



Protecting our national treasures

DCN's Paula Wallace talks to several port and terminal operators about their efforts to protect Australian waters from pollutants and monitor the impacts of their operations

When it comes to protecting Australia's waterways there is no greater imperative than those operations located within the Great Barrier Reef World Heritage Area. The only authority to manage three ports on the doorstep of the reef, takes a unique approach to applying best practice management of the environment.

North Queensland Bulk Ports Corporation is a Queensland government-owned port authority for four major port facilities in Queensland. Three of these ports, Mackay, Hay Point and Abbot Point are in the Great Barrier Reef World Heritage Area; the fourth is located in Weipa, far north Queensland.

The activities of NQBP support around \$40bn of trade movements globally and approximately 27,000 mining and agriculture associated jobs in Queensland.

A key pillar of NQBP's environmental approach is its long-standing marine monitoring partnership with James Cook University.

JCU's Centre for Tropical Water and Aquatic Ecosystem Research (TropWATER) has a world-leading team of researchers and specialists in marine water quality, coastal habitat, seagrass, coral ecology and resource management.

In 2019, NQBP, JCU and the Mackay Whitsundays Health Rivers to Reef Partnership received national recognition - winning the Outstanding Collaboration for National Benefit category at the 2019 Business Higher Education Round Table awards. This prestigious award recognises the leading collaboration between higher education and businesses.

NQBP CEO Nicolas Fertin said the monitoring partnership with JCU is a key part of the corporation's drive to "strike the right balance" between the movement of port trade and preserving and protecting the local iconic natural environment including the reef.

"Extensive ambient marine environmental monitoring of water quality, coral and seagrass by JCU is used to assist NQBP to ensure risks to the environment are managed and ships continue to trade in and out of our ports," Mr Fertin tells DCN.

"The protection of the reef and local environment is of paramount importance to us and this is central in our planning, everyday operations and other important activities such as maintenance dredging."

The scale of NQBP's and JCU's seagrass monitoring program covers 30,000 hectares across its four trading ports. Seagrasses are a critical coastal marine habitat and a key indicator of overall marine health.

For marine water quality monitoring, the partnership has had monitoring sites next to the ports of Mackay and Hay Point since 2014 and expanded to the ports of Abbot Point and Weipa in 2017.

Measurements are taken by high frequency water quality loggers every ten minutes, which record water depth, root mean square water depth, temperature, turbidity and photosynthetically active radiation. With 17 permanent loggers across for ports, there are almost 900,000 individual marine water quality records collected every year.

Coral monitoring sites are in position at Mackay, Hay Point and Abbot Point, another important facet to monitoring reef health. This program spans across six



LEFT: Dr Michael Rasheed JCU principal scientist and NQBP director environment Kevin Kane
RIGHT: JCU intern Angelina Bouet with NQBP's environmental co-ordinator Luke Galea and Nicola Stokes, senior environmental advisor

inshore islands and researchers dive and record coral health for over 6km of transects each year.

Dr Nathan Waltham, deputy director of JCU's Marine Data Technologies Hub and principal research scientist with TropWATER, said the monitoring program is conducted year-round and includes ongoing site visits and has also used of satellite technology to investigate water quality.

"The program's footprint is extensive and continually provides our researchers with new and ongoing marine water quality, seagrass and coral monitoring data," Dr Waltham says.

Dr Michael Rasheed, JCU principal scientist and head of TropWATER's Seagrass Ecology Lab, has been working with NQBP staff for more than 25 years and said the partnership was not only engaging industry with scientists, but it was also assisting future generations in the subject.

"Since 2017, JCU students have worked directly with NQBP staff learning valuable insights about the important marine habitat management in the Great Barrier Reef World Heritage Area," Dr Rasheed says.

"NQBP staff also share their knowledge by presenting at guest lectures for our students. This is

Since its inception, this partnership has provided scientifically robust and credible information on key port marine environmental assets.

Kevin Kane, NQBP

an amazing opportunity for students to get real-world exposure to industry and help launch their careers post-study."

DEVELOPMENT AND DREDGING

To ensure the efficient and sustainable movement of trade, NQBP has a world-class approach to port development, dredging and environmental protection. NQBP's Environmental Management System has been accredited to the international ISO14001 standard for more than 20 years.

Mr Fertin said considerable work was completed with JCU in the lead up to the successful maintenance dredging at Hay Point between March and May 2019. The activity was conducted under



Research activities in the Whitsundays

NQBP

stringent 10-year permits issued by the Great Barrier Reef Marine Park Authority.

“In the three years leading up to the maintenance dredging program at Hay Point in 2019, measurements were taken from loggers that record ambient water quality,” Mr Fertin says.

“During the dredging itself, this long-term, reliable dataset arising from the partnership allowed for the development of a real-time, online marine water quality monitoring dashboard able to be viewed by people across the world.

“Every step of the dredge’s movement could also be tracked and viewed on the publicly available dashboard.

During the two years of being in operation there have been no marine pollution incidents.

Leissa Pitt, VICT

This technology was a game-changer in terms of setting an industry standard.”

NQBP’s 2019 dredging activities also included a larger than normal maintenance program at the Port of Weipa with dredge volumes almost five times larger than previous years due to the impacts of significant cyclones and tropical weather patterns.

“Again, we were able to implement a water quality dashboard to ensure real-time and adaptive environmental management throughout the program,” Mr Fertin says.

THE WHITSUNDAYS

The partnership with JCU expanded into the Whitsunday Islands in 2019 as part of a Citizenship Science initiative in support of water quality monitoring by tourism operators in the region.

“The Whitsunday program includes some new partners and has also been successful in gaining a grant from the Great Barrier Reef Foundation allow

training for tourism operators to maintain data loggers and conduct key water quality sampling” Dr Waltham says.

NQBP director environment Kevin Kane said the partnership with JCU is one of NQBP’s proudest achievements.

“Since its inception, this partnership has provided scientifically robust and credible information on key port marine environmental assets to government agencies, stakeholders and our port communities. We’re excited by what the program might bring in the future,” Mr Kane says.

SPILL CONTROL AT VICT

Victoria International Container Terminal is an automated container facility, located at Webb Dock. It is in a unique position, with more than 61% of the site bordered by marine areas with all drainage running into Port Philip Bay.

“Whilst VICT’s unique location provides us with a competitive advantage commercially, it increases our potential for environmental harm,” says Leissa Pitt, VICT’s chief health, safety and environmental officer.

For on-road spills and management of potential marine pollution, VICT has installed a comprehensive range of controls.

“We have the potential to negatively impact our neighbours directly, as well as negatively impact the use of the public areas around us, including beaches, children’s play areas and Port Philip Bay.

“As a result, VICT not only focused on legal compliance but also endeavoured in the site’s design, construction and operation... to maximise our ability to respond to likely hazards,” Ms Pitt tells *Daily Cargo News*.

VICT has also leveraged the expertise of its personnel in identifying and dealing with spill management. Continuous improvement is also a big driver and, as the existing spill management equipment is used as part of both incident response and training.

In devising its spill management response, VICT considered the most likely spill and contamination hazard to be fuel and oil spills.

“Simply because we have such a large number of container trucks visiting our terminal in addition to having diesel fuelled ACCs (straddles) and utes and the fact these are more likely to occur as smaller scale responses as opposed to larger scale responses to spills from chemical cargo,” Ms Pitt says.

“As a result, our spill management system is built around the fact that most responses will be to fuel, oil spills and have, from an operational perspective, focused more on the prevention of spills occurring in our cargo handling systems.”

So far, this theory has proven to be correct, as most of the spills the site has experienced to date have been fuel and oil spills.

Any substance that is legally transportable by road and sea can transit through VICT. There are some



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VICT



Victoria International Container Terminal

specific substances which it does not store onsite due to the IMDG Class (e.g. Class 1 Explosives), which are basically transferred directly from truck to ship or vice versa.

There are also some substances that VICT and the rest of the supply chain would require additional approval for, based on public and worker safety and the environment.

“If these substances are to be handled through VICT, this requires consultation with key stakeholders including the Port of Melbourne, WorkSafe, EPA, the supply chain for the product and more importantly the community.

“We went through this entire process in July relating to Class 1.3 cargo that was planned to be loaded onto a vessel calling at VICT,” Ms Pitt says.

SPILL CONTROL AT VICT

For on-road spills and management of potential marine pollution, VICT has installed a range of controls including:

- Six penstock units, these may be lowered to stop a flow of liquid in the drain system, covering both first flush and spills.
- Five stopboard units, can be positioned to act as a physical barrier preventing spilled materials from leaving site through drains.
- 35 DrainSAFE units, constantly block debris and reduce hydrocarbons entering the drain. Additionally, with a quick turn of a handle, isolation of the drain pit can be achieved, stopping harmful spilled liquids.
- A plug to control the outflow of spilled material that has entered the “weigh in motion” system, such as fuel leaks, from entering the bioswales and ultimately the bay.
- One-way valves on three drainage points, which drain directly into Sandridge Beach, ensuring protection of outflow of first flush, spills and to prevent the chance of backflow of seawater at high tide.
- The water near outflow points is regularly tested to ensure it is safe.

For spills where hazardous or dangerous goods are transiting and handled in VICT’s stacking blocks, there are bunded areas installed, capable of capturing 127,000 litres of spilled cargo or fuel products per block.

In addition, a spill trailer is onsite for leaking cargo being handled, which has the capacity to hold more than a 40-foot container’s worth. This trailer can be moved to any road point onsite, enabling the movement of leaking cargo directly from a vessel or truck to the spill trailer.

To enable efficient localised spill response, VICT maintains and audits 23 spill kits across the site. These kits are positioned based on the site’s risks and are differentiated into three different types.

The kits are stocked with absorbent socks, pads, cushions, granular absorbent, as well as personal protective equipment.

Lastly, VICT maintains a fully stocked shipping container with additional spill kit materials, multiple types of absorbent material and further PPE to enable safe response to spills.

“These initiatives work together to minimise the risk of pollutants onsite and in turn into the bay,” Ms Pitt says.

“During the two years of being in operation there have been no marine pollution incidents and we have successfully assisted with nearby pollution events.

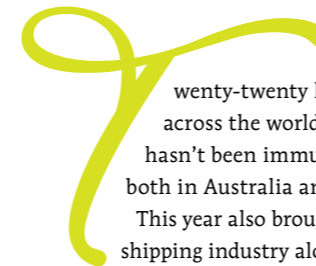
“We have not had any major spills onsite, the biggest was a truck which lost a portion of the contents of its fuel tank.”

In this case, the bulk of the spill was immediately contained and rectified.

“The investigation of the spill provided us with a good learning experience without any significant impact to the environment,” Ms Pitt says. ■

Sustainable shipping for a sustainable planet

Mick Kinley writes about our contribution to sustainability in line with the theme of this year’s World Maritime Day to be held on 24 September



wenty-twenty has been a challenging year across the world, and the maritime industry hasn’t been immune to the effects of COVID-19 both in Australia and abroad.

This year also brought significant change to the shipping industry along the path to sustainability with the introduction of global low-sulphur fuel limits.

It has been encouraging to see the industry successfully make this shift, a large change that has occurred relatively smoothly in Australia and around the world.

This change is positive, but there is further work to be done. In Australia, shipping still presents environmental challenges and AMSA is committed to improving environmental performance in our waters.

In May, AMSA completed a project to clean up pollution that resulted from the loss of shipping containers from the *YM Efficiency* in 2018. This project saw 63 containers and tonnes of associated pollution successfully retrieved from the ocean bed off the coast of New South Wales.

By recovering those containers and the tonnes of plastic litter and other garbage contained inside, we ensured that future generations are not picking up mess off the region’s beaches for decades to come.

However, just weeks after the project was completed, the *APL England* lost 30 containers overboard further down the coast. This resulted in more garbage and empty containers coming ashore on our beautiful beaches. During the same week, the *Navios Unite* also lost three containers off the coast of Western Australia.

This is not sustainable, and the local communities being affected by these incidents want the operators and companies responsible for this pollution to be more responsive when these incidents occur.

Of course, in a perfect world these incidents wouldn’t happen at all, but AMSA has taken steps to ensure they happen less frequently. We are currently in the middle of a three-month targeted safety campaign, inspecting container vessels at ports across Australia.

Containers and other forms of plastic litter from the maritime industry will be an increasing area of focus for sustainable shipping as measures under the International Maritime Organization’s *Action Plan to Address Marine Plastic Litter from Ships* are developed and implemented. Australia is committed to reducing marine pollution through this Action Plan.

NEW CHALLENGES

COVID-19 has brought new challenges to shipping’s

sustainability in unorthodox areas. AMSA knows that crew changes as a result of the COVID-19 pandemic are challenging due to border closures, the lack of aviation services and quarantine arrangements. Flag and port state authorities including AMSA have been pragmatic when accepting extensions in this challenging environment.

While this flexibility has been essential to supporting international trade, it cannot continue indefinitely, as it will increasingly affect maritime safety and seafarer welfare.

A lack of fatigue management has contributed to a number of serious maritime accidents in Australia and abroad. Fatigue was and still is contributing to short- and long-term performance and health impairment and is a risk to seafarers and safety at sea.

AMSA released our fatigue guidelines earlier this year, providing practical tools to identify fatigue at sea, report on it effectively and use evidence to improve organisational approaches to managing and reducing risk of fatigue in operational environments.

As we know the welfare of our seafarers is just as important as the proper maintenance of a ship’s equipment. A sustainable shipping industry is as much about people as it is about cleaner fuels and technology.

COVID-19 has brought new challenges to shipping’s sustainability in unorthodox areas.

REDUCING GHG EMISSIONS

Having successfully reduced air pollution through the sulphur cap the next step is to address greenhouse gas emissions from the industry. The world took the most significant step in 2018 with the adoption of the initial Greenhouse Gas Strategy by the IMO. Despite COVID-19, the work has continued to develop the regulations for the technical and operational measures needed for ships to reduce their carbon intensity (emissions per transport work) by an average of at least 40% by 2030 and total industry emissions by at least 50% by 2050.

These measures will be ‘goal based’, with the shipowner to decide how best to reduce GHG emissions, but they are coming soon and industry will need to adapt. Globally we are making progress towards a more environmentally sustainable shipping industry for the betterment of the planet and us all. ■



Mick Kinley, CEO, Australian Maritime Safety Authority