Transport and Infrastructure Net Zero Consultation Roadmap

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Department of Climate Change, Energy, Environment and Water

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Yes

5 First name
Andrew

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9 Who are you answering on behalf of?

Organisation

10 Organisation name

DP World

11 What best describes you or your organisation?

Industry

12 What sector do you represent?

Infrastructure
Maritime
Heavy road vehicles (trucks, buses etc.)

13 What state or territory do you live in?

New South Wales

14 Postcode

2000

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

Net Zero Consultation Roadmap_DPW Submission.pdf

69 Upload a submission

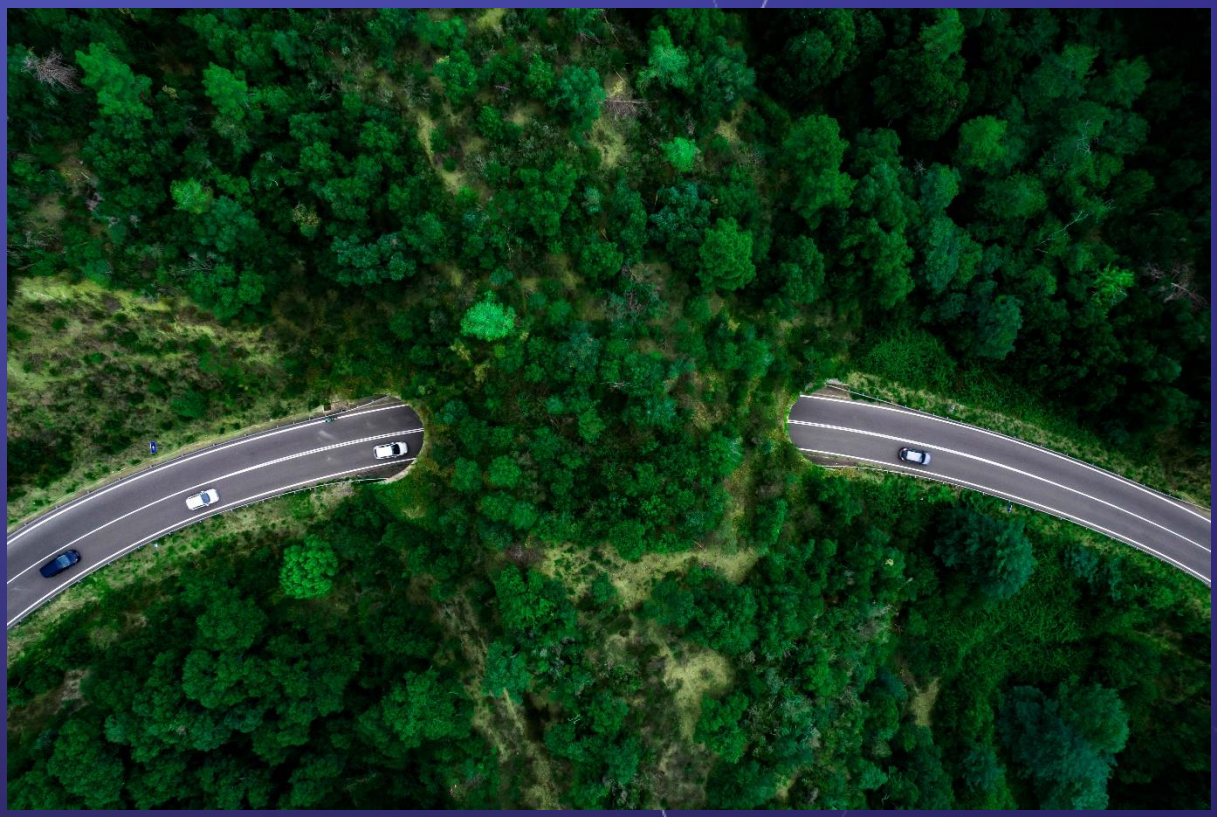
Not answered

70 Upload supporting file

Not answered

71 Upload supporting file

Not answered



TRANSPORT AND INFRASTRUCTURE NET ZERO CONSULTATION ROADMAP

DP WORLD SUBMISSION
JULY 2024

DP WORLD

About DP World

Trade is the lifeblood of the global economy, creating opportunities and improving the quality of life for people around the world. DP World exists to make the world's trade flow better, changing what's possible for the customers and communities we serve globally.

With a dedicated, diverse and professional team of more than 106,500 employees from 158 nationalities, spanning 73 countries on six continents, DP World is pushing trade further and faster towards a seamless supply chain that's fit for the future.

We're rapidly transforming and integrating our businesses -- Ports and Terminals, Marine Services, Logistics and Technology – and uniting our global infrastructure with local expertise to create stronger, more efficient end-to-end supply chain solutions that can change the way the world trades.

What's more, we're reshaping the future by investing in innovation. From intelligent delivery systems to automated warehouse stacking, we're at the cutting edge of disruptive technology, pushing the sector towards better ways to trade, minimising disruptions from the factory floor to the customer's door.

WE MAKE TRADE FLOW

TO CHANGE WHAT'S POSSIBLE FOR EVERYONE.

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TABLE OF CONTENTS

KEY RECOMMENDATIONS:

Recommendation 1 - Encourage Greater Mode Shift. To promote the shift from road to rail transport, we recommend exploring models for mode shift incentives, similar to schemes introduced in Fremantle where a $50 per TEU incentive significantly boosted rail usage. This incentive, directly benefiting rail clients, led to a nearly 5% increase in rail freight from the previous year after raising the incentive from $30 to $50 per TEU. Furthermore, it attracted new port rail operators, enhancing service offerings in 2020. Implementing similar incentives nationwide can encourage more customers to choose rail, reduce road congestion, lower emissions, and promote sustainable transportation.

Recommendation 2 - Secure Key Rail Freight Corridors. By protecting, expanding and creating freight corridors within metropolitan areas to enable increase freight movements by rail. Improving the availability of short haul freight movements within cities will help to ease congestion at port areas and shift volume closer to industrial areas which are increasingly found in the outer suburbs of Australian cities. Protecting rail corridors will also assist exporters moving large volumes of freight by rail. Identifying and securing critical freight routes across Australia will serve the interests of the economy well into the future whilst delivering significant environmental benefits.

Recommendation 3 - Improve Intermodal terminals productivity. Intermodal Terminals are vital nodes in the supply chain and crucial for a sustainable freight transport sector. To enhance productivity at key IMT sites, policy improvements are essential. These should focus on increasing weight limits for rail tracks and truck movements, eliminating bottlenecks on major road connections, and strengthening the resilience of rail infrastructure. Additionally, expanding the availability of industrial lands and easing operational constraints in planning approvals are necessary steps. These enhancements will support efficient freight movement, reduce delays, and promote a resilient, sustainable transport network.

Recommendation 4 - Ports as Green Energy Hubs. Ports make ideal locations for Low Carbon Liquid Fuel and hydrogen bunkering infrastructure and refuelling stations. Their strategic coastal locations facilitate easy access to shipping routes, ideal for importing and exporting renewable energy technologies. Ports already boast robust infrastructure, including transportation networks, storage facilities

Recommendation 5 - Enable Rail Innovation and Competition. To enhance rail infrastructure efficiency, we recommend a comprehensive review of the rail operator market to address the slow pace of innovation. Simplifying and expediting the approval process for new technologies, particularly electric freight locomotives, is crucial for encouraging modernisation. Additionally, introducing incentives to attract new operators will foster competition and innovation. Government contracts and innovation funding should be used to promote the development and use of new rail fuels and refuelling technologies. Implementing these measures will drive efficiency, increase competition, and support the transition to more sustainable rail operations.

Recommendation 6 - Future Proof Regional Roads. Regional Australia must undergo significant improvements to accommodate larger, battery-powered trucks and improve safety. Wider lanes and reinforced road surfaces along key freight routes are essential to handle the increased weight and size of double Bs and larger electric trucks. Enhanced structural integrity of bridges and culverts is necessary to support these heavier loads. Incorporating safe and secure routes into future Transport Management Plans is crucial, especially for the construction of renewable energy projects, which rely on the movement of heavy equipment through regional areas. By addressing these needs, Australia can support the evolving demands of freight transportation and renewable energy development while ensuring road safety and durability.

Recommendation 7 - Global adaptation and climate resilience planning. Overcoming the climate adaptation implementation gap will require close cooperation between public and private sector actors across borders, sectors, and institutions, despite differing vested interests. To meet increasingly stringent environmental, social, and governance targets, the public and private sectors must improve bilateral cooperation and assist each other in resource and capacity building. This approach will catalyse inclusive adaptation strategies that leverage comparative advantages and allow for a comprehensive mapping of overall risk exposures, highlighting priority investment areas for resilience building. Such efforts will enhance institutional governance and collective adaptive capacity.

Recommendation 8 - Establish Clear Sustainability Criteria and Blending Mandates for LCLFs. The Government should set clear sustainability criteria for fuel alternatives, enabling accurate comparisons and informed decisions within the industry. These criteria should prioritise domestic resources, capabilities, and industrial bases, aligning with broader decarbonisation goals. To drive the sustainable fuels industry blending mandates should be introduced. This approach ensures the gradual integration of sustainable fuels, maintaining competitiveness and mitigating the risk of businesses reverting to more polluting fuels due to cost increases or retrofitting challenges. Regular updates to sustainability criteria will accommodate advances in fuel technology and efficiency gains.

Recommendation 9 - Support Sustainable Fuels Through Policy and Infrastructure Investments. To accelerate the adoption of sustainable fuels, the government should implement policy measures that enhances price competitiveness and availability. This includes supply chain improvements, favourable taxation policies, and potential subsidies. National alignment of sustainable fuel strategies will harmonise fuel mixes, mandates, and targets, fostering a robust domestic industry. Additionally, investments in infrastructure for new fuel types, including bunkering and storage adaptations, are crucial. The government should actively consult industry stakeholders to identify needs and timeframes, ensuring safe storage, handling, and usage of sustainable fuels, thus supporting the transition towards decarbonised port operations.

Recommendation 10 – The Move to -15: We call upon the Government to support the Move to -15°C Initiative by endorsing the campaign and working with the Coalition to promote this change within the frozen food industry. This can be achieved by developing and enacting new standards that mandate the shift from -18°C to -15°C for the storage and transportation of frozen food.

SECTION 1: THE APPROACH

1.1 Guiding Principles

The consultation paper sets out five guiding principles that will influence the development of the final roadmap and action plan. In general, the five principles appear correct in their pursuit to help the transport sector and transport infrastructure transition to a net zero future. However, there are some caveats to these principles we would like to highlight. It will be paramount to understand how these principles will interact with each other when faced with particular pursuits.

Maximise Emissions Reduction. We agree that this should be a central guiding principle at the heart of the roadmap. However, more clarification should be provided to understand how the Government will measure this cost/benefit analysis. It is important to communicate what thinking will be adopted when "effective policies" are underdeveloped or near market readiness but offer a much larger decarbonisation potential. Will the Government opt for an alternative, more readily available technology at the expense of potential larger future carbon emission savings or greater value for money?

Value for Money. It is key that if the government wants industries to decarbonise, then there must be cost-comparative solutions. This will not always be the case, but in this instance, the government must look at ways that it can pull levers (regulatory or otherwise) to bring the cost of technologies or solutions down. Low Carbon Liquid Fuels (LCLF) are an example of this. Will the "lowest cost to the community" only be measured in monetary terms? Would the Government be ready to increase wait time for commuter trains to improve the availability of freight rail paths in cities? How might something such as this be weighed against reduced congestion, road wear, and road accidents?

Maximise Economic Opportunity. While the global transformation to a net zero economy is indeed a source of economic opportunity, this may not always be the case for all technologies. There will be future technologies that may not benefit regions, industries, and workers uniformly. The government should do its utmost to help regions, industries, and workers transition into the new circumstances that net zero will necessitate, but it must also be upfront with constituents about the changing technology landscape.

Inclusive and Equitable. We absolutely agree with the sentiment of this principle, but there could be ways in which this might come into conflict with other guiding principles such as value for money and maximising emissions reductions. Ensuring that no one is left behind is critical, but it must be balanced with the practicalities and realities of implementing cost-effective and efficient decarbonisation measures.

Evidence-Based. While we agree that the roadmap and action plan should be grounded in expert analysis and evidence, there is a need to consider technologies that are not yet market-ready but offer high potential emissions reductions, such as hydrogen technology. Will a potential hydrogen solution be skipped over because there is no ready and reliable supply of green hydrogen? It's essential to ensure that emerging technologies with significant future potential are not overlooked in favour of more immediate but possibly less effective solutions.

In summary, while the five guiding principles are a solid foundation for developing the roadmap and action plan, it is crucial to understand the interactions and potential conflicts between these principles. Clarifying these aspects will help ensure that the final roadmap is comprehensive, balanced, and capable of driving the transport sector towards a net zero future effectively.

1.2 Avoid-Shift-Improve

The Avoid-Shift-Improve framework is a comprehensive approach to identifying opportunities for emissions abatement in the transport sector. We support this framework and offer the following comments on each component:

Avoid. Avoiding unnecessary transport movements is a core principle for an efficient supply chain. We strongly encourage the government to improve the efficiency of transport systems through measures such as integrated land use planning and reducing the travel distance between transport nodes. Colocation of industrial land near or around intermodal terminals is an excellent example of this approach. By strategically placing industrial activities close to major transport hubs, we can significantly reduce the need for long-distance transportation, thereby cutting emissions and improving overall logistics efficiency. Additionally, promoting telecommuting and transport demand management can reduce the need for travel, contributing further to emissions reduction.

Shift. Shifting freight movements to more efficient means will be another critical component in the future freight transport task. It is essential to support mode shift beyond just price considerations. Ports will need the right infrastructure to facilitate the movement of goods by rail, and they will also need dedicated rail windows to ensure that freight can enter and exit the port without major delays. For instance, in a port such as Brisbane, implementing this will be more challenging and expensive due to poor rail infrastructure. Moreover, there is currently no clear solution for how trains will navigate through the city to service regional areas. Broader discussions and strategic investments are required to address these challenges and support a sustainable shift from road to rail and other low-emission transport modes.

Improve. Improving the technology or efficiency of transport modes is crucial for identifying opportunities for abatement. This includes electrification and other technological advancements. However, these improvements must be guided by the availability of technology and price competitiveness. For example, while electric vehicles and hydrogen technology offer promising emissions reductions, their adoption will depend on factors such as the availability of charging infrastructure, the cost of vehicles, and the supply of green hydrogen. It is essential to support the development and deployment of such technologies to ensure they become viable options for reducing transport emissions.

SECTION 2: DECARBONISING FREIGHT AND SUPPLY CHAINS

2.1 Enabling Rail Freight Transport

The Australian government can encourage a shift from road to rail freight, addressing the expected 6% growth in freight demand between 2020 and 2050. According to the consultation paper, for every additional 1% of freight moved by rail, 330,150 tonnes of CO2-e emissions could be saved annually, along with $71.9 million in avoided environmental damage. Although the guiding principles for this calculation are not specified, the potential for emission reduction is evident.

DP World advocates for greater mode shift and ambitious government targets to increase rail freight. While trucks will always play a role in last-mile delivery, efforts should focus on supporting rail growth. This is particularly important for short-haul freight movements, as a significant portion of imports into major cities like Sydney remain within a 50 km radius of the port. Regional exports benefit from rail's economies of scale but must still transit through major cities if not serviced by regional ports.

Several actions can enable a greater mode shift. The government needs to collaborate with state governments to achieve this. Rail freight often shares tracks with passenger trains, limiting the frequency of freight movements to and from ports. Priority access for passenger trains during peak hours further disrupts freight schedules. As urban populations grow, the demand for commuter trains will increase, extending peak hours and adding pressure on rail freight windows. Balancing these competing priorities will be challenging for governments.

Recommendation 1 - Encourage Greater Mode Shift. To promote the shift from road to rail transport, we recommend exploring models for mode shift incentives, similar to schemes introduced in Fremantle where a $50 per TEU incentive significantly boosted rail usage. This incentive, directly benefiting rail clients, led to a nearly 5% increase in rail freight from the previous year after raising the incentive from $30 to $50 per TEU. Furthermore, it attracted new port rail operators, enhancing service offerings in 2020. Implementing similar incentives nationwide can encourage more customers to choose rail, reduce road congestion, lower emissions, and promote sustainable transportation.

Despite limited dedicated freight lines, it's crucial for the government to prioritise building and maximising these infrastructure elements. Expanding dedicated freight lines enhances the efficiency and reliability of freight transport and improves connectivity with broader state and national freight networks.

Governments across Australia are actively working to increase the proportion of freight moved by rail through initiatives like the Inland Rail project and the Port Botany rail duplication project, which improve port access. In Melbourne, where rail infrastructure is less developed, the Webb Dock Rail link aims to partly address this gap in the supply chain however greater coordination and actions are needed.

Projects like the proposed Western Sydney Freight Line and the Sydney Outer Orbital should be integrated into a comprehensive strategy that aligns with future projects like the Inland Rail. This ensures seamless interconnectivity between key freight corridors, optimising goods movement across the state and beyond. The federal government should work with state governments to identify and protect key freight routes, ensuring interoperability with regional areas and future-proofing connections with major ports.

Recommendation 2 - Secure Key Rail Freight Corridors. By protecting, expanding and creating freight corridors within metropolitan areas to enable increase freight movements by rail. Improving the availability of short haul freight movements within cities will help to ease congestion at port areas and shift volume closer to industrial areas which are increasingly found in the outer suburbs of Australian cities. Protecting rail corridors will also assist exporters moving large volumes of freight by rail. Identifying and securing critical freight routes across Australia will serve the interests of the economy well into the future whilst delivering significant environmental benefits.

2.2 Improving Intermodal Terminals

To encourage the decarbonisation of freight and supply chains, the Australian government can focus on improving intermodal terminal infrastructure. Optimising intermodal terminals includes collocating industrial areas near these terminals and enhancing their capacity. Improvements in infrastructure, such as rail sidings and loading and unloading equipment, are essential. Additionally, increasing the portion of warehousing within terminal precincts through multi-storey development is beneficial.

As industrial land is pushed further out of cities, protecting freight routes and improving intermodal infrastructure efficiency becomes crucial. According to the consultation paper, "a net zero pathway for freight will likely see an increase in the share of freight transported by rail." The interconnected nature of supply chains requires national leadership and strategic planning with states and territories on intermodal innovation and optimisation. DP World advocates for government actions to support existing intermodal terminals as critical nodes in the freight supply chain.

Improving existing intermodal infrastructure is key for decarbonisation because these terminals are strategically located and align with the principles of avoiding, shifting, and improving. For example, most land freight movements to and from Port Botany are by road. To maximise Port Botany's underutilised capacity and enhance productivity for NSW, the government must support rail network improvements and collaborate with state governments and intermodal terminal operators to scale operations.

DP World believes there are opportunities to enhance policy settings to improve productivity at key intermodal terminal sites. This includes increasing weight limits on rail tracks and truck movements, removing bottlenecks from key road connections, improving the resilience of rail infrastructure, increasing the availability of industrial lands, and removing operational constraints in planning approvals. DP World is willing to collaborate with industry and government to further analyse these constraints and develop solutions.

Recommendation 3 - Improve Intermodal terminals productivity. Intermodal Terminals are vital nodes in the supply chain and crucial for a sustainable freight transport sector. To enhance productivity at key IMT sites, policy improvements are essential. These should focus on increasing weight limits for rail tracks and truck movements, eliminating bottlenecks on major road connections, and strengthening the resilience of rail infrastructure. Additionally, expanding the availability of industrial lands and easing operational constraints in planning approvals are necessary steps. These enhancements will support efficient freight movement, reduce delays, and promote a resilient, sustainable transport network.

2.3 Ports as Green Energy Hubs

Ports have a unique potential to serve as green energy hubs, leveraging their strategic coastal locations, robust infrastructure, and critical role in global trade to advance the adoption of renewable energy. This transformation can support the decarbonisation of the maritime sector and beyond, fostering a sustainable future.

Ports are strategically positioned along coastlines, providing easy access to vital shipping routes. This makes them ideal for the import and export of renewable energy technologies and components, facilitating the global transition to greener energy sources. Ports already boast robust infrastructure, including extensive transportation networks, storage facilities, and industrial areas. These existing assets can be adapted or expanded to accommodate green energy initiatives, enhancing their capacity to serve as pivotal nodes in the renewable energy supply chain.

One of the most promising developments in green energy for ports is the establishment of bunkering infrastructure new sustainable fuel types. As the maritime industry looks toward future fuels, hydrogen stands out due to its potential to significantly reduce emissions. Ports can develop dedicated hydrogen bunkering facilities, allowing vessels to refuel with hydrogen. This would not only support the maritime sector's decarbonisation but also position ports as essential players in the hydrogen economy. The

infrastructure needed for hydrogen bunkering includes storage tanks, refuelling stations, and pipelines, which ports are well-equipped to develop due to their existing capabilities and expertise in handling complex logistics.

The evolution of maritime fuels will require ports to update facilities to accommodate new fuel types. This transition might necessitate additional land for expanded storage and refuelling infrastructure, as well as enhanced cleaning and servicing capabilities to manage the different properties of these fuels. Training port personnel in handling new fuels safely and efficiently will be critical, ensuring that the introduction of alternative fuels does not compromise safety or operational integrity. Ports will need to invest in both physical infrastructure and workforce development to seamlessly integrate new maritime fuels into their operations.

Beyond maritime fuels, ports can play a broader role in the green energy ecosystem. By hosting facilities for the storage and distribution of renewable energy sources such as wind and solar power, ports can become central hubs for renewable energy deployment. This includes the assembly and export of renewable energy components, such as wind turbine parts and solar panels, as well as the import of materials necessary for the construction and maintenance of renewable energy infrastructure.

Ports have the potential to transform into green energy hubs by leveraging their strategic locations and robust infrastructure. By developing hydrogen bunkering facilities, adapting to future maritime fuels, and supporting the broader renewable energy supply chain, ports can play a crucial role in driving the global transition to sustainable energy. This transformation will require significant investment in infrastructure and training, but the benefits for the environment and the maritime industry make it a worthy endeavour.

Recommendation 4 - Ports as Green Energy Hubs. Ports make ideal locations for Low Carbon Liquid Fuel and hydrogen bunkering infrastructure and refuelling stations. Their strategic coastal locations facilitate easy access to shipping routes, ideal for importing and exporting renewable energy technologies. Ports already boast robust infrastructure, including transportation networks, storage facilities, and industrial areas, which can be adapted or expanded for green energy purposes. Transitioning to hydrogen bunkering will necessitate additional land, specialised cleaning services, and enhanced safety measures. Training programs for handling future fuels will also be essential.

SECTION 3: HEAVY VEHICLES

DP World has some reservations about the proposed net zero pathway for heavy road vehicles. The proposed pathway seems to take a rather simplistic view of the market trajectory for truck design and fuelling, failing to account for the complexities involved. It overlooks critical considerations such as urban planning, the unique needs of urban areas, the dynamics of commercial hubs, and the specifics of short-distance networks.

Moreover, the pathway does not include any support for refining Low Carbon Liquid Fuels (LCLFs) within Australia, particularly in key locations such as Townsville, Newcastle, Mackay, Rockhampton, and Cairns. This omission is a significant oversight, as establishing local refining capacities is essential for ensuring a reliable and sustainable supply of LCLFs, which are crucial for the decarbonisation of heavy road transport.

3.1 Prioritised for emissions reduction.

Given the proposed pathway for heavy road vehicles, which relies on a mix of battery electric, hydrogen fuel cell, and LCLFs, the priority should be on LCLFs. LCLFs offer the quickest way to reduce emissions as they can be used in existing diesel engines without significant modifications. Additionally, LCLFs can be produced in Australia, creating local jobs and supporting the economy. Utilising LCLFs would help to ease the strain on the electrical grid that would result from the widespread adoption of electric vehicles. Importantly, LCLFs meet greenhouse gas reduction targets swiftly, thereby improving the likelihood of slowing global warming.

Hydrogen should be the next priority, especially for long-distance heavy vehicles, which are crucial for Australia's transportation needs. Green hydrogen presents a promising solution for enabling long-distance green trucking, offering a sustainable alternative that supports the decarbonisation of the transport sector.

While EVs play a vital role in reducing emissions, they should be considered after LCLFs and hydrogen. The current strain on the electrical grid and the infrastructure requirements for widespread EV adoption make it less immediately feasible. However, continued development and investment in EV technology remain essential for the long-term sustainability of the transportation sector.

3.2 LCLFs for Heavy Vehicles

LCLFs should play a crucial role in the decarbonisation of heavy vehicles by acting as a transition fuel. They enable the continued use of current trucks, allowing these assets to reach the end of their usable lives without the immediate need for major investment in new technologies. This approach limits waste and avoids the significant costs associated with replacing existing fleets.

In the long term, LCLFs can also provide a sustainable solution for long-distance transport, ensuring that heavy vehicles can operate efficiently over long routes while reducing emissions. Additionally, there is a significant opportunity for Australia to leverage its agriculture and manufacturing sectors to support a robust LCLF industry. This would enhance fuel security, offer more economically viable fuel options, and create employment opportunities across the country.

3.3 Additional actions

Governments should collaborate with communities to establish transport and warehousing hubs that facilitate short-distance travel for electric vehicles. This approach supports the use of EVs where they are most practical and effective. Governments must also provide continual support for innovation and carbon emission reduction efforts, ensuring ongoing progress in these areas. Furthermore, government contracts should prioritise and sponsor the use of alternative fuels, setting a strong example and driving demand for cleaner options.

Communities play a crucial role in designing the supply chain of the future. They need to actively engage in determining whether to accept goods with high greenhouse gas emissions or work towards reducing them. By participating in this decision-making process, communities can help shape a more sustainable supply chain.

Industry standards must also evolve to support this transition. Standards Australia and State Road Departments should develop road building standards that emphasise resilience and have been tested with heavier vehicles. This ensures that infrastructure can accommodate newer, greener technologies without compromising durability or safety.

Governments should offer tax incentives to encourage the purchase of electric vehicles, making them a more attractive option for consumers and businesses alike. Additionally, governments should lobby or

mandate fuel providers to improve their fuel quality by adding engine cleaning additives. This can enhance fuel efficiency and reduce emissions from existing vehicles.

3.4 Improved Planning for Development and Road Management

The proposed actions would address the challenges and opportunities to reduce heavy vehicle emissions by improving planning for development and road management. This can limit diesel usage by optimising routes and reducing congestion, leading to more efficient fuel consumption. Additionally, better planning promotes the adoption of electric vehicles by ensuring the necessary infrastructure, such as charging stations along key routes, is in place.

Investing in large-scale battery storage systems to capture excess solar energy would allow trucks to charge using renewable energy, particularly at night. This reduces reliance on non-renewable energy sources and ensures that the environmental benefits of electric trucks are maximised. Night-time charging from stored solar power also helps balance the grid and make use of renewable energy that would otherwise go to waste.

By promoting the use of renewable energy, enhancing the efficiency of freight operations, and supporting the transition to low-emission heavy vehicles, these actions effectively reduce heavy vehicle emissions and contribute to a more sustainable freight and supply chain system.

SECTION 4: RAIL

We do not agree with the proposed net zero pathway for rail. The current pathway fails to address the critical issues surrounding infrastructure management and the significant lack of competition in the rail industry. Entering the rail sector requires substantial investment, and profitability is challenging to achieve. Additionally, the plan overlooks the shortage of real estate available for integrating rail into logistics.

There are insufficient incentives to encourage businesses to use rail. For rail to effectively improve the emissions intensity of freight in Australia, it needs to be a much bigger focus. The pathway also fails to incorporate ports into the rail expansion strategy, despite rail transport from ports being a major bottleneck. Addressing these issues is essential for a successful transition to net zero emissions in the rail sector.

Recommendation 5 - Enable Rail Innovation and Competition. To enhance rail infrastructure efficiency, we recommend a comprehensive review of the rail operator market to address the slow pace of innovation. Simplifying and expediting the approval process for new technologies, particularly electric freight locomotives, is crucial for encouraging modernisation. Additionally, introducing incentives to attract new operators will foster competition and innovation. Government contracts and innovation funding should be used to promote the development and use of new rail fuels and refuelling technologies. Implementing these measures will drive efficiency, increase competition, and support the transition to more sustainable rail operations.

4.1 Energy Solutions for Rail

Given the proposed pathway for rail relying on a mix of battery electric, hydrogen fuel cell, and low carbon liquid fuels, the prioritisation for emissions reduction should focus first on battery electric. Electrifying more of the rail network is essential, as it enables ports to transport freight for storage and rerouting using low-carbon options.

Improving the rail technology approval process and incentivising electric freight locomotives are crucial steps. Electrification not only reduces emissions but also promotes fast passenger services, addressing the current limitations of diesel-powered regional services that struggle to compete with private vehicle speeds and impede regional development. Additionally, in NSW, the introduction of metro services on major Sydney lines should reduce the load on the suburban network, which can then be opened up to freight.

Australia currently has 50% of its rail network electrified, and linking all the mainland capitals would require about 12,100 kms of electrified track. Following the examples set by countries like India, China, and Russia, which have made significant strides in electrifying their rail networks, Australia can make substantial progress in reducing rail emissions through increased electrification.

Secondly, hydrogen fuel cells should be prioritised as they offer a promising alternative for reducing emissions, especially in areas where electrification may not be feasible. Hydrogen fuel cell technology can provide a cleaner energy source and reduce reliance on traditional fossil fuels.

Lastly, low carbon liquid fuels should be considered to allow existing rail assets to continue their useful life while transitioning to lower emissions. New rail fuels and refuelling infrastructure need to be incentivised through government contracts and innovation funding. Looking to examples like California, which promotes zero emissions from rail, can provide leadership and guidance in this transition.

SECTION 5: TRANSPORT INFRASTRUCTURE

To meet future freight demand, it is crucial to improve regional roads. The freight forwarding industry is increasingly utilising double A and double B trucks, which are more efficient due to their larger cargo capacities. Despite the efficiency of rail transport for bulk movements, trucks remain essential for last-mile delivery, particularly for exporters needing to transport goods from farms or factories without direct rail connections. As a result, freight often bypasses regional centres to minimise disturbance to local communities, necessitating the use of non-major roads that may not be designed to accommodate larger trucks. This can lead to longer travel times, increased wear and tear on roads, and a higher risk of safety incidents such as rollovers.

An example highlighting the conflict with decarbonisation efforts is the construction of solar projects in regional areas. Inefficient freight routes not only increase fuel consumption but also utilise roads unfit for heavy trucks, leading to potential accidents that impose additional social and economic costs. Trucks play a significant role in transporting solar infrastructure to construction sites, as solar panels have special transport requirements that rail transport cannot meet due to vibrations that can damage the panels. Thus, improving regional roads is critical to supporting the construction of renewable energy projects and advancing Australia's sustainability goals.

Future regional transport must balance community needs with freight requirements by ensuring that road bypasses can accommodate larger trucks such as double A's and double B's. To address varied road

standards and prepare for future transportation needs, a unified national standard emphasising resilience and sustainability should be developed. This standard should incorporate considerations for carbon reduction and the principles of the circular economy, accounting for the increased impact from heavier vehicles. Ensuring roads are built to withstand greater wear and tear will harmonise road construction and maintenance practices across all jurisdictions, enhancing durability and environmental performance. Adopting these standards will facilitate long-term infrastructure resilience, reduce maintenance costs, and support Australia's transition to a low-carbon economy.

Recommendation 6 - Future Proof Regional Roads. Regional Australia must undergo significant improvements to accommodate larger, battery-powered trucks and improve safety. Wider lanes and reinforced road surfaces along key freight routes are essential to handle the increased weight and size of double Bs and larger electric trucks. Enhanced structural integrity of bridges and culverts is necessary to support these heavier loads. Incorporating safe and secure routes into future Transport Management Plans is crucial, especially for the construction of renewable energy projects, which rely on the movement of heavy equipment through regional areas. By addressing these needs, Australia can support the evolving demands of freight transportation and renewable energy development while ensuring road safety and durability.

5.1 Understanding the Vulnerability of Critical Infrastructure

Understanding the vulnerability of critical infrastructure to extreme weather events is essential for effective climate action, which comprises two twin pillars: climate mitigation and climate adaptation. While global efforts are directed toward deep decarbonisation, particularly through renewable energy transitions, low-carbon fuel alternatives, and equipment electrification, short- to medium-term resilience depends on enhancing the adaptive capacity of institutions, infrastructure, and social networks that drive daily trade operations.

Global trade functions as an interdependent network, encompassing not just ports and terminals but also shipping, logistics, construction, and various other upstream and downstream supply chain partners. Disruptions in any segment can have systemic impacts across the sector. Therefore, it is crucial to consider potential risks to ancillary infrastructure, workers, and communities that make up our urban and peri-urban spatial footprint. Achieving this requires collaboration and buy-in from industry peers, government partners, civil society, and local authorities. By leveraging available climate modelling and forecast data, the global trade community can collectively map our present level of adaptation readiness.

Managing risk proactively is integral to DP World's responsible business operations. In the Ports and Terminals (P&T) industry, risk associated with extreme weather is not a new consideration. P&T infrastructure, like coastal settlements, has long been a nexus of natural, physical, and human interaction and a hotbed for socio-economic vulnerabilities driven by climate change. The rapid rise in the frequency and severity of extreme weather events has exacerbated adverse economic impacts, with US$81 billion of global trade and at least US$122 billion of economic activity at risk annually due to P&T disruptions from climate extremes. This figure does not account for the impact on ancillary infrastructure and communities, which would only amplify these estimates.

Given the potential for disruptions and regional instability, DP World has identified the need for a systematic approach to assess operational asset resilience against the impacts of climate change. Collaborating with Guidehouse and Jupiter Intelligence, we have evaluated the direct physical climate risks to business disruptions across our P&T operations in our whitepaper *Climate Proofing the Supply Chain*. This scientific approach to measuring, monitoring, and pre-empting best practices for climate adaptation has shown

significant benefits. The entire trade sector must similarly consider broader vulnerabilities that may hinder the industry's mid- to long-term health while safeguarding the four billion people globally who are increasingly susceptible to climate shocks. Conducting similar asset resilience studies is a scalable first step in mapping adaptation efforts. It will enable the global trade community to allocate roles and responsibilities for managing the knock-on effects of climate-related disruptions.

Global campaigns like "Race to Resilience," financial instruments such as the Adaptation Fund, and voluntary mechanisms for accountability, including corporate reporting standards and National Adaptation Plans, offer frameworks through which the public and private sectors can establish a unified approach to managing cascading climate impacts. With comprehensive data, the logistics industry and wider trade community, including governments, can demonstrate a practical pathway to achieving collective climate resiliency. This pathway must consider socio-economic consequences and societal vulnerabilities that are often under-researched and overlooked.

By compiling a comprehensive dataset, the trade sector will be better poised to address social, technical, and financial barriers to adaptation. This will lead to improved governance practices, empowering local-level participation, and enhancing accountability between public and private sector entities. An evidence-based approach to monitoring and pre-empting best practices will pave the way to climate resilience.

Recommendation 7 - Global adaptation and climate resilience planning. Overcoming the climate adaptation implementation gap will require close cooperation between public and private sector actors across borders, sectors, and institutions, despite differing vested interests. To meet increasingly stringent environmental, social, and governance targets, the public and private sectors must improve bilateral cooperation and assist each other in resource and capacity building. This approach will catalyse inclusive adaptation strategies that leverage comparative advantages and allow for a comprehensive mapping of overall risk exposures, highlighting priority investment areas for resilience building. Such efforts will enhance institutional governance and collective adaptive capacity.

SECTION 6: LOW CARBON LIQUID FUELS

The Government should invest in the development of domestic LCLFs not only for their environmental advantages but also to enhance fuel security. LCLFs reduce greenhouse gas emissions, while diversifying the energy portfolio, decreasing reliance on imported fuels. In Australia, fuel security is a growing concern, with the country holding just 59 days of liquid fuel reserves as of 2023, below the 90-day international standard. Investing in LCLFs can bolster domestic production, ensuring a stable supply during global disruptions and contributing to national energy resilience.

To ensure the domestic energy sector is ready to support changing transport fuel demands stakeholders need to take several actions now and in the future. The government should set clear guidelines on sustainability criteria, enabling accurate comparisons with other fuel alternatives. These criteria are essential for driving the sustainable fuels industry in alignment with broader decarbonisation goals, helping industry make informed decisions and avoiding the pitfalls of greenwashing or misguided emissions reductions.

Governments must also establish blending mandates and remain vigilant about market forces that could hinder decarbonisation efforts. Demand for sustainable fuels may outpace supply, and significant cost

increases or the need for new machinery could drive businesses back to more polluting fuels. Policy settings should support cost-competitive sustainable fuels as an immediate solution to reduce carbon emissions, particularly while transitioning to electrification.

Recommendation 8 - Establish Clear Sustainability Criteria and Blending Mandates for LCLFs. The Government should set clear sustainability criteria for fuel alternatives, enabling accurate comparisons and informed decisions within the industry. These criteria should prioritise domestic resources, capabilities, and industrial bases, aligning with broader decarbonisation goals. To drive the sustainable fuels industry blending mandates should be introduced. This approach ensures the gradual integration of sustainable fuels, maintaining competitiveness and mitigating the risk of businesses reverting to more polluting fuels due to cost increases or retrofitting challenges. Regular updates to sustainability criteria will accommodate advances in fuel technology and efficiency gains.

6.1 Prioritising Low Carbon Liquid Fuels

The use of low carbon liquid fuels should be prioritised based on several factors to achieve maximum emissions abatement. Initially, sustainable fuels like Hydrotreated Vegetable Oil (HVO) can provide a near-term solution. HVO's ability to be used interchangeably with diesel without engine modifications and its proven efficacy as a second-generation sustainable fuel make it a favourable option.

Over time, as the electrification of equipment progresses, the emphasis should shift from interim solutions like sustainable fuels to fully electrified or hydrogen systems where possible. For example, in DP World's port and terminal operations, diesel currently accounts for 49% of carbon emissions, with another 6% from LNG. While aiming to electrify 50% of Rubber Tyre Gantries (RTGs) and Internal Transfer Vehicles (ITVs) within the next five years, sustainable fuels can still play a critical role in reducing emissions during this transition period.

6.2 Addressing Challenges and Infrastructure Needs

To maximise the potential of LCLFs, additional actions are required. The government should facilitate national alignment on sustainable fuel strategies, including fuel mixes, mandates, taxation policy, and subsidies to meet national sustainability goals. This alignment will benefit the domestic industry and ensure consistent progress towards decarbonisation.

The introduction of new fuel types may necessitate significant infrastructure investments. Existing infrastructure may need to be cleaned and recoated for safe storage, and new bunkering facilities might be required. Additional safety training and equipment design adjustments are also necessary, especially if new fuel properties increase combustion risks. Governments need to actively consult with industry stakeholders to identify these needs and establish realistic timeframes for implementing changes.

Ensuring the long-term viability of low carbon liquid fuels involves ongoing government support to adjust sustainability criteria and incentivise innovation. Advances in fuel types and efficiency gains through technology should be continually evaluated to maintain momentum towards decarbonisation. By fostering a supportive environment for sustainable fuel adoption and innovation, governments can help industries transition smoothly and sustainably, reducing transport emissions effectively over time.

Recommendation 9 - Support Sustainable Fuels Through Policy and Infrastructure Investments. To accelerate the adoption of sustainable fuels, the government should implement policy measures that enhances price competitiveness and availability. This includes supply chain improvements, favourable taxation policies, and potential subsidies. National alignment of sustainable fuel strategies will harmonise fuel mixes, mandates, and targets, fostering a robust domestic industry. Additionally, investments in infrastructure for new fuel types, including bunkering and storage adaptations, are crucial. The government should actively consult industry stakeholders to identify needs and timeframes, ensuring safe storage, handling, and usage of sustainable fuels, thus supporting the transition towards decarbonised port operations.

SECTION 7: ACHIEVING NET ZERO TOGETHER

7.1 The Move to -15

In 2023, DP World partnered with experts from the International Institute of Refrigeration, the University of Birmingham, London Southbank University, and others to review the temperature standard for the frozen food sector. The Move to -15°C is an industry-wide campaign launched by DP World at COP28 to redefine the temperature for storing and transporting frozen food globally from -18°C to -15°C. Now an independent Coalition led by international cold chain expert Thomas Eskesen, the initiative aims to unite the industry ahead of the 2050 net zero goal, driving collaboration to cut greenhouse gases and lower supply chain costs.

Food loss and waste account for 38% of total energy use in the global food system, with food waste's carbon footprint rising to 4.4 GtCO2e/yr in 2007. If food waste were a country, it would be the third largest emitter globally. The economic cost of food waste is staggering, projected to reach $1.5 trillion by 2030. While refrigeration could benefit 1.8 billion tonnes of food annually, only 45% is refrigerated, leading to a 12% loss in global food production. Refrigeration, air conditioning, and cooling technologies contribute over 7% of GHG emissions, a figure that could double by 2030 and triple by 2100.

Transitioning to freezing food at -15°C instead of -18°C could save 25 TWh/yr in energy and reduce emissions by 17 Mt CO2e/yr, equivalent to the electricity consumption of Kenya and the carbon emissions of nearly 4 million cars. This reduction would also mitigate the need for nearly $15 billion in new wind generation capacity. However, implementing this change globally requires coordinated policy and industry action.

Recommendation 10 – The Move to -15: We call upon the Government to support the Move to -15°C Initiative by endorsing the campaign and working with the Coalition to promote this change within the frozen food industry. This can be achieved by developing and enacting new standards that mandate the shift from -18°C to -15°C for the storage and transportation of frozen food.

7.2 International Examples

DP World's container terminal at Southampton has taken a major step forward in the journey to net zero by becoming the first port in Britain to eliminate fossil diesel from its operations entirely and transition to Hydrotreated Vegetable Oil (HVO).

Diesel previously accounted for 90 per cent of the terminal's emissions but HVO – a renewable biodiesel derived from sustainable sources – eliminates more than 80 per cent of net carbon dioxide emissions as well as significantly reducing nitrogen oxide, particulate matter and carbon monoxide.

DPW has been at the forefront of innovation and at DP World Southampton measures have included scaling up our use of hybrid 'straddle carriers' and across both UK ports, since January 1st 2024 we have stopped all direct usage of fossil diesel, by using fossil free HVO fuel as a transition step towards net zero.

Other initiatives include electrification of yard operations and trialling fully electric 'straddle carrier' operations at DP World London Gateway. Due to the success of the trial, DPW have invested £12m in eight new straddle carriers to service the new fourth berth due to open this summer. This will be part of the first all-electric fleet in the world to go into commercial operation at a port. These electric straddle carriers are zero local emissions. Future planned energy transition investments include but are not limited to vehicle replacement programmes, electrification of mobile equipment, LED replacement and we are currently scoping for shoreside power.

DP World UK has engaged LRQA to independently verify the greenhouse gas emissions generated from our operations. Since the inception of the ETC charge in October 2021, DP World UK's carbon intensity (kgCO2e/TEU) has fallen by around 30%.

To continue our decarbonisation journey, DPW need to make considerable investments in the coming years to progress our energy transition. The incremental investment costs for sustainable container handling equipment are significantly higher than standard options and the multi-year journey to net zero is expected to exceed £100 million. The end game is net zero operations by 2050 through electrification or green hydrogen, although an intermediate step through hybrid solutions is part of the transition.

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