

Canterbury Residential Recovery Workshop

10 October 2012

SUMMARY OF PROCEEDINGS

Summary of Canterbury Residential Recovery workshop

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Introduction

This summary of proceedings is a record of notes taken through the workshop help between a range of stakeholders on solutions to overcoming barriers to working in Technical Category 3 (TC3). Please note the following:

- This cannot be a complete record, as it is impractical to record all the comments and suggestions across 80 individuals
- They represent the views of the individual and are not the policy of either the contributing organisations or of government
- They are presented solely as a record of discussion.

Background

The reason why the workshop was convened was to identify why the residential recovery is not proceeding on a scale and a rate that is considered acceptable by the community and by the Government on the residential flat land, particularly properties categorised as TC3.

Now that flat land zoning decisions have been made (and reviewed and finalised) to provide an opportunity for homeowners to exit from particular residential areas of Canterbury, recovery, repair and rebuilding efforts in the remaining residential areas could be much further advanced than they are.

The Government zoned the residential land Red and Green so that everyone would have certainty going forward and could get on with their lives. There has been considerable frustration expressed that many in the green zone have still not been able to progress their recovery (repairs or rebuilding). In many cases this is because of misunderstandings and misinformation, and these barriers need to be urgently removed.

The objectives of the workshop were therefore to:

- Communicate the current engineering and scientific thinking to create a common understanding
- Provide an opportunity for meaningful engagement between key players in the Canterbury Earthquake Recovery –particularly the residential rebuild
- Identify concrete actions that will:
 - Overcome or minimise barriers to rebuilding in TC3 areas, and
 - Accelerate the rebuilding and repairing of homes.

Session 1 - Scientific and Engineering Knowledge

Opening presentation by Nick Rogers (Tonkin and Taylor)

Before the Canterbury earthquake series, Christchurch City was already putting in place measures to adapt to climate change, making sure that floor levels of buildings in future provided freeboard for anticipated sea level rise and increased rainfall. The current thinking in terms of building on land subject to a liquefaction hazard has been developed over a 2 year period, and it is important to appreciate the key pieces of knowledge that have informed the current thinking. The current information which forms the framework within which the residential recovery in TC3 (and elsewhere) operates includes:

- Intensive land damage mapping after the Darfield Earthquake on 4 September 2010 demonstrated that the land had performed differently in different places, ranging from no damage in the less vulnerable areas to severe damage in the most vulnerable areas.
- That no damage was observed in some areas does not mean that liquefaction had not occurred beneath the area so mapped.
- The relative land performance descriptions used in the mapping correlate to performance levels set out in Earthquake Engineering Guidelines published by the NZ Geotechnical Society, 2010.
- The EQC Stage 1 Report, published on 22 October 2010,
 - put the Darfield earthquake in the context of other natural hazards
 - covered design standards and performance
 - discussed the suitability of the land for rebuilding
 - set out remediation options, including withdrawal.
- Government decided that, at a community level, a target performance level for land at a 500 year return period (Ultimate Limit Scale (ULS)) event should be moderate damage with some minor and some major damage. On the performance scale of 0 to 10, this was mid range (4 to 5). This target level provided an acceptable level of risk at an affordable cost.
- The EQC Stage 2 Report published on 1 November 2010 set out these targets, together with recovery zones.
- To provide a level of increased resilience DBH published a Guidance Document for the repair and rebuilding in Canterbury on 1 December 2010.
- The destructive Christchurch Earthquake on 22 February 2011 caused a greater extent of the same types of land damage due to much higher shaking intensities.
- Slab on grade and heavy buildings performed noticeably worse than light weight timber frame buildings.
- Light weight buildings with weatherboards and iron roofs were much more readily repairable than masonry, slab on grade buildings.
- **It wasn't the land that was unsuitable, it was the buildings that were unsuitable for the land**

Presentation by Andrew King (GNS)

- After the Christchurch earthquake GNS advised that as a result of the earthquakes the seismicity in the region had changed
- Canterbury will remain in a state of elevated seismicity for the next 30 to 50 years, but the current seismic risk levels are rapidly diminishing back towards background levels.

- The level of seismic risk for Christchurch and surrounding urban areas are significantly less than those quoted in the media, which are for Canterbury as a region.
- The recovery has therefore had to **adapt to seismic change**.
- The seismic change (meaning higher levels of earthquake shaking more frequently), together with the considerably greater extent of damage, made it impracticable to rebuild everywhere in a timely manner.

Presentation by Sjoerd van Bellegooy (Tonkin and Taylor)

- Modelling of all the subsurface investigation data (over 4000 boreholes and CPTs) demonstrates that at all levels (10 year to 500 year return period) of shaking the red zoned land is considerably more vulnerable to damage than the green zoned land.
- Red zoned land is considerably more vulnerable to damage under all levels of shaking than TC3.
- T&T analysis is showing that only under higher levels of shaking does TC3 become more noticeably vulnerable than TC2, but this is still considerably less vulnerable than red zoned land.
- The September 2010 event caused reasonably uniform levels of shaking across greater Christchurch.
- Based on current seismicity predictions, the September 2010 levels of shaking in Christchurch roughly represent a 100 year return period level of shaking
- The February 2010 event resulted in spatially varying levels of shaking across greater Christchurch. Eastern Christchurch experienced very high levels of shaking, whereas the western and northern parts of Christchurch experienced low levels of shaking.
- Based on current seismicity predictions, the February 2011 levels of shaking in eastern Christchurch roughly represent a 500 year return period level of shaking, quickly decaying to 100 year return period levels of shaking (and less) in western and northern Christchurch.
- Prediction models show the red zoned land (i.e. the land that was heavily affected by liquefaction damage from the September 2010 event) is significantly more vulnerable to liquefaction damage at lower levels of shaking compared to TC2 and TC3 zoned land.
- TC2 and TC3 zoned land have very similar performance at levels of shaking up to about the 100yr return period level of shaking.
- Prediction models show that at 500yr return period levels of shaking, TC2 land is generally vulnerable to minor liquefaction damage and TC3 land is generally vulnerable to moderate liquefaction damage

Presentation by Dave Bundson and Nick Traylen (Engineering Advisory Group)

- DBH published revised guidelines to inform the repair and rebuild on 1 November 2011. These guidelines were accompanied by maps delineating technical foundation investigation categories (TC1, TC2 and TC3), which showed what investigation levels and repair methodologies could be applied where.
- The guidance is intended to provide an appropriate level of overall foundation resilience throughout the residential building stock.
- The guidance allows resources to be targeted to where they are likely to be needed most.

- DBH published Appendix A to their revised guidance on 27 April 2012, which details investigation and design requirements for TC3.
- Methods and solutions outlined in the Guidance are not mandatory, but will achieve compliance with the Building Act 2004 (BA) and the Building Code
- The DBH document also provides guidance to Building Consent Authorities (BCAs) using the reasonable grounds provisions of s49 BA
- Lighter-weight materials, particularly for roof and wall cladding, are encouraged for all foundation types, and required for some repairs
- Lighter weight buildings reduce the seismic loading on foundations, and hence reduce deformations in future events, as well as reducing lateral forces on wall linings, etc
- Lighter weight buildings therefore have reduced levels of damage and cost of repairs from future seismic events
- This does not preclude the use of heavier weight materials, but often at some significant cost
- New foundation types include:
 - Lightweight superstructure and floor
 - Stiff and well tied together slabs ,with ground improvement in TC3
 - Piles founded beneath liquefiable layer
- Accepting minor damage in future moderate earthquakes is the key to the viability of both new surface structures and maximising repairs. Readily repairable would include:
 - Continue to function – occupiable as a dwelling
 - Minor damage to structure – re-levelling floors using standard procedures
 - Some damage to fabric and lining – minor cracking at junctions and corne
- Readily repairable performance still needs to be clearly defined at different return period levels of shaking intensity. Clearly, at lower shaking intensity under more frequent events the majority of the building stock should be readily repairable. However, at higher shaking intensity less frequent events a proportion of the building stock not being readily repairable should be acceptable.
- DBH/MBIE looking to extend TC3 solutions
 - Timber framed dwellings on shallow gravel rafts (outside areas of lateral spread or significant settlement potential)
 - Concrete slab options (300 to 400mm above ground level)
- CERA published information on rebuilding in TC3 in July 2012.
- EQC published their Land Report in July 2012 which contains information on how the land has changed as a result of the Canterbury earthquake series.
- CERA established the Canterbury Geotechnical Database in July 2012 which is a live platform for storing all available geotechnical information on the land in Canterbury, including LiDAR and aerial photographs.
- MBIE (Building and Housing Group) published guidance covering regulatory aspects for the repair and rebuild of houses on land potentially subject to inundation on 11 September 2012.
- Christchurch City Council released their updated flood maps on 10 October 2012

Session 2 - Defining the Issues (Barriers)

The recovery is viewed very differently depending upon the viewpoint. For example, some sector groups thought that insurance was an important issue, whereas the insurance sector did not rate this as an issue at all, let alone a priority issue. The participants were placed into six functional sector groupings: **Central Government**, Local Government (particularly **Building Consent Authorities, or BCAs**), **Insurance, Construction** (including project management), **Property** (including valuers, real estate, legal and finance) and **Engineering** (both geotechnical and structural).

Key Issues

Issue	Sectors that identified issue	Description
Insurance	(Government and Property)	This included future cover in TC3, affordability, its relationship to finance (mortgage linkage to insurance) and works insurance.
Uncertainty	(Government, Insurance, and Property)	This included land cover and land damage determinations, repair or rebuild, apportionment and guidance changes, and interpretations of the Building Act.
Costs	(Insurance and Engineers)	This included community expectations on levels of repair, new foundations, what earthquake threshold are new buildings being designed to and what is the expected performance at different levels of shaking intensity for different return periods.
Stigma	(Government, Builders and Property)	This included the marketability of TC3 land, perceptions of owners and buyers, difference in value between repaired and new houses in TC3.
Liability	(Engineers, BCAs and Builders)	This included professional liability if there is insufficient geotechnical information, how acceptable solutions affect liability, what repairs are exempt, what if acceptable solutions fail.
Resources	(Engineers, BCAs)	This included not enough engineers for investigations and design, BCA's also expecting a bow wave of consent applications.

Sessions 3 and 4 - Identifying options and working through solutions

The participants were placed into ten multi-sector groups to work through the key issues, which to ensure that outcomes could be achieved on the day, were grouped into:

- a) Communication (resolving uncertainty)
- b) Costs and liabilities
- c) Fundability, marketability, acceptability and insurability
- d) Lack of reliable information
- e) Lack of clarity around the Building Act.

The multi-sector teams then worked to identify options to overcome the barriers and work through possible solutions.

3a) Communication Problems and Possible Solutions

- Map the recovery process for TC3
- Develop flowcharts and checklists
- Reduce uncertainty, advise when things are happening
- Share data of progress – not just Christchurch but specifically TC3, broken down by suburb/street
- Show homes in TC3
Case studies : Targeted for both home owners and also industry
- Work in progress (although this can add to frustration for some who are not progressing as they would like)
- Bulk planning “coalition of the willing”
- Provide certainty around MBIE Guidance – but still incorporate minor updates and other solutions as they come up
- Assign case managers (e.g. for elderly and for geographic groups). Insurers are doing this in some cases.

3b) Costs and liabilities and Possible Solutions

- Clarity of Code – don't over-engineer due to uncertainty
- Collaborative approach to understanding legal liability issues
- Enhance TC3 guidelines – more affordable options
- More information on the background to the guidance solutions, more explanation so more is known of the intent
- More structured collaboration – including of potential costs
- Q & A with agency input (for industry)
- Increasing standardisation of engineering practices – i.e. TC3 feedback opportunities – having Government technical group available for engineers
- Extract elements of guidance to have as acceptable solutions
- Better guidance on Building Act
- Clarity on legislation – Consumer Guarantees Act & Building Act - communication solution
- More Collaboration – PMOs, EQC and insurers
- Land settlements monies should go to fixing land (not on holidays etc)
- Determine the implications of collaboration against the Commerce Act.
- Circulate guidance more widely by MBIE – suggest a bulletin board approach with multi agency BCA, other Govt, insurance council.
- Building Act repairs – more information on minor repairs that avoid building consents where possible.
- Lighter weight housing – cost implications. Perceptions need to be managed.
- Insurance: no one is taking on new insurance in TC3. Response was that it isn't too far in the future. Knowing true costs of overcap repairs is an issue for insurers
- Engineers need support to communicate with homeowner

3c) Fundability, marketability, acceptability and insurability – Possible Solutions

- Better understanding of TC2 leads to better understanding of TC3 Lack of understanding – improve information, have it targeted and simple
- Community driven confidence needed
- Insurance and banks need more detailed technical information to assist in their decision making
- Land banking of vacant TC3 land suggested for developers
- Property ladder – TC3 empty sections could be the start. People contemplating buying need better understanding of TC3, e.g. it is common for red zoners to want to stay in their communities and a move to TC3 is a possible progression, with TC3 people who wish to leave and rebuild in other areas being able to do so.
- Need for public understanding of future changes in insurance policies and costs – i.e. changes to insurance product design such as sum insured only, liability for paths driveways to owner.
- Need to be clear on what the future is for homeowners on insurance and potential future costs in natural disasters
- Banks won't say no to a limited cap insurance policy for mortgages.

3d) Lack of reliable information – Possible Solutions

- Complex information – there is a lot of information out there so it is actually a lack of access rather than lack of actual information. People need to trust and have confidence in the information.
- Media is a key influence on trust and reliability. Need to be provided with consistent messages, accurate and timely information
- Create more confidence through using successful case studies. People trust people like themselves (i.e. from same area) so have a wide range of case studies that people can relate to.
- Use a customer focused process to cut through confusion and misunderstanding. Suggest could be interactive and technically based as well.
- Consumer expectations are unrealistic and need recalibrating. Is this the “Canterbury renovate rather than the Canterbury rebuild?”
- More authoritative information is needed. Industry associations need to play a bigger leadership role (i.e. engineers).
- Media engagement important, so adopt a marketing approach – informing and getting information out, don’t just rely on media and then blame them when things go wrong

3e) Lack of clarity – Possible Solutions

- Identify what is required versus what is funded
- Establish the role of loss adjuster as to what is done on site is important (money first?)
- Under s112 of Building Act– establish what happens when 20% of house needs repair?
- Discretion / judgement decision
- Use of guidance complicates areas such as liability
- Limitations of specifics – risk averse sectors because of liability issue
- BCAs/Council applies risk adverse solutions
- Clarify what is exempt from consenting
- Framework for decision making not well understood
- Consumer information on TC3 needs updating
- Greater need for education – information to a variety of audiences, including what is TC3 and what its not, pitfalls in interpreting. Suggest getting bank risk managers together for education sessions.
- Lots of repetition of steps – i.e. many assessor visits to same place
- Need more prescribed process
- Regulatory force for guidance
- Consumers not ready – prioritise those that are ready and focus on them. Get a head of steam building.
- Prescription versus creativity for building code
- Need more background information on how guidelines are developed i.e. sound basis for design allows other options for solutions
- MBIE guidelines generally conservative but keeping costs in mind.
- TC3 guidelines – standard decisions
- Back analysis – deemed to be principles. Quote specifics to each type of land within TC3 – have 100s of them that cover all options, could be done but hard work to work with for BCA
- Principles up front for engineering solutions would be better up front than prescribed ones

- Technical solutions are not the hold up – it's not the consents but it's the flow.
- There is good information and guidance but engineers are not following it. Continually trying different ways which slows process down for BCA. "100 engineers, 1 question, 100 different answers"
- Bank representatives – meeting monthly in Christchurch on rebuild. Not closing the door on TC3 land lending.

Final session - General discussion

The following notes are a record of the comments captured during a wide ranging discussion are included for completeness.

- Royal Commission will be announcing something on performance targets for buildings.
- Damage under future earthquakes – is it a performance target? Is it affordable? Only place in the world with this performance based system. Need for study to be commenced, as it is not clear cut.
- Need to look at what is normal (wear and tear) and what is EQ – needs to be some tempering.
- Case study information given – would be great to have this on all properties but 12 months is in future at least. People want to have these sorts of reports. Need to identify what the roadblocks are for getting these reports finalised.
- Risk working group is in operation now – 5-6 weeks away from producing anything. Will be looking at Commerce Commission implications.
- TC3 costings of foundations working group in place already
- IPENZ & MBIE – working on liabilities. Law Commission also involved but don't wait for their findings. Meeting on Monday.
- If the liability issue can be sorted out, it will help insurers and overcome inconsistency.
- Producer statement – being reinvestigated with licensed Builder work. Engineers now submitting producer statements and Memoranda of restricted building works, copy of statement to TAs, duplication.
- Industry information – metrics, transactions, property values, TC3 especially. CERA's role. REINZ also working with CERA on this. In a week or two will have good solid stats.
- Banks need specific information for specific sites like those given in the case studies.
- Technical information – what does industry need to know? T & T happy to do presentations and step up in the education role.
- Information for homeowners – CERA & Insurance – more communication needed. Public meetings good start but more needed. Mike Shatford leading for CERA
- Demonstrations: More examples of lighterweight and foundations for TC3.
- Housing NZ properties will be progressing in a couple of months. Southern Response and Arrow managing. More information needed on this but could be ideal opportunity to show industry and public what can be achieved on TC3 land.
- Talking forums – are we preaching to the converted? Other plays are not coming forward and therefore consistency is being lost. Need to engage with these players too.
- Council has to be the conduit to see what goes through and where there are issues, ensure those responsible are integrated into the process / education / peer reviews

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- Wider audience – message has to get out. Lot of working groups around but not clear knowledge about what each is working on or achieving. Suggest list of all these working groups on CERA website with contact details to encourage more conversations across parties. Good intentions around but some duplication, some gaps.
 - Industry education and information – how to get this out especially regarding industry metrics
 - Bank information – need specific info for specific sites – not general average info – eventually all info will be on the profile at the Council. Looking at a database to capture the info but everyone should understand risks involved. Would be a powerful resource for all of us.
 - clear, step-by-step map of processes available to property owners – information packs
 - shared database for organisations to allow easier information sharing and better engagement, thus speeding up aspects of recovery
 - offer priority to home owners who have made speedy decisions, slow decision makers to the back of the queue
 - Create “land banks” where businesses or Housing New Zealand etc. take the lead in demonstrating proven examples of quality rebuilds on TC3 land to instil more confidence in the market
 - Good publicity on successes within TC2 & TC3, e.g. number of consents issued, number of repairs/rebuilds complete
 - TC3, lightweight show homes

APPENDIX B1
PRE-WORKSHOP QUESTIONNAIRE SUMMARY

TC3 WORKSHOP QUESTIONNAIRE

A questionnaire was sent to Christchurch rebuild stakeholders in advance of the Canterbury Residential Recovery Workshop (Wed 10 Oct 2012, Riccarton Park Conference Centre).

Five questions were put to the respondents in a bid to find out the level of confidence they have in the TC3 rebuild process and the barriers they face or perceive.

The nineteen replies came from firms, agencies and organisations representing: central government, local government, the engineering sector, the legal sector, the construction industry, the insurance industry and the banking industry.

Perceptions varied according to sector, and are summarised here. In many cases, comments have been combined or paraphrased to maintain brevity and avoid too much duplication.

1	Define your organisation's/ sector's issues for the recovery?
2	What are the barriers preventing your organisation/ sector operating with confidence in the residential TC3 market?
3	Do you have enough information about building on TC3 land? How confident are you that building on TC3 land can be safe, affordable and feasible?
4	Define the barriers you see within other organisations/ sectors that prevent you operating with confidence in TC3?
5	Identify these organisations/ sectors from Question 4 above.

Pre- Workshop Questionnaire

EXECUTIVE SUMMARY OF ISSUES AND BARRIERS TO REBUILDING IN TC3

Rebuild and Repair Requirements

- Interpretation of TC3 guidance and other technical requirements (eg floor levels).
Complexity
- Certainty around consenting outcomes
- Confidence in solutions and investigation requirements
- Liability for engineers
- Cost of foundations (both high cost and uncertainty of cost)
- Quality of work by engineers and councils

Claims settlement

- Apportionment, Joint Review and property damage information
- Customer decisions (delays) and customer confidence in repair/rebuild solutions
- EQC Land damage settlement
- Uninsured gaps

Resources

- Geotechnical and other professional resources
- Construction sector labour resource
- Temporary Accommodation
- Uncertainty in forward workload
- Challenges for effective collaboration
- Lack of information from government
- Contract Works cover

Future View

- Uncertainty in future cost and extent of insurance cover for TC3 properties
- Bank lending in TC3 – value of security and reluctance
- Poor market perception of TC3 – lack of confidence
- Insurance on unrepaired properties
- Uncertainty in future damage/exposure and understanding of future hazard (Future performance)
- Effect on property values

Reasons for lacking confidence

Note: Many respondents expressed confidence in rebuilding/operating in TC3

- Design for lateral spread and concrete floor criteria
- Affordability and feasibility of solutions
- Homeowners want 'no risk'
- Lack of confidence in repairs will work in long term

- Difficulty in understanding value of property
- Cost and affordability of foundations
- Unknown land conditions

Q1 Define your organisation's / sector's issues for the recovery.

- Dealing with tech and legal constraints beyond insurance claim (e.g. flooding, land remediation, retaining walls, cross-lease properties, body corporate properties, shared-adjacent property, uncontrolled fill and contaminated sites, landslides) (*construction*)
- Resourcing (e.g. insufficient access to geotech expertise, equipment to test design solutions, future availability of builders and other contractors) (*construction*)
- Central authorities reluctant to get involved (e.g. on projected accommodation shortage) (*construction*)
- TC3 guidelines lack performance criteria and are too prescriptive (e.g. discouraging heavy wall claddings and concrete floors) (*construction*)
- EQC not making firm commitments on recovery proposals (*construction*)
- Release of guidance and data from local/central agencies (*construction*)
- Industries not working collaboratively (*construction*)
- Predicting workflow peaks and troughs (*council*)
- Ensuring that environmental legislation (e.g. RMA) does not impede recovery (*government*)
- Ensuring that recovery meets overarching environmental objectives (*government*)
- Improving confidence of insurers to move forward (*construction*)
- Improving cooperation/coordination between insurers and EQC (*construction*)
- Waiting for clients to make decisions (*construction*)
- Waiting for councils to process consents /red tape (*construction*)
- Uncertainties of foundation design and repairs and superstructure repairs (*engineering*)
- Getting property damage information (*banking, insurance*)
- Customer affordability for responsible lending (*banking*)
- Value of security (*banking*)
- Insurance requirements / availability (*banking*)
- Determining the value of properties on TC3 land (*banking*)
- Who is responsible for repairing foundations/non-insurance related repairs if deemed to be required (*banking*)
- Apportioning insurance payouts between EQC and private insurers (*insurance*)
- Timing of land settlement claims (*insurance*)
- Volume of claims (*insurance*)
- Improving customers' confidence in repair/rebuild solutions (*insurance*)
- How and by whom damage land claims are going to be settled (*insurance*)
- Unknown flood risk due to land sinking (*insurance*)

Q2 What are the barriers preventing your organisation/sector operating with confidence in the residential TC3 market?

- Uncertain if insurance premiums will vary for different TC3 solutions (*construction*)
- Deep geotech investigations are too onerous, esp. for re-levellable solutions (*construction*)
- Authorities sluggish in sharing information (fear of liability) (*construction*)

- Uncertainty over finished floor levels in potential flood zones (*construction*)
- Uncertainty about TA consents for innovative solutions (*construction*)
- Lack of confidence by customers (claim settlements and TC3 build success), engineers (over liability for innovative solutions), and insurers (over costs & workability) (*construction*)
- Claim apportionment has stalled the whole repair process (*construction*)
- Need robust and relevant geotech reporting (*construction*)
- Waiting on site-specific soils info and associated engineering design (*construction*)
- Cost. Need effective and realistic engineering solutions for foundations – some TC3 site solutions are cost-prohibitive, though probably only a minority (*construction, insurance*)
- Need affordable insurance in TC3 – cover for construction and subsequent is non-existent in NZ and too costly elsewhere (\$10,000-\$25,000) (*construction*)
- Need efficient processing of claims for even workflow – foreseeable matters should be dealt with before passing over to clients to build (e.g. betterment, EQC claims) (*construction*)
- Unknown land conditions (good TC3 vs bad TC3) (*government*)
- Need detailed understanding of foundations repair - trialling diff. methods on similar houses (*government*)
- Council review and sign-off slow and complex, level of detail required, late requests; Council lacks faith in engineers' opinion, innovation-shy, too much emphasis on liquefaction and rockfall, not enough on other fundamentals (e.g. settlement) (*engineering*)
- Flood hazard poorly understood (*engineering*)
- Geotech reports loosely worded (*engineering*)
- Vague parameters/performance criteria for design (*engineering*)
- Feasible cost-effective solutions for foundations and ground improvement (*engineering*)
- Lack of performance-based specs for readily releveable foundations (*engineering*)
- Expectations of future performance – compliance of repairs with Building Code (*engineering*)
- Liability issues – Consumer Guarantees Act (*engineering*)
- S112 of the Building Act – lack of clarity and consistency in interpretation (*engineering*)
- Delays by insurance companies (*legal, construction, engineering*)
- Banks reluctant to lend on TC3 (*legal*)
- TC3 land not seen positively by the market (*legal*)
- Time delays with drilling and otherwise (*legal*)
- Coordination between EQC and Insurance (*legal*)
- Need clarification on assessment, increased repair costs and resulting property values (*banking*)
- Purchasers of damaged properties insufficiently insured for repairs (*banking*)
- Lack of clarity on insurance outcomes (*banking*)
- Value of security / demand (*banking*)
- No land damage information from EQC on 50% of properties (*insurance*)
- EQC settlement strategy (cash rather than foundations repair) (*insurance*)
- Unconfirmed EQC approach re flood-risk and crust-thinning (*insurance*)
- Need info on future flooding risk; revised flood management areas unknown (*insurance, banking*)
- Delays caused by EQC not settling land claims until 2013 (*insurance*)
- Geotech investigations required/ drilling result unknowns (*insurance*)
- Shortage of contractors willing to work in TC3 boosts costs (*insurance*)
- EQC land settlement information (*insurance*)

Q3 Do you have enough information about building on TC3 land? How confident are you that building on TC3 land can be safe, affordable and feasible?

- Rely on engineers for safety assessment (*construction*)
- Some TC3 land should be red, but mostly okay (*construction*)
- Have recently seen a viable method of stabilisation – grouted piling (*construction*)
- Yes, enough info and confident – work of B&H has been invaluable (*council, construction*)
- Need performance criteria for concrete floors (*construction*)
- Confident that EAG solutions are suitable and that there are opportunities for alternative solutions (i.e. stiff floor-plate, readily re-levellable) (*Engineering*)
- Generally yes, but uncertain about how to design for lateral spread and tech ability to understand and define solutions (*engineering*)
- DBH guidance too prescriptive, need performance-based guidelines and guidelines on parameters for analysis and design (e.g. soil spring stiffness, acceptable bearing pressures) (*engineering*)
- Confident on safety, less so on affordability and feasibility (*engineering*)
- HNZ with Southern Response/Arrow International and MBIE’s Engineering Advisory Group is running a trial project on foundation repairs (*Government*)
- Confident, but clients not – they want land like green/grey land which has “no risks” (i.e. no requirement for extra foundations) (*legal*)
- No info. Not confident that repairs will work in long term (eg screw piling to level up houses with slab floors) (*legal*)
- Information should be better coordinated and presented (e.g. more consistency between CERA, B&H, councils, experts, developers; better website links between EQC and B&H, and between these agencies and councils; different levels of information and language should be used for different audiences, from specialists and experts to general homeowners) (*Government*)
- Not enough info - concerns about cost unknowns - value of properties, responsibility for foundation repairs, non-insurance related repairs (*banking*)
- Safe and feasible, yes (regulated). Customer affordability determined case by case and economic viability undeterminable (geotech) (*banking*)
- Not enough info from EQC on (1) land damage to 50% of TC3 properties and (2) how land claims will be settled (*insurance*)
- Concerns about affordability – costs to date are very high, engineers need to work together on more cost-effective solutions (*insurance*)
- A lack of foundation and ground improvement solutions “is creating (currently) expensive solutions that insurers know are not right.” (*insurance*)
- Of particular concern is land that would require extensive remediation to provide a buildable platform before the insurer can repair or rebuild the dwelling (*insurance*)

Q4 and Q5 Define the barriers you see within other organisations/sectors that prevent you operating in confidence in TC3? Identify the organisations.

- Insurers lack the confidence to move forward (*construction*)
- Insurers have a disorganised workflow (*construction*)
- Availability of geotech reports from EQC, engineers and drillers which are needed to design foundations and then cost repair/rebuild and decide on construction vs cash settlement (*banking, construction*)
- Culture of butt protection in design and EAG reticence to approve practical cost-effective solutions (*construction*)
- Insurers' inability to offer insurance for contract work and surety afterwards (*construction*)
- Indecision by loss adjusters, EQC, reinsurers and apportionment – drilling should have been underway 12 months ago (*construction*)
- Insurance, engineering, knowledge of smaller builders (*construction*)
- EQC will not commit to anything significant in writing, has withheld land damage data and have not confirmed their approach to the most damaged sites (*construction*)
- Council staff varied in their interpretations of the options for TCs, but this has improved with MBIE workshopping (*Engineering, construction*)
- Central government not providing clear definition of Building Act expectations & intent (*engineering*)
- S112 interpretation for repairs (*engineering*)
- Lack of acceptable performance-based approaches that have TA buy-in (*engineering*)
- Inconsistency in consent processing (*engineering*)
- Uncertainty around future performance requirements and insurability (*engineering*)
- Time taken for EQC and insurers to get their heads around the process for working with poor land - because of these delays, new buildings are being completed before TC3 repair/rebuild has even started (*council*)
- Several insurers won't progress claims until DBH guidance is released (*council*)
- Guidance documents have not added value for large, rural TC3 properties (no land remediation is proposed, remedies are site-specific engineered solutions) (*council*)
- No organisations are preventing HNZZ rebuild in TC3 – most want to move ahead but are not confident that everyone is moving in concert (*Government*)
- Insurers have varied approaches (*legal*)
- Availability and uncertain quality of EQC reports (*legal*)
- Banks and insurers see land as “too hard”, “too expensive” and “too risky” (*legal*)
- Liability – Council wants peer review on all properties, pedantically reviews calcs, uncertain outcomes from consenting process (*engineering*)
- Lack of insurance cover for repairs (properties earmarked for repair do not end up being a rebuild, thereby leaving the new owner with a shortfall) (*banking*)
- Valuation (*banking*)
- EQC and CCC not providing enough information on land damage for claim settlement (*insurance*)
- Engineers (geotech and structural) liability issues (*banking*)
- Lack of innovative solutions for foundations and ground improvement from engineers, Building and Housing and EAG (*banking*)

APPENDIX B2
WORKSHOP AGENDA

Canterbury Residential Recovery Workshop

**Balmerino Room, Riccarton Park Function Centre, 165
Racecourse Road, Upper Riccarton**

Wednesday 10 October 2012, 8:45am – 5pm

Agenda

Objectives of Workshop

1. Communicate the current engineering and scientific thinking to create a common understanding.
2. Provide an opportunity for meaningful engagement between key players in the Canterbury earthquake recovery – particularly the residential rebuild.
3. To identify concrete actions that will:
 - Overcome or minimise barriers to rebuilding in TC3 land; and
 - Accelerate the rebuilding and repair of homes.

Workshop Facilitator: Nick Rogers, Tonkin & Taylor

8.30am **Tea & Coffee on arrival**

9.00am **Welcome and Opening Address**
Hon Gerry Brownlee
Minister for Canterbury Earthquake Recovery
Minister Responsible for the Earthquake Commission
Minister of Transport, Leader of the House

9.10am **Session 1: “State of Play” Presentations**

Tonkin & Taylor
Building on land susceptible to liquefaction.
An overview of the technical information informing the decisions on land zoning (red & green) and geotechnical investigation level categories (TC 1, 2 and 3).

9:20am **GNS Science**
The seismic hazard for the residential flat land of Christchurch and adjacent districts.

9:30am **Tonkin & Taylor**
The expected performance of the land under various levels of seismic shaking, in particular TC2 and TC3 and how this compares to Red Zone land.

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- 9:40am** **Building & Housing Group, Ministry of Business, Innovation and Employment**
Summary of the key elements of Building and Housing Guidance for the repair and rebuilding of residential buildings on flat land, in particular TC3.
- 10:00am** **5 minute break Morning tea**
- 10.05am** **Session 2: Defining the Barriers**
What are the barriers preventing the rapid repair and rebuilding right now in the worst affected residential areas? Participants will be in sector groups to elicit sector issues.
- 10:45am** Plenary session.
- 11.15am** **Session 3: Identifying Options for Overcoming the Barriers**
Groups (mixed across sectors) work through the barriers defined in Session 2 and identify specific or generic options to remove or overcome these.
- 11:55am** Plenary session.
- 12:30pm** **Lunch**
- 1.00pm** **Session 4: Working Through the Solutions**
Groups work through emerging themes and solutions from Session 3 using case studies provided to identify practical application of solutions, possible refinements and potential unintended consequences.
- 1.45 pm** Plenary session
- 2:15pm** **Afternoon Tea**
- 2:30pm** **Plenary Session**
Gain agreement on practical solutions, identify actions going forward and assign actions as appropriate.
- 3:30pm** **Closing Remarks**
Hon Gerry Brownlee
- 4.00pm** **Action Plan**
Develop the Action Plan
- 5.00pm** **Conclusion of Workshop**