



Discussion Document

# Reviewing Regulations for Space Vehicle Jettison Debris in the Exclusive Economic Zone

Te Arotake Waeture mō te Otaota kua Pangaia i  
ngā Tākirirangi ki roto i te Rohe Ohaoha Urukati



Ministry for the  
**Environment**  
*Manatū Mō Te Taiao*



**Te Kāwanatanga o Aotearoa**  
New Zealand Government

## Disclaimer

The information in this publication is, according to the Ministry for the Environment's best efforts, accurate at the time of publication. The Ministry will make every reasonable effort to keep it current and accurate. However, users of this publication are advised that:

- the information does not alter the laws of New Zealand, other official guidelines, or requirements
- it does not constitute legal advice, and users should take specific advice from qualified professionals before taking any action based on information in this publication
- the Ministry does not accept any responsibility or liability whatsoever whether in contract, tort, equity, or otherwise for any action taken as a result of reading, or reliance placed on this publication because of having read any part, or all, of the information in this publication or for any error, or inadequacy, deficiency, flaw in, or omission from the information in this publication
- all references to websites, organisations or people not within the Ministry are for convenience only and should not be taken as endorsement of those websites or information contained in those websites nor of organisations or people referred to.

This document may be cited as: Ministry for the Environment. 2025. *Reviewing Regulations for Space Vehicle Jettison Debris in the Exclusive Economic Zone: Discussion Document*. Wellington: Ministry for the Environment.

Cover: *Wave*.

Image credit: Peter Marriott, NIWA.

Published in October 2025 by the  
Ministry for the Environment  
Manatū mō te Taiao  
PO Box 10362, Wellington 6143, New Zealand  
[environment.govt.nz](https://environment.govt.nz)

ISBN: 978-1-991404-11-4

Publication number: ME 1923

© Crown copyright New Zealand 2025

# Contents

Message from the Minister	5
Executive summary	6
Section 1: Consultation	7
About this consultation	7
Section 2: Background	9
The issue	9
Treaty of Waitangi	11
How does New Zealand currently manage space vehicle launches?	11
Section 3: What are the Government's objectives?	12
Section 4: Current space launch vehicles in New Zealand	13
Launch vehicle flight profile, materials and structure	13
Launch vehicle jettisoned components	14
Section 5: Effects of space vehicle jettison debris	16
Environmental effects	16
Economic effects	17
Effects on existing interests	18
Section 6: Proposed approach	22
Why is the Government proposing to change the launch limit?	22
Options for increasing the current launch limit	22
Section 7: Implementation and monitoring	26
How should the proposal considered in this document be implemented and monitored?	26
Section 8: Consultation process	27
Appendix 1: Consultation questions	29
Appendix 2: Glossary	30
Appendix 3: Further information on New Zealand's legislation and international obligations	31

# Table

Table 1:	Summary of options for changing the launch limit	24
----------	--	----

# Figures

Figure 1:	Map of the authorised launch deposit area, which includes part of the Extended Continental Shelf	10
Figure 2:	Map of previous launch jettison debris locations	15
Figure 3:	Shipping density around New Zealand from July 2018 to June 2019	19

# Message from the Minister

The Government is committed to supporting New Zealand's fast-growing space industry while ensuring it operates within clear environmental limits.

This discussion document outlines the current review of regulations allowing space vehicles (rockets) to jettison debris into the Exclusive Economic Zone and Extended Continental Shelf (EEZ).

This review has been prioritised because conditions set under current regulations are due to expire, after which each launch would need to go through a fully notified marine consent process. This would impose significant costs and time delays which is contrary to the Government's goals of promoting investment certainty and supporting continued growth in the sector. The [Space and Advanced Aviation Strategy 2024–2030](#) sets out the Government's goal to double the size of the sectors by 2030.



In a little over a decade, New Zealand's space industry has established itself as an important economic contributor that provides jobs, supports international communications and promotes innovative technology. The industry's annual economic contribution is now about \$2.5 billion annually, and it supports around 17,000 full-time equivalent positions in New Zealand.

New Zealand is now home to the world's only fully private orbital launch site and conducted the third-highest number of launches in 2024. Since 2017, there have been more than 60 orbital launches from New Zealand. Technological innovation has seen the cost of launches drop significantly in recent years, causing an increase in annual launch numbers from 3 in 2019 to 13 in 2024.

Space vehicles jettison debris as part of normal operations, some of which falls into the ocean and sinks to the sea floor. The impact of this beyond coastal waters is managed via the Exclusive Economic Zone and Continental Shelf (Environmental Effects—Permitted Activities) Regulations 2013 (EEZ Permitted Activity Regulations).

This discussion document focuses on a review of section 8A of the EEZ Permitted Activity Regulations, and whether to increase the launch limit that controls the effects of material jettisoned from space vehicles on the environment and existing interests in the Exclusive Economic Zone. The review is supported by data from an environmental risk assessment by Earth Sciences New Zealand (formerly NIWA).

I welcome feedback on the proposals to enable New Zealand space industry to continue to grow and operate within environmental limits.

A handwritten signature in blue ink, reading 'Penny Simmonds'.

**Hon Penny Simmonds**  
Minister for the Environment



# Executive summary

The Government is reviewing regulations that manage the deposition of space vehicle (rocket) jettison debris in New Zealand's Exclusive Economic Zone and Extended Continental Shelf (EEZ).

These regulations currently allow for up to 100 launches to deposit debris in the EEZ without requiring a marine consent. Due to the growth of the space and advanced aviation sector, this limit is expected to be reached in 2026.

This discussion document seeks public feedback on whether the current launch limit should be changed, and, if so, how. It outlines the environmental, economic and cultural effects of space vehicle debris, and presents options for updating the regulations to support the growth of New Zealand's space and advanced aviation sector within environmental limits.

The effects of space vehicle jettison debris are:

- **environmental effects:** An updated ecological risk assessment concluded that the environmental risk from jettison debris remains low for up to 1,000 launches, provided debris is not deposited on sensitive features like seamounts
- **economic effects:** The space sector contributed around \$2.5 billion to the New Zealand economy in 2023/24, with a strong export performance and high levels of research and development. Increasing the launch limit could enhance economic growth, attract investment and support high-skilled jobs. The impact of increased launches on the fisheries and oil and gas industries is expected to be low
- **effects on existing interests:** Impacts on maritime transport, commercial fisheries and Māori interests are expected to be low due to the remote location of debris zones and limited activity in those areas.

Three options have been identified.

- Option 1: Increase the launch limit to 1,000 – supports sector growth within environmental limits.
- Option 2: Remove the launch limit – maximises flexibility but could exceed environmental limits.
- Option 3: Keep the launch limit at 100 – maintains current environmental limits but will likely constrain the sector.

The Government also proposes refining how launches are counted, so that only launches that result in debris being deposited in the EEZ count towards the limit.

Under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012, the Minister must establish a process that gives the public, iwi authorities, and people whose existing interests are likely to be affected, adequate time and opportunity to comment on proposed regulations. This consultation has been designed to give effect to the principles of the Treaty of Waitangi for the purposes of the Act. Consultation closes at 11.59 pm on 19 October 2025.

# Section 1: Consultation

## About this consultation

The Government is considering amending regulations under the [Exclusive Economic Zone and Continental Shelf \(Environmental Effects\) Act 2012](#) (EEZ Act) that manage the deposition of space vehicle jettison debris in the Exclusive Economic Zone and Extended Continental Shelf (EEZ).

## Scope of consultation

This consultation considers the effects of jettisoned (released or dropped when no longer needed) debris from space vehicles (commonly known as rockets) in the EEZ because this is where debris usually falls during normal operations. This includes effects on the water column and seabed, as well as effects on existing interests (including Māori, maritime and fishing), international obligations, economic benefits and environmental sustainability.

Other matters not in the scope of this review include:

- regulation of space vehicle launches under the Outer Space and High-altitude Activities Act 2017 (including issuance of launch licences and payload<sup>1</sup> permits, contents of payloads, suitability of launch operators, risks to national security, notification requirements and orbital debris mitigation)
- effects management (eg, noise, effects on other activities) on land and in the territorial sea (up to 12 nautical miles from the coast) under the Resource Management Act 1991
- exclusion zones managed by the Civil Aviation Act 2023 and Maritime Transport Act 1994
- any effects on the atmosphere or outer space.

## Your views

The Government welcomes your comments on this discussion document. The questions throughout the document are a guide only. You do not have to answer every question, and all comments are welcome. See [appendix 1](#) for the full list of questions.

To ensure others clearly understand your point of view, you should explain the reasons for your views and give supporting evidence if needed.

## Closing date for submissions

Submissions close at 11.59 pm on 19 October 2025. Information on how to make a submission, including questions to guide your feedback, is included in [Section 8: Consultation process](#).

---

<sup>1</sup> The part of the space vehicle that is carried for a client, typically a satellite in the case of New Zealand commercial operations.

## **What happens next?**

After receiving submissions, officials will analyse submissions and provide advice to the Minister for the Environment, who will then decide on policy options, in consultation with the Minister for Space.

Any amendments to regulations will be made by December 2025.



# Section 2: Background

## The issue

New Zealand has an internationally recognised space launch capability. Interest is growing from space launch operators to expand their launch sites into other countries, including New Zealand.

In 2017, the Government introduced a permitted activity classification for the deposit of jettisoned material from space vehicles in the EEZ. The classification was based on a 2017 ecological risk assessment by NIWA and on public consultation.<sup>2</sup> The ecological risk assessment used the deposition of debris from a 40-tonne space vehicle to assess the effects on the marine environment. It determined that the risk of negative effects was low for up to 100 launches.

The classification was designed to support the development of a safe, responsible and world-leading space industry in New Zealand, while ensuring environmental effects were reduced or avoided. The classification allowed the:

- deposition of jettisoned material from up to 100 launches in the authorised launch deposit area (figure 1)
- launch of space vehicles without the need for fully notified marine consents, which would have added significant cost and time delays to each launch.

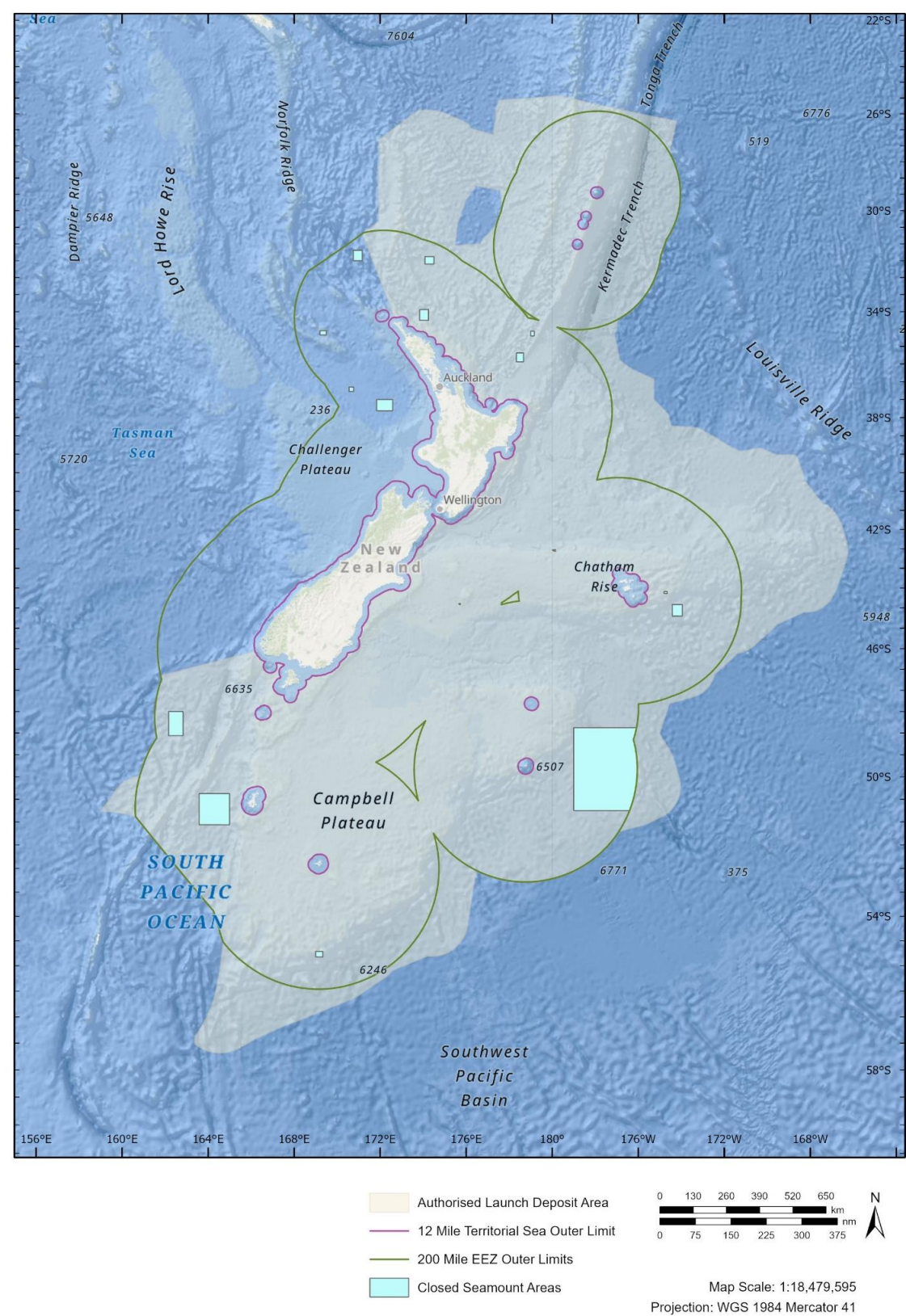
Any change to the permitted activity classification require a change to the [Exclusive Economic Zone and Continental Shelf \(Environmental Effects—Permitted Activities\) Regulations 2013](#) (EEZ Permitted Activity Regulations).

The launch limit is expected to be reached in 2026 due to the growth of the space sector. Any space vehicle launches that jettison debris beyond this limit would require a fully notified marine consent before the launch could proceed. This requirement would constrain the space and advanced aviation sector by imposing significant extra costs, time delays and uncertainty.

---

<sup>2</sup> Lamarche G, MacDiarmid A, Anderson O, Baird SJ, Bowden D, Clark M, Goetz K, Hickey C, Ladroit Y, Schnabel K, Thompson D, Lundquist D. 2017. *Regulation of jettisoned material from vehicles under the Exclusive Economic Zone and Continental Shelf Act 2012: Proposed changes*. NIWA Client Report 2017068WN. Prepared for the Ministry for the Environment. Wellington: Ministry for the Environment.

Figure 1: Authorised launch deposit area, which includes part of the Extended Continental Shelf



Source: Earth Sciences New Zealand

# Treaty of Waitangi

The EEZ Act sets out responsibilities for the Minister when amending regulations, including giving effect to principles of the Treaty of Waitangi. To recognise and respect the Crown's responsibility to give effect to the principles of the Treaty of Waitangi, [section 12](#) of the EEZ Act requires the Minister to establish and use a process that gives iwi adequate time and opportunity to comment on the subject matter of proposed regulations.

## How does New Zealand currently manage space vehicle launches?

### Outer Space and High-altitude Activities Act 2017

The Outer Space and High-altitude Activities Act was enacted in 2017 to regulate space and high-altitude activities conducted in New Zealand and by New Zealanders overseas. The Act introduced a licencing and permitting regime, requiring operators to hold a licence to launch a space vehicle or a payload from a launch facility. Launch facilities must be authorised by the Minister for Space. Operators must meet conditions to be granted a launch licence or payload permit.

### EEZ Permitted Activity Regulations

The EEZ Permitted Activity Regulations manage space vehicle debris deposition in New Zealand's EEZ. Under [regulation 8A](#), the deposit of jettisoned material from space launches onto the seabed of the EEZ is classified as a permitted activity, provided operators comply with several conditions, which:

- restrict where debris may be deposited (requiring operators to avoid closed seamounts and deposit within the authorised launch deposit area)
- limit the number of permitted space vehicle launches to 100 in total.

Operators must also meet pre- and post-launch reporting requirements. They must notify the Environmental Protection Authority (EPA) no later than 10 working days before a launch and submit post-activity reports to the EPA no later than 5 working days after a launch, as well as quarterly or after 10 consecutive launches, whichever happens first. Further information on the EEZ Act can be found in [appendix 3](#).

### New Zealand's international obligations

[Section 11](#) of the EEZ Act states that the Act continues or enables the implementation of New Zealand's international obligations, including the United Nations Convention on the Law of the Sea 1982 (UNCLOS) and the Convention on Biological Diversity 1992 (CBD). No current international agreements regulate the disposal of jettisoned material from space vehicles on the seabed.

Some general obligations apply to deposition on the seabed under UNCLOS and the CBD. As well as these general obligations, New Zealand has general obligations under the Convention for the Protection of the Natural Resources and Environment of the South Pacific Region 1986 (Noumea Convention).

Further information on New Zealand's international obligations can be found in [appendix 3](#).

## Section 3: What are the Government's objectives?

Enabling development and economic growth within environmental limits is a key priority of the Government. Any changes to the space vehicle launch limit in the EEZ Permitted Activity Regulations should also safeguard the environment and human health. This review will ensure that environmental protections remain robust, while supporting the sustainable development of New Zealand's space and advanced aviation industry.

The space and advanced aviation sector is broad and includes:

- aircraft and spacecraft that operate at different altitudes
- drones that operate at low levels
- rockets that reach Earth's orbit and beyond.

The technologies delivered by the space and advanced aviation sector are essential to the day-to-day functioning of New Zealand, enabling navigation and communication, security and defence, environmental monitoring, disaster response and recovery, weather forecasting and natural resource management.

The Government has developed a space and advanced aviation sector strategy<sup>3</sup> to support growth of the sector. The sector strategy positions New Zealand to become a global leader in space and advanced aviation, while contributing to long-term economic growth and resilience. The Government plans to double the size of the space and advanced aviation sector by:

- exploring the development of New Zealand's space capabilities with a national space mission
- establishing a world-leading regulatory environment for space and advanced aviation
- unlocking trade and investment
- building an aerospace-capable workforce
- accelerating aerospace innovation.

---

<sup>3</sup> Ministry of Business, Innovation and Employment. 2024. *New Zealand Space and Advanced Aviation Strategy 2024–2030*. Wellington: Ministry of Business, Innovation and Employment.

# Section 4: Current space launch vehicles in New Zealand

The only space vehicles that have been launched from New Zealand so far are Electron space vehicles launched by Rocket Lab and space vehicles launched by University of Canterbury Aerospace. New space vehicle operators are possible over time. Other operators may use space vehicles with different structures and compositions. Technological advances may also change the structure and composition of space vehicles launching from New Zealand.

## Launch vehicle flight profile, materials and structure

The information provided below is based on Rocket Lab Electron space vehicles.

### Flight profile

The Electron space vehicle consists of three stages. The first stage provides most of the thrust to leave Earth's atmosphere and separates from the rest of the space vehicle (including the payload) once it reaches a certain altitude. This falls back to Earth and lands in the EEZ. These can be (and previously have been) recovered for reuse. Some overseas operators are researching, developing and using self-recovering launch vehicles, but this technology is not yet in use in New Zealand.

The second stage carries the payload to a near-orbital trajectory. The third stage provides final orbital insertion and deployment of the payload.

### Vehicle parts

The space vehicle has four parts: stage 1, stage 2, kick stage and fairing.

- **Stage 1** is made of nine Rutherford engines, bulkhead tanks for propulsion and pneumatics materials, and an interstage.
- **Stage 2** comprises a single engine, high-voltage batteries and a bulkhead tank for propulsion materials.
- **Kick stage** is a single Curie engine and propellant tanks, and carries the payload to orbit.
- **Fairing** is a shell that surrounds the kick stage and payload, protecting them from the hazards of launch.

### Carbon fibre composite

The structural material of the launch vehicle is carbon fibre reinforced polymer. The carbon filaments are chemically inert and do not react to seawater.

### Propellants

Liquid oxygen and RP-1 kerosene (a rocket propellant version of kerosene) are used on both the first and second stages of the launch vehicle. Liquid oxygen, if released to the atmosphere,

rapidly boils and returns to the atmosphere as gaseous oxygen. RP-1 kerosene is a highly refined grade of hydrocarbon with low density, film and rapid evaporation.

## **Pneumatics**

All inflight pneumatic systems use stored pressurised cold gases to provide tank pressurisation, for cold-gas manoeuvring thrust in space, and for stage separation mechanisms.

## **Engines**

The launch vehicle uses nine engines for stage 1, a single Rutherford engine for stage 2 and a single Curie engine for the kick stage. The engines are constructed of Inconel, an inert nickel alloy. Each engine is mounted to the thrust section of the launch vehicle.

## **Batteries**

The launch vehicle carries 13 high-powered lithium batteries for stage 1, mounted at the rear of the launch vehicle with the engines. Stage 2 carries three batteries, two of which are jettisoned as they become exhausted during flight. The remaining battery is carried with the second stage into orbit and continues to power the stage 2 engine.

The stage 1 batteries remain with the stage 1 structure as it lands in the EEZ. The stage 2 batteries will burn up entirely. The batteries are lithium-based and contain no lead, acid, mercury, cadmium, or other toxic heavy metals.

# **Launch vehicle jettisoned components**

## **Jettison of launch vehicle parts**

During a space vehicle launch, three different groups of materials are jettisoned: stage 1, the fairing, and two stage 2 batteries.

Stage 1 is automatically jettisoned when empty of propellants. Some proportion of the jettisoned material will burn up in the atmosphere, but most of the material will land in the EEZ. The jettisoned material sinks to the seafloor and is deposited on the seabed off the east and southeast coast of New Zealand in the authorised launch deposit area. Some material could float for a short time (less than one day).

The fairing is released from the launch vehicle shortly after stage 1 and also lands in the EEZ.

Stage 2 of the launch vehicle will continue to climb and accelerate, jettisoning two batteries before entering orbit and releasing the kick stage and the payload. The batteries are highly likely to burn up in the atmosphere before reaching Earth's surface.

## **Jettison zones**

Materials jettisoned from space vehicles are permitted to be deposited in an authorised launch deposit area in the EEZ. From 2017 to 2024, 55 space vehicles were launched in New Zealand. Twelve launches were from January to August 2025. Of those launches, seven had debris recovered from the EEZ by the space vehicle operator.

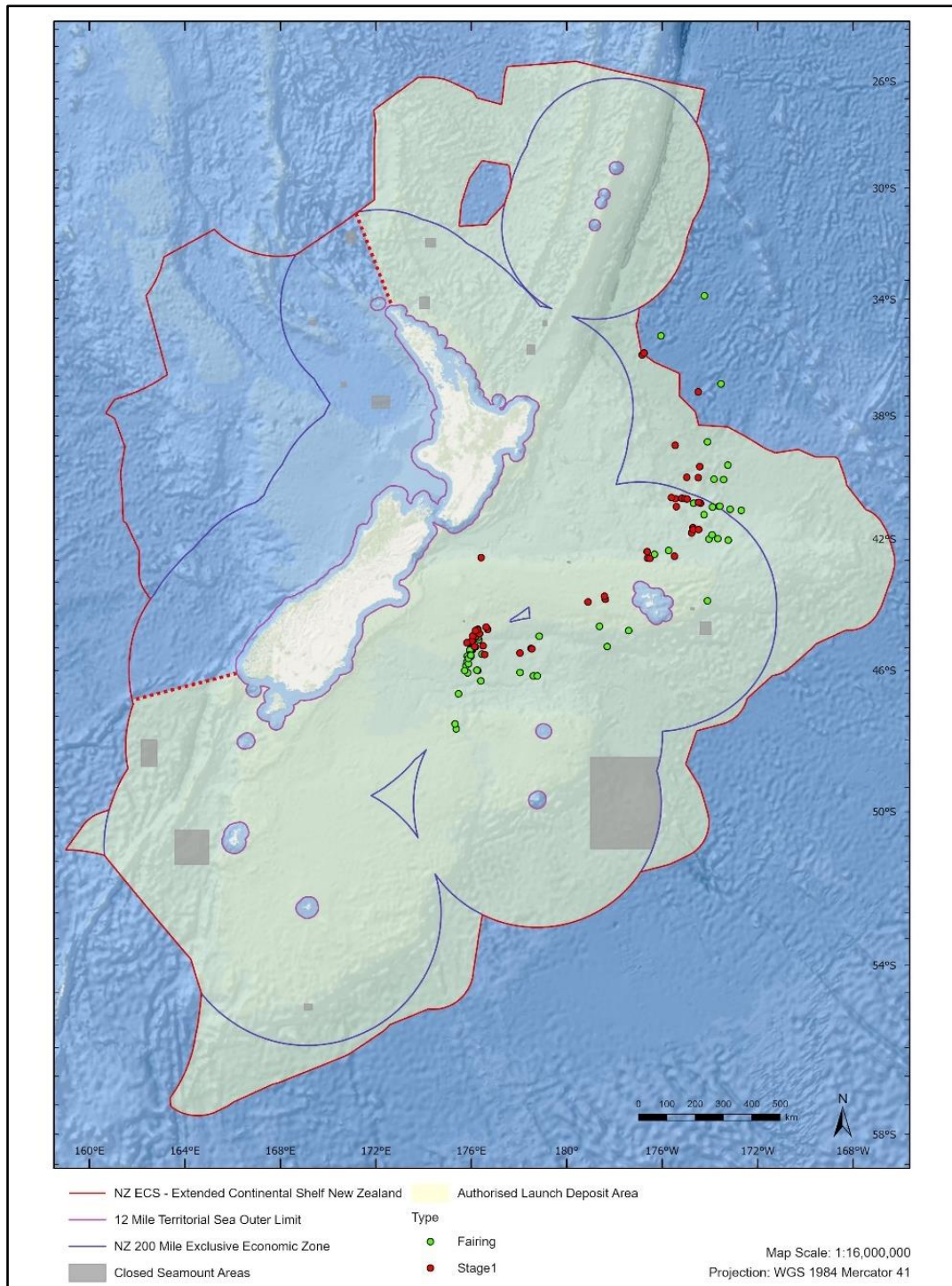


Figure 2 shows the locations of previous launch jettison debrisfigure 2.

The EEZ Permitted Activity Regulations define the authorised launch deposit area as the area to the north, east, northwest, south and southwest of New Zealand that:

- is bounded by the line extending from 46°05'S 166°11'E to 46°52'S 161°48'E (southwest of the South Island)
- is bounded by the line extending from 34°13'S 172°40'E to 30°55'S 171°10'E (northwest of the North Island).

**Figure 2: Previous launch jettison debris locations**



Source: Earth Sciences New Zealand

# Section 5: Effects of space vehicle jettison debris

## Environmental effects

The Ministry for the Environment commissioned Earth Sciences New Zealand (formerly the National Institute of Water and Atmospheric Research) to undertake an ecological risk assessment on the effects of space vehicle jettison debris on the EEZ.<sup>4</sup> The report updated the 2017 risk assessment and assessed the ecological impact of jettisoned material from space vehicles. The assessment used updated information on the environment and real-life data from space vehicle launches in New Zealand.

The report assumed that the jettison debris from a 1 tonne space vehicle – Stage 1 and fairings – does not break up in the atmosphere and is deposited on the seabed. It assessed the potential for three environmental effects from the debris: direct strike causing mortality (death), noise disturbance and smothering of benthic organisms.

The report looked at the consequences of these effects on different groups of animals, plants and ecosystems within the EEZ and assessed the likelihood of each effect. The groups of animals and plants were:

- air-breathing fauna – this includes birds, whales, dolphins and other animals that breathe air
- the pelagic community – this includes fish, sharks and other animals and plants that live in the water column
- the demersal community – this includes animals and plants that live near or on the seabed
- benthic invertebrate community – this includes animals and plants that live on the seabed and do not have a backbone.

This assessment provided a risk rating for each ecosystem and each group of animals and/or plants.

### Direct strike causing mortality

The report assessed that risk levels for direct strike causing mortality (death) were low for up to 1,000 space vehicle launches jettisoning debris in most areas of the marine environment. Risks to animals and plants on seamounts were moderate at 1,000 launches.

### Noise disturbance

Risk levels for noise disturbance were assessed as low for up to 1,000 space vehicle launches jettisoning debris in most areas of the marine environment. The risk of noise disturbance to animals and plants on seamounts was moderate at 1,000 launches.

---

<sup>4</sup> Thompson D, Anderson O, Pinkerton M, Macpherson D, Steinmetz T, Faulkner L, Thomson T, Brough T, Rowden A. 2025. *Ecological risk assessment of debris from space vehicle launches on the marine environment*. Earth Sciences New Zealand Client report 2025291WN. Prepared for the Ministry for the Environment. Wellington: New Zealand.

## Smothering of benthic organisms

Risk levels for smothering of benthic organisms were assessed to be low for up to 1,000 space vehicle launches jettisoning debris in most areas of the marine environment.

### Questions – Environmental effects

1	Do you agree that the environmental effects described are the main environmental effects likely to occur as a result of space vehicle jettison deposition in the EEZ? If not, why not?
2	Do you agree with the scale of the described environmental effects? If not, why not?
3	Are you aware of any other environmental effects the Government should consider? If so, what are they?

## Economic effects

An initial economic study on New Zealand's space and advanced aviation sector was undertaken by Deloitte in 2019. This study found that the space sector contributed \$1.69 billion to the New Zealand economy in 2018/19 and supported the employment of 12,000 full-time equivalents.<sup>5</sup>

Deloitte undertook a follow-up economic study in 2025, aiming to understand how the space and advanced aviation sector has developed economically. The study found that the space market had grown 53 per cent since 2019, with an 8.9 per cent equivalent year-on-year growth. In total, the space sector contributed \$2.47 billion to the New Zealand economy in 2023/24, and the sector's employment contribution was around 17,000 full-time equivalents.<sup>6</sup>

Increasing the number of rocket launches permitted in New Zealand could significantly boost the space and advanced aviation sector's contribution to economic growth. Permitting a greater number of launches would provide the sector with increased certainty, better supporting economic growth, compared with requiring a consent for each individual launch. More frequent launches could drive economic growth by attracting international investment, creating more high-skilled jobs, supporting the growth of local supply companies and fostering innovation across aerospace technologies. It would also strengthen New Zealand's position as a globally competitive launch destination, leveraging its geographic advantages and regulatory agility, to support cutting-edge research and development.

The space and advanced aviation sector provides significant benefits to New Zealand's research and development, domestic workforce and exports. The Deloitte study found that research and development comprises 11 per cent of the space sector, compared with the New Zealand average of 1.4 per cent in other sectors. New Zealand's space sector is generally homegrown: 78 per cent of respondents to the economic study reported that more than half of their workforce is from New Zealand. In addition, 7 per cent of respondents identified as Māori businesses.<sup>7</sup>

<sup>5</sup> Deloitte Access Economics. 2019. *New Zealand Space Sector: Its value, scope and structure*. Prepared for the Ministry of Business, Innovation and Employment. Wellington: Ministry of Business, Innovation and Employment. p 35.

<sup>6</sup> Deloitte Access Economics. 2025. *Innovation for growth: Charting the space and advanced aviation sectors*. Economic Study of the Space and Advanced Aviation Sector, prepared for the Ministry of Business, Innovation and Employment. Wellington: Ministry of Business, Innovation and Employment. p 7.

<sup>7</sup> Deloitte Access Economics. 2025. *Innovation for growth: Charting the space and advanced aviation sectors*. Economic Study of the Space and Advanced Aviation Sector, prepared for the Ministry of Business, Innovation and Employment. Wellington: Ministry of Business, Innovation and Employment. p 33.

The 2025 Deloitte economic study found that the New Zealand space and advanced aviation sector generated almost 29 per cent of its revenue from abroad, a higher export share than the New Zealand economy overall. Main export markets include Canada, Europe, India, Japan, Korea, Singapore and the United States of America.<sup>8</sup>

Rocket launches are an important anchor component of the New Zealand space and advanced aviation sector. If rocket launches are unable to continue or scale up, it could pose a significant risk to the growth and sustainability of the broader sector.

We expect adverse economic effects on other economic activities (including the interests listed below) to be low.

Questions – Economic effects	
4	Do you agree with the description of the main economic effects likely to occur as a result of space vehicle jettison deposits in the EEZ? If not, why not?
5	Do you agree with the scale of the described economic effects? If not, why not?
6	Are you aware of any other economic effects the Government should consider? If so, what are they?

## Effects on existing interests

Existing interests are defined under [section 4](#) of the EEZ Act. This includes both existing activities that are authorised under an Act or Regulations (eg, commercial fishing) and those that are not (eg, shipping). The definition of existing interests also includes Treaty settlements, including through the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 (Fisheries Settlement Act), and customary marine title and protected customary rights under the Marine and Coastal Area (Takutai Moana) Act 2011 (Takutai Moana Act) and other arrangements (such as the Ngā Rohe Moana o Ngā Hapu o Ngāti Porou Act 2019).

## Shipping and maritime transport

Before and during a space vehicle launch, warnings are issued to ships through Notices to Mariners and radio transmissions. These advise ships of debris hazard zones, areas where debris jettisoned during space vehicle launches is estimated to land. Ships may choose to move out of the debris hazard zone during the time debris is expected to land.

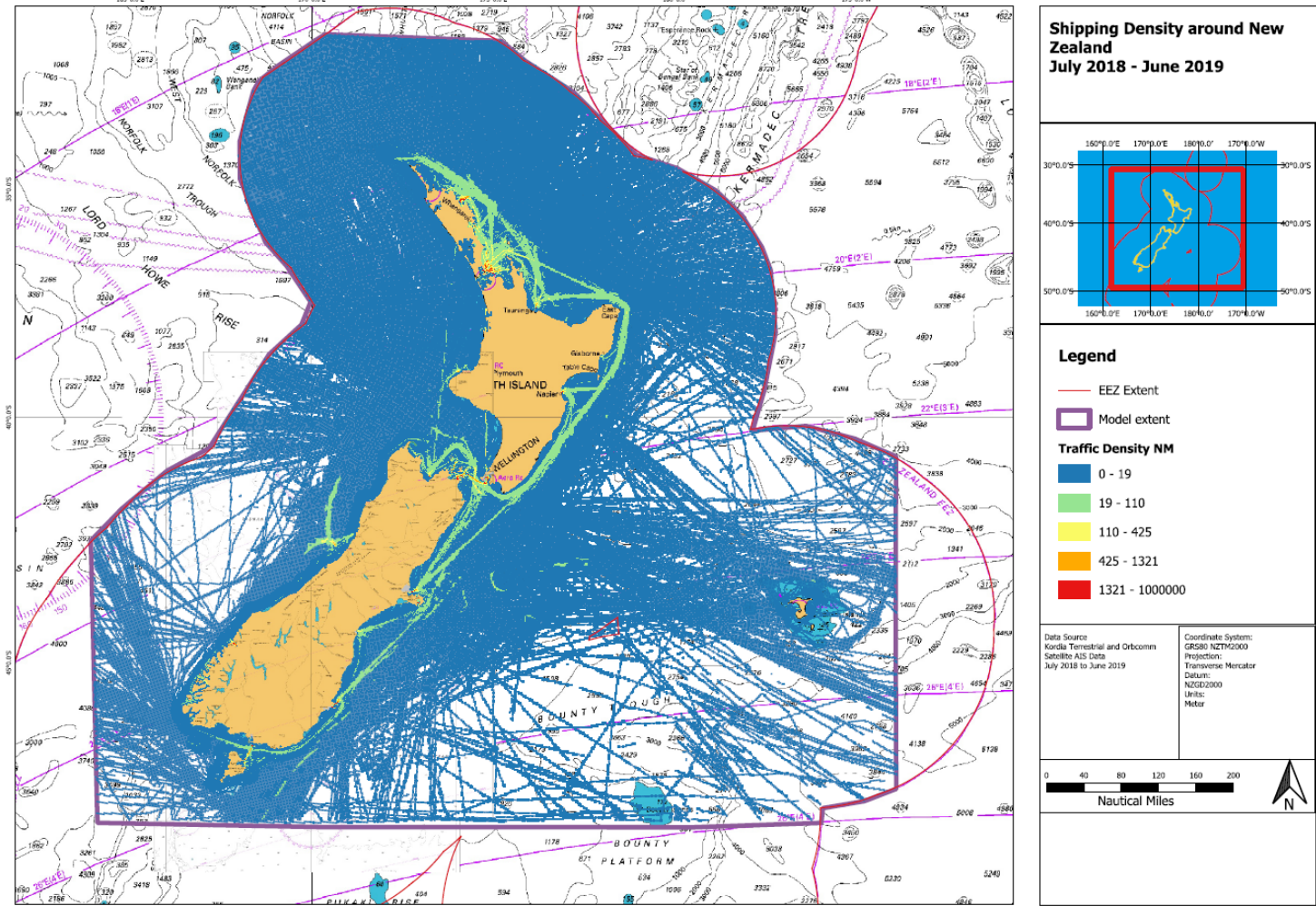
The debris hazard zones are in remote areas of the EEZ off the east coast of the North and South islands. Automatic identification system tracking of ships shows little maritime traffic in the area where debris may land. [Figure 3](#) shows the shipping density in New Zealand's EEZ; most traffic is concentrated in coastal areas, with low levels of traffic in the area where debris is jettisoned.

---

<sup>8</sup> Deloitte Access Economics. 2025. *Innovation for growth: Charting the space and advanced aviation sectors*. Economic Study of the Space and Advanced Aviation Sector, prepared for the Ministry of Business, Innovation and Employment. Wellington: Ministry of Business, Innovation and Employment. p 5.



Figure 3: Shipping density around New Zealand from July 2018 to June 2019



Source: Land Information New Zealand

Of the few vessels that travel through the debris hazard zones, most are cargo or fisheries vessels.

Increased debris deposition may mean ships need to move out of debris hazard zones more frequently, increasing costs and journey times. However, given the small number of ships that travel through or into the debris hazard zones, this effect is anticipated to be low.

## **Commercial fisheries**

Space vehicle debris is likely to be deposited in several areas designated as a fishery management area (FMA) under the Fisheries Act 1996: FMA2, FMA4, SOE (Southeast Chatham Rise), FMA3, SEC (Southeast Coast) and FMA6, SUB (Subantarctic).

An increase in launch debris deposition requiring debris hazard zones may affect the ability to exercise commercial fishing rights. Fishing ships may decide to move out of the debris hazard area or avoid it entirely, affecting their ability to catch fish. However, the automatic identification system tracking of ships in the debris hazard zones shows few vessels travelling into or through the debris hazard zones. This suggests not much fishing activity that could be displaced, meaning any effect of increased launches is anticipated to be low.

## **Māori interests**

Māori have a cultural, economic and spiritual relationship with the marine environment. This relationship is grounded in whakapapa (ancestry) and expressed through tikanga (custom) and kaitiakitanga (guardianship).

The EEZ contains spiritual pathways in te ao Māori, such as the area between Te Rerenga Wairua (at the top of the North Island) and Manawatāwhi (Three Kings Islands). This area is excluded from the current authorised launch deposit area. Māori consider the health of the ocean to be intrinsically linked to the wellbeing of people. They exercise kaitiakitanga over marine taonga (cultural treasures) within their rohe moana (customary fishing areas), which may extend into the EEZ. This includes responsibilities to protect and restore the mauri (life force) of the marine environment, and to maintain intergenerational knowledge and cultural practices associated with the sea.

Māori have fisheries interests in the EEZ through the Fisheries Settlement Act, including commercial quota holdings, customary fishing rights, and ownership stakes in fisheries companies. Māori also hold rights under the Takutai Moana Act, although this applies only to the territorial sea. Increased space vehicle jettison debris could impact the exercise of commercial fishing quota allocated under the Fisheries Settlement Act (see the [Commercial fisheries](#) section for more detail).

Rocket debris from space launches poses a low risk to marine species up to 1,000 launches (see the [Environmental effects](#) section for more detail).

Customary fishing takes place within rohe moana (defined customary fishing areas) of tangata whenua. Limited information exists about how increased launch debris deposition within affected rohe moana would affect how Māori interact with, harvest or manage customary resources. Effects may be similar to those for commercial fisheries and shipping. Based on the low level of activity in the debris hazard zones, the effect of increased launches is anticipated to be low.



Treaty settlements and other arrangements are considered existing interests under the EEZ Act. For the debris hazard areas, these include:

- Moriori Claims Settlement Act 2021
- Ngā Rohe o Ngā Hapū o Ngāti Porou Act 2019
- Ngāi Tahu Claims Settlement Act 1998
- Treaty of Waitangi (Fisheries Claims) Settlement Act 1992 and Māori Fisheries Act 2004.

## Oil, petroleum and resource extraction

No petroleum permits have been issued for the authorised launch deposit area.

One mineral mining permit is active in the authorised launch deposit area, on the Chatham Rise. This permit grants exclusive rights to mine phosphorite nodules, but no mining activity is currently taking place in the area. A marine consent is required for any future mining activity.

An increase in space vehicle jettison debris would not have any effects on oil, petroleum and resource extraction. Any operators considering applying for exploration or mining permits in the authorised launch deposit area may need to consider the potential for space vehicle jettison debris to be deposited in the area they are interested in.

### Questions – Effects on existing interests

7	Do you agree that the existing interests described are the main existing interests? If not, why not? Please describe any other existing interests you are aware of that may be affected by space vehicle jettison debris.
8	What do you think the main effects will be on existing interests? Please provide any information you have in relation to those effects.

# Section 6: Proposed approach

## Why is the Government proposing to change the launch limit?

In its ecological risk assessment,<sup>9</sup> Earth Sciences New Zealand concluded that the risk to the marine environment in the authorised launch deposit area is low for up to 1,000 launches of 1 tonne rockets. This means there is likely little difference in environmental effects between 100 and 1,000 launches. Above this number, the risk becomes moderate, which is considered too high a risk to the EEZ Act's purpose of protecting the environment. However, the report also noted that, although experts are confident in how jettison debris affects marine species, data on the marine environment are limited, and risk levels may have been underestimated or overestimated.

The options for increasing the current launch limit are described below and summarised in [table 1](#).

## Options for increasing the current launch limit

### Option 1: Increase the launch limit to 1,000

Deposition of material jettisoned from the launch of a space vehicle would remain a permitted activity for up to 1,000 launches. Based on current launch frequency (13 launches in 2024 and 12 in the year to August 2025), it may take decades to reach this limit. Once launch numbers approach that limit, a new risk assessment would likely be needed to incorporate new information about the marine environment, any changes to space vehicle technology, and the effects of space vehicle jettison debris. The requirements for deposition to be within the authorised launch deposit area and to avoid deposition on closed seamounts would remain.

This option:

- meets the EEZ Act's purpose of protecting the environment and existing interests from pollution by regulating or prohibiting the discharge of harmful substances and the dumping or incineration of waste or other matter
- meets the Government's objectives to position New Zealand as a global leader in space and advanced aviation, while contributing to long-term economic growth and resilience
- continues to incorporate the best available information on the marine environment into management of activities in the EEZ
- provides certainty for New Zealand space vehicle operators and their clients on operators' ability to provide services beyond the current 100 launch limit

---

<sup>9</sup> Thompson D, Anderson O, Pinkerton M, Macpherson D, Steinmetz T, Faulkner L, Thomson T, Brough T, Rowden A. 2025. *Ecological risk assessment of debris from space vehicle launches on the marine environment*. Earth Sciences New Zealand Client report 2025291WN. Prepared for the Ministry for the Environment. Wellington: New Zealand.

- meets New Zealand’s broader international obligations to protect the environment (under UNCLOS and the CBD), and to prevent, reduce and control marine pollution (under UNCLOS and the Noumea Convention).

## **Option 2: Remove the launch limit**

Deposition of material jettisoned from the launch of a space vehicle would remain a permitted activity, with no limit on the number of launches. The requirement would remain for deposition to be within the authorised launch deposit area and to avoid deposition on closed seamounts.

This option:

- is unlikely to meet the EEZ Act’s purpose of protecting the environment and existing interests from pollution by regulating or prohibiting the discharge of harmful substances and the dumping or incineration of waste or other matter
- could exceed environmental limits in the future, based on ecological risk assessment results
- meets the Government’s objectives to position New Zealand as a global leader in aerospace, while contributing to long-term economic growth and resilience
- provides certainty for New Zealand space vehicle operators and their clients on operators’ ability to provide services beyond the current 100 launch limit
- is unlikely to meet New Zealand’s broader international obligations to protect the environment (under UNCLOS and the CBD) and to prevent, reduce and control marine pollution (under UNCLOS and the Noumea Convention).

## **Option 3: Keep the launch limit at 100**

Deposition of material jettisoned from the launch of a space vehicle would remain a permitted activity for up to 100 launches, the limit derived from the 2017 environmental risk assessment. The requirement would remain for deposition to be within the authorised launch deposit area and to avoid closed seamounts. Any launches over the limit would require a marine consent. Marine consent applications for a notified marine consent can cost between \$180,000 and \$630,000 for the EPA to determine the consent, and take up to 9 months from notification to be determined. Consents timeframes can be extended, and this would make it hard for an operator to guarantee launch dates.

This option:

- meets the EEZ Act’s purpose of protecting the environment and existing interests from pollution by regulating or prohibiting the discharge of harmful substances and the dumping or incineration of waste or other matter
- does not meet the Government’s objectives to position New Zealand as a global leader in aerospace, while contributing to long-term economic growth and resilience
- would not incorporate updated information on the marine environment into management of activities in the EEZ
- does not provide long-term certainty for New Zealand space vehicle operators and their clients on operators’ ability to provide services
- would place significant administrative and financial burdens on operators and the EPA (marine consent issuer)

- is likely to meet New Zealand’s broader international obligations to protect the environment (under UNCLOS and the CBD) and to prevent, reduce and control marine pollution (under UNCLOS and the Noumea Convention).

**Table 1: Summary of options for changing the launch limit**

	Option 1: Increase the launch limit to 1,000	Option 2: Remove the launch limit	Option 3: Keep the launch limit at 100
Meets the EEZ Act’s purpose	Yes	No	Yes
Meets government objectives	Yes	Yes	No
Uses best available information	Yes	No	No
Provides certainty for operators and their clients	Yes	Yes	No
Ensures impact remains within environmental limits	Yes	No	Yes
Meets New Zealand’s international obligations	Yes	No	Yes

Note: EEZ Act = Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012.

## Options on how to account for launches

The current definition of a space vehicle ‘launch’ in [section 4](#) of the Outer Space and High-altitude Activities Act 2017 includes attempted launches, which do not necessarily jettison material in the EEZ. This means launches that are not successful (eg, do not take off from the ground) are counted in the launch limit. The Government considers that, if a set limit exists, launches that do not jettison materials in the EEZ should not be counted towards that limit. This is because there would be very limited impact if there is no jettisoning of materials.

### *Option 1: Only count launches where jettisoning occurs*

The Government proposes that only launches that jettison material in the EEZ count towards the proposed limit. This includes launches where debris is recovered from the ocean. This option would lead to more accurate management of the environmental risk from the launch of space vehicles.

### *Option 2: All launches count towards the limit*

This option would maintain the status quo. All launches would count towards the launch limit, regardless of their environmental impact on the EEZ.

## Excluded options

### *Annual limit*

The ecological risk assessment concluded that, with the current state of knowledge and available data, it is not possible to set a limit based on how often launches happen. The option of using an annual limit to manage the environmental risk from jettisoned debris has therefore been excluded.

### *Tonnage limit*

This option would have used the tonnage of deposited material rather than the number of launches to manage the environmental risk. The option was not retained because it did not account for the number of jettison events and would not have managed the effects of direct strike causing mortality (death) and noise disturbance, which increase with the number of launches rather than the amount deposited.

#### Questions – Proposed approach

9	Do you agree with changing the launch limit? If not, what changes would you propose and why?
10	Do you agree with setting the launch limit to 1,000? If not, which other number do you consider acceptable?
11	Do you agree with changing which launches count towards the limit? If not, what changes would you propose and why?
12	Do you think any conditions should be set on space vehicle deposition in the EEZ? If so, what are they?

# Section 7: Implementation and monitoring

## How should the proposal considered in this document be implemented and monitored?

Any changes to the launch limit or the way launches are counted will require amendments to the EEZ Permitted Activity Regulations. These amendments must be made in accordance with the EEZ Act, including giving effect to the principles of the Treaty of Waitangi and considering New Zealand’s international obligations.

Implementation of the preferred option will involve:

- **regulatory amendment:** Updating the EEZ Permitted Activity Regulations to reflect the new launch limit and any changes to how launches are counted
- **EPA oversight:** Continuing to require pre- and post-launch notifications to the EPA, with potential updates to reporting templates to reflect any new conditions or definitions.

Monitoring will be essential to ensure that the environmental effects of space vehicle jettison debris remain within acceptable limits. Monitoring could include:

- **launch tracking:** Continue to track the number of launches that deposit debris in the EEZ, including location, frequency and recovery status
- **review of regulations:** Review the regulations to assess the environmental effects, whether the authorised launch deposit area remains appropriate and whether any new conditions are needed. As technology and practice evolve over time, reviews could ensure the regulations remain fit for purpose. A review could occur when the number of launches approaches the new limit (if a limit is retained), or the review could occur at a set time.

We welcome feedback on how implementation and monitoring should be carried out, including:

- what mechanisms should be used to monitor environmental effects
- how frequently the regulations should be reviewed
- the role that operators, iwi and other stakeholders play in monitoring and review.

Questions – Implementation and monitoring	
13	How should the proposal considered in this document be implemented and monitored?
14	Should the regulations be reviewed in the future? If so, when should that occur?
15	Are there any other aspects of the regulations that should be reviewed?



# Section 8: Consultation process

## How to have your say

The Government welcomes your feedback on this discussion document. [Appendix 1](#) provides a summary of the questions posed throughout this document. The questions are a guide only; all comments are welcome, and you do not have to answer all the questions.

To ensure others understand your point of view, you should explain your reasons and give supporting evidence where appropriate.

## Timeframes

This consultation starts on 6 October 2025 and ends at 11.59 pm on 19 October 2025.

After the consultation period, we will consider the feedback received and provide further advice to the Minister for the Environment on final policy decisions.

## How to provide feedback

You can make a submission either:

- via Citizen Space, our consultation hub, available at <https://consult.environment.govt.nz/marine/regulations-space-vehicle-jettison-debris-eez>
- by writing your own submission.

If you want to provide your own written submission, you can provide this as an uploaded file in Citizen Space.

We request that you do not email or post submissions because this makes analysis more difficult. However, if you need to, please send written submissions to Space Vehicle Jettison Debris Consultation, Ministry for the Environment, PO Box 10362, Wellington 6143 and include:

- your name or organisation
- your postal address
- your telephone number
- your email address.

If you are emailing your feedback, send it to [marine@mfe.govt.nz](mailto:marine@mfe.govt.nz) as a:

- PDF, or
- Microsoft Word document (2003 or later version).

## More information

Please direct any queries to: [marine@mfe.govt.nz](mailto:marine@mfe.govt.nz).

## **Publishing and releasing submissions**

All or part of any written comments (including names of submitters) may be published on the Ministry for the Environment's website, [environment.govt.nz](https://environment.govt.nz). Unless you clearly specify otherwise in your submission, the Ministry will consider that you have consented to website posting of both your submission and your name.

Contents of submissions may be released to the public under the Official Information Act 1982 following requests to the Ministry for the Environment (including via email). Please advise if you have any objection to the release of any information contained in a submission and, in particular, which part(s) you consider should be withheld, together with the reason(s) for withholding the information. We will take into account all such objections when responding to requests for copies of, and information on, submissions to this discussion document under the Official Information Act.

The Privacy Act 2020 applies certain principles about the collection, use and disclosure of information about individuals by various agencies, including the Ministry for the Environment. It governs access by individuals to information about themselves held by agencies. Any personal information you supply to the Ministry in the course of making a submission will be used by the Ministry only in relation to the matters covered by this document. Please clearly indicate in your submission if you do not wish your name to be included in any summary of submissions that the Ministry may publish.

# Appendix 1: Consultation questions

These questions appear throughout the discussion document.

## Environmental effects

- |   |  |
|---|--|
| 1 | Do you agree that the environmental effects described are the main environmental effects likely to occur as a result of space vehicle jettison deposition in the EEZ? If not, why not? |
| 2 | Do you agree with the scale of the described environmental effects? If not, why not?   |
| 3 | Are you aware of any other environmental effects the Government should consider? If so, what are they?   |

## Economic effects

- |   |  |
|---|--|
| 4 | Do you agree with the description of the main economic effects likely to occur as a result of space vehicle jettison deposits in the EEZ? If not, why not? |
| 5 | Do you agree with the scale of the described economic effects? If not, why not?  |
| 6 | Are you aware of any other economic effects the Government should consider? If so, what are they?  |

## Effects on existing interests

- |   |   |
|---|---|
| 7 | Do you agree that the existing interests described are the main existing interests? If not, why not? Please describe any other existing interests you are aware of that may be affected by space vehicle jettison debris. |
| 8 | What do you think the main effects will be on existing interests? Please provide any information you have in relation to those effects.   |

## Proposed approach

- |    |  |
|----|--|
| 9  | Do you agree with changing the launch limit? If not, what changes would you propose and why?                       |
| 10 | Do you agree with setting the launch limit to 1,000? If not, which other number do you consider acceptable?        |
| 11 | Do you agree with changing which launches count towards the limit? If not, what changes would you propose and why? |
| 12 | Do you think any conditions should be set on space vehicle deposition in the EEZ? If so, what are they?            |

## Implementation and monitoring

- |    |   |
|----|---|
| 13 | How should the proposal considered in this document be implemented and monitored? |
| 14 | Should the regulations be reviewed in the future? If so, when should that occur?  |
| 15 | Are there any other aspects of the regulations that should be reviewed?           |

# Appendix 2: Glossary

Term	Definition
Benthic	Something that lives on or in the seabed.
Continental Shelf	The seabed extending from the edge of New Zealand's coastline to the edge of the continental margin. This can extend beyond the Exclusive Economic Zone (Extended Continental Shelf). It does not include the deep ocean.
Demersal	Something that lives on or near the seabed.
Deposit	The act of putting an object on the seabed.
Exclusive Economic Zone (EEZ)	The area of ocean and seabed between 12 and 200 nautical miles from New Zealand's coastline.
Jettison	To drop something no longer needed from a space vehicle.
Launch	The departure of a space vehicle from the ground into outer space.
Orbital trajectory	The path a space vehicle or payload takes around the Earth.
Outer space	The area beyond the Earth's atmosphere.
Payload	An object that is intended to reach or be placed in outer space.
Pelagic	Something that lives in the water column.
Pneumatics	Gases used to move a space vehicle or to move something inside a space vehicle.
Propellants	A substance that moves a space vehicle forward.
Separation stage	When a space vehicle breaks into different parts, with one part being jettisoned and the other continuing to move to outer space.
Space vehicle	A vehicle intended to reach outer space, or any vehicle that supports a payload to reach outer space. These are commonly known as rockets.
Territorial sea	The area of ocean from the average high-water mark on the coast to 12 nautical miles offshore. Effects in this area are managed by the Resource Management Act 1991.
Water column	The body of water extending from the surface of the ocean to the seabed.

# Appendix 3: Further information on New Zealand's legislation and international obligations

## **Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012**

Section 10(1) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (EEZ Act) describes its purpose, which is to:

- promote the sustainable management of natural resources of the EEZ and Continental Shelf
- in relation to the EEZ, Continental Shelf and waters above the Continental Shelf beyond the outer limits of the EEZ, protect the environment from pollution by regulating or prohibiting the discharge of harmful substances and the dumping or incineration of waste or other matter.

Under section 10(2) of the EEZ Act, 'sustainable management' means managing the use, development and protection of natural resources in a way, or at a rate, that enables people to provide for their economic wellbeing, while:

- sustaining the potential of natural resources (excluding minerals) to meet the reasonably foreseeable needs of future generations
- safeguarding the life-supporting capacity of the environment
- avoiding, remedying or mitigating any adverse effects of activities on the environment.

Section 6 of the EEZ Act specifies that an 'effect' refers to any:

- positive or adverse effect
- temporary or permanent effect
- past, present or future effect
- cumulative effect that arises over time or in combination with other effects
- potential effect of high probability
- potential effect of low probability that has a high potential impact.

The EEZ Act regulates environmental effects by restricting or prohibiting certain activities in the waters and seabed of the EEZ. These activities include:

- disturbing the seabed in a manner likely to have effects
- depositing anything or dumping material on the seabed
- discharging hazardous substances
- creating noise that can have an adverse effect on marine life.

## **Māori and the EEZ Act**

Māori interests in the EEZ include safeguarding taonga and mahinga kai (food gathering practices, locations and resources), spiritual practices, customary rights, and commercial and recreational fishing.

[Section 12](#) of the EEZ Act explains how the Act recognises and respects the Crown's responsibility to give effect to the principles of the Treaty of Waitangi for the purposes of the Act.

## **Existing interests under the EEZ Act**

The EEZ Act also considers effects on existing interests, which are defined in [section 4](#) as interests in:

- any lawfully established existing activity, whether or not authorised by or under any Act or regulations, including rights of access, navigation and fishing
- any activity that may be undertaken under the authority of an existing marine consent granted under section 62
- any activity that may be undertaken under the authority of an existing resource consent granted under the Resource Management Act 1991
- the settlement of a historical claim under the Treaty of Waitangi Act 1975
- the settlement of a contemporary claim under the Treaty of Waitangi as provided for in an Act, including the Treaty of Waitangi (Fisheries Claims) Settlement Act 1992
- a protected customary right or customary marine title recognised under the Marine and Coastal Area (Takutai Moana) Act 2011.

## **Other marine management regimes**

The EEZ Act is one part of a regulatory system that manages activities in the territorial sea, EEZ and Continental Shelf. Other marine management regimes relevant to the effects of space launch activities include the:

- Fisheries Act 1996
- Marine Mammals Protection Act 1978
- Maritime Transport Act 1994
- Resource Management Act 1991
- Wildlife Act 1953.

The nature and effect of other marine management regimes are matters the Minister for the Environment must consider when making or amending regulations.



## International obligations

### *United Nations Convention on the Law of the Sea*

Under the United Nations Convention on the Law of the Sea (UNCLOS),<sup>10</sup> states exercise sovereign rights over their EEZ for the purpose of exploring it and exploiting its natural resources. This right must be exercised with due regard to the rights of other states and in accordance with the duty to protect and preserve the marine environment, including taking necessary measures, as consistent with UNCLOS, to prevent, reduce and control marine pollution.

### *Convention on Biological Diversity*

Article 3 of the Convention on Biological Diversity reiterates that states have:<sup>11</sup>

- the sovereign right to exploit their own resources pursuant to their own environmental policies
- the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

### *Convention for the Protection of the Natural Resources and Environment of the South Pacific Region*

The Convention for the Protection of the Natural Resources and Environment of the South Pacific Region<sup>12</sup> includes a requirement that parties shall endeavour to take all appropriate measures consistent with international law to prevent, reduce and control pollution of the Convention Area (which includes New Zealand's EEZ).

---

<sup>10</sup> [United Nations Convention on the Law of the Sea](#). Entered into force on 16 November 1994. Ratified by New Zealand on 19 July 1996.

<sup>11</sup> [Convention on Biological Diversity](#). Entered into force on 29 December 1993. Ratified by New Zealand on 16 September 1993.

<sup>12</sup> [Convention for the Protection of the Natural Resources and Environment of the South Pacific Region](#). Entered into force on 24 November 1986. Ratified by New Zealand 3 May 1990.