


**Why has it
been necessary
to split the
green zone
into different
technical
categories?**


Since the 4 September 2010 earthquake there has been an ongoing process to assess available scientific and geotechnical information. Each significant aftershock has provided new information.

Some properties in the green zone have experienced liquefaction-related land damage and considerable settlement during the sequence of Canterbury earthquakes. While land in the green zone is still generally considered suitable for residential construction, houses in some areas will need more robust foundations or site specific foundation design. This will reduce the risk of injury to people and damage to homes in any future earthquakes.


**What is the
difference
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Land in the green zone has been divided into three technical categories. These categories describe how the land is expected to perform in future earthquakes.

TECHNICAL CATEGORY 1  **TC1 grey**
Future land damage from liquefaction is unlikely. You can use standard foundations for concrete slabs or timber floors. Foundation requirements changed in 2011 and information is available on the Department of Building and Housing's website at:
www.dbh.govt.nz/canterbury-earthquake-residential-building

TECHNICAL CATEGORY 2  **TC2 yellow**
Minor to moderate land damage from liquefaction is possible in future significant earthquakes.

- You can use standard timber piled foundations for houses with lightweight cladding and roofing and suspended timber floors
- Or enhanced concrete foundations – i.e. more robust floor slabs that better tie the structure together as outlined in the Department of Building and Housing 2010 *Guidance on house repairs and reconstruction following the Canterbury earthquake*
www.dbh.govt.nz/canterbury-earthquake-residential-building

TECHNICAL CATEGORY 3  **TC3 blue**
Moderate to significant land damage from liquefaction is possible in future significant earthquakes. Site-specific geotechnical investigation and specific engineering foundation design is required.

What do I need to do to ensure my repairs meet Building Code requirements?

Homeowners whose land is in TC1 can get on with repairing or rebuilding their homes. The only further site-specific geotechnical investigation required is the simple shallow soil strength testing which is standard for all homes. A range of standard solutions are available for the repair and rebuilding of foundations in these areas.

New foundations

If you are rebuilding your foundations, you can use standard foundations for concrete slabs and timber floors.

The foundation requirements changed in 2011. Your builder or project management office can find information on the Department of Building and Housing's website **www.dbh.govt.nz/canterbury-earthquake-residential-building**

Repairs to foundations

If you are carrying out repairs to foundations your builder or project management office is advised to consult the Department of Building and Housing's *Guidance on house repairs and reconstruction following the Canterbury earthquake*.

The guidance is being updated. A summary of the update, the 2010 guidance and other information is available on the Department of Building and Housing's website **www.dbh.govt.nz/canterbury-earthquake-residential-building**

Repairs to other areas of your home – excluding foundations

If you are carrying out repairs to other areas of your home that don't involve the foundations your builder or project management office is advised to use normal repair methods and refer to the Department of Building and Housing's December 2010 *Guidance for house repairs and reconstruction following the Canterbury earthquake*. The guidance is being updated and will include further information on repairs.

How much are repairs to my foundations likely to cost?

There are no additional foundation requirements for homes in Technical Category 1 (TC1). Homeowners in TC1 with foundations that need to be repaired or rebuilt due to earthquake damage can carry out repairs to foundations as part of their normal insurance process. Additional costs are unlikely as standard foundations are acceptable.

Where can I find more information?

More information is available on the Department of Building and Housing's website at **www.dbh.govt.nz/canterbury-earthquake-residential-building**


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What do I need to do to ensure my repairs meet Building Code requirements?

Homeowners whose land is in TC2 can get on with rebuilding their homes with confidence. The only further site-specific geotechnical investigation required is the simple shallow soil strength testing which is standard for all homes.

New foundations

If your home is in TC2 and you are rebuilding foundations the Department of Building and Housing recommends that you use:

- Standard (NZS3604) piled foundations for houses that:
 - Are built of lightweight materials (not masonry or brick veneer). For example tin, not tiled, roofs and lightweight cladding such as weatherboards; and
 - Have timber floors instead of concrete floors
- Or enhanced slabs (more robust foundations) such as those outlined in the Department of Building and Housing's December 2010 *Guidance on house repairs and reconstruction following the Canterbury earthquake*.

Repairs to foundations

If you are carrying out repairs to foundations or other areas of your home these should be carried out in accordance with the Department of Building and Housing's 2010 *Guidance on house repairs and reconstruction following the Canterbury earthquake*

The *Guidance on house repairs and reconstruction following the Canterbury earthquake* document is being updated. A summary of the update, the 2010 guidance and other documents are available at the Department of Building and Housing's website at www.dbh.govt.nz/canterbury-earthquake-residential-building

Talk to your builder or project management office about the requirements of this guidance and the Building Code.

How much are repairs to foundations likely to cost?

The average additional cost for homeowners in Technical Category 2 with foundations that need to be repaired or rebuilt due to earthquake damage is expected to be around \$5,000. However, depending on site circumstances costs may range from no additional cost to around \$10,000.

What if my house wasn't damaged in the earthquakes and is in TC2?

The technical categories only apply to houses that require their foundations to be repaired or rebuilt due to damage from the earthquakes. If your house was not damaged by the earthquakes then you will not need to upgrade your foundations.

Where can I find more information?

More information is available on the Department of Building and Housing's website at www.dbh.govt.nz/canterbury-earthquake-residential-building.


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**Information sheet:
Green Zone Technical Category 3 (TC3)**

What do I need to do to ensure my repairs meet Building Code requirements?

For houses that have earthquake damage that do not involve repairs to foundations, repairs should be able to proceed without geotechnical assessments.

For houses requiring foundation repairs or new foundations, homeowners in Technical Category 3 (TC3) will need site-specific geotechnical assessment and specific engineering foundation design.

What do you mean by specific engineering foundation design?

There is no one-size-fits-all solution for homes in Technical Category 3 (TC3) that require repairs to foundations or need to be rebuilt. Foundations designed for homes in TC3 will be site specific and may involve deep foundation piles.

Site-specific geotechnical investigation will identify the best foundation design for your property to reduce the risk of injury to people and damage to your property in future earthquakes.

What if my house wasn't damaged in the earthquakes and is in TC3?

The technical categories only apply to houses that require their foundations to be repaired or rebuilt due to damage from the earthquakes. If your house was not damaged by the earthquakes then you will not need to upgrade your foundations.

How much is this likely to cost?

Costs will vary from property to property. The Department of Building and Housing is conducting a research trial to test a range of innovative foundation solutions for houses in Technical Category 3. It will develop further guidance for properties in TC3 when it has tested these foundation options.

What help is available if I need to move out while repairs are carried out on my earthquake damaged home?

Homeowners who need to temporarily move out of their earthquake damaged homes while repairs are undertaken may be eligible for Government supported temporary accommodation options.

Financial assistance may also be available to help cover temporary accommodation costs.

For more information visit www.quakeaccommodation.govt.nz or call **0800 67 32 27**.

What should I do first?

If you need to rebuild or carry out repairs to foundations and your house is in Technical Category 3 (TC3) you are advised to talk to your insurer in the first instance. Your insurer should be able to arrange for a geotechnical engineer to carry out an assessment of your property as part of your claims process.

Where can I find more information?

More information is available on the Department of Building and Housing's website at www.dbh.govt.nz/canterbury-earthquake-residential-building
