

9(2)(a)

From: Hugh Cowan
Sent: Saturday, 4 September 2010 11:42 p.m.
To: 9(2)(a)
Subject: FWD: RE: Learning from Earthquake team from Auckland
Attachments: RE: Learning from Earthquake team from Auckland

Hi 9(2)(a) grateful if you would pass this on to 9(2)(a) suggest that T&T offer to embed him in our response as he has the most up to date knowledge of area soils. Could help to email 9(2)(a) get his input and plan ahead.

9(2)(a)

From: 9(2)(a)@canterbury.ac.nz>
Sent: Saturday, 4 September 2010 8:34 p.m.
To: 9(2)(a)
Cc: 9(2)(a) Hugh Cowan;
Subject: RE: Learning from Earthquake team from Auckland

Dear friends and colleagues,

We were shocked to hear the news here in Macedonia, but were relieved to learn that the worst has been avoided. My daughter was alone in the house at Ilam, but fortunately, everything was fine, and she reacted calmly (I guess the abundant experience with earthquakes in Japan helped her). We established contact very soon after the earthquake (to my great relief, because the first USGS information was suggesting much worst scenario: M=7.4, R=30km, D=16km).

We are four staff and 10 PhD students here from UC, starting our trip back from today to Tuesday. I will be back quite late (next Thursday morning), though will try to change the ticket (chances are slim though).

Anyway, starting from Friday, I will be engaged in a detailed reconnaissance related to geotechnical aspects (in particular liquefaction). I am sure all my colleagues currently out of NZ share the same sentiment and are eager to join teams and help once they are back.

In the meantime wish you all the best, and take care.

Regards,

9(2)(a)

9(2)(a)

Department of Civil and Natural Resources Engineering University of Canterbury Private Bag 4800 Christchurch, 8140 New Zealand

9(2)(a)

@canterbury.ac.nz

From: 9(2)(a)

Sent: Sat 4/09/2010 4:34 p.m.

To: 9(2)(a)

Cc: 9(2)(a)

Subject: RE: Learning from Earthquake team from Auckland

Hugh Cowan; 9(2)(a)

Dear Colleagues;

I am pleased to report that our family is all well. The only minor casualty was 9(2)(a) who partially dislocated her toe on the leg of her drawer cabinet amidst the (dark and) confusion during the initial shock.

I have a new lesson for you all: secure your custard powder well as it takes forever to clean it off the items in the pantry! We have no major damage, and even the (unsecured) china cabinet had no breakages.

Our electricity was on until the first aftershock but was then down until about 10-11am, which restored the water at the same time so aside from not being able to use the drainage system, we are in a state of normality. It is rather surreal actually, and we need to pinch ourselves occasionally to assure ourselves this is real!

The ground motion during the main event felt to have a reasonably strong motion at about 2 sec, predominantly north-south (going by the shelves that have disgorged their contents) and quite a long duration. 9(2)(a) sent me some preliminary records (while I was writing this) which showed that it was closer to 3 sec with about 150 mm amplitude (0.2 g) at 9(2)(a) high school!

My trip to the after-hours surgery revealed that most masonry chimneys in the St Albans - North CBD were collapsed, along with numerous parapets on the commercial (and some residential) buildings. The only other significant structural damage I observed was a very old timber sales/storage building on Edgeware Rd that had developed a soft storey lower (of two) storey with about 8-10% drift. The modern bank about 20 m away lost its brick facade - probably a casualty of the ties loosened during construction that 9(2)(a) was investigating when I was working at BRANZ.

We are not overly well organised, with many at the European conference. 9(2)(a) is probably surveying buildings as I type. I think that 9(2)(a) may be the only others still here. I will give them a call shortly to check that they are aware of your visit and discuss plans.

I aim to meet you at the airport in the morning, but will be in touch with 9(2)(a) (provided our electricity is still on) should anything else happen. (Our cell phones were operating until about 9am.)

Finally, while it is a beautiful day here today, weather wise, please be prepared for the bad weather that is forecast.

Now back to cleaning up the house!

Kind regards,

9(2)(a)

From: 9(2)(a) @auckland.ac.nz]

Sent: Sat 04/09/2010 12:40 p.m.

To:

9(2)(a)

Cc: 9(2)(a) 9(2)(a)

Hugh Cowan

Subject: Learning from Earthquake team from Auckland

Dear colleagues at UOC,

I hope you all are safe from the earthquake this morning and that life is slowly returning to normal.

Given the magnitude and dramatic consequences of the quake, 9(2)(a) and I have decided that it is prudent for us to come and study its effect first-hand. Whilst we are mindful of becoming earthquake tourists, we hope to catalogue some of the details of the failure before it is all cleaned up. (Often we do not get a chance to do this because of our isolation.) We will certainly be looking for not only structures that failed, but also ones that have survived.

And since the event really is in your neighbourhood, we want to make sure that we make contact with you all in the first instance. Advising you of our visit and also naturally appealing for your assistance to make sure we maximise the benefit of our visit.

We (about 10 of us) have at this stage booked plane tickets to arrive in Christchurch tomorrow (Sunday), 8:10am. We do not have a return date set yet but will assess the situation as we learn more information on the ground.

9(2)(a) and my cellphone numbers are 9(2)(a) and 9(2)(a) respectively, should you want to get in touch with us. We look forward to hearing that you are all safe and well either via email or in person soon.

With best regards,

9(2)(a)

Dept. of Civil and Environmental Engineering University of Auckland 9(2)(a)@auckland.ac.nz
<mailto:9(2)(a)@auckland.ac.nz>

9(2)(a)

This email may be confidential and subject to legal privilege, it may not reflect the views of the University of Canterbury, and it is not guaranteed to be virus free. If you are not an intended recipient, please notify the sender immediately and erase all copies of the message and any attachments.

Please refer to <http://www.canterbury.ac.nz/emaildisclaimer> for more information.

9(2)(a)

From: Hugh Cowan
Sent: Saturday, 4 September 2010 11:14 p.m.
To: 9(2)(a)
Subject: FWD: RE: Learning from Earthquake team from Auckland
Attachments: RE: Learning from Earthquake team from Auckland

9(2)(a)

suggest you get onto this group mail list. Hope attached is helpful. Cheers Hugh

9(2)(a)

From: 9(2)(a)@canterbury.ac.nz>
Sent: Saturday, 4 September 2010 6:58 p.m.
To: 9(2)(a)
Cc: 9(2)(a); Hugh Cowan; 9(2)(a)
Subject: RE: Learning from Earthquake team from Auckland
Attachments: CHCH Hospital.doc; CanNet-Some Rough prelim records.doc

Dear 9(2)(a)

Here is a very rough preliminary picture of shaking around Christchurch from some CanNet instruments. It seems relatively modest for such a magnitude.

Cheers,

9(2)(a)

At 08:03 a.m. 4/09/2010, 9(2)(a) wrote:

Hi all;

The situation is that the CBD is cordoned off and study teams are unlikely to be granted access to that tomorrow. The university is closed and we are not able to access it without permission or invitation to be there until Monday 13 Sep.

In consultation with 9(2)(a) the best way we can assist/have access is to join in the assessment teams which are being trained and commissioned tomorrow. The briefing is in the HQ in front of the Museum (which we can only access from the South via Riccarton Ave, Montreal St, etc.) at 9am, after which teams will be trained and sent out to assigned sections of the CBD. Please be prepared with sunhat, sunscreen etc. 9(2)(a) you provide a list of what else needs to be packed/brought?) There are gale force norwesters forecast for tomorrow too.

Having said that I get the impression that you may want to look at things on your own rather than assist with the assessments. There are numerous URM buildings collapsed around the city and plenty of liquefaction for people to look at too.

Once I have an idea of how everyone is placed, I will notify other CNRE staff at UC about what we are doing. Are there any postgrads that we should invite to assist. We don't want to make a general request.

Please keep the discussion going so everyone is in the loop.

Regards,

9(2)(a)

From: 9(2)(a)@auckland.ac.nz]
Sent: Sat 04/09/2010 5:21 p.m.
To: 9(2)(a)
Cc: 9(2)(a); Hugh Cowan; 9(2)(a)
Subject: RE: Learning from Earthquake team from Auckland

9(2)(a)

I recall from the Edgecumbe EQ that the worst house problem were the pantry cupboards. All the bottles fell off the shelves - mixed vinegar, cooking oil, tomato sauce etc turned out to be very hard to clean up.

See you tomorrow

9(2)(a)

-----Original Message-----

From: 9(2)(a)@canterbury.ac.nz]

Sent: Saturday, 4 September 2010 4:34 p.m.

To: 9(2)(a)

9(2)(a)

Cc: 9(2)(a) Hugh Cowan 9(2)(a)

Subject: RE: Learning from Earthquake team from Auckland

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Now back to cleaning up the house!

Kind regards,

9(2)(a)

From: 9(2)(a)@auckland.ac.nz]

Sent: Sat 04/09/2010 12:40 p.m.

To: 9(2)(a)

9(2)(a)

Cc: 9(2)(a) Hugh Cowan

Subject: Learning from Earthquake team from Auckland

Dear colleagues at UOC,

I hope you all are safe from the earthquake this morning and that life is slowly returning to normal.

Given the magnitude and dramatic consequences of the quake, 9(2)(a) and I have decided that it is prudent for us to come and study its effect first-hand. Whilst we are mindful of becoming earthquake tourists, we hope to catalogue some of the details of the failure before it is all cleaned up. (Often we do not get a chance to do this because of our isolation.) We will certainly be looking for not only structures that failed, but also ones that have survived.

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9(2)(a) and my cellphone numbers are: 9(2)(a) and 9(2)(a) respectively, should you want to get in touch with us. We look forward to hearing that you are all safe and well either via email or in person soon.

With best regards,

9(2)(a)

Dept. of Civil and Environmental Engineering
University of Auckland

9(2)(a)@auckland.ac.nz <mailto:9(2)(a)@auckland.ac.nz >

9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Saturday, 4 September 2010 3:38 p.m.
To: 9(2)(a)
Subject: RE: VUW contribution to Chch earthquake response

Hi 9(2)(a), even here we are busy with input to the response planning. By all means assume some level of support from EQC for the joint effort. Pls put an agreed scope in writing when possible, while proceeding with the work. When I get back we can progress quickly. Cheers Hugh

--- original message ---

From: 9(2)(a)@vuw.ac.nz
Subject: VUW contribution to Chch earthquake response
Date: 3rd September 2010
Time: 7:40:37 pm

Hi Hugh,

You'll see from the attached emails that Stanford has offered 12 broadband seismometers (bound for NZ later this month anyway) to augment the instruments available for a rapid deployment. We've been in touch with GeoNet 9(2)(a) and all agree that this will be useful as long as all data are made freely available and result in joint publications.

VUW can contribute student labour, some equipment (including a vehicle in the South Island at present), and logistical support right off the bat. Is there scope in this situation for some EQC support?

We have two arrays operating at the moment as you know, SAMBA and SAHKE, and supplementing them with some extra broadbands in the source area of earthquake's they'll be recording should be fruitful.

Hope your trip is going well,

9(2)(a)

9(2)(a)

School of Geography, Environment, and Earth Sciences Victoria University of Wellington P.O. Box 600 Wellington

9(2)(a)

9(2)(a)@vuw.ac.nz

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Saturday, 4 September 2010 8:18 a.m.
To: 9(2)(a)
Subject: Fwd: M 7.0 South Island Of New Zealand September 03, 2010 16:35: 04 --Version 1
Attachments: Fwd: M 7.0 South Island Of New Zealand September 03, 2010 16:35:04 --Version 1

(9(2)(b)(ii))

From: (9(2)(a))@usgs.gov
Sent: Saturday, 4 September 2010 7:32 a.m.
To: Hugh Cowan
Cc: (9(2)(a))
Subject: Fwd: M 7.0 South Island Of New Zealand September 03, 2010 16:35:04 --Version 1

Begin forwarded message:

From: (9(2)(a))@usgs.gov
Date: September 3, 2010 12:28:06 PM PDT
To: (9(2)(a))@usgs.gov
Subject: M 7.0 South Island Of New Zealand September 03, 2010 16:35:04 --Version 1

NEIC Event Executive Summary

Mw 7.0 South Island Of New Zealand
September 03, 2010 16:35:04
Version 1

43.38S 172.02E Depth 12km
Location Last Updated at 09/03/2010 13:00:09 (Mountain Time)

Event Coordinator: (9(2)(a))@usgs.gov

Nearest Cities

55 km (35 miles) WNW of Christchurch, New Zealand (pop 367,000)
185 km (115 miles) S of Westport, New Zealand
305 km (190 miles) NNE of Dunedin, New Zealand
325 km (200 miles) SW of WELLINGTON, New Zealand

Tectonic Summary

The September 3, 2010 South Island, New Zealand earthquake occurred as a result of strike-slip faulting within the eastern foothills of the Southern Alps at the western edge of the Canterbury Plains. The earthquake struck approximately northwest of Christchurch, the largest population center in the region, and about 80-90 km to the south and east of the Australia-Pacific plate boundary through the island (the Alpine and Hope Faults). The earthquake, though likely reflects right-lateral motion on one of a number of regional faults related to the overall relative motion of the overall southern propagation of the Marlborough fault system in recent geologic time.

Today's earthquake occurred approximately 50 km to the southeast of a M7.1, surface-rupturing event in 1931 that caused 17 fatalities. More recently, two earthquakes of M6.7 and M5.9 occurred in June 1994 approximately 40 km from the event, but did not cause any known fatalities or significant damage.

Talking Points

- Shallow (crustal) right-lateral, strike-slip earthquake
- Style-of-faulting and size of earthquake consistent with historical seismicity of the area and regional tectonics

- More than 200 DYFI? from 42 cities with the largest reported intensity of VII

Historical Seismicity

Latitude: 39.000S - 47.000S
 Longitude: 176.000E - 168.000E
 Date Range: 1970 01/01 to 2010 12/31
 Magnitude: 6.0 to 10.0

M6.0 1977 01 18 054149.60 -41.731 174.250 50 6.0
 M6.1 1984 06 24 132939.23 -43.541 170.673 5.6 1.37 6.1
 M6.0 1990 02 10 032741.28 -42.343 172.798 9.8 1.31 6.0
 M5.9 1992 05 27 223035.23 -41.616 173.727 84.7D 5 1.13 5.9
 M6.8 1994 06 18 032515.83 -42.963 171.658 13.6G 1.26 6.8
 M6.0 1994 06 19 134351.19 -43.273 171.611 10.0G 1.36 6.0
 M6.2 1995 11 24 061856.47 -42.984 171.793 10.0G 1.14 6.2

Style of Faulting: Strike Slip

Centroid Moment Tensor

10/09/03 16:35:50.18

Epicenter: -43.513 171.910
 MW 7.0

USGS CENTROID MOMENT TENSOR
 10/09/03 16:36:14.29

Centroid: -43.551 171.695

Depth 10 No. of sta:154

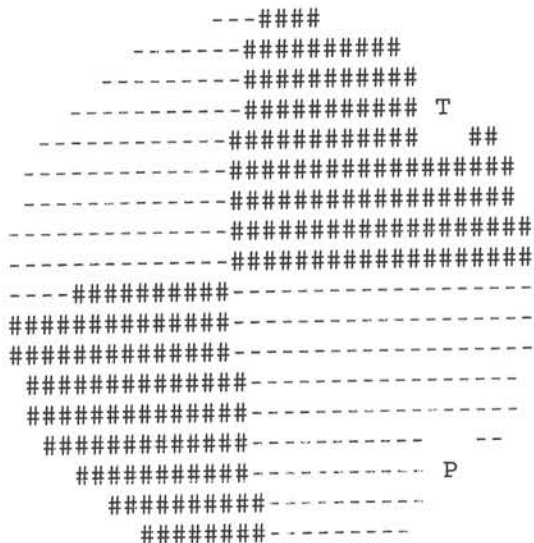
Moment Tensor; Scale 10**19 Nm

Mrr= 0.58 Mtt=-0.07
 Mpp=-0.51 Mrt= 0.80
 Mrp= 0.46 Mtp=-3.34

Principal axes:

T Val= 3.09 Plg= 6 Azm= 42
 N 0.72 76 283
 P -3.81 11 133

Best Double Couple:Mo=3.5*10**19
 NP1:Strike=268 Dip=87 Slip=-166
 NP2: 178 77 -3



Prompt Assessment of Earthquakes for Response

<http://earthquake.usgs.gov/earthquakes/pager/events/us/2010atbj/index.html>

If there are any changes, suggestions, questions, or comments about this particular email, please c

9(2)(a)

From: Hugh Cowan
Sent: Saturday, 4 September 2010 7:21 a.m.
To: 9(2)(a)
Subject: FWD: Info on magnitude, mechanism
Attachments: Info on magnitude, mechanism

9(2)(a) this from our US COLLEAGUES. Helpful info.

9(2)(a)

From: 9(2)(a)@usgs.gov>
Sent: Saturday, 4 September 2010 6:58 a.m.
To: Hugh Cowan
Cc: 9(2)(a)
Subject: Info on magnitude, mechanism

Hugh,

Here's some info about the magnitude and mechanism, and coordination as well. Do you want continued updates from me, or do you prefer not to have your email clogged up?

9(2)(a)

From: 9(2)(a)@usgs.gov>
Date: September 3, 2010 11:50:05 AM PDT
To: 9(2)(a)@usgs.gov>
Subject: Fw: Seismological contacts in New Zealand

Per your message....

----- Forwarded by 9(2)(a)/GD/USGS/DOI on 09/03/2010 11:49 AM

From: 9(2)(a)/GD/USGS/DOI
To: 9(2)(a)/GD/USGS/DOI@USGS

9(2)(a)

Date: 09/03/2010 11:47 AM
Subject: Re: Fw: Seismological contacts in New Zealand

9(2)(a) and others,

I talked to the GNS/GeoNet staff to let them know about our modeling

results. We have it as a shallow M7.0 strike-slip event (both W phase and CMT; M6.9 body-wave MT) and it is unlikely to change. GeoNet were appreciative for the call especially getting from us a sense of the style of faulting and confirmation that it was shallow. I found out from them that events in this area can be as deep as 50 km. We will coordinate with them on a final location. The event had some complexity with a smaller event 5 sec before the mainshock, so picks at both close-in stations and teleseismically are being re-analyzed.

9(2)(a)

9(2)(a) /GD/USGS/DOI

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Da 09/03/2010 12:07 PM

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----- Forwarded by 9(2)(a) /GD/USGS/DOI on 09/03/2010 11:06 AM

From: 9(2)(a) @usgs.gov>

To: 9(2)(a) @usgs.gov>

Cc: 9(2)(a) @usgs.gov>

Date: 09/03/2010 11:04 AM

Subject: Seismological contacts in New Zealand

9(2)(a)

I spoke to 9(2)(a) (cell 9(2)(a)). She said that the Geonet was their combined seismic network, including strong motion instruments. The shake map I sent you was on a Geonet web page.

Here is a list of people. The Geonet web site does not list email addresses, but you can send email via each staff person's web page (url listed below). 9(2)(a) said that in a few hours she can send cell phone numbers and emergency contact numbers for these people.

The boss of Geonet is 9(2)(a)

<http://www.gns.cri.nz/who/staff/1334.html>

9(2)(a) is probably the main person you should contact, if anyone.

Another person DEP mentioned, who is not the boss but may be involved in earthquake response is 9(2)(a)

<http://www.gns.cri.nz/who/staff/1353.html>

Probably not directly involved in response, but one of their big strong motion guys is 9(2)(a)

<http://www.gns.cri.nz/who/staff/1692.html>

I will continue to monitor the situation. If you want anything, let me know. I will forward any info 9(2)(a) sends me.

9(2)(a)

9(2)(a)

Address:
Earthquake Effects Project
Earthquake Science Center

9(2)(a)

9(2)(b)@usgs.gov

Postal and Express Mail

US Geological Survey, MS 977
345 Middlefield Road
Menlo Park, CA 94025 USA

9(2)(a)

From: Hugh Cowan
Sent: Saturday, 4 September 2010 7:21 a.m.
To: 9(2)(a)
Subject: RE: Info on magnitude, mechanism

Many thanks! :)

--- original message ---

From: 9(2)(a)@usgs.gov
Subject: Info on magnitude, mechanism
Date: 3rd September 2010
Time: 2:58:12 pm

Hugh,

Here's some info about the magnitude and mechanism, and coordination as well. Do you want continued updates from me, or do you prefer not to have your email clogged up?

9(2)(a)

> **From:** 9(2)(a)@usgs.gov
> **Date:** September 3, 2010 11:50:05 AM PDT
> **To:** 9(2)(a)@usgs.gov
> **Subject:** Fw: Seismological contacts in New Zealand

> Per your message....

> ----- Forwarded by 9(2)(a)/GD/USGS/DOI on 09/03/2010 11:49 AM

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> **To:** 9(2)(a)/GD/USGS/DOI@USGS

> 9(2)(a)

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> **Subject:** Re: Fw: Seismological contacts in New Zealand

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> To 9(2)(a)

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> To: 9(2)(a)@usgs.gov>
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> Cc: 9(2)(a)@usgs.gov>
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> Date: 09/03/2010 11:04 AM
>
> Subject: Seismological contacts in New Zealand
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9(2)(a)

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>

9(2)(a)

=====

9(2)(a)	Postal and Express
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> Mail

> Address:

> Earthquake Effects Project

> Earthquake Science Center

9(2)(a)

US Geological Survey, MS 977
345 Middlefield Road
Menlo Park, CA 94025 USA

> 9(2)(a)@usgs.gov
> =====

9(2)(a)

From: Hugh Cowan
Sent: Saturday, 4 September 2010 6:33 a.m.
To: 9(2)(a)
Subject: RE: yikes

Thanks 9(2)(a) irony is that I am in Chile understanding their recovery from the Feb event! Geonet seems to be doing ok, but one thing you could help with perhaps is a mechanism and any revision to mag and depth. Am trying to run our loss model to support my colleagues who are starting the EQC response but I lack basic input parameters and have not heard from 9(2)(a) Cheers Hugh

--- original message ---

From: 9(2)(a) <9(2)(a)@usgs.gov>
Subject: yikes
Date: 3rd September 2010
Time: 2:24:22 pm

Hugh,

You are undoubtedly swamped by events on the South Island - but want to offer any assistance possible, personal or otherwise.

9(2)(a)

9(2)(a)

US Geological Survey
University of Washington
Dept. of Earth & Space Sciences, Box 351310 Seattle, WA 98195-1310

9(2)(a)

9(2)(a) @usgs.gov

9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Monday, 6 September 2010 3:24 p.m.
To: 9(2)(a)
Cc: Ian Simpson; 9(2)(a) Hugh Cowan; 9(2)(a)
Subject: Re: Christchurch Earthquake

Hi 9(2)(a)

I dont think we can formulate questions until we see your paper, but thanks for the heads up. Trust you are tuned in with 9(2)(a) - he should have as much local data as are available. Cheers
Hugh (from Chile)

On Mon, Sep 6, 2010 at 3:17 PM, 9(2)(a) <[redacted]@aonbenfield.com> wrote:

Ian, 9(2)(a) Hugh

Over the weekend we have spent considerable time investigating the seismicity of the Christchurch earthquake, and assessing the modelled events which best represent Saturday's event. Following this we have been pulling modelled results in light of what we are seeing. As you can appreciate it is still very early days, and we are working through a number of questions that still remain.

Industry loss estimates have been released by the vendor and bespoke modellers. These range from 1B up to one outlier at 6B. In general the vendors appear to be coming in around the 2B mark for an industry loss.

We have been able to generate some preliminary losses based on the last renewal analysis we conducted on your portfolio. These are as follows:

RMS : 2.5bn to 4bn

GAPQuake : 1.1bn to 2bn

Over the next 24 hours we will be compiling a paper that will include more details on how we arrived at these numbers. In the interim, if you have any questions please don't hesitate to contact my colleagues or I.

Kind regards,

9(2)(a)

Aon Benfield Analytics

Level 29, 201 Kent Street Sydney NSW 2000

9(2)(a)

e: 9(2)(a)@aonbenfield.com | w: aonbenfield.com

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9(2)(a)

From: Hugh Cowan <9(2)(a)>
Sent: Monday, 6 September 2010 2:29 p.m.
To: 9(2)(a)
Subject: Australian offer

Hi 9(2)(a)

Good to hear you back in a driving seat. Sounds like everyone in good cheer - which helps! Re the Geoscience offer - we have an opportunity to facilitate better collaboration, trans-Tasman, on this sort of thing. Please, if we decide to decline (your call) please dont let it be because T&T or GNS said "we dont need them" :-(). One of those situations in which, until one has seen the capability, one might be skeptical or indifferent.... However, if we do say "yes please", then make sure we are in charge, and GNS/T&T are involved....

My 2c worth

cheers
Hugh

9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Monday, 6 September 2010 2:23 p.m.
To: 9(2)(a) @ga.gov.au
Cc: 9(2)(a) (MCDEM)
Subject: Re: Canterbury Earthquake : Assistance by Geoscience Australia : Vehicle Mounted Camera Array

Hello 9(2)(a)

Thanks for the offer. I have extended your offer to the team handling the response (I am currently in Chile) and they expressed interest, with the caveat that quite a lot of damage is in properties remote from street frontages. However, I am confident that my colleagues will give serious consideration to your capability and offer and they will be in touch with you shortly.

best wishes
Hugh

On Mon, Sep 6, 2010 at 1:29 PM, <9(2)(a)@ga.gov.au> wrote:
Hugh and 9(2)(a)

My name is 9(2)(a) and I lead the engineering program within the Risk and Impact Analysis Group of Geoscience Australia (GA). GA is an Australian Government agency which (among other things) monitors earthquakes and examines the vulnerability and risk of communities to severe natural hazard events. Following your recent earthquake we have been corresponding with 9(2)(a) on how we may assist with the local response and he has suggested that we contact you. In particular, we have developed at GA a vehicle mounted camera array system (RICS) that enables streetscape imagery to be digitally captured as 5MP pictures at 4 frames per second. We also have post-processing software that associates the images to land parcels. We have used this capability in Australian disasters, such as the Victorian bushfires of 2009 and, more recently, with the Kalgoorlie earthquake of the 20th April 2010. Typically we have covered the entire affected regions of communities with 100,000's of digital images captured.

With an official invitation from the NZ Government we could send a RICS team across to assist with this type of coverage with the Australian Govt covering the cost of our operations. Would this be useful to your present needs of assessing the damage to buildings in Christchurch and the region?

We are happy to assist and await your advice. We also wish you the best in managing the very taxing situation you are presently faced with.

Regards

9(2)(a)

Engineering, Economics and Exposure Project
Risk and Impact Analysis Group
Geospatial and Earth Monitoring Division

Geoscience Australia

Cnr Hindmarsh Dr and Jerrabomberra Ave,
Symonston, Canberra
GPO Box 378, Canberra, ACT 2601

Ph: 9(2)(a)

Email:- 9(2)(a)@ga.gov.au

9(2)(a)

From: Hugh Cowan
Sent: Monday, 6 September 2010 12:58 p.m.
To: 9(2)(a)
Subject: RE: FW: Christchurch Liquefaction Hazard Map attached for your inf o...

Can you pls attach as pdf? Cant see content otherwise. Thanks. H.

--- original message ---

From: 9(2)(a)@EQC.govt.nz
Subject: FW: Christchurch Liquefaction Hazard Map attached for your info....
Date: 5th September 2010
Time: 8:35:08 pm

From: 9(2)(a)@tonkin.co.nz
Sent: Monday, 6 September 2010 10:47 a.m.
To: 9(2)(a)
Subject: Christchurch Liquefaction Hazard Map attached for your info....

9(2)(a)

9(2)(a)@tonkin.co.nz <<mailto:mjacka@tonkin.co.nz>>

Geotechnical Engineer

Tonkin & Taylor Ltd.

151 Kilmore St, PO Box 13055, Christchurch 8141, New Zealand

9(2)(a)

Project:

T&T Ref:

9(2)(a)

From: Hugh Cowan
Sent: Sunday, 5 September 2010 10:56 a.m.
To: 9(2)(a)
Subject: FWD: Fw: M 7.0 South Island Of New Zealand September 03, 2010 16 :35:46 --
Version 2
Attachments: Fw: M 7.0 South Island Of New Zealand September 03, 2010 16:35:46 --Version 2

For your info. Feel free to contact 9(2)(a) directly and become part of his circle. 9(2)(a) was on the Geonet strategic review panel in 2008. Cheers Hugh

Marija Bakulich

From: 9(2)(a) [redacted]@usgs.gov>
Sent: Sunday, 5 September 2010 9:22 a.m.
To: Hugh Cowan; 9(2)(a) [redacted]
Subject: Fw: M 7.0 South Island Of New Zealand September 03, 2010 16:35:46 --Version 2
Attachments: DarfieldGoogle.png; roadoffset.png

This update contains a link to a poster (30MB) and includes photos of significant offset right-lateral surface rupture. We are all so relieved to hear there may have been no fatalities - and we hope that holds true.

M 7.0 South Island Of New Zealand September 03, 2010 16:35:46 --Version 2

9(2)(a) [redacted]

to:

9(2)(a) [redacted]

09/04/2010 13:30

9(2)(a)

From: Hugh Cowan
Sent: Sunday, 5 September 2010 12:39 a.m.
To: 9(2)(a)@soe.ucsd.edu
Subject: FWD: RE: Learning from Earthquake team from Auckland
Attachments: RE: Learning from Earthquake team from Auckland

9(2)(a) sorry for the slow reply from me. Have been involved in response planning for EQC, remotely from Chile. An irony not lost on my hosts! Suggest you get onto attached circulation if not already. Hope this helps. Biggest urban impact since 1942, but thankfully no deaths reported. We expect more than 100,000 claims. Gearing up now. I will stay to complete mission in Chile. Back home Sept 11. Hugh

9(2)(a)

From: 9(2)(a)@canterbury.ac.nz>
Sent: Saturday, 4 September 2010 6:58 p.m.
To: 9(2)(a)
Cc: 9(2)(a); Hugh Cowan; 9(2)(a)
Subject: 9(2)(a)
Attachments: RE: Learning from Earthquake team from Auckland
CHCH Hospital.doc; CanNet-Some Rough prelim records.doc

Dear 9(2)(a)

Here is a very rough preliminary picture of shaking around Christchurch from some CanNet instruments. It seems relatively modest for such a magnitude.

Cheers,

9(2)(a)

At 08:03 a.m. 4/09/2010, 9(2)(a) wrote:

Hi all;

The situation is that the CBD is cordoned off and study teams are unlikely to be granted access to that tomorrow. The university is closed and we are not able to access it without permission or invitation to be there until Monday 13 Sep.

In consultation with 9(2)(a) the best way we can assist/have access is to join in the assessment teams which are being trained and commissioned tomorrow. The briefing is in the HQ in front of the Museum (which we can only access from the South via Riccarton Ave, Montreal St, etc.) at 9am, after which teams will be trained and sent out to assigned sections of the CBD. Please be prepared with sunhat, sunscreen etc. (9(2)(a) you provide a list of what else needs to be packed/brought?) There are gale force norwesters forecast for tomorrow too.

Having said that I get the impression that you may want to look at things on your own rather than assist with the assessments. There are numerous URM buildings collapsed around the city and plenty of liquefaction for people to look at too.

Once I have an idea of how everyone is placed, I will notify other CNRE staff at UC about what we are doing. Are there any postgrads that we should invite to assist. We don't want to make a general request.

Please keep the discussion going so everyone is in the loop.

Regards,

9(2)(a)

From: 9(2)(a)@auckland.ac.nz]
Sent: Sat 04/09/2010 5:21 p.m.
To: 9(2)(a)
9(2)(a)
Cc: 9(2)(a); Hugh Cowan; 9(2)(a)
Subject: RE: Learning from Earthquake team from Auckland

9(2)(a)

I recall from the Edgecumbe EQ that the worst house problem were the pantry cupboards. All the bottles fell off the shelves - mixed vinegar, cooking oil, tomato sauce etc turned out to be very hard to clean up.

See you tomorrow

9(2)(a)

-----Original Message-----

From: 9(2)(a)@canterbury.ac.nz]

Sent: Saturday, 4 September 2010 4:34 p.m.

To: 9(2)(a)

Cc: 9(2)(a) Hugh Cowan 9(2)(a)

Subject: RE: Learning from Earthquake team from Auckland

Dear Colleagues;

I am pleased to report that our family is all well. The only minor casualty was 9(2)(a) partially dislocated her toe on the leg of her drawer cabinet amidst the (dark and) confusion during the initial shock.

I have a new lesson for you all: secure your custard powder well as it takes forever to clean it off the items in the pantry! We have no major damage, and even the (unsecured) china cabinet had no breakages.

Our electricity was on until the first aftershock but was then down until about 10-11am, which restored the water at the same time so aside from not being able to use the drainage system, we are in a state of normality. It is rather surreal actually, and we need to pinch ourselves occasionally to assure ourselves this is real!

The ground motion during the main event felt to have a reasonably strong motion at about 2 sec, predominantly north-south (going by the shelves that have disgorged their contents) and quite a long duration. 9(2)(a) sent me some preliminary records (while I was writing this) which showed that it was closer to 3 sec with about 150 mm amplitude (0.2 g) at Sam's high school!

My trip to the after-hours surgery revealed that most masonry chimneys in the St Albans - North CBD were collapsed, along with numerous parapets on the commercial (and some residential) buildings. The only other significant structural damage I observed was a very old timber sales/storage building on Edgware Rd that had developed a soft storey lower (of two) storey with about 8-10% drift. The modern bank about 20 m away lost its brick facade - probably a casualty of the ties loosened during construction that 9(2)(a) was investigating when I was working at BRANZ.

We are not overly well organised, with many at the European conference. 9(2)(a) is probably surveying buildings as I type. I think that 9(2)(a) may be the only others still here. I will give them a call shortly to check that they are aware of your visit and discuss plans.

I aim to meet you at the airport in the morning, but will be in touch with 9(2)(a) (provided our electricity is still on) should anything else happen. (Our cell phones were operating until about 9am.)

Finally, while it is a beautiful day here today, weather wise, please be prepared for the bad weather that is forecast.

Now back to cleaning up the house!

Kind regards,

9(2)(a)

From: 9(2)(a)@auckland.ac.nz]

Sent: Sat 04/09/2010 12:40 p.m.

To: 9(2)(a)

Cc: 9(2)(a) Hugh Cowan

Subject: Learning from Earthquake team from Auckland

Dear colleagues at UOC,

I hope you all are safe from the earthquake this morning and that life is slowly returning to normal.

Given the magnitude and dramatic consequences of the quake, 9(2)(a) and I have decided that it is prudent for us to come and study its effect first-hand. Whilst we are mindful of becoming earthquake tourists, we hope to catalogue some of the details of the failure before it is all cleaned up. (Often we do not get a chance to do this because of our isolation.) We will certainly be looking for not only structures that failed, but also ones that have survived.

And since the event really is in your neighbourhood, we want to make sure that we make contact with you all in the first instance. Advising you of our visit and also naturally appealing for your assistance to make sure we maximise the benefit of our visit.

We (about 10 of us) have at this stage booked plane tickets to arrive in Christchurch tomorrow (Sunday), 8:10am. We do not have a return date set yet but will assess the situation as we learn more information on the ground.

9(2)(a) and my cellphone numbers are: 9(2)(a) and 9(2)(a) respectively, should you want to get in touch with us. We look forward to hearing that you are all safe and well either via email or in person soon.

With best regards,

9(2)(a)

Dept. of Civil and Environmental Engineering
University of Auckland

9(2)(a)@auckland.ac.nz >

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9(2)(a)

From: Hugh Cowan
Sent: Sunday, 5 September 2010 12:21 a.m.
To: 9(2)(a)@usgs.gov
Cc: 9(2)(a)@usgs.gov
Subject: FWD: RE: Learning from Earthquake team from Auckland
Attachments: RE: Learning from Earthquake team from Auckland

Dear 9(2)(a), many thanks for your expressions me support. A major event for NZ, unparalleled in terms of urban impact since 1942. Thankfully no reported fatalities. Response under way. I am contributing remotely from Chile. A certain irony that is not lost on my hosts. :). Hope the attached of some interest. At least this one was in the middle me the mousetrap. Cheers, Hugh

Marija Bakulich

From: 9(2)(a)@canterbury.ac.nz>
Sent: Saturday, 4 September 2010 6:58 p.m.
To: 9(2)(a)
Cc: 9(2)(a) Hugh Cowan; 9(2)(a)
Subject: RE: Learning from Earthquake team from Auckland
Attachments: CHCH Hospital.doc; CanNet-Some Rough prelim records.doc

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Cheers,

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Sent: Saturday, 4 September 2010 4:34 p.m.

To: 9(2)(a)

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Subject: RE: Learning from Earthquake team from Auckland

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Subject: Learning from Earthquake team from Auckland

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9(2)(a) and my cellphone numbers are: 9(2)(a) and 9(2)(a) respectively, should you want to get in touch with us. We look forward to hearing that you are all safe and well either via email or in person soon.

With best regards,

9(2)(a)

Dept. of Civil and Environmental Engineering
University of Auckland

9(2)(a)@auckland.ac.nz >

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9(2)(a)

From: Hugh Cowan
Sent: Sunday, 5 September 2010 2:49 a.m.
To: 9(2)(a)
Subject: RE: RE: Learning from Earthquake team from Auckland

9(2)(a) back on Monday morning. I will stay to complete mission here, back on 11 Sept. I will remain in touch by phone and email. Here is 8 hours ahead (strictly speaking 16 hours behind)

--- original message ---

From: 9(2)(a)
Subject: RE: RE: Learning from Earthquake team from Auckland
Date: 4th September 2010
Time: 8:48:37 am

Yes, he phoned twice - earlier in the day then tonight with updated info re source (note on the second call in the pdf I sent). Thanks for asking him to call. Provided useful info (ex ph call from 9(2)(a) but still not clear re EQ fault source & detail of surface rupture. Hoped it may be clearer tomorrow?

9(2)(a) thought CanNet SM data would be on the GeoNet site but it turns out it is on a separate part of the site & you have to be registered to access it. I sent off a request for access to 9(2)(a). Not certain how promptly that will be happen given today's event. Also, from the list email you sent earlier it seems they may have only analysed CHCH sites so far, not the ones close to the fault.

When are you & 9(2)(a) back?

Better get to bed or will be in even more domestic trouble!

Cheers

9(2)(a)

-----Original Message-----

From: Hugh Cowan [mailto:hacowan@eqc.govt.nz]
Sent: Sunday, 5 September 2010 12:31 a.m.
To: 9(2)(a)
Subject: RE: RE: Learning from Earthquake team from Auckland

Hi 9(2)(a) have you talked to 9(2)(a)? I Asked him to call you, but pls feel free to do same. His number is 9(2)(a)

--- original message ---

From: 9(2)(a)
Subject: RE: RE: Learning from Earthquake team from Auckland
Date: 4th September 2010
Time: 8:27:13 am

Thanks Hugh

Have been preparing info & analyses related to the EQ but they are far from complete (in part need to resolve fault better).

Attached are several figures + scrap notes. Very preliminary / just a start, but may be of interest. Have not added any loss estimates yet. Have run numerous cases but need better info on rupture to refine the results further.

Regards

9(2)(a)

-----Original Message-----

From: Hugh Cowan [mailto:hacowan@eqc.govt.nz]

Sent: Saturday, 4 September 2010 11:14 p.m.

To: 9(2)(a)

Subject: FWD: RE: Learning from Earthquake team from Auckland

9(2)(a)

suggest you get onto this group mail list. Hope attached is helpful. Cheers Hugh

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Please delete this email if you are not the intended addressee.

9(2)(a)

From: Hugh Cowan
Sent: Sunday, 5 September 2010 12:13 a.m.
To: 9(2)(a)
Subject: RE: update on EQC trip to Chile

Hi 9(2)(a) we are plugged into the response management but thanks for the message. 9(2)(a) goes back tonight. I will stay on to complete the mission and will contribute to the home efforts by phone and mail. Thankfully few injuries and no reported deaths. A black day however, with the Fox Glacier crash on top of all this. Regards, hugh. Ps my phone number is 9(2)(a) see you next week.

--- original message ---

From: 9(2)(a)@mfat.govt.nz>
Subject: RE: update on EQC trip to Chile
Date: 3rd September 2010
Time: 4:17:09 pm

[UNCLASSIFIED]

Hi Hugh

I don't imagine that this message will reach you before word of the earthquake in Christchurch does, but just to let you know that we were trying to find you but could only come up with this email address.

I bet you and 9(2)(a) wish you were back home right now!

Chers

9(2)(a)

From: Hugh Cowan [mailto:HACowan@eqc.govt.nz]
Sent: Sunday, 15 August 2010 11:26 p.m.
To: 9(2)(a)
Subject: update on EQC trip to Chile

Hi 9(2)(a)

We will be staying at Hotel Atton El Bosque, Roger de Flor, 2770, Santiago, from arrival on 31 Aug, until Friday 3 Sept, and from Monday, 6 Sept until our departure Thurs 9 Sept. From the evening of Friday 3 Sept, until Monday evening of 6 Sept., we hope to be visiting affected areas and have not yet finalised accommodation.

regards

Hugh Cowan
Research Manager
Earthquake Commission
Level 20, Majestic Centre
100 Willis Street, P.O. Box 790
Wellington, New Zealand

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Sunday, 5 September 2010 12:05 a.m.
To: 9(2)(a)
Subject: RE: Earthquake

Thanks 9(2)(a) ok with immediate family. Not sure about 9(2)(a) yet but have asked 9(2)(a) check with 9(2)(a) am in Chile, but involved in early response planning. Action underway. Much damage. No fatalities reported yet. Regards, hugh

--- original message ---

From: 9(2)(a)
Subject: Earthquake
Date: 3rd September 2010
Time: 8:38:07 pm

Dear Hugh.

We hope all the the family is fine. We hear in the news about an Earthquake in New Zealand.

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Tuesday, 7 September 2010 2:18 p.m.
To: 9(2)(a)
Subject: RE: EQC/AB - conference call notes

Thanks, no problem 9(2)(a)

--- original message ---

From: 9(2)(a)@aonbenfield.com
Subject: RE: EQC/AB - conference call notes
Date: 6th September 2010
Time: 10:12:48 pm

Could everyone please make sure Hugh is also included in any correspondence?

Hi Hugh - sorry not include you, but a copy of my notes from the call this morning are below.

Regards,

9(2)(a) | Aon Benfield
Aon Benfield New Zealand
Level 1, 70 Shortland Street, PO BOX 699, Auckland

9(2)(a)

9(2)(a)@aonbenfield.com | w: aonbenfield.com
From: 9(2)(a)
Sent: Tuesday, 7 September 2010 12:44 p.m.
To: 9(2)(a); 'Ian Simpson'; 9(2)(a)
9(2)(a)
Subject: RE: EQC/AB - conference call notes

And here is just a quick google search for trying to establish land values in Christchurch - although second page is about house prices but could give idea on upper end of ave land value.

Regards,

9(2)(a) | Aon Benfield
Aon Benfield New Zealand
Level 1, 70 Shortland Street, PO BOX 699, Auckland

9(2)(a)

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To: 'Ian Simpson' 9(2)(a)
9(2)(a)
Subject: EQC/AB - conference call notes

Hi everyone,

A summary of the points raised in the call today - it was a bit hard to hear everyone clearly, so just correct me where necessary. Please note this email group can be used as a distribution list and there is a short action list on the bottom.

9(2)(a)

- * Need to discuss the model outputs as the range is quite significant and EQC has significant political reporting responsibilities, let alone reinsurance. Appears EQC may need to revise the numbers upward.

9(2)(a)

- * Best estimate/median/50th percentile loss Minerva is returning = 1.8bn. Loss range goes up to 2.5bn. This is based on EQC's net exposures. No FGU loss modelling done.
- * Shaking intensities of modelled have been checked with against recorded intensities and they fit well. This suggests the 80-90th percentile could be too conservative - better to look at 50-66th percentile.
- * There is no NZ data to calibrate the vulnerabilities - current assumption these are set too high; there is little focus in media on large number of light frame houses with no damage - could point to conservative best estimate.
- * Issue is the location of the EQ just to the side of urban area, means results are very sensitive and producing wide range of numbers if fault is moved around.
- * Minerva has a limited land loss component and these are likely to be undercooked as part of the 1.8bn

9(2)(a)

- * Other vendors models have similar issues with calibration, however Minerva has greater ability to play with the parameters and can be given greater credibility in this situation.

9(2)(a)

- * Issue#3 there is signs from the ground team of significant land damage due to liquefaction - est 1,000 properties, ave land value in CHCH 250k-400k? Properties long the Avon River banks are a particular risk. Further impacted if the land cannot be reinstated - EQC need to pay market value.
- * How will the models deal with this?

9(2)(a)

- * Suggest best method is to add land loss to modelled loss results.

9(2)(a)

- * In looking at increasing the official loss estimates, EQC should focus on the ground staff and experience (assessors, engineers) rather than sole focus on model output.
- * Also need to differentiate between political decisions with local authorities about re-housing/reinstating land vs the quantum of loss under EQC's cover.

9(2)(a)

- * AB recommendation is hold off giving a specific loss numbers, at least only giving a range.
- * While reinsurers will look at vendor models, AB message is Minerva is best equipped for this event, backed-up by GAP. With such a range of loss estimates coming out - initial response to reinsurers and their numbers is what parameters they are modelling.

9(2)(a)

- * RMS have only released Event IDS - no market loss figures. We will review these IDs against the ones use in our initial modelling.

9(2)(a)

- * Would be a good idea to separate the land loss component of a total loss figure.

9(2)(a)

- * Could sensibly use an estimate of 150-200m land loss.

9(2)(a)

- * Reinsurers are aware of the land value cover - however are probably going to be surprised if it made up 10% of the loss.

9(2)(a)

- * Concern over timing of getting information out to reinsurers and that a slow response could reduce trust in Minerva.

9(2)(a)

- * All vendor models are adding caveats saying this specific event is not modelled so the range of outputs the market may see are biased and therefore difficult to dismiss Minerva.
- * There is also conflicting information from GNS and USGS about the event - putting further uncertainty into the RMS/AIR outputs.

9(2)(a)

- * Question of who else is seeing these model numbers?

9(2)(a)

- * Confirm AB doing similar exercise for each client, so clients have received AB's RMS industry loss ranges and specific loss results. Clients specific loss results do not get released to anyone else.

9(2)(a)

- * EQC have an obligation to give the best information
- * 3 takeaways from call: range of indications is yet to be firmed up but will do so by on the ground experience; EQC loss is on the higher side of the numbers already put out; need to sort out times to discuss reinsurance response.

9(2)(a)

- * Need to get more certainty around the land loss before issuing any numbers.

ACTIONS:

9(2)(a) forward seismology comparison charts Jasmine - organise conference call with EQC & AB brokers to discuss reinsurance panel communications 9(2)(a) - re-run RMS using same IDs as released by RMS last night

Regards,

9(2)(a) | Aon Benfield
Aon Benfield New Zealand

9(2)(a)

From: Hugh Cowan
Sent: Tuesday, 7 September 2010 2:06 p.m.
To: 9(2)(a)
Subject: RE: FW: EQC - conference call tomorrow - 10.30am NZT/8.30am AUS

Hi 9(2)(a) grateful if you would add me to the mail list arising from today's conf call. Cheers, Hugh (from Chile)

--- original message ---

From: 9(2)(a)@aonbenfield.com
Subject: FW: EQC - conference call tomorrow - 10.30am NZT/8.30am AUS
Date: 6th September 2010
Time: 2:33:23 am

9(2)(a) Hugh - please find below the conference call details below. Meeting set for Tuesday 6 Sept @ 10.30am NZT / 8.30am Aus / ?? Chile.

Joining us will be 9(2)(a) and possibly 9(2)(a) - I've asked 9(2)(a) to talk to 9(2)(a) about Minerva as we don't run it and then we can have a full discussion on all the models tomorrow.

I have yet to get hold of 9(2)(a) but really it's 9(2)(a) who will add the most to this discussion.

Let me know if you have any questions (Hugh, I'll check my blackberry tonight) otherwise we will all talk tomorrow.

Regards,

9(2)(a) | Aon Benfield
Aon Benfield New Zealand
Level 1, 70 Shortland Street, PO BOX 699, Auckland
9(2)(a)
e: jasmine.christie@aonbenfield.com | w: aonbenfield.com

From: 9(2)(a)
Sent: Monday, 6 September 2010 6:23 p.m.
To: 9(2)(a)*Benfield Auckland; 9(2)(a)
Subject: RE: EQC - conference call tomorrow - 10.30am NZT/8.30am AUS

9(2)(a)

Here are the details.

Passcodes:

Leader: 9(2)(i)

Participant: 9(2)(i)

Dial in numbers¥:

Country

Toll Numbers

Toll Free Numbers

AUSTRALIA

SYDNEY:

61-2-8205-8128

1-800-658-378

CHILE

1230-020-2808

NEW ZEALAND

64-9-970-4772

0800-449-157

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9(2)(a)

From: Hugh Cowan
Sent: Tuesday, 7 September 2010 1:53 p.m.
To: 9(2)(a)
Subject: RE: FW: nisqually small business

Hi 9(2)(a) am in Chile and the irony is not lost on my hosts! :) back on 11 sept. Cheers Hugh

--- original message ---

From: 9(2)(a)
Subject: FW: nisqually small business
Date: 6th September 2010
Time: 9:45:09 pm

Hi Hugh

Should have copied you too. Are you in Chile, Wgtn, Chch??

Cheers

9(2)(a)

land
cell
email
address

9(2)(a)

From: 9(2)(a)
Sent: Tuesday, 7 September 2010 1:37 p.m.
To: 9(2)(a)
Cc:
Subject: nisqually small business

<http://peer.berkeley.edu/publications/nisqually/nisquallysmallbusiness.pdf>

During her recent visit, Prof 9(2)(a) mentioned Nisqually as an e.g.

of a moderate (6.8) earthquake where there were no deaths but much economic damage via SME losses. There is a v good one page exec summary in the link.

Cheers

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Tuesday, 7 September 2010 10:16 a.m.
To: 9(2)(a)
Subject: RE: Earthquake 7,2 in NZ

Hi 9(2)(a), thanks for the update. Very good time in Concepcion, now waiting to board return flight. Your plan for tomorrow is fine. I will google all addresses tonight, so I should be able to find them easily tomorrow. Thanks for giving me clear instructions. Regards, Hugh

--- original message ---

From: 9(2)(a)
Subject: RE: Earthquake 7,2 in NZ
Date: 6th September 2010
Time: 5:59:13 pm

Dear Hugh, everything Ok in Concepción?

Please remember the agenda for tomorrow; first you have a meeting with 9(2)(a) at 9:30 am. (Metro Escuela Militar, Av. Américo Vespucio Sur N°100, Of. 301, P. 3°, teléfono : 4286600). The second meeting of the day, a loss adjuster 9(2)(a) will be held in the SVS offices from 11:30 - 12:30 am (Av. Libertador Bernardo OHiggins 1449, piso 11, Metro Moneda). After this meeting we can have lunch with a reinsurance broker that wants to meet you. Please confirm that this would be fine for you. Finally there is a meeting with a bank insurance broker (Banco Estado, 9(2)(a) calle Moneda 1140 Piso 6 (walking distance from SVS).

Regards,

9(2)(a)

-----Mensaje original-----

De: Hugh Cowan [mailto:hacowan@eqc.govt.nz] Enviado el: viernes, 03 de septiembre de 2010 14:10
Para: 9(2)(a)
Asunto: RE: Earthquake 7,2 in NZ

Yes, we got a text message while at RSA. Have been in touch with people. Biggest quake close to population for many decades. See you at Mapfre. Hugh

--- original message ---

From: 9(2)(a)
Subject: Earthquake 7,2 in NZ

Date: 3rd September 2010

Time: 1:27:19 pm

Dear Hugh, are you aware of this?

Regards,

9(2)(a)

<http://earthquake.usgs.gov/earthquakes/shakemap/global/shake/2010atbj/>

Instrumental Intensity

Superintendencia de Valores y Seguros - Chile

Planta telefónica: (56 2)4734000

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9(2)(a)

From: Hugh Cowan
Sent: Tuesday, 7 September 2010 3:17 a.m.
To: 9(2)(a) (MCDEM)
Subject: Re: Clearinghouse

9(2)(a) managed to read your notes between meetings. Thanks for this. I agree with your proposed approach. Also, happy to contribute to Bruce expense or similar, as required. Hugh

--- original message ---

From: 9(2)(a) (MCDEM) <9(2)(a)@dia.govt.nz>
Subject: Re: Clearinghouse
Date: 6th September 2010
Time: 10:10:54 am

Hugh

When do you get back, still 8 Sep?

There is a lot to do here!

I have just got home after another v long day in the Beehive.

Most systems are going well.

NZSEE initiated setting up the CHC Clearing House, with CU, & GNS. I have undertaken to pay 9(2)(a) to 'manage' it part time.

9(2)(a) as indicated GNS will set up the 'virtual' clearing house that others, incl EERI, can link to. He and I (MCDEM & NZSEE) agreed that all data that supports the response & recovery is to be available to all participants.

Active participants in the 'data'. Space at this time incl ECan, CCC, Waimak DC, Selwyn DC, GNS, NZDF (obtained a GeoEye sat image taken 1006 on the morning of the EQ), NZDF, NZFS (processing NZAM high res vert colour ortho photos, ortho rectifying the GeoEye image & compiling the Bldg Safety data from the c.27 teams working out of CCC), DBH. BRANZ. MCDEM, and EQC!

EQC is yet to contribute shape files of claim locations/\$, but that's for tomorrow.

Others expected incl GEER, EERI, AEES, NIWA, LandCare, LINZ, MFE (LUCAS), etc.

Offers are in from Taiwan (9(2)(a) rmosa Sat), GA (9(2)(a)) for their mobile camera system (but Google Street View cars are here?) and many consultants.

The challenge is getting all on the same page with a common operating picture, while acknowledging sensitive data.

The Nat Haz Platform could be the umbrella.

I am of a view that NZSEE does not need to mount a reece as many tens of members are already involved. NZSEE can just support via the Clearing House, Newsletters, the BAR Guide, and the Bill papers, and PR?

Your view?

9(2)(a)

====

9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Tuesday, 7 September 2010 2:23 a.m.
To: 9(2)(a)
Cc:
Subject: Fwd: Clearinghouse
Attachments: Darfield Earthquake Clearinghouse Meeting #1.docx

9(2)(a)

A copy of notes from the first "clearing house" meeting of engineers and scientists in ChCh.

9(2)(a) could you please add 9(2)(a)@eqc.govt.nz to this list and see that he receives future bulletins. The T&T geotechs should be made aware of the research communities' activities if not already, and vice versa in terms of operational mission and priorities.

regards (from Chile)
Hugh

----- Forwarded message -----

From: 9(2)(a)@canterbury.ac.nz
Date: Mon, Sep 6, 2010 at 11:16 PM
Subject: RE: Clearinghouse

9(2)(a)

9(2)(a)

Hugh Cowan <HACowan@eqc.govt.nz>, 9(2)(a)

9(2)(a)

Dear All,

Please find some tentative minutes attached.

Note that the time and venue of tomorrow's clearinghouse meeting has been changed to 5pm at the ECAN building (58 Kilmore Street).

Also, I am not able to access the university email so it is difficult to pull together all my addresses. Please could you cc. this to anyone who may be interested?

Many thanks,

9(2)(a)

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Darfield Earthquake Clearinghouse Meeting #1

Christchurch Art Gallery, Montreal Street

6 September 2010, 4:00pm-6:30pm

Present:

9(2)(a)

1. Update on Activities to date

a) Rupture.

9(2)(a) reported on the rupture. It is a right-lateral slip running north of Rolleston. A number of houses are split into two. The best exposures of the faults over the roads are already gone. 9(2)(a) (?) is also involved with this.

b) Liquefaction.

9(2)(a) has been organizing teams related to this. He will continue to do this with 9(2)(a) until 9(2)(a) returns. Liquefaction is over many parts of the city. Much of the sign of liquefaction in the suburbs has already been removed. Also, rain is due in the next few days so it is important to collect this perishable information as fast as possible. Teams have been in Avonside, New Brighton and Lyttleton.

Information being collected includes location (street address or latitude/longitude), grain size, volume of sand boil, and photos.

9(2)(a) has also been gathering information with some students from Auckland.

9(2)(a) mentioned that there is some good LIDAR information, especially near the Waimakariri river, which is likely to be useful.

c) Shaking level.

Some work has been done by 9(2)(a) and 9(2)(a). No further work is necessary at the present time.

d) Structures.

Many people have been involved in assisting the council with building assessment and tagging (red, yellow green). A lot of data from this, including photos, are included on the council database. 9(2)(a) and 9(2)(a) were involved.

9(2)(a) and 9(2)(a) have been looking at damaged structures and providing advice as to what needs to be pulled down. 9(2)(a) has also been involved in media stuff.

The UoA team – 9(2)(a) (Adelaide) + students have been active.

e) University of Canterbury buildings.

9(2)(a) has been involved with this. They have performed a level 1 assessment (external only) on about 40% of structures. 9(2)(a) and 9(2)(a) were also involved.

2. Visiting Teams

Many local groups are already here. 9(2)(a) and 9(2)(a) are due tomorrow.

A number of international people, teams are visiting or planning to visit. These include:

- Miyomoto International (from California)
- 9(2)(a) (Buffalo)
- MCEER
- PEER
- EERI has been in contact with 9(2)(a)
- Geosciences Australia
- 9(2)(a) was hoping to come but cannot
- Japanese teams are also likely

9(2)(a) has been encouraging these teams to talk to each other and to work in collaboration rather than competition.

Briefing these teams properly is likely to be a lot of work. We need to manage this properly and do not have a mechanism to do this yet. It was mentioned that for several weeks or months after the Chile earthquake, there was someone to brief and assist visiting teams (with accommodation, transportation, information etc.)

3. Sharing Information

The best way to share information was discussed. It was considered that this should be done by a website as soon as possible. 9(2)(a) said that it would be relatively easy for GNS to provide hardware and software support for this. We also need people to gather information immediately for this. 9(2)(a) and 9(2)(a) are planning to do this. 9(2)(a) will request NZSEE funding for 9(2)(a) is putting together some requirements for the website. It is expected that the website will do the following:

- a) Provide information as it is collected in categories
- b) Provide contact people for the different areas of earthquake damage

Here are some possibilities

- Rupture – 9(2)(a)
- Sliding – 9(2)(a)
- Liquefaction – 9(2)(a)
- Building damage
 - Concrete - 9(2)(a)

- Steel – 9(2)(a)
- Timber – 9(2)(a)
- URM – 9(2)(a)
- Nonstructural element and contents 9(2)(a)
 - We may also be able to access the EQC claims photos for further information
- Critical structure aspects (e.g. hospitals, fire stations, police stations, communication centres, etc.) – there is no damage there so do we need something? UoA is interested in ports and someone could take this.

Lifelines

- Electrical (9(2)(a) – EPEcentre)
- Water related (9(2)(a)
- Roads (by geotechnical group? 9(2)(a)
- Bridges – 9(2)(a)
- Organizational aspects – 9(2)(a)
- Social aspects – 9(2)(a)

These are very tentative and may easily be changed. If something should be changed please let 9(2)(a) know.

- c) Request information from the public regarding the types of damage they have seen.
 - This would allow the public to fill our databases. This would be particularly useful for liquefaction (which is widespread), as well as non-structural damage (which is difficult to get access to). Photos should be able to be uploaded.

The speed with which we can produce quality information is important. We can create an impression overseas that we are organized and efficient!

9(2)(a) will have a computer onto which all researchers can place their photos for uploading on the web. They will discuss with GNS staff 9(2)(a) how to do this in a quality way. A computer will be available from 4-6pm tomorrow (Tuesday) at the location of the clearinghouse meeting.

4. Tomorrow's Activities

- a) Rupture.

9(2)(a) will lead a team from Rolleston New World at 9am to go over the ruptured area. 9(2)(a) and 9(2)(a) plan to participate.

- b) Liquefaction.

9(2)(a) will determine priority areas. These may include the Avon river, Dallington and Kaiapoi. It is understood that houses have slid in southeast Kaiapoi. They will coordinate with 9(2)(a) and his group.

- c) Bridges.

9(2)(a) are planning to be involved in this.

- d) URM Structures

9(2)(a) are planning to continue collecting data.

- e) Concrete Structures

9(2)(a) will be collecting data.

- f) Steel Structures

9(2)(a) will be collecting data other than that 9(2)(a) has already collected.

- g) Timber Structures

9(2)(a) will be collecting data.

- h) UC Structures

9(2)(a) will be looking at UC buildings for the university.

- i) Business resilience

9(2)(a) will be working on this. They are preparing a survey to go out on Wednesday.

- j) Water lifelines

9(2)(a) will be looking at these.

9(2)(a) mentioned that as teams go in to assess buildings, researchers may also go together. This would be especially important for evaluating internal structural and non-structural damage.

4. Student Involvement

Many UC postgraduate students may be available to help. 9(2)(a) will send out an email to them asking them to contact their supervisor and work out what they can do.

5. Tomorrows meeting (Tuesday)

The second clearinghouse meeting was scheduled to occur at 4pm tomorrow at the new City Council offices. Unfortunately they have informed us that they do not have space for us.

9(2)(a) has spoken to ECan, where there is an emergency response centre. They are happy to host us from 5pm. So we will meet at 5pm at the ECAN building (58 Kilmore Street). If you have difficulties then please give 9(2)(a) a call.

Note: Everyone is welcome. Please feel free to invite related people to this meeting as we want this meeting to be inclusive.

EMAIL ADDRESSES AND PHONE NUMBERS

9(2)(a)



9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Tuesday, 7 September 2010 1:50 a.m.
To: 9(2)(a) Ian Simpson
Subject: Fwd: Darfield Earthquake - near field records
Attachments: Revised plot of recorded PGA with surface rupture updated to extent mapped at end of 5 Sep 2010 - vs modelled (Takahashi et al).jpg; Revised plot of recorded PGA with surface rupture updated to extent mapped at end of 5 Sep 2010.jpg

FYI

----- Forwarded message -----

From: 9(2)(a)
Date: Mon, Sep 6, 2010 at 9:58 PM
Subject: RE: Darfield Earthquake - near field records
To: 9(2)(a)
Cc:
Re:

Hugh Cowan

<hacowan@eqc.govt.nz>

9(2)(a)

Revised plots of recorded PGA with surface rupture updated to extent mapped at end of 5 Sep 2010. Includes shading for CanNET sites corrected to continuous as for the GeoNet sites. Comparison with Takahashi et al this time. Note that the predicted intensities are median estimates, so can be +/- quite a bit.

Also shows close proximity of surface rupture to the Greendale site.

Recorded Lyttelton intensity a bit higher than predicted. Damage I have heard of in Akaroa also seems higher than I would have guess relative to predicted intensities.

Regards

9(2)(a)

From: 9(2)(a) [mailto:9(2)(a)@gns.cri.nz]
Sent: Monday, 6 September 2010 9:01 p.m.
To: 9(2)(a)
Cc: 9(2)(a); 'Hugh Cowan';

9(2)(a)

9(2)(a)

Subject: RE: Darfield Earthquake - near field records

Hi 9(2)(a)

Yes, we had a backlog in processing for a while, and 9(2)(a) arranged to have the CanNet (which by the way is a part of GeoNet) data pushed through for the mainshock knowing it would be of engineering interest. This would explain why it was not their earlier.

You will have to ask 9(2)(a) about the processing, but I heard others talking about the offsets today (among all the other things going on!).

Cheers, 9(2)(a)

--

9(2)(a)

GNS Science - Te Pu Ao

9(2)(a)

1 Fairway Drive, P.O. Box 30-368 Lower Hutt
New Zealand

9(2)(a)

06/09/2010 08:50 p.m.

To 9(2)(a)

cc

9(2)(a)
9(2)(a)

"Hugh Cowan" <hacowan@eqc.govt.nz>, 9(2)(a)

Subject RE: Darfield Earthquake - near field records

Thanks 9(2)(a)

Yes I am aware of the site & had downloaded & processed everything from there on Sat, but at that time there were no CanNET records available for DL. Only records from GeoNet sites that were too far from the rupture to assess the near field modelling.

I am puzzled though. 9(2)(a) plots show no net displacement offsets, so looks like they are being processed out of the records (as drifts should be, but not true ground displacements – of course difficult to prevent in an automated process not set up to detect ground displacements).

For the same site and component (Greendale), net ground displacement is very clear in the raw data (eg see below). Definitely does not look like drift to me & given the location of the Greendale site, a net displacement is not unexpected. There is also a smaller net vertical displacement.

There are also smaller net displacements in HORC (less clear – perhaps uncertain) & LINC have been removed from the processed data.

Regards

9(2)(a)

From: K 9(2)(a) [redacted]@gns.cri.nz
Sent: Monday, 6 September 2010 7:54 p.m.
To: 9(2)(a) [redacted]
Cc: 9(2)(a) [redacted]; 'Hugh Cowan'; 9(2)(a) [redacted]
9(2)(a) [redacted]
Subject: RE: Darfield Earthquake - near field records

Hi 9(2)(a) [redacted]

The GeoNet processed (plots and spectra plus waveforms in "Cousins" format) SM data for this event are at (sorry, this could have saved you time today but I assumed you knew about it):

ftp://ftp.geonet.org.nz/strong/processed/Proc/2010/09_Prelim/2010-09-03_163541/

The documentation is at:

<ftp://ftp.geonet.org.nz/strong/processed/Docs>

Including all 9(2)(a) [redacted] usual derived information.

The FTP server does seem rather slow.

Cheers, 9(2)(a) [redacted]

--
9(2)(a) [redacted]

GNS Science - Te Pu Ao
9(2)(a) [redacted]
1 Fairway Drive, P.O. Box 30-368 Lower Hutt
New Zealand

9(2)(a) [redacted]

06/09/2010 06:29 p.m.

To: "9(2)(a) [redacted]"
cc: 9(2)(a) [redacted]; "'Hugh Cowan'" <hacowan@eqc.govt.nz> 9(2)(a) [redacted]
9(2)(a) [redacted]
Subject: RE: Darfield Earthquake - near field records

9(2)(a)

First preliminary results from analysis of near field CanNET records, with very brief notes

Clear net ground displacements evident in 3 of the 4 records looked at (up to 2m max displacement, reversing back to ~1.7m net at GDLC: Greendale). Also significant displacement at HORC: Hororata School site, but in opposite direction (depending on what the actual orientations of the instruments are – have not looked at that yet). Other net displacement was at LINC: Lincoln Crop & Food Research.

GDLC: Greendale recorded the strongest shaking, unsurprisingly.

Have attached a map of recorded PGA (vs McVerry et al in this case). I saw a comment yesterday that the CanNet PGA's in CHCH seemed low. In fact they are quite consistent with our modelling (both McVerry et al and Takahashi et al). Some further afield (esp to the south) seem a bit low relative to modelled and GeoNet records. May be site issues?

Have computed spectra for all records, but have yet to look at them. Main focus this time is the near field displacements, which may be of interest.

Strangely second strongest was HVSC (Heathcote Valley Primary School). Also Kaiapoi shaking is high relative to predicted (have not investigated details yet).

Will follow up re the above later, now that I have the system up and running.

9(2)(a) – many thanks for your assistance with the CanNET data. Took some time to modify my processing s/w for the peculiarities of the CanNET data! Nothing wrong with the data, just that some things are different to the other data sources I have used in the past.

9(2)(a) many thanks for the surface rupture update. Have yet to add it on the map. Will do tonight or tomorrow am (with any further updates, if any). Focus today has been to be able to analyse the CanNET data – esp to get the displacements and spectra.

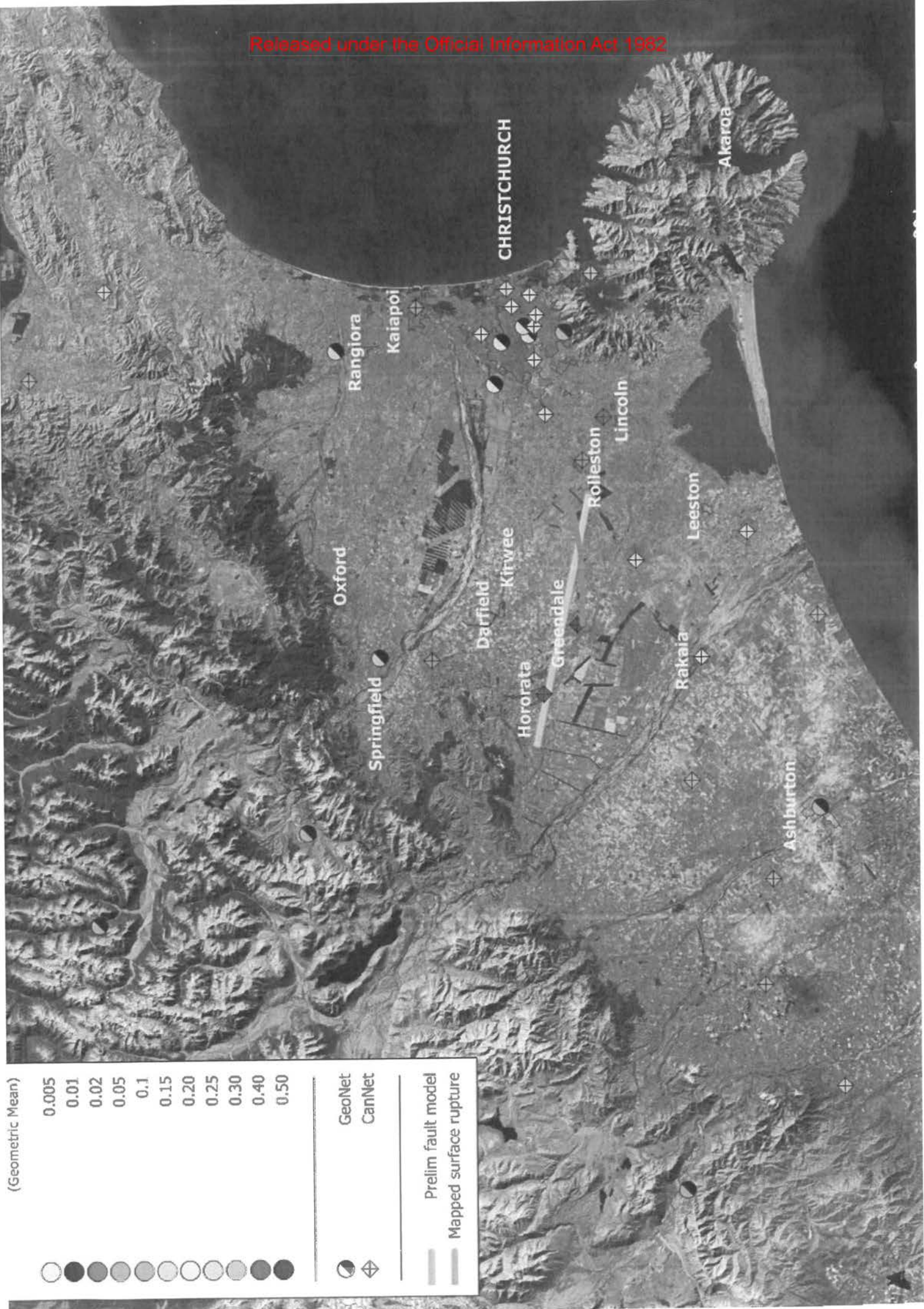
Regards

9(2)(a)

Will forward this to others later, including the Canterbury structural list. Any suggestions as to who else would be interested?

[attachment "Christchurch EQ 3Sep2010 - Site accelerations & displacements, CanNET.pdf" deleted by 9(2)(a)/GNS] [attachment "Peak ground accelerations - McVerry et al vs recorded.jpg" deleted by 9(2)(a)/GNS]

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9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Tuesday, 7 September 2010 1:48 a.m.
To: Ian Simpson; 9(2)(a)
Subject: Fwd: Christchurch Earthquake

Ian, 9(2)(a)

I have skimmed through the AonB update circulated by 9(2)(a) and the key points or questions that jump out at me are:

1. Where is 9(2)(a) input? He has been receiving all the relevant GeoNet data and fault observations and has been modeling them (email to follow).

2. There are several generalisations in the report narrative. Some appear inaccurate - e.g. "many fires", and others merely misleading e.g. "scientists were expecting a massive earthquake on the Alpine fault" - the NZ probabilistic seismic hazard model, from which model parameters are derived, incorporates contributions to hazard from all mapped faults PLUS a generous allocation to what is called "background seismicity". The latter is intended to accommodate unknown or "floating sources" below the size for which surface rupture (and therefore permanent surface expression) is likely. That threshold is roughly between M6.5 and M7, so the Canterbury/Darfield earthquake, although surprising in terms of its causative fault and orientation, is to some degree catered for in the probabilistic ground motion models. This is where 9(2)(a) input with the GeoNet data - and feedback from the USAR teams doing the inspections - is important for calibrating the models.

3. I would wait for RMS to release their own estimates before commenting on anything attributed to their model.

Sorry I won't be able to join the 1030 conference call, but I have been in touch with 9(2)(a) and confirmed that he will be there.

I suggest you forward the AonB update report to 9(2)(a) ahead of the call if not already, so he can contribute more fully.

Good luck. I will aim to join you for the 1.00pm meeting.

regards
Hugh

----- Forwarded message -----

From: 9(2)(a) <9(2)(a)@aonbenfield.com>
Date: Mon, Sep 6, 2010 at 11:02 PM
Subject: RE: Christchurch Earthquake
To: Ian Simpson <isimpson@eqc.govt.nz>, 9(2)(a) <9(2)(a)@eqc.govt.nz>, Hugh Cowan <hacowan@eqc.govt.nz>

9(2)(a)

Ian, 9(2)(a) Hugh

Further to the preliminary loss e-mail from earlier today, please find attached a more detailed loss modelling update and report for the Darfield Earthquake. Undoubtedly the results will be developing over the next few days as more light is shed on the event. We will keep you updated as and when more information becomes available.

Please let me know if you have any questions.

Kind regards,

9(2)(a)

From: 9(2)(a)
Sent: Monday, 6 September 2010 1:17 PM
To: Ian Simpson; 9(2)(a) Hugh Cowan
Cc: 9(2)(a)
Subject: Christchurch Earthquake

Ian, 9(2)(a) Hugh

Over the weekend we have spent considerable time investigating the seismicity of the Christchurch earthquake, and assessing the modelled events which best represent Saturday's event. Following this we have been pulling modelled results in light of what we are seeing. As you can appreciate it is still very early days, and we are working through a number of questions that still remain.

Industry loss estimates have been released by the vendor and bespoke modellers. These range from 1B up to one outlier at 6B. In general the vendors appear to be coming in around the 2B mark for an industry loss.

We have been able to generate some preliminary losses based on the last renewal analysis we conducted on your portfolio. These are as follows:

9(2)(i) 2.5bn to 4bn

9(2)(i) : 1.1bn to 2bn

Over the next 24 hours we will be compiling a paper that will include more details on how we arrived at these numbers. In the interim, if you have any questions please don't hesitate to contact my colleagues or I.

Kind regards,

9(2)(a) Aon Benfield

Aon Benfield Analytics

Level 29, 201 Kent Street Sydney NSW 2000

9(2)(a)

9(2)(a) @aonbenfield.com | w: aonbenfield.com

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9(2)(a)

From: Hugh Cowan
Sent: Tuesday, 7 September 2010 1:01 a.m.
To: 9(2)(a)

Cc:

Subject: RE: Clearinghouse

Hi 9(2)(a) great to hear your plan. I have forwarded your message to 9(2)(a) at EQC for coordination because I am in Chile (although receiving and contributing to daily action by phone). We have a geotech team led by T&T 9(2)(a) 9(2)(a) in the field and 9(2)(a) will hook you up. I gave your home number to my colleagues on the quake day before learning that you were abroad, so your daughter may have had a call. Good luck with the surveys. Keep in touch as required. I will facilitate as needed. Hugh

--- original message ---

From: 9(2)(a) @canterbury.ac.nz>
Subject: RE: Clearinghouse
Date: 6th September 2010
Time: 8:21:07 am

Thank you 9(2)(a)

I am coordinating the efforts of a detailed geotech reconnaissance starting this Friday together with the GEER Team (US; lead by 9(2)(a)). The team will include:

- UC: 9(2)(a) (from Monday), 9(2)(a) anyone from Eng. Geol. or Geol. that would like to join us).
- Local practitioners/experts: 9(2)(a) 9(2)(a) hope you can join the effort; the first meeting will Thursday afternoon; will let you know the details).
- GEER Team (6 people led by 9(2)(a) they are coming with SASW, DCPT, LIDAR)
- UA: 9(2)(a) me know who is joining us from Auckland

9(2)(a) and Hugh Cowan: I know you are extremely busy, but: is there any logistic support, procedures or coordination that we would need to go thorough.

The preliminary plan is:

Thursday afternoon - NZ team prep meeting (observations from preliminary reconnaissance - 9(2)(a) 9(2)(a) identification of points of interest / investigation focus; logistics and organizational issues / split teams / equipment) Friday afternoon - NZ-GEER Team meeting (reconnaissance plan / routes and targets for GR Teams) Saturday - Start of GR Teams reconnaissance.

Regards,

9(2)(a)

9(2)(a)

Department of Civil and Natural Resources Engineering University of Canterbury Private Bag 4800 Christchurch, 8140 New Zealand

9(2)(a)

From: 9(2)(a)
Sent: Mon 6/09/2010 11:16 p.m.
To: 9(2)(a)

Cc: 9(2)(a); 'Hugh Cowan'; 9(2)(a)
Subject: RE: Clearinghouse

Dear All,

Please find some tentative minutes attached.

Note that the time and venue of tomorrows clearinghouse meeting has been changed to 5pm at the ECAN building (58 Kilmore Street).

Also, I am not able to access the university email so it is difficult to pull together all my addresses. Please could you cc. this to anyone who may be interested?

Many thanks,

9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Tuesday, 7 September 2010 12:53 a.m.
To: 9(2)(a)
Subject: FWD: RE: Clearinghouse
Attachments: RE: Clearinghouse

Marija Bakulich

From: 9(2)(a)@canterbury.ac.nz>
Sent: Tuesday, 7 September 2010 12:21 a.m.
To: 9(2)(a)
Cc: 9(2)(a) Hugh Cowan; 9(2)(a)
9(2)(a)
Subject: RE: Clearinghouse
Importance: High

Thank you, 9(2)(a)

I am coordinating the efforts of a detailed geotech reconnaissance starting this Friday together with the GEER Team (US; lead by 9(2)(a)). The team will include:

- UC: 9(2)(a) (from Monday), 9(2)(a), anyone from Eng. Geol. or Geol. that would like to join us).

- Local practitioners/experts: 9(2)(a)

9(2)(a) hope you can join the effort; the first meeting will Thursday afternoon; will let you know the details).

- GEER Team (6 people led by 9(2)(a) they are coming with SASW, DCPT, LIDAR)

- UA: 9(2)(a) let me know who is joining us from Auckland

9(2)(a) and Hugh Cowan: I know you are extremely busy, but: is there any logistic support, procedures or coordination that we would need to go thorough.

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Regards,

9(2)(a)

9(2)(a)

Department of Civil and Natural Resources Engineering University of Canterbury Private Bag 4800 Christchurch, 8140 New Zealand

9(2)(a)

@canterbury.ac.nz

From: 9(2)(a)

Sent: Mon 6/09/2010 11:16 p.m.

To: 9(2)(a)

9(2)(a)

Cc: 9(2)(a)

'Hugh Cowan';

9(2)(a)

Subject: RE: Clearinghouse

Dear All,

Please find some tentative minutes attached.

Note that the time and venue of tomorrows clearinghouse meeting has been changed to 5pm at the ECAN building (58 Kilmore Street).

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Many thanks,

9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 4:40 p.m.
To: 9(2)(a)
Subject: FWD: RE: Clearinghouse
Attachments: RE: Clearinghouse

Hi 9(2)(a) for your info as indicated by 9(2)(a) cheers Hugh

9(2)(a)

From: 9(2)(a)@soe.ucsd.edu>
Sent: Wednesday, 8 September 2010 4:07 p.m.
To: Hugh Cowan
Subject: RE: Clearinghouse

Then, I will do this. 9(2)(a) is right there at the right location and in the right position – let 9(2)(a) know it. 9(2)(a)

From: Hugh Cowan [mailto:9(2)(a)]
Sent: Tuesday, September 07, 2010 9:04 PM
To: 9(2)(a)
Subject: Re: Clearinghouse

9(2)(a)

I think it could be equally useful in NZ too, since you are completely independent in terms of funding support or affiliation. It has been on my mind - and I sent a message yesterday to 9(2)(a) about it - that the existence and performance of GeoNet probably needs to be pointed out to officials and politicians, who might otherwise never realise how fortunate NZ is to have the high quality facility and skilled people.

Without GeoNet (and the people) the emergency response and public would have been confused, safety inspections would have been more tentative, the recovery planning would lack important information and EQC's ability to inform the underwriting and pricing of reinsurance risk would be severely retarded.

cheers
Hugh

On Wed, Sep 8, 2010 at 3:47 PM, 9(2)(a)@soe.ucsd.edu> wrote:
Hugh,

At some point in the next few weeks, I would like to contact 9(2)(a) who was a PhD colleague of mine in the old days and express my full support for the excellent response GeoNet and in general GNS has had to the CHCH earthquake. This would be very useful here in the US, but since I am out of touch with NZ, I would like to ask you if this is adequate or even appropriate. I believe MPs should have feedback from the community about the investment the country has made in the past.

Let me know.

9(2)(a)

From: Hugh Cowan [9(2)(a)@gmail.com]
Sent: Tuesday, September 07, 2010 6:03 AM
To: 9(2)(a)
Subject: Fwd: Clearinghouse

Hi 9(2)(a)

Let me know if you are already receiving these updates. saludos, hugh

ps. La primavera he llegado en Santiago . :-)

----- Forwarded message -----

From: 9(2)(a) [redacted] @canterbury.ac.nz>>

Date: Wed, Sep 8, 2010 at 12:17 AM

Subject: RE: Clearinghouse

9(2)(a) [redacted]

9(2)(a) [redacted] Hugh Cowan

<HACowan@eqc.govt.nz<mailto:HACowan@eqc.govt.nz>>, 9(2)(a) [redacted]

9(2)(a) [redacted]

Attached are some details on the ground motions in response to the comments in tonights Clearinghouse meeting. The ground motions are as expected from such an event. The long period nature of the motions is the result of the soft soils upon which christchurch is founded on. These soils effectively act as a filter and remove high frequency ground motion (leading to smaller PGA values than on rock sites), but amplify long period motion resulting in significantly larger longer period motion than on rock sites.

9(2)(a) [redacted]

From: 9(2)(a)

Sent: Tue 7/09/2010 11:57 p.m.

To: 9(2)(a)

9(2)(a)

Cc: 9(2)(a)

'Hugh Cowan'; 9(2)(a)

Subject: Clearinghouse

Dear All,

Please find some tentative minutes attached.

Tomorrows we hope to have a shorter clearinghouse meeting at 5pm at the ECAN building (58 Kilmore Street). Project leaders should be prepared to speak for everyone in their area.

Please send this email to anyone who may be interested.

Many thanks,

9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 3:31 p.m.
To: 9(2)(a)
Subject: RE: Please review the revised EQC section

Loss estimates at this stage are based on imperfect models :)

--- original message ---

From: 9(2)(a)@dia.govt.nz
Subject: RE: Please review the revised EQC section
Date: 7th September 2010
Time: 11:26:53 pm

Thanks Hugh. I just finished the 'busy' period!

EQC media release said that it is likely to be at upper end of \$1-2 billion.

From: Hugh Cowan [mailto:9(2)(a)]
Sent: Wednesday, 8 September 2010 3:24 p.m.
To: 9(2)(a)
Subject: Re: Please review the revised EQC section

Hi 9(2)(a)

My comments with tracked changes. Not many. Reads well. I deleted the final sentence of the footnote simply because all insurance entities face the same challenges related to call handling etc during a large event, whereas the "test" you refer to is the ability to meet the cost of claims for the largest (impact) event in its history. For this event the outcome is likely to be fine because of the way in which our reinsurance is structured. Growing the fund again in the wake of the loss will be more interesting, given the competing pressures on the government's balance sheet, but that lies beyond the scope of your paper and discussion.

regards

Hugh

On Wed, Sep 8, 2010 at 9:00 AM, 9(2)(a)@dia.govt.nz <mailto:9(2)(a)@dia.govt.nz> wrote:
Hi Hugh,

Would you be able to quickly review the revised EQC section (attached)?

The changes have been made based on:

- * The reviewer's comments: minor wording suggestions, and questions about "compulsory". One of the reviewer's questions focused on the terms "compulsory" and "semi-compulsory". He asked "What is not compulsory about it?"
- * The latest Canterbury earthquake: see the footnote.

It would be much appreciated if you could send back your comments by COP today / Wednesday. Well, no later than COP Thursday (my time) please. :-)

Many thanks!

9(2)(a)

From: Hugh Cowan <9(2)(a)>
Sent: Wednesday, 8 September 2010 2:51 p.m.
To: 9(2)(a)
Cc: 9(2)(a); Hugh Cowan; 9(2)(a)
Subject: Re: Draft media release - Retrofitting houses (Victoria University research)

Dear 9(2)(a)

I have concern with sections of the current wording of the press release, which is alarmist and implies far greater predictive value for our analysis and understanding than is warranted.

For example, the statement: "A significant proportion were found to be so poor that they would be expected to fail in relatively minor earthquakes" - begs the question as to what is a relatively minor earthquake? - is it a magnitude 5 earthquake at shallow depth directly beneath the city or a magnitude 7.5 at a distance of 100km? We currently have no means of predicting the distribution of damage at the household level from one quake to the next.

I am currently in Chile studying the impact of the magnitude 8.8 earthquake earlier this year. In this and many previous earthquakes, fewer than 1% of buildings including ancient dwellings were "selected" by the earthquake and risk factors were just as likely to involve soil characteristics or wave focusing as building defects - as seen in Christchurch now. The public however, and particularly those who participated in the 9(2)(a) could be forgiven for thinking their home is teetering on the balance when in fact all of the pre-1943 dwellings in Wellington have experienced stronger shaking than any since then.

I have no problem with 9(2)(a) promoting his work and the importance of building standards, but the tenor of the current draft is, frankly misleading if not immature. I would be grateful if you would address this point and then, by all means, proceed. It is a timely opportunity to promote the benefits of such work and EQC will support it.

regards
Hugh Cowan

010/9/8 9(2)(a)@vuw.ac.nz>

Good morning 9(2)(a) and Hugh

Attached is a draft media release about the Victoria University research led by 9(2)(a) on retrofitting houses. As both BRANZ and EQC are referred to in the release I thought you might to look at it before it goes out. Are you able to confirm today that you are OK with it please? Please let me know if you have any concerns.

Kind regards

9(2)(a)

9(2)(a) | Victoria University of Wellington Te Whare Wānanga o te Ūpoko o te
Ika a Māui | Ph: 9(2)(a) | www.victoria.ac.nz

9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 1:46 p.m.
To: 9(2)(a)
Subject: RE: Clearinghouse

Hi 9(2)(a) have forwarded your latest posting to my colleagues so they will be aware of it. I am still in Chile, learning how large claim numbers are managed. Thanks for earlier tip about your blog, I am always interested. A rare event in any career and good to see you making rapid sense of it. Suggest you interbat with 9(2)(a) who helps us with our loss model. Very clever and experienced. You would help each other. Regards, hugh

--- original message ---

From: "9(2)(a)" <9(2)(a)@canterbury.ac.nz>
Subject: RE: Clearinghouse
Date: 7th September 2010
Time: 5:36:17 am

Hi Hugh

I have been updating my website 9(2)(a) regularly in order to properly inform the public and press of what we have been doing and our current state of knowledge on the earthquake. Have a look if you are interested.

9(2)(a)

From: Hugh Cowan [mailto:hacowan@eqc.govt.nz]
Sent: Tue 9/7/2010 1:00 AM
To: 9(2)(a)

9(2)(a)

Subject: RE: Clearinghouse

Hi 9(2)(a) great to hear your plan. I have forwarded your message to 9(2)(a) at EQC for coordination because I am in Chile (although receiving and contributing to daily action by phone). We have a geotech team led by T&T 9(2)(a) in the field and 9(2)(a) will hook you up. I gave your home number to my colleagues on the quake day before learning that you were abroad, so your daughter may have had a call. Good luck with the surveys. Keep in touch as required. I will facilitate as needed. Hugh

--- original message ---

From: 9(2)(a) <9(2)(a)@canterbury.ac.nz>
Subject: RE: Clearinghouse
Date: 6th September 2010
Time: 8:21:07 am

Thank you 9(2)(a)

I am coordinating the efforts of a detailed geotech reconnaissance starting this Friday together with the GEER Team (US; lead by 9(2)(a) [redacted]. The team will include:
- UC: 9(2)(a) [redacted] (from Monday), 9(2)(a) [redacted] anyone from Eng. Geol. or Geol. that would like to join us).

- Local practitioners/experts: 9(2)(a) [redacted]
9(2)(a) [redacted]: hope you can join the effort; the first meeting will Thursday afternoon; will let you know the details).

- GEER Team (6 people led by 9(2)(a) [redacted] they are coming with SASW, DCPT, LIDAR)

- UA: 9(2)(a) [redacted] let me know who is joining us from Auckland

9(2)(a) [redacted] and Hugh Cowan: I know you are extremely busy, but: is there any logistic support, procedures or coordination that we would need to go thorough.

The preliminary plan is:

Thursday afternoon - NZ team prep meeting (observations from preliminary reconnaissance - 9(2)(a) [redacted]
9(2)(a) [redacted] identification of points of interest / investigation focus; logistics and organizational issues / split teams / equipment) Friday afternoon - NZ-GEER Team meeting (reconnaissance plan / routes and targets for GR Teams) Saturday - Start of GR Teams reconnaissance.

Regards,

9(2)(a) [redacted]

Department of Civil and Natural Resources Engineering University of Canterbury Private Bag 4800 Christchurch, 8140 New Zealand

9(2)(a) [redacted]

From: 9(2)(a) [redacted]

Sent: Mon 6/09/2010 11:16 p.m.

To: 9(2)(a) [redacted]

9(2)(a) [redacted]

Cc: 9(2)(a) [redacted]

'Hugh Cowan'; 9(2)(a) [redacted]

Subject: RE: Clearinghouse

Dear All,

Please find some tentative minutes attached.

Note that the time and venue of tomorrows clearinghouse meeting has been changed to 5pm at the ECAN building (58 Kilmore Street).

Also, I am not able to access the university email so it is difficult to pull together all my addresses. Please could you cc. this to anyone who may be interested?

Many thanks,

9(2)(a) [redacted]

9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 1:22 p.m.
To: 9(2)(a)
Cc:
Subject: FWD: RE: Clearinghouse
Attachments: RE: Clearinghouse

9(2)(a) you may already receive these notes, but just in case, you probably should be aware of this one.
Cheers, hugh

9(2)(a)

From: 9(2)(a)@canterbury.ac.nz>
Sent: Wednesday, 8 September 2010 12:45 p.m.
To: 9(2)(a)

Cc: 9(2)(a) Hugh Cowan; 9(2)(a)
Subject: RE: Clearinghouse

Dear all

There is a house at 9(2)(a) Rolleston that is located in the active fault zone. I am here now. Many of the aftershocks I believe are occurring at the fault tips and this house is situated at the eastern fault tip. Since the mainshock, the house has incurred damage during the aftershocks due to close proximity. Is it possible for an expert to come to the house as soon as possible - this is an important location for many reasons, most importantly for the health and safety of the residents.

Their contact phone details are 9(2)(a)

9(2)(a)

From: 9(2)(a)
Sent: Tue 9/7/2010 11:42 p.m.
To: 9(2)(a)

9(2)(a)

Cc: 9(2)(a) 'Hugh Cowan'; 9(2)(a)
Subject: R: Clearinghouse

H 9(2)(a)

I apologise for not coming tonight but I and 9(2)(a) went longer within inspection of UoC Buildings. We also entered the most severe damaged buildings of campus (non structural components only) and we took interesting pictures.

Tomorrow, I, 9(2)(a) PhD from Auckland and Canterbury will inspect some bridges we know are damaged. In the afternoon I will start planning strategy for each council.

If you need to contact me call at 9(2)(a). Regards, 9(2)(a)

9(2)(a)

Department of Civil and Natural Resources Engineering

University of Canterbury Private Bag 4800, Christchurch 8140, New Zealand.

9(2)(a)

Act 1982

Da: 9(2)(a)

Inviato: lun 6/09/2010 11:16

9(2)(a)

Cc: 9(2)(a)

'Hugh Cowan'; 9(2)(a)

Oggetto: RE: Clearinghouse

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Many thanks,

9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 9:41 a.m.
To: 9(2)(a)
Subject: FWD: Draft media release - Retrofitting houses (Victoria University research)
Attachments: Draft media release - Retrofitting houses (Victoria University research)

High priority for 9(2)(a) to review and respond. I am too far away to comment. Hugh

9(2)(a)

From: 9(2)(a)@vuw.ac.nz>
Sent: Wednesday, 8 September 2010 9:27 a.m.
To: 9(2)(a)@branz.co.nz'; Hugh Cowan
Subject: Draft media release - Retrofitting houses (Victoria University research)
Attachments: housing retrofit for earthquake resistance.docx

Good morning 9(2)(a) and Hugh

Attached is a draft media release about the Victoria University research led by 9(2)(a) on retro-fitting houses. As both BRANZ and EQC are referred to in the release I thought you might to look at it before it goes out. Are you able to confirm today that you are OK with it please? Please let me know if you have any concerns.

Kind regards

9(2)(a)

9(2)(a) Victoria University of Wellington *Te Whare Wānanga o te Ūpoko o te Ika a Māui* | Ph: 9(2)(a) | www.victoria.ac.nz

DRAFT MEDIA RELEASE

Retro-fitting houses could save lives

Retro-fitting existing house foundations to resist earthquakes could save lives and reduce the extent of rebuilding required after a large quake, Victoria University researchers say.

9(2)(a) from Victoria's School of Architecture is leading a team that is investigating cost-effective, practical systems of retro-fitting houses, particularly for foundations with difficult access.

"Previous research by 9(2)(a) and sponsored by the Earthquake Commission showed that more than half of domestic dwellings randomly sampled in Wellington did not meet current code requirements and their ability to resist a major earthquake is questionable," says 9(2)(a).

"A significant proportion were found to be so poor that they would be expected to fail in relatively minor earthquakes."

Houses found to be especially at risk were those with fully piled foundations built before 1978.

"After a house is constructed it is very difficult, if not impossible, to install some types of foundation systems and most standard connection details cannot be used due to space and access constraints or material incompatibilities. Our project will investigate alternative systems."

The project involves designing and building alternative bracing and connections, with testing in the structures laboratory at the Building Research Association of New Zealand (BRANZ).

"We aim to find a solution that is cheap and easy to install, making it accessible to homeowners."

For more information please contact 9(2)(a) on

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 11:05 a.m.
To: 9(2)(a)
Subject: RE: catching up

Hi 9(2)(a) No problem. Guess you have heard about Canterbury quake. I am in Chile, learning how they handled 200,000 claims. Irony not lost on my hosts. Back home on Saturday. Will be busy. Hugh

--- original message ---

From: '9(2)(a)' <9(2)(a)@usgs.gov>
Subject: RE: catching up
Date: 7th September 2010
Time: 6:52:11 pm

Hi again, Hugh!

Whether my brother will be around is still undecided. Family weekend at Tufts University is that weekend and they may go up to Boston to visit him. So it may be a couple of weeks before we know whether 9(2)(a) is in town.

9(2)(a)

9(2)(a)

Geology and Environmental Change Science Center U.S. Geological Survey

MS980 Federal Center
Denver, CO 80225-0046

9(2)(a)

From: "Hugh Cowan" <HACowan@eqc.govt.nz>
To: 9(2)(a) <9(2)(a)@usgs.gov>
Date: 07/31/2010 02:54 PM
Subject:
RE: catching up

Hi 9(2)(a) just confirming a detail ? I have booked a flight to Denver for the evening of Sunday 24 Oct, arriving just before 10.00pm. This should ensure you will arrive earlier and not be under too much pressure to meet me! Ha.

Re - your brother ? I would love to meet him, so do check if he's likely to be around. Having said that, I don't want to burden him with guiding commitments! Oh, and I will probably have my colleague, 9(2)(a) with me during the weekend in Chicago. Naturally 9(2)(a) is a well-travelled, good guy too J

Cheers,
Hugh

9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 7:15 a.m.
To: 9(2)(a)
Subject: FWD: As requested
Attachments: As requested

9(2)(a)

From: 9(2)(a)
Sent: Wednesday, 8 September 2010 6:41 a.m.
To: Hugh Cowan
Subject: As requested
Attachments: Earthquake Commission Act 1993.pdf; Unit Titles Act 1972.pdf

As requested

Search for insurance in UTA for all references – quite a few!

9(2)(a)

9(2)(a)

NZ Earthquake Commission

Ph: 9(2)(a)

Mobile:

Fax:

Web: www.eqc.govt.nz

 Please consider the environment before printing this email

9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 6:59 a.m.
To: 9(2)(a)
Subject: RE: As requested

Wow, fast! 9(2)(a) sends his regards. Hugh

--- original message ---

From: 9(2)(a)@EQC.govt.nz>
Subject: As requested
Date: 7th September 2010
Time: 2:40:42 pm

As requested

Search for insurance in UTA for all references – quite a few!

9(2)(a)

9(2)(a)

NZ Earthquake Commission

Ph: 9(2)(a)

Mobile:

Fax:

Web: www.eqc.govt.nz <<http://www.eqc.govt.nz>>

P Please consider the environment before printing this email

9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 3:16 a.m.
To: 9(2)(a)
Subject: RE: Clearinghouse

Hi 9(2)(a). The end of the rupture at depth may be beyond the limits of surface rupture on the plains. Aftershock survey will reveal this.

--- original message ---

From: '9(2)(a)' <[redacted]@soe.ucsd.edu>
Subject: RE: Clearinghouse
Date: 7th September 2010
Time: 10:50:51 am

I had seen the GNS video with the fault expression, very impressive! This doc. shows some of the slides in that video. I had downloaded data and processed the response spectra in CHC, strong, but nothing out of the ordinary, I have to process data from the end of the fault, where I expect to see strong pulses, perhaps something you could expect for Wellington.

Thanks for sharing them with me Hugh!

Cheers

9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Tuesday, September 07, 2010 6:03 AM
To: 9(2)(a)
Subject: Fwd: Clearinghouse

Hi 9(2)(a)

Let me know if you are already receiving these updates. saludos, hugh

ps. La primavera he llegado en Santiago . :-)

----- Forwarded message -----

From: 9(2)(a) <[redacted]@canterbury.ac.nz>>
Date: Wed, Sep 8, 2010 at 12:17 AM
Subject: RE: Clearinghouse

9(2)(a)

9(2)(a)



9(2)(a)

Hugh Cowan

<HACowan@eqc.govt.nz<mailto:HACowan@eqc.govt.nz>>, 9(2)(a)

9(2)(a)

Attached are some details on the ground motions in response to the comments in tonights Clearinghouse meeting. The ground motions are as expected from such an event. The long period nature of the motions is the result of the soft soils upon which christchurch is founded on. These soils effectively act as a filter and remove high frequency ground motion (leading to smaller PGA values than on rock sites), but amplify long period motion resulting in significantly larger longer period motion than on rock sites.

9(2)(a)

From: 9(2)(a)

Sent: Tue 7/09/2010 11:57 p.m.

9(2)(a)



Cc: 9(2)(a)

'Hugh Cowan'; 9(2)(a)

Subject: Clearinghouse

Dear All,

Please find some tentative minutes attached.

Tomorrows we hope to have a shorter clearinghouse meeting at 5pm at the ECAN building (58 Kilmore Street). Project leaders should be prepared to speak for everyone in their area.

Please send this email to anyone who may be interested.

Many thanks,

9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Wednesday, 8 September 2010 12:47 a.m.
To: 9(2)(a)
Subject: RE: Clearinghouse

Hi 9(2)(a) thanks for the update. Just thought I would touch base and ask if you and 9(2)(a) are reaching similar or different conclusions about the motions. 9(2)(a) and I had a chat last night (for me) about the offsets in some records, wondering if we could glean evidence of extension of the rupture at depth. I am sure 9(2)(a) would be pleased to talk with you. Cheers, Hugh (in Chile).

--- original message ---

From: "9(2)(a)" <9(2)(a)@canterbury.ac.nz>
Subject: RE: Clearinghouse
Date: 7th September 2010
Time: 8:18:44 am

Attached are some details on the ground motions in response to the comments in tonight's Clearinghouse meeting. The ground motions are as expected from such an event. The long period nature of the motions is the result of the soft soils upon which Christchurch is founded on. These soils effectively act as a filter and remove high frequency ground motion (leading to smaller PGA values than on rock sites), but amplify long period motion resulting in significantly larger longer period motion than on rock sites.

9(2)(a)

From: 9(2)(a)
Sent: Tue 7/09/2010 11:57 p.m.

9(2)(a)

Cc: 9(2)(a); 'Hugh Cowan'; 9(2)(a)
Subject: Clearinghouse

Dear All,

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Tomorrow we hope to have a shorter clearinghouse meeting at 5pm at the ECAN building (58 Kilmore Street). Project leaders should be prepared to speak for everyone in their area.

Please send this email to anyone who may be interested.

Many thanks,

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 3:21 p.m.
To: 9(2)(a)
Subject: RE: Reviewers' comment

Yes, ok. I removed some statements that might quickly become outdated. That is the only risk you should avoid. Stick to facts

--- original message ---

From: "9(2)(a)" <9(2)(a)@dia.govt.nz>
Subject: RE: Reviewers' comment
Date: 8th September 2010
Time: 11:17:55 pm

Hi

You didn't comment on the appropriateness of my reference to the Canterbury eq. Presume you thought it is ok?

-----Original Message-----

From: Hugh Cowan [mailto:hacowan@eqc.govt.nz]
Sent: Thursday, 9 September 2010 3:16 p.m.
To: 9(2)(a)
Subject: RE: Reviewers' comment

Dont explain tonight please! :)

--- original message ---

From: 9(2)(a) <9(2)(a)@dia.govt.nz>
Subject: RE: Reviewers' comment
Date: 8th September 2010
Time: 11:14:21 pm

:-) Am still reading your comments. Your question about the number of TAs etc - I am pretty sure I am correct. Will explain a bit more later.

=====

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=====

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9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 10:23 a.m.
To: 9(2)(a)
Subject: RE: FW: Draft media release - Retrofitting houses (Victoria University research)

Sounds excellent, the test that is. I look forward to hearing more when I get back. Regards Hugh

--- original message ---

From: "9(2)(a)@vuw.ac.nz"
Subject: RE: FW: Draft media release - Retrofitting houses (Victoria University research)
Date: 8th September 2010
Time: 6:19:21 pm

Hugh

Thanks for your response.

What is of most concern is that we found so many shocking examples in a survey of 80 dwellings.

And 70% had no, poor or corroded connections. 2 rusted skew nails does not make an adequate pile-bearer connection.

On a more positive note we did our first test on Tuesday and one of the devices we came up with has a 6 kN capacity in tension and compression, little loss in stiffness in subsequent load cycles and is relatively flexible, would cost less than about \$20- and can be fixed using a battery drill with self-drilling screws.

9(2)(a)

9(2)(a)

School of Architecture Victoria University of Wellington PO Box 600
139 Vivian St
Wellington 6001
NEW ZEALAND

9(2)(a)

-----Original Message-----

From: Hugh Cowan [mailto:hacowan@eqc.govt.nz]
Sent: Thursday, 9 September 2010 10:04 a.m.
To: 9(2)(a)
Subject: RE: FW: Draft media release - Retrofitting houses (Victoria University research)

Hi 9(2)(a) sorry if you found my feedback offensive. I am sure there are some shocking examples as you say. My concern is how the majority could interpret remarks about a subset of homes, given that these will be generalised by most readers. I want to see us focus on developing the solutions rather than focusing on the worst problems. The images from ChCH are sufficient in that respect. I imagine you will have good students lining up to help you soon. Let me know. Cheers Hugh

--- original message ---

From: '9(2)(a) [redacted]@vuw.ac.nz'
Subject: FW: Draft media release - Retrofitting houses (Victoria University research)
Date: 8th September 2010
Time: 5:37:34 pm

Hugh

As we have given you the courtesy of commenting on this press release, I am disappointed you saw fit to make comments which are verging on offensive.

Some of the houses inspected were so poor it is hard to believe that they stay up under gravity loads. If the owners of these houses were sufficiently worried to do something about it, it wouldn't be such a bad thing.

Some may have resisted minor earthquakes in the past, but the condition of both framing and connections has deteriorated significantly in many houses due to poor drainage and lack of sub-floor ventilation, damage from tradesman and alterations.

Attached are some images which highlight these concerns

Geoff

9(2)(a) [redacted]
[redacted] School of Architecture Victoria University of Wellington PO Box 600
139 Vivian St
Wellington 6001
NEW ZEALAND

9(2)(a) [redacted]
F [redacted]
M [redacted]
E [redacted]

From: 9(2)(a) [redacted]
Sent: Wednesday, 8 September 2010 4:14 p.m.
To: 9(2)(a) [redacted]
Subject: FW: Draft media release - Retrofitting houses (Victoria University research)

Hi 9(2)(a) [redacted]
See Hugh's concerns below. Can you please suggest some appropriate wording to further tone down the release? Most of the wording was from the conference paper, so thought it would be OK, but I can understand his issues with this.

Thanks

9(2)(a) [redacted]

From: Hugh Cowan [mailto:9(2)(a) [redacted]]
Sent: Wednesday, 8 September 2010 2:51 p.m.
To: 9(2)(a) [redacted]
Cc: 9(2)(a) [redacted]@branz.co.nz; HACowan@eqc.govt.nz; 9(2)(a) [redacted]
Subject: Re: Draft media release - Retrofitting houses (Victoria University research)

Dear 9(2)(a) [redacted]

I have concern with sections of the current wording of the press release, which is alarmist and implies far greater predictive value for our analysis and understanding than is warranted.

For example, the statement: "A significant proportion were found to be so poor that they would be expected to fail in relatively minor earthquakes" - begs the question as to what is a relatively minor earthquake? - is it a magnitude 5 earthquake at shallow depth directly beneath the city or a magnitude 7.5 at a distance of 100km? We currently have no means of predicting the distribution of damage at the household level from one quake to the next.

I am currently in Chile studying the impact of the magnitude 8.8 earthquake earlier this year. In this and many previous earthquakes, fewer than 1% of buildings including ancient dwellings were "selected" by the earthquake and risk factors were just as likely to involve soil characteristics or wave focusing as building defects - as seen in Christchurch now. The public however, and particularly those who participated in the 9(2)(a) study, could be forgiven for thinking their home is teetering on the balance when in fact all of the pre-1943 dwellings in Wellington have experienced stronger shaking than any since then.

I have no problem with 9(2)(a) promoting his work and the importance of building standards, but the tenor of the current draft is, frankly misleading if not immature. I would be grateful if you would address this point and then, by all means, proceed. It is a timely opportunity to promote the benefits of such work and EQC will support it.

regards
Hugh Cowan

010/9/8 9(2)(a)@vuw.ac.nz<mailto:9(2)(a)@vuw.ac.nz>>

Good morning 9(2)(a) and Hugh

Attached is a draft media release about the Victoria University research led by 9(2)(a) on retro-fitting houses. As both BRANZ and EQC are referred to in the release I thought you might to look at it before it goes out. Are you able to confirm today that you are OK with it please? Please let me know if you have any concerns.

Kind regards

9(2)(a)

9(2)(a) | Victoria University of Wellington Te Whare Wānanga o te Ūpoko o te Ika a Māui | Ph: 9(2)(a) www.victoria.ac.nz<http://www.victoria.ac.nz/> |

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9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 10:17 a.m.
To: 9(2)(a)@vuw.ac.nz
Subject: FWD: RE: FW: Draft media release - Retrofitting houses (Victoria U niversity research)
Attachments: FW: Draft media release - Retrofitting houses (Victoria University research)

H 9(2)(a) for your info. Regards Hugh

9(2)(a)

From: 9(2)(a)@vuw.ac.nz>
Sent: Thursday, 9 September 2010 9:37 a.m.
To: 9(2)(a)
Cc: 9(2)(a)
Subject: FW: Draft media release - Retrofitting houses (Victoria University research)
Attachments: few anomolies.pdf

Hugh

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9(2)(a)

9(2)(a)

School of Architecture
Victoria University of Wellington
PO Box 600
139 Vivian St
Wellington 6001
NEW ZEALAND
Ph. 9(2)(a)
Fax. [REDACTED]
Mob. [REDACTED]
Ema. [REDACTED]

From: 9(2)(a)
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Thanks

9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Wednesday, 8 September 2010 2:51 p.m.

To: 9(2)(a) Released under the Official Information Act 1982
Cc: 9(2)(a)@branz.co.nz; HACowan@eqc.govt.nz; 9(2)(a)
Subject: Re: Draft media release - Retrofitting houses (Victoria University research)

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regards
Hugh Cowan

010/9/8 9(2)(a)@vuw.ac.nz>

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Kind regards

9(2)(a)

9(2)(a) Victoria University of Wellington Te Whare Wānanga o te Ūpoko o te
Ika a Māui | Ph: 9(2)(a) | www.victoria.ac.nz

9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 9:48 a.m.
To: 9(2)(a)
Subject: RE: Meeting with 9(2)(a)

Dear 9(2)(a) thanks for the info. Grateful if you would confirm the meeting. My phone battery is almost flat now. I am happy to call him tomorrow but best to at least confirm today. Could you please let me know? Thanks. Hugh

--- original message ---

From: 9(2)(a)
Subject: RE: Meeting with 9(2)(a)
Date: 8th September 2010
Time: 5:41:26 pm

Dear Hugh:

Your airline leaves at 23:10. You should be there at 9:10. So in theory you can be in the meeting. 9(2)(a) wants to meet at "Café Torres", in street "Isidora Goyenechea" with street "San Sebastian" (barrio El Golf, where your hotel is located -at least that is what 9(2)(a) told me). 9(2)(a) cellular phone is 9(2)(a) His e-mail is felipe.cubillos.sigall@gmail.com

I can contact him to let him know about your interest. However, it could be even better if you contact him directly.

Please let me know you plans and if you want me to contact him and confirm the meeting.

Looking to hear from you,

9(2)(a)

-----Mensaje original-----

De: Hugh Cowan [mailto:hacowan@eqc.govt.nz] Enviado el: Miércoles, 08 de Septiembre de 2010 17:29
Para: 9(2)(a)
Asunto: RE: Meeting with 9(2)(a)

Dear 9(2)(a) thanks for the message. I would very much like to meet 9(2)(a) and I think the time should be ok. However, I should check what time I must be at the airport, but I am not at my hotel just now. If you can check this with Lan Chile (santiago to Auckland), then I am happy for you to confirm the meeting now, and let me know where to in later. I think there should be enough time. Regards, Hugh

--- original message ---

From: 9(2)(a)
Subject: Meeting with 9(2)(a)
Date: 8th September 2010
Time: 5:01:18 pm

Dear Mr. Cowan:

Finally 9(2)(a) can meet with you. We understand that you are leaving the country tomorrow. He can meet you very close to your hotel tomorrow at 7:30 PM. Please let me know if you can do it at that time, otherwise to let know 9(2)(a) that you cannot meet him at the time he suggested.

Looking to hear from you,

9(2)(a)

SVS

De 9(2)(a)

Enviado el: Viernes, 03 de Septiembre de 2010 15:12

Para: 9(2)(a)

CC: 9(2)(a)

Asunto: Visiting Municipality of Concepcion

Dear Mr. Cowan:

I am writing you on behalf of 9(2)(a). We already made an appointment with the director of Public Work of the Municipality of Concepcion, 9(2)(a). The appointment is for Monday, September 6, at 11:00 AM at the said municipality. The municipality is located at the Parque Ecuador (Av. Veteranos del 79), at the "Local de Cema Chile". The phone of 9(2)(a). The department of Public Work is called in Spanish "Dirección de Obras".

If you have any other question, do not hesitate in contacting me.

Regards,

9(2)(a)

SVS

CHILE

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 9:36 a.m.
To: 9(2)(a)
Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting th is Thursday afternoon

9(2)(a) for what it is worth at this distance, I agree with you. Thanks. Hugh

--- original message ---

From: '9(2)(a)' <[redacted]@canterbury.ac.nz>
Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon
Date: 8th September 2010
Time: 5:32:43 pm

Just a quick clarification, as we will need to be careful on how this info is presented.

The surface creep that some of you are talking about in Kaipoi is NOT fault creep - it is possibly (probably) influenced by ground shaking related to aftershocks but is also what we would expect anyway for an area highly affected by a major surface and subsurface disruption following a large earthquake.

We are presently monitoring fault creep together with GNS at the tips of the fault, the eastern tip being situated near the junction of Kerrs Rd and Railway Road north of Rolleston. The fault that ruptured during the 7.1 event is nowhere near Kaipoi. If you say anything to the media about the resettlement of the ground and / or further opening of cracks in Kaipoi (or ChCh for that matter) being related directly to movement (e.g. creep) on the fault line, you will be both inaccurate and potentially create (in my opinion) undue panic, as people will think the major fault line runs through Kaipoi. I think mentioning that many of the aftershocks that we are experiencing are to be expected following an earthquake of this magnitude, and that the shaking associated with said aftershocks may be contributing to ongoing subsidence etc in these settings might be a better option.

I hope this helps, as that is how it is intended

9(2)(a)

-----Original Message-----

From: 9(2)(a) <[redacted]@dia.govt.nz>
Sent: Thu 9/9/2010 12:13 AM
To: 9(2)(a)

9(2)(a)

Cc: 9(2)(a); 'hacowan@eqc.govt.nz'; 9(2)(a)

9(2)(a)

Subject: Re: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon

9(2)(a) et al

There are many examples and papers on 'post-earthquake creep', including Edgimbe, ask 9(2)(a) the creep can be expected to decay with time, perhaps exponentially.

It may be very relevant to monitor the creep, particularly if lifelines cross the displacement field. Repaired lifelines may be rebroken in time.

Critical areas can be surveyed, less critical cracks can usefully be repeatedly marked by spray paint, straight line across a crack will show lateral displacement, spray dots on each end of a crack will show crack extension. Photograph. Next visit to an active crack respray with a different colour, rephotograph. The last photo in a sequence will show the history. Select sites that are 'protected' so that vehicles etc won't destroy the evidence..

This has been used in past eq studies.

Keep up the good developments. The recovery will be better informed, and science.

9(2)(a)
NCMC/MCDEM

----- Original Message -----

From: Mike Jacka <MJacka@tonkin.co.nz>

9(2)(a)



Hugh Cowan <HACowan@eqc.govt.nz>; 9(2)(a)

9(2)(a)



Sent: Wed Sep 08 23:08:23 2010

Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon

I have also seen ongoing settlement in southeast Kaiapoi. We visited the Courtenay Drive area on Monday and today. Cracks 120m back from the small terrace bank which i had measured at 1cm wide on Monday are now about 2-3cm wide, and a new 1cm crack has opened up a further 10m inland. A house spanning the 1.1m crack closer to the edge seems to be racked out of shape more today, as does a house 100m back from the terrace. On Monday the manholes in the street were not obviously different to pavement level, but are now protruding about 50mm higher than the road.

Some of the undisturbed sand boils I have seen are showing a fine silt/mud on the surface, perhaps entrained from a silty crust material which is slowing dissipating of excess pore pressures (perhaps suggesting ongoing movement rather than aftershock triggered). I will likely be in the area again tomorrow, so will re-measure the crack widths on the section I measured on Monday.

9(2)(a)

From: 9(2)(a)@canterbury.ac.nz
Sent: Wednesday, 8 September 2010 10:46 p.m.

9(2)(a)

Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon

Hi all,

I also won't be able to attend the geotech meeting tomorrow afternoon - as I'm heading out to the Darfield meeting too. I will brief 9(2)(a) at 1.30pm (at ECan) on how our liquefaction teams have gone and the state of data collection/processing. Happy for anyone else to join then. We were hoping to have a map by this point - but Friday is more likely now, as the teams are exhausted and data entry apparently isn't as much fun as field mapping. In short - we are pulling the data together into a spreadsheet (georeferenced) which can then be handed onto the main GIS being built for liquefaction.

In addition to 9(2)(a) request for surveying - I want to flag that there is a need to survey on-going subsidence in Kaiapoi. It appears many of the fissures/faults are continuing to move (1-20 cms/day) but it is unclear whether this is related to aftershocks or is a more continuous phenomenon. 9(2)(a) and 9(2)(a) might be able to comment more on this (they were in the field there today). I've flagged the issue with Lis but we are struggling to locate anyone (in the uni team) who might be able to do a survey (e.g. with differential GPS kit - or similar) and the appropriate survey gear.

Cheers

9(2)(a)

Tonkin & Taylor: <http://www.tonkin.co.nz>

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9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 9:34 a.m.
To: 9(2)(a)
Subject: RE: Draft media release - Retrofitting houses (Victoria University research)

Thank you, 9(2)(a) appreciate the care you are taking. 9(2)(a) has guided some good work that deserves publicity.
9(2)(a) Best wishes, hugh

--- original message ---

From: 9(2)(a) <9(2)(a)@vuw.ac.nz>
Subject: RE: Draft media release - Retrofitting houses (Victoria University research)
Date: 8th September 2010
Time: 5:23:46 pm

Hi Hugh

Thanks for your feedback. I have consulted with 9(2)(a) and we have revised the media release bearing your comments in mind.

All the best

9(2)(a)

From: Hugh Cowan [mailto:9(2)(a)]
Sent: Wednesday, 8 September 2010 2:51 p.m.
To: 9(2)(a)
Cc: 9(2)(a) @branz.co.nz; HACowan@eqc.govt.nz; 9(2)(a)
Subject: Re: Draft media release - Retrofitting houses (Victoria University research)

Dear 9(2)(a)

I have concern with sections of the current wording of the press release, which is alarmist and implies far greater predictive value for our analysis and understanding than is warranted.

For example, the statement: "A significant proportion were found to be so poor that they would be expected to fail in relatively minor earthquakes" - begs the question as to what is a relatively minor earthquake? - is it a magnitude 5 earthquake at shallow depth directly beneath the city or a magnitude 7.5 at a distance of 100km? We currently have no means of predicting the distribution of damage at the household level from one quake to the next.

I am currently in Chile studying the impact of the magnitude 8.8 earthquake earlier this year. In this and many previous earthquakes, fewer than 1% of buildings including ancient dwellings were "selected" by the earthquake and risk factors were just as likely to involve soil characteristics or wave focusing as building defects - as seen in Christchurch now. The public however, and particularly those who participated in the 9(2)(a) study, could be forgiven for thinking their home is teetering on the balance when in fact all of the pre-1943 dwellings in Wellington have experienced stronger shaking than any since then.

I have no problem with 9(2)(a) promoting his work and the importance of building standards, but the tenor of the current draft is, frankly misleading if not immature. I would be grateful if you would address this point and then, by all means, proceed. It is a timely opportunity to promote the benefits of such work and EQC will support it.

regards
Hugh Cowan

010/9/8 9(2)(a) @vuw.ac.nz<mailto:9(2)(a)@vuw.ac.nz>

Good morning 9(2)(a) and Hugh

Attached is a draft media release about the Victoria University research led by 9(2)(a) on retro-fitting houses. As both BRANZ and EQC are referred to in the release I thought you might to look at it before it goes out. Are you able to confirm today that you are OK with it please? Please let me know if you have any concerns.

Kind regards

9(2)(a)

9(2)(a) Victoria University of Wellington Te Whare Wānanga o te Ūpoko o te Ika a Māui | Ph: 9(2)(a) | www.victoria.ac.nz<http://www.victoria.ac.nz/>|

9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 8:08 a.m.
To: 9(2)(a)
Subject: RE: FW: RMS Update.....

Thanks 9(2)(a) Hugh

--- original message ---

From: 9(2)(a)@aonbenfield.com>
Subject: FW: RMS Update.....
Date: 8th September 2010
Time: 3:38:04 pm

Hi Ian, 9(2)(a) Hugh,

FYI this is the latest update from the RMS website - note there are comments on EQC's programme being triggered.

Regards,

9(2)(a) | Aon Benfield
Aon Benfield New Zealand
Level 1, 70 Shortland Street, PO BOX 699, Auckland
9(2)(a)
e 9(2)(a)@aonbenfield.com | w: aonbenfield.com

From: 9(2)(a)
Sent: 08 September 2010 15:28
To: 9(2)(a)
Subject: RMS Update.....

Darfield, New Zealand Earthquake Mw7.0

[cid:image001.jpg@01CB4FF1.9C4CC2A0]<javascript:jsOpenImage('Resources/EQ_NewZealand_LocationMap_06Sept10_v1b.jpg');>

Click on map to enlarge

Update Number: 3

Cat Date: 9/3/2010

Posting Date: 9/8/2010

[cid:image002.gif@01CB4FF1.9C4CC2A0]Expand all Sections

[cid:image003.gif@01CB4FF1.9C4CC2A0]Executive Summary On Wednesday, 08 September 2010 RMS has updated our modelling parameters, based on more information released by New Zealand's GNS Science since the earthquake, and also from damage reports from the ground of the impact of this event. Our new user-defined modelling parameters give a closer match to the updated information, and are at the lower end of the range given by the stochastic events released on Monday. We have also updated our guidance on the released stochastic events.

Based on our understanding of exposure profile of the region, we currently expect that approximately 60% - 70% of the insured loss will be residential, and 30% - 40% commercial and residential. The majority of residential claims will be paid out by the EQC, though some claims will be large enough to exceed the EQC NZ\$100,000 limit: and go into XS EQC policies. The total residential claims expected by EQC are at the upper end of NZ\$1-2bn. It is understood that the first layer of the EQC reinsurance programme starts at NZ\$1.5bn. In the light of the EQC loss estimate published on September 7th, it is likely that this programme will be triggered.

The state of emergency in Christchurch will be extended for a further 7 days in response to the latest aftershock. The magnitude 5.1 aftershock struck at 07:49 local time, 8 September. Civil defense director John Hamilton said Christchurch had suffered no significant new damage, though some properties may need re-assessing.

The building evaluation team has now assessed 970 buildings within Christchurch's Central Business District, and along the edge of arterial roads. So far just 5% of buildings assessed to date are considered unsafe, with 25% requiring further structural assessment. The remaining 70% of buildings were assessed to be safe for their intended use.

The focus is now on assessing damage in the suburbs, with the priority being Brooklands and Bexley. An estimated 500 buildings have already been condemned in the region, and approximately 100,000 of the 160,000, or almost two-thirds, of the houses in the region suffered some degree of damage during the earthquake. Many homes are reported to be structurally sound, but suffered various degrees of contents damage. Several neighbourhoods experienced damage to houses caused by liquefaction, including Avondale, Avonside, Bexley, Brooklands, Halswell, Parklands and Redcliffs.

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Return to top<https://www.rms.com/ClientResources/Catupdates/CatUpdate.asp?event_id=3162>

[cid:image003.gif@01CB4FF1.9C4CC2A0]What's New Updated modelling parameters on Wednesday, 08 September, based on the new information that has come from GNS, and also from damage reports from the ground of the impact of this event.

Released a set of User-Defined model parameters, and updated our guidance on the released stochastic events.

Updated detailed damage report and EQ Insurance sections with the latest information, and our perspective on split of losses between residential and commercial.

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[cid:image003.gif@01CB4FF1.9C4CC2A0]Characteristics

On Friday, 3 September a powerful magnitude 7.1 (moment magnitude) earthquake occurred near Christchurch, on the south island of New Zealand at 16:36 UTC (4:36 am local time). The earthquake is the most damaging New Zealand earthquake since the 1931 magnitude 7.8 Hawkes Bay earthquake, according to New Zealand's GNS Science.

The New Zealand GeoNet network reported the earthquake to be of magnitude 7.1, with an epicenter 43.55°S 172.174°E and depth of 7 miles (11km), 40 km west of Christchurch city. The mainshock had a strike-slip mechanism.

The USGS's centroid moment solution, body-wave moment tensor solution and Wphase moment solution, along with the Global CMT solution, all describe a focal source depth between 6-10 miles (10-16 km) and a moment magnitude between 6.9 and 7.0. These solutions indicate that this was a strike-slip earthquake occurring either as a result of dextral (right-lateral) rupture along an east-west trending fault, or sinistral (left-lateral) rupture along a north-south trending fault.

According to the GNS, the earthquake has produced a 14 mile (22 km) surface rupture, with lateral displacements of up to 4m (13 feet) in length. This rupture occurred in alluvial terraces that were deposited approximately 16,000 years ago, at the end of the last glaciations. GNS has confirmed that this earthquake occurred on a previously unknown fault. There are many regional faults in this area, and ongoing research by GNS over the past several years has revealed that there are more earthquake-generating fault zones close to Canterbury than had previously been thought. The RMS New Zealand EQ model was updated in 2007 to incorporate this latest understanding of the seismicity across New Zealand.

As of 10:00 UTC on Wednesday, 8 September, GeoNet have reported 349 aftershocks occurring within 1° of the epicenter. According to GeoNet recordings, these aftershocks range in focal depth from 0-20 miles (0-32 km), in magnitude from 2.4-5.6 and are broadly oriented in an east-west direction. A map showing the location of these aftershocks in relation to the USGS and GeoNet epicenters and the trace of the finite fault model used by the USGS ShakeMap can be downloaded under the 'Maps' link on the right hand side of the page.

The USGS have reported that this strike-slip earthquake occurred near the eastern foothills of the Southern Alps at the western edge of the Canterbury Plains, some 50-55 miles (80-90 km) to the south and east of the Australia-Pacific plate boundary (the Alpine and Hope faults). Despite this distance, it is likely that Friday's earthquake represents right-lateral motion on one of a number of regional faults related to the overall relative motion of the Australian and Pacific plates.

The earthquake occurred approximately 50 km to the southeast of a magnitude 7.1 event on March 9, 1929, which ruptured the surface at Arthurs Pass and caused 17 fatalities. Two earthquakes of magnitude 6.7 and 5.9 occurred in June 1994 approximately 25 miles (40 km) to the northwest of Friday's event, but did not cause any fatalities or significant property damage.

According to USGS records, this event is the 18th earthquake of magnitude 7.0 or higher during 2010 worldwide, the largest being the 27 February Mw8.8 Chile earthquake.

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[cid:image003.gif@01CB4FF1.9C4CC2A0]RMS Modeling Information On Wednesday, 08 September 2010, RMS is providing an updated set of modelling parameters, based on the new information that has come from GNS, and also from damage reports from the ground of the impact of this event. We are releasing a "user-defined" event, with two magnitude options. These user-defined events give MMIs and loss output at the low end of the range given by the

original set of stochastic events. The user-defined events do not include PLA. We have also updated our guidance on the originally selected stochastic events - and advise clients to take these into account as well.

The main new information since the original event selection has come from the New Zealand GNS' updated assessment of the rupture, since the earthquake happened. GNS has identified 22 km of fault rupture, and the location and orientation of the fault rupture does not quite match any of our stochastic events. The User-defined events will therefore provide a closer representation of the updated information than the stochastic events.

Note that aggregate locations will not take loss with this analysis option, and thus clients with aggregate data should use the stochastic events.

Users should report the standard deviation around the mean loss of event to use the secondary uncertainty captured within the RMS model.

We are investigating if there is further data that may come available in the coming days that will enable us to release an actual event footprint. However, currently, there is not sufficiently reliable data to do this.

Recommended User-defined Event Parameters

We recommend clients to run both of these events, and use the standard deviation around the mean loss as a range of possible losses. These user-defined events give MMIs and loss output range at the lower end of the originally selected stochastic events. MMI maps of these user-defined maps and the stochastic events are available underneath "modelling information" at the top right hand side of this page. The footprints are smaller overall, as is the extent of peak MMIs, than the stochastic events.

User-Defined #1

Magnitude: 7.1
Region: New Zealand
Latitude: -43.5872
Longitude: 172.2337
Depth (miles): 6.2
Rupture Length (miles): 13.7
Orientation (degrees): 83
Attenuation: New Zealand - Strike Slip

User-Defined #2

Magnitude: 7.0
Region: New Zealand
Latitude: -43.5872
Longitude: 172.2337
Depth (miles): 6.2
Rupture Length (miles): 13.7
Orientation (degrees): 83
Attenuation: New Zealand - Strike Slip

Stochastic Events

We have also updated our guidance on the stochastic events, and removed the two highest-loss events (Event IDs 1172239, 1172238) which had originally been included as a conservative view.

The following Event IDs can be used by ALM users, or those with aggregate data. Clients using these events should use the standard deviation around the mean loss as a range of possible losses, and turn on PLA.

EventID 1172215, NZ source 1129, M7.0, "Backgrnd 10km - Zone 12 019"
EventID 1172214, NZ source 1129, M7.1, "Backgrnd 10km - Zone 12 019"

These two events give the closest loss output to the new User-Defined events, and have similar MMIs in Christchurch, though the footprints are overall still a little bigger.

EventID 1172207, NZ source 1128, M7.0, "Backgrnd 10km - Zone 12 018"

EventID 1172206, NZ source 1128, M7.1, "Backgrnd 10km - Zone 12 018"

These two events are closer to the initial USGS coordinates, but MMIs in Christchurch are higher than the User-Defined events or the Source 1129 events, and can be used to give a more conservative view of the potential losses.

EventID 1172247, NZ source 1133, M7.0, "Backgrnd 10km - Zone 12 023"

EventID 1172247, NZ source 1133, M7.1, "Backgrnd 10km - Zone 12 023"

These were the original "preferred events" released by RMS, based on the initial assessment of the earthquake parameters by GNS. Based on the updated information from GNS, and damage reports, these two events now look likely to be at the top end of possible range of losses. MMIs in Christchurch are the highest of all the selected stochastic events.

Accumulation Information

For clients that wish to query their exposure at risk, RMS has released a set of accumulation footprints that capture all the postcodes that lie within the area affected by shaking of intensity V or greater according to the USGS ShakeMap (v8) as of Monday, 6 September. These footprints may be updated later this week as the extent and severity of the event becomes clearer and more refined. Please note that it is possible there could be some damage outside the range of the identified postcodes.

The accumulation files available can be downloaded under the 'Accumulation Information' tab on the right hand side of the page. The files also include a list of affected postcodes in excel format that details the MMI intensity bandings associated with each postcode.

For users of RiskLink9.0, an access database files (v2) is available on the right hand side of the page. Clients can stress test their portfolio by altering the damage ratio that is pre-set to 100 percent. To do this, open the 'acfootprint' table and alter the 'HAZVALUE' column, i.e. change 1100 to 1050 for 50 percent or 1025 for 25 percent etc.

For users of RiskLink10.0, there is an XML-formal accumulation footprint file (v2) also available for download under the same link.

RiskManager

For users of RiskManager4, RiskManager5 and RiskManager5.1, updated report template files (v2) containing the affected postcodes for this event are available to download under the 'RiskManager' link on the right hand side of the page.

Please note that in each report, the PML/damage ratios have been set at 75%, 50% and 20% (with RiskManager giving 100% by default). These are purely illustrative damage ratios and do not represent an RMS view of risk for this event.

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[cid:image003.gif@01CB4FF1.9C4CC2A0]RMS Monitoring RMS will continue to assess the information from GNS and USGS, as well as damage reports to determine actual shaking intensities experienced across the affected area: and will update the modelling parameters further if more information or data comes to light.

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[cid:image003.gif@01CB4FF1.9C4CC2A0]Detailed Impact Report Based on our understanding of exposure profile of the region, we currently expect that approximately 60% - 70% of the insured loss will be residential and 30% - 40% commercial and industrial. The majority of residential claims will be paid out by the EQC, though a small number of claims will be large enough to exceed the EQC NZ\$100,000 limit: and go into XS EQC policies. Our initial view on this is that it will be less than 10% of the total residential losses. As detailed building inspections continue, this number will become clearer. The total residential claims expected by EQC is at the upper end of NZ\$1-2bn, from 100,000 claims, which would trigger their reinsurance program, which we understand to kick in at NZ\$1.5bn.

Treasury Secretary John Whitehead has estimated that the total quake damage could reach NZ\$4 billion, with the nation Earthquake Commission likely to pay half of that, NZ\$2 billion. This would include economic damage, not covered by insurance.

The state of emergency in Christchurch will now be extended for a further 7 days in response to the latest aftershock, allowing Civil Defence the power to close buildings and restrict access to certain areas. The magnitude 5.1 aftershock struck at 07:49 local time, 8 September. There were reports of further damage from the large aftershock, though Civil defence director John Hamilton said Christchurch had suffered no significant new damage. Civil Defence authorities said some buildings would need to be reassessed as a result of the aftershock, and detailed surveys were ongoing.

The CBD cordoned-off area remained in place as of Wednesday, 8 September, in the small area bounded by Worcester Street, St Asaph Street, Colombo Street and Madras Street. The building evaluation team has now assessed 970 buildings within the CBD and along the edge of arterial roads. So far 5% of buildings assessed to date are considered unsafe, with 25% requiring further structural assessment. The remaining 70% of buildings were assessed to be safe for their intended use.

The focus is now on assessing damage in the suburbs, with the priority being Brooklands and Bexley.

An estimated 500 buildings have already been condemned in the region, and approximately 100,000 of the 160,000, or almost two-thirds, of the houses in the region suffered some degree of damage during the earthquake.

There are many reports of chimneys collapsing on residential houses, causing damage to roofs. Many homes are reported to be structurally sound, but suffered various degrees of contents damage. Several neighbourhoods experienced damage to houses caused by liquefaction, including Avondale, Avonside, Bexley, Brooklands, Halswell, Parklands and Redcliffs.

The Kaipoi area suffered extensive damage during the earthquake, with damage to houses, surface flooding, several craters opening up, and reports of mobile homes being swallowed up. Twenty-two buildings in Kaipoi have been declared unsafe to enter, and some have been demolished. Large sections of Kaipoi have been cordoned off, and residents have been advised to leave town as water and sewage services are still down.

Reports indicate that supermarkets in the area suffered contents damage, however many have now reopened. The iconic family store Blackwells suffered damage during the quake, with part of the store requiring demolition due to safety concerns.

Christchurch is home to several historic heritage properties throughout the region which have been badly hit by the earthquake. The heritage properties which had been retrofitted with earthquake strengthening survived the quake with little damage, however many without retrofitting suffered a variety of damage. The historic homesteads of Hororata, Home Bush, Godley and Ohinetahi were among those severely damaged. There are reports that the Christchurch Cathedral, which had been retrofitted, had fared remarkably well during the earthquake.

12 km from Christchurch is the port town of Lyttelton with a population of around 3,000. The historic Empire Hotel suffered severe damage and is considered unstable. Additionally, there are some reports of damage to the town's infrastructure, including some of the port facilities, though these have now resumed partial operations.

The strongest shaking occurred in the town of Darfield which is a small town located extremely close to the epicentre and has a population of around 2,000. There are no detailed reports of damage from Darfield but given the locality to the epicentre and the severity of shaking, damage is likely to be widespread and severe. Other small towns that would have been subject to strong to severe shaking include Burnham, Rolleston, Lincoln, Leeston and Rakaia.

Further progress had been made restoring utilities services to the region, with water restrictions that were imposed following the main 7.1 earthquake lifted for Christchurch City and the Banks Peninsula. However, repairs to the city's water infrastructure were set back by the aftershock, with more areas of the city without water. Furthermore, Orion estimated 30,000 customers were without power temporarily after the aftershock, though power to these homes has been restored. As estimated 500 homes are still without power, and 66 streets are without water. Telecom reported some outages though most phone services appeared to be working. The Lyttelton Tunnel was closed while it was checked for structural damage but re-opened at 11.30 when only superficial damage was found.

Public transportation was impacted by the main earthquake with suspension of services. However, as of Wednesday, 8 September, ferry, rail and bus services had been resumed. Christchurch Airport suspended flights on the day of the earthquake, but these have now been resumed. The aftershock had limited impact on these services, and those which were suspended have already been resumed. Schools and universities were due to resume classes this week, but remain closed.

Earthquake Insurance in New Zealand

All residential property owners who buy fire insurance automatically acquire cover from the Earthquake Commission of New Zealand (EQC). The EQC was created (originally as the Earthquake and War Damage Commission in 1944) to handle the Government's social obligation to make sure that people are housed after major natural disasters. Thus residential earthquake coverage, and earthquake coverage in general, is very high in New Zealand - though the Insurance Council of New Zealand notes that around 10% of property and business owners in Christchurch do not have insurance.

Released under the Official Information Act 1982

In their press release on September 7th, EQC stated they had received 21,800 claims and expect the number to rise to 100,000: the number of received claims is climbing daily. In the same press release the organisation estimated that the EQC payout for this event was "at the upper end of NZ\$1bn - 2bn". The latest media releases from the EQC can be found at this

link<<https://www.rms.com/ClientResources/Catupdates/%20http://www.eqc.govt.nz/abouteqc/publications/mediastatements.aspx>>. An up-to-date list of claims lodged with the EQC is available here<<https://www.rms.com/ClientResources/Catupdates/%20http://www.eqc.govt.nz/insurance/recent-events.aspx>>.

Under the EQC policies, dwellings (buildings) are insured up to a maximum of NZ\$100,000 (plus tax), personal effects (contents) up to NZ\$20,000 (plus tax), and land cover is provided in addition to these limits.

Private market cover exists to both 1. Extend the coverage to residential above the EQC limits for both buildings and contents, and 2. Provide coverage to commercial and industrial properties. It is expected that where dwellings have been severely damaged by the ground shaking, the repair and reconstruction costs will exceed the EQC "first loss" limits of NZ\$100,00 for buildings and NZ\$20,000 for contents. Almost all industrial and commercial policies are written on an all-risks basis and most policies include full value earthquake cover.

The global reinsurance market provides reinsurance protection to both the EQC and the private insurance market. It is understood that the first layer of the EQC reinsurance programme starts at NZ\$ 1.5bn. In the light of the EQC loss estimate published on September 7th, it is likely that this programme will be triggered.

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Return to top<https://www.rms.com/ClientResources/Catupdates/CatUpdate.asp?event_id=3162>

[cid:image003.gif@01CB4FF1.9C4CC2A0]Summary

A detailed impact report is available to clients with a valid user name and password in the 'Client Cat Update' version of this report: <https://www.rms.com/ClientResources/Catupdates/Default.asp>

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Return to top<https://www.rms.com/ClientResources/Catupdates/CatUpdate.asp?event_id=3162>

All Cat Updates for this Event

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Update #1

(9/4/2010)<https://www.rms.com/ClientResources/Catupdates/CatUpdate.asp?event_id=3162&update_number=1>

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Update #2

(9/6/2010)<https://www.rms.com/ClientResources/Catupdates/CatUpdate.asp?event_id=3162&update_number=2>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Update #3

(9/8/2010)<https://www.rms.com/ClientResources/Catupdates/CatUpdate.asp?event_id=3162&update_number=3>

Related Information

[cid:image002.gif@01CB4FF1.9C4CC2A0]

Maps

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Map of

Aftershocks<https://www.rms.com/ClientResources/Catupdates/Resources/EQ_NewZealand_Mw7.0_Aftershocks_08Sept2010_v1.jpg>

[cid:image002.gif@01CB4FF1.9C4CC2A0]

GIS Files

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Epicenter GIS

Files<https://www.rms.com/ClientResources/ProductUpdates/Download.asp?file=/Catdownloads/EQ_NewZealand_Mw7.0_EpicenterGIS_04Sept2010_V1.zip>

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MMI Hazard GIS Files

v2<https://www.rms.com/ClientResources/ProductUpdates/Download.asp?file=/Catdownloads/EQ_NewZealand_Mw7.0_MMI_Hazard_GIS_06Sept10%20_v2.zip>

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Accumulation Information

[cid:image004.gif@01CB4FF1.9C4CC2A0]

List of Affected Postal Codes

v2<https://www.rms.com/ClientResources/ProductUpdates/Download.asp?file=/Catdownloads/EQ_NewZealand_Mw7.0_List_Affected_Zips_06Sept2010_v2.xls>

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RiskLink v9 Access Accumulation Footprint File

v2<https://www.rms.com/ClientResources/ProductUpdates/Download.asp?file=/Catdownloads/EQAC_NewZealand_Mw7.0_v9_Access_Accftp_06Sept2010_v2.zip>

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RiskLink v10 XML Accumulation Footprint File

v2<https://www.rms.com/ClientResources/ProductUpdates/Download.asp?file=/Catdownloads/EQAC_NewZealand_Mw7.0_v10_XML_Accftp_06Sept2010_v2.zip>

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Modelling Information

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User Defined M7.1 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/UserDefinedEvent_M7.1.jpg>

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User Defined M7.0 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/UserDefinedEvent_M7.0.jpg>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Event 1172215 M7.0 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/StochEvent_1172215_M7.0_MMI.jpg>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Event 1172214 M7.1 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/StochEvent_1172214_M7.1_MMI.jpg>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Event 1172207 M7.0 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/StochEvent_1172207_M7.0_MMI.jpg>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Event 1172206 M7.1 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/StochEvent_1172206_M7.1_MMI.jpg>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Event 1172247 M7.0 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/StochEvent_1172247_70_MMI.jpg>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Event 1172246 M7.1 MMI

Hazard<https://www.rms.com/ClientResources/Catupdates/Resources/StochEvent_1172246_71_MMI.jpg>

[cid:image002.gif@01CB4FF1.9C4CC2A0]

RiskManager

[cid:image004.gif@01CB4FF1.9C4CC2A0]

RiskManager Files

v2<https://www.rms.com/ClientResources/ProductUpdates/Download.asp?file=/Catdownloads/EQ_NZ_RiskManagerFiles_06Sept2010_v2.zip>

[cid:image004.gif@01CB4FF1.9C4CC2A0]

Additional Web Resources<<https://www.rms.com/ClientResources/Catupdates/RelatedInformation/WebLinks.asp>>

RMS Cat Updates provide information on major earthquakes, hurricanes, windstorms and other significant catastrophe events occurring worldwide. New Cat Updates are posted at least once a day when RMS is tracking or responding to major events.

9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 7:01 a.m.
To: 9(2)(a)
Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting th is Thursday afternoon

9(2)(a) could also try 9(2)(a) of the Survey School at Otago Uni. If there is a lot to do, they perhaps could help. Tell 9(2)(a) suggested the approach. Cheers Hugh in Chile.

--- original message ---

From: 9(2)(a)@canterbury.ac.nz
Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon
Date: 8th September 2010
Time: 2:57:37 pm

Dear 9(2)(a) et al

I have emailed those who teach surveying at Canterbury in CNRE department (9(2)(a) and 9(2)(a)). I have had no response so far and am not sure they are around.

We should be able to obtain access to the survey equipment at UC from this afternoon (I am unsure where these things are stored - any ideas from UC people?).

Students (PG / UG) should be able to undertake most of the surveying, however if there is anyone from industry able to spare a brief period (a few hours or 1/2 day) for a little retraining once we have the equipment and/or to give some up-front advice that would be very useful.

thanks

9(2)(a)

From: 9(2)(a)@dia.govt.nz
Sent: Thu 09-Sep-10 00:13

9(2)(a)

9(2)(a) 'hacowan@eqc.govt.nz'; 9(2)(a)

9(2)(a)

Subject: Re: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon

9(2)(a) et al

There are many examples and papers on 'post-earthquake creep', including Edgicimbe, ask 9(2)(a) the creep can be expected to decay with time, perhaps exponentially.

It may be very relevant to monitor the creep, particularly if lifelines cross the displacement field. Repaired lifelines may be rebroken in time.

Critical areas can be surveyed, less critical cracks can usefully be repeatedly marked by spray paint, straight line across a crack will show lateral displacement, spray dots on each end of a crack will show crack extension. Photograph. Next visit to an active crack respray with a different colour, rephotograph. The last photo in a sequence will show the history. Select sites that are 'protected' so that vehicles etc won't destroy the evidence..

This has been used in past eq studies.

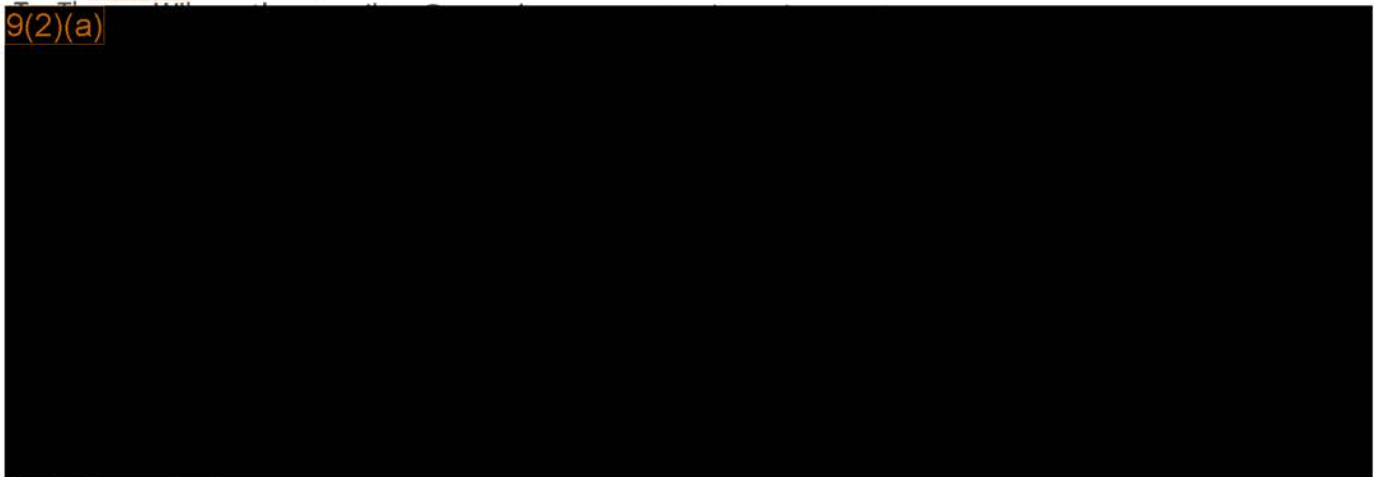
Keep up the good developments. The recovery will be better informed, and science.

9(2)(a)
NCMC/MCDEM

----- Original Message -----

From: 9(2)(a)@tonkin.co.nz>

9(2)(a)



Hugh Cowan <HACowan@eqc.govt.nz>; 9(2)(a)

9(2)(a)



Sent: Wed Sep 08 23:08:23 2010

Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon

I have also seen ongoing settlement in southeast Kaiapoi. We visited the Courtenay Drive area on Monday and today. Cracks 120m back from the small terrace bank which i had measured at 1cm wide on Monday are now about 2-3cm wide, and a new 1cm crack has opened up a further 10m inland. A house spanning the 1.1m crack closer to the edge seems to be racked out of shape more today, as does a house 100m back from the terrace. On Monday the manholes in the street were not obviously different to pavement level, but are now protruding about 50mm higher than the road.

Some of the undisturbed sand boils I have seen are showing a fine silt/mud on the surface, perhaps entrained from a silty crust material which is slowing dissipating of excess pore pressures (perhaps suggesting ongoing movement rather than aftershock triggered). I will likely be in the area again tomorrow, so will re-measure the crack widths on the section I measured on Monday.

9(2)(a)

From: 9(2)(a)@canterbury.ac.nz]

Sent: Wednesday, 8 September 2010 10:46 p.m.

9(2)(a)

Cc: 9(2)(a) Hugh Cowan; 9(2)(a)

9(2)(a)

Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon

Hi all,

I also won't be able to attend the geotech meeting tomorrow afternoon - as I'm heading out to the Darfield meeting too. I will brief 9(2)(a) at 1.30pm (at ECan) on how our liquefaction teams have gone and the state of data collection/processing. Happy for anyone else to join then. We were hoping to have a map by this point - but Friday is more likely now, as the teams are exhausted and data entry apparently isn't as much fun as field mapping. In short - we are pulling the data together into a spreadsheet (georeferenced) which can then be handed onto the main GIS being built for liquefaction.

In addition to 9(2)(a) request for surveying - I want to flag that there is a need to survey on-going subsidence in Kaiapoi. It appears many of the fissures/faults are continuing to move (1-20 cms/day) but it is unclear whether this is related to aftershocks or is a more continuous phenomenon. 9(2)(a) and 9(2)(a) might be able to comment more on this (they were in the field there today). I've flagged the issue with 9(2)(a) but we are struggling to locate anyone (in the uni team) who might be able to do a survey (e.g. with differential GPS kit - or similar) and the appropriate survey gear.

Cheers

9(2)(a)

Tonkin & Taylor: <http://www.tonkin.co.nz> <<http://www.tonkin.co.nz>>

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9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 6:59 a.m.
To: 9(2)(a)
Subject: RE: Toppled chimneys

Hi 9(2)(a) or 9(2)(a) Both madly busy as you will realise but I am sure they will inform you of the status of our info gathering. I am still in Chile. By copy of this message 9(2)(a) will be aware of your interest.
Regards Hugh

--- original message ---

From: 9(2)(a)@auckland.ac.nz>
Subject: Toppled chimneys
Date: 8th September 2010
Time: 2:18:12 pm

Hugh,

I am one of the leaders of the write-up on aspects of the performance of masonry structures, and thought that toppled chimneys deserved a report. We have plenty of photos, but I was wondering who to contact at EQC (if this is possible?) to get a capture on the number (and perhaps distribution) of toppled chimney claims that EQC have received.

Thanks, 9(2)(a)

9(2)(a)

Department of Civil and Environmental
Engineering University of Auckland Private Bag 92019 Auckland, New Zealand
<http://www.cee.auckland.ac.nz/uoa/jason-ingham>

9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 5:39 a.m.
To: Ian Simpson
Subject: FWD: FW: Christchurch Earthquake Recovery - Next Week
Attachments: FW: Christchurch Earthquake Recovery - Next Week

Ian, pls skim the following (2nd para) and consider how, or with whom, we might endorse the more sensible approach. The council will surely regret a timid approach, but few like to lead alone. Cheers Hugh. Ps everyone very impressed with EQC performance so far. Hope yot hearing same at home.

9(2)(a)

From: 9(2)(a)
Sent: Thursday, 9 September 2010 5:10 a.m.
To: 9(2)(a) Hugh Cowan
Cc: 9(2)(a)
Subject: FW: Christchurch Earthquake Recovery - Next Week

9(2)(a) Hugh - FYI

9(2)(a) - Will be touching base with 9(2)(a) (who is doing a great job) later this morning around the same question (below) of my role next week.

Hope you're managing OK with all the NZSEE matters to be handled. That was an outstanding editorial piece that you pulled together yesterday - well done!

9(2)(a) and Hugh:

I don't know if you heard the story, but CCC Councillors were supposed to be meeting today to (amongst many other things as the last meeting of the triennium) approve the updated EQP Policy, in which the prime post-Gisborne lesson of having a clause referring to the level of strengthening required post-EQ had been included. When I heard about this, I started beating the drum about having this passed under some form of urgency, in order to give some clarity and baseline for Council's building control folk (and consultants and owners). Met with Controller, CEO and Mayor Parker and they've bought into the idea, and are setting up a special Council meeting for tomorrow.

All looking good, then I finally sighted the updated policy, and the new clause. Expecting to see 67% as per NZSEE reces and Gisborne, I was bitterly disappointed to see 33%. Done to match the pre-earthquake provisions (logical) but hardly worth doing! Plus other flaws in EQP policy found in the light of events. So at a meeting late yesterday it was agreed to pursue just a quick and dirty special clause that will hopefully seal 67% for the current post-EQ situation (if they can get round the consultation issue).

I have briefed 9(2)(a) on this and he has agreed that the CDEM Group will strongly support this.

Please re-package just the previous three paras if you wish to use the info to brief others. 9(2)(a) and 9(2)(a) are across this issue following 9(2)(a) visit yesterday.

Must go

9(2)(a)

From: 9(2)(a)
Sent: Wednesday, 8 September 2010 23:47
To: 9(2)(a)
Subject: Christchurch Earthquake Recovery - Next Week

Hi 9(2)(a)

I'm sorry that I didn't get a chance to catch up with you and 9(2)(a) down here. I'll be heading back to Wgton tomorrow (Thurs) pm, and will be in the city around the middle of Friday if you'd like me to drop by.

CCC have expressed interest in me returning next week to assist them, and we will be talking about this tomorrow. While I'm sure I can be of some use to them, I have set up an organisational sub-structure for engineering aspects and forward resourced it such that it may not require my specific inputs.

This has led me to wonder if I might be more use returning (continuing) for a few days next week as a Government resource, where I could keep a broader eye on technical progress and needs.

Could you give me a call in the Released under the Official Information Act 1982 if this is of thinking is of interest or if you'd like me to see you and 9(2)(a) on Friday.

Kind regards

9(2)(a)

--

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Thursday, 9 September 2010 12:41 a.m.
To: 9(2)(a) (MCDEM)
Subject: Re: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting th is Thursday afternoon

Hi 9(2)(a) I just want to acknowledge your excellent feedback and advice about strain marking. :) hugh

--- original message ---

From: 9(2)(a) @dia.govt.nz>
Subject: Re: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon
Date: 8th September 2010
Time: 8:13:36 am

9(2)(a) et al

There are many examples and papers on 'post-earthquake creep', including Edgemicbe, ask 9(2)(a) the creep can be expected to decay with time, perhaps exponentially.

It may be very relevant to monitor the creep, particularly if lifelines cross the displacement field. Repaired lifelines may be rebroken in time.

Critical areas can be surveyed, less critical cracks can usefully be repeatedly marked by spray paint, straight line across a crack will show lateral displacement, spray dots on each end of a crack will show crack extension. Photograph. Next visit to an active crack respray with a different colour, rephotograph. The last photo in a sequence will show the history. Select sites that are 'protected' so that vehicles etc won't destroy the evidence..

This has been used in past eq studies.

Keep up the good developments. The recovery will be better informed, and science.

9(2)(a)

NCMC/MCDEM

----- Original Message -----

From: 9(2)(a) @tonkin.co.nz>

9(2)(a)

Hugh Cowan <HACowan@eqc.govt.nz>;

9(2)(a)

9(2)(a)

Sent: Wed Sep 08 23:08:23 2010

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9(2)(a)

From: 9(2)(a) [redacted]@canterbury.ac.nz

Sent: Wednesday, 8 September 2010 10:46

9(2)(a)

Hugh Cowan; 9(2)(a)

Subject: RE: [SPAM: 3.000] Chch EQ Reconnaissance - Initial team meeting this Thursday afternoon

Hi all,

I also won't be able to attend the geotech meeting tomorrow afternoon - as I'm heading out to the Darfield meeting too. I will brief 9(2)(a) [redacted] at 1.30pm (at ECan) on how our liquefaction teams have gone and the state of data collection/processing. Happy for anyone else to join then. We were hoping to have a map by this point - but Friday is more likely now, as the teams are exhausted and data entry apparently isn't as much fun as field mapping. In short - we are pulling the data together into a spreadsheet (georeferenced) which can then be handed onto the main GIS being built for liquefaction.

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Cheers

9(2)(a)

Tonkin & Taylor: <http://www.tonkin.co.nz>

9(2)(a)

From: Hugh Cowan
Sent: Friday, 10 September 2010 10:19 a.m.
To: Ian Simpson
Subject: RE: Office closed this weekend

Ian, re Monte Carlo, might not hurt to get our own summary of the event up on our website since that is where reinsurers are going to look. Sparse content at present, understandable of course! But could be cobbled together from other summaries. Main thing is to stop gaps being filled by rumour. Could 9(2)(a) something and send to me for tweaking? Disregard if already superseded. Cheers hugh

--- original message ---

From: "Ian Simpson" <isimpson@eqc.govt.nz>
Subject: Office closed this weekend
Date: 9th September 2010
Time: 4:18:11 pm

I want to thank you all for the enormous effort you have put in over the past week. I have been absolutely overwhelmed by your drive and the speed of our response to date.

Having said that, we are in for a long haul and we need to pace ourselves. With this in mind I do not want anyone to be working over the weekend unless absolutely necessary. Could anyone who feels they need to work please come and talk to me this afternoon – I will pop in over the weekend to conduct spot checks! (Obviously we'll all need to stay close to our mobiles just in case.)

Cheers,

Ian.

Ian Simpson

Chief Executive

EQC

9(2)(a)

eqc.govt.nz

9(2)(a)

From: Hugh Cowan
Sent: Friday, 10 September 2010 8:47 a.m.
To: 9(2)(a)
Subject: Re: As requested

Dicho y hecho :)

--- original message ---

From: '9(2)(a)'@svs.cl>
Subject: Re: As requested
Date: 9th September 2010
Time: 4:43:03 pm

I told you....take care with what you say...

Enviado desde dispositivo Blackberry.

----- Mensaje original -----

De: Hugh Cowan <hacowan@eqc.govt.nz>
Para: 9(2)(a)
Enviado: Thu Sep 09 15:56:17 2010
Asunto: RE: As requested

Hi Ernesto, hard to believe but I met 9(2)(a) in the street! Explained not much info from 9(2)(a) and he offered to help. What probability to meet like this in city of 5 million. . . :)

--- original message ---

From: 9(2)(a)'@svs.cl>
Subject: RE: As requested
Date: 7th September 2010
Time: 4:09:42 pm

Dear Hugh I received your email. Thank you and see you tomorrow.

9(2)(a)

-----Mensaje original-----

De: Hugh Cowan [mailto:hacowan@eqc.govt.nz] Enviado el: martes, 07 de septiembre de 2010 15:15
Para: 9(2)(a)
Asunto: FWD: As requested

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The information contained in this email is confidential to the New Zealand Earthquake Commission (EQC) and must not be used, reproduced or passed on without consent.
If you have received this email in error, informing EQC by return email or by calling (04)978 6400 should ensure the error is not repeated.

9(2)(a)

From: Hugh Cowan
Sent: Friday, 10 September 2010 8:40 a.m.
To: 9(2)(a)
Subject: RE: Canterbury Earthquake

Hello 9(2)(a) thanks for the update. I am still in Chile but on way home tonight. A lot of points in your email. Are you free to take a call? Hugh

--- original message ---

From: 9(2)(a)
Subject: Canterbury Earthquake
Date: 9th September 2010
Time: 4:34:39 pm

Hugh,

I had a call from a reinsurer at home overnight (9(2)(a)). He reckoned there was little information about damage distributions and total area affected coming out and wanted to know where he could find some. I am afraid I gave him your email address as a contact. I didn't want him bothering 9(2)(a)

It is Monte Carlo week next week and no doubt this earthquake will be the talk of the market, with the usual situation of information gaps being filled by rumour. I wonder if you and 9(2)(a) get some more information up on the web site. I didn't see there a note of EQC's latest estimate for claim numbers or amount of loss, for example. With reports of EQC's loss now exceeding the deductible, reinsurers will be hungry for information.

Maybe a Minerva map, with estimates of numbers and costs, could be maintained as a web site exhibit - with careful caveats about reliance and accuracy.

Aspects like the spotlight on land losses (something reinsurers have always discounted) and reports the government will pass legislation forcing accelerated claims payouts before proper investigation will be of concern to the market and even eventually affect the smoothness of a reinsurance recovery. The Monte Carlo melee may not be our friend, and our brokers should be kept well informed, on our behalf.

Meanwhile - I am going along to the Victoria University talk on the earthquake at lunch time today at Rutherford House. Might see you there.

Regards

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Friday, 10 September 2010 7:46 a.m.
To: Ian Simpson; 9(2)(a)
Subject: FWD: RE: FW: Christchurch Earthquake Recovery - Next Week
Attachments: RE: FW: Christchurch Earthquake Recovery - Next Week

Ian, 9(2)(a) interest and time to meet 9(2)(a) over to you. Hugh

9(2)(a)

From: 9(2)(a)
Sent: Friday, 10 September 2010 7:37 a.m.
To: 'Hugh Cowan'
Subject: RE: FW: Christchurch Earthquake Recovery - Next Week

Thanks, Hugh

I heard from 9(2)(a) that he did!

I'm in town briefly around the middle of today (my supposed stand down day!). If there's anything to brief 9(2)(a) the guys on, let me know.

From my informal 'engineering resource co-ordination' role, I am a little concerned that I don't have a clear view from 9(2)(a) and the team as to the projected needs of EQC. Under control, I hope.

Cheers

9(2)(a)

From: Hugh Cowan [mailto:9(2)(a)]
Sent: Thursday, 9 September 2010 13:27
To: 9(2)(a)
Subject: Re: FW: Christchurch Earthquake Recovery - Next Week

9(2)(a)

Have mentioned to Ian Simpson and hope he may have the chance to endorse a strategic approach to reconstruction, rather than any timid or retrograde step. He is off to an ODESC meeting now, so may mention it there. Fingers crossed.

Hugh

On Thu, Sep 9, 2010 at 5:10 AM, 9(2)(a) wrote:
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9(2)(a) and Hugh:

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Could you give me a call in the morning if this line of thinking is of interest, or if you'd like me to see you and 9(2)(a) on Friday.

Kind regards

9(2)(a)

--
9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Friday, 10 September 2010 7:40 a.m.
To: 9(2)(a)
Subject: RE: FW: Christchurch Earthquake Recovery - Next Week

Will forward to 9(2)(a) and 9(2)(a) Not sure if they reading email os via an assistant. :)

--- original message ---

From: '9(2)(a)'
Subject: RE: FW: Christchurch Earthquake Recovery - Next Week
Date: 9th September 2010
Time: 3:37:26 pm

Thanks, Hugh

I heard from 9(2)(a) that he did!

I'm in town briefly around the middle of today (my supposed stand down day!). If there's anything to brief 9(2)(a) the guys on, let me know.

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9(2)(a) and Hugh:

I don't know if you heard the story, but CCC Councillors were supposed to be meeting today to (amongst many other things as the last meeting of the triennium) approve the updated EQP Policy, in which the prime post-Gisborne lesson of having a clause referring to the level of strengthening required post-EQ had been included. When I heard about this, I started beating the drum about having this passed under some form of urgency, in order to give some clarity and baseline for Council's building control folk (and consultants and owners). Met with Controller, CEO and Mayor Parker and they've bought into the idea, and are setting up a special Council meeting for tomorrow.

All looking good, then I finally sighted the updated policy, and the new clause. Expecting to see 67% as per NZSEE recces and Gisborne, I was bitterly disappointed to see 33%. Done to match the pre-earthquake provisions (logical) but hardly worth doing! Plus other flaws in EQP policy found in the light of events. So at a meeting late yesterday it was agreed to pursue just a quick and dirty special clause that will hopefully seal 67% for the current post-EQ situation (if they can get round the consultation issue).

I have briefed 9(2)(a) on this and he has agreed that the CDEM Group will strongly support this.

Please re-package just the previous three paras if you wish to use the info to brief others. 9(2)(a) and 9(2)(a) across this issue following 9(2)(a) visit yesterday.

Must go

9(2)(a)

From: 9(2)(a)
Sent: Wednesday, 8 September 2010 23:47
To: 9(2)(a)
Subject: Christchurch Earthquake Recovery - Next Week

Hi 9(2)(a)

I'm sorry that I didn't get a chance to catch up with you and 9(2)(a) down here. I'll be heading back to Wgton tomorrow (Thurs) pm, and will be in the city around the middle of Friday if you'd like me to drop by.

CCC have expressed interest in me returning next week to assist them, and we will be talking about this tomorrow. While I'm sure I can be of some use to them, I have set up an organisational sub-structure for engineering aspects and forward resourced it such that it may not require my specific inputs.

This has led me to wonder if I might be more use returning (continuing) for

a few days next week as a Government resource, where I could keep a broader eye on technical progress and needs.

Could you give me a call in the morning if this line of thinking is of interest, or if you'd like me to see you and [redacted] on Friday.

Kind regards

[redacted]

--

[redacted]

9(2)(a)

From: Hugh Cowan
Sent: Friday, 10 September 2010 5:08 a.m.
To: 9(2)(a)
Subject: Re: [posible spam] Re: Reunión con expertos de Nueva Zelandia

Hi 9(2)(a) is generous of you to offer to meet with me. Thank you very much! I will be at Cafe Torres at 7.30.
Saludos, Hugh

--- original message ---

From: 9(2)(a)
Subject: Re: [posible spam] Re: Reunión con expertos de Nueva Zelandia
Date: 8th September 2010
Time: 5:59:35 pm

hi Hugh

looking forward to meet you tomorrow

kind regards

9(2)(a)

El 8 de septiembre de 2010 17:53, 9(2)(a) @svs.cl>escribió:

> Dear 9(2)(a)

>

>

>

> I am writing you in English because this e-mail is being copy to Hugh
> Cowan, the person who will meet you tomorrow where you suggested (Café
> Torres, barrio El Golf). Hugh might call you tomorrow; right now his
> cellular phone is low in battery.

>

>

>

> Thanks you for your cooperation. Regards,

>

>

>

> 9(2)(a)

>

> SVS

>

>

> -----

>

> *De:* 9(2)(a) mailto:

> 9(2)(a)

> *Enviado el:* Miércoles, 08 de Septiembre de 2010 16:45

> *Para:* 9(2)(a)

> *Asunto:* Re: [posible spam] Re: Reunión con expertos de Nueva
> Zelandia

>
>
>

> Hola salvador sera posible manana jueves a las 1930 en el cafe torres
> de isidora goyenechea con san sebastian. Cualquier problema me llamas

> 9(2)(a)

> -----

> Superintendencia de Valores y Seguros - Chile Planta telefónica: (56

> 9(2)(a)

> *****
> *****

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>
>
>

9(2)(a)

From: Hugh Cowan
Sent: Friday, 10 September 2010 12:15 a.m.
To: 9(2)(a)
Subject: RE: Richter

Hi 9(2)(a) actually I was in Chile at the time, learning how they are handling recovery from the Feb quake. An irony not lost on my hosts! I go back tonight. Have been in touch with 9(2)(a) her house escaped damage. Just frayed nerves. Aftershocks continue. Hugh

--- original message ---

From: "9(2)(a)" <9(2)(a)@psykologi.uio.no>
Subject: Richter
Date: 9th September 2010
Time: 6:29:23 am

I trust you are sorting out those tectonic plates down under?!

Has 9(2)(a) been affected by it all?

Enjoy!

9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Saturday, 11 September 2010 5:00 a.m.
To: 9(2)(a)@mfat.govt.nz
Subject: memory stick

My apologies 9(2)(a) The meeting with 9(2)(a) went over time and in my haste to depart I forgot to leave the data stick as arranged. I would still like to make the translation and suspect it would be more economical to do so at your end. If I may, I would like to send the stick back to you and proceed as planned. Regards, Hugh

9(2)(a)

From: Hugh Cowan
Sent: Sunday, 12 September 2010 9:37 a.m.
To: 9(2)(a)
Subject: RE: Current Arrangements in Canterbury

Hi 9(2)(a) looks like an impressive effort. Not trivial to coordinate so many elements. Is there a time when I could call for a quick chat? Cheers Hugh

--- original message ---

From: 9(2)(a)@EQC.govt.nz
Subject: Current Arrangements in Canterbury
Date: 12th September 2010
Time: 9:33:28 am

Hi all,

For the sake of clarity all round, here is a description of what's being set up in Canterbury. Photos and contact details to be promulgated when sorted.

Two inductions have been completed. The table below shows all planned induction dates, the start date of the people being inducted, the rest day for that group, and the intended site from where they will operate. You may notice that some groups work a day or two longer than the usual six days, and others a little shorter. This is to ensure that, of the seven groups operating, six will be on the streets every day. It also allows for staggered changeovers. We debated doing this at pod level but flagged it on the grounds that it becomes messy for the organisers.

Intake #

Induction Dates
Start Dates
Rest day
Location/Remarks

1

W/T 8-9 Sep
10 Sep
Friday
Level 1 Deans (ground floor will be public area)

2

F/S 10-11 Sep

12 Sep

Saturday

Addington

3

T/W 14-15 Sep

16 Sep

Wednesday

Top floor Hagley (centre floor will be CA pool, bottom floor mail/files registry, sites Co-ord centre, Quartermaster stores, and Situation/Visitor Briefing room)

4

T/F 16-17 Sep

18 Sep

Sunday

Northwood

5

M/T 20-21 Sep

22 Sep

Tuesday

Selwyn (site yet to be found and secured)

6

W/T 22-23 Sep

24 Sep

Thursday

Waimakariri (site found, yet to be secured)

7

M/T 27-28 Sep

29 Sep

Monday

AN Other in ChCh (site yet to be found and secured)

The decision on deploying more groups will be taken after a couple of weeks work from the above, so we can get a feel for the claims throughput with the Fast Track system, and the approaching-cap claims.

The sites coord centre will handle all accommodation and rental car arrangements (to avoid conflicts, double/nil bookings), stores administration, and visitor briefings. It will also be the base for 9(2)(a) and their reliefs. The three office managers will have three floors/buildings each to look after, thereby reducing the load on the tight Executive Support group list.

9(2)(a)

Earthquake Commission

L20 Majestic Centre

100 Willis St

PO Box 790

Wellington 6140

9(2)(a)

9(2)(a)

From: Hugh Cowan 9(2)(a)
Sent: Sunday, 12 September 2010 8:43 a.m.
To: Ian Simpson; 9(2)(a)
Subject: Star Times opinion piece

Ian/ 9(2)(a) you probably have seen this but just in case....

<http://www.stuff.co.nz/sunday-star-times/news/4120015/Quake-exposes-appalling-insurance-anomaly>

Does the levy-handling fee not cover the cost of administering our scheme? Comment attributed to 9(2)(a) 9(2)(a) implies that this alone prevents companies from offering cheaper cover. Less said (by me) the better, I suspect. :-)

Hugh

9(2)(a)

From: Hugh Cowan
Sent: Monday, 13 September 2010 5:41 p.m.
To: 9(2)(a)
Subject: RE: Publications re Earthquake Damage

9(2)(a)

I am coming to Christchurch this evening having arrived back from Chile on the weekend. I would be grateful for the opportunity to catch up with you at some stage. I will be in town until Friday. My principal role is to provide an executive presence for EQC across our response and our relationship to the community and other agencies. Nevertheless, I am also very interested to keep abreast of our understanding of the event and its impact as that evolves.

Let me know when we can meet or speak. My number is 9(2)(a) and I will be staying at the Quest in Worcester St.

Regards
Hugh

From: 9(2)(a) [mailto:9(2)(a)@canterbury.ac.nz]
Sent: Monday, 13 September 2010 5:28 p.m.
To: 9(2)(a)

9(2)(a) Hugh Cowan; 9(2)(a)
Subject: Publications re Earthquake Damage

Dear Darfield Earthquake Structures Group,

It is about time that we wrote up the initially interesting parts of the work. This can be part of a much greater report on the whole earthquake including rupture, seismology, soils, structures, lifelines and social aspects. However, if it looks as though the other groups may take a long time to get their preliminary ideas together, then we could publish the structural parts separately.

I have been chatting with a number of people about the best way to do this. It is still not clear, but the following may be a way of breaking it up:

Sections on:

Bridges – Coordinated by 9(2)(a) (?)

URM buildings – Coordinated by 9(2)(a) (?)

Other buildings and structures - Coordinated by 9(2)(a) if he is willing? 9(2)(a) on sabbatical here and has been very active and may have the time to pull everything together, possibly with the help of 9(2)(a)

- This mix of concrete, steel, timber and reinforced masonry seems more reasonable than considering them separately as most structures we have seen are made of several materials. Also, there is not much to write on these structures as they had very little damage.
- We could include in this survey different types of structural use such as commercial, industrial, residential and such things as silos and elevated tanks
- The non-structural effects could be described in the sections relating to the different structures, but a separate bullet point may be made on these in the conclusions

- University structures could have their own paragraph

Many people are active here in all these fields so we should acknowledge everyone who has participated (including students) as authors. We have to be careful not to leave anyone out.

People can then write their own papers from this as part of the group acknowledging the people here, or the clearinghouse.

As time passes, we will learn much more about the damage and could make a more detailed report if need be.

Does this seem reasonable? Should we break things up a different way? If so, could we get a first draft together by the 23rd June say?

Kind wishes,

9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Monday, 13 September 2010 5:37 p.m.
To: 9(2)(a)
Subject: RE: draft data access approval form

Hi 9(2)(a)

Looks straightforward insofar as it is simple and to the point. The key test for whether or not people will sign may be the cover note that explains (persuades!) why they should contribute and how this will help in future etc.... Happy to review that when you write it. 9(2)(a) better able to address how the release of data can be reconciled with our duty of care under privacy legislation.

Cheers
hugh

From: 9(2)(a)@gns.cri.nz]
Sent: Monday, 13 September 2010 5:26 p.m.
To: Hugh Cowan; 9(2)(a)
Subject: draft data access approval form

Hugh

Further to our telecon this morning, attached is a copy of the draft damage data access form that I was proposing to seek support from the commercial insurers to get client approval to enable their data to be used for research purposes.

Comments/suggestions would be appreciated.

regards

9(2)(a)

GNS Science

DDI + 9(2)(a)

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9(2)(a)

From: Hugh Cowan
Sent: Monday, 13 September 2010 5:02 p.m.
To: 9(2)(a)
Subject: postponement

Hi 9(2)(a)

Just back from Chile, and I was to have visited you later this week but must now postpone. Needless to say I have been redirected to Christchurch. I will be in touch again soon to pick up the threads.

regards

Hugh Cowan
Research Manager
Earthquake Commission
Level 20, Majestic Centre
100 Willis Street, P.O. Box 790
Wellington, New Zealand
DDI +9(2)(a)

9(2)(a)

From: Hugh Cowan
Sent: Monday, 13 September 2010 12:04 p.m.
To: 9(2)(a)
Subject: RE: IAEG2010

Will do!

-----Original Message-----

From: 9(2)(a)@canterbury.ac.nz]
Sent: Monday, 13 September 2010 12:03 p.m.
To: Hugh Cowan
Subject: Re: IAEG2010

Let me know if you are coming down -

On 13/9/10 11:58 AM, "Hugh Cowan" <HACowan@eqc.govt.nz> wrote:

> Hi 9(2)(a)

>

> Thanks for that. Glad to hear it went well and I'll no doubt hear more
> when we eventually catch up. My first day back in the office - last
> week it was all by phone and email. Not sure when I will visit ChCh
> but likely soon.

>

> Regards

> Hugh

>

> -----Original Message-----

> **From:** 9(2)(a)@canterbury.ac.nz]

> **Sent:** Monday, 13 September 2010 7:43 a.m.

> **To:** Hugh Cowan

> **Subject:** Re: IAEG2010

>

>

> Hi Hugh,

>

> Just a quick note to say that I felt the IAEG conference went off very
> well.

>

> I will give you a fuller report report once I have had the
> opportunity to collect a few thoughts, but feedback I got was
> excellent all round. The Commission's support of the conference was
> very well identified and the valuable role played by EQC was remarked
> upon by more than one overseas visitor. You can be pleased with your
> sponsorship investment and praise is due the conference organisers.

>

> It was a pleasure to once more be able to present EQC to a wider
> audience.

>

> Thanks for the opportunity

>

