

#34

**COMPLETE**

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Page 3: Submitter Information

**Q1**

Personal Information

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**Q2****No**

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

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**Q3****Yes**

Would you like to be kept informed of the outcome of the Space Policy Review?

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**Q4****Yes**

Are you happy for MBIE to contact you if we have questions about your submission?

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**Q5****Respondent skipped this question**

Privacy

**Q6**

Release of Information

**I understand that if there is other information in this submission that I do not wish to be released, I will email this to [spacepolicyreview@mbie.govt.nz](mailto:spacepolicyreview@mbie.govt.nz) with the subject line "Release of information", together with my reasons for withholding the information and grounds under the Official Information Act 1982, for consideration by MBIE**

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Page 4: New Zealand's interests in space

**Q7**

**Work in the New Zealand space sector,**

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

**Academic involvement on space issues**

**Q8**

**Respondent skipped this question**

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

Page 5: New Zealand's values in space

**Q9**

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

Innovation	<b>Agree</b>
Responsibility	<b>Strongly agree</b>
Stewardship	<b>Strongly agree</b>
Partnership	<b>Agree</b>

**Q10**

**Respondent skipped this question**

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

Page 6: New Zealand's space policy objectives

**Q11**

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

Growing an innovative and inclusive space sector	<b>3</b>
Modelling sustainable space and Earth environments	<b>1</b>
Promoting the responsible uses of space internationally	<b>2</b>
Protecting and advancing our national security and economic interests	<b>4</b>
Regulating to ensure space activities are safe and secure	<b>5</b>

Page 7: Growing an innovative and inclusive space sector

**Q12**

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

Promoting New Zealand's natural advantage for conducting space activities, and research and development expertise across the space value chain **Strongly agree**

Partnering within New Zealand and internationally to increase research and development capabilities **Strongly agree**

Identifying opportunities to increase diversity in the space sector **Strongly agree**

Using cutting-edge space technology and space sourced data to support New Zealand's values and interests **Agree**

**Q13**

**Respondent skipped this question**

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

**Q14**

**Respondent skipped this question**

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

**Q15**

**Respondent skipped this question**

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

Page 8: Promoting the responsible uses of space internationally

**Q16**

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

Advocating for effective international rules, norms and standards in space **Agree**

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

Collaborating internationally to increase New Zealand's influence and capabilities in the global space sector **Strongly agree**

**Q17**

Respondent skipped this question

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

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**Q18**

Respondent skipped this question

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

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**Q19**

Respondent skipped this question

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

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

**Q20**

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

Use space assets to protect and advance New Zealand's national security and economic interests

**Agree**

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

**Strongly agree**

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

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**Strongly agree**

## Q21

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

The role of assessment and management of natural hazards from and in the space environment is not considered in the Policy. This omission should be covered.

Space weather is only mentioned in passing, as 'outside anyone's control' in the Policy, despite the issues it can pose to resilience of the national power grid, and to satellites which provide the nation with data. With solar maximum approaching in the next several years, at a time when space-based infrastructure is being built out like never before, all during the solar minimum, this is a timely concern.

Similarly, planetary defence, which assesses the threats to the Earth from the atmospheric explosion or ground impact of small Solar System bodies, is absent from the Policy. The interplay between multiple ministries and stakeholders within Government, as well as being a topic that inherently requires international cooperation, mean it is an issue well suited to the Policy.

In July, a 1.8 kton explosion happened in the daytime at 40 km altitude over Wellington, creating a widely viewed and reported fireball. This was due to a small asteroid, only a few metres across. It was one of five natural impacts of greater than a thousand tonnes of energy globally in the past year.

This event was low-risk. However, there were no mechanisms to identify and propagate clear information about the nature of the event, or the level of risk to the public, through to our civil defence infrastructure. A clear path of operation in the event of a larger impact being forecast in the South Pacific would be a far preferable outcome.

With technology for mitigating predicted risk from a potentially hazardous near-Earth asteroid now practical, as demonstrated by the kinetic impact of NASA's DART mission in September, it would also be appropriate to consider how NZ will engage as a spacefaring nation in the event that the upcoming massive surveys of the near-Earth asteroid population do identify a hazardous asteroid. Past cooperation at UN-COPUOS and among the scientific community (scientists from 28 countries engaged on DART) suggests that the approach would be collegial.

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## Q22

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

Amending 'Use space assets to protect and advance New Zealand's national security and economic interests' to include 'Assessing and managing natural hazards from space to the nation and in the space environment'.

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**Q23**

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

There are substantial efforts already in place via DPMC regarding space weather due to its significance for national infrastructure, so it would be a matter of making that work more apparent in this Policy, and perhaps elsewhere publicly visible.

Additionally, there could be opportunities for collaboration with the new Australian BoM space weather centre, or with other space agencies that support space assets for space weather characterisation.

For planetary defence, there are substantial international ties that could be leveraged. UN-COPUOS manages the inter-agency working group for asteroid deflection (e.g. potentially with some technological descendant of the kinetic impactor technique successfully demonstrated in September by NASA's DART mission, for which NZ provided observations from the 1.8 m optical telescope at Mt John). UN-COPUOS also provides oversight to the international asteroid warning network, which functions at a lower level and brings together the scientific side of asteroid tracking and characterisation. Both ESA and NASA run planetary defence offices, and we have close ties with both agencies, although not yet on this issue.

Coordinating the data and event flow throughout our civil defence and international data sources would be a best-practise step, to ensure our systems were ready in the event of one of these high-risk low-probability events being flagged up with a lead time.

We are also well placed to source globally important observational data in optical and radar on small bolides and asteroid tracking to feed into that lead time, due to our unique longitude relative to other facilities worldwide. Such data are also applicable to 3b and 3c's Objectives around characterisation of reentering space debris.

## Page 10: Modelling sustainable space and Earth environments

**Q24**

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

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

**Q25**

Respondent skipped this question

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

**Q26**

Respondent skipped this question

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

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**Q27**

Respondent skipped this question

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

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

**Q28**

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

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

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

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

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**Q29**

Respondent skipped this question

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

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**Q30**

Respondent skipped this question

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

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**Q31**

Respondent skipped this question

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

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Page 12: Regulating in line with our national interests

**Q32**

Respondent skipped this question

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

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**Q33**

**Respondent skipped this question**

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

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