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Page 4: New Zealand's interests in space

Q7 **General interest in space,**
Work in the New Zealand space sector

What are your interests and relationship to space? Pick as many as apply below:

Q8

Please note any other interests and relationship to space below that you would like to share.

I have been involved in the space sector since my undergraduate studies at the University of Canterbury. I founded the UC Rocketry Project, contributed to the creation of the first official university course in NZ focussed on rocketry, and laid the groundwork for Rocket Lab's guidance, navigation and control systems. I joined Rocket Lab as an early employee, and developed Electron's navigation system and other aspects of the vehicle.

Since leaving Rocket Lab, I have founded my own rocket propulsion company, Argo Navis, that is supporting the wider space industry by reducing cost and schedule slip coming from engine development and a lack of commercially available rocket engines. My vision is to support a diverse, thriving commercial space industry, where we contribute our expertise and technology to a range of programs through local and international collaborations.

My staff have contributed to this submission. They are passionate about developing new technology and flying our engines in high profile space missions, as well as having a health space environment to inherit from the previous generation of engineers and space activities.

Page 5: New Zealand's values in space

Q9

To what extent do you agree or disagree that these values should apply to New Zealand's space activities and engagements?

Innovation	Strongly agree
Responsibility	Strongly agree
Stewardship	Strongly agree
Partnership	Strongly agree

Q10 **Respondent skipped this question**

Are there any other values, or aspects of kaitiakitanga (guardianship), that you think should apply to New Zealand's space activities and engagements? For example, cultural values regarding space.

Page 6: New Zealand’s space policy objectives

Q11

Respondent skipped this question

Rank these key policy objectives in order of importance to you: Click and drag to reorder the objectives from 1 (most important) to 5 (least important)

Page 7: Growing an innovative and inclusive space sector

Q12

To what extent do you agree or disagree that these policy objectives will help the New Zealand government to grow an innovative and inclusive space sector?

Promoting New Zealand’s natural advantage for conducting space activities, and research and development expertise across the space value chain	Strongly agree
Partnering within New Zealand and internationally to increase research and development capabilities	Agree
Identifying opportunities to increase diversity in the space sector	Agree
Using cutting-edge space technology and space sourced data to support New Zealand’s values and interests	Agree

Q13

Respondent skipped this question

Do you have any comments on these policy objectives? (e.g. any suggested change to how they are framed? Is there anything missing?)

Q14

Are there any other policy objectives that you think would help the New Zealand government to grow an innovative and inclusive space sector?

B – It is crucial that there is regulation that promotes and ensures the fair sharing of finite resources within NZ. For example, encouraging cooperation when it comes to the use of underutilised radio spectrum, owned by large commercial entities, may become vital as the industry grows.

Q15

Do you have any questions or comments about what these objectives would mean in practice?

C - Increasing diversity in the space sector, although necessary, is very challenging. Ultimately it is a problem in the wider industry. For example, most of the workforce in the NZ aerospace industry are engineers and unfortunately enrolments to study Engineering at the University of Auckland are made up of around 30% women. It is simply impossible to expect to have 50% female engineers in industry if the “input” is only 30%. So, implementation of diversity needs to also include a focus on introductions to STEM roles and exposure to the industry in early education.

Page 8: Promoting the responsible uses of space internationally

Q16

To what extent do you agree or disagree that these policy objectives will help the New Zealand government to promote the responsible uses of space internationally?

Advocating for effective international rules, norms and standards in space	Strongly agree
Partnering with like-minded launch states to adopt peaceful, responsible and sustainable space practices	Strongly agree
Collaborating internationally to increase New Zealand's influence and capabilities in the global space sector	Strongly agree

Q17

Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)

We are on-board with being a leader in adopting policies for responsible use of space, such as de-orbiting rocket stages after payload deployment. While this may impact us in the short term compared to other nations have yet to adopt such policies, if we build strong international partnerships and negotiate for other nations to be early adopters alongside us, New Zealand can lead the way while minimising the financial impact on individual companies.

Q18

Respondent skipped this question

Are there any other policy objectives that you think would help the New Zealand government to promote the responsible uses of space internationally?

Q19

Do you have any questions or comments about what these objectives would mean in practice?

From the perspective of Argo Navis, this will primarily be around minimising space junk creation through discarded rocket stages.

Page 9: Protecting and advancing our national security and economic interests

Q20

To what extent do you agree or disagree that these policy objectives will help the New Zealand government to protect and advance our national security and economic interests?

Use space assets to protect and advance New Zealand's national security and economic interests	Strongly agree
Manage the broad range of security risks in space to protect New Zealand's space industry	Strongly agree
Collaborate with international space and security partners to pursue New Zealand's national security and economic interests	Strongly agree

Q21

Respondent skipped this question

Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)

Q22

Are there any other policy objectives that you think would help the New Zealand government to protect and advance our national security and economic interests?

It would be fantastic to see more direct government support for companies carrying out R&D in critical areas of national security and economic development. Many of our overseas counterparts have access to significant non-venture capital funding that we do not, and it puts us at a disadvantage.

Q23

Respondent skipped this question

Do you have any questions or comments about what these objectives would mean in practice?

Page 10: Modelling sustainable space and Earth environments

Q24

To what extent do you agree or disagree that these policy objectives will help the New Zealand government to model sustainable space and Earth environments?

Encouraging inclusive, sustainable space collaborations within New Zealand	Agree
Assessing the cumulative impact of space activities on the Earth environment	Agree
Assisting with solving sustainability challenges through space data, including to better monitor or understand the Earth's environment	Agree
Investing in New Zealand's capability to retain, grow, access and use sustainable space technologies	Strongly agree

Q25

Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)

Starting with robust modelling of these areas is excellent. We need to go further than just modelling - what is needed is elegant regulation that has real bite (actively implements solutions to improving and preserving the relevant environments) while minimising impact or unfair burden on commercial entities or nations.

Q26

Respondent skipped this question

Are there any other policy objectives that you think would help the New Zealand government to model sustainable space and Earth environments?

Q27

Respondent skipped this question

Do you have any questions or comments about what these objectives would mean in practice?

Page 11: Regulating to ensure space activities are safe and secure

Q28

To what extent do you agree or disagree that these policy objectives will help the New Zealand government to promote the responsible uses of space internationally?

Facilitating the safe and secure use of emerging space technologies from New Zealand **Strongly agree**

Clarifying what New Zealand space activities are inconsistent with the national interest **Strongly agree**

Promoting and protecting New Zealand's interests through permitting space technologies **Strongly agree**

Q29

Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)

I would like to see some nuance around not over-regulating the industry. We need common sense, fit for purpose regulation that enables innovation to thrive while ensuring safety, as opposed to ensuring safety at any cost. Our European partners face many challenges around over-regulation. An example I heard recently was a clash between pipework standards in different European nations. When each nation is required to follow prescriptive pipework standards developed in their home country, but they are collaborating with other nations on a satellite or launch vehicle, there is a clash between regulatory requirements where neither party can comply and common sense cannot be implemented. This adds significant cost to a program as well as leading to solutions that may meet regulatory requirements but actually add significant flaws into the design.

If New Zealand can find elegant regulatory mechanisms for achieving safety without prescribing the exact, inflexible way things must be done, we could maintain a regulatory environment that gives us a major competitive advantage.

Q30

Respondent skipped this question

Are there any other policy objectives that you think would help the New Zealand government to ensure space activities are safe and secure?

Q31

Respondent skipped this question

Do you have any questions or comments about what these objectives would mean in practice?

Page 12: Regulating in line with our national interests

Q32

Are there any comments you would like to make about these criteria that inform consideration of the national interest?

We will forever be wanting better clarification around what is included in the defence, security or intelligence category as this is often hard to define.

Q33

Respondent skipped this question

What questions do you have about how the national interest is considered in practice?
