found" structure.

The total composite repair weight was less than 80kg. Typical product supply package volumes as well as the limited weight of each respective application made material handling into the tank and at height significantly easier and removed the hazards associated with manoeuvring heavy plates at height.

Given the nature of the repair, personnel used to complete the application were experienced applicators that had been assessed by ICI's internal processes as suitably qualified and experienced. This is in addition to the ISO 24817 [6] competency requirement. These personnel had been embedded as part of the site team that had also conducted composite repairs to process pipes using the same materials (delivering economies of scale as well as simplified logistics and inventory control).

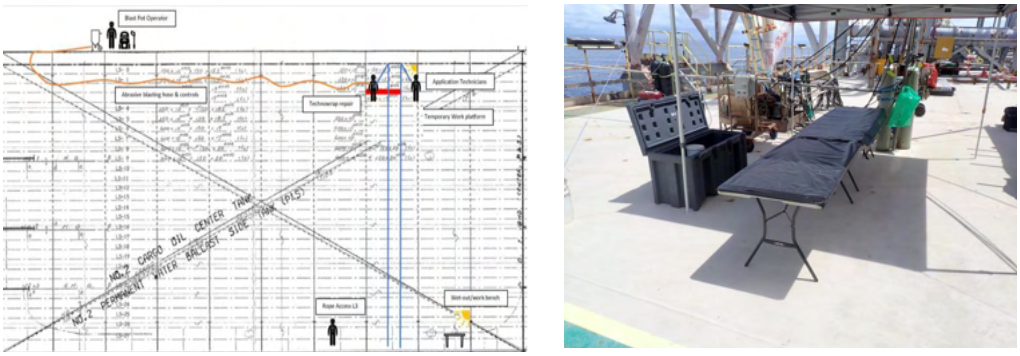


Figure 7 Locations of work front and wet out table set up on the main deck.

13. Inspections / QA

Although the design standard followed a traditional "tap test" approach for quality assurance, post-repair inspection was enhanced using ICR's INSONO™, an LR accepted NDT technique. Applied after the final composite layer, this technique enables inspection of the composite, bondline, and underlying steel allowing detection of any parent metal degradation without removing the composite.

INSONO™ also identifies application imperfections inherent in hand lay-up processes. While visual and tap tests determined fitness for service, the additional checks provided valuable quantification of these imperfections. Although not used to assess repair acceptability, this data serves as a reference for future inspections, helping distinguish between original application features and potential in-service degradation

Immediate feedback was provided following visual, tap test, and INSONO™ inspections. The inspector noted that, despite challenging installation conditions, this was among the best Technowrap™ SRS carbon laminate applications on plate steel he had seen. INSONO™ successfully detected a small number of insignificant fabrication imperfections (that had no effect on the capacity of the repair) and through-wall anomalies, including two mouseholes and known corrosion in the stiffener web.

The result confirmed that the correct surface preparation and laminate layup with a suitable level of QA can be achieved during an offshore campaign on an in-service asset.

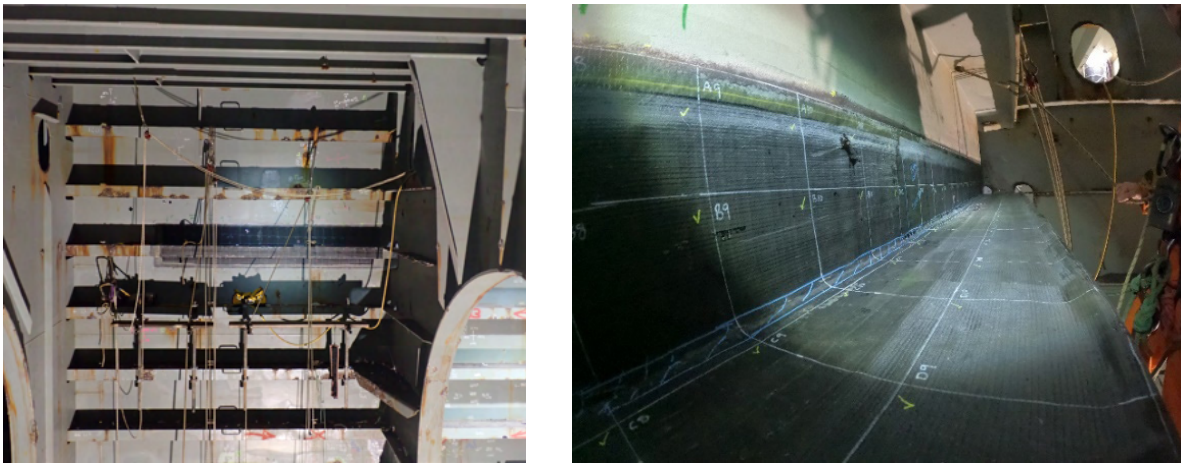


Figure 8 Repair location and final repair as left

14. Lessons Learnt Future Work

Given that in many aspects this was a first of class repair, there were several areas where lessons were learnt.

Sufficiency of analytical methods

Preliminary findings suggest that analytical hand calculations may be sufficient for similar repairs removing the need for FEA.

Ability to "stop / start"

Unlike steel repairs, composite methods do not require removing the original structure, rather they continually reinforce what is there, allowing work to pause and resume. This removes any "point of no return" an advantage during unforeseen interruptions such as cyclones.

Reduction in on-site time

The composite repair methodology demonstrated potential for reduced on-site execution time. This is attributable to factors such as prefabrication of materials, simplified installation procedures, and the elimination of hot work, which collectively streamline the repair process.

Challenges in underside lamination

Laminating against gravity is difficult and time consuming. Future designs should concentrate structural layers on the top face, with only a corrosion-resistant protective layer applied to the underside.

Ability to inspect composite repairs

Post-repair inspections successfully identified known features such as mouseholes and manufacturing imperfections, demonstrating qualitatively that composite repairs can be effectively inspected to the satisfaction of Class using current techniques.

Achievability of offshore quality assurance

The project confirmed that appropriate surface preparation and laminate layup can be achieved offshore on an in-service asset.

Importance of operator engagement

For first-of-type repairs, the involvement of an operator with the technical capability and organisational capacity to understand and support the structural requirements is critical. Their engagement ensures alignment between design intent, operational constraints, and execution feasibility.

15. Conclusions

The primary conclusion is that it is possible to deliver a Class approved, structurally effective long term repair for an in service FPSO operating in Australia without having recourse to a dry docking. As such there is no reason that this type of repair shouldn't be applied more widely to floating assets where currently only like for like steel repairs are considered.

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[16] Raymond J. Roark, Warren C. Young, Richard G. Budynas, Ali M. Sadegh, Formulas for Stress and Strain, McGraw Hill, 1965.

Revised Speed Trial Requirements for new construction ships

From 1 May 2026, revised speed trial regulations come into force. This follows the adoption by the International Maritime Organization of MEPC.403(83), published last year, which further amends the 2022 Guidelines on Survey and Certification of the Energy Efficiency Design Index (EEDI) (MEPC.365(79)).

This means, from 1 May 2026, all EEDI-relevant speed trials must be conducted according to either:

- ISO 15016:2025 – Specifications for the Assessment of Speed and Power Performance by Analysis of Speed Trial Data (Note: ISO 15016:2015 will no longer be valid). Or:
- ITTC Recommended Procedure 7.5-04-01-01.1 – Preparation, Conduct and Analysis of Speed/Power Trials, 2024 (Note: this supersedes the 2017, 2021 or 2022 versions)

The amendments to the ISO standard and ITTC procedure update the requirements in MEPC.403(83) in relation to:

- Sea conditions
- Ship speed
- Development of power curves based on the measured ship speed and the measured output of the main engines.

EEDI is required to be calculated in accordance with MARPOL Annex VI, Regulation 22 and requires a survey. The amendments to the 2022 Guidelines impact the way the initial survey or additional survey required by MARPOL Annex VI, Regulation 5 is conducted and verified.

Shipowners and shipyards need to ensure that speed trials taking place for the survey and certification of EEDI from 1 May 2026 are in accordance with the requirements of the latest ISO standard or ITTC procedure. Also take into account any additional or alternative requirements of the ship's flag Administration.

Lloyds Class News 08/26 *21 April 2026*

Fire Safety requirements for Ro-Ro Passenger Ships

The IMO has published Resolution MSC.550(108) which includes amendments to SOLAS Regulation II-2/20 (Protection of vehicle, special category and ro-ro spaces) and Resolution MSC.555(108) 'Amendments to the International Code for Fire Safety Systems (FSS Code)' which includes amendments to Chapter 7 (Fixed pressure water-spraying and water mist fire-extinguishing systems) and Chapter 9 (Fixed fire detection and fire alarm systems).

The SOLAS Regulation II-2/20 amendments may require some significant retrofit modifications for existing ro-ro passenger ships.

The amended SOLAS regulation II-2/20 requirements apply to cargo ships and ro-ro passenger ships constructed (keel laid) on or after 1 January 2026, and include

- Section 4.1 (Fixed fire detection and fire alarm systems)
- Section 4.4 (Video monitoring)
- Section 5 (Structural fire protection and arrangement of openings)
- Section 6.2 (Fixed water-based fire-extinguishing system on weather decks intended for carriage of vehicles)
- Section 7 (Decision-making)

Ro-ro passenger ships constructed (keel laid) before 1 January 2026 also need to comply with the requirements and deadlines of the following paragraphs, not later than the first survey on or after 1 January 2028.

- Paragraph 4.1.6 (Fixed fire detection and fire alarm systems): This effectively mandates installation of heat detectors additional to any existing smoke detectors in special category spaces, open and closed ro-ro and vehicle spaces. Alternatively, existing smoke detectors could be replaced with combined smoke and heat detectors.
- Paragraphs 4.4.1 and 4.4.2 (Video monitoring): an effective video monitoring and recording system shall be arranged in vehicle, special category and ro-ro spaces for continuous monitoring of these spaces.
- Paragraph 6.2.3 (Fixed water-based fire-extinguishing system on weather decks intended for carriage of vehicles): This effectively mandates installation of a fixed water-based fire-extinguishing system based on monitor(s) to protect areas on weather decks intended for the carriage of vehicles.

These new requirements, as adopted by Res. MSC. 555(108), enter into force on 1 January 2026 and apply as follows:

- The new Section 2.5 of Chapter 7 of the FSS Code (Fixed water-based fire-extinguishing system on ro-ro passenger ships' weather decks intended for the carriage of vehicles) apply to ro-ro passenger ships constructed (keel laid) on or after 1 January 2026.
- The new Sections 2.3.1.5 and 2.4.2.2 of Chapter 9 of the FSS Code (Fixed fire detection and fire alarm systems) apply to ro-ro passenger ships constructed (keel laid) on or after 1 January 2026.
- The new paragraphs 2.5.1.2, 2.5.1.3 and 2.5.1.4 of Chapter 9 of the FSS Code (Fixed fire detection and fire alarm systems) (Visual and audible fire signals) apply to ro-ro passenger ships constructed (keel laid) on or after 1 January 2026.

Lloyds Class News 07/26 *1 April 2026*

Existing LNG Infrastructure can ease transition to low-GHG methane

Demand for low greenhouse gas (GHG) methane is expected to grow in the coming decades as the expanding LNG-capable fleet faces increasingly stringent emissions requirements. But its long-term viability as marine fuel depends on regulatory clarity, closing the supply gap, and securing volumes against competing demand. With around 800 LNG-capable vessels currently in operation, 600 more on order, * existing bunkering infrastructure, decades of operational experience, and well-established international safety standards, the fleet is already technically mature.

DNV's latest white paper "Methane in Shipping: LNG-fuelled ships and the switch to low-GHG methane" finds that low-GHG methane (i.e. bio-methane and e-methane), which is chemically identical to LNG but produced with a far smaller climate footprint, can benefit from this existing infrastructure.

Low-GHG methane is fully compatible with LNG engines and tanks, making it a true drop-in fuel for LNG-capable ships. Existing LNG bunkering infrastructure is also compatible with liquefied low-GHG methane. Over the past five years, this infrastructure has seen significant improvements and now covers all major bunker hubs along key global trade routes.

Cristina Saenz de Santa Maria, Interim CEO Maritime at DNV, said:

> LNG to low-GHG methane is one viable pathway among several, and its role will vary by segment and trading pattern. As fuel standards and certification systems continue to develop across markets, owners can benefit from evaluating how different options align with their routes, exposure to regulation, and long-term fleet plans. Building flexibility into fuel strategies, supported by strong energy-efficiency measures, remains essential for managing both operational performance and regulatory costs in the years ahead.

While the technology is mature, low-GHG methane still has some hurdles to overcome. For example, the lack of a globally harmonized rule set on permitted chain of custody models, such as mass balancing or book-and-claim, creates regulatory uncertainty for ship owners and may impact access to low-GHG methane for shipping.

Fuel cost is another barrier for large scale adoption. Liquefied low-GHG methane bunker prices are currently multiple times the price of fossil LNG in major bunker hubs such as Rotterdam, with prices for liquefied bio-methane and LNG being about 1890 USD/tonne and 710 USD/tonne respectively. These figures reflect current market conditions, as ongoing geopolitical tensions have driven fossil LNG prices sharply upward in recent weeks, underscoring how dynamic these prices are and how quickly the delta between fossil and bio can shift.

Øyvind Sekkesæter, Senior Consultant at DNV and lead author of the white paper, said:

> Although low-GHG methane remains more expensive than fossil fuels, GHG related regulatory costs can significantly reduce the effective price gap. In specific cases, such as EU–EU voyages from Rotterdam, liquefied biomethane has been reported as cost competitive with fossil fuel oil once EU ETS and FuelEU Maritime mechanisms are accounted for, but this is not representative of the global picture where the overall cost remains high.

Low-GHG methane production has the potential to scale significantly, however whether shipping is able to secure this future supply at scale depends on its willingness to pay relative to competing sectors. Regulations such as the EU ETS, FuelEU Maritime, and the IMO NZF could gradually strengthen that willingness by creating a stronger incentive for low-GHG fuel uptake in shipping than in sectors with fewer policy drivers. DNV's white paper finds that compliance with the FuelEU Maritime alone could generate a demand of around 2–11 million tonnes of low-GHG methane by 2040. Meeting the initially agreed IMO NZF Base target would require significantly larger volumes, with demand potentially reaching 40–95 million tonnes by 2040, depending on emission factors and fleet composition.

DNV News *14 April 2026*

Revised version of Technical Guide to ISO 9001

Bureau Veritas advises that the Revised Technical Guide: ISO 9001:2026 is available, created to help navigate the most significant evolution of the world's leading Quality Management System standard. As organisations face new expectations around digital transformation, sustainability, ethical governance and risk-based thinking, this updated guide translates the 2026 revision into practical actions you can apply immediately.

The new edition clarifies terminology, streamlines clauses, strengthens leadership responsibilities, and reinforces quality culture across all levels of the organisation. Whether you are upgrading your existing QMS or preparing for certification, this guide gives you a clear, structured path to succeed.

- Understand all major updates introduced in ISO 9001:2026
- Translate new requirements (quality culture, ethics, sustainability, digitalisation) into actionable steps
- Identify how changes impact your processes, governance, and customer satisfaction
- Improve risk-based decision-making and operational resilience
- Prepare your teams and organisation for a smooth, efficient transition

The Technical standard may be downloaded from the Bureau Veritas Australian website.

Bureau Veritas (Aust & NZ) *14 April 2026*

Spirit of Australia 2

In the last issue, we reported the low water levels at Blowering Dam hindering trials with *Spirit of Australia 2*. At the time of preparation of this issue, the dam level remains very low at around 24% of its capacity (see: https://www.waternsw.com.au/nsw-dams/nsw-storage-levels/regional-nsw-dam-levels). With David Warby's commitment to piloting demonstration runs of *Bluebird K7* at Coniston Water in the UK during May, it is perhaps fortuitous that his regular trial venue wouldn't have been suitable for further trials anyway. The Warby team had at one time also used Talbingo Dam for testing of *Spirit of Australia 2*, however this isn't as readily accessible for spectators and their other testing venue of the Manning River wouldn't be suitable for the high-speed runs that David is now conducting.

Blue Bird K3 and Bluebird K7 UK Demonstrations

David Warby and several of the Warby Motorsport team visited the UK as David had taken up the offer to pilot Donald Campbell's *Bluebird K7* on Coniston Water during 11-17 May 2026 for the "Bluebird K7 - The Festival" event. As noted previously, the event celebrates the approaching 70th anniversary of Donald Campbell's third Water Speed Record of 225.63 mph, being his first record achieved on Coniston Water.

As part of the festivities, a series of talks had been organised at the The Coniston Institute. On the evening of 11 May 2026 Neil Sheppard and Keith Mitchell gave a talk exploring the legacy of Donald Campbell and *Bluebird K7* drawing on their book "Donald Campbell Bluebird and The Final Record Attempt" (refer to August 2025 *The ANA*). Based on rare insights and detailed research, they recounted the story behind Campbell's final world water speed record attempt on Coniston Water in 1967. The talk was in two parts, Neil speaking first followed by Keith. It was after 11pm by the time they had responded to questions and signed copies of their book for those who attended.

David Warby's demonstration runs of the restored *Bluebird K7* were hindered by weather and technical problems. Monday 11th was allocated to safety checks with an engine start around hour and a half later. By mid-afternoon a pair of familiarisation runs were undertaken at slow speed without the boat coming onto the plane. No demonstrations could be made on the Tuesday due to unfavourable weather conditions. *K7* returned to the water on Wednesday, again at low speed, however fuel control issues were encountered preventing the gas turbine from developing full power. Thunder and lightning was also encountered that day. A further run was attempted mid Thursday however problems with developing the required thrust persisted and the *K7* was returned to the workshop for further attention. The problem remained during further tests that afternoon. After further hours in the workshop on Friday morning, and the fitting of a fuel boost pump, David finally managed to get *K7* planing at around 100 mph that afternoon. Bluebird is reported to only transition to planing at around 60-70 mph. Saturday's demonstration run was again cut short due to unfavourable weather with choppy conditions. A damaged cockpit canopy latch preventing proper securing of the canopy added to the woes. For the final day of the planned demonstration runs, David-John Gibbs, as alternate pilot, would have run *K7*. However a hose related to the engine starting system became detached and this consumed time to fix. Once again, runs had to be abandoned due to increasing winds.

While receiving less media attention, Malcolm Campbell's *Blue Bird K3* was also operated during the festival, making this the first time both of the record-breaking Campbell boats have appeared together on Coniston Water.

Based on news reports from Simon Armstrong, BBC and Spirit of Australia 2 Facebook page & Ruskin Museum website

Bluebird K7 attracted a large crowd of spectators during re-launch at Coniston Water on Monday 11 May 2026
(Photo courtesy Ian Forsyth & BBC)

Bluebird K7 slowly underway at Coniston Water
(Photo courtesy Speed Record Club Facebook page)

Pilots of *Bluebird K7,* David-John Gibbs and David Warby in discussion alongside the boat at Coniston Water
(Photo courtesy BBC)

Bluebird K7 planing on Coniston Water
(Photo via Spirit of Australia 2 Facebook page)

Also demonstrated at Coniston Water during the week was Malcolm Campbell's restored propeller driven *Blue Bird K3*
(Photo courtesy Speed Record Club Facebook page)

Australian return to competing for America's Cup

On 14 May, the Royal Prince Edward Yacht Club confirmed their challenge for the Louis Vuitton 38th America's Cup, Naples, has been accepted by the Royal New Zealand Yacht Squadron.

Representing the club will be Team Australia with backing from John Winning and family. John is the founder of Appliances Online and CEO of Winning Group. This is the first time in 25 years an Australian team has launched an America's Cup bid.

The team also confirmed that Tom Slingsby, Olympic gold medallist, multiple foil-sailing champion, and two-time World Sailor of the Year, will join the team as Head of Sailing. Grant Simmer, a member of the winning 'Australia II' campaign in 1983 has been appointed as Chief Executive Officer of Team Australia while Glenn Ashby also joins the team as Head of Performance & Design.

Grant Simmer said:

> For me, this campaign is both deeply personal and incredibly exciting. I first became involved in the America's Cup in the early 1980s and was fortunate to be part of the legendary Australia II team that changed the course of the Cup forever. Since then, I've been involved in every America's Cup edition, including Australia's successful hosting of the event in Fremantle. Over the decades, Australian talent has spread across teams all over the world. Thanks to John Winning and this new challenge, we now have the opportunity to bring that talent back together to compete again for Australia. What excites me most is helping build the next generation of Australian America's Cup sailors, designers and engineers, while creating a long-term foundation for Australia in the modern era of the Cup.

Glenn Ashby added:

> For more than half my sailing career I have had a dream to see an Australian team return to the pinnacle event of our sport of sailing - The America's Cup... It is extremely humbling and a huge honour to help create and be part of a new and significant chapter in Australian sport, whilst honouring and respecting the legacy of those who have come before us. Team Australia aims to build on this legacy, combining expert Australian experience and knowledge with new talent to build into the future across multiple departments. This new team will leverage modern engineering and design tools, simulation and performance optimization to ensure we hit the ground running in Naples, Italy, early next year.

The Louis Vuitton 38th America's Cup will introduce new AC75 rules requiring at least one female sailor to be included in each race crew for the first time in the competition's history. The shift to battery-powered systems will also place greater emphasis on skill, strategy and flight control, while continuing to strengthen pathways between the Youth and Women's America's Cup programmes and senior teams.

Team Australia Sailor, Tash Bryant, said the changes represented an important moment for the future of the sport:

> This feels like an exciting new era for the America's Cup. The evolution of the boats and the competition is opening the door to broader opportunities and visibility for women in elite sailing, while also creating clearer pathways for younger generations coming through the sport. For young Australian sailors watching this campaign launch today, that representation and ambition matters greatly.

Team Australia will also accept a place on the America's Cup Partnership (ACP) board. Grant Dalton, Chairman of the ACP welcomed the team saying:

> History tells us that antipodean sailing has a habit of turning out the very best in the America's Cup, and I'm delighted both as Chairman of ACP and as CEO of Emirates Team New Zealand, to welcome Australia back to the America's Cup. We know they will be fierce competitors, and we certainly know all about the deep sailing talent in Australia.

Team Australia will compete in the America's Cup using an AC75 foiling monohull. Reports indicate the team has purchased an existing AC75 from Emirates Team New Zealand, which will be modified to satisfy the rules for the regatta in Naples in 2027.

Summarised from ABC, Sail-World and Sails magazine

Gitana 18 Maxi Edmond de Rothschild

In the previous issue, we reported on the foiling trimaran *Sodebo Ultim 3* which had set a new Jules Verne Trophy record after sailing around the world in around 40 days and 11 hours. While the application of hydrofoils to sailing craft has a long history, they had tended to remain in a niche. However over the last decade or so, the application of hydrofoils to sailing vessels has become progressively more mainstream being the norm for the moth class, America's Cup, and the international Sail GP events. Lifting foils are also featured on a range of

cruising yachts and are also making inroads in around the world sailing competitions.

The *Sodebo Ultim 3* is one of a number of high-performance yachts in the relatively newly created Ultim class (also referred to as Classe Ultime or Ultim 32/23). These are required to have an overall length between 24 to 32 m, a maximum width of 23 m and an air draught not exceeding 120% of the largest length of hull amongst other requirements. Further details are provided at: https://en.wikipedia.org/wiki/Ultim_(trimaran_sailboat_class).

A more recently built Ultim class is the *Gitana 18 Maxi Edmond de Rothschild*, once again designed to operate fully foilborne when underway. With construction having commenced in January 2024, the foiling trimaran was launched on 14 Feb 2026. This project has involved more than 50,000 hours of study and 200,000 hours of construction. The team reports that 2500 overall configurations were studied in the design process including 89 foil configurations. There have also been around 3000 hours of computer-based sailing simulations.

Launch of *Gitana 18* in February. At that point, only the pair of ama mounted rudder foil were fitted
(Image courtesy Gitana team video)

The trimaran maximises its size within the class rule being 32 metres long and 23 metres wide. The mast is 36 m tall. Displacement is reported as around 19.5 tonnes and maximum sail area is 630 square metres. *Gitana 18* is not simply a revision of her foil equipped predecessor, the Gitana 17, but a complete re-design. This time, the craft has been designed for sustained offshore foiling.

The foil system is composed of:

- centre hull canting daggerboard T-foil with a three metre span
- retractable T-foil on each ama having foil spans greater than five metres
- retractable inverted Pi-foil rudders attached to each ama as well as the transom of the centre hull.

The main foils on the amas are fixed to the deck rather than in a well inside the hulls as has had been common past practice. To retract, they fold upwards and inboard. Also instead of the more common inverted slender T-foil rudders on previous sailing hydrofoils, the team have adopted a configuration with twin struts per foil unit. This design provides considerable strut length, over four metres long, to allow the yacht to continue to fly in 3-metre waves while still providing the necessary strength and stiffness for these units to cope with

Gitana 18 illustration. Note 3 rudder foil sets (one retracted), main ama foils, canting centreline daggerboard T foil
(Image courtesy Gitana team)

the varying loads experienced in a seaway while sailing at average speeds bordering on 40 knots. It is designed to achieve speeds in excess of 45 knots.

While the project has been based in Lorient, Brittany, France, it has drawn on a global network of specialists. With a design initiated by naval architect Guillaume Verdier it has drawn on the skills of foil builders and composite experts across Europe. To share the design and building process with the public, the team has produced a series of videos covering conception, simulation, hydrodynamic testing, construction, artwork and the international collaboration involved, see: http://www.gitana-team.com/fr/. These are all in French.

The boat is equipped with around 500 sensors that transmit information to an autopilot system. The sensor inputs are around double those used on *Gitana 17*. Due to their different configurations, the accumulated data from *Gitana 17*'s years of sailing cannot be directly applied to *Gitana 18*, so months of sailing will be needed to develop and refine the settings on the new boat.

Image from animation of *Gitana 18* underway foilborne showing the windward foils retracted to minimise drag
(Image courtesy Gitana team video)

The intention is that the new trimaran will be ready to complete and defend its team title in the Route du Rhum race from Saint-Malo to Guadeloupe in November this year. However the trimaran hasn't only been designed with winning of races in mind, they are also in pursuit of records including that of sailing around the world, either solo, double-handed or with a larger crew.

Afloat magazine, Wikipedia and www.sail-world.com.

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NAVAL SHIPBUILDING/ SUSTAINMENT

2026 National Defence Strategy and Integrated Investment Program

National Defence Strategy

Today, 12 April, 2026, the Albanese Government has released the 2026 National Defence Strategy and Integrated Investment Program. Together, these documents set out the Government's plan to respond to our strategic circumstances and keep Australians safe.

In delivering the 2026 National Defence Strategy and Integrated Investment Program, the Albanese Government continues its structured approach of identifying the capabilities we need and funding them appropriately.

In recognition of our dangerous and unpredictable strategic circumstances, the 2026 Integrated Investment Program includes an additional $14 billion over the next four years, and an additional $53 billion over the decade, through defence funding, estate modernisation and alternative financing where appropriate. As a result, defence spending as a proportion of gross domestic product (GDP) will rise to 3 per cent by 2033 under the NATO approach.

The Albanese Government's record increase in defence investment coincides with major reforms, including the establishment of the Defence Delivery Agency and the Government's response to the Estate Audit, to ensure every dollar of investment is focused on value for money and greater speed to capability.

Not only are these investments acquiring and sustaining the capabilities needed to keep Australians safe, they are also supporting tens of thousands of highly skilled, well-paid Australian jobs directly and across supply chains.

2026 National Defence Strategy

The inaugural National Defence Strategy delivered in 2024 identified that Australia's strategic environment was deteriorating and that our nation faced the most challenging circumstances since the Second World War. It set out, for the first time, the concept of national efence and adopted the Strategy of Denial as the cornerstone of defence planning. The 2026 National Defence Strategy builds on these foundations by:

1. increasing efforts to develop greater self-reliance;
2. prioritising capability acquisition and sustainment plans, drawing on lessons learned from the war in Ukraine and conflicts in the middle east;
3. strengthening the resilience of Australia's sovereign defence industrial base and building stronger, more diverse international industrial partnerships;
4. improving national civil preparedness and resilience to help Australia manage and recover from regional or global disruption; and
5. increasing coordination with regional partners to strengthen and preserve the global rules-based order.

The 2026 National Defence Strategy puts Australia on a path to strengthen our self reliance; it reinforces the industrial foundations needed for national defence; and it situates Australia firmly within a network of trusted regional partnerships. Above all, it ensures Australia remains secure, sovereign and ready — not just for today's challenges, but into the future.

2026 Integrated Investment Program

The Albanese Government has allocated $425 billion over the decade to deliver accelerated capability for the integrated, focused force – to increase the ADF's self-reliance and contribute to regional deterrence.

The 2026 Integrated Investment Program prioritises investment to:

1. deliver an enhanced undersea warfare capability, supported by a sovereign fleet of conventionally-armed, nuclear-powered submarines;
2. accelerate the delivery of more lethal maritime capabilities;
3. further expand long-range strike capabilities across the integrated, focused force;
4. accelerate the introduction of integrated air and missile defence capabilities;
5. expand the adoption of autonomous and uncrewed systems across the land, air and maritime domains;
6. field counter-uncrewed air systems to protect Australian sites, events and critical infrastructure; and
7. deliver a resilient and secure multi-orbit satellite communications system.

These investments, including the additional $53 billion in new funding over the decade, will also strengthen the resilience of our sovereign defence industrial base, create and sustain Australian jobs, and build stronger, more diverse international industrial partnerships and supply chains. The 2026 Integrated Investment Program also includes targeted investments to increase preparedness and resilience to ensure the ADF is postured and prepared today to respond to unforeseen events tomorrow.

Throughout all of this, the Albanese Government continues to invest in Defence's most important capability — its people. Recruitment, retention, training and skilling are central to delivering on the concept of national defence. The 2026 National Defence Strategy and Integrated Investment Program continue the important work of growing and retaining our Defence Force.

As a defence enterprise, there is no more important or consequential task than defending Australia and protecting the security, interests and livelihoods of every Australian. The work the ADF and their enabling APS colleagues perform directly supports this mission and we thank them,

and their families for their continued commitment and service.

Copies of the 2026 National Defence Strategy and Integrated Investment Program are available online at https://www.defence.gov.au/nds.

Defence Media release *12 April 2026*

Australia locks in delivery of first three General Purpose Frigates

The Albanese Government has taken a major step towards delivering a larger and more lethal surface combatant fleet with contracts now signed for Australia's first three general purpose frigates. Built by Mitsubishi Heavy Industries (MHI), the ships will be of the upgraded Japanese *Mogami*-class frigate design, with the first scheduled to be delivered to the Royal Australian Navy in 2029.

The Albanese Government is working closely with the Japanese Government and industry with future ships to be constructed in Western Australia, subject to consolidation of the Henderson Defence Precinct, in line with the Government's commitment to continuous naval shipbuilding.

Defence is also working with Japanese industry and the Japan Maritime Self-Defense Force to develop an initial capability to sustain and operate the upgraded *Mogami*-class frigates in Australia, supported by Australian industry and workers.

The upgraded Mogami-class frigate has a range of up to 10,000 nautical miles and a 32-cell Vertical Launch System. It will be equipped with surface-to-air and anti-ship missiles, crewed by 92 Royal Australian Navy sailors and officers, and capable of operating Navy's MH-60R Seahawk maritime combat helicopter.

The decision to acquire upgraded Japanese *Mogami*-class frigates accords with the Albanese Government's commitment to more than double the size of Navy's surface combatant fleet, following the 2024 independent analysis of Navy's surface combatant fleet. In the 2026 Integrated Investment Program released this week, the Government committed to the investment of up to $20 billion over the decade into general purpose frigates.

The contract-signing was marked by the Deputy Prime Minister and his counterpart, the Japanese Minister of Defense, Koizumi Shinjirō signing the '*Mogami*

Deputy Prime Minister Marles and Japanese Minister for Defence Koizumi Shinjiro
(Photo courtesy Defence Media)

Memorandum', reaffirming the Australian and Japanese Governments' shared commitment to the successful delivery of Australia's general purpose frigates and deeper defence industry cooperation.

Royal Australian Navy personnel trained with the Japanese Maritime Self-Defense Force aboard the *Mogami*-class frigate Japan Ship *Kumano* during its transit to Australia for Exercise Kakadu, further strengthening interoperability and the longstanding defence relationship between Australia and Japan.

The next two decades will see tens of billions of dollars invested in defence capabilities in Western Australia, including the build of future upgraded *Mogami*-class frigates at the Henderson Defence Precinct, supporting around 10,000 high-skilled jobs.

The Australian Deputy Prime Minister, Richard Marles said:

> Acquiring upgraded-*Mogami*-class frigates demonstrates the Albanese Government's focus on investing in the capabilities we need to keep Australians safe. Our surface fleet is more important than at any time in decades. These general purpose frigates will help secure our maritime trade routes and northern approaches as part of a larger and more lethal surface combatant fleet.

The Minister for Defence Industry, Pat Conroy added:

> This is the fastest acquisition for the Royal Australian Navy in peacetime. We are working closely with Japanese and Australian industry partners as we acquire one of the most, if not the most, advanced general-purpose frigate in the world. We are delivering these commitments at pace, supporting and creating jobs for Australians, and deepening Australia's industrial base. The first three frigates will be built offshore in Japan. We will then transition to an onshore build in line with the Government's commitment to continuous naval shipbuilding and a future made in Australia.

Defence Media release *18 April 2026*

New senior appointments in Department of Defence and Australian Defence Force

During April, the Prime Minister has announced a number of significant appointments in the ADF and Department of Defence leadership. On 13 April he announced that the current Chief of Navy, VADM Mark Hammond AO RAN will be promoted to ADML as the Chief of Defence Force, and RADM Matt Buckley AM, CSC RAN will be promoted to VADM and take over as Chief of Navy in early July. Both officers are submariners. The Prime Minister also announced that LTGEN Susan Coyle AM, CSC DSM will become the Chief of Army in July, the first female Chief of Army.

On 28 April, the Prime Minister announced that Ms Meghan Quinn PSM will be appointed Secretary of the Department of Defence on 18 May. Ms Quinn, the first female to head the Department, has a distinguished career as a senior leader in the Australian Public Service and is currently

the Secretary of the Department of Industry, Science and Resources.

Ms Quinn has advised Government on a wide range of Australian and international policy matters. She previously held several Deputy Secretary roles at the Department of the Treasury and was head of the Secretariat for the 'Australia in the Asian Century White Paper' at the Department of the Prime Minister and Cabinet. Prior to this, Ms Quinn worked for BHP and the Bank of England.

In 2009, Ms Quinn was awarded the Public Service Medal for outstanding public service in the development of climate change policy.

Prime Minister media releases *13 & 28 April 2006*

ADV *Cape Hawke* delivered to RAN

Defence has accepted the tenth and final Evolved Cape-class patrol boat for the Royal Australian Navy, ADV *Cape Hawke*, in a ceremony at Henderson shipyard in Western Australia today.

Delivery of the tenth and final evolved Cape-class patrol boat for the Royal Australian Navy is a key example of a shared commitment between Defence and industry to delivering capability to our ADF on time and on budget in accordance with the 2024 Naval Shipbuilding and Sustainment Plan.

Built by Austal Ships Pty Ltd under project SEA1445 Phase 1, the evolved Cape-class patrol boats contribute to the whole-of Government effort to protect Australia's borders and offshore interests.

ADV *Cape Hawke* will work alongside the nine evolved Cape- class patrol boats currently operated by the Royal Australian Navy, and with the *Arafura* class offshore patrol vessel fleet, enhancing the capability for civil maritime security operations in Australia.

Under project SEA1445 Phase 1, the evolved Cape-class patrol boats have been delivered approximately every six months, contributing to Australia's ability to effectively protect our borders and offshore interests.

RAN Crew line deck of ADV *Cape Hawke* at delivery
(Photo courtesy Defence Media)

Deputy Secretary for Naval Shipbuilding and Sustainment, David Hanley said:

> The delivery of these evolved Cape-class patrol boats are an excellent example of our partnership with defence industry in action. It also supports the Government's Future Made in Australia agenda, and our commitment to growth within the defence industry, through the delivery of defence shipbuilding projects on-shore and boosting our sovereign supply chain.

Defence Media *27 February 2026*

Austal awarded contract extension for a further two Evolved Cape-class for Border Force

Austal Limited is pleased to announce that Austal Ships Pty Ltd has been awarded a contract extension for the construction of two additional evolved Cape-class patrol boats (ECCPBs) for the Australian Border Force (ABF).

This latest award, valued at approximately A$150.3 million, brings the total number of ECCPBs contracted for delivery to the ABF to six. The award follows the recent delivery of the tenth evolved Cape-class patrol boat to the Royal Australian Navy, ADV *Cape Hawke*, in March 2026.

Austal Limited Chief Executive Officer Paddy Gregg said the Evolved Cape-class patrol boat Project (SEA1445-1) is a highly successful and critical element of Australia's continuous naval shipbuilding and sustainment enterprise, delivering effective maritime capability for the nation.

Since 2020, the Commonwealth of Australia has ordered fourteen evolved Cape-class patrol boats for the Royal Australian Navy and Australian Border Force. The addition of this fifteenth and sixteenth vessels reflects continued confidence in the platform's performance, Austal's delivery capability, and the strength of Australia's sovereign shipbuilding industry.

The evolved Cape-class patrol boat design features expanded accommodation for up to 32 personnel, enhanced quality-of-life systems, and advanced sustainment technologies to maximise operational availability. The vessels are designed to support a wide range of missions, including border protection, fisheries enforcement, and national security operations.

Construction of these two new patrol boats will take place at Austal's Henderson shipyard in Western Australia, supported by a proven national supply chain and integrated project teams from the Department of Defence and the Australian Border Force.

Austal continues to provide comprehensive in-service support for both Cape-class and evolved Cape-class fleets through facilities in Henderson (WA), Cairns (QLD), and Darwin (NT).

Austal Media release *4 May 2026*

Final Guardian Class patrol boat delivered

The Republic of Maldives has taken delivery of the final Guardian-class patrol boat provided by Australia under the Defence Cooperation Program in an official handover ceremony at HMAS *Stirling*, Western Australia. This delivery builds on the long-standing relationship between Australia and Maldives, grounded in mutual trust and respect, and represents a significant milestone in our bilateral defence engagement.

As island nations, Australia and Maldives both rely on sea-lanes for security and economic prosperity. This delivery demonstrates both nations' shared commitment to enhancing maritime security across the Indian Ocean.

The new vessel will enhance Maldives' ability to conduct maritime surveillance, deter and respond to illegal activities within its vast exclusive economic zone, conduct humanitarian and disaster relief operations, and contribute to regional security and stability.

This marks the 24th and final Austal Ships Pty Ltd-built Guardian-class patrol boat delivered by Australia to a partner nation.

Crew of Maldives National Defence Force Coast Guard Patrol Boat 24 salute at handover ceremony (Photo courtesy Defence Media)

Commander Maritime Border Command, Rear Admiral Brett Sonter said:

> Australia's delivery of this Guardian-class patrol boat to Maldives is the product of close cooperation between our two nations and demonstrates the trust, respect and shared purpose that underpins our defence relationship.
>
> Australia is proud to support this important capability, and we remain committed to working alongside Maldives to uphold a peaceful, secure and resilient Indian Ocean region.

Brigadier General Mohamed Saleem, Commandant, Maldives National Defence Force Coast Guard:

> On behalf of the government, defence force and the people of Maldives, I express our deepest gratitude and appreciation to the government and the generous people of Australia for the invaluable contribution towards enhancing Maldives' maritime defence capability.

Defence Media *19 April 2026*

Contracts signed with Austal for new LCM and LCH

The Albanese Government has taken another significant step towards the Australian Army's transformation to a littoral fleet, with the signing of two key contracts for landing craft heavy and landing craft medium. Together, these contracts – signed with Defence's strategic shipbuilder Austal Defence Australia – represent a major investment in Australia's sovereign shipbuilding capability and is expected to create over 1,100 direct and more than 2,000 indirect jobs, particularly in Western Australia.

The Government is investing $4 billion into Army's future landing craft heavy littoral fleet through a new contract covering the scope, timeline and material requirements that will see eight vessels built at WA's Henderson Shipyard. These vessels, designed by Damen Naval, will be capable of transporting more than 500 tonnes of long range precision strike weapons and other units by sea, greatly enhancing the Australian Defence Force's amphibious capability and humanitarian and disaster relief.

Importantly, the contract signed today also represents a commitment by the Albanese Government to support a future made in Australia, with an overall Australian contract expenditure of over 60 per cent – supporting local and regional businesses and incentivising industry investments in workforce, supply chains and infrastructure.

The first tranche of these vessels will be constructed at the Common User Facility, before the program moves to a permanent location. As part of the Landing Craft Heavy Program, the Government will also make available an initial $30 million for the Western Australian Government to commence early works for interim replacement facilities for non-Defence industries that utilise the Henderson Common User Facility (CUF) to ensure they are afforded ongoing access to infrastructure.

The Albanese and Cook Governments are committed to minimising the impacts to non-defence industries at the CUF as work continues to deliver the Defence Precinct at Henderson, which will support 10,000 direct jobs over the next two decades.

The Government and Austal Defence Australia have also signed a $1 billion contract to design, build and deliver 18 landing craft medium vessels, further consolidating Western Australia as a national shipbuilding hub.

Together, these milestones for the landing craft heavy and landing craft medium represent the largest recapitalisation of Army's littoral capability since the Second World War. The expanded littoral fleet is central to Army's rapid transformation under the 2024 National Defence Strategy and will significantly enhance the ADF's ability to hold adversaries at risk, project and sustain capabilities and deny access to Australia's northern approaches.

Defence Media *20 February 2026*

Austal teams with Damen for LCH design

Western Australian shipbuilder Austal has signed a deal with Dutch naval shipbuilding giant Damen Shipyards Group to support the construction of a new class of landing ships for the Australian Defence Force. The agreement, signed on Friday, 20 February, will see Damen provide the design and licensing for the landing ship transport (LST) 100 vessels, which Austal will build locally at its shipyard in Henderson.

The signing ceremony took place at the Australian Marine Complex Common User Facility, with representatives from government and industry in attendance. The event highlighted the growing importance of Australia's shipbuilding sector in delivering new defence capabilities.

The partnership follows the Australian government's decision in November 2024 to select the LST 100 as the preferred design for the Army's future landing craft heavy program after a competitive tender process. The LST 100 design was selected in part because it is based on a proven platform already in service internationally. An earlier version of the vessel has been built and delivered,

helping demonstrate the design's operational reliability. The platform has also attracted international interest, including selection by the Naval Sea Systems Command for use by the United States Navy.

Under the program, eight landing craft heavy vessels will be constructed in Western Australia as part of Austal's 15-year strategic shipbuilding agreement with the Australian government. Construction is expected to begin later this year, with the ships delivered progressively over a 12-year period.

The vessels will be built using Austal's facilities at Henderson, about 23 kilometres south of Perth. The broader Australian Marine Complex is also undergoing significant upgrades to support future large-scale defence shipbuilding projects.

Each vessel will measure around 100 metres in length and 16 metres in beam and will be capable of transporting more than 500 tonnes of military vehicles and equipment.

Beyond amphibious operations, the ships are expected to support a wide range of missions, including logistics and sustainment operations, humanitarian assistance and disaster relief, and regional security deployments.

Damen regional director Oceania Rabien Bahadoer said the partnership had been built on close cooperation between the two companies:

> It has been a pleasure to work closely with Austal throughout this process. By maintaining an open, transparent and constructive partnership, we've been able to establish a strong foundation for a program that delivers lasting value for Western Australia and Australia's defence capability.

Stephen Kuper, Defence Connect *4 March 2026*

Government invest $176m in *Bluebottle* USV

The Albanese Government will strengthen Australia's maritime security with a $176 million investment to deliver 40 new Australian-designed and built *Bluebottle* uncrewed surface vessels (USV) – one of the world's largest sovereign USV fleets. Announced today, the contract with Ocius Technology expands Navy's operational fleet to 55 *Bluebottles*, significantly boosting long-range intelligence, surveillance and reconnaissance capability across Australia's vast maritime domain.

This investment will create 50 jobs at Ocius' new advanced manufacturing facility in Sydney, supported by a second production site in the NSW Hunter region and an extensive Australian supply chain. Further opportunities for small and medium Australian businesses will be generated as production scales.

The *Bluebottle*, developed in partnership with Navy and initially funded through the Defence Innovation Hub, is a long-endurance USV powered by solar, wind and wave energy. It provides persistent surface and sub-surface surveillance, can carry payloads and operates as part of a teamed, integrated maritime force. Increasing *Bluebottle* capability delivers a sovereign, persistent and scalable capability, supporting a key priority identified in the Albanese Government's National Defence Strategy.

Bluebottle USV announcement in Canberra
Chief of Navy, Ocius CEO, Minister for Defence Industry
(Photo courtesy Ocius)

Bluebottle USV at sea on trials
(Photo courtesy Ocius)

The Deputy Prime Minister, the Hon Richard Marles MP, said:

> The *Bluebottle* is an innovative platform designed, developed and manufactured right here in Australia. This is an excellent example of Defence and industry working together to deliver cutting-edge capability. The Albanese Government's investment in Ocius Technology and their *Bluebottle* USV has accelerated the delivery of the autonomous systems for Navy.
>
> Over the next five years and beyond, *Bluebottle* will monitor Australia's maritime approaches and strengthen Defence's ability to protect our national security interests.

Minister for Defence Industry, the Hon Pat Conroy MP added:

> With this investment the Albanese Government is backing Aussie ingenuity while creating highly skilled, well-paid jobs for locals. We are investing right now to uplift our sovereign defence industry.
>
> With this world-leading technology, we are able to increase surveillance of Australia's northern approaches and respond to increasing maritime threats. Accelerated development of autonomous

capabilities will be fundamental as we navigate this new era of global uncertainty.

Defence Ministers media release *11 March 2026*

Sea Archer USV Trials in Australia

Leidos Australia built one of two *Sea Archer* unmanned surface vessels (USV) that are in existence – the other was constructed in the USA – and the 11.2m-long craft is currently undergoing a series of Australian trials to demonstrate its maturity.

Kevin Quarderer, International Director Science & Technology at Leidos Australia, told Naval News in late March that the Australian vessel was undergoing harbour acceptance trials in Tasmania that month, and that no undue issues had been discovered.

Then, in May, the *Sea Archer* will undertake sea acceptance trials from Darwin in Australia's north "to be able to make that progress and keep going down this technology readiness level path to increase the maturity in the system". These sea trials will include "different sea states to wring it out," and the craft is expected to achieve TRL 6 in a mission-relative environment.

Quarderer explained the planned trajectory of the *Sea Archer*'s development in Australia:

> We really emphasise that *Sea Archer* was built in Australia by Australians for Australian missions." He continued, "The idea is to build up to a level of maturity, to understand what customer requirements are – certainly for Australia and then in the region – and then to make sure Sea Archer is ready to support those expected requirements when they come out.
>
> Things are pretty open at that point. So we're in discussions to say, if everything comes through in the harbour acceptance and sea acceptance trials, then we're operationally ready. So we're looking at what the opportunities may be for exercises, for evaluations or to do a contribution to the operational world.

Of relevance, Australia released a 2024 surface fleet review that recommended procurement of six large optionally crewed surface vessels (LOSV), each boasting 32 missile cells. Various shipbuilders are angling solutions for this Royal Australian Navy (RAN) requirement, with the Leidos *Sea Archer* being one of them. The 11.2m-long *Sea Archer* USV carries a 900kg payload and travels at speeds of 40kt. Its listed range is 1,500nm, but this can be extended 20% by using part of the payload capacity to carry extra fuel. The hull form, designed by Gibbs and Cox, has been around for 30 years so it is "well proven". Because of that, we've got high confidence that the vessel can operate nicely operating in sea states 1-4, and then it can survive and operate with reduced performance in sea states 5-6. The USV can be scaled up or down according to specific requirements.

Furthermore, Leidos Australia has carefully researched how *Sea Archers* could be manufactured locally. "In Australia we've identified about 14-16 different shipyards that we think can reproduce these at pace, if and when they're needed." That is one reason why the company chose an aluminium hull, since it enables rapid construction to occur in times of crisis.

Leidos Sea Archer USV
(Photo courtesy Leidos)

Additionally, practically the whole *Sea Archer* – apart from its autonomy package – can be built in Australia using local components. "The intent is that as we gain knowledge and we use that in Australian waters and in the Indo-Pacific, to continue to mature the autonomy package with inputs from Australia. So if you ask me about the materiel boat build, I'd say just about everything can be built in Australia, and that's the intent."

Australia is obviously not the only potential customer, for Leidos is talking to other potential Indo-Pacific customers too. He also said Leidos would entertain the idea of Australia being a manufacturing hub for regional customers.

He said almost everyone is open-minded to adopting uncrewed surface vessels, but navies have different risk appetites as they contemplate hybrid manned-unmanned fleets.

> In the Indo-Pacific, I'd say some of those requirements are starting to evolve and so, as we're doing *Sea Archer* on our own here in Australia, we're looking at what we think those requirements are and trying to anticipate them in advance of their release.

The *Sea Archer* is also expeditionary in nature. They fit inside 40-foot containers, enabling easy transport. They could also be loaded onto C-17 cargo aircraft or towed to boat ramps on a trailer. This means they could be rapidly moved around Australia or farther afield. Alternatively, quantities of USVs can be prepositioned.

Quarderer, a former US naval attaché in Australia, stressed Leidos' expertise in autonomy. The company has worked with the US Navy (USN) for more than 50 years. Its portfolio includes USVs like the *Sea Hunter* and *Sea Ranger*, as well as the *Sea Dart* unmanned underwater vehicle.

In fact, moving beyond the realm of experimentation, a USN carrier strike group will deploy with two medium-sized USVs later this year. The navy confirmed that a *Sea Hunter* and *Seahawk* USV, both Leidos platforms, would be under fleet control for a deployment.

Gordon Arthur, Naval News (edited) *9 April 2026*

Christening and commissioning ceremony of the Speartooth large UUV slated for the US military, May 1, 2026
(Photo courtesy C2 Robotics)

***Speartooth* – Battery-powered long-range UUV for defence applications**

Melbourne, Australia-based unmanned systems manufacturer C2 Robotics has commissioned and christened a new large unmanned undersea vehicle (UUV) slated for the US military. C2 said the *Speartooth* large UUV has been designed to deliver scalable, cost-effective undersea capability across intelligence, surveillance, reconnaissance (ISR) and strike missions. The UUV was originally unveiled in 2022 as the result of a collaboration between C2 and the Royal Australian Navy (RAN).

The craft's smaller size and lower unit cost will enable it to be deployed rapidly and operate in contested environments and generate force mass not possible with traditional platforms, according to the manufacturer. This is partly because it was developed from the outset for defence and security applications whereas similar craft were originally manufactured to also serve clients in the underwater research and offshore energy industries.

The UUV has a hull diameter of one metre (3.3 feet), a minimum displacement of 2,000 kg, and a lithium-ion battery pack that can deliver silent navigation to reduce the risk of detection. The manufacturer said the craft will be available in variants between eight and 12 metres (26 and 39 feet) long, although the exact length of the first example of the UUV for US service has not been disclosed.

C2 said that *Speartooth*'s range allows it to access an area of operations independently, freeing up larger crewed vessels for other tasks. It can be transported in standard shipping containers and be launched from a boat ramp, thus minimising both the workforce and infrastructure needed to operate it, reducing its operating signature while complicating an adversary's ISR capabilities. The composite construction meanwhile helps reduce its overall displacement, ensuring lower energy consumption at the same operating ranges and speeds.

The UUV also boasts a collision avoidance sensor, an inertial navigation system, and dual payload bays capable of carrying an assortment of mission-specific equipment. Among the first sensors cleared for integration into the craft are Thales sonars and acoustic equipment, which the company said will enhance its ability to navigate autonomously at long range with higher levels of safety, reliability and precision. Customisable hatches on the top, bottom, and sides meanwhile permit ease of replacing equipment out in the field.

C2 said that *Speartooth* has been designed so that its production and operations can be sustained even in times of conflict and crisis when supply chains will be disrupted.

The UUV's capability has already been proven in operational trials. In particular, an earlier example of the craft participated in the RAN's Exercise Autonomous Warrior in late 2023, where it demonstrated its performance and its ability to be transported and deployed with only minimal specialised equipment.

Baird Maritime *11 May 2026*

Bechtel appointed to undertake master planning of the defence precinct at Henderson, WA

The Albanese Government has taken the next step in establishing a consolidated defence precinct at Henderson to support sovereign shipbuilding and sustainment in Western Australia.

Bechtel Infrastructure Australia (Bechtel) has been appointed as the design services consultancy to undertake master planning of the defence precinct. Bechtel will provide specialist infrastructure design advice and work with a range of stakeholders to create the plan.

In 2024, the Albanese Government announced $127 million to progress planning for the defence precinct. Last year, the government backed this commitment with an additional $12 billion to support the delivery phase for the long-term development of the defence precinct. This contract is the next step in realising these investments in the west.

The defence precinct will play a vital role in securing continuous naval shipbuilding and sustainment in Australia, delivering critical capabilities for the Australian Defence Force, and contributing to the support of about 10,000 direct jobs in the west over the next two decades.

The Commonwealth is working hand in glove with the West Australian Government to deliver the defence precinct that will include:

- Construction facilities for the Royal Australian Army's landing craft and Australia's future Mogami-class

frigates following successful consolidation of the Henderson precinct;

- Support infrastructure for conventional submarines and surface combatant vessels;
- Contingency docking capabilities for Australia's future conventionally armed, nuclear-powered submarines; and
- Depot-level maintenance capabilities.

Planning and feasibility studies have already commenced and will continue throughout 2026. Establishment of the defence precinct will occur over the next decade to align with defence capability needs and minimise disruption to local industry and communities.

Alongside the Albanese Government's record investments across shipbuilding and AUKUS in the west, these commitments will support 10,000 direct jobs over the next two decades as well as providing opportunities for small and medium sized businesses across the state.

Defence Ministers media release *8 March 2026*

Research facility at AMC opens to support naval capability

A secure research facility has opened at the University of Tasmania's Australian Maritime College (AMC), supporting

collaborative defence capability development with a focus on maritime research. The Common User Facility (CUF), located at AMC's Launceston campus, provides a dedicated environment for Defence, industry and academic partners to work together on sensitive projects.

Built to an approved security standard, the facility is designed to support multiple simultaneous meetings of up to 20 personnel and is equipped with secure communications technology to enable sensitive discussions and research activity. The CUF was delivered under a $30 million agreement between AMC and the Defence Science and Technology Group (DSTG) and became fully operational in late March.

Chief Defence Scientist Professor Tanya Monro said the facility would strengthen Defence's ability to collaborate securely with trusted partners:

> With an initial focus on maritime science and engineering, the Common User Facility will enable Defence to collaborate with Tasmania-based academia and industry across a broad range of sensitive research. By bringing Defence, industry and academia together in a secure environment, this collaboration strengthens Australia's innovation ecosystem and helps translate research excellence into real capability, delivering asymmetric advantage for Defence.

One such partner is Navantia Australia, which has a strategic partnering agreement with Defence and recently established the Naval Research Centre on the floor above the CUF.

Defence Media *1 April 2026*

DSC West: BAE Systems Australia awarded Anzac Class Designer Support Contract (DSC).

BAE Systems Australia – Maritime, working with BMT, has been awarded the Anzac Class Designer Support Contract (DSC) to sustain and enhance the Royal Australian Navy's *Anzac*- class fleet. The engineering design contract is valued at $163 million over seven years. The contract is dubbed 'DSC-West', reflecting the decades of dedicated warship sustainment capabilities at the Henderson maritime precinct in West Australia – the home of the Anzac class – that the teams will be able to bring to this new contract. It is a strategic collaboration that highlights both companies' joint commitment to deliver superior, sovereign maritime capabilities for Australia.

BAE Systems and BMT (which last year acquired Australian Maritime Technologies – AMT - with their heritage link to the original *Anzac*-class designer), combine platform expertise, design authority access, and sovereign capability support to enhance *Anzac*-class vessels. This position is uniquely suited to meet the Commonwealth's stringent requirements, providing the "know-how and the know-why" essential for optimal platform sustainment.

David Shepherd, Managing Director, Surface Ships, BAE Systems Australia – Maritime, said:

> This award marks a new chapter in *Anzac*-class sustainment. As the company that constructed the *Anzac* fleet, and successfully helped deliver two major upgrade programs across the class, we're proud to combine our experience with the expanded capabilities of BMT to deliver safe, efficient and reliable outcomes for the Commonwealth.

Graeme Nayler, Managing Director, BMT said:

> We are delighted the Commonwealth has selected the DSC-West team. With AMT now part of BMT, we bring together decades of *Anzac*-class knowledge, ensuring we can continue delivering operational excellence for the *Anzac*-class fleet. The DSC-West contract will be delivered out of the Henderson shipyard in Perth, as well across multiple offices in Melbourne, Sydney and other locations. The contract award leverages these teams' deep platform knowledge, direct design authority access, and robust sovereign capability to deliver assured availability and future ready upgrades for the *Anzac*-class.

BAE Systems (Australia) website *9 April 2026*

Product of Concern Summit for *Collins*-class sustainment: Joint media statement by Minister for Defence Industry and Minister for Finance

The Albanese Government held its fourth Product of Concern Summit in Canberra today to support the sustainment of Australia's *Collins-class* submarines. Minister for Defence Industry, Pat Conroy, convened the summit alongside the Minister for Finance, Senator the Hon Katy Gallagher, and senior representatives from government and industry.

Since being listed as a Product of Concern in December 2024, Defence and the contractor, ASC Pty Ltd, have developed a remediation plan for the sustainment of the *Collins*-class. This plan will ensure *Collins*-class submarines remain among the most capable conventionally powered submarines in the world.

Since the revitalisation of Defence's Projects and Products of Concern process in 2022, the Albanese Government has strengthened the oversight and remediation of defence projects.

Remediation is being achieved through targeted workforce initiatives, process improvements and productivity reform. The Product of Concern framework continues to play a crucial role in driving cooperation, accountability and sustained action across government and industry. This is the twelfth Project of Concern Summit since May 2022.

The Minister for Defence Industry, Pat Conroy said:

> I was pleased to convene the fourth Product of Concern summit for the *Collins*-class submarine fleet today. This process helps ensure Australia has a highly-capable conventional submarine fleet for many years to come, and as we transition to nuclear-powered submarines. By bringing Defence and industry together on a regular basis, we maintain oversight and transparency of the capabilities required by the Australian Defence Force to preserve peace and deter conflict.
>
> The Product of Concern framework, which was revitalised by the Albanese Government, provides a structured forum to collaborate and agree on remediation activities to support *Collins*-class submarine sustainment outcomes.

Defence Media *2 March 2026*

Government funds Collins submarine Life of Type Extension at $11B.

The Albanese Government is enhancing Australia's fleet of Collins class submarines, through a life of type extension that will reduce risk, enhance capability and maximise availability for the Royal Australian Navy as Australia transitions to a conventionally armed, nuclear-powered submarine fleet. The life of type extension will commence with HMAS *Farncomb* at the end of the month, the first of six submarines to receive an extension. ASC, as the Government's sovereign submarine sustainment partner, will continue to be responsible for delivering the program.

Informed by independent expert advice, detailed planning and industry engagement Defence will undertake a conditions-based sustainment approach across the life of type extension program. This will see Defence and ASC retain and restore base components, while continuing to upgrade critical weapons and systems. This will reduce engineering and schedule risks and ensure the Collins class remains a formidable deterrent for years to come.

As one of the oldest boats in the Collins class fleet with the highest number of sea days and distance travelled, HMAS *Farncomb's* life of type extension will also include a detailed engineering assessment period to tailor its life of type extension upgrades and inform work required across the class. The program will also accelerate and prioritise sustainment work on the fleet's youngest submarines, commencing with HMAS *Rankin*. Safety will not be compromised and the Collins class will be supported by increased investment of up to $11 billion over the next decade for sustainment, including life of type extension maintenance and the skilled workforce and infrastructure required to maintain this capability.

Defence Minister media release *19 May 2026*

Indian Ocean Defence and Security Conference. Perth, 26-28 May 2026 - Innovation Awards

The Indian Ocean Defence & Security (IODS) 2026 Innovation Pitchfest and Awards spotlight the ingenuity shaping Australia's maritime and defence future. This year's finalists represent a diverse cross-section of industry, from advanced robotics and secure communications to next-generation training and sustainment solutions, each demonstrating practical capability aligned to evolving operational requirements.

They will pitch their ideas onsite at IODS 2026 to a panel of judges who will determine the winner of each category, each receiving $10,000 to contribute to further personal and innovation development. The judges will also award a Best Presenter trophy on the day to the participant who best demonstrates the art of the three-minute pitch.

Congratulations to the finalists

Innovation Award

- Ausco Products - AMAS Intelligent Buoy
- Greenroom Robotics - Lookout
- Capability X - CX Remote: Remote command and control

Young Innovator Award

- Alice Haddon | Chief Fluid Systems - Emergency Hose Replacement Kit

Emerging Technology Award

- Chief Fluid Systems - Emergency Hose Replacement Kit
- Space CoLAB - Post Quantum Security – Communications
- Sunfish Robotics - Persistent, covert nomadic ocean robot

Blue Sky Thinking Award

- ASC Pty Ltd - Persistent Virtual Fleet Training Environment
- LexChip Pty Ltd - LexChip
- Skapari - SD400X 'Bull shark'

See the finalists pitch their innovation onsite at IODS 2026 on Thursday 28 May from 1000- 1130 within the Theatrette on the exhibition floor. The winners of each category will be judged and announced at the conclusion of the event.

IODS 2026 E-news #11 *10 March 2026*

Australia's upgraded Mogami-class frigates to be fitted with SeaRAM defensive weapon systems

RTX, via its Raytheon business unit, has been awarded a contract by Japanese shipbuilder Mitsubishi Heavy Industries (MHI) to provide SeaRAM ship self-defence systems in support of Australia's "Sea3000" general-purpose frigate program. The Sea3000 program is set to replace the Royal Australian Navy's ageing *Anzac*-class frigates with 11 Upgraded *Mogami*-class frigates.

Under the contract, Raytheon will supply SeaRAM launchers, blast test vehicles, and technical services to support installation and testing of the systems for the first three ships that are being built in Japan by MHI. "SeaRAM extends the defensive reach of a ship beyond traditional close in weapon system ranges," said Barbara Borganovi, President of Naval Power at Raytheon. "By integrating SeaRAM on the Royal Australian Navy's new surface combatants, Australia gains a proven, highly effective terminal air and missile defence layer for its future fleet."

SeaRAM launcher firing an RIM-116 rolling airframe missile
(Photo courtesy RTX)

Each SeaRAM system combines the Phalanx close-in weapon system with the RIM-116 rolling airframe missile to provide autonomous terminal defence against cruise missiles and other advanced airborne threats.

Will Xavier, Baird Maritime *13 May 2026*

AUKUS RELATED

Scholarship launched to Propel submarine workforce

More than 800 students across Australia have been selected as part of the inaugural cohort of scholars for the Propel Australian Submarine Scholarships. The $15.8 million initiative is supporting the development of Australia's future nuclear-powered submarine workforce and will award 3,000 scholarships over the next three years to students undertaking tertiary studies in priority STEM disciplines.

Propel is being delivered through a partnership between the Australian Submarine Agency (ASA) and the Australian Academy of Technological Sciences and Engineering (ATSE) to help build the highly skilled workforce needed to deliver and sustain Australia's nuclear-powered submarines under the AUKUS partnership.

ASA, Head Engineering and Technology, Bruce Easterson, said the launch of Propel reflects the scale of Australia's long-term commitment to developing the workforce required for one of the nation's most complex industrial endeavours:

> AUKUS represents one of the most significant industrial programs in Australia's history, and its success relies on thousands of people gaining the specialist technical skills needed to build, operate and sustain nuclear-powered submarines,
>
> Propel will help Australians access the education and experience required to step into these roles. This investment strengthens Australia's future STEM workforce and supports the defence industry capabilities our nation needs.

Mr Easterson also congratulated the first cohort of scholarship recipients. AUKUS is an uplift, a whole of nation effort. Propel provides an opportunity for Australia to have a greater pool of experts to draw from to support this endeavour:

> We are dependent on you as future leaders to help us with this important task, and I wish you good luck on your journey.

Australia's nuclear-powered submarine program is expected to create around 20,000 highly skilled jobs nationwide over the coming decades. Propel will help ensure the talent pipeline is ready to meet this demand and support the broader AUKUS alliance.

ATSE Chief Executive Officer, Professor Kylie Walker AM, said the Academy is proud to welcome the first group of scholars and support them as they build foundations for long and rewarding STEM careers. Ms Walker added:

> Propel is more than a financial scholarship—it opens doors to a national community of researchers, engineers and innovators. Our scholars will have opportunities to connect with leaders across industry, government and universities, and to learn directly from ATSE Fellows who are among Australia's most accomplished scientists and engineers. These experiences will help prepare students for the critical roles they may one day play in delivering and sustaining Australia's nuclear-powered submarines, and the important role they play more broadly in building Australia's STEM future.

Propel aligns with the Australian Government's broader investment to expand Australia's STEM-qualified workforce for the nuclear-powered submarine enterprise, including the Nuclear-Powered Submarine Student Pathways program, the ASA Nuclear Graduate Program, and national workforce initiatives delivered through the Skills and Training Academy.

Deputy Prime Minister Richard Marles with Propel scholars
(Photo courtesy ASA)

The next round of applications will open later this year. More information can be found via the ATSE website.

Australian Submarine Agency *24 March 2026*

Government acquisition of AUKUS long-lead items from the UK

The Albanese Government has announced a $310 million payment for the acquisition of long-lead items from the United Kingdom to support Australia's future sovereign conventionally-armed, nuclear-powered submarine capability.

Today's announcement will directly support the manufacture of critical components for nuclear-powered submarines which will be built at Osborne in South Australia, including the nuclear propulsion systems of Australia's first two SSN-AUKUS.

Under the AUKUS program, the United Kingdom will deliver complete, welded nuclear propulsion systems for Australian-built SSN-AUKUS boats, with work already underway at the Rolls-Royce Submarine facility in Derby. Early progress on reactor manufacturing is essential to maintaining program momentum, sustaining specialist skills, and align industrial schedules across the AUKUS partnership.

This investment is in addition to Australia's contribution of GBP 2.4 billion over 10 years to expand the production capacity of Rolls-Royce Submarines.

This announcement follows Minister Conroy's engagement at the Australia-United Kingdom Defence Industry Dialogue (AUKDID) which was held in London today. AUKDID – which was held for the first time since 2018 – provided an important opportunity to build on areas of shared interest between Australia and the United Kingdom, including submarine industrial base cooperation. Industrial cooperation between Australia and the United Kingdom is key to AUKUS and a shared commitment to delivering a safe, secure and enduring submarine capability. Rolls-Royce Submarines is a cornerstone of the UK's nuclear submarine enterprise and a key partner in the delivery of SSN-AUKUS.

By securing long-lead items now, Australia is ensuring schedule certainty, and strengthening supply-chain resilience. It also reflects Australia's commitment to the highest standards of nuclear safety, security, and non-proliferation, consistent with international obligations and best practice.

The visit follows the Australian Government's recently announced investment of AUD $3.9 billion as a down payment to deliver the new submarine construction yard in Osborne. This critical investment ensures sovereign capability for conventionally-armed, nuclear-powered submarines enabling the start of construction of the SSN-AUKUS nuclear-powered submarines by the end of the decade as planned.

At its peak, at least 4,000 Australian workers will be employed to design and build the infrastructure for the submarine construction yard. Around 5,500 direct jobs are expected to be created to build the nuclear-powered submarines in South Australia, when the program reaches its peak.

This week in Western Australia, HMS *Anson*, a United Kingdom *Astute*-class submarine, is at HMAS *Stirling* for maintenance, marking the first time a UK nuclear-powered submarine has undergone a maintenance period in Australia.

Together, these key AUKUS milestones demonstrate how Australia and our partners continue to grow the already-strong momentum on this historic program.

Defence Media *24 February 2026*

Pentagon awards $AUD276m submarine contract in first for AUKUS pact

The Pentagon has awarded the first major submarine contract to deliver on the AUKUS security deal.The $US197 million ($AUD 276 million) contract is for engineering and design work to support the transfer of nuclear-powered submarine capabilities from the US to Australia.

The announcement came shortly after the ABC reported a critical construction contract for the submarines had been delayed despite an urgent need to fast-track their construction.

Australia intends to buy several second-hand *Virginia*-class submarines from the US in the 2030s. But the deal stipulates the US will only sell the submarines, likely second-hand, if it has built enough boats to replenish the American fleet.

The newly announced contract has been awarded to General Dynamics Electric Boat, a major navy contractor that builds submarines at shipyards in Connecticut.

The contract includes options that could take its cumulative value to $US930 million ($1.3 billion), the US Defense Department said.

Brad Ryan, ABC News *24 April 2026*

SHIP/BOAT-BUILDING & REPAIR

Delayed delivery of *China Zorrilla* to South America

The US-Iran war and subsequent closure of the Strait Of Hormuz has sent shock waves through worldwide shipping schedules.

While its main effect has been on fuel supply, it has also scuppered plans for one electric vessel. The world's largest battery electric-powered ship, the 130-metre-long *China Zorrilla,* has been sitting idle in Hobart's River Derwent, waiting to be picked up and enter service in South America. But it can't get there. The large heavy-lift ship that is set to carry the *China Zorrilla* to South America is one of thousands stuck in the Strait of Hormuz.

Incat managing director Craig Clifford told ABC Radio Hobart the ship owner, Buquebus, was monitoring the situation daily. He said:

> It's just an unfortunate coincidence where the ship was at the time. They've got commercial arrangements in place, but, as you can imagine,

they're being frustrated at this stage, given the inaccessibility through that particular strait.

On board the ship are around 500 batteries. It is enough to run the ferry for roughly 90 minutes, but not the 28-day journey from Tasmania to South America. Mr Clifford said one option was for diesel generators to be placed on board, to power the ship's electric motors. He added:

> All sorts of options are being explored, including alternative heavy-lift ships, so we'll keep working with the customer in that regard.

When it does enter service, the *China Zorrilla* will carry up to 2,100 passengers and 225 vehicles between Uruguayan capital Montevideo and Argentina's capital Buenos Aires. At top speed, it will be able to travel at about 25 knots

Josh Duggan, 936 ABC Hobart *28 April 2026*

Incat, Wärtsilä and Molslinjen Showcase Landmark Electric Ferry Project

Incat, Wärtsilä and Molslinjen have unveiled a new collaborative video highlighting one of the most significant electrification projects in the global maritime sector. Premiered at the 2026 Shippax Conference in Italy, the video provides a first look at the world-leading technology and innovation behind three 129-metre battery-electric ferries currently under construction at Incat's shipyard in Tasmania (including *China Zorrilla*). Once delivered, the vessels will be the largest electric ferries operating in Europe.

Once complete, the vessels will enter service in Denmark, supporting Molslinjen's commitment to sustainable, high-performance transport while connecting communities across one of Europe's busiest ferry corridors.

The link to the video is at:

https://us.list-manage.com/Z3hxdVE_0SL?e=37ffadd86d&c2id=6eb3d06071551e1e7b71296c50a3625e

Incat Insider, Issue 092 *7 May 2026*

123m Ro-Pax Ferry *Mercedes Pinto* performs exceptionally on sea trials

Mercedes Pinto, the third 123-metre dual-fuel Ro-Pax fast ferry designed by global digital shipbuilder Incat Crowther for Spanish operator Baleària, has been tested successfully on sea trials. Built by Astilleros Armon in Gijon, Spain, the vessel achieved a top speed of 38 knots during trials, with all propulsion and onboard systems performing consistently and in line with design specifications.

Mercedes Pinto is expected to operate in the Canary Islands, consolidating a commitment from Baleària to improve connectivity in the archipelago. The new vessel joins a growing fleet of Incat Crowther-designed Ro-Pax ferries for Baleària.

The first two vessels, *Eleanor Roosevelt* and *Margarita Salas*, also constructed by Astilleros Armon, have been in operation connecting the Spanish mainland with the Balearic Islands. *Margarita Salas* has been servicing Baleària's busy route between Barcelona and the islands of Mallorca and Menorca since 2024, while *Eleanor Roosevelt* has been in service since 2021, operating between Denia, Ibiza and Mallorca. Incat Crowther is also designing two all-electric Ro-Pax fast ferries for Baleària that will connect Europe with Africa – with construction currently underway at Astilleros Armon.

[A more complete coverage of the *Mercedes Pinto* design was covered in the November 2025 edition of *The Australian Naval Architect*, on page 51 - Ed]

Incat Crowther Press Release *6 May 2026*

New High Speed Rescue Vessel for NSW

Supporting crews in fast, reliable emergency responses and port patrols in Sydney Harbour and Port Botany is the aim of a new 10-metre advanced marine response vessel. The boat, designed and built under the craftsmanship of local master marine builders in Newcastle, has been unveiled by the Port Authority of New South Wales.

With twin 300-horsepower outboard engines and 870-litre fuel capacity, it is expected to be ready to support crews in fast, reliable emergency response and patrol duties around port waters.

The Port Authority's new high speed response vessel.
(Image courtesy Port Authority NSW)

More than twenty local specialist shipbuilders and maritime experts have been working closely with the Port Authority team to deliver this vessel in recent months. Port Authority Acting Group Executive of Assets, Catherine Blaine said the new vessel showcased the quality of shipbuilding skills in Newcastle and Port Authority's focus on investing in maritime assets:

> Port Authority is proud that this build also supports regional jobs, apprenticeships and advanced manufacturing capability, strengthening NSW's maritime sector.
>
> Our people have played a key role in the design and customisation of this vessel, ensuring it reflects the practical requirements, safety focus, and innovation. Once construction and on water testing is complete, the vessel will travel to Sydney to join Port Authority's operational fleet supporting our crews to undertake important work including navigation aid maintenance, pollution response, general patrols and response to a wide range of reporting or identified maritime issues and incidents.

The Whiskey Project Group Chief Executive Darren Schuback said they were building world-class vessels in Newcastle, powered by skill, precision and pride:

> The Whiskey Project Group is proudly building advanced maritime manufacturing capability that showcases the depth of talent in our community. We're proud to be part of Newcastle's manufacturing story and by backing local people, growing capability, we're helping to secure Newcastle as one of Australia's key manufacturing heartlands.

Port Authority owns a fleet of vessels that carry out critical roles to ensure safe and efficient operations across the state's ports, including pilot vessels, response vessels, and multipurpose vessels with marine pollution and firefighting capabilities.

The new build includes:

- A reinforced, marine-grade aluminium hull and level-flotation foam to maximise stability, buoyancy and safety at speed.
- A collar system and high-performance suspension seating further reduce impact in rough conditions.
- Integrated navigation and communications suite that delivers real-time situational awareness.
- Twin high-performance engines that deliver speeds of up to 42 knots (approximately 77 kms per hour).

David Sexton, DCN *20 February 2026*

Marine Rescue 30 - The Whiskey Project Group

This sleek search and rescue (SAR) boat is the first in a new series for Australia's Marine Rescue NSW from The Whiskey Project Group (TWPG) subsidiary Yamba Welding and Engineering (YWE). Designed in close collaboration with Marine Rescue NSW's volunteer crews, this 11.4-metre craft was specifically engineered for offshore SAR operations along the eastern coast of the Australian state of New South Wales, from Point Danger to Eden.

The vessel's exaggerated hull flare significantly reduces spray on deck, a wide walkaround deck with safety railings secures foredeck access and enhances line handling, and large windows provide excellent all-round visibility. The internal layout prioritises crew comfort and ergonomic efficiency during extended operations. Optimised for safe berthing and handling in challenging offshore conditions, Marine Rescue 30 is an impressive new addition to Australia's volunteer SAR fleet.

Marine Rescue 30
(Photo Courtesy Baird Maritime)

Darren Schuback, CEO of TWPG, told Baird Maritime:

> Marine Rescue 30 (MR30) is a landmark vessel that delivers a definitive combination of speed, sea-keeping performance, and stability for volunteer crews operating in heavy offshore and potentially remote conditions.

As she is the first vessel in a new range, the focus was on engineering a platform that balanced high-speed responsiveness with the safety and comfort required for long-duration missions. The hull features an exaggerated flare specifically engineered to reduce spray on deck, paired with large windows that provide the high level of visibility required for complex search patterns. The hull design and twin high-performance diesel outboard configuration deliver a top speed of 34 knots while making the vessel fuel-efficient and extending its operational range.

Schuback added:

> By combining this performance with the joystick helm system for superior control and manoeuvrability, MR30 delivers the best of both worlds: high-level mission performance and improved crew comfort. MR30 is a purpose-built asset for those who risk their lives to save others.

By balancing years of volunteer feedback with precise engineering, you can transform a complex set of requirements into a highly effective, fit for purpose asset.

Schuback explained that the primary challenge was designing and building a boat that met the specific needs of the client, as such a vessel did not exist yet:

> In naval architecture, weight and performance are a constant balance; you inevitably sacrifice performance as you add weight for structural integrity and essential rescue equipment. Because this vessel was designed around rescue operators, we worked in close collaboration with Marine Rescue NSW to ensure it included every required capability while still being able to perform on the water in terms of speed and range.

Schuback added that the project reinforced the value of the deep end-user integration and engagement between the builder and the operator. By involving the volunteer crews early in the naval architecture phase, TWPG was able to manage the weight-to-performance trade-off effectively.

> We incorporated a twin diesel outboard configuration and a stabiliser trim-tab system to ensure the vessel remained fuel-efficient and stable without compromising on its mission-critical responsiveness. Our design target was to exceed 32 knots, and through this collaborative refinement, the final build successfully reached 34 knots. The lesson we took away is that by balancing years of volunteer feedback with precise engineering, you can transform a complex set of requirements into a highly effective, fit for purpose asset.

The selection of TWPG for the development of MR30 is in line with growing demand for sovereign shipbuilding capability, which Schuback indicated as a major trend, especially among government operators:

Governments want more control over their supply chains, especially with the pressures we're seeing internationally, and they're tightening safety and environmental regulations at the same time. In Australia, for example, the NSCV standards, and rightly so, set a high bar for crew protection and structural integrity. At TWPG, we've leaned into this shift by building a resilient supply-chain and manufacturing footprint across Australia, New Zealand, and the USA so we can meet local requirements and keep delivering even when global supply chains are under stress.

Baird Maritime *30 March 2026*

[Not necessarily related to this article, we note with much sadness, the tragic loss of two Marine Rescue NSW crew on the Ballina MR rescue boat, and the yachtsman, when they responded to reports of a yacht in distress near the Ballina bar southern breakwater. The incident will be the subject of investigation and coronial inquest. - Ed]

***Cape Gloucester* - Periscope Naval Architects and Fodico Marine Group**

This versatile landing craft was recently placed into service by Australia's Fodico Marine Group, representing the largest and most capable vessel in its fleet of three landing craft. Built to a design by Periscope Naval Architects, *Cape Gloucester* features operational flexibility, thanks to bow and stern ramps that allow loading and unloading of personnel, vehicles, and freight without needing to turn the vessel, and an impressively shallow draught of just 1.7 metres.

The expansive 484-square-metre clear working deck supports high deck loading strength, making it ideal for heavy logistical support in Australia, New Zealand, and Papua New Guinea. The vessel combines practical barge-like simplicity with a sleek, modern exterior.

Shaun Phelps, Director at Periscope Naval Architects, told Baird Maritime:

She is state-of-the-art when it comes to shallow-draught landing craft. The owner was very forward-thinking in its brief and gave us the liberty to develop a design that was out of the box of the traditional landing craft design. She has quite distinctive superstructure styling, which was a wish from the owner. She makes an impact and stands out on the water. She has a refined hull form compared to the typical flat panel landing craft design, and this aspect, combined with beautifully faired propeller tunnels, delivers a hull form efficiency quite unique in this vessel sector.

Phelps remarked that the owner's decades of experience operating these vessels enabled Periscope to ensure that all the important aspects of the vessel operations are optimised. The geometry of the bow door and the forward lines create a beach landing capability, "that is as good as it can be."

The vessel's aluminium superstructure helped to create a considerable margin on stability and make for a comfortable experience on board. According to Phelps, the stable platform, combined with her high-quality fit out, enables the vessel to seamlessly bridge the gap between workboats and passenger vessels.

Cape Gloucester
(Photo Courtesy Baird Maritime)

Leon Toy, Managing Director at Fodico, added:

Cape Gloucester stands out because she strikes that rare balance between being unique and practical, She is not a 'unicorn' vessel built around experimental ideas; she's special because she's grounded in five decades of proven Australian coastal engineering. That foundation gives her reliability, predictability, and operational confidence that many newbuild vessels simply do not have.

Toy commented that what distinguishes *Cape Gloucester* from a traditional vehicle ferry is how thoughtfully the tried-and-tested design elements have been adapted and refined. Her shallow draught and propeller arrangement are not theoretical solutions; they are the evolution of vessels that have been successfully built, operated, and improved in-house for over 30 years. That lineage shows in the way she handles, the low maintenance demands, and the operational flexibility she offers in tidal or constrained environments.

Toy also pointed out the vessel's under-house height clearance of 4.6 metres paired with a full-deck point-loading capacity of 20 tonnes per square metre. In his view, that combination genuinely sets the vessel ahead of conventional ferries, which usually restrict heavy vehicles to dedicated lanes. She is built from experience, not theory, and that makes her not just unique, but uniquely reliable.

On *Cape Gloucester,* the entire deck is heavy-load capable, which transforms loading plans, cuts turnaround times, and allows machinery and road trains to be positioned wherever operationally best, not where the vessel design forces the cargo to be placed.

Toy added:

The addition of the stern ramp is another decisive advantage. It's not just a convenience feature; it's what makes true drive-on/drive-off operations possible for long or multi-trailer combinations.

Baird Maritime *26 March 2026*

Weld Australia Supports Cairncross Dock Project

Weld Australia executives were recently invited to a briefing at Cairncross Dockyard in Brisbane, together with Federal Minister for Skills and Training, Andrew Giles MP and the Member for Griffith, Renee Coffee MP, to discuss reactivation of the shipyard as a model for sovereign capability and workforce innovation.

Weld Australia has thrown its full support behind the project, describing it as a strategically significant initiative that could help reshape how Australia delivers Defence, maritime and major industrial projects. Weld Australia praised the project's

new ownership and leadership team, led by Managing Director of Cairncross Dockyard Brisbane Pty Ltd, Ben Quin, for implementing a practical and forward-thinking operational model that tightly integrates engineering, production methodology, automation and workforce development.

The $2.5 billion privately funded Cairncross Dockyard Brisbane Project has been declared a 'prescribed project' by the Queensland Government. It is expected to create more than 1,000 direct shipyard jobs, with thousands more supported indirectly across advanced manufacturing, steel fabrication and logistics. The redevelopment is intended to re-establish the historic Morningside site as a world-class ship sustainment hub with the potential to support Defence maritime activities in Queensland.

According to Weld Australia CEO Geoff Crittenden, the Cairncross approach reflects exactly the kind of industrial thinking Australia needs to strengthen sovereign manufacturing capability and respond to ongoing skills shortages. He added:

> What is being developed at Cairncross is a practical blueprint for how Australia should approach complex industrial delivery. The alignment between engineering design, weld execution, automation and workforce capability is smart, scalable and exactly what is needed to support national infrastructure, maritime sustainment and Defence-aligned work.

Crittenden said one of the most significant aspects of the Cairncross model is its direct connection between engineering requirements and workforce training outcomes. The project identifies the specific welding procedures required for production and then supports structured training and certification of production welders to ISO 9606-1, creating an accelerated pathway for workers to become job-ready in months rather than years. This model also establishes a clear pathway toward more advanced welding procedures needed for long-term sustainment and visiting vessel work. Crittenden added:

> Australia's welding and fabrication workforce challenges are well known. Cairncross is demonstrating a practical solution. By linking procedure qualification directly to welder training and certification, the project is creating a workforce model that is faster, more targeted and better aligned to real production needs.

Weld Australia believes this structured approach has national relevance, particularly across Defence, maritime and heavy industry sectors where labour shortages and capability gaps continue to constrain growth. The Cairncross project demonstrates that when engineering, production planning and workforce development are connected from the outset, you can build capability in a way that is both commercially realistic and strategically valuable.

Crittenden said the broader public context around Cairncross also matters:

> This is a major industrial project with real scale, real private investment and real workforce potential. When you combine that with the project's focus on ship sustainment, advanced manufacturing and structured skills development, it becomes highly relevant as a model for future industrial development in Australia.

The Cairncross Dockyard project should be viewed as a highly relevant case study for future industrial development in Australia, particularly as the country seeks to expand sovereign capability in Defence and maritime sectors. Crittenden said:

> This is the kind of initiative Australia should be backing. It is practical, it is aligned to real industrial demand, and it strengthens the sovereign skills base we are going to need for decades to come.

The Cairncross Dockyard project will include the construction of a large-scale graving dock, a 12,000-tonne hydraulic chain jack vertical ship lift, a 1,200-tonne crawler crane, new and expanded wharves, and critical power and water infrastructure. Once complete, the facility will be equipped to perform on-water and out-of-water vessel maintenance, ensuring vessels are ready to meet operational challenges.

APDR *22 April 2026*

Austal Vietnam's Ro-Ro *Dory 2* launch

West-Australian-based shipbuilder Austal, says the launch of roll-on/roll-off (Ro-Ro) *Dory 2* for The Degage Group of French Polynesia marks an important milestone for expanding its global steel shipbuilding capability. The vessel was built by Austal Vietnam and successfully launched as Hull 426, *Dory 2*, a 71-metre Ro-Ro passenger cargo vessel.

Austal Vietnam vice-president Mark Pleiter said the project highlighted their evolution as a multi-material shipbuilder, with the yard now delivering both aluminium and increasingly complex steel vessels:

> This progression reflects the strength, flexibility and growing expertise of Austal's global shipbuilding network. *Dory 2* also reinforces Austal's strategic focus on expanding its steel shipbuilding capability into key growth markets.

This includes:

- Next-generation ro-pax, low-carbon 50–120 metre vessels integrating electric and hydrogen propulsion systems to support the maritime energy transition.
- Energy-offshore support vessels (OSVs) and service operation vessels (SOVs) engineered for evolving offshore wind and energy sector requirements.
- Sustainable sailing cargo—combining traditional wind-assist technologies with modern steel construction to deliver high-capacity, eco-friendly cargo vessels.

The Degage Group is a long-standing Austal customer, and this latest project builds on a strong partnership that has seen Austal design and construct multiple vessels for their fleet, including cruise ships and high-speed ferries such as the 66 metre *Apetahi Express*, delivered in 2023.

Featuring a steel monohull and aluminium superstructure, *Dory 2* has been purpose-designed for inter-island

Dory 2 launch with the Austal Vietnam team.
(Photo courtesy IAustal)

operations and will accommodate up to 140 passengers and 17 crew.

The vessel includes a 494 square metre cargo deck, capable of transporting containers, palletised freight and vehicles, providing a highly flexible logistics solution for the region. With a cruising speed of 12 knots and a range of 1000 nautical miles, *Dory 2* is optimised for reliable, efficient service between Papeete and the Palliser Islands, supporting essential transport and supply chain connectivity across French Polynesia. Mr Pleiter said:

> This is a proud moment for our team in Vietnam and a testament to the hard work, skill and dedication shown throughout the build so far. Successfully launching *Dory 2* reflects the growing capability of our shipyard and the strength of our partnership with The Degage Group.

Upon completion, *Dory 2* will undergo final outfitting, harbour and sea trials ahead of delivery to The Degage Group, where it will play a vital role in supporting sustainable and efficient inter-island transport operations.

Allan Newton, DCN *8 April 26*

DECARBONISATION

Pilbara Ports signs Low-Carbon Ammonia MOU

Pilbara Ports has taken a step further towards development of a low-carbon ammonia bunkering hub (ship re-fuelling) in the Pilbara, including safe and efficient ammonia handling, by signing a memorandum of understanding (MOU) with Yara Pilbara. The Yara Pilbara plant is one of the largest ammonia production facilities in the world, utilising world-class export infrastructure in the Port of Dampier.

The MOU advances the Pilbara Clean Fuel Bunkering Initiative through the two organisations agreeing to work collaboratively on government and stakeholder advocacy, developing a training program in safe ammonia handling, and in the planning of necessary fuelling infrastructure at the Ports of Dampier and Port of Port Hedland.

Pilbara Ports Chief Executive Officer Samuel McSkimming emphasised the importance of this new agreement:

> We're pleased to work alongside Yara Pilbara to promote the production of clean marine fuels in the Pilbara, and on ensuring WA plays a leading role in the global transition to low-emission shipping, The green iron corridor between the Pilbara and East Asia has the scale, stable demand, port infrastructure, and risk management experience to support the significant investment that maritime decarbonisation requires, while the Pilbara has the renewable energy resources, carbon capture and storage potential, and ammonia-based industry to lead in green fuel production.

Currently, ships do not generally bunker in the Pilbara, instead taking on heavy fuel oil elsewhere for their entire outward-bound and return voyages.

Yara Pilbara Chief Operating Officer Laurent Trost said the company is committed to working with Pilbara Ports on decarbonising the shipping routes linking the Pilbara to established trading partners and emerging markets:

> Our operations represent Australia's largest ammonia plant, we are an established producer in the region and part of a parent company that is a global leader in the application of low-carbon ammonia, The vision of the Pilbara as a bunkering hub offers great promise and we are excited to be part of the push to make it happen.

The Pilbara Ports and Yara Pilbara MOU marks another milestone in the Pilbara Clean Fuel Bunkering Hub strategic roadmap which involves significant industry collaboration. Launched last year, the Pilbara Clean Fuel Bunkering Hub outlines a strategic approach to establish a clean fuel bunkering hub in the region, enabling the use of alternative fuels such as ammonia. One successful bunkering trial has already taken place and another is set to occur in the Port of Port Hedland later this year.

The first of its type in Australia, the bunkering hub would support decarbonisation efforts across the shipping, resource and maritime sectors, in line with the State Government's 2050 emissions reduction target.

Pilbara Ports goal is for 100 per cent of bulk export vessels departing the Pilbara to be powered by low carbon fuels, reinforcing its pivotal role in Australia's iron ore trade and commitment to achieving net zero emissions by 2050.

Pilbara Ports Media release *5 March 2026*

INTERNATIONAL

NZ Frigate project progress key for maritime security

A media release by the New Zealand Defence Minister, Christopher Penk has identified that the Government is progressing work to replace the Royal New Zealand Navy's ageing frigates as part of broader efforts to strengthen New Zealand's Defence capability. Mr Penk said:

> As a remote island nation, maritime security underpins New Zealand's economic prosperity. Our safety, international connectivity and the vast majority of our trade is dependent on the sea. The New Zealand Defence Force has significant responsibilities in promoting and protecting these interests through a wide range of tasks, including monitoring activity in our waters, undertaking combat, patrol and

interception operations, transporting people and equipment by sea, and supporting search and rescue efforts.

These activities rely on a resilient Navy, yet most ships in the current fleet are expected to reach the end of their design life by the mid-2030s, including the Anzac-class frigates. Without replacement, this would have a significant impact on New Zealand's ability to protect its maritime interests in the Pacific and beyond.

The Government is addressing this by progressing a Maritime Fleet Renewal programme as part of the Defence Capability Plan, which will assess options for delivering a modern and combat capable fleet. It is expected the future fleet will support a broad range of functions, including maritime combat, patrol and security, sealift, hydrography and diving operations, assistance to other government agencies, and support for humanitarian and disaster response.

NZ Defence has begun discussions with the Royal Australian Navy and the United Kingdom's Royal Navy to inform the next stage for potential frigate replacement and ongoing service arrangements. Mr Penk said:

Our decision to prioritise discussions with our partners and focus on considering the Japanese *Mogami*-class frigate selected by Australia and the UK's Type 31 frigates to inform the business case reflects our need to be interoperable and leverage efficiencies.

Further, we are looking at mature combat capable vessel programmes which are at a stage that allows adequate analysis against New Zealand requirements. A final decision has not yet been made, and advice is expected to be provided to Cabinet before the end of 2027.

In the interim, we are continuing to ensure the current frigates remain operational. We know this will be a significant decision for New Zealand and we are determined to work with our partners, focus on what is in our best interests and get it right.

By planning for the replacement of our frigates and other naval vessels' capability, this Government is ensuring our Defence Force personnel are equipped with the modern, combat capable assets they need to protect New Zealand's interests, support our partners, and respond effectively to challenges at sea.

NZ Official Government website media release 7 May 2026

Hanwha Ocean and Leidos sign MoU for Naval Shipbuilding

Hanwha Ocean and Leidos are collaborating to advance next-generation naval ship design, strengthen U.S. shipbuilding capacity, and pursue opportunities across global defence markets. Hanwha Ocean's world-class shipbuilding, combined with Leidos' naval design and engineering expertise, is intended to deliver scalable, production-ready solutions aligned with evolving U.S. Navy and allied needs. The companies plan to focus on:

- Adapting Hanwha ship designs for full alignment with U.S. Navy standards and requirements;
- Co-developing next-generation surface combatant concepts for U.S. and global markets;
- Establishing a resilient, distributed supply chain across U.S. and Korean industrial bases;
- Advancing ship designs optimised for rapid, efficient production and long-term sustainment.

Hanwha Ocean brings world-class shipbuilding and naval vessel production capabilities, supported by decades of experience in designing, building, and maintaining advanced vessels, including submarines and surface combatants. Its U.S. subsidiary, Philly Shipyard, is emerging as a key contributor to the 2025 U.S.–Korea shipbuilding cooperation framework and is expected to play a growing role in future naval programs.

Leidos brings advanced maritime technologies, including International Class combatants, U.S. Navy-validated maritime autonomy software, and autonomous vessels such as *Sea Archer, Sea Specter, Sea Ranger*, and *Sea Hunter*. Leidos Gibbs and Cox has designed more than 70% of U.S. Navy surface combatants since World War II and remains one of the Navy's most trusted design partners.

Charlie SC Eoh, President of Naval Ship Business at Hanwha Ocean, said:

This MOU will be a pivotal opportunity for Hanwha Ocean to secure a decisive technological edge not only in the U.S. market but also across the global naval shipbuilding arena. By collaborating with Leidos, we will accelerate our expansion into the global maritime defense market and deliver tangible results.

Mike Rickels, Leidos senior vice president for maritime said:

Leidos has been a trusted partner to the U.S. Navy for decades," "By working with Hanwha, we're extending that legacy, combining proven design expertise with world-class manufacturing capabilities to deliver ships that are designed for today's missions and adaptable for the future.

APDR *30 April 2026*

Marine Environment Protection Committee "back on track" towards consensus on global shipping emissions

The 84th session of the Marine Environment Protection Committee was held at IMO headquarters in London from 27 April to 1 May 2026, chaired by Dr. Harry Conway of Liberia.

The Marine Environment Protection Committee of the International Maritime Organization (IMO) concluded its 84th session with a commitment to rebuild consensus on global shipping emissions, while sounding the alarm over environmental risks in the Strait of Hormuz and adopting new measures to curb air pollution in the Northeast Atlantic.

Closing the meeting, held from 27 April to 1 May 2026 in London, IMO Secretary-General Arsenio Dominguez said: "We are back on track, but we have to rebuild trust. I encourage you to maintain this momentum through your intersessional work and to prepare submissions that can bring the membership together."

The Committee will resume its Second Extraordinary Session on Friday 4 December 2026, subject to confirmation by the 85th session (MEPC 85) scheduled to convene 30 November to 3 December.

MEPC 84 in session
(photo courtesy IMO)

IMO Net Zero Framework

Nearly 100 delegations took the floor this week to voice their views on the adoption of "mid-term measures" to address greenhouse gas (GHG) emissions from ships - known as the IMO Net-Zero Framework - with multiple proposals tabled on how to take forward negotiations.

The Committee agreed to establish an intersessional Working Group to resolve various concerns and drive broader convergence on a global measure ahead of MEPC 85 in six months. Member States will be able to submit new amendments and adjustments to the draft amendments previously approved.

Two inter-sessional meetings will be scheduled (1 to 4 September and 23 to 27 November) ahead of MEPC 85 (30 November to 3 December), as well as a one-day expert workshop on "chain of custody" models, which track fuel origin and movement of fuels across the supply chain, ensuring emissions are properly traced and verified.

The second extraordinary session of MEPC (adjourned last October) is scheduled to resume on 4 December, subject to discussions at MEPC 85.

Strait of Hormuz and the marine environment

The Committee adopted a resolution condemning the attacks on commercial shipping in the Strait of Hormuz region and the related risks of marine pollution.

The Committee recognised the vulnerability of the Persian Gulf and adjacent waters, warning that these attacks could cause large-scale marine pollution such as oil, hazardous and noxious substances and hazardous residues arising from missiles, drones, fires and explosions.

The Committee requested Secretary-General to monitor environmental impacts and report to the next IMO Council session.

Further significant decisions

- Adoption of new Emission Control Area for nitrogen oxides, sulphur oxides and particulate matter from 2028.
- 2026 Strategic Action Plan on marine plastic litter.
- Code for transporting plastic pellets.
- Recommendation circular for fishing gear marking.
- Amendment to Ballast Water Management Convention.
- Reduction in underwater radiated noise from shipping.
- New work programme items.

Other key decisions

The Committee also took action on the following:

- Approved the Terms of Reference for the Fifth IMO GHG Study and requested the IMO Secretariat to initiate the procurement process for the study;
- Adopted 2026 Guidelines for test bed and onboard measurements of CH4 and/or N2O emissions from marine diesel engines;
- Approved draft amendments to the 2008 NOx Technical Code in relation to non-carbon containing fuels, with a view to subsequent adoption.
- Agreed that a standalone legally binding instrument should be developed for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species.

IMO Media Release *1 May 2026*

SHIP OPERATIONS

RAN 125th Birthday and Exercise Kakadu

Thirty one ships from 19 nations conducted a ceremonial entry into Sydney Harbour on Saturday morning 21 March for the 2026 Exercise Kakadu Fleet Review.

Hosted by the Royal Australian Navy (RAN), the review was the largest gathering of foreign warships in Sydney Harbour in more than a decade and marks 125 years of the Australian Navy's service to the nation. The RAN was joined by the Royal Australian Air Force in an impressive aerial display over Sydney Harbour. Following the flying display, the RAN conducted a ceremonial gun salute.

The Governor-General of the Commonwealth of Australia, Her Excellency the Hon Sam Mostyn AC, was joined by the Deputy Prime Minister, Richard Marles, Chief of the Defence Force Admiral David Johnston AC RAN, and the Chief of Navy, Vice Admiral Mark Hammond AO RAN, to conduct a ceremonial review of the Australian and international ships.

A fleet review is a long-standing naval tradition in which a reviewing officer, embarked in a reviewing ship, inspects an assembled fleet. Historically, fleet reviews occurred when a battle fleet was mobilised for war. In the modern era, they have become important commemorative milestones that bring together partner navies to demonstrate shared commitment to maritime security and international cooperation.

Reviewing Ship HMAS *Leeuwin* passes HMAS Canberra during the Exercise Kakadu Fleet Review on Sydney Harbour. (Photo courtesy Defence Media)

The Fleet Review was held in conjunction with Exercise Kakadu, the RAN's premier multinational maritime exercise. This pairing transformed the occasion from a ceremonial event into a practical demonstration of regional partnership, readiness and interoperability.

The Chief of Navy, Vice Admiral Mark Hammond AO RAN said:

> The Fleet Review highlights the depth of our partnerships across the region, demonstrating the strength of the relationships and the importance of working together to ensure a secure maritime domain. For 125 years, Australia's Navy has defended our nation, protected our maritime approaches, and supported regional stability but we have never done it alone. Our partners and allies have played a critical role in our 125-year history.

Defence Media *21 March 2026*

Tasmania and WA vie for first Australian use of Vessev (NZ) electric hydrofoils

WA

New Zealand-based marine technology company Vessev has expanded into the Australian market, with propulsion specialist the Enautic Group set to introduce Vessev's electric hydrofoiling passenger vessels to Western Australia. Vessev said there are currently only three commercially-certified electric hydrofoiling vessels in operation anywhere in the world, with two of these utilising the company's patented tour boat design.

Vessev Hydrofoil *Kermadec* (Photo courtesy Vessev)

Several Vessev boats have already been reserved and will operate on Perth's Swan River, which Vessev said is one of Australia's most underutilised transport corridors. The focus for the vessels will be on premium tourism experiences including wine cruises, twilight sailings and private charters, with plans to introduce commuter routes in the future.

Where other large commercial ferries are typically restricted to speeds of five to eight knots along much of the Swan River, the Vessev hydrofoil boats can cruise at 25 knots while producing virtually no wake, according to Vessev.

Josh Portlock, Founder and Executive Chairman of the Enautic Group said:

> Hydrofoiling is what makes electric water transport genuinely viable. It delivers the speed, range and sustainability you need without compromise and is exactly the type of vessel that makes this model possible.

The first vessels are expected to be delivered to Australia in early 2027. Vessev said it is working collaboratively with applicable classification societies and local regulatory bodies to ensure compliance with all local requirements for this vessel type.

Gareth Havelock, Baird Maritime *17 Mar 2026*

Tasmania

Tasmanian company "Fly Derwent" in partnership with New Zealand-based company Vessev have announced plans to launch Australia's first electric hydrofoil catamaran network and service, set to run from Hobart to New Norfolk on the Derwent River. The ferry network is said to initially involve the use of Vessev's VS–9 catamaran, a 10-seat hydrofoil vessel, with larger VS–12 models also earmarked for use, capable of transporting up to 30 passengers.

Fly Derwent's Cameron McCulloch said the project aims to reshape how waterways are used for transport:

> This world-leading technology unlocks affordable, river-based commuter and tourism transport in Hobart without the need for large-scale infrastructure

changes. It's an entirely new mode of transport that enables us to use waterways in a way that is more like a metro system than a ferry service.

The DNV-classed VS-9 measures 8.95 metres in length and displaces 4.4 tonnes at full load. With the use of hydrofoils, the vessel's hull can remain 50 cm above the surface of the water while travelling, allowing the vessel to maintain high transit speeds without being affected by waves, even in bad weather.

This then ensures a much more comfortable ride and little to no fatigue for the passengers.

The hydrofoils, specially developed by Vessev for the VS-9, are fitted with precision flaps that remain submerged underwater.

The flaps enable the foils to change shape to become more efficient, a system similar to those used on sailing boats in the America's Cup races. The catamarans can also travel at around 25 knots, or just over 46 kph, while producing minimal wake, allowing the boats to maintain high speed without the threat of erosion damage to the surrounding river banks.

The catamarans will be powered by Tasmania's renewable electricity grid, with developers also exploring battery storage and mobile charging solutions. Tasmania already operates at close to 100% renewable electricity over a typical year, powered predominantly by hydropower and complemented by wind and solar, and that same grid will charge the Fly Derwent fleet.

The first vessels are expected to be delivered to Australia in early 2027. Vessev said it is working collaboratively with applicable classification societies and local regulatory bodies to ensure compliance with all local requirements for the vessel type.

Vessev CEO Eric Laakmann said what's happening in Tasmania is the beginning of a much larger shift in how cities think about water mobility:

> Electric hydro foiling enables an entirely new category of water transport. Tasmania is a standout environment to demonstrate this at scale, where abundant renewable energy and strong local ambition come together to show what zero-emissions marine transport can look like in the real world.

Adam Rice, Derwent Valley Gazette *20 Apr 2026*

Townsville celebrates record cruise ship season

A record 2025-26 cruise season reflects increased demand to experience North Queensland, Port of Townsville chief executive Ranee Crosby says. The port is celebrating a season that saw 23 cruise ships carrying more than 27,000 passengers and 13,000 crew visit Townsville. The last cruise ship for the 2025/26 season, *Vista*, visited Townsville on Tuesday 14 April with about 1200 passengers on board.

Port of Townsville chief executive Ranee Crosby said the record season reflected increasing demand to experience the Townsville region:

> We work incredibly hard with our cruise partners in Townsville and within the cruise sector to make the seasons the best they can be, offering a welcome dose of energy to the city's vibrant tourism sector,
>
> It's exciting to see cruise ship companies visit Townsville for the first time with the port and cruise liners celebrating many 'maiden' voyages this season.
>
> We also had the pleasure of welcoming several residential cruise ships, where residents on board were able to enjoy the city and region for a number of days.

Ms Crosby said the cruise ship season usually ran from November to April, but this year's season had been extended, with cruise ships booked to dock in June and July in 2027.

Member for Townsville Adam Baillie said the growing cruise trade was delivering solid benefits:

> Cruise ships are now becoming a reliable part of Townsville's local economy, supporting cafes, shops and tourism operators as our city continues to evolve in the lead up to the 2032 Games.

According to Port of Townsville, cruise tourism boosts the local economy with each passenger spending about $200 a

Cruise ship *Vista* in Townsville.
(Image courtesy Port of Townsville)

day exploring the region. The 2026/27 cruise season is to begin in November 2026, with the first cruise ship, *Riviera*, due to dock on Saturday 7 November.

David Sexton, DCN *14 April 2026*

Port of Melbourne and Svitzer sign electric tug MoU

Visiting royalty, Their Majesties the King and Queen of Denmark, witnessed the signing of a memorandum of understanding at the Port of Melbourne this week that explores the introduction of electric tugs. The MOU features a partnership between Port of Melbourne (PoM), Svitzer, Copenhagen Infrastructure Partners (CIP) and Plexar Energy which will establish a collaborative framework to assess the feasibility of introducing two fully electric TRAnsverse 2600e tugs in the port. The framework will also explore the feasibility of a dedicated renewable energy microgrid and high capacity charging infrastructure. The MoU was officiated at the Port of Melbourne Education Centre as part of the Danish State Visit to Australia.

PoM chief executive Saul Cannon said the collaboration reflected a shared ambition to improve port efficiency while accelerating the sector's transition to lower emissions operations:

> Efficient, reliable towage services are critical to the smooth functioning of the port, and electrification offers the potential to improve both operational performance and environmental outcomes. Through this MoU, we are exploring what it would take to bring the next generation of electric towage to Melbourne in a way that benefits port users, reduces emissions, and supports a more sustainable future.

The shift to electric towage has the potential to deliver a range of benefits for port users, including improved vessel-handling performance, reduced noise and vibration, and greater predictability in operating costs. A dedicated renewable microgrid may also provide a resilient and efficient energy supply tailored to the specific operational requirements of tug services.

Svitzer Australia managing director Videlina Georgieva said the partnership with PoM and CIP represented an important step in bringing the next generation of sustainable towage to Australia:

> Towage is critical to the performance of any port, and our biggest challenge for decarbonisation is reducing emissions without compromising safety, capability or reliability. At Svitzer, we are investing in the technologies that will help solve this challenge, and it is exciting to see Melbourne leading the way, through this collaboration, to make sustainable towage a working reality in Australia.

Plexar CEO and partner at CIP, Karsten Plauborg, said the partnership highlighted how microgrids and AI based optimisation tools can support electrification:

> We are grateful to our visionary partners and look forward to demonstrating how Plexar's solutions, electrical engineering expertise and the direct use of onsite electricity generation can both optimise costs and increase power availability.

The MoU was signed during the state visit's energy program, themed Partnering for a green, secure and sustainable tomorrow and the occasion underscored PoM's broader commitment to advancing decarbonisation and enhancing efficiency across the port supply chain, the port said in a statement. Mr Cannon said:

> Transitioning port operations to cleaner, more efficient technologies is a shared challenge. Collaborations like this help us build the partnerships and capability needed to deliver meaningful progress for the sector and for Victoria.

Dale Crisp, DCN *18 March 2026*

***Spirit of Tasmania V* sails for Melbourne**

TT LINE's second new Bass Strait ro-pax *Spirit of Tasmania V* arrived in Geelong on Sunday 3 May, having departed Fremantle at 1345 hours Monday 27 April after completing regulatory clearances and re-provisioning.

The 47,994 GT vessel arrived in Fremantle's Inner Harbour last Thursday evening after completing a delivery voyage that began in the temporary lay-up port of Leith, Scotland on 7 March and continued via bunker and supplies stops at Gibraltar, the Canary Islands, Cape Town and Mauritius.

Spirit V is due to undergo berthing trails in Geelong before moving to Melbourne where sister *Spirit of Tasmania IV* is berthed at Nelson Pier, Williamstown, Melbourne undergoing hull-strengthening work.

It will then shift to Hobart for final fit-out work and then function from 8-30 June as a venue for the Dark MoFo festival. The ship will be located at the Macquarie 2 wharf and its vehicle decks 3 and 4 will be transformed into large scale art spaces with installations that will include robotics, light works, and immersive video pieces.

Dale Crisp, DCN *28 April 2026*

Maritime Industry Australia Ltd "Blueprint for a Maritime Nation" – Opening Session

The opening session at the Maritime Industry Australia Ltd (MIAL) "Blueprint for a Maritime Nation" conference in Perth on Tuesday 12 May, focused on the vulnerability of Australia's maritime industry.

Director General from the Department of Transport in Western Australia, Peter Woronzow kicked things off with a look at the importance of the maritime supply chain to Western Australia, particularly in light of flooding events in recent years which had impacted on rail connections. The state government had turned its eyes to shipping as a solution, something Mr Woronzow said hadn't been realised, although WA's 22 ports were exporting 60% of Australia's goods by weight. The vision for an Australian sovereign fleet now lay firmly with the federal government. Mr Woronzow said the state government was keen to expand port infrastructure, while Rear Admiral Chris Smith, commander of the Australian fleet, asked how those ports should be protected in an increasingly unstable world.

The admiral's view was that we need to change our view from living in a world with periods of instability to expecting a world of constant change. Admiral Smith said:

> We are a maritime nation and every Australian, regardless of whether they know it or not, has a maritime story to tell.

He said Australia needed to better understand its reliance on maritime trade and supply chains, and that greater public awareness would help drive investment in the sector. The admiral said nurturing that realisation of a maritime nation would make the country realise how dependent it was on the ocean for its supply chains. Admiral Smith said instability and disruption were becoming persistent features of the global environment: there is no comfortable reset point where things go back to how they used to be.

He warned low-cost technologies were making large-scale disruption easier for both state and non-state actors. According to the admiral, it was a mistake to assume there would be a return to stability or the status quo, and the maritime industry shouldn't plan on the basis of stability. He said the risk was assuming disruption was temporary and waiting for conditions to return to normal:

> However, if instability is no longer the exception but instead the norm, then our assumptions and planning need to change with it.

Admiral Smith said recent defence policy documents, including the 2020 Defence Strategic Update, the 2023 Defence Strategic Review and the 2024 National Defence Strategy, all pointed in the same direction regarding growing strategic instability. He said Australia needed to reassess long-held assumptions about the maritime domain: the era of uncontested seas is now over.

Admiral Smith pointed to the various current conflicts in the world. He said the global maritime system had developed around efficiency and just-in-time logistics, while countries including Australia, the US and the UK had reduced their merchant shipping fleets over recent decades. He pointed to United Nations Trade and Development figures which show more than 80% of the world trade moves by sea.

> And for Australia, this is well over 90%. As of January 2025, the global merchant fleet comprised around 112,500 vessels. Of this, 41% of the carrying capacity is held by entities in Greece, China, and Japan. The majority of Greek and Japanese-owned shipping is foreign-flagged. Australia, by comparison, owns about 0.1% of the world's shipping fleet.

The admiral also pointed to the vulnerability of an increasing reliance on a few undersea cables:

> We may be more dependent on the global system than at any point in our history, yet we have not fully confronted what it would take to sustain access to it during deliberate disruption. The maritime industry formed part of Australia's national resilience and strategic capability, citing risks including supply chain disruption, workforce constraints, industrial fragility and reliance on external providers. We depend on a global maritime system we neither own nor control.

Admiral Smith also said Australia's geography provided some protection:

> This provides us an advantage over those with complex and contested borders, though it's important to acknowledge advances in weapon ranges and precision are reducing that advantage. Our resource-based energy, minerals and industrial potential remain significant and ripe for development. And perhaps most of all, we operate within a stable political and institutional framework that does not suffer from the swings and shocks we are currently witnessing others experience.

Admiral Smith said the question is not whether we have advantages, it is how to ensure these advantages continue to work in our favour in the changing system we rely on.

> Though we may not control the global system, it's important to note we are not without influence over how we access, support and sustain our place within it. There is also opportunity, as long as we recognise it early and act deliberately.

Allan Newton, The DCN *12 May 26*

TECHNICAL

Industry Recognition for Revolution Design

Revolution Design has been recognised with the prestigious Shippax HighSpeed Award for Hull 096/*China Zorrilla* – the world's largest battery-electric ship which will operate between Argentina and Uruguay.

Presented during Shippax 2026 in Italy, the award recognises groundbreaking innovation in the global fast-ferry industry, with Hull 096 acknowledged as a milestone vessel that is redefining large-scale sustainable maritime transport.

Revolution Design staff show their Plaque with *China Zorilla* in background
(Photo Courtesy Incat Tasmania)

For the Revolution Design team, it's a proud moment to see years of innovation, problem solving, and technical expertise recognised on the international stage after playing a key role in bringing this world-first vessel to life.

Incat Tasmania Linkedin post *15 May 2026*

Next Generation 80m six-engine Incat Crowther Ro-Pax Ferry to be built in South Korea for Ongjin County (ROK)

Global digital shipbuilder Incat Crowther has been commissioned by South Korean shipbuilder Kangnam Corporation (Kangnam) to design a new 80-metre high-speed catamaran Ro-Pax ferry for operation by Korea Express Ferry (KEF). The new vessel will service routes between Incheon Metropolitan City and the Yellow Sea islands of Daecheongdo, Baengnyeongdo and Socheongdo in Ongjin County, Republic of Korea (South Korea).

The project renews the successful partnership between Incat Crowther, Kangnam and KEF, with the companies having previously collaborated on the design and delivery of *Korea Pride* – a 72-metre passenger ferry that has been successfully operated by KEF from Incheon City since 2022. The proven performance of *Korea Pride* reinforces KEF's decision to once again utilise Incat Crowther's operator- focused design approach. The operational success of Korea Pride led to KEF being selected to replace the aging Ro-Pax service on these critical routes.

The new vessel will incorporate modern design optimisations and technological innovations to maximise operational efficiency while meeting growing local demand. With a vehicle deck capable of transporting up to 60 cars or 50 utility trucks, the vessel will provide critical economic support to island residents and businesses.

Capable of transporting up to 572 passengers and 12 crew at speeds of up to 45 knots, the new vessel has been designed to optimise vehicle flow and passenger amenity. The vessel features twin pedestrian access ramps providing step-free access to the passenger deck, as well as a bespoke stern ramp for vehicle accessibility.

Incat Crowther 80m Ro-Pax ferry for ROK
(Image courtesy Incat Crowther)

Building on the success of *Korea Pride*, the new vessel provides an enhanced passenger experience across four seating classes (economy, premium, business and first class) and dedicated facilities for parents, pets and wheelchair users. The large, air-conditioned passenger deck also features a kiosk and pantry, cleverly designed cargo and luggage holds, a medical room, ample bathroom facilities, a smoking room, and massage chairs for business and first-class passengers.

The vessel's propulsion system provides greater redundancy, reliability and manoeuvrability while achieving higher power-to-weight ratios and lower fuel consumption. This configuration enhances operational safety and efficiency on the demanding coastal routes the vessel will be operating on. The vessel will also be equipped with an aft control station, providing the captain with optimal vision and safety during docking operations.

Dan Mace, Technical Manager at Incat Crowther said:

> We're pleased to be partnering once again with Kangnam Corporation and Korea Express Ferry to deliver an enhanced vessel for these vital island routes.

This project is a great example of how Incat Crowther can utilise their global experience and capabilities to support the delivery of a bespoke, locally built passenger ferry. The new vessel offers a reliable six engine drivetrain of MTU M05 rated engines, combined with an off-the-shelf configuration of waterjets and gearboxes for ease of installation and maintenance. Operational efficiency is enhanced with a wide turning circle for loading and unloading of cars. They are committed to supporting Kangnam to ensure this important sovereign build delivers for local communities.

Sung Man Hwang, C.E.O. of Korea Express Ferry said:

> The addition of this new vessel to our fleet represents a significant investment in connecting Ongjin County communities with Incheon City. The enhanced vehicle capacity will provide crucial support for local businesses and residents, while the vessel will ensure reliable, comfortable service for years to come. We have great confidence in our partnership with Incat Crowther and Kangnam Corporation and look forward to seeing this vessel enter service on these crucial routes.

Construction on the new vessel is to commence in second half of 2026, with the vessel to be delivered in 2028.

Specifications

Length Overall	262' 5" / 80.00m
Length Waterline	251' 11" / 76.80m
Beam Overall	62' 4" / 19.0m
Draft	7' 6" / 2.30m
Depth	18' 0" / 5.50m
Construction	Marine grade aluminium
Fuel Oil	15,850 gallons/60,000L
Fresh Water	1,188 gallons/ 4,500 litres
Sullage	1,188 gallons/ 4,500 litres
Passengers	572
Vehicles	60 cars or 50 utility trucks
Crew	12
Speed (Service)	36 knots
Speed (Max)	45 knots
Main engines	6 x MTU 16V4000M65L IMO2
Installed power	6 x 2560kW @ 1800rpm

Propulsion	6 x Waterjets
Flag	Panama
Class / Survey	✠KRS0 Passenger Ship Catamaran (HSLC-SA2) ✠KRM0 UMA

Incat Crowther Media Release *30 March 2026*

Australian Yard to build new ferry for Stradbroke Island service

Commercial Marine Australia (CMA) has been selected for the construction of a new ferry that will be operated between mainland Queensland and North Stradbroke Island. CMA will build the ferry, which will be named *Straddie Express*, at its Brisbane facilities. Design work on the vessel will be undertaken by One2Three Naval Architects.

Straddie Express
(Courtesy One2Three Naval Architects)

Straddie Express will have a length of 24 metres, a beam of 7.5 metres, and two decks with 141 internal seats, 27 internal standing spaces and 82 upper deck seats. The interior will feature wider aisles to improve movement throughout the vessel. There will also be an increased number of priority seating areas and dedicated spaces with fold-down seating to better accommodate passengers in wheelchairs.

Minimal cabin entry and exit sills will meanwhile make boarding and movement easier for passengers with mobility needs. A larger, air-conditioned main cabin will feature panoramic windows and an onboard kiosk. Additional enhancements will include open upper deck seating, dedicated luggage storage, and seating with tables.

Construction is expected to commence shortly, with a build program of approximately 12 months, after which the vessel will enter into service.

Gareth Havelock, Baird publishing *7 May 2026*

Large Fish Farm support vessel for New Zealand

A versatile, multi-purpose fish farm support workboat recently delivered to New Zealand was designed by Australian firm Southern Ocean Solutions (SOS) and built in Vietnam.

Its highly flexible, multi-functional layout and efficient design were tailored for demanding aquaculture operations, and *Whekenui* supports a wide range of daily tasks including feed transport and discharge, mort recovery, mooring support, towing, power supply, personnel transport, and data collection around both inshore and offshore salmon leases. With self-contained accommodation for five crew and strong performance in exposed offshore conditions, *Whekenui* is a highly capable, efficient workboat purpose-built for modern New Zealand salmon farming.

Fish Farm support vessel *Whekenui*
(Image courtesy New Zealand King Salmon)

Scott Keane, Construction Manager at SOS, told Baird Maritime that *Whekenui* delivers exceptional capability within a modest 24-metre footprint:

> Engineered for strength and reliability in challenging conditions, she offers excellent manoeuvrability and operational flexibility. Her design supports a diverse range of functions, including as a mobile feeding platform, mort retrieval, feed-barge support, towing operations, crane work, and general offshore and inshore tasks.

Keane remarked that SOS developed the vessel from the ground up, incorporating extensive input from client New Zealand King Salmon. The design is fully customised to suit their operational requirements and the extreme environmental conditions in which the vessel will operate. He added:

> While this level of tailoring is time-intensive, it consistently delivers a vessel that meets - and often exceeds - client expectations, making the additional investment of time well worthwhile.

While the vessel follows a largely conventional layout, its hull form has been optimised and all machinery and equipment have been carefully selected to maximise safety and energy efficiency and also to minimise manpower requirements. These are in line with aspects such as efficiency, crew safety, and operational economy, which Keane identified as key focus areas currently impacting naval architecture.

The aquaculture sector is highly interconnected, and positive experiences naturally lead to further opportunities and long-term relationships.

Within that same sector, Keane observed that innovation remains a priority, though the major trend will be increasing operational capability, particularly the ability to work safely and efficiently at offshore sites in adverse weather conditions. He expects that this demand for robust, offshore-capable vessels will grow significantly in the next few years.

Meanwhile, for the broader Australian workboat industry, he forecasts that fleet replacement will be a major driver of the industry in the coming years:

> Maintenance costs in Australia continue to rise sharply, while the cost of new vessels is, in many cases, decreasing. This creates a compelling case for replacement, which is further strengthened by the improved safety, efficiency and performance gains offered by modern vessel designs.

Baird Maritime *29 April 2026*

Incat Crowther To Design Ten Crew Transfer Vessels For Brunei

Fast Offshore Supply (FOS), one of Asia's offshore marine services providers, has selected global digital shipbuilder Incat Crowther to design a fleet of ten new 55-metre DP2 Fast Crew Vessels (CTV). The new state-of-the-art vessels will join FOS expanding fleet providing offshore personnel and cargo transportation services and will operate for Brunei Shell Petroleum's (BSP) offshore energy assets. Incat Crowther's team of naval architects worked closely with FOS during the international tender to develop a design specifically to meet the stringent demands of BSP, particularly for availability and operability throughout the year.

The new vessels, which will be capable of transporting 80 passengers and a payload of 150 tonnes at speeds of up to 30 knots, will be constructed in multiple shipyards across the region including FOS's own shipyard in Singapore.

Commenting on the benefits of Incat Crowther's digital shipbuilding process, Ed Dudson, Incat Crowther's Managing Director Europe said:

> Constructing this fleet across multiple shipyards will enable rapid deployment of the new vessels and has been made possible by our digital design and shipbuilding process.
>
> Each shipyard receives an identical, highly detailed digital package containing everything required for construction –from structural arrangements through to internal routing of auxiliary systems, electrical cable trays and HVAC. This approach ensures that despite the complexity of a multi-location build, all ten vessels will be delivered to an identical design and specification, providing FOS with a consistent, reliable fleet.

Designed to maximise operational efficiency, the new vessels feature a SMST gangway that enables safe and efficient personnel transfer to offshore infrastructure. The vessels also boast a large 200m^2 aft cargo deck capable of transporting critical supplies and equipment to BSP's offshore assets. To support the gangway operation, the vessels are fitted with three bow thrusters to meet the required DP2 notation.

Passenger amenity has also been prioritised with each vessel's main deck boasting a spacious, air-conditioned passenger cabin complete with business class style seating, three bathrooms, two twin cabins and ample cargo storage spaces. The hull deck accommodates each vessel's 16 crew in comfort with six twin cabins, two single cabins, a crew mess and kiosk area.

Chew Kia Hoe at Fast Offshore Supply said:

> FOS and Incat Crowther have teamed together to successfully win this highly competitive international tender process, we're pleased to be working together on the design and delivery of this important new fleet. _Incat Crowther's dedication to genuine collaboration throughout the tender and design phase has been highly valued and has resulted in a vessel design which we are incredibly proud of, and one which is tailored specifically to the needs of our clients at BSP. Incat Crowther's digital design process also provides us with the flexibility and confidence to construct the fleet across multiple shipyards simultaneously, which is commercially essential and will enable timely deployment of the full fleet.

55m Crew Transfer vessel for Brunei
(Courtesy Incat Crowther)

Construction on the new fleet started in late 2025, with the first vessels in the fleet anticipated to enter service in early 2027.

Specifications:

Length Overall	180' 5" / 55.00m
Length Waterline	170'2"/ 52.00m
Beam Overall	29' 6"/ 9.00m
Draft	6' 6" / 2.00m
Depth	14'3"/ 4.35m
Construction	Marine grade aluminium
Fuel Oil	34,342 gal/130,000 litres
Fresh Water	9246 gal/35,000 litres
Black Water	528 gal/2,000 litres
Grey Water	528 gal/2,000 litres
Passengers	80
Crew	16
Cargo deck area (no SMST & Container)	200m2
Cargo deck area (with SMST & Container)	140m2
Cargo deck capacity	150t
Speed (Service)	25 knots
Speed (Max)	30 knots
Main engines	4 x CAT 3512C
Installed power	1678kW @ 1800rpm
Propulsion	4 Hamilton H10
Generators	3 CAT C9 250kW
Flag	Panama
Class / Survey	Bureau Veritas

Incat Crowther media release *11 May 2026*

AUS Ships Group Fully Electric Domestic Commercial Vessel Ferry

Brisbane based shipbuilder Aus Ships Group is to partner with Volvo Penta to build Australia's first electric drive passenger ferry, which is already under construction and due

to be commissioned by the end of the year. Aus Ships Group and Volvo Penta, the maritime engines and power systems subsidiary of Swedish manufacturing giant Volvo Group, say the "landmark" electric ferry will be an 18-metre vessel capable of transporting 80 passengers.

The ferry will feature a twin installation of Volvo Penta's IPS450E electric propulsion system, delivering 250 kilowatts (kW) per driveline and combining a 460 kilowatt-hour (kWh) onboard battery pack with solar panels.

Aus Ships Group electric ferry concept
(Image courtesy Aus Ships Group)

As the ferry's launch will essentially serve as a demonstration to provide better understanding of electric propulsion in marine environments, it will also incorporate a Volvo Penta D4 marine diesel engine to act as a range extender.

Phillipa Wood, head of Volvo Penta Oceania, said:

> This project represents a bold step towards low emissions transport in Australia. What we're doing here goes beyond deploying new technology – it's about validating a complete, integrated solution that delivers efficiency, reliability and confidence for operators. With our Electric IPS platform, we're carrying decades of proven marine innovation into the electric era, combining performance with efficient, quieter propulsion.
>
> In this installation, we're using twin IPS450E electric drivelines, each delivering 250 kilowatts of power. The aim is to allow the vessel to operate using renewable energy sources with improved efficiency – while maintaining performance. For Volvo Penta, this is about more than a vessel. It's about validating scalable electric marine propulsion solutions for Australia's waterways.

Aus Ships, which built two of Brisbane's CityCats ferries, is being backed in building the new electric ferry by a $2 million grant from the Australia-Singapore Low Emissions Technologies (ASLET) initiative, which is funded by the Australian and Singaporean governments and is co-delivered by Australia's national science agency, the CSIRO, and the Maritime Port Authority of Singapore.

Tommy Ericson, director of Aus Ships, said:

> We see this as a defining moment for the Australian marine industry. By combining our shipbuilding experience with Volvo Penta's advanced electric propulsion technology, we are not only delivering a first-of-its-kind vessel – we are also laying the groundwork for a new generation of sustainable electrically driven passenger ferries. This is about creating a scalable model that can be replicated across the region.

Joshua S. Hill, The Driven, *11 May 2026*

***Whale Dreamer* – Sightseeing and events catamaran built for Australia's coastal waters**

Thai/Australian builder SeaCat Ships recently delivered a new semi-displacement catamaran vessel to local tour operator Sapphire Coastal Adventures.

Whale Dreamer was designed by SeaCat affiliate SeaSpeed Designs. SeaCat said the bespoke aluminium catamaran has been purpose-built for operations in Sydney's exposed coastal waters. The vessel has an LOA of 23.4 metres (76.8 feet), a beam of eight metres (26 feet), a draught of only 1.65 metres (5.41 feet), a crew of five, and space for 145 passengers.

Based on SeaCat's semi-displacement deep-vee hull platform, *Whale Dreamer* delivers enhanced seakeeping performance in offshore conditions. The vessel provides a smooth and controlled ride in swell, with reduced slamming and excellent stability, ensuring passenger comfort.

SeaCat Ships *Whale Dreamer*
(Image courtesy SeaCat Ships)

Paul Birgan, Managing Director of SeaCat Ships, told *Baird Maritime*:

> The hull form has been carefully refined to minimise resistance while still providing a smooth and comfortable ride in exposed coastal conditions.

Certified under NSCV Class 1C survey for up to 150 passengers, the vessel has been optimised for high-frequency tourism operations with practical passenger flow and operational efficiency in mind. Paul Birgin added:

> The owner required a modern, economical, and reliable whale watching and events vessel capable of operating comfortably in offshore coastal conditions while maintaining low operating costs. The brief focused heavily on passenger comfort, fuel efficiency, visibility, and safe passenger flow around the vessel. The owner also wanted a platform suitable for multi-purpose use, including tourism cruises, private events, and seasonal whale watching operations.

Another important requirement was compliance with the latest pollution and emissions regulations in New South Wales, particularly in Sydney and along the South Coast where the vessel will be operated, while still delivering strong commercial performance and reliability.

Powered by twin Yanmar 6HYWET 700hp (520kW) diesel engines driving fixed-pitch propellers via shaftlines, the vessel

can achieve a top speed of 26 knots and cruise economically at 21 knots with a fuel consumption of approximately 75 litres (16 gallons) per hour per engine. Birgan added:

> This setup was selected for its simplicity, reliability, efficiency, and ease of maintenance in commercial tourism operations. The propulsion system has been carefully matched to the proven semi-displacement hull design to provide excellent cruising performance, strong offshore capability, and low fuel consumption while maintaining comfortable passenger operations.

A key feature of the propulsion package is the vessel's ability to achieve strong operational performance with comparatively low horsepower requirements. The refined hull design and efficient propulsion integration allow the vessel to deliver economical operations while still maintaining the speed and handling characteristics required for commercial whale watching duties. The mini-keel arrangement meanwhile provides additional protection for the running gear during coastal and harbour operations.

The vessel is fitted with a comprehensive Garmin commercial marine electronics package that Birgan said is suitable for offshore tourism and whale watching operations. The system includes integrated multifunction navigation displays, a radar, GPS navigation, a depth sounder, an AIS, VHF communications, and vessel monitoring systems.

The integrated bridge system provides a simple and highly user-friendly operating environment for the skipper and crew, with all key navigation and vessel information accessible through a centralised interface.

The vessel also features full walk-around decks and large three-level viewing areas, which greatly improve passenger movement, sightseeing opportunities, crew access, and overall operational safety during whale watching activities. The layout allows passengers to move safely and comfortably around the vessel while maximising viewing opportunities during tours and events. The multi-level viewing arrangement creates a much more open and interactive passenger experience, which is particularly valuable during whale watching operations.

For Birgan, one of the main challenges was balancing operational efficiency with regulatory compliance under the latest NSW environmental and pollution requirements:

> The design also needed to provide excellent passenger comfort and stability during offshore whale watching operations while still maintaining economical fuel consumption and practical maintenance requirements. Passenger movement and visibility were also key design considerations, which led to the incorporation of the full walk-around deck arrangement and multi-level viewing areas.

Also, as the vessel was built entirely in aluminium, maintaining weight control throughout construction was critical to achieving the desired performance and fuel efficiency targets.

> Another challenge was integrating the vessel systems and propulsion arrangement while meeting the latest regulatory requirements and maintaining ease of maintenance for the operator. As with many modern commercial vessels, supply chain timing and coordination between multiple equipment suppliers also required careful management throughout the project.

Birgan nonetheless remarked that the work on *Whale Dreamer* reinforced the importance of refining proven hull platforms rather than reinventing successful concepts. By continuing to evolve an established SeaSpeed catamaran platform, SeaCat was able to achieve very strong efficiency and performance outcomes with a relatively low total installed power.

> The project also provided valuable experience in integrating modern environmental compliance requirements into commercial vessel operations without compromising commercial viability. Passenger flow and usability also continue to be a major focus, and the success of the walk-around deck arrangement will certainly influence future tourism vessel designs.

Specifications:

Type:	Sight seeing/events
Classification	NSCV 1C
Flag	Australia
Owner	Sapphire Coast Adventures
Builder	SeaCat Ships Thai/Australia
Construction Material	Aluminium
Length OA	23.4m
Beam	8.0m
Draft	1.65m
Main Engines	2 x Yanmar 6HYWET, each 700 hp (520 kW) at 2,300 rpm
Propulsion	Two fixed pitch propellers
Speed – max	26 knots
Cruising speed	21 knots
Electronics	Garmin
Fuel	8,000 litres
Fresh Water	1,000 litres
Blackwater	1,000 litres
Passengers	145
Crew	5

Baird Maritime *18 May 2026*

AMC Major Events & Activities

2026 Careers Day

The AMC Careers Expo 2026 was held in Launceston on 26 March. The event proved to be highly successful, bringing together a wide range of industry partners and providing students with valuable insights into future career opportunities upon completing their studies at AMC. AMC appreciates the support of many industry partners and RINA Tasmania Section.

2026 Careers Day stand
(Photo courtesy Hossein (Behrooz) Enshaei)

Kingdom of Saudi Arabia (KSA) students at AMC

The Australian Maritime College (AMC) is pleased to welcome a growing cohort of students from the Kingdom of Saudi Arabia (KSA), marking an important milestone in international collaboration and capacity building in maritime education.

Following the successful completion of a one-year foundation program in Hobart during 2025, a total of 51 KSA students commenced their studies at AMC in Semester 1, 2026. This includes 35 students enrolled in Maritime Engineering and 16 students undertaking Maritime and Logistics Management. Their transition reflects both strong academic preparation and a shared commitment to advancing maritime capability in line with global industry needs.

This initiative forms part of a broader partnership aimed at developing future maritime professionals equipped with the technical knowledge and operational awareness required in an evolving sector. The foundation year has played a critical role in supporting academic readiness, English language proficiency, and cultural integration, ensuring students are well prepared for the demands of their undergraduate programs.

Looking ahead, the pipeline continues to grow. A further cohort of 24 KSA students is currently undertaking their foundation studies in Hobart and is expected to join AMC in Semester 1, 2027. This sustained engagement highlights the strength of the collaboration and the confidence placed in AMC's educational offerings.

2026 Kingdom of Saudi Arabia Foundation Studies students
(Photo courtesy Hossein (Behrooz) Enshaei)

Beyond academic achievement, these cohorts contribute to the diversity and vibrancy of the AMC community, enriching the learning environment and fostering cross-cultural exchange. AMC looks forward to supporting these students throughout their academic journey and to the long-term impact they will have within the global maritime industry.

Assoc Prof Hossein (Behrooz) Enshaei

Director CMEH, Australian Maritime College

UNSW Canberra

How time flies! We are seemingly running at speed towards the end of Semester 1 and have been busy on many fronts. From a student perspective the highlights in addition to the captivating classes which included a model inclining experiment, have likely been our recent field trips to Sydney with the 3rd year NA and students taking the course as an elective; and to Tasmania and to sea with the 4th-year NA group. I have provided a series of appropriately captioned photos telling some of our stories. Many thanks are duly expressed to the organisations and the individuals within them that gave freely of their time to make lasting impressions on students and staff during these trips (Lloyds Register, Thales, Incat Crowther, One2three Naval Architects, AMC, Incat Tasmania, Sentinel Boats and MATV *Sycamore*).

Perhaps an effective way to summarise the value of the field trips generally is by drawing on a lightly edited personal reflection of one of the students.

> *<u>Reflection on Tasmania Field Trip</u>*
>
> *The trip to Tasmania was a great experience, enabling me to reflect on topics learnt in class and to gain an appreciation for the variety and scale of maritime related activity and the enterprises in both Launceston and Hobart.*
>
> *Our time with AMC's Dr Nick Johnson in the towing tank was a practical highlight. With some freedom, we were allowed to investigate phenomena we had been taught without the pressures of direct assessment.*

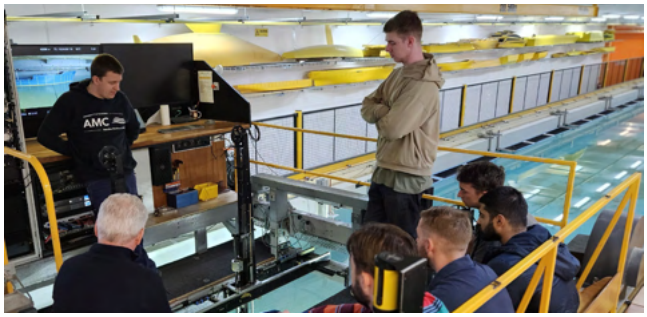
Model Inclining experiment in UNSW Canberra lab - Kieran Truelsen, Harrison Quinn, Kieren Armitage, Guy Latsky, David Lyons

In Garden Island Dockyard Pump Room during Sydney Field Trip hosted by Murray Makin (Thales) - David Lyons, Hudson Elliot, Guy Latsky, Harrison Quinn, Kieran Truelsen, Massimo Parlapiano, Kieren Armitage, Joshua Cook, James Fenn, Ethan Lovell, William O'Brien

Combined with Nick's engaging approach to teaching us about how the carriage worked and what systematic errors we need to look out for / mitigate, our time on the carriage felt more free-form and hands-on than our work at ADFA sometimes does. Nick was also freed up by the unconstrained nature of our sessions to demonstrate different methods of testing, and he was happy to use the rig in a few unorthodox ways to help us connect our theoretical understanding of hydrodynamics to its practical applications. We were able to come away with some great data and footage, particularly of runs demonstrating hull speed and the influence of encounter frequency on motions.

The morning we spent in the ship simulators was also great fun, and although I've been lucky enough to be in similar ship simulators before, navigating through AMC's customised harbour gave me a better understanding of the pressure many ships coming in and out of port are under. The tug simulator also gave me a lot more appreciation for tugboat operators and their critical role. The tours of the remaining facilities at AMC were also enjoyable with the cavitation tunnel being a standout. With it running, it was incredible to be able to witness cavitation live, and to see the effects of dirty water on the formation and shape of the cavitation bubbles and sheets. Some of the alternative visualisation techniques they have available are incredibly interesting.

However, perhaps the most insightful portions of the trip for me were the two tours we did at Derwent Park in Hobart. Both Sentinel Boats and Incat Tasmania were eye-opening, showcasing the vastly different scales and techniques of boat and shipbuilding with HDPE and aluminium respectively. At Sentinel it was fascinating to see the parallels to traditional wooden shipbuilding, but also to hear about the processes they were going through with classification societies and customers to build confidence in HDPE construction and near indestructible boats. The conversations we had with head engineer Jason Downie (Head of Engineering) were insightful and his knowledge and passion were clear.



4th year students on AMC Towing Tank carriage with Dr Nick Johnson during AMC visit

Warren Smith with 4th year students Toby Costigan, Ethan James, Luke Reidy, Parth Khanna, David Lyons, and Russ Donovan at Sentinel Boats, Hobart

Led by Jason McVicar from Revolution Design (Design Manager), the tour of Incat's large work site was also very impressive. Being the closest look we've had at modern block-based ship construction, it really drove home to me the level of support and infrastructure required to build significant vessels, underlining how much of a national effort continuous naval shipbuilding is and will be, and the importance of keeping such local industries and workforces alive.

Other significant action for the naval architecture discipline team in addition to our teaching commitments and field trips has spanned:

- continuous improvement in teaching with a program revision to be introduced in 2027 following feedback spanning 5 years of delivery of the BE(Nav Arch) at ADFA - by the end of this year we will have graduated 13 naval architects,
- recruitment action which is currently underway to grow our academic staff team,
- working on the "Low-Cost Rapid Prototypes Driving Fast Boat Hull Innovation" project under Australia's Economic Accelerator (AEA) Ignite program,
- preparation for the teaching of new naval architecture and marine engineering courses at ADFA within a BSc Maritime major and minor and through a targeted maritime elective for non-engineering students, and
- contributing to the School's preparation and reporting for Engineers Australia accreditation where the review visit is planned for October.

In closing this relatively brief report, I again invite all stakeholders to engage with us as we attempt to make a difference in meeting national objectives in things maritime.

Asso\c Prof Warren Smith
Naval Architecture Program Coordinator,
UNSW Canberra

MEMBERSHIP NEWS

Australian Division Council

The Council of the Australian Division of RINA met on the afternoon of Wednesday 17th March 2026 by zoom-conference under the chairmanship of our Vice President, Sammar Abbas in Perth in the absence of President Binns, with links to Gold Coast, Sydney, Canberra, Hobart, Launceston, Adelaide and Perth.

Among the items discussed were:

Accreditation of Australian degree courses

Council further considered the impasse between the Engineering Council and Engineers Australia. The Chief Executive had offered to assist and Council continues to work on the most effective way of using its influence and that of RINA HQ to achieve a satisfactory outcome to the benefit of our members. In particular, Council is looking to facilitate recent graduates becoming Chartered Engineers.

Legal Relationship between RINA and Australian Division

Discussions are ongoing between the Division and RINA HQ as to the extent of legal separation between the two entities regarding finances, membership and organisation. Initial consideration is being given to whether the Division bylaws require amendment to reflect this relationship.

The *Australian Naval Architect* Paywall

Council noted that no progress has been made in making our journal available to non-members and is considering methods that might be used to make it more widely read. Meanwhile members can download the PDF of the magazine. Further, HQ has been requested to reinstate the full *ANA* archive as it currently only goes back to 2024.

AMSA Accredited Marine Surveyor System

The Secretary provided a verbal report of a briefing on the process for reviewing the system. An industry reference group is about to complete its input and stakeholders including RINA would be consulted in relation to it followed by development of legislation that is likely to enter effect in 2028.

AMSA Lightship Verification

Council was advised that AMSA had not been prepared to reconsider the Division's submissions in relation to this matter. There would be no further action.

Next Meeting

Noting that the Annual General Meeting would be held on 24th March 2026, a week after the Council meeting, Council was tentatively scheduled to meet on 16th June 2026.

The draft minutes of the meeting have been circulated to Council members and are available to other members by request.

Members will have noted from the President's column in this issue that our President is now Mr Sammar Abbas. Prof Jonathan Binns signalled to the AGM that he would not be continuing and subsequently submitted his resignation. Council subsequently elected Sammar Abbas as President, elevated from Vice-President.

Although no progress with succession planning was reported to the above Council meeting, Rob Gehling subsequently also moved on and I have been elected to the position of Secretary.

Stuart Cannon
Secretary
E: rinaaustraliandivision@gmail.com
P: 0403 221 631

NOMINATIONS FOR WALTER ATKINSON AWARD 2026

Background

This Award, named after one of the founders of what is now the RINA Australian Division, is provided for the purpose of encouraging the writing and presentation of written papers.

Scope and Eligibility

A nomination must be a **written paper, either first presented at a RINA-supported technical meeting or conference in Australia, such as Indo-Pacific 2025 IMC or first published in a RINA-supported publication in Australia**. A paper presented at a Section meeting is eligible provided it is accompanied by a written copy of the paper submitted to the Section (or Division). The paper may be written following its presentation.

Papers by multiple authors are eligible and all authors are eligible, Australian or overseas, members or non-members.

Members of the Award sub-committee are not eligible.

Nominations are called for papers respectively published or first presented in the year 1 July 2025 to 30 June 2026.

Selection Criteria

A maximum of 10 points are allocated to each of:

- Is there a stated or implied purpose?
- How important is the paper to Australia?
- Does the paper have any new ideas to impart?
- How easy is the paper to understand?
- How rigorous is the paper?

If no paper scores more than 35 points average out of 50 max, then the prize will not be awarded.

Having a points system offers consistency across reviewers, and the criteria chosen reflect the original objectives of the Award.

Selection Process

Nominations for the year 2025-2026 will be received from two sources:

- Section committees: – each Section will be invited to nominate up to TWO papers.
- Papers from *The Australian Naval Architect* (ANA).

Note that a Section can nominate a paper from any eligible source, they are not limited to a Section paper.

A Council-appointed Award committee of three RINA members

will receive the nominations and make a recommendation to Council for the best paper. The Award committee members are not eligible for the Award.

Award Value

The Award comprises three components:

- An engraved trophy or medal.
- A framed certificate for each author.
- Where practicable, a free registration/entry to the event at which the award is to be presented.

Award Presentation

The Award will be presented by the President of the Australian Division (or their nominee). It will be presented at the next RINA-supported conference in Australia. Where this is not practical, the Award may be presented at a prominent Divisional or Section event.

Timelines

Nominations may be received by the Secretary at any time during the 12 month eligibility period. Nominations close on Friday 17th July 2026

The Award committee will aim to make its recommendation to the September meeting of Council and the Award will subsequently be announced and presented.

Past Winners

2013 – R Ballantyne, G MacFarlane, S Ballantyne & T Lillienthal; The Floating Harbour Transhipper an Operationally Effective Solution for Military and Emergency Response Duties (Pacific 2012 IMC).

2014 – R Dunworth; Back Against the Wall (Pacific 2013 IMC and The ANA, February 2014)

2015 – R Neill; Preliminary Analysis of Imagery Data arising from the 2014 Internal Investigation of HMAS AE2 (Victorian Section technical meeting September 2014)

2016 – S Denehy, J Duffy, D Ranmuthugala and M Renilson; Mooring Arrangement Design to Minimise Berthed Ship Motions due to a Passing Ship, (Pacific 2015 IMC)

2017 – No Award Made.

2018 – G Seil, D Pook, M C Nguyen and Z Q Leong; The Influence of Appendages and their Stall on Submarine Hydrodynamic Loads, (Pacific IMC 2017)

2019 – A Swidan, D Christophersen and T Bauer; A New Centrebow Design to Enhance the Performance of High-Speed Catamarans in Rough Seas, (Nominated by ACT Section and presented to that Section on 19 March 2019)

2020 – S Garrett and T Durrant; Characterising the Southern Ocean and Ross Sea Wave Climate, (nominated by NSW Section – Pacific 2019 IMC and published in May 2020 ANA)

2021 – No Award Made.

2022 – R Dunworth; Scaling the Wall: Inclining Experiment Analysis on Vessels with Chines, Hull Discontinuities or Asymmetry (published in November 2021 ANA)

2023 – No Award Made

2024 – K W Fisher; Limited Meaning: Misunderstanding the Role of Class Org (Published in February 2024 ANA)

2025 – No Award Made

NAVAL ARCHITECTS ON THE MOVE

The recent moves of which we have been advised or become aware are:

Peter Goodin has recently retired after a long career, initially with the Department of Defence, but for the last five years serving in the role of Chief Engineer with Navantia Australia based in Melbourne.

Tim Speer has worked in various capacities within the Austal business for over 30 years and has now assumed the role of Chief Engineer for Austal Defence Australia (ADA). The challenge of two first of class landing craft programs both cutting steel during 2026, means that Austal is working hard to grow an engineering team that meets this challenge. The engineering team which Tim leads has now grown to more than 100, with the establishment of numerous strategic subcontracts and an Austal Engineering team based in Melbourne. Tim advises that is great to see the growing need in Australia for naval architects to support these long term contracts.

Xavier Ling recently joined the Stability, Hydrodynamics and Support Craft Cell within the Directorate of Navy Engineering of the Department of Defence having previously worked in the Hydrodynamics Group of DSTG predominantly on CFD analysis of underwater vehicles.

Gregor Macfarlane has been on the move lately but is safely back at AMC Launceston following a dual-crew kayak crossing of Bass Strait with his eldest son via the island chain.

The Macfarlanes rounding Wilson's Promontory
(Courtesy Gregor Macfarlane)

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 undersigned 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 Stuart Cannon (rinaaustraliandivision@gmail.com) when your mailing address changes to reduce the number of copies of *The Australian Naval Architect* emulating boomerangs.

Trev Ruting and Martin Grimm

E: tbr13mob@gmail.com

FROM THE ARCHIVES
A SHORT HISTORY OF THE INTERNATIONAL HIGH-SPEED CRAFT (HSC) CODE

Rob Gehling

Background

With the claimed world's largest electric ship now completed by Incat Tasmania, it is an appropriate time to recount the development of the Australian high-speed craft industry and IMO's *International Code of Safety for High-Speed Craft* (HSC Code) that underpins it.

I have to preface this account by explaining that the heading *From the Archives* is only loosely applicable as I don't have access to most of the relevant records and have to rely on memory. I apologise in advance for any inaccuracies that may arise from this reliance. Of course a short history such as this cannot be comprehensive and of necessity can only touch on significant factors rlating to the Code

When the late Phil Hercus, founder of Hercus Marine Designs (later to become Incat Designs) first started designing high-speed aluminium catamarans for various services to Great Barrier Reef resorts, he expected that the market would be limited to perhaps 20 or 30 vessels.

After the bulk carrier *Lake Illawarra* collided with the Tasman Bridge in Hobart in 1975 leading to its collapse, Robert Clifford saw a business opportunity to commence a ferry service to avoid a long road detour for those travelling between the north and south banks of the Derwent River. With the technical advice of Hercus he developed high-speed catamarans for this service, leading to the formation of a partnership between Clifford and Hercus which became International Catamarans.

Incat Hull No. 1 Jeremiah Ryan
(Courtesy Incat Tasmania)

With the adoption by IMO in 1977 of the *Code of Safety for Dynamically Supported Craft* (DSC Code) as Resolution A.373(X) to provide recommended standards for vessels such as hydrofoils and hovercraft operating on international voyages, Hercus soon started applying that code to his aluminium catamaran designs. Such application was potentially contentious in terms of interpretation of these vessels fitting within the definition of a "dynamically-supported craft" requirement requiring "the weight, or a significant part thereof, is balanced in one mode of operation by other than hydrostatic forces". However, there was also an applicable speed/length requirement and Hercus' designs met this requirement. In the West several builders were also building high speed monohulls and catamarans in general compliance with the DSC Code, including Wavemaster, Precision Marine and later Austal Ships; in many cases these were in-house designs but several were built to Lock Crowther designs.

However, the recommendatory status of the DSC Code brought with it the limitations of a recommendatory standard rather than a mandatory international standard. Accordingly a vessel could be prevented from operating into a port of a country other than its flag State through its safety certification or technical features being b rejected by the port State. This possibility applies in particular in relation to provisions that the Code provides to be "to the satisfaction of the (flag) Administration", as may be on the recommendation of a delegated classification society. As a practical example, the Precision and Austal catamarans delivered to Hong Kong/China between about 1988 and 1995 were required by the Hong Kong Marine Department to be in compliance with the DSC Code and by the China Classification Society (ZC, later CCS) to be built to the DNV High Speed Light Craft Rules.

High-Speed Ferries at Hong Kong Terminal
(Courtesy Austal)

The only internationally accepted safety construction standard was, and still is, the SOLAS 1974 Convention which among other things requires ships to be constructed of "steel or equivalent material". For reasons of fire resistance, uninsulated aluminium is not accepted as equivalent.

This situation came to a head when the first of Incat's 74m wave-piercing catamarans, the Bahamas-flagged *Hoverspeed Great Britain* arrived in the United Kingdom in 1990 with a DSC Code certificate. The Maritime and Coastguard Agency required SOLAS certification with all deviations from the detailed requirements spelled out with their safety justification. Entry of this vessel into commercial service was delayed by some months while this problem was overcome to the satisfaction of MCA. It should be noted that a Austal Ships was building its first similar-sized catamarans at about the same time but I am not aware of them encountering the same problem with flag- or port-state acceptance of DSC Code application.

Incat's first 74m cat Hoverspeed Great Britain in the shadows of Manhattan before its Hales Trophy winning crossing of the North Atlantic
(Courtesy Incat Tasmania)

Austal's first large ferry of Auto Express 79 design
(Courtesy Austal)

Development of the HSC Code

Another factor was the fact that these large catamarans were constructed to the 450 passenger limit of the DSC Code, which restricted further development of the concept of large catamarans to operate on international voyages.

Even before the entry into service of *Hoverspeed Great Britain* there was a clear need for revision of the DSC Code to address these problems, such that the issue was on the agenda of IMO's Ship Design and Equipment Sub-Committee meeting when I first attended in 1989. The work was under the agenda item "Review of the DSC Code" although it was soon clear that Phil Hercus was also in attendance to progress this matter as was the head of the Hong Kong Marine Department who was responsible for numerous high-speed craft operating between Hong Kong, Macao and nearby Chinese ports. The drafting group at that meeting soon concluded that a replacement of the DSC Code needed to be developed and drafted many of the provisions that appear today in the first chapter of what we now know as the HSC Code.

To achieve international acceptance, the new code needed to embody requirements that ensured safety levels at least equivalent to those of SOLAS. To do this it could utilise shore-based support available in a localised operating area compared with the primarily self-sufficient measures applied under SOLAS to unrestricted trading ships. On the other hand, its application needed to be restricted so that it was not an optional alternative to SOLAS for vessels such as conventional passenger ferries.

The Code was intended to be performance-based in terms of various arrangements being accepted on the basis of trials to demonstrate the effectiveness of proposed arrangements.

Various proposals were put forward for dividing vessels to which HSC Code applies from those covered by SOLAS. One proposal by the United Kingdom was to separately define what constituted "light-weight construction" and "high-speed", with both being required to be met. This was supported by a tabulation of the dimensions and speeds of various types and sizes of existing vessels including warships. Another proposal by the United States was to use a volumetric Froude number, but with a threshold set at a level based on theory which would have excluded virtually all existing and proposed high-speed craft and so was initially rejected. But this problem was resolved by using data from the UK table to set a threshold volumetric Froude number above that for conventional ships including warships but achievable by high-speed craft.

In facilitating the use of light high-speed vessels, it was necessary to provide for sea state and speed restrictions to operations so that the vessels did not necessarily have to be constructed to withstand extreme sea conditions.

It was also necessary to take account of resources available to vessels such as ferries operating on relatively short regular routes in comparison with vessels certified under SOLAS for unlimited voyages. This was particularly relevant to life-saving provisions, where the position of the vessel was relatively well known at all times and local search and rescue sources could be applied. This enabled adoption of a philosophy of using evacuation at an early stage rather than saving "the ship as its own best liferaft" after a significant safety incident and thus replacing reliance on lifeboats with liferafts as front-line rescue craft. A criterion for required demonstrated evacuation time was adopted in support of this approach.

I was not comfortable with some of the evacuation arrangements into liferafts, which in the early stages involved passengers using narrow steps and ledges on the sides of vessels to get down to inflated liferafts at the waterline. Whilst this arrangement was accepted on the basis of successful evacuation trials in heavy seas but was thankfully soon superseded by the implementation of marine evacuation systems (MES), some types of which brought with them further safety problems.

The Code was developed soon after significant casualty when the Norwegian catamaran *Sea Cat* crashed into a rock face on a dark night. Crashworthiness and measures to protect passengers from high accelerations then became a feature of the HSC Code from the outset. The Hong Kong Marine Department were also active in the Code's development following the 1989 high-speed ferry grounding of *Apollo Jet* on a shore breakwater following failure of a small component in the ferry's machinery control systems. The failure mode and effects analysis (FMEA) requirements of the Code resulted.

Another factor taken into consideration included fire safety, particularly the use of combustible construction materials. In comparison with steel, aluminium and GRP are not acceptable in general as they cannot withstand a standard fire test without insulation to protect the structural core. It was necessary to

develop modified fire test procedures to secure acceptable levels of fire safety for vessels built of these lightweight materials. The ban on enclosed sleeping berths and limitation on the installed heating capacity for food preparation were also intended to restrict fire hazards.

In the early stages of development of the HSC Code, the Russian Federation sought to have wing-in-ground effect craft ("WIGs" or "ekranoplans") included in the Code's application. The Russian interest related to development of craft such as the "Caspian Sea Monster" and subsequently Australian work on proving concepts such as the "Flightship 8" which later became "Airfish 8" developed in Singapore. However IMO's Maritime Safety Committee determined that development of requirements these craft should be addressed separately by a separate standard developed after the HSC Code.

Airfish 8 WIG craft
(Courtesy Wigetworks)

One aspect related to WIG craft was the possibility of using low flashpoint fuels which of course are associated with increased fire risk. While the possibility of using fuels with flashpoint as low as 35°C was provided for in the Code, I am not aware of such low flashpoint fuel oils being used, I understand that Incat Tasmania (for example) has built vessels to run on LNG which has a much lower flashpoint. Presumably such fuels are certified as an equivalent arrangement complying with the International Gas Fuels (IGF) Code which is permitted under SOLAS but I have no direct knowledge of how this is managed under the HSC Code.

It is noteworthy that some of the navigational equipment on HSC Code vessels is required to conform with enhanced performance standards taking account of the higher speed relative to conventional SOLAS vessels, such as requiring higher sped radar rotation.

The damage stability provisions of the HSC Code have from the outset ignored any effectiveness of one-compartment subdivision in protecting the vessel's survivability. However, within the first 5 years after the finalisation of the Code, grounding casualties with vessels such as *Condor 11*, *St Malo* and *Sleipner* demonstrated that the Code's damage stability requirements needed to be upgraded particularly in relation to raking bottom damage. These requirements, which I understand make it impractical to build Code-compliant vessels of less than 40m, were introduced in the 2000 version of the Code.

The finalisation of the initial HSC Code in 1994 coincided with the mandatory implementation of the International Safety Management (ISM) Code under SOLAS Chapter IX. Since

Condor 11 on Black Jack Rock
(Courtesy Incat Tasmania)

the safety of high-speed craft is highly dependent on adherence to procedures, such as conformity with speed and seastate restrictions, these craft are subject to the SOLAS Chapter IX requirements.

Since the aim of having the Code reflect robust safety standards that were at least equivalent to those of SOLAS, in adopting the original version of the HSC Code in 1994 IMO also adopted SOLAS Chapter X facilitating internationally acceptance of HSC Code certification in place of that issued under SOLAS Chapter I. In light of their characteristics, HSC Code vessels are not required to have International Load Line Certificates.

After the first meeting mentioned above, where Phil Hercus led the Australian contribution, I headed the working, drafting and correspondence groups tasked with initial development of the HSC Code and it subsequent amendment through to 2008, apart from the 1995-99 period when the work was led by Andrew Blyth of the UK while I was on another job. Successful outcomes could not have been achieved without the active involvement of the Australian high-speed craft building industry including representatives of Incat Design, Austal, Incat Tasmania and DNV Australia. Notable Australian individuals involved included Dr Tony Armstrong, Nick Wells and Jim Black among representatives from about ten countries. Karl Wiklund of DNV was a prominent international contributor from among the class societies. From an IMO Secretariat perspective the whole project was overseen by Fernando Plaza as Senior Deputy Director of Maritime Safety and secretary of the working group for the finalisation of the Code was Koji Sekimizu who was subsequently elected Secretary-General of IMO for 2012-2015.

Chapter 1 of the HSC Code has from the outset contained a clause calling for the Code to be reviewed every 5 years which, considering the time taken to go through IMO procedures, effectively means it should be under constant review. The first such review resulted in the 2000 HSC Code which itself was amended in 2008. It has since been largely untouched apart from updating of lifesaving and navigation equipment standards in parallel with those of SOLAS. This has meant that some aspects may be outdated such as in relation to use of LNG as fuel, but obviously work-arounds have been found for these areas.

Current Situation

While Phil Hercus (awarded AO in 1995) passed away in 2017, his legacy lives on through Incat Crowther (incorporating Phil's company Incat Designs) and Incat Tasmania with whom he parted ways in 1988. His early prediction of the demand

for high-speed craft mentioned above has been exceeded several times over within the list of vessels produced by Incat Tasmania, let alone a longer list from Austal to which should be added the many vessels designed by Incat Crowther and others for production in Australia and internationally.

In his 2018 PhD thesis to the University of Wollongong, Neil Baird of Baird Publications summarised the international and domestic effect of the HSC Code as follows:

> A significant unforeseen and probably unintended benefit has arisen from the obstacles put in the way of the development of fast catamaran ferries in the early to mid-1990s, mentioned above. They have, since 1996, been subject to the IMO HSC Code (High Speed Code). While originally intended for vessels engaged in international voyages, the code has been widely adopted in domestic use. That has undoubtedly been a good thing as it covers all aspects of safety including stability, fire, lifesaving, structures and navigation.
>
> If such a strict approach to IMO"s ISM Code had been applied to conventional Ro-Pax ferries, particularly as it applies to stability, fire prevention and lifesaving, there would undoubtedly have been fewer fatalities since. The HSC Code is based on and similar to the ICAO code for aircraft. The ferry travelling public would benefit from its wider or, preferably, universal adoption.
>
> Fast ferry designers, builders, owners and operators seem to have coped very well with the HSC Code, despite its allegedly onerous requirements. Importantly, it does not appear to have detracted from the profitability of fast ferry operations. In fact, high speed ferries, generally, have a distinctly superior safety record to that of slower conventional craft. Indeed, of the 32 known fatal, non-Man Overboard, accidents involving them, all were clearly the result of human error. The HSC Code, regrettably, cannot prevent that.
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> While the original intentions for the implementation of the HSC Code may have been somewhat malignant in trying to restrict and impede the development of high-speed aluminium catamaran ferries from outside Europe, the final, probably unintended, consequences have been generally beneficial. Perhaps the main safety features of the HSC Code, particularly those concerned with fire prevention and suppression, should be adapted to conventional ferries also and, indeed, to all passenger vessels engaged in both domestic and international trade.

A 2020 paper by Stephen Phillips of Seaspeed Marine Consulting posted on the InterFerry website proposes that scope of application of the HSC Code be broadened to accommodate lightweight craft of lower speeds. This proposal reflects the need to achieve improved fuel efficiency and decarbonisation and is supported by other influential people in the high-speed craft sector. However no action appears to have resulted presumably because of the perceived need to keep use of the HSC Code isolated from conventional ships covered by the standard provisions of SOLAS.

In closing we refer back to the start of this article, the fully-electric 2100 passenger 130m catamaran *China Zorrilla* built by Incat Tasmania and featured several times in this and earlier issues of *The ANA*. This vessel appears to fall short of the speed required by the definition of "high-speed craft" but is presumed to have been otherwise built in accordance with the HSC Code and accepted for operation between Argentina and Uruguay by bi-lateral agreement. This, together with military applications, are examples of the Code being accepted and used for services beyond those for which it was intended. Nonetheless I do not foresee its scope being extended to "all passenger vessels engaged in both domestic and international trade" as suggested by Baird as I would expect it to be prevented by countries who wish to maintain conventional SOLAS standards for passenger ships and conventional ferries.

Whatever its future, the HSC Code has facilitated the development and international spread of high-speed craft and their implementation well beyond the 450 passenger limit that they were designed to overcome.

IMO Working Group with support staff following final meeting in 1994 – note Fernando Plaza, Rob Gehling and Alexander Petrov in front row, Jane Thompson 2nd left and Koji Sekimizu centre in second row, Ian Williams third row far right, Karl Wiklund in front of back row right, Jim Black at left of Westminster tower in back row.
(courtesy K Sekimizu)

A photo opportunity by the bow of China Zorrilla, the world's largest battery-electric ferry, during UNSW Canberra tour of Incat Tasmania, Hobart, Tasmania Field Trip with 4th Year Students

L-R: Jason McVicar (Design Manager, Revolution Design), Toby Costigan, Ethan James, Luke Reidy, David Lyons, Parth Khanna, and Russ Donovan
(photo courtesy Warren Smith)

Ships led by *HMAS Canberra* approach Bradley's Head
on entry into Sydney Harbour during Fleet Review
(Courtesy Defence Imaging)