Transport and Infrastructure Net Zero Consultation Roadmap

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Department of Climate Change, Energy, Environment and Water

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Maritime Industry Australia Limited

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5 First name
Not answered

6 Last name
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7 Email
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Not answered

9 Who are you answering on behalf of?

Organisation

10 Organisation name

Maritime Industry Australia Limited

11 What best describes you or your organisation?

Not answered

12 What sector do you represent?

Not answered

13 What state or territory do you live in?

Victoria

14 Postcode

3004

15 What area best describes where you live?

City

16 1. Do you support the proposed guiding principles?

Not answered

17 1.1 Please add details to your response.

Not answered

18 2. Do you support the use of the avoid-shift-improve framework as a tool to identify opportunities for abatement?

Not answered

19 2.1 Please add details to your response.

Not answered

20 3. Do you agree the development of a national policy framework for active and public transport will support emissions reduction?

Not answered

21 3.1 Please add details to your response.

Not answered

22 4. What should be included in a national policy framework for active and public transport and how should it be developed?

Not answered

23 5. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the movement of people contributes to transport emissions reduction?

Not answered

24 6.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure that the movement of goods contributes to transport emissions reduction?

Not answered

25 6.2. How would these actions address the identified challenges and opportunities for emissions reduction in the movement of goods?

Not answered

26 7. Do you agree with the proposed net zero pathway for light road vehicles?

Not answered

27 7.1 Please add details to your response.

Not answered

28 8. The Australian Government is currently developing an Australian New Vehicle Efficiency Standard and has already begun to implement actions in the National Electric Vehicle Strategy.8.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce light vehicle emissions?

Not answered

29 8.2 How would these actions address the identified challenges and opportunities to reduce light vehicle emissions?

Not answered

30 9. Do you agree with the proposed net zero pathway for heavy road vehicles?

Not answered

31 9.1 Please add details to your response

Not answered

32 10. The proposed pathway for heavy road vehicles relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

33 10.1 Please add details to your response. Why did you rank them in that order?

Not answered

34 11. What role should low carbon liquid fuels play in the heavy vehicle

decarbonisation?

Not answered

35 12. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce heavy vehicle emissions?

Not answered

36 13. Do you agree with the proposed net zero pathway for rail?

Not answered

37 13.1 Please add details to your response.

Not answered

38 14. The proposed pathway for rail relies on a mix of battery electric, hydrogen fuel-cell and low carbon liquid fuels.Rank from 1 to 3, the order in which these should be prioritised for emissions reduction.

Not answered

39 14.1 Please add details to your response. Why did you rank them in that order?

Not answered

40 15. What role should low carbon liquid fuels play in rail decarbonisation?

Not answered

41 16. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce rail emissions?

Not answered

42 16.1 How would these actions address the identified challenges and

opportunities to reduce rail emissions?

Not answered

43 17. Do you agree with the proposed net zero pathway for maritime?

Not answered

44 17.1 Please add details to your response.

Not answered

45 18. The Australian Government is engaging in consultation as part of the development of the Maritime Emissions Reduction National Action Plan and those consultations will also inform the final Roadmap and Action Plan. 18.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce maritime emissions?

Not answered

46 18.2 How would these actions address the identified challenges and opportunities to reduce maritime emissions?

Not answered

47 19. Do you agree with the proposed net zero pathway for aviation?

Not answered

48 19.1 Please add details to your response.

Not answered

49 20. The Australian Government has already engaged in consultation on aviation decarbonisation through the development of the Aviation White Paper and those consultations will also inform final Roadmap and Action Plan.

Not answered

50 20.1 What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce aviation emissions?

Not answered

51 21. Do you agree with the proposed net zero pathway for transport infrastructure?

Not answered

52 21.1 Please add details to your response.

Not answered

53 22. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to reduce transport infrastructure emissions and ensure that transport infrastructure is ready for and enables low-emission transport modes?

Not answered

54 22.1 How would these actions address the identified challenges and opportunities to reduce transport infrastructure emissions?

Not answered

55 23. What additional actions by governments, communities, industry and other stakeholders need to be taken now and in the future to ensure the energy mix is ready to support transport emissions reduction?

Not answered

56 24. How should the use of low carbon liquid fuels (LCLFs) be prioritised across different transport modes over time to achieve maximum abatement?

Not answered

57 25. What are the best ways for the Australian Government to work collaboratively with industry, business, governments and communities to implement the proposed pathways?

Not answered

58 25.1 What are good domestic or international examples of partnership and collaboration on transport and transport infrastructure emissions reduction that could inform the final Roadmap and Action Plan?

Not answered

59 25.2 What opportunities can Government leverage to show leadership in Australia and internationally?

Not answered

60 26. What measures and metrics should be used to evaluate the final Transport and Infrastructure Net Zero Roadmap and Action Plan?

Not answered

61 26.1 What other data and evidence could governments use and how could this offer further insights on the pace, scale and location of transport emissions reduction pathways?

Not answered

62 27. Do you have any feedback on the proposed review process?

Not answered

63 28. Do you have any further feedback on the Consultation Roadmap and proposed pathways?

Not answered

64 28.1 Is there anything missing? Are the sections appropriately integrated? Is the Roadmap appropriately ambitious?

Not answered

65 29. Is there any further information or documentation that you wish to be considered with your submission?

Not answered

66 Would you like to upload a document?

Yes

67 Have you removed any identifying information from your submission?

Yes

68 Upload a submission

281 Redacted
240806_MIAL_Submission_Transport_and_Infrastructure_Net_Zero_Consultation_Roadmap.3bbe4f36.pdf

69 Upload a submission

230920 Final MIAL Response to MERNAP Issue Paper 1-4 .pdf

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered

06 August 2024

Email: NetZero@infrastructure.gov.au

Dear Net Zero Unit,

Re: Transport and Infrastructure Net Zero Consultation Roadmap

Thank you for the opportunity to provide a response to the *Transport and Infrastructure Net Zero Consultation Roadmap*. MIAL has had the opportunity to read the consultation paper and associated documents and attend an information session on July 18, 2024. MIAL has also been able to consult with our members regarding this consultation and has been able to socialise this draft for comment with our members.

MIAL recognises that this consultation is closely related to and builds on other programs of work regarding Australian transport and industry decarbonisation and recently closed consultations such as the *A Future Made in Australia: Unlocking Australia's low carbon liquid fuel opportunity* and the issues papers released during the development of the *Maritime Emissions Reduction National Action Plan (MERNAP)* as well as initiatives such as the *Maritime Single Window* and the expansion of the *Guarantee of Origin Scheme*. MIAL's previous responses to the consultations are attached as separate documents to this submission to ensure a completeness of this response.

MIAL has been actively engaged with DITRDCA (and other departments where appropriate) during these industry consultation opportunities and have submitted several papers articulating the Australian maritime industry position regarding the transition to net zero and our position remains consistent. To achieve a pathway to net zero for Australia's maritime industry and the broader transport sector, MIAL believes the Government has a key role to play in creating the enabling regulatory environment and supporting industry in this transition period.

To deliver the net zero transition, MIAL believes the following need to occur:

- the development and implementation of new and internationally consistent approaches to:
    - certification of carbon content in fuels that considers lifecycle emissions.
    - technical standards for the storage, delivery, and bunkering of low and zero carbon fuels.

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    - safety handling standards and associated training packages for new fuels.
- 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.
- Support for research and development of new low and zero carbon fuels and energy sources and the transition of these into production and use.
- 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.
- 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 zero/near zero emission fuels, vessel, and infrastructure development. This will be a key role Australia can play in facilitating broader collaboration attraction of further private investment across the value chain.
- 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.
- Acknowledge the potential for modal shift in the transport sector **toward** the maritime industry as a low(er) carbon pathway than land-based transport options, for example from road haulage to short sea shipping. This will require commitment to supporting a viable domestic maritime industry and government support to grow and maintain the Australian maritime sector.

MIAL broadly agrees with the *Transport and Infrastructure Net Zero Consultation Roadmap* as a 'whole-of-sector' approach and acknowledges the role of the MERNAP to provide a maritime focussed approach to Australia's transport net zero pathway.

1. 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. This includes vessels that are covered by the *Maritime Transport and Offshore Facilities Security Act 2003*. MIAL also represents the industries that support theses maritime operators – finance, training, equipment, services, insurance and more.

MIAL provides a full suite of maritime knowledge and expertise form local setting to global frameworks. This gives us a unique perspective.

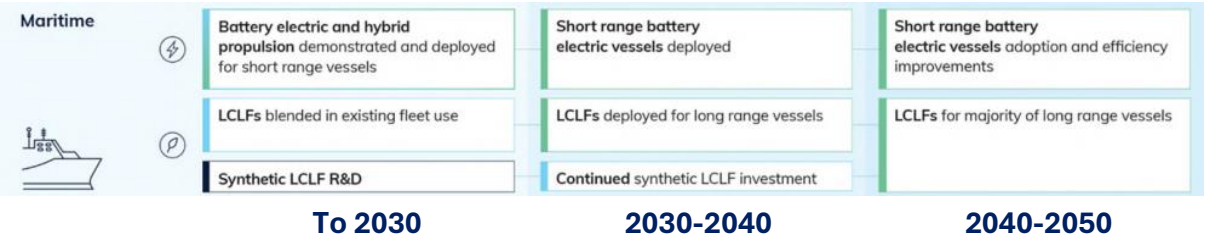
We work with all levels of government, local and international stakeholders ensuring that the Australian maritime industry is heard. We provide leadership, advice and assistance to our members spanning topics that include workforce, environment, safety, operations, fiscal and industry structural policy.

MIALS's vision is for a prosperous Australia with a strong sovereign maritime capability.

MIAL's overarching position concerning maritime policy in Australia is that we ought to have a sustainable, viable maritime industry. This activity can occur anywhere – coastal, offshore, and international. This maritime activity should encompass anything – freight, tourism, passenger movement, port and harbour services, offshore oil and gas, construction, scientific/research, essential services, and government services.

MIAL is an advocate for a fiscal and regulatory regime that makes it attractive for shipping and maritime businesses to exist in Australia and affords those Australian businesses every opportunity to compete for work and participate in maritime activity worldwide.

2. MIAL response to consultation paper



The proposed net zero pathway for maritime provides a high-level picture of the options that may be available to support maritime decarbonisation; however, the plan fails to capture the nuance of what achieving this pathway will entail, although it is noted that the MERNAP examines the maritime sector at a level of granularity not able to be achieved in this roadmap.

International regulatory actions currently being developed and refined through the IMO (International Maritime Organization), are already driving the transition of the maritime industry globally and, given Australia's reliance on and connection to the global shipping industry, will continue to influence domestic strategies. MIAL strongly recommends that any domestic net zero pathway be consistent and compatible with international actions to ensure Australia retains access to regional and global carbon markets.

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 (Australian Maritime Safety Authority). Often it is difficult to ascertain what the Australian position is, if one is held, which is 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 actively 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 limited visibility on Australia's position, particularly with respect to the IMO mid-term measures. Industry would welcome more active engagement.

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.

While it is acknowledged broadly that maritime is a hard-to-abate sector, it is important to recognise that there are opportunities for decarbonisation in the maritime sector that are not available to all transport modes, and with appropriate policy settings and government support, may be leveraged to accelerate the maritime transition. Support to produce low carbon liquid fuels, the development of and support for a domestic hydrogen-derived fuels capability, and increased optimisation of the maritime supply chain will all be essential for transition. Hydrogen derived fuels need to be explicitly included in the maritime decarbonisation pathway, as they will be an essential part of the decarbonisation energy mix for the sector, particularly in the long term, however these fuels are coming online now.

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 compelling 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.

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 (including hydrogen derived

fuels such as ammonia and methanol), 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.

The plan does not appear to consider the inclusion of energy efficiency measures in the maritime industry to aid the net zero path. 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.

The plan does not fully address the complexity of development of port and supporting infrastructure for maritime decarbonisation, particularly around the potential future fuel mix which may include methanol, ammonia and hydrogen, and the implications this has for the timeline for maritime decarbonisation. This includes the establishment of diverse fuel production and bunkering facilities, the infrastructure and transport to support these facilities, the availability of net zero shore power to allow vessels to access a decarbonised shore supply. This emphasizes the need for a strategic, coordinated, and collaborative approach between energy and infrastructure developers, suppliers, ports, and the shipping industry.

The plan provides a high level 'view from the balcony' of the Australian transport and infrastructure path to net zero. As a stand-alone document, it lacks the detail necessary to facilitate the transition, however it is acknowledged that this Roadmap will be supported by sectoral specific plans such as the MERNAP which will provide greater clarity to industry facing the challenges of the energy transition.

3. Summary

Thank you for the opportunity to provide a response to the Department of Infrastructure, Transport, Reginal Development, Communication, and the Arts (DITRDCA) *Transport and Infrastructure Net Zero Consultation Roadmap*.

As discussed above, to achieve meaningful progress toward decarbonisation of the maritime industry, and net zero emissions by 2050, there needs to be domestic and international policy frameworks that provide support across the sector, incentives to adopt low carbon fuel sources and the removal of any regulatory barriers to industry action. Considerations of cost, availability and quality are paramount for the industry, as is the requirement for compatibility for existing systems to enable transition to begin.

MIAL believes the Government has a key role to play in creating the enabling regulatory environment and supporting industry in this transition period. 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.

Please feel free to contact the undersigned should any clarification be required.

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.

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.

MIAL Submission
MERNAP Issues Paper 3
Skills and Training

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.

Response to Issues Paper

General commentary on the domestic context

How much of the current government skills and training support for the decarbonisation transition are you aware of – more broadly and specifically in relation to the maritime sector?

While Issues Paper 3 is clearly focused on the skills needs of the future workforce required to facilitate the maritime energy transition, it is important to recognise the current maritime skills crisis the industry faces and the existing focus on accessing crew for deployment on vessels today.

Its also important to understand the different qualification and training frameworks that are relevant to the national maritime energy transition – STCW Vs Near Coastal – because each face unique challenges that may require quite separate approaches to overcome.

The Government skills and training initiatives as listed in the issues paper are not specific to maritime, however may provide some linkages to training outcomes for the current pool of trained mariners that could be adapted and utilised in a new energy environment.

The uncertainty relating to how the new fuel mix will play out (hydrogen, ammonia, methanol) leads to questions around the capabilities and competence required and the potential for training and handling practices to be adapted from existing industries. This makes planning for training requirements in some sectors of the maritime industry difficult at this stage.

On the other hand, while the related skills will be in high demand across the economy, where electrification is likely to be viable, it is easier to see a clear pathway for skills adaptation from existing electro technical qualifications and careers.

Are there specific impediments for maritime sector employers / employees to access government skills and training programs?

Maritime training in Australia (Near Coastal and STCW qualifications) is delivered across the VET and university sector (UTAS). There are only three institutions providing STCW pathways – Southern Metropolitan TAFE in WA, TAFE NSW in Newcastle and the Australian Maritime College (UTAS) in Launceston – but many more RTO's that provide the Near Coastal qualifications and specialised upskilling and endorsements.

As much of the government focus and funding has been towards VET sector reform, we are now finding when looking closely at maritime training frameworks to address the critical skills shortage of STCW qualified seafarers, there are significant limitations in the training capacity for a whole range of complex reasons. It will no doubt be important that when considering the capacity within the higher education sector for upskilling or retraining seafarers on new energy technology, to consider the limitations of the existing Australian maritime training capability.

How can government skills and industry effectively prepare a skilled workforce for a decarbonised maritime sector? What specific skills differentiate the maritime workforce from the other sectors in decarbonising?

Preparing the workforce for the energy transition must consider the following:

- The maritime sector is diverse, and mechanisms required to prepare the skilled workforce for the transition will vary between operations and between trade types, i.e. domestic training and qualifications and training and qualifications that follow international standards (i.e., STCW)
- The maritime energy transition will require skills relevant to land-based handling but also training that accounts for the specific characteristics of the on water environment (moving platform etc)

When will you need access to a workforce possessing relevant skills to design, implement and work safely in your decarbonised operations (Now, 3, 5, 10 years)?

While it is difficult to predict given the uncertainty relating to the multifuel landscape for maritime decarbonisation, elements of upskilling, particularly with respect to digitalisation and in some sectors, electrification is necessary now.

Skills challenges for a Decarbonised Maritime Sector

What are the major skills shortages that are impacting the maritime sector's decarbonisation transition?

As ships operating systems have become more sophisticated over time the industry is experiencing a shortage of electro technical officers. As the industry decarbonises and the demand for this skill set is likely to grow.

How are existing skills shortages being impacted by the need for new skill sets to transition the maritime sector towards net zero?

The acute maritime skills shortage is the result of many and varied complex issues including the decline in Australian shipping over decades which was exacerbated by COVID. In recent years, training of Australian STCW certified seafarers has virtually ground to a halt, with some green shoots appearing only now. Consequently, we have an ageing workforce, and, with dedicated effort, we hope to have a surge of new entrants over the next few years. However, the magnitude of this surge is limited by the capacity of the industry to absorb new entrants by providing the qualifying sea service.

Importantly, maritime will also be competing with other sectors for the same pool of new entrants.

On the other hand, as land-based skills relating to the production and handling (and likely shipping) of new energy are developed over time, some of these skills will be able to be adapted to the seagoing environment, providing those technically trained transition to maritime with some upskilling.

Future Needs

What are the essential components that should be considered in the development of training for your segment (eg port services, fishing, tourism, coastal shipping, international seafaring) of a decarbonised maritime sector?

Where possible, amendments to existing codes and standards (e.g., Australian standards, IGF Code) through international bodies such as IMO for STCW qualification, and the international standards or local standards as appropriate.

Components must include technical safety, safety culture and emergency response.

DNV, in collaboration with stakeholders engaged in the Maritime Just Transition Task Force and its Global Industry Peer Learning Group have developed an insightful report, Insights into Seafarer Training and Skills Needed to Support a Decarbonized Shipping Industry, which provides an initial assessment of the impacts on seafarers of the decarbonisation of the international shipping industry.

To what extent do you think skills in the clean energy sector are transferable to maritime decarbonisation initiatives and what level of comfort would you have in deploying those skills directly in your operations?

On the shipboard side relevant addition training required is dictated by legislation/regulations so while skills acquired working in the clean energy sectors (electro technical, land side low and zero carbon fuels handling) could be adapted to seafaring roles, further upskilling would be required.

How do you see your maritime energy transition providing opportunities for attracting talent from other clean energy sectors and also increasing female participation in the maritime sector?

Attraction and retention of seafarers is a significant issue today. The decarbonisation of the maritime industry creates an opportunity to change the frame through which we discuss and promote maritime career to being a highly specialized, technical and sophisticated and sustainable industry to be involved in.

MIAL Submission
MERNAP Issues Paper 4
Green Shipping Corridors and Partnerships

About MIAL

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Response to Issues Paper

The IMO Strategy on Reduction of GHG Emissions from Ships

Decarbonisation of international shipping requires immense public and private investment. The IMO GHG Strategy is an important signal to the private sector – shipowners and energy producers – articulating the global collective ambition that is necessary to attract private investment.

The strategy also provides the framework for member states to work within to create the necessary policy settings to enable the scaled up production, supply and offtake market for low and zero carbon fuels market to decarbonise the shipping industry.

GHG fuel standard

MIAL supports the implementation of a GHG fuel standard that incorporates the following elements:

- The option of complying using flexible compliance units to allow companies unable to access low or zero carbon fuels to comply through purchasing compliance units from other companies with excess units at mutually agreed price.

- Capability to reward first movers with access to fuels of lower carbon intensity than the target through the sale of over-compliant units.
- The additional reward from over-compliance could contribute to closing the price gap between conventional fuel and low or zero carbon fuels. It's important to note that in the absence of incentives for over-compliance, fuel with lowest compliance cost would be used, and hence unlikely to drive early uptake of zero or near zero emission fuels which are more costly in the earlier years of implementation.
- Coverage of lifecycle emissions (Well to Wake) to incentivise the use of fuels with lower lifecycle emission.
- Takes into account the commercial complexity of the maritime industry, including multiple value-chain actors and complex commercial arrangements, to ensure that the effectiveness of the standard is not compromised. To achieve compliance, there will be commercial negotiation between shipowners and charterers around the role which a given vessel plays towards realisation of contributions/credits, or how the cost of compliance could be shared between various players in the industry.
- Incentivises fuel switching activity instead of being a pass-through cost without any decarbonisation benefits.

Green Shipping Corridors – Opportunities and the potential role of Government/s

Decarbonisation of the international shipping industry is an immense task and green shipping corridors provide the opportunity to focus on specific fuel production, bunkering locations and trade routes where obvious alignments exist, including co-location of green fuel production and potential fuel export activities to contribute to building the required level of offtake to support the scaling of fuel production.

Where bilateral or multilateral agreements and commitments exist, such as the Australia – Singapore Green Economy Agreement, the resulting intergovernmental cooperation will potentially improve the chances of success of relevant green shipping corridors.

Government has a role to play in investing in bunkering infrastructure and the development of associated safety standards at these locations to ensure that the benefits of supplying zero and near zero emission fuels are also shared with domestic maritime sector, made available for international ship bunkering as well as made available for export.

MIAL would like to make the following recommendations/observations regarding the government's role in green shipping corridors:

- Government involvement from the start of the green corridor development is necessary.
- Although the industry plays a role in absorbing some of the incremental cost associated with realising green corridor, government has a major role to play in creating the levers and support mechanisms to bridge the significant cost gap between conventional and zero or near zero emission fuels.
- Government can consider facilitating / accelerating policies measures which incentivise zero or near zero fuels adoption including bunkering, safety standards and regulatory framework, supply and demand side mechanisms and subsidies to economically support the development of green corridors.

- Bilateral engagements between governments to explore how complementary policy action could benefit both ends of the corridor are critical.
- Due to the complexity of green corridor implementation and the commercial sensitivity around demand aggregation, there is a role for government to facilitate the demand aggregation activities for the purchase of zero or near zero emission fuel. Demand aggregation can provide offtake certainty to fuel producers, unlock economies of scale, bringing down the cost of zero or near zero emission fuels. This can have an impact on price, assisting to bridge the price gap between conventional and zero emission fuels, addressing one of the critical barriers for realising the corridor.

The Getting to Zero Coalition position paper circulated in support of the establishment of the Australia East Asia iron ore green corridor provides an overview of policy options that may assist Government's consideration of its role in creating the enabling environment for green shipping corridors to succeed.