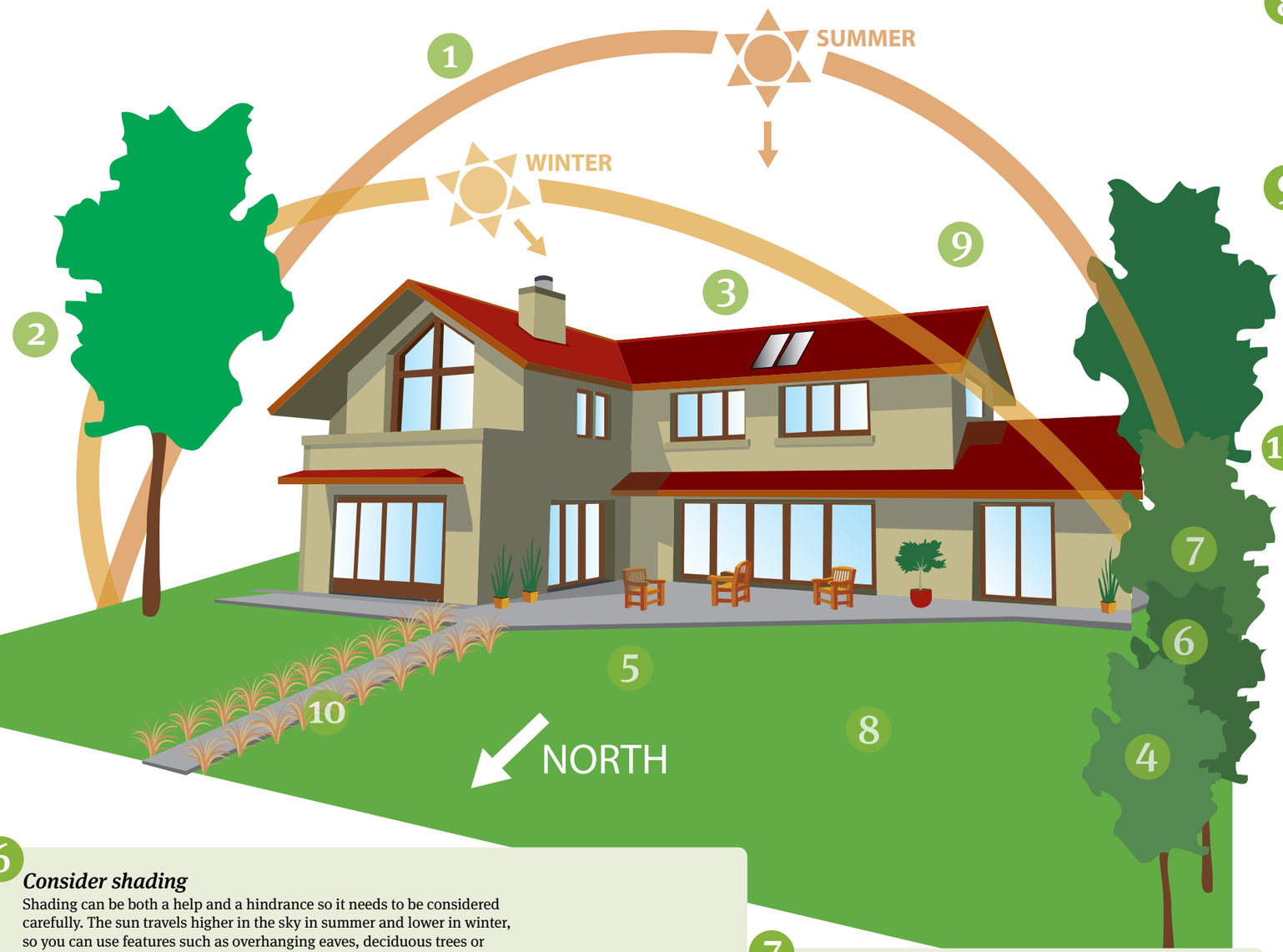
Your chance...
TO BUILD BACK SMARTER

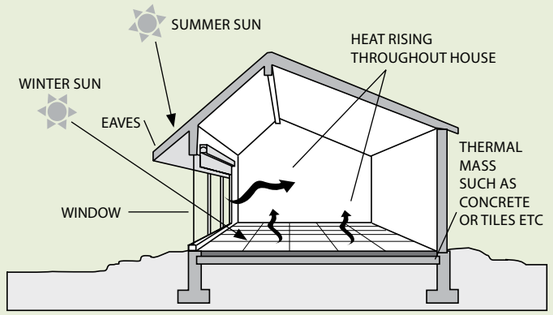
Many Christchurch homes have been damaged by earthquakes. Recovering from this damage presents a unique opportunity to make homes better for you - warmer, drier, healthier and cheaper to run - and better for the environment. This guide can be used to help you discuss smart building options with your builder or designer.

Before you do anything
Make sure you have made a claim and your home has been assessed by the Earthquake Commission, www.eqc.govt.nz, 0800 326 243



1 *Use the sun*
When building a new home, always consider the orientation of the house on the site. You should be maximising use of winter sun and reducing the impact of summer sun. This includes appropriate location and amounts of glazing (most on northern side, least on southern and western sides) to avoid heat loss in winter and overheating in summer.

Talk to your builder or designer about maximising the use of the sun on the site – and refer them to www.level.org.nz for passive solar design guidelines.



2 *Keep it quiet*
Locate the house and use landscaping to reduce external noise penetration into living areas and bedrooms, even when windows or doors are open.

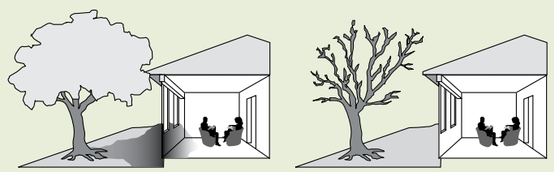
3 *Power your house*
The sun and wind can be harnessed to generate energy for your home.

Talk to your designer and renewable energy specialists about how solar water heating or photovoltaics could be added to your home now or sometime in the future.

4 *Go native*
Native plants tend to be more drought resistant, need less water, and help to support local insect and birdlife.

5 *Be neighbourly*
Provide for outdoor privacy, but also include an open, more public, front yard that allows for interaction with neighbours and people on the street. Avoid blank garage doors dominating the street frontage. Windows that face the street help to make safer, more welcoming neighbourhoods.

6 *Consider shading*
Shading can be both a help and a hindrance so it needs to be considered carefully. The sun travels higher in the sky in summer and lower in winter, so you can use features such as overhanging eaves, deciduous trees or awnings to ensure you don't get too much sun in summer. In winter, when you want the sun, keep in mind that objects cast shadows two to three times their height. If possible, your home should be sited well back from anything that might block the sun during this time.



7 *Escape the wind*
Think carefully about where the prevailing winds come from on the site. Talk to your designer about placing the outdoor living areas so they are sunny yet sheltered, and design the house to exclude harsh winds while taking advantage of cooling breezes in summer. Windows on opposite sides of the house can be opened to provide free cooling ventilation throughout summer.

8 *Sensitive to site*
Consider topography, ground stability and over-land water flow paths. Talk through the design with the builder aiming to minimise the amount of earthworks required on site.

9 *Capture views*
Views enhance the enjoyment and value of any house, but make sure that you don't detract from the performance of your building. Avoid large windows on the cold southern side which will lose heat in winter or large western facing windows which can lead to overheating in summer.

10 *Stormwater*
Plan for stormwater management carefully and try to minimise 'impermeable' areas, such as driveways and paths, to reduce run-off. Talk to your designer and builder about including features such as swales and rain gardens to slow water flow and reduce stormwater run-off and pollution.

The Council can help
Christchurch City Council can help with a range of information and advice. The Council holds detailed property information and records of consents, hazards and utilities. It also has a variety of design and construction guides related to swimming pools, fences, earthworks, landscaping, protected trees and special amenity areas.

www.ccc.govt.nz
(03) 941 8999

Christchurch City Council

BE SMART ABOUT YOUR HOME

Design for a lifetime
Design the home to be flexible and adaptable so that as your needs change, you can continue to live comfortably. Check out www.lifetimedesign.org.nz and ask your designer to ensure that the design is Lifemark accredited.

1
Use eaves for summer shade
Talk to your builder about designing overhanging eaves that keep out the strong summer sun but let in the lower winter sun to warm your home.

2
Remove moisture
Make sure all bathrooms and clothes dryers are ventilated outside, and install a kitchen range hood to remove odours and moisture from cooking.

3
Rainwater harvesting
Collecting rainwater helps you to be more resilient, as well as making use of a precious resource that is otherwise wasted. Talk to your builder or designer about providing a rainwater tank of at least 5,000 litres and make sure that it is connected to the toilets and washing machine as a minimum. Christchurch doesn't get much rain – so try and use all of the roof area to collect as much water as possible.

4
Energy efficient appliances
Ensure that your main energy-using appliances ,such as fridges, freezers, washing machines and heaters, have the highest star ratings that you can afford.

5
Up-spec your insulation
A well-insulated home is essential as it provides year-round comfort, and costs less to cool and heat. Talk to your builder and designer about going beyond the 'minimum' Building Code requirements to ensure that your home is as warm and comfortable as it can be.

Aim for at least the following R values*:
Ceiling insulation: R4.0
Wall insulation: R2.6
Underfloor insulation: R1.9

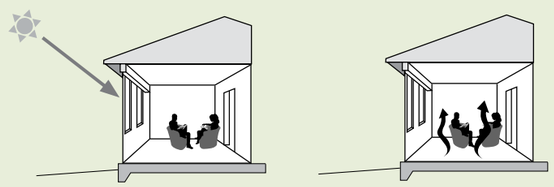
If you are having a concrete slab installed, talk to your builder about insulating under the slab and around the perimeter of the floor, to stop the heat leaking out of your house into the surrounding ground and air.

**The R value is a measure of the effectiveness of insulation - the higher it is, the more it slows down the transfer of heat. So, the bigger the better!*

6
Double glazed windows and thermally broken frames
Alongside high levels of insulation, double glazing can help make your house much more comfortable, keeping the heat in and the noise out. Talk to your builder about the best options including thermally broken frames, 'Low-E glass' and argon filled glazing, all of which help reduce heat loss and condensation on windows.

7
Use Environmental Choice certified products and materials
This eco-label is awarded by an impartial third party and shows that the product has been certified as meeting environmental performance standards. There are a wide variety of building products labelled with the Environmental Choice tick – these include paints, insulation, plasterboard, carpets and floor coverings, and joinery.

8
High thermal mass
Dense materials, such as concrete, tiles or brick, can help to maintain comfortable temperatures by absorbing and releasing heat within your home. These areas of 'thermal mass' need to be well insulated from the outside and ideally in an area that receives winter sun. A fully insulated concrete floor, exposed to sunlight under a north-facing window, works well to capture and store heat.



THERMAL MASS ABSORBS THE SUN'S WARMTH DURING THE DAY AND RADIATES THAT WARMTH INTO YOUR HOME AT NIGHT

9
Light effectively - avoid downlights
Lighting makes up about 15% of the average electric bill – so specify efficient bulbs and fittings, such as CFL and LED lights. Avoid recessed downlights as these create a gap in your ceiling insulation and draw heat into the roof space. Use alternatives such as surface mounted, wall mounted or hanging light fittings.

10
Passive controlled ventilation
Ensure that all parts of the house are able to be passively vented through openable windows in accessible locations. The design should introduce fresh, healthy air into the home while maintaining comfortable temperatures. Talk to your builder or designer about considering ventilation alongside passive heating and passive cooling options for your home.

11
Water efficient fittings/appliances
Ensure that your main water fittings, such as showers, taps and toilets, have high WELS ratings – ideally 3 or more stars for shower fittings and 5 or 6 stars for toilets, taps, dishwashers and washing machines.

12
Efficient heating
Choose an efficient pellet or wood burner and consider a simple ducted heat transfer system to move warmth from main living areas to bedrooms. Alternatively, choose an Energy Star rated heat pump (look for the logo) and make sure that it works well in winter temperatures below -2°C.

13
Solar or heat pump water heating
Reduce costs through providing efficient water heating – it will add value to your home and lower your operating costs. Talk to your builder/plumber about the best option for your home given its location and the pitch of your roof line. If you are going with a hot water heat pump, make sure that it will perform really well even in cold, winter-time temperatures.

Reduce waste
Ask your builder to follow REBRI (Resource Efficiency in the Building and Related Industries) guidelines for waste management. Make sure that they have a waste management plan in place for the duration of construction. This helps to reduce waste going to landfill which will save you money and it give you more Homestar™ points too! (http://www.branz.co.nz/REBRI)

Consider reusing building or demolition materials such as wood, metal or bricks. Check possible use by neighbours, local salvage and recycling markets, hold a garage sale or drop off reusable materials at your local Eco-depot.

Useful information...
www.smarterhomes.org.nz
Run by the Department for Building & Housing, Smarter Homes is a comprehensive guide to making your home perform better. It covers energy, water, indoor environment, design, materials, construction, siting and landscaping, with good general advice on what to think about.

www.level.org.nz
Developed by BRANZ in tandem with Smarter Homes, Level gives more detailed advice on building and renovating for the construction industry. Expect to find more technical detail here. It is a good resource for your builder.

www.ecodesignadvisor.org.nz
Eco-Design Advisors offer free and independent advice on home design. Homes designs can be e-mailed to advisors and discussed over the phone or during site visits.

homestar.org.nz

Homestar™ measures or rates the performance of your home, in a similar way to the energy star rating for a washing machine or fridge. The advice given here closely aligns with the Homestar™ rating tool – so making the effort to build back smarter will increase the performance, value and comfort of your home. A trained Homestar Practitioner can provide you with professional advice about incorporating good environmental design and help you get the appropriate Homestar rating. Use the free online version of the rating tool to compare different options for your home **www.homestar.org.nz**.

Beacon

community energy action charitable trust

CB Certified Builders Association of New Zealand

cafe Christchurch Agency for Energy Te Umaka Pōkao o Ōtautahi

Christchurch City Council