New Zealand Space Agency
Ministry of Business, Innovation & Employment
National Office, 15 Stout Street
Wellington 6011
[by email Aerospacestrategy@mbie.govt.nz]

12 October 2022

Re: AWS comments on the Developing the Aotearoa New Zealand Aerospace Strategy consultation document

Dear Madam/Sir,

Amazon Web Services (AWS) is pleased to make a submission on the Developing the Aotearoa New Zealand Aerospace Strategy consultation document.

Introduction

AWS is the cloud computing arm of Amazon Inc. AWS has been operating in New Zealand for the past 9 years. We have offices in Auckland and Wellington including a dedicated public sector-focused team. In September 2021, AWS announced that it would establish an AWS Region in Auckland in 2024, which will bring world-class cloud computing infrastructure onshore to New Zealand. The Economic Impact Study[1] that accompanied the AWS infrastructure announcement estimated that this investment of NZD$7.5 billion will create around 1,000 new jobs and contribute approximately NZD$10.8 billion to New Zealand's GDP over the next 15 years.

AWS allows customers to innovate and scale in a highly secure cloud environment. The forthcoming AWS infrastructure in Auckland will enable our thousands of New Zealand customers – from large enterprises to government to small businesses and individuals – to leverage our advanced cloud services using infrastructure located in New Zealand. Some of our most inspiring New Zealand customer success stories can be found in our Economic Impact Study.[2]

AWS in Space

In July 2020, AWS launched a new business segment dedicated to accelerating innovation in the global aerospace and satellite industry.[3] Then in March 2021, AWS launched the AWS Space Accelerator to catalyse additional innovation and support some of the most innovative startups that are helping shape the future of aerospace. AWS' interest in space is wide ranging from solutions in smart design and manufacturing, ground services[4], geospatial analysis, satellite operations, and research and exploration. AWS has helped commercial and government customers build satellites, conduct space and launch operations. Our reliable global infrastructure and portfolio of cloud services position AWS to equip

[1] AWS Economic Impact Study, New Zealand Region

[2] Ibid. see p.5

[3] We are driving innovation in space with the world's leading cloud, Terresa Carlson, July 2020

[4] Ground services are deployable command & control infrastructure with a direct downlink to the cloud. AWS Ground Station is the only fully managed cloud service that lets you control satellite communications, process data, and scale your operations without having to worry about building or managing your own ground station infrastructure.

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organisations in the private and public sector to process and transform space collections into data, make that data actionable and accessible to customers around the globe, and redefine how organisations transform the space sector segment. With the AWS Cloud customers are accelerating space missions.[5] To read about some of our customer stories in the public sector, we have published a number of blogs here.

AWS has the largest and most dynamic community, with millions of active customers and tens of thousands of partners globally. Customers across virtually every industry and of every size, including start-ups, enterprises, and public sector organisations, are running a variety of use cases on AWS. With AWS, customers can leverage the latest technologies to experiment and innovate more quickly. We are continually accelerating our pace of innovation to invent entirely new technologies to transform business. AWS is architected to be the most flexible and secure cloud computing environment available today. Our core infrastructure is built to satisfy the security requirements for the military, global banks, and other high-sensitivity organisations. This is backed by a deep set of cloud security tools, with 230 security, compliance, and governance services and features. Within New Zealand's emerging commercial space industry, where it's feasible for even small start-ups to make a big impact by introducing innovative new space technologies, the cloud will be critical to accelerating experimentation, expanding automation, and delivering deeper insights.

Comments on the consultation document

The attached submission (Appendix A) contains AWS views on ***Developing the Aotearoa New Zealand Aerospace Strategy consultation document***. Thank you for the opportunity to provide comments. We would be pleased to elaborate further on our submission and look forward to remaining engaged in supporting New Zealand's Aerospace Strategy and subsequent implementation.

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Amazon Web Services

[5] AWS for Aerospace and Satellite

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Appendix A

AWS Submission to the New Zealand Government on the Aotearoa New Zealand Aerospace Strategy consultation document

AWS is pleased to submit the following comments in response to the consultation document.

Question 1: Do the four areas above provide the right basis for the Aerospace Strategy?

We agree that the "four areas" provide the right framework for New Zealand's Aerospace Strategy. The "four areas" clearly identify the "why" and "how" of an aerospace plan. The "what" is captured in the Pillars and Goals sections. We respectfully recommend that the "who" (e.g. which government agencies will have the responsibility for overseeing the implementation of the strategy's Action Plan) and "when" be covered in the "Pathway to the 2030 Future State" (please see our responses to Questions 16 and 17 below).

Question 2: What are the critical factors that you see for aerospace sector development?

We see five foundational elements as being critical to the development of the aerospace sector:

- Culture of innovation: Technology development, innovation, and intellectual property creation/protection;
- Aerospace professional development: Workforce development and education;
- Investment: Clearly articulated and steady investment by the government and attraction of private capital;
- Export: Strong export advocacy from the government to support New Zealand companies; and
- Sector attraction: Attraction of global aerospace businesses and knowledgeable human talent to New Zealand.

Question 3: How would an Aerospace Strategy help you?

Having a national aerospace strategy, and one that is open for public consultation, is an important signal both domestically and internationally that the New Zealand Government is prioritising this sector and wanting to learn from international best practice. As this strategy continues to develop, including the 2030 Future State, companies can prioritise their activities and investments in New Zealand in support of and alongside local business. Clear and concise guidance from the government is helpful in creating a stable and growing aerospace industry, one characterised by strong partnerships at the local, national and international levels.

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?

There may be benefit in adding a section to the beginning of the 2030 Future State stating New Zealand's current capabilities and strengths. Outlining the current capabilities would help the government and

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industry develop clear starting points and roadmaps for how to achieve the 2030 Future States and such an exercise may also help identify areas of needed improvement or attention. A recommended approach to encouraging aerospace sector development is ensuring that the strategy articulates clearly the contribution of the sector to national goals for example relating to employment, communications, telehealth and education, maritime activities, transportation, national security and other strategic areas for New Zealand. This focuses the Future State on national interests and how the aerospace sector can help to achieve those interests.

Question 5: Will the 2030 Future State support your ambitions for growth and participation in the sector?

The Future State, as written helps us in determining how AWS might best support our customers in New Zealand. As suggested in the response to Question 4, the Future State could provide additional detail that would help enabling partners, such as AWS, to understand where to focus support of New Zealand's aerospace sector. We note that the final aerospace strategy document could provide further clarity to the aerospace industry and government agencies if it were to include specific mention of the key missions (e.g., agriculture, disaster response/recovery), technologies (e.g., launch), and other capabilities the government would like to see emerge from the New Zealand aerospace industry.

Question 6: What barriers are there to optimising sector growth?

Although we see no particular barriers at this time, special attention should be paid to such issues as licensing, regulation, export controls, and incentives/disincentives for venture capital funding as the aerospace sector evolves. New Zealand's current approach to ensuring strong collaboration with international partners in sharing aerospace-enabled data across borders should be continued as a good practice that will support growth of the sector and its international networks. Within the emerging commercial space industry, where it's feasible for even small start-ups to make a big impact by introducing innovative new space technologies, public cloud will be critical to accelerating experimentation, expanding automation, and delivering deeper insights.[6] [redacted]

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

Encouraging growth toward the 2030 Future State will require consistency and continuity of policy and direction from government. The development of aerospace technologies can take many years and frequent changes to plans/strategies can disincentivise companies from investments in research and development. Achieving the 2030 Future State will also depend on strong relationships between government, the commercial aerospace industry and technology providers. Please see our answers to questions 12-18 for specifics on how government and industry could work together to achieve these goals.

Question 8: How can the Government enable Māori ambitions for the sector?

The strategy could benefit from elaborating further on how capabilities from the aerospace industry such as telecommunications, drone delivery, telemedicine and agriculture, etc. can improve the quality of life

[6] It's officially start-up season in space, Werner Vogel, June 2021

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for Māori. It could also describe specific initiatives that may be taken to support Māori aerospace sector opportunities. [redacted]

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

The content of the Pillars does support the 2030 Future State. From the perspective of structure and nomenclature, the various "Areas", "Pillars", "Goals", and "Future State" in the strategy may create confusion unless the overall "framework" is clearly described at the outset. Many jurisdictions take a "principles, end-state/goals, ways, and means" approach to aerospace strategies and policy guidance. All of New Zealand's aerospace stakeholders, government and industry, may find it easier to achieve the 2030 Future State if the strategy clearly identifies and differentiates the key elements of this strategy, how they connect, and the interdependencies between them. Any confusion around the priorities and topic areas may hinder how the many players organise, execute, and oversee the Aerospace Strategy. We recommend reviewing the pillars to identify any overlap - for example, Pillars One and Two both describe regulatory topics, and Pillars One and Three both describe workforce development and training.

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

We recommend providing specific references and use cases in the full version of the Aerospace Strategy to provide examples of where the aerospace sector and/or specific technologies can support sector growth. For example, the final aerospace strategy document could specify key missions (e.g., agriculture, disaster response/recovery) and the technologies applied (e.g., launchers, cloud storage, 5G networks) as use cases under Pillar One – Unlocking Aerospace Potential. AWS has a number of customer stories and use cases on our website should this prove to be useful in building out these case studies.

We recommend providing additional detail within the pillars. Pillar One contains several important ideas and initiatives – e.g. exports, technology development, workforce, education, infrastructure investment. It would benefit from further details because of the breadth of issues highlighted. For example, the Aerospace Strategy states that Pillar One will rely on essential infrastructure and investment. Early identification of which areas to target for development and investment would be useful to support implementation. The government could articulate where enabling technology investments, such as in cloud technology and infrastructure, can play a role in establishing a New Zealand aerospace sector. On Pillar Two specifically, we recommend that the strategy identify specific policies, regulations, legislation, and states which agencies will be responsible for specific elements of the strategy. With respect to Pillar Three, we recommend providing more clarity on the "Aerospace Nation" concept and how it will be implemented.

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

Nations with successful aerospace sectors have articulated clear goals, provided a fertile environment for the sector to grow (R&D funding, incentives, progressive regulations, etc.) and have frameworks to work collaboratively with the sector. Prescribing specific actions and initiatives may be more appropriate during the implementation phases of the aerospace strategy when the government and aerospace sector are

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working to collaboratively implement the strategy. Strong relationships and mechanisms that encourage cooperation between the government and sector, including clearly defined shared goals and communication mechanisms, will enable problem solving and opportunity creation in support of the strategy. It is also important that the industry players in the sector have opportunities to contribute to the development of specific policies and regulatory reviews that impact the sector.

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

The goals themselves are appropriate for both developing the aerospace sector and New Zealand's aerospace "exportable" technologies and services. We recommend that the goals be fully integrated within the 2030 Future State as outlined in Area 1 in the document.

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?

The goals appear to build upon existing government policy approaches to sustainability, safety in the space sector more generally and data-led decision-making. This is important for the sector as these policies continue to develop across sectors. The goals have been made specific to the aerospace sector. We recommend that the goals be embedded within the Action Plan as objectives, with clear initiatives for each. We further recommend that the goals should reference the Areas, Pillars, and Future State 2030. We note also that there are some critical areas identified in the pillars but are not reflected in the goals. For example, the inclusive and diverse aerospace sector referenced in the Future State 2030 and Pillar Three is not referenced in the goals.

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

Achieving these goals will require collaboration from across government and across industry. Rather than focus on specific activities or milestones it may be better to note in the Aerospace Strategy the need for New Zealand to take a "whole of nation" approach to achieving these goals and that every part of New Zealand's government and commercial sectors will need to participate. Please reference our responses to Questions 4, 7, 10, and 11.

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

AWS supports customers in government and industry that support aerospace and space applications across a wide range of solutions in smart design and manufacturing, ground services, geospatial analysis, satellite operations, and research and exploration which support all five of New Zealand's Aerospace Strategy goals. AWS can bring space experience, cloud services directly applicable to the aerospace sector, and share knowledge learnt through recent case studies relevant to New Zealand. Some thought-leaders at AWS who provide insights from their deep technology or space experience through blogs and online articles include AWS CTO Werner Vogels and Clint Crozier (Maj Gen, Air Force/Space Force Retired), Director of Aerospace and Satellite Solutions, AWS. Specifically, AWS sees Goal Five as an area in which we have a strong capability including a dedicated Aerospace and Satellite business unit. We see Goal Five as foundational to the success of the four other goals.

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

We welcome the Action Plan. After the Aerospace Strategy is released we recommend clear identification of which government agencies will have the responsibility for overseeing the implementation of the strategy's Action Plan. Specific actions may not be as important, for now, as the *process* for deciding which of those specific actions is confirmed first. Structured ongoing collaboration between government and industry, consistency and continuity in the government actions, and a clear process for determining and prioritising actions amongst all the actors will be beneficial.

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

AWS would like to be involved in the execution of the Aerospace Strategy. [redacted]

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