

# SAFE PASSAGE

Serving the professional interests of pilots and pilotage throughout Australasia



Swanson Dock, photographed by Captain Toby Shelton

## IN THIS ISSUE

THE FUTURE OF HARBOUR AND SEA PILOTS • PORT HEDLAND PILOTS  
IMO CONFERENCE 2025 • IS MARINE PILOTAGE A “COMPLEX SYSTEM”?



AUSTRALASIAN  
MARINE PILOTS INSTITUTE

# WELCOME NEW MEMBERS

First Name	Last Name	Post State	Post Country	Pilotage Organisation Service-Employer
Gulshan	Rangi	NT	Australia	Darwin Ports
Julie	Latimore	NT	Australia	Darwin Ports
Luca	Ferro	NT	Australia	Darwin Ports
Ben	Tan	NT	Australia	Darwin Ports
Tobias	Aakesson	NT	Australia	Darwin Ports
Brent	Hills	NT	Australia	Darwin Ports
Chris	Cridland	NT	Australia	Darwin Ports
Michael	Aucello	NT	Australia	Darwin Ports
Alexander	Temple	SA	Australia	Flinders Ports
Aaron	Headley	TAS	Australia	TasPorts
Thomas	Rowles	TAS	Australia	TasPorts
Rory	Kenyon	NSW	Australia	PANSW
Aden	Felstead	WA	Australia	Fremantle Pilots
Thomas	Moran	WA	Australia	Fremantle Pilots
Gerrard	Van Der Merwe	WA	Australia	Mid-West Ports
Karl	Kabo	Port Moresby	PNG	PNG Ports



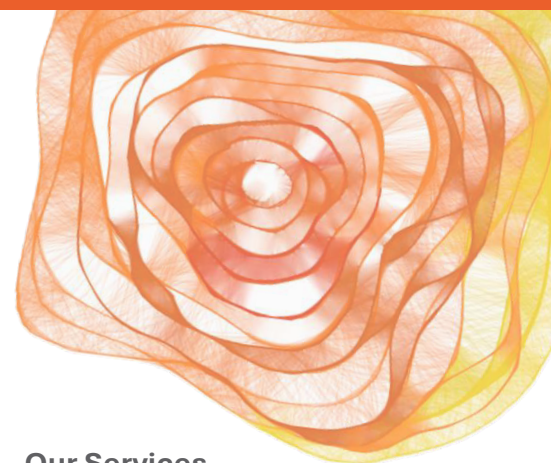
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# CONTENTS

AUTUMN 2026

LETTER FROM THE EDITOR	04
PRESIDENT'S REPORT	05
TREASURER'S REPORT	06
4TH ASIA PACIFIC MARITIME PILOTS ASSOCIATION FORUM	07
SPONSORING THE FUTURE	08
OSSA FORMS NEW SCHOLARSHIP FUND	09
AMC SEARCH	10
BRIDGE ALARM MANAGEMENT	12
PORT HEDLAND PILOTS	14
EXPLORATORY ANALYSIS THRUSTER EFFECTIVENESS	17
CAN THE SCANDINAVIAN APPROACH TO REMOTE PILOTAGE WORK IN AUSTRALIA?	22
IS MARINE PILOTAGE A "COMPLEX SYSTEM"?	26
NEWS FROM PORT ASH	29
IMO 2025	30
THE MENTAL & PHYSICAL STRAIN MARINE PILOTS ARE EXPOSED TO	32
ROUTINE CLIMB LIFE CHANGING FALL	34
STRESS & FATIGUE IN MARINE PILOTAGE	36
THE FUTURE OF HARBOUR & SEA PILOTS	38
ISPO CONFERENCE 2025	39
AMPI ADELAIDE 2025	40
PILOT LADDERS, WHAT ELSE... PILOTS AND CAPTAINS WORKING TOGETHER	43
ACROSS THE DITCH	44
AUSTRALIAN MARITIME MENTORING PROGRAM REPORT	46
AUSTRALIA'S WEATHER OUTLOOK JANUARY TO JUNE 2026	48



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# LETTER FROM THE EDITOR

Welcome to this edition of Safe Passage.

Before anything else, an apology for the delay in getting this issue out. The year rather got away from me, but I hope you'll agree it has been worth the wait.

This issue is a particularly strong one and very much grounded in the real issues pilots are dealing with day to day. Several of the articles included are practical, experience-based, and aimed squarely at improving safety and decision-making on the job.

You'll see a practical and well-considered exploration of thruster effectiveness, including supporting assessment of material and draft forms. My thanks to my fellow Brisbane pilot, Capt. Luke Felsing, for a paper that brings much-needed clarity and consistency to a topic we regularly deal with on the bridge. This work tackles a topic that regularly comes up on the bridge and during MPX but is often handled inconsistently. Bringing a more structured and transparent approach to how thrusters are assessed, discussed and recorded is a valuable step forward and one that I'm sure many of you will recognise from your own pilotage experience.

We've also included a substantial and timely piece on remote pilotage, Can the Scandinavian Approach to Remote Pilotage Work in Australia by Capt. Nic Gardner. It is also one of the more controversial topics within our profession, often provoking strong and differing views among pilots. This article is attracting increasing attention internationally and takes a balanced, evidence-based look at remote pilotage, where the risks remain, and why pilot judgment and situational awareness continue to be central. Alongside this are

shorter contributions touching on the future of pilotage in a digital age, the physical and mental demands of the role, and the idea of pilotage as a complex system rather than a series of isolated tasks. Whether you view remote pilotage as an opportunity, a risk, or something to be approached very cautiously, this contribution is grounded in pilot experience and provides a thoughtful basis for informed discussion.

We've also included an important and timely article on pilot ladders, as well as further material reinforcing just how serious the consequences of routine non-compliance can be for pilots and their families. Pilot transfer arrangements continue to be one of the most persistent and serious safety risks in our profession, and this piece is a direct, experience-based reminder of why vigilance, reporting and collective standards matter.

I'm also very pleased to share contributions from our colleagues overseas, including articles from the UK and Canadian Pilot Magazines.

You'll also find shorter pieces and briefings covering seasonal weather risks for the first half of 2026 and an update on initiatives aimed at supporting and investing in the next generation of maritime professionals written by Sydney Pilot Capt Michael Kelly OAM.

A very big thank you as well to Emma Oxenbridge for her help in coordinating the publication and advertising for this edition. Her support behind the scenes has been invaluable.

Thank you to all of the contributors who have taken the time to write, review, and share their work. Safe Passage only exists

because pilots are willing to contribute openly and thoughtfully for the benefit of others.

I would also like to extend our deep sympathy to our colleagues and friends in the United States following the tragic loss of Capt. Phillip Brady of the St. Andrew Bay Pilots Association in Panama City, Florida. At just 46 years old, his passing is a sobering reminder of the risks inherent in our profession. Our thoughts are with his family, friends, and fellow pilots during this very difficult time.

Finally, a warm welcome to our new AMPI members. We're delighted to have you join the Institute and the broader pilot community. I encourage you to engage with the magazine, share your views, and consider contributing to future editions.

I'd also like to take the opportunity to wish everyone a very happy New Year. I hope 2026 is a safe, steady, and positive year for you all.

As always, stay safe.

Kind regards,  
**Capt. Patrick Walsh**  
Editor



# PRESIDENT'S REPORT

With the new year now upon us, it's time to sharpen focus and look ahead to AMPI's priority areas for 2026. As well as bringing our annual conference to Darwin in June, and representing at the 27th IMPA Congress in Bali, the main areas of work will include;

- Improvements to the CPD platform, user interface and system
- Professional Qualifying Exam
- Develop and publish AMPI's Strategic Plan 2026 – 29
- Review of Constitution to ensure it remains fit for purpose and establish recognition of PNG region membership

Marine pilotage is a small but critical part of the maritime sector. While the profession is niche, the consequences of getting it wrong are significant and for that reason, education, training and ongoing professional development remain at the centre of AMPI's work.

The preferred and recommended entry route into Australian marine pilotage remains the AMSA issued Master Unlimited Certificate of Competency. This assures candidates have a high level of academic attainment alongside extensive seagoing experience on large, foreign trading vessels. However, the reality is that regulation in some parts of the country does not require this, and other entry qualifications into the profession have been accepted for decades. Individual pilot service providers have successfully developed in-house training plans to bridge academic and experience gaps between the candidate's actual maritime background/experience and Master Unlimited CoC syllabus.

However current and future recruitment demands that a new academic verification system for pilot licensing be introduced, (since the assumption that everyone brings Master Unlimited academic knowledge is no longer valid). It should not be left to individual pilot service providers to have to develop bespoke training systems/standards - with no standardisation or external oversight.

AMPI's position on this subject is that regardless of how a candidate enters pilotage, there must be a robust and independent means of verifying academic

knowledge at the appropriate level. To address this, we are working jointly with the Australian Maritime College to develop a Professional Entrance Examination for marine pilotage. The exam is designed to assess academic competencies at Chief Mate and Master Unlimited level and importantly, has already secured the principal support of major regulators.

Like independent professional examinations used in other fields such as lawyers, engineers, medicine, aviation, plumbers & gasfitters etc, its purpose is to confirm that the required underpinning knowledge exists before operational training begins.

The examination would provide a consistent benchmark across federal and state regulators, enabling alternative entry routes without compromising standards. It would also provide a credible mechanism for managing academic equivalence where applicants hold overseas qualifications. Potential candidate groups include:

- Holders of alternative maritime qualifications, including OOW or Chief Mate Unlimited and relevant domestic licences
- Royal Australian Navy navigation officers
- Holders of non-Australian Master Certificates of Competency
- Overseas-qualified marine pilots

Australian marine pilotage operates in a demanding environment. Compared with many other jurisdictions, Australia has limited coastal shipping but routinely handles very large vessels, often in confined waterways and environmentally sensitive areas. The operational risk profile is therefore high. Australian pilots are widely regarded as operating to some of the highest standards globally. Maintaining that reputation requires that any changes to entry pathways do not erode the foundational knowledge expected of a marine pilot.

Turning to the subject of Bridge Alert Management, in October 2025 Newcastle pilot Riley Oxenbridge represented both AMPI and IMPA to address 120 delegates from the International Association of Marine Electronics Companies (CIRM) at

their annual conference in Lisbon Portugal. Riley delivered a presentation on the Bridge Alerts and how they are affecting pilotage in a negative way - one of the few times such an audience has heard direct feedback from an active mariner.

Following the presentation, feedback has been received from a few manufacturers who have already started to consider solutions to this issue and are happy to listen to concerns and find a way where IMO BAM standards are still applied, but audible alerts are reduced and prioritised during pilotage.

Whilst many of us have become accustomed to tuning out excessive Bridge Alarms during our everyday work, it is commendable that Riley has taken up the challenge of finding a solution to this persistent problem. AMPI will continue to support Riley in this work, and he's recently connected with Standards Australia to be nominated as an industry expert on Technical Committee RC-004 Radiocommunications Equipment - Maritime and Safety of Life.

He'll also continue working with IMPA to improve the current requirements to better align with SOLAS V/15 and during the debate of current proposals that engine room alarms and alerts replicate the BNWAS.

Finally, in late breaking news, congratulations to Michael Kelly (Sydney marine pilot) who was rightly recognised with a Medal of the Order of Australia (OAM) in the 2026 Australia Day Honours for his decades long work in seafarer's welfare services. This is richly deserved and reflects the very best of our profession. Well done Mick!

Safe Piloting,  
**Capt. Jo Clark**  
AMPI President



# TREASURER'S REPORT

AMPI remains in a sound financial position, enabling the organisation to undertake a range of projects that directly benefit our membership and the pilotage profession. This report outlines highlights of AMPI's financial position and activities for the three-month period from 1 November 2025 to 30 January 2026.

Total income for the reporting period, excluding GST, was \$74,411.41. This comprised \$550 from Safe Passage advertising, \$1,100 from CPD subscriptions, \$589 from associate memberships, \$4,919 from full memberships, \$19,000 in Darwin Conference sponsorships, \$5,885.73 from early registrations for the Darwin Conference, and \$46,694.80 from various income streams associated with the Adelaide Conference.

The Adelaide Conference was a success both professionally and financially. Total conference expenditure amounted to \$189,928.17, while income from sponsorships, delegates (165 registrations), and workshops reached \$219,393.23. This resulted in a surplus of \$29,465.06, which contributes to AMPI's operating costs and supports funding for future conferences.

Total expenditure for this same period, excluding GST, was \$61,337.22. This included \$12,656.19 in venue and facility deposits for the Darwin Conference, \$8,950.00 in event planning and administration costs, \$12,000 donated to the Mission to Seafarers and Stella Maris from Adelaide Conference raffle proceeds, \$9,977.30 in professional fees relating to accountancy services and the peer support programme, and \$10,185.00

for the full-time administrator salary. Major operational conference costs for the Darwin event, including venue, catering, audiovisual services, and logistics, will be incurred in later reporting periods.

The net result for the reporting period was a surplus of \$13,074.19, strengthening AMPI's cash flow position ahead of the major expenditures associated with the Darwin Conference.

As for international participation, AMPI will be represented at the IMPA XXVII Conference in Bali from 23 to 28 August 2026 by Jo Clark, President, whose attendance will be funded by AMPI, and Adam Roberts, Vice President and IMPA Vice President, whose attendance will be funded by IMPA. Other AMPI members attend on a self-funded basis. AMPI's participation at IMPA is strategically important, providing opportunities for international engagement, technical paper presentations, and industry networking. Adam Roberts will also seek international support for his re-election to the IMPA Board.

AMPI will also be represented at the New Zealand Maritime Pilots' Association Conference from 7 to 9 April 2026, where Ricky Rouse, Deputy President, will present a paper on the pilot entrance examination, and Damian Laughlin, Vice President, will present a paper on organisational resilience following an incident. AMPI will partially support attendance at the NZMPA Conference with a contribution of up to \$2,000 per delegate, with the remaining costs covered by the delegates.

AMPI is looking forward to the conference in Darwin, to be held from the 14th to the 17th June 2026. Early bird registrations are now open. The projected cost of this event is \$212,747. Early sponsorship confirmations and strong interest from sponsors and delegates indicate no risk of a cash-flow shortfall, with projected income expected to fully cover conference expenditure.

Turning to membership, at the end of the reporting period AMPI had 276 licensed pilot members and 34 CPD subscribers. Full pilot membership increased by four pilots, primarily new pilots recruited by pay-for-organisation pilotage providers.

Special mention to Darwin Port that has joined as a pay-for-organisation, funding full memberships for all their pilots and subscribing to the CPD programme. They have also committed to Diamond Sponsorship of the 2026 Darwin Conference.

AMPI extends its sincere thanks to all pilot members, associate members, sponsors, Marvie and Emma in their roles as Administrator and Event Manager, and all Directors who generously contribute their time and expertise. Their continued support enables AMPI to advance and represent the pilotage profession at both domestic and international levels.

# 4TH ASIA PACIFIC MARITIME PILOTS ASSOCIATION FORUM - Da Nang

CAPT. JOSEPHINE CLARK

The Asia Pacific Maritime Pilots Forum (APMPF) is the regional professional body established in 2016 to enhance collaboration among maritime pilots and improve pilotage standards across the Asia-Pacific. The decision to create the forum was made during the IMPA Seoul Congress in 2016 and the first official APMPF was held in Bali, Indonesia, in 2017. Since its inception, the forum has held meetings in Sydney, Australia (2019) and Seoul, South Korea (2023).

The 4th APMPF took place from 4-6 September 2025 in Da Nang, Vietnam, focusing on the theme “Enhancing Maritime Safety and Efficiency in the Asia-Pacific Region”. It was attended by approximately 160 delegates representing hosts VMPA, Malaysia, Singapore, Korea, Taiwan, Hong Kong, Shanghai, Indonesia, Thailand, New Zealand, PNG and Australia, IMPA, ISPO and sponsors.

The primary purpose of APMPF is to provide a platform for pilots to exchange knowledge and advocate for the profession. Key objectives include:

- **Professionalism & Sustainability:** Improving the professionalism of maritime pilots and ensuring the long-term sustainability of the industry.
- **Safety Advocacy:** Advocating for the safety of pilots in member regions and sharing information on risks and new technologies.
- **Regional Cooperation:** Facilitating cooperation between pilots on various issues related to pilotage, including technical expertise and industry benchmarking.
- **Stakeholder Communication:** Enhancing communication between pilots, national governments, and international agencies like the International Maritime Pilots' Association (IMPA) to influence global shipping standards

AMPI was represented by a delegation of 4, and proceedings commenced with a welcome address By Capt. Quach Dinh Hung, Chair of the Vietnam Marine Pilots Association (VMPA). Jo Clark and Damien Laughlin presented a joint paper in Session 3 discussing Data Analysis in Marine Pilotage from the perspective of what technologies are available, the benefits to safety and training, and specific examples of use in Port Phillip Sea Pilots' operations in Melbourne.

Adam Roberts chaired the Training and Safety session, as well as the concluding General Meeting. Max Stossel of Niugini Pilots was successful in his bid to host the next Forum to be held in Fiji in 2027.

Da Nang was an outstanding destination for the event providing world class conference facilities, wonderful hospitality and historical & cultural sites such as Hue City and Hoi An. The VMPA certainly set a high bar as to making delegates feel welcome and it was lovely to meet and speak with so many marine pilots, working in diverse ports, from around our region.



AMPI delegation presents a plaque of appreciation to Capt. Quach Dinh Hung, Chair of the Vietnam Marine Pilots Association (VMPA)



# SPONSORING THE FUTURE

## CAPT. MICHAEL KELLY

Since 2018 the Port Authority of NSW have been sponsoring deck cadets. Recently, we sponsored our 12th deck cadet, and proud to say all of them are still working in the industry.

Fremantle Ports previously sponsored deck cadets through a Bursary scheme thanks to the Harbour Master Allan Gray. This initiative kicked off the Port Authority of NSW deck cadet sponsorship program.

Around 2018 we saw the loss of many Australian ships including the BP & TK tankers which were the last Australian flagged vessels to call into Port Botany! Not only did we see the loss of jobs but the opportunity for cadets.

At this time, I approached our Executive team with the idea of sponsoring deck cadets, and they have supported it ever since.

Our program is simple we sponsor the cadets over a two-year period, and we find them the ships to complete their 18-month sea time.

We have partnered with 15 companies including TK, ASP, Strait Link, Serco, Searoad, Engage, many offshore companies and our new partners are Oldendorff and CMB Tech.

Our cadets experience up to 6 different types of vessels and have included Royal Caribbean, Wilhelmsen, Carnival, Seatrade and many Australian companies.

During their time some cadets have been offered full time cadetships with shipping companies. They quickly learn if they perform, they will be offered the traditional cadetship which are a dime a dozen.



A few years ago, I approached all the ports and private pilot companies around Australia asking if they would sponsor deck cadets. This would solve the future shortage of harbour masters, college lecturers, AMSA surveyors and pilots. Unfortunately, not one port authority or pilot company agreed to help. We can all look around at these roles and say we are relying a lot on maritime skills visas to fill these positions.

There is a group in Melbourne called OSSA "Offshore Specialist Ships Australia" OSSA is a not-for-profit organisation with nationwide membership drawn from across the maritime industry. Their vision is to promote and strengthen Australia's

maritime capability, including through our schools program, which introduces students to the diverse and rewarding career paths available within the sector. Peter Barrow many of us know is part of OSSA.

OSSA are shaping the future by advocating to the highest levels of government through their national schools' program. Their moto: "We're working to ensure our industry thrives for generations to come".

OSSA & I came up with an idea to sponsor an engineer cadet through a Bursary scheme, which OSSA manages, many of us chipped in and raised \$25,000.

We successfully sponsored an engineer cadet paying him \$500 per week and the young gentleman commenced his training with Strait Link and after 3 swings was offered a full time cadetship.

I am writing to you to ask if you're willing to chip in \$10 or \$20 per week and as a national pilotage group we can help the future captains, pilots, harbour masters, college lecturers, surveyors, ATSB etc. This would be classed as a tax deduction through OSSA.

The federal government has promised funding for years and it is slow coming but we can make a change now and start sponsoring deck cadets through our own bursary scheme.

All it will take is 50 pilots to donate \$10 per week ( 2 coffees) and we will have one deck cadet away.

Port Authorities will take note and may start sponsoring.

The pilots that had a great 4-year cadetship with BHP, ANL, ASP and Howard Smith would know how good it was to be paid great wages as junior officers and now with great salaries as a pilot.

I look forward to hearing from you if you would be interested in joining a pilot-initiated bursary scheme to get more deck cadets a start at sea.

[mkelly@portauthoritiesnsw.com.au](mailto:mkelly@portauthoritiesnsw.com.au)

# OSSA FORMS NEW SCHOLARSHIP FUND

## Support to Seafarer Training

Australia's maritime industry is facing a well-recognised challenge – a shortage of experienced seafarers and difficulty attracting new entrants to the profession. Offshore & Specialist Ships Australia (OSSA) has taken a proactive step to address this issue by establishing a separate Trust dedicated to support young Australians pursuing professional sea-going careers.

The Trust is to be known as The OSSA Scholarship Fund has been registered as a Charitable Organisation with the Australian Tax Office.

The Fund has been created to provide both financial assistance and structured mentoring to trainees working toward maritime qualifications. OSSA, a not-for-profit organisation, draws its membership from across the national maritime community and is committed to strengthening Australia's maritime capability. This includes extensive outreach through its nation wide schools' program, which introduces secondary students to the varied and rewarding careers available in the maritime sector.

OSSA Chair Richard Owen said the Scholarship Fund was designed to help bridge the gap between classroom learning and actual time at sea – a critical requirement for those seeking to gain their professional marine qualifications.

"Initially we are targeting our support toward trainees who already hold an AMSA-approved trade qualification," Mr Owen said. "Through structured mentoring and financial assistance, successful applicants will be able to complete the required sea service and associated training they need to progress."

The financial support will help cover key costs such as approved sea time, travel, insurance and associated expenses – removing the financial barriers that can prevent otherwise capable and motivated trainees from completing their qualification pathways.

"OSSA will work closely with shipowners to secure suitable berths and ensure ongoing mentorship throughout the training period" Mr Owen said.

To achieve this goal, OSSA is now seeking financial contributions to grow and sustain the Scholarship Fund. All donations to the Fund are tax deductible.

"We estimate the total cost per student at between \$30,000 and \$50,000, covering the full duration of their required sea-going service," Mr Owen said. "With OSSA's longstanding commitment to maritime excellence and workforce development, any form of support – financial sponsorship, provision of berths, or mentoring – will make a meaningful contribution to securing the future of Australia's maritime workforce."

Mr Owen said OSSA welcomed the opportunity to discuss the initiative further and explore partnership opportunities with industry stakeholders, organisations, and individuals who share OSSA's vision for a strong, skilled, and sustainable maritime sector.

OSSA has an Australian wide membership drawn mainly through people wishing to share the vision of promoting the Australian Maritime Industry. OSSA is actively seeking members to support their schools program of drawing students to the opportunities of making a career within the industry.

For more information or to discuss supporting the Scholarship Fund or becoming a member please contact OSSA at [admin@ossa.org.au](mailto:admin@ossa.org.au) or visit our website <https://offshorespecialistships.com/>

11th November 2025

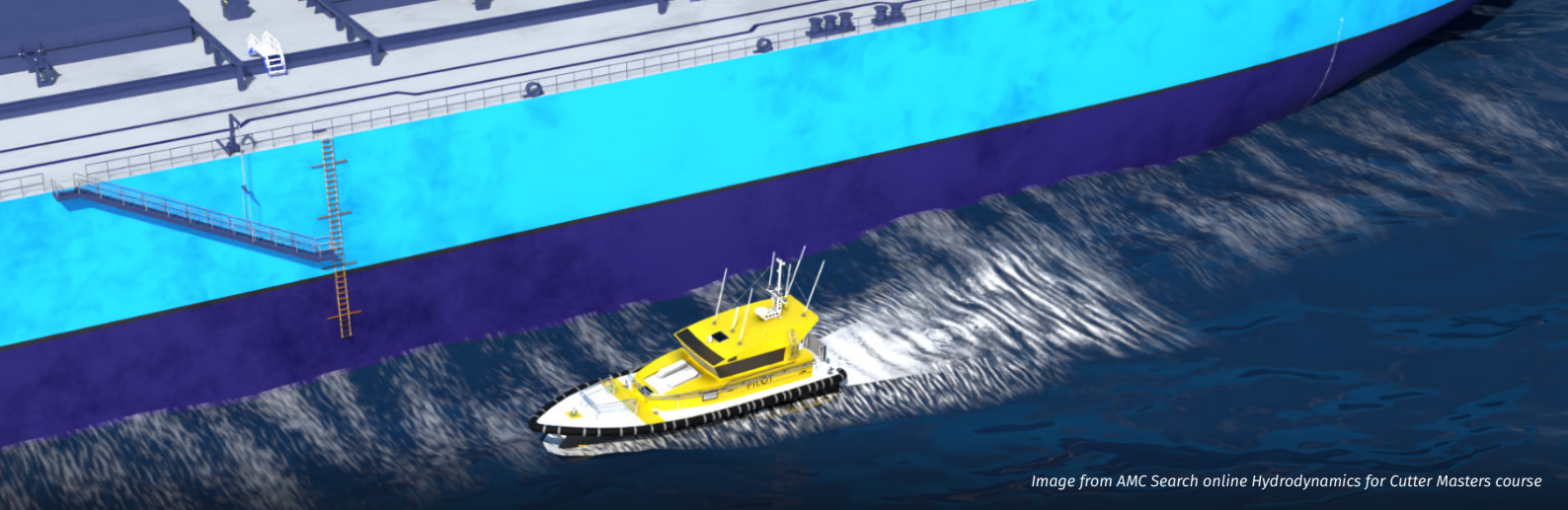


Image from AMC Search online Hydrodynamics for Cutter Masters course

# AMC SEARCH

AMC Search would like to extend our congratulations to the Executive, Organising Committee, and Flinders Ports for hosting the excellent Adelaide Conference.

The event generated valuable discussions and insights, and it was particularly pleasing to see Associate Professor Ben Brooks from AMC / AMC Search recognised for his ongoing dedication and contribution to the maritime pilotage profession.

Presented by AMPI President Captain Josephine Clark, the award recognised the contribution Ben delivers to enhance the cultural and safety practices for marine pilots.

At AMC Search, industry engagement remains a core priority and following multiple requests, we recently delivered our first Mentor Pilot Course, with the next intake already fully subscribed.

We are also finalising arrangements with industry partners to deliver our inaugural Cutter Master Course, which will focus on small vessel BRM, hydrodynamics, and the key competencies required to safely and effectively operate a pilot cutter.

Prior to the release of the full course, AMC Search has also released a 100% online course: Hydrodynamics for Cutter Masters. Developed following incidents in which pilot cutters have reported difficulty maintaining a safe position alongside a large vessel, the course covers:

- How to anticipate and manage the interaction effects surrounding a large vessel.
- The influence of these effects on handling your pilot cutter during approaches.
- The specific hydrodynamic changes when approaching a pilot ladder rigged far forward or aft.
- Safety knowledge and how to improve your vessel handling skills and minimise the impact of hydrodynamic forces on the job.

Designed for Cutter Masters onboard pilot vessels, this flexible online three-hour course costs just \$270 and provides a Completion Statement from the Australian Maritime College.

Our simulator-based programs, including AMPT and Check Pilot, continue to attract strong participation, with most sessions operating at or near capacity. If you intend on sending Pilots to any of our 2026 course, please book as soon as possible as places are filling fast.

We are also extending more into our Pilot Pre Employment Simulations, working with new and existing clients to assist them in finding the right pilot for their organisation.

If you require simulation time outside of scheduled courses, please make your bookings now. The Centre for Maritime Simulations is in high demand so book as soon as possible to ensure you are not delayed.

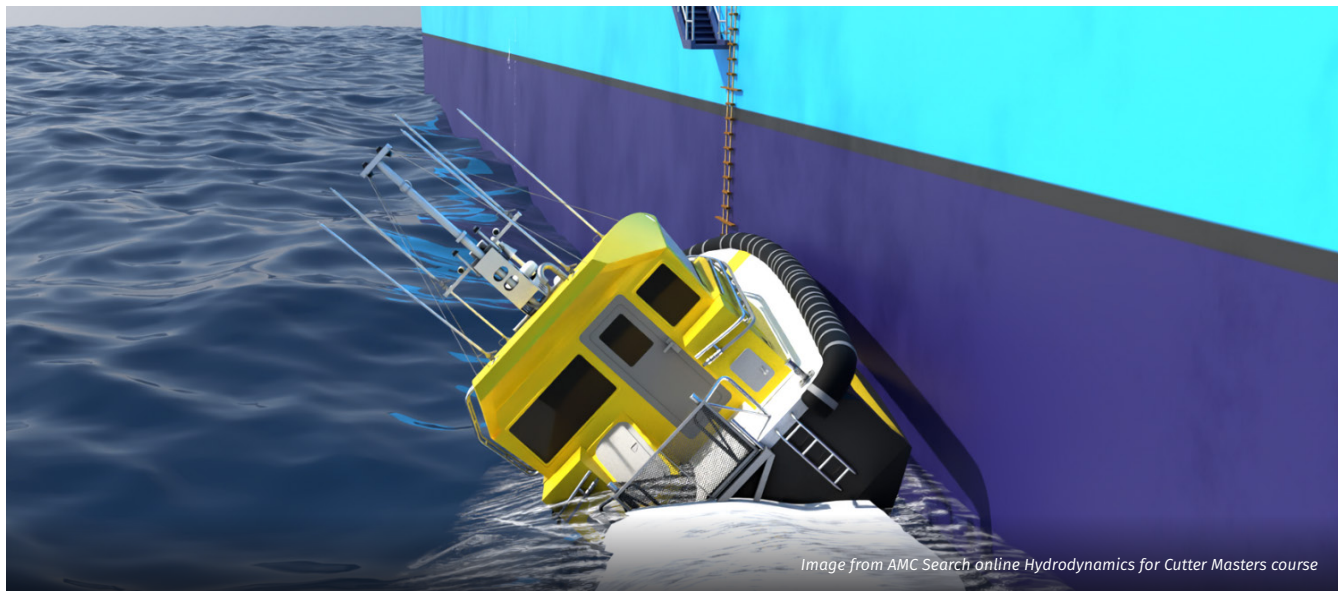


Image from AMC Search online Hydrodynamics for Cutter Masters course

To support the growth in demand and ensure the continued quality of our training environment, we have scheduled a major upgrade of the Main Bridge Simulator.

The bridge will be offline for most of December for hardware upgrades, and again in July as we transition to Kongsberg's K-Sim environment. This upgrade will allow full integration across the Main Bridge, Bridge B, tugs, VTS, and, subject to model capability, the Engine Room Simulator.

We are continuing to reinvest across all training areas, including recent upgrades to our communications capability. This includes the installation of new hardware VHF's in the Ship Operations Cubicles to support Coxswain, Mates/Masters, Revalidation, and bespoke AMC Search programs. These systems provide reliable DSC and VHF emergency communications, fully integrated with bridge GPS systems to enhance training realism.

Bridge B will shortly receive a VR binocular system (providing a more realistic operational experience than a monitor-based view), enhanced debrief facilities, a Remote Operations Centre, and a range of smaller usability improvements. Pending successful performance,

the VR binocular technology will also be extended to the Main Bridge and applied to bridge wing views.

Ideally a standard pilotage should not produce any audible alarms, these higher risk conditions are expected and are not a threat to the safe navigation of the ship. If an alarm does sound under pilotage, it should have the full attention of the bridge team and serve as intended.

As the maritime industry stands at a crossroads where automation and human performance intersect, effective alert management must remain grounded in operational reality, particularly during pilotage, where seconds matter. Continued collaboration between pilots, manufacturers, and regulators presents a clear opportunity to refine alert systems so they genuinely enhance, rather than hinder, navigational safety.

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# BRIDGE ALARM MANAGEMENT

RILEY OXENBRIDGE

**Distractions on the bridge during pilotage can lead to disastrous consequences. The humble ECDIS alarm is now at common place during most pilotages, kindly informing us of approaching tugs, grounding lines and waypoints to name a few. All of which is why there is a pilot onboard in the first place.**

The Alert management causes it biggest distraction to the bridge team when it pulls the attention from the OOW to reduce the audible alerts. The OOW is often seen by pilots blindly acknowledging and silencing alarms without informing the pilot/master. The terms alarm fog and alarm fatigue are used to describe this problem but there is an underlying issue when under pilotage and that is why are they alarming in the first place.

While these systems are designed to enhance safety, the unintended consequence can be the opposite: a constant stream of auditory alarms that divert attention away from essential navigation tasks, like visually checking rudder commands and engine orders.

Pilots are especially affected by this environment because we are managing multiple time-critical operations simultaneously, cannot always distinguish alarm types by tone alone, and encounter vessels with vastly different system behaviours due to limited standardisation between manufacturers. Compounding this is the fact that existing Bridge Alert Management (BAM) standards were never designed with pilotage in mind. The IMO's Resolution MSC.302(87), adopted in 2010, harmonises the prioritisation and classification of alerts, but it does not recognise that adding a pilot to the bridge fundamentally changes the workload and situational context of the bridge team. Under BAM, both High Priority and Warning alerts generate audible tones, and the triggers for these were developed on the assumption of a solo bridge watch. There is currently no mechanism to adjust BAM parameters once a pilot is onboard.

To better understand how these challenges affect operations, AMPI conducted a national survey in August 2025, receiving 109 responses from active pilots. The results confirmed that unnecessary alerts are a widespread and growing concern. Many respondents reported that constant alarms reduced overall situational awareness and made it more difficult to detect genuine hazards, particularly in complex, high-density pilotage environments.

The CIRM Annual Conference in Lisbon provided a valuable opportunity to present these concerns to system manufacturers. Many were receptive to the need for a reduction in alarms during pilotage, even while operating within the constraints of the current BAM framework. Several ideas and approaches are already in early development. I have since been invited to attend IEC working groups for reviewing standards for bridge equipment. The AMPI survey produced many practical suggestions that will be collated, and further ideas from pilots continue to be welcomed.

Alerts remain undeniably valuable when correctly configured and prioritised, preventing countless incidents each year for solo bridge watches. However, the challenge now lies in ensuring that critical information is not lost in the noise when operational dynamics shift under pilotage.

Emerging technologies such as the S-100 data framework and VDES (VHF Data Exchange System) offer promising opportunities to transform how alerts are generated, contextualised, and presented.

With greater pilot involvement at the IMO and increased collaboration across the industry, future alert systems could filter and prioritise alerts relevant to the pilotage phase, adapt dynamically to vessel operations and environmental conditions, and reduce unnecessary noise without compromising safety.

Ideally a standard pilotage should not produce any audible alarms, these higher risk conditions are expected and are not a threat to the safe navigation of the ship. If an alarm does sound under pilotage, it should have the full attention of the bridge team and serve as intended.

As the maritime industry stands at a crossroads where automation and human performance intersect, effective alert management must remain grounded in operational reality, particularly during pilotage, where seconds matter. Continued collaboration between pilots, manufacturers, and regulators presents a clear opportunity to refine alert systems so they genuinely enhance, rather than hinder, navigational safety.

Alert priority	Relative level	Description	Sound
<b>Emergency Alarm</b>	<b>highest priority</b>	An immediate threat to human life or the ship and its machinery.	Sound will be provided as usual for e.g. fire/abandon ship, etc. (see IMO resolution A.1021 (26)). A CAM system (see 2.5) will not provide sound.
<b>Alarm</b>	<b>high priority</b>	An imminent threat to the safe navigation and safe operation of the ship, for which immediate action needs to be taken.	Three short signals, repeated every 7-10 s.
<b>Warning</b>	<b>medium priority</b>	A situation that requires <b>immediate attention for precautionary reasons</b> , but for which action is only required 'in due course' when the mariner has the time to do so given other pressing matters. As a warning situation can subsequently develop into a dangerous situation, an unacknowledged warning can be escalated into an alarm when the time frame of the danger associated with the alert goes from 'in due course' to 'immediate'.	Two short signals, repeated every 15 s to 5 min.
<b>Caution</b>	<b>lowest priority</b>	Provides awareness of a condition that is out of the ordinary, but does not warrant an alarm or warning. The indicated situation can be dealt with in due course.	No sound provided. The mariner will have to check the equipment regularly as usual.



Port Hedland in the early 1990's

# PORT HEDLAND PILOTS

## From Beginning's to Ending's

MATT SHIRLEY

There'd be more than a few Australian and international seafarers who remember Port Hedland's original, and now very much "deconstructed", iron-ore export wharf, Goldsworthy. From 1966 until the mid-90s it leant against Finucane Island, before being replaced by what we now know as Finucane Island Charlie Berth. There's still a piece of one of the old dolphins embedded in the berth pocket today; a reminder for some of us of earlier days, although now for many a rather practical limit on loading drafts.

Almost directly across the harbour, Wedge Street, one of the town's earliest roads, laid out in or around 1896, still keeps watch over the berth. What was once the town's commercial spine now overlooks one of fifteen Capesize-class berths that anchor a port that's grown into one of the world's largest exporters of Iron Ore.

Long before any of this, the land's Traditional Owners, the Kariyarra and Nyamal peoples, named the place Marapikurrinya, meaning "place of good water." So, it's fitting that the widened and deepened channel still traces the same path originally found by the town's namesake, Peter Hedland. And the name, Marapikurrinya, lives on not just in the port

and the channel, but in a community park, a lookout, a playground, and a three-storey fishing jetty; places where locals and visitors still gather to watch ships come and go.

For decades, the port formed part of BHP's steel-manufacturing chain: the original Goldsworthy berth, Nelson Point's Alpha and Bravo berths, and three general-cargo wharves. Many former BHP cadets would likely remember wandering those wharves in the 80s and 90s, long before port-security rules turned the walk to and from the Pier Hotel into little more than a fond and hazy memory.

Those relatively modest beginnings though shifted in the mid-90s, as global iron-ore demand surged and port expansion loomed. With the need to strengthen and secure marine pilotage services, the Port Hedland Port Authority partnered with a company formed by its former pilots...and so, in 1995, Port Hedland Pilots (PHP) was born.

As the port accelerated from 2008 onwards, PHP grew with it. The original team of eight pilots expanded to twenty-eight by 2018, barely keeping pace with a port whose throughput had increased by nearly 950%.

Annual pilotage movements rose from roughly 1,100 to well over 6,500. And with that growth came training, and community. For the better part of a decade there was always a Port Hedland Pilot family group on the go: partners and children gathering at the yacht club, watching sunsets over the Spoil Bank while a training pilot gave the ship's whistle a healthy lean on.

Despite the heat, the cyclones, and the occasional dust storm, the town's social heartbeat was strong. Winters in particular were a steady run of community events, barbecues, fundraisers, and functions, and an atmosphere that built lasting friendships between pilots, families, and the wider community.

The port itself now spans a 24-nautical-mile, tidally constrained channel with a spring range of seven metres, feeding a deep-water harbour that handles 550–600 million tonnes of cargo each year. And as the port scaled up, PHP had to adapt with equal pace. Reliability, risk, and resilience became defining themes.

To strengthen professionalism and consistency, PHP achieved ISPO

accreditation in 201, becoming only the 11th pilotage service in the world, and the second in Australia, to do so. But accreditation was only part of the story. By the early to mid-2010s, main-engine events were occurring roughly every ten days, with full engine failures on average every twenty. This demanded new approaches to emergency response including indirect towage, simulation, and on-water training. PHP worked closely with the Port Authority, towage providers, shippers, and others to build procedures and partnerships that kept the channel moving safely. Again, in those days, it was very much a port community feel with open conversation and dialogue helping everyone push the operation towards a common and united goal – that of channel integrity, one of the drivers towards what was for a long time PHP's motto; Pilotage with Integrity.

Around the same time, PHP helped pioneer a world-first integration of Dynamic Under Keel Clearance (DUKC) with Portable Pilot Unit (PPU) technology, by bringing together OMC International, Navicom Dynamics, and Qastor to overlay real-time DUKC data on a pilot's PPU. This allowed pilots to trial speed profiles and scenario-plan on the fly, especially during emergencies. The first discussion about this happened, of all places, around the dining table at one of our pilots' homes, and it's this system that's since been adopted by major ports around the world.

Developments like these, new tug classes, specialised towage techniques, robust operating procedures, and integrated

technology all combined to help safeguard a channel that, at its peak during the COVID years, carried close to 20% of Australia's GDP.

COVID changed many things for many people, and Port Hedland was no exception. The rhythm of work, travel, community life, and recruitment shifted in ways few could have anticipated. For Port Hedland Pilots, this period brought significant challenges, but also moments of notable commitment, as the service continued to keep the channel open through some of the most complex operational conditions in the port's history. One positive outcome from this time was PHP's engagement with shipping stakeholders and AMSA, suggesting that, where appropriate, crew changes be facilitated via the Philippines, providing additional flexibility for ship operators seeking to meet crew welfare requirements.

As time moved on though, so too did the broader landscape. Plans evolved, and by 2025 it became clear the future direction for pilotage services in Port Hedland would take a different shape.

In the end our contract simply reached a natural conclusion and was not renewed. As the saying goes, nothing lasts forever.

For many of our pilots, this change opened new chapters: some chose retirement after long careers, others moved into different pilotage services, new maritime ventures, or new professions entirely.

But the PHP one would hope most will now choose to remember is the one based on our

achievements. Over 30 years, PHP supported and was an integral part of the growth that became the largest bulk-export port in the world (by tonnage). We undertook more than 100,000 pilotage movements, facilitated the safe export of over 8 billion tonnes of cargo, pioneered world-first operational innovations, and helped build a notable chapter in Australia's maritime history.

Our final pilotage movement, fittingly enough, was a departure on 30 June 2025 – an ending marked not by ceremony, but by a professionalism that characterised the thousands of movements before it. While the administrative process of winding up the company continues, our operational chapter is closed, and our pilots have stepped off the bridge for the last time.

As we look back, what stands out is not just the scale of the work, but the people we knew and worked with – the crews, the harbour community, the colleagues who became friends, and a town that shaped so many of our lives.

So while this chapter turns its final page, the memories and friendships remain.

To those we worked alongside over the years, thank you. We wish you fair winds, following seas, and every success in the years ahead.

Over and out.



# Hart

marine

## THE ORC PILOT BOAT

As used by:  
Port Phillip Sea Pilots  
Mid West Ports  
Flinders Ports  
Darwin Ports  
Svitzer  
Rio Tinto  
Esperance Port Authority  
The Port Authority of NSW - Port Kembla  
Port of Townsville Gladstone Ports  
Authority Tasmanian Ports Corporation  
Lyttelton Ports Corporation – NZ PrimePort  
– NZ  
Port Otago – NZ  
Port of Tauranga – NZ  
DP World - Dubai



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# EXPLORATORY ANALYSIS

## Thruster Effectiveness

CAPT. LUKE FELSINGER

### PREAMBLE

In the Port of Brisbane, the port procedures allow for a tug to be substituted with an “effective thruster” under favourable conditions. However, the term “effective” is not explicitly defined - a gap this paper aims to address.

For example, if a pilot requests full power on a bow thruster but receives only 80% input on the ammeter/dial, what thrust output is actually achieved?

Is it effective? Is it enough? Does the output decrease linearly to 80%, or is the relationship more complex with possibly only 60-70% output thrust delivered?

Such questions are not merely academic; they have direct operational impact on ship handling safety and efficiency.

This analysis tackles the central issues in thruster effectiveness for marine pilotage:

- **Part 1:** Examines what constitutes an “effective thruster” and investigates if full (100%) output is essential, reviewing factors such as reliability, thermal limits, and derating
- **Part 2:** An example of a thruster assessment form

This paper aims to bridge the gap between theoretical performance and operational reality, finally with the goal of providing a clear, consistent assessment form to support pilots, shipmasters, regulators and port authorities in their decision making process.

### PART 1: EFFECTIVE TUNNEL THRUSTER

***Ships not providing 100% input power – is their BT effective?***

#### EXECUTIVE SUMMARY

An effective thruster is not simply one that is installed with a listed kW rating. Its true effectiveness depends on whether it can reliably deliver the required thrust when pilots need it most.

Pilots generally view thruster capacity as a design decision driven in construction phase by vessel dimensions and electrical distribution constraints (notably switchboard capacity). In certain vessel trades, ships may be specified with higher-capacity thrusters to support reduced tug dependency under defined environmental limits. However, many conventional container ships, PCCs, and smaller tankers may have thrusters that are less effective in moderate to heavy laden conditions and/or limited possible electrical margin overall, which reduces the scope to specify excess thruster capacity during construction.

Performance can be compromised by multiple factors, including thermal derating, load-induced trips, switchboard limitations, wear, historical damage, fouling and system aging. As a result, a thruster that is “present” on paper may be operationally ineffective. Masters often recommend running thrusters below their rated maximum - typically at 80-95% - due to concerns about overheating or tripping, further complicating real-world effectiveness.

This analysis evaluates “effectiveness” in terms of the performance delivered under realistic (calmwater) conditions. It deliberately sets aside hull/tunnel characteristics, fouling, and wear in order to focus on the core thruster system, using manufacturer data to support a generic but operationally relevant theoretical output.

The aim is to provide pilots with a robust, objective 100% power table and individual thruster power curves for determining whether a given thruster can substitute for tug assistance, and to establish clear criteria for when additional operational limits or restrictions should apply.

For ease of piloting reference, thrust output is expressed as bollard-pull-equivalent tonnes.

#### 1. THRUSTER INPUT POWER VS THRUST OUTPUT THEORY

The theoretical relationship between thruster input power (P in kW) and thrust output (T in tonnes bollard pull equivalent) is non-linear, and it follows propeller scaling laws. Observed data shows that thrust increases approximately with the two-thirds power of applied power.

100% Input Power in kW	Thrust in BP equivalent tonnes	Observed Coefficient	
2500	27.6	0.15007	Extra Large Size Observed Coefficient
2250	25.8	0.150074	
2000	23.8	0.178084	Large Size Observed Coefficient
1800	22.2	0.178084	
1600	20.5	0.178084	
1400	18.8	0.178084	
1200	16.9	0.178084	
1100	13.6	0.12766	Medium Size Observed Coefficient
1000	12.8	0.12766	
850	11.5	0.12766	
750	10.5	0.12766	
600	9.1	0.12766	
500	8.0	0.12766	Small & Very Small Observed Coefficient
350	5.9	0.11799	
200	3.3	0.09795	

Table 1: 100% input power vs 100% output thrust

Specifically, thrust follows the relationship:

$$T = C \times P^{(2/3)}$$

**T = Output Thrust in BP equivalent tonnes force**  
**C = Observed Coefficient – defined below**  
**P = input power in kW**

In the relationship above, the coefficient “C” is an observed thruster performance coefficient representing the installed hydrodynamic efficiency of a tunnel bow thruster under zero speed conditions. It accounts for generic variables notably propeller geometry, tunnel and hull interaction losses, and scale-related flow losses, which are proportionally higher in smaller thrusters. As a result, C varies with thruster size and design rather than being a universal constant and converts output thrust to BP tonnes equivalent.

Manufacturer data was used in calculations along with comparisons to various anecdotal tables of input power vs output thrust in tonnes which had no similar thrust outcomes. The sub-linear thrust-power relationship follows established propeller scaling and Computational Fluid Dynamics optimisation by Özdemir1 et al. confirming geometry's role in achieving realistic efficiencies for tunnel thrusters.

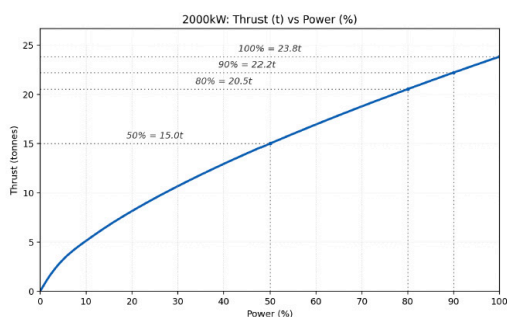
1 Y. H. Özdemir, S. Bayraktar, T. Yilmaz, and M. Güner, "Determining optimum geometry for a bow thruster propeller," in Proc. 8th Symp. High Speed Marine Vehicles (HSMV), Naples, Italy, May 2008.

### Effective thruster - Theoretical outcome;

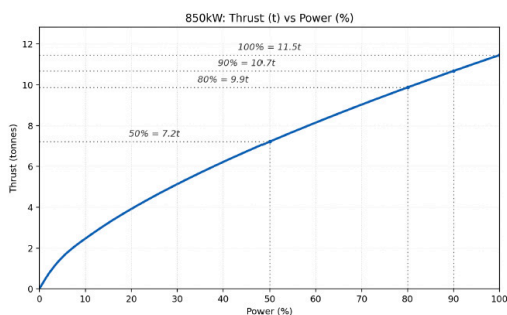
Reducing input power from 100% to 90% to 80% results in a smaller-than-expected proportional drop in output thrust - typically around 7% or 13% respectively, rather than a linear reduction.

**90% input = 93% output**

**80% input = 87% output**



**Figure 1: 2000 kW - Power vs Thrust**



**Figure 2: 850 kW - Power vs Thrust**

It is important to note that these graphs represent theoretical performance and do not account for practical real-world variables mentioned earlier, such as fouling, ventilation, rising motor temperature, or blade wear. In practice, vessel age and operational environment can further reduce thrust output beyond these theoretical losses. But it gives us general theory to base our judgement upon.

## 2. CASE STUDIES

Case studies are essential for translating technical relationships and theoretical boundaries into operational realities. The following illustrate how actual shipboard thruster limitations impact pilot decision-making and how an assessment form is needed to keep assessments consistent.

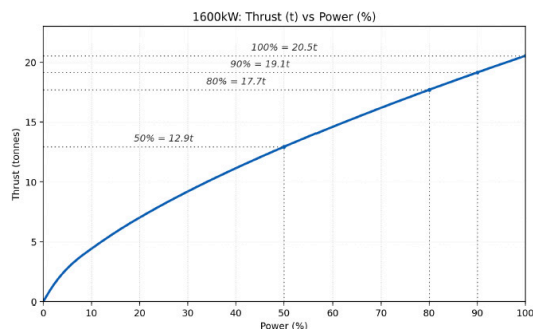
### 2.1 Gantry General Cargo vessel

During a recent assessment, the vessel's master advised that the bow thruster could not sustain 100% output continuously due to the risk of overheating, the ship is 28 years old and thermal issues are present. During manoeuvring (no swing), the pilot observed the thruster being manually cycled between 100% and 90% power input in a short two-minute window. This operational pattern highlighted potential concerns regarding both reliability and sustained effectiveness for tug substitution when required to be ran for several minutes.

Potential assessment decision: Due to age and thermal issues the thruster may not be considered effective for extended use when swinging but may be effective for simple non-swing manoeuvres, where shorter bursts of thrust suffice

### 2.2 Containership 4,500 TEU (270x35m)

On departure, the master reported the bow thruster had tripped on arrival. In controlled tests on departure (with no swing, two tugs so a reduced operational risk), the thruster performed without issue at 50%, 80%, and 90% load for two minutes each. However, it tripped again above 90% input power. Although nominally rated at 1600 kW (approx. 20.5t thrust), actual safe operational output can be capped at 90% which is equivalent to ~18.5t. On this occasion the Master was welcoming of the test, assessment and advice as he will use it in his next port.



Potential assessment decision: This thruster could support swinging operations, with no thermal issues present, only a max load trip, if power input remained strictly below the 90% threshold. With many Masters clearly advising these limits and reason for the limits during pre-arrival checks this can assist with safe planning and, if necessary, afford the early ability to arrange additional tugs.

### 2.3 Historical Analysis: Master Reporting

A review of anonymised operational survey data (50 vessels) shows a welcoming trend in reported thruster operability:

- 28 ships stated full 100% input power available
- 6 ships stated a maximum 95% input
- 10 ships stated a maximum 90% input
- 2 ships stated a maximum 85% input
- 4 ships stated a maximum 80% input

While most vessels report full rated power, a significant portion operate under voluntary or required derating. This highlights the importance of factoring in maximum reliable input - not just nominal - and the reason behind the derating, when assessing whether a thruster can truly substitute for a tug.

### Case study Lessons and Recommendations

- Case study evidence consistently shows that reliability and actual operational capacity, not just theoretical kW or thrust ratings, must guide thruster assessments.
- Masters should be encouraged (or required) to report actual maximum continuous input power as part of routine vessel arrival information - and if less than 100% a reason for derating - thermal, switchboard load, age etc
- Pilots, regulators, tug companies and agents would benefit from a clear, standardised protocol for recording and communicating thruster limits, ensuring that derating and reliability issues are visible and actionable before arrival and manoeuvre execution.

### 3. DEFINING AN 'EFFECTIVE THRUSTER'

An effective thruster must meet three core criteria to be considered a safe and reliable substitute for tug assistance. These thresholds need to be objective and stated in the assessment form.

- **Reliability:** The thruster shall maintain continuous operation at the required power without overheating, tripping, or shutting down during critical manoeuvres such as swinging. Assessment protocols or live tests should specify minimum sustained operation durations for given power levels (e.g., full power sustained for at least 5mins for no swing and 10mins for a swing manoeuvre).
- **Performance:** Real-world thrust output should be as close as possible to the rated capacity, considering any official or master-advised derating. Objective data from live testing, power monitoring, and pilot observations must be recorded rather than relying on nominal power ratings or assumptions. Less than 80% should be considered not effective for tug substitution.
- **Suitability:** Thruster capability must be matched to current and forecast environmental conditions, including wind, currents, vessel laden condition and berth characteristics. Minimum required limits should be declared and communicated during pre-arrival exchanges to enable proactive operational planning. This assessment may be subjective as assessing RoT in different states of wind and current may not be feasible for non regular calling ships and a wider margin may be required. Draft and/or wind limits may be listed for individual vessels. Eg: 250m containership may have an effective thruster to substitute for a tug when at 9.0m draft and 15kts wind however when 11.9m it may not be effective with 5-10kts wind.

Critically, the pilot's professional judgement remains paramount. Where objective data is ambiguous or lacking, real-time observation during manoeuvring - such as delayed response, inability to maintain heading/RoT/lateral velocity, or cyclic power fluctuations - enables pilots to make critical safety decisions. These judgements should be documented as part of the assessment to guide future ship specific port operations and vessel scheduling.

### 4. OPERATIONAL IMPLICATIONS AND PROTOCOLS

Upon identification of thruster limitations - be it reliability, power output, or suitability-related - the following operational measures should be adopted:

- **Environmental Operating Restrictions:** Adjust wind and current limits downward for vessels with known or suspected thruster restrictions. For example, reduce the maximum wind speed allowed for thruster substitution from 20 knots to 15 knots or other agreed thresholds depending on severity.
- **Movement and Manoeuvre Controls:** Restrict or prohibit certain manoeuvres - particularly swinging off berths or operating in confined waters - where thruster performance cannot be guaranteed. Requirements for additional tugs during such operations should be enforced proactively.
- **Transparent Reporting and Early Disclosure:** Mandatory declaration of thruster capabilities, including any recent derating, failures, or limitations, before vessel arrival and confirmed during the Master-Pilot Exchange. This transparency enables pilot and port authorities to make informed decisions and arrange necessary support in advance rather than reactively.

- **Standardised and Structured Assessment Forms:** Use and evolve forms like a Thruster Assessment Form to capture quantitative data (power ratings, operational delays, failure history) and pilot observations in a database. The form may also state an agreed live testing process for the port which can be carried out under pilot supervision or tested by Masters prior to entry. This structured approach reduces ambiguity and reinforces accountability among masters, pilots, and scheduling administrators.

In summary when thrusters are performance-limited or unreliable, pilots and operators may need to adjust operational practices, such as:

- **Reducing wind limits** (e.g., to 15 knots).
- **Restricting vessel swinging without tug support.**
- **Requiring masters to test and declare thruster limitations** before arrival or during Master-Pilot Exchange (MPX).

### 5. ASSESSMENT METHODS

A Thruster Assessment form provides a structured way to capture and standardise these evaluations, enabling objective decisions. Key aspects to a thruster assessment form must be

1. Thruster size
2. Observed displacement & drafts
3. Any thruster information available in operation manuals including
  - a. Maximum continuous use
  - b. Maximum power input
  - c. Thrust output
4. Advice or a template on how to test a thruster
  - a. Run for 2 minutes at 50%, then 75% then 80% then 90% then 100%
5. Any past issues or failures with the thruster
6. Is 100% input available or is a lower power setting advised as maximum available.

Subjective assessment should be avoided however the pilot will need to make an overall assessment if the thruster is able to be substituted for a tug in favourable conditions and for the following

- a. Can the ship be swung using the thruster
- b. Can the thruster substitute for a tug when in loaded condition
- c. Can the thruster hold the ship alongside or slow the lateral approach to the berth in favourable conditions.

### 6. CONCLUSION

1. A thruster is only 'effective' if it can reliably deliver sufficient thrust under the conditions in which it is expected and required to operate.
2. Both output performance and reliability must be considered.
3. Theoretically at 80% input, the output thrust may be 87%
4. >80% input may be considered adequate in suitable conditions
5. An assessment form is essential (Part 2)
  - a. Page 1 – objective information, pilot checklist, final assessment & comments
  - b. Page 2 – Guide for a consistent approach to live testing, thruster output table, disclaimer
6. Reducing subjectivity in the assessment is important, however we must not discount the pilots professional judgement and it should take precedence.

## PART 2: EXAMPLE THRUSTER ASSESSMENT FORM

Vessel Name				Year Built		
IMO Number			LOA			BEAM
Assessed Δ				Assessed Draft (m)		
Movement	Arrive / Depart	Berth			HU / HD	Swing? Y / N
UKC when manoeuvring			Current			Wind

### INFORMATION FROM SHIP MACHINERY OPERATING MANUAL – IF AVAILABLE THRUSTER EFFECT AT TRIAL CONDITIONS (IMO Resolution A.601 [15])

Thruster	Rated Power (kW)	Rated Thrust <sup>1</sup> (tonnes) [if available]	Time Delay for Full Thrust (sec)	Turning Rate at Zero Speed (°/min)	Time Delay to Reverse Full Thrust (m&s)	Not Effective Above Speed (kn)
Bow						
Stern						

<sup>1</sup> Rated Thrust may be found in the Vessel Specification or Machinery Operating Manuals. If quoted in kN, divide by 9.8 to obtain tonnes.

### PILOT CHECKLIST FOR EFFECTIVE THRUST

Effectiveness Test	Responds promptly: <i>Immediate response to input command.</i>	Y / N
	Steady max load: <i>Sustained load with no alarms or cycling.</i>	Y / N
	Environmental control: <i>Maintain control against wind/current.</i>	Y / N
	No thermal derating: <i>No derating (&lt;80%) or temperature warnings observed.</i>	Y / N
	Matches rated performance: <i>Delivered thrust consistent with rating.</i>	Y / N
	Consistent with advisories: <i>Performance aligned with Master's advice.</i>	Y / N

Has the thruster failed recently? <i>If yes note recent failure description</i>	Y / N
Derating Observed or Advised? <i>(Master advised max power %)</i>	

TEST	Thruster Test Completed? – guide on Page 2	Y / N
	Type of test	Made Fast / Underway (preferred)
	Maximum input thrust % achieved during test	%

FINAL EFFECTIVENESS ASSESSMENT	≥ 80% Thruster Effective for Berthing/Unberthing – NO SWING?	Y / N
	≥ 80% Thruster Effective for Berthing/Unberthing – SWINGING?	Y / N
	NO SUB (if required): Thruster unsuitable for tug substitution.	Y / N

Comments			
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Pilots Name		Signature	
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### Thruster 100% input/output guide

Input Power kW	Thrust in BP equivalent tonnes
2500	27.6
2250	25.8
2000	23.8
1800	22.2
1600	20.5
1400	18.8
1200	16.9
1100	13.6
1000	12.8
850	11.5
750	10.5
600	9.1
500	8.0
350	5.9
200	3.3

#### Conflict Resolution and Escalation

If the Pilots observations conflict with that of the Master or operator's declarations:

- Pilot judgement to take precedence for safety decisions.
- Immediate notification to VTS, PSP Operations the Master must advise their Agent.
- Pilot can request or advise additional tug support or restrict manoeuvres as needed.

#### Triggers for Reassessment

A thruster operational reassessment may be required where:

- Repairs, modifications, or maintenance have been completed
- Vessel has undergone dry-dock
- A thruster fault or limitation has been reported
- Pilot feedback or recurring operational issues are identified
- Operating conditions or manoeuvring demands have materially changed

**Disclaimer:** This assessment is based on objective observations and the professional judgment of a qualified marine pilot at the time of inspection. It does not constitute a certification of mechanical integrity or future performance. The pilot conducting this assessment is not liable for any subsequent operational issues or failures. Any concerns identified should be referred to appropriate technical personnel for further investigation and resolution or sufficient towage assets engaged. This assessment also serves as a risk management tool to help protect port infrastructure and the marine environment.

## Thruster Operational Test (Live Assessment)

### 1. Objective

Verify thruster system stability and assess sustained thrust delivery and vessel response during live operations to determine suitability for manoeuvring and tug substitution – is the thruster effective.

#### 1.1 Applicability / Triggers for Assessment

A thruster operational assessment may be required where vessel manoeuvring demands are increased, including but not limited to:

- Heavily laden or deep-draft vessels
- Reduced UKC during manoeuvring
- Restricted berths or channels
- Adverse wind or current conditions
- Following thruster failure, repair, or maintenance
- Pilot concern regarding thruster performance

### 2. Test Method

The thruster may be tested either while the vessel is made fast or while underway. Where practicable, testing underway provides the preferred assessment of thruster performance and effectiveness.

50%		80%		90%		100%	
Fail	Pass	Fail	Pass	Fail	Pass	Fail	Pass
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>NO SUB</b>	<i>Go to 80% test</i>	<b>NO SUB</b>	Minimum 80% Pilot Assessment Req	Can Substitute Tug for BT if pilot deems effective			

#### 2.1 Made Fast – System Stability Observation

When tested with the vessel secured alongside, the thruster is run progressively to maximum available power to confirm operational integrity. Observations are made for tripping, alarms, delayed response, power cycling, or derating. This method provides a limited assessment and does not fully represent manoeuvring effectiveness.

#### 2.2 Underway – Performance Assessment (Preferred)

During arrival or departure manoeuvres, the thruster is operated at increasing power levels for sustained time periods (>2min) where practicable.

The pilot observes vessel response, heading control, sustained power delivery, and any loss of effectiveness or system limitation.

### 3. Assessment Criteria

Final assessment should be based primarily on underway performance.

***To be considered effective, the thruster must reliably sustain at least 80% power underway without tripping, cycling, derating, or loss of manoeuvring effectiveness.***

Suitability for tug substitution remains a matter of pilot judgement based on observed performance and prevailing conditions.

# CAN THE SCANDINAVIAN APPROACH TO REMOTE PILOTAGE WORK IN AUSTRALIA?

Remote pilotage is often presented as a technological inevitability, but the current reality is more complicated. FinnPilot's Project Nelson, DanPilot's operational trial, and IMPA's R-Pilot study all assume a licensed pilot remains firmly in the loop and that bridge teams are capable of executing manoeuvres and taking over if the links go down. At the same time, automation and bridge operations research shows a steady decline in manual shiphandling skills and fault-diagnosis abilities among officers, raising awkward questions about who will actually handle the ship when remote pilotage technology fails.

For Australian pilots, this cuts both ways. On one hand, remote pilotage offers clear benefits in a narrow envelope—fewer ladder transfers, options for supporting long transits or routine legs, and potential back-up when weather or logistics prevent boarding. On the other hand, it risks concentrating failure modes into complex systems that depend on sensor suites, high-bandwidth links, and bridge teams whose practical shiphandling experience may be minimal. This article explores how current trials are grappling with these realities, and what that means for Australian pilots seeking to keep a human in the loop, especially in mandatory pilotage waters.

## WHAT IS REMOTE PILOTAGE?

Remote pilotage is not new, it has just changed its name. In the past, several vessel traffic services (VTS) have provided navigational advice to vessels; however, this advice was non-binding and often not provided by a trained pilot. The European Marine Pilot Agency defines shore-based pilotage as, "... an act of pilotage carried out in a designated area by [a licensed pilot] from a position other than on board the vessel..." with the bridge team executing the pilot's instructions. Some jurisdictions treat this as "navigational assistance" rather than pilotage, because the pilot does not formally assume conduct of the vessel.

Using the EMPA definition, a 2012 European Union report showed that shore-based pilotage (Artuso et al., 2012) was used by twelve countries in certain situations, while in 2021 Italy regularly used shore-based pilotage (Hovda, 2021).

In this article, remote pilotage means a licensed pilot directing the navigation of a ship from ashore using real-time data and communications links, as an alternative to being physically on board. That is distinct from vessel traffic services (VTS), which provide advisory traffic management, and from traditional "shore-based pilotage" used for boarding support rather than full port entries.

The key differences between existing remote pilotage systems and those discussed in this article are the scope and the technology. Current remote pilotage operations are used in exceptional circumstances and rely on standard shipboard equipment and systems. In the future, remote pilotage systems may become the norm for appropriately equipped ships. This article focuses on future operations.

Taking recent developments in marine technology into account, remote pilotage appears to solve several pilotage problems. The bigger question is: do the problems it introduces outweigh those it solves? Three remote pilotage projects aim to answer this question.

## REMOTE PILOTAGE TRIALS

Several projects are in progress including FinnPilot's Project Nelson, DanPilot, and IMPA's R-Pilot. These three projects represent complementary approaches:

- Project Nelson's infrastructure development to enable widespread adoption across multiple European countries;
- DanPilot's operational implementation; and
- IMPA's comprehensive research study to establish evidence-based guidelines.

## PROJECT NELSON

In February 2019, Finland's amendments to the Pilotage Act entered into force. Finland's Pilotage Act now allows pilots to perform their duties "from a location other than aboard the vessel" subject to route- and vessel-specific authorisations from Traficom, provided remote pilotage is at "least as safe as traditional pilotage." So far, trials have focused on short-sea routes with well-equipped ships transmitting data ashore, rather than complex port approaches.

Project Nelson itself is primarily an infrastructure project: VHF Data Exchange System (VDES) base stations have been installed in Finnish and Swedish territorial waters, two remote pilot stations have been set up in each country, a service platform for digital traffic management has been developed, and cybersecurity assessments have been completed for all services with remote pilotage used as a pilot use case. Despite the regulatory framework being in place since 2019, FinnPilot describes commercial remote pilotage implementation as still "years ahead," mainly because there is no agreed international definition of remote pilotage to anchor regulation and equipment standards.

In May 2022, Finland conducted its first remote pilotage technology trial as part of the Sea4Value Fairway program. ESL Shipping's M/S Viikki transmitted real-time information from Kokkola to a remote pilotage center in Turku.

Project Nelson is an EU-funded project in Finland and Sweden, led by Fintraffic. It aims to enable new innovative maritime services and support remote pilotage adoption through standardised international information exchange between ships and shore.

At this stage, Project Nelson's remote pilotage demonstrations sit firmly in a low-risk envelope, with well-equipped test vessels, defined routes, and normal operating conditions, with full conventional pilotage still used for complex port and coastal passages (Fintraffic. (n.d.)).

## DANPILOT

Following six years of planning with maritime technology firm Danelec, Denmark launched the world's first government-approved operational trial of remote pilotage in May 2025. The trial deliberately sets a restricted operating envelope: vessels with draft under 13 m, in the Kattegat and western Baltic Sea, and only on transits that do not require compulsory pilotage. The planned 18-month trial involves around 50 pilotages over 18 months, using Danelec's VDR-based data stream and a remote control centre in Randers where pilots provide advisory guidance. The Master and bridge team retain full control throughout, with DanPilot positioning the service as a supplement to traditional pilotage, not a replacement.

External concerns focus on equipment failures, bridge resource management, divided attention in emergencies, and the inherent limits of shore-based situational awareness, especially without independent radar and optical channels. As of January 2026, there have been no publicly reported incidents or interim results from the trial.

Participating vessels are fitted with Danelec's technology to collect voyage data recorder (VDR) data, and transmit course, speed, position, heading, wind conditions, engine power, and vessel attitude data in real time to DanPilot's control center in Randers, where pilots provide navigational guidance based on received data. Secure Starlink satellite connections with TLS encryption deliver this data to cloud servers and onward to the control centre. The system holds DNV Cyber Security Type Approval and IACS Unified Requirements E27 compliance.

Importantly, the remote piloting solution does not take over navigation control. The Master and bridge crew maintain full control, while the remote pilot provides advisory guidance, preserving the fundamental principle that the pilot advises while the master commands. DanPilot CEO Erik Merkes Nielsen suggested remote pilotage could eventually apply to up to 10% of DanPilot's total operations.

External concerns have been raised about equipment failures, bridge resource management implications, divided attention during emergencies, and the inherent limitations of shore-based situational awareness. Despite this, as of December 2025, approximately seven months into the 18-month trial, no interim results have been published and no incidents have been reported online (DanPilot, n.d.).

## IMPA REMOTE PILOTAGE PROJECT (R-PILOT)

The International Maritime Pilots' Association (IMPA) launched an international study in 2024, partnering with the Canadian National Centre of Expertise on Maritime Pilotage and the Canadian Coast Guard. The goal is to rigorously assess remote pilotage feasibility, readiness, and impacts on safe navigation by looking at pilotage as a socio-technical system. It aims to deliver evidence-based, authoritative insights into remote pilotage for both conventional ships and future autonomous vessels.

Following information gathering and technology assessment, this project is a three-phase trial. Originally planned to start in Q3 2025, the first phase would be simulated environment trials to assess technical performance. This will be followed by trials aboard Canadian Coast Guard vessels operating in pilotage waters, and the final phase in 2027 would have involved near real-life trials aboard commercial ships in mandatory pilotage waters. Of the three current trials, this is the only one that planned

to test remote pilotage in complex, real-world conditions (IMPA, 2025).

Unfortunately, the Technology Readiness Assessment Report released in September 2025 (IMPA et. al, 2025) identified significant gaps in proposed solutions. Four critical risk areas emerged:

- shared situational awareness challenges;
- collision avoidance limitations;
- relative navigation difficulties; and
- maneuvering close to other vessels and infrastructure.

The Phase 2 assessment applied detailed pilotage workflow tasks and rated each system from very low to very high risk impact in a colour-coded matrix. Both candidate solutions showed repeated high or very high risk ratings in exactly the domains pilots worry most about: maintaining shared situational awareness with the bridge team, collision avoidance without independent radar and visual channels, relative navigation, and manoeuvring close to other ships and infrastructure.

Because of these gaps, the R-Pilot Board concluded that no available solution is mature enough—yet—for trials in mandatory pilotage waters, and that any early trials must not be allowed to “bake in” technology limitations as if they were acceptable levels of risk.

Captain Simon Pelletier, President of IMPA, explained, “We have had a glimpse of what might be possible, but we are not there yet. Our primary concern is how to conduct trial phases that are not skewed by the limitations of technology solutions.” At this point, IMPA has put out another request for proposals and expressions of interest. As a result, a second, more prescriptive request for information is now underway, with realistic trials pushed back to at least 2027–2030 (IMPA, 2025).

## CHALLENGES AND BARRIERS TO REMOTE PILOTAGE

As IMPA noted in its September 2025 report, immature technology, sensor and data limitations, a lack of system redundancy and critical gaps in situational awareness pose a barrier to widespread adoption of remote pilotage.

### TECHNICAL CHALLENGES

In the absence of an on-board pilot, reliance on shipboard SOLAS sensors and equipment may not provide the precision required for complex remote pilotage. In addition, a communication system capable of supporting low-latency closed-loop, non-verbal, verbal, and video communications between pilot and bridge team is essential for building trust, conducting continuous Master-Pilot Exchange (MPX), providing unambiguous directions, and ensuring a shared mental model.

All the trials discussed acknowledge significant cybersecurity risks including signal interference such as jamming, spoofing, and cyberattacks, which are becoming more common. In remote pilotage, any misunderstanding, delay or interruption to communication, video feeds or sensor data could have serious consequences during time-critical manoeuvres, regardless of whether the cause is a cyberattack, equipment freeze, a poor connection, or any other reason. These are the situations where pilotage expertise is most important. Any situation where a single-point-of-failure could endanger lives, ships, or infrastructure must be avoided.

R-Pilot found no candidate system with sufficient redundancy and independent channels to support safe operations in mandatory waters. To complicate the situation, Captain Arseneault noted that while IMPA anticipated significant interest from manufacturers, “this did not materialise” suggesting the market may not see remote pilotage as commercially viable yet. Until the technology companies are ready for trials, there is likely to be little progress on expanding remote pilotage.

## REGULATORY CHALLENGES

At a regulatory level, most jurisdictions have no clear regulatory framework for remote pilotage, and there is no international standard definition of remote pilotage. Until States agree on this, harmonised international regulation is impossible. As shipping is an inherently international industry, standardisation is essential to ensure common language and terminology and avoid ambiguities or misunderstandings in communication. As a result of this lack of regulation, questions around liability, responsibility, and insurance coverage remain largely unresolved. Finland's law is one of the few that explicitly addresses remote pilotage, and even there the requirement is that remote operations must be “at least as safe as traditional pilotage”. Most other States have no dedicated framework, and international definitions are still under active discussion.

## SCOPE AND APPLICABILITY LIMITATIONS

The two main trials in progress, DanPilot and FinPilot, are restricted in scope and exclude complex and high-risk operations such as confined waters, heavy traffic, adverse weather, complex port approaches. DanPilot's solution would be relevant for only up to 10% of pilotage operations. IMPA's R-pilot trial is planned to be a more realistic trial in compulsory pilotage waters; however, it is postponed until appropriate technology is available to complete the trial safely.

## SAFETY AND RISK MANAGEMENT CONCERNS

As a service, traditional pilotage is resilient to a single point of failure because pilots are not reliant on a single source of information for executing and monitoring pilotage. In contrast, by relying on technology, remote systems may concentrate risk. These risks must be managed through real-time data transfer, verification of technical solutions, definition of operative ways of working, and training, all of which add complexity and potential failure points.

## HUMAN CONSIDERATIONS

When a pilot boards a ship, they can assess non-verbal communication, bridge team competence and responsiveness, observe ship handling characteristics, and receive the sensory feedback that most seafarers rely on. The pilot's physical presence helps to build trust and rapport between the pilot, the Master, and the bridge team. Pilots conducting remote pilotage will have to develop alternatives to this information and feedback. In emergencies—fire, blackout, equipment failure—the remote pilot will be unable to intervene directly, relying solely on the bridge team's response.

## BARRIERS

Current SOLAS ships lack several capabilities essential for remote pilotage, such as real-time data streaming, video transmission, and communication latency. While SOLAS mandates VDR equipment on vessels over 3,000 GT, these systems are not designed for live data extraction, a core requirement for remote pilotage that forms the basis of the DanPilot technical solution.

Camera systems are another major gap. SOLAS has no requirements for navigation-grade cameras, yet to be effective in all conditions, remote pilotage requires comprehensive visual coverage including multiple maritime-grade high-definition feeds with night vision capability. Bandwidth limitations can make satellite video transmission expensive, requiring advanced compression technologies.

IMPA's R-Pilot study specifically identified real-time kinematic (RTK) positioning as necessary where ship characteristics and pilotage area dictate; however, this is beyond standard GNSS requirements. All assessments identified communication system redundancy as critical, with automatic transfer capability between primary and backup communication links essential for safety-critical operations.

For existing commercial vessels to achieve remote pilotage eligibility, retrofits would typically require: high-bandwidth satellite terminals (such as Starlink Maritime), VDR modification for real-time data extraction,

installation of multiple cameras with bridge and external coverage, ship-to-shore data integration platforms, enhanced power redundancy for communication systems, and cybersecurity upgrades.

## OTHER INDUSTRIES

While the marine industry differs from most other industries, understanding how other industries manage similar risks can help to identify the risk around remote pilotage.

### Aviation - Remote Tower Operation

Several countries including Sweden, Norway, and Germany have implemented operational remote tower systems for smaller airports. In remote towers, air traffic controllers manage multiple airports from a centralised location using high-definition cameras, sensors, and data feeds (IFATCA, 2024). This parallels remote pilotage as controllers cannot observe the plane, so they use multiple information streams to guide aircraft through critical phases without being physically present. As with remote pilotage, safety concerns required extensive validation before implementation, and the role remains human-in-the-loop rather than being fully automated (IFATCA, 2024).

### Vessel Traffic Services (VTS)

In many areas, VTS operators provide remote navigational guidance and traffic management from shore stations, although this advice is advisory rather than directive (NorthStandard, 2020). The infrastructure and operational concepts for VTS remote navigational assistance overlap with remote pilotage, making VTS centres logical candidates for housing remote pilotage operations (Greenwood et al., 2024).

### Application to Remote Pilotage

Remote towers in aviation and remote VTS centres show that high-stakes remote operations can be implemented safely, but only after years of validation, starting with small airports or low-risk traffic situations and maintaining human controllers firmly in the loop. These systems depend on mature, redundant communication links, high-quality visual and sensor feeds, and clear regulatory frameworks.

For pilots, there are two main lessons. First, if remote pilotage is adopted, it should follow the same path: start with low-complexity, non-compulsory passages on well-equipped ships, and expand only when technology and training demonstrably match traditional safety levels. Second, remote pilotage is unlikely to be a cheap shortcut. In every other industry, it has required heavy upfront investment in infrastructure, standards, and human-factors design.

## ALTERNATIVES TO REMOTE PILOTAGE

Like remote pilotage, pilotage exemption certificates (PECs) are an alternative to a qualified pilot physically conducting a vessel. In practice, PECs are an early example of "Master-only" navigation in pilotage waters. PEC systems vary considerably, but usually require a Master to complete a certain number of transits under the supervision of a licensed pilot, plus theory examinations covering at least local knowledge and emergency procedures. They are most commonly issued to frequent callers on very maneuverable ships such as ferries and Ro-Ro freight ships, sometimes performing dozens or hundreds of exempted missions per year.

The EU's 2012 analysis across seven countries found no clear evidence that PECs had a major negative effect on safety overall. However, the accident frequency for PEC voyages was slightly higher—0.18 accidents per 1,000 exempted missions compared with 0.13 per 1,000 piloted missions—and pilots were significantly more likely than administrations or shipowners to perceive PECs as a safety risk.

This matters for remote pilotage because both PECs and remote pilotage rely on the same

assumption: that a master with adequate local knowledge, backed by either their own experience (PEC) or a remote pilot's advice, can safely navigate without a pilot physically present. If automation has already eroded the underlying shiphandling skills that PEC systems implicitly depend on, then a master-only or PEC-style remote model may be operating on an outdated picture of what "a typical master" can actually do.

Outside PEC systems, many coastal and confined water passages are still conducted with no pilot and no PEC, purely as master-only navigation. In these cases, neither the local authority nor the pilotage organisation has formal assurance about the master's local knowledge, and the risks are managed primarily through general SOLAS obligations and company procedures.

From a risk-management perspective, that is a much weaker position than either traditional pilotage or PECs. Any move towards remote pilotage should avoid quietly sliding into "remote PECs" where neither the onboard competence nor the pilot's tools are robust enough to match the risk profile of the waters.

## AUSTRALASIA-SPECIFIC CHALLENGES

Australia's coastal pilotage problem is partly one of scale. The Great Barrier Reef, Torres Strait and Coral Sea PSSA covers roughly 968,000 square kilometres, and the Inner

Route alone runs for more than 1,000 miles through shallow, reef-strewn waters with tide-dependent transits, restricted sea-room, and frequent obstructions requiring precise navigation. AMSA regulates this coastal pilotage, while port pilotage falls under state and territory authorities creating a regulatory mosaic.

From a remote pilotage perspective, this is the extreme end of the complexity spectrum: multiple pilot boarding grounds in remote locations, long stretches with limited VHF and data coverage, helicopter-only transfers, and dense mixed traffic. No current trial proposes to use remote pilotage in anything approaching this risk profile, and as of January 2026 there are no announced Australian or New Zealand trials for commercial shipping.

### THE IMPACT OF AUTOMATION

Remote pilotage assumes that the bridge team can both execute the pilot's instructions and take over competently if systems fail. However, the same trends that make remote operations attractive—highly automated bridges, reduced manning, and efficiency pressure—are steadily eroding manual navigation and shiphandling skills.

Simulator and lab studies repeatedly show that officers struggle to detect and diagnose system faults without explicit alarms, find it hard to revert to manual control when automation fails, and suffer degraded situational awareness in complex, close-quarters situations when they are accustomed to high levels of automation (Chan et al., 2022). Observational work on automated ferries and reviews of bridge automation reinforce the picture: fewer manual tasks, more “button-pressing”, and gradual skill fade (Chan et al., 2025; Veitch et al., 2022; Aalberg, 2024).

For pilotage, the impact is twofold. First, bridge teams may no longer have the confidence or competence to execute a remote pilot's manoeuvring orders and to challenge or support that pilot effectively; and worse, the next generation of pilot candidates may reach the role with less real-world shiphandling experience, even if their certificates show the same sea-time.

That raises an uncomfortable question for any remote pilotage model: if you remove the pilot from the bridge, and the remaining team has primarily overseen automated systems, can whoever is left actually handle the ship when things go wrong?

### CONCLUSION

Taken together, the current trials suggest a clear picture. Remote pilotage has a genuine role in supporting routine, low-complexity transits on well-equipped ships in non-compulsory pilotage waters. But the technology, regulation and human factors needed for safe operations in complex, mandatory pilotage areas are not there yet, and may never fully replace the situational awareness and intervention capability of a pilot on the bridge.

For today's pilots, the question is not whether remote pilotage should exist at all, but how to shape its narrow, legitimate use cases while protecting the core model of traditional pilotage that has kept high-risk passages safe for generations.

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# IS MARINE PILOTAGE A “COMPLEX SYSTEM”?

from The Canadian Pilot magazine  
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## COMPLEXITY

As indicated in Captain Pelletier’s introductory message to this issue, the performance of Canadian pilotage was once again virtually flawless in 2024, with a 99.97% rate of incident-free assignments (and all incidents being minor in nature) despite these assignments occurring in waters with a high-risk profile. Clearly, it can be inferred from this that the pilots who performed these approximately 53,000 assignments were both highly competent and operated in a professional environment that did not hinder their competence. Furthermore, given the ever-increasing size of commercial vessels transiting waterways that, for their part, essentially remain unchanged, such near-perfection was achieved with operating margins that have become smaller than ever before. A similar rate of incident-free assignments has now been maintained for several decades.

While Canada’s pilots are highly competent, sustaining such performance would not be possible without support from the system as a whole. The most evident characteristic of a system – its performance – is possibly an initial indication of its complexity, involving the interplay of numerous internal components. Complex systems science delves into how the interdependence of such components, where isolating individual factors proves challenging, leads to either high performance or catastrophic failure.

## BOEING’S 737 MAX 8 CRASHES

In his article titled *How Complex Systems Fail: Lessons from Boeing’s 737 Max 8 Crashes*, forensic engineer Sean Brady illustrates how an intuitive analogy to complex systems can be made with a sports team. He suggests that attempting to comprehend the team’s overall performance solely by analyzing each player in isolation will yield limited insights into the team’s collective behaviour. Brady then introduces the “Sand Pile Model,” which employs the metaphor of a tabletop where grains of sand fall at random locations. As more grains accumulate and small hills rise, a single grain eventually triggers an avalanche on the most inclined hill, subsequently impacting neighboring hills.

Brady posits that this development not only exemplifies how minute alterations in a system’s components can have substantial and unpredictable effects on other parts but also necessitates a reevaluation of causality. He argues that the conventional notion of cause and effect is inadequate and that, to comprehend failure in complex systems,

it is imperative to shift our perspective from the triggering event (the single grain of sand that precipitated the initial avalanche) to the “critical state of the system” (the gradual accumulation of grains across the tabletop, which resulted in several hills becoming susceptible to impact).

Boeing developed the 737 MAX 8 to prevent a loss of market share to Airbus’ A320neo. From the outset, Boeing wanted pilots already trained on the conventional 737 to operate the MAX 8 without additional simulator training. Wind tunnel tests conducted on a scaled model revealed issues: the engines positioned further forward on the wings resulted in the model pitching up during tight, high-speed maneuvers. Excessive pitching, accompanied by an excessively steep angle of attack, could lead to stalling and, consequently, crashes.

Brady notes: “the chief pilot of the project (...) wanted a hardware solution, but was overruled because the software [solution] was cheaper”. Tests continued and the risk of stalling eventually became apparent at slower speeds, including during take-off and landing. To address this, Boeing further enhanced its software solution – called “Manoeuvring Characteristics Augmentation Systems” (MCAS).

Boeing submitted an earlier version of the software (revision C, not E) to the Federal Aviation Administration (FAA) for approval. This version C, with its more restricted description of MCAS’s role, was approved. Consequently, no “new functionality” was present, necessitating no additional simulator training for pilots. The FAA also granted approval to omit any reference to MCAS in the training manual. Regrettably, Lion Air Flight 610 crashed in October 2018, and Ethiopian Airlines Flight 302 crashed in March 2019. In both instances, sensor data pertaining to angle of attack and pilots’ inability to override MCAS were implicated as contributing factors.

In his analysis, Brady advances that a conventional approach to understanding Boeing’s failures would concentrate on malfunctioning angle of attack sensors. Instead, he suggests a comprehensive examination of the system’s critical state, including:

- The transformation of Boeing’s culture from engineering excellence to cost-cutting measures following its merger with McDonnell Douglas.



- The imperative to expedite the production of new aircraft to maintain competitiveness against Airbus.
- The decision to omit simulator training for existing 737 pilots.
- The implementation of MCAS and its subsequent expansion.
- The software’s reliance on a single sensor.
- The apprehension that the FAA would withhold certification for the aircraft if MCAS was deemed a “new” functionality.
- The deliberate concealment of the software from trainers and pilots, as well as its omission in the manual.

Brady’s observations align with Dr. Richard Cook’s seminal 1998 article titled *How Complex Systems Fail* wherein Cook outlines how “change introduces new forms of failure” and “post-accident attribution to a [single] root cause is fundamentally wrong” due to the inherent nature of “catastrophe requiring multiple failures”.

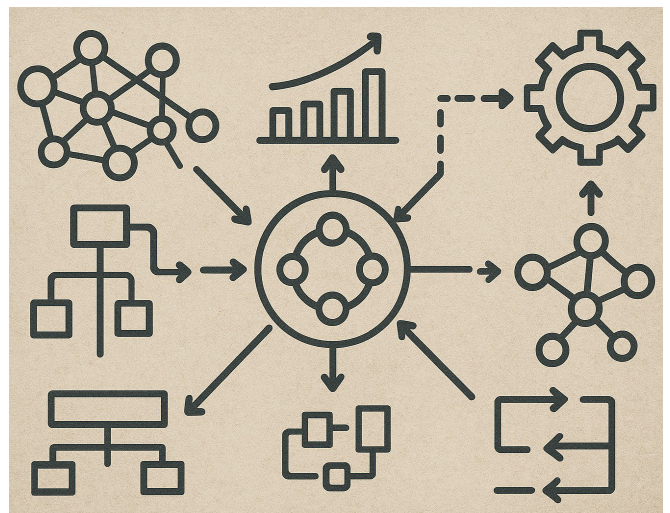
## IS PILOTAGE A COMPLEX SYSTEM?

Literature on complex system failure discusses navigation but not maritime pilotage. For example, in *Examining and Learning from Complex Systems Failures* Kevin Heslin discusses the sinking of the Titanic as “perhaps the most well-known [example of a complex system failure] in history” in light of the “compound effect of structural issues, management decisions, and operating errors.” Heslin also mentions the 1983 Exxon Valdez oil spill as another example, although he omits the lesser-known fact that Alaska had deregulated its pilotage system shortly prior to the accident, which means that a licensed pilot, not the ship’s crew, would have been conducting the vessel at the time of the incident had this not occurred.

To gain a deeper comprehension of the intricacies of pilotage as a complex system, the International Maritime Pilots’ Association (IMPA) has initiated a partnership with

the University of York (United Kingdom). The outcome of this collaboration is anticipated to be released in the coming months.

The initial view is that pilotage exhibits at least certain characteristics of complex systems. These include the interdependence of various components such as regulation, training, licensing and operational practices whose interaction within a system may potentially be greater than the sum of individual parts. Furthermore, the highly regulated nature of typical pilotage systems suggests that pilotage can be highly political – a domain that is, in itself, very complex. With this in mind, pilotage is perhaps part of a form of “super-complexity” in which a complex system, politics, is responsible for overseeing another complex system. This is in addition to the multitude of information and perceptions filtered and acted upon by thousands of pilots operating in challenging environments around the world in contexts where public tolerance for errors is often nonexistent.



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# NEWS FROM PORT ASH

## CLIFF, ANDREW AND TEAM

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It's been quite a busy spell with mixed but generally friendly weather during which we ran courses practically non-stop. The perpetually damp winter gradually morphed into a dry spring and although there were no extremes, it's about what we expect these days and mercifully we had no strong wind interruptions. I say 'these days' because when we started in 2001, I remember some very persistent strong winds with cold fronts which seem to have mellowed over the years. Famous last words?

Over the winter we've had a very interesting mix of local pilots, naval courses from both here and across the ditch, also naval officers from Singapore who plan to come here every six months or so. It is new to us to note their rank differences where the Captain of a warship has the rank of Major. Our twin-screw ship Centurion with her bow thruster, provides a reasonable generic training platform with – importantly - plenty of practice at the accelerated timescale. We appear to be the only manned-model centre with warship models, and it works well for an increasingly skillful Navy and for an appreciative audience at Port Ash.

We had the weed harvester here for a week back in August. Conditions were quite good for it and when the water cleared, we could see a good result with little weed remaining and much sludge removed, hence our in-house description of 'dredger'. There are very few of this type in the country and ours was trucked up from Melbourne. It is an interesting and highly maneuverable craft with side-paddle propulsion and a very shallow draught.

Expansion and renovation onsite continue slowly with ongoing planning to put the new large storage shed into use. At least the ground has dried out from our wet winter, and now of course we're into the bushfire season with all fingers crossed.

One of our outside wharves near the boatshed is about to undergo a re-decking, but should be back in service in a few weeks.

Our large azimuthing-pod ship Assault was craned out of the water in September and taken to our nearby boat-builder for a dry-dock bottom inspection and repaint. She was out of the water for longer than expected while patches of hull were repaired and repainted but is back afloat and being reassembled. The other podded ship is next in line for docking, and should be done early in the year.

Both azimuthing-pod ships will have new consoles in due course; the steering and throttle controls in particular are heavily used in steering the ship and eventually work loose. I understand this has also been a problem with ASD tugs too, so we're not alone.

We had an interesting course recently when six New Orleans pilots came for a week. After Hurricane Katrina damaged their area severely in 2005, they first came here to have a look at us and other centres with a view to building their own in the aftermath. As we know, the hurricanes in that area can be ferocious and are generated in the Gulf of Mexico America. It is difficult to imagine winds of over 100 knots, but it happens.

We noted later that there was a local manned-model centre nearby at Covington, but although impressive, it doesn't get much publicity and seems mostly directed at very large box ships and tug work. It too was hit by a hurricane while still new.

On a lesser note, over the years we've had a few comments from people who have been caught in strong winds while piloting and commented that coming here in windy weather might well have helped them survive unscathed. I know that happened to me once when engine problems – "only 20rpm Mr Pilot!"- coincided with a 40knot beam squall entering harbour with a normally-ballasted Panamax requiring about 30deg of leeway briefly – or was it more... One of those nightmare days never to be forgotten!

I'm sorry to say that our Office & Business Manager Brett Sturgess, who some of you may have met here, is retiring shortly with Andrew and others picking up his duties remotely. Brett has been here since 2008 and will be sorely missed.

Wishing you smooth seas, safe ladders, a good lee, healthy ships and safe piloting from us all at Port Ash.





The Australian Delegation to IMO at NCSR12

# IMO 2025

ALEX COOMBS

In May 2025, I had the privilege of attending the International Maritime Organization’s (IMO) Sub-Committee on Navigation, Communications and Search and Rescue (NCSR), alongside representatives from the Australian Maritime Safety Authority (AMSA). This opportunity was made possible through the coordination and support of the Australasian Marine Pilots Institute (AMPI).

perception of how change is introduced in our industry. It was particularly striking to see how a proposal could be highly beneficial for one flag State while raising serious concerns for another — and how these differing perspectives were managed with balance and diplomacy under the Chair’s guidance.

It was a particular honour to attend the conference with Jo Clarke during the week that also marked the IMO’s Women in Maritime Day 2025 — a significant occasion recognising the contributions and growing presence of women in our industry.

Participating in the NCSR conference was a truly eye-opening experience. For any mariner, the chance to observe the inner workings of the IMO offers a deeper appreciation of the intricate and layered nature of international maritime regulation.

The IMO is a highly structured and methodical institution, steeped in tradition and governed by long-standing protocols. Each flag State delegation is given the opportunity to contribute to discussions on every agenda item. As each topic is tabled by the Chair, a decision is made on whether the proposal proceeds or is referred to a working group for further discussion.

These working groups operate continuously throughout the week, and their discussions are both precise and rigorous. The level of detail and scrutiny applied to any proposed changes to international regulations reflects the IMO’s commitment to consensus-building and international relevance.

As a young seafarer, witnessing the pace and complexity of decision-making at this level fundamentally shifted my



Alex Coombs and Jo Clark at IMO London

Beyond the formal proceedings, one of the most rewarding aspects of the week was the opportunity to interact with delegates from around the world. Hearing their personal seafaring stories — particularly from nations proud to be increasing their representation of women at sea — was both humbling and inspiring.

Jo and I were also invited to an event hosted by the Saudi Arabian delegation, where they were celebrating a milestone achievement: the appointment of their first-ever female deck cadet. For a culture traditionally viewed as conservative, this was a moment of enormous pride and significance. The excitement, passion, and determination they shared in breaking this barrier and committing to a more inclusive future was genuinely moving. It was also a strong reminder of how societal shifts are gradually being reflected within our global industry. As Australians, it was a moment that made us feel incredibly proud of the progress our own industry has made — and continues to make — in embracing diversity and evolving alongside modern societal values.

Globally, women account for just 1-2% of the world's seafarer workforce, according to the latest IMO-WISTA Women in Maritime Survey. In this context, Australia stands ahead of the curve, with women making up approximately 5% of our seagoing workforce. While this is still a relatively small number, it represents a positive step toward greater diversity and inclusion — and is a sign that national efforts are having an impact.



Jo Clark (centre) filming a podcast by KSN Films at IMO on International Day for Women in Maritime 2025

At times, it's easy to feel that the Australian maritime industry is lagging, especially when viewed through the lens of broader international pressures. However, this experience reminded me that in many areas, we are not only keeping pace but leading. We are making meaningful progress — in safety, in working conditions, and in workplace equity.

It is organisations like AMPI that are driving these advancements, pushing to improve our industry and shape a more inclusive and sustainable future for maritime professionals. That message truly resonated with me during my time at the IMO.



Alex Coombs, Jo Clark, Adam Henry (Alternative Permanent Representative to the IMO)

# THE MENTAL AND PHYSICAL STRAIN

## Marine Pilots are Exposed to

CHRIS HOYLE

Chris Hoyle, Chairman of the UK Maritime Pilots' Association (UKMPA), highlights the critical role maritime pilots play in supporting infrastructure, logistics, and trade. He calls for continued innovation and investment to maintain safety in demanding operational environments. Given the challenging nature of their work, ongoing vigilance and proactive reporting are essential to prevent accidents and protect both pilots and ships' crews.

Hoyle also notes that the industry continues to encounter damaged ladders, counterfeit certifications, and improperly designed or secured stanchions and tripping lines. To address these issues, he stresses the importance of digital tools and closer collaboration with ship designers, operators, and managers, combined with a forward-looking safety mindset rather than a reactive approach.

Chris Hoyle: The principal challenge for pilot transfer arrangements (PTAs) lies in achieving consistent education, awareness, and compliance across all stakeholders. Pilots can only work with the equipment and procedures made available to them; when shipowners or managers cut corners, they introduce systemic risks with the potential for serious injury or loss of life. Non-compliant PTAs – most commonly worn or poorly maintained ladders and inadequate rigging arrangements – remain stubbornly persistent issues across the global fleet. Addressing these risks requires a co-ordinated effort to strengthen training, enforcement, and communication between crews, ship managers, and port authorities, ensuring safety is prioritised over expediency.

### **S4S: OVER THE LAST 5 YEARS, AND PARTICULARLY SINCE THE IMO BEGAN REVISING SOLAS V/23, WHAT COMMON NON-COMPLIANCES REGARDING MARITIME PILOTAGE AND PILOT TRANSFER ARRANGEMENTS HAVE YOU OBSERVED?**

Chr.H.: Our members continue to see worn or damaged ladders, counterfeit certification, and improperly designed and secured stanchions and tripping lines. Data collected through the UKMPA Ladder Reporting App and the IMPA annual survey increasingly highlights weaknesses in the structural integrity and securing of ladders, issues that are often only noticed after incidents occur. While awareness of these compliance gaps is improving, ongoing vigilance and proactive reporting remain essential to prevent accidents and protect the safety of pilots and ships' crew.

### **S4S: TRAINING GUIDANCE HIGHLIGHTS THE NEED FOR PILOTS TO EVALUATE CONDITIONS, IDENTIFY UNSAFE SETUPS, AND REFUSE TRANSFERS. HOW WELL PREPARED ARE UK PILOTS TODAY IN THESE AREAS?**

Chr.H.: UK pilots are highly trained and experienced, and refusing to board an unsafe vessel is a recognised and well-established right under the International Convention for the Safety of Life at Sea (SOLAS). At UKMPA, we have developed the Ladder Reporting App, which allows pilots to report safety concerns immediately to Competent Harbour Authorities, the MCA, and the MAIB. This system empowers pilots to make informed decisions, strengthens compliance monitoring, and creates a feedback loop that helps prevent repeat issues at other ports and for other pilots. The UKMPA is a global leader in pilot safety, promoting

safe procedures, personal protective equipment, policy development, and best practice through the Embarkation & Disembarkation of Pilots Code of Safe Practice, which sets the benchmark for pilot transfer safety worldwide. These efforts are supported by collaboration with other professional associations, including the International Maritime Pilots Association (IMPA), the European Maritime Pilots Association (EMPA), the British Tug Owners Association (BTA), UK Major Ports Group (UKMPG) and national and international harbour masters and ports associations, ensuring that knowledge and best practice are shared across the industry.

### **S4S: WHAT ARE UKMPA'S TOP PRIORITIES TO ADDRESS PILOT TRANSFER SAFETY OVER THE NEXT THREE YEARS, PARTICULARLY IN THE RUN-UP TO THE 2028 SOLAS ENFORCEMENT DEADLINE?**

Chr.H.: Our priorities are:

- Ensuring the safety of pilots, pilot boat crews, and ship crews during every pilot transfer arrangement (PTA).
- Encouraging early adoption of SOLAS V/23 requirements; there is no reason to wait until the enforcement deadline.
- Educating the global maritime community—from pilots and ship crews to harbour authorities, naval architects, ship managers, insurers, and P&I clubs—on compliance and best practice.

By focusing on these areas, we aim to reduce incidents, protect lives, and streamline port operations, ensuring that safety is embedded across every stage of the transfer process.

**S4S: YOU HAVE RECENTLY LAUNCHED AN INTERACTIVE POSTER TO SUPPORT NEW SOLAS V/23 PILOT TRANSFER COMPLIANCE REGULATION. COULD YOU EXPLAIN HOW ITS INTERACTIVE, VISUAL FORMAT GOES BEYOND TRADITIONAL TRAINING MATERIALS?**

Chr.H.: With mandatory internet access now required on ships, the poster provides a highly interactive learning tool. Users can explore detailed visual examples of compliant versus non-compliant PTAs without needing to cross-reference ISO 799 standards or other technical documents. Unlike a static poster, the interactive format allows for layered detail, scenario-based exploration, and engagement across multiple user groups, including ship crews, ship management, and port authorities. The interactive poster transforms a regulatory requirement into a practical, accessible training resource that enhances understanding and supports real-world compliance. By making complex requirements easier to visualise, it complements traditional training and helps embed best practice throughout the industry.

**S4S: HOW MAY TECHNOLOGY AND DIGITIZATION – SUCH AS ONLINE TRAINING TOOLS, DIGITAL REPORTING SYSTEMS, OR EVEN EMERGING INNOVATIONS – AFFECT PILOTAGE SAFETY?**

Chr.H.: Digitisation is transforming knowledge transfer in maritime operations. Tools such as the UKMPA Ladder Reporting App enable real-time communication between ship and shore, allowing safety data to be shared instantly. Improved connectivity also facilitates the dissemination of interactive posters and online training platforms. Emerging technologies, including digital simulations and predictive analytics, have the potential to anticipate risks before they materialise, enhancing training, reducing incidents, and improving overall pilotage safety. UKMPA has already received numerous approaches from online training providers seeking to integrate our content, highlighting the growing demand for innovative approaches to pilot training and education.

**S4S: HOW IMPORTANT IS COLLABORATION WITH REGULATORS, PORT AUTHORITIES, AND SHIP OPERATORS IN DRIVING COMPLIANCE, AND WHERE DO YOU SEE THE BIGGEST GAPS TODAY?**

Chr.H.: Collaboration is critical. Maritime pilots are among the most experienced and stable professionals in port operations, and retaining their knowledge is essential for safe, efficient operations. The biggest gaps lie in targeted engagement. Too often, industry consultations are broad or unfocused, diluting their practical impact. Focused collaboration with those who design, operate, and manage ships ensures real-world improvements rather than theoretical guidance. At the same time, engagement fatigue must be avoided to keep initiatives effective and ensure sustained attention on safety priorities.

**S4S: DO YOU BELIEVE THE 2028 TIMELINE FOR ENFORCEMENT IS TOO DISTANT, GIVEN THAT UNSAFE TRANSFERS REMAIN A PRESENT-DAY RISK?**

Chr.H.: Yes, the timeline is long, but it reflects the complexities of international adoption. That said, there is no reason not to adopt best practice early. Early compliance protects crews and pilots, reduces operational disruptions, and establishes a benchmark for continuous improvement. Safety should always be forward looking, not reactive.

**S4S: IF YOU HAD A WISH LIST FOR REGULATORS, OPERATORS, AND AUTHORITIES TO IMPROVE PILOTAGE SAFETY, WHAT WOULD BE AT THE VERY TOP?**

Chr.H.: Decisive and early action. Proactive enforcement, early adoption of standards, and practical support for pilots – including investment in equipment, training, and monitoring systems – are essential. Early compliance reduces risk, protects lives, and demonstrates leadership in maritime safety.

**S4S: HOW CAN THE INDUSTRY BETTER SUPPORT PILOTS IN DEALING WITH THE PHYSICAL DEMANDS AND RISKS OF TRANSFERS, PARTICULARLY IN ADVERSE WEATHER AND HIGH-TRAFFIC PORTS LIKE THOSE IN THE UK?**

Chr.H.: Pilots are exposed to significant physical and mental strain. Hazards such as whole-body vibration, hull impact, and fatigue must be actively managed. Adequate recovery time, robust equipment standards, and operational support are all critical. UK ports lead in risk mitigation, but continued innovation and investment are needed to maintain safety in challenging operational environments. Maritime pilots are critical to national infrastructure, logistics, and trade, and protecting them safeguards the entire supply chain.

**S4S: IF YOU COULD CHANGE ONE THING ACROSS THE INDUSTRY FROM YOUR PERSPECTIVE, WHAT WOULD IT BE AND WHY?**

Chr.H.: I would ensure that all ship operators and managers prioritise pilot transfer safety equally with commercial imperatives. Compliance and safety must never be optional; protecting lives should be inseparable from maintaining efficient port operations worldwide.

**S4S: WHAT MESSAGE WOULD YOU GIVE TO SHIP OPERATORS AND CREWS CALLING AT UK PORTS ABOUT THEIR RESPONSIBILITIES IN ENSURING SAFE PILOT TRANSFER ARRANGEMENTS?**

Chr.H.: Safety starts with you. Ensure ladders, stanchions, and PTAs meet standards before a pilot boards. Respect the pilot's authority to refuse unsafe transfers. Early adoption of SOLAS V/23 standards protects crews, pilots, and your vessel while reducing delays and operational risk. It is important to remember that SOLAS regulations represent the minimum standard, not the gold standard. Operators and crews should aim for best practice in every transfer, taking proactive measures to reduce risk and support the safety of everyone involved in port operations.



# ROUTINE CLIMB LIFE CHANGING FALL

DOMINIQUE VAUGRENART

PILOT ON THE SEINE RIVER, PORT OF ROUEN

My name is Dominique. I am 54 years old and have been a pilot on the Seine River since 2005, guiding vessels safely into and out of the Port of Rouen. With over 20 years of experience, including four years as a senior pilot in charge of traffic co-ordination, I am deeply familiar with the procedures, challenges and responsibilities of this critical role. But on 22 April 2021, a routine transfer operation turned into a traumatic accident – one that not only affected my health and career but also sparked a conversation on the safety of pilot transfers in France.

That evening, the Van Star, a Panamax tramp vessel measuring 190 metres in length and 32 metres in beam, 6.5 metres draught, was sailing up the Seine River towards Rouen to load scrap metal. It was arriving in ballast from Terneuzen, Netherlands. During the transit, a changeover from the second to a third pilot was scheduled at kilometre point 256 in the port of Rouen. This third pilot – me – was to complete the final manoeuvring phase and berth the vessel.

At approximately 9:40 pm, the launch Oceanite left its berth to transfer me to the Van Star. At 9:46 pm, in early night conditions, we approached the starboard side of the vessel where a combination ladder had been deployed.

## A SEINE RIVER PILOT'S ACCIDENT, RECOVERY AND THE FIGHT FOR SAFETY

The platform of the accommodation ladder had been positioned too high, covering the pilot ladder, obstructing the forward rope that I needed to grip with my right hand. This rope was essential for maintaining balance and advancing safely up the ladder. I was forced to shift my body weight while holding on with only my left hand. At the same time, my feet were placed on a repaired pilot ladder step that was thicker but less stable than the others. Suddenly, I lost my grip and fell 4.5 metres onto the hard deck of the launch vessel below.

### INJURIES, INVESTIGATION AND CRITICAL FAILURES:

The fall resulted in four significant fractures – my left wrist, elbow, scapula and ankle were all injured, with two requiring surgeries. I was evacuated to Rouen Hospital, where I remained for several days before beginning a lengthy rehabilitation. Due to the strain

on hospitals during the Covid-19 pandemic, access to operating rooms was delayed, further complicating my recovery.

Immediately after the incident, the French Marine Casualty Investigation Office (BEAmer) launched an inquiry into the causes and circumstances. Their investigation uncovered a disturbing number of safety violations and oversights.

### AMONG THE FINDINGS WERE:

- The accommodation ladder platform was incorrectly positioned, obstructing access to the pilot ladder's forward rope.
- The platform had not been secured properly to the ship's hull – a key safety measure that was entirely omitted.
- One of the stanchions meant to support the pilot ladder was missing.
- The step I fell from was a replacement step – installed correctly in theory, but with different thickness and spacing, which introduced a subtle instability.
- Most critically, the ladder was visually inspected by me in near-darkness, without any effective lighting or briefing before the transfer. I noticed the problem too late – by the time I realised the rope was inaccessible, I had already lost balance.

- The investigation further suggested that the accommodation ladder may have been slightly raised between the second and third pilot boarding, which was likely the reason the platform came to obstruct the rope. This subtle change – lifting the platform by only a few dozen centimetres – made the forward rope unreachable and ultimately led to my fall.

### THE ROAD TO RECOVERY: PHYSICAL AND PSYCHOLOGICAL HEALING:

Recovering from the accident required immense physical and mental endurance. After one and a half months of immobilisation with a cast on my ankle and an external fixator on my left wrist, I began intensive daily physiotherapy. For over three months, I engaged in sport and rehabilitation sessions every day to rebuild the strength and stability needed to resume climbing ladders.

But the physical pain was not the only challenge. Emotionally, the experience was deeply traumatic – not only for me but also for my colleagues. Some were shaken by the severity of my injuries, particularly the visible hardware that held my wrist together. One of them, remembering another tragic case involving a pilot crushed between a launch and a vessel, described feeling deeply disturbed by the risks we all take for granted.

Initially, I was hesitant to seek psychological support. It wasn't until my occupational doctor recommended it during my post-accident evaluation that I considered reaching out to CRAPEM – the French Seafarers' Psychotrauma Support Centre in Saint-Nazaire. With regular phone calls from a compassionate professional named Madame Benoît, I was able to process the emotional weight of the accident. Her support was instrumental in helping me rebuild the confidence to return to work and face pilot ladders again without fear.

Due to the seriousness of the accident, many didn't believe that I returned to active

duty just 146 days after the accident, on 15 September 2021. It was a personal goal, a symbolic milestone and a statement that I would not let this accident define the remainder of my career.



### LESSONS LEARNED & THE NEED FOR CHANGE:

What followed was not just a personal recovery but a movement toward systemic improvement. The French Federation of Maritime Pilots (FFPM), in collaboration with my colleague Thomas Levillain, produced a powerful safety video using real images from our accidents to highlight the risks pilots face daily.

This video [www.youtube.com/watch?v=U2DRLX7dyS8](https://www.youtube.com/watch?v=U2DRLX7dyS8) became a training tool, designed to shock viewers into recognising the gravity of even minor oversights. The Seine Pilot Station also introduced training sessions for launch crews, held off Le Havre at sea. Rouen's pilots organised 'Skipper-Pilot Navigation Meetings' to review procedures and encourage communication. A local notice to masters was issued to all ships arriving in Rouen, outlining best practices and highlighting the proper rigging of combination ladders.

The importance of wearing a helmet was further emphasised – a logical and necessary safety measure, given the height from which

a fall can occur and the numerous obstacles on the deck of the launch that pose significant risks in the event of an accident.

Yet despite these efforts, BEAmer noted in its report that incident feedback remains inconsistent across French pilot stations. Many pilots do not report near misses or non-compliant arrangements, often due to time pressure or a belief that nothing will change. That should be improved. Pilot ladder safety is a chain – each link representing ship design, regulation, crew training, industry standards and onboard procedures. When even one link breaks, lives are at stake. Even ship design needs scrutiny. On Van Star, the gangway was located dangerously close to the stern and propeller, increasing the risk should a pilot fall into the water. In my case, the launch didn't have time to move clear. A fall into the water could have been just as dangerous – or even fatal.

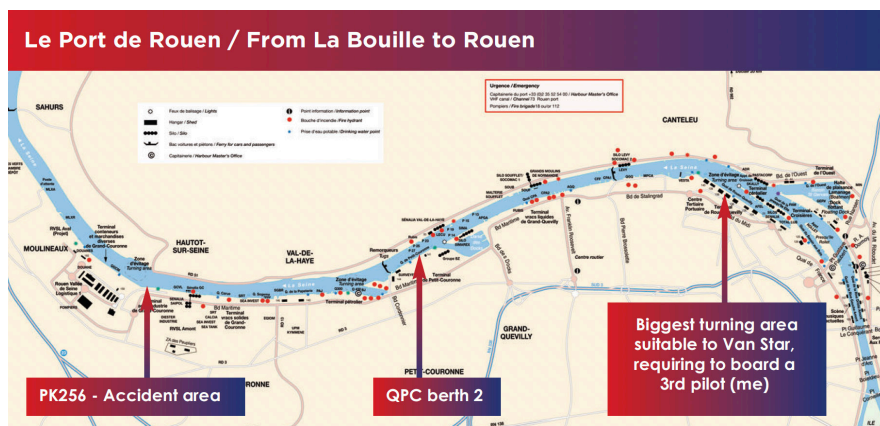
### FOUR YEARS LATER: LASTING IMPACT AND FINAL REFLECTIONS:

Now, four years on, I continue to live with the long-term consequences of that night. The injuries I sustained have resulted in arthritis and reduced mobility, particularly in my ankle. I used to be an avid runner – but that's no longer possible because of the chronic pain.

While new warnings, standards and regulations have since been introduced to enhance the safety of pilot ladders, it's clear that many of these systems still fall short of compliance. Often, this is due to a lack of awareness among crews about the critical importance of maintaining this equipment in perfect working order – putting the lives and health of pilots at risk.

Though such accidents are rare, their consequences can be severe – and the lessons they teach are universal. They serve as a stark reminder that pilot transfers, though seemingly routine, are among the most hazardous operations in maritime navigation. Every shipowner, captain, deck crew member and port authority shares a responsibility to ensure that these transfers are carried out safely, in full compliance with regulations and with a clear understanding of the risks involved.

I am deeply grateful to everyone who supported my recovery – my family, my colleagues, Madame Benoît at CRAPEM and the dedicated medical professionals who helped me heal. Thanks to them, I was able to move forward. But my commitment remains firm: no pilot should ever have to endure a fall like mine.



# STRESS & FATIGUE In Marine Pilotage

PROF. LUANA MAIN

Maritime pilotage is widely recognised as a demanding profession requiring sustained attention and moderate physical fitness [1]. Prolonged exposure to high-stress environments has been shown to exacerbate fatigue and impair performance [2], with reports acknowledging that maritime environments are one of the most dangerous and demanding work environments [3]. Fatigue, stress and workload are critical contributors to human error, which is implicated in 50–90% of maritime accidents [4]. Therefore, fatigue among maritime pilots presents as a critical safety concern. Analyses of industry-related accidents resulting in injury or death indicate that incidents peak in the early morning and rise again in the evening when fatigue is most pronounced [5,6].

## IMPLICATIONS FOR JOB PERFORMANCE

However, one of the challenges is a lack of objective data highlighting the magnitude of the problem. To better understand the impact of shift work on sleep and fatigue in maritime pilots, we monitored 40 pilots from four independent pilot companies over 16–28 days (depending on company roster) [7]. What we found was that average sleep duration across work shifts fell below the recommended 7–9 hours per night [8]. There was also significant variability depending on shift schedules and call duty.

### Key findings include:

- Pilots on duty averaged 6.6 hours of sleep per night, failing to meet optimal recovery needs.
- Those on call recorded significantly lower sleep durations (~4.76 hours per night).
- 36% of sleep opportunities occurred after pilots had been awake for 16 to 20 hours.
- In 14% of cases following night shifts, pilots remained awake for over 20 hours before sleeping.

When we are fatigued, executive function, attention, memory and reaction time are compromised. This makes it harder to process information and make accurate decisions. We know from other occupational contexts that decreases in cognitive function affect occupational performance, reduce occupational safety and increase musculo-skeletal injury risk [10].

### RESEARCH WITH MILITARY POPULATIONS OFFERS SOME INSIGHTS INTO THE COGNITIVE EFFECTS OF FATIGUE IN HIGH-STRESS ENVIRONMENTS:

- Sleep deprivation impairs vigilance, executive function, memory and reaction time, leading to poorer decision-making.
- Self-assessments of cognitive function may not be reliable, as individuals under stress struggle to accurately gauge their own alertness and capabilities.
- Prolonged exposure to occupational stress reduces resilience, with recovery requiring extended rest periods.

Notably, these findings from military personnel [10] highlight the need for increased awareness of the impacts of stress and fatigue in maritime pilots given the observed fatigue-related performance declines. This is relevant for job performance as extended wakefulness diminishes alertness and decision-making ability, underscoring the urgent need for fatigue monitoring and management strategies for maritime pilots. It must be highlighted that it is not the pilot at fault here for any

decrement in performance, but rather that the working environment and shift structure has led to a state of fatigue.

In summary, prolonged exposure to high-stress environments can significantly impact work performance by affecting cognitive function and physical health. Pilots are at an increased risk of making errors when they are sleep-deprived, leading to compromised safety. Given the significant implications of fatigue and stress on maritime pilots' occupational health and safety, targeted interventions are needed to enhance pilot wellbeing and performance.

These patterns indicate chronic sleep deprivation, which can contribute to metabolic dysfunction, increasing risk of cardiovascular disease [9] and impaired immune and cognitive function. Cognitive function is a broad term that refers to various inter-related mental processes critical for tasks that involve problem-solving, reasoning, vigilance and reaction time. The ability to perform these types of tasks is essential for maritime safety. Working in high-stress environments necessitates activation of the body's stress response systems, leading to the release of hormones such as cortisol and adrenaline. In the short term, this can enhance focus and alertness. However, prolonged activation (or chronic stress exposure) can impair cognitive function. Chronic stress can also cause physical fatigue, increased muscle tension and headaches.

### SOME RECOMMENDED STRATEGIES FOR INDIVIDUALS TO CONSIDER INCLUDE:

- Sleep hygiene practices: Optimising sleep duration and quality to mitigate risks of chronic sleep deprivation. Where possible, prioritise 7–9 hours of sleep per night and maintain consistent sleep schedules when not on shift.
- Maintain (or improve) cardiovascular health and general fitness for metabolic stability. Regular exercise, hydration and proper nutrition can counteract fatigue-related declines in cognitive and physical performance.
- Develop stress management techniques: Increasing self-awareness of occupational stress responses and adopting effective coping mechanisms. Mindfulness, breathing exercises and structured problem-solving approaches can help regulate stress levels and improve resilience.

- Manage workload and take breaks: Know when you can take strategic rest periods to reduce fatigue, particularly during cognitively demanding tasks. Depending on the port, this may be on the pilot boat between ships. When you have the opportunity to take recreational leave, make sure that you genuinely unplug and disconnect to fully recover.

#### AT AN ORGANISATIONAL LEVEL TO MITIGATE THE EFFECTS OF STRESS AND FATIGUE IN THE WORKPLACE, THE FOLLOWING STRATEGIES ARE OFFERED AS SUGGESTIONS:

- Fatigue management programmes: Implement mandatory rest periods, workload limits and shift rotations to mitigate chronic exhaustion. Use evidence-based research to optimise shift durations and where possible align schedules with circadian rhythms.
- Sleep and recovery support: Provide education on sleep hygiene and access to rest areas, and schedule sufficient time for recovery. A seven-hour sleep opportunity does not equate to seven hours of sleep.
- Mental health and resilience training: Offer workshops to increase organisational awareness of these issues and provide access to psychological support services.

## // MENTAL HEALTH

In conclusion, the available literature underscores the serious health risks associated with stress and fatigue in maritime pilotage, particularly concerning sleep deprivation [7], cardiovascular health [9] and risk of impaired cognitive function. Occupational fatigue compromises safety, increasing error rates and reducing overall job performance. While parallels can be drawn from military studies on cognitive fatigue, there remains a critical research gap in evaluating the impact of fatigue on job task performance and recovery strategies specific to maritime pilots.

Moving forward, the Resilience Shield ([www.resilienceshield.com](http://www.resilienceshield.com)) in partnership with the Fremantle Maritime Simulator Centre ([www.maritimetraining.com.au](http://www.maritimetraining.com.au)) will be offering a Human Factors course for the sector to address some of these issues. The course has been designed to help individuals understand how the body and mind operate under pressure and equip you with the tools to maximise your performance, both in the moment and over the years. It is anchored on the Resilience Shield model, an applied and evidence-based model of resilience focused on defining exactly what resilience is and — crucially — how it can be developed.

The founders of Resilience Shield shared first careers within the Australian SAS where they developed a deep understanding of the criticality of Human Factors in high-risk operating environments. They have honed this understanding through their work supporting clients globally in the fields of resilience, leadership and crisis management. The Human Factors course covers key topics such as cognitive workload, decision-making, situational awareness and human limitations. Through interactive lectures, case studies and practical exercises, participants will gain valuable insights into applying Human Factors principles in real-world scenarios.

I invite interested parties to reach out if they have questions about any of the above.

**By Associate Professor Luana Main,  
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# THE FUTURE OF HARBOUR AND SEA PILOTS:

## Opportunities & Challenges in the Digital Age

SVEN STEMMLER

*This expert article is based on a presentation given by Capt. Pilot Sven Stemmler at the MCN's (Maritimes Cluster Norddeutschland e. V.) event 'On the Future of the Pilot Profession' at Fraunhofer CML in Hamburg on 9 September 2025. Sven Stemmler has been a harbour pilot in Hamburg, Germany, for 24 years.*

### INTRODUCTION

The work of maritime pilots has always been subject to change. New technologies, automation, and the increasing interconnection of the maritime world have constantly challenged traditional practices while opening up new opportunities. As artificial intelligence (AI) and the processing of "big data" have become ubiquitous tools across all industries in recent years, the way sea and harbour pilots work may also be on the verge of profound transformation.

This article explores the role that remote pilotage, digital assistance systems, and AI may play in enhancing safety and efficiency in shipping – and the continuing responsibility that pilots will bear in this evolving context.

### REMOTE PILOTAGE – AN OLD IDEA WITH NEW RELEVANCE

What is often discussed today as remote pilotage has, in fact, been a reality in the Port of Hamburg for decades. Since 1965, the so-called radar advisory service has enabled pilots to provide information to ships from ashore. In practice, this service has so far been limited mostly to exceptionally large or deep-draft vessels. Only in fog almost all ships have used shore based radar advice since it was introduced.

With high-resolution radar images, AIS-based ship outlines, up-to-date depth contours on electronic charts, and databases and other information systems containing current traffic lists as well as tidal and weather data, shore-based pilots now have access to a wealth of information far beyond what was previously possible.

Even today, ships could be advised far more comprehensively from land than is currently standard practice in Germany. However, demand remains low, partly because few are aware that radar advice from ashore is provided free of charge. Exceptionally large vessels usually use it only because it is mandatory. The fact that all ships – including those not subject to pilotage – may also request radar advice is scarcely known.

### PILOTS ON BOARD AND ASHORE: COMPLEMENTARY ROLES

The pilot on board remains indispensable: they experience the situation directly, perceive it with all senses, and form part of a larger team involving bridge crew, tug masters, mooring personnel, and port authorities.

The shore-based pilot, by contrast, operates with a digital overview – not only through radar displays underlaid with electronic charts but also via harbour cameras, traffic information, and additional data streams. Both perspectives complement each other. Modern land-based information systems can contribute to greater safety and efficiency along navigational routes.

Nonetheless, navigational command remains with the master, in collaboration with the pilot on board. Instructions to the helmsman or engine-room telegraph operator are usually given directly by the pilot, while the master retains the overriding authority. On longer pilotage passages, the master may delegate navigational tasks to the officer of the watch. Pilots – like bridge officers – must constantly interpret new information, make decisions, and, when necessary, calm the crew. Every impression on the bridge – a view out of the window, sounds such as alarms and radio messages, reports from crew members, or the vibration of the hull caused by propeller revolutions – contributes to real-time decision-making.

### FUTURE PRIORITIES: REDUNDANCY AND RESILIENCE

In future, shore-based safety systems and information will play an even greater role. In light of growing threats – from technical failures and cyber-attacks to geopolitical risks – redundancy and resilience will become increasingly vital.

Pilots must understand new systems and be able to use them in such a way that they can ensure safe pilotage even in the event of failure or manipulation of individual components. This means utilising diverse information sources and ensuring that independent navigational tools remain available.

If discrepancies arise between positional data from ship radar, shore radar, or the electronic chart, pilots must recognise them and still be capable of navigating visually – as is often still customary in confined or coastal waters. Already today, ships are equipped with advanced technologies that pilots should be familiar with, such as:

- Camera systems and infrared sensors
- Augmented-reality displays
- RTK positioning and LiDAR
- Dynamic positioning (DP)
- Inertial navigation systems (INS)
- Modern audio and communication systems

Such tools will also become available ashore, not only improving radar advisory services but also enabling remote-controlled and autonomous shipping. Perspectives for Ports and Waterways.

In the near future, the following developments could prove particularly relevant:

- 5G networks for stable data transmission
- Ship-to-shore intercom systems for continuous information exchange
- Escort drones to improve situational awareness
- Intelligent alarm systems that filter relevant hazards and provide audible alerts
- AI-based route proposals and manoeuvre analyses

A modern Remote Pilot Centre could transform radar advisory operations into a fully fledged shore-based pilot workstation – equipped with conning displays, live vessel data, and intelligent assistance systems.

If radar stations ashore were upgraded to allow direct audio intercom communication between pilots and bridge crews, and if traffic coordination and radio reporting could also be managed from land, it might even become feasible to reduce pilot numbers on certain vessels.

For ships currently required to carry two pilots, one might suffice in future under such conditions.

On smaller, non-mandatory vessels or inland ships, advice from shore-based pilots could also enhance the safety and efficiency of port and waterway operations.

## REGULATORY ADJUSTMENTS AND STAFFING CONSIDERATIONS

To make this evolution possible, legal frameworks will need to adapt. Only when regulations permit remote pilotage and remote-controlled or autonomous navigation within designated areas can such innovations be trialled and implemented.

There is also a structural issue: demographic change and a shortage of skilled personnel may lead to bottlenecks in pilot associations over the coming years.

If modern technology can help to optimise double manning without compromising safety, many pilots might even welcome such measures.

Conclusion: Pilots Remain Indispensable

Even in a digitalised maritime world, pilots will remain essential – with their unique local knowledge, experience, and sense of responsibility for safety and the environment, both ashore and on board.

However, their role will continue to evolve: pilots must keep learning to operate the latest navigation systems, process more data ashore, interpret AI-supported decisions, and flexibly bridge the gap between bridge and shore-based control centres.

Shore-based advisory services will continue to develop technologically, becoming increasingly modern and relevant.

One thing is certain: ships will cross oceans autonomously long before the need for pilots on board disappears – if it ever does. Until then, the opportunities of digitalisation must be actively embraced to ensure greater safety, efficiency, and competitiveness in German maritime waters.

# ISPO CONFERENCE 2025

## Dubai

RICKY ROUSE

AMPI Deputy President

I recently attended the ISPO Conference 2025 in Dubai, hosted by P&O Maritime FZE. The conference theme, “The Evolution of Maritime Pilotage and Pilotage Logistics – From Local Knowledge to Data-Driven Maritime Pilotage”, reflected a clear shift across the sector toward structured assurance, data use, and verifiable competence, while reinforcing the enduring importance of local pilot knowledge. The event again proved valuable in bringing together pilot organisations, regulators, users, and service providers to exchange practical experience and emerging best practice.

I delivered a presentation on Pilot Training, Continued Competence and Verification in Australia, outlining Australian approaches to initial training, ongoing competence assurance and independent verification. This generated constructive discussion,

particularly in the context of ISPO-aligned auditing by external classification societies and how different jurisdictions are addressing consistency, transparency and workforce sustainability.

Other presentations at the conference reflected the broad theme of pilotage transitioning toward more structured, data-driven assurance models. Topics included the use of digital pilotage planning tools, enhanced incident and near-miss reporting frameworks, fatigue and workload management, pilotage logistics optimisation, and the role of independent auditing in strengthening stakeholder confidence. Several speakers highlighted how data analytics and standardised performance indicators can support continuous improvement without undermining professional judgement, while others focused on practical lessons learned

from ISPO implementation across different regions. Collectively, the presentations reinforced a shared emphasis on safety, consistency and transparency as pilotage services adapt to increasing operational complexity.

ISPO membership continues to grow in Australia, with an increasing number of pilotage providers engaging in external audits of their management systems and operational processes. AMPI maintains a close and productive relationship with ISPO, and I have previously presented at conferences in Cork and Melbourne. I strongly encourage AMPI members to attend future ISPO conferences where possible, and to consider nominating for ISPO board and working group positions as they arise, to ensure Australian pilotage interests are well represented as the standard continues to evolve.

# AMPI ADELAIDE 2025

## Regional Ports & Pilotage Conference Wrap Up

CAPT. MATT SHIRLEY

The Australasian Marine Pilots Institute's recent Regional Ports and Pilotage Conference, held in Adelaide across three and half days from 2nd to 5th November was another chance for Pilots and Industry partners to meet and discuss current issues.

Ably sponsored by many allies to the community, the conference was well attended and a success that brought together old friends and new colleagues in the City of Churches.

### DAY ONE – SETTING THE TONE: CULTURE, CAPABILITY & THE CHANGING SHAPE OF PILOTAGE

Day One of the AMPI Adelaide Conference opened not with technology or geopolitics, but with something deeper: place, people, and the cultural threads that bind maritime practice to the communities it serves.

Following arrival and registration, delegates were welcomed with "Greetings to Spirit of Place" by Karl Telfer a grounding reminder that maritime work in Australia exists within a much older custodianship of sea, land, and story. This set the tone for a day that repeatedly returned to themes of stewardship, responsibility, and the human element woven through pilotage.

### OPENING SESSION

Setting the scene: leadership perspectives on port and pilotage futures.

The formal opening from AMPI President Captain Josephine Clark, followed by remarks from Jon Whelan, Chief Executive of South Australia's Department for Infrastructure and Transport, and Captain Carl Kavina of Flinders Ports Holdings, helped frame the national and regional context for the conference.

Jo's opening remarks set a welcoming tone inviting curiosity, inclusion, and mutual respect for myriad opinions – a message that resonated throughout the three day event.

The combined messages from the regions Adelaide representatives spoke to the pressures, successes, and future of South Australia's ports – from workforce shortages to escalating operational complexity, and the ways in which Flinders Ports Holdings and the South Australian government are dealing with challenges, growth, and rapidly changing world dynamics.

A keynote address from Angus Mitchell, Chief Commissioner for the Australian Transport Safety Bureau (ATSB) saw the release of three new ATSB reports, and discussed the ways in which the ATSB had arrived at their findings.

With this, the conference moved into the first of three structured sessions.

### SESSION 1 – NAVIGATING THE SKILLS SHORTAGE: ADDRESSING THE MARITIME WORKFORCE CRISIS

The human capital challenge then took centre stage.

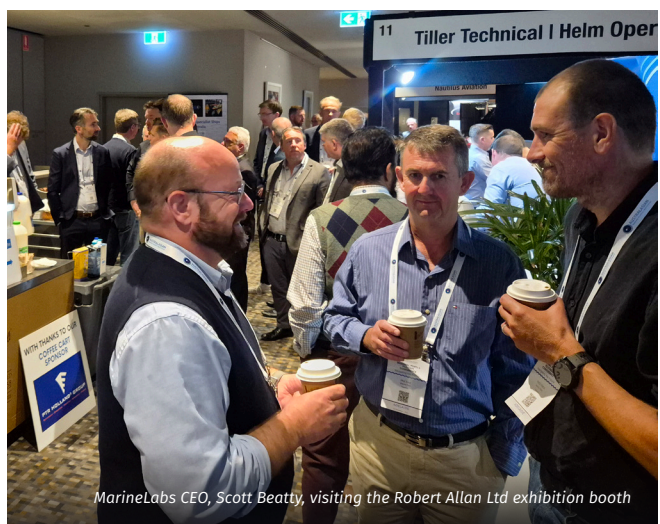
The morning began with a clear-eyed look at the workforce crisis reshaping the maritime sector. This was clearly framed as a present, systemic constraint requiring coordinated action.

Speakers from Anna Jerrems of Skills Australia, Sarah Cerchè of MIAL, and IMPA President Matthew Williams all delivered complementary perspectives on capability pipelines, training frameworks, and the emerging global competition for maritime talent.

The overriding message being that Australia may not be able to rely on legacy pathways. The skills shortage isn't cyclical; it's structural.

The discussion recognised that pilotage, like many specialist maritime roles, is increasingly competing in a shrinking talent pool while simultaneously managing escalating operational demands.

The session's closing Q&A reinforced the importance of new models of learning, attraction, and progression. Many delegates noted the need for cross-industry alignment, particularly with education, regulation, and broader maritime sectors.



MarineLabs CEO, Scott Beatty, visiting the Robert Allan Ltd exhibition booth

## SESSION 2 – THE EVOLVING ROLE OF ESCORT TOWAGE IN PORT SAFETY

After lunch, the conference shifted from workforce to operational capability, beginning with the changing landscape of escort towage.

Presenters explored both the technical and practical evolution of escort towage, unpacking the challenges emerging from new techniques and technologies. Contributions ranged from the development and application of active escort principles to the design thinking behind the next-generation TRAnSverse tug, through to the way insights from escort towage training might be scaled and cross-pollinated into wider harbour towage operations. Together, these perspectives highlighted a sector that is rapidly maturing – one where innovation is increasingly tied to operational reality.

What emerged across the session was a pragmatic consensus: escort towage is no longer a niche capability but a core safety barrier in several high-risk ports. Speakers emphasised that its effectiveness rests heavily on having properly trained pilots and tug masters, capable of managing high-energy manoeuvres under pressure. Dom McCarron of Engage Marine and Ben Holder of Svitzer outlined the technical and coordination demands inherent in contemporary escort work, reinforcing the way skill, communication, and system-level awareness shape safe outcomes. Captain Scott Clinton of Newcastle added an important dimension, stressing that pilots must actively engage with ship design and performance characteristics to better understand both vessel behaviour and the true capability of towage assets when controlling emergencies.

The session concluded with a strong call for Australia's ports to take a systemic view of escort towage, not as a stand-alone mitigation, but as an integral element of a broader navigational risk framework. When embedded into port-wide safety architecture, escort towage strengthens resilience, sharpens decision-making, and provides more predictable control of large vessels in constrained or high-consequence waterways.

## SESSION 3 – HUMAN FACTORS & FATIGUE

The final technical session of the day brought the focus squarely back to the human being in terms of fatigue risk, workload, physiological limits, and the practical realities of rostering and operational decision-making. Presenters approached the problem from three complementary angles,

Kirsty McCulloch explored “defences-in-depth” in fatigue management, outlining the way layered organisational controls and individual behaviours combine to prevent impairment. Peter Page examined biomathematical models, unpacking what they're good for and, just as importantly, what they're while highlighting where these tools sit within a broader fatigue risk management system. And Dr Matthew Thomas closed the session with a grounded look at the lived reality of fatigue in pilotage: happy pilots, unhappy pilots, really cranky pilots, belt rosters, allocations, duty-pilot demands, day-of-operations decisions, and the ongoing challenge of keeping alert pilots on the bridge, fatigued pilots in bed, and an empowered duty pilot able to make safe calls; so that everyone is able to pilot happy!

The message across the three talks was essentially that fatigue is not a compliance exercise but a systemic human-performance issue – highly variable, shaped by context, and deeply tied to judgement, resilience, and safety margins. While biomathematical models provide useful foresight, they do not replace the operational nuance pilots carry in their heads, nor can rules alone substitute for an organisational culture where people are empowered to speak up, challenge unsafe conditions, and prioritise fitness for duty.

In short, the path to safer pilotage lies in layered defences, workforce engagement, and a readiness to innovate where physiology, operational judgement, and smart system design meet.

## GOVERNANCE & COMMUNITY

The day concluded with the AMPI Annual General Meeting, followed by an evening social event and a chance for pilots, port leaders, regulators, and industry partners to reconnect outside the formality of sessions, with the atmosphere warm despite Adelaide's attempt to keep us all cool.

## DAY TWO – INNOVATION, HUMAN ELEMENT & FUTURE SAFETY PATHWAYS

### *A focus on digital evolution and real-world practice*

Day two of the AMPI Adelaide Conference opened with a continued theme of modernising pilotage, balancing technology adoption with operational judgement and human-centred design.

Sessions began with a dive into digital navigation and pilotage decision-support, with presenters examining bridge technology, distraction, alarm strategy, and the ongoing refinement of Portable Pilot Unit (PPU) competency.

A highlight of this session was a presentation by Captain Riley Oxenbridge, a Newcastle marine pilot who recently attended a CIRM (Comté International Radio-Maritime) Conference in Lisbon, Portugal, to discuss ways to move forward with Bridge Alarm Management. Chris Jones of CIRM followed up with a discussion on CIRM's role, and Captain Peter Dann discussed Bridge Distractions from a Human Factors perspective.

The session reinforced that while digital tools continue to enhance situational awareness, pilots remain the final safeguard, and manage technology in support of, not in place of, professional judgement.

## EMERGING FRAMEWORKS FOR FUTURE-READY PILOTAGE

Mid-morning turned to future-facing operational models and regulatory interfaces, including data-enabled safety insights, structured digital route exchange, and globally informed pilotage methodologies.

Particular attention was paid to how ports, regulators, and pilotage organisations are shaping interoperability and information symmetry between bridge teams and pilots.

Session highlights included a live display of Transit Analyst technology by Captain Warren Wood, the development of route-exchange methodologies utilising S-421 framework, and an exploration of resilience versus compliance and High Reliability Organisation principles by Captain's Marco Blanco and Craig Eastaugh.

A standout theme: resilience over compliance – moving from strict rule-following to learning and adaptive capacity in high-stakes environments.

## TRANSFER SAFETY AND THE AVIATION-MARINE INTERFACE

The afternoon moved to evolving standards in pilot transfer safety, including helicopter operations and trauma-informed first-aid preparedness.

Session highlights included a presentation by Wendy Sullivan from Maritime Medical Solutions who discussed raising the the standard of care offshore through specialised, tailored training for marine pilots and boat crews.

Speakers shared real-world lessons and clear calls to lift standards across equipment, training, and decision-making in pilot transfers.

### WEATHER INTELLIGENCE & OPERATIONAL DECISION-MAKING

The final technical session focused on dynamic weather risk, decision-support systems, and predictive models to support safer and more efficient pilotage in complex environments.

Session Highlights included an in-depth review of present and future weather patterns in the Australasian region by Felix Levesque of DTN APAC PTY LTD, and a exhibit of weather predictive technology as developed by Dr Scott Beatty of Marine Labs in Canada.

Captain Josephine Clark, AMPI president, closed out the day with reflections on this year's conference, and an introduction of next year's conference in Darwin, in June.

### GALA EVENING

The day concluded with the AMPI Gala Dinner, an evening recognising friendship and community amongst pilots and industry colleagues, and in true AMPI spirit, the night was both warm and purposeful.

As a part of the festivities, the conference once again surpassed its previous seafarer-welfare fundraising record, raising more than \$12,500. This amount was divided equally between Sydney Stella Maris and Port Adelaide Stella Maris, and graciously received by Sydney's Sister Mary Leahy and Port Adelaide's Ian Kearne.

The evening also honoured several individuals whose sustained dedication, leadership, and service continue to shape the profession.

#### AMPI recognised the contributions of:

1. Peter O'Brien, OMC International
2. David Phillips, Svitzer
3. Sister Mary Leahy, Sydney Stella Maris
4. Dr Ben Brooks, AMC Search
5. Dr Matthew Thomas, CQUniversity

Each award reflected not just professional achievement but years of commitment, collaboration, and support for AMPI and the wider maritime pilotage community.

To all recipients, thank you for your ongoing contribution, your collegiality, and the generous spirit you bring to the profession.

And all those who attended, thank you for a great night!

### DAY THREE – PRACTICAL LEARNING & PROFESSIONAL DEVELOPMENT

The final day shifted from plenary sessions to practical engagement, training, and industry networking.

### SITE VISITS

Delegates participated in port tours, gaining first-hand insight into operational realities and infrastructure supporting South Australian trade.

### PROFESSIONAL DEVELOPMENT STREAMS

Parallel training programs ran throughout the day, including:

- Peer support and wellbeing training
- ATSB transport safety investigation fundamentals
- First-aid and trauma-specific competency sessions
- These sessions emphasised that excellence in pilotage is built not only on technical skill, but on capability in investigation, human performance, and peer-supported resilience.

### INDUSTRY LEADERSHIP AND INCLUSION

WISTA Australia also hosted a breakfast discussion in celebration of the opening of their South Australian chapter, highlighting diversity, future workforce pathways, and leadership in maritime.

The day reinforced a conference-long message: pilotage is evolving through digital capability, human performance, and collaboration across disciplines.

### CLOSING NOTE

Across three days, the AMPI Adelaide Conference showcased a sector embracing innovation while staying firmly grounded in professional expertise and shared learning.

Every session returned to the same anchor: pilots, ports and regulators working together to keep Australia's maritime network strong, smart, and safe for the future.

**Captain Matt Shirley**  
Safe Harbours Australia



# PILOT LADDERS, WHAT ELSE...

## Pilots and Captains Working Together

ARIE PALMERS

FIRST PUBLISHED IN ISSUE 338 OF THE UKMPA MAGAZINE, THE PILOT.

It has been a while since UKMPA has published something in their magazine on the wonderful world of pilot ladders so therefore it is time for a small update on recent events and mishaps written from my side. I'll leave the explanation of new rules etc. to my good friend Kevin Vallance to prevent we're talking about the same topic. At the moment of writing the 2025 IMPA safety campaign is about to start. My tally is over 50% non-compliance year after year, and I really wonder what the new results for this year will be!

As you might know I was one of the people who were involved in the workgroups to develop a brand-new pilot ladder poster as well as a thorough revision of the regulations. I'm glad to notice that more and more captains and shipowners reach out to me with questions regarding their pta's and how they can make them compliant. The before and after pictures you'll find below. After all, it is more than ladders; it is the complete pilot transfer arrangement that has to be compliant. Stanchions are an often overlooked item that pilots do not complain about, despite the fact that faulty stanchions were the root cause of several accidents of which a fatal one in Sandy Hooks a couple of years ago where a pilot dropped to his death due to faulty stanchions. Please check the stanchions and have them rectified! It's a small job for a welder to get it compliant and therefore safe to use. Something the pilot before you didn't care about to get it fixed... Don't be the pilot before you! Make it safe for yourself and the people that will need to use it after you. You might even save a life, if not your own...

It has been proven that the EMPA-Safe app has stirred up quite a bit; more and more pilots are using this way of reporting, and I have received quite a few notifications from your side of the pond that a vessel with deficiencies is coming our way. We are therefore warned and take extra care when we approach the specific vessel. The app has recently been updated and has more and better features now, thank you EMPA for looking after the brotherhood. After all, the app is basically meant by pilots, for pilots to help each other to keep coming home vertically instead of horizontally. The last thing you want is to end up as a statistic! As I am writing this article I am on my way

back to the Netherlands after attending the TUMPA conference where I was given the opportunity to talk a bit on ladders and of course interact with a lot of TUMPA members and the sponsors who made the event possible. Over the past years TUMPA has lost quite some pilots due to bad pta's so they are very serious on this topic and collectively do not accept below standard setups, way to go!!

Pilots, however, are very reluctant to report any defects despite the fact it is mandatory by law. We can also identify this lack of reporting in the annual number of reports in the IMPA campaign: on average around 5000 reports in 2 weeks worldwide, not much at all but nevertheless the average non-compliance plus the total body count was reason enough for the IMO to start the process of reviewal. We can only hope that the new poster and regulations will improve the unacceptable situation we are currently thriving in. Even if I would be wrong with my tally (impossible, but for the sake of conversation let's assume that) and the IMPA NC rate of 20% on average would be correct, basically nothing has changed over the years. Thank the entity you believe in on your knees that nuclear powerplants or even British Rail has a better score!

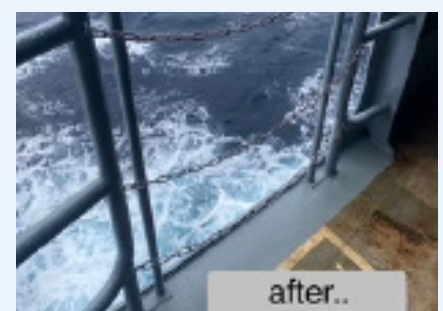
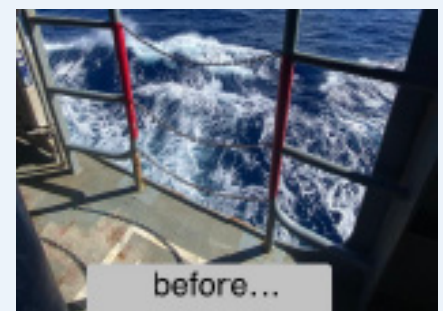
Being confronted with a dodgy setup means the entire chain has failed: construction, approval, certification, maintenance, audits, vetting, port state control, surveys and what not has completely failed from start to finish, resulting into a pilot being confronted with a DANGEROUSLADDER. The fact the situation doesn't change a lot 'non-compliance wise' is because pilots are also mutual responsible for this problem besides of course a lot of other causes: we are hesitant, complacent yes maybe even lazy or fulfilled with ourselves and do no report. Fact you don't report set aside, the least you can do is solve the problem by interacting with the parties involved. For me it is absolutely not the slightest problem to shake the tree with all involved stakeholders sitting on the branches of that tree. Direct communication with the manufacturer, who of course will state his ladder meets all requirements and is class approved (where have I heard that before??). Contacted class recently and showed them the specific ladder is below any acceptable standard! 9 months of

absolute silence and after I contacted this class association again (IACS member), they told me the manufacturer was visited and all problems were solved. Why do I have a gut feeling there still might be issues. When I see a similar ladder in front of me, I can do nothing else than turn the vessel away. It is important to keep the problems where they belong after all. The moment I set foot on a dangerous system, the ownership of the problem suddenly changes from the vessel to me, and I like to keep away from problems I do not wish to own!

The pilot before me, I cannot state it often enough, obviously had no problem at all with a dangerous ladder, again: complacency, laziness, maybe even fatigue or completely have given up on this that there will be any improvement.

As long as we as a brotherhood do not stick together the problem will keep existing: accepting below standard setups will teach the crew that not following the requirements is also okay, a downhill slope. As admins of the #Dangerousladders page we sometimes say to each other: if every member's partner would be on the page, the problem would be solved tomorrow!

Please dear all, stay awake, stay ready for action and most of all: stay safe!!



# ACROSS THE DITCH

MATT CONYERS

NZMPA Vice President

## KIA ORA KOUTOU!

Despite a slug-like economy in NZ and geopolitical uncertainty like never before, 2025 was a bumper year for many port operators in New Zealand with several posting record profits. In general, this financial high performance can be put down to increases in both container and bulk volumes nationally, increases in pricing, and generally improved operational efficiencies.

For pilots, the increased cargo volumes have not translated into any significant rise in shipping numbers. In fact, escalating costs have contributed to a significant drop in cruise ship visits to NZ ports this season, as cruise companies attempt to trim itineraries at the geographical edge of their operations. One contributor to those escalating costs is regulatory compliance – particularly around

biosecurity. Ask any cruise ship Master about their hull cleaning regime for NZ ports, and you're likely to get both barrels!

With no NZMPA conference in 2025, our online AGM in November was our opportunity to measure our performance against our work program for the year and to set our agenda for 2026. Overall, we found that we had kept to our brief. In 2025 we became an Incorporated Society with clearly defined objectives and roles. We achieved financial stability, thanks mainly to the hard work of Matt Dundas and Matt Birdsall as Treasurer and Fundraiser respectively. We also held elections for Executive and Non-Executive roles. The NZMPA team now looks like this:

Position	First Name	Last Name	Location
President	Paul	James	Bluff
Vice president	Matt	Conyers	Lyttelton
Executive	Matt	Birdsall	Tauranga
Executive	Phil	Sweetman	(Lyttelton)
Executive	Andy	Baker	Whangarei
Executive	Richard	Hill	Whangarei
Non-Executive	Matt	Dundas	Auckland
Non-Executive	Travis	Welsh	Lyttelton
Non-Executive	Laurence	Walkinshaw	(Timaru)

The most pressing issue for our members right now concerns licensing – specifically minimum entry requirements for trainee pilots and equivalency of certification. In short, the problem in NZ arises from ambiguously written legislation, poor legislative guidance, and differing interpretation of the legislation by pilots, employers (port operators), and the regulator. Couple all of that with an opaque process for determining equivalency and you end up with a complete mess where inconsistency and conjecture can reign free. If you want the full story, see the June 2025 edition of The NZ Pilot and read the article “Just the Ticket”.

As a result of our November AGM, we have drafted a position statement on this subject and have committed to work collaboratively with the regulator (and others), so that the issues can be unravelled, examined, and resolved. Andy Baker and Laurence Walkinshaw will be our representatives in this work.

Our website and magazine go from strength to strength. Travis Welsh and Phil Sweetman have been tasked with keeping our

communication lines open – Travis taking on the role of magazine editor, and Phil looking after the website, LinkedIn page, and our emailing system.

Being located in the Capital, Richard Hill takes on the role of liaison with Maritime New Zealand and the Transport Accident Investigation Commission head offices.

As well as being President, Paul James is on IMPA's working committee and is the driving force behind our conference content. Our conference in 2026 will be in Tauranga between 7th and 9th April, with workshops following on the 10th. The theme is “Positive Organisational Culture” and we already have a long list of speakers. Registration is open for delegates, speakers and sponsors on our website at <https://nzmpa.org/nzmpa-conference/>

We hope to see you there...

NGA MIHI NUI

# 2026 NZMPA CONFERENCE



Positive Organisational Culture



**Join us at Trinity Wharf, Tauranga**

7th – 9<sup>th</sup> April 2026 – Workshops 10<sup>th</sup> April 2026

**REGISTRATIONS NOW OPEN!**

✉ [emma@maritimeevents.com.au](mailto:emma@maritimeevents.com.au)

🌐 [www.nzmpa.org](http://www.nzmpa.org)



**Port of  
Tauranga**



# AUSTRALIAN MARITIME Mentoring Program Report

## PARTICIPANTS

Participants are the mentors and mentees in your program.

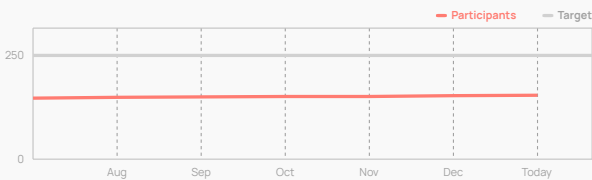
Total active participants (on Feb 02, 2026)

**154** 82 mentees  
72 mentors  
0 others

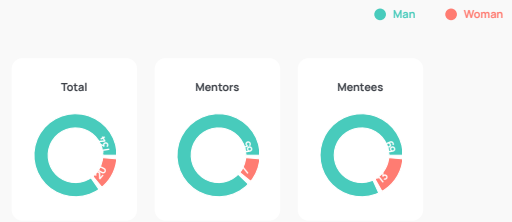


The number of people - mentors and mentees - who have joined and are active in your program

Participants over time

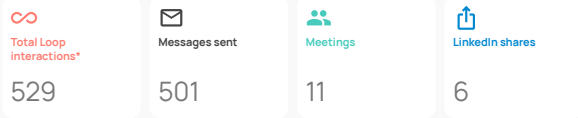


Gender



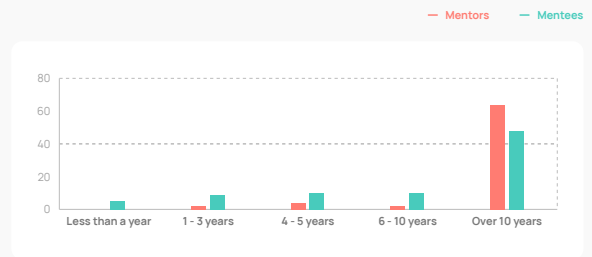
Shows the count of responses to the question "Gender"

Participant interactions



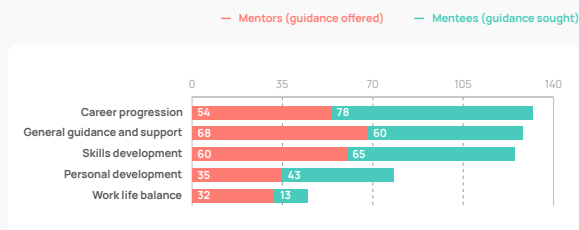
\* Represents the number of Loop interactions measured within Mentorloop. Total activity may be higher if conducted via offline channels e.g. by phone. Interactions with the program coordinator are not included in these numbers.

Experience



Shows the count of responses to the question "How many years of work experience do you have?"

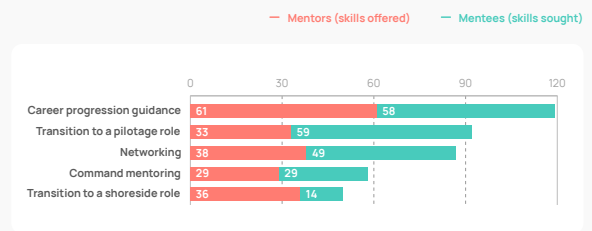
Outcomes



Mentors (guidance offered): Shows the count of responses to the question "How can you support others?"

Mentees (guidance sought): Shows the count of responses to the question "How would you like to be supported?"

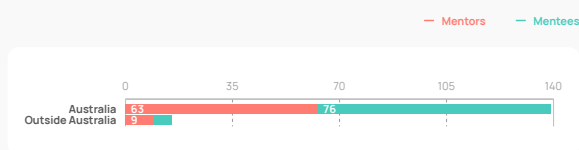
Skills



Mentors (skills offered): Shows the count of responses to the question "What expertise are you able to share?"

Mentees (skills sought): Shows the count of responses to the question "Which focus areas do you wish to improve?"

Location




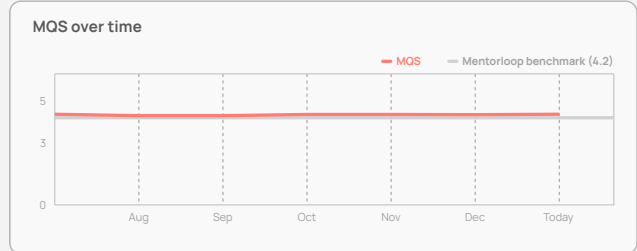
Shows the count of responses to the question "Where are you located?"

## SENTIMENT

There are three types of sentiment data: MQS (Mentoring Quality Score), post-meeting surveys, and close loop surveys. They are determined by your participants' relationship feedback and ratings over time, and they are an indicator of the overall quality and success of your program.

**MQS average out of 5**

**4.37** Your MQS is tracking well with an average of 4 or above. Great work!

**Average out of 5\***

**3.7**

**Number of closed loops\*\***

**17**

**Reason for closing**

Run its course	5	
No response	4	
Achieved my goals	3	
Never got started	3	
Not suitable	2	
No time	1	
Other	1	
Left program	0	
Inappropriate behavior	0	
Closed by PC	0	
Archived	0	

\* The average represents loops closed where a loop rating was provided.  
\*\* The number includes all closed loops, including those closed by the PC, which do not have a rating.

**Average out of 5**

**4.9**

**Number of responses**

**19**

**Number of meetings\***

**11**

\* Number of scheduled meetings + number of instant video conferences  
Note that participants may be scheduling or launching meetings elsewhere. Those meetings won't be included here.

## MATCHING


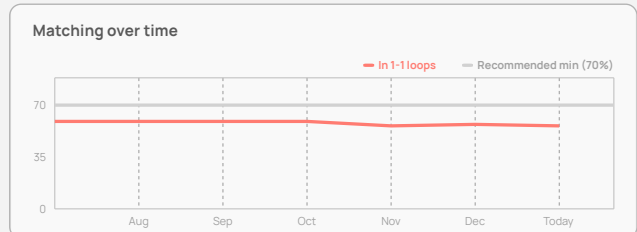
This shows the number of active program participants that have been matched with a mentoring partner in a 1-1 loop or matched into a group loop (if applicable for your program). In a traditional mentoring program we're often optimizing for participants matched in 1-1 loops. However, if your program is primarily group loop focused, the group loop match rate will be your key metric.

**Total matched in active 1:1 loops**



**56%** 86 matched participants


**68** Total active 1:1 loops

Recommended minimum (70%)



## HIGHLIGHTS


  **Kate Delisky (Mentor)** received a 5 star review - great work! Jan 16, 2026

 **Nikulas Gudnason (Mentee)**


**Mentoring quality score:** ★★★★★


Kate is fantastic, she is always happy to discuss ideas and give insights into the pilotage industry

  **Helge Menk (Mentor)** received a 5 star review - great work! Jan 8, 2026

 **Lisa Hanna Pfaff (Mentee)**



**Close loop survey:** ★★★★★ **Reason for closing:** Achieved my goals


 **Mitch Williams (Mentor)** received a comment Dec 9, 2025

 **Bryce Connor (Mentee)**

**Close loop survey:** ★★★★★ **Reason for closing:** Other

There was both mutual agreement that being interstate it was beneficial to have a mentor close to my home port to meet in person and get guidance and form a closer network.

  **Pete Hagan (Mentee)** received a 5 star review - great work! Nov 14, 2025

 **Kate Delisky (Mentor)**

**Mentoring quality score:** ★★★★★

# AUSTRALIA'S WEATHER OUTLOOK JANUARY TO JUNE 2026 Marine Pilotage Briefing

## BUREAU OF METEOROLOGY

### OVERVIEW

Marine conditions around Australia from January to June 2026 are expected to be warmer than average, with elevated sea and air temperatures, a fading La Niña and a near to slightly above average tropical cyclone season. While large-scale rainfall signals remain weak or neutral, operational risk for marine pilots will be driven by discrete high-impact events rather than seasonal averages.

Key hazards include tropical cyclones, monsoonal lows, severe thunderstorms, strong sea-breeze regimes and periods of reduced visibility from rain, haze or smoke. Persistently warm surrounding seas increase the risk of storm intensification and rapid weather changes near ports and pilotage approaches.

### KEY CLIMATE DRIVERS

#### WARM OCEANS

Sea surface temperatures across Australian waters remain among the warmest on record and are expected to stay above average through late summer and early autumn. The Tasman Sea and waters off the western and north-eastern coasts are of particular note.

Operational implication: Warm seas provide additional energy and moisture, increasing the intensity of storms, supporting rapid cyclone intensification and amplifying rainfall and squall potential.

#### ENSO AND INDIAN OCEAN INFLUENCE

A weak La Niña is expected to decay toward neutral conditions by late summer, with the Indian Ocean Dipole remaining neutral. No single climate driver is expected to dominate.

**Operational implication:** Greater short-term variability, increasing reliance on short-range forecasts rather than seasonal outlooks.

### REGIONAL HIGHLIGHTS

#### NORTHERN WATERS

The tropical cyclone season continues through to 30 April, with near-normal cyclone numbers but an increased likelihood of severe systems due to warm tropical waters. Monsoonal lows remain a key risk, bringing intense rainfall, sharp wind shifts and rapid sea-state deterioration.

#### Primary hazards:

- Tropical cyclones and rapid intensification
- Monsoonal lows and heavy rain squalls
- Rapid visibility loss from rain and low cloud
- Fast-building swell during active systems

Key areas include Torres Strait, the Great Barrier Reef, Darwin approaches, the Gulf of Carpentaria and north-west shelf ports.

#### EASTERN SEABOARD AND TASMAN SEA

Sea temperatures along the east coast and in the Tasman Sea remain warmer than average, supporting humid conditions and stronger sea-breeze circulations. Rainfall is expected to be variable, with fine periods punctuated by short, intense weather events.

#### Primary hazards:

- Severe thunderstorms with heavy rain and squally winds
- Enhanced sea-breeze gustiness
- Humidity and haze affecting visibility
- Mixed swell from Tasman systems and local winds

Ports affected include Brisbane, Newcastle, Sydney, Melbourne and Tasmanian ports via Bass Strait.

#### SOUTHERN AND SOUTH-WESTERN COASTS

Warmer and relatively drier conditions are favoured through late summer and early autumn. Hot, dry inland airflow increases fire-weather risk, with smoke and dust at times impacting coastal visibility.

#### Primary hazards:

- Strong afternoon sea-breeze transitions
- Smoke haze reducing visibility near ports
- Sharp land-sea temperature contrasts driving gusty winds
- Occasional strong frontal systems with squalls and swell

Commonly affected areas include southern WA ports, South Australian gulfs, Port Phillip, Westernport and exposed Bight approaches.

### WESTERN SHELF AND OFFSHORE AREAS

Sea surface temperatures off the Pilbara and west coast remain well above average, increasing the risk of marine heatwaves. Cyclone numbers are near normal, but warm waters favour rapid intensification once systems develop.

#### Primary hazards:

- Marine heatwaves affecting visibility and cloud formation
- Rapid cyclone strengthening with reduced lead times
- Fog and low cloud in warm, moist air
- Gusty monsoonal winds and complex swell fields

Pilbara ports, Exmouth Gulf, offshore facilities and Timor Sea routes require particular vigilance.

### NATIONWIDE OPERATIONAL CONSIDERATIONS

Temperatures are likely to be above average across most regions, including warmer nights, particularly in northern and eastern Australia.

#### Key considerations:

- Increased heat load and fatigue risk for crews
- Continued reliability of cooling and ventilation systems
- Greater emphasis on short-range forecasting, radar and satellite monitoring

With weak large-scale rainfall signals, operational focus should remain on individual high-impact events rather than monthly or seasonal averages.

#### Key Decision Points

- Tropical cyclone season runs to 30 April, with highest risk in March and early April
- Monsoon transitions typically occur during April and May
- ENSO conditions move toward neutral, increasing variability
- Marine heatwaves may emerge or persist, especially off western and north-eastern coasts

### SUMMARY HAZARD SNAPSHOT

**Northern regions:** Tropical cyclones, monsoonal lows, intense rain and swell

**East coast:** Severe thunderstorms, strong sea breezes, mixed swell

**South and south-west:** Hot winds, smoke-affected visibility, strong sea breezes

**Western shelf:** Marine heatwaves, rapid cyclone intensification, fog and haze

### CLOSING NOTE

The first half of 2026 is expected to be warmer than average across Australia's marine environment. For marine pilots, risk will be shaped by short-lived but high-impact weather events rather than a single dominant climate pattern. Close monitoring of short-range forecasts and rapid response to changing conditions will remain essential across all pilotage regions.

# AMPI BOARD OF DIRECTORS 2025-2026

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Captain Bernardo Obando	036 54497 87047 14	Treasurer and Vice President	QLD	0419500927
Captain Adam Roberts	036 69954 57780 28	AMPI/ IMPA Vice President	NSW	0427579768
Captain Damian Laughlin	036 59711 78648 68	Vice President	VIC	0408577150
Captain Glenn Attrill	036 73370 33938 13	PAN/ Fatigue & Human Factor	WA	0407948735
Captain Andrew Burn	036 94250 28683 34	Membership Officer	TAS	0427336442
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Captain Luke Sorensen	036 01928 68906 25		QLD	0409066976
Captain Ryan Cobb	036 81247 4432 72		WA	0400998995
Captain Patrick Walsh	036 87643 65670 68	Editor/ CPD	QLD	0437681277

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## Niugini Pilots Limited

# NOTICE TO VALUED CLIENTS AND INDUSTRY PARTNERS



This notice serves to inform our valued clients and industry partners of the passing of our late employee, Mr. Karo Kota, Coxswain on Saturday 01st November 2025. We appreciate your understanding and support as our team navigates this period of loss. We remain committed to maintaining our high standards of service.

Karo loyally served Niugini Pilots Limited as a Coxswain for nearly a decade, demonstrating unwavering dedication and exceptional skill throughout his service. He was a respected figure within the marine pilotage and wider shipping industry in Papua New Guinea, known for his professionalism, expertise, and steadfast commitment to safety.

His passing is felt deeply by all of us who had the privilege of working alongside him. Karo was not only a skilled mariner but also a cherished friend and a valued member of our team.

He will be sadly missed by all who knew him.

On behalf of the entire Niugini Pilots Limited family, we extend our heartfelt condolences to his family, friends, and all who are grieving this profound loss.

*May he rest in eternal peace.*

**Management and Staff of Niugini Pilots Limited**



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