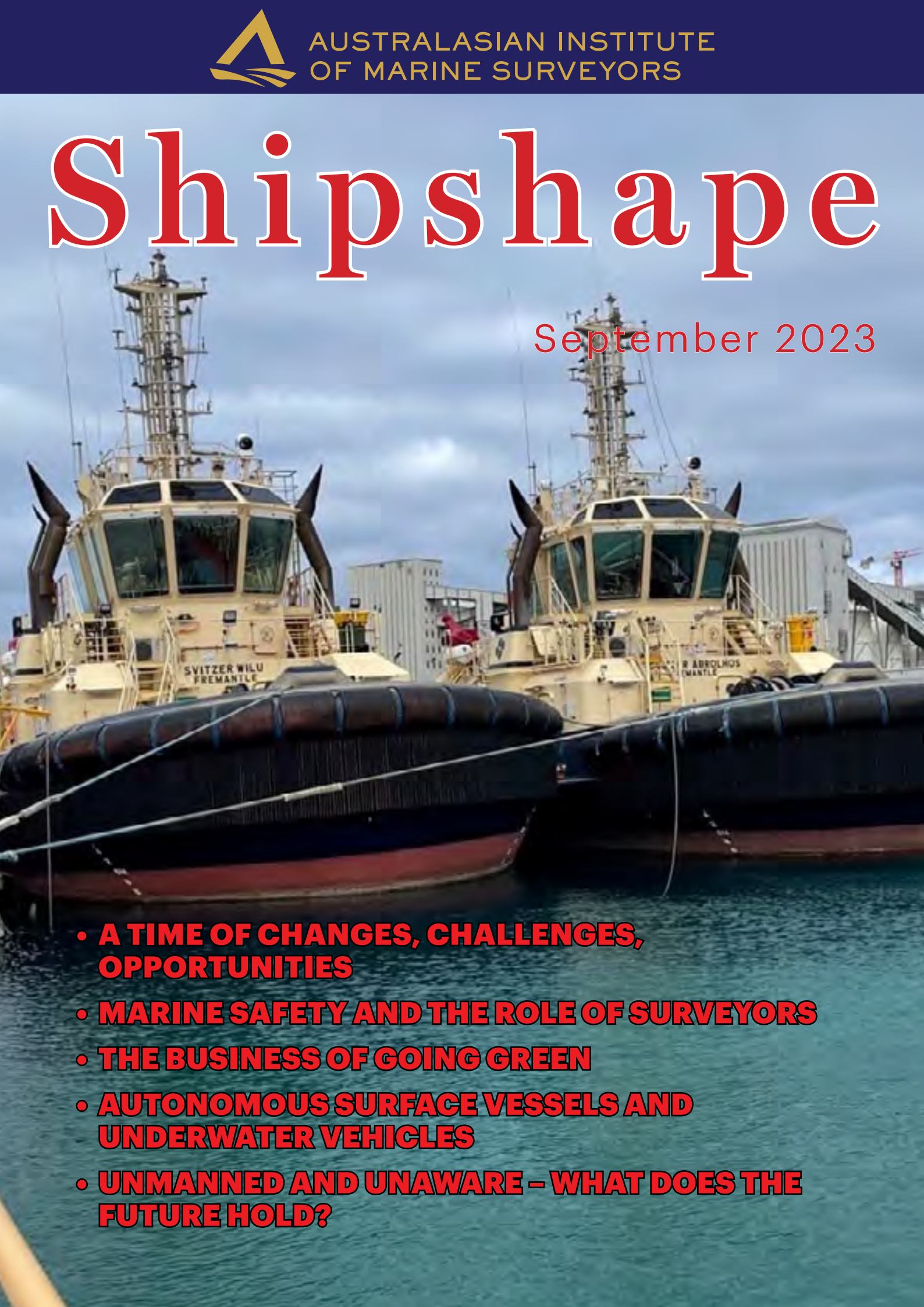




AUSTRALASIAN INSTITUTE  
OF MARINE SURVEYORS

# Shipshape

September 2023

- 
- **A TIME OF CHANGES, CHALLENGES, OPPORTUNITIES**
  - **MARINE SAFETY AND THE ROLE OF SURVEYORS**
  - **THE BUSINESS OF GOING GREEN**
  - **AUTONOMOUS SURFACE VESSELS AND UNDERWATER VEHICLES**
  - **UNMANNED AND UNAWARE - WHAT DOES THE FUTURE HOLD?**





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# Shipshape

September 2023

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## Changes, Challenges, Opportunities

I AM writing from the lands of the Gurang, Gooreng Gooreng, Bailai, and Taribelang Bunda people, the traditional custodians of country encompassing the Gladstone region and pay respect to elders, past, present, and emerging.

The AIMS has employed a new CEO, Eric Perez, who is negotiating his way up the steep learning curve to grasp the breadth and depth of marine surveying. However, Eric has not been overwhelmed by this, moving quickly to establish himself as a hands-on manager who is keen to get out amongst membership to learn what they do, what they want from the AIMS and gather their ideas and suggestions for improvement.

Eric has additionally launched a membership feedback poll. Please get involved, as it takes just a few minutes. Remember, if the AIMS management is not informed, they cannot deliver. You can participate in the member survey via this link: <https://www.surveymonkey.com/r/FDXDRVP>

Eric is very approachable, so I urge all members to jump onboard with a view to getting to know our new business unit leader.

Additionally, the AIMS is celebrating the establishment of a landmark scheme in partnership with the Australian Government's Department of Agriculture, Fisheries and Forestry (DAFF).

The Accredited Grain Surveyor Assurance (AGSA) Scheme is the first time that government have engaged in such a way for such a program. This is the culmination of more than five years' work that was started by our then CEO, Susan Hull, worked through by our ex-GM, Stacey Taylor, and finally signed off under our current CEO.

I want to thank all those who have been involved, including the AIMS Grain Committee members who have freely given their time to attend meetings and discussions, the previous AIMS executive and current board members who have worked through the very long-winded process of establishing the Deed that forms the framework for this scheme, and last, but definitely not least, our dedicated, business unit employees who worked so tirelessly to make the AGSA Scheme a reality. I must also thank and congratulate the team at DAFF for their cooperative and collaborative attention to get this across the line. Well done to all those involved!



I have been getting reports from across the marine surveying sector that many members are very busy and finding it increasingly difficult not only to find quality staff but also to keep those they currently employ. As the operator of a marine survey business in Gladstone, Queensland, I appreciate the difficulties others are presently experiencing. There is always another company ready to offer better conditions or better remuneration.

Well-established businesses with long-time employees are seeing less dedication to the craft and more interest in the salary package. Given that there are many jobs with common needs, particularly in remote and regional areas, it is hard to keep qualified people in this current economic and employment climate.

The AIMS, through lobbying the Australian Government, is seeking to reverse the previous removal of marine surveying from the visa pathway, with additional requests to lower the entry requirements to include Chief Officer qualifications to provide easier access to those seeking to work – and eventually live – in Australia. I think all would agree that this would improve upon the current system that is very difficult to navigate and usually requires the assistance of immigration agents who can find their way through the maze of immigration entry requirements.

I believe we all understand the need to ensure we accept the right people, and the fact that marine surveying is a relatively small, niche employment sector; however, there are many good people, some with highly qualified spouses, seeking to move to Australia to build a different life. Why must it be so

hard for our sector when higher profile sectors are offering simple pathways with far fewer hurdles to jump over?

One consequence of the shortage of suitable marine surveyors or suitably qualified people has been the increase in “poaching” and “job-shopping”. Within the marine survey sector in Australia, not much happens without others finding out in short time. Previously, surveyors would only seek to move upon their own decision; however, it is now common for one company to actively approach employees of others to fill their needs. It is very disappointing that many of these are substantial-sized businesses with ample resources to train new people but their preferred strategy is to take employees away from other businesses.

The other activity that has become common is that of “job-shopping”. This is where employees seeking a few dollars more will chop and change between employers with little regard for the consequences. In my opinion, this demonstrates a lack of moral and ethical fortitude. Persons who partake in this type of activity should be called out, as they have no respect for the time, effort and cost that employers bear when employing them. I have heard of the turn-round time for this being as little as a few days. I hope these people will get their justice when the employment cycle normalises, and they cannot find anyone to employ them!

I can already hear the murmurs from employees who believe they are not treated well, experience poor conditions, work with no fatigue management, get little time off, or are unappreciated or underpaid. I hear you and would urge you to report unsafe conditions or unethical work expectations. I believe too many people nowadays want to run before they can walk. Nobody wants to do their time to learn the trade, assuming that their previous experience is sufficient for them to enter the marine surveying profession simply because of their past.

Nonetheless, I believe this is more a symptom of what employees expect than of what employers provide, particularly with the current shortage of suitable workers. Much of this comes down to ambition: what people will do to achieve and whether they have the foresight to identify opportunities outside of their circle of desire.

As a business owner, I appreciate the value of employees who can see past their short-term desires to engage with their employer to create a better business that provides opportunities for their future and a pathway for owners to transition to retirement. Savvy business owners are always looking for those employees who wish to join them in creating a future and this is something that employees should keep in mind.

So, members all, I believe you should expect greater interaction with our CEO as he settles into his new role and begins his voyage of discovery, as he plots a course to build and improve the AIMS, who we are and what we represent to both members and industry alike.

One example of this is the developing relationship between the AIMS and Maritime New Zealand. This has been facilitated by our NZ-based board member, Greg Marsden, who commenced this process over 12 months ago and has successfully engaged on several occasions. I understand that our CEO will be meeting with them to further this relationship and our push to enter the marine surveying sector in New Zealand.

As you can all see, there has been much happening within the AIMS as we look to the future.

Until next time, all the best to our members and the communities in which we work.

**John Holden**  
Chairman of the AIMS Board





## New CEO on board

I AM grateful for the opportunity to work for our Institute, and I appreciate the confidence shown by my Board and members.

I am looking forward to demonstrating the value to marine surveyors and our members of being part of AIMS, create new platforms to engage with members and the community, and to further grow the Institute.

I will also be exploring new ways to promote the critically important work marine surveyors undertake – by sharing why my members became marine surveyors and why members believe what they do matters.

Industry promotion is critically needed and, talking amongst ourselves, learn and share ideas. However, it is also important create a dialogue with other industry sectors and government.

Included in the many functions members provide to the marine industry and the public is the provision of expert advice:

- ❑ regarding condition and valuation of vessels in both commercial and recreational sectors;
- ❑ on the salvage or recovery of vessels;
- ❑ to underwriters, insurers, financial institutions and vessel owners;
- ❑ relating to the repair of damaged vessels;
- ❑ to courts and coronial inquests regarding marine incidents;
- ❑ on overall vessel safety and national law compliance for commercial vessels; and
- ❑ regarding safety management systems and certificates of operation.
- ❑ Our industry is critical to the ongoing operation of domestic shipping and recreational vessel safety.

### Membership Engagement

I have enjoyed my trips to meet members in Sydney, Melbourne, and Newcastle in August. I will advise members of dates, times and venues for other centres in the not-too-distant future.

### 2023 AIMS Membership Survey

I would like to thank members for their feedback regarding the membership survey.



The feedback has sent me some very clear messages regarding opportunities for improved member services. These include:

- ❑ explore ongoing education and professional development opportunities;
- ❑ more networking opportunities;
- ❑ increased use of webinars; and
- ❑ opportunities for better use of social media platforms.

### AIMS Website

I will be undertaking a full review and rebuild of the AIMS website to improve its functionality for members.

### Videocasts and Audio Podcast Platforms

AIMS is in the process of creating a member-only YouTube channel with webinar content for members and an audio version of all video materials. You will have multiple ways to engage with educational, industry-specific content.

A revamped public AIMS YouTube Channel will also have content to help us engage with the community, broader industry, and government.

Please contact me on +61 2 6232 6555 or send me an email with feedback, and ideas at [gm@aimsurveyors.com.au](mailto:gm@aimsurveyors.com.au).

Dr Eric Perez  
Chief Executive Officer

## The advantages of technology in a marine surveying business

AS a young marine surveyor entering the industry, I grew up with a computer. During high school, instead of pen and paper, I had a laptop, and would punch out our class work at 60 words per minute. Because it was new technology, we used to have to do our end of year assessments on paper and I could never seem to get the result to look nearly as nice. I was always a big advocate for technology and, because I could type blisteringly fast, it seemed like a no-brainer to do everything digitally.

Fast forward to starting my own business as a surveyor: I had to come back to the dreaded pen and paper. I created my report template with everything I wanted to check and would print it out and take it in the field with me so I didn't miss anything. No matter how hard I tried, I always had to re-type it when I got home to make it look professional. This meant tedious hours after the job, late nights, and slower reports. The report was generally majority text, although I did spend hours importing photos, resizing them and aligning it all to look professional. No matter what template I made, there was always something that could not be done quickly.

I got to thinking and tried out a few "apps". I tried the new Apple Pencil, and thought I'd write on my digital template that was editable. I was significantly slower at handwriting than I was typing. I started downloading all different kinds of building inspection apps, auditing apps, with nothing quite right for boats.

I knew I'd always wanted to grow my business to more than just myself, and, against everyone else's advice that "creating your own app is expensive", I decided to move forward and get a custom iOS app built. The process took

about a year to get to a state that was useable and is continually an ongoing project.

So, you're probably wondering, what's my point? After integrating technology into my business, I was now able to reap the benefits. Instead of being upset when a slipway or travel lift was late, I can happily work on sections of the report as I wait. As I see a defect, I note it and photograph it straight away, putting it into the section of the report required before I forget.

I've got a gallery of every boat I've ever done that's never more than two clicks away on the iPad. I can quickly bring up a report I did two years ago, view the report, and see exactly what was wrong, who owned it and anything else in the report.

But what are the disadvantages? Setting up any software takes time and effort, and there is always a learning curve. Every surveyor has a slightly different style of report, and I would urge

you to test and perfect your paper report templates first, before seeking a digital alternative. Tweaking your templates will become something of a regular occurrence, as additional features and tools come out.

My app isn't for sale or public use but, since developing it, several similar products have come onto the market and marine surveying software is readily available for surveyors.

Pre-purchase reports are often something marine surveyors shy away from. I honestly believe that by implementing technology, systems and procedures you can largely reduce the risks associated with these types of reports, and greatly improve the efficiency and quality of your marine surveying business.

Will you be dropping the pen for a digital tablet anytime soon?

Aaron O'Donoghue  
Marine Engineer and Surveyor  
BoatBuy Pty Ltd





# Marine safety in Australia and the role of marine surveyors

MARINE safety is of utmost importance in Australia due to its vast coastline and the significant role of maritime activities in the country's economy. Marine surveyors report to the Australian Maritime Safety Authority (AMSA) and the benefits of their services are reflected in an increased level of safety and an overall reduction in marine incidents.

Marine surveyors are highly skilled professionals who play a pivotal role in maintaining safety standards in the Australian maritime industry. Their primary responsibility is to assess the condition and compliance of vessels with relevant regulations and Marine Orders, set down by AMSA as the national regulator.

Basically, there are two levels of marine surveyors: those who are employed by Class Societies and those engaged in the Domestic

Commercial Vessel (DCV) sector. Both report to AMSA. However, Class Societies are generally regarded as having a higher standard of compliance, over and above the rules set down by AMSA and that of the DCV sector. There are approximately 250 accredited marine surveyors working in Australia.

By conducting thorough inspections, marine surveyors help to identify potential hazards and ensure that vessels adhere to safety standards, thus minimising risks and accidents at sea.

AMSA serves as the National Regulator responsible for overseeing maritime safety within the country. Marine surveyors act as intermediaries between vessel owners and AMSA, as they are responsible for reporting any non-compliant or unsafe conditions they encounter

during their inspections. This reporting mechanism is crucial in identifying and rectifying safety issues promptly, thereby enhancing overall marine safety.

One significant benefit of marine surveyors' reporting to AMSA is the constant monitoring and enforcement of safety regulations within the maritime industry. By promptly addressing non-compliance or unsafe conditions, AMSA can take appropriate actions such as issuing penalties, imposing sanctions, or even revoking certificates when necessary. This ensures that vessel owners and operators have a strong incentive to prioritise safety, thus reducing the likelihood of accidents and promoting a culture of safety within the industry.

In addition, marine surveyors are represented and invited to



A professional fishing boat. (Photo: Spellbound Holdings, Geraldton, WA.)

## Latest training news

THE training sector continues to be extremely busy, with strong local and international enrolments signalling an increasing interest in the marine survey industry.

To further ensure that our training suite is robust, up-to-date, and relevant to the needs of the industry, AIMS have established a training review committee comprised of a volunteer group of highly experienced and qualified members, including representation from our New Zealand colleagues.

The expertise and knowledge they have brought to the table is guaranteed to benefit not only students but also industry. It has not gone unnoticed that, given the demographic of current marine surveyors, there may soon be more exiting the game than entering and this is an opportunity for some to pass on their invaluable experience.

The review of the Working

various advisory committees run by AMSA and in this way, can contribute directly to Reviews of Marine Orders and regulatory processes, resulting in a more practical and pragmatic approach to changes in national law. These individual surveyors are most usually asked to contribute by their professional industry bodies, of which The Australian Institute of Marine Surveyors (AIMS) is one.

Furthermore, when marine surveyors are engaged by insurance companies to inspect vessels over and above the AMSA survey regime, securing insurance coverage for vessel owners and operators becomes less onerous. Insurance companies rely heavily on accurate and up-to-date information about the safety status of vessels when

Boat and Recreational Vessel qualifications is well underway, and findings of the committee will be incorporated into our current courses in the near future. We are also thankful to Maritime NZ for contributing the use of specific resources to the cause.

The next goal is to transfer the way students currently interact with the training program to an online learning management system. This dedicated student portal will allow students to access all the material they need by logging in to the site where they can access content, upload assignments, participate in forums, communicate with assessors, and find out about upcoming events and student webinars. Trials and selection of a suitable platform have already begun, and we (I) are excited about this transition.

To create an interface between our emerging students and existing members, we will soon be encouraging established

determining coverage rates. By reporting deficiencies and providing accurate data to AMSA and insurance companies separately, marine surveyors help insurance underwriters make informed decisions and assess risks accurately.

This ultimately leads to fairer insurance premiums for vessel owners, considering the vessel's adherence to safety standards. Securing insurance coverage is essential for vessel owners, as it provides financial protection against various risks, including accidents, natural disasters, and liabilities. Marine surveyors' role in safeguarding vessel safety, coupled with their reporting to AMSA, helps reduce the perceived risk associated with insuring vessels. Insurance companies are more likely to

surveying businesses from each state to offer an opportunity for one or two students to spend a day or two with you in the workplace to find out what being a marine surveyor is like. We have already had some of you express interest in this, hopefully, mutually beneficial exercise and will be putting more on the website in the near future.

In the meantime, if this is something you are interested in, feel free to contact me with any questions on 0493 546 380 or [training@aimsurveyors.com.au](mailto:training@aimsurveyors.com.au).

In other news, Eric and I are working together on an annual calendar of interesting and practical webinars that will contribute to those all-important CPD points. If you would like to know more about a particular topic, get in touch and we will do our best to include it.

Sue Brown  
Professional Development and  
Training Coordinator  
AIMS

offer better coverage terms and lower premium rates to vessels that are regularly inspected and found to be compliant with safety regulations.

Marine safety in Australia is of paramount importance, and marine surveyors play a crucial role in ensuring compliance with national safety standards. Additionally, their services contribute to securing fair insurance coverage for vessel owners by providing accurate and up-to-date information to insurance underwriters.

By prioritising marine safety and leveraging the expertise of marine surveyors, Australia can continue to promote a safe and thriving maritime industry.

Mick McAuliffe  
Green Sea Survey Pty Ltd



# Cyber security matters

IN recent years, data breaches have become increasingly frequent and impactful, highlighting the vulnerability of digital systems and the importance of robust cyber-security measures.

These breaches have affected individuals, businesses and even governments, leading to significant financial losses, reputational damage and potential identity theft.

One such noteworthy breach is the SolarWinds supply chain attack, discovered in December 2020. This highly sophisticated attack targeted numerous organisations, including US Government agencies and Fortune 500 companies. The attackers compromised SolarWinds' software update mechanism, enabling them to

infiltrate networks and steal sensitive information.

The incident underscored the potential risks associated with third-party software providers and the need for enhanced supply chain security.

Another significant breach involved the Colonial Pipeline, a major US fuel pipeline operator, in May 2021. A ransomware attack forced the company to shut down its operations, leading to fuel shortages and price spikes across the US East Coast. The incident highlighted the potential real-world consequences of cyber attacks on critical infrastructure.

Additionally, the Facebook data leak in April 2021 demonstrated the ongoing challenges of protecting user data. Over 500 million Facebook users' personal

information, including phone numbers and email addresses, were posted on a hacking forum. This breach raised concerns about privacy, data governance and the broader implications of data aggregation by tech giants.

As cyber threats continue to evolve, organisations and individuals must remain vigilant in their efforts to protect sensitive information. Proactive cybersecurity measures, regular system updates, employee training, and a strong incident response plan are crucial for minimising the risks posed by data breaches.

Governments and regulatory bodies also play a role in establishing and enforcing standards to ensure data protection and promote a secure digital environment for all stakeholders.

Olaf Bauer  
Owner  
RingIT.com.au



*The maritime industry cannot operate without marine surveyors but do government and the wider public understand our vital role?*

## Developing technologies and practices within commercial marine surveying

MIKE WALL presented at the 2022 AIMS Conference held in Sydney. One of Mike's key messages was the critical need to improve industry visibility.

Mike noted that industry remains relatively unknown, stating that:

Several years ago, the UK Government was requested to consider marine surveyor apprenticeships for the profession.

A meeting was convened in London where all stakeholders in the shipping industry were present.

When asked by the Government representative about the need for marine surveyors, every one of those attending confirmed that they could not function without the services of marine surveyors.

This lack of knowledge on the part of government officials may be due to our industry not being exposed to the public.

The lack of awareness of our industry also extends to that of the marine surveyor, who is often mistaken as a marine biologist.

Consequently, it often takes some time to explain the role of the marine surveyor to the layman.

When explained, the response is often: "That must be a really interesting job."

Improving public knowledge of the sector also involves a discussion regarding how do you educate and inform to build industry awareness?

Mike provided some key considerations to address awareness:

The only way that our profession will become recognised and respected is by increasing its profile.

The higher our profile, the more influence we will have on the decision-making process by governments and the International Maritime Organization (IMO).

This can only be achieved by all doing their bit.

The IMO is the United Nations specialised agency with responsibility for the safety and security of shipping and the prevention of marine and atmospheric pollution by ships.

Note: Mike Wall, BSc, MSc, FRINA, CEng, QDR is Managing Director of Mike Wall & Associates Ltd.





## What constitutes acceptance in a contract?

IN any agreement between a client and their surveyor, the client or surveyor will make an offer for services. Then the other party, if they agree, and for some consideration, will accept, the offer. Acceptance is one of the fundamental principles in the formation of a contract.

Where two parties engage in a commercial agreement, there is an implied presumption that the parties intend to form a legal relationship and, as such, if they use a certain means to imply that acceptance, then they are bound to complete their performance as dictated by the contract. As technology advances, what constitutes acceptance changes.

Where once written evidence – such as a signature on a document or a witnessed spoken agreement

– was the accepted minimum, a recent Canadian case has shown that a “thumbs up” emoji sent by text on a mobile phone was enough to “seal the deal”. The King’s Bench for Saskatchewan (equivalent to a State Supreme Court in Australia) found that “a thumbs-up emoji is used to express assent, approval, or encouragement in digital communications”.

The defendant in the case, a farmer, had previously had a contract with the plaintiff, a commodity trader. The Court found that, having contracted previously with the same client using the same contract, the use of an emoji would, in the eyes of a reasonable person, indicate that the farmer was indicating his acceptance of the terms of the contract and was agreeing

to supply his produce on the terms indicated. His previous conduct also meant that he was willing to establish legal relations or *consensus ad idem* with the trader.

In agreeing to the terms of a contract, no matter how many or few, be certain that your acknowledgement of those terms is one that you, as the service provider, have read, understand and are willing to be obligated to perform before sending any form of agreement. The Courts these days are willing to accept what modern technology provides in ensuring parties abide by their actions.

**Eric McIlwain**  
Principal Surveyor  
Hastings Marine and  
Engineering

## Leadership matters

WORK engagement is reportedly declining internationally, with significant economic losses in productivity and practical implications in the workplace. Employees must be more engaged or we must live with the impact on productivity.

Australia faces multiple challenges: workforce shortage, an ageing population, negative productivity growth and low engagement indicators. For a nation prioritising economic growth into the future, these concerns regarding workforce shortages and levels of engagement need to be better understood.

To respond to this imperative, my research posits that a critical indicator of engagement is leadership, especially as it relates to the characteristics and abilities of senior leaders, widely defined as strategic leaders. Little research has examined how strategic leaders impact work engagement in relation to organisational outcomes, which

are heavily influenced by the actions of the organisation’s top executives.

Strategic leadership posits that organisational outcomes reflect the top leaders’ characteristics and abilities. The research suggests that these characteristics and capabilities can be used as proxies to determine, to some extent, how an organisation’s outcomes will turn out in the future.

Studies also suggest that work engagement is related to desired organisational outcomes, including organisational commitment, citizenship behaviour, employee well-being, profitability, and competitive advantage.

In a recent large study focusing on the strategic leadership cognitive capabilities of foresight and strategic thinking, work engagement was associated with both cognitive capabilities. Furthermore, an association of work engagement dimensions,

employee outcomes, and organisational outcomes with foresight and strategic thinking capabilities was evident in the study.

The study findings supported the conceptualisation of foresight and strategic thinking as engagement antecedents directly linked to individual and organisational outcomes.

The primary responsibility of all leaders is to authentically engage their workforce in the future by developing foresight as an organisation’s capability. The rational thought processes behind traditional strategic planning are inadequate to confront the complex, ambiguous and uncertain times we live in; instead, leaders need to develop strategic thinking capabilities to solve strategic problems and seize opportunities by combining generative and rational thought processes.

**Dr Wade Azmy**  
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# The business of going green

SUCCESSFUL business are born and flourish when the owners have that unique ability to identify opportunities forced by change. Governments across the world are facing many fronts, not the least being climate change and environmental damage caused, in part, by emissions generated by humans.

Australia is no different and our government has great ambitions for Australia to be seen as a green energy super-power. They believe that this will facilitate new export industries and committing to a net-zero emissions target will benefit the whole economy.

The maritime industry has not been overlooked and, while some of us might not subscribe to the notion of climate change, state and federal governments are wholeheartedly convinced and, just as there are many changes afoot, there are many opportunities arising from these changes.

Believe it or not, in 2007, 13 years ago, the Environment Standards Branch of the Department of the Environment and Water Resources conducted a project to compare and benchmark emissions from outboard (petrol) engines and personal watercraft that were available for sale in Australia during 2006.

The paper stated that substantial power is required to move small boats through water and even the better performing small engines that comply with overseas emission limits emit far greater quantities of pollutants per hour than typical modern car engines. Apparently, one hour of operation of a boat that complies with US 2006 emission stan-

dards (i.e. has a relatively clean engine) produces the same pollution as about 50 cars operated at a similar speed. In summer, due to the hot conditions Australia experiences, the impact is greater.<sup>1</sup>

As part of the Federal Government's Transport and Infrastructure Net Zero Roadmap, it is working with the maritime industry to develop a Maritime Emissions Reduction National Action Plan (MERNAP).

The plan seeks to identify opportunities and future-proof the maritime industry, ensuring Australia can benefit from the global zero-emissions transition.

Informed by an industry co-design approach, the MERNAP will set the strategic direction and commitments to actions to decarbonise our maritime transport sector and contribute towards reducing international shipping emissions.

While emissions in the maritime sector are generally harder to abate than in land transport sectors, there exists significant opportunities for Australia from greening maritime shipping.

The maritime sector has a key role to play in these efforts. From facilitating green energy export hubs, bunkering new zero and low emissions fuels, and addressing port emissions, the efforts to reduce emissions present significant opportunities for the maritime sector.

The 2023 Asia-Pacific Heads of Maritime Safety Agencies

<sup>1</sup> Comparative Assessment Paper

(APHoMSA) forum, concluded with key actions centred around continued collaboration to reduce greenhouse gas and increase safety for mariners.

If Australia is determined to support the very ambitious plan to phase out greenhouse gas emissions from international and domestic maritime operations by 2050, then there is plenty of work to be done and marine surveyors are well placed to get more active in this space.

A ship's carbon intensity is the greenhouse gas emissions relative to the amount of cargo carried over the distance travelled. The less fuel used by the ship for a given distance travelled, the lower the ship's carbon intensity.

The new Carbon Intensity Indicator (CII) framework sets an annual carbon intensity limit for ships by size and type, which builds on the already achieved carbon intensity reduction by the global fleet. This limit is adjusted annually in three phases for the period 2020-30. These annual reductions are cumulative; that is, they build on the reductions achieved in previous years, to achieve the 40% reduction by 2030 target.

The CII and rating system requires changes to the way ships are operated to improve energy efficiency and reduce carbon intensity.<sup>2</sup>

When we think of boating and also working boats, such as fishing vessels, where regulated surveys take place, it's not hard to see opportunities for marine surveyors to enhance their business scope.

<sup>2</sup> AMSA



Operators of commercial fishing boats would benefit from the advice of marine surveyors on issues such as reducing propulsion costs.

About 90 per cent of recreational boating in Australia is conducted in salt water, which creates greater technological challenges for reducing emissions through the use of catalytic converters. However, there are ways to combat this, and I am sure that most marine engineers would have some pretty good ideas on clever ways to do this.

The marine fishing industry leans heavily on fossil fuels. In general, the most fuel-consuming activity is vessel propulsion.

If every hour you go electric with a hybrid boat reduces the corresponding emissions, consumption and service costs compared with operating a diesel engine, then operators will appreciate some advice from surveyors. For instance, the fishing vessel delivered in 2019 with the electric hybrid propulsion solution reduces greenhouse gas emissions by approximately 25 per cent and runtime on diesel engines by as much as 75 per cent, which "significantly im-

proves the working environment on board". As part of their smart features, the vessels have energy-efficient heating through heat recovery from the diesel generators and the entire 150 cubic meters of cargo space.<sup>3</sup>

So, what opportunities can marine surveyors take advantage of right now? Start small, use considered advice and suggest small changes to vessel owners that can be implemented relatively cheaply in the first instance. Build up your advisory service as part of your normal survey activities.

## How?

Do some research and offer simple options that boat owners needing repairs can implement now.

Understand the new CII rating system (AMSA website) so that you can advise masters and shipowners on how to implement the new measures when on board.

<sup>3</sup> Global Seafood. Org Dec 2022

Find out more about the issues facing the fishing industry and other working boats, and help them move to a greener approach.

Marine surveyors have a set of very unique skills that can easily be incorporated into their businesses.

Many consumers are now actively seeking companies that embrace emissions reduction targets and it wouldn't hurt to advertise the fact that you can help.

A little bit of advertising, a little bit of discussion at surveys, or events and forums, a little bit of entrepreneurship – it could easily attract new business.

It's worth thinking about. Who knows? Done right, it could easily reap benefits for you and make your competitors just a little bit green.

Susan Hull  
Senior Partner  
Liquid Strategies



# Asahi II build for UK MCA commercial use

IT'S been a busy last six months here in New Zealand, with the usual range of commercial and leisure surveying activity ongoing. However, there have been some more unusual commissions, including supporting Maritime New Zealand with a technical investigation into a fatal vessel capsizing, and, secondly, project managing the commercial compliance of a Rayglass 410 Targa RIB for commercial use.

I will discuss my role as a marine surveyor in the capsizing investigation in a future article, following the publishing of the final New Zealand Transport Accident Investigation Commission (TAIC) report, as it will undoubtedly be of interest to many surveyors who inspect small commercial vessels.

In this article, however, I'll highlight some of the intricacies and challenges regarding the commercial compliance of a Rayglass vessel. Already, I can sense some readers nodding off and thinking "What can be

*simpler than putting a 12.5m RIB into commercial use? It's a known, well-respected brand; all you need to do is throw in a sprinkle of Design Approval, a dash of stability and buoyancy, mix in some build inspections, equip with some safety kit, fill in the paperwork, and bake for 90 minutes on a high heat." Oh, if it were that easy!*

This vessel, *Asahi II*, turned out to be a little more complicated. The client indicated that the vessel required was a Rayglass Protector 410 Targa (12.5m), Kiwi-built, to be employed as a superyacht tender, and be commercially coded under the UK MCA MGN 280 harmonised standards.

Further complications were that the vessel was to be Coded MCA Category 2 (60 miles from safe haven), opposed to the usual Cat 3 (20 miles), with the superyacht annotated as the safe haven and operating globally. Other complications included the fact that I am not a recognised

UK MCA surveyor and the MCA Certifying authorities are not well represented here in New Zealand.

However, as with most things, networking (aka, knowing a bloke who knows a bloke) was the solution. Duncan Saunders of Morgan Saunders-Harris (UK) Ltd, who I had worked with previously, came on board to provide UK support. Duncan is an MCA Coding Surveyor, Fellow of the Yacht Designers and Surveyors Association (YDSA) and a member of the YDSA Large Yacht Group.

The key issues to tackle were to undertake a certification audit, and confirm that the 410 Targa SD had the required CE documentation to demonstrate compliance with the UK MCA Coding requirements. This included reviewing over 20 individual ISO standards applicable to the 410, including, but not limited to stability, electrical systems, fire protection, construction and scantlings,



*Asahi II - Preparing for stability testing and sea trials*

windows, loading, steering, fuel systems, fabrics etc.

The second challenge was to make sure that the vessel was built to comply with all the requirements set out in the MCA SCV2A compliance schedule and meet the requirements of the MCA SA-RIB stability requirements. The vessel also needed to meet all the required test standards, including heel, swamp and MOB tests. There was some debate regarding the requirement to undertake a Swamp Test (hugely unpopular with Rayglass), as it would mean swamping a new vessel. Advice was sought from the MCA, and it was confirmed that this would not be required and could be done by calculation.

Luckily, the Rayglass 410 Targa OBM variant already had a stability book, so it was decided to engage Nina Heatley at Clever Fox Projects to update and re-issue a new stability book for the inboard variant of the vessel.

The build progressed well, with regular in-build inspections undertaken by myself, coupled with ongoing communication between myself, Duncan in the UK and the Rayglass project

team, including Steve Collinson and Gregor Wilson. The culmination of the project was in July, with the final inspection attended by Duncan (who flew out from the UK). Duncan – jetlagged and arriving with only the clothes on his back (luggage in Hong Kong) – was fuelled by the best coffee New Zealand could muster to hit the ground running.

The plan worked well: with all the out-of-water inspections completed on day one, the second day was given over to Rayglass to resolve any post-inspection issues, launch the boat and conduct sea trials. Day three was dedicated to the on-water testing and sweep-ups. The vessel is currently being anti-fouled and equipped with the safety equipment prior to being shipped to its new home in September.

Ultimately, the ability of OEMs to supply vessels for commercial use in other jurisdictions relies heavily on three key factors: first, having a full understanding of the compliance certification that relates to the vessel and how this certification interfaces with the national statutory survey compliance requirements;

secondly, applying the national statutory requirements / rules to the build; and, finally, having the expertise in the right place to fulfil all the project requirements.

In summary, any OEM embarking on a project like this will need to undertake a scoping audit and significant pre-production planning. However, in the case of the Rayglass Protector Targa 410, this vessel type now has a comprehensive technical file and can be offered for certified commercial use throughout the UK and European Union.

## Other News

The IMCI has advised that CE marking for export to the UK will now be indefinite. [UK Government announces extension of CE mark recognition for businesses - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/news/uk-government-announces-extension-of-ce-mark-recognition-for-businesses)

Greg Marsden

Greg is an AIMS CCMS Member and sits on the AIMS Board. He is an MNZ and AMSA-recognised surveyor and also an Associate Inspector with the ICMI.



*Asahi II Inspection Visit 1 - Layup of the hull*



*Asahi II - Inspecting prior to engine and sternleg fitting*



# Autonomous surface vessels and underwater vehicles — or, do robot ships need lifeboats?

AMC Search – which is the training and consultancy division of the Australian Maritime College, University of Tasmania – has focussed its efforts on autonomous maritime systems through the Autonomous Maritime Systems Laboratory (AMSL).

The AMSL is based on the Launceston campus and makes use of wharf, workshop, and teaching facilities at Beauty Point, 50 km north on the estuary of the River Tamar. The facilities and environment allow the lab to house, develop, experiment with, and apply both autonomous surface and underwater vehicles supporting academic, commercial, and defence projects.

AMC Search also hosts AMSTEC, Australia's temperature and high energy autonomous maritime systems test and evaluation centre.

The AMSL houses three autonomous underwater vehicles, and a fleet of surface vehicles – five at last count but growing quickly. The facilities also include more traditional vessels that support the lab's operations. The vehicles themselves have been deployed numerous times around Tasmania, in Sydney and in operations around Antarctica, where the lab has a particular focus.

While the word “autonomous” is used widely, the specific meaning can be unclear or differ between groups. In the broadest sense, it means a system or platform that is capable of independent action to some degree without human intervention. What this degree is, and at what point it becomes

interesting or novel, is another thing. The meaning of the word is perhaps best understood through the function that it is trying to enable.

In the context of maritime shipping, we might consider that its application is an attempt to reduce or replace crews. That's certainly an interpretation, but another equally important perspective is that autonomy is at its best when it enables people to do more. So, the design of ships in a world of autonomous potential is at something of a crossroads; do we want new types of vessels, possibly smaller with no hotel facilities, or do we want ships fitting an existing profile with autonomous bridges?

The reality is that there is no one single solution that meets the diverse, and evolving, needs of the maritime industry. Some, if not most, future maritime vessels will look and feel very similar to those of 10 or 20 years ago. They will be augmented to different degrees with enabling technology that increases reliability, fault-finding, safety, reduces the mental and physical burden on crew, and so on. Adaptation of technologies will be piecemeal in this segment of the maritime industry, with incremental improvements to navigation and planning systems, engine alert and inventory systems, as well as logistical and wharf facilities.

Taken in the whole, these changes will amount to dramatic increases in crew and vessel performance but won't necessarily be individually disruptive. There is, however, another segment of the maritime industry that is already starting

to look very different from the traditional fleet.

The decrease in component prices, increases in low-cost computer performance and access to community-developed control systems have spurred the development of a wide range of smaller, sometimes alien-looking craft. These vessels, which typically range from one to 20 metres long, may lack seats or windows, displace very little water, and yet maintain the ability to navigate precisely over lakes, bays or oceans.

Their states of readiness are diverse. For example, smaller systems that are built for the delivery of science instruments to hard-to-reach places (like icy cliffs in the Antarctic) are very mature but rather single purpose – sail in, take a measurement, sail out. The job, in this instance, could be done by a person in a small boat but the risk of injury is too high, so a robot is the idea coxswain. Robot coxswains don't need sleep, only battery charging. They don't need toilets or sleeping quarters.

If they can maintain a good data connection with the shore or larger vessel, they can be remotely piloted. If they don't, there is potential for them to be autonomous driven. Thus, we might understand autonomy in this sense to be a concept that platforms that might be remote but where communication is challenging, for reasons of human cognitive capacity or, particularly in the case of the underwater world, inhibited.

Autonomy is therefore not a binary thing but rather a way of describing the capability



A WAM-V Autonomous Surface Vessel on its first deployment at the Autonomous Maritime Systems - Test and Evaluation Centre at the AMC wharf, Beauty Point, Tasmania.



of platforms on a scale. The scale runs from being entirely human-driven, through humans being prompted to take actions, through to humans taking a back seat to the control. Sadly, there is no one numerical scale in use, as different groups have adopted somewhat incompatible increments.,,

Still, this need not be a large impediment, as it's a function of language to describe the vessels, rather than their compatibility with other standards. So, when discussing, for example, Level 3 autonomy, it must be borne in mind that one standard understands this to mean that a vessel is controlled remotely with no seafarers onboard, but for another it means a vessel that is computer-controlled but supervised by a human with the expectation that they can take over if required. The solution to avoiding confusion is to clarify the language from the outset at a project, purchase or design level.

By some definitions, autonomy in the maritime industry has been around for quite a while. Systems like dynamic positioning allow the bridge crew to hand-off the fine control of the vectored thrust of a ship to a computer system. The system must have adequate redundancies, reliability, performance and human supervision. The regulation of such systems, along with

training, and thorough survey of these systems, is certainly not new.

While vessels that look quite different to traditional ships are starting to appear, at wharves and in concept, the tools used by marine surveyors are no less applicable. Reports on Failure Mode Effects and Analysis already play an important role in the assurance of safety in new autonomous maritime systems. The importance of fire safety system and other life-saving equipment, such as lifeboats, is also much discussed and assessed.

The legislation that governs autonomous systems is not yet ready, so they are handled in much the same way as traditional craft. The degree to which they are a risk to other users, infrastructure and the environment is determined by the fuel systems involved, their size and speed, the ability to be detected, the design of their fail-safes and, of course, their concepts of operation. Small, battery-powered vessels, which may be a metre in length, do not present the same risk as proposed robotic container ships with all the mass, kinetic energy, and diesel or possibly hydrogen that they entail. In Australia, the regulators have recognised this lack of appropriate legislation and the need to appraise risks on a case-by-case basis.

The Australian Maritime Safety Authority (AMSA) has a policy on the regulatory treatment of unmanned or autonomous vessels. This policy is available on their website and sets out their position that they will wake a light regulatory touch, in a risk-appropriate manner. AMSA has a further set of principles that they apply in the assessment of autonomous operations that will be important factors for marine surveys to apply to vessels that may, at first blush, look very different from their typical clients.

This is a wholly more permissive approach than that taken by other advanced seafaring economies. Hurdles to the development of autonomous vessels elsewhere have meant innovators looking at Australia as a potential testing ground. This growing international user base, as well as a fast-emerging homegrown community of designers and innovators, builders and users, academics and companies, mean that the demand for marine surveyors with an understanding of autonomous vessels is going to grow proportionally.

So, when asked “Do robot ships need lifeboats?” the answer is, of course, “It depends...”

Damien Guihen  
Australian Maritime College



# Unmanned and unaware – what does the future hold?

THERE is an increasing buzz out there about transforming efficiency and costs of international shipping through the use of unmanned ships. But who are the drivers behind thinking that this is a good idea, and have they thought about all of the practicalities and challenges?

The general rules, laws and practicalities of pilotage are a fantastic starting point for us to consider the implications of a transition to unmanned shipping in international trade. Unfortunately, commentary and case law on these issues remain limited in Australia, and, as with many other areas in the wonderful world of shipping, we tend to throw up our hands and leave a 200-year-old tradition alone.

I would like to be really clear at the outset. I am not saying that autonomous or unmanned ships absolutely would not work. There are many areas (for example, in research, environmental monitoring and the like) where autonomous and/or unmanned ships are wholly effective.

What I am suggesting is that the same could not be applied with respect to full and proper working vessels involved in international trade or supply. Further to that, there are obvious implications for the role of the

marine surveyor in terms of how we would go about our work if unmanned shipping was ever to become a reality in this context.

The long-established rules (and challenges) relating to Australia's pilotage laws provide a great launching point to unpack these issues.

So, using the complications and confusion surrounding the laws of pilotage as a base, we will explore some of the similar issues that might arise in other aspects of shipping that may come to the fore if the fascination with unmanned ships becomes a reality for international trade.

I have broken this paper down into five key areas:

1. The plot of the pilot;
2. The problem: it's a question of change;
3. The desired change: unmanned shipping;
4. The challenge: practically speaking; and
5. What does the future hold?

## The plot of the pilot

It has long been settled that, ultimately, a shipowner is responsible for what happens to his ship<sup>1</sup>.

<sup>1</sup> Oceanic Crest Shipping Company v Pilbara Port Services Pty Ltd (1986) 160 CLR 626, 641 (Gibbs CJ).

But consider the following scenario: A vessel is heading into a port with compulsory pilotage. The pilot provides an on-shore direction to the master. The master of the vessel follows that direction, and on entry into port, the vessel damages the wharf.

Who is responsible for the damage? If the master, following an on-shore direction, enters a compulsory pilotage area without a pilot on board, is he guilty of an offence for proceeding without a pilot? Is the pilot liable for acting outside of pilotage?

It remains a grey area for many harbour authorities in Australia and I believe will be absolutely compounded if the future of the industry is to have unmanned ships involved in international trade.

A number of important questions remain unanswered that would, in turn, be directly impacted by a move to unmanned shipping in certain contexts. For example, when does pilotage actually commence? If a master follows an on-shore / remote direction provided by a pilot, could they be deemed in breach of pilotage laws for proceeding without a pilot in a pilotage area?

Keep in mind that there is a general assumption that the act of pilotage does not commence



*Could the use of autonomous remotely-controlled vessels work in international shipping and what might it mean for marine surveyors?*

until the pilot is on board the vessel<sup>2</sup>. The pilot is the “controller of collisions”; a pilot is the person with the best knowledge of the port, better equipped with requisite local knowledge to get the vessel in and out of port safely.

However, this provides no assistance on the question of when pilotage actually commences. The difficulty is that pilotage in Australia is steeped in two hundred years of tradition, dating back to Imperial merchant shipping laws. It is therefore important to first look at Australian legislation to determine whether they provide a clear answer as to when pilotage actually commences or, more specifically, whether a pilot must be **on board** a vessel for pilotage to be underway.

There is a running theme throughout Australian legislation, which points to pilotage involving conduct of a

<sup>2</sup> Michael White, *Australian Maritime Law* (Federation Press, 2nd ed, 2000) 288. See also Justice Hill's comments in *The Adoni* [1918] P 14, 18.

vessel. But what does “conduct” mean and how does this affect the interpretation/s of the role of a pilot?

## Marine pilotage in Australia

There is a general assumption that has existed for centuries – pilotage commences when the pilot steps on board the vessel.

In 1918, Justice Hill in the UK case of *The Adoni* put it this way<sup>3</sup>: “In my opinion a pilot, prima facie means... ‘A person taken on board at a particular place for the purpose of conducting a ship through a river, road or channel or from or into a port’. And where you find that pilotage is compulsory, that, prima facie, means that the pilot is entitled, and the master is bound to permit him, to conduct the ship, that is, to take charge of the navigation of the ship.”

It has also been said that<sup>4</sup>: “When the master hands over the

<sup>3</sup> *The Adoni* [1918] P14, 18 (Hill J).

<sup>4</sup> Chris S. Yuen, “Marine Pilotage in Australia: Sydney Ports Case Study” (2003) 17 *Maritime Law Association of Australia and New Zealand Journal* 80.

conduct of the vessel to the pilot, the latter is legally responsible for his own actions. The master's right to interfere is restricted to circumstances where there is clear evidence of the pilot's incapability or incompetence. Unwarranted interference by the master would be treated as the ship not being piloted.”

From these statements, the assumption is pretty clear. After all, if a pilot is not on board the vessel, the master is still navigating. Therefore, it makes much more sense to consider pilotage to commence at a master/pilot exchange, which cannot be effected until the pilot steps onto the bridge. Surely, therefore, ‘conduct’ requires physical presence of the pilot on board a vessel.

Unfortunately, it is not that simple. Differing legislation makes the distinction difficult to determine.

## Pilotage legislation – It's not easy...

Commonwealth Legislation: Navigation Act 2012. The



Navigation Act 2012 (Cth) (“Navigation Act”) contains provisions relating to pilotage, with most provisions reinforced in most State jurisdictions.

The Navigation Act regulates pilotage under Chapter 6, Part 2. The essential pilotage definitions for the purposes of the Act are set out in Part 4. The Navigation Act defines a pilot as: “...a person who does not belong to, but has the conduct of, a vessel.”

This restrictive definition is problematic. It fails to describe the wider meaning of the use of the word “pilot”. With the 1912 Navigation Act repealed to make way for the 2012 Navigation Act, also came with the transfer of some of the pilotage provisions to Marine Order 54. MO54 states that pilotage commences once the pilot is on board the vessel:

□ “*commences pilotage duties* when the vessel on which the pilot is on board as pilot enters the compulsory pilotage area in which the pilotage is to be conducted;” and

□ “*ceases pilotage duties* when the vessel on which the pilot is on board as pilot leaves the compulsory pilotage area in which the pilotage was conducted.”

The limitation of liability provisions of the Navigation Act (particularly s326) states that “[a] pilot who has the conduct of the ship is subject to the authority of the master of the ship and the master is not relieved from responsibility for the conduct and navigation of the ship by reason only of the ship being under pilotage”.

### State legislation

Each State and Territory in Australia has enacted pilotage legislation. Although the jurisdictions are predominantly consistent, there are a number of interesting anomalies regarding what constitutes pilotage. Clear examples are seen in comparing

the legislation in NSW, SA and WA.

The New South Wales Marine Safety Act 1998 is clearest, “pilotage means the conduct of a vessel by a pilot as follows:

f. Inward pilotage, that is, the pilotage of a vessel entering into a pilotage port,

g. Outward pilotage, that is, the pilotage of a vessel leaving a pilotage port,

h. Harbour pilotage, that is, the pilotage of a vessel being moved within a pilotage port.”

Section 74 of the same Act is explicit in assuming pilotage to occur whilst on board the vessel. Section 74(2) states that: “the master of a vessel must not enter, leave or move within a pilotage port with the vessel before taking on board the marine pilot made available by the pilotage service provider to conduct the vessel on its movement into the port, out of the port or within the port.”

This is consistent with South Australia’s definition, which assumes that conduct of a vessel concerns the pilot being on board. In the Harbours and Navigation Act 1993 (SA), a pilot is defined as: “[a] person, who although not a member of the master’s crew, temporarily takes control (subject however to the master’s overriding authority) of the vessel’s navigation”.

Again, pilotage is assumed to commence when the pilot boards the vessel.

Western Australian legislation defines pilotage using “command”. The Port Authorities Act 1999 (WA) defines pilotage as being “in charge or command of, or to have the management of, the vessel”.

Further assistance with this definition is provided in s 98: “An approved pilot who has control of a vessel in a port is subject to

the authority of the master of the vessel, and the master is not relieved from responsibility for the conduct and navigation of the vessel by reason only of those circumstances.”

This indicates that more than merely providing an on-shore direction is required before a ship is under control of a pilot. It requires the pilot to be on board, controlling and managing the vessel.

State jurisdictions are as restrictive as the Commonwealth Navigation Act in defining pilotage, using either “command” or “conduct”. They all follow the general assumption, that pilotage does not commence until the pilot boards the vessel and shows the master all relevant licence and competency papers.

### This is significant.

As much as this may illuminate the meaning of the word “conduct”, further clarification is required. It is important, with the apparent face of uncertainty in marine pilotage, to elaborate on the question of “conduct” of a ship.

### The question of conduct

So, what is precisely meant by “conduct” of a ship? Could a pilot have “conduct” of a vessel simply by providing an onshore direction (the same of which would apply for remote pilotage of unmanned ships)?

The Navigation Act doesn’t actually define “conduct”. And Australian courts haven’t really assisted either. The only (minimal) assistance was provided back in 1913 by Chief Justice Barton in the High Court case of *Fowles v Eastern & Australian Steamship Co.*

The issue in that case concerned interpretation of the Queensland Navigation Act of



*Different States have some different rules about what can occur in their ports, including pilotage.*

1876<sup>5</sup>: “Compulsory pilotage is prescribed by sec. 113: “The master of every vessel not exempt from pilotage, arriving at or off any port whereat any pilot shall have been appointed for the purpose of entering any of the said ports or harbours, shall deliver and give in charge such vessel to the duly qualified pilot who shall first board or go alongside of such vessel in order to conduct the same into port, and such pilot shall if required by such master produce his authority to act as such pilot, and no master of any such vessel shall proceed to sea from any of the said ports or quit his station or anchorage in any port, without receiving on board the harbour master or some pilot appointed as aforesaid to move or conduct the said vessel to sea.”

The literal definition of “conduct” clearly denotes some form of behaviour. The Oxford Dictionary defines it as an “activity or manner of directing or managing”. However, the issue still remains as to whether an onshore direction by a pilot can be considered an act of pilotage.

<sup>5</sup> *Fowles v Eastern & Australian Steamship Company Limited* (1913) 17 CLR 149.

### The problem: it’s a question of change

So far, we have identified that, even without considering the effects of unmanned shipping, the traditional definitions and approaches to pilotage (from a legal standpoint at least) present their own difficulties.

It is also worth noting that the courts and governments – even 50 years ago – were not confronted with the advances in technology that we are seeing today; all giving rise to questions of whether a pilot would effectively be able to fulfil the requirements of pilotage from on-shore.

Think about the scenario I introduced earlier: If all of the legislation presumes that vessels are manned, and that a pilot actually needs to be on board, would the pilot be breaking the law if pilotage duties were carried out on shore and/or remotely?

### Pilot’s liability for acts while not on board

The logic of pilotage works like an “if-then” statement. If pilotage concerns the conduct

of navigation, which cannot be achieved (from a legal point of view) unless the pilot is navigating, then pilotage does not commence until the pilot boards the vessel.

It has been said that “what a pilot is not, purely and simply, is an adviser”<sup>6</sup>. To call a pilot merely an adviser, as we’ve seen, is completely inconsistent with the legal definition of a pilot, and also the practical concept of a pilot. That being said, it could be argued that the pilot is a “stranger to the ship he has conduct of”<sup>7</sup>.

So...if the laws and practicalities of Pilotage are clearly confusing, how are we possibly going to transition to unmanned shipping in international trade? Can we anyway...practically speaking?

### The desired change: unmanned shipping

Some would argue that the way of the future is unmanned shipping. I have had many lawyers approach me with their

<sup>6</sup> Christopher Hill, *Maritime Law* (Lloyd’s of London, 3rd ed, 1989) 376.

<sup>7</sup> *Ibid.*



views on how awesome it would be in terms of technological advancement, costs, efficiency and the like. And don't get me started on the view that if advancements in blockchain are anything to go by, then it is only a matter of time whereby international trading vessels will traverse the world completely unmanned.

On paper, it looks like a pretty good proposition: <https://au.video.search.yahoo.com/search/video?fr=mcafee&ei=UTF-8&p=ROLLS+ROYCE+AUTONOMOUS+SHIPPING+VIDEO&type=E210AU739G0#id=2&vid=54df4da1c34b730f0357e8c11cb32d15&action=click>

### The challenge: practically speaking...

It goes without saying that Rolls Royce's idea<sup>8</sup> is very compelling. And there are some aspects of international shipping that would indeed be practically possible with the advent of unmanned ships.

8 Refer to video

First, there are unanswered legal questions. We've already seen that legal frameworks would need to be overhauled. And how would international laws apply to vessels that have no humans on them? Who would be liable in the event of an incident?

What about cybercrime? Forget piracy; we face a considerably bigger threat with cyber pirates – just look at Optus and Medibank!

These are just some of the core questions; and I'm not completely unopposed. Indeed, there are probably some core aspects of international shipping that would work.

Let's explore them. I am just going to skim the surface and touch very briefly on a few aspects.

### What could work

**Navigation** – It is entirely realistic for vessels to be navigated remotely.

Being in a room somewhere in the world, with a controller/

joystick and suitable communications, could result in a vessel being perfectly navigated from anywhere in the world, safely and efficiently.

**Loading and discharge** – We are already seeing, in many ports around Australia that container handling operations can be managed entirely unmanned. It would also be entirely probable that vessels that are loading and discharging bulk cargoes could also be remotely controlled. What's the upshot of this?

**Saving lots of money** – Less crew, less fuel, operational efficiency, all have the potential to save shipowners potentially hundreds of thousands of dollars in improving efficiency, with less crew required, and considerable savings in fuel. But is it really that simple? Never.

### What would not work

**Navigation** – While it is entirely realistic for a vessel to be navigated remotely, is it really a practical proposition? Or one step further: can safe and efficient navigation – with all of

the conditional unknowns that could be faced – be carried out by an autonomous vessel?

One only has to think of the many, many unpredictable conditions and experiences involved in international shipping that, essentially, would require some measure of human control. I would therefore argue in this respect that navigation could work for unmanned vessels (remotely controlled) but not in an autonomous context. How could an autonomous vessel expertly predict all of the unknowns of sea conditions that would impact navigation, and respond accordingly?

**Loading and discharge** – How could an unmanned vessel capably deal with an equipment failure requiring urgent attention, without some measure of manning? While the equipment itself could be remotely controlled, and thus capable of being “unmanned” per se, it becomes an entirely different ball game when something catastrophically breaks down.

You'll notice in the Rolls Royce snippet I referred to earlier that they haven't gone down the path of providing an answer to urgent or catastrophic equipment failures; I find that particularly interesting...

**Saving lots of money** – True: less crew, less fuel, and operational efficiency can save money. But the costs are likely to be considerable in the event of failures, as mobilisation of required crew / drones or helicopters to facilitate repairs that cannot wait for a port call would, arguably, cost considerably more in terms of supply – and also efficiency – and in the end that would come at great cost.

But saving money, particularly with vessel crewing, also has a knock-on effect. A sizeable portion of the world's population are seafaring, or rely on the work of seafarers, for their pay cheques.

It goes without saying that where vessel crewing is reduced, there will be a whole lot of people without jobs....and...

**Maintenance** – I am sure all of the seafarers / ex-seafarers reading this can attest to the extent of preventative maintenance carried out on board vessels. During my research for this paper, I had a chat with a few seafarers who mentioned that the bulk of their time on shift is spent undertaking preventative maintenance on board vessels.

Practically speaking, do you think it would be economically and practically feasible for proper and efficient preventative maintenance to be carried out successfully where a vessel is entirely unmanned?

### Summary

These questions are clearly just the tip of the iceberg but certainly pave the way for a contentious future, at least in the short term.

And, as we've explored with the confusing legal regimes of pilotage, and the assumption across our legal frameworks that vessels are actually **manned**, a move to unmanned ships is going to inconvenience a whole lot of shipowners and make a whole lot of lawyers and government policy advisers very wealthy.

So what does this mean for us?

As surveyors, we are seriously overlooked and undervalued. It goes without saying that so much of what we do requires our physical presence on vessels.

I think there's a sense where our opinions and findings have the potential to become far less reliable (potentially) from a legal point of view, where we are not in a position to be physically on board vessels inspecting issues, liaising with key people (this is a less impractical component), or being able to manage timely incident response.

Here are just some examples:

- ❑ How do unmanned shipping advocates propose to deal with contentious collisions or casualties, where expert assessments and opinions are crucially required to determine damage, manage salvage, and/or identify opportunities for recovery?
- ❑ What about surveys for grain and other bulk cargoes where strict hold cleanliness certification is required?
- ❑ Or proper and frequent monitoring of reefer containers?

As we've seen, there is a lot that needs to be unpacked, amended and considered for me to be convinced that unmanned ships in international trade can be the way of the future – practically and legally.

I believe that, ultimately, despite technological advancements, there will never be a position in international trade whereby a commercial trading vessel can be entirely unmanned.

With the work that has already been done with autonomous vessels operating in certain coastal contexts, it is really only a matter of time that we are faced with this sizeable paradigm shift in international shipping as well. And the knock-on effect of this is that we will be doing surveying quite differently if it ultimately pans out.

But... we will be waiting a while yet.

Kerryn Woonings LLB, DipMS, MAIMS  
Senior Marine Surveyor & Loss Adjuster, Global Technical Services  
Crawford & Company (Australia) Pty Ltd



Is unmanned shipping the way of the future?



# InspectX software developed for marine surveyors

OVER and over, I hear from marine surveyors who love what they do but hate the late nights and weekends spent writing reports.

Let's face it, there's little glory and no appreciation for the hours spent behind a computer screen, and it's near impossible to complete a professional report without dedicating a significant amount of time behind the desk.

I realised my efforts of taking handwritten notes and photos while onboard were being duplicated when transcribing these notes back in the office.

Ever since then, I have been on an endeavor to improve my surveying method without sacrificing the quality or the content in the final report.

The solution for me came after

developing a software application that enabled writing statements in the field using a touchscreen computer, thus eliminating the majority of time spent in the office transcribing.

This application had a profound and direct impact on my survey process, and, after making some changes to allow the customisation of the final report, we made it available to other surveyors and called it InspectX (inspectxpro.com).

Since releasing this program to the general public, InspectX has continued to spread throughout the surveying community and is now in use by surveyors all over the world. The completed report is polished, professional, and continues to get rave reviews from clients and underwriters.

Of course, collecting this data

onboard using a touchscreen computer requires some practice and familiarity, just like any surveying tool.

When we consider the value of our time, and how much of it is spent duplicating effort with handwritten notes, the effective use of technology to enhance our process becomes apparent, and it's certainly worth the end result of being able to leave a survey assignment with a report almost completely written in the field.

**Craig Norton**  
President  
InspectX

Based in the sunshine state of Florida, and a second generation marine surveyor, Craig Norton is the President of InspectX, a SAMS® Accredited Marine Surveyor, RYA Captain, and MCA Y3 Chief Engineer.



# George & Sim – 100 not out



THE History of George & Sim Marine Surveyors Pty Ltd: The First One Hundred Years 1923 – 2023, by Capt. Peter Bosman.

Captain George Moira and Capt. Stanley Sim registered “George & Sim” as a marine surveyors partnership on 23 June 1923, starting with an office at the bottom of Queen Street, Melbourne. Around that time, there also existed in Melbourne other firms of marine surveyors, mainly the firms of Capt. Longmore and Evans & Jones.

Vague references from that time indicate that the partnership soon soured and broke up, with Capt. Sim carrying on by himself, but keeping the name “George & Sim”.

Capt. Sim sold the firm, in the 1940s, to Capt. Fred Hirst. Fred carried on by himself, as was fairly common in those days, till the 1960s. By that time, Fred had built up a considerable reputation, and, it being before the Trade Practices Act, represented a cartel of Melbourne marine surveyors in negotiations with the local shipping companies re a standard fee structure for some of the common tasks.

This ensured that there was more and more work coming into the firm, and an expansion was warranted, so he took on Capt. Peter Goodson, who had arrived in Melbourne from the UK after World War II and had spent a few years in stevedoring.

At that time, marine surveyors became more involved with the

loading and discharge of tankers, in particular chemical cargoes – something Peter Goodson managed to get a fair share of, with Fred Hirst not particularly interested in this “dirty” work.

In the early 1970s, the amount of work, and growing business regulations, led to a decision to incorporate, and the partnership became “George & Sim Pty Ltd”. That was also the time when the (rented) office in Queen Street was swapped for an office in St Kilda Road, amid several apartments occupied by prostitutes and other doubtful businesses.

In 1977, Fred Hirst wanted to retire, and Capt. Peter Bosman, who had “learned the ropes” of marine surveying in the company Evans & Jones under the guidance of Capt. Jim Clark, took over Fred’s share in the business.

Peter Goodson’s skills attracted more and more clients, and “George & Sim Pty Ltd” soon required more manpower to deal with the expanding demands in the chemical trade, as well as the then fairly new, but massive, car carrier trade.

Other surveyors were taken on board as co-owners (Capt. Mike Terry in 1978 and Capt. Peter Edgerton in 1980) to handle the growth.

By that time, Peter Goodson decided to “leave the shop to the younger generation” and retired.

Lots of things changed. George & Sim became one of the first

surveying companies in Australia to be “computerised”: a double floppy drive word processor, with electric typewriter, that could rapidly spew out massive reports.

In 1984, we were confident enough to purchase our “own” office building in Port Melbourne. Capt. Terry then left us. Over the years, several other surveyors, such as Capt. Craig Maddison, Capt. Michael Perham, Engineer Nicolas Wesen and Capt. Boris Georgiev, contributed to George & Sim’s growth.

By that time, George & Sim Pty Ltd was certainly one of the major firms in Melbourne and became involved with supporting the then nascent Australasian Institute of Marine Surveyors, established to improve the standards in our industry.

By the end of the century, the then-owners – Capts Peter Edgerton and Peter Bosman – had different ideas about the future and decided to split up.

Capt. Edgerton went his own way into the tanker world and Capt. Bosman continued in the general surveying work, with the company now renamed “George & Sim Marine Surveyors Pty Ltd”.

From the year 2000, George & Sim Marine Surveyors Pty Ltd carried on in a rather relaxed “one-man version”, looking only after satisfied established clients.

In 2021, Capt. Bosman realised that, at the age of 74, he should retire and, after a careful selection process, sold the business to Mark McIlwain. Mark came from an established marine family background. After substantial experience in the composites boatbuilding industry, he ran a small business in the recreational survey sector and wanted to expand into the larger ship and insurance side of marine surveying.

**Mark McIlwain**  
Marine Surveyor



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