

Build Back Smarter Info Sheet

Double glazing

The opportunity to build back smarter

Disaster repairs: Replacement or repair of windows. Recladding or relining of house.

Opportunity to upgrade: Replace single glazed glass with double glazing in existing frames. Upgrade twisted or damaged frames with higher performing and weathertight frames. Up-spec any insurance funded window replacement to high standard glass options (low e and argon filled)

Why double glazing is important

Insulation acts in two ways – in winter, it's like a blanket keeping your home warm, and in summer, it's like the walls of a chilly bin, keeping your home cool. Having a well-insulated home means that when you heat (or cool), it's your house that gets the benefit. Heating or cooling an un-insulated house is like trying to fill a bath with water, but not putting in the plug.

As insulated surfaces are warmer, condensation is less likely to form on them. As a result, an insulated house will have less mould and mildew, and be a less appealing environment for allergy-aggravating dust mites.

Your windows are the most likely place for heat can escape from your house. 21-31% of heat escapes through your windows in an uninsulated house, and an even higher proportion once your ceiling, walls and floor are insulated.

Only houses built after 2007 are likely to have double glazing.

Build Back Smarter recommendations

Your opportunity to improve your windows by adding double glazing will depend on:

- Any scoped replacement of windows as part of disaster repair
- Types of frames in existing windows
- Condition of existing frames
- Size and orientation of existing windows

If you do double glaze, consider including Low emissivity (Low e) glass as this is a much better-performing glass for little additional cost. Argon gas can also be included within the panes for further improvement in performance.



There may be the opportunity to reduce large areas of window, particularly those facing south or west, by removing windows or replacing with smaller windows. If this is not possible, these should be prioritised for double glazing. Equally, there may be the opportunity to increase the number and size of windows letting in the sun to the north and east. Conservatories, with all their windows, are a common source of heat loss – consider getting these double glazed.

Draughty windows and doors can also be fixed during repairs. Basic maintenance can be done, such as sanding and repainting, repairing the hinges and latches, and adding draught proofing. Draughty glass doors can be draught proofed or even replaced with windows if not needed. Louvres are a very draughty type of window and should be replaced with a double glazed window.



A draughty louvre window is replaced by secondary glazing – aluminium inserts placed into the wooden frames



Frame choices

Type of Frame	Pros	Cons
Aluminium frames	<ul style="list-style-type: none"> Standard, cheapest frames available. Relatively low maintenance. 	<ul style="list-style-type: none"> Heat escapes easily through the aluminium frame
Thermally broken aluminium	<ul style="list-style-type: none"> Aluminium frames which include a “thermal break” so that heat doesn’t pass through the frame. Becoming more widely available, and therefore more affordable, in New Zealand. 	
Wooden frames	<ul style="list-style-type: none"> The standard frame in older houses. Better than aluminium frames – less heat escapes through the frame, provided there are no draughts! 	<ul style="list-style-type: none"> Much more expensive than aluminium Wooden frames need to be painted and have regular maintenance.
PVC frames	<ul style="list-style-type: none"> Widely used overseas. Similar to wood – less heat escapes through frames. 	<ul style="list-style-type: none"> More expensive than aluminium Relatively untested in New Zealand; durability in high sunshine and coastal situations is not proven.



Glass choices

Type of Glass	Pros	Cons
Clear double glazing glass	<ul style="list-style-type: none"> Two layers of glass, with an air gap in between. The thicker the air gap, the better performing the glass. Standard air gap is 12 mm. 	<ul style="list-style-type: none"> Double glazing is heavier. Sliding doors may need more support, and older double hung sashes may need the upper sash fixed in the closed position.
Low emissivity (Low e) glass	<ul style="list-style-type: none"> Lets the sun's heat through the glass but acts like a mirror to prevent it from leaving. 	
Argon filled glass	<ul style="list-style-type: none"> Gas inserted in between the panes of glass instead of air Makes a minor improvement in the thermal performance 	
Tinted glass	<ul style="list-style-type: none"> Good for reducing glare and overheating in west facing rooms. 	<ul style="list-style-type: none"> Adds no additional insulating properties Care is needed in location – tinted glass can make a room very dark, particularly in winter.

The best combinations

You can include any combination of glass choice with your frame. Both panes of glass do not need to be the same – for example, you could make one pane tinted.

This table will help you decide which option will give you the best result. It tells you the R values of the different combinations of frame and glass.

	Single glazing	Standard double glazing	Double glazing with low e glass	Double glazing with low e glass and argon
Aluminium frames	R0.15	R0.26	R0.31	R0.32
Thermally broken aluminium frames	R0.17	R0.31	R0.39	R0.41
Wood or PVC	R0.19	R0.36	R0.47	R0.50

Note: Figures from NZS 4218:2009. Figures for double glazing based on 10mm space between panes

Adding double glazing to existing windows

There are a number of different options if you are considering double glazing your existing windows.

Firstly, you can consider reducing the size and number of your existing windows. As a rule of thumb, your home should have most and bigger windows to the north and east, and fewer and smaller windows to the south and west (western windows can overheat a home).



Secondly, you can prioritise the order in which you double glaze.

Start with windows which give you the most improvement – these tend to be south-facing windows because these get very little winter sun, and are a major source of heat loss. And consider the rooms that you use the most – bedrooms and the main living area.

Next consider western or eastern-facing windows (particularly in bedrooms), and then finally northern windows. If you have a problem with glare or overheating in the afternoon, then western windows should be double glazed as a second priority after southern facing windows.

To add double glazing to your existing windows you have three options:

1. **Retrofitted double glazing:** you can either replace the whole window frame with new frames and glass, or install frame inserts into your existing window frames. Frame inserts are a lot cheaper, if your window frames are still in good condition. Low E and argon filled glasses are also able to be included in either retrofit option.
2. **Alternatively you can consider secondary glazing:** this means inserting a second pane of glass, acrylic or plastic sheets in or onto an existing window frame. This gives you many of the benefits of double glazing, performs nearly as well, and is usually cheaper again than a full double glazing option.
3. **Even cheaper are shrink wrap plastic insulation film kits.** These can be a very cost effective way of improving your window performance in winter – they help with condensation as well as reducing heat loss. Shrink wrap plastic is attached to your window frame with double-sided tape, and then shrunk to fit using a hair dryer. You can buy these from a hardware store. They aren't permanent, but if well-installed can last several years,

Pros and cons of double vs secondary glazing

Secondary glazing

- Can achieve similar R values to standard double glazing.
- Is cheaper.
- Is available both as glass and acrylic inserts.
- Can be a better option if you want to address external noise issues. Secondary glazing can be really good at blocking external noise.
- Can be swapped in summer for insect screens fitted to your windows in the same way - this is really popular in Europe.
- Can look ugly to some people, and this may be a consideration for you.

Double glazing

- Is able to include low E glass and argon filled gas within the fixture
- Is usually not as good for noise as secondary glazing, but still makes a big difference to noise levels.
- Is a more permanent/long term option than secondary glazing).
- Is probably going to be valued by the market more in the long term than secondary glazing (since new houses are now required to have double glazing).

Both double glazing and secondary glazing should reduce condensation on your windows considerably.

