Regulatory Impact Statement: Regulation of deposit of jettisoned material from space vehicle launches under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012

Agency Disclosure Statement

This Regulatory Impact Statement (RIS) has been prepared by the Ministry for the Environment (MfE). It provides an analysis of options for regulating the deposit of jettisoned material from space vehicle launches under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (the Act). The proposed regulations classify the deposit of jettisoned material from space vehicle launches in a wider area of the exclusive economic zone (EEZ) and continental shelf (CS) than is currently authorised as a "permitted activity" under the Act.

There are a number of limitations associated with the analysis. There is uncertainty about some of the quantifiable benefits and costs of the options assessed in the RIS. Benefits and costs have been quantified as far as possible but depend on a range of unknown factors. The environmental risk assessment used to inform the assessment of environmental effects in the RIS has a number of limitations arising from the limited data on habitats and biota in the EEZ. Public consultation occurred from 16 August 2017 to 13 September 2017 and further aided our understanding of the risks and data limitations.

Given the minor or less than minor environmental impacts of space vehicles launches, there is likely to be no difference in environmental outcomes between the different options considered. Compared to the status quo, the options proposed are likely to reduce costs to businesses and improve the economic benefits to New Zealand from the development of a space launch industry.

Government agencies and the public have been consulted on the proposal and the RIS.

John Robertson, Acting Director
Marine, Environmental Risk and Science
Ministry for the Environment

Date:

Background and Context

Summary

1. This Regulatory Impact Statement (RIS) summarises the regulatory impacts associated with several options for regulating the deposit of jettisoned material from space vehicle launches under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act (the Act).
2. This RIS summarises the regulatory impacts of all policy options considered for managing this activity under the Act. After analysing the policy options, this RIS recommends Option A: that the deposit of jettisoned material from space launch vehicles on the seabed is classified as a permitted activity in a wider area of the Exclusive Economic Zone (EEZ) and Continental Shelf (CS) than is currently permitted. A summary of Option A can be found in *Table 2: Options analysis*on page 16 of this document.

Regulating space launch activities

3. Space vehicle launches are a new activity in New Zealand. New Zealand's location provides access to particular launch angles, and to relatively uncongested seas and airspace to enable frequent launches. There is currently one commercial operator launching space vehicles from New Zealand, Rocket Lab, which has a launch site on the Mahia Peninsula.
4. Space launch activities cross a number of domains, and have the potential to interact with a broad range of other activities and interests. The Outer Space and High-Altitude Activities Act 2017 (OSHAA Act) is the over-arching legislation managing launch activities, including their impacts on public safety. Space vehicle launches require a launch licence granted by the responsible Minister.
5. The OSHAA Act was passed into law in July 2017 and came into force on 21 December 2017. The new regulatory regime will enable the development of a peaceful, safe, responsible and secure space industry that meets New Zealand's international obligations.
6. Space vehicle launches jettison material which is likely to land on the seabed in the EEZ and extended CS. The deposit of such material is an activity regulated under the EEZ Act.

The EEZ Act

7. The area of jurisdiction covered by the Act is New Zealand's EEZ and CS. The EEZ is the water column extending from 12 to 200 nautical miles offshore and the CS is the seabed and subsoil beneath the EEZ, and extending to the outer edge of the continental margin (the point where the shelf drops into deeper water).
8. The purpose of the Act is to promote the sustainable management of the natural resources of the EEZ and CS. The Act came into force in 2012 and manages the environmental effects of activities that were not previously subject to environmental regulations, including depositing anything in, on or under the seabed. Several sets of regulations have been made under the EEZ Act to classify and regulate specific activities.
9. The EEZ Act does not manage related activities on land, in New Zealand's territorial sea, on the high seas, or in New Zealand's airspace. These are managed under other legislation including the Civil Aviation Act 1990, the

Maritime Transport Act 1994, the Resource Management Act 1991, and the Outer Space and High-Altitude Activities Act 2017 (OSHAA Act).

10. In 2016, the deposit of jettisoned material on the seabed was classified as a "permitted activity" under the Act within four authorised areas, by amendments made to the Exclusive Economic Zone and Continental Shelf (Environmental Effects—Permitted Activities) Regulations 2013 (Permitted Activity Regulations). The boundaries of the authorised areas were chosen to cover initial test-phase space launch activities, and the classification was set to expire in October 2021. The current conditions on the activity include limits of 10 test launches and 100 non-test launches in total.

11. Under the existing Permitted Activities regulations, depositing material outside the boundary of the authorised areas is a discretionary activity and therefore requires a marine consent. More information about activity classifications is included at paragraph 24.

Current space launch activities in New Zealand

12. The first company expected to undertake commercial launches in New Zealand is Rocket Lab, a US aerospace business with a New Zealand subsidiary, which has plans to deliver lightweight, cost-effective commercial launch services from New Zealand. Rocket Lab's launch operation is regulated by the United States Federal Aviation Authority (FAA), which is responsible for licensing launch activities for US registered companies even for launches in New Zealand.

13. Commercial space launch vehicles will primarily deliver satellites into orbit. Satellites enable the provision of everyday services and infrastructure including banking, transportation, electricity, telecommunications, navigation, remote sensing (with applications ranging from agriculture and land-use monitoring to disaster management and climate change) and national security.

14. Rocket Lab has a private orbital launch range in Mahia (see Figure 1) which is licenced for a launch to occur every 72 hours. Rocket Lab aims to scale up its launch activities over time towards a maximum of one launch per week. In comparison, there were 22 launches in 2016 from the United States and 82 internationally.

15. Two test launches have taken place in New Zealand to date, the first of which took place on 25 May 2017. Rocket Lab accurately predicted the flight path of the space launch vehicle and was able to reasonably estimate where jettisoned material fell. Rocket Lab's information indicates that no materials were known to have landed in the Bounty Islands marine reserve or other marine reserve areas. On 21 January 2018, Rocket Lab successfully sent a space launch vehicle into orbit and deployed customer payloads.

Current market for space launch vehicle activities

16. Developing a New Zealand-based space launch industry creates opportunities for New Zealand to provide launch services to meet a growing demand for launches, particularly for small satellites. It also creates opportunities for New Zealand-based organisations to design, build and operate their own satellites, and to develop applications for space-based information.

17. Currently, Rocket Lab is the only launch provider operating in New Zealand. It is anticipated that Rocket Lab will increase its customer base over the first 1-2 years. Given the lead time necessary to establish a space launch operation, it is unlikely that the number of providers will increase in the near future.

18. An economic impact analysis carried out by Sapere Research Group in 2016[1] estimated that the establishment of a space vehicle launch industry could directly contribute around $30 – $80 million per year in value-add to the New Zealand economy, mostly through increased activity and employment by Rocket Lab and its suppliers in New Zealand.

19. There are also groups that are involved in educational and recreational rocketry. Currently these activities do not operate above controlled airspace. However, we understand that the New Zealand Rocketry Association has members that are seeking to operate above controlled airspace in the future (although these launches will not be able to reach orbit).

Figure 1: Rocket Lab Launch Complex on the Mahia Peninsula, Hawkes Bay, New Zealand

Status Quo and Problem Definition

Summary

20. The current management regime under the EEZ Act was designed with an expectation of this activity being carried out in a relatively small area of the marine environment, based on the assumption that only two possible flight paths and one type of small space launch vehicle (the Electron) would be used.

21. Because of this, the current authorised launch areas constrain the launch trajectories that can be used by commercial operators without having to apply for a fully notified marine consent.

22. We seek to ensure that the regime appropriately manages the environmental effects of the activity well into the future, including deposits from new trajectories and from larger vehicles.

[1] Sapere. June 2016. *Economic Impact Analysis of the Development of a Rocket Industry in New Zealand.*

Status quo

23. After lift-off, space launch vehicles generally jettison parts, which fall back towards the Earth. The jettisoned material may burn up in the atmosphere but some of it may reach the earth's surface. Any jettisoned material that lands in the sea is likely to sink, either immediately or over time, to the seabed. The jettisoned material that reaches the seabed constitutes a deposit under the EEZ Act. Deposit of material on the seabed is a restricted activity under section 20 of the Act.
24. Under the EEZ Act, regulations can classify activities in four different ways:

    - **Prohibited activities** must not be undertaken. For example, dumping of waste not listed in the Act is prohibited.
    - **Restricted activities** may not be undertaken unless the activity is a permitted activity or authorised by a marine consent.
    - **Discretionary activities** require marine consent. The marine consent can set out conditions to manage the way the activity is undertaken. A marine consent may be either **notified** or **non-notified**. A fully-notified marine consent is the default requirement for activities that have not been otherwise classified. Regulations may provide for the consent for a discretionary activity to be non-notified—exploration drilling for petroleum is managed under this classification.
    - **Permitted activities** may be undertaken without a marine consent, and the regulations can specify terms and conditions that apply to the activity. Marine scientific research, and prospecting and exploration for petroleum (excluding exploration drilling) are managed under this classification, as is the deposit of jettisoned material from a space vehicle, within authorised zones.

25. Figure 2 shows the framework for classifying activities.

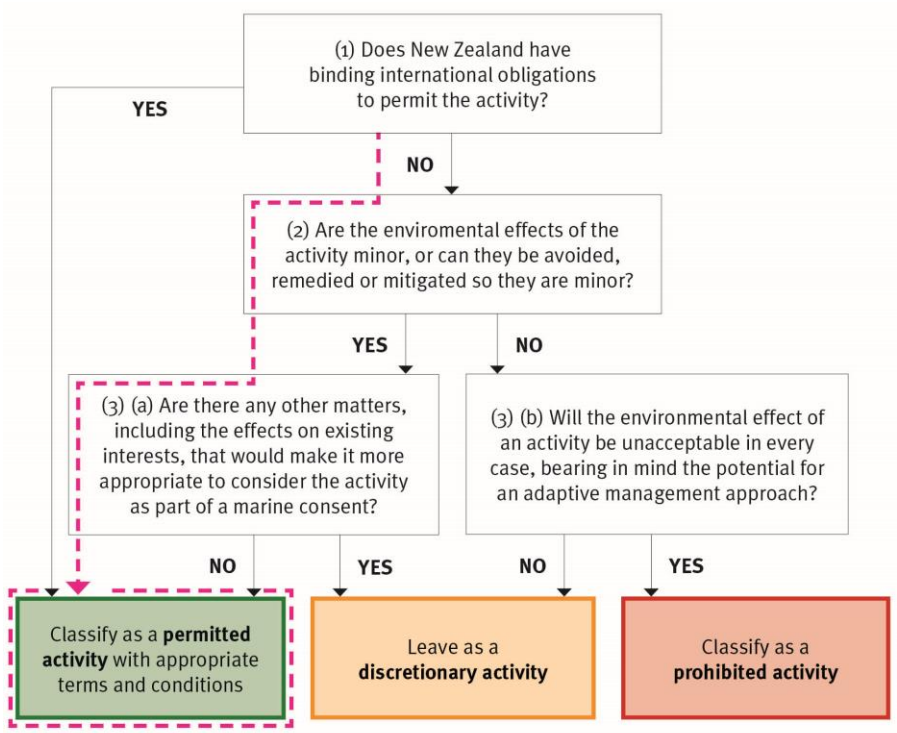

Figure 2: Framework for classifying activities under the EEZ Act

26. On 21 October 2016, the Permitted Activities Regulations were amended to permit the deposit of material on the seabed from space launch vehicles (section 8A). There are conditions on the activity, including pre- and post-activity reporting requirements and caps on the number and frequency of launches. There is also a restriction on where the activity may occur—deposits are permitted only in two test launch deposit areas and two launch deposit areas, shown in Figure 3.

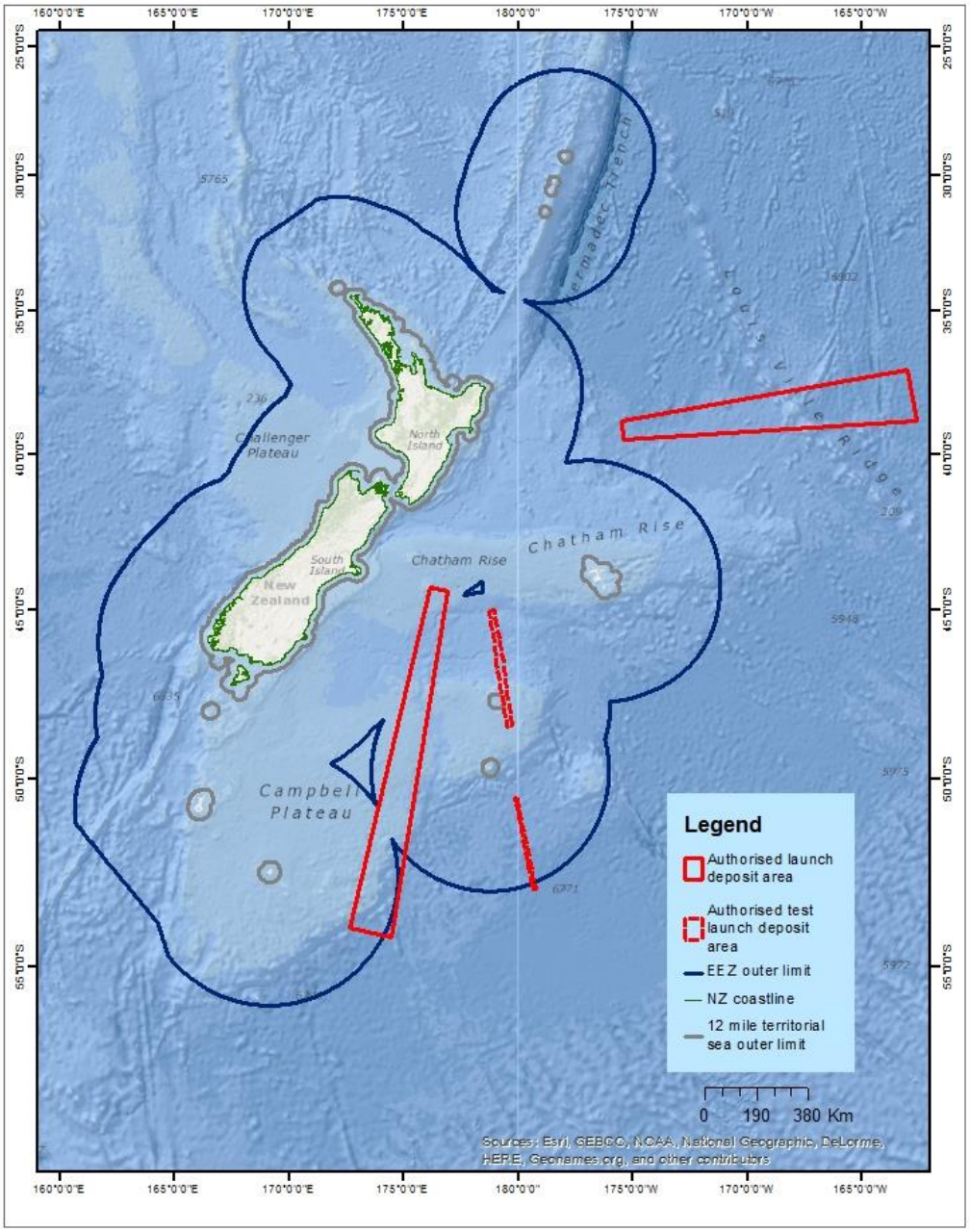

Figure 3: Authorised launch deposit areas under the Permitted Activities Regulations

The problem

27. Following the 2016 amendment of the Permitted Activities regulations it was recognised that the current authorised launch areas constrain the launch trajectories that can be used by commercial operators without having to apply for a fully notified marine consent.

28. Based on best available information on future flight paths at the time, the areas were drawn to account for test and some commercial launches from Rocket Lab's facility on Mahia Peninsula. However it is anticipated that, as the space industry develops, operators will want to undertake launches on other flight paths, which could deposit material outside the authorised areas.

29. The deposit of jettisoned material outside the authorised areas has not been classified, therefore, it is a discretionary activity requiring a fully notified marine consent. The process for a marine consent (see Table 1) can take up to 9

months and cost the applicant anywhere from $350,000 to $1.2 million, dependent on number of submissions and hearing process. A marine consent is designed to enable consideration of activities that have the potential for significant and ongoing adverse effects.

30. We consider that the deposit of jettisoned material from space vehicle launches on the seabed, within the proposed conditions, is not likely to have more than minor adverse effects on the environment or an existing interest, and that any adverse effects would not be more appropriately considered in relation to a marine consent application. This view is based on two marine ecological risk assessments, discussed in more detail in the Environmental effects section of this RIS.

Table 1: Steps and potential costs of the marine consent process

Process	Potential cost
The applicant submitting an environmental impact assessment (EIA) to the EPA outlining the likely impacts of the activity and proposals to mitigate them	$100,000 - $500,000 (all costs met directly by the applicant)
The EPA assessing the adequacy of the EIA and requesting further advice if necessary	$250,000 - $700,000 (costs met initially by the EPA and recovered from the applicant)
The EPA publicly notifying the application for consent	
Hearings if deemed necessary by the EPA or requested by the applicant or a submitter	
The EPA deciding to grant or decline a marine consent.	
	Total: $350,000-$1,200,000

Objectives

31. Through public consultation, a set of objectives have previously been developed for regulations under the Act[2]. These objectives draw on the purpose of the Act and matters required to be considered when making regulations under the Act.

32. In order to meet these objectives, this analysis seeks that **the deposit of jettisoned material from space launch vehicles on the seabed in New Zealand's EEZ and continental shelf is appropriately managed, now and into the future**, such that—

- The natural resources of the EEZ and continental shelf are sustainably managed
- Activities are regulated in a manner proportionate to the level of effects and processes are cost-effective
- Non-environmental impacts are considered—including impacts on existing interests, iwi and other matters set out in the EEZ Act—in a manner proportionate to the scale and effects of activities

[2] Ministry for the Environment. 2012. *Managing our oceans: A discussion document on the regulations proposed under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill*. Wellington: Ministry for the Environment.

- New Zealand fulfils its obligations under relevant international conventions relating to the marine environment, such as the United Nations Convention on the Law of the Sea (UNCLOS).

Options and Impact Analysis

Approach

33. This RIS presents the assessment against the high-level objectives. The options were also assessed for their impacts (costs and benefits). Where possible, quantitative analysis was used to determine the magnitude of the impacts. Where this was not possible, qualitative analysis and judgement were exercised. Policy conclusions were based on a combination of assessment of impacts and assessment against objectives.

34. The environmental effects and impacts on other users are the same for the status quo and the other options (further analysis below). The status quo and all options fulfil New Zealand's international obligations (further analysis below). For these reasons, the first two objectives provide the only distinctions between the options.

Scope

35. It is very unlikely that space launch vehicles will be launched westward (due to the effects of the rotation of the Earth), but could feasibly be launched on flight paths to the north, east and south of New Zealand. We have considered what the likely effects of the activity would be throughout the area of the EEZ and extended continental shelf over which space vehicle launches could reasonably occur in the future. The area considered in NIWA's ecological risk assessment is shown in Figure 4.

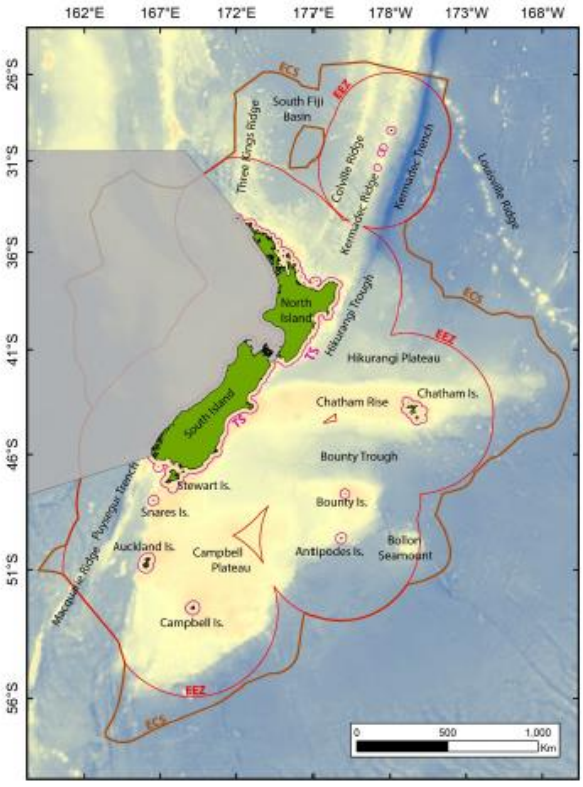

Figure 4: Area considered in assessment (shaded area not included). Source: NIWA

Options

36. The possible options to manage the environmental effects of deposits of jettisoned material outside the currently authorised launch deposit areas are set out below. With the exception of the status quo, the other two options would require implementation through the promulgation of new regulations.

    - **Option A:** Classify the activity as **permitted, subject to conditions** in regulations under the EEZ Act—the regulations enable any operator to launch rockets on new trajectories with potential to deposit jettisoned material in the EEZ and extended continental shelf to the north, east, and south of New Zealand. Conditions are set out in regulations to manage any potential adverse effects.
    - **Option B:** Classify the activity as **non-notified** in regulations under the EEZ Act—a marine consent is still required but does not require public notification or hearings. Rocket Lab or any future operator would apply for a marine consent, costing around $350,000 and taking up to 60 working days (roughly three months), after regulations have been put in place. The EPA may impose conditions on the marine consent to manage any potential adverse effects.
    - **Option C:** The **status quo** is allowed to continue—the activity is a fully notified discretionary activity requiring a marine consent from a Board of Inquiry. Rocket Lab would apply for a marine consent and this would cost them somewhere between $350,000 and $1,200,000 and take up to 140 working days (roughly nine months). The BOI may impose conditions on the marine consent to manage any potential adverse effects.

37. Under either the non-notified or status quo options, if a marine consent were not applied for or not granted, Rocket Lab would be confined to launch on trajectories that could deposit material only in the current authorised areas under the Permitted Activities Regulations. Rockets could not be launched from any other facility without a marine consent.

38. For the purposes of the analysis, we have assumed that a marine consent is granted under the options that require one.

39. Under all options, there would be pre- and post-activity reporting to the EPA to monitor compliance with conditions of the activity.

Classifying new activities

40. As described in paragraph 16, new activities are treated by default as discretionary (and fully-notified), and the Act provides for regulations to be made to classify activities as prohibited, non-notified discretionary, or permitted, on the recommendation of the Minister.

41. The Act allows that regulations may classify activities as **permitted** if they are not likely to have adverse effects on the environment or existing users that are significant in the circumstances.

42. To be classified as **non-notified** a section 20 activity (restricted activity other than discharge or dumping) must:

    - have a low probability of significant adverse effects on the environment or existing interests, and either
    - be routine or exploratory in nature, or
    - be brief in duration.

43. In developing regulations, the Minister must take into account the matters set out in section 33 of the Act. These matters include the effects on the environment or existing interests, human health, biological diversity, New Zealand's international obligations, economic benefit, efficient use of natural resources and any other relevant matters. Matters under section 33 taken into consideration for the development of the proposed regulations are outlined in Appendix 2.

44. The Act requires the Minister to take a precautionary approach to decisions—favouring caution and environmental protection when information is uncertain or inadequate.

Environmental effects

45. To better understand the environmental effects from the deposit of jettisoned material in the EEZ and extended continental shelf, the Ministry for the Environment commissioned the National Institute of Water and Atmospheric Research (NIWA) to undertake two marine ecological risk assessments of the effects of future launching activities—in 2016 and 2017.

    - The 2016 report assessed the risk to ecosystem components of multiple launches within two specific jettison zones: the sun synchronous and eastern jettison zones. This report considered a single splashdown to consist of one tonne of debris, the most that could be deposited by an Electron-type vehicle if none of it burned up in descent.
    - The 2017 report[3] assessed the risk to ecosystem components for a single splashdown of jettison material in a wider geographic area of the EEZ and extended continental shelf (to the north, east and south of New Zealand, as shown in Figure 4), and estimated the cumulative effects of multiple launches and combined effects with other activities. This report considered a single splashdown to consist of 40 tonne of debris, the most that could be deposited by the largest space vehicle proposed to be launched in the foreseeable future if none of the material burned up in descent.

46. Both reports considered a range of threats that deposited material could pose (direct strike causing mortality, noise disturbance, toxic contaminants, ingestion of debris, smothering of seafloor organisms, provision of biota attachment sites, floating debris).

47. Both reports considered the risk that these posed to a number of ecosystem components (benthic invertebrate community, demersal fish and mobile invertebrates, air-breathing fauna, sensitive environments and/or pelagic community) of the environmental classes found in the assessment area (shelf, upper slope, northern mid-depths, southern mid-depths, deep and very deep waters, and/or seamounts).

48. Both reports concluded that the risk to all ecosystem components from a single deposit was low. This is attributed to the consequence from a single splashdown of 40 tonnes of debris at any point being considered 'not severe'. This was assessed by the expert panel using a scale of 0 to 5. The panel

[3] National Institute of Water and Atmospheric Research. April 2017. *Ecological Risk Assessment of the impact of debris from space launches on the marine environment.* Prepared for the Ministry for the Environment by the National Institute of Water and Atmospheric Research. Wellington: Ministry for the Environment.

concluded that the consequences of potential effects were either 0 (negligible) or 1 (minor).

49. The main aspects of risk were direct strike and smothering impacts on sensitive benthic environments, and the effects of noise on marine mammals. Both reports found that although some threats are likely to occur, the consequences to the various ecosystem components at a population, community or habitat scale would be negligible to minor.

50. Both reports acknowledged that there is considerable uncertainty about the way the environmental effects would accumulate with repeated launches, and recommended reviewing the effects when more data is available (i.e. when a number of actual launches and deposits have taken place).

51. The 2016 report estimated that, the ecological risk was low for all ecosystem components for up to 100 launches in the in the two zones considered. For some components of the ecosystem, the risk was low even up to 10,000 launches (or 200 years of once-weekly launches). The expert panel identified some potential thresholds, where risks were anticipated to become moderate and then high.

52. The lowest of these thresholds was for noise and disturbance to marine fauna above and below water, which was expected to pose a low risk for up to 100 and a moderate risk for up to 1000 launches.

53. The 2017 report considered that 10 repeated launches, each depositing 40 tonnes of debris in the same area of the wider EEZ and continental shelf would still have a minor risk, but at 100 launches the risks could be moderate, and with 1,000 launches could become high.

54. The 2017 report recommended reviewing any management system when more data are available but before the 100-launch threshold was reached in any area, for instance, by requiring a reassessment of the environmental effects after 50 launches.

55. The 2017 report noted a risk that environmental effects could accumulate if deposits were concentrated in sensitive seamount areas.

Effects on existing interests

56. The effects of the activity on existing interests will most likely be limited to shipping and fishing vessels, where there is a very low risk of impact from falling fragments.

57. We consulted Maritime New Zealand (MNZ) and the Ministry for Primary Industries on whether broadening the deposit area will impact any lawfully established existing activity, whether or not authorised by or under any Act or regulations, including rights of access, navigation, and fishing.

58. Maritime New Zealand (MNZ) has created maps designating vessel tracks and density in New Zealand waters between July 2016 and June 2017. The density map (Figure 5) indicates that vessel density is highest at the ports (between 1,321 and 4,326 ships per grid section on a 5 nautical mile grid) and the territorial sea (between 19 and 109 ships). Ship density is generally lower in the EEZ, with most areas receiving fewer than 18 vessels per grid section annually. This low density, along with good existing warning systems, indicates that the scale of the effects will be small.

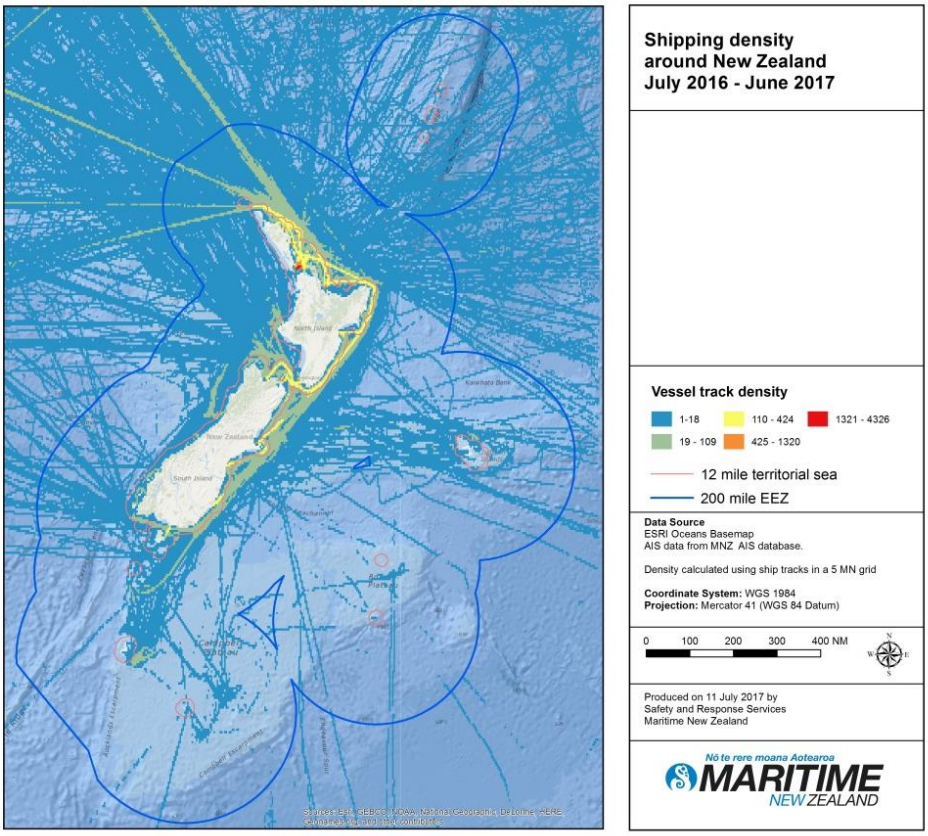

Figure 5. Shipping density around New Zealand July 2016 - June 2017

59. The jettison zone for each space vehicle launch is long and very narrow. On the narrow axis, it will be no more than 30 nautical miles wide, although some of the jettison zones will be narrower than this. Rocket Lab has modelled the risk of a vessel in the jettison zone being directly impacted by a fragment from launch of an Electron vehicle as less than 1 in 100,000. Modelling of impacts in the jettison zone is based on NASA's Debris Assessment Software suite, which meets the requirements of the United States' Federal Aviation Authority and is based on NASA's experience over the past 50 years.

60. Confidence in the impact modelling is supported by the fact no one has ever been injured by space debris or jettisoned material, even though more than 5400 tonnes of it is believed to have reached Earth's surface over the past 40 years.[4]

61. There are already systems in place to notify other users of the sea of potential hazards.

62. MNZ (through the Maritime Operations Centre) is responsible for sending out coastal navigational warnings, while Land Information New Zealand (LINZ) coordinate, collect and issue long range radio navigational warnings that are broadcast to ships in New Zealand waters.

[4] (MacDiarmid, *et al*., August 2016)

63. LINZ publishes fortnightly New Zealand notices to mariners to advise mariners of matters affecting navigational safety. These notices are available on the LINZ website and can be received via email. Rocket Lab also communicates directly with vessels in the vicinity of the launch site directly by radio using publically notified marine VHF channels. On the day of a launch, local authorities periodically notify maritime traffic of the current status of the marine exclusion zones.

64. Systems for notifying vessels of potential hazards are managed by Maritime NZ and operated for the test launch on 25 May 2017. A Notice to Mariners (NOTMAR) was published on the Land Information New Zealand (LINZ) website on 12 May with details of the launch. In addition, the Rescue Coordination Centre NZ (RCCNZ) and Maritime NZ broadcasted navigation warnings to shipping in the area six times per day for five days before launch and published the warning online. Two vessels inside or near the area in the NOTMAR were contacted by Royal NZ Air Force aircraft on 23 May, but none were known to be in the vicinity on the day of launch. Rocket Lab and relevant authorities are reviewing aspects of the launch, including how well the notification system operated.

65. Even though the possibility of impact with a vessel is extremely remote, vessels may choose to move out of the jettison zone during the brief period of time that fragments are expected to reach Earth's surface. This could result in some relocation of fishing effort over time if the same jettison zone were continually used.

66. As the frequency of space launches increases there may be impacts on other commercial operators in the marine or aviation sectors. Any such effects will be monitored by MBIE as part of its function to administer the OSHAA Act 2017. MBIE will also seek to facilitate the development of industry-led approaches to coordinate activities in the wider EEZ.

Costs to the Crown

67. The costs to the EPA of monitoring would largely be cost recovered. The costs of monitoring the activity are 80% cost recovered. The 20% cost accruing to the EPA is likely to be too small to require any adjustments to the EPA's Crown funding.

68. There is also a cost to government when developing regulations. While it is difficult to estimate, a group of researchers have developed a methodology which gives an average of $530,000 to develop a set of regulations, and an estimate of $50,000 per page of regulations in New Zealand[5]. Further, opportunity costs are also borne by government in undertaking regulation development.

International Obligations

69. There are no relevant international conventions that specifically regulate the deposit of material jettisoned from space vehicles on the seafloor. There are relevant international obligations under UNCLOS, the Convention on Biological Diversity and the Noumea Convention.

70. In our view, all the options comply with these international obligations because:

[5] Wilson, N., *et al*. *Estimating the Cost of New Public Health Legislation.* Bulletin of the World Health Organization 2012;90:532–539

- The probability of significant adverse effects from the activity is low, and conditions can be set in either a marine consent or regulations to avoid, remedy or mitigate effects on the environment, biodiversity and existing interests.
- For the purpose of the Noumea Convention, the Minister needs to consider whether the activity is a ‘major project’. Through consultation with experts, including NIWA, officials have assessed the routine environmental effects of the activity as not significant, and concluded that the activity is therefore unlikely to be considered a major project.

Table 2: Options analysis

Option	Assessment against objectives	Net impact

Option A: Classify the deposit of jettisoned material from space vehicle launches in a wider area of the EEZ as a permitted activity, subject to conditions	<u>Sustainable management</u>
	
	The potential for adverse environmental impacts from the activity is low. However, there is uncertainty about the likely scale of the cumulative effects of repeated launches. This uncertainty can be appropriately managed by conditions on the activity set in regulations including, as appropriate:
	
	• Pre-activity reporting - at least 10 working days before a launch
	  ○ The proposed dates and times of the launch
	  ○ the predicted flight path(s) of the launch
	  ○ the area where material may be deposited
	  ○ the details of any additional proposed actions to avoid, mitigate, or remedy adverse effects
	• Post-activity reporting – no more than 5 working days after a launch
	  ○ The final date and time of the launch
	  ○ details of any deviations from the information provided in the post-activity report
	  ○ the observed flight path(s)
	  ○ as far as reasonably practicable, the volume of material deposited and coordinates of the area where jettisoned material landed
	• Post-activity reporting – quarterly or after 10 launches
	  ○ A summary of any written complaints that were received alleging that the conditions were breached and an explanation of how they were addressed
	• Limiting the activity to 100 launches total in the area shown in Figure 4
	• A requirement to avoid depositing material in closed seamount areas
		Option A will provide a good level of environmental protection. It has limited opportunity for public involvement, and the lowest compliance costs of the three options considered. The costs are considered to be most proportionate to the level of likely effects of the activity.

Option	Assessment against objectives	Net impact
	This option would best provide for sustainable management, as it would pose fewer unnecessary barriers to use the area for economic activity than either the status quo or a non-notified classification, while sustaining the potential of the environment to meet future needs and safeguarding its life-supporting capacity, and managing any potential adverse effects of the activity by limiting the number of launches to 100. As recommended by the 2017 NIWA Ecological Risk Assessment (see the *Environmental effects*section on page 11), we consider this limit is an appropriate precautionary measure until more information about the launch trajectories and distribution of debris can be obtained and analysed. <u>Cost effectiveness and proportionality</u> There is a cost to government in developing regulations (see Costs to the Crown Section on page 14), however this option is cost-effective for government to monitor and would impose only low compliance costs on users such as Rocket Lab. <u>Non-environmental impacts</u> Non-environmental impacts, including impacts on existing interests and iwi and other matters set out in the EEZ Act, would be considered only during the preparation of regulations. As described in this analysis, the effects on existing interests are not likely	

Option	Assessment against objectives	Net impact
	to be significant in the circumstances. This option allows for public participation only through government consultation on the regulations. This is considered to be proportionate to a low level of public interest on this particular activity[6] and likely level of effects on existing interests.	
Option B: Activity remains discretionary but is classified as non-notified	<u>Sustainable management</u> Option B would allow any potential adverse effects on the environment to be managed, as in Option A. In this case, conditions would be imposed by the EPA on a marine consent for a launch or number of launches, rather than across all instances of the activity. There is less certainty for both applicants and the public about what conditions might be imposed. The resulting costs of applying for and deciding marine consent applications are higher than for Option A, in terms of both time and money. There will be costs to both the government and the applicant. Conditions may be imposed on a marine consent at the discretion of the EPA. These may be either more stringent than those proposed in Option A (and therefore impose a	Option B will provide a good level of environmental protection. It has limited opportunity for public involvement, and significant compliance costs. The costs are considered to be disproportionate to the level of likely effects of the activity.

[6] Public consultation on the proposed regulation of jettisoned material from space launch vehicles in 2016 resulted in 13 submissions. Public consultation on the proposed changes to the regulation of jettisoned material from space launch activities in 2017 resulted in 8 submissions. This is compared to 21,221 submissions on the Discharge and Dumping Regulations under the EEZ Act in 2013 and 11,743 submissions on classifying exploratory drilling as a permitted activity under the EEZ Act in 2012.

Option	Assessment against objectives	Net impact
	greater compliance burden) or less stringent (and therefore provide a lesser degree of environmental protection). The uncertainty this creates for both the public and the applicant is considered to outweigh the benefits of the added flexibility. This option will likely sustain the potential of the environment to meet future needs, safeguard its life-supporting capacity, and manage any potential adverse effects of the activity just as well as Option A. However, it will impose some barriers on the use of the area for economic purposes, so is considered to promote sustainable management to a lesser extent. <u>Cost effectiveness and proportionality</u> The cost involved in applying for and deciding a marine consent is considered to be disproportionate to the likely effects, which are not expected to be significant in the circumstances. <u>Non-environmental impacts</u> The non-environmental impacts, including effects on existing interests, are considered by the EPA when making a decision on a marine consent under s59 of the Act. This option offers no additional public involvement over Option A, as non-notified marine consents are not publically notifiable.	
Option C: Status quo	<u>Sustainable management</u> Option C would allow any potential adverse effects on the environment to be managed, as in the options above. In this case, conditions would be imposed on a marine consent for a launch or number of launches by a Board of Inquiry, rather than the EPA. There is a similar level of certainty for applicants and the public about what conditions might be imposed as in Option B.	Option C will provide a good level of environmental protection. It has considerable opportunity for public involvement, and the highest compliance costs of the three options considered. The costs are considered to be

Option	Assessment against objectives	Net impact
	Cost effectiveness and proportionality This option is the most costly to both industry users (such as Rocket Lab) and the government, in terms of time and money. The notification and Board of Inquiry process add both time and expense to the process of obtaining marine consent, compared with option B. The scale of the cost is considered to be disproportionate to the level of the likely effects of the activity. Non-environmental impacts The non-environmental impacts, including effects on existing interests, are considered by the BOI when making a decision on a marine consent under s59 of the Act. This option allows for more additional public involvement than either option A or option B, as the consents are publically notifiable, and the public will have the opportunity to submit on every application for marine consent. It is considered that the likely insignificant effects of the activity do not warrant this degree of public involvement.	disproportionate to the level of likely effects of the activity.

Conclusions and Recommendations

71. After analysing the policy options, this RIS recommends Option A: that the deposit of jettisoned material from space launch vehicles on the seabed is classified as a permitted activity in a wider area of the EEZ and CS off the north, east and south coast of New Zealand. A summary of Option A can be found in *Table 2: Options analysis* on page 16 of this document.
72. The effects on the environment and existing interests of the deposit of material jettisoned from space launch vehicles on the seabed in the EEZ and extended continental shelf are not expected to be significant in the circumstances.
73. Since this is a new activity, there is some uncertainty about the potential for effects to accumulate over time, and officials recommend that the management approach favours caution and environmental protection by **imposing appropriate conditions** on the activity in regulations.
74. The conditions proposed have been developed through public consultation and consultation with the EPA. This is discussed further in the Consultation section of this document.
75. The regulations propose the following conditions on the activity:

Table 3: Proposed conditions on the activity

	Proposed conditions
Pre-activity requirements	At least **10 working days before a launch**, the person undertaking the activity must notify the EPA of: i. the proposed dates and times of the launch ii. the predicted flight path or paths of the launch iii. the area where material may be deposited iv. details of any additional proposed actions to avoid, mitigate, or remedy adverse effects The EPA must publish this information on its website as soon as is reasonably practicable after the person provides it.

	Proposed conditions
Post-activity requirements	**No more than 5 working days after** the launch, the person undertaking the activity must confirm to the EPA: i. the final date and time of the launch ii. details of any deviations from the information provided in the pre-activity report iii. the observed flight path(s) iv. as far as is reasonably practicable, the volume of material that was deposited and coordinates of the area where jettisoned material landed The EPA must publish a summary of this information on its websitewebsite as soon as is reasonably practicable after the person provides it. **Quarterly or after 10 launches** (whichever happens first), the person undertaking the activity must report to the EPA: v. a summary of any written complaints that were received alleging that the conditions were breached and an explanation of how they were addressed. The EPA must publish a summary of this information on its website as soon as is reasonably practicable after the person provides it.
Limits on number of launches	The activity is limited to 100 launches in total.
Restrictions on area	The deposit of jettisoned material on the seabed is restricted to the EEZ and ECS to the north, east and south of New Zealand, in the area shown in Appendix 1. Operators are required to avoid depositing material in seamount closures.*

**Seamount closures are defined in commercial fishing regulations under the Fisheries Act 1983, and are shown in* Appendix 3: Seamount closures.

Consultation

76. Consultation with the public, iwi authorities, regional councils, and persons whose existing interests are likely to be affected has been undertaken in accordance with section 32 of the Act. Public consultation on initial proposals ran from 16 August to 13 September 2017, based on a discussion document *Regulation of jettisoned material from space launch vehicles under the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012: Proposed changes.*

Public consultation on the proposal

77. We received eight submissions in total from the fishing industry, other industry, iwi and individuals. One submission supported the proposal, four opposed it,

and three supported or opposed in part. In particular, submitters raised issues about:

- the environmental effects of the deposit of jettisoned material, specifically around the deposit of lithium batteries and also more generally about risks arising from depositing more material (toxic or otherwise) into the ocean
- impacts on other interests, including fishing, petroleum exploration, and Māori commercial activities
- concerns about specific areas being included in the proposal, in particular the area between Te Rerenga Wairua (at the top of the North Island) and Manawatawhi (Three Kings Island) and Rangitāhua (Kermadec Islands)
- iwi/Māori involvement prior to launch activity.

78. Issues were also raised about the space industry and launch activities more broadly. Managing these is out of the scope of the proposed regulations.

Environmental Effects

79. Three submitters disagreed with the proposed "permitted" classification and suggested that the activity be classified as "discretionary", to better manage the uncertainties of the activity through a marine consent, or as "prohibited". Concerns were raised about the deposit of lithium batteries, and about the deposit of more plastic into the marine environment.

80. Information from Rocket Lab notes that lithium batteries are expected to burn up completely during descent rather than be deposited. NIWA's ecological risk assessment conservatively assumed that materials did not burn up during descent and concluded that, even in that situation, the overall risk from toxic contaminants, including the release of lithium, is low. The risk assessment notes that impacts that released lithium might have on benthic communities and sensitive environments would be transient and localised. Nevertheless, the proposal included a condition to avoid seamount closures, in order to reduce potential effects of the activity on sensitive benthic communities.

81. The NIWA risk assessment concluded that the effects from direct strike causing mortality, noise disturbance, ingestion of debris, smothering of seafloor organisms, provision of biota attachment site and floating debris were likely to be minor for up to 100 launches.

82. This informed the proposed condition to limit the number of launches to 100, and we consider that the limit is an appropriate precautionary measure until more information about the launch trajectories and distribution of debris can be obtained and analysed.

Impacts on other interests

83. The Petroleum Exploration and Production Association of New Zealand (PEPANZ) and Talley's Group Ltd. (a Nelson-based fishing company) raised concerns about competing commercial interests in the EEZ and the need for vessels to avoid exclusion zones where rocket debris could land. The PEPANZ submission noted that vessels involved with exploratory drilling, for instance, cannot move at short notice without considerable cost and effort.

84. Two others submitted that Māori commercial interests such as fishing, tourism, and transport are likely to be affected by the proposal and should be protected.

85. There are two petroleum prospecting permits and eight exploration permits in the area currently proposed for authorised space launches. However, none of

these permit holders have authorised marine consents from the Environmental Protection Authority (EPA) for these same areas.

86. Given the low density of vessels in the area, and particularly of activities on the seabed, we consider that the deposit of jettisoned material on the seabed in the proposed area is not expected to have a significant effect on existing interests, and it is not more appropriate for these effects to be considered in a marine consent application.

87. There could be some impact on existing interests from jettisoned material falling from the sky from space vehicle launches and the need for vessels to move out of the areas for safety reasons, as some submitters noted. We consider that safety matters are sufficiently considered under the OSHAA Act's licensing regime and that this is the appropriate place for the Minister responsible for the OSHAA Act to consider safety matters such as the ones raised by fishing and industry submitters.

88. We note that there are systems in place to notify users of the sea of potential hazards. These include navigational warnings, both coastal and long-range, through the Maritime Operations Centre and LINZ, and regular fortnightly notices to mariners published by LINZ. Rocket Lab also communicates directly with vessels in the vicinity of its launch site.

89. Given this low density, and with good warning systems in place, we consider the probability of jettisoned material striking vessels in the area to be low.

90. Following this consultation, officials from MBIE facilitated a discussion on 21 November 2017 between Rocket Lab, PEPANZ and Talley's Group to share information about what activities are occurring or planned in the EEZ and ECS, and ensure safety concerns and conflicts are proactively addressed.

91. As the frequency of space launches increases there may be impacts on other commercial operators in the marine or aviation sectors. Any such effects will be monitored by MBIE as part of its function to administer the OSHAA Act 2017. MBIE will also seek to facilitate the development of industry-led approaches to coordinate activities in the wider EEZ.

Concerns about specific areas

92. Ngāti Kuri submitted that the area between Te Rerenga Wairua (at the top of the North Island) and Manawatawhi (Three Kings Islands) is part of the spiritual pathway of Te Ao Māori for which Ngāti Kuri holds kaitiaki rights and responsibilities, and should be excluded from the proposed activity area. They also submitted that Rangitāhua (the Kermadec Islands), for which Ngāti Kuri are the mana whenua (and which are in the area of the proposed Kermadec/Rangitāhua Ocean Sanctuary), should be excluded from the proposed activity area.

93. The revised proposal excludes the area between Te Rerenga Wairua and Manawatawhi. This area is at the edge of the area considered in the NIWA risk assessment, and was excluded by moving the western boundary (where it lies north of the North Island) eastward, as shown in Appendix 1. We understand that Rocket Lab does not anticipate launching over this area. We do not consider that this constitutes a substantive policy change from the Proposal released for consultation.

94. The proposed regulations would not permit the deposit of jettisoned material on the Kermadec Islands or in the territorial sea that extends to 12 nautical miles around them, as they are not part of the EEZ or ECS. However, those parts of the Kermadec Ridge more than 12 nautical miles from the low-water mark

would be part of the authorised area. This includes much of the area of the proposed Kermadec/Rangitāhua Ocean Sanctuary. We also note that implementing the proposed regulations would not preclude the making of a sanctuary around the Kermadec Islands at a later date.

Iwi involvement

95. Two submitters questioned how the proposal will comply with the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

96. The UNDRIP is an affirmation of accepted international human rights and also expresses new and non-binding aspirations. New Zealand has developed its own distinct approach to addressing the UNDRIP through well-established processes for giving effect to the Treaty of Waitangi. The EEZ Act incorporates the principles of the Treaty of Waitangi through section 12. In particular, when developing regulations, the EEZ Act requires the Minister for the Environment to give iwi adequate time and opportunity to comment on their proposed subject matter and to take into account the effects of proposed activities on existing interests (which extends to certain iwi interests).

97. Ngāti Toa (Porirua/Wellington iwi) proposed that a condition be imposed requiring iwi consultation prior to a launch activity. Ngāti Toa also suggested that an operator be required to submit all documentation to relevant iwi at the same time as to the Crown.

98. The policy proposed in the discussion document included conditions that an operator (among other things):

- submits a pre-activity notification with information about the anticipated launch and deposit to the EPA at least 14 calendar days before a launch
- submits a post-activity report to the EPA quarterly or after 10 launches detailing, as far as is reasonably practicable, the volume of material and the area where jettisoned material landed; and a summary of any complaints of breach of conditions that were received and how they were addressed.

99. The EPA would publish pre- and post-activity reports. We recommend that requirements for the EPA to publish information specify that it must publish the information on its website, as soon as reasonably practicable after receiving it, as is specified in the current regulations. We consider that the proposed two-week pre-activity condition would enable iwi and others to access information about the activity in a timely manner.

100. The Permitted Activity Regulations do provide for direct notification to iwi in relation to another set of permitted activities: marine scientific research, exploration and prospecting. In that provision (set out in Schedule 1 of the Permitted Activity Regulations), pre-activity notification to the EPA must occur no less than 40 days before the activity commences, and the EPA is required to provide, within 10 days after receiving a notice, a list of iwi, hapū, customary marine title groups, and protected customary rights groups whose existing interests the EPA considers may be affected by the activity. The person who intends to undertake the activity must then notify the groups identified.

101. We note that there is a comparatively short pre-activity notification proposed for the deposit of jettisoned material (10 working days). This takes into account the potential frequency of launches, which could scale up to one launch per week. It is also similar to the timeframe of “Notices to Mariners” (NOTMAR), which LINZ publishes fortnightly to advise mariners of matters affecting

navigational safety. For example, the NOTMAR of 12 May 2017 included details of Rocket Lab's first test launch (which took place on 25 May 2017).

102. It would be a narrow window for the EPA to prepare a list of affected iwi and for operators to engage with iwi as a result of any notifications before the activity takes place. For these reasons, we consider that direct notification would not be an appropriate condition on the deposit of jettisoned material.

103. We note that Rocket Lab has taken a proactive approach to engaging with the public, including local iwi and hapū, by providing opportunities to discuss concerns or questions they may have about launch activities at quarterly town halls at the Mokotahi Hall in Mahia, as well as through email notifications. Local media often attend these and report on Rocket Lab updates and feedback from the community. Rocket Lab also has a direct, ongoing relationship with Rongomaiwahine and has been welcomed onto the Te Rakato Marae to discuss Rocket Lab activities, as well as queries and suggestions from iwi.

104. We consider that these mechanisms provide appropriate opportunity for iwi engagement on the activity.

Other departments involved in the consultation

105. MfE consulted with the following agencies to discuss the problems identified with the status quo and the proposals in this RIS:

- Ministry of Business, Innovation and Employment
- Environmental Protection Authority
- Maritime New Zealand
- Department of Conservation
- Ministry of Primary Industries
- Ministry of Foreign Affairs and Trade
- Te Puni Kōkiri
- Treasury

106. These agencies raised no significant issues or concerns. The Department of Prime Minister and Cabinet have been informed about the proposals.

107. The EPA reviewed early policy proposals and the draft regulations, and suggested a number of operational changes which have been incorporated into the final version. These included:

- (at the policy stage) adjusting a condition regarding sensitive areas to reflect the closed seamount areas identified in regulations
- (at the drafting stage) a number of minor and technical changes, including making post-activity requirements to report the volume and location of deposited material apply earlier, to better facilitate compliance monitoring.

Implementation

108. This RIS informs Cabinet's final decision on the proposal to permit the deposit of jettisoned material from space vehicle launches in a wider area of the EEZ

than currently permitted. This would be implemented through regulations made pursuant to the EEZ Act. The proposed approach would be given effect through regulations made under Section 27(1), 30(1) and 35 of the Act and the new regulations would come into effect in March 2018.

109. Responsibilities for the EEZ Act are largely split between the Ministry and the EPA. The Ministry administers the EEZ Act and its implementing regulations and policies. The EPA is responsible for monitoring compliance with the EEZ Act, carrying out enforcement and promoting public awareness of the requirements of the EEZ Act and associated regulations.

110. The EPA has an EEZ Compliance Monitoring Policy as well as an EEZ Compliance and Enforcement Programme. The policy document sets out principals for monitoring compliance as well as how compliance is monitored. In regards to reviewing regulatory information the EPA checks that the information provided meets the legal requirements. If insufficient information is provided the operator is advised in writing and requested to address the matter within a set time frame.

111. If the information provided to the EPA indicates a breach of the regulations, adverse environmental effects, or impact to an existing interest the EPA will:

- complete a risk assessment to establish the risk gap
- consider compliance history and the attitudes of the operator
- respond in a manner proportionate to the risks presented.

112. The EPA has several options available to them to encourage compliance if operators do not comply with the regulations:

- work with the operator to ensure they understand their obligations
- use non-statutory tools such as letters or change inspection frequency
- use statutory tools such as abatement notices
- prosecute those responsible for breaking the law.

113. When the Ministry undertakes a review of the Permitted Activities regulations, the effectiveness and appropriateness of these compliance tools will form a part of that review.

114. The EPA will also gather information on the impacts of space vehicle launches through post-activity reporting. This will allow the EPA to determine if the deposition of debris from space vehicle launches complied with regulation and develop a picture of the cumulative impacts of the activity.

Monitoring, Evaluation and Review

115. As the responsible policy agency, MfE monitors the effectiveness of the overall EEZ regime. Part of this ongoing monitoring, evaluation and review may include:

- evaluation of costs and the effectives of all EEZ functions including permitted activities

- evaluation of how effective the EPA and other management agencies are in meeting the purpose of the Act.

116. The deposit of jettisoned material is a relatively new activity. The Ministry considers that more information about the activity will be available after 50 launches, and will use this to help inform future assessments of the scale and impact of the activity.

117. The Ministry considers that it is important that the classification is reviewed when the effects are better understood, to ensure that the permitting regime is proportionate to the effects of the continued activity.

118. With this intent, the activity will no longer be permitted after the 100-launch threshold is reached. If not reclassified in regulations, the deposit of jettisoned material from space launch vehicles in the EEZ and extended CS will then become a discretionary activity, requiring a marine consent to undertake the activity.

119. The Ministry intends to review the regulations at or before the time when the 100-launch threshold is reached. This consideration could include confirming that the regulations are the appropriate tool for managing the activity, or choosing to regulate the activity in a different way, for instance, through a different classification. The review will be informed by new data on the nature and scale of the activity, including information reported to the EPA under the requirements of the proposed Permitted Activity regulations.

120. The proposed regulations will also be considered as a part of a wider review of the Permitted Activities Regulations. The Permitted Activities Regulations came into force on 28 June 2013. Cabinet agreed that these regulations would be reviewed as soon as reasonably practicable in five years following their commencement. The Ministry is planning a review of these regulations in 2018.

Appendix 1: Extent of the proposed area

Figure 6 shows the extent of the area initially considered in the proposal. During the public consultation period, Ngati Kuri submitted that the area between Te Rerenga (the top of the North Island) and Manawatawhi (Three Kings Island) be excluded from the area. The western boundary (where it lies north of the North Island) has been moved slightly eastward, in order to exclude the area identified (Figure 7).

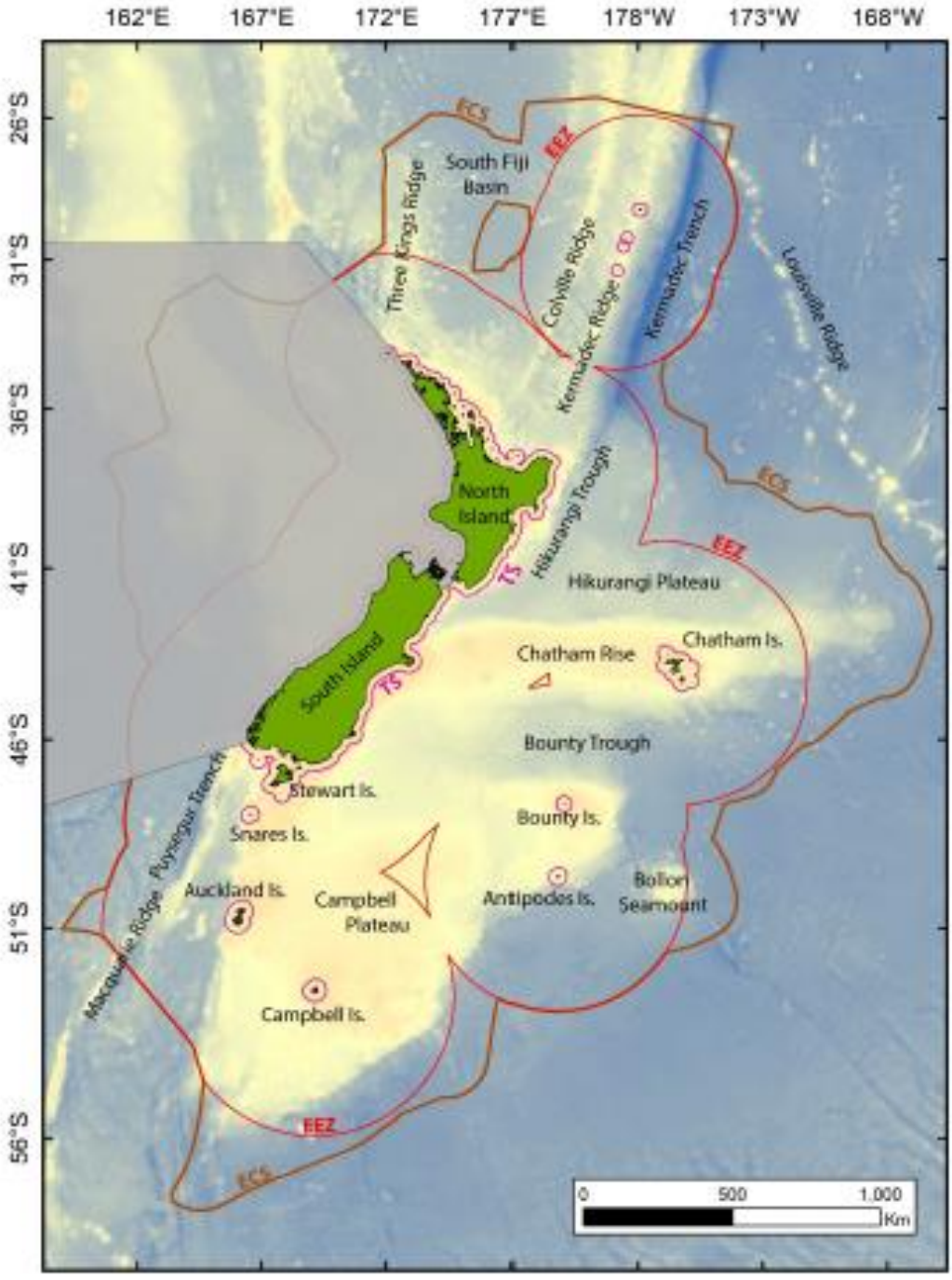

Figure 6: Area of the EEZ and Continental shelf considered in the environmental risk assessment for the deposit of jettisoned material. The shaded area is excluded.

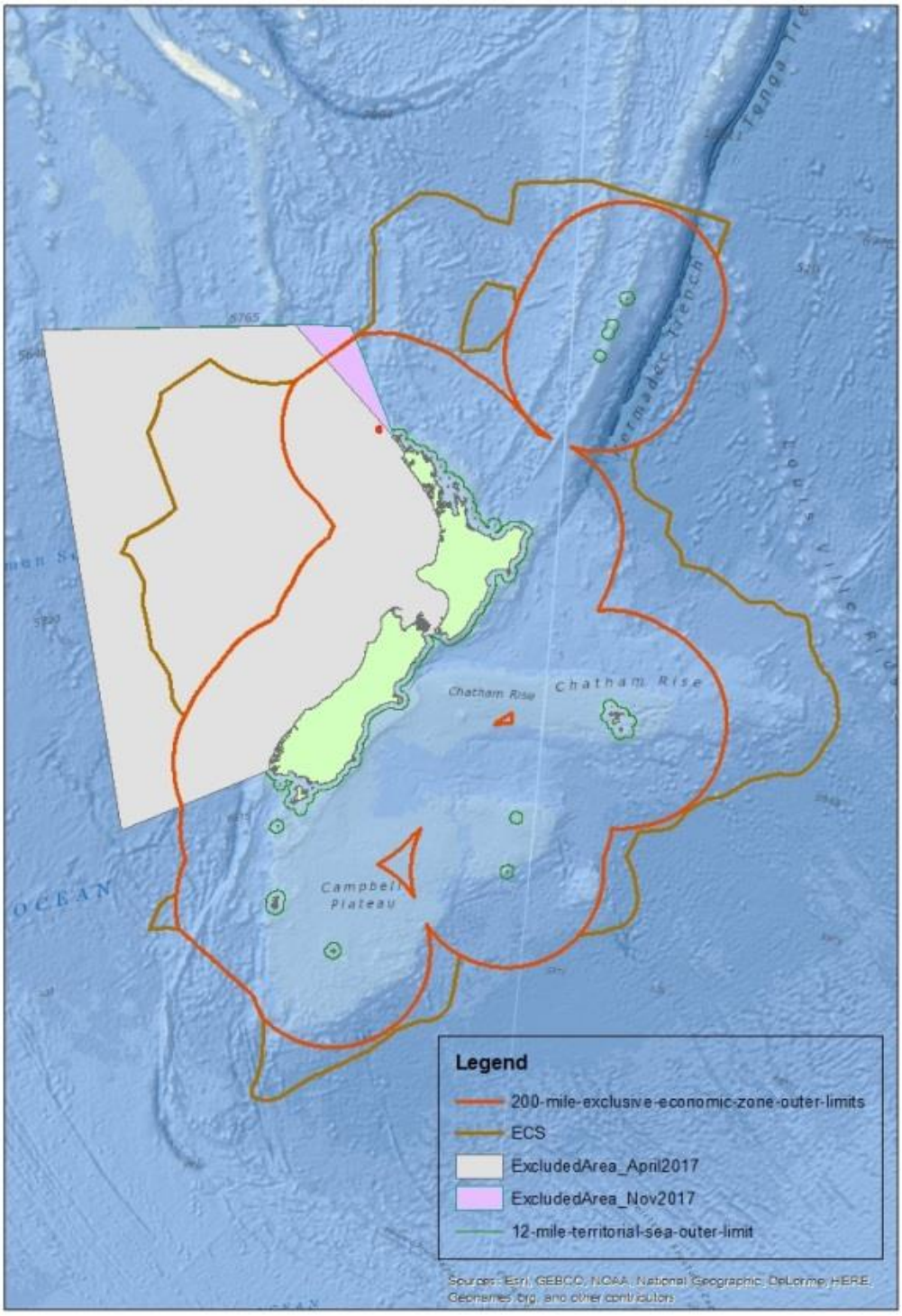

Figure 7: Amended area of the EEZ and continental shelf proposed for permitted activity classification. The total shaded area is excluded.

Appendix 2: Relevant considerations under Section 33 of the Act

Table 4: Relevant considerations under section 33 of the Act

Section 33(3) matters	Relevant considerations
(a) any effects on the environment or existing interests of allowing an activity with or without a marine consent, including— (i) cumulative effects; and (ii) effects that may occur in New Zealand or in the waters above or beyond the continental shelf beyond the outer limits of the exclusive economic zone; and (b) the effects on the environment or existing interests of other activities undertaken in the exclusive economic zone or in or on the continental shelf, including— (i) the effects of activities that are not regulated under this Act; and (ii) effects that may occur in New Zealand or in the waters above or beyond the continental shelf beyond the outer limits of the exclusive economic zone; and	The effects on the environment of allowing the deposit of jettisoned material on the seabed were assessed by NIWA, and were considered likely to be minor for up to 100 launches in the area considered. The study included consideration of the way effects could accumulate with repeated launches and the effects of other activities. It also indicated that effects of the activity are expected to be localised. Based on best available information, the deposit of jettisoned material on the seabed will not have any significant effect on existing interests. There may be some impact on existing interests from jettisoned material falling from the sky from space vehicle launches. There is currently no evidence of a significant problem in relation to competing interests. Any such effects in future will be monitored by MBIE as part of its function to administer the OSHAA Act 2017.
(c) the effects on human health that may arise from effects on the environment; and	There are not expected to be effects on human health arising from effects on the environment.
(d) the importance of protecting the biological diversity and	Biodiversity and the functioning of populations, communities and habitats

Section 33(3) matters	Relevant considerations
integrity of marine species, ecosystems, and processes; and	were considered in the NIWA risk assessment when consequence scores were assigned. The assessment did not assign a consequence level greater than “minor” to any environment-class/threat combination.
(e) the importance of protecting rare and vulnerable ecosystems and the habitats of threatened species; and	The NIWA risk assessment noted a risk that environmental effects could accumulate if deposits were concentrated in sensitive seamount areas. Accordingly, the Amendment Regulations include a condition to avoid any seamount closures identified in fisheries regulations. These areas are shown in Figure 3 in Appendix 2.
(f) New Zealand’s international obligations; and	There are no international conventions that specifically regulate the environmental effects of the deposit of jettisoned materials from space vehicle launches. There are relevant international obligations under UNCLOS, the Convention on Biological Diversity and the Noumea Convention. The permitted activity classification complies generally with these international obligations. New Zealand also has international obligations that are relevant to space activities, but do not have direct implications for the proposed regulations.
(g) the economic benefit to New Zealand of an activity; and	The deposit of jettisoned material is one of a broader set of activities involved in launching a space vehicle. An assessment in 2016 concluded that the development of a New Zealand rocket industry could contribute significant value to the New Zealand economy.
(h) the efficient use and development of natural resources; and	The activity is not directly related to the use and development of natural resources.
(i) the nature and effect of other marine management regimes; and	Maritime NZ (through the Maritime Operations Centre) and Land Information New Zealand (LINZ) manage navigational safety in the area. Coordination in the territorial sea is managed by regional councils under the Resource Management Act 1991 (RMA). In the case of launches from

Section 33(3) matters	Relevant considerations
	the Mahia Peninsula, the Hawkes Bay Regional Council (HBRC) is the relevant authority. Although it is not a "marine management regime" (as that term is defined in section 7 of the EEZ Act), the OSHAA Act manages effects of space launches on public safety through the launch licence process. The Amendment Regulations will not interact directly with these regimes.
(j) best practice in relation to an industry or activity; and	Both the European Space Agency and NASA recommend that jettisoned material and re-entry debris from space is directed into the ocean to minimise the risk to human life.
(k) in relation to whether an activity is classified as permitted, discretionary, non-notified, or publicly notifiable, the desirability of allowing the public to be heard in relation to the activity or type of activity; and	The public consultation involved in the publicly notifiable discretionary marine consent process is considered to be disproportionate to the scale of the expected effects of the activity. Public consultation was carried out on the proposed policy for the Amendment Regulations. Public participation in the consultation was low but is likely proportionate to the expected scale of effects on the interests of the public and iwi/Māori.
(l) any other relevant matter.	None were identified.

Appendix 3: Seamount closures

Some of the commercial fishing regulations under the Fisheries Act 1983 set out seamount areas that are closed to trawling:

Table 2: Regulations prescribing seamount closures

Commercial fishing regulations		Number of closures
Fisheries (Auckland and Kermadec Areas Commercial Fishing) Regulations 1986	2B	6 (2 within proposed area)
Fisheries (Central Area Commercial Fishing) Regulations 1986	6B	2
Fisheries (South-East Area Commercial Fishing) Regulations 1986	4C	5
Fisheries (Southland and Sub-Antarctic Areas Commercial Fishing) Regulations 1986	15JA	4
Total		**17 (13 within proposed area)**

These areas are shown in Figure 8.

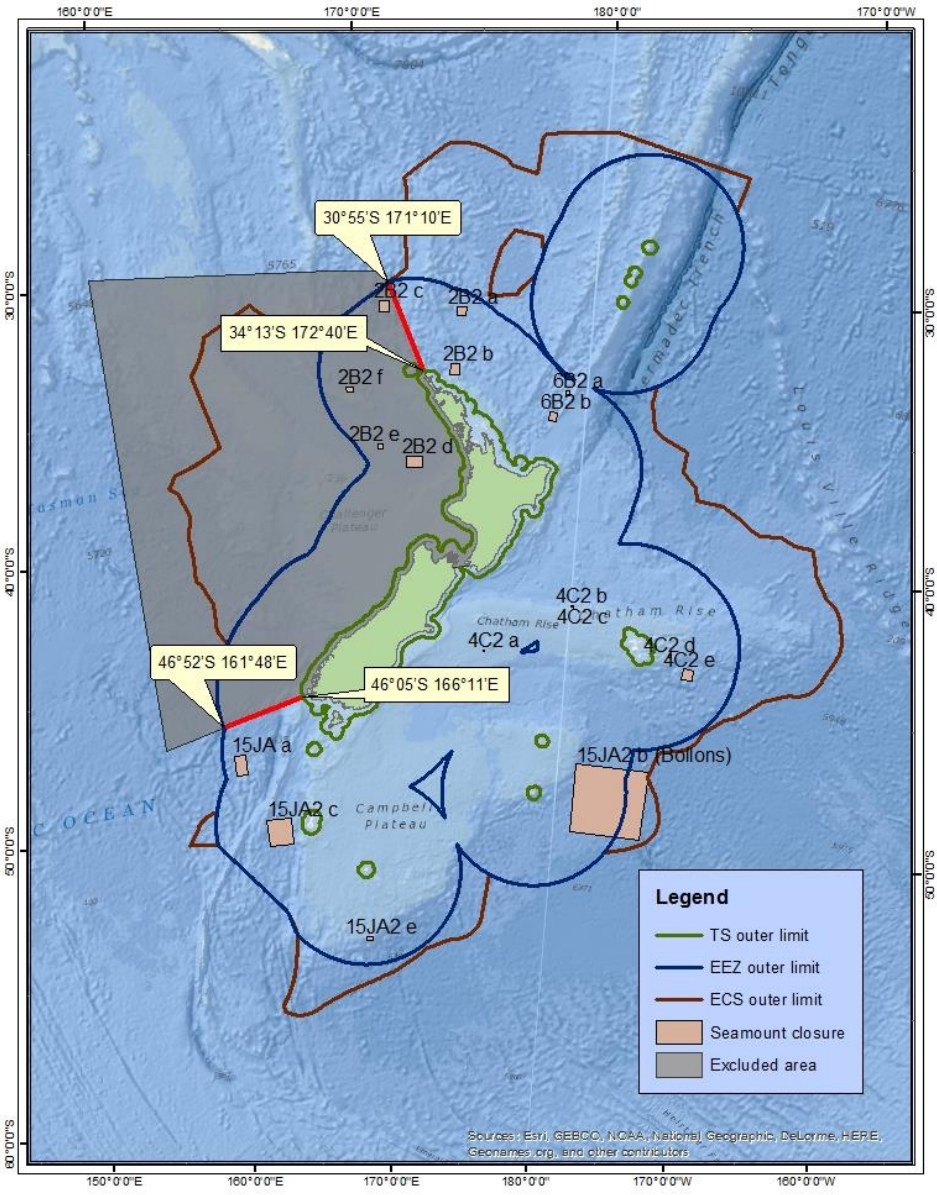

Figure 8: Closed seamount areas in the EEZ and extended continental shelf. Thirteen of the seventeen current closures are within the area that is proposed as the authorised launch deposit area. The labels correspond to regulations under the Fisheries Act where the closures are described.