

To: Minister for Canterbury Earthquake Recovery



In Confidence

PORT HILLS ZONING REVIEW – UPDATED MODELLING FROM GNS SCIENCE

Date	16 August 2013	Priority	URGENT
Report No	M/13-14/062	File Reference	A318805/A319435

Action Sought	Deadline
<p>Hon Gerry Brownlee <i>Minister for Canterbury Earthquake Recovery</i></p> <ol style="list-style-type: none"> 1. Agree that, in response to revised rockfall risk modelling from GNS Science the following changes be made to zoning decisions: <ol style="list-style-type: none"> 1.1. 92 Bridle Path Road and 96 Bridle Path Road will be rezoned red; and 1.2. 23A Ross Terrace, 21 Buxtons Road and 23 Buxtons Road will be rezoned green. 2. Sign the attached draft letter to the Minister of Finance seeking agreement that you both exercise your Power to Act for the zoning changes outlined above. 3. Forward a copy of this paper to the Minister of Finance. 4. Agree that CERA officials will develop a brief summary of the zoning changes for you to discuss with your Cabinet colleagues as an oral item if you wish. 	21 August 2013

Contact for Telephone Discussion (if required)

Name	Position	Telephone	1st Contact
Benesia Smith	Deputy Chief Executive, Strategy and Governance		<input checked="" type="checkbox"/>
Amanda Shaw	Senior Advisor, Ministerial and Executive Services		<input type="checkbox"/>

Minister's office comments

- Noted
- Seen
- Approved
- Needs change
- Withdrawn
- Not seen by Minister
- Overtaken by events
- Referred to

withheld under section 9(2)(a)

Comments

PORT HILLS ZONING REVIEW – UPDATED MODELLING FROM GNS SCIENCE

Purpose

- 1 This paper advises you of recently received updated rockfall risk modelling data from GNS and seeks your direction on whether you wish to seek the Minister of Finance's agreement to any zoning changes as a result.

Executive Summary

- 2 On 18 July 2013 Canterbury Earthquake Recovery Authority (CERA) officials were advised that GNS Science (GNS) had provided Christchurch City Council (CCC) with a revised set of the rockfall risk models for the Port Hills.
- 3 The changes in the location of the risk line appear to have a notable impact on a small number of properties, with implications for the zoning of seven properties (**Attachment A**). Two residential properties are green zoned and appear to be exposed to a higher level of risk than previously understood. Five other properties were rezoned red on 15 July and are now shown by the modelling to be exposed to a decreased level of risk.
- 4 Most of the new information was provided to the Port Hills Zoning Review Advisory Group (Advisory Group). However, with regard to the two green zoned properties, the new information was not made available to the Advisory Group.
- 5 Officials consider that zoning changes for these seven properties should be considered. There are several options for decision-making, including:
 - a. **Option 1** – Make no changes to zoning decisions.
 - b. **Option 2** – Consider on a case-by-case basis whether there is a clearcut case for changing the zoning decisions in relation to each property.
 - c. **Option 3** – Change the zoning of all seven properties to reflect the updated rockfall risk modelling.
- 6 There are arguments in favour of each option, and risks associated with each. However, officials recommend Option 2, under which approach it is considered that five properties should be rezoned:
 - a. 92 Bridle Path Road to be rezoned red;
 - b. 96 Bridle Path Road to be rezoned red;
 - c. 23A Ross Terrace to be rezoned green;
 - d. 21 Buxtons Road to be rezoned green; and
 - e. 23 Buxtons Road to be rezoned green.
- 7 CERA officials recommend that you consider using the Power to Act for joint Ministers (to take decisions in respect of any unforeseen matters arising from the Port Hills Zoning Review) to effect these zoning changes. A draft letter to the Minister of Finance is attached for your consideration (**Attachment B**).

- 8 Alternatively, if you would prefer to seek the agreement of your Cabinet colleagues, a draft Cabinet paper is also attached for your consideration (**Attachment C**).
- 9 The estimated net cost of the recommendations to purchase 92 and 96 Bridle Path Road is withheld under section 9(2)(j) and can be met from existing appropriations. The estimated net saving of the recommendation to rezone three properties green is \$244,000.

Consultation

- 10 Treasury and the Christchurch City Council was consulted on the recommendations in this paper. The Department of the Prime Minister and Cabinet was informed.

Recommendations

11 It is recommended that you:

1. **Note** that GNS Science has provided a revised digital set of the rockfall risk models for the Port Hills;
2. **Note** that the revised rockfall risk modelling appears to be relevant to the zoning of only seven properties;
3. **Note** that CERA officials and a GNS representative visited six of the seven properties on 24 July 2013, and discussed the updated modelling data for all seven properties;
4. **Note** that on 15 July 2013 Cabinet delegated Power to Act to you and the Minister of Finance (Joint Ministers) to take decisions in respect of any unforeseen matters arising from the Port Hills Zoning Review [CAB Min (13) 24/8 refers];
5. **Agree** that, in response to the updated risk modelling:
EITHER
 - 5.1. **Option 1** – no changes will be made to zoning decisions; **YES / NO**
 - OR**
 - 5.2. **Option 2** – zoning for the seven properties noted in Attachment A to this paper will be considered on a case-by-case basis as to whether there is a clearcut case for changing the zoning decisions in relation to each property [*recommended*]; **YES / NO**
 - OR**
 - 5.3. **Option 3** – all seven properties noted in Attachment A to this paper will be rezoned red and green respectively to reflect the updated rockfall risk modelling; **YES / NO**
6. **Agree**, in accordance with the Option 2 approach, that the properties at 92 Bridle Path Road and 96 Bridle Path Road will be rezoned red; **YES / NO**
7. **Agree**, in accordance with the Option 2 approach, that the properties at 23A Ross Terrace, 21 Buxtons Road and 23 Buxtons Road will be rezoned green; **YES / NO**
8. **Agree**, in accordance with the Option 2 approach, that with the exception of Recommendations 6 and 7 above no other zoning changes will be considered based on the revised risk modelling; **YES / NO**

Background

Port Hills Zoning Review process

- 12 The Port Hills Zoning Review Advisory Group undertook a review of zoning on the Port Hills and provided you with final recommendations for changes to zoning in April 2013.
- 13 The primary geotechnical resource informing this review was GNS modelling for life safety risk due to cliff collapse and rockfall. However, the Advisory Group also considered other reports and ground truthing data and received advice from experts from GNS, CCC and CERA, including advice on limitations of the modelling.

Cabinet decisions on Port Hills Zoning Review

- 14 On 15 July 2013 Cabinet made decisions on zoning changes resulting from the Port Hills Zoning Review [CAB Min (13) 24/8 refers].
- 15 Cabinet delegated Power to Act to you and the Minister of Finance (Joint Ministers) to take decisions in respect of any unforeseen matters arising from the Port Hills Zoning Review (Zoning Review).

Updated risk modelling

- 16 On 18 July 2013 CERA officials were advised that GNS had provided CCC with a revised digital set of the rockfall risk models for the Port Hills. The revisions reflect further information collected by GNS in 2012, particularly in relation to ground truthing data.
- 17 We understand from GNS that this data was known to them in November 2012, although the model itself was not updated until recently, and that in most cases the additional information was discussed with the Port Hills Zoning Review Advisory Group (Advisory Group) during the Zoning Review. However, the changes were not represented visually in the maps until recently.
- 18 CCC intends to release the updated risk modelling information on its website in the future although the exact timeframe has not been decided and it is unlikely to be before the final zoning announcement is made.

Comment

Officials' review of updated information

- 19 CERA officials reviewed maps of the updated rockfall risk modelling information against the zoning decisions agreed by Cabinet on 15 July 2013. Based on that preliminary view it appeared that for most properties any change in location of the risk line is so small that it does not warrant further consideration of the zoning for these properties. Also, in some cases the changes reflect information about limitations of previous modelling that was already known to the Advisory Group, and their recommendations aligned well with the changes.

- 20 However, there are 7 properties where officials consider the change in risk modelling is notable, and where further changes to zoning might need to be considered:

	Property name	Property type	Current zoning	Effect of changes in risk modelling
1.	92 Bridle Path Road	Residential	Green	Properties now appear exposed to an increased level of risk
2.	96 Bridle Path Road	Residential	Green	
3.	21 Buxtons Road	Vacant	Red	Properties now appear exposed to a decreased level of risk
4.	23 Buxtons Road	Vacant		
5.	37 Ross Terrace	Vacant		
6.	23A Ross Terrace	Vacant		
7.	Taylor's Mistake	Large CCC owned land parcel	Part red – in accordance with the risk lines	Bach 33 no longer appears to be within the risk lines

- 21 Maps of these properties are attached, with information about the Advisory Group's reasoning for its recommendations (**Attachment A**).
- 22 After reviewing the maps, officials undertook site visits to 1-6 of the properties listed above on 24 July, with a representative of GNS. The reason for these visits was to understand the basis for the changes to the risk modelling, and to understand where the updated information had already been provided to the Advisory Group and was considered in the course of the Zoning Review.
- 23 Bach 33 at Taylor's Mistake was not visited at this time. However, the GNS representative outlined and demonstrated the relevant modelling in relation to that property for participants on the site visit.
- 24 On 25 July CERA officials also met with a CCC representative to discuss the updated information and the recommendations in this paper.

Implications of the updated risk modelling

- 25 In the course of the site visits and discussions, it was established that:
- For properties 3-7 above, GNS has advised that the information used to update the model was provided to and considered by the Advisory Group during the Zoning Review, although the risk lines had not yet been updated at the time.
 - For properties 1-2 above, GNS has advised that the information used to update the model in this area was not provided to the Advisory Group.
- 26 More information about the Advisory Group's reasoning for their recommendations with regard to these properties can be found at **Attachment A**.

Currently red zoned properties (3-7)

- 27 Properties 3-7 in the table above were all rezoned red as part of the Cabinet decisions on 15 July. They now appear to be subject to a lower degree of risk, which could mean they meet the Cabinet criteria to be zoned green.

- Released in the Mirror for Canterbury Earthquake Recovery
- 28 Four of the properties were recommended by the Advisory Group to be rezoned red. One property (23A Ross Terrace) was included in the additional properties you recommended to Cabinet for red zoning due to its risk profile. Bach 33 at Taylors Mistake has a notice under section 124 of the Building Act 2004.
 - 29 CERA officials note that the updated information was available to the Advisory Group. Also, the Advisory Group considered information from other sources during its review, including information about limitations of the GNS model. Officials consider the Advisory Group was well placed to make judgements about the use of this information.
 - 30 However, officials note that the Advisory Group discussed and considered the further information without the benefit of the revised maps depicting the changes.

Currently green zoned properties (1-2)

- 31 Two properties (92 Bridle Path Road and 96 Bridle Path Road) are currently zoned green and appear to be exposed to a higher level of rockfall risk than previously understood. The dwellings now appear to be intersected by the 1 in 10,000 at 2016 risk line.
- 32 As noted above, this new information was not provided to or discussed with the Advisory Group. The Advisory Group recommended that these properties remain zoned green because it understood that the dwellings were outside the area of risk.
- 33 One of the Advisory Group's guiding considerations when making zoning recommendations was that a property affected by rock roll would typically be recommended to be zoned red if the dwelling was entirely within or substantially intersected by the rockfall risk line.
- 34 Under the Port Hills zoning criteria agreed by Cabinet, red zones have been declared where
 - a. the annual individual fatality risk associated with residential dwellings is higher than 1 in 10,000 at 2016 risk levels as per the GNS modelling or there is the potential for immediate cliff collapse or land slip caused or accentuated by the earthquakes with associated risk to life;
 - b. an engineering solution to mitigate the life risk is judged not to be desirable; and
 - c. the health and wellbeing of residents is at risk from remaining in the area for long periods.

Options

- 35 Officials consider there are three options which you may wish to take in response to this updated modelling:
 - a. **Option 1** – Make no changes to zoning decisions.
 - b. **Option 2** – Consider on a case-by-case basis whether there is a clearcut case for changing the zoning decisions in relation to each property. CERA officials consider that this approach would mean that two properties are rezoned red and three properties would return to being zoned green (as they were before the 15 July Cabinet decisions).
 - c. **Option 3** – Change the zoning of all seven properties to reflect the updated rockfall risk modelling. This would mean that two properties are rezoned red, four properties would return to being zoned green (as they were before the 15 July Cabinet decisions), and the boundary of a part-zoned property at Taylors Mistake would shift slightly.

- 36 There are strong arguments in favour of each of the options. There are also risks associated with each.
- 37 Option 1 recognises that there are always limitations on modelling and new information will continue to become available from time to time. This Option could be justified on the basis that zoning decisions were based on the best information available at the time and there is benefit to property owners from certainty and finality in decision making.
- 38 However, if this Option is chosen, there is a risk to occupants of two properties, where it appears that dwellings are exposed to an unacceptable level of risk, and the health and wellbeing of residents would be at risk from remaining in the area for long periods.
- 39 Option 3 would mean that the zoning decisions will appear more consistent with the rockfall risk lines shown on the maps released as part of the zoning announcements. However, these decisions would not be based on the same level of deliberation and investigation as undertaken by the Advisory Group in the course of the Zoning Review and may not stand up to closer scrutiny. This Option would also result in an additional property in the green zone being subject to a section 124 notice. It may also indicate the possibility of further changes in zoning from red to green as more refined risk modelling becomes available. This may create uncertainty for some property owners, particularly those who are reluctant to accept the rezoned status of their property.
- 40 On balance, CERA officials recommend that you seek the Minister of Finance's agreement to Option 2 - the proposal to consider whether there is clearcut case for changing the zoning decisions in relation to each property.
- 41 This Option recognises that in all but two cases the Advisory Group considered the further information which is the basis for the modelling changes, and was in a position to make judgements about limitations of the GNS model. However, this Option also recognises that:
- a. the Advisory Group discussed and considered the further information without the benefit of the revised maps depicting the changes; and
 - b. for two properties, important information was not available to the Advisory Group, and the dwellings on these properties are exposed to what appears to be an unacceptable level of risk.

withheld under section 9(2)(g)(i)

42

- 43 Using this approach CERA officials would recommend that the following properties be rezoned:
- a. 92 Bridle Path Road to be rezoned red
 - b. 96 Bridle Path Road to be rezoned red
 - c. 23A Ross Terrace to be rezoned green (the some zoning as before the 15 July Cabinet decisions)
 - d. 21 Buxtons Road to be rezoned green (the some zoning as before the 15 July Cabinet decisions)

- e. 23 Buxtons Road to be rezoned green (the same zoning as before the 15 July Cabinet decisions).
- 44 It is considered that the annual individual fatality risk associated with the residential dwellings on the properties at 92 and 96 Bridle Path Road is higher than 1 in 10,000 at 2016 risk levels as per the GNS modelling. An engineering solution to mitigate the life risk to this area was judged not to be desirable and the health and wellbeing of residents is considered to be at risk from remaining in the area for long periods.
- 45 It is considered, on the other hand, that the three properties recommended for green zoning are exposed to an annual individual fatality risk less than 1 in 10,000 at 2016 risk levels.
- 46 CERA officials therefore recommend that you consider using the Power to Act for joint Ministers (to take decisions in respect of any unforeseen matters arising from the Port Hills Zoning Review) to effect these zoning changes.

Financial Implications

- 47 The net cost of a Crown offer to purchase 92 Bridle Path Road and 96 Bridle Path Road, taking into account expected insurance recoveries and recoveries from CCC (as per the cost sharing agreement of June 2013), is estimated to be [REDACTED] withheld under section 9(2)(j)
- 48 This cost can be met from existing appropriations. The original appropriation was made in 2012/13 as part of Budget 2013. In July 2013 you and the Minister of Finance agreed to an expense and capital transfer of the \$100.007 million of funding for the Zoning Review decisions from 2012/13 to 2013/14.
- 49 CERA officials estimate if 21 Buxtons Road, 23 Buxtons Road and 23A Ross Terrace are to be rezoned green there would be an estimated [REDACTED] net saving to the Crown in relation to the estimated cost of the Crown purchasing vacant, uninsured improved and commercial properties as advised to Cabinet on 15 July 2013. withheld under section 9(2)(j)
- 50 If you and the Minister of Finance preferred Option 3 and therefore decided to rezone the other two properties green, there would be some further savings to the Crown in relation to the estimated cost of the Crown purchasing 37 Ross Terrace.

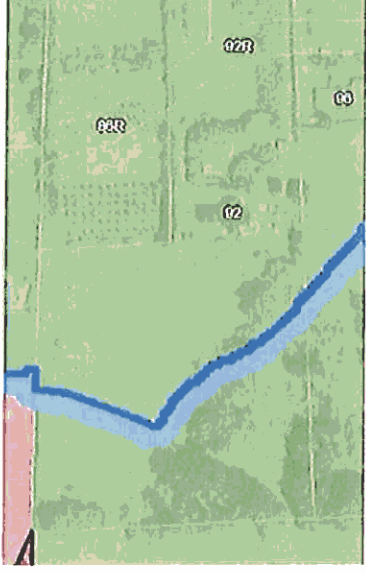

Next Steps

- 51 If you agree to the Option 2 approach outlined above, you and the Minister of Finance can give effect to these zoning changes using your joint Power to Act.
- 52 It is recommended that you sign the attached letter (**Attachment B**) and send it to the Minister of Finance seeking his agreement. You may also wish to outline the zoning changes as an oral item at Cabinet and officials can prepare a brief summary to assist.
- 53 If, however, your preference is to seek Cabinet agreement to the proposed zoning changes officials have drafted a Cabinet committee paper for your consideration (**Attachment C**).
- 54 If decisions are made to change the zoning of affected properties, CERA officials would then update the draft communications materials for the zoning decisions announcement to reflect any changes.

Attachment A

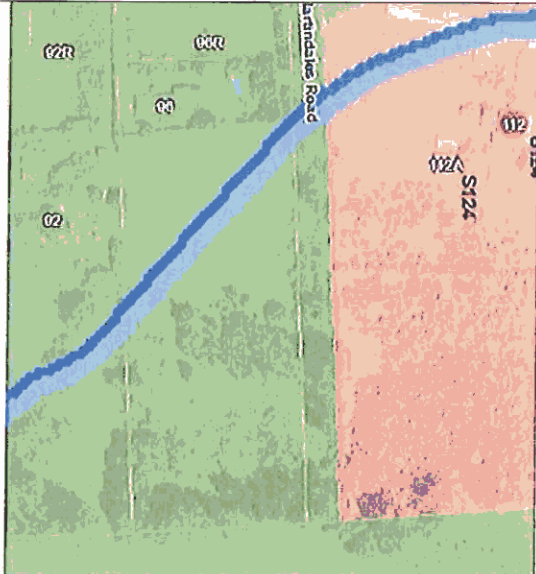
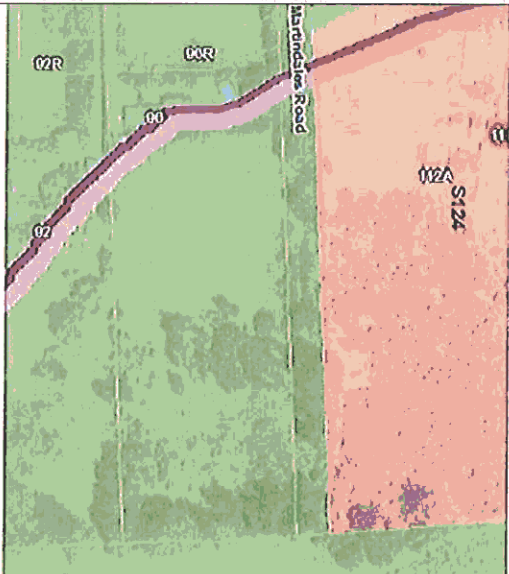
92 Bridle Path Road (Map 11)

- Residential improved property
- withheld under section 9(2)(a)

Previous modelling	Updated modelling
	
<p><i>Pre-review zoning:</i> Green</p> <p><i>Advisory Group's recommendation:</i> Remain zoned green (because the dwellings are outside the life risk safety line)</p> <p><i>Cabinet decision, 15 July 2013:</i> Remain zoned green</p>	<p>Comment:</p> <p>GNS advice is that the dwelling at 92 Bridle Path Rd is intersected by the revised rockfall risk modelling line.</p> <p>A gully feature upslope of the dwelling was previously thought to reduce the risk, as it appeared to direct boulders away from the dwelling. GNS now consider that the gully is not significant enough to reduce the risk.</p> <p>Boulders triggered by the 22 February 2011 event went past a building on this property.</p>
	<p>CERA recommends:</p> <p>Re-zone red</p>

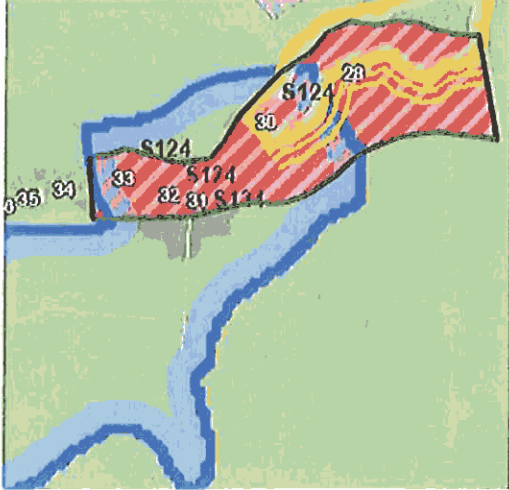
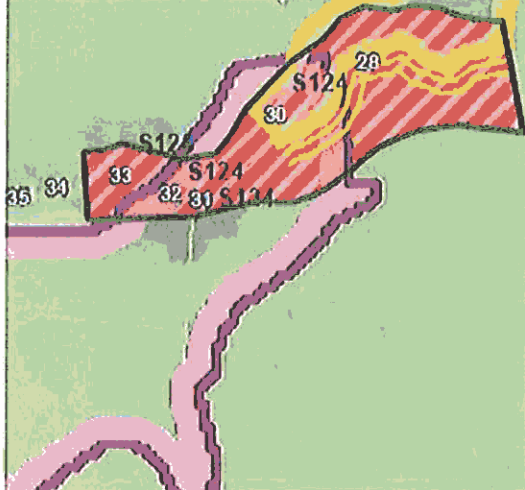
96 Bridle Path Road (Map 11)

- Residential improved property
- withheld under section 9(2)(a)

Previous modelling	Updated modelling
	
<p><i>Pre-review zoning:</i> Green</p> <p><i>Advisory Group's recommendation:</i> Remain zoned green (because the dwelling is outside the life risk safety line)</p> <p><i>Cabinet decision, 15 July 2013:</i> Remain zoned green</p>	<p>Comment:</p> <p>The dwelling at 96 Bridle Path Road appears to be intersected by the rockfall risk modelling line.</p> <p>GNS advice is that the boundary of the area affected by the ground truthing had not been correctly defined previously. GNS has also advised that the risk reduces rapidly from 10^{-4} to 10^{-6} over a relatively small distance so the risk to the property may be overstated.</p>
	<p>CERA recommends:</p> <p>Re-zone red</p>

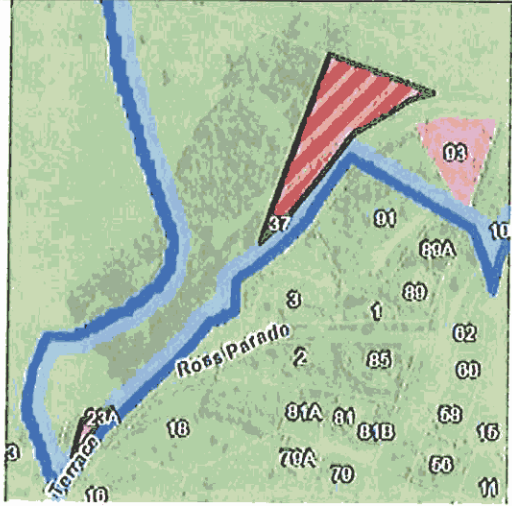
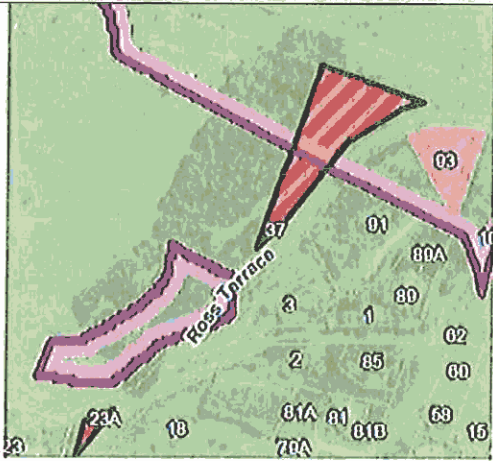
Baches at Taylors Mistake (Map 29)

- Baches on CCC land

Previous modelling	Updated modelling
	
<p><i>Pre-review zoning:</i> Green</p> <p><i>Advisory Group's recommendation:</i> Partially rezoned this property red (in accordance with the risk modelling)</p> <p><i>Cabinet decision, 15 July 2013:</i> Partially rezoned this property red (in accordance with the risk modelling)</p>	<p>Comment:</p> <p>Bach 33 appears to be outside the risk modelling. Bach 33 has a s124 notice.</p> <p>GNS advise that field assessments have indicated that the original ground truthing for this area was incorrect.</p>
	<p>CERA recommends:</p> <p>Remain zoned red</p>

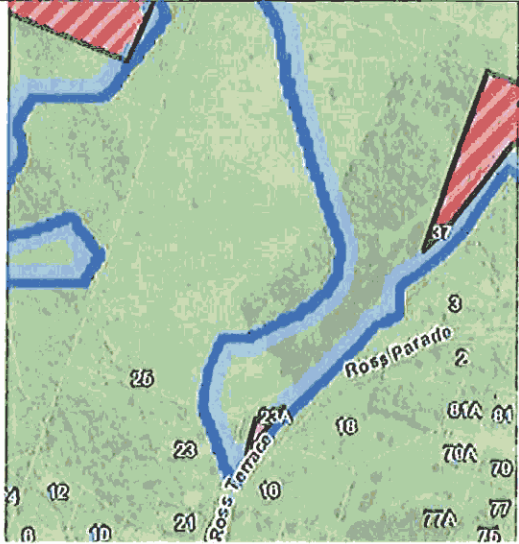

37 Ross Terrace (Map 34)

- Vacant land
- withheld under section 9(2)(a)

Previous modelling	Updated modelling
	
<p><i>Pre-review zoning:</i> Green</p> <p><i>Advisory Group's recommendation:</i> Rezone red</p> <p><i>Cabinet decision, 15 July 2013:</i> Rezone red</p>	<p>Comment: 37 Ross Terrace now appears to be only partially within the rockfall risk modelling line.</p> <p>For other similar properties the Advisory Group has recommended the property be zoned green based on a reasonableness test for vacant land to achieve a sensible outcome.</p> <p>GNS has advised that the boundary of the area affected by the original ground truthing was not correctly defined.</p>
	<p>CERA recommends: Remain zoned red</p>

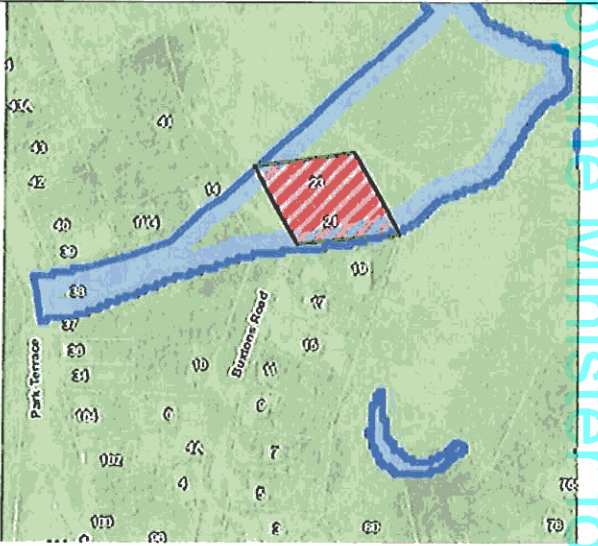
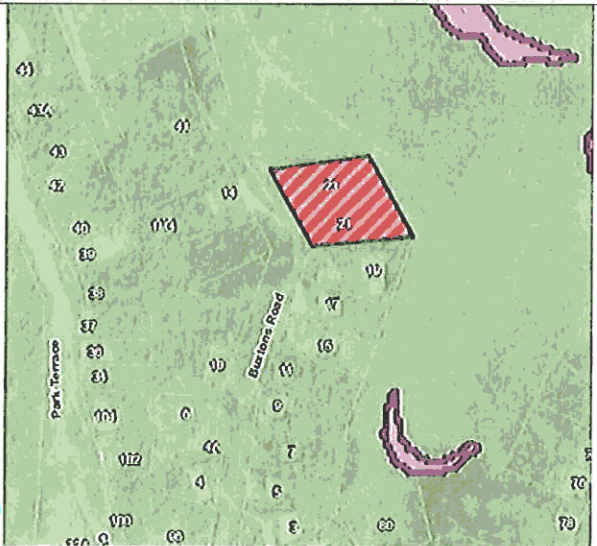
23A Ross Terrace (Map 34)

- Vacant land
- The property has its own title but appears to be treated as being associated with 25 Ross Parade. Both titles are currently owned by the same individual. The north-western boundary of 23A is undeveloped land and not a formed road, although it appears that it may still be legal road.
- **withheld under section 9(2)(a)**

Previous modelling	Updated modelling
	
<p><i>Pre-review zoning:</i> Green</p> <p><i>Advisory Group's recommendation:</i> Remain green (because it is associated with 25 Ross Parade which is largely outside the life risk line)</p> <p><i>Cabinet decision, 15 July 2013:</i> Rezone red (because although it is used with 25 Ross Parade it is a separate title and appears to be subject to an unacceptable level of risk).</p>	<p>Comment: 23A Ross Terrace now appears to be outside the rockfall risk modelling line.</p> <p>GNS has advised that the boundary of the area affected by the original ground truthing was not correctly defined.</p>
	<p>CERA recommends: Re-zone green</p>

21 and 23 Buxtons Road (Map 36)

- Vacant land
- withheld under section 9(2)(a)

Previous modelling	Updated modelling
	
<p><i>Pre-review zoning:</i> Green</p> <p><i>Advisory Group's recommendation:</i> Rezone red</p> <p><i>Cabinet decision, 15 July 2013:</i> Rezone red</p>	<p>Comment: 21 and 23 Buxtons Road appear to be outside the risk modelling line.</p> <p>GNS has advised that the original ground truthing for this area assumed that the gully would focus boulders into it. On further investigation the gully appears to be a relatively minor one with little effect on forcing or concentrating boulders. The risk for the gully area now matches the adjacent area.</p>
	<p>CERA recommends: Re-zone both properties green</p>



Office of Hon Gerry Brownlee

MP for Ilam

Leader of the House

Minister of Transport

Minister for Canterbury Earthquake Recovery

Minister Responsible for the Earthquake Commission

26 AUG 2013

Hon Bill English
Minister of Finance
Parliament Buildings
WELLINGTON 6160

Dear Bill

I seek your agreement that we exercise our joint Power to Act to take decisions in respect of any unforeseen matters arising from the Port Hills zoning review which was authorised by Cabinet on 15 July 2013 [CAB Min (13) 24/8 refers].

Officials advise me that GNS Science has recently provided Christchurch City Council with a revised set of the rockfall risk models for the Port Hills, as a result of collecting further information on the modelled areas. Further detail is outlined in the attached briefing paper from the Canterbury Earthquake Recovery Authority.

For the most part, the Port Hills Zoning Review Advisory Group (Advisory Group) was informed of this new information at the time they undertook a review of the zoning for these areas. The Advisory Group was not aware of the revised information in relation to 92 Bridle Path Road and 96 Bridle Path Road at the time of the zoning review, and it recommended that the properties remain zoned green because the modelling indicated the dwellings were outside the area of risk.

After considering the revised rockfall risk information I consider that the properties at 92 Bridle Path Road and 96 Bridle Path Road are exposed to what is considered to be an unacceptable level of risk, and are consistent with the criteria agreed by Cabinet to be zoned red.

I also consider that, after reviewing the revised rockfall risk modelling, the following properties are consistent with the criteria agreed by Cabinet to be zoned green:

- 21 Buxtons Road
- 23 Buxtons Road
- 23A Ross Terrace

I request that you respond as soon as possible.

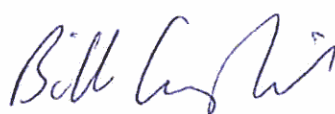
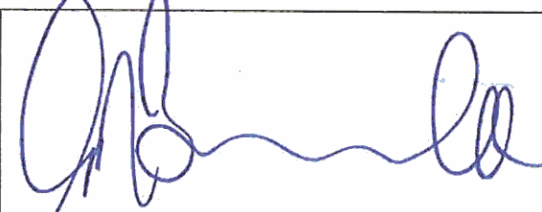
Yours sincerely

Hon Gerry Brownlee
Minister for Canterbury Earthquake Recovery

- 2 SEP 2013

It is recommended that you:

- | | Minister English | Minister Brownlee |
|---|---|---|
| 1 Agree that the properties at 92 Bridle Path Road and 96 Bridle Path Road be rezoned red; and | <input checked="" type="radio"/> YES / <input type="radio"/> NO | <input checked="" type="radio"/> YES / <input type="radio"/> NO |
| 2 Agree that the properties at 23A Ross Terrace, 21 Buxtons Road and 23 Buxtons Road be rezoned green. | <input checked="" type="radio"/> YES / <input type="radio"/> NO | <input checked="" type="radio"/> YES / <input type="radio"/> NO |

 Hon Bill English Minister of Finance	 Hon Gerry Brownlee Minister for Canterbury Earthquake Recovery
Date: 27 8 / 2013	Date: 24 8 / 2013

Attachment – Briefing paper from the Canterbury Earthquake Recovery Authority dated 16 August 2013 – "Port Hills Zoning Review – Updated Modelling from GNS Science".