ACVOA
Australian Commercial Vessel Operators Association

Response to MERNAP Issues Paper 1: Regulation and Standards

The responses below are on behalf of ACVOA members, operators of Class 1 and 2 vessels, both domestic commercial vessels and regulated Australian vessel operators around the Australian coast.

1. Australia's Maritime Sector and principles for regulation

Q *What aspects of the domestic and international industry do you think we should be particularly mindful of?*

i. Regulatory costs to operators domestically
ii. Capital costs of re-engineering to a new fuel type, structure changes for fuel storage or new vessels where it is impractical (through cost of configuration) to transition to a new fuel type.
iii. Research and testing costs for viability of new fuel types.
iv. Cost of new fuels that reduce emissions e.g. above B20 biofuel, tax credits no longer apply so fuel is 30% more expensive.
v. Areas outside the major population centres where supply and choice of fuel type do not provide options for uptake or use.
vi. Ship building regulations.
vii. Not all vessels of the same type operate in the same manner. Vessel operations as well as type, will dictate which alternative fuels are suitable.

Q *These principles will help us provide advice to Government on what the potential future next steps might be. Do agree with these principles? What other aspects should we consider?*

Specific aspects of the key principals to consider include:

- differing capacities involve differing lead in times in accessing technical resources and new fuel supplies,
- regulation enabling the use of testing regimes of novel approaches,
- need to have Emission Reduction Strategies for industry owners and operators in meeting Australian, IMO and UN milestones,
- need to provide clarity to the whole industry outlining requirements and responsible government agencies to educate, communicate, assist and support initiatives.
- identify the differing segments of the domestic industry and ensuring all are included. For example:
    - surveyed domestic commercial vessels (including workboats, tugs, fishing vessels, ferries, self-propelled barges, car ferries, charter vessels, government vessels) have a different regulatory system to Australian registered ships (the National Law Act and Navigation Act respectively),
    - vessels providing services within ports to shipping (tugs, workboats, fuel barges, pilot boats) may have obligations under legislation involving ports,

- consideration should be given for how the Australian government intends on including private and recreational vessels.

2. Regulatory Barriers and Opportunities

a) General

Q *Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?*

- The costs associated with either converting or replacing the domestic fleet to zero-emission solutions must be studied from regulatory, financial and practical perspectives for industry.
- The Australian Maritime Safety Authority (AMSA) as regulator of both domestic and international registered ships should be resourced to support industry in transitioning to zero emissions. This competency should be set to advocate transitional requirements and to better advise both government and industry.
    - Without a central agency with expertise, costs fall on individual operators and research or combined industry knowledge, remains unavailable to the wider industry. The example is in AMSA's novel vessel policy (that includes vessels using alternative fuels). Novel vessels need to be constructed to classification society rules. The owner then needs to deal with both the class. society and AMSA. If AMSA is able to source the required information and undertake surveys (even if internally arranged as being via the class. society) then the regulatory environment is streamlined for the end user.

Q *What key regulatory arrangements would support or obstruct your operation and investment in decarbonising the maritime sector? What do you think the regulatory priorities to facilitate maritime decarbonisation should be?*

- Need to ensure there are no commonwealth vs state/territory contradictions in regulation relating to differing fuel types. Specifically this may occur with differing state/territory regulation on the carriage of dangerous goods,
- Bio-fuels including bio-diesel (100%) and HVO (Hydrogenated Vegetable Oil) need to be studied to identify if their supply will become essential to industry prior to 2050 net-zero milestones,
- Fuel cost changes to current expenditure and the impact on fuel excise benefits needs to be considered. Fuel tax credits and excise benefits for biodiesel only apply to some blended fuels, this list needs to be readily extended and current benefits readily applicable as other fuel types become available.

Q *What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?*

Cost is the main factor. Some technology exists, however the transition needs to be regulated in a practical way and support cost effective transition.
Standards, information and research is required. As examples;

- there may be differences in level of risk with smaller quantities in terms of both incident occurring and nature of outcome,

- stability considerations have yet to be identified,
- stability changes will have regulatory implications for load line certificates and other certification. This in turn has timing and cost considerations when making a fuel transition.

b) Ports

Where applicable, the government marine fleet could be the first movers both within ports (tugs, pilot, fuel) and could also be used as 'test beds' in other fleets i.e. marine safety, water police, research, Antarctic, defence, public transport, island services (Cocos & Keeling, Norfolk, Lord Howe). This requires legislation allowing for small scale testing.

Q *What examples/evidence of implementation of shore power internationally could Australia leverage or learn from?*

i. The cruise ship industry is moving to have all cruise ships fitted with shore power capability. Ports will eventually require cruise ships to be on shore power when in their ports putting pressure on cruise lines to comply.

ii. Electric tug use overseas.

c) Shipping

Q *Do these or other regulations, or their current development uncertainty, impact investment in low and zero emission bunkering vessels?*

i. There is little or no synergy between shore and marine regulation for the transport, storage and transfer of hydrogen for use on vessels.

ii. This could similarly effect the provision of electricity at small berths and wharves for plug-in electric vessels.

iii. Regulation/ standards will be required for all new fuel types, as well as support engine manufacturers. These will need to consider the method of bunkering, the type and method of use. Industry needs some level of certainty around standards e.g. engine wear, storage on board, storage shelf life. This requires research in the alternative fuels currently being considered.

Drop-in Biofuels

Regulations relating to fuel excise benefits for marine users only applies to up to B20. This should be extended to all bio-diesel. It is our understanding that HVO is the only biofuel that can be used in the majority of current diesel engines.

Only some manufacturers will warrant engine operating in higher percentages of bio-diesel.

Q *In what areas is further analysis on standards, regulations, and communication required to build confidence in the use of biofuels as a potential emissions reduction strategy?*

- Ability to transition – which are drop in biofuels, which may require engine adjustment?
- Range when using biofuels
- Maintenance requirements
- Compliance with current regulations (MO97)
- Security of supply
- Price comparative to mineral diesel
- Where in Australia will it be available?
- Method of storage on board
- Specific gravity of biofuels and stability considerations of amount and location of storage on board.

d) Future Global Regulatory Environment

Q *Are there specific areas of Australia's international emissions reductions engagements, in relation to IMO regulations, that the maritime sector would benefit from greater knowledge of, and engagement in?*

Given the urgency at an international level, information on what has been decided or is being considered, at IMO level needs to be promulgated to industry as quickly as possible. The raw information will still be useful initially, this does need to wait until interpretation has been made locally, or new marine orders or marine notices have been drafted. The maximum lead time is likely to become crucial to industry meeting targets and compliance obligations.

AMPTO
Association of Marine Park Tourism Operators

21st September 2023

Via email: MERNAP@infrasture.gov.au

MERNAP Issues Paper: Regulations ad Standards

Please see below the Associations of Marine Park Tourism Operators ltd (AMPTO) responses to MERNAP Issues Paper: Regulations ad Standards.

Yours sincerely,

s 47F

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Chief Executive Officer
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AMPTO
Association of Marine Park Tourism Operators

General Introduction to AMPTO and our industry:

AMPTO is a not-for-profit membership association that has been the peak industry body for marine park tourism operators since 1989. AMPTO members carry more than 4 million people each year, 95 per cent of all visitations, to the Great Barrier Reef (GBR). Members range from single vessel operations, small and large island resorts, to publicly listed multi-operational companies. AMPTO's primary objective is to ensure the economic and ecological viability of marine tourism.

Australian tourism is the fourth largest export for our Country and is in fact the largest non-consumptive industry in all of Australia. In 2019 the tourism industry contributed $166 billions to the Australian GDP (Thrive 2030). Adding to that, marine tourism has an economic output $30.7 billion in 2017-18, which is nearly 40% of the entire marine industry economic output[1]. Further to this, marine tourism output has both a direct and indirect value add of $42.4 billion and $26.8 billion (total $69.2 billion or 3.7% of GDP in value add), respectively[1]. Within Queensland, the economic output of domestic and international tourism totalled $12.3 billion in 2017-18[1]. This is larger than any other State.

It is clear how significant tourism and marine tourism are to both the National and Queensland State economy.

The Great Barrier Reef alone is a significant industry, but its role in the National and Queensland State economic can't be overstate. As the number one reason for all nature-based travel and is one of the top three reasons for all other visitors travelling to and within Australia the Great Barrier Reef and its tourism industry is a tourism industry driver and amplifier (keystone sector). Visitors come to Australia to see the Great Barrier Reef and end up doing other tourism experiences.

Please note I have referenced Aims Index of Marine Industry 2020 report and not the 2023 report, as the figures in the 2023 report highlight the significant impact COVID had on the industry and does not reflect the true role our sector plays in the marine industry economy.

As an industry the marine tourism industry in the Great Barrier Reef have a strong history of environmental outcomes. These include but not to

- Legacy founders delivering contractors for the Crown of Thorns Starfish control program. This program is the strongest action one can take to protect live coral on the Great Barrier Reef
- Founders of the Eye on the Reef coral reef monitoring program. This is now a flagship monitoring program by the Great Barrier Reef Marine Park Authority.
- Co-founders and partners in the Master Reef Guide program. Delivering stronger, accurate education and information for vessel crew and guests.
- The concept creator and drivers of Tourism Reef Protection Initiative.

More pertinent to this issue paper our industry has been looking at transitioning to more renewal fuel source for over 10 years. This has led to AMPTO invest three years of effort, time resources to creating and engage a contractor and specialist engineer firm to work in partnership with both Federal and Queensland State Government to deliver a holistic industry wide feasibility study to develop a roadmap to guide industries transitions.

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1. The Aims Index of Marine Industry 2020.

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AMPTO has been in discussions with both levels of Government for over a year with a formal proposal submitted to multiple portfolios in both Governments early in 2023. To date no decision has been made and discussions continue.
The industry is committed to this process and is hoping for a positive outcome to be able to deliver our feasibility study and roadmap. Such an approach will enable our sector to provide evidence based information and technical solutions to technical, logistical, and economic challenger.

As sector that operators in the World Heritage Great Barrier Reef, the now "poster child" for climate change, a targeted and structured approach like AMPTO's will not only be positive for the Great Barrier Reef but will add significantly to Australia reputation as being series about climate change and a green energy super-power.

General Feedback with regards to Regulations and Standards:
Few of AMPTO members have made the step to be early adopters. Through consultation with them the regulation and standards framework is over complicated. There is confusion with State and Federal Government regulators as to who holds what responsibilities, how they interact and what levellers can be used to assist transition. This highlights an opportunity for increased training and education of regulator staff to have a deeper understanding, how they intersect with State or Federal regulation, as well as how they cross departments and sectors. This must be done in conjunction with reviewing and adapting regulations and standards to be more contemporary, adaptable and flexible, ensuring there are no unintended consequences for operators not yet in a position to transition. Understandably this is not a simple process, however the opportunity of a holistic feasibility study will provide evidence based information to guide this process. A feasibility study that produces a roadmap will guide early adopter in a manner that tests and shape the pathway, it will have the added benefit of reducing early adopters' risk- not entirely but it will reduce it.

Including engine and vessel manufactures in the process is key. AMPTO's research in developing our proposal has shown there is a clear gap between what engineers of low or zero emission technology, vessel and engine manufacturing constraints or obligations are verse what is believed to be possible . Specifically, in relation to the diversity of the maritime sector. In other words, technology may be successful and held up as a successful solution, however it is only successful in one or two specific circumstances. If a zero emissions maritime industry is to be achieved by 2050 a multiple solution, "toolbox" is needed. A recent example is a large member of ours has repowered one of their vessels and present research to the engine manufacture with a proposed solution they would like to look at as a means to low emissions. The manufacturer explained that although there are situation where that particular technology could work to a degree, it would only work for this member for leaving they berth and maybe berthing the vessel and it would be cost prohibitive at this stage of that technologies development.

I see the opportunity for a "single stop shop" where vessel operators, marina operators, manufacturers and energy producers can all go to get the information on regulations and standards (once the framework has been developed). Transitioning the maritime industry is complex, having a central hub with regulator and standards staff from all departments, level of governments and portfolios in one place will be key to accelerating the transition. This will reduce time and research and help drive decision making of operators.

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Below I have provided feedback on certain questions from the issues paper.

Q *What aspects of the domestic and international industry do you think we should be particularly mindful of?*

From the marine tourism industries perspective, it is key that regulators must consider and understand our market is extremely price sensitive and has inflexible price. This has the knock on effect that our members are less likely to change vessels, as they will not have the same capacity to do that. At the same time, our customers are more demanding for the transition to happen, but do not have a wiliness to pay more for it.

An additional aspect is that retrofitting vessels will also trigger transition to class adding to cost. This is a barrier at the moment. Building new vessels and transition existing vessel is not variable at the present time. This needs to be carefully looked at to determine commercial risk reduction mechanisms.

Communication of specific technologies is putting pressure on operators and has the potential of reputational damage. During COVID shutdowns I was call at least once a week for over 6 months by a range of interest groups, councils, members of the public to ask why the Great Barrier Reef Tourism Vessels wont transition to electric or hydrogen vessels while our vessels are laid up in part. In many of these conversations no explanation was acceptable as to why we could not transition at the moment. In these majority of conversations the person had seen a story or read a story or headline of a vessel that had transitioned and so therefore my explanations were only excuses rather than legitimate.

Q *Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?*

As mentioned above a central hub with where all regulation and standards are known. Whether this is for short to medium term as the maritime industry learns and transitions. This will lead to a more holistic and coordinated approach to regulation and standards development.

Q *What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?*

At present the lack of clear regulations and standards, the cost and lack for reliability of the technology. There is also a lack of knowledge about technologies and how to access it. This is driven by the fact that business are time poor to do the research – busy running their business. I believe there are opportunities now - in partnership with Government and with Government support the delivery for industry specific feasibility and roadmap studies can be used as a resource for vessel operators and give confidence that the solutions are fit for their purpose. Other opportunities exist now for certain aspect of our operations that can be considered low hang fruit, for example, small tenders, glass bottom boat can probably transition now. However, there need to be education that provides confidence in the technology, where to find it and how to implement it.

The above feedback to those questions hopefully added other questions in the issues paper.

To make one more point, staff training and certification to be able to adapt and keep up with incoming a developing technologies is critical. Regulations and standards must support the development and roll out of accredited training. Government support is need for this to ensure it can happen at the same pace as the technology development. This support must extend to

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Recognise Training Organisations that provide the training. Understanding that these RTO's constrained like all other businesses and will also need support to be adaptable.

It is key that maritime industry subsectors have a detailed knowledge of their sectors requirement and challengers. Supporting these different sectors study their needs is key to working with Government to develop a strong MERNAP.,

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Bioenergy Australia: Maritime Emissions Reduction National Action Plan

Bioenergy Australia (BA) is the national industry association committed to accelerating Australia's bio economy. Our mission is to foster the bioenergy sector to generate jobs, secure investment, maximise the value of local resources, minimise waste and environmental impact, and develop and promote national bioenergy expertise into international markets.

This submission from Bioenergy Australia is on behalf of the Cleaner Fuels Alliance (CFA). This alliance was founded to accelerate the development and deployment of a renewable liquid fuels industry in Australia as a means to deliver meaningful social, environmental, and economic benefits. Individual members of the alliances will be providing more detailed submissions specific to their business and expertise.

Australia's Bioenergy Roadmap (ARENA, November 2021) outlines how, by the start of the next decade, Australia's bioenergy sector could contribute to around $10 billion in extra GDP per annum and 26,200 new jobs (predominately regional), reduce emissions by about 9 per cent, divert an extra 6 per cent of waste from landfill, and enhance fuel security. Now is the time to capitalise on these opportunities by prioritising the **renewable liquid fuels** opportunities within the Maritime Emissions Reduction National Action Plan (MERNAP).

Bioenergy Australia thanks the Department for the opportunity to provide feedback on the MERNAP. There is no doubt that emissions from the maritime and shipping sector will continue to increase unless immediate action is taken.

We commend the Department's objective of prioritising actions that will decarbonise the maritime industry so that Australia is well-placed to meet its 2050 net-zero targets. However, a key component of achieving these goals is the urgent deployment and development of renewable liquid fuels, which includes renewable diesel, biodiesel and ethanol. The significant opportunities these renewable liquid fuels offer cannot be overlooked and address many of the concerns raised in the MERNAP Issues Paper: Regulation and Standards.

1. Renewable liquid fuels are an immediate decarbonisation opportunity.

We commend the Australian Government's commitment to cut carbon emissions by 43% by 2030 and to achieve net zero by 2050. These fast-approaching objectives pose a significant risk of failure if immediate decarbonisation solutions, such as the development and deployment of renewable liquid fuels, are not prioritised.

Maritime is a hard-to-abate sector that will continue to rely on liquid fuels as hydrogen and electrification are not yet available or economically feasible to fully support this sector in time to achieve our net-zero targets. Thus, an immediate solution is required to ensure these fleets and technologies can be decarbonised. That solution is renewable liquid fuels, with biodiesel, renewable diesel, and ethanol, being immediately deployable and compatible with existing infrastructure.

2. Renewable liquid fuels support our existing fleets and technologies.

The lifespan of maritime fleets and infrastructure can approach 50 years and upgrading these technologies is both time-consuming and expensive. This means that today's fuel reliant technologies will likely continue to be used and a solution to decarbonise these existing technologies is required.

Drop-in replacement fuels, like renewable diesel biodiesel and ethanol, are the straightforward solution. Renewable liquid fuels burn in combustion engines and can be used as a direct replacement for traditional fossil fuels, without requiring significant changes to existing technologies, infrastructure or storage facilities. These fuels are cost-effective, readily deployable and have convenient storage and handling properties.

Renewable liquid fuels allow us to decarbonise now, rather than waiting to act until alternative solutions are available or compatible.

3. Renewable liquid fuels are essential for meeting our decarbonisation goals.

Renewable liquid fuels are an essential piece of the puzzle when it comes to Australia's decarbonisation journey. The Transitioning Australia's Liquid Fuel Sector: The Role of Renewable Fuels Report suggests the immense task of decarbonising Australia's economy will be near impossible without the urgent development and deployment of renewable liquid fuels, given 45 per cent of the nation's total energy use is from liquid fuels. This urgency is particularly required for hard-to-abate sectors that contribute close to half of the nation's energy consumption in liquid fuels.

The onshore production of these renewable liquid fuels will enhance Australia's overall fuel security and reduce reliance on imported fuels, while also providing a commercially viable and urgent pathway to net-zero for hard to abate sectors like maritime where there are no genuine alternative answers.

The maritime industry recognises the decarbonisation opportunities offer by renewable liquid fuels with large industry players already making significant commitments:

- Svitzer is one of the world's largest towage and marine services providers, servicing approximately 140,000 tug assists globally annually. They are seeking to achieve a 50% reduction in the CO_2 intensity by 2030 and to have fully carbon neutral operations by 2040. They have expressed that biofuel and green diesel represent an accessible and pragmatic pathway to achieve these goals by 2030 and beyond.
- MIAL has shown its strong support for the revised IMO strategy to be net-zero by 2050 and supports an international market-based mechanism that helps address the cost delta between conventional and net-zero carbon fuels through a combination of pricing carbon emissions and rewarding early movers.
- Maersk one of the world's largest shipping companies has a 2040 target of net zero GHG and aims to transport a minimum of 25% of ocean cargo using green fuels by 2030 and are already placing orders for renewable diesel and renewable methanol.

These commitments indicates that there is a ready market prepared to take on the immediate and long-term opportunities presented by renewable liquid fuels.

4. Renewable liquid fuels are key to Australia's overall energy transition.

We agree with the Department that the decarbonisation of Australia maritime sector is interconnected with Australia's broader energy transition and therefore all relevant aspects of this transition should be considered. The development of renewable liquid fuels in Australia will not only

be instrumental to decarbonising our maritime sector but other hard to abate sectors such as aviation, agriculture, defence, heavy haulage, mining, manufacturing and construction.

The development of a domestic renewable liquid fuels industry will also leverage Australia inherent agricultural might. The importance of agricultural feedstock cannot be overstated, representing an estimated 41 percent, or 1066PJ per annum, of the nation's bioenergy resource potential by 2030.

Despite Australia possessing a diversity of renewable liquid fuels feedstocks, without a viable domestic industry, Australian growers and producers are exporting their raw material to foreign refiners, at times locking into long term offtake agreements that sends millions of dollars to overseas markets. As a result, Australia risks becoming a net importer of renewable fuels derived from feedstock abundantly grown on its own soil. This is a real and immediate threat with export of Australian feedstocks increasing, including over a 30,000% increase in the export of used cooking oil from Australia to the USA from 2020 to 2022.

It is well past time that we secure this economic opportunity for our domestic market.

5. Recommendations: Key regulatory and standards arrangements to support operation and investment in decarbonising the maritime sector.

We recommend the following regulatory arrangements that are key to the deployment of renewable liquid fuels and the decarbonisation of the maritime sector:

- Development of a legislative approach that supports early movers, creates incentives and provides a stable, long term regulatory framework that helps to address the significant cost gap between conventional and renewable liquid fuels.
- Expansion of excise relief to support new and developing renewable fuels as a means to generate market development and support the demand of motivated customers.
- Implementation of a Carbon Intensity Standard across all fuel types.
- Leveraging existing Government programs such as the National Reconstruction Fund, Powering the Regions Fund, Industry Growth Program and future investments through the Net Zero Authority.
- Leveraging Government procurement of renewable fuels primarily through Defence.
- Replacing the location-based accounting under the National Greenhouse and Energy Reporting (NGER) Scheme with a market-based accounting approach.
- Delivery of demand-side commercialisation support and supply-side financial support.

There are multiple overseas examples where stable long term regulatory frameworks are in place and leading to incremental increases in production and adoption of low carbon fuels by offsetting production and consumption costs. Examples include the Canadian Clean Fuel Regulations and the Californian Low Carbon Fuel Standard. Australia is playing catch-up to its global peers, and it is imperative that governments look to these matured international frameworks that encourage investment, innovation and deployment, so that these opportunities can be fully capitalised here, just as they are being capitalised in Europe and North America.

The implementation of regulation and standards with the dual purpose of driving action and creating a stable, long term regulatory framework to address the significant cost gap between conventional fossil fuels and renewable liquid fuel is critical for the Government to achieve its net zero targets. While industry is poised and ready, slow government action is causing market uncertainty and hindering aspiring industry players from making commitments. To unlock Australia's potential, Government must act now.

The MERNAP paper states that “the end-game is clear – a decarbonised maritime sector by 2050”. Achieving this objective requires the development of a domestic renewable liquid fuels industry. The industry's appetite to take on the immediate and long-term opportunities presented by renewable liquid fuels is clear. However, industry cannot tackle this task alone. It is imperative that governments create policy frameworks that encourages investment, innovation and deployment of renewable liquid fuels within the maritime sector, so that these opportunities can be fully realised, and realised quickly.

Thank you for the opportunity to provide this submission. Please send any comments or queries to myself at s 47F @bioenergaustralia.org.au or s 47F

Sincerely,

s 47F

s 47F, CEO Bioenergy Australia

Department of Infrastructure, Transport, Regional Development, Communications and the Arts

Response to 'MERNAP Issues Paper: Regulation and Standards'

Submission by CSL Australia

September 2023

1. CSL Australia

CSL Australia (CSL) is the largest dry bulk shipowner/operator on the Australian coast. A subsidiary of Canadian owned CSL Group, CSL own and operate a fleet of up to twelve self-unloading bulk carriers, pneumatic cement carriers, standard bulk carriers and transhipment vessels in the Australian coastal region. Over 27 million tonnes of dry bulk cargoes, including cement, clinker, sugar, iron ore, gypsum, mineral sands, magnetite and coal are shipped and transhipped on CSL vessels for major industry participants on an annual basis. The CSL coastal vessel footprint operates in the federal regulatory regime and consists of four General Licence (Australian flag and crew) vessels and a flexible number of vessels operating under a Temporary Licence.

The CSL Group core business is owning and operating self-unloading bulk carrier vessels. In Australia, this also extends to fully enclosed pneumatic cement vessels and transhipment operations. Pneumatic cement vessels eliminate air-borne dust from cement that is discharged into shore side cement facilities. Our transhipment operations in Whyalla and Cape Preston provide economies of scale for bulk cargo exporters by providing a small feeder vessel to load panamax and capesize vessels within the naturally deeper waters of a port.

2. General comments

CSL is committed to decarbonising our global fleet to meet national, international and our own internal emissions reduction goals. The rapidly changing landscape of low carbon fuel options and decarbonisation solutions are being tracked by every shipowner around the world. If these options were economically and operationally feasible, we would all switch tomorrow. The challenge is to facilitate this transition in a way that incentivises infrastructure investment and reduces the cost of alternative fuel supply chains, while ensuring that any operational hurdles are addressed.

Greenhouse gas (GHG) emissions from shipping is a global issue that can only be addressed effectively if national regulation supports and complements international regulation. Any incentives or regulation cannot be implemented in isolation, without acknowledgment of International Maritime Organisation (IMO) regulations and guidelines. Many IMO member countries are further advanced than Australia and we should learn from what has been implemented elsewhere while acknowledging and aligning with future IMO pathways. It has been demonstrated that regulation is accelerates the decarbonisation transition. The impact of the European Union Emissions Trading Scheme and FuelEU regulations have triggered a significant pace of alternative fuel development and growth in decarbonisation and efficiency options that is spreading beyond Europe into the global fleet. Without a regulatory impetus or incentive in Australia, change will not happen fast enough to keep up with international requirements.

One alternative fuel and decarbonisation solution will not fit all vessels. Vessel types, trade patterns, availability of fuel and shore infrastructure will contribute to the decarbonisation solution of choice for each vessel and shipowner. CSL strongly believe that biofuel will be a significant part of this fuel mix, not only as a transition fuel but as a long-term option to 2050 and beyond.

3. Ports

The Australian ports system of mixed private and public ownership is a hurdle to achieving consistent and fast paced change. A national maritime decarbonisation strategy can only succeed if ports are equally able, and equally incentivised, to provide the infrastructure and supply chain requirements for decarbonisation solutions.

3.1 Shore Power

Shore power is beneficial to vessels that have onboard high intensity and high consumption operations while alongside a berth. In addition, shore power lends itself to dedicated vessels that frequent a specified berth. Pneumatic cement vessels, for example, use four to five times the amount of fuel when discharging powder cement than a standard bulk carrier using cranes to discharge a granular cargo.

Considerations for shore power regulation and standards:

1. Shore power connection standards should be consistent between Australian ports. When developing the standard, consideration should be given to type of vessel, power requirements and berth activity – ie. cruise/container/pneumatic vessel.
2. The pace of transition of the grid itself to renewable energy should not hinder an investment decision at the port level.
3. Capital equipment investment on the vessel is required, not only port infrastructure.
4. Shore power is not the optimal solution for all vessels, or for all berths.
5. Shore power may only provide incremental benefit to a vessels overall carbon intensity. For example, on a pneumatic cement carrier, in-port fuel consumption while discharging is 10% of the overall fuel consumption on a 12-day voyage. This drops to 3% on a bulk carrier.
6. The ability of the surrounding grid to handle the required power requirements at peak times and potential plans for expansion.
7. Connections will likely result in additional training requirements for crew should they be the obligated party to make the connection. If the port is the obligated party, the port will need to ensure suitably trained personnel are available for ships arrival and departures.

Shore power is a decarbonisation technology that is available now and will continue to be part of the overall mix of options available to shipowners to reduce emissions. Many major international ports have installed shore power and are using it across different vessel types. The benefits extend beyond carbon reduction to a reduction in community noise, NOx, SOx, particulate matter emissions and enhance the living conditions onboard. Lower operating costs on the vessel side are also expected, due to less generator engine hours and hence an extension to maintenance timeframes. The gradual uptake of alternative low/zero carbon fuels does not lessen the impact that shore power can have in the immediate future and should be considered part of the long-term energy transition.

4. Shipping and Domestic Commercial Vessels – Biofuel

Biofuel is an ideal drop-in fuel for reducing carbon emissions immediately and for the long term. CSL has accumulated over 60,000 running hours on biofuel and currently runs eight vessels in Canada and is examining options in Norway and the US east coast/Canada. The operational viability of

biofuel has been proven and we have worked closely with class, flag state and OEM's to crystalise the positive emissions benefits of a drop-in fuel with zero capital expenditure.

4.1 Background to CSL's Biofuel Program

CSL has conducted the longest running biofuel trial in the world on the Great Lakes in Canada. The demonstration test was launched in 2019 with testing on the auxiliary engine on one vessel and in 2020 progressed to main and auxiliary engines of two vessels. In 2021, trials were conducted on eight vessels. These eight vessels went on to consume biofuel in 2022 and are continuing in 2023.

4.2 Biofuel Testing and Analysis

Over the duration of CSL's trials, various grades of biofuels were tested on bulk carriers and self-unloading bulkers on a range of engine loads and configurations. The fuel's NOx emissions were measured in accordance with the NO_x Technical Code, while sulphur content was measured in accordance with ISO 8754.

Emissions testing and fuel analysis was conducted at different bio-content concentrations to measure environmental compliance. In 2019, B50 fuel, a blend of 50% biodiesel and 50% marine diesel oil (MDO) was initially tested and increased to B80 fuel, a mix of 80% biodiesel and 20% MDO.

In 2020, the ships trials commenced with a B50 fuel, progressed to B80 and reached B100, which is pure biodiesel made of 100% bio-content second-generation biofuel. In 2021, eight CSL vessels used B100 continuously for a duration of five to eight months.

During each test, engine emissions were measured at 25%, 50%, 75% and 100% load according to their technical file, as well as at their normal operating loads to demonstrate a typical operation.

4.3 Biofuel Due Diligence

Prior to commencing the biofuel trials and receiving approvals from the flag state and port state control, DNV was engaged to conduct a risk assessment. Mitigating actions were developed for the following identified risks:

- increase in NOx emissions
- waxing at cold temperatures
- spontaneous combustion of soaked rags
- low viscosity of the fuel
- degradation of the piping system
- loss of fuel conditioning module
- clogging of filters
- fuel degradation in storage tanks
- inadequate fuel treatment
- lube oil compatibility.
- Spill containment

4.4 Biofuel Fuel Properties and Measurements

A biofuel standard for marine fuel does not currently exist at the concentrations used in CSL's trials.

The fuel was evaluated against ISO 8217:2017 with the exception of bio content, which was measured in accordance with EN 14103, a European standard for measuring high concentrations of biofuel.

All grades of biofuel and their properties were analysed, confirming their compliance with the values specified in ISO 8217:2017. The standard allows for up to 7% FAME, which stands for fatty acid methyl esters molecules obtained from vegetable oils by transesterification. As expected, each biofuel blend tested by CSL contained much higher concentrations of FAME. Additionally, while the standard allows for a pour point at -6°C, CSL's testing conditions were at temperatures that did not

go below of 0°C. During the trial, bunker tanks were not heated and tank temperature remained around 13°C. Biofuels can be heated if necessary.

4.5 Biofuel Results

CSL's tests successfully demonstrated that biodiesel is a technically viable and practical fuel option for existing ships to reduce well-to-wake GHG emissions and reduce SOx and NOx emissions below regulatory limits.

Among the findings:

- Total NOx emissions remained within Tier II limits for all grades of trialed biofuels.
- During B50 and B80 trials, NOx emissions were less than indicated in the technical file, suggesting that biofuels may be effective in reducing NOx emissions.
- The sulphur measured in all grades of trialed biofuels was below North America Emissions Control Area limits.
- SOx emissions were lower than the minimum measurable value of the equipment.
- The carbon factor assessment demonstrated that even before a life cycle analysis is performed, biofuels can provide an immediate CO2 reduction of 11.7%.

4.6 Biofuel for marine application and OEM's

Biofuel is considered a viable option for immediate carbon emissions reduction on a life cycle basis. Many shipowners trading in Europe are contracting for significant volumes of biofuel in the near term to meet the requirements of the EU Emissions Trading Scheme and FuelEU regulations, which regulate the carbon intensity of the fuel. Large shipowners, such as Maersk, are investing in upstream infrastructure to secure biofuel supply.

The vessels used in CSL's biofuel trial run main engines manufactured by MAN, Mak (Caterpillar) and Sulzer. We worked closely with each of these OEM's, who strongly support the use of biofuel in marine applications.

Some newbuild vessels, including additions to CSL's Americas fleet, are being designed and constructed as dual-fuel methanol. The intention for many shipowners is to run biofuel as the first fuel until methanol is readily available. Methanol may not be viable in some ports in the mid-term or even in the long term, due to production or infrastructure challenges. These vessels will have a continued requirement for biofuel for 20-30 years of asset life, taking the global demand beyond 2050.

4.7 Biofuel standards

Marine fuels are currently governed by ISO 8217 which only allows for 7% biofuel blend. When higher bio content is measured using the prescribed method in the ISO is an error generated due to a dilution factor that takes place in the process. It is expected that the ISO will be updated in 2024 to reflect all blends of biofuel.

Currently, the EU Standard for biofuel accurately reflects higher blends of biofuel. EN14214 eliminates error in the ISO method so an analysis of B100 will be accurate. Adopting EN14214 is an easy way for the Australian maritime industry to ensure a standard quality that has been proven in European industry. Post 2024, ISO can also be used.

5. Future Global Regulatory Environment

Australian industry participants have minimal visibility and understanding of IMO regulatory developments unless the company actively and purposefully engages with Maritime Industry Australia Limited (MIAL) or directly with the Department or AMSA. CSL gains the majority of our knowledge and understanding of IMO developments through Canada, despite the CSL Australian office having significant coastal and transhipment presence, and Australian flagged vessels.

We have very little visibility on Australia's position on matters at the IMO. Occasional AMSA circulars pass on information however there seems to be very little industry engagement or participation in informing any positions put forward at the IMO level.

6. Conclusion

Government has the opportunity to drastically increase the pace of decarbonisation by incentivising the maritime industry, fuel suppliers, infrastructure providers and other stakeholders to put in place the supply chains needed for biofuel. Biofuel is a solution that is available now and will be part of the mix of alternative fuels in 2050. This is being recognised globally and Australia must start d to support industry reduce cost and increase supply, through regulation and incentives. Perceived barriers to adoption are being solved at an international level, including fuel standards and bunkering a blend greater than a B20 by barge. Globally, OEM's have been working with shipowners to use biofuel and are supported by class and flag state. Shipowners in Australia are willing and able to consume biofuel if commercially viable.

Shore power is a solution for some ports and some ship owners and operators. Again, it is part of a mix of solutions that will be utilised to 2050, as other solutions are developed and become economically feasible. Shore power is a technology that is ready now but should be approached from a nationally consistent perspective to ensure maximum value add for vessels calling at multiple ports with shore power connections.

EV MARITIME

21 September 2023

MERNAP@infrastructure.gov.au

Feedback: MERNAP Issues Paper: Regulation and Standards

EV Maritime strongly supports the development of MERNAP, and in particular its recognition of both the uncertainties of the path we are on and the urgent necessity to address emissions despite this uncertainty.

Ambition
Achieving Australia's commitment to net zero by 2050 is an enormous task and a huge stretch. It will not be achieved in an environment of delay, nor working to rule. Every sector must do everything possible, as quickly as possible. We believe it is important for MERNAP to acknowledge this fact overtly: failure to put this plainly risks leaving industry and government with the misconception that they can limit their climate ambition.

Change is now
It is also important to point out that Australia's commitments to net zero are not commitments to change in the future. They are commitments to change now. The language of MERNAP could reinforce this better.

Government as Regulator
The issues paper seems to focus on Government's role as regulator. Regulation is important in this case because it provides a common platform to enact industry-wide change at scale and quickly.

Industry has shown that it will not adopt the necessary changes anywhere near quickly enough on its own to achieve Australia's commitments. MERNAP needs to focus on establishing a business environment in which change is required and accelerated.

Government regulation should be specific, and targeted at real emissions reduction. Loopholes which might encourage greenwashing (e.g. by "low emission", "hybrid", "biofuel" responses)

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need to be closed, by requiring quantitative justification of the benefits and options.

Government as Buyer
The issues paper also acknowledges the Government's role as owner of vessels, ports and infrastructure and accordingly the requirement which falls on Government to directly adopt the changes which will take us to net zero.

The evidence would suggest that the requirement for change has not yet been accepted across government in Australia. Transport for New South Wales' 2023 decision to commission the construction of seven new diesel passenger ferries is a case in point.

Climate delayed is climate denied
TfNSW's ferry decision was made despite knowing the technical and financial viability of an electric fleet, and at a time when comparable cities such as Auckland and San Francisco had already committed that no new diesel vessels would enter their fleets.

It is self-evident that this decision is not consistent with Australia's achievement of deep and urgent emission reductions. By extension, there is a need for MERNAP to provide a much more clearly articulated set of expectations to prevent this type of obfuscation.

MERNAP should enshrine the requirement for government and all government-related agencies to stop buying diesel boats where zero emission boats are technically viable. If economic viability is to be allowed as an excuse to ignore emission targets, such viability assessment should be expressly required to consider whole of life costs including properly valued emissions.

De-risk Adoption to Catalyse Action
As both regulator and owner of assets and infrastructure which need to decarbonise, Government is in the position of having to consider and manage adoption risk and address the confidence gaps most necessary to catalyse action.

The most constructive way for government to de-risk adoption is by itself making the first move into electric itself. By being the early adopters, government supports industry through the initial

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deployments. This has significant value which should be considered in the pursuit of climate action.

Government should also seek to directly support early adoption through the provision of grant funding. Time-bound funding, targeted at genuine emissions reduction at scale, will be an important tool for catalysing early change.

Government as Leader

MERNAP should acknowledge the leadership role of government. Whether they choose to or not, governments lead. They choose whether to lead well or to lead poorly. Choosing to keep buying fossil fuelled vessels over electric ones is powerful leadership against climate action, providing society every excuse they need not to change. It's also hypocrisy to announce policy and then not to follow it. Conversely, the inshore maritime sector, especially ferries, represent the ideal platform for highly visible positive climate leadership, through which government can demonstrate the value and urgency of taking action. Simply put, the bar for government maritime climate action should be set higher than that for industry.

Industry should not be building diesel boats

Looking across industry, there is an enormous number of new vessels needing to be built over the next 5, 10 and 20 years. MERNAP should provide a framework for collective management of the wider fleet to ensure the Australia's maritime emissions reduction trajectory. The regulatory framework should target the redeployment of diesel vessels away from any services which could be decarbonised and seek these to be redeployed into services in which zero-emission options are not yet viable.

Subsector Insights

MERNAP would do well to consider subsectors of the maritime industry at a granular level. As it stands, considering "maritime" as a whole makes it too easy to use arguments of scale or difficulty to excuse inaction in areas where action can be taken. MERNAP should seek to address this structurally by making sure it defined it subsectors in such a way as to encourage action rather than excuse inaction.

<u>High Seas Fleet:</u> Decarbonisation of the high-seas fleet is a long process which Australia may not have a lot of influence over.

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These changes will happen and be imposed upon Australia. As MERNAP proposes, Australia should watch these developments, support them politically and diplomatically, and prepare its ports to adapt accordingly.

Inshore Fleet: Decarbonisation of the inshore fleet however is viable now and should therefore be prioritised. The two areas in which Australia should be especially active right now are (1) full electric boats, and (2) hydrogen. Both are moving at pace internationally and there are Australian companies in a position to play a role in Australia's early adoption of these technologies.

Biofuels as last resort

Australia's decision to brand its climate action around "net zero" commitments rather than considering gross emissions presents a temptation to greenwash the solutions with a bio-fuel response. Biofuels still emit greenhouse cases, just like the fossil fuels which they emulate. They also come with significant environmental and ethical concerns, including deforestation, biodiversity loss, competition with food crops, and questionable carbon neutrality. To address climate change effectively, we must focus on sustainable, low-carbon energy alternatives that do not compromise our ecosystems and food security.

International Standards

In our opinion, Australia should not seek to develop domestic technical standards around low emission vessels or their supporting technologies. These are fast-moving areas and relatively small jurisdictions like Australia will always lag behind the leaders in this stage. Australia should peg its regulations to accepted international standards and ensure that regulators and industry are equipped to keep up with the pace of change which will characterise this period.

s 47F

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Chief Executive Officer

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06 OCTOBER 2023

MARITIME EMISSIONS REDUCTION NATIONAL ACTION PLAN (MERNAP)

ISSUES PAPER:

REGULATION & STANDARDS

Submission to the Department of Infrastructure, Transport, Regional Development, Communications and the Arts on behalf of Freight &Trade Alliance (FTA) and the Australian Peak Shippers Association (APSA)

"KEEPING AUSTRALIA'S INTERNATIONAL TRADE MOVING"

FTA
FREIGHT & TRADE ALLIANCE

Australian Peak Shippers Association Inc. (APSA)

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ABOUT THE ALLIANCE

Freight & Trade Alliance (FTA) is the peak body for the international trade sector with a vision to establish a global benchmark of efficiency in Australian biosecurity, border related security, compliance, and logistics activities.

FTA represents more than 500 businesses including Australia's leading customs brokerages, freight forwarders and major importers.

On 1 January 2017, FTA was appointed the Secretariat role for the Australian Peak Shippers Association (APSA). APSA is the peak body for Australia's containerised exporters and importers under *Part X of the Competition and Consumer Act 2010* as designated by the Federal Minister of Infrastructure and Transport.

APSA is also a member of the Asian Shippers' Alliance (ASA) and has board representation on the Global Shippers Forum (GSF) that represents shippers' interests and that of their national and regional organisations in Asia, Europe, North and South America, Africa and Australasia.

FTA / APSA also provide international trade and logistics advocacy support to the following associations:

- Australian Council for Wool Exporters and Processors;
- Australian Dairy Products Federation;
- Australian Horticulture Exporters and Importers Association;
- Australian International Movers Association;
- Australian Meat Industry Council;
- Australian Steel Association; and
- Tyre Stewardship Association.

The current APSA Officers and Committee of Management are listed below:

- s 47F (Manildra Group) - APSA Chair
- s 47F (Visy) - APSA Vice Chair
- s 47F (Casella) - Treasurer
- s 47F - APSA Secretary
- s 47F (Fletcher International Exports)
- s 47F Australian Meat Industry Council)
- s 47F (Australian International Movers Association)
- s 47F (Norco Co-operative Limited)
- s 47F (QMAG)
- s 47F (AGT Foods Australia)

A list of all members and further information about FTA / APSA is available at www.FTAlliance.com.au

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EXECUTIVE SUMMARY

Freight & Trade Alliance (FTA) and the Australian Peak Shippers Association (APSA) represent leading import and export businesses including world class manufacturers and producers, supported by skilled customs brokers and freight forwarders. This broad membership of professional entities is ready to take advantage of the opportunities created by trade liberalisation measures and those economies recovering from the pandemic.

Freight & Trade Alliance (FTA) and the Australian Peak Shippers Association (APSA) see significant value in the Department of Infrastructure, Transport, Regional Development, Communications and the Arts (Department) Maritime Emissions Reduction National Action Plan (MERNAP) initiative. It serves as a proactive response to the industry's call for clear guidance and support in the face of a globally recognised imperative: the need to reduce maritime emissions and transition to a more sustainable, greener future.

By addressing the mosaic of regulatory challenges and providing a clear roadmap for transition, MERNAP lays the foundation for both a greener maritime sector and a resilient Australian economy.

FTA / APSA in collaboration with our members, have contributed to providing feedback to the Department's Maritime Emissions Reduction National Action Plan (MERNAP) Issues Paper focusing on Regulations and Standards.

Supporting this position, FTA / APSA have prepared the following submission with five (5) recommendations in response to the specific questions as outlined in the *MERNAP Issues Paper on Regulations & Standards.*

RECOMMENDATION 1 - MERNAP needs to take a holistic approach to decarbonisation, ensuring compliance with IMO standards set, and crucially ensuring stakeholder engagement, particularly with ship owners & port operators.

RECOMMENDATION 2 – To best serve the maritime industry's evolving needs, it is recommended that the government adopt a dynamic, sustainable, and inclusive regulatory framework that prioritises adaptability, global harmonisation, stakeholder transparency, and uncompromised safety.

RECOMMENDATION 3 – MERNAP should consider the impacts and regulation of shore-side electricity in maritime ports, thereby reducing emissions and enhancing air quality.

RECOMMENDATION 4 – As a priority, targeted national actions need to specifically address shipping competition law (including repeal of Part X CCA, exclusive dealings via vertical integration, quayside cost recovery), Terminal Access Charges (stevedores & empty container parks), container detention (import & export). By doing so, holistically it would offset the cost impost of any carbon pricing mechanisms.

RECOMMENDATION 5 – MERNAP should ensure stakeholder engagement with ship owners and port operators to discuss and map the way forward in preparation of next generation fuel transitioning.

Part One: Australia's Maritime Sector and principles for regulation

QUESTION 1. What aspects of the domestic and international industry do you think we should be particularly mindful of?

FTA / APSA would like to ensure that the following aspects are also considered:

Compliance with IMO Conventions: Australia must ensure compliance with International Maritime Organisation (IMO) regulations, especially concerning safety, environment, and efficiency. We must understand the links between international and domestic regulations and ensure where possible, they are harmonised.
Decarbonisation and GHG Emissions: As international pressure grows to reduce greenhouse gas (GHG) emissions from shipping, Australia should actively participate in setting, endorsing, and implementing global decarbonisation standards.
Stakeholder Engagement and Industry Input
The maritime sector includes a variety of stakeholders, from shipowners to port operators. Ensuring mechanisms for their feedback on regulatory changes is essential.

RECOMMENDATION 1 – MERNAP needs to take a holistic approach to decarbonisation, ensuring compliance with IMO standards set, and crucially ensuring stakeholder engagement, particularly with ship owners & port operators.

QUESTION 2. These principles will help us provide advice to Government on what the potential future next steps might be. Do agree with these principles? What other aspects should we consider?

FTA / APSA agree with these principles, as they provide a broad framework for equitable, informed, and comprehensive decision-making. However, to further refine the regulatory approach and enhance its applicability, the following additional aspects might be considered:

***Adaptability and Flexibility*:** Given the rapid technological changes and global dynamics impacting the maritime industry, regulatory frameworks should be adaptable to cater to unforeseen developments without necessitating frequent, disruptive changes.
***Sustainability and Environmental Considerations*:** Regulations should inherently promote sustainable and eco-friendly practices. While decarbonisation is a significant part of this, other environmental concerns, such as ocean pollution, habitat destruction, and noise pollution, should also be addressed.
***Incentivisation and Support Mechanisms*:** To encourage compliance, especially among smaller operators with limited resources, the government might consider financial incentives, grants, or support mechanisms. This can expedite the transition to greener operations and reduce financial burdens.
Capacity Building and Education: For smaller operators with limited access to regulatory information, the government can offer training and educational resources. This will ensure that even the smallest players are well-informed and can comply efficiently.
***Harmonisation with International Standards*:** To avoid any potential conflicts and ensure seamless operations for international players, regulations should be harmonized with global standards and conventions where feasible.
Transparency and Accountability: Clear mechanisms should be in place for stakeholders to understand how regulations are formed, implemented, and enforced. Additionally, entities responsible for oversight should be held accountable for their roles.
Dispute Resolution Mechanisms: With varied actors in the maritime sector, disagreements or disputes might arise. It's crucial to have clear, efficient, and equitable dispute resolution mechanisms in place.
Periodic Review and Feedback: Regulations should not be static. Periodic reviews, perhaps every few years, can help in updating them based on industry feedback, technological advancements, and global trends.
Risk Management and Safety: While ensuring environmental sustainability and operational efficiency, the safety of the vessels, crew, and cargo should always be a top priority. Regulations should inherently ensure that safety is not compromised.

Part Two: Regulatory Barriers and Opportunities

a) General

QUESTION 3. Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?

MERNAP should focus on several regulatory areas of responsibility, including:

***Harmonisation of Standards*:** Address discrepancies between Commonwealth, State, and Territory regulations. A unified set of standards will simplify compliance for maritime operators and ensure consistent decarbonisation efforts across jurisdictions.
***Fiscal Incentives and Support*:** Consider providing tax incentives, grants, or subsidies to companies investing in cleaner technologies, alternative fuels, and green infrastructure. Such support can expedite the adoption of green technologies in the maritime sector.
***Infrastructure Development*:** Invest in port infrastructure that can support alternative fuels. Ensuring that the necessary infrastructure is in place is vital for the transition to greener vessels.
***Enforcement and Monitoring*:** Strengthen the oversight mechanisms to ensure compliance with decarbonisation standards. This could include regular inspections, enhanced monitoring systems, or penalties for non-compliance.
***Data Collection and Analysis*:** Implement robust systems for collecting and analysing data on emissions from the maritime sector. Such data can inform future policy decisions and help track the progress of decarbonisation efforts.
Stakeholder Engagement: Maintain an open dialogue with industry stakeholders, ensuring that their feedback and concerns are addressed in regulatory decisions. Regular consultations can ensure that regulations are both effective and practical.
***Alignment with International Regulations*:** Given the global nature of the maritime industry, ensure that Commonwealth regulations align with international conventions and standards, particularly those set by the International Maritime Organisation (IMO).

RECOMMENDATION 2 – To best serve the maritime industry's evolving needs, it is recommended that the government adopt a dynamic, sustainable, and inclusive regulatory framework that prioritises adaptability, global harmonisation, stakeholder transparency, and uncompromised safety.

QUESTION 4. What key regulatory arrangements would support or obstruct your operation and investment in decarbonising the maritime sector? What do you think the regulatory priorities to facilitate maritime decarbonisation should be?

Nil comment.

QUESTION 5. What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?

Nil comment.

QUESTION 6. We have set out a few potential areas below where there may be regulatory barriers or opportunities. What other areas exist from your perspective?

Nil comment.

b) Ports

QUESTION 7. The regulatory framework above begins to identify the intersections and complexities of regulation for ports. What situations have you or other potential investors come across where these regulatory layers contradict each other in relation to decarbonisation, or are inconsistent in their interlinkages?

Nil comment.

QUESTION 8. What have been your challenges with complying with the existing regulatory framework in relation to decarbonisation?

Nil comment.

QUESTION 9. What regulatory arrangements would support or obstruct your operation and investment for ports in decarbonising the maritime sector? For you, what would prevent an accelerated response to decarbonisation?

Nil comment.

QUESTION 10. Do you or your investors have visibility of the required standards/guidance for the development of shore power? How do these standards currently impact your investment decisions for ports? Are guidelines sufficient?

Nil comment.

QUESTION 11. What other information do you need to inform investment and operational decisions in relation to shore power? Is greater certainty in the status of the standards/guidelines a prerequisite?

Nil comment.

QUESTION 12. What examples/evidence of implementation of shore power internationally could Australia leverage or learn from?

The European Union Council in July adopted the Alternative Fuels Infrastructure Regulation (AFIR) which establishes, among other things, that maritime ports must provide shore-side electricity for vessels by 2030. FTA / APSA see merit in introducing similar to reduce emissions and improve air quality.

RECOMMENDATION 3 – MERNAP should consider the impacts and regulation of shore-side electricity in maritime ports, thereby reducing emissions and enhancing air quality.

QUESTION 13. What other regulatory challenges have you or others you know experienced in consideration of investment in shore power?

Nil comment.

QUESTION 14. What lessons can be learned from the development of liquefied natural gas (LNG) as a bunker fuel?

Nil comment.

QUESTION 15. What is your understanding of the scope and magnitude of the different requirements for the emerging fuels handling?

Nil comment.

QUESTION 16. What research is required to understand which equipment and procedural standards should apply?

Nil comment.

QUESTION 17. What is your understanding of the scope and magnitude of the different requirements for emerging fuels handling?

Nil comment.

c) Shipping

QUESTION 18. Do these or other regulations, or their current development uncertainty, impact investment in low and zero emission bunkering vessels?

Nil comment.

QUESTION 19. What other opportunities or barriers exist?

Nil comment.

QUESTION 20. What concerns do you have with the pathways for biofuel use (for example a perceived lack of standards across marine applications, or Original Equipment Manufacturers not supporting their use?

Nil comment.

QUESTION 21. Is there a lack of standards across marine applications limiting the use and uptake of alternative fuels, including biofuels? If yes, what are the gaps?

Nil comment.

QUESTION 22. What standards apply to support engine manufacturers in the transition to biofuels? If there are no international or domestically recognised standards, is there an accelerated pathway for land-use engine standards for biofuels that can be adapted for maritime application?

Nil comment.

QUESTION 23. In what areas is further analysis on standards, regulations, and communication required to build confidence in the use of biofuels as a potential emissions reduction strategy?

Nil comment.

d) Future Global Regulatory Environment

QUESTION 24. Are there specific areas of Australia's international emissions reductions engagements, in relation to IMO regulations, that the maritime sector would benefit from greater knowledge of, and engagement in?

FTA / APSA believe there are several areas where deeper knowledge and engagement would benefit Australia's maritime sector:

***Fuel Transition*:** Understanding the IMO's direction and recommendations concerning alternative fuels, their specifications, and bunkering requirements can guide Australia's maritime sector in preparing for the

next generation of fuels. Australia's maritime sector should also ensure stakeholder engagement, in particular seeking the opinion of the ship owners who are already investing heavily in new vessel builds with alternative fuels.

***Carbon Pricing*:** FTA / APSA see it as essential for the maritime sector to understand how these might impact operational costs, competitiveness, and the overall market dynamics.
The recent Productivity Commission Review of Australia's Maritime Logistics System made key recommendations to address issues on pricing which should be incorporated into the MERNAP goals to assist in lessoning the overall pricing impact required to help achieve goals for decarbonisation:

SHIPPING COMPETITION

Repeal of Part X CCA

The Federal Government must incentivise foreign owned shipping lines to continue to service Australian trade in a free and open market. To that end, FTA / APSA see merit in the Productivity Commission (PC) recommendation (as outlined in their review of *Australia's Maritime Logistics System*), to simply remove current competition protections offered to shipping lines without interfering with price setting.

FTA / APSA question whether shipping line vessel sharing agreements should continue to be protected and exempt from competition law faced by others in Australian commerce. While there appears to be a consensus across shipping and trade representative bodies for the repeal of the current protections offered under *Part X of the Competition and Consumer Act*, the difference of opinion lies in what should replace it.

FTA / APSA understand that shipping lines are looking for more liberal *'block exemption'* measures, presumably along the lines of the European Commission *Consortia Block Exemption Regime (CBER)*. FTA and APSA note the advocacy of the Global Shippers Forum (GSF) and those of multiple international associations advocating to the European Commission not to continue its CBER beyond the current period (expiration in 2024) believing its benefits have not been fairly shared with users of liner shipping services in the time since it was last renewed in 2020.

FTA / APSA agree with the PC that the onus should be placed on shipping lines to show that their agreements provide a net public benefit before entering into agreements whilst facilitating class exemptions allowing businesses to collectively bargain in negotiating terms with shipping lines.

Exclusive dealings via vertical integration

FTA / APSA are advised by members of increased scenarios whereby shipping lines and stevedores are offering capacity and / or significantly discounted rates contingent on using their other *'vertically integrated'* services such as landside transport, freight forwarding and customs clearances. Whilst benefits derived from vertical integration offerings are encouraged, it is imperative that the ACCC monitor any illegal exclusive dealing arrangements.

Quayside cost recovery

It is evident from consecutive ACCC stevedore monitoring reports that shipping line consortia are also benefitting from significantly reduced quayside charges administered by their contracted stevedore and empty container park providers. Savings that are clearly not being passed on down the supply chain via reductions in Terminal Handling Charges

With less quayside revenue, stevedores and empty container parks have resorted to a *'ransom'* model forcing transport operators to pay Terminal Access Charge (TAC) and ancillary fees or be denied access to container collection / dispatch facilities.

It is not sustainable for our exporters and importers to absorb this additional impost of hundreds of millions of dollars annually whereby they cannot influence service or price.

TERMINAL ACCESS CHARGES

Stevedores

The consistent position of FTA / APSA over many years of advocacy aligns with the PC finding in their draft report, recommending all charges be negotiated on a commercial in-confidence basis between the stevedore and their contracted client (shipping lines) negating the need to impose charges on third parties who have no ability to influence service or price.

All businesses face a dilemma of how to deal with unavoidable costs such as rent, infrastructure, labour, and power. Those same businesses are then forced to either absorb these costs or pass them on to their commercial clients. Similarly, stevedores and empty container parks should be forced to either absorb operating costs or pass these on to their commercial client (shipping lines). Shipping lines then have the choice to absorb or pass those costs onto exporters, importers and freight forwarders through negotiated freight rates and associated charges.

The existing voluntary arrangements established by the Victorian government and adopted by the National Transport Commission have proven to be futile, providing no ability to influence price, and giving stevedores' tacit approval to significantly inflate fees levied against our domestic transport operators.

FTA / APSA note that the PC deviated away from its original position and now recommend a mandatory code with the ACCC to act as the pricing regulator with special provisions to keep stevedores highly accountable for any charges imposed on the landside logistics sector. The proposed mandatory code will undoubtedly be an improvement to the current regime but will be less effective than simply allowing market forces to take effect by forcing cost recovery to take place exclusively via contracted commercial parties. Shipping lines are best placed to keep a lid on prices charged by their commercial suppliers.

Should the Federal Government implement the PC recommendation, it is essential that it do so in its entirety as any watering down of this recommendation will have devastating impacts, leaving our essential containerised trade sector exposed to ongoing and uncontrolled spiraling costs.

Empty Container Parks

While much of the attention has been focused on stevedores, it is important to note the empty container parks (ECPs) have adopted an identical cost recovery model. Transport operators cannot choose which ECP to dehire (return) containers after being unpacked by an importer.

The transport operator must also book a time slot with the ECP. This booking started as a minimal fee to cover technology costs, to many that now exceeds up to $100 per container. Again, the transport operator has no influence on service and is purely a *'price taker'*.

The Federal Government must implement equivalent regulation to both stevedores and ECPS to protect the Australian export and import sectors from the current unfair cost recovery models.

CONTAINER DETENTION

Import container detention

FTA and APSA provided extensive material to the PC highlighting the administration of exorbitant container detention fees, payable when delays occur in returning empty containers within prescribed periods as set by shipping lines.

Furthermore, evidence included scenarios whereby these fees are unfairly applied in an environment of *'vessel bunching'*, limited operating hours of facilities to receive empty containers, the empty container park being at capacity, delays in border and biosecurity releases, extreme supply chain labour shortages and in many cases, the detention clock starting at a time when cargo is physically unavailable for collection from the wharf.

The impost of an unreasonable container detention charging regime continues to be a significant impost for Australian commerce and a windfall for foreign owned shipping lines contributing to their recent multi-billion dollar annual profits. A remedy is required in an environment with inflationary pressures being felt across Australia with charges being passed down the supply chain, adversely affecting manufacturers, farmers, rural communities, and consumers.

This is hitting hard – everyone from major retailers through to small businesses. Freight forwarders, customs brokers and transport companies are left with the unenviable position of trying to explain this unbudgeted and unreasonable fee to importers and exporters costing anywhere from hundreds of dollars per consignment up to hundreds of thousands of dollars in some circumstances.

Whilst the PC sees a part of the solution being to remove the shipping line protections from Australian Consumer Law unfair contract provisions, we have asked the Federal Government to make decisive action by following the ACCC position in its last container stevedore monitoring report by creating a distinct prohibition on such unfair or unreasonable commercial conduct, either confined to the shipping industry as with the US model, or more broadly.

FTA and APSA remain of the view that the only realistic solution is for regulatory intervention to impose limits on when, or the amount of, container detention that can be charged.

Some options to protect importers could be:

- requiring shipping lines to offer to sell the container to the consignee after a set period and that the sale would end the detention period;
- cap the amount of detention to the lesser of the value of the container or the actual loss suffered by the shipping line;
- place a limit on shipping line's being able to charge detention where the delay in returning the container was due to:
- extended free periods in the event of border or biosecurity intervention;
- extended free periods for a Force majeure event;
- extended free periods for any act of the shipping line (or their contractors);
- restricting the daily charges to an amount equal to set amount - for instance, the provision could provide that the maximum daily charge cannot be greater that an amount equal to 5% of the replacement value of the container.

Export container detention

Similar considerations are also required in context of exports whereby some shipping lines start the free detention from the time of container collection to the time it boards the vessel for export.
Again, this is unfair in circumstances whereby vessels bypass ports or face delays.
FTA / APSA see the need for some form of safeguard for the detention clock to stop once the export container is received by the stevedore and in circumstances whereby the exporter stage the container in their facility (or a contracted third party's yard) for the period until the vessel is available to receive cargo.

***Data Collection and Reporting*:** IMO's data collection system for fuel oil consumption of ships is vital. Australia's maritime sector can benefit from understanding the nuances of this system, ensuring accurate reporting and leveraging the data for performance improvements.

RECOMMENDATION 4 – As a priority, targeted national actions need to specifically address shipping competition law (including repeal of Part X CCA, exclusive dealings via vertical integration, quayside cost recovery), Terminal Access Charges (stevedores & empty container parks), container detention (import & export). By doing so, holistically it would offset the cost impost of any carbon pricing mechanisms.

RECOMMENDATION 5 – MERNAP should ensure stakeholder engagement with ship owners and port operators to discuss and map the way forward in preparation of next generation fuel transitioning.

QUESTION 25. What initiatives related to the above issues are happening internationally that we can learn from/consider/adopt when constructing our national approach to decarbonisation under the MERNAP? What has and hasn't worked, and what is feasible for us domestically?

FTA / APSA identifies various international initiatives which can provide valuable insights:

European Green Ports: Ports like Rotterdam and Amsterdam are pioneering various green initiatives, from electrification of quayside operations to incentives for green vessels.
Alternative Fuels: Norway's push for electrification of its ferry fleet and the use of liquid natural gas (LNG) in various European routes provide real-world insights into transitioning away from conventional fuels.
Carbon Pricing: Sweden's implementation of a carbon tax has shown both the challenges and potential of such an approach in reducing GHG emissions.
Innovation Hubs: Singapore's maritime sector, with its innovation hubs and green ship initiatives, offers insights into leveraging technology and industry partnerships for decarbonisation.
Incentive Programs: In California, USA, the state provides financial incentives for green vessels, which has driven the adoption of cleaner technologies.
Challenges: Some challenges observed internationally include the initial resistance to new regulations, the high upfront cost of green technologies, and concerns about the availability and reliability of alternative fuels.

For Australia, feasibility considerations should include:

Infrastructure Development: Assessing the readiness of ports to adopt new bunkering facilities and other green technologies.
Domestic Fuel Production: Evaluating Australia's capacity to produce and supply alternative fuels like hydrogen or biofuels.
Economic Implications: Balancing the need for green initiatives with their potential economic implications, especially in terms of trade competitiveness. The government addressing recommendations made in the Productivity Commission Review of Australia’s Maritime Logistics System which go a long way to offsetting the costs.
Geographical Considerations: Given Australia's vast coastline and remote regions, ensuring that decarbonisation strategies are effective not just in major ports but also in more isolated areas.
In essence, while Australia can derive valuable lessons from international initiatives, it's crucial to adapt and implement them based on domestic circumstances, capabilities, and priorities.

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7th September 2023

Department of Infrastructure, Transport,
Regional Development, Communications and the Arts (DITRDCA)
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RE: Feedback on MERNAP Issues Paper: Regulation and Standards

This document is feedback on the *MERNAP Issues Paper: Regulation and Standards* ("the paper") from Maritime Impulse Pty Ltd ("Maritime Impulse").

About Maritime Impulse

Maritime Impulse exists to help domestic commercial vessel (DCV) owners in Australia decarbonise their existing vessel fleets. We offer digital solutions for DCV fleet owners and have partnered with Cetasol to sell their iHelm and CetaFuel products in Australia.

It was founded by s 47F, a strategy and product management expert who has moved beyond just creating software products to creating a more sustainable future. His involvement in projects with Fisheries Research Development Corporation (FRDC) and the Pacific Islands Forum Fisheries Agency (FFA) has given insights into and appreciation of the challenges facing the wild-catch commercial fishing industry.

Our Feedback

From the questions asked by the paper:

Q These principles will help us provide advice to Government on what the potential future next steps might be. Do agree with these principles? What other aspects should we consider?

Key Principle: Self-Sufficiency

The importance of self-sufficiency, the ability to deal with problems without help from other people, should also be considered when looking at decarbonising deep-sea vessels, especially ones with single vessel owners who might not have staff elsewhere to help (like many fishers).

Self-sufficiency with regards to the ability to be at sea and handle power, propulsion, or engine problems without the need to request help. There is an element here of economic independence (not wanting a catch to spoil, not needing to pay for others' help) mixed in with a focus on crew and personal safety.

Government steps to promote decarbonisation of the sector should therefore take this into account and look to ensure that where possible ideas that better support self-sufficiency are prioritised.

To help with this Maritime Impulse recommends that the following key principle be added:

- recognise that self-sufficiency is an important safety and economic principle for many commercial operators in the maritime sector.

Key Principle: Remembering the Regions

It is important to recognise that the maritime sector is distributed around regional areas and the economic and social importance of the services and employment that these offer to remote regions.

Whilst international shipping will naturally demand alternative fuel bunkering and shore charging be a key element of major ports, it will be vital to the decarbonisation of the entire sector that smaller regional harbours and marinas be supported to decarbonise.

To help with this Maritime Impulse recommends that the following key principle be added:

- ensure that the regional maritime sector is helped to decarbonise.

Q Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?

AMSA's *National Standard for Commercial Vessels (NSCV)* is an obvious area that needs to be updated to include alternative fuels so that vessels can be constructed to use them without being classed as novel vessels.

Q What key regulatory arrangements would support or obstruct your operation and investment in decarbonising the maritime sector? What do you think the regulatory priorities to facilitate maritime decarbonisation should be?

Requiring GHG emission tracking, and publishing of sustainability actions would be a good start.

With fishers, there are some input managed fisheries that may need to find ways to allow fishers to vary the characteristics of their license conditions in order to implement changes to decarbonise their operations (e.g. vessel length).

Alternative fuels will be more expensive to buy for the same energy output, so some way of regulating prices to help early adopters would support decarbonisation.

Electrification (or going hybrid) requires significant capital expense and costly expert help, alternative fuels are hard to retrofit for, so either way there will be a push to create more newbuild vessels – Government help in limiting unsustainable newbuilds and dropping the price of newbuilds would be useful.

Q What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?

Costs and economic pressures, going it alone is OK for big businesses, but for smaller players we need to protect our competitiveness and are not able to afford to accelerate decarbonisation in the face of a lack of need to do so across our market segment. If the majority of smaller maritime businesses are unable to comply with regulation, then the assumption will be that the government will back down on enforcing expensive changes.

Q Is there a lack of standards across marine applications limiting the use and uptake of alternative fuels, including biofuels? If yes, what are the gaps?

Drop-in biofuels are very different to biofuels in general and should be carefully distinguished.

Biodiesel blends up to 5% (B5) are allowed to be sold without declaring them to Australian customers[1], and many engine OEMs support up to a 20% blend (B20). However, the current Transport for NSW recommendation is that vessel owners avoid these biodiesel fuel blends due to the shorter shelf life of these fuels as it tends to oxidise and "an additional fuel stabiliser may be required if biodiesel blends are stored for more than a few months"[2]. There is also the chance of biological growths in the fuel system that may need regular cleaning to remove.

Renewable diesel (also known as "HVO") on the other hand does not have these issues and is generally treated the same as diesel by both Australian regulations and engine OEMs. It also offers a much greater reduction in well-to-wake GHG emissions than biodiesel blends can. A recent call for action by the Australian Government to support renewable diesel across several sectors, including maritime transport, is worth acting on[3].

Petrol drop-in fuels like E10 are not good in marine environments, but biobutanol is a relevant biofuel substitute. We do not have a biobutanol-petrol blend available in Australia, but research in the USA has shown that a small biobutanol blend of 16% (Bu16) can reduce GHG emissions by 10-20%, and marine engine OEMs have offered support for Bu16 as a drop-in maritime biofuel[4]. The very large number of outboard motors users in the commercial maritime industry would benefit greatly from having this sort of blend made available, but there is no standard for this type of fuel in Australia.

Q What standards apply to support engine manufacturers in the transition to biofuels? If there are no international or domestically recognised standards, is there an accelerated pathway for land-use engine standards for biofuels that can be adapted for maritime application?

Through the GreenVoyage 2050 project the IMO have created a regulatory mapping portal for alternative marine fuels[5], this offers insight into the state of various alternative fuels. Maritime Impulse believes that the most important fuel to focus on is (bio)methanol, which is in fairly good

[1] https://www.accc.gov.au/consumers/petrol-and-fuel/ethanol-and-other-biofuels
[2] https://roads-waterways.transport.nsw.gov.au/about/environment/sustainability/vessel-biofuels.html
[3] https://hvia.asn.au/wp-content/uploads/Joint-letter-for-cross-sector-renewable-diesel-August-2023.pdf
[4] https://www.nmma.org/assets/cabinets/Cabinet515/Marine%20Biobutanol%20Research%20Book%20SFS2.compressed.pdf
[5] https://greenvoyage2050.imo.org/alternative-marine-fuels-regulatory-mapping/

shape as a marine fuel. Methanol has both land and marine use as a racing fuel, and in this sense has some regulatory guidance already. Dual-fuel (methanol/diesel) ICE, mono-fuel ICE, and fuel-cell implementations of methanol already exist.

Q In what areas is further analysis on standards, regulations, and communication required to build confidence in the use of biofuels as a potential emissions reduction strategy?

Setting clear mandates for renewable diesel and isobutanol blends would help signal demand for these biofuels and help producers and consumers prepare for them. Government investment into market innovations that are inherently risky, where demand is not yet measurable, and government subsidy of alternative fuel use, where its supply will be more costly, is the only way to mature a market like this quickly.

However, biofuels are not the only answer. Where possible it is important to consider how changing the way we operate maritime vessels can help preference other technologies, such aa battery-electric, or hybrid vessels. Renewable electricity will be vastly cheaper to source than biofuels, and results in much less wasted energy. It will be necessary to promote standards that support charging at sea from power buoys (and not just at wind farms); new ways of designing vessels to be efficient, either using hydrofoils, or foil assist technologies; and encouraging new ways of thinking about how to achieve the same or better outcomes with different technologies.

Q What initiatives related to the above issues are happening internationally that we can learn from/consider/adopt when constructing our national approach to decarbonisation under the MERNAP? What has and hasn't worked, and what is feasible for us domestically?

Norway: Got Results, But Stifled Innovation

Norway has also been a world leader in addressing climate change and reducing GHG emissions. Their 2030 target is a 55% net GHG emissions reduction compared to 1990 levels. Norway introduced one of the world's first CO_2 taxes on fuels in 1991 and has one of the highest carbon tax rates in the OECD[6].

If we consider the impact that electrification of ferries has had in Norway, then it is both encouraging and a warning to us. Most of the ferry electrification projects have been funded by the government through tenders and grants, unfortunately the mandate "electrify at any cost" has trumped the commonsense viewpoint of "electrify efficiently". A local partner of Maritime Impulse tells the story of finding a ferry with batteries six times as large as they actually needed!

Ship owners are going to expert systems integrators and suppliers to electrify, but this has resulted in little innovation. Rather than solving problems with new products, existing products have been rolled out, often with massively over-specified capabilities resulting in much higher project costs, lower ROI, and solutions that will be more expensive to run in the long-term. The co-founders of Brim Explorer, a sustainable Norwegian tourism operator point out that:

> *Owners seem to believe this is "smart". But all it has led to is inefficient solutions that have generated good profits for vendors but little transferability to the private sector.*

[6] https://en.wikipedia.org/wiki/Carbon_tax

> *This lack of transferability prevents Norwegian maritime electrification solutions from becoming an exportable product, despite that being a government aim. Out of hundreds of ferry projects, hardly any have been exported.*[7]

Their point was that rather than boost breakthrough innovations, the financial incentive was used to fund "good enough" solutions. Rather than asking what the best way to electrify was, the existing pattern of operations were used to justify providing batteries that were too large, requiring DC fast charging at every stop, and creating more load on the grid than was needed – a particular problem on island stops. The resulting systems are not what is needed globally and are less competitive with other approaches.

Australia can, and should, encourage and indeed, mandate moves towards becoming more sustainable in our maritime sector, but the emphasis should be on smart, innovative solutions that can be turned into products and services we can export to the world.

California: Displacing Diesel

The USA's State of California has long been a leader in addressing climate change and technology development. With a population of 39 million and a Gross State Product (GSP) of US$3.3 trillion its nominal GDP is the fifth largest in the world.

The California Air Resources Board (CARB) "is charged with protecting the public from the harmful effects of air pollution and developing programs and actions to fight climate change."[8] Since the Global Warming Solutions Act of 2006 was passed it has been creating regulatory and market mechanisms to reduce GHG emissions in economical ways. In 2022 amendments were made to "the Commercial Harbor Craft (CHC) Regulation require the use of at least 99 percent Renewable Diesel ("R100" or "R99")".[9] From the 1st of January 2023 this has been compulsory for all commercial harbor craft.

There is also the Low Carbon Fuel Standard (LCFS) which begin implementation in 2011, was strengthened significantly in 2018, and has been steadily decreasing the amount of life cycle (well to wake, or well to wheel) greenhouse gas emissions of fuels in use in California[10]. The result of this focus on renewable diesel has been that diesel and renewable diesel prices in California now track each other very closely[11] and for the first time ever this year saw 50% of diesel replaced by clean fuels[12] (see Figure 1).

[7] https://www.tradewindsnews.com/opinion/-costly-flaws-norway-s-electric-ferries-are-over-engineered-lighter-energy-efficient-vessels-are-needed/2-1-1432997
[8] https://ww2.arb.ca.gov/about
[9] https://ww2.arb.ca.gov/resources/fact-sheets/chc-factsheet-renewable-diesel-r100-or-r99
[10] https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard/about
[11] https://afdc.energy.gov/fuels/prices.html
[12] https://ww2.arb.ca.gov/news/first-time-50-california-diesel-fuel-replaced-clean-fuels

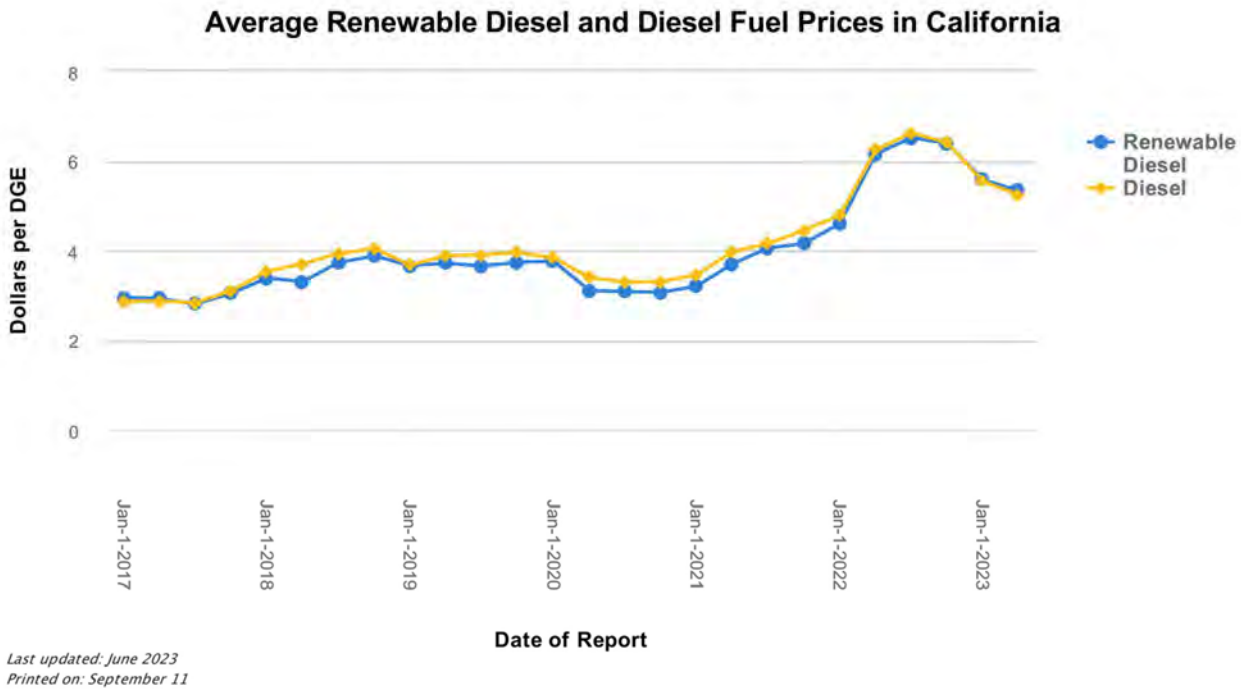

Figure 1: Fuel Prices in California. Source AFDC, US DoE.

At present domestic commercial vessels (DCVs) are replaced roughly every 20 years, and only around 1% of the fleet is actually replaced with newbuilds each year (and often newbuilds just add to the numbers of DCVs, with older vessels languishing at mooring sites)[13]. Renewable diesel offers a way of ensuring mass decarbonisation, and California has shown us the way it has helped them make a real difference.

In Conclusion

Maritime Impulse wishes to thank DITRDCA for the opportunity to comment on the MERNAP Issues Paper: Regulation and Standards. We welcome the collaborative nature and transparency of these sorts of government processes and hope to see more of this in the development of the national action plan for emissions reduction plan in the maritime sector.

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CEO & Founder

Maritime Impulse Pty Ltd

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[13] Source: Email communication with AMSA.

MARITIME INDUSTRY AUSTRALIA LIMITED

MIAL Submission
MERNAP Issues Paper 1
Regulation and Standards

About MIAL

Maritime Industry Australia Ltd (MIAL) is the voice and advocate for the Australian maritime industry. MIAL is at the centre of industry transformation; coordinating and unifying the industry and providing a cohesive voice for change.

MIAL represents Australian companies which own or operate a diverse range of maritime assets from international and domestic trading ships; floating production storage and offloading units; cruise ships; offshore oil and gas support vessels; domestic towage and salvage tugs; scientific research vessels; dredges; workboats; construction and utility vessels and ferries. MIAL also represents the industries that support these maritime operators – finance, training, equipment, services, insurance and more. MIAL provides a full suite of maritime knowledge and expertise from local settings to global frameworks. This gives us a unique perspective.

We work with all levels of government, local and international stakeholders ensuring that the Australian maritime industry is heard. We provide leadership, advice and assistance to our members spanning topics that include workforce, environment, safety, operations, fiscal and industry structural policy.

Overarching comments

There are several important regulatory and standard related considerations issues to address so that for Australia's maritime industry to decarbonise:

1) the development and implementation of new and internationally consistent approaches to:
    a. certification of carbon content in fuels that takes into account lifecycle emissions;
    b. technical standards for the storage, delivery and bunkering of low and zero carbon fuels;
    c. Safety handling standards and associated training packages for new fuels.

2) Where demonstrated to be safe to do so, removal of legislative barriers that create practical difficulties and disincentives for the adoption of low and zero carbon marine fuels.

3) The development of a legislative approach that supports early movers, creates incentives and provides a stable, long term regulatory framework that helps to address the significant cost gap between conventional and low and zero carbon fuels.

4) Demonstrate in a practical sense the Australian Government commitment to maritime green corridors (as a signatory to the Clydebank Declaration tec) via incentives and direct investment to support vessel and infrastructure development. This will be an important role Australia can play in facilitating broader collaboration attraction of further private investment across the value chain.

There are multiple overseas examples where stable long term regulatory frameworks are in place and leading to incremental increases in production and adoption of low carbon fuels, by creating a credit trading scheme that helps to offset the additional production and consumption costs. Some examples include the Canadian Clean Fuel Regulations and the Californian Low Carbon Fuel Standard. Schemes such as these are transport mode and technology blind, and have the additional benefit of embedding the necessary regulatory levers in the economy to help ensure emissions reduction targets can be met.

It's important to recognise that the most significant regulatory barrier to maritime decarbonisation is the fact that, while there already exists a suite of technology and fuel options to significantly reduce emissions (for example biofuels and renewable diesel) there currently exists no regulatory imperative to act. The implementation of regulation and standards that have the dual purpose of driving action and creating the stable, long term regulatory framework that support the transition by addressing the significant cost gap between conventional and low and zero carbon fuels will be critical in ensuring the government achieves its Net Zero decarbonisation objectives.

Key principles in regulation

MIAL supports the key principles in regulation as expressed in the issues paper, and suggest the following additions:

- As a key priority, target incentives to support decarbonisation of domestic shipping activities, while assessing green corridors and international ship bunkering opportunities.
- Avoid perverse outcome that drives transport activity away from shipping to less energy efficient forms or transport. (In avoiding this outcome government must ensure that regulation applying to the maritime industry does not impose costs that are disproportionately imposed upon the maritime sector and not on other modes of transport.)
- Through domestic reserves or another mechanism, allocate supply of green hydrogen to the domestic production of green shipping fuels for bunkering.

A complex regulatory environment

There will be roles for local, state/NT and commonwealth government in facilitating Australia's maritime energy transitions in ensuring adequate supply of fuel, address land use planning barriers, assisting early movers with capital upgrades and create the regulatory environment to establish the economic viability of low carbon fuels to secure demand.

However, it is incredibly important that the Commonwealth Government takes a strong leadership role in problem solving and coordination of efforts to address practical and regulatory issues between jurisdictions and public and private interests. Given the cross jurisdictional nature of many in the maritime industry, it is also a key role of the commonwealth government to establish the required imperative to act.

There is also a unique role for the commonwealth to actively particate in international forums, such as the IMO, to ensure unnecessary regulatory barriers are removed. One such example is the requirement for bunker barges carrying biofuels and biofuel blends over a certain concentration to be certified under the IBC code. This means that conventional bunker barges, the most efficient form of fuel delivery, could not be utilised to deliver high concentration biofuels to ships.

Shore power

Shore power provides an opportunity for ports to address some of their scope III emissions. There are other benefits to shore power, including reduction in noise and SOx emissions, which may make shore power particularly attractive for some ports and port users. On the other hand, shore power is relatively high cost, non-viable in some ports that doesn't have energy capacity and potentially difficult to implement given the periodic transitional instability of the Australian energy grid as the stationary energy system decarbonises.

Shore power - regulations and standards

- Regulations and standards must recognise that shore power may not be the right solution for all operators and that as alternative low carbon fuels options increase, demand for shore power facilities may decrease.
- Application of consistent standards governing landside and ship side equipment will be critical to ensure ships not consistently visiting the same ports have the confidence to invest in on board equipment knowing that it will be able to be utilised widely.

Shore power – the business case

- Ability to utilise at multiple or all ports (depending on trade). A vessel on a consistent trade between two or three ports would need to be able to access shore power connections at each port to justify the investment
- There must be clarity on electricity supply charges to better understand the business case and the ability of ship operators to pass on costs.

Shore power – decarbonising the grid

It is important to note that, while a port's capacity to provide the additional power requirement is an important consideration, the source of electricity generation made available for shore power should not in itself be reason to delay creating the right regulatory environment for investment in shore power either on the ship side or port side. Decarbonisation of the electricity grid is occurring at a rapid pace and is subject to a separate commonwealth government regulatory, policy and investment program.

New Fuels Handling, storage and distribution

There is a significant amount of work underway by organisations such as the Global Centre for Maritime Decarbonisation, Maersk Mc-Kinney Moller Centre for Zero Carbon Shipping, classification societies, port authorities, scientists, engine manufacturers and energy producers to provide the necessary research and controlled trials that will underpin standards for the storage, handling and distribution of new fuels. It is incredibly important that Australian authorities closely follow developments in these areas to avoid duplication and ensure implementation of Australian safety standards, regulation and training is consistent internationally.

There will be elements of existing standards governing distribution and storage of new fuels such as hydrogen, ammonia and methanol, that will be able to be adapted for the purpose of fuel as well as new standards required.

Shipping and domestic commercial vessels

Novel vessels

In an environment where the production and uptake of low carbon fuels was incentivised through stable, long term regulatory framework that helps to address the significant cost gap between conventional and low and zero carbon fuels, standards relating to vessel construction could become a significant factor limiting the ability of Australia's maritime industry to decarbonise.

There is significant capability within classification societies to safely approve novel design and construction standards for vessels using non-conventional propulsion systems as per the AMSA novel vessel policy. However, the ability of the Domestic Commercial Vessel sector to fund the exercise is limited. This is where government early mover support would be very well targeted.

Drop in Biofuels

There are varying and inconsistent experiences across the industry with respect to the attitudes of OEM and the use of biofuels in their engines. Some OEMs provide guidance documents and have gone to great lengths to publicly back the use of biofuels and dispel historical concerns, such as increased NOx emissions and impact on engines. Other vessel operators report OEM resistance. This indicates that there may be some work to be done to establish universal acceptance of drop in biofuels and remove any perceived technical barriers to its widespread adoption.

Existing fuel standards (ISO 8217) are suitable for renewable diesel but present an obstacle to the use of biofuel blends above 7%. There are alternative standards (EN14214 – and EU standard) which if adopted could be a straightforward way for industry to be assured of B100 fuel quality.

There is a significant amount of understanding of and experience with biofuels within the global maritime industry. Adaptation of land-based engine standards for marine use would be a retrograde step.

Future Global Regulatory Environment

The Australian industry's visibility of regulatory development at the IMO is patchy and is dependent on the resources available within each company to be able to actively engage through MIAL, other industry peak bodies and directly with AMSA. Often it is difficult to ascertain what the Australian position is, if one is held, which is likely driven by the fact that Australia is not a large flag state.

However, it is critical that where the Australian government seeks a firm outcome at IMO that industry is closely engaged in the process of informing the Australian position, particularly with respect to papers the Australian Government intends to submit to IMO/MEPC either alone or as a co-sponsor. In recent years the industry has had very limited visibility on Australia's position, particularly with respect to the IMO mid-term measures. Industry would welcome more active engagement.

22 September 2023

MARITIME EMISSIONS REDUCTION NATIONAL ACTION PLAN
Issues Paper 1: Regulation and Standards

Department of Infrastructure, Transport, Regional Development, Communications, and the Arts

Port of Melbourne

Port of Melbourne acknowledges the Bunurong, Wadawurrung and Wurundjeri Peoples of the Kulin Nation as the Traditional Custodians of the land and waters on which our business operates.

We recognise and value their unique cultural heritage, customs, spiritual beliefs and relationship with the land. We pay our respects to their Elders past, present and emerging, and to all Aboriginal and Torres Strait Islander peoples across the communities in which we work.

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Introduction

About Port of Melbourne

As Australia's largest general cargo and container port, the Port of Melbourne is a vital trading gateway for south-eastern Australia, facilitating more than one-third of the nation's container trade and playing a critical role as a key driver of economic activity. The Port of Melbourne services the south-east of Australia, including Tasmania, and occupies a central position in Australia's maritime freight and logistics industry.

As the landlord manager of the port, Port of Melbourne Operations Pty Ltd (PoM) is responsible for the strategic planning, development and management of the port's operations under a 50-year lease from the Victorian Government.

The Port of Melbourne Group is owned by some of the largest and most experienced global infrastructure investors with wide-ranging expertise in managing significant infrastructure assets. They are QIC, on behalf of its managed funds and clients, Future Fund, Global Infrastructure Partners, and OMERS Infrastructure.

The shareholders are long-term investors and, as such, make investment decisions in the strategic interests of the port and its place in the national supply chain.

PoM is focused on providing world-class port facilities and services, and we are committed to investing in infrastructure at the Port of Melbourne to drive efficiencies and productivity that support the state's economic growth, job creation and social prosperity. The port contributes 30,000 jobs and $11 billion[1] to the Australian economy each year and is committed to servicing the Australian economy.

Port of Melbourne's decarbonisation strategy

PoM recognises that climate change is a significant global challenge that will have wide-reaching effects on our business, all sectors of the economy and society. We support the Paris Agreement goals and efforts to limit global temperature rise to 1.5 degrees Celsius above pre-industrial levels by the end of this century. We also support the State of Victoria and Australia's transition to net zero emissions.

PoM is committed to managing the risks and opportunities arising from climate change to ensure the long-term sustainability of the port and the ongoing resilience of our assets. We align our approach to climate management and reporting to the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD).

In June 2023, PoM set a target to achieve net zero emissions for Scope 1 and 2 by 2030. We will achieve this by sourcing the electricity needed for our business operations from renewables and transitioning our corporate vehicle fleet and marine survey vessel to electric or zero-emissions fuel technologies.

We have also set a target to engage with tenants, shipping lines and other port users on emissions reduction measurement and opportunities to progress the decarbonisation of the port supply chain (PoM's Scope 3 emissions).

[1] ACIL Allen, 23 February 2023 Report to Port of Melbourne Operations Pty Ltd 2021-22 Economic contribution of the Port of Melbourne

In FY22, PoM's Scope 1 and 2 emissions were 2,916 tonnes CO2-e, representing only 1% of emissions across the Port of Melbourne precinct.

In FY22 PoM's Scope 3 emissions across the Port of Melbourne precinct (from the port gate on the landside to the boundary of port waters on the marine side) were 360,904 tonnes CO2-e. This figure reflects our role at the centre of large global shipping, logistics, road and rail supply chains, with 63% of emissions generated by shipping within PoM waters. Of these, approximately 50% were generated by ships at berth. A further 30% of emissions are generated by PoM's tenants.

More detail on PoM's approach to decarbonisation and our greenhouse gas emissions can be found in our Sustainability Reports available at the Port of Melbourne website (Sustainability - Port of Melbourne).

PoM's support for MERNAP

PoM supports the Federal Government's efforts to:

- Facilitate Australia's national emissions reduction targets with a maritime framework that contributes to global decarbonisation;
- Future-proof the Australian maritime sector by setting signals early to avoid a later accelerated, disruptive transition;
- Signal to global trading partners Australia's clear pathway to net zero emissions shipping in our waters and ports; and
- Promote a safe and equitable transition for the maritime sector, particularly for the maritime workforce.

The Maritime Emissions Reduction National Action Plan (MERNAP) objectives should also complement and embed decarbonisation goals into our broader freight system through the Government review of the National Freight and Supply Chain Strategy.

PoM's contribution to MERNAP is informed by:

- PoM's unique position at the centre of south-east Australia's supply chain and our commitment to facilitating decarbonisation in collaboration with our stakeholders;
- PoM's Sustainability Strategy and Net Zero Plan which is aligned with the United Nations Sustainability Development Goals and includes the monitoring and measurement of vessel emissions within PoM waters; and
- PoM's engagement with stakeholders across the port supply chain and other ports internationally to identify and facilitate decarbonisation initiatives, which provide PoM with insight into current domestic challenges and global trends.

PoM is pleased to provide comment on the Federal Government's Maritime Emissions Reduction National Action Plan (MERNAP) *Issues Paper 1: Regulation and Standards*.

Specifically, PoM asks that the Government notes the points made below regarding industry trends and the role of ports.

Industry Trends

It is important to recognise the context and extent of influence of Australia's maritime industry within a global context. PoM's observations and recommendations are made within this context, noting the following industry trends:

1. While a number of initiatives are being considered to decarbonise the shipping industry, at present there is no commonly agreed alternative fuel or approach. Further, fuel sources adopted in the next few years may serve as transition fuels with a move to other fuel sources or technologies in coming decades.

2. Many decarbonisation initiatives in the shipping sector are initiated overseas where shipping lines and vessel owners are domiciled. According to the latest edition of DNV's *Maritime Forecast to 2050*[2], the shipping industry will find it challenging to secure enough supply of zero emissions fuels to meet IMO net zero targets. It is anticipated that the maritime sector needs 30-40% of the projected worldwide net zero fuel supply to meet the anticipated demand of 17 million tonnes of oil equivalent (Mtoe) annually by 2030 for which shipping must compete with other industries.

3. While securing zero emissions fuels is critical, the industry is looking at many other forms of efficiency measures that can deliver lower emissions results now. These include for example; air lubrication systems that reduce the resistance working on the ship's hull creating energy saving effects and wind assisted propulsion that harnesses wind to supplement the propulsion of a vessel by generation of aerodynamic forces. In addition, technologies such as onboard carbon capture and storage can address the competition for sustainable biomass fuels and renewable electricity which are being incorporated into the design of new vessels.

4. Fuel producers need surety that there is sufficient demand to justify the investment in production, storage and transport of zero emissions fuels for the maritime sector.

5. Major shipping lines are looking at transition plans in their orderbook of vessels with half the ordered tonnage capable of using liquefied natural gas (LNG), liquefied petroleum gas (LPG), or green methanol in dual-fuel engines, compared to one third of the tonnage on order last year. The DNV report also notes that around 6.5% of tonnage in operation can now operate on alternative fuels, compared to 5.5% last year.

6. Considering the different pathways to zero emissions currently being evaluated by the shipping industry, there will be a need to ensure that safety and emergency management procedures and protocols as well as seafarer welfare and training are evaluated before solutions are implemented.

[2] Maritime Forecast to 2050 - DNV

The Role of Ports

1. Australian ports will be required to work collaboratively with international counterparties such as ports, shipping lines and vessel owners to meet IMO decarbonisation goals in line with Australian statutory requirements such as Australian Maritime Safety Australia and the objectives of MERNAP.

2. The role of ports in undertaking research and development will be complemented by the potential to trial new opportunities such as bunkering of zero or low emissions fuel and shore power.

3. Initiatives such as green shipping corridors between ports enable industry collaboration and shared risk to reduce uncertainty by scoping and trialing different low and zero emissions fuel types that may help aggregate demand and lower risk.

4. In support of alternative fuel production, storage and bunkering, there will be a requirement for capital investments to attract and build infrastructure and capabilities. It will be important to consider the commercial models, funding sources and pricing and cost recovery that might be available to support these investments as we embark on the decarbonisation journey together with industry and government stakeholders.

5. Digital technologies have a role to play in achieving the decarbonisation objectives of the shipping industry from route planning to lower fuel consumption and emissions, to emissions tracking of vessels through automatic identification system (AIS) movements. There are a number of ports in Australia, including PoM, that have invested in platforms and data to monitor vessel emissions and develop a pathway to track progress for carbon emissions reduction.

Observations on MERNAP Issues Paper 1

The aim of any regulation must be to achieve certainty for, and facilitate investment led by the market, rather than dictate or mandate specific initiatives, fuels or mechanisms. Shipping is leading the global demand for zero emissions fuels but will be reliant on investors to unlock the potential business cases at the company, national and regional level to effectively respond to this demand.

The regulatory context must contemplate how it can facilitate or accelerate private participation in the exploration of and development of sustainable production, transport, storage and bunkering to support maritime industry decarbonisation. In this regard, PoM also encourages the Government to consider the role of cross-industry collaboration, open access and multi-user infrastructure where there is common demand across modes (that is, across ships, road and rail).

PoM agrees with the proposed short, medium and longer term regulatory approach to enable future investment and support the transition to a decarbonised maritime sector. This will enable ports to study the initiatives undertaken overseas and evaluate the appropriate technology and zero emissions fuels that are most suitable for the Australian market.

While international experience provides important learnings, Australian ports and maritime infrastructure can vary from international examples, and from one another, in many ways. These include differences across regulatory settings, physical port configurations and ownership structures. There are likely to be different solutions and decarbonisation pathways adopted across different geographic locations. It is important to ensure that any regulatory settings are appropriately flexible and adaptable to support a variety of potential solutions.

Regulatory settings can play an important role for investments and collaboration with international counterparties for research and development to achieve net zero emissions and the applicable fuel definitions/standards and sustainability criteria in Australia, for example:

- Commercial and financial incentives / benefits for private investment in research;
- Commercial and financial incentives / benefits for private investment / participation in infrastructure and supporting systems and networks;
- Regulatory settings that remove impediments to support the development of new technologies and establishment of new safe operating arrangements; and
- Mechanisms that support price setting and cost recovery to make infrastructure investment attractive and sustainable.

There is a significant opportunity for MERNAP to:

- Provide the roadmap for the Australian maritime sector and ports to collaborate in this space and ensure infrastructure and operating protocols adhere to Australian standards and objectives;
- Provide a platform for research communities such as the National Transport Research Organisation and Commonwealth Scientific and Industrial Research to work with the private sector; and

- Establish the regulatory framework to trial decarbonisation initiatives within Australia's coastal shipping sector.

Examples of this may include the decarbonisation requirements of the potential Maritime Strategic Fleet and coastal shipping activities such as Bass Strait shipping operated by Strait Link and SeaRoad. Should this be successful, it can be expanded to regional routes such as Trans-Tasman shipping. Providing an opportunity to trial decarbonisation initiatives in the coastal shipping sector will provide greater certainty for ports to make the necessary investment and de-risk future opportunities to accommodate the wider global maritime fleet in the long term.

MERNAP can play a role to ensure international counterparties, many of whom operate under different arrangements, have access to objective and factual information about regulatory settings and standards in Australia in achieving net zero emissions.

Maritime – and particularly port – decarbonisation, must be looked at in the context of broader policy settings such as a modal shift to rail, clean landside transport, electrification and capacity of energy networks, research and development and planning policy.

Proposals for any new regulation of individual parts of the maritime supply chain must be assessed for their impact on the full supply chain, to avoid unintended consequences and cost shifting.

Intelligence from potential international partners

PoM is working with government agencies (such as DFAT's Partnerships for Infrastructure program), global stakeholder forums (such as the C40 Green Ports forum) and directly with other ports to explore potential decarbonisation initiatives.

Feedback from potential international partners is that clarity from the Federal and State Governments about the regulatory environment and required standards would assist in progressing direct partnerships. This is particularly so in understanding the respective roles of government and the private sector and regulatory pathways.

While the global nature of shipping has seen established information sharing and coordination for a number of decades, the significant variation in the operation, ownership and context of individual ports has seen similar collaboration lag until recently.

The C40 Green Ports Forum, as an example, now brings together 20 ports from across the world to advance maritime decarbonisation and the broader energy transition. As well as facilitating partnerships and commercialisation, it also has a focus on joint solutions to setting common standards and addressing barriers (including regulatory) to investment.

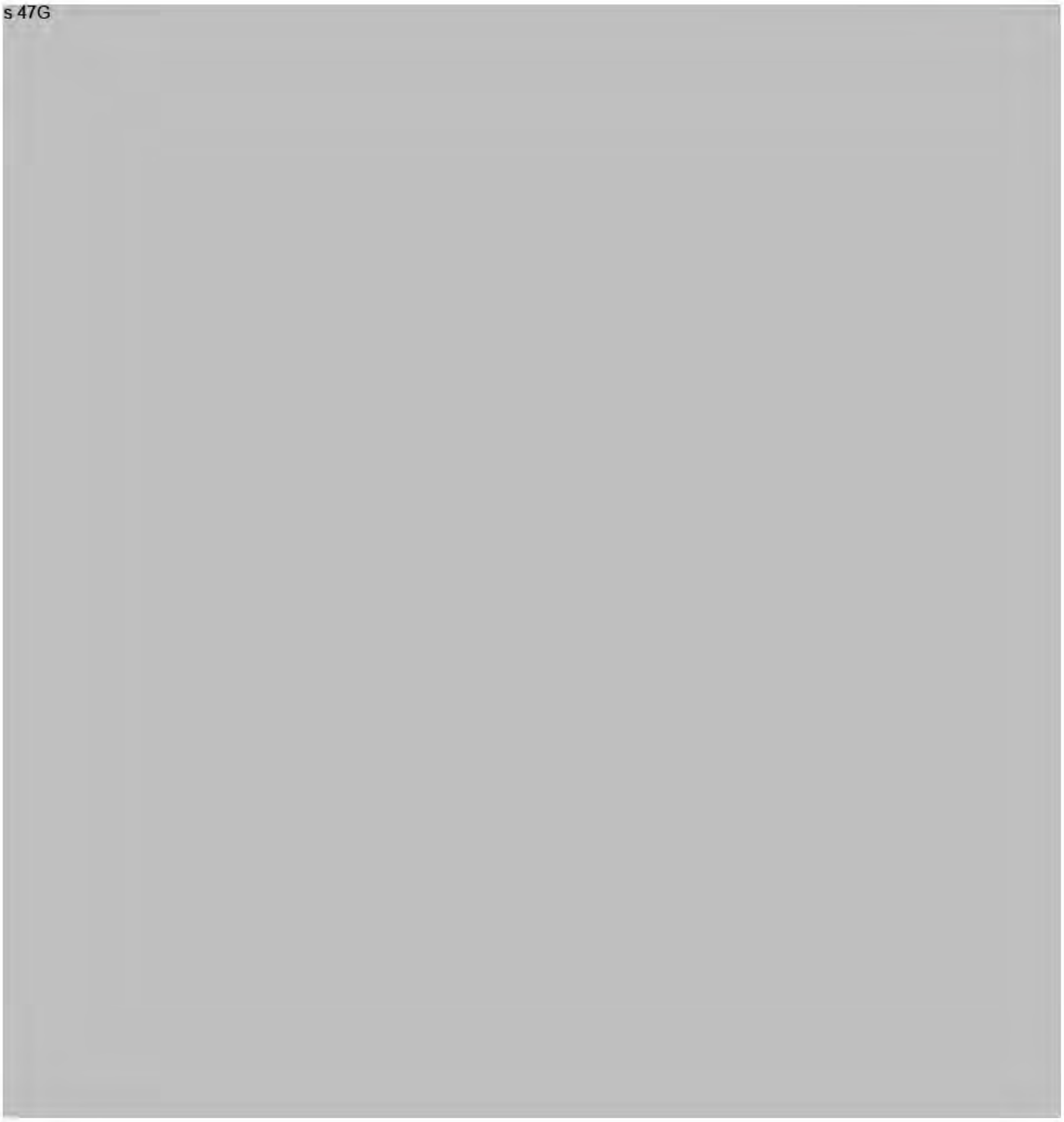
PoM is also currently working with a number of potential partners throughout Asia and expects to be able to provide further insight as to regulatory and policy enablers on shore power, green shipping corridors, port stay optimisation and alternate fuels. This will include feedback from those potential counterparties as to their needs – critical to Australia's opportunities in the highly competitive market for decarbonisation partnerships – and further learnings from their domestic regimes.

PoM's current initiatives and key learnings

In the interest of supporting a collaborative approach to the development of MERNAP, the following section provides an update on PoM's current initiatives and learnings as context and points of input for consideration.

Initiative 1: Measuring maritime emissions	
Scope	In 2022, PoM engaged Rightship to assist in modelling greenhouse gas emissions from marine vessels in Port of Melbourne waters through Rightship's Marine Emissions Portal (MEP). Rightship has developed the MEP using data on each marine vessel's specific engine specifications and detailed vessel movement data accessed through the automatic identification system (AIS) to model emissions for individual vessels. The MEP enables PoM to break down emissions calculation by individual vessel, shipping line, by berth and by activity (that is, alongside a berth, at anchor or steaming).
Status	Implemented
Learnings	• Accurate measurement of greenhouse gas emissions from fuel burnt by marine vessels is challenging due to the lack of fuel data from individual vessels and the inability to accurately disaggregate this by sectors of the voyage made between bunkering stops and the specific activities of the vessel, that is, steaming or idling. • PoM initially estimated maritime emissions within Port of Melbourne waters using a "top down" approach drawing on information on vessel calls and standard maritime emissions factors. This approach did not enable PoM to understand emissions by vessel activity. s 47G • The image below demonstrates a heat map of emissions in Port of Melbourne waters produced by the MEP. The red areas show greater emissions intensity aggregated over all vessel movements within the 2022 financial year.

s 47G



Initiative 2: Green methanol bunkering	
Scope	In April 2022, a Memorandum of Understanding (MoU) was signed between Port of Melbourne, Maersk, ANL (a subsidiary of CMA-CGM), Svitzer, Stolthaven Terminals, HAMR Energy and ABEL Energy to explore the commercial feasibility of establishing a green methanol bunkering hub at the Port of Melbourne. The MOU partners have commenced the first phase of this feasibility study which will assess the technical requirements associated with bunkering including regulatory, environment and safety issues.
Status	Phase 1 of feasibility study in progress
Learnings	• PoM's involvement in this study is driven by demand from global shipping lines (and PoM customers) for alternate fuels to help them meet IMO decarbonisation targets. • Emergent production of alternate fuels is complex and requires multiple stakeholder involvement to facilitate the uptake and ability to scale of these fuels. • Commercial uptake of alternate fuels will require regulation that specifies measurement of well-to-wake emissions. We understand that potential producers in Australia will be required to meet stringent regulations set by the EU ETS for the whole of supply chain carbon intensity. This type of regulatory certainty for Australia can incentivise further investment. • s 47G so the ability for Australia to capture and implement global learnings around the safe and efficient transport, storage and bunkering of green methanol to ensure a smooth transition on the availability of zero emissions fuels when demand grows will be critical to ensure existing port infrastructure can be utilised or repurposed in the near term, while future planning and investment in new infrastructure can be captured for a growing demand on zero emissions fuels over the coming decades. • While this document is in response to *Issues Paper 1*, the Port of Melbourne also wishes to nominate the green methanol bunkering program as a case study under *Issues Paper 2*. This would ensure the policy development process under MERNAP does not become fragmented and the learnings of such a strong collaboration are maximised.

Initiative 3: Feasibility assessment of shore power	
Scope	PoM has recently undertaken a feasibility assessment to understand the technical and commercial implications of the provision of shore power in the context of sustainability and future port development.
Status	Implemented
Learnings	• s 47G

Initiative 4: Developing a business case for decarbonisation	
Scope	In developing its Net Zero Plan for Scope 1 and 2 emissions, PoM developed a strategic business case for the specific initiatives that form part of this plan. PoM also developed a strategic business case for a number of Scope 3 decarbonisation initiatives.
Status	Implemented
Learnings	• s 47G • More certainty over a price on carbon, related to clear regulations and/or legislation on emissions trading or other decarbonisation pathways, would greatly assist PoM in developing business cases for future decarbonisation initiatives we wish to assess. • Regulations regarding marine emissions, freight emissions and construction would also assist PoM in factoring in an anticipated carbon price to business cases developed in future.

For more information

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Our Ref: NTRO/MERNAP - 22.09.23

Your Reference:

22 September 2023

Reducing Surface Transport Emissions Branch
Department of Infrastructure, Transport, Regional Development, Communication & the Arts
MERNAP@infrastructure.gov.au.

Dear Emission Reduction Team & MERNAP Consultative Group

Maritime Emissions Reduction National Action Plan Issues Paper: Regulation & Standards

Thank you for the opportunity to provide comments on MERNAP Issues Paper focussed on Regulation and Standards.

The National Transport Research Organisation (NTRO) is the leading Australian / NZ provider of value-added transport research and technical services for road, rail, ports and airports. NTRO (and earlier as the Australian Road Research Board (ARRB)) has been advising key decision makers on our nation's most important challenges since 1960.

The NTRO is the source of independent expert transport knowledge, advising key decision makers on our nation's most important challenges. Our mission is firmly focused on creating knowledge for tomorrow's transport challenges and solutions for today.

We have a particular focus on landside decarbonisation and emissions reduction across transport modes.

NTRO employs around 250 staff who form a multi-disciplinary pool of highly qualified research professionals, experienced engineers, and specialist technical and support staff.

Our offices are located in Canberra, Melbourne, Perth, Brisbane, Sydney, and Adelaide. We also maintain strong relationships with national transport research organisations and key universities in the UK, Germany, France, China, Poland, Ireland and the USA.

I am pleased to lead the NTRO Ports & Airports Divisions after more than two decades on the Australian port industry. Our selected comments on this first paper are limited, however I can confirm our absolute commit for the MERNAP.

Decarbonisation of the maritime and ports sector presents a significant challenge, but also a significant opportunity, for our nation.

Responses to Questions within Issues Paper

PART ONE:

What aspects of the domestic and international industry do you think we should be particularly mindful of?

The interconnected nature of the global shipping industry requires 'global thinking' – not just domestic/regional thinking. Strong partnerships with global players will be key to developing a value-adding policy framework.

Australian policy must be clear, supportive and must incentivise 'first movers' – in both financial and regulatory terms. We must have a policy-construct that supports ports, terminals, shipping lines, transport providers and stakeholders involved in both the landside and marineside emission reduction challenge.

Q These principles will help us provide advice to Government on what the potential future next steps might be. Do agree with these principles? What other aspects should we consider?

Principles look fine – we would suggest adding national consistency across jurisdictions as a central / key principle.

PART TWO:

What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?

N/A for NTRO. We would suggest it may be regulatory delays, lack of policy clarity and certainty.

Ports

Key issues ahead will include land use planning and environmental impact assessment of proposed fuel storage facilities. Port-Community interface issues will present challenges that need to be robustly addressed. It is our view that some ports (viz. Regional Ports with large land holdings / adjacent State Development Areas etc) may be better suited for large scale storage / bunkering opportunities.

Every port can't be everything. We must think 'port network' as a nation.

Connection of Shore Power

Shore power was originally seen as a solution for urban ports with significant air quality challenges within a particular urban conurbation. Nowadays, shore power facilities are referred to more in relation to their ability to assist in the decarbonisation of port operations. Shore power facilities which offer the best overall 'system-wide' emissions savings are those with power generated from renewable energy sources.

NTRO supports shore power facilities being further introduced at Australian ports. Experience from European ports would indicate the benefits of shore power installations for a variety of vessel types.

Bunkering of New Low or Zero Carbon Fuels

Community and operational safety must also remain the primary consideration when discussing fuel storage and bunkering. Protection of port nodes and supply chains from incompatible (and encroaching) urban development must be robustly considered when developing policy and regulation.

NTRO is of the view that a National Port Strategy is required to properly articulate (and reinforce) the specific requirements of port nodes as they become both 'trade' and 'energy' hubs on the urban and regional landscapes.

Whilst the National Urban Freight Planning Principles agreed to as part of the National Freight & Supply Chain Strategy are sound – the implementation of these principles into local and regional planning frameworks remains lacking.

Further policy reinforcement in this area is required.

Shipping

We are currently involved (as an Advisory Board Member) on the Maersk McKinney Moller Centre's Australia – New Zealand Green Shipping Corridor Prefeasibility Study. This initial study is highlighting the need to think beyond each port boundary and the current developments at identified ports. The study must also consider port nodes which offer strategic, longer-term opportunities.

It is our view that landside decarbonisation opportunities must also be considered as corridors are to be truly 'green'.

Biofuels

It is our view that a multi-fuel solution will be required as we transition to a cleaner future.

Biofuels must be encouraged as a transitional fuel. NTRO is of the view that strong regulatory support and financial incentives would help accelerate the uptake of biofuels in port operations. Availability of suitable biofuel feed stocks and the ability to 'scale-up' the industry are areas which would need further research.

We would suggest a 'scaling-up' approach, commencing with the regulatory support for higher use of biofuels in smaller vessel types operational in and around our port nodes.

Future Global Regulatory Environment

NTRO supports the revised IMO GHG Strategy.

We also support the Department taking an active role in IMP deliberations regarding mid-term, interim targets.

We hope these brief comments assist the Consultative Group – and would welcome the opportunity to be futher involved in the development of the MERNAP at the appropriate points.

Please reach out to me on 0404860172 or jason.sprott@ntro.org.au if you would like to discuss any matter raised in this submission.

Yours Sincerely

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Executive Director (Ports & Airports)

NTRO

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MARITIME EMISSIONS REDUCTION NATIONAL ACTION PLAN
ISSUES PAPER: REGULATION AND STANDARDS

Department of Infrastructure, Transport, Regional Development, Communications, and the Arts

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Ports Australia welcomes the opportunity to provide feedback on the *Maritime Emissions Reduction National Action Plan (MERNAP) Issues Paper: Regulation and Standards (Issues Paper)* to inform the development of the MERNAP. The MERNAP has the opportunity to be a substantial support to Australia's decarbonisation efforts and the maritime industry, and Ports Australia is appreciative of the consultation to date by the Department of Infrastructure, Transport, Regional Development, Communications, and the Arts (the Department).

Ports Australia is the peak industry body representing both publicly and privately owned port authorities and corporations across Australia. Ports Australia is governed by a Board of Directors comprising the Chief Executive Officers of 11 port corporations from across Australia.

Ports Australia members are actively engaged in decarbonisation of their own operations in addition to supporting the broader supply chain's decarbonisation efforts, particularly on the marine side. As ports in Australia are unique in their ownership, operating structure, types and amount of trade and vessels that they service, it is appropriate that each will differ in their approach to supporting decarbonisation of the maritime sector. Given the MERNAP will be aimed at addressing decarbonisation of the maritime industry and ports are the key interface between maritime and landside trade, port knowledge and experience will be essential to shaping a suitable and practical plan for decarbonisation of the industry.

To assist in the development of the MERNAP, Ports Australia has made recommendations informed by research on the international and national landscape and understanding of the port and maritime sector across Australia. Continued engagement by the Department with individual ports across Australia is necessary to understand the nature and experience of each port.

Set out below is a summary of the key recommendations, with these and additional points expanded on within the submission. The submission has been structured to mirror the Issues Paper layout, responding broadly to the questions set out in each part. Should the Department require further information on any of the information provided, please do not hesitate to contact Ports Australia.

Whilst Ports Australia has provided feedback on specifics within the Issues Paper, it is highly recommended that in order for the MERNAP to be useful and long-standing that it is developed as a strategic document, enabling flexibility as fuel, technology and supply chain environments evolve over the coming years.

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Ports Australia: Key Recommendations

- The current international and national landscape, including extant and expected research into future fuels and technologies needs to inform the MERNAP.
- The MERNAP needs to be a strategic document, enabling a practical and feasible approach to supporting maritime decarbonisation, as the field is rapidly evolving.
- As part of context setting, statistics on current maritime emissions and the breakdown of emissions by source should be included in the MERNAP, to enable stakeholders to better understand the share of emissions being incurred by each maritime source.
- Australia should seek to work in conjunction with New Zealand and the Pacific Islands, and take a regional approach to decarbonisation.
- The key principles in assessing regulatory challenges and devising new approaches need to address a number of additional considerations, as detailed below.
- In the development of the MERNAP, the Department should be mindful of a number of aspects as it seeks to support the decarbonisation of the maritime industry, as detailed below.

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Ports Australia Recommendations – General

- The current international and national landscape, including extant and expected research into future fuels and technologies needs to inform the MERNAP.

  It is critical that the development of the MERNAP is informed by the current international and national maritime landscape, including extant and anticipated research into future fuels and technologies. Whilst the focus of the MERNAP is Australia, the focus needs to be Australia as part of a global maritime decarbonisation effort, particularly as there are significant technological and future fuel developments and investment occurring internationally. Research needs to obtain the costs and effectiveness of each measure, where it is available. In addition to this and importantly, information on the funding source and mechanisms should be gathered. It is understood that the Department is currently undertaking research on future fuels and technologies and this activity is supported, with the data to be instrumental in informing decision making.

  Once this information has been gathered, strategic mapping exercises are recommended to be undertaken to inform the MERNAP, including 1) mapping the entire supply chain and lifecycle for each future fuel and 2) mapping the abilities of ports in Australia to bunker future fuels, and the anticipated bunkering requirements of vessels using future fuels.

- The MERNAP needs to be a strategic document, enabling a practical and feasible approach to supporting maritime decarbonisation, as the field is rapidly evolving.

  The MERNAP should be devised as a strategic and flexible document that allows for industry and government responsiveness to the changing landscape, thus placing Australia in the best position to achieve the objectives setup for the MERNAP. The landscape has evolved and continues to change from multiple angles, and this is why it is essential the MERNAP is a strategic plan. Recent changes include:
  - increased decarbonisation targets set by the International Maritime Organization (IMO), to reach net-zero emissions from international shipping close to 2050;
  - Australia committing to net zero emissions by 2050, and an interim reduction of emissions by 43% below 2005 levels by 2030;
  - Australian states committing to their own interim reduction targets which either align or are more ambitious than the Australian interim reduction target; and
  - future fuel discussion emphasis shifting between fuels, such as the transitionary drop-in biofuels and liquified natural gas (LNG), to methanol, hydrogen and ammonia.

  Internationally owned and operated shipping is the lifeblood to the Australian economy and is also a reasonable proportion of international emissions. As these vessels are outside of Australia's direct control, Australia needs to prepare itself for when significant international decisions are made in relation to future fuel types which will be made in conjunction with the International Maritime Organization and international ship owners. As Australia has lower international leverage in these arenas, being prepared and ready to act once future fuels have been better determined will ensure cost-effective investments for Australia which services a small population that is dispersed over a large geographically remote area.

  As further research on future fuels is conducted and greater investment in future fuel supply infrastructure and international ship building is made, more clarity will be obtained on how Australia can better support the international maritime industry in its decarbonisation. Ports in Australia differ

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in their location, land and landside connections, ownership, infrastructure, operational structure, profits, and volumes and types of trade, and vessels services. The plan needs to account for these differences and enable each port to build on the strengths of its unique nature, to support their own and the broader maritime industry to decarbonise.

Australian governments and businesses must carefully consider their resources and measures available to ensure comparisons between measures are made and adoption is as cost-effectiveness as possible for long term sustainability. At its core, MERNAP should set-out to support the research, analysis of and implementation of evidence-based and cost-effective decarbonisation solutions. Thus, Ports Australia supports a strategic plan which emphasises research and piloting measures, and positions Australia as ready to act and invest when more certainty on future fuels and technologies is obtained.

- As part of context setting, statistics on current maritime emissions and the breakdown of emissions by source should be included in the MERNAP, to enable stakeholders to better understand the share of emissions being incurred by each maritime source.

  Data on the volume and source of maritime emissions is needed whether that be from towage, pilotage, Australian vessels, international vessels, tourism vessels, fishing vessels etc. These statistics coupled with information on cost-effectiveness of decarbonisation efforts (where available) will assist Australia in determining where decarbonisation efforts should focus. Should this data not yet be available, this should be clearly stated and a plan developed to have this collected and reported on. This should be part of the general context setting, however should also be included around each proposed measure, where possible. For example, in the *Connection of Shore Power section*, the emission reduction of shore power is provided. However, the emission reduction differences for different vessels are not provided, nor is the emission reduction given as a percentage of overall maritime or port emissions. This is critical to provide as part of the context, and as measures are compared to one another.

- Australia should seek to work in conjunction with New Zealand and the Pacific Islands, and take a regional approach to decarbonisation.

  The countries in the Pacific are spread out from key trading nations, and in comparison to other trading nations, have relatively smaller trading volumes. These similar circumstances as well as Pacific countries being proximal to one another, mean that collective efforts towards decarbonisation should be prioritised. In adopting this approach, resources can be used more effectively and with a broader impact. Ports Australia perceives that this would be specifically beneficial when assessing regional capabilities and needs for bunkering alternative fuels, and having a collective regional voice when advocating at international forums.

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Ports Australia Recommendations - Specifically Related to the Regulation and Standards Issues Paper

1. **Part One: Australia's Maritime Sector and Principles for Regulation**

- The key principles in assessing regulatory challenges and devising new approaches need to address a number of additional considerations.

  The Issues Paper proposes key principles for both assessing current regulatory challenges and devising new approaches as follows:
  - *recognise the differing capacities of actors in the maritime sector to finance and implement regulatory measures;*
  - *ensure a clear regulatory environment for investment certainty;*
  - *ensure an even playing field across the sector;*
  - *be undertaken with broad consultation across the maritime sector; and*
  - *undertake comprehensive impact assessments.*

  Whilst these are a reasonable starting points, critically principles around the following need to be included:

  i. *recognise the differing attributes of actors in the maritime sector, including their existing and proposed infrastructure*

     The differences in ports will limit the suitability of each port to plan and invest in certain new infrastructure and technologies (differing attributes include location, land and landside connections, ownership, infrastructure, operational structure, profits, and volumes and types of trade, and vessels services).

  ii. *recognise that the differing relevancy and needs of actors in the maritime sector*

     An example of where this principle is necessary is in the discussion around onshore power. Whilst onshore power is a potential solution to reduce vessel emissions at berth, there are significant cost, uptake, and infrastructure considerations, and it is not suitable for all berths or ports. Hence, the relevancy and needs of each actor is critical to support the implementation of suitable decarbonisation measures.

  iii. *support evidence based and cost-effective measures, where data is available*

     Building off the important principle of undertaking impact assessments, it should be specified that the intention is to support those measures which are evidence based and cost-effective.

  iv. *ensure next steps are consistent with emission reduction targets, IMO conventions and they respond to indicators from shipping industry and renewable fuel investments*

     Depending on the trade type, Australia does not always have leverage to influence the future fuel and ship building landscape, and thus, Australia should continually look to and respond to indicators from the shipping industry and renewable fuel investments. This should be stated within the principles as Australia's context within the global landscape needs to be kept in mind.

  v. *consideration should be given as to the financial impact of measures on the Australian consumers and exporters*

     Given decarbonisation initiatives may require significant investment, the cost-effectiveness should be examined along with consideration of the financial impact that this will have to Australian exporters and consumers. For example, Ports Australia understands that low and zero-carbon fuels are less efficient and are only available at a higher price. The economic impact of this could be significant, and therefore this should be examined.

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- In the development of the MERNAP, the Department should be mindful of a number of aspects as it seeks to support the decarbonisation of the maritime industry, including:
  - Differing attributes of ports including their location (urban, regional, rural), land and landside connections, ownership, infrastructure, operational structure, profits, and volumes and types of trade, and vessels services;
  - Length of time needed for planning new infrastructure at ports;
  - Amount of investment required for new infrastructure that will support decarbonisation measures at individual ports;
  - Approach to funding decarbonisation measures, and the impact of this on Australia's marine freight costs;
  - Capacity of existing electricity grids, particularly microgrids and those outside the national electricity market (NEM) to be able to facilitate onshore power supply;
  - Additional research and learnings required on implementation of alternative low or zero carbon fuels and which fuels the international shipping industry are going to favour;
  - Cost, production, supply, demand, storage and transport of various alternative fuels;
  - Length of time needed for production of alternative fuels, and scaling this up;
  - Ship building and purchase markets to understand new orders for dual fuel, certain fuel or other low emissions vessels (as ports are users of fuels / boats, the degree to which individual ports can influence the adoption of new fuels is limited at a port level).
  - Size of vessels being ordered and where they are to be deployed, which would provide an indication of the potential for industry development in Australia;
  - Uniqueness of Australia and the impact of this on bunkering and battery recharging: Australia is highly reliant on shipping, and the fact that it is positioned relatively far from its trading nations and the ports in Australia are spread out, may result in rather unique fuel and bunkering requirements; and
  - Based on current technologies, the cost of decarbonising the sector and what aspects cannot be abated.

2. Part Two: Regulatory Barriers and Opportunities – General

- A number of assertions in the Issues Paper require correction:
  - *As the majority of ports are government owned, correct the Issues Paper statement that the majority of ports are under private ownership.*
    The majority of commercial ports in Australia are under government ownership. Accordingly, the following Issues Paper statement requirements correction, "Whilst the majority of ports are under private ownership, several remain state-owned". As this is part of the industry scene setting, the Department's acknowledgement of the inaccuracy of this statement is important. Ports Australia can assist in providing information on the ownership structure of each port, should the Department not have this readily available.

  - *As ports control land-use planning and control on port land, correct the Issues Paper statement that this is a remit of the state and territory governments.*
    The statement in the Issues Paper that "State and Territory governments are responsible for land use, planning and controls, including for ports" is inaccurate and requires updating. Whilst the state and territory government regulate land-use planning, they do not conduct nor administer port planning and this should be explicitly explained.

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  - *As shore power is aimed at addressing shipping emissions and these are classified as a port's scope 3 emissions, correct the statement in the Issues Paper that shore power looks to address a port's scope 2 and 3 emissions.*
    The statement in the Issues Paper that "Shore power infrastructure is a method of emission mitigation that is used in ports for their scope two and scope three emissions." Requires correcting to remove the reference to scope 2 emissions, as scope 2 emissions are classified as those emissions from the indirect consumption of an energy commodity.

  - *As self-unloading bulk carriers can use extensive power whilst at berth, modify the statement in the Issues Paper around their energy use to better reflect this.*
    Depending on the method of discharge, self-unloading bulk carriers can use extensive power at berth. Therefore, it would be more appropriate to state that cruise vessels require significant power at berth compared to bulk carriers, and self-unloading bulk carriers require more power while discharging than bulk carriers, although in such circumstances the power in simply transferred from the port-side infrastructure to the ship.

- Examples of regulatory areas of Commonwealth responsibility that the MERNAP should focus on, include but are not limited to:
  - Regulatory requirements around fuel standards, safety, handling and storage standards across the various jurisdictions for certain fuels like ammonia on marine vessels. This includes both marine vessels on-water use, but also on land transport and storage.
  - Reviewing the level of approval processes required for decarbonisation initiatives, noting that timeframes and potential offsets can be disabling factors.
  - Microgrids outside the Australian Energy Market Operator's regulation would be worth focusing on, given they are likely to be limiting in terms of capacity to facilitate onshore power. Identifying the alternative electricity regulatory bodies to AEMO and the different regulations around these systems will impact future onshore power connections at the ports on these grids. Also, for these grids and the types of first mover ships e.g. cruise vessels that may drive the need for shore power connection.
  - Offshore electricity infrastructure and regulations around items such as wind turbines, wave and tidal energy infrastructure, could assist the MERNAP for those gazetted areas close to the relevant ports around Australia and should be included, particularly as renewable energy feedstock is required to decarbonise electricity grids. The same for on-land hydrogen hubs, wind turbines and solar farms close to ports.

- Examples of regulatory arrangements that would support or obstruct port operations and investment in decarbonising the sector, include but are not limited to:
  - Regulatory arrangements should be consistent with evidence based and cost-effective actions, and account for variation across the sector.
  - Providing assurance of fuel availability by requiring new and emerging fuel proponents to provide (as and when required) a percentage of green fuel produced for domestic and/or bunkering use, rather than 100% export (as previously experienced in the LNG boom).

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- Examples of issues that will prevent sector participants from embarking on an accelerated response to decarbonisation include: capital investment based on a sound business case; access to labour; and potential or perceived impacts on neighbouring communities.

- Examples of regulatory barriers that exist are included below:
  - Marine parks and reserves adjacent to ports
  - Environmental approvals under the *Environmental Protection Biodiversity Conservation (EPBC) Act* including proposed changes
  - Environmental approvals under state environment acts could impact developments to marine infrastructure at ports
  - *Underwater Cultural Heritage Act 2018*

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3. Part Two: Regulatory Barriers and Opportunities – Ports

- There are many considerations that need to be examined around onshore power and specific sites, and Ports Australia stresses the need for MERNAP to consider the drivers and focus of onshore power with other priorities and investment opportunities. Information needed to inform investment and operational decisions in relation to onshore power includes:
  - Individual assessments are necessary for each port / berth to support decision making in relation to onshore power. These assessments should include:
    - Utilisation assessment to understand the anticipated vessel uptake, including investment decisions being made by shipping companies to transition their fleets and expectations around whether these fleets will visit Australia.
    - Demand assessment to understand the differing power load requirements of vessels that would visit the port / berth, and the cost impact of this on electricity contracts / power purchase agreements. As onshore power requires ports to have electricity agreements that cover the max load / threshold of when a vessel is using the . This can be particularly costly, especially when the energy requirements of a vessel are high, but vessel visits are not frequent. An example of this would be a cruise vessel at a regional or rural centre.
    - Implementation feasibility, including of existing grid infrastructure and capacity, and new infrastructure requirements.
    - Renewable electricity availability, as and when required (regarding varying load demand).
    - Capital and operational costs.
    - Funding and cost recovery options.
    - Cost-effectiveness assessment.
    - Analysis to forecast the timing and impact of future fuels on the utilisation of onshore power supply by vessels, to determine the expected energy source of vessels whilst at berth i.e. will onshore power infrastructure be utilised or be redundant.
    - Options analyses to be able to properly compare and determine the most appropriate measures to support reduced vessel emissions, particularly at berth.
  - Onshore power standards would assist with implementation, however, this is not a deciding investment factor.

- A number of Ports Australia members have provided examples in response to the questions posed in the Issues Paper section on ports. Whilst these scenarios and perspectives don't necessarily represent all members, they have been included below for the Department's information.

- Examples of regulatory layers that exist which contradict each other in relation to decarbonisation, or are inconsistent in their interlinkages are listed below.
  - Approval complexities in general can have contradictory layers, especially inconsistent application and overlap between state and federal regulation.
  - Challenges arising from different targets and expectations between states and the commonwealth.
  - One of Ports Australia's Western Australian members has indicated that regulatory arrangements such as those under the *WA Port Authorities Act 1999* do not allow for ports as energy and refuelling hubs, yet these ports have been suggested as key sites for decarbonisation. As, presently the act is silent on such activities, changes to this act could assist in supporting investment in renewable energy and decarbonisation projects within or adjacent to ports.

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- Examples of challenges complying with the existing regulatory framework in relation to decarbonisation are listed below.
  - Understanding international guidance (Greenhouse Gas Protocol), commonwealth (*National Greenhouse and Energy Reporting Act*) and state legislation and regulation around emissions baselines and reporting and how it relates to the port industry. Port industry guidance around emissions reporting will assist with this, and Ports Australia has commenced piece of work to support ports in defining their scope 3 emissions boundaries and emissions reporting. To develop this guidance, Ports Australia will be consulting with key stakeholders including the Department.
  - National GreenPower accreditation program rules around purchasing GreenPower for an embedded network are limiting. If green energy purchased could be passed from ports to onsite tenants using electricity within a port's grid this would be beneficial.

- Examples of onshore power implementation internationally that Australia could leverage or learn from are detailed below.
  - In some large European and American ports, emissions from ship's auxiliary engines while at berth has been linked to poor local air quality and public health concerns. This has spurred tougher environmental legislation and the installation of onshore power supply in ports where air quality is an issue. Improving local air quality, not decarbonisation, is the historical driver for installation of onshore power equipment, particularly at busy northern hemisphere seaports and on the commercial seagoing vessels that call at those ports.
    It is understood that in Europe and in America governments have been the sole funder of onshore power. There is a high capital and operational expenditure related to onshore power, and to date minimal cost-recovery experience. It would be beneficial to examine these cases.

- Further work, for all emerging fuels, particularly around safety and emergency management and pertaining to ports is required. There seems to be various safety, handling, exclusion zone requirements for some of the alternative fuels including ammonia, hydrogen and methanol. However, it appears that biofuels like biodiesel and renewable diesel have less safety, handling and exclusion zone requirements at present.

- Trials by ports and/or equipment and engine manufacturers is probably the best research that could be undertaken to understand which equipment and procedural standards should apply. For example, research into storage times, oxygen degradation and microbial growth on biodiesel at various sites in Australia is something that has been raised as an issue to consider for use in marine pilot boats.

- It is understood that fuel used in equipment in Australia needs to meet fuel quality standards under the *Commonwealth Fuel Quality Standards Act 2000* and *Fuel Quality Standards Regulations 2019*. Noting this, these standards don't include renewable diesel or other emerging fuels like ammonia, hydrogen and methanol.

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4. Part Two: Regulatory Barriers and Opportunities – Shipping

- Within the shipping section of the Issues Paper, there is an emphasis on alternative fuels and whilst this is necessary, alternative means of propulsion e.g. electric, as well as hybrid models need to be acknowledged and considered.

- A number of Ports Australia members have provided examples in response to the questions posed in the Issues Paper section on shipping. Whilst these scenarios and perspectives don't necessarily represent all members, they have been included below for the Department's information:
  - An example of the current regulation development uncertainty that is impacting investment in low and zero emissions bunkering vessels, is in the space of pilot and lines boats. In the proposed changes to the National Standard for Commercial Vessels (NSCV) currently underway, it doesn't contain explicit standards to guide certification of pilot and lines vessels, except as 'novel vessels'. For pilot and lines boats, this could increase costs and time of procurement to operation, as an Australian Maritime Safety Authority accredited marine surveyor may need to inspect the vessel and may potentially change current insurance arrangements for vessels if they are classed as a 'novel vessel'.
  - MARPOL requirements need to be considered including the risks of alternative fuel spills and safety impacts.
  - One member has suggested that there may be the opportunity for older vessels e.g. pilot, lines and work boats, to be retrofitted to be compatible with alternative fuel sources rather than trying to meet the NSCV. Government grants or funding could be provided to facilitate these changes rather than updating to a standard internal combustion engine (ICE).
  - Present concerns around biofuels are cost, technical readiness, commercial readiness, manufacturing, lack of cost-effective supply, compatibility with marine infrastructure e.g. boats and equipment, and freight costs. The EU has addressed the cost-effective supply by requiring EU countries to ensure that the share of renewable energy in the final consumption of transport energy is 14% by 2030, including a minimum share of 3.5% advanced biofuels. Individual countries are looking to achieve this by legislating that fuel suppliers need to comply with this requirement.
  - At this stage, lack of standards across marine applications are limiting the use and uptake of alternative fuels. For example, presently an exemption is required to use renewable diesel (R100) for on-road diesel purposes under the Automotive Diesel Determination (2019). Whilst not applicable in the use of marine applications, the renewable diesel can't be used on-road to transport this type of fuel to the port site without an exemption.

5. Part Two: Regulatory Barriers and Opportunities – Future Global Regulatory Environment

- Global initiatives that would be worthwhile for Australia to obtain information to inform Australia's approach to decarbonisation is the implementation of Green Shipping Corridors, as these are pilot programs may provide significant lessons learnt; and the European Union which has adopted a highly collaborative method to decarbonisation of the sector.

- Lessons from similar industries, such as the sustainable aviation industry should be drawn upon, where possible.

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SAL 2023-022

22 September 2023

Maritime Emissions & Environment - Surface Transport Emissions & Policy
Department of Infrastructure, Transport, Regional Development, Communications and the Arts

By email to: MERNAP@infrastructure.gov.au

Dear Maritime Emissions & Environment - Surface Transport Emissions & Policy Team,

Shipping Australia Ltd.'s (SAL) submission to *MERNAP Issues Paper: Regulation and Standards*

Please find below our comments in relation to the above issues paper.

A. About Shipping Australia

Shipping Australia is the principal Australian peak body that represents organisations that are locally owned and/or locally active in the ocean freight shipping industry. We are recognised as an Australian national shipping association by the World Shipping Council, the Global Federation of National Associations of Ship Brokers and Agents, and by the International Chamber of Shipping.

Shipping Australia provides policy input to Australian State, Territory, and Commonwealth government bodies. We are consulted by the national, regional, and international media for our expert commentary on shipping and trade.

Collectively, our members employ about 3,000 Australians. Our membership includes Australian ports, the local arms of global shipping and domestic shipping agents, the local arms of global and domestic towage companies, the local arms of ocean shipping lines, and a wide variety of Australian-owned and operated maritime service providers.

Our members provide services in ocean freight, local seaport cargo handling, domestic harbour towage, Australian marine surveying, and domestic pilotage, among other services. Our members handle nearly all Australian containerised seaborne cargo, along with a large volume of our car and bulk commodity trades.

Our comments in this submission will relate to international ocean shipping and will not refer to the domestic maritime industries unless explicitly stated.

B. Importance of Australia's ocean freight shipping sector – it should not be unduly burdened

Exports and imports of goods and services (including intangible services) accounted for 25.8% and 19.9% of our gross domestic product in 2022, according to World Bank Data (accessed 06 July 2023).

The combined volume and value of Australia's import and export cargo (2020-2021), according to the Bureau of Infrastructure and Transport Research Economics (BITRE) publication, Australian Sea Freight 2020-21, was about 1.61 billion tons valued at about $601.4 billion. Australia's international

ocean freight (import and exports, not including coastal) accounts for approximately 99.93% by volume of all cargo that enters or leaves this country.

That cargo is carried by ships: about 6,219 uniquely identified cargo ships called at Australian ports from destinations overseas in 2020-2021, according to BITRE, and, together, they made over 17,300 port calls.

It was estimated in "Australian Trade Liberalisation: analysis of the economic impacts," 2017 Centre for International Economics Report on Australian Trade Liberalisation for the Department of Foreign Affairs and Trade, that 1-in-5 Australian jobs were related to global trade. If that ratio still holds true today, then, based on August 2023 Australian Bureau of Statistics data which shows that over 14.1 million Australians were employed, global trade supports over 2.8 million Australian jobs.

It should now be obvious that ocean shipping services are vital to Australia. It therefore follows that minimal disruption to, or cost impositions on, ocean shipping is in the Australian national interest as any factors that adversely affect shipping thereby adversely affect the Australian economy.

Shipping Australia of course accepts that there are matters or issues that nonetheless require impositions to be made on shipping – biosecurity arrangements, customs control, environmental protections, and so on – and we urge that such impositions are kept to a sensible minimum necessary to achieve the policy goals without imposing excess burdens and costs.

C. Decarbonisation must be international in scope and must be consistent across jurisdictions

The international shipping industry is supportive of the global efforts to reduce harmful emissions from industrial activities. The shipping industry has, in fact, led the push for decarbonisation by researching, testing, trialling, and investing in, new technologies.

The shipping industry is highly supportive of the recently declared policy of the International Maritime Organization in July 2023 for the global shipping industry to decarbonise on a global scale by approximately 2050.

We note that the IMO has introduced the Energy Efficiency Design Index for new ships, the Existing Ship Index for existing ships and the Carbon Intensity Indicator system for managing ship emissions over time. The shipping industry is generally supportive of these policies and systems although we note that, as in any large diverse body of stakeholders, there are a variety of opinions as to the desirability / utility / efficacy of any specific measure or part thereof.

There are approximately 195 countries in the world, 175 of which are members of the IMO, and the majority of which have coastlines and ports, and which take part in global seaborne trade. It is simply not possible for shipping and international trade to take place, or to occur efficiently, if each jurisdiction has different rules for shipping and international trade.

Given the international scope of the shipping industry along with its vast and diverse range of stakeholders, the best way to regulate the shipping industry is on a global basis by one regulator.

That regulator is the IMO; that set of regulation is IMO regulation.

Shipping Australia therefore considers that the single most important principle that Australia should be mindful of is that the Government should ensure that any legislation, policies, orders, regulations, or rules of any kind howsoever described are consistent with, and aligned to, IMO rules. Australian rules should be neither more, nor less, stringent than IMO rules.

Given that Australia is a Federal jurisdiction, we also assert that the States, Territories and any other government-type in Australia should not introduce any of their own rules that are in anyway inconsistent with IMO rules.

Where possible non-Federal governments of all kinds should be constrained from making any such rules; this may be done through an inter-governmental agreement with the States and Territories while subordinate government bodies and executive agencies can be restrained from introducing any such rules.

We specifically believe, and assert, that Australia should not introduce any kind of tax, levy, trading scheme, or other financial penalty of any kind on international shipping, such as those seen in the EU with the EU trading scheme of the Fuel EU system, as the IMO is currently developing a global financial measure and a global fuel standard.

Policy makers may wish to note that, in the past, when new charges, fees, levies etc. have been introduced, then ocean shipping companies have been observed to introduce corresponding surcharges that are charged to consignors and/or consignees.

Australia should take part in the work of the IMO and adopt whatever system is promoted by the IMO. Similarly, non-Federal levels of government should not adopt any rules that are contrary to IMO rules.

Any bunkering standards should be consistent with the IMO rules.

Shore power connection rules should be consistent with IMO rules too. The applicable IMO interim guidelines (MSC.1/Circ.1675 – June 2023) takes in to account that onshore power supply systems for ships are installed and applied internationally and do not discriminate between different kinds of ship types. The MERNAP paper seems to allude to onshore power for cruise ships only. Any policy and capability relating to the provision of onshore power supply should be consistent with the IMO guidelines i.e. applicable to any ship type.

On a somewhat-related noted, there are internationally standardised physical ship-to-shore connections should be standardised (See SOLAS under Chapter II-2, regulation 10.2.1.7; ships above 500 tons gross tonnage and upwards must have at least one international shore connection). However, not all ports have the standardised couplings and members have told us that couplings in Australia can vary from port to port.

D. Regulatory environment: keeping an even playing field

We would strongly urge all governments to refrain from “picking winners” i.e., deciding which technology / jurisdiction / fuel etc will be deployed or used.

There are many examples of, for example, technologies that promised to revolutionize society but did not. Here are just a few: commercially available supersonic flight; the reusable-manned space shuttle; the Betamax video recorder system; Google Glass; algae-derived green fuel.

Then there are the technologies that radically changed over time. Examples include computer technology, mobile telephony (with the iPhone et al completely displacing the fax machine and the Blackberry), the massive fall in cost and massive boost in productivity of photovoltaic panels, and artificial intelligence-systems. Then there are radical technologies that have appeared in a very short period such as gene-editing with CRISPR, mrna-vaccines, and, in shipping, the advent of modern containerisation which completely up-ended shipping.

More recently – as of even a few years ago – the consensus was that shipping would shift from heavy fuel oil to hydrogen marine fuel via a slow transition via liquefied natural gas. That consensus has

now been near totally over-turned with shipping currently investing heavily in methanol. The industry has also seen an upsurge in small scale craft being electrified. Future battery technology could possibly result in a range of vessels, such as harbour tugs, ferries, pilotage vessels and so on being electrified or hybrid-electric.

The point is neither we, nor anyone else, can know what the future holds at it is dynamic while being both unknown and unknowable. The risks and the actual and opportunity costs of committing to one specific course of action are high.

Therefore, Australian policy should therefore be as agnostic as possible in respect of a wide range of factors whether that is fuel, other technologies, jurisdiction and the like. Whatever policy is adopted should help drive down emissions without mandating specifically how this must be done. One example is the IMO's CII policy – which is outcomes focused (i.e., it demands that the shipping industry drive down emissions) but it does not determine how this should be done.

E. Encouraging the uptake of greener fuels

Greener fuel is more expensive, and more voluminous, fuel. Greener fuels have lower energy content – about 2x to 2.5x less than conventional fuels and they also tend to be more expensive. It follows that operators that adopt greener fuels are going to be penalised relative to operators that do not.

Taxes, subsidies, levies and the like have, in Australia, been provided to be politically disfavoured and also not liked by the general populace. Shipping Australia is also opposed on the basis that any such financial measures ought to be subject to an IMO ruleset.

There are at least two policies that have been shown to reduce these financial disincentives that side-step such problems.

The first is California's 2007 Low Carbon Fuel Standard which requires fuel suppliers to decrease the carbon intensity of their fuels. These policies are being adopted elsewhere. Axsen and Wolinetz in "What does a low-carbon fuel standard contribute to a policy mix? An interdisciplinary review of evidence and research gaps," Transport Policy, Volume 133, March 2023 p54-56 (doi.org/10.1016/j.tranpol.2023.01.008) indicate that LCFS have helped cut emissions to date. The researchers also indicate that LCFS policies provide a transformative signal that is associated with increased investment in low-carbon fuels and supportive infrastructure.

However, policymakers are advised to bear in mind that the IMO is working on a marine GHG fuel standard regulating the phased reduction of the marine fuel's GHG intensity that could be adopted in 2025 and could possibly enter into force in 2027. Any LCFS system should be consistent with any IMO fuel mandate.

The second is the UK's Renewable Transport Fuel Obligation, which was introduced in 2008. Under the RTFO, UK-based transport fuel suppliers must show that a percentage of the fuel that they have supplied comes from renewable and sustainable sources. This obligation affects suppliers of at least 450,000 litres of fuel. This obligation covers a wide range of sectors, including some maritime obligations. See "Renewable Transport Fuel Obligation" UK Department for Transport (2012 / 2021) for details - https://www.gov.uk/guidance/renewable-transport-fuels-obligation#full-publication-update-history

A 2014 impact assessment by the UK Department of Transport https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/307437/impact-assessment-pir.pdf indicated that the RTFO met its policy goals by helping to increase the supply of biofuels. "The RTFO has been successful in moving biofuel supply from a niche activity

to a normal business operation for all major UK suppliers of road fuels, and production capacity has increased significantly over the life of the policy," the 2014 review indicated.

The policy also resulted in carbon reductions equivalent to taking over 600,000 cars off the road and it was shown to be sustainable via a certification programme. The effects on industry in 2014 were mixed with some suppliers diversifying, some exiting the market, significant consolidation, but the market share for small suppliers was (overall) maintained. The overall UK production capacity increased.

At least one Shipping Australia member has directly advised us that they buy biofuels as a result of the UK RFTO system because the cost of the fuel is lower than it would have otherwise.

California's LCFS and the UK RFTO may be of interest provided that any Australian version is consistent with the IMO system.

F. Certification of green fuel / certification of subsidies

It is vitally important that all participants in the green fuel supply chain can be certain that the fuel that they are supplying / transporting / producing is actually a carbon-reduced fuel. Similarly, participants need to be certain that any financial or other incentives (regardless of their form and substance) can be relied upon and actually have the effect that they said to have.

We have seen many problems involving supply chains and the provision of services, goods, and offsets, where what was actually sold or supplied did not match what was said to be sold or supplied.

Some examples –

In 2023: it was reported that Verra, a Washington-based nonprofit organisation, approved tens of millions of allegedly worthless offsets that are used by major companies for climate and biodiversity commitments, according to media reporting. Companies that relied on the offsets have now had to remove claims of carbon neutrality from their promotional and communications materials https://www.theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe

In 2015: independent third-party testing revealed that the major car manufacturer, Volkswagen, had intentionally cheated on its emissions testing and installed "defeat devices" in cars to deliberately deceive authorities and consumers so that its cars met US air pollution standards. In reality, the cars it sold emitted up to 40 times more nitrous oxide than the company complained. Billions of US dollars have been spent by the company in paying civil settlements, criminal fines, and vehicle buy-back costs. The Notice of Violation from the US Environmental Protection Agency sets out the details - https://www.epa.gov/sites/default/files/2015-10/documents/vw-nov-caa-09-18-15.pdf.

In 2013: European food supply chains were discovered to have been infiltrated by criminals with the result that major retailers of pre-prepared food unknowingly sold meat products that contained horse meat or, in some cases, beef products that contained non-beef meat (e.g. pork). Apart from the upset caused to people who were consuming meat that was not typically consumed in their culture (e.g. horse meat is not usually consumed in the UK) and people unknowingly consuming meat contrary to their religious beliefs (several religions prohibit the consumption of pork) there were human health concerns e.g. meat returned as being contaminated with mould was cleaned and re-inserted into the supply chain; there was potential for chemical contamination (e.g. meat from euthanised horses can contain chemicals that are harmful to human health). It appears that, at some point in the supply chain, horse meat was intercepted and re-labelled as beef. See: "Findus beef lasagne contained up to 100% horsemeat, FSA says," 7 February 2013, BBC. https://www.bbc.com/news/uk-21375594

A robust and transparent auditing and certification scheme is vital to ensure industrial-, political-, and public trust and goodwill in the sector.

G. Infrastructure / ports / supply / financing

A supply chain view will need to be taken as, if ships are to take on fuel here, it will need to be supplied by providers with infrastructure at ports. Adoption of signal-providing polices such as the California LCFS (or IMO technical fuel standard) or the UK RFTO may assist with inducing infrastructure investment and fuel supply.

Ports are large assets with a high impact on the Australian economy and, as regional monopolies, they should be overseen by the Federal Government. Shipping Australia supports and advocates for Federal MERNAP-related oversight of the port sector. Noting that ports are a State / Territory responsibility, we would urge that the Federal Government explore an inter-governmental agreement to ensure that ports are adequately regulated at the Federal level.

Shipping Australia is opposed to the practice of charging fees to build infrastructure; shipping should not be charged to use infrastructure that does not exist. This practice is analogous to announcing that a tolled motorway will be built and then charging motorists a toll to use the as yet non-existent motorway.

Shipping should not be charged any kind of fees or charges so that ports can build fuel supply infrastructure. Ports and port operators benefit greatly from international trade; they should recover the costs of their investment through the normal course of competing for business. If they need capital up-front to build such infrastructure then they can always tap the capital markets by issuing bonds or equities as appropriate, receiving equity injections from shareholders, investing from their own balance sheet, or seeking loans from banks, or from government.

Shipping Australia is also opposed to any concept or consideration that international shipping companies should subsidise or support the domestic maritime sector in any way. The domestic maritime sector is a valuable, profitable and it is quite capable of financing itself.

H. Recommendations

*(**Note**: we will refer here to policies, standards, obligations, conventions, treaties, laws, legislation, regulations, administrative directions, executive orders and the like as "rules")*

1. Owing to the economic importance of shipping, any new rules on ocean shipping ought to be avoided if possible and, if it is not possible, should be kept to the absolute minimum to achieve the desired policy goal.
2. Any attempts to create new rules should preferentially take place at the IMO; and, if not at the IMO, at the highest levels of government. Subordinate government bodies of all kinds ought to be restrained from making any rules.
3. Any rules should be consistent with and aligned with IMO rules; similarly, ship-to-shore connections ought to be consistent with the international standards.
4. Governments should refrain from "picking winners" in relation to technology, jurisdiction etc. Any new policies should be as agnostic as to jurisdiction, technology, systems etc as possible.
5. Policymakers should consider carrying out research into the UK Renewable Transport Fuel Obligation and to examine whether a similar system could be applied in Australia and, if so, what are the advantages, disadvantages and trade-offs that would be incurred.
6. Policy makers should research, devise, and implement a robust auditing and certification scheme in respect of the green fuel supply sector.

7. Ports ought to be regulated at a Federal level; this can be achieved by an intergovernmental agreement.
8. The practice of charging shipping companies a fee to build infrastructure ought to be prohibited.
9. Ports ought to bear the risk of building infrastructure; ports ought to seek their own source of finances to do so.

Authorised by

s 47F

Chief Executive Officer

Seafood Industry Australia
The Voice of Australian Seafood

SEAFOOD INDUSTRY AUSTRALIA

Seafood Industry Australia submission

to the

Maritime Emissions Reduction National Action Plan (MERNAP)

October 2023

About SIA

SIA is the national peak-body representing the Australian seafood industry as a whole. With members from the wildcatch, aquaculture and post-harvest sector, including state, territory and sectorial associations, along with seafood businesses and producers. We are the voice of Australian seafood.

Currently valued at more than $3.5 billion and directly supporting more than 17,000 Australian families (ABARES, 2021) and thousands more downstream in logistics and sales, the Australian seafood industry plays a key role securing Australia's food base, creating and maintaining jobs, boosting economic activity, and generating valuable export income for Australia and our rural and regional communities.

Growth of our industry delivers increased jobs and investment in rural and remote Australia, and puts more than 1.5 billion meals of quality, healthy, sustainable seafood for Australian families and our international neighbours.

SIA provides consumers, Government and other stakeholders with confident and united representation.

Our mission is to Promote, Protect and Develop the Australian seafood industry on the national and international level. Our unity indicates that we love what we do, we stand by our products, and that our products are the best in the world.

Our Pledge

Introduction

Thank you for providing SIA with the opportunity to contribute to the Department's development of an Australian Maritime Emissions Reduction National Action Plan (MERNAP). This submission will cover some of the questions outlined in the MERNAP issues paper, as well as some additional points that SIA believes are important.

SIA notes that the Australian wild catch and aquaculture sectors already have a number of early adopters who are well advanced in transitioning to decarbonised operations. SIA can also advise that it partnered on the project 'Climate Resilient Wild Catch Fisheries', based on the key question "how can the fishing industry demonstrate rapid and practical progress to achieve climate resilience by the fisheries, aquaculture & supply chain by 2030?"

Fishing and aquaculture support vessels play a vital role in the Australian food supply chain and comprise around 10,000 active vessels – around one third of the total Australian fleet of approximately 31,000 Domestic Commercial Vessels (DCV).

The average age of Australian fishing vessels is +30 years, with many currently relying on outdated engines and equipment, making the integration of fuel efficient engines or alternate fuels a complex and costly endeavour.

Many Australian fishing and aquaculture support vessels operate in unpredictable and dynamic environments and are required to travel long distances and operate for extended periods, requiring substantial fuel consumption. Reducing emissions whilst maintaining productivity will necessitate a carefully planned process. Designing new vessels or retrofitting existing ones will require significant investment and technological expertise.

Effective emissions reduction in fishing and aquaculture support vessels will require innovative solutions and collaborative efforts between the industry and governments. Emission reduction targets must be balanced with the socio-economic interests of the Australian seafood industry, particularly within regional and coastal communities.

SIA is aware that reduction in emissions will provide significant opportunities – and challenges – for the fishing and broader seafood sector.

Considerations for Government

To facilitate investment in decarbonising the fishing fleet, the Government must facilitate a clear, consistent and supportive regulatory environment that encourages innovation and the adoption of sustainable practices. There are a number of aspects that SIA believes that the Government should take into account when considering the impact of emission reduction on the Australian seafood industry both domestically and internationally. These are provided in the following paragraphs.

Regulatory challenges

The Australian seafood industry is already governed by an array of international, national, state and territory regulations. Coordinating these disparate regulatory frameworks to establish emission standards and enforcement mechanisms presents challenges; particularly in relation to regional and remote areas. Coordination becomes even more complex when considering vessels operating

between international jurisdictions. A lack of harmonised regulations across different jurisdictions has the potential to provide uncertainty for vessel owners and create barriers to planning and investing.

Economic impacts

Many Australian fishing and aquaculture operations are currently operating on thin profit margins which can make investment in emissions reducing technologies challenging for some, and out-of-reach for others. High initial costs and uncertainty regarding returns is likely to deter vessel owners from investing in new vessels or upgrading existing ones. Vessel owners may also be uncertain as to the form of alternative fuel or technology that would be most appropriate for their individual circumstances.

Fishing and aquaculture communities, particularly those operating in remote and regional areas, have valid concerns regarding job security and the ongoing economic sustainability of their industries and may consequently be reluctant to embrace change.

Port infrastructure

Lack of port infrastructure and facilities such as recharging or re-fueling for alternate fuels in regional and remote areas could provide challenges for vessel owners in transitioning to green fuel, particularly where some alternate fuel or technology options are not available in these ports.

Compliance

Compliance with new regulations without financial support mechanisms in place would impose significant compliance costs on the industry, potentially deterring new investment.

Alternate fuels

SIA believes there is a lack of standardised regulations and guidelines across marine applications which have the potential to limit the use and uptake of alternative fuels, including biofuels. SIA understands that there are currently no recognised international or domestic standards to support engine manufacturers developing these technologies. Whilst various standards for land-use engines already exist that might provide a useful basis for development of marine-based standards, it is important to note that specific requirements for marine use is likely to require the development of new, specialised standards. In particular, these would need to take fuel storage, handling and transportation into account.

Several potential key challenges and limitations relating to standards in the marine sector identified by SIA are:

- Inconsistent regulations. Some sectors of the wildcatch fishing industry operate on an international scale which vessels travelling between different regions and jurisdictions. A lack of consistent international regulations has the potential to create compliance issues and create uncertainty as to investment choices in alternate technologies.

- Safety and risk management. Without clear and cosistent guidelines, the use of alternative fuels and technologies has the potential to create safety hazards and environmental harm.

- Fuel quality and compatibility. Biofuels and other alternative fuels may have different specifications and qualities depending on their source and production methods. The absence

of clear standards for biofuel quality and compatibility with different types of engines and vessel systems has the potential to cause operational problems.

- Infrastructure limitations. To support the use of alternative fuels, a robust infrastructure for production, storage, transportation and bunkering is essential. A lack of standardised infrastructure and refueling or recharging facilities has the potential to cause operational problems.

- Emission standards. Different regions and countries have varying emissions standards for marine vessels, creating uncertainty about compliance requirements.

Knowledge and training

A lack of standardised training programs, both nationally and internationally, has the potential to create barriers to the safe and effective use of alternative in terms of where further analysis of standards, regulations and communications requirements to build confidence in the use of biofuels as an emissions reduction strategy, SIA believes the seafood industry would benefit from greater knowledge of, and engagement in:

- Fuel quality testing.

- Emissions standards and testing will be essential to assess the environmental benefits and emissions reduction associated with the use of biofuels, ensuring that they genuinely align with emission reduction goals.

- Safety guidelines.

- Feedstock sourcing and sustainability criteria will be critical to avoid negative environmental and social impacts such as deforestation and food crop displacement. In particular this will need to be communicated to consumers to inform perceptions as to the benefits, safety and environmental impact of biofuels.

- Modelling, information and guidance on the risk of biofuel feedstock pricing volatility.

Recommendations

1. Incentives for finding efficiencies in current infrastructure and operations/design and purchase of new vessels and retro-fitting existing ones.

2. Investment in diesel alternates/new fuels or electrification access and port infrastructure, particularly remote and regional ports.

3. Harmonised regulations and standards for entry and uptake of new fuels/biofuels – handling, storage and how to manage if classed as dangerous goods across critically between states and territories and make every effort to push for international harmonisation.

4. Investment in research funding for alternate fuels.

5. Develop a Funding and Transition Roadmap that includes a seafood industry transition funding proposal.
6. Development of a decarbonisation e-Decision Map for wild catch fisheries and aquaculture.
7. Develop a SIA+ BECRC Policy Directions Paper for Federal and state and territory government regulators targeting governance challenges and opportunities.
8. Support the regulatory, safety and training aspects of new directions.
9. Develop pilot schemes for green corridors/ports with fisheries, recreational, ferries, tourism and port vessels and make results available.
10. Education programs for vessel owners in making the most appropriate decisions for transitioning to alternate fuels, particularly those in regional and remote areas where the risk of investing in a fuel type that is not adequately supported by the available port infrastructure.

SIA looks forward to being involved in the consultation process as more information becomes available. We are interested in reviewing the IMO impact assessment on the socio-economic, food security and trade competition impacts on Member States, as well as outcomes from the Partnerships for Infrastructure (P4I) 'Green Fuel Bunkering and Maritime Decarbonisation' when these become available.

Thank you

SIA, on behalf of our members and the entire Australian seafood industry, would like to thank you for taking the time to review our submission. I welcome the opportunity to discuss any of our requests with you further and can provide more details if needed.

Finally, I would like to thank you in advance for your support of the future of Australia's seafood industry.

Yours sincerely,

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Maritime Sector Fuel Emissions Policy for Australia

MERNAP Contribution

20 September 2023

minderoo.org

Background

Global commercial shipping is responsible for 3% of global carbon emissions and remains amongst the most challenging sectors to decarbonize. Obstacles in the decarbonization of shipping and marine transport result from:

- Extra jurisdictional nature of the sector
- Lack of central regulator
- Poor regulatory framework concerning reporting of emissions
- Technical challenges - electrification is not a viable option given the distances involved and a dearth of substitute fuel options
- Lack of financial incentives for ship owners or charterers to reduce greenhouse gas emissions.

Instruments available to policymakers to effect change include:

- Regulatory policy and legislation
- Financial motivators and disincentives in the pursuit of alternative fuels and provision of signals to market
- Facilitation of design and technical solutions - e.g. promotion and pursuit of electrification of ports and vessels in ports (i.e., cold ironing)
- Raising awareness of shipping emissions by way of regulatory reporting from ship owners to authorities on GHG emissions from voyages commencing, terminating and transiting Australia
- Operational: development and participation in smarter green corridor programmes cutting through the rhetoric for meaningful technological change in operations

Shipping is a capital intensive industry with assets (predominantly trading vessels) that have a lifespan between 20 to 35 years. In 2021 there was estimated to be approximately 54,000 vessels trading above 2000 gross tonnage of which 80% of these vessels are controlled by beneficial interests in 15 countries being Greece, China, Japan, Singapore, Hong Kong SAR, Germany, Republic of Korea, Norway, USA, Bermuda, France, Taiwan, UK, Denmark and Belgium.

The timing sequence from ordering a new design of a large tanker, bulker or container vessel can be up to five years from concept design to delivery when using conventional propulsion technologies. Decisions made today for new vessel design deliverable 2027-2028 require engine decisions today in an environment where tested alternative engines are not available nor the fuel supply to support the alternative fuel.

The structure of a weak regulatory environment, fractured ship ownership base and geographical disbursement of member states results in a lack of progression from the shipowners.

Consumers (charterers) presently have little commercial motivation to reduce GHG emissions through their imported or exported products and remain largely unaware of their emissions profile. Many exporters consider emissions from charted vessels as scope 3 emissions (i.e. indirect emissions).

Maritime emission regulations are established by the International Maritime Organisation by mutual agreements negotiated amongst the 174 member states. Vested interests often slow these agreements and even once documented, member states must ratify the agreement into domestic legislation for it to be impactful. As a result of these delays, the shipping industry has seen leading signals from the European Union via an emissions trading scheme, rather than the IMO.

In the port sector the response to heightened focus on GHG emissions has been to focus on the low cost easy fixes rather than the more capital intensive meaningful upgrades required to significantly reduce GHG emissions. Ports have little incentive at present to reduce emissions.

Responding specifically to the issues raised in the, "MERNAP Issues Paper: Regulation and Standards":

GENERAL

Q Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?

The IMO reports that at present eight nations have submitted to the Secretariat their National Action Plans (NAP) on maritime emissions. These nations are Finland, India, Japan, Marshall Islands, Norway, Republic of Korea, Singapore and the United Kingdom. These NAPs vary in date of implementation and the specific targets, but in general specify:

1) Improving domestic and institutional legislative arrangements for the effective implementation of IMO instruments
2) Developing activities to further enhance the energy efficiency of ships
3) Initiating research and advancing the update of alternative low-carbon and zero-carbon fuels
4) Encouraging the eco-system for production and distribution of fuels
5) Accelerating port emission reduction activities
6) Fostering capacity building, awareness raising and regional cooperation
7) Facilitating infrastructure for green shipping
8) Facilitating voluntary cooperation through the whole value chain

https://www.imo.org/en/ourwork/environment/pages/relevant-national-action-plans-and-strategies.aspx

To date Australia is yet to develop a NAP or send clear signals to industry on intentions. The shipping industry has adapted to legislative changes predominantly triggered by actions in the European Union. The EU's approach has been to resolve EU emissions by way of emissions taxation under an

Emissions Trading Scheme, with a contraction of Allowable Units over forward years driving upwards pricing in costs of emitting.

A regulatory area Australia could consider is a maritime emissions levy in order to encourage the adaptation of lower emission fuel sources. A well-designed system of emission taxation economically narrows the price spread between existing, polluting fuels and the more expensive, less emitting fuels. An initial carbon tax, coupled with future increase taxation indicators sends a clear price signal to investors, consumers and operators on which sector capital should be deployed.

Alternative mechanisms that could be considered are a well-managed, high quality carbon offset system. The Safeguard Mechanism has a new process for incentivising decarbonisation through Safeguard Mechanism Credits (SMCs). SMCs could be created by shipping related entities that overachieve on their emissions reduction requirements. Those entities (such as bulk exporters) can then trade their overachievement, effectively establishing a carbon credit trading scheme internal to entities covered by the Safeguard Mechanism. This would require extending the Safeguard Mechanism to categorise shipping activities as it currently does not address indirect emissions (scope 2 or 3) or extend beyond about 215 industrial facilities.

Q What key regulatory arrangements would support or obstruct your operation and investment in decarbonising the maritime sector? What do you think the regulatory priorities to facilitate maritime decarbonisation should be?

At present there is no incentive or penalty framework within Australia to encourage decarbonisation of marine emissions. Traditional fuels in some applications are granted exemption to diesel excise, hindering introduction of more costly, low carbon intensity fuels.

Regulatory mechanisms that offer financial incentives, tax breaks, or subsidies for operators who invest in decarbonization initiatives, such as retrofitting vessels with cleaner technologies or using low-carbon fuels, can encourage industry participation in emission reduction efforts.

Policies that support research and development in green maritime technologies can further promote innovation and accelerate the deployment of cleaner technologies in the sector.

Q What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?

At present the technical uncertainty surrounding the selection and potential competitiveness of the future fuel alternatives presents a challenge for those seeking to build or acquire propelled assets.

The adaptation of clear and ambitious emission reduction targets for the maritime sector can provide a strong incentive for investment in cleaner technologies and practices. At present there are no regulatory standards that set limits on greenhouse gas emissions per unit of cargo or distance travelled which discourages the adoption of cleaner fuels and more efficient vessel designs.

Q We have set out a few potential areas below where there may be regulatory barriers or opportunities. What other areas exist from your perspective?

Beyond Ports, Shipping and Global Regulatory Environment (currently focussed on the IMO), there are specific areas of competition law which may inhibit innovation in decarbonisation.

For example, competing exporters could not collectively enter the market with a freight requirement for zero emission freight purchases as this would be a potential abuse of their purchasing power. Such an action however would send a strong demand signal to market that the industry demands such a solution, and avoid a single exporter absorbing the premium for zero emission fuel alone.

Similarly, containership owners are unable to collectively schedule their vessel arrivals to avoid the emission inefficiency of waiting time in port as it could be construed as collusion.

PORTS

Q The regulatory framework above begins to identify the intersections and complexities of regulation for ports. What situations have you or other potential investors come across where these regulatory layers contradict each other in relation to decarbonisation, or are inconsistent in their interlinkages?

Inconsistent implementation of emissions reduction policies across different regions or states in Australia can create uncertainty for maritime operators, making it challenging to plan and invest in decarbonization initiatives. Some ports are advocates for technologies such as cold ironing (electrification), however learnings from those ports that have implemented technology rely on voluntary sharing with other ports which may be in a competing environment. Implementation standards should be introduced to ensure that hardware is inter-compatible between ports. Examples of inter-compatibilty challenges include electrical interfaces in shore power, hydrogen or ammonia manifold heights, locations and diameters along with unified sampling management procedures.

Q What have been your challenges with complying with the existing regulatory framework in relation to decarbonisation?

Existing domestic regulations do not appear to be challenging to industry. Challenges to international trading are arising from other jurisdictions introducing regulation, such as the EU ETS. As a result, industryis following the lead of the more proactive governments.

Q Do you or your investors have visibility of the required standards/guidance for the development of shore power? How do these standards currently impact your investment decisions for ports? Are guidelines sufficient?

Minderoo does not invest in shore power, however at the present time it appears standards are being set by equipment manufacturers with limited industry guidelines.

Q What other information do you need to inform investment and operational decisions in relation to shore power? Is greater certainty in the status of the standards/guidelines a prerequisite?

For shore power to effectively reduce GHG emissions the electrons supplied require certification of low emission credentials to ensure there is a net benefit from the status quo (ie fossil fuel consumption). Given the hotel loading that some vessels place on the grid, visibility is also required into the emissions profile of the peaking capacity supply which may be required.

Q What examples/evidence of implementation of shore power internationally could Australia leverage or learn from?

Please refer to:

1. EU strategy for the Baltic Sea Region (EUSBSR) – www.eusbsr.eu
2. HELCOM Baltic Sea Regional Plan - www.helcom.fi
3. Clean Baltic Sea Shipping program - www.interreg-baltic.eu
4. Interreg Baltic Sea Region (Green Cruise Port Action Plan)

BUNKERING

Q What lessons can be learned from the development of liquefied natural gas (LNG) as a bunker fuel?

Development of a coherent safe bunkering procedure and protocol for various types of marine fuels whether it be ammonia, methanol or other varieties that may emerge, need to be aligned between bunkering ports. Technology and methodologies need to be standardised and crew training in safe handling of various marine fuels is a priority.

To achieve this MERNAP could facilitate representation with the IMO and relative industry organisations to reach a global consensus in a similar manner to how LNG bunkering has evolved.

Q What is your understanding of the scope and magnitude of the different requirements for the emerging fuels handling?

There are separate groups leading the charge to develop safe handling methodology with limited co-ordination between parties. MERNAP could seek to create a framework for regional centres to coordinate.

Q What research is required to understand which equipment and procedural standards should apply?

MERNAP could seek to support AMSA's involvement with international groups working on procedural standards and appropriate training for crews that until now have not worked with multiple fuels. Centres such as Singapore's Global Centre for Maritime Decarbonisation (https://www.gcformd.org/) are actively developing such standards.

SHIPPING

Q What other opportunities or barriers exist? Drop-in Biofuels - For some segments of the maritime industry, drop-in biofuels will be a natural and vital transitional fuel - or end point—in reducing emissions, particularly where the costs of alternate technologies are prohibitive.

Biofuels are limited in availability and are not feasible in long distance mass transportation. As an interim solution for limited circumstances they can be useful when available. Biofuels also have an important role in pilot fuels for alternative fuels such as ammonia.

Q What concerns do you have with the pathways for biofuel use (for example a perceived lack of standards across marine applications, or Original Equipment Manufacturers not supporting their use)?

Second or third generation biofuel use would be the preferred supply as a drop-in replacement. Concerns however exist within supply chains and the availability to be continuously supplied as required along with traceability.

Any deviation from OEM fuel parameters often void engine warranty, so legislating change in this area would encourage adaptation of biofuel on newly constructed vessels.

Q Is there a lack of standards across marine applications limiting the use and uptake of alternative fuels, including biofuels? If yes, what are the gaps?

Yes. MARPOL annexures provide clear guidance for standards on marine fuels, however to date MARPOL has not extended to alternative fuels. Work on internationally accepted procedures should be a priority.

FUTURE GLOBAL REGULATORY ENVIRONMENT

Q Are there specific areas of Australia's international emissions reductions engagements, in relation to IMO regulations, that the maritime sector would benefit from greater knowledge of, and engagement in?

Australia made agreements under the Clydebank Declaration at COP26 (Australia's membership of the Zero Emission Shipping Mission) and COP27 (https://minister.infrastructure.gov.au/c-king/media-release/australia-rises-green-shipping-challenge-cop27) that would benefit from further action. The maritime sector would welcome clarification on how these commitments are being actioned.

Commented [AS1]: Not sure if this is supposed to be a link?

Q What initiatives related to the above issues are happening internationally that we can learn from/consider/adopt when constructing our national approach to decarbonisation under the MERNAP? What has and hasn't worked, and what is feasible for us domestically?

There are numerous active organisations and initiatives seeking to decarbonise the maritime space including:

1. **Getting to Zero Coalition**:
    - A global alliance of stakeholders, including governments, industry, and NGOs, with the goal of decarbonizing the maritime sector and achieving zero-emission vessels by 2030. www.globalmaritimeforum.org
2. **World Ocean Council (WOC)**:
    - An international industry organization that engages the ocean business community in sustainable practices, including responsible shipping and marine environmental protection. www.oceancouncil.org
3. **The Sustainable Shipping Initiative (SSI)**:
    - A coalition of shipping companies and stakeholders working together to drive sustainability and reduce the industry's environmental impact. www.sustainableshipping.org
4. **Environmental Ship Index (ESI)**:
    - A voluntary, performance-based certification system that evaluates ships' air emissions based on their Environmental Ship Index score, encouraging cleaner ships to be rewarded with reduced port fees. www.environmentalshipindex.org
5. **The Clean Cargo Working Group (CCWG)**:
    - A collaborative initiative involving major global cargo owners and ocean carriers to measure, evaluate, and benchmark environmental performance in container shipping. www.bsr.org
6. **SMART Green Shipping Alliance**:

- A group focused on developing and promoting technological innovations and sustainable practices in the shipping industry to reduce emissions and improve energy efficiency. www.smartgreenshipping.com

7. **Global Maritime Forum**
    - A platform for leaders from the maritime industry, government, and other sectors to discuss and address pressing issues, including sustainability and climate change. www.globalmaritimeforum.org
8. **Blue Visby Alliance**
    - A technological solution to improve coordination of vessel speed in order to reduce GHG emissions and share the benefits of fuel and time saving. www.bluevisby.com
9. **Environmental Defence Fund**
    - Guided by science and economics, and committed to climate justice, EDF works on projects in the shipping and marine industry where people can make the biggest difference. www.edf.org
10. **COZEV/ZEMBA (Aspen Institute)**
    - Cargo Owners for Zero Emission Vessels (coZEV) is a platform specifically designed for climate-leading customers of the shipping industry where cargo owners can come together to undertake high impact initiatives that accelerate the transition to ZE maritime shipping. www.cozev.org

MERNAP Issues Paper: Regulation and Standards

Introduction to UMAS International

UMAS International Ltd ("UMAS Int") is a leading maritime decarbonisation consultancy. Founded in 2014, our data and expertise have been instrumental in shaping the groundswell that underpins current efforts to transition to sustainable shipping. Often operating in conjunction with the UCL Energy Institute under the umbrella brand of "UMAS", we have been at the forefront of delivering innovative and insightful projects to a diverse range of clients, including supranational organisations such as the International Maritime Organisation (IMO), the World Bank, and the European Commission (EC).

The work undertaken by UMAS Int is grounded in rigorous models and research practices, supported by state-of-the-art data. Our proprietary models bring together disparate sets of big data, allowing us to map the drivers and trends of trade, shipping activity, and energy demand. By understanding the dynamics and intersections of these sectors, we are able to offer pioneering solutions for transformative first-mover initiatives such as green shipping corridors.

Our work and our experience spans the individual components of the maritime sector across the globe, but we are not industry participants. As the opinions we offer are based on a top-down view of the macro challenges faced by stakeholders across the industry, we have only sought to offer our insights where we hope they can serve to inform.

For more information visit http://www.umas.co.uk/.

Australia's Maritime Sector and Principles of Regulation

Q What aspects of the domestic and international industry do you think we should be particularly mindful of?

As a first step, building a comprehensive understanding of Australia's domestic (including vessels below 2,000 dwt) and international shipping activity and emissions would provide valuable insight for assessing potential future regulation/policy levers and timelines. Emission-mitigating regulation is likely to focus on larger vessels initially; however, an understanding of the full profile of domestic shipping from the start will help develop and publicly signal a regulatory framework with short, medium and long-term targets and where those targets require alignment from different types/sizes of actors in the domestic shipping industry.

Several countries (e.g. Norway[1], UK[2]) have utilised vessel AIS (Automatic Identification System) tracking data to establish a clear picture of the activity of the domestic fleet and wider sources of domestic shipping emissions (i.e. international vessels undertaking coastal trades). As well as identifying and estimating the emissions of all vessels (over 100 GT), this data can also deliver deep

[1] https://www.regjeringen.no/contentassets/2ccd2f4e14d44bc88c93ac4effe78b2f/the-governments-action-plan-for-green-shipping.pdf

[2] https://www.marine-capital.co.uk/ukmaritimedecarbonisationreport/; UMAS provided AIS data and emissions estimates for this report

insights into the geographic aggregation of shipping activity, emissions and potential fuel demand around Australia's coastline. The analysis can be extended to cover international shipping activity too, and this can help pinpoint where the convergence of demand for low/zero emission fuel between domestic and international shipping could potentially coalesce.

More generally, consideration needs to be given to how domestic and international shipping differ. The delineation is not always clear (as in the case of international vessels undertaking domestic voyages), but typically, domestic vessels are more heterogeneous in type and function. As well as ships that carry cargo, there are those that undertake activity-based work (e.g. tugs, offshore services). While the focus of regulation has been on reducing emissions from cargo vessels, there has been increasing recognition that other sectors (particularly offshore services) should also be covered (e.g. in the EU ETS[3]).

Options for lowering and eliminating emissions may also differ between domestic and international shipping. The latter is reliant on the development of supply chains of low/zero carbon liquid fuels, but electrification may be a viable alternative for some domestic shipping activity. The provision (or the need to support the provision) of infrastructure may differ between areas where domestic and international shipping activity is concentrated. Where there is overlap, demand aggregation from international and domestic sources could be a positive outcome, but may also simply dictate fuel/technology pathways for smaller or later adopters.

Ultimately, if a wider regulatory framework than the implantation of the IMO's measures is sought, then a clear understanding of the activity, emissions and vessels captured by that regulation will be critical.

Q These principles will help us provide advice to Government on what the potential future next steps might be. Do you agree with these principles? What other aspects should we consider?

Providing that these principles do not hinder the incentivization of first-movers from taking action to demonstrate and begin scaling zero or near-zero emissions technologies in the mid-2020s, we see them as well-conceived principles with a strong focus on the key issues of fairness and equitability.

Other aspects to consider:

1. Identify segments for priority action that might benefit from targeted measures.
2. Create regulatory conditions such that first-movers can begin steps to demonstrate and scale zero or near-zero emissions technologies imminently.

[3] https://climate.ec.europa.eu/eu-action/transport/reducing-emissions-shipping-sector/faq-maritime-transport-eu-emissions-trading-system-ets_en

Regulatory Barriers and Opportunities

1. General

Q Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?

Government can act to support the transition in a number of ways:

1. Policy signals: Signalling clear and well-defined targets and timelines, along with indications of the manner of implementation (e.g. market-based mechanisms, fuel standards, etc.), will give industry stakeholders a greater degree of certainty and help de-risk investment decision-making.
2. National strategies: Developing clear channels through which energy, transport and resource strategies can be integrated gives a firmer line of sight where cross-industry demand can coalesce around potential low/zero-emission fuel projects.
3. Direct investment: Support for key projects that could demonstrably act as critical catalysts in the development of zero-emission bunker fuel supply chains.
4. Future-proofed workforce: Planning for the training needs of a future workforce dealing with zero-emission bunker fuels and ships.

Q What key regulatory arrangements would support or obstruct your operation and investment in decarbonising the maritime sector? What do you think the regulatory priorities to facilitate maritime decarbonisation should be?

We are not direct actors in the maritime industry, but we do have a clear view of the issues and challenges faced by those stakeholders—at the global, regional and domestic level. Lack of willingness to pay for early adoption has been the key headwind to investment thus far. Clear regulatory signals—either in relation to market-based mechanisms or compliance-based targets would help to unlock action. Joined-up thinking on policies (i.e. consideration of policy impacts on the development of bunker supply chains, port infrastructure and zero-emission vessels), would help firm confidence in the future policy direction and commitment.

Q What would prevent you from embarking on an accelerated response to decarbonisation (e.g. long lead-in time with regulatory change)?

As previously indicated, a lack of willingness to pay by end users is a key challenge to any business case related to early decarbonisation investments. Strong policy signals, that start to enable upstream projects to reach FID could help sway commitment to early adoption on an individual basis. Cross-value chain collaborative approaches (e.g. green corridors) may seek direct support or assurance of wider policy factors.

Q We have set out a few potential areas below where there may be regulatory barriers or opportunities. What other areas exist from your perspective?

Decarbonisation of the shipping sector, locally or globally, can only be done in conversation with actors in the landside energy and infrastructure sectors. The scalability of renewable energy production, grid capacity, as well as green fuel production and transport are all critical to the decarbonisation of shipping. At the same time, the size and relative stability of the shipping sector presents a potentially valuable means of providing the kind of long-term guaranteed off-take that can support the deployment and/or scaling of the necessary infrastructure and energy systems.

2. Ports

Q The regulatory framework above begins to identify the intersections and complexities of regulation for ports. What situations have you or other potential investors come across where these regulatory layers contradict each other in relation to decarbonisation, or are inconsistent in their interlinkages?

N/A

Q What have been your challenges with complying with the existing regulatory framework in relation to decarbonisation?

Our research has concluded that ports typically face the following key regulatory issues in developing their role in decarbonising the maritime sector:

1. Establishing bunkering facilities for alternative fuels poses challenges including the need for safety regulations and infrastructure investments. The development of safety standards for new low and zero-emission bunker fuels is typically deemed to be slow.
2. Existing regulations may lack clarity regarding decarbonisation requirements for ports. This can make it difficult for port authorities to determine precisely what measures they need to implement to reduce emissions and transition to cleaner energy sources.
3. Emissions reduction targets focus investment on Scope 1 & 2 (i.e. emissions from port operations) reduction, rather than on the infrastructure needed to reduce Scope 3 emissions (i.e. bunkering infrastructure).
4. Ports often need to coordinate with various government agencies and regulatory bodies. Ensuring alignment and compliance with multiple sets of regulations can be challenging and time-consuming.

To address these challenges, ports may benefit from government support, clear and consistent regulatory guidance, financial incentives, and partnerships with experts in decarbonisation strategies. These measures can help ports navigate the complexities of regulatory compliance while working towards a greener and more sustainable future.

Q What regulatory arrangements would support or obstruct your operation and investment for ports in decarbonising the maritime sector? For you, what would prevent an accelerated response to decarbonisation?

Generally, governments can support decarbonisation by providing clear policy signals and financial incentives to close cost differentials and de-risk upfront investment. In the case of port decarbonisation, there are some specific actions governments can take:

1. Providing low-cost electricity to improve the business case for port owners who invest in shore power
2. Foster collaboration between the diverse range of stakeholders involved in port operations (e.g. through public-private partnerships)
3. Support the development of the necessary infrastructure for ports to rapidly decarbonise (e.g. grid capacity, green fuel bunkering, etc.)
4. Specific regulatory standards for ports (e.g. emissions targets, efficiency standards, etc.)
5. Develop guidance on the technical, economic and business aspects of shore power projects to allow port operators to make informed and develop best practices.

Connection of Shore Power

Q What other information do you need to inform investment and operational decisions in relation to shore power? Is greater certainty in the status of the standards/guidelines a prerequisite?

Certainty in the form of emissions targets and standards is a key facet of stimulating collaboration between the many stakeholders involved in the provision and use of shore power (e.g. port owners, port operators, utilities, grid operators, shipowners, charterers, national and local governments, etc.). The high upfront cost of installing shore power capability at ports is a major barrier to uptake, especially in light of the typically modest revenues associated with providing electricity. For this reason, global deployment of shore power up to this point has largely been driven by government grants and other financial incentives.

There is also often a lack of best practice guidance around the installation and operation of shore power for port operators. This means that the systems for connectivity can differ from location to location. Standardisation and dissemination of guidelines on best practices could help overcome these inefficiencies.

Q What examples/evidence of implementation of shore power internationally could Australia leverage or learn from?

Norway and the EU offer examples of successful deployment of shore power at scale. In Norway, projects to deliver hybrid and all-electric ferries have been ongoing since 2015[4]; the Norwegian government has also invested heavily (~USD85m) in shore power projects, particularly for cruise ships[5]. As part of its Fitfor55 package, the EU announced that containerships and passenger ships

[4] https://www.rivieramm.com/news-content-hub/news-content-hub/partnership-creates-next-generation-all-electric-ferry-60619
[5] https://www.offshore-energy.biz/norway-backs-shore-power-projects-with-e5-5-million-investment/

would be obliged to use shore power at major EU ports from 2030, and at all EU ports from 2035 onwards[6].

Q What other regulatory challenges have you or others you know experienced in consideration of investment in shore power?

Other regulatory barriers known to limit the deployment of shore power globally include:

1. The high level of taxation on electricity compared to the low level of taxation on marine fuel can make it difficult for ports to recoup the initial investment of installing shore power.
2. Potential misalignment (or mistiming) between the regulations that compel ports to provide shore power and that which obliges ships to connect to shore power.

Bunkering of New Low or Zero Carbon Fuels

Q What lessons can be learned from the development of liquefied natural gas (LNG) as a bunker fuel?

During the 2010s, LNG was portrayed as a 'transition fuel', that could serve as an interim solution to reducing emissions from shipping given the relatively long lead time for deploying zero or near-zero emissions fuels. However, the investment decisions in dual fuel LNG vessels were very much taken on a commercial basis—shipowners/operators sought the opportunity to access lower fuel costs based on the gas/fuel oil differential.

The development of the associated LNG bunkering infrastructure took some time to develop; low utilisation of bunkering assets and infrastructure has a dramatic impact on the business case of bunker suppliers. LNG contractual agreements differed from normal bunkering procedures and needed to be developed. While the emergence and evolution of LNG bunkering can offer insights into the commercial challenges that the bunkering supply chain of new low/zero emission fuels will face, the surrounding landscape will be vastly different—the backdrop of compliance-driven demand cemented by the IMOs recent absolute emissions targets for 2030/2040 will act as a far greater tailwind on investment in low/zero emission fuel bunkering infrastructure.

Q What is your understanding of the scope and magnitude of the different requirements for the emerging fuels handling?

When considering the handling of emerging zero or near-zero emissions fuels, there are a few aspects to consider:

1. Production, transport and storage: Emerging zero or near-zero carbon fuels such as methanol and ammonia are already produced in large quantities, transported globally using ships and used in a range of applications safely. Safety procedures for these aspects of handling emerging fuels are well-established and robust.
2. Use as a maritime fuel: Methanol is already being used as a maritime fuel with IMO guidance in place. Whereas, hydrogen and ammonia are in the development/pilot stage. Hydrogen is

[6] https://www.europarl.europa.eu/news/en/press-room/20230320IPR77909/fit-for-55-deal-on-new-eu-rules-for-cleaner-maritime-fuels

non-toxic and quickly dissipates when leaked but it is extremely flammable and creates a more significant risk of explosion compared to traditional marine fuels. Ammonia is highly toxic and would pose a significant risk of fatal injury to seafarers, or those in port areas, if not properly contained as well as significant environmental damage. However, in both cases, safety standards are currently being developed by class societies, engine manufacturers and ship builders and there is confidence they can be safely used as marine fuels. In addition, enhanced staff training support will also be a requirement for seafarers and port workers in close proximity to the fuels.

Q What research is required to understand which equipment and procedural standards should apply?

No hydrogen- or ammonia-fuelled ICEs are currently commercially available; however, development is proceeding quickly, and several engine manufacturers hope to have models available by the mid 2020s. As long-standing commodity chemicals, the hazards and risks associated with the use of hydrogen and ammonia are well understood. As such, the main research and development focus currently is on the design of the necessary infrastructure to safely transport and store these chemicals in potentially highly populated areas as well as safety procedures for emergencies (e.g. ammonia leaks) in the specific application as a bunker fuel.

Shipping

Q Do these or other regulations, or their current development uncertainty, impact investment in low and zero emission bunkering vessels?

As you have identified, the need to use special approval processes adds cost and complexity to the implementation of zero-emission vessels; thus, creating a barrier to their adoption. For international shipping, the IMO has laid out a timeframe for providing guidance on the use of such fuels which may be helpful when developing domestic rules. At the domestic level, many national authorities are currently attempting to develop their guidelines, creating an opportunity to collaborate to speed up the process while providing some regulatory consistency across nation-states.

Regarding bunkering vessels and processes, the safety protocols needed may be more stringent because of the properties of the zero-emission fuels (e.g. ammonia). This is likely to lead to increased bunkering costs and the need for enhanced crew training.

In both vessel certification and bunkering safety, it is important that regulatory bodies engage with pilot programmes to lower the burden of compliance through collaboration and to learn from the outcomes of the pilots. These outcomes can then be used to develop better rules and guidance.

Q What other opportunities or barriers exist?

Opportunities:

1. Innovation and Investment: Regulatory challenges often drive innovation. Companies that can develop solutions to navigate these regulatory hurdles may find opportunities for innovation and investment in developing new, compliant technologies and infrastructure.

2. Collaboration: Collaboration between regulatory bodies, industry and government stakeholders, and investors can help streamline the regulatory framework and create clearer pathways for investments in low and zero-emission bunkering vessels.

Barriers:

1. Risk Aversion: The uncertainty associated with evolving regulations may make investors risk-averse, leading to slower adoption of low and zero-emission bunkering vessels.
2. Increased Costs: Compliance with complex regulations can increase the overall costs of vessel construction and operation, potentially impacting the economic viability of such investments.
3. Delayed Market Entry: Investors may delay or reconsider market entry until regulatory frameworks become more stable and predictable, potentially slowing down the development of the low and zero-emission bunkering vessel market.

In summary, while regulatory challenges can be barriers to investment in low and zero-emission bunkering vessels, they also present opportunities for innovation and collaboration. Clearer and more predictable regulatory frameworks can encourage investment in sustainable bunkering solutions, ultimately advancing the adoption of cleaner fuels and technologies in the shipping industry.

Drop-in Biofuels

Q What concerns do you have with the pathways for biofuel use (for example a perceived lack of standards across marine applications, or Original Equipment Manufacturers not supporting their use?

Our main concern is on the availability and sustainability of any biofuel used in shipping. There is much debate on the likely availability of biofuel in the shipping industry due to the limited supply of truly sustainable biofuel coupled with significant demand from other energy sectors and transport modes. From a sustainability perspective, land use change is a concern. So, rules and guidance are needed to mitigate any unintended consequences.

Q Is there a lack of standards across marine applications limiting the use and uptake of alternative fuels, including biofuels? If yes, what are the gaps?

N/A

Q What standards apply to support engine manufacturers in the transition to biofuels? If there are no international or domestically recognised standards, is there an accelerated pathway for land-use engine standards for biofuels that can be adapted for maritime application?

N/A

Q In what areas is further analysis on standards, regulations, and communication required to build confidence in the use of biofuels as a potential emissions reduction strategy?

Further analysis, standards development, and enhanced communication are vital in several areas to build confidence in biofuels as a viable emissions reduction strategy:

1. Biofuel Specifications: Establishing standardised biofuel specifications for marine applications, including feedstock sourcing, production processes, and quality standards, to ensure consistency and compatibility with various vessel types.
2. Engine Optimisation: Developing guidelines and standards to support engine manufacturers in optimising their systems for biofuel use in maritime settings, addressing issues such as engine efficiency, emissions reduction, and reliability.
3. Safety and Handling: Defining safe handling and storage practices for biofuels onboard vessels, including considerations for different biofuel types and their interaction with existing infrastructure.
4. Regulatory Framework: Collaborating with regulatory bodies to create clear and consistent regulatory frameworks for biofuel use in shipping, encompassing safety, emissions, and performance standards.
5. Industry and Staff Education: Enhancing industry education and communication efforts to inform stakeholders about the benefits, challenges, and best practices associated with biofuel adoption in the maritime sector.

Addressing these concerns and filling the gaps in standards, regulations, and communication will be instrumental in facilitating the widespread use of biofuels as a promising emissions reduction strategy in the maritime industry.

Future Global Regulatory Environment

Q Are there specific areas of Australia's international emissions reductions engagements, in relation to IMO regulations, that the maritime sector would benefit from greater knowledge of, and engagement in?

As a UK-based consultancy considering the decarbonisation of the global shipping system, we see that Australia is well-placed to be an exporter of hydrogen-derived low-carbon fuels. The 2023 IMO GHG strategy increases the demand for such fuels significantly, creating an opportunity across the Australian maritime and energy supply chains. Awareness of this opportunity may be beneficial for Australian stakeholders.

Q What initiatives related to the above issues are happening internationally that we can learn from/consider/adopt when constructing our national approach to decarbonisation under the MERNAP? What has and hasn't worked, and what is feasible for us domestically?

UMAS Int is most familiar with the UK's Clean Maritime Plan (CMP) which is currently under revision by the Department of Transport. Leveraging their expertise may be beneficial to the Australian authorities when considering their national action plan. UMAS Int provided much of the underpinning work used to establish the current UK CMP.

Initiatives to consider when constructing a national approach:

1. Green Corridor Identification: Australia can consider using UMAS Int's Green Corridor Identification tool which could help them identify key national and international Green Corridor routes. This tool can provide data-driven insights based on which suitable and sustainable insights can be drawn and can be used to reflect on the points below.
2. GHG Reduction Targets: Australia can consider adopting GHG reduction targets in line with the IMO's 2030 and 2040 ambitions. This provides a clear framework for decarbonisation efforts in the maritime sector, aligning national goals with international standards.
3. Technology and Research Collaboration: Australia can explore opportunities for international collaboration on research and development of alternative propulsion systems and low or zero-carbon fuels. Collaborative initiatives with international partners can accelerate the development and adoption of sustainable maritime technologies.
4. Incentives for Clean Technologies: Learning from international examples, Australia can design incentives and policies that encourage the use of clean maritime technologies. These incentives may include tax breaks, subsidies, or grants for vessel owners and operators who invest in environmentally friendly solutions.
5. Capacity Building: Australia can benefit from international capacity-building programs that enhance the skills and knowledge of its maritime workforce in sustainable practices, energy-efficient technologies, and compliance with evolving regulations.
6. Stakeholder Engagement: Australia can consider models of stakeholder engagement and consultation used successfully in other countries to gather input from various maritime industry stakeholders, including shipowners, operators, and environmental groups, when shaping domestic policies.
7. Public-Private Partnerships: Exploring successful public-private partnerships from other countries can inform Australia's approach to funding and implementing green initiatives in the maritime sector, facilitating collaboration between government agencies and industry players. UMAS is currently engaged in a Green Corridor Finance study with GMF, where it is exploring Public-Private Partnership opportunities in regions around the world, including a green corridor between Australia and East Asia.

GLOBAL MARITIME FORUM

Consultation: MERNAP Issues Paper – Regulation and Standards
Input provider: Global Maritime Forum

September 22nd, 2023

The Global Maritime Forum (GMF) has inputted on a few selected questions in this first consultation paper. Question and page number is indicated for each answer below. GMF is open to elaborate or answer questions on the responses provided.

Q1 p. 4: What aspects of the domestic and international industry do you think we should be particularly mindful of?

- The strategic, economic and societal opportunities that exist for Australia to not only 'follow' the choice of fuels for international shipping to meet their GHG obligations but to become a leader in that transition producing and exporting zero-emission bunker fuels.

Q2 p. 4: These principles will help us provide advice to Government on what the potential future next steps might be. Do agree with these principles? What other aspects should we consider?

- Consider how different combinations of policies interact to maximize the role of shipping decarbonization in delivering on Australia's strategic investments in e.g., clean hydrogen. For example, the opportunity to design policy mechanisms that stimulate demand for the clean fuels already supported by Australian hydrogen policy (see National and regional policy for green shipping corridors paper by Global Maritime Forum (GMF)).
- Consider working backwards from reaching the global target of at least 5% of zero emission shipping fuels by 2030 – which supportive policy measures must be in place to ensure that Australia meets this tipping point?
- Ringfence revenues generated by economic instruments in the sector for use in the sector:
    - Cf EEIST project and IPCC AR6 Mitigation report for cutting edge theory relating to decarbonisation policy design.

Q3 p. 4: Recognising the role of government in supporting the transition, what regulatory areas of Commonwealth responsibility should the MERNAP focus on?

- Basket of measures to drive the use of zero-emission shipping fuels based on clean hydrogen (e.g. clean ammonia)
- Alternative design and infrastructure approval processes.

Q4 p. 4: What key regulatory arrangements would support or obstruct your operation and investment in decarbonising the maritime sector? What do you think the regulatory priorities to facilitate maritime decarbonisation should be?

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- Closing the cost gap for operating zero-emission vessels should be the key priority to facilitate maritime decarbonisation:
    - Demand-side subsidies to incentivize the uptake of zero-emission shipping fuels, e.g., Contracts for Difference schemes; targeted financial support for developing zero-emission vessels. Examples: German Carbon Contracts for Difference Funding Programme; Norwegian Ammonia in Vessels programme.
    - Supply-side subsidies for producing zero-emission shipping fuels (hydrogen, green ammonia). Example: U.S. Inflation Reduction Act.
- Complementary policy measures are also critical to create an enabling environment for deployment. These must be developed in parallel to closing the cost gap. Examples include:
    - Reducing the administrative barriers to deployment by facilitating renewable energy permitting; alternative design approvals; port guidelines and regulations; building credibility and trust by, for example, developing fuel-side certification schemes or advocating for green corridors at the IMO level.

Q9, p. 5: What regulatory arrangements would support or obstruct your operation and investment for ports in decarbonising the maritime sector? For you, what would prevent an accelerated response to decarbonisation?

- Faster permitting and approval processes on the port infrastructure sides, including bunkering guidelines and safety standards, is critical.
- Training requirements for personnel working with zero emission fuels at port.

Q16, p. 7: What research is required to understand which equipment and procedural standards should apply?

- Cf. work being done in Singapore; should be an area of collaboration with Singapore.
- Support work of Pilbara Ports Authority to explore ammonia bunkering, as a strategic hub with the opportunity to establish ammonia bunkering, with fast movement.

Q18, p. 7: Do these or other regulations, or their current development uncertainty, impact investment in low and zero emission bunkering vessels? and Q19, p. 7: What other opportunities or barriers exist?

- Standards for the safe handling of zero emission shipping fuels, like that of green ammonia, must be developed to de-risk investments in zero emission vessels, including bunkering vessels.
- There is an opportunity to learn from other first mover- flag nations to share learnings and streamline alternative design processes, working closely with classification societies and take a leading role in developing ammonia regulations at the IMO in a timely fashion (mid-2020).
- There is a need to identify and establish which are the critical vessel design elements for bunkering vessels. This requires progress on the deployment of zero emission vessels, ensuring that the bunker interface is properly designed. Guidelines for green ammonia bunkering

operations should be in place by mid-2026, to allow for bunkering vessels to be piloted and scaled up in 2028.

Q23, p. 8: Are there specific areas of Australia's international emissions reductions engagements, in relation to IMO regulations, that the maritime sector would benefit from greater knowledge of, and engagement in?

- As mentioned above, Australia could take a leading role in developing regulations for zero-emission shipping fuels (e.g., safe handling of green ammonia) at the IMO in a timely fashion (mid-2020), benefiting the knowledge and uptake of these fuels, including Australia's potential position of becoming a leading bunkering hub for some of these fuels.

Q24, p. 8: What initiatives related to the above issues are happening internationally that we can learn from/consider/adopt when constructing our national approach to decarbonisation under the MERNAP? What has and hasn't worked, and what is feasible for us domestically?

- Initiatives happening internationally to learn from/consider/adopt when constructing MERNAP:
    - Norway best practice - introducing NOx regulations and Fund, offshore and ferry decarbonisation mandates, comprehensive RD&D support throughout lifecycle, including public-private Green Shipping Programme, Enova CAPEX and OPEX support for ZEVs, strategy on zero-emission fuel provision for shipping.
    - EU's Fit for 55 basket of measures and Innovation Fund, which are driving investment cf. LAURA Maerskin Baltic Sea
    - Proactive supporting role on green corridors, following the examples set by Singapore, Nordics, and UK. Cf. National and regional policy for green shipping corridors paper by GMF for inspiration and recommendations on measures to do so
    - There are approvals-related challenges - cf. the Nordic Green Ammonia Powered Ships Project (NoGAPS) which has taken 3 years to reached Approval in Principle (AiP), required 5x usual manpower from Danish Maritime Authority (DMA), and financial support from Nordic Innovation.
    - Opportunity to learn from DMA's Regulatory Futures Lab.
    - Key blocker to investment is the cost gap for zero-emission vessels/fuels. The lack of an investment case is holding up projects in Norway which have detailed designs and have already received the necessary regulatory approvals – examples include Grieg ammonia vessels, Amon Maritime vessels. This is also the conclusion of the work in the NoGAPS project.
    - Evidence suggests that a combination of a technical measure, such as a fuel standard, and economic measure, such as GHG levy, with revenue generated reinvested in the sector, would be the most effective framework for hitting the sector's decarbonisation goals (cf. GMF Closing the Gap report).

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- Consideration should be given to how shipping can both benefit and serve as a source of domestic demand for hydrogen through the Hydrogen Headstart scheme.

- Analysis by the GMF, Rio Tinto, BHP, Oldendorff, and Star Bulk has showed that decarbonising the iron ore carriers operating between the Pilbara and North Asia would require ~5Mt of ammonia by 2050 and up to 0.3Mt by 2030. To unlock this demand and support the sector's decarbonisation, part of the funding from the Hydrogen Headstart scheme could be ringfenced for shipping (cf. NZ hydrogen support design) and/or part of the revenue from a levy used to close the remaining gap between the cost of greyhydrogen/ammonia and VLSFO (Cf. GMF National and regional policy for green corridors)

Contact person GMF: s 47F Project Coordinator Decarbonisation, s 47F @globalmaritimeforum.org.

AUSTRALIAN HYDROGEN COUNCIL

28th September 2023

Megan Scott
Assistant Secretary, Maritime and Shipping
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
Australian Government
GPO Box 594
CANBERRA ACT 2601

Dear Megan,

Re: MERNAP Issues Paper: Regulation and Standards

The Australian Hydrogen Council (AHC) is the peak body for the hydrogen industry, with over 100 members from across the hydrogen value chain. Our members are at the forefront of Australia's hydrogen industry, developing the technology, skills and partnerships necessary to ensure that hydrogen plays a meaningful role in decarbonising Australian industry.

AHC welcomes the opportunity to respond to the MERNAP consultation process. Hydrogen will be necessary as a feedstock for future shipping fuels but the industry is far from commercial. Without significant planning, policy support and investment the scale will not be available when the next generation ships are demanding it.

AHC recently developed a paper[1] in response to the 2023 National Hydrogen Strategy consultation process. Our paper provides a comprehensive record of the current hydrogen policy state of play and provides recommendations for next steps. We suggest that the MERNAP team reviews the paper to engage with the issues and steps to get hydrogen to scale to support shipping and ports in the energy transition. For initial reference, we have provided the relevant recommendations as an appendix to this letter.

Getting hydrogen to the scale required for future shipping fuels will be an enormous task, with competition for inputs at each point, and competition for the hydrogen from other sectors of the economy.

There is a need to plan and engage across portfolios in new ways. Energy, transport, environment, water, industry and workforce need to essentially work together on master planning for the next several decades for new technologies, new supply chains, new equipment and skilled up workers. As we note in our paper, we understand the challenges facing international shipping to include:

- Technological solutions being required (engines, turbines etc) that can operate effectively with new fuels. These solutions are not readily able to be retrofitted on existing costs, meaning that change is slower than ideal as a result of sunk costs in existing assets and the high costs associated with new build vessels.
- Supply chains for the secure, at scale, supply of the new fuels are undeveloped and the prices for offtake are uncompetitive with existing, incumbent fuels.

[1] AHC (2023) *A fit-for-purpose refreshed National Hydrogen Strategy: next steps for building Australia's hydrogen industry*, August, https://h2council.com.au/ahc-publications/.

AUSTRALIAN HYDROGEN COUNCIL

- Workers all along the supply chain as well as on the vessels are unprepared for working with the new fuels and globally accredited training is not yet available. Unions and the broader citizenry are unsure about the new fuels and bulk storage at ports close to residential centres.
- Infrastructure to meet future shipping needs is undeveloped, including ports with space for additional storage capacity and safety buffer zones, as well as any specialised delivery systems and trained workforce. Shipyards must have capacity for retrofits and new builds.

Bringing these issues together to plan is a complex task. This is why one of the key priorities and immediately actionable recommendations in our paper is the implementation of Hydrogen (or low carbon) Economic Zones. It is easier to manage and deliver complexity with some boundaries; Hydrogen Economic Zones go beyond Renewable Energy Zones to foster more intensive engagement between parties, such as ports, electricity and workforce planning.

Another key takeaway from our paper is the necessity for research and publicly available analysis. Linking this back to the MERNAP process, we advise that regulatory efforts are vital but should be based on international evidence. Australia is not going to lead the global shipping industry – in fact we will be a taker of shipping company appetites for fuels and for bunkering. We therefore advise against mandates that seek to pick fuel 'winners' or determine storage needs while these matters are still being determined by factors outside of our control.

However, this is not to advocate for passivity. Overall, there is a need for planning and collaboration both domestically and internationally to develop an intellectual and investment framework ready for the future market. There is much to do in understanding the options, and we recommend robust analysis and modelling be undertaken to determine what combination of factors would be in Australia's interest and in what timeframe. There is a need to engage with shipping companies about their decarbonisation and bunkering plans. There is also a question of how shore power might affect electricity grid capabilities and costs – this would seem necessary to understand so as to not overload the grid as multiple modes of transport and industrial use shift to electrification.

Whether the dominant shipping fuel of the future is ammonia or methanol, hydrogen is a vital input. With this in mind, we encourage you to engage with the AHC as an ally in this space. We also recommend that the MERNAP team work closely with the National Hydrogen Strategy team within the Department of Climate Change, Energy, the Environment and Water to ensure that a coordinated approach is undertaken.

We thank you again for the opportunity to respond to this first Issues Paper and look forward to further consultation and developments.

If you wish to discuss any element of this in further detail, please contact me at s 47F @h2council.com.au.

Yours sincerely,

s 47F
Policy Officer
Australian Hydrogen Council

AUSTRALIAN HYDROGEN COUNCIL

APPENDIX A: AHC's response to the National Hydrogen Strategy Refresh – Maritime relevant recommendations

Recommendation 6: Prioritise hard-to-abate and scalable domestic demand sources.

The Australian Government should prioritise growing demand for hydrogen in the applications that are more likely to require clean hydrogen to decarbonise, and more likely to achieve large scale. Ideally these should demonstrate an ability to open the market to other applications, through knowledge/technology sharing, geographic proximity, and/or cost reduction. Current evidence supports these industries as being:

- Chemicals, particularly ammonia and methanol
- Low emissions metals, particularly iron and alumina
- Heavy road transport
- High temperature process heating
- Marine and aviation, where hydrogen is a feedstock for future fuel
- Seasonal storage for the electricity market

Recommendation 12: Develop joint support packages between Australia and its trading partners to support trade in hydrogen and hydrogen derivatives.

The Australian Government should develop bespoke joint support packages between Australia and its trading partners that underwrite trade and support necessary infrastructure.

These should also cover multilateral agreements to incentivise investment and collaboration, for example, between Australia as a producing country, Singapore as a key intermediary for shipping and the nations of North Asia as key customers for hydrogen, its derivatives and also products produced using hydrogen.

Recommendation 15: Create Hydrogen Economic Zones to support regional hydrogen initiatives and connect the relevant supply, demand, infrastructure and workforce.

The Net Zero Economy Agency should oversee the development of Hydrogen Economic Zones that link hydrogen production targets to locations via hydrogen economic zones that incorporate REZs and ports, as well as likely requirements for hydrogen storage, CCS, refuelling, pipelines, and workforce.

This work should adopt work already undertaken by the jurisdictions.

Recommendation 24: Develop a national assessment of port capability to meet the revised NHS objectives and targets.

DCCEEW should engage with port corporations and peak bodies to analyse and report back on port capability for future exports, in line with the objectives and targets set by the revised NHS and connected with Hydrogen Economic Zones.

This should lead to an understanding of how ports can collaborate without triggering unforeseen regulatory hurdles and future government support for common use infrastructure.

AUSTRALIAN HYDROGEN COUNCIL

Recommendation 25: Select and support ports with existing industry connections to be demonstration ports.

Australian governments should work with ports to identify appropriate demonstration sites for hydrogen development. To mirror international developments this could include ports that have existing industrial connections.

Recommendation 26: Commit to a funding envelope for ports.

The Australian Government should undertake to support port redevelopments to 2045. The national assessment will clarify what is required, but this is expected to be around A$20-$30 billion.

Recommendation 49: Attract private investment for hard-to-abate industrial processes.

Noting the need for funding to align with analyses addressed in Recommendations 3-5 and any targets set, the Australian Government should:

- Fund a hydrogen readiness programme of at least A$1 billion for capital expenditure on industrial processes that cannot readily be electrified, including (and not exclusively) for the production of steel, ammonia, methanol, and alumina/aluminium.
- Continue to use ARENA (and CEFC where possible) to underwrite demand through a revenue support mechanism (such as contract for difference) intended to incentivise domestic production of critical chemicals and metals, including (and not exclusively) for the production of steel, ammonia, methanol, and alumina/aluminium. Funding should be aligned with funding from state/territory governments.

Funding should be prioritised for projects that protect or create local jobs and have a detailed plan for skilling and re-skilling. Applicants should be required to share non-commercially sensitive information to support industry knowledge development – this could be assisted by engaging with industry associations to support delivery.

To mitigate and reduce the costs associated with project development (such as transmission costs), the Australian and state governments could collaborate to further incentivise co-location of chemical production within Hydrogen Economic Zones, and within proximity to other industrial infrastructure such as ports.

Recommendation 51: Develop a national assessment of shipping routes and refuelling requirements.

The Australian Government should engage with shipping companies operating in Australia and peak bodies to analyse and report back on:

- Current shipping routes.
- Shipping companies' views on fuels in which they are investing, the relative energy densities of options, and requirements to refuel (that is, the maximum journey length without bunkering requirements).
- Bunkering in Australia, to understand if products (including fuels) are to be transported from southern Australia, what the impact is on key matters such as the total journey length and requirement to refuel.
- Opportunities for demonstration projects at suitable ports.

Maritime Emissions Reduction National Action Plan Issues Paper: Regulation and Standards

Response from the Maritime Union of Australia

3 October 2023

Department of Infrastructure and Transport

Submitted via: MERNAP@infrastructure.gov.au

s 47F **, National Secretary,**

Maritime Union of Australia

A Division of the Construction, Forestry, Maritime, Mining and Energy Union

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Background

This submission has been prepared by the Maritime Union of Australia (MUA).

The MUA represents approximately 14,000 workers in the shipping, offshore oil and gas, stevedoring, port services and commercial diving sectors of the Australian maritime industry.

This includes coal export terminals and port and shipping services to many emissions-intensive industries, such as aluminium smelters and steel manufacturing facilities. The MUA is also part of the Offshore Alliance (with the Australian Workers' Union) which represents workers on offshore oil and gas facilities.

The MUA is a Division of the 120,000-member Construction, Forestry, Maritime, Mining and Energy Union and an affiliate of the 20-million-member International Transport Workers' Federation (ITF).

The MUA supports the government taking action to address climate change. We are working hard to prepare our membership and industries for the necessary transition to a zero-net emissions economy and society. We recognise the need to urgently reduce emissions globally and in Australia to prevent global heating from exceeding 1.5°C, but this will have a very significant impact on the jobs held by many of our members. Our ability to provide climate leadership in these industries depends on the ability of governments and of our union to deliver a just transition to our members working in fossil fuel industries, and their communities. If we cannot provide such a transition, we risk significant reductions to workers' living standards, deepening inequality, and a very significant political backlash which could stall the transition we need.

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MERNAP Objectives

We are pleased to see the Department adopt as an objective for MERNAP to 'promote a safe and equitable transition for the maritime sector, particularly for the maritime workforce.' This is very welcome and a critically important principle going forwards.

However we note that this language has been somewhat watered down from the original IMO resolution which calls for 'a just and equitable transition for seafarers and other maritime workforce that leaves no one behind'.[1] This echoes language from the Paris Agreement, which recognises 'the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities.'[2]

We ask that the Department examine the language used by the IMO and the Paris Agreement further and reinstate some of the missing language.

Going forwards, it will be critically important to embed the objective of a 'safe and equitable transition' into the MERNAP and its policy recommendations. This will include:

- Prioritising safety in all aspects of the regulation of new energy sources
- Ensuring workers are fully funded to access quality training to work with new energy sources
- For any government grants and incentives delivered under MERNAP, requiring that all projects maximise the contribution of the project to the Australian economy and local communities, including to*:*
  a) ensure quality jobs through the implementation of a Secure Jobs Code, to be applied across government-funded projects.
  b) maximise the use of locally produced and supplied goods and services
  c) maximise the employment of suitably qualified local workers, including energy workers, engaged under registered industrial instruments, agreed between relevant unions and employers
  d) provide for training and skills development of local workers, minimum requirements for trainees and apprentices, worker transition opportunities from industries facing closure, and the employment of workers from groups underrepresented in the workforce.

Current opportunities

As an affiliate of the Australian Council of Trade Unions, the MUA is participating in the campaign for a $100 billion investment in an Australian Renewable Industry Package, including in zero carbon transport and fuels.[3] We understand a package is being developed by a Renewable Superpower

[1] IMO Resolution MEPC.377(80), 2023 IMO STRATEGY ON REDUCTION OF GHG EMISSIONS FROM SHIPS, 7 July 2023, para 5.6

[2] A Just Transition is defined in the UNFCC, Report of the Conference of the Parties on its twenty-first session, held in Paris from 30 November to 13 December 2015.

[3] Paul Karp, **Investors and unions press Labor to invest $100bn to compete in global green economy**, *The Guardian*, Monday 11 September 2023.

Task Force within the Department of Energy, supported by $5.6 million in funding from the most recent Federal Budget. It would be important for the MERNAP team to see what cross-over funding would be possible that can be used to support maritime decarbonisation.

Part One: Australia's Maritime Sector and principles for regulation

Q What aspects of the domestic and international industry do you think we should be particularly mindful of?

Q These principles will help us provide advice to Government on what the potential future next steps might be. Do agree with these principles? What other aspects should we consider?

The proposed principles are sensible. We would also support the addition of the following principles:

- Strong regulation to prioritise safety of the workforce and community

  While it is critically important to develop new energy sources for the maritime sector, virtually every option comes with a substantial range of new and very serious hazards which must be addressed in vessel and equipment design, safety processes, as well as worker training and experience. Corners must not be cut in this process.

- As a key priority, target incentives to support decarbonisation of domestic shipping activities, and particularly areas where government support or procurement can be leveraged to accelerate decarbonisation.

  The MERNAP should specifically address and align with the Government's shipping policy commitments to revitalise Australian shipping. Not only must policy ensure that Australian ships are not disadvantaged relative to foreign registered ships, but they should be supported and given an advantage in decarbonisation, thus helping rebalance the very unbalanced competitive playing field that currently exists. The APS Net Zero Emissions by 2030 policy may also apply to government owned or contracted vessels.

  Likewise various levels of government play a role in procuring and/or supporting maritime transport services, particularly ferries but also passenger and freight transport across the Bass Strait and to Kangaroo Island, and potentially freight transport in Queensland and West Australia. Likewise many ports around Australia are owned or at least regulated by state governments.

- Avoid a perverse outcome that drives transport activity away from shipping to less energy efficient forms of transport. (In avoiding this outcome government must ensure that regulation applying to the maritime industry does not impose costs that are disproportionately imposed upon the maritime sector and not on other modes of transport.)
- Avoid perverse incentives to shift away from the use of Australian registered ships, that could result in those ships being replaced by foreign registered ships.

The complex international nature of the shipping industry means that there is a potential for 'offshoring' of the obligation to decarbonise by for example, transferring the cost and risk to another jurisdiction with less stringent regulation. MERNAP policies will need to be clear on how to avoid such a regulatory imbalance. For example, given the overweight volume of international ships visiting Australian ports, in what jurisdiction does the obligation lie to meet a regulatory standard? Is it in the nation where the ship is registered, in the nation of beneficial ownership, or in the nations where the ship uses ports?

Australian ships compete for cargo with (i) foreign ships (e.g. those licensed to operate in coastal trading); and (ii) with rail and road in coastal corridors. The regulatory framework that is put in place for ships and ports must be harmonised with the regulatory arrangements encouraging or mandating decarbonisation in those competing modes of transport, otherwise sea freight could be disadvantaged.

- Through domestic reserves or another mechanism, allocate supply of green hydrogen to the domestic production of green shipping fuels for bunkering.

A rush to export renewable fuels must not be allowed to undermine domestic supply.

Part Two: Regulatory Barriers and Opportunities

Key principles are set out above.

The Commonwealth must take a lead role in:

- creating clear incentives for decarbonisation in areas where it is currently technically feasible, and addressing roadblocks that are identified
- funding and incentivising investments and new infrastructure, including:
    - common user facilities operated by state and/or local governments (eg. port transmission infrastructure, shore power, and bunkering facilities), and
    - funding for higher decarbonisation ambition in procurement decisions by state and/or local governments (eg. for ferries and charging infrastructure)
    - funding whole-of-port or whole-of sector decarbonisation plans in specific places or industries.
- establishing certainty for industry and the workforce moving forwards

- participating in the development of nationally and internationally consistent maritime safety regulation covering vessel and bunkering standards, safety processes and crew training.
- Ensuring maritime training facilities have appropriate infrastructure in place to provide experience in handling all new energy sources and the associated risks.

Establishing the MERNAP and the industry working group is an important first step, but to achieve an effective energy transition, government will need to take a more interventionist role than it has played in industry for decades.

Going forwards, it will also be critically important to understand how domestic and international shipping emissions are counted and reported, so we can understand the implications of various policy options. We understand this will be covered in an upcoming MERNAP paper on shipping emissions.

We support the Government's exploration of a Carbon Border Adjustment Mechanism for Australia (CBAM). An Australian CBAM has the potential to support global decarbonization and protect Australian industry and workers from unfair competition with foreign industry not required to abide with Paris-aligned emissions regulation. Any Australian CBAM will need to carefully consider the question of ships' emissions and how they are reported and allocated to prioritise and encourage the use of high-quality domestic shipping, to complement the government's agenda to revitalise Australian shipping.

Safety and community confidence

All new maritime energy sources under consideration have new and very serious hazards which must be addressed in vessel and equipment design, safety processes, as well as worker training and experience.

Seafarers, firefighting personnel, search and rescue personnel, pilots, dockers, bunkering handling personnel and tugboat personnel are directly and indirectly affected and involved in on-the-job operations. Companies, maritime authorities, suppliers, protection and indemnity insurance providers, and recognised organisations must ensure the safety of those mentioned above.

Unions play a key role in ensuring workplace safety. Australia's process-based Work Health and Safety laws apply concurrently with maritime safety regulation, and they rely on the participation of Health and Safety Representatives and full consultation with the workforce. Workers can only participate in these processes properly and with confidence if they are in secure work, are not fatigued, and have the support and protection of a union. Conversely, casualisation of work significantly undermines safety, and also makes it more difficult for industry to retain skills in new technologies.

Maritime education and training institutes, medical practitioners, and safety regulators are to ensure safety culture is firmly embedded in the whole system.

For all stakeholders, appropriate competencies and establishing a safety culture are essential for health and safety for both the human element and the environment.

Introducing a new type of energy source encompasses the entire life cycle from manufacturing, transporting, bunkering, storage, and energy processing onboard.

To protect human lives in this transition, it is necessary to have a clear vision of the safety dynamics associated with each energy source. This can be accomplished by acquiring the correct knowledge about the energy sources being used and obtaining the proper competencies necessary for the whole operation, including emergency circumstances. Competencies must therefore include knowledge of operations that may include, inter alia, extreme temperatures and pressures, toxicity, corrosiveness and high voltage, all of which can inflict harm and/or accidents.

When introducing alternative energy sources, the following are crucial:

- Collaboration with the relevant union/s, workplace safety committee, and Health and Safety Representatives
- A robust training scheme that guarantees the highest level of safety culture
- appropriate training that covers communication, risk analysis, operation and emergency situations
- knowledge about construction and design and relevant regulations
- adequate fire detection and fire-fighting equipment
- availability of proper lifesaving appliances
- provisions of adequate personal protection equipment for all personnel

Ports

A holistic approach should be taken to port decarbonisation to ensure adequate planning for the required infrastructure. The paper focuses mainly on the provision of shore power, but this is simply one part of the picture. Technologies to support port electrification are available now, covering smaller vessels such as ferries, lines vessels, port workboats and even tugs. Likewise significant cargo handling equipment in ports could also be electrified, along with port vehicles. These will also require adequate charging stations which are resilient to flood and severe weather events.

The potential required electrical capacity for port electrification must be understood and factored into electricity system planning. It is likely that most ports will need substantial upgrades to their electrical supply and electrical system. If this work is not undertaken, a lack of electrical capacity will prevent the implementation of existing technologies.

We suggest that MERNAP include funding to support the development of whole-of-port decarbonisation plans, which would include:

- shore power
- electrification of port vessels
- electrification of port vehicles and machinery

- total potential port electrical demand, and any required upgrades to port electrical supply/transmission and port electrical and charging systems
- potential energy sources for larger vessels, bunkering needs, and any common user facilities required to support this.
- Any new risks and hazards to be managed

MERNAP should also provide a pool of funding to support the installation of the required port infrastructure. Clear expectations must be attached to this funding that the introduction of any new port electrification technologies not be used to undermine the existing port workforce or negatively impact port working conditions.

Bunkering of New Low or Zero Carbon Fuels

We support the development of port bunkering facilities, which we would understand are likely to be classified as Major Hazard Facilities under the WHS Act. Our comments above on safety also apply.

Shipping

We note the document's negative comment about AMSA's Novel Vessel Policy, which requires DCVs powered by hydrogen, ammonia, or with electric propulsion and an installed battery power greater that 30kWh to be constructed and maintained in according with Class rules (with some flexibility in the application to battery-powered vessels).

Given the risks involved and the lack of clear standards for the construction of vessels with these fuels, this is an entirely reasonable policy. It is disappointing to see vessel operators complain about the cost of safe regulation.

The gap we see with this policy is that it does not address the training requirements for crew of these vessels. Our view is that at present the *Marine Safety (Domestic Commercial Vessel) National Law* provides a wholly inadequate framework for the safe regulation even of conventional vessels and training of their crew.[4]

Hydrogen is highly explosive. Ammonia is highly toxic to people and the environment – it is classified as 'Hazardous' by Safe Work Australia, as toxic by inhalation, and causing burns. At high concentrations, it can cause death by inhalation.[5] A liquid ammonia explosion in April 2013 decimated 4 blocks around a Texas facility, and shook the ground over 100km away.[6]

[4] Maritime Union of Australia, Stopping the Race to the Botton on Maritime Safety in Australia, May 2021.
[5] IMAP – Accelerated assessment of industrial chemicals in Australia, Ammonia and Ammonium hydroxide: Human health tier II assessment, 04 July 2014

[6] Ker Than, Explosion Highlights Dangers of Anhydrous Ammonia, *National Geographic News*, April 21 2013.

Any vessels powered by hydrogen or ammonia or carrying these energy sources as cargo should be required to be Regulated Australian Vessels under the *Navigation Act*. Crew must have Navigation Act qualifications and vessels must have clear Minimum Safe Manning documents (MSMD) that reflect the danger and complexity of the energy source and/or cargo. Tripartite consultations with unions should take place on the MSMD.

This would ensure much higher standards for vessel construction, including Class standards, but also an appropriate number of crew trained to a significantly higher standard with much more seagoing experience. Entry level qualifications under the DCV National Law require no seagoing experience at all. Dangerous goods training under the National Law is not at all sufficient.

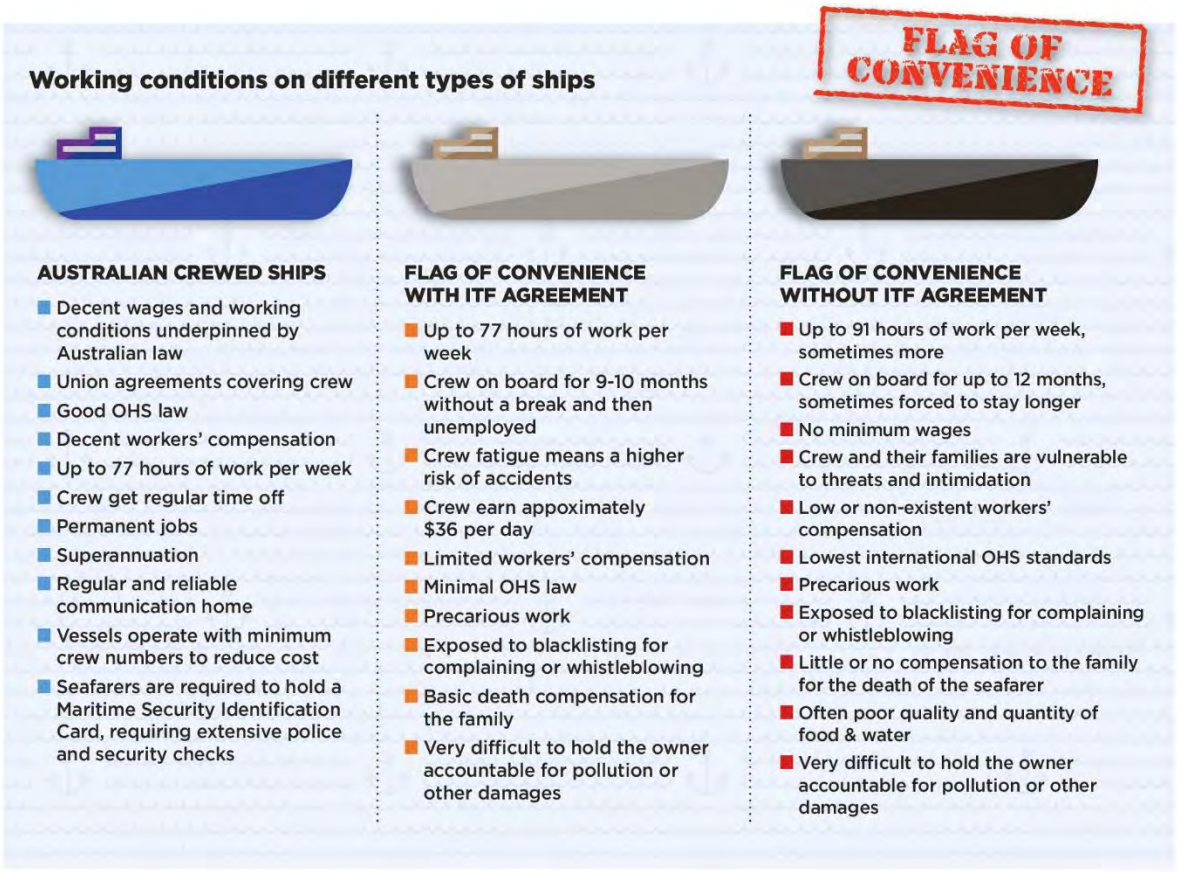
The inadequate regulation of higher-risk vessels under the National Law has been acknowledged in the recent review of the Law, which says that 'there are DCVs that pose a higher risk that is not currently appropriately managed under the applicable NSCV standards,' including vessels that carry 'dangerous goods or hazardous and noxious substances' and 'novel' vessels. The review suggests that AMSA should identify requirements to apply to higher risk DCVs, including relevant Marine Orders under the Navigation Act.[7]

Seafarer qualifications will need to be updated to address all aspects of safe storage, transport and handling of these materials. Similar training updates will need to occur for workers in port terminals loading these materials.

Trading vessels carrying large volumes of hydrogen and ammonia within Australia and from Australia to international ports should also be Australian flagged and crewed ships, governed by Australian WHS and fatigue standards and regulated under the *Navigation Act 2012*.

[7] Independent Review of Domestic Commercial Vessel Safety Legislation and Costs and Charging Safety Report—Phase 1 ,September 2023, p.29-30

Figure 1: A comparison of working conditions on Australian and international ships.



Source: Maritime Union of Australia and International Transport Workers Federation

Application of other areas of regulation to the maritime industry

Appendix A covers our knowledge about how Safeguard, the NRF, and the PRF apply to the maritime sector. This is drawn from MUA submissions on these programs made earlier this year. Topics include:

- Safeguard Mechanism and how it applies to maritime sector. Consequences of it only applying to certain companies in maritime.
- To understand if shipping emissions from the operations of Safeguard facilities are included in emissions reporting by those facilities? Or are they counted separately?
- Availability of funding and programs for the maritime sector in the National Reconstruction Fund and the Powering the Regions Fund, including the Industry Transformation Stream.

Future Global Regulatory Environment

AMSA run excellent briefing sessions on the IMO MSC work program. It would be great to have a similar process on the IMO MEPC discussions.

It would be good if MERNAP could provide a summary of the relevant IMO MEPC and MSC workstreams around maritime decarbonization.

Appendix A: Application of Safeguard, the National Reconstruction Fund and Powering the Regions to the maritime sector

Powering the Regions Fund

MUA Recommendations, 17 February 2023

Shipping and dockwork is generally considered a 'service' to other industries. The PRF must be structured so as to specifically include the option for 'services' to be supported, as well as 'projects'.

It is important that strategic fleet ships, and in fact all Australian registered ships that emerge from implementation of the Government's shipping policy initiatives, are able access the *Powering the Regions Fund*.

We want assurances that the Fund, particularly the dedicated $600 million Safeguard Transformation Stream within the Fund for trade exposed facilities where shipping provides a vital support service, could potentially be accessed by ship owners, ship operators or charterers of strategic fleet ships and other Australian registered ships that agree to meet or exceed a predetermined emissions reduction target for a strategic fleet ship or ships. This will help offset the cost differential disadvantage faced by Australian ships relative to foreign registered ships and help ensure a supply of fit for purpose ships that service industries, particularly in energy production, manufacturing, resources, agriculture/aquaculture and construction, that are seeking ways to address their scope 1, 2 and 3 emissions under the Government's emissions reduction strategies and programs.

Update on the application of the Powering the Regions Industry Transformation scheme provided by Powering the Regions Fund – Policy Section on 2 June, 2023 (Damian.Doyle1@dcceew.gov.au)

"The full details of project eligibility and merit assessment criteria will be confirmed when ARENA publishes the Program Opportunity Guidelines for the Industry Transformation Stream (ITS). You can register your interest with ARENA here to receive updates as the ITS is developed.

"We expect the ITS will be open to a wide range of sectors. The critical factor is whether the relevant entity and facility is required to report emissions under the National Greenhouse and Energy Reporting Scheme (NGERS) administered by the Clean Energy Regulator.

"Where a business is captured by NGERS, it is expected to be eligible to apply for ITS funding for projects such as fuel switching and electrification. You can find more information on NGERS, including who currently reports, on the Clean Energy Regulator website."

Based on our brief investigation, it seems like it eligibility comes down to whether the company is on the lists here: https://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/Extract-of-National-Greenhouse-and-Energy-Register-by-year/national-greenhouse-and-energy-register-2021-22

We did a few sample searches, and found the following maritime companies on the list: Teekay, Rio Tinto Shipping, Searoad, Transdev, Qube, DP World, Kelsian Group (Sealink).

However ASP, Hutchison, and TTline are not.

This is just indicative, please confirm any details with the Department of Energy.

National Reconstruction Fund

Of the seven priority areas articulated for the National Reconstruction Fund to date, the following have a strong maritime component:

- Transport, although the consultation document did not specifically mention shipping
- Renewable energy, which includes offshore wind, and port facilities and vessels required for onshore and offshore renewable energy
- Value-add in resources, which almost always has a shipping component – either to transport raw materials to the refining facility, or to export refined materials

The Safeguard scheme and shipping

Excerpts from the MUA submission to the Safeguard consultation, 28 February 2023

Shipping services many of the high emissions industries which are included in the Safeguard Mechanism, such as steelworks (with ships carrying iron ore, coal, scrap steel, and steel products), aluminia refineries (with ships carrying bauxite), aluminium smelters (ships carrying alumina and aluminium products), and many other industrial facilities.

There are also some ships directly included in the Safeguard Mechanism due to their emissions, including the Straitlink/Toll and TTLine vessels that connect Tasmania to mainland Australia, and the Rio Tinto Marine vessels that carry bauxite from the NT and north Queensland to alumina refineries in Gladstone.

The Government has commenced implementation of its shipping policy election commitments. It has established a Strategic Fleet Taskforce (Taskforce) and is considering ways to close loopholes in the *Coastal Trading (Revitalising Australian Shipping) Act 2012* (CT Act) which regulates Australian coastal shipping.

In December 2022, the Taskforce provided an Interim Report to the Government and is currently considering ways the strategic fleet could be established and operate in advance of providing a Final Report to the Government by 30 June 2023. An element of that consideration is examining how the strategic fleet and Australia's marine transportation capability can not only be revitalised but support industries that are in transition and new industries to emerge, in response to decarbonisation imperatives.

It is important that strategic fleet ships, and in fact all Australian registered ships that emerge from implementation of the Government's shipping policy initiatives, are able access the *Powering the Regions Fund* particularly the dedicated $600 million Safeguard Transformation Stream within the Fund for trade exposed facilities where shipping provides a vital support service. Ships must also be able to benefit from any other funds for decarbonisation raised through the scheme, for example the new Safeguard Mechanism Credits, or any other future reforms directing support to industry decarbonisation. Large quantities of shipping services are used by Safeguard Mechanism facilities, and some of key areas are outlined in Table 1 below.

Table 1: Emissions from selected existing industrial facilities within the Safeguard mechanism with substantial shipping and maritime facilities.

	Facility	**Annual emissions** Tonnes per annum CO_2-equivalent	**Maritime and shipping needs**
Steelworks	Bluescope Steel	6,260,763	Port facilities and shipping for iron ore, coal, scrap steel, steel products
	Liberty Steel, Whyalla	2,346,007	
Alumina refineries	Worsley refinery, WA	3,657,800	Port facilities and shipping for bauxite, alumina
	QAL refinery, Gladstone	3,300,358	
	Rio Tinto Yarwun	2,130,417	
	Pinjarra refinery	1,576,697	
	Kwinana refinery	1,292,269	
Cement	Cement Australia (Qld)	1,618,328	Port facilities and shipping for cement, limestone, clinker
	Cement Australia (Tas)	1,047,925	
	Boral Cement NSW	1,019,669	
Aluminium smelters	Tomago, NSW	1,181,106	Port facilities and shipping for alumina, aluminium ingots and products
	Boyne, Qld	898,887	
	Portland, Vic	594,849	
	Bell Bay	355,698	
Iron Ore	Pilbara rail operations	656,605	Port facilities and shipping for iron ore
	Sino Iron – Cape Preston	1,241,225	

Transport	Qantas	2,466,674	Port facilities and shipping for fuel
	Pacific National	912,770	
	Virgin Australia	845,653	
	Toll National Transport	444,449	
Lead/silver smelter	Nyrstar Port Pirie	342,966	Port facilities and shipping for ores and lead and zinc ingots and products
Bauxite Mine	Rio Tinto Weipa	245,840	Port facilities and shipping for bauxite
Vessels	TTLine (Bass Strait)	129,262	Vessels linking Tasmania and Victoria
	Rio Tinto Marine	108,109	Bauxite carrying vessels (NT/Qld)

Source: Downloaded from the Clean Energy Regulator, Safeguard Scheme Reported Emissions 2020-21.

Emissions-intensive, trade-exposed businesses and shipping

We welcome the proposed arrangements for tailored treatment for emissions-intensive, trade-exposed (EITI) businesses including dedicated funding to support low carbon investments through the Powering the Regions Fund, and differentiated decline rates for facilities with an elevated risk of carbon leakage.

We acknowledge the special requirements of EITI industries to decarbonise because of their high CO_2 emissions in the processing aspects of production. We further note that some of those industries are exploring carbon capture and storage (CCS) of emissions e.g. the cement industry, which is exploring technological options to extract carbon from the CO_2 intense calcination process. Given the location of cement production facilities relative to CCS storage facilities, sea transportation of captured CO2 from production sites to CCS facilities remains a pathway under consideration by that industry to help meet its obligations in line with the requirements under the Safeguard Mechanism.

We note also that the cement industry, having regard to the Safeguard Mechanism Reforms outlined in the Position Paper, and the stage reached in the commercialisation of abatement measures is continuing to advocate for a Carbon Border Adjustment Mechanism (CBAM). We understand that now that the EU has given provisional agreement on a Carbon Border Adjustment Mechanism (CBAM), the concept is likely to be given renewed consideration in Australia.

Given the policy support being advocated in the Position Paper for tailored treatment of EITI businesses, including a possible Australian CBAM, and that shipping might form part of a CCS solution if that is proven commercially viable at scale, then we urge the Government and

Department to require a higher level of Australian content in the shipping components of the industry's supply chains, including ships that may be required for transporting captured CO_2. We urge the Government and Department to ensure that the role for shipping, and a role for Australian shipping, in the decarbonisation of industries covered by the Safeguard Mechanism is integrated into the special requirements that Government is foreshadowing for the industries covered by Safeguard Mechanism, and in particular hard to abate EITI industries.

Coverage of the Safeguard scheme and industrial transformation

It is also an issue with the overall design of the mechanism that not all facilities in an industry are covered by the Safeguard scheme. In the maritime industry, shipping companies Rio Tinto Marine and TTLine are included, but others may not be directly included, depending on how emissions are reported between companies. We are unsure what the long term effects of this will be. All ship operators face similar challenges of reducing emissions from vessel fuels, including upgrading engines to use new zero-carbon fuels. Action should be coordinated across the whole industry.

Australian Carbon Border Adjustment Mechanism

We support the Government's exploration of a Carbon Border Adjustment Mechanism for Australia (CBAM). An Australian CBAM has the potential to support global decarbonization and protect Australian industry and workers from unfair competition with foreign industry not required to abide with Paris-aligned emissions regulation. The government has flagged a future consultation on the introduction of an Australian CBAM, and this will need to carefully consider the question of ships' emissions and how they are reported and allocated to prioritise and encourage the use of high-quality domestic shipping, to complement the government's agenda to revitalise Australian shipping.

From: s 47F @acvoa.com.au>
Sent: Friday, 2 February 2024 12:44 PM
To: MERNAP
Subject: Feedback on issues paper 2 Energy Sources and Technolgoy

Hi s 47F ,

I think we have discussed much of this topic already though it has been circulated further within the DCV industry. The main feedback in relation to questions asked is that alternative fuels are only just on the radar of this industry sector. There is little impetus yet for any change with cost effectiveness being incompatible with remaining in business for many operators and supply of which alternative fuels being a complete unknown.

Perhaps the shift to alternative fuels will not be demand driven by operators as it becomes an investment in the unknown, due to information availability and supply of alternative engine types, engine reconfiguration to handle alternative fuels or of alternative fuels themselves. Instead perhaps engine manufacturers and fuel suppliers will drive the demand by providing the information and products.

Obviously there is real collaboration required for the success of this pathway and within the DCV sector there has been no collaboration thus far, on a regional or any other level. For this reason uptake is likely to be slow and as we've previously discussed, transitional fuels - biofuels or drop in fuel types - anything that requires the least changes to engine, storage or vessel configuration are likely to be adopted at a faster rate than others, if they are readily available.

Kind Regards,

s 47F

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15 January 2023

1. INTRODUCTION

Strait Link and Team Global Express (TGE) appreciates the opportunity provided by the Department of Infrastructure, Transport, Regional Development, Communications and the Arts to provide feedback on the *MERNAP Issues Paper – Energy Sources and Technologies*.

2. BACKGROUND

TGE is one of Australia's most significant transport and logistics networks spanning road, rail, air, and sea. Our footprint sees us delivering a vast range of goods to customers and consumers around the country.

Strait Link has a proud history of being a vital link between Tasmania and the world, providing daily sea freight services between the Port of Burnie in Tasmania and the Port of Melbourne in Victoria. With two purpose-built roll on / roll off (RORO) vessels servicing Bass Strait six days a week, we move full container loads (FCL), refrigerated containers, trailers (including over-sized) and vehicles.

As a regional leader in the transport and logistics sector, we see sustainability as a core corporate responsibility: central to our people's aspirations and values, and to our purpose as an organisation.

We are determined to play our part responsibly, meeting the current needs of our communities without compromising the ability of future generations to do the same.

As such, we seek to decarbonise our footprint so that by 2030, TGE will have reduced emissions by 30% with a target of Net Zero by 2040.

Strait Link will be striving to meet the IMO commitments of an emission reduction of between 20-30% by 2030 and a 70-80% reduction by 2040.

In a significant step towards meeting these commitments, TGE is planning our transition to decarbonise our 7000-strong heavy transport fleet with a combination of electric vehicles, hydrogen fuel cell vehicles (using liquid hydrogen), and critically the use of renewable diesel.

For Strait Link however, meeting the IMO goals will be both very challenging and extremely expensive to meet these demands. We are already undertaking a huge amount of work to optimise our operations and this year both ships will be in dry dock for maintenance and service in Asia.

s 47G

s 47G

We must rely on supportive policy frameworks from the government and would like to take this opportunity to respond to specific questions outlined in the Discussion Paper and to offer our continuing collaboration and commitment to work together with industry for the best outcomes for all.

We appreciate that the Australian Government has legislated an economy-wide target of reaching net zero emissions by 2050 and are very keen as a business to assist Government and work more broadly across industry to deliver upon this commitment, including the six sectoral decarbonisation plans. Given our intermodal focus, we operate across road, rail, aviation, shipping, electricity and energy, waste management and all of the associated supporting infrastructure.

In particular we take this opportunity to respond to the direct questions posed by the Department in relation to energy provision and abatement technologies for Australia's maritime sector and are keen to be involved in future discussions around skills and training, and international partnerships to facilitate the green maritime transition.

3. PURPOSE OF MERNAP AND OUR RESPONSE

We appreciate the purpose of the MERNAP is to:

- support Australia's national emissions reduction targets and contribute to global decarbonisation of shipping;
- future-proof the Australian maritime sector and avoid a later accelerated, costly and disruptive transition by setting early signals;
- signal to global partners Australia's clear pathway to net zero emission shipping in our waters and ports; and
- promote an equitable transition for the maritime sector, particularly for the maritime workforce.

Our most critical feedback relates not to the specific attention required in a range of low emission energy provision and technologies, but the overwhelming fact that all of these will be incredibly costly (and at times prohibitively so) for the local coastal shipping industry to bear alone.

We have already investigated at length the three main technical emission methods for decarbonising the maritime sector: being improving vessel and operational energy efficiency, using low emission energy and fuel sources, and potentially employing carbon capture and storage technology, and provide feedback on the feasibility of these approaches.

We recognise that there are both operational and technical measures that can be undertaken (or indeed we are already doing) to lower emissions in our domestic capacity.

However the only way to actually reduce emissions for the long term will be through a combination of low emission fuel / energy types and the technology being used which is appropriate for this low emission fuel / energy.

4. SPECIFIC QUESTIONS AND OUR RESPONSES

What energy efficiency measures would your / is your organisafion considering ufilising to reduce emissions?

s 47G

Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?

We do not see this as an inhibitor to either efficiencies or measures to reduce emissions as the industry is well informed and educated. Strait Link considers that there is adequate information on energy efficiency measures available through OEMs, Classification Societies and Professional Organisations with no barriers of significance.

How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?

We do not believe that they differ in their applicability. However the availability of these may be more of an issue given changes applied in dry dock are not likely to occur in Australia. Except for fuel availability, market contestability on supply and infrastructure options, Strait Link considers no significant difference for suitable international energy efficiency technologies implementations for the same vessel specific adaption.

What are the barriers your organisation faces in investing in energy efficiency technologies or measures?

The biggest barriers are cost and availability.

This is at the level of both capital cost and operational cost.

For example, changes to technology and propulsion methods (capital spending) are likely to only take place during dry docking and this takes place at specific times, specific locations

s 47G

s 47G

The docking of vessels in Singapore necessitates scheduling significant commercial impacts and prolongs work programs due to the distance of mobilising and demobilising to the Singapore Marine precinct. This prevents businesses being more adaptable and agile in implementing efficiency technologies in real time scenarios and delays adaptation to 7.5 year or 5 year docking programs.

The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?

At this point in time, only alternative liquid fuels such as FAME and HVO are applicable to our engine types. We would consider that a 20% FAME blend would be appropriate (or indeed higher) in our case, as opposed to a 7% restriction as noted in the discussion paper, along with a 100% HVO fuel.

In the absence of a complete change of engine type, the other alternative fuels would not be applicable to our ships.

The key technical considerations are as follows when considering alternative energy sources:

a. *Safety Standards* - Ensure that the selected energy source meets rigorous safety standards to prevent accidents, leaks, or other potential hazards.

b. *Energy Density* - Evaluate the energy density of the alternative energy source. Higher energy density typically allows for longer operational ranges between refuelling or recharging.

c. *Storage and Handling* - Assess the requirements for storage and handling of the energy source. Different sources may have specific storage conditions and safety protocols.

d. *Infrastructure Compatibility* - Consider the existing infrastructure and modifications needed for the storage, transport, and utilization of the chosen energy source.

e. *Operational Compatibility* - Examine how well the energy source aligns with the vessel's operational needs, including power requirements, duration of use, and response to varying loads.

f. *Vessel Design and Retrofitting* - Determine the feasibility and cost-effectiveness of integrating the alternative energy source into the current vessel design or the cost of retrofitting existing vessels.

g. *Availability and Supply Chain* - Assess the availability of the chosen energy source in the intended operating areas and evaluate the robustness of its supply chain.

h. *Regulatory Compliance* - Ensure that the selected energy source complies with existing and future maritime regulations, emissions standards, and environmental policies.

i. *Cost Implications* - Evaluate the overall cost of adopting the alternative energy source, including initial investment, operational costs, and potential savings over the vessel's lifecycle.

j. *Maintenance Requirements* - Assess the maintenance requirements and potential downtime associated with the chosen energy source. Consider the availability of skilled personnel for maintenance.

From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?

- Cost – the cost of alternative fuel types is currently prohibitively expensive in Australia as opposed to internationally where different subsidies and mechanisms are able to support their use. In the absence of government support and / or mechanisms to pressure or mandate suppliers, it is difficult to see how this will change. It is imperative that operating costs be minimised.

- Technology choice - For Strait Link and other shipping organisations, dry dock occurs every 5-7 years. If major vessel changes are to be made then this is the time that would support conversions or changes. The challenge is that some of the noted technologies are not yet at a stage that would allow for their adoption or - at this point in time - are cost prohibitive. It is likely that maritime will be a slower adopter of technology due to this. Another key point is that any technology change that is adopted must lead to a no less efficient operation and not increase costs as history has shown that the end customer is unlikely to bear this increase. Finally, it is likely that there will not be a single choice of energy source for the maritime sector - it will be more a case-by-case basis that considers vessel type, operating profile geographical location, energy availability and infrastructure.

- Fuel availability/infrastructure – s 47G [redacted] In the absence of government intervention of some type it is difficult to see a change to this issue. s 47G [redacted]

- Regulations and standards – we do not consider this to be a prohibitive barrier to the use of low emission energy sources. With the fast-paced changes and several uncertainties we will watch how the major and international vessel owners and operators lead the changes in this area and attempt to follow accordingly.

- Safety - we do not consider this to be a prohibitive barrier to the use of low emission energy sources.

What are the specific barriers to using each potential energy source in your organisation?

s 47G

Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?

s 47G

When considering alternate energy sources, how has your organisation engaged with ports and marinas?

We appreciate the ambitions of the Port of Melbourne and Tasports to develop alternate energy sources for shipping. However from our perspective these projects are being driven by the needs of international shipping operators in mind, not the high frequency Bass Strait Merchant Marine activities.

We believe it imperative that a local, coastal, domestic shipping community be successful, along with a focus on international shipping to drive down emissions and enhance efficiencies.

For ports and marinas (what) are the major factors that ports and marinas consider when investigating alternate energy sources for bunkering?

It is critical that sustainable, compliant energy sources be available at a competitive rate with adequate infrastructure to supply and at least some level of market contestability at supplier level.

Part of the lack of innovation in this space is derived from the single supplier of bulk fuels and lubricants to the marine sector in the Port of Melbourne.

The need to innovate through contestability simply does not exist.

For regional ports and vessel operators, are there specific supply issues that may hinder the ability to bunker alternate energy sources?

Cost and availability drive these supply issues irrespectively of whether ports and vessel operators are regional, domestic or international. In Australia in addition there is a lack of infrastructure and volume scalability which dilutes the options available to the market.

Having contestability (i.e. multiple suppliers rendering cost effective solutions) may be difficult to achieve given scale but until that occurs it is difficult to see alternative solutions being successfully deployed at scale.

***Is there a mismatch between available energy sources for bunkering and your vessels' fuel** needs?*

Yes – as noted above. There is a reticence for the bunkering fraternity to engage on alternative fuel needs, or if available, the cost is prohibitively expensive.

In the absence of government support and / or intervention it is difficult to see this changing.

Do opportunities exist to pool the demand for alternate energy sources across vessel owners?

Yes – if any issues of anti-competitive behaviours or collusion could be overcome in the interests of a greater outcome.

The Case Studies represent a regionalised view of the challenges and opportunities of maritime decarbonisation. From your own region are there collective efforts being undertaken to address energy source pooled demand? If not, are there opportunities to work across operators?

It appears that the 'domestic operator' example as provided was actually a part of a 'large multi-national shipping line' and so I think a further conversation to this extent with a handful of the actual domestic shipping operators would be relevant.

We would be very happy to partake in such a conversation. This would have to be undertaken under strict guidance and oversight from the ACCC.

How do the local factors, such as vessel type, energy production and business structures impact how you are planning future decarbonisation activities?

In the absence of substantial intervention and government support it is difficult to see how the domestic shipping fraternity can decarbonise without an unpalatable economic cost and so therefore it is recommended that substantial investigation and support to this end be provided by the department.

What further information about decarbonisation activities would be useful to inform other regions and operators investment decisions?

This has the potential to be a very large and interesting separate piece of work however we are not sure is a relevant question to this discussion paper and intended outcomes.

Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector? What are major factors that will drive demand for alternate energy sources?

We believe that the uptake of alternative propulsion technologies – and therefore alternate fuel sources – will by its own nature be somewhat 'clunky'.

By this we mean that big changes will occur in an abrupt fashion rather than a linear change – it won't be slow and steady and incremental change. The use of LNG will be a short term fix only.

Rather the uptake will be through major and expensive change occurring and then plateauing until the next big step is taken.

The major factors will also work commensurately – being that outside of the use of biodiesel and renewable diesel, the fuel change cannot happen without the propulsion change first.

Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?

Energy prices may be higher for a period until local demand and local supply is able to be appropriated through local final investment decisions.

Offtake agreements will need to see contractual demand – being that in order for local supply to increase (and thereby potentially bring prices down) investment certainty instead of investment risk will be required.

In addition, a number of future feedstocks will naturally be subjected to competitive tension from other sectors – there will be a number of other transport sectors looking to similar fuels and feedstocks and by this virtue the sector with the most robust demand and pricing will naturally be elevated.

How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?

Ensure robust and ongoing support for all elements of the supply chain without picking winners.

Where appropriate, provide guidance and certainty through mandated requirements.

In the absence of government support and / or mechanisms to pressure or mandate suppliers, it is difficult to see how access, availability and exorbitant pricing will change. Providing owners with support and incentives to transition to new technology and energy sources will be imperative.

Support energy providers in infrastructure and technology startups.

Support merchant marine repair industry and provide dry dock and repair facilities in Australia.

Once again I thank you for this opportunity to respond to your Issues Paper.

Yours sincerely

s 47F

s 47F

Director ESG

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Association of Marine Park Tourism Operators

22nd January 2024

Via email: MERNAP@infrasture.gov.au

MERNAP Issues Paper 2: Energy Sources and Technologies

Please see below the Association of Marine Park Tourism Operators ltd (AMPTO) input to MERNAP Issues Paper 2: Energy Sources and Technologies.

Yours sincerely,

s 47F

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Chief Executive Officer
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AMPTO
Association of Marine Park Tourism Operators

General Introduction to AMPTO and our industry:

AMPTO is a not-for-profit membership association that has been the peak industry body for marine park tourism operators since 1989. AMPTO members carry more than 4 million people each year, 95 per cent of all visitations, to the Great Barrier Reef (GBR). Members range from single vessel operations, small and large island resorts, to publicly listed multi-operational companies. AMPTO's primary objective is to ensure the economic and ecological viability of marine tourism.

Australian tourism is the fourth largest export for our Country and is in fact the largest non-consumptive industry in all of Australia. In 2019 the tourism industry contributed $166 billions to the Australian GDP (Thrive 2030). Adding to that, marine tourism has an economic output $30.7 billion in 2017-18, which is nearly 40% of the entire marine industry economic output[1]. Further to this, marine tourism output has both a direct and indirect value add of $42.4 billion and $26.8 billion (total $69.2 billion or 3.7% of GDP in value add), respectively[1]. Within Queensland, the economic output of domestic and international marine tourism totalled $12.3 billion in 2017-18[1]. This is larger than any other State.

It is clear how significant tourism and marine tourism are to both the National and Queensland State economy.

The Great Barrier Reef tourism industry is an important sector, and its role in both the National and Queensland State economic can't be overstate. As the number one reason for all nature-based travel and one of the top three reasons for all other visitors travelling to and within Australia, the Great Barrier Reef and its tourism industry is a tourism industry driver and amplifier (keystone sector). Visitors come to Australia to see the Great Barrier Reef and end up doing other tourism experiences.

Please note I have referenced Aims Index of Marine Industry 2020 report and not the 2023 report, as the figures in the 2023 report highlight the significant impact COVID had on the industry and does not reflect the true role our sector plays in the marine industry economy.

As an industry the marine tourism industry in the Great Barrier Reef has a strong history of positive environmental outcomes. These include but not limited to:

- Legacy founders and delivering contractors for the Crown of Thorns Starfish control program. This program is the strongest action one can take to protect live coral on the Great Barrier Reef. The industry delivered this program until the industry was shut down in 2020 due to COVID– nearly 2 decades. The COTS control program continues still today and is recognized globally as a platinum standard reef protection.
- Founders of the Eye on the Reef coral reef monitoring program, back in 1984. This is now a flagship monitoring program within the Great Barrier Reef Marine Park Authority and is a key source of the Authorities reef data that guides its management decisions.
- Co-founders and partners in the Master Reef Guide program. Delivering stronger, accurate education and information for vessel crew and guests.
- The concept creator and drivers of Tourism Reef Protection Initiative.

More pertinent to this issue paper, our industry has been looking at transitioning to more renewal fuel source for over 10 years. This has led AMPTO investing three years of effort, time, and resources to create holistic industry-wide feasibility study to develop a roadmap to guide industries transitions. AMPTO has engaged a contractor and specialist engineer to deliver this work. A partnership with Government is key to the success of this work. Two critical area of the partnership with Government are necessary, 1) Government knowledge and 2) funding, to deliver this study and roadmap successfully and to the standard needed.

1. The Aims Index of Marine Industry 2020.

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AMPTO has been in discussions with both levels of Government (Federal and Qld State) for over a year with a formal proposal submitted to multiple portfolios in both Governments early in 2023. To date no decision has been made and discussions continue.

The industry is committed to this process and is hoping for a positive outcome to be able to deliver our feasibility study and roadmap. Such an approach will enable our sector to provide evidence-based information and technical solutions to technical, logistical, and economic challenges.

As a sector that operators in the World Heritage Great Barrier Reef, the now "poster child" for climate change, a targeted and structured approach like AMPTO's will not only be positive for the Great Barrier Reef but will add significantly to Australia and our Industry's reputation as being serious about climate change and a green energy super-power.

General Feedback with regards to Energy Sources and Technologies:

With the above paragraphs in mind, it is AMPTO's responsibility to emphasize an obstacle that our industry must overcome. This obstacle is the belief of Government that there is an endless willingness-to-pay from our customers. In nearly every meeting discussing our proposal, I have been questioned as to why we don't just charge our customers extra. It is imperative that Government understands that, despite any research they have done or read, the practical reality is that customers are not willing to pay. This thinking was again demonstrated in the minutes of a MERNAP consultative group meeting when a discussion on tourism case study in Port Douglas claimed that there is "potentially greater ability for operators to pass on the extra costs..", due of the proximity to the Great Barrier Reef. Showing a nearly complete lack of understanding of our industry, despite AMPTO repeatedly explanations.

When MERNAP was announced AMPTO expressed, multiple times, interest to be part of the process beyond just providing submission with the hope to provide the necessary understanding of our industry and to work in a collaborative manner with Government. However, we were excluded. Only when a group of DCV bodies raised concerns over the lack of DCV representation in the MERNAP program were DCV's given positions (2 I believe) on the consultative group.

As mentioned above, The Great Barrier Reef marine tourism industry has been exploring more fuel-efficient technologies including renewable energies for over 10 years, for two primary reasons:

1) We see this as our moral responsibility to do all we can to conserve the Great Barrier Reef, as well as this aligns with and represents the next step in our sustainability actions.
2) With narrow revenue margins, increasing fuel efficiency and/or cost efficiency are crucial for the industry's long-term viability.

The industry's decision to assign its peak-body, AMPTO, to plan and implement an industry-wide approach verse a siloed approach, was driven by the need to achieve our goals (stated above) through early and structured action. This approach is hoped to deliver outcomes suitable for our industry while working with Governments process towards net-zero. This objective would also avoid our industry being excluded or left behind and face possible regulation that will not be suitable for our industry follow.

It is now clear that the MERNAP process, although reasonably structured, has constraints resulting in gaps, which, from our perspective will not be filled. The key gap is that MERNAP is focused on the large vessels and not the DCV fleet of small to medium vessel operations. This has the real possibility of resulting in key maritime sectors being corned into a roadmap of transition that is not viable for them as a result of MENRAP findings.

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This issue was highlighted in the development of issue paper 2 case studies. As part of our commitment to working with MERNAP, members took part in a case study, only for it to be excluded from the issues paper 2. While we appreciated the opportunity to provide our information, plus the assurance that the information has been discussed and will be considered, there remains concerns the information will not be thoroughly considered or understood. At the time of the case studies AMPTO did express concern over such a specific case study (single area) and which may not give the full picture of the challenges the maritime tourism industry has to transition. The exclusion our case study reinforces our concerns and we feel the Department will continue to have a lack of understanding of our industry. Therefore, concerns remain for the potential outcomes of MERNAP and how those will impact our sector.

The Great Barrier Reef marine tourism industry is a very public facing industry that has a lot of scrutiny. So, if we are not understood and therefore finding or outcomes of MERNAP are not suitable for us to effectively transition our industry, as well as Australia, will face a reputational challenge, which could/will negatively impact our viability.

It is our industries belief and feedback, as part of this process (MERNAP), advise must be presented to the Government that Government support and funding is need for individual sectors to deliver sector specific studies to develop sector specific roadmaps for transitioning to more renewable technologies. Without that level of knowledge, sectors like ours will be corned into national transition rules made from limited research that will potentially undermine our viability. The flow on impacts will be significantly negative to employment and the national economy and reputation.

In a recent meeting with the Federal Tourism Minister and the CEO of Tourism Australia both explicitly stated that the primary reason for travel to Australia is the Great Barrier Reef. Considering the tourism industry is the fourth largest contributor to the National GDP ($166 billion per year), and the Great Barrier Reef is number one reason for travel, it is impressive that our industry remains well positioned to meet this demand. A significant part of that is how we present what sustainable actions we are taking to conserve the Great Barrier Reef. As already state decarbonising is seen as our next step, but if it is not viable for us, that would have a negative flow on effect.

Further to members reasons for wanting to transition to more renewable fuels (stated above), our customers are putting [unrealistic] pressure on us to adopt these emerging technologies, now. As the peak body I am asked nearly weekly why our industry has not already converted to renewable fuels or energy. This pressure I have determined, through engaging with customers, is driven from customers seeing multiple demonstrations of renewable fuels in vessel worldwide and even sighting land transport as examples of solutions for us. The lack of public understanding of these technologies and our industry puts unrealistic expectation on our sector which will and may already be damaging our reputation, unfairly.

I agree with the issues paper 2 when it states the maritime sector faces significant short- and long-term challenges in emissions reduction and requires careful planning and early action. The maritime sector is a very diverse fleet offering extremely diverse necessary services to the national economy (transporting over 99% or our international trade volume[2]).

Under the “context” subtitle of this paper, it highlights that many vessels are relatively small and aging. Despite acknowledging that many vessels are small this paper seems to be more focused on large vessels of the maritime industry, raising concern that there is more focus on the future strategic fleet of 12 ships rather that than the economically important DCV’s.

2. https://www.infrastructure.gov.au/infrastructure-transport-vehicles/maritime/charting-australias-maritime-emissions-reductions.

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The "aging" fleet is also referenced with new builds being critical considerations. The paper goes on to say that having an aging fleet suggests that there will be an increasing number of new-builds which provides an opportunity to consider emissions reduction. One needs to ask why the fleet is aging now? That does not seem to have been considered in this paper. From our perspective building new vessels is not financially viable, particularly as we are constrained by what our market will pay for a trip (especially compared with other destinations that are considerably cheaper than Australia). One can deduce that other maritime sectors ageing fleet is under similar pressures. There needs to be more consideration of retrofitting vessels and the associate legislation and or considering the barrier of new builds as part of the barriers to decarbonising.

Technical Emission Reduction Measures

Energy Efficiency Measures

Questions for Industry Stakeholders

- **What energy efficiency measures would your / is your organisation considering utilising to reduce emissions?**

Our industry is surprise and pleased to see energy efficiency measures we have adopted decades ago being presented in this paper as major decarbonisation strategies as we never thought of them as decarbonising strategies. This again highlights MERNAPS focus is on the bigger vessels and less on the small vessels larger DCV fleet. Our sector has been using:

- Route optimization;
- Trim optimization;
- Shore power;
- Advance hill coating;
- Lightweight materials
- Counter rotating propellers;
- Hull form optimization (limited);
- Power assistance methods – wind-assistance,

for decades. Many operators have a hull cleaning schedule and procedures to ensure hull efficiency too; approximately every 2 weeks. All these measures were introduced as a result of the narrow margins of our industry and to support economic viability.

In the public conversation of decarbonising, I would say many of our customers would not consider these as lowing emissions or decarbonising measures and therefore difficult for our industry to communicate our sustainability on these measures alone.

- **Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?**

It is hard to comment if there is sufficient information. I believe the information is available but to easily accessible, so the challenge would be having the time to look for the information and work through it. But firstly, not knowing that these are decarbonising strategies is a barrier.

- **How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?**

This question is outside of our area of consideration.

- **What are the barriers your organisation faces in investing in energy efficiency technologies or measures?**

The biggest barrier is time and costs. With a very diverse fleet, with many bespoke designs and applications, having the time and resources to research what energy efficiency technologies are available and their applications is key. From there it is communicating that to operators and then

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for the operator the actual cost of adopting these measures. These costs include loss of revenue while the vessel is not operating together with the actual cost of the technology.

Alternative Low Emissions Energy Provision

Questions for Industry Stakeholders:

- **The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?**

What is key for our organisation when exploring alternative energy is having valid technical data based off technical research of our energy needs and how a specific alternative energy source will fulfill our needs and ensuring it is fit-for-purpose.

It is important to acknowledge that many, if not all vessel operators are not fuel energy experts so having research based on our industries bespoke circumstance is key is give operators confidence to make the investment and transition.

- **From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?**

  o Cost – Our industry has narrow margins with customers that are not willing to pay and compared to other destinations we are already very expensive. We are heavy constrained as to what the market will pay. Early research shows investing in low emissions energy source are six times high than conventional energy sources.

  Our industry does not have flexible pricing and so reliable energy source pricing is key. If there is fluctuation in pricing, we can't adjust our pricing. Pricing is usually locked in between 9-18 mouths ahead of a pricing cycle which last for 12 months. So, the prices some pays in March 2024 for a reef trip were set in May 2022.

  o Technology choice – We are not energy or fuel experts and so without understanding what our industry accurately needs and what energy sources are suitable, we are unable to make any decision on technology types.

  Currently, research is showing despite technological advancements the low or renewable energy source are not ready for maritime use, yet.

  o Fuel availability/infrastructure – Reliability and consistency of operating are key to our businesses. Without reliable fuel/energy supply our sector can't take the risk to operator with less reliability. Agents will stop booking if operators cancel regularly.

  o Regulations and standards – Not knowing what the regulation and standards landscape is going to look like makes it hard to comment. As an industry we had hoped to deliver our feasibility roadmap study that would have provided us with the information to provide input to regulations and standards development. Concerns remain as to how MERNAP will guide that landscape. Regulations and standards will also impact on staff and staff qualification. There are questions around how, particularly deck crew (skippers) and engineer crew will transition to what is required and who will be responsible for those costs and commitment (time away from work too). Our sectors vessels operators will not be in a financial position or operational position to do that without government support and intervention of workforce supply.

  o Safety – Safety is everything – crew, passengers, contractor, suppliers and the environment. It is necessary to understand the technologies and their individual requirements. Currently that information is not readily or easily available. An industry approach is key to providing the pertinent information to the industries operators. High-level

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wide information is helpful to a point but may not be detailed to help or drive investment and uptake of these technologies.

All of the above we would consider primary barriers. These are all core considerations.

- **What are the specific barriers to using each potential energy source in your organisation?**
  - **o LNG**
  - **o Biofuels (HVO, FAME)**
  - **o E-Hydrogen**
  - **o E-ammonia**
  - **o E-Methanol**
  - **o Battery**

There are many barriers. In no particular order, there is a lack of a supply, reliability of supply chain, serviceability, the cost of the fuel type, the suitability of these for our sector, the lack of infrastructure to supply the fuel reliably and consistently, the lack of training for crew, particularly engineers to be qualified in these fuels, the cost and time to train the crew, the lack for regulations and standards for these fuels. The engine technology to be able to use these fuels. The cost for converting and the current regulation and standards framework which does not support this transition but also adds significant costs to it.

- **Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?**

Our organisation as an industry body has invested significant time and in-kind value, estimate at over $200,000 to date. This investment has demonstrated without a specific study of the technical and practical needs of the industry, the industry will not have the necessary information to transition effectively to support our low or zero emissions ambition. What will happen is a continuation of what is happening now and that is siloed uncoordinated approaches that are met with significant delays and cost blow outs leading to a very slow up take.

The marine tourism industry supports a collaborative approach with government and government support to map out the needs of individual sectors. This will show a clear staged and stepped approach that will provide vessel operators with confidence to invest and therefore drive real decarbonisation and emissions reduction for the sector.

Low Emission Energy Provision Availability in Australia

Questions for Industry Stakeholders:

- **When considering alternate energy sources, how has your organisation engaged with ports and marinas?**

AMPTO has had spoken to marina operators regarding our plan to deliver a feasibility roadmap study. We have asked marina operators if they would be happy to engage with such a piece of work, which they are happy too. In conversations marina operators have expressed concern that if all Reef vessels were to convert to battery or electric they would not be able to supply the electricity necessary. All our vessels connect to shower power when in port already. They have said the cost of such transition would have to be passed onto the vessel owners, which would add to the already high forecast costs of transitioning.

Similarly with other fuel types, marinas would have to invest in infrastructure to change or add to the fuels they can provide/store. Cost of this would be passed on to vessel owner too.

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There is also a possibility that marina would have to supply multiple types of fuels as different low emissions fuels will have different applications and suit different operations. Marina's questioned how they would be expected to do that and the complexities of that.

In every case, costs will be passed onto vessel owners and so putting the transition further out of reach.

- **For ports and marinas are the major factors that ports and marinas consider when investigating alternate energy sources for bunkering?**

N/A for our industry

- **For regional ports and vessel operators, are there specific supply issues that may hinder the ability to bunker alternate energy sources?**

Like what has been said above. Again, in no particular order, but reliability of supply and cost. This becomes less reliable in regional areas. Our operations run 7 days a week, we can't wait for fuel to be delivered. Our market requires and in fact insists or reliability, without it books will go elsewhere. The fact that there may be a variety of low emission energy needed, supplying that to regional areas in the necessary amounts and the infrastructure needed to do that will all hinder ports and vessel operators and increase costs. Without knowing what our requirements are it is hard to say. The need for industry specific information would be key to providing a detailed and comprehensive answer to a question like this.

- **Is there a mismatch between available energy sources for bunkering and your vessels' fuel needs?**

This would be difficult to answer, but from basic research, member engagement and industry knowledge, we can deduce there would be. Firstly, not all operators will transition at the same time. This means there would be different needs at different times.

- **Do opportunities exist to pool the demand for alternate energy sources across vessel owners?**

No opportunities currently exist; however, we do see there should be potential in the future as there will be vessel owners that need the same alternative sources. The industry foresees the challenge that different operations will require different energy sources, so the question is how would the infrastructure support that and who will wear the costs of that. All indications are that cost will be passed on to vessel owners which will added to the barriers of transitioning.

Bass Strait Case Studies

The Maritime industry remain appreciative of the opportunity to be part of a case study but remains disappointed that our case study was not included in this issues paper. The case studies presented in this paper highlight the lack of focus on smaller DCV sector, which is a significantly large fleet nationally.

The case studies lack representation from maritime sectors that are small to medium size business with small, majority less than 45m vessels.

Case Study: Domestic Shipping Operator is not a good representative example of a domestic operator as it is a multi-national ship operator and therefore not comparable to domestic owned DCV's. Saying they are running trials in their HQ country is misleading. From research, other governments have support and funding of such projects far more readily available than Australia, so there is a likelihood that they are receiving support for these trials in their HQ country. This case study would not reflect the reality for most vessel operators in Australia.

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Questions for Industry Stakeholders:

- **The Case Studies represent a regionalised view of the challenges and opportunities of maritime decarbonisation. From your own region are there collective efforts being undertaken to address energy source pooled demand? If not, are there opportunities to work across operators?**

Yes, we see our efforts as a regional collective effort for marine tourism industry to deliver a holistic industry wide approach to decarbonising, with the first step being a focus, structure and technical feasibility study with the goal to produce a roadmap that will help guide the industry in transitioning. Such work, for our industry, requires government support and funding. And we see this as a partnership as the finds will be available to our industry and the Government. Without this support, there is a real risk of a lack of understanding and therefore the risk that the industry will not be able to make the move to low or no emissions future.

- **How do the local factors, such as vessel type, energy production and business structures impact how you are planning future decarbonisation activities?**

This is very large questions. Vessel types: there is a diverse range of vessel type, from small sail vessels to large multi-hull 38m wave piecing vessels. An additional layer of complexity to vessel type is area of operation. There may be similar vessel that operate in totally different sea conditions and areas. These would most likely require different solutions. All of our vessel operators are in regional areas, so the supply and storage for energy or fuel and the associated infrastructure and costs would be a challenge. In conversations with a hydrogen fuel producer, they have said they can supply hydrogen to Townsville, Whitsunday and Cairns, but not Port Douglas, highlighting limitations in supply due to the nature of regional areas. The other issue is the reliability of getting energy source to those areas. AMPTO has engage with other industry, such as primary producers, to determine how our needs would with others, however the sheer size of the region means that supply chains or storage would be so far apart and complex. We have made this part of our proposal if we can get the funding.

As tourism, our businesses model, is dictated by market, regulators, standards, and WH&S which means we have very high operating cost, labour intensive, and have very price sensitive and competitive markets with narrow margins. The result is there is no to very little chance of passing costs on. We have fixed pricing, which means in the context of low or zero emissions energy/fuels operators would have to consider cost and viability. This, we can tell, will result in a multitude of different fuels needed for one region.

- **What further information about decarbonisation activities would be useful to inform other regions and operators investment decisions?**

Without government support and funding (investment) DCV operators will struggle to decarbonise. Sector specific information is needed to support individual maritime sectors understand what is needed to decarbonise. This will give vessel operators more confidence to invest and make the move.

Energy Consumption Scenarios

Questions for Industry Stakeholders:

- **Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector? What are major factors that will drive demand for alternate energy sources?**

Currently I foresee a slow uptake. The key reasons are costs, readiness of the different fuels, reliability of supply, associate regulations and standards are not fit for purpose, and a lack of understanding from decision makers of the needs of the different sectors within the maritime

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industry, and re-skilling crew. MERNAP is focused on the larger end of town and so risks leaving small to medium operators behind.

- **Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?**

This question is outside my knowledge base, however, the price of the energy source are a concern but additionally the cost to be in a position to use a particular energy source is problematic – i.e., building a new boat or retrofitting an existing vessel. Current research and examples show that building a low or zero emissions vessels is up to 6 time more costly than building a convent fuel vessel.

- **How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?**

There needs to be genuine consultation and partnership with all levels of the domestic maritime industry. Key is funding and investment by both Federal and State Governments to support industries and operators. At the moment funding and investment in the maritime sector is siloed and ad hoc. Partnering for genuine industry consultation will build knowledge and understanding that can ensure funding has best value for money.

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Submission

MERNAP Issues Paper 2: Energy Sources and Technologies

Submitted: 2 February 2024

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Introduction

Gas Energy Australia (GEA) welcomes the opportunity to provide a submission on the MERNAP Issues Paper 2: Energy Sources and Technologies.

There is global momentum towards gas-fuelled ships. In fact, a decade ago there were just 10 gas-fuelled cargo vessels worldwide. Today there are 936, with another 876 on order (Clarkson's Research).

Australia has been a slow adopter of the inherent immediate and longer-term advantages gas – and, in particular, LPG – provides. That said, three of the most recent acquisitions to Australia's coastal shipping fleet are powered by LPG. And for good reason.

The benefits of running shipping on LPG include:

1. LPG yields an immediate 20% reduction in emissions compared to marine diesel. But, as renewable gases are developed over the next few years, those emissions will plummet to net zero using bioLPG and, ultimately, actual zero using synthetic renewable LPG (rLPG).

2. Adopting LPG now avoids future costs. Ships are acquired with a view to many decades service. BioLPG and rLPG are one-for-one replacements for conventional LPG. This means no changes are requires to ship engines or components in order to swap-in bioLPG or rLPG.

3. Adopting LPG prevents the prevailing dangers posed by marine diesel ships. If a diesel ship were to run aground, collide with another vessel or sink in Australian waters it would be an ecological disaster without parallel for our pristine beaches, waters and the sea life they support.

   Such an incident would have far-reaching and long-term ramifications for local businesses, fisheries, tourism operators, hospitality venues and a host of associated impacts. This scenario is entirely avoidable. LPG-fuelled vessels are clean and, in the event of an incident at sea, the gas can be released, dissipating without environmental impact as it neither slicks nor sediments.

4. Energy security is emerging as a key issue globally. Using LPG as a fuel -f choice would solve our national reliance on imported diesel-oil, replaced by domestically produced gases (LPG, bioLPG and rLPG) that Australia can produce in abundance. This would deliver genuine fuel security and self-sufficiency, which underpins the point of having a sovereign fleet.

As detailed in this submission, net zero bioLPG will be available in Australia from as soon as 2025-26. As a by-product of biodiesel and sustainable aviation fuel production using the hydrotreated vegetable oil process, the first three plants slated for operation in 2025-26 have the capacity to initially displace 11% of conventional LPG demand almost immediately, seeing up to 160,000 tonnes of CO2-e abated per year.

The exponential growth of this sector has the potential to replace all conventional LPG. Indeed, as the CSIRO's Sustainable Aviation Fuel Roadmap (released August 2023) makes clear, from 2025 Australia will have sufficient feedstock to produce 5 billion litres of SAF every year from approximately 15 biorefineries with LPG as a by-product. This would abate up to 1.5 million tonnes of CO2-e each year.

However, the advent of renewable synthetic LPG (rLPG), derived from green Hydrogen and CO2 from the atmosphere, is an actual zero emitting gas. The only CO2 expelled when it is burned is what was captured when it was made – meaning it has a zero impact on the environment and, as such, requires no offsets. It is expected rLPG will be available in Australia from the mid-2030s.

Based on current domestic demand, replacing all conventional LPG with synthetic actual zero rLPG by 2050 would reduce CO2-e emissions by up to 1.94 million tonnes every year.

About GEA

GEA is the national peak body representing the downstream gas fuels industry, encompassing Liquefied Petroleum Gas (LPG) and associated gases – including a raft of new renewable gases such as bioLPG, synthetic renewable LPG (rLPG) and renewable Dimethyl Ether (rDME). The industry comprises major companies, medium and small businesses across the gas fuels supply chain including producers, refiners, fuel marketers, equipment manufacturers, gas transporters, consultants and service providers.

Having engaged directly with the Australian Government Department of Industry, Science and Resources, Department Climate Change and Energy, relevant Ministers and Shadow Ministers, as well as state and territory governments, GEA has provided seminal research undertaken by Frontier Economics on LPG's path to zero emissions.

LPG supply can begin this transition as soon as 2025-26, offering governments, industries and household consumers another important string in their bow to deliver on 2030 targets and beyond. We see these developments as complementary to government objectives in shifting to renewable energy, while offering customers diversity in choosing the zero energy sources that suit their needs.

Importantly, we have made it clear to all governments – and do so again here – that the LPG sector is not seeking any government funding. That is, we require no subsidies, seed or project funding or the like to facilitate the transition.

We simply seek a level playing field. That is, recognition and inclusion of bioLPG, rLPG and rDME technologies in the array of government considerations, programs and mechanisms so homeowners and businesses can choose the path to zero best for them.

Examples for LPG to Achieve Net Zero & Actual Zero Emissions

BioLPG:

- Derived from plant and vegetable waste.
- Derived as a by-product from biodiesel and/or Sustainable Aviation Fuel production using the Hydrotreated Vegetable Oil process.
- Identical to LPG. A simple 'drop in' replacement.
- Same storage, transport infrastructure and appliances. No change. No additional capital costs.
- Net zero as an 80% renewable gas.
- Potential to be actual zero as related sectors (i.e. farming and transport) reduce their emissions.

rLPG:

- Synthetically produced from green hydrogen and CO2 taken from the atmosphere.
- Identical to LPG. A simple 'drop in' replacement.

- Same storage, transport infrastructure and appliances. No change. No additional capital costs.
- Is an actual zero gas – that is, the only CO2 expended in its use is what was captured in its creation. No offsets are required.

rDME:

- Derived from methanol.
- Chemically similar to LPG (propane and butane).
- Can be blended with rLPG up to 20% with no change to appliances.
- It can fully replace LPG, however, would require minor changes to existing appliances.
- Derived from gasification and catalytic synthesis or electrolysis (i.e. green H2) and catalytic synthesis.
- It is net zero, but can be actual zero as related sectors (i.e. transport) reduce their emissions.

Consultation Questions

Energy Efficiency Measures: *Question 1: What energy efficiency measures would your organisation consider utilising to reduce emissions?*

Gas Energy Australia is urging the inclusion of LPG as an energy efficiency measure for reducing emissions in the maritime sector. LPG stands out as a cleaner alternative compared to traditional marine diesel, offering an immediate 20% reduction in emissions. Notably, LPG is positioned as a cleaner option than LNG (Liquefied Natural Gas), providing a more sustainable and environmentally-friendly fuel source for the maritime industry. As renewable gases, such as bioLPG and synthetic renewable LPG (rLPG), are developed in the coming years, LPG's emissions are expected to decrease to zero, making it a compelling choice for the immediate and long-term.

Information Accessibility: *Question 2: Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?*

Australia's maritime sector plays a pivotal role, handling 99% of the nation's international trade. The information available from the Bureau of Infrastructure and Transport Research Economics indicates the substantial volume of cargo and port calls in 2020-21. However, there is a need for increased awareness and accessibility to information regarding the benefits of switching from marine diesel to LPG as a clean and sustainable fuel option. A concerted effort to disseminate detailed information on the advantages of LPG, including its immediate emissions reduction and transition to net-zero and, ultimately, actual zero emissions, is crucial for fostering informed decision-making in the maritime sector.

To this end, GEA would be pleased to provide the department and its stakeholders with the Frontier Economics research ‘Pathways to Zero Emissions for LPG’ to foster informed discussion and consideration.

Applicability of Technologies: *Question 3: How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?*

European nations and the US provide incentives encouraging fuel switching from marine diesel to gas. To be fair, this typically involves LNG given those nation’s long association with LNG.

Across the globe, there has been a sea-change with gas-fuelled ships increasing from 18 vessels in 2010 to 936 vessels today in service and another 876 on order.

Perversely, this means Australia gets the world's clunkers – diesel-powered cruise and freight vessels – navigating through our waters and docking at our ports.

Meanwhile, three of the most recent private acquisitions to our shipping fleet are powered by LPG. With a view to decades in operation, LPG is the fuel of choice for its immediate emissions reductions and its short and longer-term flexibility as a net zero and actual zero option.

Adopting LPG also prevents the inherent dangers posed by marine diesel ships. If a diesel ship were to run aground, collide with another vessel or sink in Australian waters it would be an ecological disaster without parallel for our pristine beaches, waters and the sea life they support.

Such an incident would have far-reaching and long-term ramifications for local businesses, fisheries, tourism operators, hospitality venues and a host of associated impacts. This scenario is entirely avoidable. Gas-fuelled vessels are clean and, in the event of an incident at sea, the gas can be released, dissipating without environmental impact as it neither slicks nor sediments.

All new vessels in Australian waters, including ferries, should be geared for gas. Supporting such a shift would set-up our maritime sector to achieve net zero in the short-term, and actual zero over the medium term, while immediately reducing the risks to the environment.

The recent acquisition of three vessels in Australia powered by LPG demonstrate the applicability of LPG to domestic needs.

This includes international trade vessels, coastal shipping, and even domestic ferries, showcasing the versatility and effectiveness of LPG as a clean and efficient energy source.

Barriers to Investment: *Question 4: What are the barriers your organization faces in investing in energy efficiency technologies or measures?*

As mentioned at the outset of this submission, GEA and its members are not seeking any funding to pursue the development and commercial availability of bioLPG and rLPG.

If/when Australia embarks on building or acquiring new vessels for a coastal shipping fleet, we submit that including LPG in government considerations would be prudent.

Phasing out oil-based ships, which present a clear danger to Australia's pristine waters and shores, and replacing them with demonstrably cleaner and safer renewable LPG-run vessels, is a no-brainer.
We would be happy to work with the department and/or stakeholders to demonstrate the bona fides of these new technologies.

This is easily facilitated as LPG is already a proven performer, with the gas already used successfully in Australian shipping operations.

By emphasising LPG's cleanliness, Gas Energy Australia aims to address concerns related to emissions and underscore the advantages of choosing LPG over other fuel options, ultimately contributing to a cleaner and more sustainable maritime industry.

Technical Considerations: *Question 5: What are key technical considerations that your organisation considers when exploring alternate energy sources?*

Technical considerations for Gas Energy Australia encompass the reliability, scalability, and compatibility of LPG as a marine fuel. Importantly, LPG stands out as a notably cleaner option compared to other energy sources, including LNG, providing an immediate reduction in emissions but moving to net-zero and actual zero emissions with renewable gases in bioLPG and rLPG.

As a one-for-one replacement for conventional LPG, bioLPG and rLPG require no ongoing transitional issues, costs or practical impediments.

Barriers to Low Emission Energy Sources: *Question 6: From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?*

Gas Energy Australia acknowledges the significance of various barriers to investing in low emission energy sources in the maritime sector, including:

- **Cost:** New ships running on LPG would incur no extra costs upon transitioning to net zero bioLPG and, ultimately, using rLPG in the same vessel with the same engine and components. There is and will be a premium on renewable forms of energy, however, Gas Energy Australia asserts, based on the Frontier Economics modelling, that that as technology advances and economies of scale are realised, costs will become more competitive, making cleaner options financially viable.

- **Technology Choice:** The choice of technology is crucial, and Gas Energy Australia is committed to thoroughly evaluating options. We see LPG as a superior choice due to its immediate emissions reduction and short to medium-term transition to net-zero and actual zero emissions.

- **Fuel Availability/Infrastructure:** Infrastructure development for alternative fuels, such as LPG, is well established. Indeed Australia exports some 70% of its LPG production. As the CSIRO has stated, with 5 billion litres of SAF available in Australia from 2025 and some 15 biorefineries slated in the production of bioLPG, the sector is on a path for growth. Further, as green hydrogen ramps up to scale come the mid-2030s, Australia is in the enviable position of producing hydrocarbons, including rLPG, at will.

- **Regulations and Standards:** Evolving regulatory frameworks are considered, and Gas Energy Australia is committed to complying with and contributing to the development of regulations that promote environmentally friendly and sustainable practices in the maritime industry. Recognition of bioLPG and rLPG as the exact same molecule as conventional LPG is well-established. GEA is working with federal and state governments on piloting bioLPG and rLPG as renewable gases for Australian application.

- **Safety:** Safety concerns are paramount, and Gas Energy Australia emphasises that LPG, as a cleaner fuel, has inherent and long-stranding record of safety advantages. In the event of an incident at sea, LPG can be released, dissipating without environmental impact, unlike some other fuel options. If a diesel ship were to run aground, collide with another vessel or sink in Australian waters it would be an ecological disaster without parallel for our pristine beaches, waters and the sea life they support. Such an incident would have far-reaching and long-term ramifications for local businesses, fisheries, tourism operators, hospitality venues and a host of associated impacts. This scenario is entirely avoidable.

By actively promoting LPG as a cleaner and safer alternative, Gas Energy Australia aims to contribute to the reduction of emissions and foster sustainable, affordable and secure domestic energy supply for the maritime sector.

Medium and Long-Term Investments in Low Emission Energy Sources:
Question 7: Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?

- **Immediate Focus on Proven Technologies:** GEA and its members are prioritising investments and development option in proven technologies, such as LPG, which can deliver immediate emissions reduction benefits. While bioLPG and rLPG are emerging in Australia, they are well-established in Europe and north and south America. The opportunity is in considering Australia's coastal shipping fuel needs, Australia can be in the vanguard in using these gases, which has the advantage of already being tried and tested.

- **Continuous Monitoring and Contribution:** Gas Energy Australia remains actively engaged with members in monitoring and contributing to the development of emerging technologies. This involvement includes collaborating with industry stakeholders, research institutions, and government bodies to stay abreast of advancements.

- **Balanced Approach:** The organisation emphasises a balanced approach, recognising the current viability of certain technologies while contributing to the ongoing research and development of emerging solutions.

- **Transition to Sustainable Energy:** Gas Energy Australia is committed to transitioning toward sustainable energy sources in the short, medium and long-term. This includes fostering the evolution of cleaner technologies and contributing to the achievement of net-zero and actual zero emissions goals, aligning with broader industry and environmental objectives. LPG is different in that it has a clear, commercially viable and relatively easy path to decarbonise, produce bioLPg and rLPG at scale on an affordable basis, while providing Australian government and industry with secure domestic supply.

Case Study: Origin LPG Powered Fleet

Origin Australia

Embarking on a path of sustainable shipping leadership, Origin are driving innovation with the introduction of three groundbreaking vessels—Gaschem Homer, Gaschem Iliad, and Gaschem Odyssey. These globally unprecedented ships are fuelled by Liquified Petroleum Gas (LPG), a departure from conventional diesel, establishing a new benchmark for eco-friendly maritime transportation. This initiative is a pledge to reduce emissions, promote domestic product outsourcing, and foster a sustainable future. Operating along Australia's eastern seaboard and the Pacific region, these vessels, distinguished by innovative designs, optimize efficiency, resulting in an 8% reduction in overall fuel consumption compared to conventionally powered ships. The transition to LPG aligns with the 2050 International Maritime Organization (IMO) targets for greenhouse gas reduction and contributes to IMO Energy Efficiency Design Index (EEDI) compliance, advocating for energy-efficient equipment and engines on new ships.

Beyond environmental benefits, these LPG-powered ships significantly enhance efficiency and cost-effectiveness. Mitigating Scope 3 emissions, they eliminate the necessity to export 90,000 tonnes of domestic product overseas, eliminating the use of 6,000 tonnes per annum of marine diesel fuel on Very Large Gas Carriers (VLGC). Simultaneous bunkering with LPG cargo reduces diesel bunker operations, resulting in an annual saving of 470 bunker barge hours, thus improving efficiency and reducing emissions. This strategic transition leads to an impressive 20% reduction in carbon emissions, a notable 95% reduction in sulphur dioxide, a 20% reduction in nitrogen oxide, and an extraordinary 99% reduction in particulate emissions.

Source: Origin LPG Powered Fleet

Conclusion

GEA's hopes that, from this submission, there is greater understanding leading to recognition that LPG is different and can be a viable option in the maritime industry.

The global momentum towards gas-fuelled ships, combined with the environmental advantages and fuel security offered by LPG, underscores the urgency for Australia to embrace this transition. As the nation's maritime fleet navigates the complexities of decarbonization, the adoption of cleaner fuel options is essential to safeguard Australia's pristine marine ecosystems and coastal regions.

LPG has a unique value proposition in the gas space, with a vital role to play as a renewable energy source that can quickly and relatively easily fully decarbonise.

We encourage governments to change their rhetoric to recognise that not all gases are the same and see this reflected in public discourse. LPG presents a solution to the growing problem of coal-fired power coming out of production, at the same time as renewable sources like solar, wind, etc., struggle to meet expected targets.

Based on current domestic demand, replacing all conventional LPG with synthetic actual zero rLPG by 2050 would reduce CO2-e emissions by up to 1.94 million tonnes every year.

Finally, the LPG sector has undertaken to complete this transition without any call on government funding. However, the need for governments to recognise this transition is vital to giving the industry confidence to invest in these renewable technologies.

For More Information

Should you require more information, have questions or wish to discuss any elements arising from this submission, please contact:

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RE: Feedback on MERNAP Issues Paper:

Energy Sources and Technologies

This document provides feedback on the *MERNAP Issues Paper: Energy Sources and Technologies* ("the paper") from Maritime Impulse Pty Ltd ("Maritime Impulse").

About Maritime Impulse

Maritime Impulse exists to help domestic commercial vessel (DCV) owners in Australia decarbonise their existing vessel fleets. We offer digital solutions for DCV fleet owners and have partnered with Cetasol to sell their iHelm and CetaFuel products in Australia. We talk with domestic commercial vessel operators every week about what they are doing to become more sustainable and hear many of the same blockers again and again.

It was founded by Angus McDonald, a strategy and product management expert who has moved beyond just creating software products to creating a more sustainable future. His involvement in projects with Fisheries Research Development Corporation (FRDC) and the Pacific Islands Forum Fisheries Agency (FFA) has given insights into and appreciation of the challenges facing the wild-catch commercial fishing industry throughout the Pacific Islands.

Our responses to this MERNAP issues paper are based on the discussions we have had with many DCV operators in Australia and overseas.

Our Feedback

We have tailored our feedback around the questions asked by the paper.

Energy Efficiency Measures

Q. What energy efficiency measures would your / is your organisation considering utilising to reduce emissions?

The digital solution we represent offers between 10 - 17% fuel savings to vessel operators by predicting how much fuel a given operation will use and specifying the optimum 'eco-driving' approach. Those fuel savings are both dollars and carbon emissions, yet we find many operators do not have time or budget to consider implementing them – despite an ROI of 3 - 6 months.

Other measures we have seen used are anti-fouling changes, reducing the amount of fuel carried, and implementing speed restrictions. Also, some fishers have experimented with wind assistance by using simple sails on downwind routes.

Q. Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?

There are many different sources of this information, but most are either very high-level, or very technical. One of the best we have found is the US MARAD Energy Efficiency and Decarbonization Technical Guide that was created by Glosten, but this is not well known in Australia. Many reports push a particular agenda, or include options that are popular, but without much basis in reality (e.g. nuclear reactors, or liquid hydrogen fuels). We have covered a number of these reports in our article on the Maritime Energy Transition.

Here*.

Q. How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?

International shipping can invest more upfront than most domestic vessels, and the very flat-bottoms and relatively straight sides of their ships mean that some technologies like air lubrication are better suited for those ships than for the displacement hulls in use domestically, let alone planning hulls. At the same time, small to medium fast vessels can consider using foil-assisted or fully hydrofoiling capabilities that do not scale up to larger or slower vessels.

International shipping involves vessels that tend to have far more predictable operational requirements for energy than DCVs, this can mean that some solutions are less effective at saving energy when applied to DCVs where their energy demands may fluctuate widely based on operational needs, such as fishing vessels, or tugboats, etc.

There can also be much less free deck space on many types of domestic vessels than some international shipping vessels. Also, the crew on a domestic vessel may have a limited range of training, education, and experience than the crew of an international shipping vessel.

Q. What are the barriers your organisation faces in investing in energy efficiency technologies or measures?

The primary barrier is understanding how each energy efficiency measure will impact a particular vessel, it's crew and operations. Typically to answer that question naval architects and CFD calculations might be needed, however both can be expensive. Without standard vessel designs, each vessel has a completely individual or new set of problems to solve. Even when the vessel is reasonably standard, such as workboats for example, the operations a tour operator might

perform are very different to the ones of an aquaculture operator. Without an easy answer to the question of cost/benefit, it means that the act of asking that question itself is a cost whose return must be weighed up.

Another barrier is the vast array of efficiency options available. Without a clear idea as to the effectiveness of any given option, organisations are forced to consider a wide range of different options. With any innovation, there are early movers in the industry who have tried that specific innovation and might be able to promote the effectiveness of it, as well as its pros and cons. However, the sheer array of different options now being considered (Glosten's mention 27 different ones) and the noise of manufacturer claims, adviser biases, and a lack of well-known local implementations means that it can be overwhelming to consider where to start.

In some parts of the maritime sector, such as fishing and aquaculture, there are significant investments into research and development that help this sort of decision-making. Even there, there has been a lack of trust that a competitor's efficiency breakthrough is really applicable to one's own boats. In other parts of the maritime sector, there is much less research and development money available.

Alternative Low Emission Energy Provision

Q. The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?

The primary consideration ends up being economic, how costly the solutions are compared to the existing set of energy sources. The ability to bunker fuels or access charging in every possible port or harbour that might be used is also a concern. Regional areas are likely to be well away from energy production centres, so the ability of the energy source to be cost effectively transported is also important. Lastly, does using that energy source cause regulatory or safety issues, and can they be cost-effectively handled?

Q. From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?

- *Cost*
- *Technology choice*
- *Fuel availability/infrastructure*
- *Regulations and standards*
- *Safety*

From what we have seen:

- Cost – This is generally the primary barrier for battery/hybrid electric options for most of our contacts, and specifically the expense of making these changes to their vessels. Although, in many cases there are operational savings to battery/hybrid electric options that need to be factored in. Many alternative fuels such as sustainable sources of hydrogen, ammonia, and methanol don't yet exist, and speculation as to the probable cost of them does not promote investment.

- Technology choice – They look for technology their staff have experience in, or their main service providers have experience in. Unfortunately, this leads to an over-reliance on Hydrotreated Vegetable Oil (HVO) as the best possible future solution. Engine Original Equipment Manufacturers (OEMs) have been talking up their alternate fuel engines, but this hasn't been seen as that useful as most of those engines are not designed for marine conditions. Where alternate energy sources require significant changes to the powertrain of the vessel, for example introducing pilot fuels, altering entirely the fuel system, or replacing engines and fuel tanks with batteries and motors, we see the lack of technology experience creates a significant barrier to investment.
- Fuel availability/infrastructure – None of the alternate fuels are readily available in the near term, even HVO (which currently requires an exemption to use). Battery electric vessels need chargers, and fast DC chargers for most heavy use cases, and both of these require dock upgrades that are neither easy nor inexpensive. Hybrid electric vessels are easier to handle and can rely on trickle charging from standard three-phase power supply, or even single-phase power supply at most marinas and harbours (they can also take excess power from the diesel generator to charge).
- Regulations and standards – We have seen that one issue is the National Standard for Commercial Vessels (NSCV) restrictions on battery sizes; battery systems above 30 kWh need to be type approved by a classification society, and when tied to electric propulsion they fall into AMSA's Novel vessel category, which requires that the vessel has a certificate of classification with regards to its design and construction from a classification society.
- Safety – Many operators dismiss ammonia and LNG out of hand, and methanol is not much better from a safety viewpoint – especially for passenger vessels. Lithium-ion batteries, especially Nickel Manganese Cobalt (NMC) ones, have had a poor reputation in marine use, however this is due to both misinformation and poor system designs. LFP (lithium ferro phosphate) and LTO (lithium titanium oxide) chemistries have become more popular in marine environments, and recent breakthroughs in sodium-ion batteries (now in production with several Electric Vehicle (EV) manufacturers) also hold promise.

Q. What are the specific barriers to using each potential energy source in your organisation?

- *LNG*
- *Biofuels (HVO, FAME)*
- *E-Hydrogen*
- *E-ammonia*
- *E-Methanol*
- *Battery*

From what we have seen:

- LNG – does not offer a meaningful well-to-wake emissions reduction.
- Biofuels (HVO, FAME) – very limited supply of HVO and high cost (Refuelling Solutions brings in Neste's HVO product). There are OEM limits on how much Fatty Acid Methyl Esters (FAME) can be used in engine fuel mixes (usually 20%) which reduces its effectiveness, and it brings maintenance issues.
- E-Hydrogen – no available supply and not particularly practical, as it is itself a greenhouse gas likely to leak. It is also likely to be very costly too.

- E-Ammonia – no available supply and severe toxicity issues. It cannot be used on passenger vessels due to possible exposure of untrained people. Also, most engine designs require a pilot fuel, so creating yet more complexity and cost with a second fuel system.
- E-Methanol – no available supply, but a fairly practical option as the AMSA regulations allows for low flashpoint fuels like methanol. Classification societies have been slow in developing rules that suit smaller vessels (e.g. Bureau Veritas demanded an 800 mm cofferdam), but some have found ways to be more helpful (e.g. RINA has accepted an 80 mm cofferdam for methanol fuel tanks).
- Battery – fully battery-electric usually means accepting lower range and/or speed, although some workarounds exist for various categories of newbuilds (e.g. composite hulls and use of hydro foiling to reduce displacement and maximise efficiency). Hybrid electric vessels are promising for a wider range of conditions, but system cost is the main limiter here as the technology is ready and available. There is also a problem with onshore charging infrastructure which is significant and often outside of the vessel operator's control. AMSA's consideration that all vessels with greater than 30 kWh of batteries and electric propulsion are Novel vessels does not help matters as it requires obtaining a certificate of classification, which can increase complexity and cost.

Q. Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?

Most of our contacts have been delaying investments until there is greater clarity around HVO supply (which provides an easy emissions reduction). The exceptions have been passenger vessel operators with high rates of utilisation (passenger ferries and some tourism operators) where the investment in battery electric is seen as both worthwhile and customer pleasing. Hybrid electric vessels are becoming much more common across a wider range of use cases, and we believe this may well be the winning option in the short term.

Low Emission Energy Provision Availability in Australia

Q. When considering alternate energy sources, how has your organisation engaged with ports and marinas?

We have engaged with Executive Team members and the Environmental, Social and Governance (ESG) representatives at the ports and marinas we've been in contact with. One of our areas of interest was to explore the availability of shore power as well as possible interest in the bunkering of methanol.

Q For ports and marinas are the major factors that ports and marinas consider when investigating alternate energy sources for bunkering?

One major factor is customer demand. For example, at one port, in both the case for shore power and methanol bunkering, we were told that barely any of their customers were capable of using these, so they could see a future need, but not an immediate requirement to investigate.

Also, a major factor when considering whether to provide shore power, is the potential limitation of geographic constraints and utility providers. One marina operator could not guarantee their current electricity supply, so had a generator on-site in case of brownouts, whilst a port operator

mentioned they had significant issues with laying the requisite cable to their berths due to a lack of clarity over the location of neighbouring properties' subterranean services.

Another major factor with methanol bunkering was the potential for supply of the fuel. Without a clear idea of who could or would be supplying the alternate fuel, there was little interest in investigating a potential bunkering situation.

Q. For regional ports and vessel operators, are there specific supply issues that may hinder the ability to bunker alternate energy sources?

Many alternate fuels do not travel well (e.g. e-hydrogen, e-ammonia), so would preferably be created close to the point of bunkering. For some regional ports this may be fine, but for many, and the vessel operators using them, it limits the usefulness of that fuel. For example, regional vessel operators that commit to a locally developed alternate fuel may find that their vessel becomes harder to resell.

Q. Is there a mismatch between available energy sources for bunkering and your vessels' fuel needs?

Not current fuel needs, but for future fuels, definitely. Even though expensive, if HVO bunkering was widely available then it would be the fuel of choice for many operators – at least in a blended product.

Q. Do opportunities exist to pool the demand for alternate energy sources across vessel owners?

For alternate fuels there probably are, certainly for HVO, however it's not clear which alternate fuels should be pooled.

However, the growth in demand for more electricity supply around ports and marinas is a certainty – and this should be a priority as it both allows the most efficient use of renewable energy and the cleanest energy use.

Bass Strait Case Studies

Q. The Case Studies represent a regionalised view of the challenges and opportunities of maritime decarbonisation. From your own region are there collective efforts being undertaken to address energy source pooled demand? If not, are there opportunities to work across operators?

There are some collective efforts being made to pool demand for HVO. There are few operators who appear to be actively demanding alternate energy sources, except for electricity.

Q. How do the local factors, such as vessel type, energy production and business structures impact how you are planning future decarbonisation activities?

Electrification by investing in hybrid powertrains has some momentum. Battery electric solutions require land-based infrastructure investments that most operators cannot make, either because of cost, or more often because they rent their land access. Vertically integrated businesses that both own their own vessels and own their docks or berths have an advantage in being early movers. There are very few, if any, of these in NSW – other than ferries owned by the NSW Government.

Q. What further information about decarbonisation activities would be useful to inform other regions and operators investment decisions?

Greater awareness of what is being done, why it's being done, and how it has succeeded or failed would be very helpful to many. Most operators don't have a good handle on how they use energy, so promoting Energy Intelligence, the concepts and theory of energy efficiency, scope 1/2/3 emissions, and how it relates to the bottom line would be helpful.

Energy Consumption Scenarios

Q. Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector? What are major factors that will drive demand for alternate energy sources?

Without external factors there will be a slow uptake of sustainable energy solutions because what we have today works for most people and is a known quantity.

To drive demand, we need Government regulation that either legislates a transition away from gasoline/diesel, or that increases the price of those energy sources so that it makes the alternatives more viable to consider. A government funded research and development project that finds an effective way for a particular part of the industry to transition, which is then well-publicised, could also significantly increase demand in that area.

Q. Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?

A shortfall in availability will increase the price of that energy source. If alternate energy sources are too expensive, and there is no legislated need to change, then demand for existing fossil fuels will be maintained. If other countries legislate the transition away from fossil fuels and Australia does not, then we may be seen as a viable market for those fuels – helping to keep their costs down locally even if demand in the rest of the world collapses.

Electricity prices are likely to rise due to the need to build out much more transmission, substation, and storage infrastructure across the grid, especially in industrial areas. At the same time, local supply via solar panels will help reduce some of the demand for electricity, even whilst the cost of supplying electricity is going up. Unfortunately, this is likely to create upwards price pressure even while the amount of electricity in the system is increasing. It would help if the Government could make the public more aware that greater electrification means developing better electricity grids – including developments closer to home or in their street.

Without Government intervention the increase in energy prices will have a significant detrimental impact on Australian businesses that rely on vehicles, generators, and energy systems which burn fuel or use electricity.

Q. How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?

HVO

Focusing on making HVO/diesel fuel blends widely available and cost effective would be a great starting point. It requires no capital expenditure to be used and offers significant reductions in greenhouse gas emissions – however will cost more than marine diesel on its own.

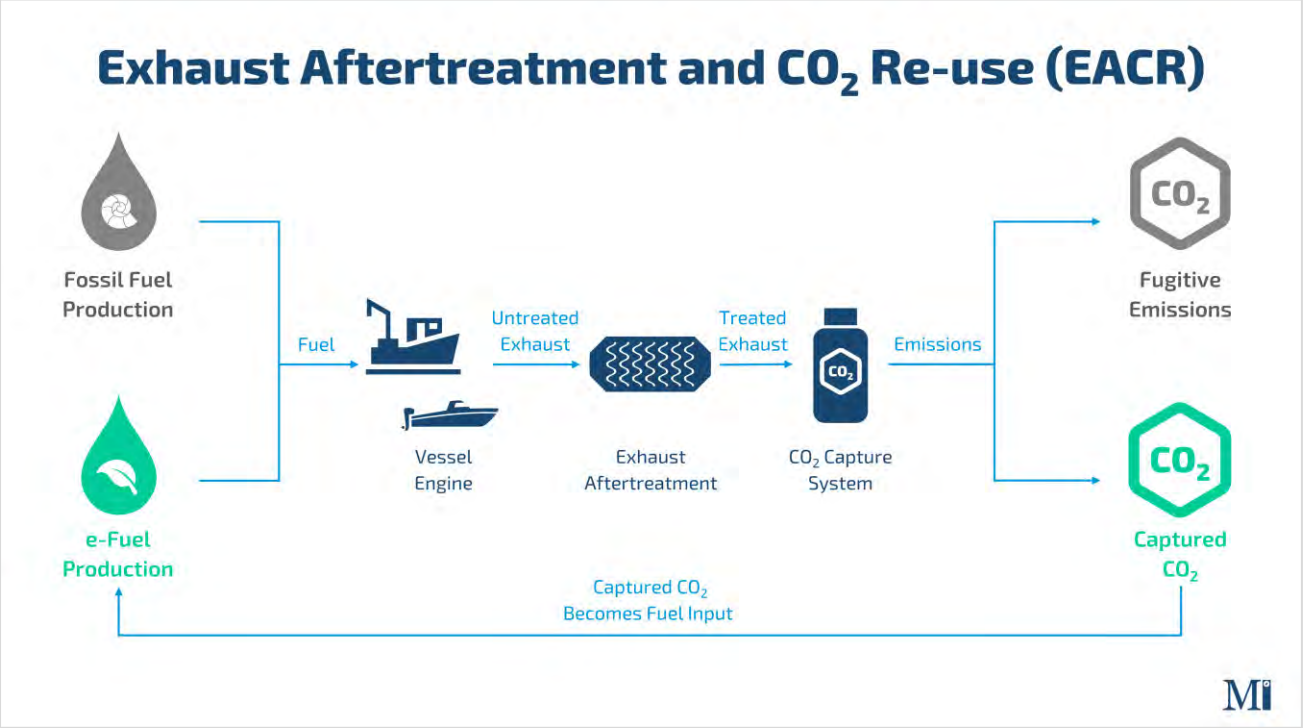
Ammonia/Hydrogen

It is our opinion that ammonia and hydrogen should not be promoted by the Government as alternative marine fuels. Ammonia is too hazardous to be pursued as a worthwhile solution. Hydrogen, itself is a greenhouse gas, is too prone to leakage, costs too much to store, and barely helps solve the problem of maritime energy requirements.

Methanol

Methanol can be a real option, but unless it comes from a biomass production pathway it is too expensive a fuel for most use cases. It also releases CO_2 in the exhaust gases, which is less than ideal.

In our work on the Climate Resilient Wild Catch Fisheries report for the FRDC, we suggested a way that methanol could be introduced as a fossil fuel and then transitioned into an e-fuel by implementing mobile CO_2 capture on vessels and then bringing that captured CO_2 back to e-fuel production plants (see EACR figure below).



Unfortunately, the effectiveness of this sort of circular fuel system depends on breakthroughs in mobile CO_2 capture that are being developed but have yet to be proven technically or economically for the maritime industry. A modest amount of Government funding for research and development in this area would be helpful, but it should not take away from proven solutions such as electrification.

Electrification

From our previous work in this area, we believe the best approach is for the Government to promote the use of hybrid diesel/electric energy systems on existing vessels and newbuilds.

For example, enabling marine diesel mechanics to use the opportunity of an engine rebuild or overhaul to ask the owner whether it is worth supplementing the diesel power with batteries and electric motors. This requires industry-wide education of marine diesel mechanics and

owners/operators, incentives for owners to consider hybrid options, and well publicised success stories from pilot programs.

Startups that target the problems inherent in the maritime energy transition should also be encouraged and supported beyond the normal venture capital environment that insists upon outsized potential returns. Non-capital diluting options need to be found and used to help founders grow their businesses to the point where they can help the local, and perhaps international, maritime industry.

Finally, early adopters and innovators need to be brought together across a wide range of industries, from OEMs, vessel owners/operators, ports/marinas, boatbuilders, naval architects, classification societies, training organisations, electricity utilities, and regulators. The Government should promote innovation ecosystems that bring these groups together.

In Conclusion

Maritime Impulse wishes to thank DITRDCA for the opportunity to comment on the MERNAP Issues Paper: Energy Sources and Technologies.

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Maritime Emissions Reduction National Action Plan Issues Paper: Energy Sources and Technologies

Response from the Maritime Union of Australia

12 February 2024

Department of Infrastructure and Transport

Submitted via: MERNAP@infrastructure.gov.au

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Background

This submission has been prepared by the Maritime Union of Australia (MUA).

The MUA represents approximately 14,000 workers in the shipping, offshore oil and gas, stevedoring, port services and commercial diving sectors of the Australian maritime industry.

This includes coal export terminals and port and shipping services to many emissions-intensive industries, such as aluminium smelters and steel manufacturing facilities. The MUA is also part of the Offshore Alliance (with the Australian Workers' Union) which represents workers on offshore oil and gas facilities.

The MUA is a Division of the 120,000-member Construction, Forestry and Maritime Employees Union Union and an affiliate of the 20-million-member International Transport Workers' Federation (ITF).

The MUA supports the government taking action to address climate change. We are working hard to prepare our membership and industries for the necessary transition to a zero-net emissions economy and society. We recognise the need to urgently reduce emissions globally and in Australia to prevent global heating from exceeding 1.5°C, but this will have a very significant impact on the jobs held by many of our members. Our ability to provide climate leadership in these industries depends on the ability of governments and of our union to deliver a just transition to our members working in fossil fuel industries, and their communities. If we cannot provide such a transition, we risk significant reductions to workers' living standards, deepening inequality, and a very significant political backlash which could stall the transition we need.

Summary

The high level planning provided in the *MERNAP Issues Paper: Energy Sources and Technologies* is very welcome so the government can determine what the most socially beneficial pathways are to the decarbonization of the maritime industry, and how to support them.

The final Maritime Emissions Reduction National Action Plan should also examine the opportunity for emissions reduction in other transport sectors through modal shift to shipping. This is likely to offer much higher economy-wide emissions reduction opportunities than the focus so far on the comparatively small maritime industry. Such a focus is also likely to significantly increase the appetite in the maritime industry to make difficult reforms.

Planning to ensure coordinated government support

The development of MERNAP is very welcome, as stronger coordination across government is needed. For example, the paper highlights the importance of making renewable methanol, and supplying it from Portland Victoria and Bell Bay Tasmania to the Port of Melbourne for domestic tugs and for international container shipping (p.17). Supplying fuels to international shipping is an important economic opportunity for Australia to realise its potential as a renewable energy

superpower. Currently virtually all international shipping to Australia bunkers in overseas ports, such as the well-known hub of Singapore, which is also host to petroleum mega-refineries. The paper highlights an MoU that has been signed to progress this proposal.

However, the $2 billion Hydrogen Headstart program has not shortlisted any methanol manufacturer in a port that could supply methanol on the scale required (only one located 30km inland from Burnie).

The Issue Paper also says 'there may be challenges for biofuels and methanol, due to limited planned projects, and the maritime sector may need to rely on imports' (p.22). However the case study for the Port of Melbourne highlights two suppliers of these fuels they are collaborating with who have the capability to provide the necessary supply. The role of the Plan should be to identify critical projects such as these and ensure that support is coordinated across government. The Plan should not be suggesting that we rely on imports instead of doing this work.

Modelling future demand

Interim modelling for the National Hydrogen Strategy suggest that there could be a 50% increase in ship's bunkering in Australia if Australia starts to manufacture new renewable fuels. This is not currently considered in the modelling in Section 7 of the Issues Paper.

In the final Plan, it would be good if the scenarios for total GWh and tonnes of fuel in Section 7 are provided with a comparison to make them meaningful. Eg. how do these totals compare to current demand nationally or in a state? What is the scale of increase needed?

Planning for the electricity system

AEMO is currently finalising the 2024 Integrated System Plan for the future of the electricity system. The MERNAP total electricity demand calculations to manufacture maritime fuels should be contributed to the AEMO ISP process.

Technologies

- The paper only talks about Lithium-ion batteries. What about other types of batteries in development?

- Hydrogen fuel cells are briefly mentioned but not included in Figure 6 or Figure 8. Are they included in modelling for Section 7 or Figure 9? Currently hydrogen fuel cells appear closer to deployment than the use of hydrogen or ammonia in internal combustion engines. See for example this ferry in Norway .

- The paper mentions carbon capture and storage on board ships in relation to ship's emissions. More information is needed about whether this is effective and credible.

- Any snapshot of fuels and technologies in the final Plan should also include a snapshot of the safety risks of each fuel.

Format issues

- It would be useful if the final paper was more consistent in the definition of maritime – sometime int eh papers it is used only for ships and sometimes it includes ports and this is not always clear.

- The graphs need more explanation in the final Plan, especially Figures 2 and 3.

- Table 1 says 'energy source' but only talks about fuels – what about electric vessel or port equipment infrastructure?

MARITIME INDUSTRY AUSTRALIA LIMITED

MIAL Submission
MERNAP Issues Paper 2
Energy Sources and Technologies

1. About MIAL

Maritime Industry Australia Ltd (MIAL) is the voice and advocate for the Australian maritime industry. MIAL is at the center of industry transformation; coordinating and unifying the industry and providing a cohesive voice for change.

MIAL represents Australian companies which own or operate a diverse range of maritime assets from international and domestic trading ships; floating production storage and offloading units; cruise ships; offshore oil and gas support vessels; domestic towage and salvage tugs; scientific research vessels; dredges; workboats; construction and utility vessels and ferries. MIAL also represents the industries that support these maritime operators – finance, training, equipment, services, insurance and more. MIAL provides a full suite of maritime knowledge and expertise from local settings to global frameworks. This gives us a unique perspective.

We work with all levels of government, local and international stakeholders ensuring that the Australian maritime industry is heard. We provide leadership, advice and assistance to our members spanning topics that include workforce, environment, safety, operations, fiscal and industry structural policy.

2. Response to Issues Paper

2.1. Energy Efficiency Measures – overall comments

Technical and operational energy efficiency measures are not only critical for emissions reduction now, but energy efficiency is an important enabler of low and zero carbon intensity fuels due to the cost of new fuels and the lower calorific value (energy density) compared to traditional fuels.

MIAL members operating international and domestic trading ships and domestic commercial vessels already utilise a range of energy efficiency measures, both technical and operational, and many incorporate biofuels into their fuel mix at a significant operational cost premium.

While operators of larger vessels to which the mandatory IMO Carbon Intensity Indicator (CII) applies now have a regulatory imperative to reduce carbon intensity for compliance purposes, it is widely acknowledged that the design parameters of the CII can drive perverse outcomes, reducing carbon intensity over a voyage, but increasing overall emissions. This illustrates the pitfalls of applying a carbon intensity requirement in the absence of a market-based mechanism that addresses overall emissions.

2.1.1.Commercial Drivers

Prior to the implementation of the CII some energy efficiency measures (such as slow steaming) could be justified on the grounds of minimising operational costs, particularly during oil price peaks. It is also worth noting that most large, global companies, particularly publicly listed companies, have corporate net zero targets and are accountable to shareholders with respect to demonstrating progress towards meeting those targets.

There are factors that complicate the commercial drivers of energy efficiency. Some **technical** measures require significant capital investment in vessel upgrades and retrofitting of equipment - a cost that is generally borne by the shipowner. However, it is often the charterer who is responsible for the cost of fuel consumed and who stands to benefit from associated fuel saving. From the perspective of the shipowner, there remains little evidence that a 'green premium' will be paid, or in other words, that a more efficient vessel attracts a higher charter rate. This is particularly true for voyage charter/spot charter arrangements, whereas there may be some correlation between vessel efficiency and charter rates for time charter (longer term leasing) arrangements. Nevertheless, the commercial incentive for a shipowner to invest in efficiency upgrades isn't always strong.

Commercial contractual arrangements are also problematic when it comes to **operational** efficiency. Charter parties include arrangements relating to demurrage, which is a penalty paid to the shipowner in circumstances whereby the ship is not loaded or discharged within a specified time. Demurrage can be lucrative, and shipowners may be incentivised to 'sail fast and wait', meaning the vessel may be operated at faster than optimal speed to arrive in port and begin earning demurrage. The Blue Visby Solution estimates that 15% reduction across the global tanker and bulker fleet could be achieved by eradicating 'sail fast then wait' practices through sharing the economic benefit of operational efficiency.

The development of mechanisms for sharing the commercial benefit of technical efficiency investments, operationally efficient practices, and the deployment of low carbon fuels across the value chain will be critical. Collaboration between ports, ship owners, fuel producers, finance institutions and cargo owners is essential and it is likely that an increased focus on scope 3 emissions will assist to drive these outcomes.

What energy efficiency measures would your / is your organisation considering utilising to reduce emissions?

There are many energy efficiency technologies and operational practices currently being utilised by MIAL members. Importantly, effectiveness of technologies can vary between vessel types and trades.

2.1.2.Technical measures

Available retrofit energy efficiency technologies can be broken up into three loose categories:

1. **Off the shelf**: easier to justify, lower upfront investment and a proven short payback period.
2. **High capital/long payback**: more difficult to justify, high capital investment, long payback period that may be incompatible to length of vessel charter.
3. **Novel technologies**: can be (but not always) high capital investment with unknown effectiveness and as such represent a high risk as to whether pay back will occur at all.

Off the shelf *	**High capital/long payback***	**Novel technologies***

Advanced hull coatings	Shore power connection	Ultrasonic antifouling systems
Hull grooming	Wind assisted propulsion	Novel fuel treatments
Propulsion technology, including propellors (e.g. propellor boss cap fins)	Air lubrication	Advanced AI
Drive shaft sharing	Shaft generator	
Engine and Heating, Ventilation and Air Conditioning (HVAC) monitoring and automation		
Waste heat recovery systems		
Solar panels		
Variable frequency drive motors		
Speed and trim optimisation software		

**non exhaustive list*

Changes in hull design over the years, including the introduction of the bulbous bow has made a significant difference to vessel efficiency.

New ships can more easily integrate energy efficiency technology. In the Australian setting it is worth noting that the Australian fleet – particularly the Bass Strait trade – have undergone significant tonnage renewal programs in the last 5 to 10 years, with more new ships currently in the pipeline. This potentially is a result of the corporate tax arrangements introduced in 2012 that encourage reinvestment of tax-free profits.

2.1.3.Operational measures

Voyage optimization utilising met ocean data to take advantage of oceanic currents and weather routing is common practice. It has been identified that various environmental, psychological and social factors affecting the vessel crew can have a significant impact on efficient operation. MIAL member across the bluewater and DCV sectors investigate and implement behavior modification and training programs to incentivise and enhance energy efficiency operational practice where possible.

Is there sufficient information available to maritime industry stakeholders about energy efficiency measures? What are the barriers to accessing this information?

Industry knowledge and the general availability of information relating to energy efficiency has significantly increased in recent years as the focus on ship emission reduction has intensified. Information about energy efficiency, along with services to assist operators to achieve energy efficiency goals are widely available to those who seek it, however smaller operators may have less access and importantly, no means of verifying performance claims prior to implementation.

Global efforts are underway to improve the evaluation of the various technologies, including the inherent uncertainties, as well as verification of performance during operations to demonstrate that improvements have been realised.

A mechanism to facilitate sharing of efficacy information and benchmarking of energy efficiency technology performance, particularly with respect to the emerging or novel technology would be a welcome development.

How do the energy efficiency technologies suitable for international shipping differ in their applicability to domestic vessels?

The challenge with selecting technologies is that their suitability is very much dependent on the vessel design and operating modes. Alo, technical energy efficiency measures can be complicated to evaluate – there is inherent performance improvement uncertainty. Rigorous and transparent verification will improve overall industry knowledge and confidence with technology selection. Since the domestic fleet is diverse, the ability for most owners to undertake the evaluation and verification (demonstration) will be difficult and a coordinated national effort may assist those entities.

As noted in the issues paper, international shipping is characterised by much larger vessels with longer, linear voyages, providing greater opportunity for voyage optimisation and more hull and deck space (depending on the vessel type) for retrofitting equipment. However, there are some exceptions to this, including transshipment operations (large ships, very short voyage lengths) and scientific research vessels (large ships, nonlinear voyages, potentially ice breaking hulls) for example.

Domestic commercial vessels represent an incredibly diverse cohort of operation and vessel type with varying voyage regularity, operational profile and power loads – all relevant factors to the applicability, or otherwise, of certain energy efficiency opportunities.

What are the barriers your organisation faces in investing in energy efficiency technologies or measures?

MIAL would like to highlight three key barriers to the shipping industry investing in energy efficiency technologies or measures:

1. Absence of a mechanism to share the commercial benefits of investment, as described in 2.1.1 and 2.1.2 above.
2. Absence of standardised technical evaluation method to build confidence in the business case for novel technologies.
3. For the Domestic Commercial Vessel sector, AMSA's Novel Vessel Policy can create an insurmountable barrier due to the broad definition of 'novel vessel' and the cost associated with having a vessel constructed and maintained in class.

Standardised technical evaluation

There is a lack of confidence within the industry about the effectiveness of energy efficiency measures which makes it very difficult to develop an adequate business case for investment.

While there are many energy efficiency technologies available, and more being developed each year, adoption is limited as there is no consistent technical evaluation method. This creates significant uncertainty about actual benefits vs. claimed benefits.

There are existing concepts, such as the Maersk Mc-Kinney Moller Centre Maritime Book & Claim project that could help to increase the integrity of emissions reductions claims and may assist to support the business case for adopting energy efficiency technology.

Importantly, in the absence of technology agnostic and universal regulations, such as a substantial market-based mechanism, uptake of energy efficiency technology will be slow. It is unreasonable to expect businesses to place themselves at a competitive disadvantage, which is why regulation that creates a level playing field is so important for decarbonisation.

In this critical period of transition, before all the necessary building blocks are in place to develop a supportable business case, there is a role for government in facilitating solutions to the barriers outlined above.

AMSA's Novel Vessel Policy

It is clear that the pace of evolution in safety and environment protection regulation in the maritime industry struggles to keep up with the pace of technological advances. Efforts by AMSA to facilitate rapid carbon emissions reduction through the adoption of novel technology and vessel design in the domestic commercial vessel (DCV) sector are very welcome.

The Novel Vessel Policy opens the door for alternate certification of a vessel that cannot satisfy the requirements of NSCV, or prescribed 'deemed to satisfy' circumstances, through the certification by a recognised organisation (class society).

The very broad definition of 'novel vessel' in combination with prohibitive cost associated with certification of a DCV by class, creates a major barrier to adoption of energy efficiency technology. While AMSA often takes a collaborative and constructive approach with individual operators on a case by case basis, a more nuanced approach to the definition of 'novel vessel' would assist operators to overcome this barrier.

2.2. Alternative Low Emission Energy Provision

Questions for Industry Stakeholders:

The differing properties of each energy source means that, given current technologies, they are not appropriate for all vessel types. What are key technical considerations that your organisation considers when exploring alternate energy sources?

- Compatibility with engine (manufacturers approval). Biofuel is available and acceptable as a drop in fuel for slow speed diesel engines (large ships), the picture is less clear for medium speed engines (smaller vessels).
- Energy density.
- Ship or fleet age.
- On board storage requirements, e.g. what kind of pre-consumption treatment does the fuel need, energy density, compatibility with other fuels.
- Safe handling considerations.
- Quality standards and assurance.
- Volatility and other safety characteristics.
- Fuel availability and shore side handling.
- Feed stock provenance/guarantee of origin/life cycle assessment (genuine well to wake emissions reduction).

There are many fuel evaluation projects and work being undertaken to look at supply and infrastructure needs. There is a need for learnings to be shared in situations where alternative fuels are used in different locations.

From the following list, what are the primary barriers to investing in low emission energy sources in the maritime sector? Can you comment on what your organisation thinks about each of these factors?

- **Cost**

Cost is a major limiting factor, or more precisely, the difficulty inherent in building a supportable business case for the adoption of expensive technology. Payback periods are uncertain, but often longer than the length of charter parties, meaning that it is difficult to determine how to share benefits from investment. While shipping (particularly bulk international shipping) is very efficient, the deployment of green electrons towards the generation of shipping fuels results in a relatively high carbon abatement cost per ton of CO_2. As such, from a whole of economy perspective, capital may be directed elsewhere to industries where smaller investments achieve greater emissions reduction. This is a significant long-term problem for the shipping industry.

For biofuels – a mature drop in technology and currently the only available option to achieve significant emissions reduction, cost is the primary limiting factor to widespread adoption in Australia.

- **Technology choice**

Currently, technology choice is heavily dictated by availability and operational suitability. For the existing fleet and from a technical perspective, drop-in solutions are highly desirable, while the nascent technologies mature and reach commerciality.

Gaps in the critical building blocks required for low emissions energy sources to reach maturity and for confidence to build within the offtake market, such as transparency, lifecycle assessment and guarantee of origin, are major limiting factors.

- **Fuel availability/infrastructure**

Low and zero carbon fuels: Fuel availability at the scale required, reliability and accessibility of delivery infrastructure and fuel storage options are major issues for the maritime energy transition requiring a strategic, coordinated, and collaborative approach between energy and infrastructure developers, suppliers, ports and the shipping industry. In contrast to conventional fuels, the energy transition will result in a diverse fuel mix, as different fuels/energy sources will be required for different ship types and operating modes. This increases the complexity for all stakeholders.

Shore power: Commitments to shore power from ports such as the Port Authority of NSW are very welcome. However generally, unlike northern hemisphere ports in Europe and North America, there is a lack of investment in shore power infrastructure in Australian ports, despite strong commitments from some sectors such as cruise shipping and the specialised dry bulk sector to shore power as an emissions reduction mechanism. Certainty around the availability of shoreside infrastructure is required to justify the installation of shore power equipment on ships where it isn't already installed.

- **Regulations and standards**

Regulation has a critical role to play in facilitating the maritime energy transition. Australia must play an active role supporting international standard development. The development of regulations and standards must include the following:

- Support for early movers, creates incentives and provides a stable, long term regulatory framework that helps to address the significant cost gap between conventional and low and zero carbon fuels.
- Internationally consistent approaches to:
  - certification of carbon content in fuels that takes into account lifecycle emissions (well to wake carbon intensity);
  - technical standards for the storage, delivery and bunkering of low and zero carbon fuels;
  - Safe handling standards and associated training packages for new fuels.
  - Alignment with international market-based mechanisms.
- Avoid perverse outcomes that drive transport activity away from shipping to less energy efficient modes. In avoiding this outcome, the government must ensure that regulation applying to the maritime industry does not impose costs that are not imposed on other modes of transport.

- **Safety**

Creating intrinsically safe systems of handling and storage for nascent fuel technologies will be central to their success in providing long term decarbonisation solutions.

Additionally, there is a need to ensure high levels of competency among seafarers, regulators, first responders and port personnel. There is a major challenge in upskilling all industry participants to create the right mindset and behaviours to ensure a safe working environment.

What are the specific barriers to using each potential energy source in your organisation?

- **LNG**

Most LNG powered vessels operating in Australia are dual fuel. In these circumstances the cost difference between LNG and diesel, which is highly dependent on location, transport and processing costs, can be significant, and will drive operators to diesel, even where an LNG supply is established.

It's important to note that availability of LNG in Australian ports is limited, and the limited emissions reduction potential of LNG raises concerns about long term viability of investments into LNG delivery infrastructure.

- **Biofuels (HVO, FAME)**

Biodiesel is available in Australia, particularly on the east coast and is a lower carbon drop-in solution for slow speed marine diesel engines. Simply put, in the absence of a low carbon fuel standard and/or access to carbon credit trading mechanisms, depending on the fluctuating oil price and manufacturing location, the cost of biodiesel is 3 or 4 times the price of conventional fuels which is prohibitive to adoption. Given Australia's natural advantage with respect to feedstock availability, from a lifecycle emissions perspective, ideally biofuels would be sourced from a local Australian production industry.

- **E-Hydrogen**
- **E-ammonia**
- **E-Methanol**

As an overall comment, the use of 'e-' along with other descriptors such as in 'blue, grey and green' is unhelpful. The substance, and its lifecycle (numerical) carbon intensity must be the focus, as opposed to a descriptor of how the substance is derived.

Use of these energy sources requires specific engine capability. Hydrogen is extremely expensive to acquire, store and transport, requires large volumes if used as a shipping fuel and is not available in large quantities. Ammonia is expensive, requires large volumes for storage, is not available in large quantities as fuel and there remain ongoing safety concerns. Methanol is expensive and not readily available in large volumes.

For operators to invest in new builds designed for the nascent technologies, they require guaranteed access to the relevant fuel type at the ports they use and confidence in the fuel's lifecycle carbon intensity. The fuel must also be available at an economic price and at the required scale. This again emphasizes the need for a strategic, coordinated, and collaborative approach between energy and infrastructure developers, suppliers, ports and the shipping industry.

- **Battery**

Electrification of vessels through the application of battery technology is proven for shorter, regular voyages between specific ports, and electric vessels are relatively common overseas. Furthermore, with advances in technology the voyage and vessel characteristics suitable for electrification is likely to broaden.

The additional capital cost of a new build battery powered vessel as compared with conventional vessels is significant. Other capital costs include charging infrastructure, and in Australia there are complications relating to the power grid. These in combination create major barriers to widespread adoption in Australia.

There is a strong case to be made for government assistance to facilitate the electrification of domestic commercial vessels in Australia including the additional community benefit derived from the potential for local grid stabilisation. Government contribution to the capital cost of charging infrastructure and grid upgrades to support business case for the electrification of domestic commercial vessels is necessary if we are to realise the benefits of this proven technology.

Given many low/zero emission propulsion systems are still in the early stages of development, how is your organisation considering its medium and long-term investments in low emission energy sources?

Immediate/short-term drop in solutions: MIAL members are actively seeking ways in which low emission fuels, including drop-in biofuels, can be economically produced and bunkered for immediate emissions reduction.

Medium to long-term solutions: Given the long asset life of commercial ships, medium to long-term scenarios are having to be accounted for now in new build programs and charter parties. In the face of uncertainty, ships are being constructed with this in mind, leaving additional space on board to allow for retrofitting, engine conversions and the installation of storage systems.

Some recent ship designs are dual fuel, with the intention to use biofuel (if available) until methanol or ammonia matures and becomes available at a reasonable price. Battery solutions are scalable and appropriate for some applications as shore power infrastructure catches up and the size/cost of batteries reduces.

2.3. Low Emission Energy Provision Availability in Australia

When considering alternate energy sources, how has your organisation engaged with ports and marinas?

Close collaboration between ship operators and ports/marinas is critical to the energy transition. There are several examples including ongoing consultation between the operator and users of the Bays Ports Precinct White Bay and Glebe Island) regarding the new shore power installation.

Overall, ports play a pivotal role in the maritime energy transition. Ports need a clear strategy to address their own transition as well as how they will enable the marine fuel transition.

Given the various ownership structures of ports around Australian, discussions towards collaboration can vary and must be nuanced depending on the port.

For ports and marinas what are the major factors that ports and marinas consider when investigating alternate energy sources for bunkering?

Land availability, safety in storage and handling, social license, proximity to urban/residential environments and social license, compatibility with other port activities, local emissions, co-location opportunities with energy generation. These factors must be thoroughly considered in a port's strategy.

For regional ports and vessel operators, are there specific supply issues that may hinder the ability to bunker alternate energy sources?

In some cases, given the very high cost of transportation of new energy, regional ports in close proximity to new energy generation projects may be at an advantage in terms of being able to supply to the shipping industry at lower cost.

On the other hand, the vast distances and in some cases isolation of some ports that is inherent in the Australian maritime environment may have the opposite effect and hinder access to alternate fuels.

Is there a mismatch between available energy sources for bunkering and your vessels' fuel needs?

This is difficult to establish because beyond biofuels (which are available in some ports) alternative energy sources are not available anywhere. However, it is worth noting that the production of future fuels requires a large capital investment. This will require a change to current fuel procurement practices, from short term to longer term.

The compatibility of fuels and bunkering infrastructure is an important consideration. It is always preferable that fuels be bunkered using existing methods and infrastructure as much as possible, e.g. barges.

Do opportunities exist to pool the demand for alternate energy sources across vessel owners?

Pooling demand is likely to be critically important in this transitional stage, however there can be commercial and legal (anti-competition laws) challenges with respect to accessing fuel consumption data from operators.

Where challenges are managed carefully, pooled demand models utilising demand information from multiple end users may allow suppliers to build a business case.

There are several high-profile examples of industry collaboration involving considerations of pooled demand including:

- West Australia -East Asia Iron Ore Green Corridor.
- Australia NZ Green Corridors Pre-Feasibility Study led by MMMCZCS.
- First Movers Coalition, which has the intention of leveraging collective purchase power to create early markets for the emerging climate technologies.

2.3.1.Bass Strait Case Studies

The Case Studies represent a regionalised view of the challenges and opportunities of maritime decarbonisation. From your own region are there collective efforts being undertaken to address energy source pooled demand? If not, are there opportunities to work across operators?

Discussions between MIAL members around pooled demand in QLD kicked off in earnest in November 2023 and efforts to source biodiesel to meet demand at economic cost are ongoing. What makes QLD attractive is the state government incentives for the biofuels production industry. MIAL and Bioenergy Australia are working collaboratively with our respective members to identify and progress these opportunities.

There are also multiple consortiums and collaborations that have progressed green corridor feasibility and pre-feasibility studies to various stages as indicated above. While there are challenges relating to the treatment of commercial information, with dedicated effort, there are major gains to be made by working across operators to understand individual requirements and find commonality.

How do the local factors, such as vessel type, energy production and business structures impact how you are planning future decarbonisation activities?

Likely locations of new energy production projects, fuel storage requirements and cargo displacement impacts, voyage length and energy density of fuels, cargo/fuels compatibility, length of charter, customer expectations and requirements and fleet age are among the many factors involved in planning future decarbonisation activities.

2.4. Energy Consumption Scenarios

Do you foresee a slow, or a steady, uptake of low and zero emission energy provision in the maritime sector?

Uptake is dependent on fuel availability, regulatory imperatives and fleet renewal timeframes which all have an influence on the ability of individual operators to transition.

There are many resources available that predict a rate of uptake of low and zero emission energy sources that are modelled on different assumptions. Fundamentally, the policy settings, regulations and standards that develop will heavily influence the rate of uptake of low and zero emission energy sources – these are critical elements in providing the framework within which supportable business cases for the required investment can be developed.

What are major factors that will drive demand for alternate energy sources?

Primarily enabling regulation that supports early movers, creates incentives and provides a stable, long term regulatory framework. Customer expectation in relation to scope 3 emissions also has an influence.

Given the evidence in relation to potential shortfalls for biofuels and methanol availability, as well as competition from other sectors, what impact is this likely to have on energy source prices into the future?

High demand for new fuels across hard to abate sectors will push prices up until production reaches scale to meet demand across the economy.

How can the Australian Government support the timely adoption of alternative fuels in the domestic maritime sector?

The Government has a major role to play in creating the enabling regulatory environment and supporting industry in this transition period. Some suggested target areas:

- Ensure port strategies includes consideration of facilitation of maritime (waterside) decarbonisation.
- Ensure Australia maintains internationally consistent standards that are aligned with global industry.
- Prioritise target areas to stimulate decarbonisation efforts rather than all locations at once.
- Incentivise/subsidise energy production to reduce cost gap.
- Provide financial support for capital investment in key infrastructure, vessel upgrades and to demonstrate technology.
- Implement internationally consistent well to wake carbon intensity requirements.
- Support and adopt IMO market-based measures.

It will be important that the ratcheting up of regulation is appropriately matched to fuel availability, price and the capability of the industry to comply.

Furthermore, ensuring an appropriate domestic reserve framework for low and zero emission fuels produced in Australia will ensure these fuels are available to decarbonise the Australian economy, including our maritime industry.