

Interactive comment on “The utility of earth science information in post-earthquake land-use decision-making: the 2010–2011 Canterbury earthquake sequence in Aotearoa New Zealand” by Mark C. Quigley et al.

Anonymous Referee #1

Received and published: 12 May 2020

GENERAL COMMENTS This paper is dealing with earth sciences information is used for post-disaster land-use planning decisions during the 2010-2011 Canterbury earthquake sequence (Christchurch, New Zealand). The scope of this paper is limited to mass movements and ground surface fault rupture because authors possess intimate knowledge of those hazards. Unfortunately, just brief comparasions are made for liq-uefaction.

Manuscript is well structured and clear. However, there are a lot of institutions involved in the research (New Zealand Cabinet, CERA, Christchurch City Council, MfE, MBIE,

ECQ, ECan, SDC) so a new section to explain interactions (hierarchy, competences, and so on) among them would be greatly appreciated. I would reduce the number of acronyms used (for readers not familiarised with them), especially those not used more than twice.

I would clarify the compulsory regulations, if any, to enforce geotechnical reports.

A map showing differences in land uses after CES would be appreciated to check the real impact of earth sciences information

SPECIFIC COMMENTS

Maybe answers to some of the next questions could be useful to improve the paper in order to clarify it.

Line 210 Were domestic dwellings damaged by earthquakes after 16/2/2011 (Table S1)? Line 230 Do you mean the revised Selwyn District Plan? Line 239 I suppose that buffer zone is 20 m. according to Kerr et al, 2003. Is that buffer considered in fig. 1C? Lines 285 Are Kerr et al, 2003 and Building Act the pre-disaster geotechnical guidelines? Line 305 Which is the percentage of fault avoidance zones in current district plans considering maps of past surface rupture faults? Do you have the information for revising plans? Have the results improved when compared to those published by Saunders, W.S.A., Beban, J.C. and Coomer, M.A. (2014). Analysis of natural hazard provisions in regional policy statements, territorial authority plans, and CDEM Group Plans. GNS Science report 2014/28. Lower Hutt: GNS Science? Line 360 Was the reduction of dwellings to be evacuated due to the 13 June 2011 Mw 6.0 earthquake damages? Line 426 Has reforestation been proposed as solution for rockfall hazard? Line 784. Are hazard maps legally binding? Line 801 Is District Plan including liquefaction and ground rupture?

Figure 1. I would have considered one figure for each hazard in order to enlarge some small figures.

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Fig. 1A. I suppose that SDC corresponds to 1C. I have missed buildings (and specifically damaged buildings mentioned in Lines 163-166, Lines 243-245) in fig. 1C. Is the fault avoidance zone restricted to one type of deformation (well defined, distributed or uncertain) or to all of them? Is the buffer already considered?

Fig. 2 Too much information. Table S1 is more clear. Table S2 would be better with landscape orientation.

TECHNICAL COMMENTS

Line 120, 129, 146 and 148. Reference of Berryman 2012 is missing Line 280. ordinances instead of ordnances Lines 250, 251, 253 and 638. Hornblow et al, 2014 should be 2014a or 2014b? Lines 447 and 813. Building Act is not included in references Lines 490 and 682. Reports are not included in references Line 518. 5.2.3 should be 5.2.2 Line 616. Reference of Drabek 2007 is missing Line 669. "Replacement Christchurch District Plan (RCDP)" instead of "Replacement Christchurch District Plan" Line 783. Reference of Gerstenberger et al, 2104 (probably 2014) is missing Line 814 Local Government Act 2002 should be included in references Lines 821 to 825. Sentence is repeated (lines 770 to 774). Please, rewrite it. Line 845. Correct "and liquefaction hazards are the be applied"

Author contribution: W.S. contribution is missing

References: Line 901 Cubrinonovski et al, 2010 is not in alphabetical order Line 955 Hornblow et al, 2014 should be 2014a? Line 1022 Massey et al, 2011 are not cited Line 1044 Mileti, 1999 is not cited Line 1047 Neth, 2016 is not cited Line 1064 2010a instead of 2010? Line 1097 Saunders and Beban, 2014 are not cited Line 1107 Stahl et al., 2013 should be Stahl et al, 2014

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2020-83>, 2020.

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