

23 November 2021

Ministry for the Environment
Environment House
23 Kate Sheppard Place
Wellington

AIR NEW ZEALAND SUBMISSION ON TE HAU MĀROHI KI ANAMATA, TRANSITIONING TO A LOW-EMISSIONS AND CLIMATE-RESILIENT FUTURE

Air New Zealand welcomes the opportunity to submit on *Te hau mārohi ki anamata | Transitioning to a low-emissions and climate-resilient future: Have your say and shape the emissions reduction plan* (the **Draft Plan**).

Air New Zealand supports a national plan to decarbonise the New Zealand economy and is committed to playing its part in the global response to climate change.

Aviation connects New Zealand to the world and enables our economic and social success. Air travel is vital to the basic functioning of our economy, our critical infrastructure and our health system. It is necessary for our exporters to distribute high-value, often perishable, goods to the rest of the world and for our country to import the critical goods and services needed to keep our economy functioning. It ensures our people can continue to connect with others at home and abroad, and it is fundamental to the ongoing success of our world-class tourism proposition. To this end, aviation and its infrastructure, delivers a strategic public good.

However, flying creates carbon emissions, and these are hard to abate. Even with the full deployment of aviation decarbonisation technologies, including electric, hybrid and hydrogen powered aircraft, and Sustainable Aviation Fuel (**SAF**), there is no current technology mix that can enable the industry to absolutely decarbonise by 2050. Furthermore, the industry's share of emissions will continue to increase in coming decades as other sectors decarbonise more quickly given available technologies and policy support.

He waka eke noa, we are all in this together

Air New Zealand is committed to decarbonising its operation. The airline is striving to reach our goal of net zero carbon emissions by 2050 by reducing actual emissions as far as possible, using offsetting as a last resort. However, we cannot solve this challenge alone. Decarbonisation will require coordinated decision-making across the transport, energy, and tourism sectors. It will be a journey that Air New Zealand shares with the Government and other stakeholders across the economy. *He waka eke noa, we are all in this together.*

Air New Zealand has been deeply encouraged by New Zealand signing the *COP 26 Declaration: International Aviation Climate Ambition Coalition* (the **Declaration**) pledging New Zealand's support to the development and deployment of both SAF and zero emissions aircraft, alongside Ministerial support for an aviation specific decarbonisation plan. The recommendations in **Appendix 1** of this submission are closely aligned to the objectives of the Declaration.

We urge the Government to continue to work closely with countries and industry bodies with progressive aviation decarbonisation plans to share knowledge and accelerate aviation decarbonisation.¹

Air New Zealand provides recommendations to strengthen the Draft Plan

Air New Zealand generally supports the Draft Plan as it relates to aviation. The recommendations in Appendix 1 strengthen the Draft Plan and allow New Zealand to meet its commitments under the Declaration. The recommendations are guided by three overriding principles:

- Principle 1: A **public-private partnership** approach to aviation decarbonisation is required and a **delivery plan** is paramount
- Principle 2: Policy and funding is required to accelerate the **development and deployment of sustainable aviation fuels**
- Principle 3: Policy and funding is required to support the **development and operation of zero emissions aircraft**

The principles and recommendations reflect the limited abatement options available to the aviation sector, the important need to maintain international connectivity and emphasise the significance of Government's role in the aviation decarbonisation journey given the public good air travel provides. Given aviation's criticality to New Zealand's economic and social success, it is essential that decarbonisation is recognised and prioritised by Government.

Where to next?

We welcome further discussion on the content of this document and look forward to working constructively with the Government as it implements the final Emissions Reduction Plan. Should you require any further specific advice on the content of this submission, please contact Meagan Schloeffel, Head of Sustainability, at Meagan.Schloeffel@airnz.co.nz.



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¹ In particular we note the [United States 2021 Aviation Climate Action Plan](#) and the United Kingdom's [Jet Zero Consultation](#).

APPENDIX 1 – RECOMMENDATIONS ON THE DRAFT PLAN

Principle 1: A public-private partnership approach to aviation decarbonisation is required and a delivery plan is paramount

Recommendation 1 – Aviation to be a standalone focus area of the transport section of the Emissions Reduction Plan, with an aviation specific target.

Aviation is hard to decarbonise, and it is unique within the transport sector – decarbonisation will require collaboration across the whole economy, including the energy sector, airports, tourism, imports, exports, supply chain and primary industries.

The Draft Plan includes three focus areas for transport. Aviation is included within Focus 3, targeting heavy transport and freight. Focus 3 largely covers emissions reductions within the freight sector. Although aviation plays an important role in Aotearoa's freight supply chain connecting exporters of highly-valuable highly perishable exports to the world, and importing critical goods, that is just one part of aviation's offering.

Our view is that aviation requires its own specific focus area within the transport section of the Draft Plan. This focus area would recognise the dual role of aviation in Aotearoa – connecting both people and products. This new focus area would also recognise the need for collaboration across the whole economy.

We note that the Draft Plan excludes aviation and maritime emissions in estimating the relative impact of actions identified to decarbonise heavy transport and freight. Equally, it is unclear whether aviation emissions are within the scope of transport target 3, which aims to reduce emissions from freight. Creating a focus area for aviation would allow aviation emissions to be addressed with targeted actions, without inadvertently shifting the burden to other parts of the sector. Similar to other focus areas in the Draft Plan, we recommend a target is set to accompany the aviation focus area.

Lastly, and aligned with the need for an aviation specific focus area in the Emissions Reduction Plan, we urge the Government to consider the international context in which our aviation industry operates when considering domestic policy settings for decarbonisation. This includes the need for a SAF-specific mandate that applies to all aviation fuel uplifted in Aotearoa, including aviation fuel uplifted for use on international flights departing Aotearoa.

We note the exclusion of international aviation emissions from New Zealand's domestic targets and the role of the Climate Change Commission (the **Commission**) advising the Government on the treatment of international emissions by the end of 2024. Regardless of the outcome of the Commission's decision, steps need to be taken now to accelerate the development and deployment of aviation decarbonisation technologies that will facilitate in sector decarbonisation, given the criticality of maintaining strong economic and social connections internationally.

Recommendation 2 – Launch a public-private aviation-specific decarbonisation advisory body to facilitate the coordination and development of policies and investment settings needed to support industry decarbonisation.

The Draft Plan supports the establishment of an *industry-led* aviation advisory body.

Air New Zealand is committed to decarbonising its operation and has a net zero 2050 target and is developing two science-based interim targets. However, it is clear that the private sector cannot decarbonise the industry alone. New policies, regulations, research and investment are needed. Industry and the Government have to work closely together to get to net zero by 2050 while maintaining New Zealand's essential international and domestic connectivity.

There is strong support from industry for a public-private *partnership* approach facilitated by an advisory body focused on aviation decarbonisation.² We believe that to get to net zero 2050 and decarbonise our tourism and export offerings, a partnership approach is critical and consistent with progressive approaches internationally (including in the United States and United Kingdom).

The collective industry view is that the body should have a single sponsoring Minister (the Minister for Transport), supported by the Minister for Energy and Resources, Minister for Tourism, Minister for the Environment, Minister for Climate Change and Minister for Trade and Export Growth.

We request that in the context of establishing this body, the Government considers the possible appointment of an executive officer and/or secretariat to coordinate and facilitate the advisory body's operation and work program, managing, for example, scheduling, agendas, and minutes. We view this role as critical to the operation and effectiveness of the advisory body.

We also encourage upfront Government funding for pilot projects and note that the sustainable aviation fuel feasibility study (recommendation 4) and the airport infrastructure study (recommendation 10) are projects that would benefit from Government innovation funding in the first budget period.

Recommendation 3 – Use the State Action Plan as an opportunity to develop a measurable strategy to decarbonise aviation aligned with other Government initiatives.

The Draft Plan does not include a specific decarbonisation plan for aviation, rather aviation is considered generally within the freight and heavy-transport section.

An overarching strategy mapping aviation to net zero by 2050 is required to provide clear direction for action and investment in and beyond the first carbon budget period, and to ensure alignment between the Government and private sector as to key milestones.

In 2022, New Zealand will update its International Civil Aviation Organization (ICAO) State Action Plan, detailing New Zealand's strategy for aviation decarbonisation. We encourage the Minister of Transport to use the State Action Plan as an opportunity to develop a measurable strategy to decarbonise aviation aligned with the Declaration and other Government initiatives including the national energy strategy, the national freight and supply chain strategy, the

² Twenty-five representatives across the airline, airports, aviation manufacturing, energy, research, and sustainability sectors have shown a strong interest in joining such a public-private aviation advisory body.

tourism industry transformation plan, the trade for all agenda, and any strategy for the bioeconomy. This strategy would provide a framework for the public-private advisory body (see recommendation 2) to structure its work program on.

Principle 2: Policy and funding is required to accelerate the development and deployment of sustainable aviation fuels (SAF)

Recommendation 4 – In partnership with the private sector, Government to allocate funding to support the feasibility study.

The Draft Plan recognises the need to investigate the feasibility of SAF production in Aotearoa. It also notes that the Government could consider more active support for development of larger scale bioenergy and hydrogen industries to enable emissions reductions in the transport sector. Air New Zealand supports each of these proposals and encourages deeper support from the Government, to complement the aviation industry ambition.

Domestic SAF production would create numerous co-benefits, many of which support a just transition. These include new clean energy jobs,³ regional development opportunities, the decarbonisation and safeguarding of Aotearoa’s tourism proposition, the decarbonisation of high value exports, opportunities for repurposing waste products, domestic fuel security, improved air quality and exportable intellectual property.

A SAF production facility in Aotearoa would produce both SAF and biodiesel,⁴ enabling emissions reductions across the transport sector. A comprehensive feasibility study is the gateway to understanding and unlocking domestic SAF capability, confirming high level production cost estimates and feedstock supply, determining the most viable pathways to SAF in Aotearoa, identifying necessary policy and investment settings, and quantifying the greater benefits to regional Aotearoa.

Air New Zealand and the Ministry of Business Innovation and Employment have signed a Memorandum of Understanding to run a closed request for proposal process that invites leaders in innovation to demonstrate the feasibility of operating a SAF plant at a commercial scale in Aotearoa.

Limited public funding has been allocated to the feasibility investigation. A comprehensive feasibility study, will require investment in the range of \$5m-10m. A partnership approach to this investment will be required, with the cost shared by Government and industry. Air New Zealand is prepared to enter into an offtake agreement for domestically produced SAF to provide demand side certainty and may contribute to the feasibility study if sufficient support from the public sector is demonstrated.

We continue to support the use of funds generated through the New Zealand Emissions Trading Scheme Auctions for projects or innovation, like this feasibility study, that accelerate the deployment of low emissions technologies.

³ The SAF Consortium (Air New Zealand, Scion, Z Energy, LanzaTech and LanzaJet) estimates domestic SAF production in accordance with its roadmap could result in around 6,400 temporary infrastructure development jobs, 1,800 new permanent jobs and 5,000 additional indirect jobs (such as tradespeople, caterers and security).

⁴ Biofuel plants using the HEFA pathway choose their optimal product mix – for example, the ratio of SAF produced vs biodiesel or other by-products – according to market conditions.

Recommendation 5 – The Government take a key role enabling a SAF industry in Aotearoa by removing barriers and setting supportive policy including: ensuring feedstock sustainability credentials; supply-side measures to support SAF deployment; demand-side measures to stimulate SAF uptake; and enabling measures and systems to facilitate SAF scaling.

The Draft Plan does not address in any detail how to support SAF production, importation, and uptake in Aotearoa.

The feasibility study will confirm the viability of a domestic SAF (and biodiesel) production facility. Thereafter, front end engineering and design, and construction of a production facility would take around 5-7 years. The feasibility study will help determine the level of capital investment required and could be in the range of \$500m - \$1b. The business case for attracting private investment in such a facility, will be greatly strengthened by clear policy support from Government.

Alongside domestic production of SAF, imported SAF will be crucial – both in the period before any production facility is operational in Aotearoa and after. Policy will be required to support the import supply chain.

Governments around the world are grappling with the best way to establish viable SAF industries in their territories. A portfolio approach is emerging as the preferred approach, made up of: (a) policy to ensure the sustainability credentials of feedstocks; (b) supply-side measures to support SAF deployment; (c) demand-side measures to stimulate SAF uptake; and (d) enabling measures and systems to facilitate SAF scaling. Air New Zealand supports many of the enabling policy measures proposed in the *Clean Skies for Tomorrow: Sustainable Aviation Fuel Policy Toolkit*.⁵

Through the feasibility study process (recommendation 4) and guided by the aviation decarbonisation plan (recommendation 3) and the public-private advisory body (recommendation 2), analysis should be conducted to understand the best policy mix to support SAF production, importation, and uptake in Aotearoa. This body should also advise on the measures required to accelerate the deployment of power to liquid SAF.

If the feasibility study confirms that a SAF production industry is viable in Aotearoa, Air New Zealand intends to provide demand-side support in the form of a long-term SAF offtake agreement, and strongly encourages the Government to play a key role in removing barriers and facilitating increased supply and demand.

Recommendation 6 – Alongside other supportive policy and pegged to supply realities, the Sustainable Biofuel Mandate must incorporate a meaningful SAF specific mandate for domestic and international aviation fuel uplift.

The Draft Plan supports a broad application biofuels mandate across the entire transport sector.

Air New Zealand is supportive of the Sustainable Biofuel Mandate applying to SAF. However, the Sustainable Biofuel Mandate, as a broad application mandate, would not support SAF in

⁵ *Clean Skies for Tomorrow: Sustainable Aviation Fuel Policy Toolkit* (November 2021): <https://www.weforum.org/reports/clean-skies-for-tomorrow-sustainable-aviation-fuel-policy-toolkit>

Aotearoa. Nor will a mandate in isolation enable meaningful change. As noted in recommendation 5, a biofuel mandate is just one component of a portfolio of policy interventions required to support SAF production and uptake.

Aviation is not the only transport sector that must decarbonise, but it is the most difficult to abate. Currently, at a global level, the road sector uses the majority of biofuels produced, as higher production costs associated with SAF output and more limited demand uptake are disincentives for biofuel producers to redirect feedstock to SAF production. SAF specific policy interventions are required to ensure SAF production.

A SAF specific mandate is a critical demand-side measure, to incentivise investment in SAF by providing demand certainty to producers and investors. Overseas, SAF mandates are being used by governments as a key tool for establishing domestic SAF industries. Globally, SAF mandates have been set between 0.5 percent and 2 percent,⁶ ratcheting up over the next 30 years to percentages beyond the current approved maximum SAF blend rate of 50 percent.⁷

Similarly, in the context of Aotearoa, a SAF mandate that incrementally increased over time would be appropriate, to allow for the establishment of production and to provide a manageable transition period for producers, suppliers, and distributors. Further consideration is required as to the appropriate percentages for a SAF mandate. Given the absence of domestic SAF production in Aotearoa, the cost of standing up domestic production, the global shortage of SAF supply and the uncertainties of import supply opportunities, emissions reduction percentages for a SAF mandate must be pegged to emerging SAF supply realities. Fuel suppliers must not be penalised if they cannot access SAF due to dynamics outside of their control.

It would not be commercially viable in Aotearoa for a SAF mandate to differentiate between fuel uptake for domestic and international travel. This is because domestic fuel uptake demand alone would not be enough to support production economies of scale, and the significant SAF investment and production costs. Differentiating between domestic and international travel could also lead to competitive distortions.

Recommendation 7 – In the first two emission budget periods, the Sustainable Biofuel Mandate should be phased out for non-SAF biofuels.

Aviation remains highly dependent on SAF for the immediate to medium-term. However, most transport sector emissions can be cost-effectively mitigated through electrification. To further support Aotearoa's transition to zero-emissions road vehicles and redirect feedstocks to the production of SAF (rather than biodiesel for light vehicles) further changes to the Sustainable Biofuel Mandate are required.

In the first two budget periods, Air New Zealand supports phasing out the Sustainable Biofuel Mandate for non-SAF use, to incentivise the redirection of feedstocks to domestic SAF production as other parts of the transport sector electrify.

⁶ In Norway, a 0.5% blend mandate has been in effect since Jan 2020, with the plan being for a 30% mandate in 2030. In Sweden, a 0.8% mandate will be in place in 2021, increasing to 30% in 2030. Spain is planning a 2% SAF mandate in 2025.

⁷ Currently SAF is only approved to fly with if blended with a minimum of 50% fossil fuel. Boeing and Airbus have recently announced development and testing to enable aircraft capable of flying on 100% SAF by 2030.

Principle 3: Policy and funding is required support the development and operation of zero emissions aircraft

Recommendation 8 – Extend the scope of the Draft Plan's proposal to develop the policy and regulatory settings required to support the development of zero emissions aircraft, to also include the import and operation of zero emission aircraft.

The Draft Plan proposes to develop the policy and regulatory settings required to support the development of zero emissions aircraft. We support this approach and are committed to working with the industry and Government to design these settings as the technology matures. We note that policy and regulatory settings should also cover the *import and operation* of zero emissions aircraft in Aotearoa.

Recommendation 9 – Adopting a mission-oriented approach, the aviation public-private advisory body and any other relevant stakeholders, to design a framework for zero emissions aircraft, including the infrastructure, regulatory and industry commercialisation requirements.

The Draft Plan recognises the need for policy and regulatory settings to *develop* zero emissions aircraft but does not provide detail as to what group or body should be responsible.

Collaboration across the aviation value chain will be required to understand the policy and regulatory framework required to support the development and operation of zero emissions aircraft in Aotearoa. It is our great hope that the pace of innovation will be rapid. We acknowledge the need for the industry and the regulator to match that pace of innovation. Ensuring we are all on a common journey will be vital.

Policy and regulatory settings will continue to evolve beyond the first emissions budget period, given the longer lead times for zero emission aircraft technologies. As a starting point, zero emissions aircraft will need to be developed within a regulatory environment which enables their demonstration, certification and quick scale-up to safe deployment. A regulatory and safety framework will be required for the operation of these aircraft and the ground handling equipment specific to these aircraft. Consideration of policy incentives to encourage the uptake of these next generation aircraft will also be required.

The Draft Plan proposes a mission-oriented approach to address sector specific challenges, joining efforts, resources and knowledge across disciplines, sectors and policies, to collectively support projects that tackle climate change. Air New Zealand suggests that preparing Aotearoa for zero emissions aircraft, including understanding enabling infrastructure requirements, facilitating the required changes and designing appropriate regulatory settings would be an ideal pilot project for a mission-oriented innovation approach.

The membership of the proposed aviation public-private advisory body (recommendation 2) is representative of the industry value chain, including aircraft manufacturers, airports, and energy companies, and hopes to include the Civil Aviation Authority (as the key regulator of Aviation in Aotearoa). In the first budget period, and thereafter as technology matures, the public-private body would be well placed to design a framework for zero emissions aircraft, including the infrastructure, regulatory and any industry commercialisation requirements.

Recommendation 10 – Government to invest research and development funding in the first budget period to understand the infrastructure needed by airports to handle new forms of zero emissions aircraft.

The Draft Plan supports mission-oriented innovation but does not identify the need for research and development funding for zero emissions aircraft.

For zero emissions aircraft to be able to operate in Aotearoa, airports may require suitable electricity capacity, safe access to and storage of alternative fuels (such as green hydrogen), and the infrastructure to fuel, and take-off and land these new aircraft. Pilots, crew, engineers and ground handlers will require new skills to operate and maintain them safely. Further work is required to better understand the energy capability and infrastructure needs within the airport ecosystem and the skillsets required to ensure these aircraft can operate safely and efficiently.

Recently, the United Kingdom Government has invested £3m into research and development funding, to understand the infrastructure and equipment needed by airports to handle new forms of zero emissions aircraft. We encourage the Government to allocate funding to a similar study in Aotearoa in the first emissions budget period. This work plan should include a survey of the electricity capacity at each airport as well as the suitability of the supporting airspace in Aotearoa and would complement and inform the framework for zero emissions aircraft (recommendation 9).

We also note our continued support for a space-based augmentation system to improve network reliability and set the platform for greater deployment future zero emissions flights in Aotearoa.

Recommendation 11 – Ensure the National Energy Strategy properly investigates green hydrogen demand from the transport sector and includes volume and price pathway signals to the market.

The Draft Plan proposes the development of a National Energy Strategy and suggests the Government could consider more active support for development of larger scale bioenergy and hydrogen industries to enable emissions reductions in the transport sector. Air New Zealand is supportive of an Energy Strategy and investment in green hydrogen, with production prioritised for the hard to abate parts of the transport sector.

The transport sector, including aviation, will be large consumers of renewable electricity and green hydrogen in the future. Decarbonising aviation through the deployment of power to liquid SAFs and next generation and zero emissions aircraft (battery electric, hybrid, hydrogen fuel cell and down the track, direct hydrogen combustion) will rely on having access to affordable and reliable supplies of domestically produced renewable electricity and green hydrogen.

The Energy Strategy must properly investigate energy demand from the transport sector and ensure future electricity and green hydrogen production can be scaled to meet economy wide demand. Clearly signalled forecast production volumes and price forecasts should be included in the strategy. Alongside the Energy Strategy, the next stage of the hydrogen roadmap should ensure future transport sector demand for green hydrogen is properly considered.

Within the Energy Strategy, we encourage the Government to design a regulatory framework that defines the sustainability criteria for hydrogen use and incentivises the use of green hydrogen.

Recommendation 12 – Position Aotearoa as an aviation testing and demonstration hub.

The Draft Plan seeks to use Aotearoa’s unique strengths to overcome some of the world’s biggest challenges, positioning Aotearoa as a world-class generator of ideas and solutions.

Aotearoa has a unique opportunity to be a world leader in the adoption of zero emissions aircraft, given the country’s commitment to renewable energy which can be used to generate green hydrogen, our highly connected regional air network and our relatively quiet airspace. Aotearoa also has the benefit of an internationally regarded aviation regulator, and an enabling risk-based regulatory regime.

In particular, Aotearoa has the potential to offer an ideal location for initial certification flight testing and early service demonstrator trials of zero emissions aircraft. We encourage deeper collaboration with the Federal Aviation Administration, the United Kingdom Civil Aviation Authority, and the European Union Aviation Safety Agency as the key aircraft certification bodies to ensure any testing completed in Aotearoa is recognised by these bodies.

Air New Zealand and aircraft manufacturer Airbus have signed a Memorandum of Understanding to cooperate on a joint research project to better understand the opportunities and challenges of flying zero-emission hydrogen powered aircraft in Aotearoa. Air New Zealand will analyse the impact hydrogen aircraft may have on its network, operations and infrastructure, while Airbus will provide hydrogen aircraft performance requirements and ground operations characteristics to support Air New Zealand to develop its decarbonisation roadmap.

This relationship is a clear signal of Aotearoa’s potential as an attractive location for aviation innovation. Setting a clear strategy for aviation decarbonisation and forming a partnership with the aviation industry to implement this plan would further encourage aviation innovation in Aotearoa.