

A satellite-style image of New Zealand, showing the North and South Islands, with a dark blue semi-transparent overlay. The text is centered on the left side of the image.

## **Summary of feedback**

New Zealand Space Policy Review  
Consultation



### **About PublicVoice**

The analysis and reporting for the New Zealand Space Policy Review consultation has been undertaken by PublicVoice Limited. PublicVoice is a research and engagement consultancy located in Wellington, New Zealand. We specialise in research and engagement activities related to public policy and public consultation. PublicVoice works for a range of New Zealand local and central government agencies. You can find out more about our work at [www.publicvoice.co.nz](http://www.publicvoice.co.nz).

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## Introduction

This document summarises the submissions and feedback received during the public consultation period for the *New Zealand Space Policy Review*<sup>1</sup>. The consultation period ran from 5 September 2022 to 31 October 2022. During this time, 183 submissions were received, 5 public meetings were held and 4 targeted meetings were conducted. Low attendance was recorded at the 5 public meetings.

This report focuses on summarising submissions and presenting feedback gathered during public meetings; it does not make assessments or recommendations on feedback. In addition to feedback collated through this report, MBIE is also separately analysing all submissions to inform recommendations to relevant Ministers on:

- Creating a National Space Policy: a document which outlines New Zealand's values and objectives on space, including for our international partners;
- Articulating New Zealand's broad interests on space across multiple activities and engagements: including at United Nations fora and with international space and security partners;
- Developing future space strategies, policies and regulatory changes: including adjusting our policies and regulations to meet advancements in space technology;
- Further engagement on space policy with the New Zealand public: including on any key areas of interest identified through the consultation; and
- Considering whether any legislative changes are required to the Outer Space and High-altitude Activities Act 2017

## Where did submissions come from?

A total of 183 submissions were received. Of these, 129 submissions came from individual submitters, and 54 were on behalf of organisations. A list of submitters can be found in Appendix 1 — Organisations that submitted and Appendix 2 — Individuals who submitted. The names of 55 individuals and 15 businesses have been redacted on request for privacy reasons.

The consultation questions tested the values and objectives outlined in the Space Policy Review consultation document. An online survey was developed by MBIE in consultation with other space policy government agencies and a Word document using the same questions as the online survey was provided for respondents to complete. Of the 183 submissions received, 117 were received via the online survey, 44 were submitted in the template provided and 22 were unstructured written submissions received via email.

### Unstructured written submissions received via email

Of the written submissions received, 22 were unstructured/not submitted within the consultation form. Some of these submissions indicated which consultation questions they were directly answering. These submissions were processed and analysed according to the questions. Whenever submissions did not follow a set structure, they were analysed as per the consultation questions PublicVoice deemed them to be answering most closely. Closed-ended questions (e.g. asking to what extent submitters agreed or disagreed with values and objectives) were only incorporated from the responses to the online survey or submissions received via the survey template.

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<sup>1</sup> *New Zealand Space Policy Review Consultation, September 2022*. New Zealand Space Agency, Ministry of Business, Innovation and Employment (MBIE)

## The consultation process and submissions

A consultation document (in PDF and html formats) was made available to the public through The Ministry of Business, Innovation and Employment's (MBIE) Have Your Say webpage.<sup>2</sup> The document outlined the government's existing interests, values and objectives which inform New Zealand's space policies. Submissions and feedback were invited through an online survey, by email or in hardcopy.

### Data analysis methodology

The consultation questions have formed the framework of analysis and reporting of all submissions.

#### Thematic analysis

PublicVoice undertook the analysis of responses to open-ended interface questions. All submissions received via the online interface and in written format underwent thematic analysis, which extracted topics from the text responses. The foundation for the thematic analysis used by PublicVoice is the methodology developed by Braun and Clarke, 2006.<sup>3</sup> A team of research analysts identified, analysed and interpreted patterns of meaning within the open-ended responses. Each theme was then analysed for frequency.

Themes are reported with n values (n=x). 'n' represents the number of submitters who mentioned the theme at least once in their response to a particular survey question. Submitters tended to repeat comments across all objectives and questions, hence there is repetition in the thematic analysis results.

Disclaimer: The choice of words used in the thematic analysis is reflective of the submitter's language. Therefore, themes may reflect different interpretations and world views of submitters and not those of MBIE or PublicVoice.

#### Classification of themes

The results from the thematic analysis were organised into top-level themes to aid interpretation. The most common themes have been listed below, along with a brief description.

*Economic* — includes responses regarding the financial aspects of space policy, exploration, or governance, as well as the economic benefits to New Zealand from having a space industry.

*Education* — includes responses related to general public education as well as the importance of education and training specifically for the space sector.

*Environmental* — includes responses related to the relationship between space and the environment.

*General comments* — includes responses that are generally related to the question asked or the consultation content.

*Governance* — includes responses relating to the governance of space both locally and internationally.

*Military* — includes responses that relate to the militarisation of space.

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<sup>2</sup> New Zealand Space Policy Review, Ministry of Business, Innovation and Employment. <https://www.mbie.govt.nz/have-your-say/new-zealand-space-policy-review/>

<sup>3</sup> Braun and V. Clarke (2006), 'Using thematic analysis in psychology'. *Qualitative Research in Psychology*, 3(2), 77-101.

*National security* — includes responses relating to the security of New Zealand in relation to space exploration.

*Partnership* — includes responses that relate to Treaty partnerships, international governmental partnerships, and public-private partnerships.

*Technology* — includes responses that relate to innovation and the use of technology in space.

### **Further classification**

Submissions were then further categorised into topics under each of these top-level categories.

## **Quotes**

This report contains quotes extracted from submissions. Quotes were selected for inclusion in the report based on how well the response represented one or more of the identified themes.

# Overview of submissions

## Section 1: New Zealand interests in space

### Question 1. What are your interests and relationship to space?

Submitters were asked what their interests and relationship to space were. They could select as many interests or relationships that applied to them. They were also able to add any other interests or relationships which have been further categorised. Some interests and relationships mentioned in “Other” fit into the options presented and were categorised as such

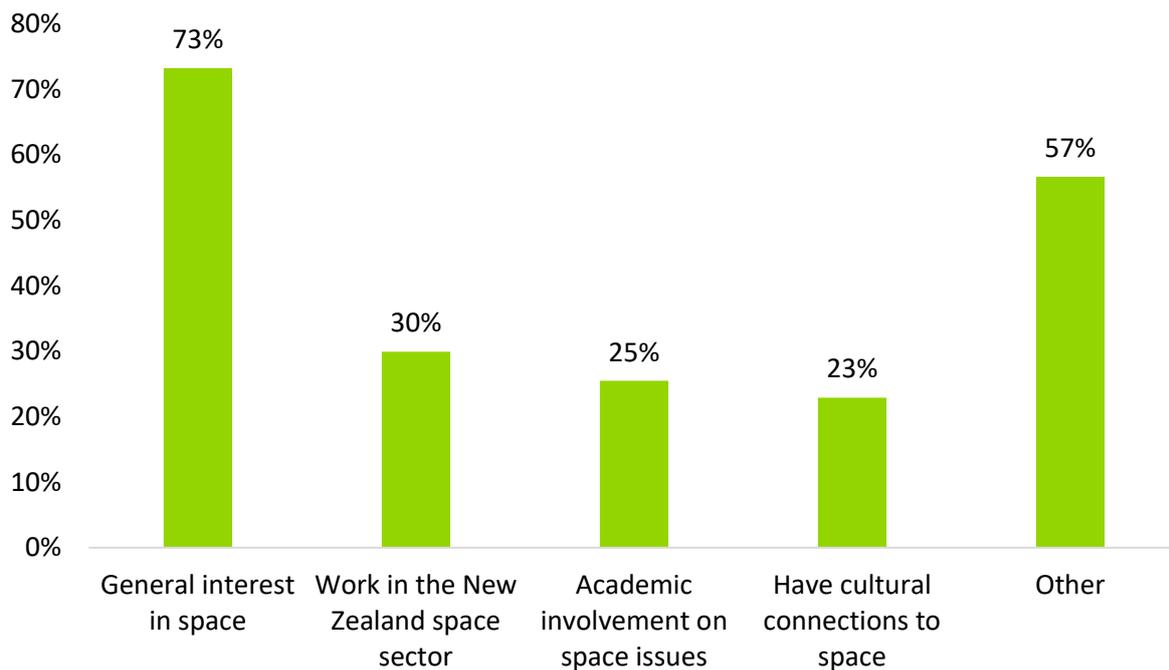


Figure 1: Q1 - What are your interests and relationship to space?

Interest group (listed in submission form)	# of submissions
General interest in space	115
Work in the New Zealand space sector	47
Academic involvement on space issues	40
Have cultural connections to space	36
<b>Other interest groups (categorised from mention in submission)</b>	
Experience in/part of space industry	36
Advocate of peaceful use of space	36
Interest in politics of space	18
Environmental interest	15
Advocate for promoting New Zealand space industry	11
Noted they live in/near Mahia	7
Advocate for minimal use of space	3

Table 1: Q1 - What are your interests and relationship to space?

**Are you making this submission on behalf of a business or organisation?**

A list of submitters can be found in Appendix 1 — Organisations that submitted and Appendix 2 — Individuals who submitted. The names of 55 individuals and 15 businesses have been redacted on request for privacy responses.

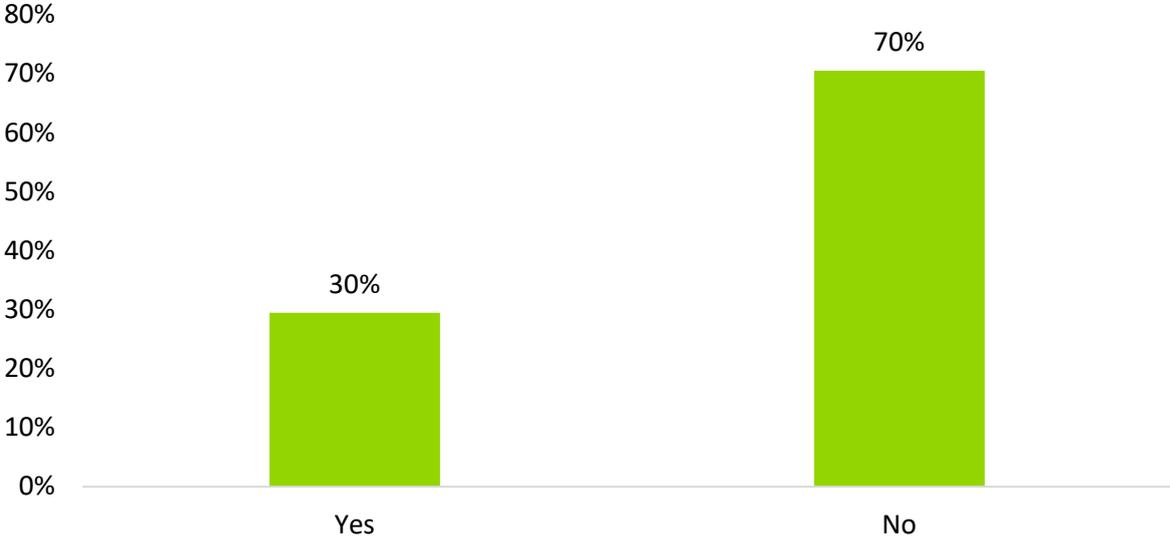


Figure 2: Are you making this submission on behalf of a business or organisation?

Business or organisation	# of submissions
Yes	54
No	129

Table 2: Are you making this submission on behalf of a business or organisation?

## Section 2: New Zealand values in space

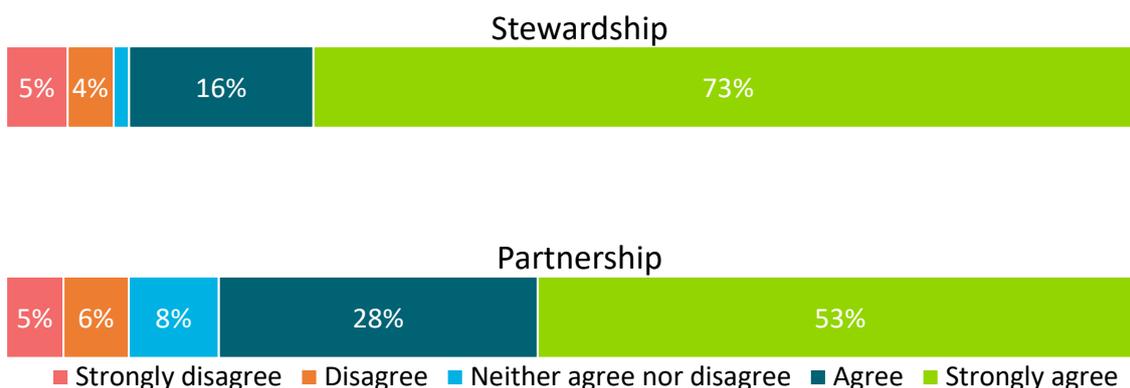
New Zealand’s values speak to who we are as a nation and how we act in the world. The following are values that the New Zealand government aims to reflect and promote through space activities, engagements and the use of space technologies. These values are informed by the concept of kaitiakitanga (guardianship) as a guiding framework to ensure that space, and its benefits, remain accessible for all.

- **Innovation** – We value innovation, science, and technology as means of advancing our knowledge about the universe, driving productivity in the economy and improving the wellbeing of New Zealanders. We also want to encourage innovation which is responsible, enables New Zealand to be a good steward of the environment, and enables collaboration with companies and other governments.
- **Responsibility** – Space is a unique domain which is shared by all states. We act responsibly to promote a peaceful, stable, and secure space environment and to inform responsible behaviours on Earth. This includes acting in accordance with the principles in the Outer Space Treaty and other international agreements and arrangements applicable to space, as well as New Zealand’s domestic law and policies. We also seek to influence the development of new international instruments, and develop norms and standards with like-minded countries, where there are gaps.
- **Stewardship** – Space offers a unique perspective that is crucial for understanding our environment, including to fight climate change, and better manage our natural resources. At the same time, we take care to act sustainably in space and on Earth to preserve the benefits of these environments for future generations.
- **Partnership** – We are better when we work together. Participation, Partnership, and Protection are key principles of Te Tiriti o Waitangi and we want to continue to engage with Māori on New Zealand’s space activities and engagements. The government works alongside New Zealanders and the space sector in developing policy and regulations that impact them; collaborates with international partners on economic, security and other interests; and within international institutions to promote New Zealand’s values.

### Question 2. To what extent do you agree or disagree that these values should apply to New Zealand’s space activities and engagements?

Submitters were asked to what extent they agree or disagree that these values should apply to New Zealand’s space activities and engagements. The following responses are based on what was received on this particular survey question.





**Figure 3: To what extent do you agree or disagree that these values should apply to New Zealand’s space activities and engagements?**

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	# of submissions
Innovation	6%	5%	8%	22%	58%	144
Responsibility	6%	4%	4%	12%	73%	146
Stewardship	5%	4%	1%	16%	73%	148
Partnership	5%	6%	8%	28%	53%	139

**Table 3: Q2 - To what extent do you agree or disagree that these values should apply to New Zealand’s space activities and engagements?<sup>4</sup>**

Table 4 shows the average level of agreement. Submitters indicated their level of agreement on a scale of strongly disagree to strongly agree. Each response was assigned a value, strongly disagree was given a value of 1 and strongly agree a value of 5. These were then averaged to give a result on the level of agreement.

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	All submitters
Innovation	4.25	4.83	3.68	4.50	3.85	4.22
Responsibility	4.43	4.76	4.03	4.70	4.32	4.42
Stewardship	4.48	4.76	4.06	4.58	4.43	4.47
Partnership	4.18	4.32	4.03	4.55	4.05	4.19

**Table 4: Q2 - To what extent do you agree or disagree that these values should apply to New Zealand’s space activities and engagements? By interest groups (average rating 1= strongly disagree, 5 = strongly agree)**

<sup>4</sup> Due to rounding % may not always add to 100%.

**Question 3. 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).**

Table 5 details the feedback received which referred to the other values, or aspects of kaitiakitanga (guardianship) that participants thought should apply to New Zealand’s space activities and engagements.

Main theme	Topic	Frequency
<b>Other values</b>		
	Peace	46
	Fulfil Te Tiriti obligations	29
	Transparency	17
	Sustainability	16
	Nuclear free values	12
	Human rights	9
	Value space as a global common	5
	Taonga tuku iho	5
	Values should be colourblind	4
	Leadership	3
	Taiao	2
	Respect	2
	Whakamarumaruru	1
	Culture	1
	Safety	1
	Accountability	1
	Education	1
	Collaboration	1
	Security	1
<b>Aspects of kaitiakitanga</b>		
	Apply kaitiakitanga to space	10
	Utilise space for environmental monitoring	3
	Recognise Māori rights to space	1
	Kaitiakitanga requires that launching does not prohibit access	1

**Table 5: Q3 - Are there any other values, or aspects of kaitiakitanga (guardianship), that you think should apply to New Zealand’s space activities and engagements.**

*“The overarching value should be that space should be used for peaceful purpose only. This fits well with the values of Responsibility and Stewardship.”*

**Submitter quote — Peace**

*“We agree with the values that the Government has identified should aim to reflect and promote through engagement with space, with a particular significance of Partnership <sup>(SEP)</sup> principle underpinned by Te Tiriti o Waitangi.”*

**Submitter quote — Fulfil Te Tiriti obligations**

### Section 3: New Zealand’s space policy objectives

The New Zealand government supports a range of interests in space (economic, environmental, international, national security and regulatory) by pursuing the following key policy objectives:

- Growing an innovative and inclusive space sector
- Modelling sustainable space and Earth environments
- Promoting the responsible uses of space internationally
- Protecting and advancing our national security and economic interests
- Regulating to ensure space activities are safe and secure

This section of the report summarises the feedback received on each of the policy objectives. For each objective submitters were asked to what extent they agreed or disagreed with the policy objective, whether they have any comments on the policy objective, if any other policy objectives should be considered, and lastly, whether they had any questions or comments relating to the objective.

Feedback is presented as figures and tables and organised according to the questions in the submission form. For open-ended questions, submitters tended to repeat comments across all objectives and questions, hence there is repetition in the thematic analysis results. The results below present a summary of submissions received on each question and make no further analysis of the data or recommendations.

#### Question 4. Are any of these key policy objectives of particular importance to you?

Submitters completing the online form were asked to rank each of the key policy objectives in order of importance to them. Objectives ranked most important by submitters were assigned a value of 1, similarly those ranked second were assigned a value of 2 with the least important assigned a value of 5. These values were averaged to get an overall ranking score. A lower score indicates that submitters ranked the objective higher in importance.

Table 6 shows the average ranking or placement of each objective by submitters. The overall ranking is represented by the average rank of each objective across all submissions. Objectives are listed in order of overall average ranking.

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	Overall average ranking
Modelling sustainable space and Earth environments	2.26	2.61	1.83	2.17	2.06	2.21
Promoting the responsible uses of space internationally	2.41	3.11	2.08	2.42	2.29	2.45
Growing an innovative and inclusive space sector	3.06	1.56	3.71	2.61	3.53	3.07

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	Overall average ranking
Regulating to ensure space activities are safe and secure	3.10	4.00	2.87	3.61	2.97	3.13
Protecting and advancing our national security and economic interests	3.97	3.29	4.29	3.81	3.82	3.93

**Table 6: Q4 - Rank these key policy objectives in order of importance to you. Average rank By interest groups (average rating 1= most important, 5 = least important)**

Submissions received in written format were only able to provide comments on each of the objectives. Table 7 provides a summary of the comments received.

Main theme	Topic	Frequency
Growing an innovative and inclusive space sector		
	Objective is important	14
	Focus on growth/support/collaboration with space businesses	7
	Attractive policies/investment required for industry and talent	6
	Increase awareness of career paths in space industry	2
	Concerns regarding how inclusivity will be achieved	1
	Allow New Zealand to compete in international market	1
	Take part in international R&D	1
	New Zealand is attractive for skilled workers	1
Modelling a sustainable space and Earth environment		
	Objective is important	6
	Mitigation of space debris	2
	Public-private partnerships for active debris removal	1
	Better ground-based tracking assets required	1
	Promote better data sharing among space operators	1
	Better modelling for the LEO atmospheric environment required	1
	Support joining UN Convention on Registration of Objects	1
	Use of Space Sustainability Rating for New Zealand launches	1
	Preventative measures for space collisions needed	1
	Promote use/development of sustainable technology	1
Promoting the responsible uses of space internationally		
	Objective is important	12
	Oppose military-related applications	5
	New Zealand to set example of responsible use of space	3
	Promote peaceful use of space	2
	Promote use/development of sustainable technology	1
	New Zealand has opportunity for large international influence	1

Main theme	Topic	Frequency
	Promote international cooperation	1
	Engage with industry/states for responsible use	1
Protecting and advancing national security and economic interests		
	Objective is important	8
	Public trust requires transparency around payloads	3
	Aerospace data increases productivity and economic value	2
	Important for maintaining global alliances	2
	Concern regarding assessment of military payloads	2
	Support for collaboration on environmental monitoring	1
	Non-weaponised military use	1
	Important for innovation	1
	Support partnering with like-minded states	1
	Reliable high speed connection important for economic interest	1
	Recognise dual purpose applications for national security	1
Regulating to ensure space activities are safe and secure		
	Objective is important	7
	Regulations should not impede innovation	3
	Uphold international/national law	3
	Regulations needed for safety of launches	2
	Ensure regulations keep up with industry	2
	Regulations ensure New Zealand is a trusted space participant	1
	Discourages use of nuclear weapons	1
	Incorporate sustainability values into regulation	1
General comments		
	All objectives are equally important	8
	Need to include scientific pursuit/discovery as policy	2
	Objectives require more detail	2
	Improve public knowledge of space sector	2
	Incorporate Te Ao Māori into policies	2
	Objectives should be aligned to high-level national interests	1
	Values and objectives do ensure peaceful use of space	1
	Values and objectives do not ensure peaceful use of space	1
	Cultural and environmental protection should not be traded off	1
	New Zealand to share economic advances internationally	1
	Ensure space sector contributes to improved well-being/equality	1
	Concern regarding consultation	1
	Clarify/define "space"	1
	Requires a whole of government approach	1
	Framework is vague/unclear	1
	Require expert staff as science advisors for NZSA	1

Table 7: Q4 - Are any of these key policy objectives of particular interest to you?

### Section 3a: Growing an innovative and inclusive space sector

**Objectives**

The New Zealand government supports the growth of an innovative and inclusive space sector. This means:

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

**Question 5. 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?**

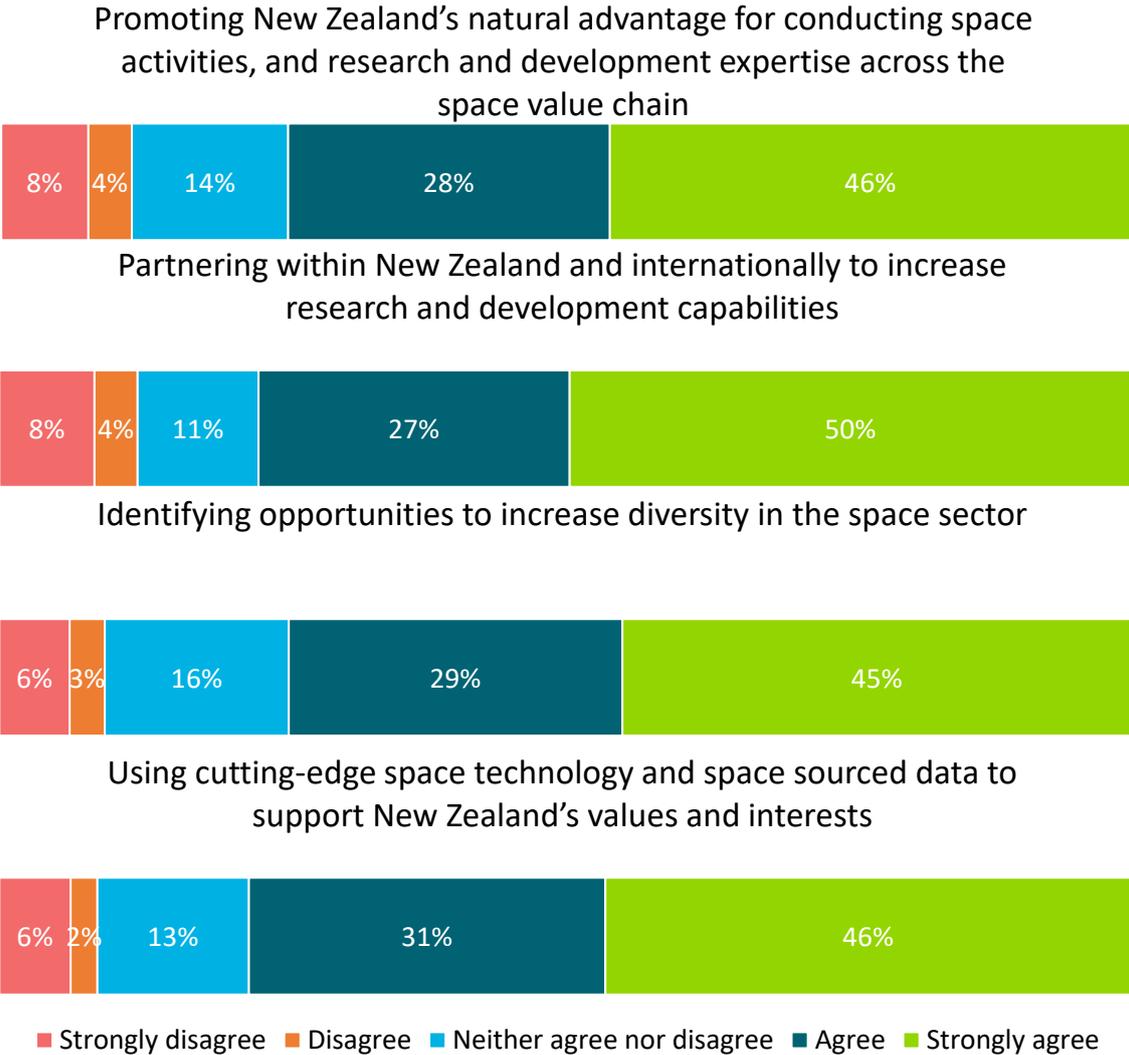


Figure 4: Q5 - To what extent do you agree or disagree that these policy objectives will help the New Zealand government to grow an innovative and inclusive space sector?

	Strongly disagree	Disagree	Neither agree nor disagree		Strongly agree	# of submissions
			disagree	Agree		
Promoting New Zealand’s natural advantage for conducting space activities, and research and development expertise across the space value chain	8%	4%	14%	28%	46%	
	10	5	18	37	60	130
Partnering within New Zealand and internationally to increase research and development capabilities	8%	4%	11%	27%	50%	
	11	5	14	36	65	131
Identifying opportunities to increase diversity in the space sector	6%	3%	16%	29%	45%	
	8	4	21	38	58	129
Using cutting-edge space technology and space sourced data to support New Zealand’s values and interests	6%	2%	13%	31%	46%	
	8	3	17	40	59	127

**Table 8: Q5 - 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?**

*“These policy objectives are framed well in general. Collaborative partnerships are an effective way to utilise shared resources and funding to amplify impact across the space value chain. Space-sourced data, including for climate change imagery and research, is an increasingly valued commercial opportunity that can have an immediate positive impact. The objectives to Increase R&D capabilities and diversity within the sector will need to begin with supporting STEM initiatives and raising space sector awareness within our education system.”*

**Submitter quote — Support partnerships that develop local industry**

*“We advocate for a stronger, more specific education component to be explicitly articulated in this section – from primary schools through to internships, graduate, and postgraduate study – to develop the expertise needed to support Aotearoa’s growing space industry. A comprehensive educational strategy is needed to encourage the engagement of rangatahi / young people throughout the country, with an emphasis on outreach to Māori and Pasifika students. This effort should start now, so that we will have many qualified people in the “pipeline” in the coming decades, and those in the pipeline represent the diversity of Aotearoa/New Zealand.”*

**Submitter quote — Improve university/STEM/education for space sector**

Table 9 shows the average level of agreement. Submitters indicated their level of agreement on a scale of strongly disagree to strongly agree. Each response was assigned a value, strongly disagree was given a value of 1 and strongly agree a value of 5. These were then averaged to give a result on the level of agreement.

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	All submitters
Promoting New Zealand's natural advantage for conducting space activities, and research and development expertise across the space value chain	4.03	4.63	3.39	4.07	3.61	4.02
Partnering within New Zealand and internationally to increase research and development capabilities	4.03	4.78	3.39	4.31	3.56	4.06
Identifying opportunities to increase diversity in the space sector	4.02	4.54	3.68	4.29	3.65	4.04
Using cutting-edge space technology and space sourced data to support New Zealand's values and interests	4.17	4.61	3.60	4.14	3.59	4.09

Table 9: Q5 - 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? By interest groups (average rating 1= strongly disagree, 5 = strongly agree)

### Question 6. Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)

Table 10 provides a summary of submitters' comments on the policy objective: Growing an innovative and inclusive space sector.

Main theme	Topic	Frequency
General comments	Concern regarding wording of objectives	15
	Prioritise protection of the environment over growth	15
	General support for objectives	5
	Concern regarding commercialisation of space	4
	Opposed to growing the space sector	3
	Concern regarding role of MBIE	2
	Improve transparency	2
	Develop a national space advisory group	2
	Operational measures are required	1
a. Promoting New Zealand's natural advantage for conducting space activities, and research and development expertise across the space value chain	Definition of "natural advantage" required	2
	Emphasise New Zealand's natural advantage for launch	2

Main theme	Topic	Frequency
	Objective is overrated, as many other nations share advantage	1
	Concern regarding sea-level rise and impacts on launch sites	1
	Promote unique human and cultural characteristics	1
<b>b. Partnering within New Zealand and internationally to increase research and development capabilities</b>		
	Support partnerships that develop local industry	21
	Oppose any military-related partnerships	8
	Prioritise partnership with Māori	7
	Improve government involvement in space sector	5
	Uphold international/national law	4
	Concern regarding international space businesses	4
	Promote partnerships with developing countries	3
	Most important objective	2
	Foundations need to be in place to facilitate partnership	1
	Financial and commercial objectives are needed	1
	Address international wealth and well-being gap	1
	Use skilled migrants in space industry	1
<b>c. Identifying opportunities to increase diversity in the space sector</b>		
	Improve university/STEM/education for space sector	8
	Engage with a diverse range of public	4
	Objective should encompass diversity, equity and inclusion	3
	Address gender imbalance	3
	Provide resources to support diversity	3
	Cross-cultural inclusivity required	3
	Benchmark study required	3
	Objective could distract from advancing the sector	2
	Include benefits that will trickle down into other sectors	1
	Prevent companies that facilitate hate speech	1
	Prioritise diversifying the development of technology	1
	Promote cross-disciplinary mentorship	1
	Framing should be action orientated	1
<b>d. Using cutting-edge space technology and space sourced data to support New Zealand's values and interests</b>		
	Promote peaceful innovation	13
	Prioritise sustainability	3
	Regulation of the sector is required	1
	Improve access to open-source space and geospatial data	1
	Support foundational technology capabilities	1
	Mandate and regulate use of data in national policy statements	1

**Table 10: Q6 - Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)**

## Question 7. Are there any other policy objectives that you think would help the New Zealand government to grow an innovative and inclusive space sector?

Table 11 provides a summary of submitters' recommendations of other policy objectives for: Growing an innovative and inclusive space sector.

Main theme	Topic	Frequency
Education		
	Develop local capabilities, skills and knowledge	23
	Promote working in STEM to youth	6
	Improve public knowledge of space sector	3
	New Zealand to share all research findings internationally	1
	Prioritise space medicine	1
Partnerships		
	Support partnerships that develop local industry	15
	Partner with Tangata Whenua	11
	Constructive engagement with industry	4
	Educate/inform public regarding New Zealand's role in space	2
	Support partnerships with minority owned businesses	1
	Partner with the Pacific Islands	1
Governance		
	Incentivise people to work in New Zealand	3
	Regulate the space sector and its resources	2
	Requires a whole of government approach	2
	Take a leading role in international space policy	2
Technology		
	Promote and incentivise innovation	3
	Space innovation has potential to influence other sectors	2
	New Zealand should trial new aerospace technology	1
	Potential for mining in space	1
	Potential to develop technology for space tourism	1
	Policy address ground based aspects of satellite communication	1

Table 11: Q7 - Are there any other policy objectives that you think would help the New Zealand government to grow an innovative and inclusive space sector?

## Question 8. Do you have any questions or comments about what these objectives would mean in practice?

Table 12 provides a summary of submitters' questions or comments about what the objectives would mean in practice for the policy objective: Growing an innovative and inclusive space sector.

Main theme	Topic	Frequency
General comments		
	Who will implement the objectives and how?	4
	Objectives written to support industry, not general public	4
	How will progress be measured and monitored?	2
	How will objectives be prioritised?	2
	Transparency of all space activities is required	2
	How will government collaboration be achieved?	1

Main theme	Topic	Frequency
	How will aging infrastructure be addressed?	1
	Innovation and inclusivity not important	1
	Government will need to keep pace with sector	1
	How will this affect the operation of business?	1
<b>a. Promoting New Zealand's natural advantage for conducting space activities, and research and development expertise across the space value chain</b>		
	Government could support sector through tax cuts and incentives	1
	Government help essential in assisting international bids	1
	Definition of "natural advantage" required	1
<b>b. Partnering within New Zealand and internationally to increase research and development capabilities</b>		
	Concern regarding military partnerships	14
	Support international partnerships for research and development	6
	Support partnerships that develop local industry	4
	Promote partnership with Mana Whenua and landowners	4
	Develop local capabilities, skills and knowledge	3
	Provide funding for research and development	2
	Avoid foreign control of the sector	1
	Incompatibility between some international partners of NZ	1
	Promote and fund defence systems	1
	What political or diplomatic work is being done?	1
<b>c. Identifying opportunities to increase diversity in the space sector</b>		
	Clarify/define "diversity"	2
	Promote working in STEM fields	2
	Support for research/funding required	2
	Practical/applications based teaching required	1
	Prioritise young females	1
	Prioritisation needed for broadly "increasing diversity"	1
	Create "Space Launch Officials"	1
	Identify opportunities for open-source data	1
	Progress underway	1
<b>d. Using cutting-edge space technology and space sourced data to support New Zealand's values and interests † Identifying opportunities to increase diversity in the space sector</b>		
	Allow only peaceful space activities	2
	Access to data will allow for entry into sector	1
	Definition of New Zealand's values and interests needed	1

**Table 12: Q8 - Do you have any questions or comments about what these objectives would mean in practice?**

*"I have grave concerns about the operational outcomes of partnering internationally with respect to R&D. How would we ensure that the R&D we support does not go to support the weapons programs of foreign powers? Even aiding our allies in their military research could mean that our involvement leads to the deaths of civilians."*

**Submitter quote — Concern regarding military partnerships**

### Section 3b: Modelling sustainable space and Earth environments

**Objectives**

The New Zealand government advocates for the sustainable use of space to ensure its benefits remain available to future generations. At the same time we seek to use space, and space technologies, to gain understanding and better protect our environment on Earth. Specifically this means:

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

**Question 9. 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?**

Submitters were asked to what extent they agree or disagree that the policy objectives will help the New Zealand government to model sustainable space and Earth environments.

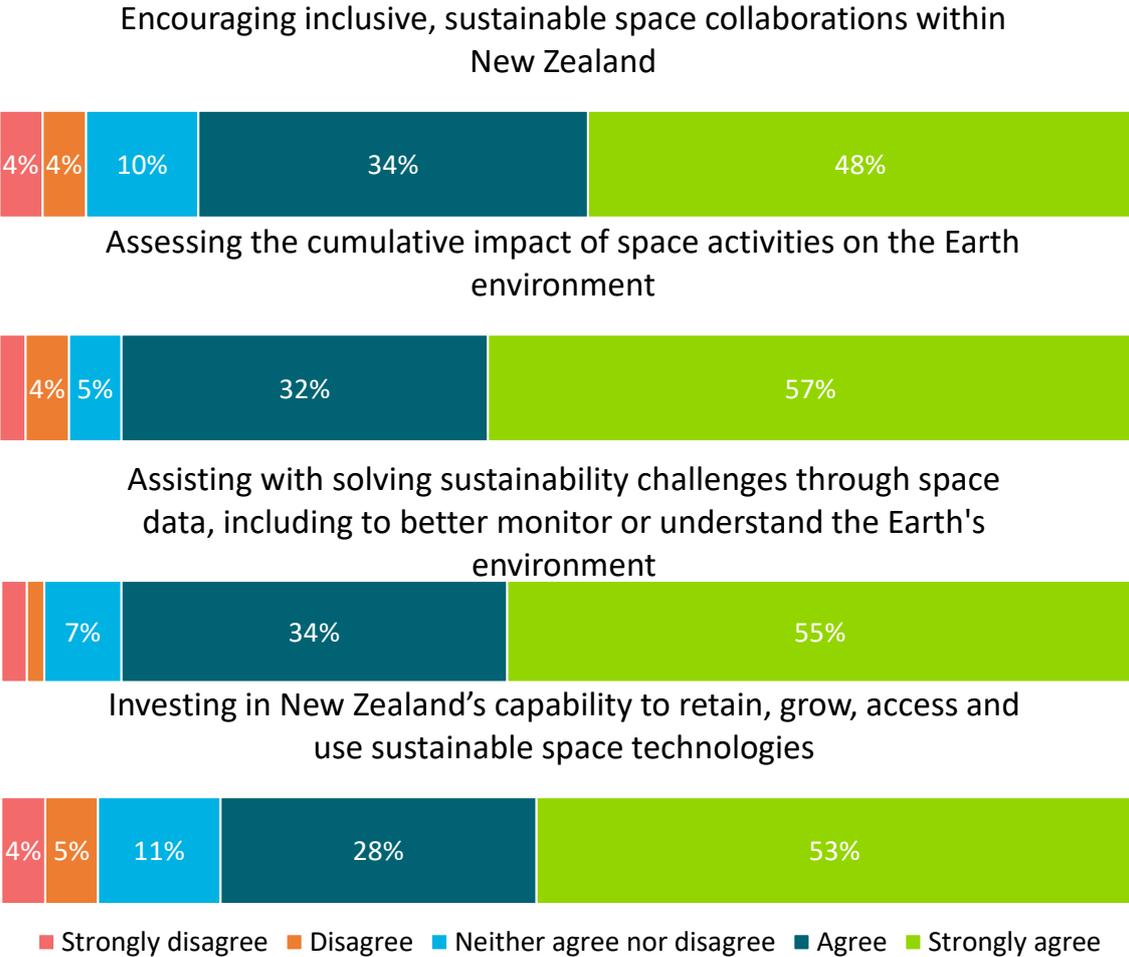


Figure 5: Q9 - To what extent do you agree or disagree that these policy objectives will help the New Zealand government to model sustainable space and Earth environments?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	# of submissions
Encouraging inclusive, sustainable space collaborations within New Zealand	4%	4%	10%	34%	48%	
	5	5	13	45	63	131
Assessing the cumulative impact of space activities on the Earth environment	2%	4%	5%	32%	57%	
	3	5	6	42	74	130
Assisting with solving sustainability challenges through space data, including to better monitor or understand the Earth's environment	2%	2%	7%	34%	55%	
	3	2	9	45	73	132
Investing in New Zealand's capability to retain, grow, access and use sustainable space technologies	4%	5%	11%	28%	53%	
	5	6	14	36	68	129

**Table 13: Q9 - 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?**

*"We think there should be an explicit policy objective that states that the sustainable space and earth environments are there for the good of all, and their use should be regulated at global level to ensure that use is in the global interest not simply for private profit or partisan advantage."*

**Submitter quote — Environmental regulations required**

*"Expanding the focus to cover beyond NZ's EEZ and understand that whatever we do in space will have effects beyond our borders. An international perspective should infuse all policies throughout this consultation document and the resulting policies."*

**Submitter quote — Incorporate an international perspective**

*"Engagement with the general public to explain in what ways space may help us create sustainable practices across different fields, as well as creating high education programs with focus on space and sustainability would be beneficial for the fulfilment of the above objectives."*

**Submitter quote — Develop local capabilities, skills and knowledge**

Table 14 shows the average level of agreement. Submitters indicated their level of agreement on a scale of strongly disagree to strongly agree. Each response was assigned a value, strongly disagree was given a value of 1 and strongly agree a value of 5. These were then averaged to give a result on the level of agreement.

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	All submitters
Encouraging inclusive, sustainable space collaborations within New Zealand	4.18	4.50	4.28	4.54	4.15	4.19
Assessing the cumulative impact of space activities on the Earth environment	4.33	4.34	4.66	4.52	4.55	4.38
Assisting with solving sustainability challenges through space data, including to better monitor or understand the Earth's environment	4.38	4.65	4.44	4.57	4.24	4.39
Investing in New Zealand's capability to retain, grow, access and use sustainable space technologies	4.24	4.77	4.04	4.54	3.92	4.21

**Table 14: Q9 - 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? By interest groups (average rating 1= strongly disagree, 5 = strongly agree)**

*“We understand that the use of Space to monitor the effects of climate change, pollution, reducing in ice sheets etc etc is more easily achieved and has less of an impact (ecologically) than direct measurement, from Earth-bound observations.”*

**Submitter quote — Support using space technology to assist sustainability**

*“The climate change implications associated with spacecraft launches are currently not well understood. Encouraging Aotearoa’s development as a launch state may run counter to carbon neutrality goals. Further studies are required to tabulate and forecast emissions associated with the activities of companies such as Rocket Lab.”*

**Submitter quote — Space exploration incompatible with environmental protection**

**Question 10. Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)**

Table 15 provides a summary of submitters' comments on the policy objective: Modelling sustainable space and Earth environments.

Main theme	Topic	Frequency
General comments		
	Terms are vague/unclear	9
	General support for policy objectives	4
	Objectives follow international objectives	1
a. Encouraging inclusive, sustainable space collaborations within New Zealand		
	Inclusive decision making/partnership is required	4
	Acknowledge connection and knowledge of Tangata Whenua	3
	Definition of "inclusive" required	1
	Regulation of the sector is required	1
b. Assessing the cumulative impact of space activities on the Earth environment		
	Space exploration incompatible with environmental protection	8
	Environmental impact reporting should be required	6
	Support assessing the cumulative impacts of space activities	6
	Support for research/funding required	4
	Improve access to open-source space data	3
	Assess cumulative impacts of space activities on space	3
	Mitigation is required as a further objective to assessment	1
	Environmental assessments and regulation required	1
	Utilise economic incentives for environmental mitigation	1
	Assess cumulative impacts on people	2
	Assess impact on close earth environment	2
	Assess impact on ground based astronomy	2
	Include positive impacts of space activities	2
	Create biological cleanliness requirements	1
	Compare impact against other industries	1
	Adopt the Space Systems Life Cycle Assessment	1
	Consultation needed with industry/Mana Whenua/researchers	1
	Clarify scope of assessment	1
	Assess impacts of potential weapon use	1
c. Assisting with solving sustainability challenges through space data, including to better monitor or understand the Earth's environment		
	Support using space technology to assist sustainability	5
	Commitments to global environmental policies/standards needed	3
	Take leading role in the removal of space debris	3
	Concern regarding inaction towards current problems	1
	Include land based astronomy/dark sky endeavours	1
	Identify most important sustainability challenges	1
	Address disproportionate distribution of environmental impacts	1
d. Investing in New Zealand's capability to retain, grow, access and use sustainable space technologies		

Main theme	Topic	Frequency
	Support investment/modernisation of sector	7
	Space activities should be sustainable	7
	Regulation of the sector is required	2
	Identify global issues that concern New Zealand	1
	Will require data privacy policies	1

Table 15: Q10 - Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)

### Question 11. Are there any other policy objectives that you think would help the New Zealand government to model sustainable space and Earth environments?

Table 16 provides a summary of submitters' recommendations of other policy objectives for: Modelling sustainable space and Earth environments.

Main theme	Topic	Frequency
Environmental		
	Environmental regulations required	7
	Objectives needed for reducing pollution caused by launches	5
	Improve understanding of impacts on the environment	4
	Incorporate connection and knowledge of Tangata Whenua	3
	Longevity of space equipment key to sustainability	2
	Mitigation of space debris	2
	Launch benefits have to outweigh environmental costs	1
	Promote land-based astronomy as sustainable	1
	Consideration needed for impacts in space as well	1
Governance		
	Develop local capabilities, skills and knowledge	3
	Incorporate an international perspective	3
	Improve public accessibility to space data	2
	Success requires short-term goals	1
	Prefer an independent foreign policy	1
	Employ community liaison	1
	Do not allow environmental considerations to stall progress	1
Military		
	Oppose any military-related activities	7

Table 16: Q11 - Are there any other policy objectives that you think would help the New Zealand government to model sustainable space and Earth environments?

### Question 12. Do you have any questions or comments about what these objectives would mean in practice?

Table 17 provides a summary of submitters' questions or comments about what the objectives would mean in practice for the policy objective: Modelling sustainable space and Earth environments.

Main theme	Topic	Frequency
General comments		
	Framing is vague/unclear	8
	Oppose any military-related activities	2
	Long-term objectives limit short-term accountability	1

Main theme	Topic	Frequency
	Align objectives with national interests	1
	Wider consultation is required before projects proceed	1
	Satellite-based communications will impact sea mammals	1
	General support for objectives	1
	How will these impact business operations?	1
<b>a. Encouraging inclusive, sustainable space collaborations within New Zealand</b>		
	Retain independence of space sector	1
<b>b. Assessing the cumulative impact of space activities on the Earth environment</b>		
	Environmental regulations required	3
	Improve understanding of impacts of launches	2
<b>c. Assisting with solving sustainability challenges through space data, including to better monitor or understand the Earth's environment</b>		
	Support achieving sustainability through space data	3
	The launching of satellites will impact the environment	2
	How will government invest in sustainability?	2
	How will sustainable land-based astronomy be achieved?	1
	Ensure data is freely available	1
	Focus on learning to live sustainably before using space	1
	How will sustainability be achieved?	1
<b>d. Investing in New Zealand's capability to retain, grow, access and use sustainable space technologies</b>		
	Attractive policies/investment required for industry and talent	2
	Develop a response to potential discoveries e.g. mining, aliens	1

**Table 17: Q12 - Do you have any questions or comments about what these objectives would mean in practice?**

*“General claims about contributing to sustainability and climate change responses are not good enough. We know enough about the issues as it is, what we need now is action that doesn't increase greenhouse gas emissions. Don't use methane monitoring initiative to justify this industry's existence.”*

**Submitter quote — Environmental regulations required**

*“So YES these Objectives for good use of Space Tech in practice does have potential to be genuinely helpful eg: for monitoring, surveillance and legal conviction evidence, particularly in relation to our oceanic Exclusive Economic Zone to protect the fisheries from bottom trawling, Seamount dredging, poaching, over fishing, dumping and stopping transit of weapons and drugs from entering our waters and country. Protecting the Eco-logical health of the Pacific Ocean and Island Security is a valid use of the NZ Space Tech industry, especially if it can be decoupled from militarisation of the Pacific and Warfare games.”*

**Submitter quote — Support achieving sustainability through space data**

*“This could be an area in which New Zealand could be very influential as long as it retains its independence.”*

**Submitter quote — Attractive policies/investment required for industry and talent**

### Section 3c: Promoting the responsible uses of space internationally

**Objectives**

The New Zealand government promotes the responsible use of space internationally. This means:

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

**Question 13. 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?**

Submitters were asked to what extent they agree or disagree that the 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



Partnering with like-minded launch states to adopt peaceful, responsible and sustainable space practices



Collaborating internationally to increase New Zealand’s influence and capabilities in the global space sector



■ Strongly disagree ■ Disagree ■ Neither agree nor disagree ■ Agree ■ Strongly agree

Figure 6: Q13 - 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?

	Neither agree nor disagree		Agree	Strongly agree	# of submissions
	Strongly disagree	Disagree			
Advocating for effective international rules, norms and standards in space	4%	4%	26%	62%	136
Partnering with like-minded launch states to adopt peaceful, responsible and sustainable space practices	6%	2%	27%	57%	132
Collaborating internationally to increase New Zealand's influence and capabilities in the global space sector	4%	5%	16%	58%	135

**Table 18: Q13 - 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?**

Table 19 shows the average level of agreement. Submitters indicated their level of agreement on a scale of strongly disagree to strongly agree. Each response was assigned a value, strongly disagree was given a value of 1 and strongly agree a value of 5. These were then averaged to give a result on the level of agreement.

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	All submitters
Advocating for effective international rules, norms and standards in space	4.32	4.63	4.33	4.50	4.38	4.39
Partnering with like-minded launch states to adopt peaceful, responsible and sustainable space practices	4.28	4.55	4.31	4.57	4.23	4.27
Collaborating internationally to increase New Zealand's influence and capabilities in the global space sector	4.13	4.80	3.69	4.54	3.67	4.17

**Table 19: Q13 - 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? By interest groups (average rating 1= strongly disagree, 5 = strongly agree)**

**Question 14. Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)**

Table 20 provides a summary of submitters’ comments on the policy objective: Promoting the responsible uses of space internationally.

Main theme	Topic	Frequency
General comments		
	Concern about intentions/honesty/transparency	6
	Framing is vague/unclear	4
	Objectives should be framed from international best practice	1
	Policy objectives repeat international policy	1
	General support for objectives	1
a. Advocating for effective international rules, norms and standards in space		
	Promote peaceful use of space	10
	New Zealand to set example of responsible use of space	5
	Support effective and transparent standards	3
	Develop international codes of practice and standards	2
	Ensure international rules are kept up to date	2
	Advocate for effective rules that are enforceable	1
	Laws needed to protect space heritage sites	1
	Concern regarding commercialisation of space	1
b. Partnering with like-minded launch states to adopt peaceful, responsible and sustainable space practices		
	Oppose any military-related activities	19
	Concern regarding partnering with the United States	14
	Prioritise partnerships that promote peaceful practices	12
	Support partnering with like-minded states	11
	Prioritise independence of space policy	3
	Oppose partnering with other states	2
	Clarify/define "sustainable"	2
	Prioritise international research and collaboration	2
	Consider sustainability impacts of space	2
	Prioritise the public good	1
	Clarify/define "space practices"	1
c. Collaborating internationally to increase New Zealand’s influence and capabilities in the global space sector		
	Support collaboration for New Zealand to become global leader	1

**Table 20: Q14 - Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)**

*“The international rules, norms and standards, should be guided by the principle that space is to be used for the common good, not for either national advantage or private gain. There are already examples of space being used for nation state military purposes and for private profit and the international rules, norms and standards should prohibit both. NZ needs to promote the development of a competent and authoritative space agency to authorise and monitor all activity.”*

**Submitter quote — Oppose any military-related activities**

### Question 15. Are there any other policy objectives that you think would help the New Zealand government to promote the responsible uses of space internationally?

Table 21 provides a summary of submitters' recommendations of other policy objectives for: Promoting the responsible uses of space internationally.

Main theme	Topic	Frequency
<b>Military</b>		
	Oppose any military-related activities	20
	Promote peaceful use of space	8
	Be a model for the PAROS treaty	1
<b>Partnerships</b>		
	Fulfil Te Tiriti obligations	4
	International authority to authorise/monitor launches/payloads	4
	Oppose partnership with states that have militaristic interests	4
	Advocate for developing nations to access space resources	1
	Partner with nations that have advanced space programs	1
	Partner with the Pacific Islands	1
	Only partner with PAROS signees	1
	Encourage countries to collaborate with indigenous populations	1
	Increased launches will impact Māori right to night sky	1
<b>Environment</b>		
	Include an objective for environmental conservation in policies	4
	Investigate environmental impacts of space activity	4
	Regulations/treaties needed for space debris	3
	Create sustainable/reusable spacecraft	1
	Recognise that orbital space is finite	1
<b>Governance</b>		
	Concern regarding privatisation of space	2
	Improve accessibility to space data	2
	Promote objectives through United Nations	1
	Transparency of all space activities is required	1
	New Zealand to set example of responsible use of space	1
<b>General comments</b>		
	Support objectives	1

Table 21:Q15 - Are there any other policy objectives that you think would help the New Zealand government to promote the responsible uses of space internationally?

### Question 16. Do you have any questions or comments about what these objectives would mean in practice?

Table 22 provides a summary of submitters' questions or comments about what the objectives would mean in practice for the policy objective: Promoting the responsible uses of space internationally.

Main theme	Topic	Frequency
<b>General comments</b>		
	Policies/objectives will need to be regularly reviewed	1
	Address barriers to New Zealand's participation	1
	How will these objectives be achieved?	1

Main theme	Topic	Frequency
a. Advocating for effective international rules, norms and standards in space		
	Promote peaceful use of space	2
	How will international rules be enforced?	1
	New Zealand will need to engage to influence internationally	1
	Will be focused around minimising space debris	1
	New Zealand will be leader in industry	1
b. Partnering with like-minded launch states to adopt peaceful, responsible and sustainable space practices		
	Oppose any military-related activities	9
	Sustainability is a priority	3
	Balance between sustainability and commercial needed	1
	Only allow launches from PAROS supporters	1
	Concern data gathered will not be accessible in New Zealand	1
	Concern regarding transparency	1
	Concern regarding non like-minded states	1
c. Collaborating internationally to increase New Zealand's influence and capabilities in the global space sector		
	How will collaboration happen?	2
	Support collaborating internationally	2
	Collaboration between international government agencies needed	1
	Foreign and space policies need to be aligned to guide practice	1
	Collaboration will require budget commitments	1
	Importance of "increasing capabilities" to other objectives?	1

Table 22: Q16 - Do you have any questions or comments about what these objectives would mean in practice?

*"Commit to demilitarised and non-militarising, peaceful uses of space only."*

**Submitter quote — Promote peace**

*"The Government needs to acknowledge that contributing to the militarisation of space goes against the national interest."*

**Submitter quote — Oppose any military related activities**

*"How are we intending to collaborate internationally? This can become a serious problem area for conflicts of interest, especially if we end up partnering with foreign military or intelligence agents."*

**Submitter quote — How will collaboration happen?**

### Section 3d: Protecting and advancing our national security and economic interests

**Objectives**

To sustainably grow our space sector by having due regard to our national interests we need to:

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

**Question 17. 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?**

Submitters were asked to what extent they agree or disagree that the 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



Manage the broad range of security risks in space to protect New Zealand’s space industry



Collaborate with international space and security partners to pursue New Zealand’s national security and economic interests



■ Strongly disagree ■ Disagree ■ Neither agree nor disagree ■ Agree ■ Strongly agree

Figure 7: Q17 - 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?

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	# of submissions
Use space assets to protect and advance New Zealand's national security and economic interests	16%	9%	18%	22%	35%	
	20	11	23	27	44	125
Manage the broad range of security risks in space to protect New Zealand's space industry	16%	4%	17%	28%	34%	
	20	5	21	34	42	122
Collaborate with international space and security partners to pursue New Zealand's national security and economic interests	21%	6%	17%	21%	35%	
	26	7	21	26	44	124

**Table 23: Q17 - 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?**

Table 24 shows the average level of agreement. Submitters indicated their level of agreement on a scale of strongly disagree to strongly agree. Each response was assigned a value, strongly disagree was given a value of 1 and strongly agree a value of 5. These were then averaged to give a result on the level of agreement.

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	All submitters
Use space assets to protect and advance New Zealand's national security and economic interests	3.52	4.53	3.04	3.89	2.97	3.51
Manage the broad range of security risks in space to protect New Zealand's space industry	3.64	4.54	3.15	3.79	2.97	3.60
Collaborate with international space and security partners to pursue New Zealand's national security and economic interests	3.46	4.63	2.93	3.81	2.76	3.44

**Table 24: Q17 - 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? By interest groups (average rating 1= strongly disagree, 5 = strongly agree)**

**Question 18. Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)**

Table 25 provides a summary of submitters' comments on the policy objective: Protecting and advancing our national security and economic interests.

Main theme	Topic	Frequency
General comments		
	Promote peaceful use of space	9
	Framing is vague/unclear	6
	National interests	
	Support local economy	2
	Sustainable programmes	2
	How is "national security" defined and protected?	2
	Important for New Zealand's future	2
	Long-term objectives limit short-term accountability	1
	Objectives should be framed with space as a global common	1
	Oppose space exploration	1
	Concern objectives will not bring security	1
	Oppose objectives	1
a. Use space assets to protect and advance New Zealand's national security and economic interests		
	Oppose any military-related activities	25
	Objectives form foundation for military action	7
	Support advancing New Zealand national security in space	6
	Concern regarding security and economic interests together	5
	Cultural and environmental protection should not be traded-off	5
	Concern regarding the commercialisation of space	4
	Consideration for businesses supporting space industry	2
	Military/defence applications not well understood by public	2
	Environmental interest is more important than economical	2
	Support non-weaponised military use	2
	Oppose objectives as framed by self-interest	1
	Support humanitarian/disaster relief use	1
	Consider effects of space activity on astro-tourism	1
	Support for research/funding required	1
b. Manage the broad range of security risks in space to protect New Zealand's space industry		
	Data encryption and security is needed	2
	Planetary defence needs to be considered	2
	Need controlled use of space sector for defence	1
c. Collaborate with international space and security partners to pursue New Zealand's national security and economic interests		
	Consider security implications associated with partnerships	15
	Collaboration undermines neutrality and independence	4
	Include security of vulnerable populations in policy	3
	Include security of non-human life in policy	3
	Collaboration is needed to harness full potential of space	3

Main theme	Topic	Frequency
	Reciprocity required	2
	Framework required for approving partnerships	2
	Promote security in space	2
	Promote international rules/treaties	2
	Concern regarding dual purpose of partnered projects	2
	Unclear who partners will be	1
	Partner for non-security interests	1
	Use natural advantage to improve relationships with partners	1
	Transparent collaboration to address threats	1
	Dual purpose collaboration is needed	1
	Use position to benefit security of Pacific Island nations	1

Table 25: Q18 - Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)

### Question 19. 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?

Table 26 provides a summary of submitters' recommendations of other policy objectives for: Protecting and advancing our national security and economic interests.

Main theme	Topic	Frequency
National security		
	Oppose any military-related activities	12
	Promote peaceful use of space	6
	Oppose partnering with the United States	4
	Develop local space/defence technology	3
	Remove "national security" from space policy	3
	Create non-space alternatives for resilience	3
	Focus on non-alignment	2
	Planetary defence needs to be considered	2
	Precautionary approach needed for dual purpose technology	1
	Support non-weaponised military use	1
Governance		
	Collaborate with Tangata Whenua	4
	Improve access to open-source space data	3
	Support private developments in national security/economy	2
	Increase scope of security to vulnerable/non-human populations	2
	Support international collaborations	2
	Transparent collaboration to address threats	1
	Use natural advantage to support other nations	1
	Promote international rules/treaties	1
	Use natural advantage to maintain independence in space sector	1
	How will these objectives be achieved?	1
Environmental		
	Environmental protection is in national interest	6
	Use of space activities to help in climate related emergencies	1
Economic		

Main theme	Topic	Frequency
	Improve university/STEM/education for space sector	3
	Consider effects of space activity on astro-tourism	1

**Table 26: Q19 - 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?**

### Question 20. Do you have any questions or comments about what these objectives would mean in practice?

Table 27 provides a summary of submitters' questions or comments about what the objectives would mean in practice for the policy objective: Protecting and advancing our national security and economic interests.

Main theme	Topic	Frequency
General comments		
	Framing is vague/unclear	3
	Oppose space activities for security or economic interests	2
	Policy objectives for the future need to be developed	1
	Have effects on astro-tourism been considered?	1
	How will these objectives be achieved?	1
a. Use space assets to protect and advance New Zealand's national security and economic interests		
	Military-related activities are contrary to national security	10
	Concern regarding transparency of launches	5
	Space activities beneficial for businesses/community	4
	How will the required collaboration be achieved?	3
	Regulation of the sector is required	1
	Is spying part of New Zealand policy?	1
	NZDF needs to be linked to protection of space assets	1
b. Manage the broad range of security risks in space to protect New Zealand's space industry		
	Improve New Zealand space capability and security	2
	Difficult to know how security is benefitting	1
	Collaborate with Space Information Sharing and Analysis Centre	1
	Does MBIE have required tech/knowledge to assess payloads?	1
c. Collaborate with international space and security partners to pursue New Zealand's national security and economic interests		
	Is collaboration with US against international obligations?	3
	What are mechanisms for risk of counterproductive partnerships?	1
	Collaborate with International space weather programmes	1
	Collaborate data for planetary defence	1

**Table 27: Q20 - Do you have any questions or comments about what these objectives would mean in practice?**

*"A greater NZDF space footprint and more NZ space capability and knowledge kept within NZ. More objectives allowing a pipeline of personnel development between academia, industry and government."*

**Submitter quote — Improve New Zealand space capability and security**

### Section 3e: Regulating to ensure space activities are safe and secure

**Objectives**

The New Zealand government regulates to ensure New Zealand space activities are safe and secure. This means:

- Facilitating the safe and secure use of emerging space technologies from New Zealand
- Clarifying what New Zealand space activities are inconsistent with the national interest
- Promoting and protecting New Zealand’s interests through permitting space technologies

**Question 21. To what extent do you agree or disagree that these policy objectives will help the New Zealand government to ensure space activities are safe and secure through regulation?**

Submitters were asked to what extent they agree or disagree that the policy objectives will help the New Zealand government to ensure space activities are safe and secure through regulation.

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



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



Promoting and protecting New Zealand’s interests through permitting space technologies



■ Strongly disagree ■ Disagree ■ Neither agree nor disagree ■ Agree ■ Strongly agree

Figure 8: Q21 - To what extent do you agree or disagree that these policy objectives will help the New Zealand government to ensure space activities are safe and secure through regulation?

	Strongly disagree		Neither agree nor disagree		Strongly agree		# of submissions
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree		
Facilitating the safe and secure use of emerging space technologies from New Zealand	6%	3%	8%	31%	52%		
	8	4	10	39	65		126
Clarifying what New Zealand space activities are inconsistent with the national interest	5%	2%	11%	30%	53%		
	6	3	14	39	69		131
Promoting and protecting New Zealand's interests through permitting space technologies	9%	8%	15%	26%	43%		
	10	9	18	30	50		117

**Table 28: Q21 - To what extent do you agree or disagree that these policy objectives will help the New Zealand government to ensure space activities are safe and secure through regulation?**

Table 29 shows the average level of agreement. Submitters indicated their level of agreement on a scale of strongly disagree to strongly agree. Each response was assigned a value, strongly disagree was given a value of 1 and strongly agree a value of 5. These were then averaged to give a result on the level of agreement.

	General interest in space	Work in the New Zealand space sector	Have cultural connections to space	Academic involvement on space issues	Other	All submitters
Facilitating the safe and secure use of emerging space technologies from New Zealand	4.20	4.78	4.08	4.37	4.00	4.18
Clarifying what New Zealand space activities are inconsistent with the national interest	4.22	4.26	4.52	4.36	4.45	4.24
Promoting and protecting New Zealand's interests through permitting space technologies	3.90	4.62	3.56	4.04	3.69	3.86

**Table 29: Q21 - To what extent do you agree or disagree that these policy objectives will help the New Zealand government to ensure space activities are safe and secure through regulation? By interest groups (average rating 1= strongly disagree, 5 = strongly agree)**

**Question 22. Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)**

Table 30 provides a summary of submitters’ comments on the policy objectives.

Main theme	Topic	Frequency
General comments		
	Framing too vague/unclear	3
	Regulation of the sector is required	3
	Do not permit launches that will impact observation	1
	Objectives are not currently being met	1
a. Facilitating the safe and secure use of emerging space technologies from New Zealand		
	Concern regarding verifying contents of payloads	7
	Support facilitating safe and secure space activities	4
	Clarify/define "safe"	3
	Clarify stakeholders in the governance of space in NZ	2
	Regulations must include penalties for contravening NZ laws	2
	Ensure regulations keep up with industry	1
	Regulation of the sector is required	1
b. Clarifying what New Zealand space activities are inconsistent with the national interest		
	Military-related activities are against national interest	18
	Clarify/define "New Zealand's values and interests"	11
	Concern regarding nuclear-related activities	7
	Collaborate with Tangata Whenua	5
	Public trust requires transparency around payloads	3
	Develop international codes of practice and standards	2
	Unnecessary launches are not in national interest	2
	Do not focus on economic pursuits	2
	Will require thorough review of launch permit applications	1
	Add international peace and security to objective	1
	Balance New Zealand interests and international cooperation	1
	Consider impact on space industry of denied launches	1
	Security is consistent with national interest	1
c. Promoting and protecting New Zealand’s interests through permitting space technologies		
	Investigate environmental impacts of space activity	6
	Regulation of the sector is required	2
	Concern regarding intent of foreign agencies	2
	Requirements needed for radio receiving licences	1

**Table 30: Q22 - Do you have any comments on these policy objectives (e.g. any suggested change to how they are framed? Is there anything missing?)**

*“Furthermore, due to the strategic and technical complexities of dual-capable, space-based military systems, we are concerned that the government may lack the technical capacity within the Ministry of Business, Innovation and Employment (MBIE), which currently manages the space-launch portfolio, to lead the process of assessing whether or not a payload complies with the 1987 Act.”*

**Submitter quote — Concern regarding verifying contents of payloads**

**Question 23. Are there any other policy objectives that you think would help the New Zealand government with regulating to ensure space activities are safe and secure?**

Table 31 provides a summary of submitters' recommendations of other policy objectives for: Regulating to ensure space activities are safe and secure.

Main theme	Topic	Frequency
<b>Military</b>		
	Oppose any military-related activities	17
	Oppose any nuclear-related activities	4
	Precautionary approach needed for dual purpose technology	3
<b>Governance</b>		
	Support effective and transparent standards	4
	Regulate space activities by developing treaties	4
	Support greater community involvement	4
	Fulfil Te Tiriti obligations	3
	Support Government partnerships	2
	Promote international approval/monitoring space agency	2
	Regulations/treaties needed for space debris	2
	Align with similar countries to develop safety regulations	1
<b>Environment</b>		
	Reduce emissions/environmental impact from space activity	7
	Support position of Dark and Quiet Skies Working Group	1
	Add tax for carbon emissions	1
	Investigate environmental impacts of space activity	1
<b>National security</b>		
	Concerns regarding private sector players	2
	Increased number of satellites not required for security	1
	Review US FAA recognition model	1
	Improve data security	1
	Support space for scientific research only	
<b>Safety</b>		
	Create hierarchy for HADR operations	1
	Decrease "safety" to stop restrictions on innovation	1

**Table 31: Q23 - Are there any other policy objectives that you think would help the New Zealand government with regulating to ensure space activities are safe and secure?**

**Question 24. Do you have any questions or comments about what these objectives would mean in practice?**

Table 32 provides a summary of submitters' questions or comments about what the objectives would mean in practice for the policy objective: Regulating to ensure space activities are safe and secure.

Main theme	Topic	Frequency
<b>General comments</b>		
	Framework is vague/unclear	3
	Military activities will make New Zealand a target	2
	One agency is required to be accountable	1
	Support Government involvement	1

Main theme	Topic	Frequency
	Partnerships will overrule objectives	1
	Objectives will support peace	1
	What will be impact on Dark and Quiet Skies Working Group?	1
	What will be psychological/spiritual effects of space industry?	1
	How will these objectives be achieved?	1
<b>a. Facilitating the safe and secure use of emerging space technologies from New Zealand</b>		
	Investigate environmental impact of launches	2
	Progress involves risk	1
	How will the benefits be weighed against consequences	1
	Support funding for ambitious projects	1
<b>b. Clarifying what New Zealand space activities are inconsistent with the national interest</b>		
	Concern about how "national interest" is decided	2
	Requires expert staff to review launch applications	2
	What is the role of Māori in decision-making?	1
	Focus on fixing existing issues	1
	Is rocket technology breaking the law?	1
	Each launch requires public feedback about national interest	1
	Will a limit be needed on amount of launches in New Zealand?	1
<b>c. Promoting and protecting New Zealand's interests through permitting space technologies</b>		
	Lengthy rulemaking process stifles innovation	1
	More detail about permitting required	1
	Concern about international permissions applying to New Zealand	1
	New Zealand has small share of space debris	1
	Unclear what this would mean in practice	1
	Take leading role in the removal of space debris	1
	Does New Zealand need to distance itself from US payloads?	1

**Table 32: Q24 - Do you have any questions or comments about what these objectives would mean in practice?**

*“We are also concerned that given the relatively high rate of turnover in public sector agencies, that there may not be sufficient capacity to critically examine applications. What outside or external non-governmental advice is currently sought, if any? Expert advice may be warranted if officials lack specific expertise. Further oversight may be appropriate given the high-risk nature of allowing military launches from New Zealand. This could be in the form of random audits of MBIE assessments, conducted by an independent third-party entity.”*

**Submitter quote — Requires expert staff to review launch applications**

*““Facilitating the safe and secure use of emerging space technologies from New Zealand” might involve allocating some funding for ambitious aerospace projects, which I am all for.”*

**Submitter quote — Support funding for ambitious projects**

### Section 3e(i): Regulating in line with our national interests

Under the Outer Space and High-altitude Activities Act 2017, the Minister for Economic and Regional Development may decline a licence or permit if they are not satisfied that it is in the national interest. The Minister may take into account when considering the national interest: economic or other benefits to New Zealand; risks to national security, public safety, international relations or other national interests; risks that cannot be mitigated by conditions of the licence or permit; and any other relevant matters.

As part of policy to inform the language in the Act, Cabinet has agreed to principles that will inform the consideration of national interest for space activities, as well as what is not in New Zealand’s national interests. These principles are:

- **Responsibility:** that space activities from New Zealand should be conducted with due care and in such a way as to promote an orbital environment where actors avoid causing harm or interference with the activities of others.
- **Sustainability:** New Zealand should promote sustainable space practices that preserve the benefits of space for future generations.
- **Safety:** space activities from New Zealand should be conducted in a way that does not jeopardise human safety (including the safety of people in space).
- **Aligning with New Zealand’s values and interests:** space activity from New Zealand should uphold the policies and values supported by New Zealanders and align with broader policy settings.

The following space activities are not in New Zealand’s interests; i.e. the Minister will not authorise space activities:

- that contribute to nuclear weapons programmes or capabilities
- with the intended end use of harming, interfering with, or destroying other spacecraft or space systems on Earth
- with the intended end use of enabling or supporting specific defence, security or intelligence operations that are contrary to government policy
- where the intended end use is likely to cause serious or irreversible harm to the environment.

### Question 25. Are there any comments you would like to make about these criteria that inform consideration of the national interest?

Table 33 provides a summary of submitters' comments about the criteria that inform consideration of the national interest.

Main theme	Topic	Frequency
General comments		
	General support for criteria	12
	Framing is vague/unclear	6
	Regulation of the sector is required	3
	Concern regarding MBIE as a self-regulator	2
	Requires expert staff to review concerns about space	2
	Space policy should be independent	2
	Prioritise New Zealand's independent foreign policy	2
	Oppose principles	1

Main theme	Topic	Frequency
New Zealand's values and interests		
	Oppose any military-related activities	34
	Involve Māori in decision-making	9
	Improve transparency of launch/space activity	7
	Improve public engagement with all citizens	5
	Revise Outer Space and High-Altitude Activities Act	4
	Consider all citizens in national interest	3
	Include human rights	2
	Support prioritising security	2
	Allow for the defence of NZ space assets	2
	Include prosperity as a national interest	1
	Support defence partners	1
	Existing legislation is not fit for purpose	1
	Include scientific interest and exploration	1
	Include security as a national interest	1
	Allow for military-related activities in the event of war	1
Sustainability		
	Consider the impact on the environment	18
	Consider the impact on Māori	2
	Consider the impact on public	1
	Clarify/define "sustainable"	1
	Amend to "Environmentally sustainable"	1
Responsibility		
	Create a detailed list of forbidden activities	6
	Concern regarding surveillance activities	1
	Regulation will attract investment	1
National security		
	Safety must be weighed against progress	1
	Allows for harming, interfering, destroying targets on earth	1

**Table 33: Q25 - Are there any comments you would like to make about these criteria that inform consideration of the national interest?**

*"The government needs to commission further Ecological Risk Assessments of the environmental effects of space activities, particularly rocket launches."*

**Submitter quote — Consider the impact on the environment**

*"I would consider adding to 'where the intended end use is likely to cause serious or irreversible harm to the environment' 'or mātauranga Māori'. I suggest this because it brings mātauranga Māori to the fore of why New Zealand would consider a space activity not in national interest and begins to take into account more of a Te Ao Māori worldview in terms of harm to the environment (of both the land and sky)."*

**Submitter quote — Consider the impact on Māori**

**Question 26. What questions do you have about how the national interest is considered in practice?**

Table 34 provides a summary of submitters' questions about how the national interest is considered in practice.

Main theme	Topic	Frequency
	How will "national interest" be defined?	10
	How will the Minister evaluate payloads?	7
	How will "harm to the environment" be evaluated/avoided?	4
	How is "national security defined" and protected?	3
	Will there be further consultation/clarification?	3
	Will human rights obligations be considered?	2
	Is military in space in the national interest?	2
	Will practice ensure integrity/transparency?	2
	How are Māori centered in this decision-making?	1
	How will the collection/use of data be monitored?	1
	Have the risks of technological advancement been considered?	1
	Have weapons other than nuclear been considered?	1
	How will the sector be regulated?	1
	How will disarmament be ensured?	1
	How will science and research be promoted?	1
	Will our standards align with international counterparts?	1

**Table 34: Q26 - What questions do you have about how the national interest is considered in practice?**

*“How would ‘National Interest’ be defined? In the process of developing this concept of national interest, who would participate in the decision-making process and how would the group ensure the informed consent of representatives contributing to this definition?”*

**Submitter quote — How will "national interest" be defined?**

*“How do we ensure that the Minister for Economic and Regional Development conducts a review with these objectives in mind and responsibly enforces these objectives?”*

**Submitter quote — How will the Minister evaluate payloads?**

*“Does "environment" include the night sky as an environment (it should), and if so is this captured in environmental impact assessments (it should)?”*

**Submitter quote — How will "harm to the environment" be evaluated/avoided?**

*“How do you monitor this? An image device that is put in space can be used to take photos of 'land erosion' today, and then to identify a target for war tomorrow can't it?”*

**Submitter quote — How will the collection/use of data be monitored?**

## Other comments

The section focuses on feedback received from submissions which falls outside of the consultation questions.

Main theme	Topic	Frequency
Values in space		
	Responsibility	
	Oppose any military-related activities	40
	Promote peaceful use of space	17
	Concern for national safety associated with space exploration	12
	Concern Rocket Lab is not upholding values	12
	Partnership	
	Support partnership/co-governance with Māori	25
	Fulfil Te Tiriti obligations	15
	Concern regarding lack of consultation with Tangata Whenua	12
	International/like minded/scientific partnerships	6
	Acknowledge interoperability amongst 5 eyes	1
	Partner with the Pacific Islands	1
	Stewardship	
	Prioritise environmental/celestial protection	25
	Concern regarding environmental impacts of launches	17
	Investigate environmental impacts of space activity	16
	Innovation	
	Support research and innovation	7
	Concern over reactionary nature of NZ space sector	5
	Develop local capabilities, skills and knowledge	4
	Oppose space activity in New Zealand	4
	Support for research/funding required	3
Governance		
	Concern regarding commercialisation of space	10
	Amend Outer Space and High Altitude Activities Act 2017	9
	Concern over how values are put into practice	7
	Concern New Zealand space sector is within MBIE	5
	Maintain/invest in local infrastructure	3
	Support local collaboration	3
	Concern regarding promotion of space industry	3
	Encourage inclusive/transparent space sector	3
	General opposition towards values	3
	Increase transparency of space sector	3
	Update current legislations	2
	Values should be nationally determined	2
	Support IAU Submission to COPUOS	1
	Space should be an area of global commons	1
	Increase regulation of the sector	1
	Decrease regulation of the sector	1
	Support signing of international agreements	1

Main theme	Topic	Frequency
	Concern regarding international agreements	1
Space Policy review		
	Concern regarding consultation	16
	Framing is vague/unclear	9
	General support for values, objectives and policy	7
	Maintain national independence in space policy	7
	Space policy should be holistic and evolve	6

Table 35: - Other comments

*“Humanity’s engagement with the space beyond our planet has mostly been Co-operative until recent times (eg: spy satellites) - we should keep military hardware inside terrestrial limits, not extended into orbit or beyond.”*

**Submitter quote — Oppose any military-related activities**

*“Every rocket launch has an impact on the environment. Reducing the environmental effects of space activities, including rocket launches, should be a priority. The government needs to commission further Ecological Risk Assessments of the environmental effects of space activities, particularly rocket launches.”*

**Submitter quote — Prioritise environmental/celestial protection**

*“Kaitiakitanga plays an important role in our approach to space, Māori view space as a taonga and respect and care is needed when considering activities in space. It is essential however that when concepts such as kaitiakitanga are cited as a foundation for policy that their fundamental philosophical underpinnings are well understood. Māori cultural values in decision making need to be included and Māori need to be at the table in decision making. We note that sooner or later hard choices may be required to uphold our values.”*

**Submitter quote — Support partnership/co-governance with Māori**

*“The production and use of bulk geospatial data from the space domain is often a hurdle to smaller companies and organisations to undertake, but equally large New Zealand organisations have occasion to outsource this data production to overseas facilities. This can have unintended consequences of not enabling our unique New Zealand oversight on data about our people and places, and potentially limits the entry of rangatahi or emerging organisations in Aotearoa that can supply products and services in an efficient and effective manner. Policy considerations that include New Zealand-launched platforms have core data functions processed in New Zealand will help grow the kaimahi of the space industry and the data products, models, and the infrastructure which supports this.”*

**Submitter quote — Support research and innovation**

# Summary of public meetings

## Public consultation meetings

One form of public consultation undertaken by MBIE was public meetings. These meetings were announced on the MBIE website on 5 September, following the announcement of the consultation process by the Minister for Economic and Regional Development at the Aerospace Summit in Christchurch. The meetings were advertised on 15 September via social media, including geo-targeting of meeting locations, and were open to all interested parties. In total, 5 public meetings were held in various locations across New Zealand and online, with low numbers in attendance.

Key points were noted down at each of the meetings by MBIE staff members in attendance. These key points were then passed to PublicVoice to collate this feedback as part of the report.

Place	Venue	Date	Time
Mahia	Mokotahi Hall	Tuesday 11 October	6:30pm – 8:30pm
Auckland	AUT Campus	Thursday 13 October	5:30pm – 7:30pm
Christchurch	Te Puna o Waiwhetū Art Gallery	Tuesday 18 October	6:00pm – 8:00pm
Wellington	Victoria University of Wellington	Wednesday 19 October	5:30pm – 7:30pm
Online via Zoom	Zoom	Thursday 20 October	12:00pm – 1:00pm

Table 36: Public consultation meetings

### Mahia public meeting — summary of key points raised

- Activities against national interest

Clarification/more robust consideration is needed concerning assessing national interest bright lines.

The action “Serious harm to the environment” is too broad.

Respect for Papatūānuku and Mahia is essential, along with environmental monitoring to consider whānau, the whenua and flora.

Systems and processes need to be in place to ensure future effects of launches are managed to ensure kaitiakitanga of the whenua.

Regarding the activity “We will not launch anything intended to harm”, the word intended needs to be removed as this is subject to falsifying intentions. Experience has seen trust being broken with Rocket Lab and Gunsmoke-J launch.
- Concern regarding Aerospace Strategy

The Aerospace Strategy group should partner and engage with Tangata Whenua. The strategy focused on industry first, contrary to Te Tiriti.
- Concern regarding the impact of launches on marine life

Question to the government around whether or not environmental concerns outweigh economic gain, e.g. when penguins are near the launch site, would launches go ahead?

There is concern regarding the impacts of launches on whale migration.
- Concern regarding military applications of payloads

No military payloads should be launched from New Zealand, as these are intended to harm.

Concern regarding the level of certainty the government has regarding the contents of payloads from foreign states (e.g. the United States). Can the New Zealand government confidently trust that the content of payloads is declared truthfully?

More transparency is required regarding the contents of payloads and the assessment process. When accidents happen, knowing the contents of the payload is vital for a response.

Concern that the actions of the United States will put the whenua of New Zealand at risk.

Do foreign nations respect New Zealand as a signatory to peaceful international agreements?

How will we know if a payload is repurposed once launched, and what will be done in such instances?

- Criticism of the consultation process

Consultation has not been robust; no cultural and environmental reports have been undertaken.

- How can the local community share in Rocket Labs' profits?

Evidence is required to substantiate Rocket Labs' claims of supporting the local economy. Additionally, the community would like to know how they can share in the profits.

- Incorporate Mātauranga Māori in legislation

Various mātauranga need to be considered as there is not one unified source.

- Legislation keeping pace with innovation

Private entities must be adequately regulated to ensure that they act in the public's best interests. A question to the government about their ability to update legislation at pace with innovation; out-of-date legislation will not ensure proper regulation or governance of the space above our atmosphere.

- Government support for the industry

Question to government around how much financial support Rocket Lab receives from MBIE.

- Te Tiriti

Space policy should better reflect Te Tiriti and include a framework for kaitiakitanga/Māori.

There needs to be an aspiration to develop partnerships and relationships in government, e.g. Tāwhaki re Kaitōrete Spit.

There must be a robust partnership with indigenous whānau in the industry.

## **Auckland public meeting — summary of key points raised**

- Question around dual-purpose payloads

Are there risks from the use or details of payloads changing from the time of approval to when they are in space?

- Impact of non-disclosure arrangements and the flow of information

The use of NDAs has inhibited suppliers of Rocket Lab to be able to “tell their stories” as businesses which limits wider awareness of the growth of the space industry within New Zealand.

- Educate/inform the public regarding New Zealand's role in space

There is a gap in public awareness and understanding of New Zealand's space sector. There was some interest at the time of the first Rocket Lab launch, but the industry has grown at pace since then, and interest has not kept up accordingly. There needs to be a concerted effort to address this.

There could be a specific Policy Objective around ensuring that the New Zealand public is well-informed about our space industry. This includes a greater appreciation of the opportunities and benefits, as well as how it is managed from a regulatory point of view.

- Governing the use of data gathered from space

There is a need to think about the use and governance of data obtained in space including how data is sold and used commercially, and how risks are managed. Reference to the Blueprint for an AI Bill of Rights that has recently been released in the US.

- Growth and inclusivity in the space sector

Question to the government around which areas of the space industry it is looking to develop and how it is supporting a more inclusive sector overall.

- Identify space activities that New Zealand will not support

The existing list of things we will not launch from New Zealand is clear and as expected. Is there a way to "shift these forward" and include more specific terms for the activities we won't support in space? For example, anything that contributes to warfare.

- Opportunity to develop a world-leading sustainability policy

A further opportunity to think about the sustainability dimension and how New Zealand could adopt a leadership position and branding around "sustainable space", noting New Zealand has several of the necessary components underway.

- Promote a sense of discovery to inspire public

An opportunity to capture the public's imagination and leverage a sense of discovery around space. One idea would be to develop a New Zealand mission to space (using a robust process to identify the focus).

- Transparency of space activities is required

How is the government managing transparency of payloads that are assessed and approved for launch from New Zealand and the allocation of budget to space-related activities? Transparency on how decisions are made and who is making them with what expertise.

## **Christchurch Public Meeting — summary of key points raised**

- Clarify areas of responsibility across government agencies

It would be valuable to clarify within the Space Policy where key roles sit within the government system. Including what are the core roles of the New Zealand Space Agency vs other government agencies that also have a role in New Zealand's space activities.

- Clarify the relationship between Space Policy and other government policies

How does the Space Policy Review relate to other government policies and strategies, for example, the Aerospace Strategy, and Te Ara Paerangi (review of the research, science and innovation system)? Will there be ongoing reviews of our space policy?

- Collaborating on future policy considerations

There are future policy considerations to be thinking about e.g., the possibility of sending life into space from New Zealand (including biological substances). Research is underway on this now. Who in the system would have a role around this?

- Impact of non-disclosure arrangements on collaboration

The predominance of NDA (non-disclosure agreements) constrains collaboration e.g., with space start-up companies that are pivoting from the defence sector. We need to think about the implications and how to achieve strong outcomes in this environment.

- Educate/inform the public regarding New Zealand's role in space

There's a need to lift the level of communication and education with the general public around New Zealand's activities in the space industry, including the benefits it brings to the country. This could benefit from national missions (like MethaneSat) particularly if launched from New Zealand.

- Facilitative partnerships that develop the local industry

Can the government do more to support and partner with industry for economic development benefits? What are the tangible plans, and can these extend beyond engagement with Rocket Lab? Could wraparound services be offered to companies looking to locate in New Zealand, as well as potentially the creation of core infrastructure for the sector.

- Invest in support for the local industry

Noted that other countries, including Australia, are investing in this support. While New Zealand may not have the same amount of available support, the status quo is not optimal nor sustainable for businesses to flourish.

- National interest red lines and economic harm

A question around whether the national interest red lines should include something relating to economic harm, e.g. where a payload may have an anti-competitive impact on other industries in New Zealand.

- Retaining local capabilities, skills and knowledge

We need to think about how we can retain skills and knowledge in New Zealand as companies grow and go offshore to take advantage of scale.

- Support for Project Tāwhaki

Tāwhaki is an example of a good investment in the initial partnership and underlying enabling factors.

- Values led policy

Noted that the draft Space Policy is one of very few internationally that has a Values-based framing – this could be a unique point of difference for Aotearoa New Zealand.

## **Wellington public meeting — summary of key points raised**

- Acts governing space

Ground stations should be in Outer Space and High-altitude Activities Act 2017.

- Clarify/define "responsible behaviours in space"

Question regarding the UK-led resolution at the UN, what are responsible behaviours, and how do they relate to peace in space?

- Concern regarding the Humanity Star payload

The Humanity Star payload may now be considered irresponsible.

- Concern regarding verifying the contents of payloads

How does the regulator ensure that the contents of payloads fall within what is permitted?

- Consider commercial activities in foreign countries  
How would New Zealand manage instances where foreign nations engage in commercial ventures that are counter to the country's national interests?
- Educate/inform the public regarding New Zealand's role in space  
The New Zealand Space Agency must be promoted domestically, perhaps through branded merchandise.
- Governing the use of data gathered from space  
Do GCSB and NZSIS know who is using raw data gathered from satellites?  
Space Policy has not addressed governing remotely sensed data; current regulations focus on raw data when the majority of use and risk is associated with processed remotely sensed data. What is needed is information on the recipients of the data.
- New Zealand Space Agency should be independent of MBIE  
Will the Space Agency be separated from MBIE? Including the Space Agency in MBIE could imply a focus only on economic benefits.
- Raise awareness of the importance of space in STEM  
Improve knowledge around using remotely sensed data in general and specifically for education in STEM.
- Regulation and sustainability  
Investigate the potential of utilising a sustainability rating system similar to Australia, where voluntary adoption is incentivised.
- Space technology provides mapping benefits  
The benefits of space technology are evident in environmental monitoring
- Te Tiriti obligations  
Question to the government on how space policy aligns with Te Tiriti and how the potential impacts of private launches will be governed.

### Online public meeting — summary of key points raised

- Clarify the relationship between the regional council and Rocket Lab  
Question to the government regarding the relationship between the Wairoa District Council and Rocket Lab.
- Concern regarding appropriation of Te Reo  
Concern regarding the appropriateness of a Crown agency incorrectly using te reo to describe their work.
- Concern regarding MBIE as a self-regulator  
How are potential conflicts of interest managed given that MBIE is both regulator and promoter of the space industry?
- Concern regarding militarisation of space  
Can payloads that contribute to militarisation can be considered “safe and sustainable” and do they comply with current policy objectives, principles and treaties?  
The government needs to differentiate between the military and weapons/warfare technology. At present, all are supported.

Concern regarding the ability of the New Zealand government to counter-navigate powerful states who seek to dominate space and develop weaponry.

- Concern regarding military applications of payloads

Question regarding the likelihood of the government considering a complete ban on military payloads being launched from New Zealand.

- Concern regarding nuclear-powered payloads

Question to the government on whether launching nuclear-powered payloads is considered contributing to nuclear weapons.

- Concern regarding the power and influence of Rocket Lab

Clarification is sought as to why MBIE and Rocket Lab use the same terminology regarding payloads and the potential relationship that this suggests. This relationship is concerning as MBIE is the responsible regulator.

- Concern regarding the approval of all payloads

Question to MBIE about whether or not they have ever declined a payload.

- Concern regarding the environmental impact of launches

Innovation and space technology is the cause of environmental degradation.

The space industry contributes to New Zealand's overall emissions profile. While the Act does not stipulate that emissions from launches must be considered, New Zealand is a signatory to several international agreements that imply they should be considered.

Comment regarding the exclusion of military and launch activities from emissions accountability.

- Concern regarding verifying the contents of payloads

Question regarding how the regulator differentiates dual-use technology with the potential for military applications.

- Criticism of the consultation process

Concern that the consultation process is not suited to such a significant and complex issue.

- Decline payloads/applications with military applications

Military payloads must be declined to prevent the militarisation of space.

- Environmental assessments and regulation required

MBIE cannot consider itself a responsible regulator if it has not assessed the greenhouse gas emissions of the space sector.

- Fulfil Te Tiriti obligations

Question regarding how the Space Policy will protect Māori reliance on the Whanua Marama for hauora.

Question regarding whether the policy acknowledges and implements Te Tiriti.

- How will Ranginui and Māori tupuna be protected?

Question regarding whether the Space Policy will look after Ranginui from all parapara.

Question regarding how the Space Policy protects Māori tupuna in space given that, at present, there is a great deal of space pollution.

- Kaitiakitanga and weapons deployment are at odds

How can the government reconcile kaitiakitanga and weapons development?

- Oppose any military-related activities

The current militarisation of space cannot be used to justify further militarisation.

- Opposed to innovation

Opposed to innovation as it is the cause of environmental impacts and climate change.

- Partner with Tangata Whenua

Space Policy will affect all Uritanga so each haputanga should be individually consulted.

Māori astronomers have not been invited to consult on the Space Policy. Māori astronomers should be partnered with as they know the heavens very well and how this kaupapa will affect their tino rangatiratanga, manamotuhake and whanaungatanga with the whanau marama. They can speak on behalf of their Astronomical relatives.

Question to the government on whether MBIE has sought advice on the Te Tiriti implications of the Space Policy.

Question regarding whether or not the air space and night sky above Aotearoa are considered taonga and protected under Article 2?

How do individual Māori have their voice heard in a partnership with the government?

- Space sector cannot self-regulate while weaponizing space

The space sector considers itself responsible; however, how can this be when it approves weapons payloads?

## Targeted meetings

Several targeted meetings were conducted with key stakeholder groups. On 5 September, MBIE emailed stakeholders with interests or involvement in space activities to inform them of the start of the consultation and ways to make a submission. Some stakeholders were also invited to reach out if they wished to discuss the policy review with officials and, upon request, the following stakeholders were engaged. Due to timing constraints some meetings took place after the close of the consultation period.

Group	Venue	Date	Time
Public Advisory Committee on Disarmament and Arms Control (PACDAC)	Online via Zoom	Friday 7 October	10:00am — 11:00am
Tawapata South Management committee	Online via Zoom	Thursday 3 November	9:00am — 10:00am
Disarmament Community	Online via Zoom	Monday 10 October	12:00pm — 1:00pm
Hui with Rongomaiwahine	Kaiuku marae	Tuesday 11 October	12:00pm — 2:00pm

## Public Advisory Committee on Disarmament and Arms Control (PACDAC) — summary of key points raised

- Clarify relationship between Space Policy/Aerospace Strategy

How is the Space Policy Review linked to the Aerospace Strategy? The Strategy had no values or mentions of risks and other key concerns.

- Concern regarding military applications of payloads

Question to the government regarding how payload capabilities are assessed against those necessary for weapons targeting and whether MBIE has the expertise to evaluate these payloads.

Question to the government regarding the technology safeguards agreement and whether it explicitly excludes the launch of command/control technology for nuclear or other prohibited weapons.

- Concern regarding partnering with the United States

Interactions with the United States are coloured by their position that they will “dominate space” and see it as a warfighting domain.

- Concern regarding power and influence of Rocket Lab

Concern that Rocket Lab’s influence over smaller companies and other space actors’ may influence their responses to the consultation.

- Concern regarding using third-party content collator

Concern regarding difficulties of using an external content collator for a specialised subject. Nuances may be missed or elided.

- Concern regarding verifying contents of payloads

Concern about trusting military clients on contents of payloads.

Need for additional mitigation practices e.g. independent audits of payloads. Risk assessments are needed.

Are there stats on the number of Sealed Units?

- Consider all banned weapons not just nuclear weapons

Expand the classification of banned weapons from just nuclear to all classes.

- Expand safe and securely to peaceful

Safe and secure does not mean peaceful.

- Focus on "high risk" activities which could cause serious harm

The presentation is too focused on the benefits of space and needs to include the risks.

The focus should be on “high risk” not “intended end use” for national interest e.g. high risk of causing severe environmental harm.

- Public trust requires transparency around payloads

Question regarding what satellites are being used for or can be used for.

- Support effective and transparent standards

The transparency of information is currently poor.

Information on satellite launches was missing, either classified or commercially sensitive.

Concern regarding the lack of information provided to the government and whether the regulator understands it.

## **Tawapata South Management Committee — summary of key points raised**

- Access to land is restricted for short periods of time

Access to land is physically restricted for quite short times – usually only on the actual day of the launch window. Noted that this may differ from perceptions of access restrictions based

on the notices published in the Wairoa Star in advance of the launch campaign which give closure notices for the full 10 day launch window.

- Assist in the development of local expertise

Want access to resources, science and space collaborations to allow building capacity to participate in the space industry.

- Concern regarding disturbance caused by launch site

Concern that launch pad construction is negatively impacting natural processes.

- Concern regarding land rights and the potential seizure of site

Assurance is needed that land will not be taken away by the government.

- Concern regarding safety of surrounding communities

No warning was given to the community by Rocket Lab about the health and environmental risks associated with hydrazine storage.

- Criticism of consultation process

Difficult to understand how Policy is being developed.

The consultation document does not recognise Tawapata South as part of the value chain.

- Engagement with Māori Land Court essential

The Māori Land Court was missing from the list of agencies involved in space.

The Māori Land Court should be included in the development of regulations and ownership and protection of the land.

- Environmental assessments and regulation required

Audit needed to assess short and long-term impacts on the environment from land use.

- Partner with Tangata Whenua

Tawapata Management Committee needs to be recognised as a key stakeholder and a partner in this policy area's development and management.

## **Disarmament Community — summary of key points raised**

- Concern regarding militarisation of space

There are apparent benefits to space activities. However, there is concern about militarisation.

- Concern regarding military applications of payloads

Misled by Rocket Lab's initial presentation, we were informed that use would be exclusively peaceful.

Question to the government regarding the point at which dual-use technologies will be denied.

- Concern regarding partnering with the United States

Concern regarding New Zealand's association with the United States and the potential this has to make New Zealand a target for military action.

Concern regarding partnerships with countries that utilise nuclear weaponry, e.g. the United States.

Does New Zealand have the military and technical expertise to assess the potential risks of United States military launches and to know the full implications of limited information received from them?

Question to the government regarding the percentage of launches that have served the interests of the United States and how many have been denied.

- Concern regarding the environmental impact of launches

Question to government regarding intent to minimise rocket launches to ‘essential services’ only to reduce environmental and space pollution.

Is the government concerned about pollution in space and its potential to resemble the oceans, full of pollution etc.?

- Concern regarding verifying contents of payloads

Concern regarding whether or not New Zealand has the military and technical expertise to assess potential risks of United States military launches.

Concern regarding confirming the contents of sealed payloads and their exclusively peaceful end-use.

## Hui with Rongomaiwahine — summary of key points raised

- Concern regarding disturbance caused by launch site

Before launches are increased, the impacts on those living nearby must be considered, e.g. the ground shaking and lighting up of the night sky.

- Concern regarding impact on local infrastructure e.g. roads

Individuals from outside the local area are moving in and purchasing housing needed for the local community. Additionally, roads are under pressure resulting in damages.

- Concern regarding launches interrupting customary activities

Launch windows exclude Tangata Whenua from the land and marine area and limit customary practices. Disruption must be minimal.

- Concern regarding military applications of payloads

Concern was expressed about the relationship between Lockheed Martin and Rocket Lab. Greater transparency is required regarding what the United States puts into its payloads.

- Consult with Iwi

Decisions about the use of the whenua should be made by iwi, whānau and hapū. Mana Whenua would like to have increased input into what is launched. Iwi was not consulted regarding building Rocket Lab.

- Extend deadline of consultation

Requests for the consultation to be extended.

- Incorporate Mātauranga Māori in legislation

The government needs to reflect mātauranga Māori in the intentions of the legislation – including the relationship with Ngā Whetū O Matariki.

- Monitor environmental impact of launches around Mahia

Environmental monitoring of the land and sea around Mahia should be conducted to understand launch effects better.

A letter to Minister Nash regarding customary fisheries and the concerns of Tangata Whenua about launches has gone unanswered.

- Partner with Tangata Whenua

Advice and information on the cultural impacts of the use of space must come from Tangata Whenua.

Iwi and hapu members want to engage with MBIE as partners and, therefore, would like to know more about the process for engagement.

# Appendices

## Appendix 1 — Organisations that submitted

Organisations that requested that their names and contact details be withheld are omitted from this list.

- Aerospace New Zealand Inc trading as Aerospace Christchurch
- Aotearoa Lawyers for Peace
- Aviation New Zealand
- Brainbox
- Celestial Commons
- Christchurch New Zealand
- Committee on Space Research (COSPAR) National Committee
- Disarmament and Security Centre
- Globalstar, Inc.
- Green Party MP
- Kiwi Innovation Network (KiwiNet)
- Kuiper Systems LLC
- Learn For Life
- Lynker Analytics
- Microsoft
- New Zealand Nuclear Free Peacemakers
- New Zealand Trade and Enterprise
- Ngati Consult Limited
- Nigel Sewell Software Ltd(UK)
- Nova Systems New Zealand
- Oasis orbital systems
- Peace Action Wellington
- Peace Movement Aotearoa
- Public Advisory Committee on Disarmament and Arms Control (PACDAC)
- Ramage Sheetmetals Ltd
- Rapid Advanced Manufacturing Limited (RAM3D)
- Religious Society of Friends (Quakers) Te Hāhi Tūhauwiri
- Rocket Lab
- Royal Astronomical Society of New Zealand (RASNZ)
- Space Operations New Zealand Limited
- SpaceBase Limited
- StardustMe
- Tāwhaki Joint Venture
- Te Kuaka New Zealand Alternative
- Te Mahia School
- Tuahuru Marae
- University of Canterbury
- World BEYOND War

## Appendix 2 — Individuals who submitted

Individuals who requested that their names and contact details be withheld are omitted from this list.

- Andrew Thorpe
- Anna Collins
- Bill Merrill
- Bruce Hodgson
- Bruce Rogan
- Carolyn Campbell
- Catherine Bircher
- Chris Martin
- Christian Koch
- Cornelia Baumgartner
- Darcy Knibb
- David Burr
- David Hall
- Dr. Sam Spector
- Eileen Wright
- Frances Mountier
- Frances Palmer
- Genevieve Forde
- Gloria J Sharp
- Hamish McDonald
- J R Whittington
- James Barber
- James Douglas
- Janet De Lu
- Jeremy Dunningham
- Jim Wilson
- John Minto and Bronwen Summers
- Julia Rothman
- Linda Hill
- Manu Caddie
- Marçal Sanmartí
- Mark Watson
- Mary Morgan-Richards
- MaryAnn Florence Allen
- Matthew Hodgetts
- Matthew John Thorne
- Maurice and Dorothy Alley
- Michele Bannister
- Myles Beardsmore
- Ngaromoana Raureti
- Nicholas van Brakel
- Nicolette Hurnen
- Oliver Gwatkin
- Patrick Cummuskey
- Paul A. Broady
- Paul Bruce
- Paul Elwell-Sutton
- Pauline E Tangiora
- Pauline Harris
- Peter Volker
- Renee Sturch
- Richard Northey
- Robert McLachlan
- Robin and Margaret Gwynn
- Rosemary Neave
- Ruth Gerzon
- Shane Gardiner
- Sonya Smith
- Susan Washington
- Suzanne Woodward
- Syed Khurram Iqbal
- Terry Sumner
- Theo Macdonald
- Tim Jones
- Tina Ferguson
- Trish Lambert
- Ursula
- Warren Hugh Thomson
- William Arthur Frederick Rangiwai
- William Grant
- William Stewart
- Zoe Ogilvie-Burns

