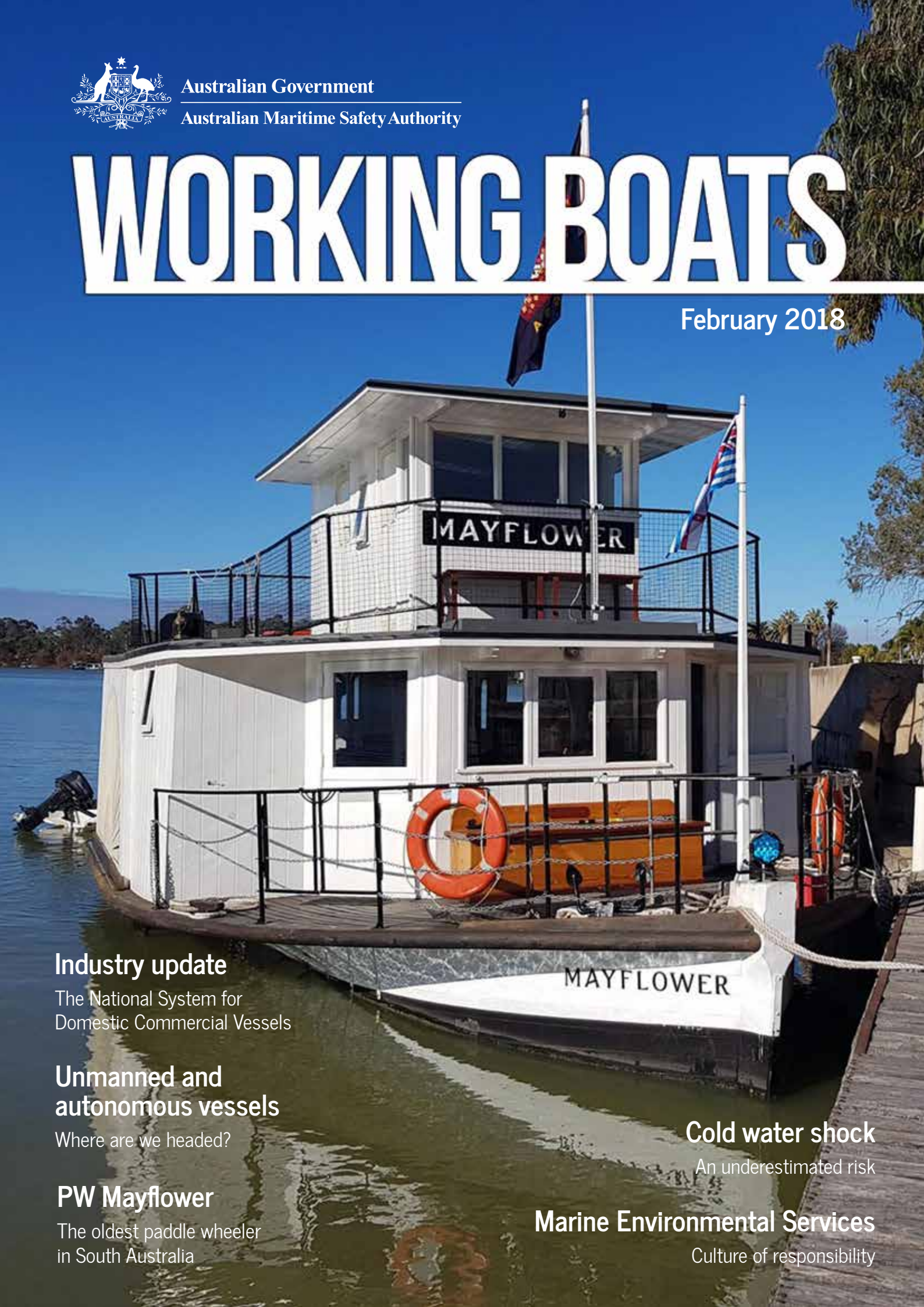




Australian Government
Australian Maritime Safety Authority

WORKING BOATS

February 2018



Industry update

The National System for
Domestic Commercial Vessels

Unmanned and autonomous vessels

Where are we headed?

PW Mayflower

The oldest paddle wheeler
in South Australia

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Culture of responsibility



Australian Government
Australian Maritime Safety Authority

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Front cover image
PW Mayflower



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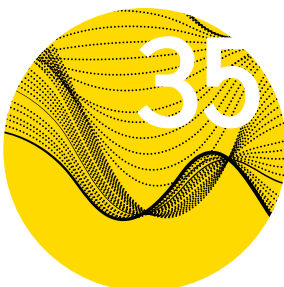
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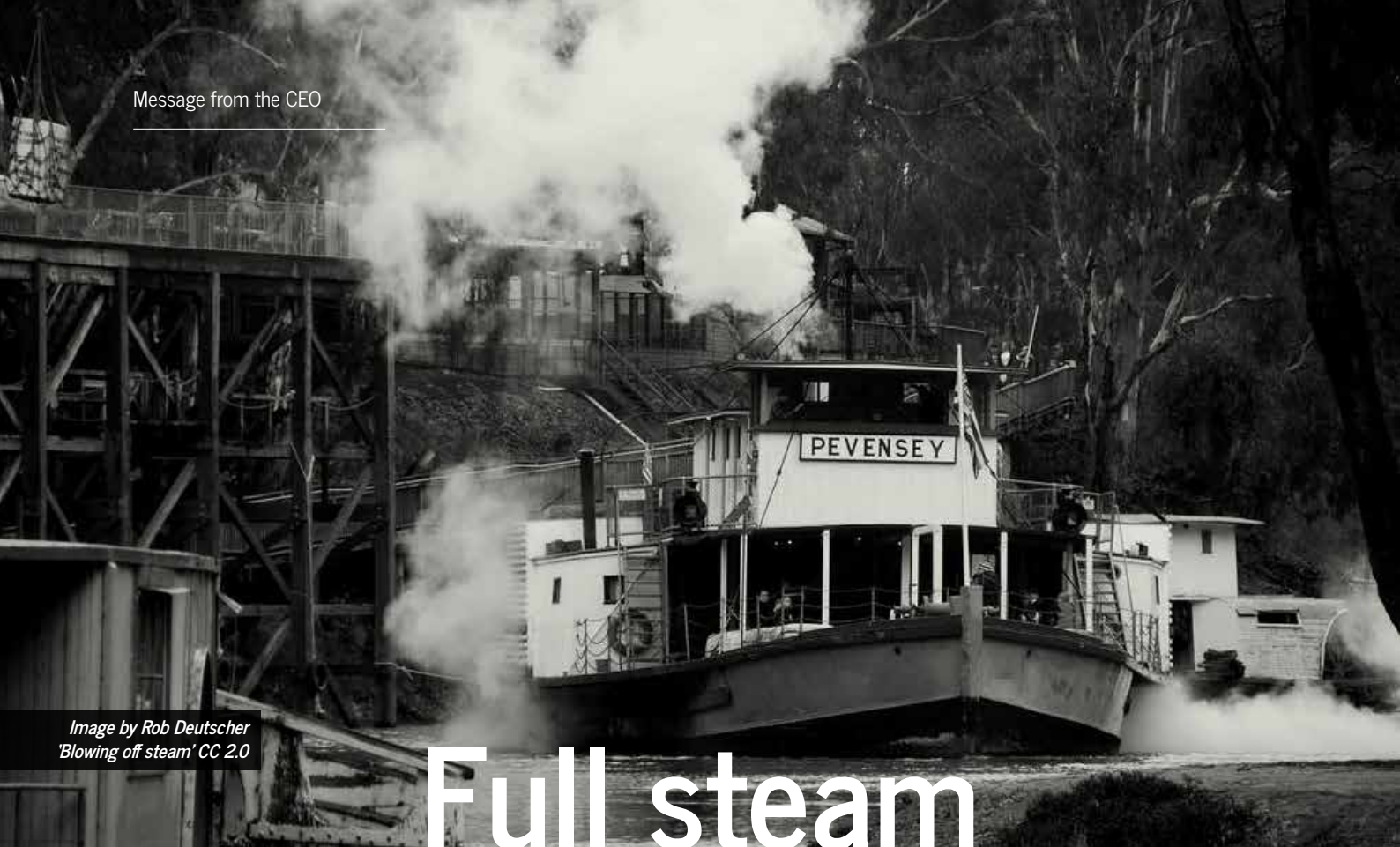


Image by Rob Deutscher
'Blowing off steam' CC 2.0

Full steam *ahead*

Message from the CEO

The government's recent decision to provide \$100 million over 10 years to ease industry into new service arrangements under the national system is great news for industry (page 2).

With the funding agreed, work is in full swing to finalise the national system fees and levy model—taking into account your feedback from the levy consultation in 2016.

This long-awaited development is a big step toward a new era in maritime safety—bringing together one set of rules, one set of fees and one regulator for commercial vessels in Australia.

For most people, it provides more certainty around the practicality of the new service delivery arrangements for individuals, their families and communities.

Safety is about preserving lives and livelihoods; not about placing regulatory burden on people. Hence our work has continued to streamline and tailor regulations to be relevant and practical for owners, operators and crew.

To achieve this, safety regulations have to be adaptive to the nuances and complexities in different pockets of industry, and sustainable in the face of emerging technologies and markets.

This edition gives a glimpse of that change to come and of how some existing parts of industry have forged a new future out of past beauty and modern safety regulations.

Mick Kinley
Chief Executive Officer

Industry update

National System for Domestic Commercial Vessel Safety

There's a lot happening at AMSA as we prepare to take on the national system services from 1 July 2018.

The national system has been in place since 2013, with services delivered by state and territory marine safety agencies. From 1 July this year we will provide these services directly to industry. This is the final stage of putting in place a consistent approach to maritime safety in Australia.

Funding support

To support industry's transition to national service arrangements Australia's transport ministers have agreed to provide more than \$100 million and are committed to phasing in cost recovery gradually, to allow time for industry to adjust and prepare for the changes.

Cost recovery levy and fees

In the future, if you own or operate a vessel you may be required to pay a levy. We recently released the proposed levy model and expected charges for the next five years on the AMSA website. As part of the funding package **no levy** will be charged in the first year.

The proposed model and charges are subject to legislation being passed by the Australian Parliament and are not yet law. The Bill for the levy Act is expected to be introduced in 2018.

We will publish the fees for services as soon as they are available.

Transfer of services

AMSA is working with marine safety agencies to ensure a smooth transfer of services so you can continue to access the services you need, when you need them.

Access to services until 30 June

For now it is business as usual and you should continue to access services from your local marine safety agency. We will let you know as things change and when you need to take any action.



Go to amsa.gov.au/transition for more information, to view the advice and updates about these changes, including the proposed levy model.



Call AMSA Connect on 02 6279 5000



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PW Mayflower

Past, present, future

PW *Mayflower* is a fine example of the heritage working boats that were deeply ingrained in the economic and social viability of the Murray–Darling river systems in their day.

Now beautifully restored to its 1913 glory by a group of passionate volunteers for the Mannum Dock Museum in South Australia, *Mayflower* is one of two paddle wheelers proudly cruising visitors along the Murray each week.

We spoke to Chairman Robert Bowring OAM about what influenced the museum's decision to restore *Mayflower* to its days with the Creager family and what they have in store for this beautiful vessel.

'This was her longest stint as a commercial vessel—45 years. It is believed that the Creagers started one of the first professional fishing businesses along the river, so during this time *Mayflower* was also in the thick of Murray River history.'

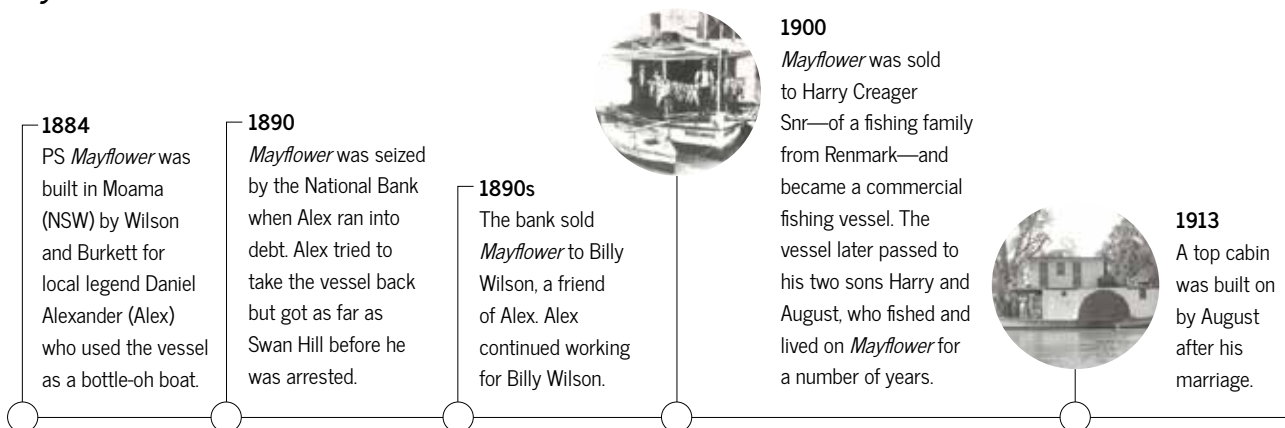
There were a number of features from this time that the Mannum Dock Museum wanted to retain during the restoration process. ▶

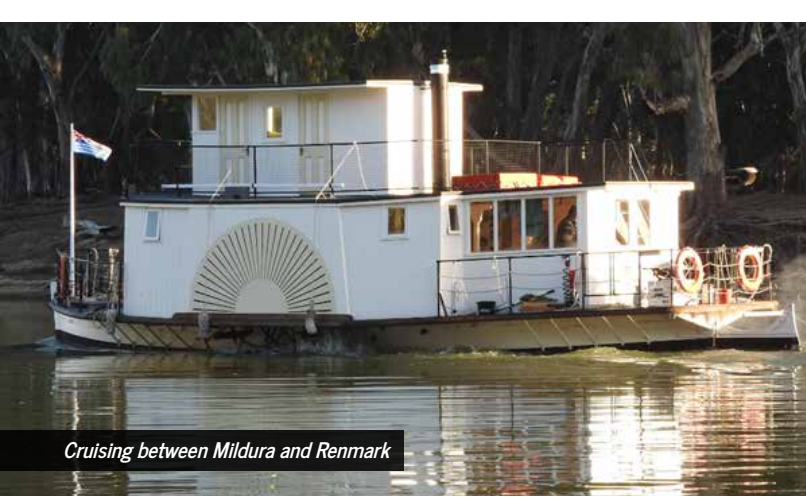


PW *Mayflower* became PW *Mayflower* in 1956 when it was converted to a diesel-operated vessel.



***Mayflower* – 1884 to 1950**





Cruising between Mildura and Renmark



Some of the passionate volunteers who have restored Mayflower



Mayflower



On the way to Wentworth junction from Mannum

1919

August purchased *PS Enterprise* and moved his family on board. *PS Enterprise* is now a part of the National Museum of Australia on Lake Burley Griffin in Canberra (see article on Page 6).

1946

Mayflower was sold to Norm Collins and Lyle Nickles for £222 and moored somewhere in the Cowanna Bend Area, Mildura.

Late 1940s

Mr Chanter of Robinvale purchased *Mayflower*.

1947

Mick Wilson acquired *Mayflower* from Chanter due to unpaid debts for carpentry work Wilson had done.

1950

Mayflower was sold to A H Wilkins who sold it to a Mr Cox.

1950s

Captain Paddy Hogg purchased *Mayflower* for £700. One night he came home and tripped over the paddle shaft, so he cut the paddle shaft and let the wheels go to the bottom of the river.

'We wanted to retain the top cabin, added by August Creager in 1913. When August built the second storey, the doors on either side of the vessel didn't match and he told his wife Dorothy it didn't matter because you couldn't see both sides at once. We have replicated this with different doors on either side in the restoration process,' Robert said.

Mayflower is one of two paddle wheelers proudly cruising visitors along the Murray each week.

'We also wanted to retain the original paddle wheels, which have a history of their own. One of the owners—Paddy Hogg—cut the shafts off and let them fall into the river after he came home one night and tripped over them. When a later owner—Alby Pointon—restored *Mayflower*, he salvaged the paddle wheels from the bottom of the river and put them back in place.'

'The steering wheel, the diesel engine and drive mechanism are still there also. Alby Pointon installed all of these in 1956. Alby was an aircraft engineer and the helm controls are actually out of a DC3 aircraft,' Robert said.

A big part of the renovation process involved making sure *Mayflower* met all the modern safety requirements.

'We called on surveyor Howard Peachey to help us make sure we were doing all the right things during the renovation process,' Robert said.

'As a vessel used for commercial purposes, she has to be in survey and meet modern safety requirements. Howard Peachey was instrumental in helping us make sure we took the right approach (see page 7).'

'It's extremely important that *Mayflower* be well maintained because we want present and future generations to experience our maritime heritage and understand the days of steam trade on the Murray and Darling rivers,' Robert said.

'The restoration work done on *Mayflower* has prepared the vessel for many years of work to come.'



Mayflower – 1950 to 2017



1956

Alby Pointon of Mildura bought the vessel, salvaged the paddle wheels from the bottom of the river and converted it to a passenger, diesel-operated vessel known as the *Mayflower Showboat*.

1968

Mayflower Showboat was sold to Tommy Barr Smith of Lake Victoria Station, and used as a houseboat.

1975

R Cooke of Woodville purchased *Mayflower*.

1978

Stanley and June Wilson of Swan Hill purchased the vessel and did a lot of renovation work, including new red gum hull of 2.75 inch planks from the mill in Cohuna. They then ran two-hour trips from a caravan park in Swan Hill.



Mayflower, Settlers Bend near Renmark

PS Enterprise

Australian National Museum, Canberra

Launched in 1878, PS Enterprise is now one of the oldest working paddle steamers in the world.

PS Enterprise has worked as a cargo boat, floating store, fishing vessel, houseboat and showboat and is now the oldest working exhibit at the Australian National Museum in Canberra. Today it can be seen moored on Lake Burley Griffin outside the museum.

Perhaps the best known period in PS Enterprise's history was under the ownership of August Creager, who bought the vessel in 1919, moved his young family aboard and used it for commercial fishing along the Murray river. Until then he had lived with his brother Harry aboard *Mayflower*.

The life of the Creager family aboard PS Enterprise is well documented by the Australian National Museum.



PS Enterprise on Lake Burley Griffin, ACT

1984

Dr Brice Douglas purchased *Mayflower* for private use.

2013

Mayflower sank on 1 June at Wellington in South Australia during a storm and then again on 9 June.

2014

Mannum Dock Museum purchased *Mayflower* from Dr Douglas thanks to a donation made by Robert O'Callaghan and Pam O'Donnell.

2016

Mayflower was restored back to its 1913 era and recommissioned at the biennial 'All Steamed Up' event in Mannum.



2017

Mayflower commenced public cruises from the Mannum Dock Museum.



Getting PW Mayflower shipshape

The thing about old vessels

All commercial vessels—old and new alike—must meet requirements for their construction and safe operation.

For heritage vessels, this means finding a balance between retaining the heritage features of the vessel, while maintaining or improving the safety outcome by requiring alterations that increase safety to contemporary standards.

The Mannum Dock Museum restored *Mayflower* with the intention to use it commercially to take the public on local cruises. They called on naval architect and surveyor Howard Peachey to ensure the vessel met these requirements through the survey process.

Howard has years of experience with heritage vessels and understands the challenges involved in these vessels meeting contemporary safety standards while maintaining the vessel's traditional heritage appearance and integrity.

'An historic vessel may not have been built to a recognised standard or set of rules, and often the builder may not have been a recognised or qualified shipwright or boat builder,' Howard said.

i For AMSA's purposes, a heritage vessel means a vessel that is owned and operated by a not-for-profit organisation and listed on the Australian Register of Historic Vessels.

'It might have been built on a riverbank or in a paddock and as a result, the vessel might not be symmetrical, or it could have slightly different dimensions for similar items of construction.'

'Certain items of construction that you expect to see in a normal survey may not even be there at all, or they might be installed in a way you don't expect.'

With historical vessels, the aim is for the vessel to comply as far as possible with modern safety requirements. However, in some cases it's necessary to take a whole-of-vessel approach, and mitigate those areas that don't quite comply due to the heritage nature, in other ways.

Having been constructed in 1884 in Moama on the opposite riverbank to Echuca, *Mayflower* is no exception.

'Historical vessels like *Mayflower* usually don't pass the flooded stability requirements, due to lack of watertight bulkheads, or too great a distance between any watertight bulkheads. Angles of down flooding may also not comply, but in these cases we can mitigate these issues to achieve a practical and safe outcome,' Howard said.

'This could mean increasing the number and type of bilge pumps and placing restrictions on the area of operation and weather conditions that it can operate in. It could also mean restrictions on the allowable angle of heel (the lowest point in which water can enter the vessel while it is heeled), and number of passengers allowed on the upper deck.'



Paddle wheel

Another aspect of *Mayflower* that had to be thought out was the installation of electrical equipment.

'The previous installation of electrical equipment didn't meet marine safety standards, so this had to be replaced; but in the process we had to make sure the new fittings still had a historical appearance,' Howard said.

In the process of restoring a vessel or bringing an historical vessel into survey, you can use modern materials and fittings, but it's also important to not lose the historical appearance of the vessel. In particular, the fitting of engines can be a problem.

'It's also important to not lose the historical appearance of the vessel.'

'Most vessels like *Mayflower* would have originally been fitted with steam engines and later fitted with internal combustion to save space and weight for other things like carrying passengers or cargo.'

'These days new steam engines are normally not available (unless specially constructed) but you can sometimes find one to restore, which brings in a whole new raft of problems—finding steam-qualified engineers and boiler inspectors.'

When it comes to carrying passengers, safety equipment must always meet modern standards and requirements.

'Under the National Law a vessel like *Mayflower*—which carries over 26 passengers—is required to carry a range of modern safety equipment that ensures the safety of both passengers and crew.'

'These include lifejackets, life buoys, life lines, carly floats, and modern communication equipment, amongst other things,' Howard said.



Back on the slip at Mannum, replacing planks, caulking, pitching, sponson supports and tarring.



Pam O'Donnell and Robert O'Callaghan proud to be associated with the restoration of Mayflower

The restoration of *Mayflower* was completed in 2016. She is now a shining example of a heritage vessel that retains the beauty and appearance of a bygone era, while offering a safe experience for passengers.

Howard's role in making sure that *Mayflower* met survey requirements as an historic vessel was greatly supported by the Mannum Dock Museum and all the people involved in its restoration.

'Having a good working relationship with the operator really helped me to meet their expectations, while making sure that *Mayflower* was as safe as possible for its intended use,' he said.

'The experienced staff at the Mannum Dock Museum, as well as all the passionate volunteer workers and other professionals on the job, all played a part in achieving a logical and practical outcome for the future of *Mayflower*'.



Working Boats

on the Australian Register of Historic Vessels

When it comes to heritage vessels, working boats are a group deserving of greater attention. They went about their tasks with little fanfare, yet they were an indispensable part of the working infrastructure around Australia before the emergence of modern transport networks.

Stories about these vessels are preserved on the Australian Register of Historic Vessels. These commercial craft—which make up about 45 per cent of the total number of vessels listed on the register—include fishing boats, cargo craft, traders, paddle steamers, passenger vessels and other service craft.

Avon, 1907

Avon is a rare example of an early explosives lighter, tug and workboat built in 1907 by Clement Blunt in Victoria.

Originally named *Victory*, it was responsible for transferring explosives—one of Victoria's first export items—from the shore at Altona to ships or barges on Port Phillip.

After narrowly escaping the scrap heap in 1934, it was renamed *Avon* and put to work on the Gippsland Lakes in Victoria until World War II (1939–1945), when it was used by the Royal Australian Navy as a support vessel in Papua New Guinea.

At the end of the war *Avon* went back to its work on the Lakes.

When *Avon* retired from work on the Gippsland Lakes, it became a private motor vessel and ended up in Queensland. The present owners from the Gippsland region discovered it in Queensland and were keen to become the custodians of this piece of the local history.

Avon returned to Paynesville on the Lakes where the builders who had worked on it in 1970 took over the restoration.

World War II working boats

Another type of workboat well known to many are the numerous 40-foot workboats built during World War II. The Australian Register of Historic Vessels lists two that both come from the Melbourne-based Botterill and Fraser boat yard.



Koombana with the team that built her on the foredeck

Victoria, 1944

Originally this vessel was used by the Australian Army and known as *AM1725 Kerlong*, then later as *AWB 414* from about 1945 through to 1947.

In 1946 the vessel was loaned to the Royal Edward Victualling Yard in Sydney and used by the Victualling Store Officer in 1947. It was surveyed at the Blackwattle Bay Small Craft Disposal Base and valued at £800.

In March 1947 the New South Wales Public Works Department bought the vessel to work in Port Kembla Harbour.

Then in 1950 it was purchased by the Victorian authorities, taken south by road and put to use towing and other general transportation duties on the inland waterways of the Hume Weir.

In 1956 the New South Wales Water Supply and Sewerage Authority took over the vessel and then in the late 1970s it was taken over by the Victorian State River and Water Supply Authority and moved to Dartmouth Dam on the Mitta Mitta River. It was renamed *Victoria* and remains in use on the dam to this day, under Goulburn Murray Water.

Stan AWB 441, 1943

AWB 441—now known as *Stan*—served out the war in the army, then joined the navy and was paid off in 1992. The vessel has since been meticulously restored to wartime configuration by its current owner, whose father managed the production line for the engines used in these craft during the war. *Stan* is now used as a pleasure craft on Sydney Harbour.

Koombana, 1961

The *Koombana* was a pilot vessel in Western Australia, which carried out most of its service with the Bunbury Port Authority until it retired in 2011.

Built by the West Australian Harbour and Lights Department, *Koombana* is an example of boatbuilding done by public service staff. It took the department's shipwrights—Jeff Beal, Ted and Luke Botica, and apprentice Ian Leonard—two years to complete.



Stan AWB 441 at the Australian National Maritime Museum (2014)



Avon in Tasmanian waters (2007)



Victoria AWB 414 (2016)

Australian Register of Historic Vessels

The Australian Register of Historic Vessels is an online registry of surviving historic vessels that have played a significant role in Australia's maritime heritage. Managed jointly by the Australian National Maritime Museum and the Sydney Heritage Fleet, it has grown to include almost 650 craft since it started in 2007.

One of the strengths of the Australian Register of Historic Vessels is creating public awareness of the important role vessels have played in Australian history so that these historic craft and their stories can be recognised and valued.



For more information about the Australian Register of Historic Vessels, to search the register or to register your vessel, go to anmm.gov.au/ARHV

By Brad Roberts
AMSA Liaison Officer, Victoria



Heart *of steam*

With sides of iron and hearts of steam, the paddle steamers along the Murray–Darling river systems are unique working boats that were vital to productivity in these areas during the eighteenth and nineteenth centuries until wider infrastructure networks and newer technologies triggered a decline in their use.

To step aboard these beauties is to step back in time and many now operate to keep local history vibrant and boost tourism.

They have adapted exceptionally well to modern safety systems and requirements, but the passing of time has presented some challenges for these stunning vessels.

A skills shortage in steam engineering, heritage shipwrights and master tickets for inland waters threatens their future.

Earlier in the year, I travelled along the Murray River, calling on paddle steamer captains, engineers and crew from Mildura to Yarrawonga, to talk about their safety management systems and answer questions about the National Law.

I also asked them about their challenges and what it is like to work with these timeless vessels. As PS *Pevensey* made its ways downstream the appeal of this lifestyle wasn't hard to imagine.

The gum trees along the bank dappled sunlight on the river, which is fed by rains in the high country. The smell of red gum logs burned in the fire box. No sound but the steady rumble of the steam engine and the thrum of paddles could be heard on the river, until a shrill steam whistle cut the air and Captain Graham Trist started up a commentary as he headed the vessel downstream.

The commentary was a cleverly delivered passenger safety briefing that addressed modern safety protocols, but in a role play of what life used to be like—transporting passengers back to another time on the Murray.

'The passengers are relaxed, engaging with the heritage surroundings, but extremely safe,' Captain Trist said.

Rohan, who became involved in paddle steamers through his father, said 'You can't really call it a job, it's too much fun—we all share a passion for our visitors, our boats, the river and Echuca'.

'In the past paddle steamers played a vital role in opening up Australia's inland,' Rohan explained, '... their cargo has changed over the century from wool, wheat and wood to tourism and people'.

One of the challenges Rohan talked about was continuously lifting the mindset on safety, and improving the vessels' safety management systems.

He recently allowed *Pride of the Murray* to be the centre of a major emergency response exercise, involving around one hundred emergency services teams from both sides of the river.

'We were keen to play a part in the exercise because it was a great opportunity to verify our safety management systems and look for improvements to ensure passenger, crew and vessel safety,' Rohan said.

Further downstream at Wentworth, I called in on Ian Robinson—Administration Officer for the Wentworth Shire Council—on PS *Ruby*.

The shire has just completed the latest refurbishment of the 110-year-old historic vessel. 'Wentworth sees PS *Ruby* as being the tourism flagship of the town,' Ian said. ▶



PS Ruby



PS Pevensey



PS Emmylou



PS Alexander Arbuthnot

'We plan for the vessel to return to day and overnight charter tours for local and international guests, as it did over a century ago.'

Ian explained that the shire had recently replaced rotten timbers, resurfaced all the decks and made them watertight, and painted PS *Ruby* throughout.

'The shire also developed a 30-year plan for programmed maintenance of the vessel to make sure its heritage status is retained and that it stays compliant with the National Law,' he said.

The whole visitor experience had been thoughtfully built into the safety management system of the vessel, while still providing a fun and engaging holiday event.

While at Echuca, I also spoke with Rohan Burgess, Managing Director at Murray River Paddle steamers. Rohan and his team operate PS *Canberra*, PS *Emmylou* and *Pride of the Murray*.

Although owners and communities pour heart and soul into these paddle steamers, they face a critical threat to their survival—the ability to provide training and endorsement of skills such as steam-powered marine engineering.

Rohan Burgess explained, 'Heritage skills such as reticulated steam engine operation are fading, and there needs to be a way to introduce those skills to new generations of engineers'.

'There are also shortages in heritage shipwright skills and master tickets for inland waters,' he said.

When I asked if this meant these vessels might become museum pieces only, Ian Robinson said 'Without these skills, the vessels will certainly decline in number'.

Without these skills, there is a real danger these proud vessels will soon become museum pieces only—their hearts of steam silent.

AMSA remains committed to working with operators of historic vessels to ensure a vibrant future.

What tickets and endorsements do I need?



Tickets

To operate a paddle wheeler or paddle steamer you need a Master (Inland waters) certificate.

To carry out duties that involve operating the engine of the vessel, you need a marine engine driver or engineer certificate, depending on the propulsion power of the vessel. A number of different levels of marine engine driver and engineer courses are available through registered training organisations around Australia.

To find out where courses are offered go to amsa.gov.au > Seafarer qualifications > Training organisations and courses.



Endorsements

To be able to work as an engineer on a steam-powered vessel, you need an endorsement on your certificate.

If you have a marine engine driver or engineer tickets you can either get an endorsement as a chief engineer on vessels with steam propulsion up to 750kW, or endorsement as a chief engineer on specific vessels with steam propulsion up to 750kW.

If you have a Master (Inland waters) ticket working on boats longer than 24 metres you may also seek endorsements to do additional tasks—for example, an endorsement to act as second in command—or command—a commercial vessel up to 80 metres long in inland waters.

For more information, including the requirements for each endorsement, read the *National Regulator Endorsements Approval 2014*. This is available under the Endorsement information for your qualification.

Contact the marine safety agency in your state or territory about having the endorsement added to your certificate.

The Murray River flag

The Murray River flag is flown from vessels along the Murray–Darling river system.

It is thought to have originated as far back as 1850. Three variants of the flag exist today.



Upper Murray River flag



Lower Murray River flag



Combined Murray River flag

Certificate of competency

exemptions extended to 2020

All general exemptions relating to certificates of competency under the National Law have been extended until 30 June 2020.

With some of these exemptions you don't have to do anything to keep operating under them.

Others may require you to take certain steps, such as reapply to continue using the exemption when your permission ends.

Read more about each exemption to find out what you need to do. To apply for any of these exemptions contact your local marine safety agency, which may have application arrangements in place.

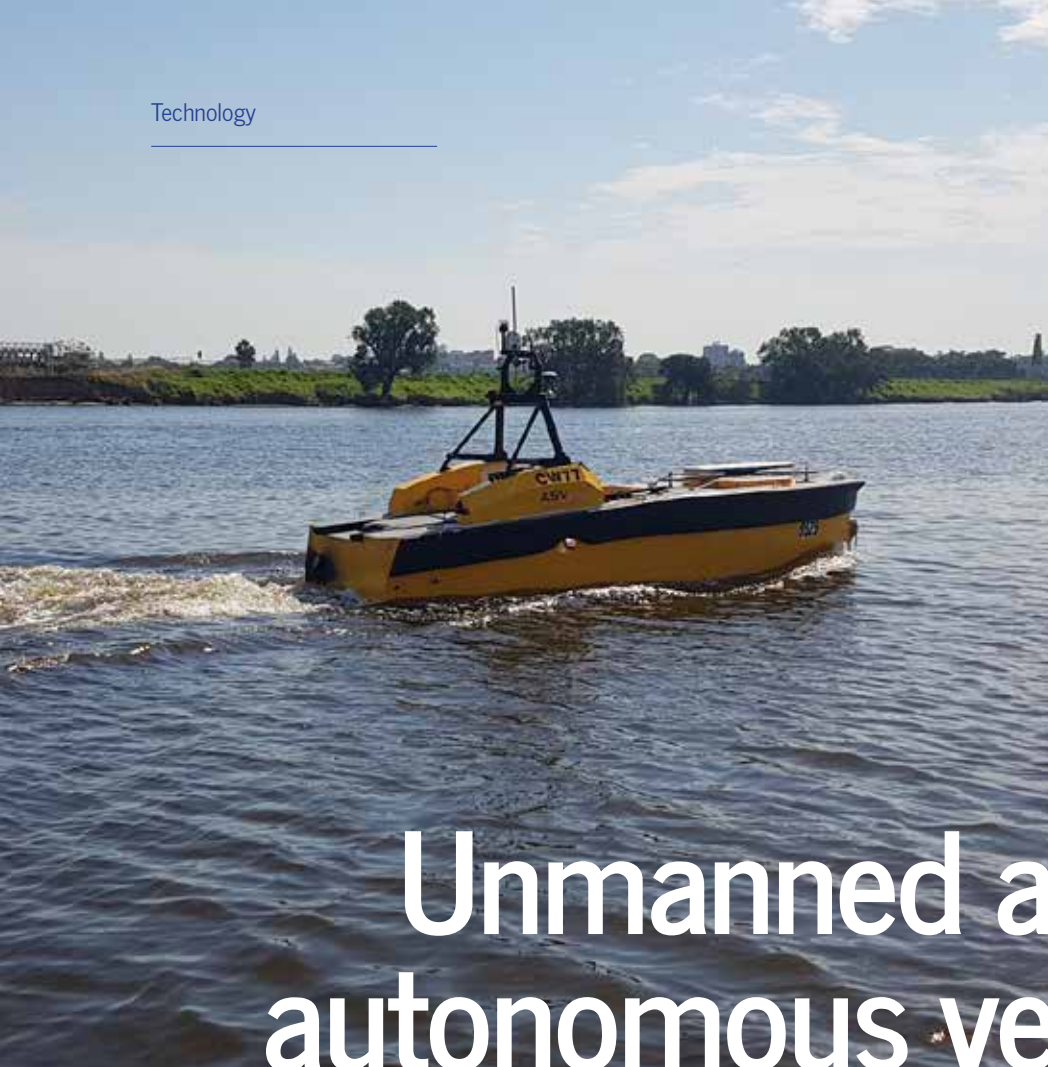


[amsa.gov.au/
domestic-qual-exemptions](http://amsa.gov.au/domestic-qual-exemptions)



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Unmanned VS autonomous vessels

Unmanned vessels are usually remotely operated and monitored. There is no need for a crew on board, but a human operator is always in positive control, whether from a support vessel or shore facility.

Autonomous vessel systems are capable of independent decision making without involvement of a human operator.

Autonomous collision avoidance systems are still being developed, but they are becoming increasingly sophisticated and capable.

Picture: ASV C-Worker 5 – Operated by Western Advance Group on the Swan River, Perth

Unmanned and autonomous vessels

Where to from here?

Unmanned vessels and vessels with increased levels of autonomy in Australia are rapidly increasing in number, particularly in the fields of scientific research, hydrography, oceanography and the off-shore oil and gas industry.

Unmanned vessels are now expanding to other more general purposes and its growth in industry seems bound by its increasing accessibility and affordability.

Under the law there is nothing to prevent the operation of unmanned and autonomous vessels here in Australia, although there are some challenges in meeting the requirements for domestic commercial vessels.

Our aim is to proactively work through these issues with vessel owners and operators to comply with the National Law, and ensure the safety of vessels, people and the environment.

In late 2016, AMSA received its first enquiry for an unmanned hydrographic survey vessel, which now operates in Australian waters.

The 5.5-metre-long vessel is called *C-Worker 5*. A support vessel or nearby shore facility operates the vessel remotely for different purposes—the most recent being to conduct a fish habitat survey on Perth's Swan River.

To be compliant with the National Law, the operator applied for a specific exemption from some parts of the National Standards for Commercial Vessels (NSCV).

AMSA conducted a detailed survey of the vessel and considered the risks associated with the vessel and its operation.

When AMSA issued the exemption and the certificate of operation, it contained a series of conditions for the vessel and how it is safely operated.

With increased use of unmanned vessels and increasing autonomy, regulators around the world—including AMSA—are looking at how they can apply existing maritime regulatory frameworks practically and appropriately for these vessels, based on safety, risk, and practicality.

But not only do we want regulations relating to unmanned and autonomous vessels to be applicable, we want them to be sustainable in an environment of rapid technological change.

STOW IT DON'T THROW IT

By 2050 there will be more plastic in the sea than fish. And that's just plastic.

Dispose of your garbage ashore.

Penalties apply to those caught dumping waste overboard.



**Report dumping 1800 641 792
amsa.gov.au/environment**

Automatic identification system

The benefits

Many owners are installing Automatic Identification System (AIS) equipment on their vessels because of the significant safety benefits they offer.

AIS was introduced as an anti-collision tool, to improve safety of life and navigation at sea, and to improve protection of the marine environment. It works by indicating the position and movement of other AIS-equipped vessels nearby, including information about vessels that are blocked from normal view by barriers like breakwaters and headlands.

Two types of AIS can be used on vessels. Under the International Convention for the Safety of Life at Sea some vessels are required by law to have Class A AIS. Class B AIS has less functionality than Class A but still offers significant safety benefits for skippers seeking additional awareness

about other vessels around them.

The information provided by AIS—transmitted as data over VHF radio—includes the identity, position, course and speed of vessels fitted with AIS. Depending on local weather conditions, Class B AIS can transmit and receive information about vessels within 5 to 10 nautical miles.

If your vessel has a transmit–receive AIS unit, others with AIS will also receive information about your vessel, allowing them to avoid a close-quarters situation with you. When other vessels can see the location and movement of your vessel, the level of safety is increased, which is why we encourage vessel owners to install transmit–receive AIS.

AIS is an additional navigation aid that can help your awareness of other vessels around you, especially when it's dark, in poor weather and restricted visibility, or when you're in a busy shipping area.

However, it's important to remember that not all vessels have AIS—vessels that don't have AIS can't see your AIS information and you can't see them. That's why AIS should be used in addition to other navigation aids like marine radars—not replace them.

To find out more about AIS and how it works, take our free online e-learning module, which takes about 20 minutes to complete.



AMSA's online AIS course takes you through the basics of AIS and takes about 20 minutes to complete. Go to amsalearningcentre.e3learning.com.au and login or register to do the course.



amsa.gov.au/safety-navigation/navigation-systems



**AMSA Connect
02 6279 5000**

Types of Class B AIS

Receive only

Allows you to see where other vessels are but they can't see you. Some operators such as fishers prefer this option because it allows them to keep their fishing locations private. The safety benefits are not as good as with transmit–receive system AIS.

Transmit–receive

Allows you to see where other vessels are; and other vessels to see where you are. Because other vessels receive information about your vessel, this system has the added safety benefit of two-way vigilance.

Transmit–receive systems will usually integrate directly into your navigation equipment, providing comprehensive and user-friendly information.

Standalone multi-function displays

As the term suggests, these sets transmit and receive AIS information and display the information on a stand-alone screen.

Push-to-mobile-device feature

Some systems allow you to view your AIS display on a mobile device or tablet using Wi-Fi.

Get the most out of your AIS

- Fit transmit–receive AIS to your boat.
- Make sure your AIS device is set up correctly by the manufacturer and your details are correct.
- Switch your AIS on and leave it on—particularly in high-risk areas.

Your AIS device must have an MMSI number issued by AMSA—to apply for this go to amsa.gov.au > Safety and navigation > Navigation systems > Automatic identification systems > Installing an automatic identification system.

AIS on the trawler **NW Murchisun**

James Day is just one fishing operator who swears by AIS. Operating his trawler *NW Murchisun* out of the Whitsundays he uses a transmit-receive (Class B) AIS to navigate the traffic going to and from Airlie Beach, and the many ships transiting nearby.

'The safety benefits of AIS are huge, so long as you can maintain the silence of where you fish when you need to,' he said.

'When the equipment is turned on, it allows other commercial fishing boats with AIS to see your location, which is undesirable when you want to keep a fishing location to yourself.'

'I've got a switch on mine so my skipper or I can turn it off when we don't want to be seen by other trawlers and we turn it back on when we're in shipping and other high-traffic areas.'

James installed AIS on his trawler because 'it just made sense'.



NW Murchisun

'The more safety measures you have, the better. I don't want to be pulling the cord on my life raft ever.'

James says that one of the benefits of AIS is that it takes a lot of guesswork out of navigating, particularly around vessels in high-traffic areas such as the Whitsunday passage where there are many charter boats, yachts and high-speed ferries.

'The more safety measures you have, the better.'

'Even though you might see a red light from a vessel and you think it's going to cross at your port side, it could actually be coming across your starboard side, because they've got that much rudder on them with the tide.'

'So the ability to place your cursor on other AIS targets and instantly have their closest point of approach, course and speed displayed in front of you is beneficial to all operators.'

He says it's also really useful having AIS in ports.

'When we trawl in areas like the Port of Hay Point (where we trawl around anchored up ships), or we transit through the shipping channel, AIS makes it easy for vessel-traffic services to call us if they think we could be in the way of a ship, or just to notify us of any movements.'

'When you've got AIS you and others can see exactly where you are going,' he said. 'I think everyone should have a transmit-receive AIS on their boat for safety.'

Satellite-based positioning: next generation



A trial in Australia and New Zealand

These days we are dependent on global navigation satellite systems (also referred to as GNSS) whether we realise it or not.

GNSS technology enables a vast range of things in our lives—as individuals, nations, and globally. The opposite page shows just how ingrained GNSS is in daily life.

For Australia, the latest improvement to GNSS is a trial of a Satellite Based Augmentation System (SBAS) which drastically improves accuracy and reliability of positioning data across the Australia and New Zealand region. The Australia–New Zealand region is one of the last developed areas of the world to implement an SBAS.

With the first generation of SBAS already in use in other regions of the world, Australia and New Zealand are currently trialling a second generation SBAS, which offers even greater precision and reliability.

SBAS improves the accuracy and reliability of our positioning data by taking GNSS signals and fine-tuning them before broadcasting the corrections over the Australia and New Zealand region free of cost to the user.

To give you an idea of what this actually means, the Global Positioning System gives a positioning accuracy of approximately five metres. For a work boat that depends on accurate positioning for its work, five metres may leave a significant amount of uncertainty.

However with SBAS enabled on our GNSS devices, the accuracy can be as good as one metre and a greater guarantee that this positioning information is correct.

The accuracy can be as good as one metre.

Anyone with an SBAS-enabled receiver can benefit from the SBAS technology being tested during the trial, but the trial is focussed on evaluating the effectiveness and application of SBAS in nine industry sectors—agriculture, aviation, construction, maritime, mining, rail, road, spatial, and utilities.

The maritime industry's reliance on satellite-based positioning is not just about accuracy in position.

It's also about reliable positioning information and more accurate measurement and monitoring of movement, heading, acceleration and deceleration of vessels and equipment.

In sectors where satellite-based positioning has traditionally been used—such as the oil and gas industry and commercial shipping—the added accuracy and reliability of SBAS offers significant benefits. Greater precision in oil exploration and the laying of undersea cables, and more accurate navigation for big ships in port—reducing the need for port development and dredging—are just some benefits.

Smaller operations in the domestic commercial vessel industry are increasingly tapping into satellite-based positioning. Read about the way the Sydney Harbour Environmental Services crew use satellite-based positioning to assist their operation on page 31.

The benefits of the SBAS trial are already available, free of charge. All you need is an SBAS-enabled receiver.



ga.gov.au > satellite based augmentation system



GNSS in daily life

At home

- Wake up with an alarm on a smartphone which receives the time from GNSS.
- Check email, social media and online news using internet data centres synchronised using GNSS.
- Home electricity is from the GNSS-synchronised power grid.
- Go for a morning run, tracked using GNSS.
- Check the weather forecast, which has been enhanced by GNSS.

On the move

- Drivers, pedestrians and cyclists use GNSS-based local search, route-planning and navigation.
- Smartphone users can order a taxi to their GNSS-derived location using apps.
- Travellers on planes, trains and boats indirectly benefit from GNSS being used to operate those transport modes efficiently and safely.

With others

- Personal trackers can be used to monitor the location of children, loved ones with dementia, pets and personal possessions (ie luggage, bikes, keys, wallets).
- Augmented-reality games and travel guides leveraging GNSS offer entertainment and convenience.
- Meet up with friends using a 'share my location' function.

At work

Most workers use GNSS to some extent. For example:

- fishermen use GNSS to locate and remain within fishing zones
- merchant vessels use GNSS as a 'lighthouse in the sky' for positioning, route-planning, ETA estimation and satellite communications to update port schedules.

When things go wrong

- All emergency services (police, ambulance, fire brigade, coast guard) use GNSS to locate the emergency, dispatch the most appropriate vehicle, and navigate there and away in as little time as possible.
- GNSS-guided satellite imagery and positioning is used for risk monitoring and disaster response planning.

Back at home

- Smart home technology (ie thermostat) linked to a GNSS-derived user location ensures a heated home whilst minimising energy consumption.
- Groceries or a take-away might be delivered using GNSS navigation and positioning.
- Watching TV relies on broadcast signals that are synchronised using GNSS.
- Using a standard landline for a phone call relies on the GNSS-synchronised network.

Taken from the *Economic impact to the UK of a disruption to GNSS: showcase report* (Innovate UK, UK Space Agency & Royal Institute of Navigation, 2017).





Cold water shock

be prepared

It's important to understand the risks associated with operating in cold waters—
to be prepared and ready to respond quickly in the event of an emergency.

How dangerous is cold water?

Falling into cold water can have extreme and immediate effects on the body and its ability to function. Physical effects on your body begin immediately, and studies show up to 60 per cent of fatalities occur in the first 15 minutes.

The 1:10:1 principle describes three phases of effects on the body.



One minute—cold shock response:

Falling into cold water can trigger an immediate 'cold shock response' which includes increased heart rate and a sharp, involuntary inhalation or gasp.



Ten minutes—cold incapacitation:

Cold water can numb extremities and weaken strength and coordination, making it difficult to swim, wave, or grab and hold onto a lifebuoy or flotation device.



One hour—hypothermia:

When body temperature drops below 35 degrees Celsius (noting the normal body temperature is 37 degrees Celsius) hypothermia sets in. This can be fatal without quick rescue and treatment.

How cold is cold?

Water temperature considered to be 'cold' can generally be defined as lower than 15 degrees Celsius. A person's survival time will depend on their physical condition, clothing, access to flotation aids, weather and wave conditions.

How can you be prepared?

Claire Cunningham, AMSA Liaison Officer in Tasmania says operators need to consider whether cold-water immersion is a risk for their operation.

Operators working in cold waters should consider the risks in their safety management system risk register, put measures in place to reduce the

likelihood of it happening, and be prepared to respond appropriately in a real-life situation.

'I don't think enough people realise how debilitating it can be and take it seriously—your initial shock reaction can cause drowning,' Claire said.

'Measures can include wearing a lifejacket and appropriate clothing; having a way of raising the alarm so that you are located quickly if you fall overboard; and having the knowledge and means to treat the effects of hypothermia on board if it does occur.'

'Having a vessel capable of level flotation if swamped can also be an effective control,' she added.

Be prepared to treat a victim of cold water shock or hypothermia by keeping space blankets, dry towels and a change of clothes on board at all times. These should be located with your first aid kit, and relevant crew members should be trained in the treatment of hypothermia.

Before you set out, visit the Bureau of Meteorology's website (bom.gov.au/marine) to check marine forecasts, warnings, and observations, and stay tuned into the weather while you're out on the water. Prepare for, or avoid conditions that could increase the risk of falling into the water.

'I don't think enough people realise how debilitating it can be and take it seriously—your initial shock reaction can cause drowning'

You can also find observed sea-surface temperatures via the Bureau of Meteorology's online mapping tool MetEye (bom.gov.au/meteye). These observations are derived automatically from temperature sensors in the ocean, blended with measurements from meteorological satellites.

Treatment for hypothermia

Signs of hypothermia include intense shivering, slurred speech, confusion, slow pulse and dilated pupils.

When treating a person with suspected hypothermia, St John Ambulance Australia recommends moving them to a sheltered area, protecting the patient and yourself from wind, rain or sleet.

60 percent of fatalities occur in the first 15 minutes.

Lie the patient down and handle them gently, avoiding excess activity or movement. Remove their wet clothing and warm the patient by placing them between blankets, in a sleeping bag or wrap them in a thermal or space blanket, and cover their head to maintain body heat.

Hot water bottles and heat packs may be applied to the patient's neck, armpits and groin. Give the patient warm, non-alcoholic drinks if conscious. Do not use radiant heat such as fire or electric heaters, and do not rub affected areas.

Seek medical advice early and return to shore immediately.

Being prepared and responding quickly can mean the difference between life and death in a situation where yourself, a member of your crew or a passenger has fallen into cold water.

Seek medical advice early and return to shore immediately.



Visit the Bureau of Meteorology website at bom.gov.au/marine



Visit the MetEye website at bom.gov.au/meteye

Overboard at

53 latitude south

While trawling for Patagonian toothfish around Heard Island, a crew member in his twenties got knocked overboard into two-degree Celsius waters while leaning out over the rail to hook up the sweep wire to the trawl door.

He was in the water for nearly 20 minutes with 40-knot winds and six-metre seas before he was pulled back on board. He was extremely lucky to survive but he suffered hypothermia, which took months to recover from.

His workmates saw him go overboard and raised the alert immediately.

The skipper did a Williamson turn to get back to the position where he went overboard, while the crew all mustered and used spotlights to locate their mate.

'He was just conscious when we got him on board. Medical advice from shore recommended Valium and the slow restoration of body temperature,' said the skipper.

'As soon as we got him to the ship's hospital we stripped him bare, dried him off and warmed his body temperature as gently as possible by getting two other crew members to undress and lie next to him under a blanket.'

'He recovered relatively quickly except for some tingling in his extremities, which took several months to finally resolve.'

The incident had a significant impact on the crew and afterwards they implemented a whole range of changes to address the risks of falling overboard.

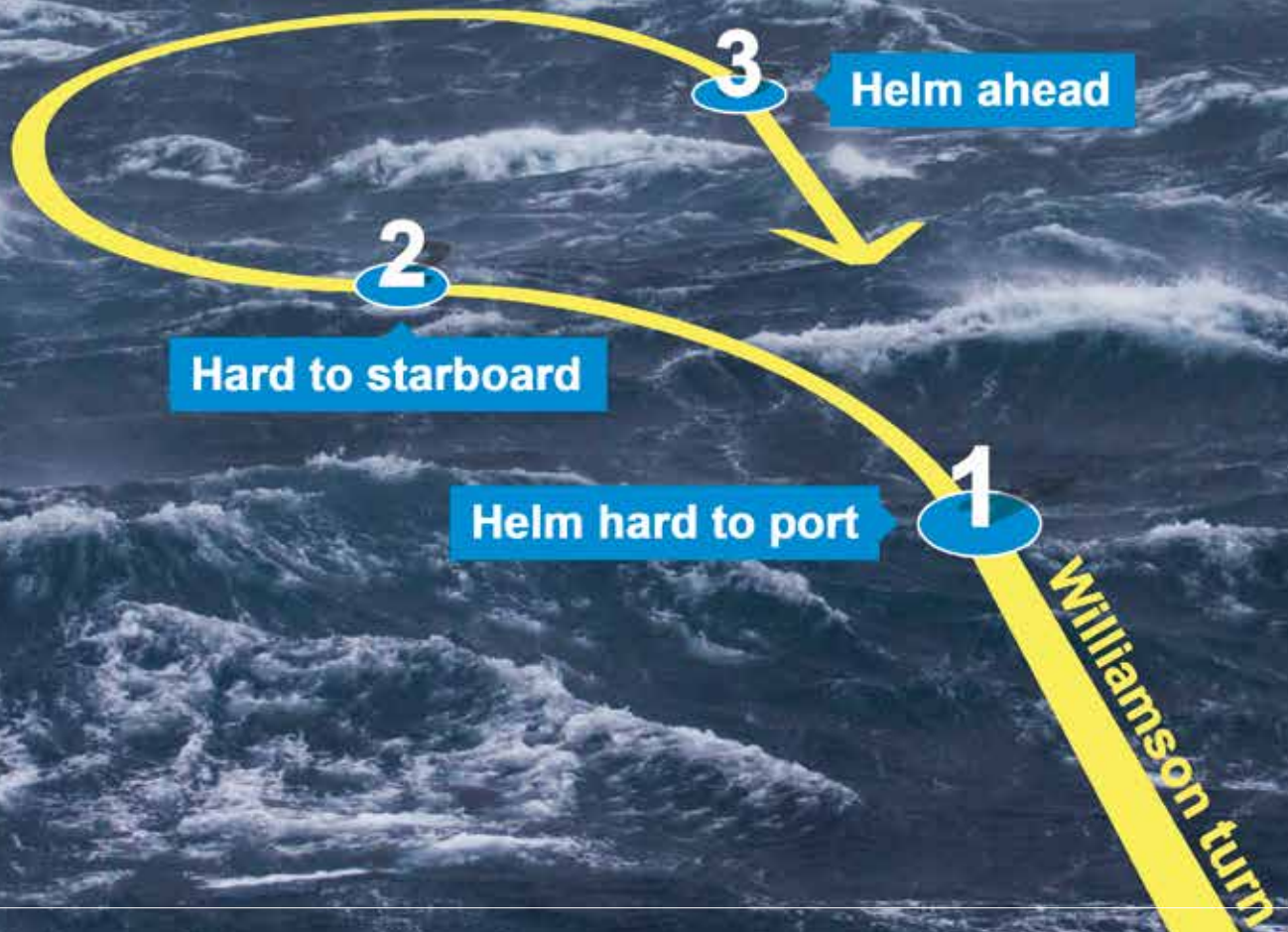
These changes ranged from requiring crew be tethered, to slowing down the work flow, adding additional equipment for recovery of crew from the water and improving the alarm systems.

The crew member himself, who is still at sea and now more senior in the team, is a great advocate for safety.



You don't have to be exposed to cold water to get hypothermia.

You can get hypothermia from exposure to cold weather on deck for long periods or from working in a freezer for too long.



David James Colson

1983–2007

On 8 October 2007, David James Colson tragically succumbed to hypothermia after the boat he was employed to work on filled with water and rolled two nautical miles off the port of Smithton, Tasmania.

Usually David worked as an abalone diver but on this occasion he was subcontracted as a deckie for Tony—another diver contracted to harvest abalone for a local quota holder.

During the first day of the dive operation the additional weight from the 744 kilos of abalone Tony had collected and bad weather converged, causing the 4.7-metre dinghy *Too Easy* to founder and capsize. By the time Tony and David realised they were in trouble, they were unable to stem the flow of water into the dinghy and had very little time to react.

When the boat rolled David's attempts to set off flares were hampered by the sea swell, which kept knocking him off the upturned bow, and it is said that the EPIRB couldn't be found (read about storing safety equipment on page 25). Tony was wearing a dive wetsuit but David—who was wearing a tracksuit, wet weather trousers and a PFD 1 yoke—quickly lost body heat.

Shortly after, David and Tony were forced to start swimming to Perkins Island, which

they mistakenly estimated to be about 500 metres away. In the process David lost consciousness and died before Tony—who by then was holding on to David—eventually reached a sand bar.

Loss of life is always tragic, but when it might have been avoided, the loss of life is even more heartbreaking.

The Coroner who conducted the investigation into the circumstances of David's death noted a number of shortcomings at a local and state level. He noted 'an apparent lack of any operating standards within the industry dealing with commercial vessels as a workplace' and recommended that the government create a Code of Practice for the abalone fishing industry to ensure the safety of those working in the industry.

He also highlighted an 'apparent failure to initiate a local response' to search for the missing fishers and also that 'the timeline from the initial contact with police to the formal notification of Police Search and Rescue Squad' indicated that 'the requirements of ... the Tasmanian Police Manual were not complied with'.

The Coroner also noted things the operator could have done to give a better chance of survival.

Firstly, the operator should have been carrying two coastal lifejackets in accordance with regulatory requirements. These lifejackets would have been fitted with lights and whistles, making it easier for rescuers to locate the men.

If the EPIRB had been fixed to the boat the men would have been able to access it and alert emergency services immediately, which would have improved the success of the search and rescue operation. A VHF radio would have allowed two-way communication with shore.

Survey of the vessel should have addressed the weight of additional equipment added over the years and the vessel's buoyancy, while an automated bilge pumping system could have dealt with the intake of water.

In addition, a safety management system would have encouraged the operator to prepare for the risks by creating operational procedures and safety drills. These should have addressed things like how to set off a flare, drills for what to do if the vessel sinks and checking weather conditions.

Marine safety regulations are there to ensure a minimum level of safety but it's up to operators to think about what additional safety precautions need to be taken for their type of operation.

BUREAU OF METEOROLOGY

Going boating? Do the five vital weather safety checks



More info: www.bom.gov.au/marine

**YOU'RE THE SKIPPER
YOU'RE RESPONSIBLE!**

By Justin Williams
AMSA Liaison Officer, Southern Queensland



Safety equipment

Is yours touch and go?

Having a vessel's safety equipment clearly marked and readily accessible saves lives in an incident.

Too often we see safety equipment stored in places that are hard to reach and scattered in different locations, like under helm stations or hidden away in lockers.

If an incident occurs suddenly and at night, how will you get your safety equipment together in time to be of use? Will you remember where you put it? Will you have to choose what to grab? What if the item you need is already underwater and unusable?

Most vessel capsizes happen suddenly with very little warning for crews to act. If you end up in the water without basic safety survival equipment, your chances of being rescued—or surviving—are severely reduced.

Storage

Safety equipment can be stored in lots of different ways. An effective way is to store all your essential safety equipment in a clearly marked, buoyant container like a grab bag or buoyant storage container.

Take a look at your individual operation and what storage option works best. Talk with your crew about what safety gear you have on board, where it's stored, and how to use it. This should be a part of your safety drill and induction routines.

Be aware that some types of safety equipment such as flares, must be stored in specific ways by law, whereas other items have recommended ways of being stored.

EPIRBs

Having an Emergency Position Indicator Radio Beacon (EPIRB) is a lifeline to rescue but if it's locked in a bracket at the rear of a wheelhouse, or in a drawer out of reach, you might not have time to grab it.

The best place to store an EPIRB is along an evacuation route or near a helm station, away from possible sources of fire or continuous exposure to sunlight and saltwater, as this can cause damage.

The best type of EPIRB is a float-free EPIRB. These have the added benefit of automatically activating when they are at least four-and-a-half metres under water, in circumstances such as when a vessel sinks. However, in some circumstances an EPIRB may not reach the depth required to float free and activate and you will need to activate it manually.



Also, in situations like when a vessel capsizes, a float-free EPIRB that would normally be in an unobstructed location may become trapped under the vessel or its equipment. To avoid this, float-free EPIRBs should be placed as high as possible and free from items that can block the EPIRB from reaching the surface, like nets, lines and awnings.

The casing holding float-free EPIRBs is designed to bear sunlight and saltwater, so storing the EPIRB out in the open isn't an issue.

Communication channels

Ship-to-shore communication channels are essential. Satellite phones and portable marine VHF radios are excellent ways for crew to call for help, and tracking devices allow the position of the vessel to be tracked and located.

With two-way communication you know the call for help has been received. It also allows you to communicate a position and the nature of distress, to provide updates on the situation and also receive advice until emergency services arrive.

Don't rely on mobile phones for effective communications, because they rely on area coverage that might not be available.

If two-way communication is not available in a life threatening situation, you should activate your distress beacon. The point at which you feel this is necessary is a personal decision.

Flares

Pyrotechnics and smoke signals are another very important piece of safety equipment. They must be stored in a buoyant container with a clear label and a lanyard that you can use to attach the container to you in an emergency.

Depending on the class of your vessel, different rules apply to the positioning of the container and what other safety equipment must be stored inside.

V sheets, torches, signalling mirrors and whistles or horns are just some of the items you might be required to have for your operation.

On Class 1 (13 or more passengers) and Class 2 (up to 12 passengers) vessels the container must be readily accessible to the crew, whereas on Class 3 (fishing) vessels the container must be readily accessible to the crew and mounted in a float-free position above deck.



AMSA Connect 02 6279 5000



Contact your local AMSA Liaison Officer (call AMSA Connect to speak to the Liaison Officer in your area).



Read Safework South Australia's *Personal Flotation Devices* factsheet at safework.sa.gov.au

Essential safety equipment

Are you prepared?

Keep in mind that safety equipment standards only ensure a minimum range of safety equipment. It's important to think about what additional gear might be needed for your type of operation.

Some essential items of safety equipment include:



Common mistakes

- Not enough safety equipment on board
- Impossible to reach or scattered around in different places
- Float-free EPIRB not positioned in a place that allows it to float to the surface
- Location of equipment not clearly marked
- Beacon out of date or not registered.

Safety award goes to **Sydney Fish Market**



Hats off to the Sydney Fish Market for receiving the 2017 National Seafood Industry safety award.

The Sydney Fish Market won the inaugural safety award for its commitment to ensuring the safety of its customers and workers, having maintained third-party safety certification for 14 consecutive years.

Don't forget to submit your nomination for the 2019 state and territory seafood industry safety award. State and territory winners will feed into the national awards, to be presented at Seafood Directions 2019 in Victoria.



2020 low sulphur fuel *Does it apply to me?*



From 1 January 2020 all vessels will be required to use fuel containing no more than 0.5 per cent sulphur.

Vessels will also be able to use alternative options such as exhaust gas cleaning systems known as 'scrubbers', as long as they achieve the same reduction in emissions.

If your vessel uses diesel you may already be using fuel below the sulphur cap, as most suppliers in Australia offer diesel fuels below this limit.

With each fuel delivery, your supplier should provide documentation stating the sulphur content of the fuel received.

AMSA is involved in discussions at the International Maritime Organization to support the transition to this new requirement. To be part of the consultation on proposed implementation measures email IMOEnvironment@amsa.gov.au



amsa.gov.au/2020-low-sulphur-fuel



Coral Knight

Training to tasking

Protecting Australia's unique marine environments—and by extension the livelihoods of thousands of Australians from maritime pollution—is an imperative for all commercial operators. For AMSA, it's a primary function.

Under the National Plan for Maritime Environmental Emergencies, AMSA takes a leading role in responding to pollution or potential pollution of the seas.



Picture courtesy of Master Luke Hosking

Training for a major oil spill on the Great Barrier Reef

Being prepared is essential to launching an effective response, which is why AMSA hosted a training exercise in Cairns in May 2017 to simulate a major oil spill incident at sea.

The exercise took place on AMSA's first response vessel, the *Coral Knight*, and included volunteers from state and territory maritime safety agencies, port authorities and environmental protection agencies.

These volunteers form the National Response Team, which responds to maritime environmental emergencies.

During the exercise, nautical charts were marked with a fake oil spill and teams were tasked with launching a clean-up operation including surface skimming, rolling out boom and performing manoeuvres with the *Coral Knight* and its workboat to contain the spill.



Despite long days, choppy conditions and mechanical setbacks, the National Response Team successfully completed their mission to contain and recover the spill.

'This type of experience working with the crew is invaluable,' AMSA Senior Advisor for Crisis Preparedness and Response, Andrew Griffiths, said.

'They've got a feel for a real work environment and the complexities associated with working in a team.'

The National Response Team conducts oil spill recovery exercises in different environments around Australia every year.

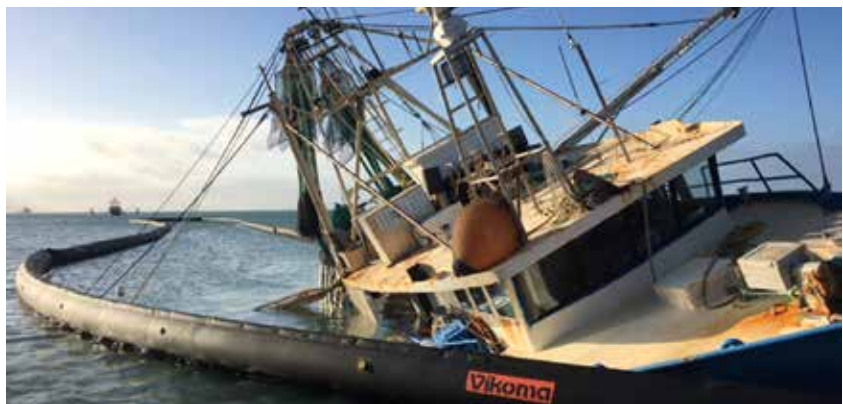
Responding to FV *Miss Macleay* aground on Cape Flattery

True to the old adage that practice makes perfect, just weeks after the *Coral Knight* hosted the oil spill training exercise with the National Response Team, the vessel responded to a real incident unfolding about 120 nautical miles north-west of its home port in Cairns.

At 7.00 am on Saturday 17 June the *Coral Knight* received a request from Cairns VTS to assist the prawn trawler *Miss Macleay*, which was taking on water near Cape Flattery.

Cairns Vessel Traffic Service had earlier advised the trawler's two-man crew to put her aground on Connie's Beach to avoid her sinking with both men and 10,000 litres of diesel on board. After grounding the trawler, the men swam to a nearby fishing boat.

At the time of the incident, the *Coral Knight* had been servicing a navigation aid on Palfrey Island about 17 nautical miles north-east of Cape Flattery. She



was on scene within two hours and was placed under the operational command of the Cairns Harbourmaster.

A work boat was deployed to the trawler, which was listing to starboard with severe water inundation. The crew of the *Miss Macleay* had been rescued by another fishing vessel, however the vessel was observed to be leaking a small amount of fuel into the water.

Using their work and fast rescue boats, and aided by a tender from the Cape Flattery Silica Mine, *Coral Knight* crew secured Hi-Sprint boom around the trawler and blocked her fuel breathers to prevent more fuel from escaping.

Coral Knight Captain Andrew Profke said the oil spill response training in May proved to be a valuable experience, not only for the National Response Team, but also for the crew of the vessel.

Thanks to the quick response, the spill was contained and there were no reported shoreline impacts. *Miss Macleay* was refloated and taken back to shore by salvors in the following days.



Go to [youtube.com/amsa](https://www.youtube.com/amsa) and search 'AMSA National Response Team oil spill recovery training exercises Cairns May 2017'.

By Damian Pudney
Roads and Maritime Services

Sydney Harbour clean-up crew



An efficient and safe marine team



When you have a beautiful and iconic harbour viewed by tourists, traversed by commuters and used by thousands of locals every day—it pays to keep it clean.

Did you know?

Sydney Harbour has a combined area of 5020 hectares and 270 kilometres of foreshore.

Two teams of seven on-water staff from Maritime Environmental Services make sure this iconic and important waterway is clean and safe for navigation 365 days a year, in addition to supporting major on-water events like the start of the Sydney to Hobart Yacht Race, New Year's Eve and Australia Day.

They run a tight ship and provide a good service to the environment and the community. This is partly because they have what they call a 'culture of responsibility', where each person accepts the responsibility to look after one another as well as the vessels they work on and the operations they carry out.

This is the philosophy behind their good safety management, work practices and overall productivity, and they realise this in a number of ways.

Safety systems

Because of this team culture, when the National Law requirement to have a safety management system (SMS) was introduced, Maritime Environmental Services was ahead of the game.

They saw this as an opportunity to call on their already detailed work systems to plan and implement the SMS with full cooperation from the vessel masters and crew.

The crew finds that having key information in an easy-to-read format (written by the crew, for the crew) is the best way of keeping safety and responsibility at the forefront of their operations.

So, when it was time to implement the SMS as set out in the new National System, it was a natural extension for the crew to be fully involved in its creation and implementation—so much so, that today the SMS is used as the primary training and induction tool for new crew. ▶





The right skill mix

Each crew member is qualified and trained to safely operate all of the vessels and equipment managed by the division. Because of this, the team can comfortably manage any fatigue or emergency situation that arises during the 12-hour shifts—including the ability to change masters if needed.

The fleet of vessels include three 12-metre landing barges with deck cranes and twin outboard engines and a fast-response 16-metre aluminium inboard diesel catamaran.

The catamaran has a 3-tonne deck crane that lowers a custom litter cage through the moon pool and into the water between the hulls, used to skim floating debris from the swirling currents and tide lines around the harbour.

These operations require skilled hands at the helm, as the vessels hug the seawalls and edges of the harbour where the litter accumulates and are often used in very shallow and rocky waters.

Both Coxswains tickets, a Masters under 24m and a Marine engineer driver grade 3 are required to operate these vessels.

All members of the crew can carry out routine tasks such as using the 30-tonne land-based crane to remove the collected rubbish from ship to shore; loading equipment onto the vessels; and operating any of the various tools such as forklifts, chainsaws, power-barrows and deck cranes.

Having crew skilled up to carry out work in all areas increases productivity and reduces the likelihood of incidents.

Vessel maintenance

A lot of equipment is used to keep the waters of Sydney Harbour clean and this equipment has to be maintained. Every year a vessel and a piece of equipment is assigned an owner (a designated crew member). This person carries out the maintenance according to the maintenance schedule, which has been tailor-made by the crew for each piece of equipment.

In the beginning the maintenance schedules took a lot of effort to design, but they have seen huge benefits in the form of less downtime due to breakdowns and equipment failure.

In addition to the crew maintaining and expanding their skills set, learning all of the intricacies of the equipment and the vessels make them more proficient operators.



Over the years

- 1900s** The Maritime Environmental Services' predecessors were known as the 'rat catchers' of Sydney, formed to combat the spread of the bubonic plague. The trapping of infected rats was a vital service to the health of Sydneysiders.
- 1930s** The 'rat catchers' became the Harbour Cleaning Service. In timber boats a crew of hardy souls who didn't mind the salt, spray or the smell, would collect debris and floating rubbish. The retrieval of dead animals and other unsavoury objects from Sydney Harbour was a common task.
- 1950s** The wooden boats gained the luxury of engines.
- 1980s** It wasn't until June 1989 that the present harbour cleaning equipment was purchased. This was instigated by increased environmental awareness that came with the 'Clean Up Australia' campaign.
- 1990s** The Maritime Authority took on the responsibility for cleaning Sydney Harbour as a major environmental initiative.
- 2000s** In 2002 the role of the Harbour Cleaning Branch changed to Environmental Services, which has grown in conjunction with Roads and Maritime's enhanced environmental responsibilities.

Technology

To monitor the safety of the crew and vessels, Maritime Environmental Services uses a Global Positioning System module on each vessel. These gather important information and relay it back to base.

The designated master uses a Dallas key to 'tap' on and start the vessel, then the unit logs information such as the master's details, engine and fuel data, speed and revs position.

The system also tracks location and has the ability to set geographic boundaries (set an alarm to go off when a vessel leaves a predetermined area) as well as duress alarms and engine alarms.

This technology also allows the operations manager to monitor engine and fuel data and predict when servicing will be required, or quickly organise servicing when a breakdown occurs.

The system also monitors how many hours are logged by a master, which is really useful for crew wanting to record hours for certificates of competency.



Sydney Harbour environmental services can be found online at
rms.nsw.gov.au/about/environment/sustainability/sydney-harbour.html



youtube.com/RMSRoadProjects

Research

Sustainable *fishing families*

Funded by the Fisheries Research and Development Corporation, an evidence-based health and safety training program for Australian fishing families is underway.

The project—led by maritime anthropologist Dr Tanya King—is hosted by Deakin University in partnership with the National Centre for Farmer Health and the University of Tasmania and the University of Exeter, UK.

The project consists of:

- a national survey to gauge the health, safety and wellbeing of professional fishers in Australia
- adapting the Sustainable Farming Families™ program to address the needs of the fishing sector.

Dr King, who is on the board of Seafood Industry Victoria, and the Women's Industry Network Seafood Community, explained that without healthy, happy and resilient professional fishers, we can't have a healthy and economically viable industry.

'A lot of focus is given to the health of our fisheries—and they're in good shape—but we've tended to overlook the value of our fishing industry professionals.

This survey will help us get a snapshot of how Australian fishers are faring,' she said.

The survey took place in early 2017 and Dr King said that the commercial fishing communities responded generously with their time and candour.

'Our response rate was over 20 per cent, which doesn't sound like much but is actually a fantastic response given the length of the survey and the pressures people have on them to fill in endless amounts of paperwork,' she said.

Unfortunately, the results point to some concerning trends in the mental health of Australian fishers, and the role played by livelihood insecurity.

'We all know about the challenges faced by Aussie farmers ... Well, this is at least as big of a problem, if not bigger,' she said.

'As well as providing the first base-line data for commercial fishers, the survey results have helped to inform adaptations to the Sustainable Farming Families™ program, which has made it relevant to the fishing sector,' Dr King said.

The pilot of the *Sustainable Fishing Families* program, which is currently underway, is due to be rolled out again with funding from the Victorian government, and will soon be available for fishing communities across Australia.

'This is a fantastic resource for fishing communities who want to maximise the health and productivity of their businesses,' she said.

'The poor state of mental health and psychological distress evident in the fishing industry also warrants a dedicated mental health and wellbeing assistance program for those communities facing severe livelihood insecurity.

'An organisation like Hunterlink, which currently services Australian and international seafarers, would be ideally placed to expand their services into the fishing industry, providing the kind of rapid-response and group counselling programs required'.



[blogs.deakin.edu.au/
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**Landline Fishing for votes
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Safety

in the commercial fishing industry

High rates of work-related injury and illness in Australia's commercial fishing industry indicate the challenges associated with creating safe workplaces in this industry.

Led by Dr Kate Brooks, research is underway to identify exactly what factors stop people in the commercial fishing industry from adopting safe work practices and looking out for themselves and others while on the job.

This research—supported by funding from the Fisheries Research and Development Corporation, on behalf of the Australian Government—will work with a number of fisheries and fishers in New South Wales and Western Australia (where Work Health and Safety [WHS] research has been identified as high priority) over 18 months, involving:

- a baseline survey
- a focus group session to explore fishers' experiences
- testing of an alternative approach to sharing a WHS culture
- a follow up survey to identify if the conversations and activities resulting from being involved in the research have changed their behaviour and attitudes toward safe work practices.

The results of the research are intended to provide greater insight for fishers, their industry associations and safety authorities like AMSA, helping them to improve their ability to raise safety standards in the sector.

Dr Brooks said 'In the past, attempts to improve WHS have focused on training—more, better, sooner and immediately after an incident'.

'But rather than focus on training, we want to work with fishers to understand what "flicks the switch" to be concerned enough to look out for themselves, their mates and other workers around them.'

She said that this would start with conversations about what made them care about getting home in one piece every day.

'Essentially, we will be looking for the stories that explain how and why fishers value their safety and use this understanding as the basis of developing alternative approaches to fostering a positive WHS culture in the sector.'

Get involved



To take part in the survey, share a story (confidentiality is guaranteed) or to receive updates on the progress of the project, email Kate Brooks
kate@kalanalysis.com.au.

How

Maritime leaders

deal with crisis situations

Brad Roberts, AMSA Liaison Officer, is completing his doctoral research project into how masters and chief engineers in the offshore marine sector make sense of crisis situations.

The research also looks at how seafarers learn from these situations to improve safety practices at work.

These insights will provide a clearer understanding of modern seafaring, and improve education for mariners—particularly in how they respond to crisis situations that fall outside of their experience or current procedures.

Brad's research involved sailing as an observer on an offshore supply ship and interviewing 20 seafaring leaders about how they made sense of and resolved crisis situations.

The seafarers recounted experiences, ranging from the sinking of a vessel, to dealing with aggressive crew members at sea.

Many of the reported situations had not been encountered before and were not covered by the vessel's standard operating and safety procedures.

'We're talking about highly trained seafarers at the top of their game who have had to make sense of extreme situations,' Brad said.

'For example, one master had to work out what was happening on the bridge of another vessel that had started heading directly towards him, at speed and without explanation.'

'He avoided a collision but I wanted to understand all the factors leading to his actions.'

Brad found that when dealing with these situations, seafaring leaders used gut instinct as well as logic.

'Seafarers rarely think of all the different things that go into their actions during a crisis. In understanding how these different types of thinking, feeling, sensing and behaviour work together, we can better prepare our seafarers to respond to crises,' Brad said.

Brad is conducting his doctoral research project with the Swinburne University of Technology.



Read more about Brad's research in his recently published article 'Recasting Odysseus: embodied sensemaking among seafaring leaders' (in the Australian Journal of Maritime and Ocean Affairs Vol. 9).



Australian Government
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NAV18

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