

# Developing the Aotearoa New Zealand Aerospace Strategy

Submission form

## Submission on developing the Aotearoa New Zealand Aerospace Strategy

### Overview of the Aerospace Strategy

- Question 1:** Do the four areas above provide the right basis for the Aerospace Strategy?
- Question 2:** What are the critical factors that you see for aerospace sector development?
- Question 3:** How would an Aerospace Strategy help you?

**Please type your submission below. If applicable, please indicate the question(s) to which you are responding.**

#### Introductory Overview

Air New Zealand supports the ambitious nature of the Aerospace Strategy's goals and the aspiration to be at the forefront of global activity. It is important, however, that the Strategy retains focus on the primary goal of New Zealand's aerospace sector: to improve and protect New Zealand's domestic and global connectivity.

As an island nation, air connectivity is critical for New Zealand's links to the rest of the world, tourism, trade and economic prosperity. However, as a carbon intensive activity, action to future-proof the sector is required now. The sector faces a difficult and long-term transition to reduce aviation emissions while maintaining system resilience and improving New Zealand's connectivity.

Air New Zealand therefore encourages MBIE to make the purpose of the aerospace strategy more explicit: connectivity. With connectivity as the guiding goal, success of the strategy can be more clearly measured. As a critical enabler of New Zealand's future connectivity, the strategy therefore also requires a much stronger focus on decarbonisation. Decarbonising the aviation sector, both domestically and internationally, is central to a thriving aerospace industry and will require innovation, technological developments and aligned Governmental priorities, policy, and regulation to enable it.

There is no time to waste. Air New Zealand will need to make key procurement decisions on the replacement of its domestic fleet within the next two years. To make bold purchasing decisions on zero emission aircraft we will need a coherent aerospace strategy with concrete decarbonisation commitments, including on the supporting infrastructure (as recommended in the New Zealand Infrastructure Strategy and the draft Freight and Supply Chain Strategy), and a clear regulatory framework.

In the absence of these clear signals and actions from Government (and other critical stakeholders such as airports and energy providers), purchasing timeframes may require us to commit to procuring aircraft that lock in carbon emissions for domestic aviation over the next 15-20 years.

## Understanding 'Aerospace'

In the consultation document's introduction, Minister Nash quantifies the economic contribution of the space sector to the New Zealand economy at \$1.69 billion. Surprisingly, there is no explicit recognition in the entirety of the document of aviation's significant value to the New Zealand economy. Oxford Research shows that in 2018 the aviation sector contributed **\$21** billion to the economy and supported 287,000 jobs.<sup>1</sup> Given that the strategy defines aerospace broadly to include both space and aviation activities, we think the strategy could benefit from clearer articulation of aviation's current and future potential. The Australian Government has commissioned a similar piece of future-focussed work ([the White Paper](#)), which seeks to chart a course for maximising the sector's contribution to achieving net zero emissions and the economic reforms needed to improve productivity and address the disconnected way in which the various parts of the system are funded and regulated to achieve that critical transition.

All participants in the air transport sector are currently facing the challenge of maintaining safe, efficient, and sustainable operations in a new demand environment. Airlines and their passengers bear most of the costs of the currently user-pays system which is not well equipped to incentivise innovation. Further, many years of under-investment in critical aviation infrastructure has resulted in significant infrastructure constraints. Insufficient investment in New Zealand airport infrastructure (including but not limited to air traffic control, security, or renewable energy generation) could further constrain Air New Zealand's ability to meet its decarbonisation imperatives.

For example, currently the FAA are trialling space-based ADS-B technology in Oceanic airspace where ground-based receivers cannot be used. (New Zealand uses ground-based receivers). Space-based ADS-B enables aircraft to be tracked anywhere in real-time, enabling aircraft to fly closer together safely with greater accommodation of preferred routes, altitudes and speed. Innovation of this nature not only benefits passengers by increasing safety and reducing flight times, but also has significant emissions reduction potential. There is no mechanism by which to prioritise investment in this sort of strategic technology under the current user pays model.

In the context of decarbonisation, monopoly providers of aviation services in New Zealand (i.e., air navigation services, airports, aviation security) primarily consider their part in the system in isolation from the whole, with little incentive to innovate or invest in sustainable technologies and infrastructure. The sector therefore needs an enabling strategy which ensures the right regulatory settings are in place and provides clear direction to all parts of the systems on the milestones they must meet to support the New Zealand Government's ICAO commitments for decarbonisation.

### **Response to Consultation Document Questions:**

#### **Question (1) Do the four areas above provide the right basis for the Aerospace Strategy?**

It is encouraging to see these themes recognised in the Aerospace Strategy and the 2030 Future State and Goal One. However, we would like to see the Three Pillars explicitly recognise the criticality of decarbonisation to the sector's future, with a fourth pillar focused on this. This pillar could be linked to the Ministry of Transport's initiative to establish Sustainable Aviation Aotearoa and deliver on decarbonisation set out in the draft National Freight and Supply Chain Strategy. This pillar should take a comprehensive view which acknowledges and addresses the constraints of the current framework to ensure a system-wide transition to decarbonisation.

<sup>1</sup> Air Transport Action Group (2018), Aviation Benefits Beyond Borders, October 2018.

## **Question (2) What are the critical factors that you see for aerospace sector development?**

We would encourage greater recognition of the critical role Sustainable Aviation Fuel (SAF) will play in the sector's decarbonisation, particularly from now until 2030.

In the period to 2030, it is critical that SAF and zero emissions aircraft technologies (ZEAT) are developed, refined, scaled and deployed within the aviation sector, alongside improvements in operational efficiencies (both in the air and on the ground). As this will require a considered suite of policies, regulations, and investment incentives, decarbonising aviation must be done in partnership with the Government to be successful. The Aerospace Strategy is therefore an opportunity to introduce enabling policy to help advance SAF and ZEAT as set out below.

### ***Sustainable Aviation Fuel***

SAF is critical on the pathway to net zero and is the only current option for decarbonising long-haul flights. Initially made from waste materials such as used cooking oils, forestry residues or landfill waste, SAF has the potential to reduce carbon emissions by more than 80 percent compared with traditional jet fuel and will play a significant role in decarbonising the New Zealand tourism and export economy. In addition, SAF can be used safely today in existing aircraft and fuel infrastructure, meaning no new infrastructure is required to take advantage of its decarbonisation potential. To date, over 400,000 flights internationally have flown on SAF.

However, supply is a problem- there is no SAF supply in New Zealand, and there is a global SAF shortage – less than 1 percent of aviation fuel supplied in the world is SAF. Where it is available, it is two to five times the cost of traditional jet fuel.

With the right policy and investment settings, domestic SAF production and importation could be made viable, and the commercial gap with fossil fuels can be narrowed, as demonstrated in California where State and Federal policy measures have reduced the gap to under two times the price of fossil fuel.

Analysis carried out by the SAF Consortium (Air New Zealand, Z Energy, Scion, LanzaTech and LanzaJet) shows there is a pathway to stand up a domestic SAF industry for New Zealand to meet 50 percent of New Zealand's aviation fuel demand by 2050, supported by a domestic feedstock (waste materials, such as forestry residue and landfill waste) supply chain. Further consideration of the domestic viability of SAF production in New Zealand is currently being investigated via the partnership between Air New Zealand and the Ministry of Business, Innovation and Employment (MBIE). Any domestic production of SAF would need to be supplemented by SAF imported from offshore and emerging global trading platforms enabling 'book and claim' transactions.

Air New Zealand is a member of the World Economic Forum's Clean Skies for Tomorrow coalition (WEF and CS4T respectively) working to scale the global SAF industry. Air New Zealand has signed the CS4T 2030 Ambition Statement, pledging support for SAF and a commitment to help accelerate the supply and use of SAF to reach 10 percent of global jet aviation fuel supply by 2030. Achieving the 10 percent goal within Air New Zealand's operation, would require over 150 million litres of SAF.

Accelerating the development and production of next generation "power to liquid" (PtL) SAF will also be a key objective in the period to 2030. PtL SAF is made from green hydrogen and captured carbon and has the potential to reduce the lifecycle carbon emissions 100% compared to fossil fuel.

### ***Zero Emissions Aircraft Technologies***

While SAF is currently the best solution to decarbonise long haul flights and is able to be deployed safely to begin decarbonisation today, it still produces a residual amount of carbon emissions (CO<sub>2</sub>). Zero emissions aircraft technologies play an important role in reducing not just CO<sub>2</sub>, but other types of emissions such as NOX and contrails.

Zero emissions aircraft technology encompasses aircraft designs including battery electric, hydrogen fuel cell, hydrogen combustion and hybrid concepts. Hydrogen, battery and hybrid technologies are still under development by aircraft manufacturers and innovators. This technology is expected to mature and be a possibility for Air New Zealand from 2026 on shorter domestic and regional flights. From 2040, these technologies could enable flights to Australia and the Pacific Islands.

Enabling ZEAT to operate in New Zealand will require an enabling (and fit for purpose) regulatory environment and the infrastructure required to fuel, operate and support these aircraft. This Strategy has the potential to establish New Zealand as a leader in ZEAT innovation.

As much of the critical infrastructure needed to deploy ZEAT (e.g. hydrogen storage and/or electric charging facilities) will have to be built on privately held airports – it is important that Government provides the necessary strategic oversight and support to ensure airports prioritise this infrastructure within upcoming CAPEX allocation and/or Government works with industry to provide an attractive investment framework.

## Area One - A strategy for building our aerospace sector

- Question 4:** Is the 2030 Future State set out in a way that enables New Zealand to build on its existing advantages to develop a leading place in the global aerospace economy?
- Question 5:** Will the 2030 Future State support your ambitions for growth and participation in the sector?
- Question 6:** What barriers are there to optimising sector growth?
- Question 7:** How could the government and the sector work together to achieve the 2030 Future State?
- Question 8:** How can the Government enable Māori ambitions for the sector?

**Please type your submission below. If applicable, please indicate the question(s) to which you are responding.**

### **Question 4 - Is the 2030 Future State set out in a way that enables New Zealand to build on its existing advantages to develop a leading place in the global aerospace economy?**

The opportunity that New Zealand has to lead in the deployment of ZEAT could be more clearly articulated in the Draft 2030 Future State. An acknowledgment of the enabling regulation and infrastructure required to support these technologies should be called out. The critical role SAF plays in decarbonising the sector (particularly in the period to 2030) needs to also be acknowledged. It is unlikely the sector will thrive if access to SAF is not supported.

A 2030 Future State that sets out ambitious goals such as “New Zealand’s three busiest airports will have robust charging or refuelling infrastructure available to support commercially viable ZEAT and have ready access for airlines to SAF (either from import or domestic production)” will send the right market messages that change will be supported by Government, this in turn will encourage private sector investment in the technologies.

### **Questions 5 & 6 Will the 2030 Future State support your ambitions for growth and participation in the sector? What barriers are there to optimising sector growth?**

The aviation sector needs to decouple emissions growth from business growth to align with New Zealand’s domestic emissions reduction targets and New Zealand’s international aviation targets under the International Civil Aviation Organization’s (ICAO) long term aspirational goal for international aviation. If the 2030 Future State enables and accelerates access to SAF and ZEAT there will be clear alignment with Air New Zealand’s ambitions and objectives. As mentioned in (3) above, SAF and ZEAT face barriers to entry that the Aerospace Strategy can help address.

### **Question 7 How could the government and the sector work together to achieve the 2030 Future State?**

The Government will be a critical partner in delivering on the 2030 Future State within the set timeframes – in particular to help decarbonise aviation.

#### **Governance and strategy**

- An overarching strategy mapping aviation to net zero by 2050 is required to provide clear direction for action and investment up to and beyond 2030, and to ensure alignment between the Government and private sector as to key milestones. It is important that a strategy for aviation is developed alongside and in alignment with the National Freight and

Supply Chain Strategy, Tourism Industry Transformation Plan, National Energy Strategy, and the New Zealand Infrastructure Strategy.

- Air New Zealand strongly supports the establishment of Sustainable Aviation Aotearoa, a public-private advisory body to advance aviation decarbonisation (an action encompassed in the Emissions Reduction Plan). Operating in a similar manner to the UK's Jet Zero Council, the group would provide a forum to accelerate and scale domestic SAF supply, investigate policies and regulatory settings to enable the commercially viable importation of SAF, advise on the airport and energy infrastructure required to enable operation of ZEAT and develop a coordinated approach to the policy and regulatory framework needed to deliver net zero aviation.
- By 2030 (and evolving with technology thereafter), a policy and regulatory framework supporting aviation decarbonisation out to 2050 and beyond must have been established.

#### SAF

- Continued partnership with Air New Zealand to consider the feasibility of domestic SAF production in New Zealand under the MBIE - Air New Zealand MOU.
- The Government should take a key role in enabling a SAF industry (including an import supply chain) in New Zealand through the development of supportive policy settings including to: ensure feedstock sustainability credentials; implement supply-side measures to support SAF deployment; implement demand-side measures to stimulate SAF uptake; and implement enabling measures and systems to facilitate SAF scaling. This includes but is not limited to incentives for users of SAF<sup>2</sup> and a meaningful SAF specific mandate for domestic and international aviation fuel uplift. Please refer to Air New Zealand's submission on Increasing the use of biofuels in transport: Consultation paper on the Sustainable Biofuels Mandate for more detailed information.

#### ZEAT

- Collaboration across the aviation value chain will be required to understand the policy and regulatory framework required to support the development, import and safe commercial operation of ZEAT in New Zealand. Sustainable Aviation Aotearoa as the aviation public-private advisory body and other relevant stakeholders, should be tasked with identifying issues, gaps and unworkable areas of the current regulatory framework and advise on the amendments required to ensure the regulatory framework is fit for purpose and matures alongside the technology. It should also further build on and support the New Zealand Infrastructure Strategy's Recommendation 11 to 'Prepare for zero-emissions commercial electric flights'.
- For ZEAT to be able to operate in New Zealand, airports will 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. Further work is required to better understand the energy capability and infrastructure needs within the airport ecosystem (including the funding required to deliver).
- The Civil Aviation Authority should be appropriately resourced and empowered to advise on the transition. The United Kingdom's Civil Aviation Authority established an Innovation Hub in 2019, to make it easier for innovators to access guidance on regulations and accelerate the development of new policies and regulations by anticipating regulatory challenges in

<sup>2</sup> For example, we note the new US federal Sustainable Aviation Fuel Credit, which from 2023 will provide a USD \$1.25/gal SAF blending credit for SAF that reduces emissions by at least 50% compared to standard jet fuel. An additional 1 cent/gal will be given for each percentage point over 50% to a max of USD \$1.75/gal. SAF volumes will also continue to qualify for the federal credits available as Renewable Identification Numbers (RINs), and state low carbon fuel standards in California, Oregon, and Washington state. These incentives can be stacked to further improve the commercial viability of SAF.

areas of innovation, then defining the requirements for new policies and regulations. A similar program could be established in New Zealand. Activity supporting 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 should be pursued to ensure standards and regulations are aligned (and mutually recognised) as necessary.

- The National Energy Strategy should properly investigate and prioritise green hydrogen demand from the hard to abate heavy transport sector (including aviation) and provide volume and price pathway signals to the market.
- Continued deployment of tools and practices to optimise the airspace environment, enable more efficient management of aircraft and create a foundation for maximised deployment of zero emissions aircraft from 2030. Example activity includes nationwide airport collaborative decision-making tools, more efficient routing, greater deployment of RNP-AR (Required Navigation Performance – Authorisation Required) and continued investment in a space-based augmentation system to improve network reliability.

## Area Two - Building strong foundations (Three Pillars)

**Question 9:** What do you think of the Three Pillars and do you think they will support the 2030 Future State?

**Question 10:** What else would you like to see in the Three Pillars?

**Question 11:** What actions and initiatives could the sector focus on to support the Three Pillars?

**Please type your submission below. If applicable, please indicate the question(s) to which you are responding.**

**Questions 9-11 What do you think of the Three Pillars, and do you think they will support the 2030 Future State?**

The Pillars should explicitly recognise the key role of aerospace as the critical enabler of New Zealand's current and future connectivity and the paramount need to decarbonise. It should therefore clearly articulate support for the aviation sector's transition from fossil fuels while maintaining New Zealand's critical connectivity and trade channels. We suggest adding a fourth pillar relating to decarbonisation of the aerospace industry. For air travel, this should focus on SAF and ZEAT as outlined in our answer to Question 7.



## Area Three - Goals for 2030

**Question 12:** What do you think of the Goals for 2030?

**Question 13:** Are the goals framed in a way that will enable New Zealand to build on its strengths and comparative advantages to achieve the 2030 Future State?

**Question 14:** What activities and milestones can help us achieve these Goals?

**Question 15:** Where do you see yourself in realising these Goals?

**Please type your submission below. If applicable, please indicate the question(s) to which you are responding.**

### **Question 12. What do you think of the Goals for 2030?**

Goal 1 *Build a sustainable air passenger journey* should recognise the need to support the aviation sector's transition from fossil fuels while maintaining New Zealand's critical connectivity and trade channels. Following this, it should acknowledge the critical role SAF will play and recognise the need to access SAF in New Zealand to 2030 and beyond as the only technology available for decarbonising long-haul flights. This should include the significance of enabling policy and investment settings to facilitate the supply and use of this technology. The role of enabling regulation and support for ZEAT enabling infrastructure should also be recognised (please also refer to Question 7 answer).

Air New Zealand's focus is largely on Goal One, with decarbonisation being integral to the connectivity of New Zealanders to each other and the world. We are already actively working to build a sustainable air passenger journey, and in addition to our net carbon zero by 2050 goal, have interim goals of 10% SAF by 2030, a 2030 science-based carbon reduction target, and aspirations to lead the world in the deployment of ZEAT. We are committed to working with the government and others in the aviation industry to make these goals reality.

## Area Four - Pathway to the 2030 Future State

**Question 16:** What policies, ideas, actions, and/or initiatives would you like to see in the Action Plan to help achieve the ambitious 2030 Future State?

**Question 17:** What would be the benefits of these actions and how would they help grow the New Zealand aerospace sector?

**Question 18:** How would you like to be involved in the delivery of the Aerospace Strategy?

**Please type your submission below. If applicable, please indicate the question(s) to which you are responding.**

**Question 16. What policies, ideas, actions, and/or initiatives would you like to see in the Action Plan to help achieve the ambitious 2030 Future State?**

In addition to the policies, regulatory and investment settings outlined in our response to question 7, we would welcome an integrated and cohesive cross-government approach to the aerospace strategy that complements other work programs and strategies across the economy, including the soon-to-be established public-private body focused on aviation decarbonisation, Sustainable Aviation Aotearoa, the draft Freight and Supply Chain Strategy, the New Zealand Infrastructure Strategy and the National Energy Strategy.

Air New Zealand also supports the award of funding to the Civil Aviation Authority to build capability and support the development of fit for purpose regulation to enable the deployment of ZEAT. However, more clarity is required to understand what the \$3.7 million granted to the Civil Aviation Authority to establish an Emerging Technologies Programme will support. If this funding does not extend to ZEAT, then further funding must be granted to allow the Aerospace Strategy and Future State to be achieved.

**Question 18. How would you like to be involved in the delivery of the Aerospace Strategy?**

Air New Zealand would like to be involved in the delivery of the air travel decarbonisation initiatives encompassed in the strategy, both directly and via the public-private decarbonisation body, Sustainable Aviation Aotearoa, noted above. We reiterate the need for a joined-up approach across government, to avoid duplication of work streams.