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Insulation in older Lockwood Homes

Insulation has a huge impact on the comfort of your home, in winter it helps keep your home warm, in summer it helps keep your home cool. Many homes in New Zealand have little or no insulation, especially if they were built prior to 1979, when ceiling insulation became compulsory under the building code.

Older Lockwood homes have the advantage of being built with solid timber which provides insulative properties above that of uninsulated conventional homes, however, unless the home was built after 2013, retro-fitting insulation when and where you can is recommended.

The measurement of insulation efficiency is measured in “R”s, the higher (well-distributed Rs) the better. Increasing the R rating can make a dramatic difference to your comfort levels in the long run. New buildings are required to meet R-values in floor, walls and ceilings. Double glazing also contributes to achieving R-value requirements. The achieved R-values vary from floor to wall to ceiling and evenly distribute the efficiency of the insulation throughout the building. The same distribution should be considered when retro fitting insulation.

Ceiling insulation is the most important insulation in the house. Since hot air rises, improving ceiling insulation to stop the warm air escaping is the most effective way of reducing heating bills. Older Lockwood homes with high, sarked ceilings have insufficient roof space to install insulation and will require some building work to insulate to todays standards. We recommend coordinating the installation with the re-roof of your Lockwood home as the most cost effective option.

Lockwood homes have always been built to meet the building code at the time. The table below describes the ceiling insulation installed in your home, depending on when it was built.

Ceiling Insulation Table for older Lockwood Homes

Year	Under purlin size	Dummy rafter size	Roof purlin size	R value achieved
Up to 1979	10mm	n.a	45mm	R 0.3 – Sarking only
1980 - 1982	45mm	n.a	45mm	R1.5 – 50mm Glass wool blanket
1983 - 2001	70mm	n.a	45mm	R2.5 – 100mm Glass wool blanket
2002 - 2008	n.a	90mm	45mm	R2.93 – 110mm glass wool blanket
2009 --------	n.a	140mm	45mm	R3.5

For an older Lockwood home with 62mm solid timber exterior walls (R Value of 0.62), it would be best to upgrade your ceiling to R2.93 for an efficient balance. If your home has 62mm exterior walls and R2.93 ceilings the efficiency gains by upgrading to R 3.5 in the ceiling would be minimal unless the walls and glazing were also upgraded.

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Retrofitting ceiling insulation in older Lockwood Homes

The most likely homes to be upgraded are pre–1980. Coordinating the insulation upgrade with the re-roof of your Lockwood home will be the most cost effective way to retrofit insulation. You can choose to use the existing timber roof structure and replace just the roofing iron, or replace roofing battens, purlins fascia and barge boards to create more space to install higher R-Value insulation. We have put together some recommendations for you below.

Option 1: New roof using existing roof timber structure (including fascia and barge)

Requires the removal and replacement of roofing and flashings.

Year	Available Roof Space Cavity (25mm gap allowed for)	Recommended Insulation Option
Up to 1979	55mm	30mm closed cell R1.7
1980 - 1982	90mm	50mm closed cell R2.8
1980 - 1982	90mm	50mm glass wool R1.5

Option 2: New roof and new roof timber structure (including fascia and barge)

To achieve R3.24 or R3.64 we recommend 140mm - R3.2 or R3.6 - glass wool “wall” insulation making sure there is 25mm gap between insulation and roofing to comply with clause H1 of NZBC. To create the space required for the insulation you will need to install new 140x45 dummy rafters and 70x45 roof purlins. This option also requires the replacement of self-support papers, barge and fascia boards, roofing, flashings (detail drawings available) and spouting.

Year	New Roof Space Cavity (25mm gap allowed for)	Recommended Insulation Option
1979 - 2001	185mm	140mm glass wool R3.24
2002 onwards	The increase in R value will only be R0.5, not recommended as a cost effective option.	

Since the improvements involve changing the means of fastening the roof cladding to the building structure you should check with your builder to determine whether the local authority will require a building consent.

Keep in mind moisture problems could arise if insulation is poorly installed. When you engage a builder or roofing contractor, we can supply them with the technical details required.

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Underfloor Insulation

The second most important place to install insulation is under the floor. Homes built on concrete slabs provide sufficient insulation but uninsulated timber floors can be a major source of unnecessary heat loss. If the space under the floor is large enough to access, it is easy and cost-effective to retrofit under-floor insulation. Bulk fibre (such as Pink Bats) or polystyrene insulation can be installed between the joists.

Many old houses had previously been insulated with aluminium foil. Although it had no R value, it would trap the air and reflect back escaping radiant heat. Retrofitting or repairing foil insulation in houses is now banned in New Zealand due to safety concerns. If you have foil insulation with rips or holes, it should be replaced with bulk fibre or polystyrene.

It also pays to install a layer of polythene ground sheet under the house to reduce moisture entry and help the insulation work better.

Requirements under the Residential Tenancies Act

The Healthy Homes Guarantee Act has recently been passed into New Zealand law to ensure that every rental home in New Zealand meets minimum standards of heating and insulation. If you are renting out a Lockwood home you will need to state the R Values of the walls, floor and ceiling in any tenancy agreements. Lockwood homes have always been built to meet building code at the time of construction and the age of the home will determine what insulation was installed in the ceiling and underfloor. If you are unsure, your local council should have this information. The table below gives insulation values of the walls in Lockwood home based on its age.

Year	Wall Construction	R value achieved
Up to 1999	62mm solid timber	0.64
1999 to 2013	97mm with foam insulation	1.36
From 2013	107mm with foam insulation	2.1

By July 2019, the Residential Tenancies Act also requires all rental properties to have ceiling and underfloor insulation installed. However, exemptions to the law apply if installing ceiling and/or underfloor insulation is not 'reasonably practicable'. If major building work is required, such as replacing the roof to add ceiling insulation, the home will likely be exempt.

If you're unsure if your home qualifies for an exemption, or requires an assessment by a professional, visit www.tenancy.govt.nz/maintenance-and-inspections/insulation/compulsory-insulation/

Further information

For more information on the importance of insulation and the different types of insulation available visit
Energy efficiency and Conservation Authority (EECA) – www.eeca.govt.nz
Energy Wise News on Line – www.energywise.co.nz
Kingspan insulation – www.kingspaninsulation.co.nz

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