AUSTRALIAN HYDROGEN COUNCIL

30th November 2023

Aviation White Paper Project Office
Aviation White Paper
Department of Infrastructure, Transport, Regional Development, Communications and the Arts
Australian Government
GPO Box 594
CANBERRA ACT 2601

To the Aviation White Paper Project Office,

Re: Aviation Green Paper

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

AHC welcomes the opportunity to respond to the Aviation Green Paper. We support the approach taken but note that the work to be done extends also to significant planning for a hydrogen supply chain.

Using hydrogen as a fuel or feedstock for aviation is less progressed and further in the future than other applications,[1] with the discussions about a scale replacement of jet fuel focussing on the production of Sustainable Aviation Fuels (SAF) that rely on biofuels as input. Most analysts agree that hydrogen will play a role for SAF production in the future, primarily because there will be a natural constraint on how much biofuel will be available. However, there does not seem to be consensus yet on what the opportunities are, or the next steps.

It is important to note that hydrogen production and the supporting supply chain in Australia is not yet commercial. Getting hydrogen to the scale required will be an enormous task, with competition for inputs at each point (including the workforce and electricity which are intrinsically tied to hydrogen's social licence), and competition for the hydrogen from other sectors of the economy.

Notably we expect the aviation and maritime sectors will need to collaborate and coordinate the use of hydrogen and its derivatives. With connections and insights from across the hydrogen value chain, we encourage you to engage with the AHC as an ally in this space and utilise our perspective to investigate and test planning.

[1] International Energy Agency (2023) *Aviation*, https://www.iea.org/energy-system/transport/aviation, International Renewable Energy Agency (2021) *Reaching Zero with Renewables: Biojet fuels*, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2021/Jul/IRENA_Reaching_Zero_Biojet_Fuels_2021.pdf.

AHC recently developed a paper[2] in response to the 2023 National Hydrogen Strategy consultation process. Our paper provides a comprehensive assessment of the current hydrogen policy state of play and provides recommendations to progress Australia's opportunity here. We suggest that the Aviation White Paper Project Office reviews the paper to engage with the issues and steps to get hydrogen to scale in preparation of the demand from the aviation sector. For initial reference, we have provided the 53 recommendations grouped by topic as an appendix to this letter.

The energy transition is an opportunity to develop Australia as a producer of SAF. As the Australian aviation sector is the ninth largest global jet fuel consumer and very little is produced or refined domestically,[3] local supply would provide strong energy security and confidence amongst uncertain reliability. In the first instance, we would recommend the development of strong policy and regulatory settings to support SAF and hydrogen R&D in Australia.

We recognise that there has been significant investment in Australia's SAF industry, such as $30 million from ARENA[4] and the $400 million Climate Fund through Qantas and Airbus.[5] However, process is limited without a wider policy framework, such as a SAF mandate or low-carbon fuel standard. As mentioned in the consultation paper, there are a variety of approaches internationally that target different parties of the supply chain, from production requirements or incentives, airport supply or airline consumption. It is integral that the Australian government takes a leadership role in determining and implementing an appropriate mechanism, rather than leaving this to individual organisations to decide their decarbonisation roadmap on behalf of the aviation sector's transition.

This is particularly relevant when the Safeguard Mechanism, a key Australian policy in decarbonising our highest emitting facilities, covers the Qantas Group, Virgin Australia and Alliance Aviation Services,[6] only one of which has voluntarily committed to a SAF target[7] despite modelling that SAF will hold a 53%[8] (or up to 65%[9]) share of aviation's net zero requirement by 2050. Recognising that global demand for SAF will be competitive, a target would encourage a thriving domestic SAF market, increasing demand signals and R&D investment to build a lasting ecosystem for Australia's energy transition.

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

[3] The Global Economy (2022) *Jet fuel consumption - Country rankings*, https://www.theglobaleconomy.com/rankings/jet_fuel_consumption/ and Forshaw, S. (2023) *Aviation Reimagined Session 4: Technological innovation and advancements*, Airbus representative presenting at Griffith University webinar, 5 October, https://www.griffith.edu.au/institute-tourism/news-events/aviation-reimagined-2023.

[4] Australian Renewable Energy Agency (2023) *Sustainable Aviation Fuel Funding Initiative*, Australian Government, https://arena.gov.au/funding/sustainable-aviation-fuel-funding-initiative/.

[5] Qantas Group (2023) *Qantas Sustainability Report 2023,* https://investor.qantas.com/FormBuilder/_Resource/_module/doLLG5ufYkCyEPjF1tpgyw/file/annual-reports/QAN_2023_Sustainability_Report.pdf.

[6] Clean Energy Regulator (2023) *Safeguard facility reported emissions 2021-22*, Australian Government, https://www.cleanenergyregulator.gov.au/NGER/The-Safeguard-Mechanism/safeguard-data/safeguard-facility-reported-emissions/safeguard-facility-reported-emissions-2021-22.

[7] Qantas Group (2023) *Sustainable Aviation Fuel*, https://www.qantas.com/au/en/qantas-group/sustainability/our-planet/sustainable-aviation-fuel.html.

[8] Forshaw, S. (2023) *Aviation Reimagined Session 4: Technological innovation and advancements*, Airbus representative presenting at Griffith University webinar, 5 October, https://www.griffith.edu.au/institute-tourism/news-events/aviation-reimagined-2023.

[9] International Aviation Transport Association (2023) *Net zero 2050: sustainable aviation fuels*, https://www.iata.org/en/iata-repository/pressroom/fact-sheets/fact-sheet---alternative-fuels/.

Aviation has a challenging decarbonisation narrative in which every fully realised efficiency and technology is still unable to get the sector to net zero by 2050 without offsets.[10] Tackling this requires focused collaboration with industry and between state, federal and international governments, particularly noting the necessity to plan and engage across portfolios in new ways. Energy, transport, environment, water, industry and workforce need to essentially work together on master planning for the next several decades for new technologies, new supply chains, new equipment and skilled up workers.

With these points in mind, we also recommend that the Aviation White Paper Project Office work closely with the National Hydrogen Strategy team within the Department of Climate Change, Energy, the Environment and Water to ensure that a coordinated approach is undertaken. This collaboration between key strategies, departments and sectors should intimately inform the upcoming transport sectoral decarbonisation plan, giving Australia the necessary tools to transition to net zero.

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

Yours sincerely,

Natasha Cerexhe
Policy Officer
Australian Hydrogen Council

[10] *Ibid.*

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APPENDIX A: Recommendations from AHC's response to the National Hydrogen Strategy Refresh

Government role

Topic	Recommendation	Section of paper
Overall	**Recommendation 1**: Commit to significant market making and ecosystem building in the public interest	2.1
	Recommendation 2: Task the Net Zero Economy Agency with overseeing the implementation of the refreshed NHS.	2.1
	Recommendation 10: Support the refreshed NHS with public implementation plans and stakeholder engagement.	2.3

Priorities

Topic	Recommendation	Section of paper
Domestic	**Recommendation 6**: Prioritise hard to abate and scalable domestic demand sources.	2.2
Export	**Recommendation 7**: Support hydrogen for export as an energy vector and for value added products such as green iron.	2.2
Emissions	**Recommendation 21**: Remain open to blue hydrogen for regions that can support it without unnecessarily delaying renewable hydrogen developments.	4.2

Targets

Topic	Recommendation	Section of paper
Targets	**Recommendation 9**: Set hydrogen targets for 2030 and 2040, with a range for 2050.	2.3

Analysis

Topic	Recommendation	Section of paper
Overall	**Recommendation 3**: Task the Net Zero Economy Agency to oversee a rolling programme of industry analysis to support ecosystem planning.	2.1
Costs	**Recommendation 4**: Task the Net Zero Economy Agency to oversee an assessment of cost and clarify investment needs from the public and private sectors.	2.1
NHIA	**Recommendation 5**: Extend and re-run the NHIA analysis to support decision-making for the refreshed NHS.	2.1

Topic	Recommendation	Section of paper
	Recommendation 29: Ensure a refreshed NHIA addresses refuelling infrastructure.	4.2
Supply chain	**Recommendation 8**: Assess Australia's hydrogen supply chain risks and opportunities.	2.2
Energy	**Recommendation 20**: Develop consistent energy planning scenarios and cost recovery mechanisms by connecting AEMO, AEMC and energy regulators with the Net Zero Economy Agency and the refreshed NHS.	4.2
	Recommendation 52: Undertake a full energy market and grid impact analysis for wide scale adoption of electrolysers as flexible load in the electricity grid.	5.4
Water	**Recommendation 22**: Develop a national assessment of hydrogen industry water needs and required planning to meet the revised NHS objectives and support long-term water security.	4.2
Pipelines	**Recommendation 23**: Develop a national assessment of hydrogen pipeline corridors, easements, and route alignment.	4.2
Ports	**Recommendation 24**: Develop a national assessment of port capability to meet the revised NHS objectives and targets.	4.2
Storage	**Recommendation 27**: Develop a national assessment of hydrogen storage needs for different purposes, timeframes, and locations.	4.2
Workforce	**Recommendation 34**: Undertake capacity gap analyses to support regional development.	4.3
RD&D	**Recommendation 39**: Develop and articulate RD&D priorities for hydrogen.	4.3
Regulation	**Recommendation 42**: Undertake and publish a regulatory gap analysis and programme of reform.	4.3
Shipping	**Recommendation 51**: Develop a national assessment of shipping routes and refuelling requirements.	5.3
Aviation	**Recommendation 53:** Work with the Department of Infrastructure, Transport, Regional Development, Communications and the Arts and its Jet Zero Council to consider the next steps for hydrogen for SAF production, using the CSIRO Futures report.	5.5

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Ecosystem, engagement and implementation

Tier 1: Short term implementation priorities

Topic	Recommendation	Section of paper
Overall	**Recommendation 15**: Create Hydrogen Economic Zones to support regional hydrogen initiatives and connect the relevant supply, demand, infrastructure and workforce.	4.1
	Recommendation 31: Boost Australian Government ability to attract and deploy private capital.	4.3
Emissions	**Recommendation 46**: Clarify the next steps and fast-track the process to implement the GO scheme.	4.3
Export	**Recommendation 11**: Support the refreshed NHS through a clear investment proposition.	3.1
	Recommendation 12: Develop joint support packages between Australia and its trading partners to support trade in hydrogen and hydrogen derivatives.	3.1
	Recommendation 13: Explicitly locate hydrogen production and use within the current international agreements on critical minerals.	3.3
	Recommendation 14: Actively seek risk and information sharing opportunities with like-minded international partners.	3.3
Industry capability	**Recommendation 38**: Create a 'one stop shop' and case management to assist with funding and permissions.	4.3
Ports	**Recommendation 26**: Commit to a funding envelope for ports.	4.2
Storage	**Recommendation 28**: Commit to a funding envelope for common user storage.	4.2
Heavy transport	**Recommendation 30**: Commit to a funding envelope for refuelling infrastructure.	4.2
	Recommendation 48: Support hydrogen in heavy road transport with a national ZLEV strategy, fleet trials, transition funds, and either a heavy vehicle fuel efficiency standard or sales target.	5.1
Industrial sectors	**Recommendation 49**: Attract private investment for hard-to-abate industrial processes.	5.2

Tier 2: Medium term implementation priorities

Topic	Recommendation	Section of paper
Community	**Recommendation 32**: Support a new programme of work on community water values and hydrogen awareness.	4.3
	Recommendation 33: Develop messages and communications support for the refreshed NHS to roll out to all governments and industry.	4.3
	Recommendation 45: Work with AEMC and AER on cost and price models to ensure affordable energy bills.	4.3
Industry capability	**Recommendation 36**: Support a lessons learned repository through CSIRO's Knowledge Hub.	4.3
	Recommendation 37: Support the Australian Hydrogen Council to expand the scope of HyCapability.	4.3
	Recommendation 16: Support a nationally connected and coordinated regional network facilitated by the Australian Hydrogen Council.	4.1
	Recommendation 17: Support Business Renewables Centre Australia to expand its remit and create hydrogen specific modules.	4.1
Supply chain	**Recommendation 18**: Support the development of domestic electrolyser production and assembly through a domestic manufacturing package.	4.2
	Recommendation 19: Secure supplies of raw materials (e.g., nickel and platinum group metals) and other key components.	4.2
Workforce	**Recommendation 35**: Drive coordination of competency standards and training packages for hydrogen.	4.3
RD&D	**Recommendation 40**: Work with CSIRO and the Chief Scientist, and other RD&D leaders to deliver hydrogen RD&D priorities and knowledge sharing.	4.3
	Recommendation 41: Establish common testing and prototyping infrastructure.	4.3
Ports	**Recommendation 25**: Select and support ports with existing industry connections to be demonstration ports.	4.2
Heavy transport	**Recommendation 43**: Harmonise Australian heavy vehicle regulation with international standards.	4.3
Industrial sectors	**Recommendation 44**: Develop harm prevention regulations to support industrial sectors.	4.3
	Recommendation 47: Support Australian-made clean products in hard-to-abate industries, supported by government procurement.	4.3
	Recommendation 50: Develop bespoke packages for other early adopters in high temperature process heating.	5.2