



Aerospace  
Christchurch

## **Submission on the New Zealand Freight & Supply Chain Issues Paper from Aerospace Christchurch**

### **About Aerospace Christchurch**

“In the same way New Zealand is a gateway to the Antarctic, Christchurch will be a gateway to space. By 2030, Christchurch will be the home to hundreds of aerospace companies providing thousands of aerospace jobs.”

Mark Rocket, CEO, Kea Aerospace

Aerospace Christchurch is an industry body that promotes the interests of Christchurch, the Canterbury region and New Zealand. We encompass broad aspects of aerospace: aviation, space flight, rocketry, manufacturing, engineering, geospatial mapping, data analytics, education, training and services. Aerospace Christchurch works with individuals and organisations that want to grow the economic wealth and aerospace capability in New Zealand.

Christchurch aspires to be at the centre of an energetic New Zealand aerospace industry by 2025, with a network of aerospace companies employing hundreds of people across the city. The aerospace sector encompasses the research and development, design, manufacturing and launch of satellites, drones, flight vehicles, space launch vehicles, and spacecraft (manned and unmanned), as well as upstream and downstream services concerning the provision and use of aerospace data.

Christchurch’s low air traffic and easy access to both an international airport and seaport makes it an ideal environment for the development and testing of aerospace technologies, including sub-orbital rocket launch, drones and satellites. Christchurch is also the only gateway to Antarctica in New Zealand, and one of only five internationally.

### **We support the overall intent and proposed outcomes of the Strategy but feel it lacks vision for the role that the aerospace sector can play**

The issues paper takes a fairly traditional view of freight supply chain systems and lacks an understanding and vision for the role that the aerospace sector is playing and can play in the future to support the strategic goals you aspire to. The aerospace sector in Aotearoa is fast growing and can deliver innovative solutions to the problems you are trying to address.

The strategy needs to think beyond the obvious solutions to future trends—some which may seem impossible today but in many cases are closer to adoption than you may expect.

## **Key trends in aerospace that support the goals of the strategy**

### *Low emissions – the electrification of aircraft*

We support the need for decarbonisation to be a cornerstone of the strategy. The aviation sector is making significant gains in this area. The Strategy should acknowledge how the greater use of drones and electric aircraft can support this goal.

- The strategy should acknowledge the role that small to medium sized pilotless aircraft can play as a low carbon freight movement option.
- The strategy should place greater emphasis on the transition the aviation sector is making towards low-emission operations, and how New Zealand is uniquely placed to use electric aircraft given the relatively short routes. With a good source of renewable energy, flight costs and emissions could be reduced through the greater use of electric and hybrid aircraft.

### *The rise of autonomy to support greater productivity and innovation*

The autonomous aircraft market is undergoing significant and fast growth. Major aircraft manufacturers as well as dozens of start-ups are developing technology that will allow the safe and efficient delivery of cargo using self-flying planes.

The adoption of autonomous cargo aircraft will reduce the cost of aviation. Without the need to factor in the pilot, these aircraft will substantially increase the frequency of flights and movement of freight. Free from the restrictions brought about by flight crew, this provides the opportunity for more flights—getting our products to market more quickly and cheaply. It will remove trucks off the roads and reduce the reliance on commercial passenger air transport as a means to move freight domestically and internationally.

#### **Case study: Unlocking the potential of autonomy in the freight and supply chain system**

There are a number of companies who are developing solutions to reduce the dependency on pilots thereby dramatically reducing flight costs. Two such companies have a presence in New Zealand.

Merlin Labs has developed and integrated a hardware and software solution that allows any aircraft to fly with reduced pilots or fully autonomously. The hardware can be installed in any aircraft negating the need for new aircraft designs that are costly to certification. It allows aircraft to successfully fly autonomously in complex airspace, integrate into existing air traffic control systems in all weather and all routes. It is the world's only issued certification basis for takeoff to touchdown autonomy in a joint programme with the US FAA and NZCAA. Merlin has partnered with large freight companies both in the US and New Zealand. They are currently exploring freight routes in both the North and South Island.

Skybase's system SOFI adds 'drone' capabilities to existing aircraft, unlocking the potential to operate 24/7. The application of this technology has the ability to move cargo to remote locations at any time—unlocking new cargo routes to provide greater economic opportunities and resilience for these communities. While operating under remote control at the moment, Skybase's aim is to remove the pilot in the near future.

*And it's not just traditional aircraft.....*

Overseas smaller aircraft and drones already offer an on-demand air service ability. There are great examples of the use of drones to transport freight from ship to shore ( [Swoop Aero drone logistics serving Singapore Straits - Australian Manufacturing Forum \(aumanufacturing.com.au\)](#) and [Airbus' Skyways drone trials world's first shore-to-ship deliveries | Airbus](#) ). The ship to shore drone delivery operation speeds up deliveries, lowering delivery costs by up to 90%, reduces the carbon footprint and significantly mitigates risks of accidents associated with launch board deliveries.

Last mile delivery costs make up a significant proportion of the cost of freight delivery. Small drones will also play a greater role to reduce costs and improve access in this area.

#### **Case study: Swoop changing the way we think about first mile and last mile delivery**

Swoop Aero was founded to change how the world moves by making access to the skies seamless, and since 2018 our EVTOL drone logistics platform has undertaken 15,000 flights, delivering over 850,000 items across 7 countries and three continents. Swoop Aero's New Zealand operations are based in Christchurch, and our initial network is due to launch in 2022 in collaboration with the West Coast District Health Board, with a healthcare service operating between Greymouth and Westport.

Swoop Aero's latest aircraft, Kite, is currently undergoing certification with the US Federal Aviation Authority, which will allow us to unlock the skies above cities and enable the growth of urban drone logistics operations.

Swoop Aero's fleet of aircraft bridge the first and last miles between hard-to-reach populations and vital medical supplies needed to improve health outcomes. Because of its unique two-way logistics capability, one flight can safely convey vaccines and other medical supplies at the required temperature for 130 km and can pick up time-sensitive test samples for the return flight.

In April 2022 Swoop Aero announced a partnership with ChristchurchNZ to develop an urban drone logistics network concept, which will identify the opportunities and challenges for a future network that will lower emissions, reduce road congestion, and foster a highly skilled, and highly sought after, local workforce.

#### *Supersonic aircraft*

The next generation of supersonic aircraft is under development with some speculating that supersonic air travel will return before the end of this decade. Aircraft designs are considering how to overcome the noise and emissions issues associated with earlier supersonic aircraft. It is worth considering what role supersonic aircraft could play in the future freight and supply chain system. The considerable time savings these aircraft provide would improve access to international markets for our high value products.

### *Resilience – new aircraft designs provide greater access*

Drones and EVTOL aircraft can also provide access to remote communities where roading or airport infrastructure is costly to build and maintain. This directly supports the resilience goals of the Strategy. These aircraft can be used:

- routinely as a means to supply remote communities
- during emergencies to deliver medicines, food and other supplies.

### [Covid in Scotland: Drones to carry Covid samples - BBC News](#)

#### **The government has several roles that it can play**

##### *Ensuring the regulatory environment is fit for purpose*

Many of these technologies are new and novel. Given the safety implications, our regulatory environment, for good reason, does not easily allow the integration of these new technologies into the transport system. We understand that the future of our sector is dependent on delivering safe and sustainable transport solutions.

There is a role for the government to allow for testing and trialling of this technology, and to signal a clear pathway to regulatory approval. The adoption of ‘sandboxes’ where technology can be safely tested, or partnering with like-minded regulators to develop a common set of rules will go a long way to providing the New Zealand sector with the confidence and certainty needed to develop this technology in Aotearoa.

The government must ensure that rules are designed to support and not hinder innovation. Rules must provide certainty to the sector and be kept up to date. This means the government must ensure that the Ministry of Transport and Civil Aviation Authority have the capacity and capability to maintain the regulatory regime and ensure it is designed to support the goals of this strategy.

We are a small nation and can’t compete with other countries around the amount of funding that is provided to the sector to develop new technologies. However, New Zealand’s value proposition should be our agile regulatory regime, a willingness from regulators to support the development of new technologies and in the case of aviation our unique and varied geography that supports testing and trialling. The government has a role and responsibility to create and nurture such an environment.

##### *Building the workforce we need to be successful*

The document touches on the need to build an adaptable workforce to support resilience outcomes. However to realise all the strategic outcomes will require a highly trained, future-proofed workforce. New Zealand must significantly build our internal capability and capacity if we are to deliver on the strategic goals.

This needs to start with attracting young students into STEM subjects—sparking an interest, enthusiasm and passion that will drive them to seek out careers across a broad range of areas that are essential to nurture and build New Zealand as a centre of innovation—developing solutions that will lower emissions, build resilience, lift productivity and deliver safer communities.

## **We want to play an active role in the development of the Strategy**

Successful stakeholder collaboration is dependent on early engagement to fully understand the problems and opportunities. It is disappointing that we have not have the opportunity to engage early in this piece of work.

The success of this strategy will be dependent on a multi-modal approach. The aerospace sector has a greater role to play than has been portrayed in this issues paper. We would like to be actively involved in the development of the strategy, including representation on reference groups and involvement in workshops as the strategy develops.

### **Key points**

- We support the overall intent and proposed outcomes of the Strategy but feel it lacks an understanding and vision for the role that the aerospace sector is playing and can play in the future to support the strategic goals you aspire to.
- The government must deliver a regulatory regime that supports and doesn't hinder innovation.
- Aerospace Christchurch wants to play an active role to develop the strategy.