DEPARTMENT OF THE PRIME MINISTER AND CABINET
TE TARI O TE PIRIMIA ME TE KOMITI MATUA

Proactive Release

The following documents have been proactively released by the Department of the Prime Minister and Cabinet (DPMC), and National Emergency Management Agency (NEMA), on behalf of Hon Kieran McAnulty, Minister for Emergency Management:

Proactive Release: Bridging Funding for GeoNet and the National Seismic Hazard Model

The following documents have been included in this release:

Title of paper: Bridging Funding for GeoNet and the National Seismic Hazard Model (GOV-21-SUB-0066 refers)

Title of minute: Bridging Funding for GeoNet and the National Seismic Hazard Model (GOV-21-MIN-0066 refers)

Title of minute: Report of the Cabinet Government Administration and Expenditure Review Committee: Period Ended 17 December 2021 (CAB-21-MIN-0550 refers)

~~Security classification — Budget Sensitive~~

Office of the Minister for Emergency Management

Cabinet Government Administration and Expenditure Review Committee

Bridging funding for GeoNet and the National Seismic Hazard Model

Proposal

1 There is an urgent funding shortfall for the operation of GeoNet and the National Seismic Hazard Model of $15.8 million.

2 This paper seeks agreement to provide bridging funding for the current and next financial years to ensure the operation of GeoNet and the continuation of the National Seismic Hazard Model programme while a sustainable funding solution is developed and agreed.

Executive Summary

3 GeoNet, together with the National Seismic Hazard Model provide fundamental support for effective management of geological hazard risks and emergencies in New Zealand. I am advised that the gravity of the non -performance or non-operation of GeoNet, or the National Seismic Hazard Model will have significant and immediate implications for hazards and life safety risk.

4 In April 2021, the financial partners of GeoNet (Land Information New Zealand, and the Earthquake Commission, the Ministry of Business, Innovation and Employment) and the National Emergency Management Agency (a beneficiary but not a financial partner of GeoNet) were made aware of an urgent funding shortfall by GNS Science.

5 While multiple Ministers and agencies depend on the ongoing operation of GeoNet and the National Seismic Hazard Model to deliver effectively, there is no single Ministerial lead as multiple agencies fund according to their own requirements and mandates.

6 For example, the National Emergency Management Agency relies on GeoNet services and the 24/7 National Geohazards Monitoring Centre to advise on geohazards. The GeoNet assets are owned by GNS Science and I have no Ministerial responsibility for how GNS Science manages these assets on behalf of the wider hazard management system.

7 The nature of multiple agencies and ministerial use, but not ownership, has meant that the funding shortfall was not identified by the financial partner agencies to advance a time sensitive budget bid.

8 Given the time critical aspects of this funding shortfall, and the risks associated with an ineffective GeoNet service, I am willing to be the lead Minister for this interim appropriation in my capacity as Minister for Emergency Management. A sustainable approach needs to be developed by financial partners, or non

financial partners that rely on GeoNet services. This bridging funding is intended to enable the relevant parties to establish a longer term sustainable funding model for GeoNet moving forward.

Context

9 GeoNet is New Zealand's geological hazard monitoring system for earthquakes, volcanoes, tsunamis and landslides, operated by GNS Science. The National Seismic Hazard Model is built on GeoNet data and contains our best estimation of the hazard from earthquakes in any one location, and how we need to build, plan, and prepare as a result.

10 GeoNet is currently funded by various contracts for deliverable services, primarily with the Earthquake Commission (**EQC**) and Land Information New Zealand (**LINZ**), and the Ministry of Business, Innovation and Employment (**MBIE**) for the 24/7 Geohazards Monitoring Centre.

11 Similarly the National Seismic Hazard Model is supported by MBIE Building Systems Performance and EQC but their funding is time limited.

12 MBIE separately provides funding to GNS Science for deliverable research programmes (not science services) through various research funds, such as the Endeavour Fund and the Strategic Science Investment Fund.

13 GeoNet and the National Seismic Hazard Model deliver science-informed data and information to the emergency management system across the '4Rs': risk reduction, readiness, response, and recovery. **Appendix 1** includes a diagram showing how these platforms contribute to wider natural hazard management.

Funding shortfall

14 An immediate 2021/22 financial year funding shortfall now endangers GeoNet's capability, capacity, and asset base.

15 The shortfall has arisen as funding and contracting models have not adapted to increased demand over the past 20 years. These increased expectations have necessitated changes to GeoNet's operating model over the last two years, including:

15.1 an increase in the National Geohazards Monitoring Centre's (NGMC) staffing and training, to ensure the highest level of capability and capacity;

15.2 the creation of expanded duty teams of scientists, to be available to provide on-call and continuous science advice, especially during times of tsunami and volcanic threat evaluation;

15.3 a reduced tolerance for asset downtime and failure, necessitating increased investment in communication and power assets, faster repair or replacement of monitoring instruments, and higher volumes of on-hand (in-stock) assets and supplies;

15.4 maturing processes for the development of robust, operational tools that reflect current science, knowledge and global practice (such as visual tsunami modelling)

15.5 in places, an expressed desire from researchers for greater density and/or geographical coverage of the network in order to better understand known hazards.

16 Alongside growing expectations, GeoNet has faced increasing costs from technology, data services, and suppliers. The GeoNet programme tries to keep pace with emerging computer and networking technology such as cloud computing and automated server management, as well as new data transfer and storage capabilities. These bring large efficiencies, but require investment not just in technology and assets, but in new capabilities within the core GeoNet team. The GeoNet programme has been able to flatten the slope of the cost curve but costs continue to increase.

17 Funding for the National Seismic Hazard Model expires at the end of August 2022, with no mechanism in place to extend this further. This poses significant risk to retaining the highly specialised capability required for the maintenance of the model's currency and limits the full realisation of the model's benefits.

18 The shortfall will result in a degradation of the sensor network infrastructure and underpinning datasets for science and decision makers, with negative impacts on our understanding of geological hazards and the dangers they pose. This could impact on public safety outcomes for natural hazard events such as a tsunami, where more timely, better-informed decisions can save lives.

19 A cost-pressure budget bid for Budget 2022 was considered by officials, however, out of cycle funding covering both financial years will provide the most short-term certainty to these programmes. This will best halt the degradation of the quality of GeoNet's geological hazards' advice and sensor network efficacy by allowing the ordering of specialist equipment in the face of global supply chain issues and the soonest resumption of GeoNet's normal level of operational activities. It will also give future assurance to specialist staff supporting the National Seismic Hazard Model.

20 This paper seeks agreement to provide bridging finance for GNS Science to meet the current urgent shortfall for GeoNet and extend funding for the National Seismic Hazard Model until the end of 2022/23 financial year. This will allow GNS Science to maintain the integrity of New Zealand's seismic and volcanic sensor networks, provide products and services that support science advice and communications, and maintain an up-to-date National Seismic Hazard Model.

21 The National Emergency Management Agency (NEMA) is not an existing funder of GeoNet nor the National Seismic Hazard Model and does not have the capacity to support the required contract management. Given the Ministry of Business, Innovation and Employment's (MBIE) existing ownership relationship with GNS Science, I propose that MBIE are responsible for the

administration of this appropriation within Vote Business, Science and Innovation.

22 A cross-agency initiative will be developed in preparation for Budget 2023. This initiative will propose a solution that ensures hazards data collection and related infrastructure, along with the hazard and risk models derived from this data, are sustainably funded to support the wider hazard risk management system.

23 This must include consideration of the appropriate proportion of funding that should be paid by service users who derive specific benefits. But it will also need to recognise that GeoNet and the NSHM are core, critical infrastructure and data models respectively and it may be more appropriate that a portion of funding should be provided directly by the Crown in recognition of the wider public benefit of these programmes.

Background

24 GeoNet has become critical national infrastructure supporting the core government functions of hazard risk management and emergency management, as well as underpinning New Zealand geological research. It contributes to broad system outcomes by:

24.1 providing 24/7 monitoring of geological hazards to provide rapid advice to NEMA as geological events occur. In some instances, such as tsunamis, this reduces the impact of events by providing advice to enable effective and timely warnings to the public;

24.2 supporting response and recovery by rapidly pinpointing affected areas and understanding the impact and ongoing risks related to geological events;

24.3 collecting and curating open data sets which enhance scientific knowledge (including hazard and risk models) to reduce the risk of impacts from hazards through improved land use planning, building codes and informing re-insurance pricing; and

24.4 improving organisational and community awareness of, and readiness for, geological events through GeoNet's communication platforms.

25 GeoNet is funded by various contracts for deliverable services, primarily with the Earthquake Commission (EQC) and Land Information New Zealand (LINZ). The Ministry of Business, Innovation and Employment (MBIE) provides support for the 24/7 National Geohazards Monitoring Centre which delivers information and science advice based on the GeoNet capabilities. NEMA is a beneficiary of GeoNet but is not a funding partner.

26 The National Seismic Hazard Model underpins our collective understanding of seismic risk in New Zealand. It is a model of the likelihood and strength of earthquake ground shaking that might occur at any given site in New Zealand, over specified time periods. These estimates are essential for a range of safety, security, resilience, financial, and economic purposes, including to:

26.1 provide a national assessment of New Zealand's seismic hazard;

26.2 inform the settings in the Building Code, so that buildings are designed to withstand earthquake shaking;

26.3 inform the standard for seismic resilience for the development of other infrastructure, such as dams, roads and bridges, through guidance such as the New Zealand Dam Safety Guidelines and the New Zealand Transport Agency's Bridge Manual;

26.4 support risk communication, emergency management, business continuity planning, and community resilience; and

26.5 contribute to natural hazard risk and loss models, including those used for insurance and reinsurance purposes, as well as for local government's infrastructure and land use planning.

27 The current revision of the National Seismic Hazard Model is funded from the building levy by MBIE Building System Performance (MBIE-BSP), matched by a contribution from EQC from their insurance levies.

28 The partners of GeoNet (Land Information New Zealand, the Earthquake Commission and the Ministry of Business, Innovation and Employment) and the National Emergency Management Agency were only made aware of the urgent shortfall by GNS Science in April 2021. These agencies immediately commenced work to investigate additional funding options, however, were unable to find the capacity for further support from within existing baselines.

29 A cost-pressure budget bid for Budget 2022 was considered by officials, however, out of cycle funding covering both financial years will provide the most short-term certainty to these programmes. This will best halt the degradation of the quality of GeoNet's geological hazards' advice and sensor network efficacy by allowing the ordering of specialist equipment in the face of global supply chain issues and the soonest resumption of GeoNet's normal operational activities. It will also give future assurance to specialist staff supporting the National Seismic Hazard Model.

GeoNet's funding shortfall risks degradation of a critical investment

30 Stakeholder expectations on GeoNet to provide rapid, accurate data and information about emerging geological hazard events and ongoing situational awareness and science advice, have continued to evolve and increase with natural hazard events over the past decade. GeoNet aims to meet stakeholders' expectations of ever-shorter alerting and warning times. However, there is significant cost and complexity associated with fast, accurate translation of research science into a robust 24/7 operations environment.

31 These increased expectations have necessitated changes to GeoNet's operating model over the last two years, including:

31.1 an increase in the National Geohazards Monitoring Centre's (NGMC) staffing and training, to ensure the highest level of capability and capacity;

31.2 the creation of expanded duty teams of scientists, to be available to provide on-call and continuous science advice;

31.3 a reduced tolerance for asset downtime and failure, necessitating increased investment in communication and power assets, faster repair or replacement of monitoring instruments, and higher volumes of on-hand (in-stock) assets and supplies;

31.4 maturing processes for the development of robust, operational tools that reflect science, knowledge and practice (such as visual tsunami modelling); and

31.5 an expressed desire from researchers for greater density and/or geographical coverage of the network in order to better understand known hazards.

32 Alongside these growing expectations, GeoNet has faced increasing costs from technology, data services and suppliers as the programme tries to keep pace with emerging technology to improve capability and efficiency. The GeoNet programme has been able to flatten the slope of the cost curve but costs continue to increase.

33 Current funding is largely on a deliverable services model based on the remit of individual agencies, with limited funding available for long-term investment and improvement or to support the sustainability of platforms over time. Due to this model, and the increasing pressures described above, GeoNet continues to operate with a 'bow-wave' of deferred hardware and software investment, some of which now requires critical attention.

34 Multiple parties have an interest in GeoNet products and services. However, GeoNet's evolving role as critical infrastructure in the natural hazard response space has meant that its financial needs extend beyond the organisational abilities of its core funding partners, particularly on the continued use of insurance levy funding. This constrained fiscal operating environment means that to date, agencies have been unable to find the capacity for additional funding to support GNS Science from within existing baselines.

35 It is the assessment of GNS Science, its funding partners (EQC, LINZ and MBIE) and NEMA, collectively known as the GeoNet Advisory Panel, that GeoNet now has budget and 2021/22 and 2022/23 financial years investment needs that extend beyond its current operating envelope.

36 The GeoNet Advisory Panel has considered the funding that would be required to deliver to current expectations, to maintain the integrity of New Zealand's seismic and volcanic sensor networks and provide products and services that support science advice and communications. The funding levels described in

the table below would maintain operations at the status quo, including status quo risk tolerance for asset failure on the sensor network.

Planned costs and existing funding envelope for GeoNet 2021/22 and 2022/23 financial years

Spend category	**2021/22 planned costs $m**	**Expected 2022/23 costs $m**
Capex	$3.323	$4.600
Opex	$19.677	$21.500
Total	$23.000	$26.100
Existing	$18.900	$18.900
Funding required	**$4.100**	**$7.200**

37 Two alternative options were considered by the GeoNet Advisory Panel, but have significant risks associated with them:

37.1 No new funding: deliver a work programme within the currently committed funding of $18.9 million; and

37.2 Reduce the bridging funding request by $1 million from $4.1 million to $3.1 million for 2021/22 financial year.

38 If no additional funding is provided, the GeoNet Advisory Panel expects the following risks to materialise over the course of the year (Appendix 2 has more detail on specific risks):

38.1 gradual degradation of the GeoNet monitoring assets (including seismic and volcanic sensors), datasets and capabilities;

38.2 reduction in quality of science advice during geological hazard events due to degradation of datasets;

38.3 compromised ability of NEMA and GNS Science to manage responsibilities for warning of life safety risks. For example, gaps in the sensor networks resulting in lesser monitoring coverage and a degraded detection capability for real-time responses;

38.4 stalling of improvements to New Zealand's geological hazard monitoring and response system e.g. work to expand the range of scenarios and implementation of pre-calculated tsunami threat maps does not progress. This would inhibit improvements to rapid initial advice that supports public warnings and an efficient emergency management system, increasing the threat to life safety in a tsunami event; and

38.5 increased multi-year costs to maintain and enhance the GeoNet sensor network and other assets; and

38.6 erosion of the value created over 20 years.

39 A funding request for $3.1 million in 2021/22 financial year would enable the partial restoration of the sensor network to the service levels experienced in 2020/21 financial year and provide for some planned product and service development work. However, reduced product and service development would impact negatively on the speed and accuracy of science advice, and this option is not recommended.

Expiration of funding for the National Seismic Hazard Model limits the realisation of its benefits

40 In 2019 the Hazard Risk Board of the Department of the Prime Minister and Cabinet identified the lack of investment to maintain the National Seismic Hazard Model (NSHM) as a key national risk. At the time, the National Seismic Hazard Model had not been fully updated since 2002.

41 MBIE-Building System Performance (BSP) and EQC have funded a rapid revision of the model over a period of two years, to be completed in August 2022.

42 It is not appropriate to continue to use the Building Levy to fund the upkeep of the NSHM at current levels, which is funded by building consent applicants, when the use of the information is spread across a wide number of other government and non-government agencies outside the remit of the Building Act. Any future use of Building Levy funds would need to be proportionate to the extent to which the NSHM supports building regulatory functions and take into consideration any other competing priorities for spending levy funds. Cessation of funding however would limit realisation of the value of the model and its benefits, as the model's currency, public access and use of its outputs would be impacted.

43 A delay in funding while a long-term solution is identified is not recommended, due to the significant investment made in developing the highly specialised team of seismic hazard experts at GNS Science, which are not available domestically. Loss of funding, even for a short period, presents a critical risk to maintaining this capability.

44 Projected costs to maintain continuity of investment from 1 September 2022 to the end of 2022/23 financial year are specified in the table below.

Projected costs for National Seismic Hazard model August 2022 to end 2022/23

Activity	**Cost $m**
GNS Science staff time	$3.600
Disbursements including collaborator sub-contracts	$0.900
TOTAL funding required for 10 months	**$4.500**

Interim funding will give time to develop a sustainable longer-term funding approach

45 Delays to global supply chains means that certainty of funding is critical for the effective management of GeoNet's network maintenance and repairs. Therefore, this request has been brought to Cabinet for out of cycle funding for both 2021/22 and 2022/23 financial years, rather than a cost pressure bid in Budget 2022. This approach will provide the required certainty some months ahead of May 2022 and will allow specialist replacement parts for the sensor network to be ordered in time for installation into 2022/23 financial year, preventing further degradation to the network's efficacy.

46 The issues regarding fragmentation of funding faced by GeoNet and the National Seismic Hazard Model are indicative of broader system issues. There is a lack of clear, long-term accountability and sustainable funding within the science and hazard risk management systems for data collection, monitoring, and modelling that supports hazards research and the application of the 4Rs of emergency management: risk reduction, readiness, response, and recovery. This has made it particularly challenging to identify appropriate leadership and responsibility arrangements in addressing this immediate funding shortfall.

47 Officials are considering options to provide sustainable support and clear accountabilities for critical hazards infrastructure, datasets and data models that support hazards research, and the application of the '4R's of emergency management. This work will ultimately inform a bid for Budget 2023, identifying a funding solution for GeoNet, the NSHM, and other natural hazards initiatives yet to be identified for 2023/24 financial year and beyond.

48 This must include consideration of the appropriate proportion of funding that should be paid by service users who derive specific benefits. But it will also need to recognise that GeoNet and the NSHM are core, critical infrastructure and data models respectively and it may be more appropriate that a portion of funding should be provided directly by the Crown in recognition of the wider public benefit of these programmes.

49 I note that the broader issue of how government can support the science contribution to core government services, such as hazards management, has been raised in the Te Ara Paerangi Future Pathways Green Paper on the future of the New Zealand research system led by Ministers Woods and Verrall as Ministers of Research Science and Innovation. Cabinet will have an opportunity to consider the directions identified via Te Ara Paerangi in mid 2022.

50 NEMA, MBIE, EQC, LINZ, Fire and Emergency New Zealand, NIWA, GNS Science, MetService and the Department of Internal Affairs have all been identified as parties interested in contributing to this process. Further agencies may be involved as work continues in 2022.

51 The provision of interim funding for GeoNet and the NSHM through to 2022/23 financial year will ensure that future solutions are informed by the new approaches for the funding of science services and infrastructure being tested in the Te Ara Paerangi Future Pathways Green Paper on the future of the New

Zealand research system. It will also allow for alignment with any recommendations from the upcoming 2022 GeoNet Review and provide the best opportunity for sustainability.

Financial Implications

52 The total interim funding required is set out in the table below.

Interim Funding per financial year for GeoNet and NSHM:

$m		**2021/22**	**2022/23**
GeoNet	Capital	$2.200	$3.000
	Operating	$1.900	$4.200
	Total	**$4.100**	**$7.200**
National Seismic Hazard Model	Operating		**$4.500**
TOTAL		**$4.100**	**$11.700**

53 Multiple Ministers have an interest in GeoNet and the National Seismic Hazard Model, including the Minister for Research, Science and Innovation, the Minister Responsible for the Earthquake Commission and the Minister for Building and Construction. There is no single Ministerial or agency responsibility for either programme.

54 On behalf of interested Ministers, I am willing to be the responsible Minister for this appropriation as an interim solution, in my capacity as Minister for Emergency Management and having the stewardship role for the emergency management system, given any funding delays will have significant and immediate implications for hazards management and life-safety risk.

55 There is no existing appropriation suitable for delivery of this funding. NEMA is not an existing funder of GeoNet or the National Seismic Hazard Model, and as such has limited capacity to support contract management. Existing Research Science and Innovation appropriations are focussed on funding research and innovation rather than science-based services and are therefore not suitable. However, given MBIE's existing relationships with GNS Science, it makes sense for MBIE to be the agency that administers the appropriation and contracting with GNS Science. The Minister of Finance has approved the establishment of a new multi-category appropriation "Services for Hazards Management" in Vote Science and Innovation" with the Minister for Emergency Management as the appropriation Minister.

56 I consider the proposed multi-category appropriation to be a pragmatic short-term solution to ensure ongoing supply of critical hazards management data and services via these two platforms, while a longer-term approach to maintaining critical platforms is developed. I expect to work with the other interested Ministers on the long-term hazards system, and report back to Cabinet ahead of Budget 2023 on the proposed new arrangements and

investment required, including the arrangement of Ministerial and agency accountabilities and the way any funding is delivered.

Legislative Implications

57 There are no legislative implications of this paper.

Regulatory Impact Statement

58 Regulatory impact analysis requirements do not apply to this paper.

Climate Implications of Policy Assessment

59 This paper does not meet the criteria for a Climate Implications of Policy Assessment.

Population Implications

60 There are no population implications of this paper.

Human Rights

61 This paper does not have implications for human rights.

Consultation

62 This paper has been consulted with MBIE, EQC, Treasury and GNS Science which all support the recommendations.

Communications

63 No public statements are proposed for this paper.

Proactive Release

64 I intend to proactively release the Cabinet paper consistent with Cabinet Office Circular CO (18) 4.

Recommendations

The Minister for Emergency Management recommends that the Committee:

1 **Note** that GeoNet and the National Seismic Hazard Model provide fundamental support for effective management of geological hazard risks and emergencies in New Zealand, supporting emergency management across the '4Rs': risk reduction, readiness, response, and recovery.

2 **Note** that an immediate short-term funding shortfall exists for GeoNet for the 2021/22 and the 2022/23 financial years, and funding expires for the National Seismic Hazard Model in August 2022.

3 **Note** that an out of cycle request is being made to provide for certainty of funding to allow the earliest ordering of specialist sensor equipment in the face

of global supply chain issues and the resumption of the necessary operational activities to support an effective GeoNet system.

4 **Agree** to provide bridging funding for a total of $15.8 million over two years for GNS Science as follows:

4.1 $4.1 million for the 2021/22 financial year and $7.2 million for the 2022/23 financial year to support the required investment to sustain GeoNet until a longer-term solution is presented.

4.2 $4.5 million for the 2022/23 financial year to support the continuance of the National Seismic Hazard Model, similarly until a longer-term solution is presented.

5 **Note** that the Minister of Finance has approved the establishment of a new multi-category appropriation "Services for Hazards Management" in Vote Business, Science and Innovation, to be administered by the Ministry of Business Innovation and Employment and with the Minister for Emergency Management as the appropriation Minister;

6 **Note** that the Minister of Finance has agreed that the single overarching purpose of this appropriation is to ensure hazards management is based on science-informed data and information services as measured by the percentage of contracts being monitored and performance assessed within agreed timeframes;

7 **Note** that the Minister of Finance and the Minister for Emergency Management have agreed that the categories for this appropriation should be as follows:

Title	**Type**	**Scope**
Services for Hazards Management	Non-Departmental Output Expense	This category is limited to purchasing products and services from GeoNet and the National Seismic Hazards Model.
Capital to Support Services for Hazards Management	Non-Departmental Capital Expenditure	This category is limited to capital investment in GNS Science Ltd for its GeoNet infrastructure.

8 **Agree** to increase expenditure to provide for costs associated with the new multi-category appropriation described in recommendations 5, 6 and 7 above, with the following impacts on the operating balance and net core Crown debt:

	$m – increase / (decrease)				
Vote Business Science and Innovation	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & Outyears**

Operating Balance and Net Core Crown Debt Impact	1.900	8.700	-	-	-
Net Core Crown Debt Only Impact	2.200	3.000	-	-	-
Total	4.100	11.700	-	-	-

9 **Approve** the following changes to appropriations to give effect to the policy decisions above, with a corresponding impact on the operating balance and net core Crown debt:

	$m – increase / (decrease)				
Vote Business Science and Innovation **Minister for Emergency Management**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & Outyears**
Multi- Category Expenses and Capital Expenditure:					
Services for Hazards Management MCA	-	-	-	-	-
Non-departmental Output Expense:					
Services for Hazards Management MCA	1.900	8.700	-	-	-
Non-departmental Capital Expenditure:					
Capital for Services for Hazards Management MCA	2.200	3.000	-	-	-
Total Multi-Category Expenses and Capital Expenditure: Services for Hazards Management	4.100	11.700	-	-	-
Total Operating	1.900	8.700	-	-	-
Total Capital	2.200	3.000	-	-	-

10 **Agree** that the proposed changes to appropriations for the 2021/22 financial year above be included in the 2021/22 Supplementary Estimates and that, in the interim, the increase be met from Imprest Supply;

11 **Agree** that that the operating balance and net core Crown debt impact in recommendation 8 above of expenses incurred under recommendation 9 above be charged against the between-Budget contingency established as part of Budget 2021, and that the net core Crown debt only impact in recommendation 8 above of capital expenditure incurred under recommendation 9 above charged as a pre-commitment against the Budget 2022 capital allowance;

12 **Direct** officials to work across agencies to investigate and prepare a long-term sustainable funding solution for GeoNet and the National Seismic Hazard Model, in the context of broader science-based hazards management infrastructure and services, for Cabinet consideration in Budget 2023; and

13 **Invite** the Minister for Emergency Management to report back to Cabinet by June 2022 ahead of a Budget 2023 bid, to update Cabinet on the progress achieved toward a future sustainable solution, and possible future ministerial and agency responsibility arrangements, and investment needs, including considering the appropriate proportion of funding by service users and by the Crown in recognition of the core public benefit of these programmes.

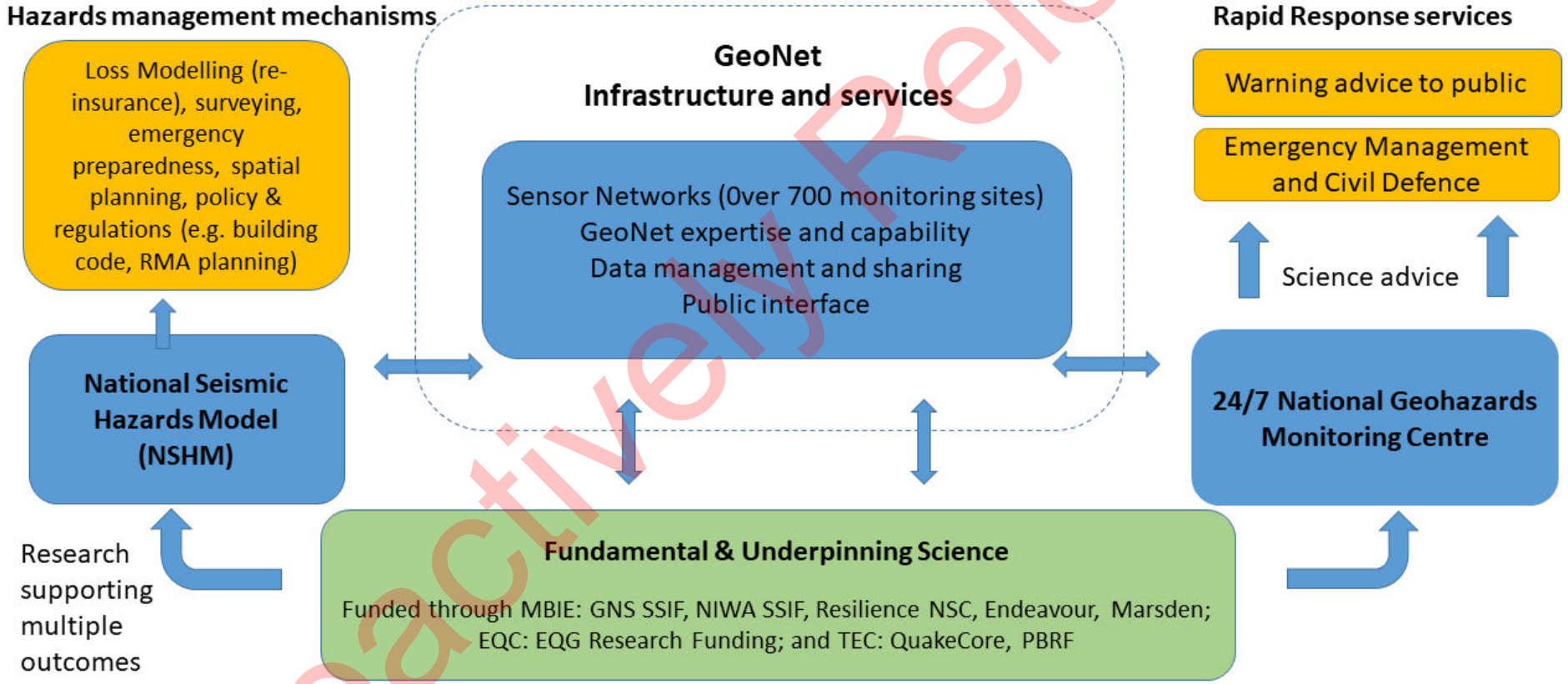
Authorised for lodgement

Hon Kiritapu Allan
Minister for Emergency Management

Appendix 1

Hazards Platforms deliver science-informed data and information

Supporting natural hazards management across the 4Rs –
risk reduction, readiness, response, & recovery



Appendix 2

Examples of risks to products and services that would be incurred with the existing GeoNet 2021/22 financial year funding envelope of $18.9 million:

Output/Service	Users	Examples of risk/impact with underfunding
Earthquake Catalogue	Domestic and international researchers, EQC and insurers	**Degraded research quality:** less comprehensive research with wider uncertainty; cannot uphold reputation for scientific rigour, resulting in reduced international investment**.** **Reduced catalogue completeness**: reduced understanding of our active hazard environment, impacting NZ's understanding of its risk. **Degraded input into infrastructure resilience and design codes**: infrastructure is at higher risk to unexpected events, long-term degradation. **Increased potential to overlook serious hazards in land use planning and resource management** (e.g. where we build dams). **Risk to participation in international initiatives** (e.g. the Comprehensive Nuclear-Test-Ban Treaty Organisation or Pacific Tsunami Warning System).
Volcanic Monitoring Data (e.g. gas levels, seismic data, water sample analysis)	Department of Conservation (DoC), Public, Metservice, researchers	**Degraded monitoring:** cannot effectively deliver on international obligations/initiatives such as Volcanic Ash Advisory for domestic and international aviation. **Degraded research quality**: less comprehensive research with wider uncertainty; cannot uphold reputation for scientific rigour and cannot investigate impact of volcanic hazards on humans and infrastructure. **Increased potential to overlook serious hazards in land use planning and resource management** (e.g. changes in magma location).
Eruption Detection Systems	DoC, Ruapehu Alpine Lifts, Public	**Degraded detection of volcanic eruption and associated hazards** (e.g. lahars) and **increased risk to life** (280k skiers on Ruapehu/year and 130k walkers on Tongariro).
National Geohazards Monitoring Centre	Researchers, NEMA/CDEM	Degraded products and services could result in **reduced ability to locate earthquakes, assess tsunami, and identify volcanic eruptions quickly**, and slows efficient delivery of initial science advice. This fuels an environment of **high uncertainty,** which **negatively impacts life safety**

		(e.g. tsunami evacuation) and **inhibits recovery** (e.g. where to deploy resources).
Tsunami threat maps	NEMA/CDEM, Public	Reduced investment in expansion of scenarios and implementation of pre-calculated tsunami threat maps **inhibits improvements in initial advice** that support public messaging and emergency management alerting and **increases threat to life safety** in a tsunami event.
Landslide forecasting	NEMA/CDEM, Public, Waka Kotahi, technical experts (e.g. engineers)	Inability to develop and implement earthquake and rainfall induced landslide forecasting **reduces possible mitigation of landslide effects** and could **slow response times to landslide impacts** following a geohazard event (e.g. large earthquake).
Scientific expert advisory panels	NEMA, National Geohazards Monitoring Centre (NGMC), Government, public	Science expert panels are **under-prepared to respond,** and degradation of GeoNet Data and GeoNet Rapid products **reduces the speed at which they are able to provide refined advice**.
Social science input into Data and Rapid products	Researchers, NEMA/CDEM, Government, EQC, Public	Lack of investment in improvements to understandability and effectiveness, particularly of GeoNet Rapid products, leads to **reduced effectiveness of advice products** and **sub-optimal decision-making and risk reduction.**
GeoNet data sets	EQC and reinsurers	**Negative impact on NZ's understanding of its risk** and therefore ability to access reinsurance markets.

Cabinet Government Administration and Expenditure Review Committee

Minute of Decision

Bridging Funding for GeoNet and the National Seismic Hazard Model

Portfolio **Emergency Management**

On 16 December 2021, the Cabinet Government Administration and Expenditure Review Committee:

1 **noted** that GeoNet and the National Seismic Hazard Model provide fundamental support for effective management of geological hazard risks and emergencies in New Zealand, supporting emergency management across the '4Rs': risk reduction, readiness, response, and recovery;

2 **noted** that an immediate short-term funding shortfall exists for GeoNet for the 2021/22 and the 2022/23 financial years, and funding expires for the National Seismic Hazard Model in August 2022;

3 **noted** that an out of cycle request is being made to provide for certainty of funding to allow the earliest ordering of specialist sensor equipment in the face of global supply chain issues and the resumption of the necessary operational activities to support an effective GeoNet system.

4 **agreed** to provide bridging funding for a total of $15.8 million over two years for GNS Science as follows:

4.1 $4.1 million for the 2021/22 financial year and $7.2 million for the 2022/23 financial year to support the required investment to sustain GeoNet until a longer-term solution is presented.

4.2 $4.5 million for the 2022/23 financial year to support the continuance of the National Seismic Hazard Model, similarly until a longer-term solution is presented;

5 **noted** that the Minister of Finance has approved the establishment of a new multi-category appropriation "Services for Hazards Management" in Vote Business, Science and Innovation, to be administered by the Ministry of Business Innovation and

Employment and with the Minister for Emergency Management as the appropriation Minister;

6 **noted** that the Minister of Finance has agreed that the single overarching purpose of this appropriation is to ensure hazards management is based on science-informed data and information services as measured by the percentage of contracts being monitored and performance assessed within agreed timeframes;

7 **noted** that the Minister of Finance and the Minister for Emergency Management have agreed that the categories for this appropriation should be as follows:

Title	Type	Scope
Services for Hazards Management	Non-Departmental Output Expense	This category is limited to purchasing products and services from GeoNet and the National Seismic Hazards Model.
Capital to Support Services for Hazards Management	Non-Departmental Capital Expenditure	This category is limited to capital investment in GNS Science Ltd for its GeoNet infrastructure.

8 **agreed** to increase expenditure to provide for costs associated with the new multi-category appropriation described in paragraphs 5, 6 and 7 above, with the following impacts on the operating balance and net core Crown debt:

	$m – increase / (decrease)				
Vote Business Science and Innovation	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & Outyears**
Operating Balance and Net Core Crown Debt Impact	1.900	8.700	-	-	-
Net Core Crown Debt Only Impact	2.200	3.000	-	-	-
Total	4.100	11.700	-	-	-

9 **approved** the following changes to appropriations to give effect to the policy decisions above, with a corresponding impact on the operating balance and net core Crown debt:

	$m – increase / (decrease)				
Vote Business Science and Innovation **Minister for Emergency Management**	**2021/22**	**2022/23**	**2023/24**	**2024/25**	**2025/26 & Outyears**
Multi- Category Expenses and Capital Expenditure:					
Services for Hazards Management MCA	-	-	-	-	-
Non-departmental Output Expense:					
Services for Hazards Management MCA	1.900	8.700	-	-	-
Non-departmental Capital Expenditure:					
Capital for Services for Hazards Management MCA	2.200	3.000	-	-	-
Total Multi-Category Expenses and Capital Expenditure: Services for Hazards Management	4.100	11.700	-	-	-
Total Operating	1.900	8.700	-	-	-
Total Capital	2.200	3.000	-	-	-

10 **agreed** that the proposed changes to appropriations for the 2021/22 financial year above be included in the 2021/22 Supplementary Estimates and that, in the interim, the increase be met from Imprest Supply;

11 **agreed** that that the operating balance and net core Crown debt impact in paragraph 8 above of expenses incurred under paragraph 9 above be charged against the between-Budget contingency established as part of Budget 2021, and that the net core Crown debt only impact in paragraph 8 above of capital expenditure incurred under paragraph 9 above charged as a pre-commitment against the Budget 2022 capital allowance;

12 **directed** officials to work across agencies to investigate and prepare a long-term sustainable funding solution for GeoNet and the National Seismic Hazard Model, in the context of broader science-based hazards management infrastructure and services, for Cabinet consideration in Budget 2023;

13 **invited** the Minister for Emergency Management to report back to Cabinet by June 2022 ahead of a Budget 2023 bid, to update Cabinet on the progress achieved toward a future sustainable solution, and possible future ministerial and agency responsibility arrangements and investment needs, including considering the appropriate proportion of funding by service users and by the Crown in recognition of the core public benefit of these programmes.

Rebecca Davies
Committee Secretary

Present:
Hon Grant Robertson (Chair)
Hon Dr Megan Woods
Hon Chris Hipkins
Hon Nanaia Mahuta
Hon Damien O'Connor
Hon Stuart Nash
Hon Peeni Henare
Hon Michael Wood
Hon Kiri Allan
Hon Dr David Clark
Hon Meka Whaitiri
Deborah Russell, MP

Officials present from:
Office of the Prime Minister
Officials Committee for GOV

Cabinet

Minute of Decision

Report of the Cabinet Government Administration and Expenditure Review Committee: Period Ended 17 December 2021

On 20 December 2021, Cabinet made the following decisions on the work of the Cabinet Government Administration and Expenditure Review Committee for the period ended 17 December 2021

GOV-21-MIN-0066 **Bridging Funding for GeoNet and the National Seismic Hazard Model** CONFIRMED
Portfolio: Emergency Management

Michael Webster
Secretary of the Cabinet