



HomeFit Technical Manual

V1.1

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HomeFit Supporters

HomeFit is powered by the following leading organisations:



Change log

Date	Version	Changes logged
12 November 2018	1	Original version created and launched
Updated: 12/3/19	1.1	<ul style="list-style-type: none">• Advisory report texts revised and updated to include comments on compliant features• Changed height of rangehood from no more than 750mm above cooktop, to between 650-900mm of the cooktop - to reflect proposed Healthy Homes Standards (HHS)• Deleted the option for meeting subfloor ventilation in fully enclosed subfloors by way of ventilation holes – again to reflect HHS• Indicative R-value table added (Insulation Chapter)

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Steering Group

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Introduction

What is HomeFit

HomeFit is an inspection-based assessment of the health, comfort, energy efficiency and safety of a New Zealand home. It covers a range of topics that a panel of experts believes to be essential for a home to be liveable.

HomeFit also includes a higher standard called HomeFit PLUS. This results in a home that is warmer, drier, more comfortable and more energy efficient than HomeFit.

Marketing a home

Homes that achieve the HomeFit or HomeFit PLUS standard and that have been formally assessed by a HomeFit assessor by placing a submission through the New Zealand Green Building Council can be marketed as meeting the standard, for example on sale or rent.

What HomeFit does not cover

To keep the cost of HomeFit to an affordable level, the scope of the scheme has been limited to 13 distinct topics that most commonly impact the health, comfort and energy efficiency of New Zealand homes. The presence of smoke alarms has been added to align with the Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016. Hot water safety and water efficiency are included as they were considered by the technical working group to be important.

HomeFit does not cover the overall condition or integrity of the building; for example, building envelope water tightness (leaky buildings), leaking guttering or pipework, structural integrity, rising damp or anything else not expressly described in this technical manual.

Eligibility

HomeFit allows all types of homes to be assessed; to be eligible, however, homes must not be new to market (i.e. they must have had at least one owner/occupier). This is to ensure that they have been lived in for a period. Problems that emerge from daily use can then be identified with the tool. New build homes are assessed with a different tool, Homestar, which considers a much wider range of environmental features.

Homes assessed for HomeFit must also be “self-contained”. This means that they must have at least one working bathroom with toilet and shower and/or bath and at least one kitchen with an oven, food preparation area and food storage space. Homes must be a single dwelling, i.e. sleepouts, granny flats, apartments with separate entrances, must be assessed separately.

HomeFit: the process

Registration

Consumers will normally first hear about the HomeFit process through advertising and promotion of HomeFit.org.nz. The consumer can gain an initial indication of whether their home meets the HomeFit criteria by filling out this 23-question online survey. They can save their HomeFit.org.nz free assessment for further review and/or improvement as they make changes to the house. Once satisfied that the home is ready for assessment, the HomeFit online check prompts the homeowner to contact an Assessor for a HomeFit assessment.

Find a HomeFit Assessor

While initial registration is free, the applicant will need to pay a HomeFit Assessor to come to the home to carry out the assessment and submit evidence to NZGBC that the home meets the HomeFit criteria. A formal HomeFit submission needs to be carried out by a HomeFit Assessor to ensure that the scheme retains consistency and credibility.

After registration, the applicant will be prompted to go to the directory of HomeFit Assessors on the homefit.org.nz website and request an assessment. On application, they will be asked to read the HomeFit terms and conditions and confirm that they agree with them. Once they have chosen an assessor, the applicant will give their nominated HomeFit Assessor the HomeFit reference code. The HomeFit Assessor will then complete the rest of the assessment and submit to NZGBC.

Administration and audit fee

An administration fee and audit fee are payable to NZGBC. This will be paid by the nominated HomeFit Assessor and needs to be added to the fees that they charge for the HomeFit assessment.

Assessment

To undertake a HomeFit assessment, the HomeFit Assessor must review the home against the criteria from the Technical Manual. The HomeFit Assessor must use the guidance in the Technical Manual and personally sight, or seek documentary evidence to support the presence of each attribute of the home that proves compliance with the criteria.

When the HomeFit Assessor has completed the assessment they must submit it, along with all the audit documentation (typically photos), to the NZGBC for audit and verification.

Auditing

As the certification body, NZGBC is responsible for ensuring the quality and consistency of HomeFit assessments. This is done through an audit process.

NZGBC employs third party, independent auditors to audit the first five HomeFit submissions of each HomeFit Assessor and thereafter a random selection of 1 in 10 submissions from each assessor. Since many HomeFit assessments need a quick turnaround - for example before the sale of a property – audited projects will not be required to resubmit if faults are found by the auditor. Instead, the principle is that audits are carried out of the assessors rather than the assessment so that, ultimately, sanctions could be taken against an assessor (e.g. withdrawal of assessor status).

HomeFit: the assessment process

Health and safety

The assessment of homes under HomeFit requires a physical inspection of existing homes and this carries with it inherent health and safety risks. These submission guidelines do not expressly outline any health and safety policy about inspections (for example minimum accessible dimensions for subfloors and ceilings). These must be addressed in a risk-based health and safety policy developed by each individual assessor organisation (see HomeFit Assessor Agreement).

NZS 4246:2016 gives guidance (in appendix B) on the inspection of properties for the purposes of installing insulation and this is a good place to start in the development of a health and safety policy. The standard highlights many of the common risks found when inspecting properties. These include, but are not limited to:

- Foil insulation
- Working in confined spaces
- Working at height

Inspectors should prepare a specific site-based risk assessment and controls for managing risk when visiting each property.

Conflicts of interest

Manufacturers and suppliers of products and services recommended in the HomeFit advisory report (such as insulation, LED lighting, etc) may become HomeFit assessors and may offer the HomeFit assessment service.

However, these suppliers must declare their interests to homeowners/landlords prior to engagement.

In some cases, HomeFit assessors may also offer (and charge for) minor additional on-site remedial services to help homeowners bring their properties up to the standard. These could include the cleaning of mould, replacement of light bulbs and the correction of hot water cylinder temperatures (if qualified to do so). This is to ensure that homes do not fail for minor infringements of the guidelines.

However, contracts for major items of work such as new insulation, replacement of light fittings, and the installation of heating and ventilation systems must be discussed and agreed independently of the assessment. In practice, this could mean leaving a business card or making a follow up appointment to discuss options.

The NZGBC reserves the right to de-list HomeFit Assessors or installers that have been found to pressure-sell assessment or products or infringe the terms of the assessor agreement.

The HomeFit standard

HomeFit

The HomeFit standard sets out the minimum standard required for a home to be considered a warm, dry, healthy home. This standard is achieved by complying with all the items on the HomeFit mandatory list and at least 3 items from the HomeFit optional list.

HomeFit PLUS

Homes that achieve all items in the HomeFit list may achieve the HomeFit PLUS standard by achieving higher insulation levels, having fixed, energy-efficient heating and any 6 items from an additional list. This is designed to recognize homes that have had additional features put in to improve health and comfort to occupants beyond the acceptable minimum.

Know your zone

HomeFit PLUS has different minimum standards depending on the location of the home in New Zealand. If the home is in the South Island or in the Central Plateau of the North Island (areas around Taupo, Ohakune, Mount Ruapehu and Mount Tongariro) it is in Zone 3. Anywhere else is either Zone 1 or Zone 2.

Healthy Homes Standards

The Healthy Homes Guarantee Act 2017 (HHGA) provides for the setting of minimum standards for insulation, heating, ventilation, moisture exclusion, drainage and draught control for rental homes. Healthy Homes Standards under the HHGA were approved by Cabinet in May 2019 and have been formulated into regulations to be enforced from 1 July 2019.

While we have a good idea of what the HHGA comprises, we won't know for sure until clarifications and guidance, including a new heating demand calculator, are provided by MBIE. Until then, we have indicated where the regulations are likely to differ from HomeFit and the RTA in this version of the Technical Manual. This will be confirmed when we issue a new version of the HomeFit Assessor web app and manual to cover the HHS.

Summary of HomeFit requirements

HomeFit mandatory	The home must achieve all of the following for HomeFit:
<i>Mould</i>	The home is free of visible mould
<i>Space heating</i>	The living space can be adequately heated
<i>Energy-efficient hot water supply</i>	Shower flow rate is no more than 9 L/min. Hot water is generated by either an instantaneous system, a natural gas cylinder, an A-grade or MEPS compliant electric cylinder, or older cylinder with wrap and lagging
<i>Ventilation</i>	Kitchens and bathrooms have a mechanical extract to outside and other living spaces have adequate ventilation
<i>Ground moisture</i>	Ground vapour barrier, adequate subfloor ventilation, no obvious signs of pooling water or pipework leaks (where accessible) in the subfloor
<i>Ceiling insulation</i>	Minimum 120mm bulk insulant installed to all accessible roof spaces. R2.2 is acceptable where insulation is thinner than 120mm
<i>Underfloor insulation</i>	Minimum 60mm bulk insulant installed to all accessible floor spaces. R1.3 is acceptable where insulation is thinner than 60mm
<i>Windows</i>	Windows in all living rooms and bedrooms are either fitted with good curtains <i>or</i> are double glazed
<i>Draught-free building fabric</i>	The home has no obvious air leaks: holes or large gaps in windows, doors, walls, floors, or ceilings
<i>Smoke alarms</i>	The home is fitted with smoke alarms within at least 3m of all bedrooms and at least one on each floor
HomeFit optional	The home must achieve at least 3 of the following:
<i>Ceiling insulation</i>	Zone 1 and 2: Minimum R3.2, Zone 3: Minimum R3.6
<i>Windows</i>	Windows in all living rooms and bedrooms are both double glazed <i>and</i> are fitted with good curtains
<i>Energy-efficient lighting</i>	At least 80% (by number) of all <i>fixed</i> interior lamps in habitable spaces are LED or Fluorescent
<i>Clothes drying</i>	Clothes dryers are either vented to the outside or are condensing/heat pump dryers. Alternatively, there is an external covered washing line
<i>Improved water efficiency</i>	Toilets are dual flush

Summary of HomeFit PLUS requirements

HomeFit PLUS mandatory

The home must achieve HomeFit and all of the following to achieve HomeFit PLUS:

Space heating

The living space has an energy-efficient, fixed heating source

Ventilation

As HomeFit but kitchen extract must be via dedicated rangehood between 650mm and 900mm of cooker and all extract fans must have an adequate flow rate

Ceiling insulation

Zone 1 and 2: Minimum R3.2, Zone 3: Minimum R3.6

Underfloor insulation

Minimum R1.3 installed to all accessible floor spaces

Wall insulation

Insulation must be present in 80% of external walls

HomeFit PLUS optional

The home must achieve 6 of the following for HomeFit PLUS:

Improved hot water supply

The home has a heat pump hot water system or solar hot water system

Improved ventilation

The home is fitted with balanced heat recovery ventilation serving the living spaces, bedrooms, bathrooms and kitchen as a minimum

Improved insulation

Subfloor: Minimum R1.8
Ceiling Zone 1+2: Minimum R3.6
Ceiling Zone 3: Minimum R4.0

Windows

Windows in all living rooms and bedrooms are both double glazed *and* are fitted with good curtains

Energy efficient lighting

At least 80% (by number) of all *fixed* interior lamps in habitable spaces are LED

Clothes drying

Clothes dryers (if present) are either vented to the outside or are condensing/heat pump dryers. Alternatively, there is an external covered washing line

Safe hot water

Hot water at the tap is 55°C or less

Improved water efficiency

Toilets are dual flush

Rainwater harvesting

The home has a rainwater harvesting system

Presence of mould

Summary

A HomeFit home must be free of visible mould.

Why this is important

Mould grows in conditions of high moisture and low temperature. Mould is an indicator of dampness in the home and this assessment relates to areas of visible mould. According to the BRANZ House Condition Survey (2015), nearly half (49%) of the homes inspected had some signs of visible mould. In the same survey, nearly 10% of rental properties had *large* patches of mould.

The presence of mould in a home indicates inadequate management of temperature (too cold) and moisture (too damp). Solving this issue requires a mix of home-based features (e.g. insulation/ draught stopping/curtains, good heating, and mechanical extract ventilation of kitchens and bathrooms) and good occupant behaviour (e.g. heating/airing the home, not drying washing inside and avoiding un-flued gas heaters). It is important to keep on top of even small specks of mould: these can easily be cleaned, and their reoccurrence managed by heating and airing. The BRANZ House Condition Survey observed mould less often in heated homes with insulation and ventilation.

In addition to damp and mould potentially affecting the durability of your home (through decay of timber, plasterboard and other building materials), it can have serious health consequences for people with respiratory illnesses including asthma, and some forms of gastroenteritis. Damp homes can directly worsen the symptoms of illnesses such as asthma, bronchitis and other breathing disorders as well as encouraging the spread of dust mites which can further exacerbate asthma and allergies.

Detail of what is required

There should be no visible mould in the home. Note that it is possible for mould to be present inside the cavities of building elements (through interstitial condensation or through leaks in the building fabric, such as exterior cladding). Mould inside these cavities is not assessed in HomeFit because this process would require invasive investigations.

How to assess

Note as you enter the home if there is a damp, mouldy smell and inspect the property closely for the presence of mould. Walls, ceilings, flooring (e.g. carpet should not be rotting), window frames and glazing, and curtains/blinds should be assessed. Mould is mostly likely to be found in, or adjacent to, wet rooms (kitchen, bathroom, laundry), may appear on the coldest walls, and can be behind furniture (it is not necessary to assess or note mould on items of furniture). Small specks of mould on shower/basin/bath grout or window frames (wood and aluminium) should also be disregarded: it is very difficult to 100% exclude mould from these places.

Advisory report text

General advice to keep your home mould free:

1. Keep the heat in: do all you can to improve insulation (ceiling, underfloor) and install well fitted double layered curtains that you open when sunny (free heat) and shut before it gets cold (keep that free heat in);
2. Heat your home effectively; and,
3. Remove the moisture regularly. This means using extractor fans in kitchens and bathrooms and venting any clothes dryer to the outside (try to avoid drying clothes on racks inside). Research says that, during the heating season, New Zealanders should air their homes 1-2 times a day: open most of the doors and windows for 15 minutes to remove moisture that has built up from your indoor activities. Think of how long you would air the home after burning toast. This is more effective than leaving a window open all the time which lets the heat out and cold in.

Home has no visible mould

No dampness or visible mould is a sign that this home is warm and dry. However, there may be mould in other less accessible places, and at certain times of the year. The best way to clean mould is to use a solution of 70mls of white vinegar and 30mls of water, spray it on affected areas, leave for up to an hour and then wipe off with a clean damp cloth. Keep an eye out especially in wardrobes and other enclosed spaces, and continue airing the home to remove stale, damp air.

Home has visible mould

Your home has areas of visible mould, which indicates that it is (or has been) inadequately insulated, ventilated and/or heated. Alternatively, there may be a problem with water entering from the outside (e.g. via holes in your roof, cladding) or through a leak such as a broken pipe, or rising ground moisture. We recommend that you urgently seek professional advice to remedy any moisture issues in your home.

If your home has extensive blackened areas and large patches of mould ($>1\text{m}^2$), then your home has a serious damp problem and you should seek professional advice to remedy the situation as soon as possible. Sometimes small patches of mould ($<1\text{m}^2$) are the first indication of a major issue. If the area is hard to clean and it's clear the mould is not just on the surface and has penetrated the building material, treat this seriously too. This may indicate a significant problem with the fabric of the building (which may need replacement). See further advice for details of where to get help.

Small patches of surface mould ($<1\text{m}^2$) can be cleaned by following a procedure recommended by Eco Design Advisors:

- Mouldy areas can be treated with a solution of 70 percent white vinegar to 30 percent water (not 100% vinegar). Alternatively use methylated spirits or isopropyl alcohol (available from supermarkets and hardware stores). The acidity in the solution will kill the mould.
- Spray or wipe the solution over the mould areas, leave for around 30 minutes, then clean it off well, rinsing the dead material away.
- Rinse the cloth you are using regularly in water and use gloves. When you are finished, be sure to clean the cloth or throw it away so that mould spores don't spread.
- For especially bad areas, use a mask, safety glasses and gloves to avoid inhaling mould spores or getting in your eyes.
- To keep mould at bay, use a spray bottle to regularly spray vinegar on mouldy areas to stop germination.
- Do not use bleach – this can release harmful fumes into your home over a long period of time.

- Keep children, allergy sufferers and people with a weakened immune system out of the room during mould treatment. Air the room well until all fumes have evaporated. Keep all chemicals well away from children, and open flames or fire. Do not smoke or use candles whilst handling methylated spirits or isopropyl alcohol. Note that treatment may discolour some materials and as such this may not be appropriate for all surfaces. Refer to manufacturer for further advice.

Any mould must be appropriately cleaned, and solutions explored to prevent its reappearance as per other criteria in HomeFit that ensure that the home has adequate insulation, heating, ventilation, and moisture control and that the occupants know how to use these systems.

What to submit for the rating

All dwellings

Tick yes /no box for 'spaces are free of visible mould'.

PASS: Confirm that there is no visible mould.

FAIL: Describe extent of visible mould (beyond odd specks on bathroom grouting etc.) and photograph mould found (at least one picture per room with infestation).

References

- 1) BRANZ 2015 House Condition Survey: Comparison of House Condition by Tenure. Vicki White, Mark Jones, Vicki Cowan, Saera Chun
- 2) BRANZ Study Report SR372 (2017) Warm, dry, healthy? Insights from the 2015 House Condition Survey on insulation, ventilation, heating and mould in New Zealand houses.
- 3) Housing Improvement Regulations 1947 Every house shall be free from dampness.
http://www.legislation.govt.nz/regulation/public/1947/0200/latest/DLM3565.html?search=sw_096be8ed80ba08aa_regulation+15_25_se&p=1&sr=10
- 4) Phipps, R. October 2007. Indoor Environment Quality. Report TE220 for Beacon Pathway Limited.
- 5) World Health Organisation Regional Office for Europe (2009). WHO guidelines for indoor air quality: dampness and mould. www.euro.who.int/document/E92645.pdf. This report summarises the scientific evidence on health problems of building moisture and biological agents. They conclude that to avoid the significant adverse health impacts we should prevent (or minimise) persistent dampness and microbial growth on interior surfaces and in building structures. While people who already have respiratory issues are very susceptible, the report notes that dampness and mould may impact on otherwise healthy occupants too. The report notes that, while few intervention studies were available at the time, results show that remediation of damp can reduce adverse health outcomes. They say that the increasing prevalence of asthma and allergies in many countries increases the number of people who are susceptible to damp mouldy buildings.
- 6) Alexandra C Carswell, Niamh F Hammond, Wan N Ab-Halim, Olivia P Badcock, Georgia TA Brownlee, Sarah MJ Bush, Samuel CD Clark, Shaun G Collings, Sarah AL Cox, Jhanvi A Dholakia, Amelia A Eddowes, Timothy J Foster, Auzita Irani, Tom A Judd, Georgina LE Kioa. Costs of Childhood Hospitalisation for Asthma. Department of Public Health, University of Otago, Wellington, 2015
This undergraduate paper did an economic analysis of the costs of asthma. They found at a national level the costs of childhood (<15years) hospitalisations in 2013 to be \$2.1m in non-health care costs (e.g. time off work for parents, expenses, schooling) plus \$7.6m in health care costs.
- 7) <http://www.otago.ac.nz/wellington/news/otago661987.html>. This research found that mould in houses can trigger a child's first asthma attack. Also noted more mould, more wheezing.

Main living space can be adequately heated

Summary

The main living space in a HomeFit home must be able to be adequately and cost-effectively heated. Smaller living spaces with a heat load equal to or less than 2.4kW may be heated with a portable electric heater. Larger spaces must have fixed, energy-efficient heating. In addition, heating sources must be clean burning.

Why this is important

The World Health Organization recommends a minimum indoor temperature of 18°C, and ideally higher if babies or elderly people live in the home. New Zealand homes regularly fall outside this comfort zone with consequent health implications.

Electric resistive heaters are the most common form of space heating in New Zealand, but these are expensive to run for long periods of time (particularly in the main living space). Portable and fixed electric resistive heaters may be acceptable in smaller living rooms, but more energy-efficient heating types are available and either heat pumps or clean-burning wood fires or pellet burners are recommended by HomeFit.

Detail of what is required

Main living spaces with a heating load greater than 2.4kW must have a fixed, cost-effective, clean-burning form of space heating.

Fixed heating source

“Fixed” means that the heat source is permanently attached to the fabric of the building. Living spaces with a heat load greater than 2.4kW must have a permanent “fixed” heating system that is cost-effective and clean burning.

Clean burning

“Clean burning” means a wood burner that meets the National Environmental Standards for Air Quality at the date of testing (see wood burners that meet Ministry for the Environment [regulations here](#)). The NESAQ requires that wood burners must have a discharge of less than 1.5 grams of particles for each kilogram of dry wood burned (g/kg) and a thermal efficiency of at least 65 per cent. Note that non-clean burning fuels other than wood (or wood pellet) such as coal and diesel/oil are not permitted.

Able to be adequately heated

“Able to be adequately heated” means either that:

- a) the main living space has fixed cost-effective, clean-burning heating installed **OR**
- b) the main living space is small enough and sufficiently well insulated to be cost-effectively heated by an electric resistive heater (2.4kW or less)

The main living space includes all open plan areas such as kitchens or dining rooms connected to the living room without a dividing door.

The HomeFit App includes a basic heat loss calculator that estimates the heat loss of the main living space. This need only be used if the main living space is reliant on electric resistive heating (either fixed or portable). The heat loss calculator has 5 simple inputs:

- 1) Location of home
- 2) Level of insulation
- 3) Number of external walls
- 4) Window size (as approximate % of external walls)
- 5) Floor area

It is expected that most HomeFit assessments will make use of the HomeFit heat loss calculator. However, if the assessor wishes to carry out a more detailed heat loss analysis of the room, this may be calculated manually, and the figure entered in the overall HomeFit scorecard. The unit fabric heat loss should be calculated according to the calculation method in NZS4218:2009 (section 4.2) and then multiplied by the design temperature difference (DeltaT) in the table below.

Climate Region	Design (ΔT)	Climate Region	Design (ΔT)
Northland	15	Nelson-Marlborough	21
Auckland and Coromandel	16	West Coast	21
Hamilton	21	Christchurch	24
Bay of Plenty	19	Queenstown-Lakes	25
Taupo	24	Central Otago	26
Rotorua	22	Dunedin	21
East Coast	21	Invercargill	23
New Plymouth	19		
Wellington	20		

An allowance for ventilation heat loss should then be added according to the following formula:

$$\text{Ventilation heat loss (W)} = \Delta T \text{ (as table above)} \times \text{Room Volume (m}^3\text{)} / 6$$

Cost effective

Cost effective means that the heating has a running cost of less than 20c per kWh (delivered heat) assuming fuel costs as follows (2017 prices).

- Electricity 28c/kWh
- Firewood \$100/m³
- Wood pellets 70c/kg
- Natural gas 12c/kWh
- LPG (45kg bottles) \$92 per refill

The following heat sources are deemed to be cost effective by default:

Non-centrally heated

- Electric heat pump (air or ground source)
- Flued LPG/natural gas heater
- Solid fuel burner (pellet and wood fuel) *provided it is clean burning.*

Centrally heated

- Electric heat pump (air or ground source) ducted or hydronic (radiators or underfloor)
- Flued LPG/natural gas boiler ducted or hydronic (radiators or underfloor)
- Pellet or wood boiler ducted or hydronic (radiators or underfloor)

Not acceptable

The following heating systems are not acceptable:

- Fixed or portable electric resistance heaters (panel, convection, fan assisted) except in living spaces with a heat loss equal to or less than 2.4kW.
- Open fireplace
- Oil burner (diesel)/central heating
- Non-clean-burning solid fuel burner (including all coal burners)
- Unflued gas heaters (fixed or portable)

Unflued gas heaters are not acceptable in any form. Unflued gas heaters release large amounts of undesirable moisture, oxides of nitrogen and carbon monoxide indoors, which is problematic, especially for occupants with respiratory issues.

Open fires are also not acceptable as they promote draughts and release undesirable particulates. The presence of open fireplaces is, however, acceptable provided that they are blocked and that a separate source of acceptable heating is provided where the heat load is greater than 2.4kW.

Exceptions

Homes that are certified to the Passive House standard will generally have acceptable indoor temperatures for most of the year without space heating and meet this requirement by default.

HomeFit PLUS

A HomeFit PLUS home must have a fixed, cost-effective, clean-burning heat source in the main living space regardless of the room's heat loss. Electric resistive heating (either fixed or portable) is not permitted.

How to assess

HomeFit

The presence of a fixed, cost-effective, clean-burning heating source should be evidenced during the site inspection.

If there is no acceptable fixed heating source or the heating source is electric resistance, then the heat loss of the room will have to be estimated either using the HomeFit calculator or a separate calculation as described above.

If the fixed heating source is a wood burner, then this will have to be confirmed as being clean burning. Find the make and model of the wood burner and confirm that it meets Ministry for the Environment [standards here](#). If the homeowner cannot provide evidence of the make and model of the wood burner (e.g. nameplate, receipt, operating instructions) then this must be failed.

If the home has a heat source on the "compliant by default" list, no further evidence is required to be submitted.

If the home has a heat source that is not on the default acceptable list but is believed to be both clean burning and cost effective the assessor will need to submit additional evidence to NZGBC. Evidence of its fuel source, efficiency and tested emissions (if solid fuel) must be submitted alongside the provided calculator. Fuel costs must be as per the table provided above to ensure consistency.

HomeFit PLUS

The presence of a fixed, cost-effective, clean-burning heating source should be evidenced during the site inspection.

If the fixed heating source is a wood burner, then this will have to be confirmed as clean burning. Find the make and model of the wood burner and confirm that it meets Ministry for the Environment [standards](#) here.

Advisory report text

General advice for operating your heating cost effectively

- 1) Turn your heaters off when you don't need them - rather than leaving them on when you're not there, this includes your heat pump.
- 2) Set your heater thermostat - aim for 20°C to 22°C.
- 3) Many heaters are only big enough to heat one room - so close doors and in the evening pull curtains.
- 4) Use a heater directly in the room you want to heat - and keep the door shut (unless you have central heating).
- 5) Use draught excluders under doors to keep heat from escaping into other parts of the home.

Home has fixed heating source that is compliant with HomeFit PLUS

Your home has one of the HomeFit PLUS approved heating systems, which include heat pumps, wood fires, pellet burners and flued gas heaters, or central heating using the same fuels.

Home has a heat pump that is compliant with HomeFit PLUS

Heat pumps are generally regarded as the most efficient way to heat the living areas of your home and come in several air-to-air, ground-to-air, ground-to-water and air-to-water options. Typically, they would use between half to a third of the energy of a standard electric heater to provide the same amount of heat. They come in a variety of high-wall, low-wall and floor-mounted designs, or can be ducted to multiple rooms of your home.

Make sure you know how to use them effectively. See the information on [Energywise](#) on using heat pumps wisely. There's also useful advice on how to operate heat pumps on the Eco Design Advisor website [here](#).

Home has a flued, clean burning wood or pellet fire that is compliant with HomeFit PLUS

Wood fires or pellet burners are relatively cheap to run and, since wood is renewable and sustainable (and New Zealand has extensive areas of forestry), are good for the environment too.

Burning wood from sustainable forests is carbon neutral - while trees are growing, they capture carbon dioxide from the air. This carbon dioxide is released either when the wood is burnt, or when the tree dies and rots. While some emissions are produced in the transporting and processing of the wood, this is only a very small amount per unit of heat produced.

Wood fires work during power cuts – many free-standing models can be used for cooking as well as heating. Some wood fires can be equipped with a wetback system to heat water; check with your supplier about this option.

Modern wood fires or pellet burners that were installed after 2005 are relatively efficient and clean burning compared with older burners and open fires. Ensure you store and burn dry, untreated and paint-free wood only, have the chimney swept regularly and don't dampen the fire overnight, to prevent the fire from smouldering and adding to local air pollution. Learn how to light a smoke-free, efficient fire [here](#).

Home has a flued gas heater or central heating that is compliant with HomeFit PLUS

Flued gas fires are relatively efficient and clean burning compared with wood fires. Gas is a fossil fuel and contributes to climate change. Mains gas fires are more cost effective than bottled gas.

Central heating can be cost-effective in larger homes, negating the need to run several heaters in different parts of the home, providing the home is well-insulated. Depending on the fuel type (gas, wood, electricity), it can be relatively efficient per square metre of home heated.

Home does not have any fixed heating, but heat loss is less than 2.4kW

Your home does not have a fixed heating source in the main living space, but the space is small enough and sufficiently well-insulated to be cost-effectively heated with portable electric heating. This is compliant with HomeFit. It is worth exploring more cost-effective heating options such as a heat pump or clean-burning wood fire or pellet burner. These options would meet the HomeFit PLUS standard and, if you are renting out your property, likely to be compliant with the new Healthy Homes Standards.

Home has fixed electric resistive heating, but heat loss is less than 2.4kW

Your home has a fixed electric resistive heater in the main living space, but the space is small enough and sufficiently well insulated to be cost-effectively heated with this type of heating. While this is compliant with HomeFit, it is worth exploring more cost-effective heating options such as a heat pump or clean-burning wood fire or pellet burner. These options would meet the HomeFit PLUS standard and, if you are renting out your property, likely to be compliant with the new Healthy Homes Standards.

Other HomeFit compliant heating source

Your assessor has deemed your heating source to be compliant with HomeFit.

Home does not have any heating and heat loss is greater than 2.4kW

Your home does not have a fixed heating source in the main living space and this space is too big or insufficiently insulated to be cost-effectively heated with a portable electric heater.

It is recommended that you install either a heat pump, clean-burning wood fire or pellet burner. These options would meet the HomeFit PLUS standard and, if you are renting out your property, likely to be compliant with the new Healthy Homes Standards.

More information on types of space heating can be found on the Energywise website [here](#).

Home has electric resistive heating and heat loss is greater than 2.4kW

Your home has an electric resistive heating source in the main living space, but this space is too big or insufficiently insulated to be cost-effectively heated with this type of heating.

It is recommended that you install either a heat pump, clean-burning wood fire or pellet burner. These options would meet the HomeFit PLUS standard and, if you are renting out your property, likely to be compliant with the new Healthy Homes Standards.

More information on types of space heating can be found on the Energywise website [here](#).

Home has unflued gas heating in the main living space

These are extremely unhealthy and potentially dangerous. If at all possible, you should choose a different form of heating.

Unflued gas (UFG) heaters should be avoided because using them emits large quantities of moisture and toxic fumes which makes your home harder to heat and may make people in the home ill. UFG heaters should never be used in enclosed spaces such as bedrooms, and a window should always be left open to avoid toxic gasses building up, which makes them highly inefficient. UFG heaters are not recognised under HomeFit and are illegal in some countries including Australia.

We recommend upgrading to a more cost-effective heating option such as a heat pump or clean-burning wood or pellet burner. These options would meet the HomeFit PLUS standard and, if you are renting out your property, likely to be compliant with the new Healthy Homes Standards.

More information on types of space heating can be found on the Energywise website [here](#).

Home has open fireplace that is currently not blocked

Open fireplaces are cosy to sit next to in the winter while they're burning but, unfortunately, most of the time they just act like a giant hole leaking warm air out of your house. It's like having a window open all the time and they produce unacceptable air pollution.

We recommend you get the fireplace replaced with a modern, efficient wood burner or block it up (or remove it altogether) and get a heat pump instead.

To block the chimney, a rubbish bag filled with shredded clothing works well. Make sure the bag is visible, so no one tries to light a fire in a blocked chimney.

More information on types of space heating can be found on the Energywise website [here](#).

Home has a non-clean-burning solid fuel burner

Burners that are not clean burning are inefficient, costly, and release harmful particles into the air. Consider upgrading to a new (post-2005) wood or pellet burner that meets Ministry for the Environment [regulations here](#), or to a heat pump. These options would meet the HomeFit PLUS standard and, if you are renting out your property, likely to be compliant with the new Healthy Homes Standards.

More information on types of space heating can be found on the Energywise website [here](#).

Home has fixed heating source that is not compliant

Your home has a non-compliant heater installed in the main living space. This is not compliant with HomeFit since it is either not clean burning (in the case of oil/diesel or solid fuel burners) or it is not cost effective to run.

It is recommended that you install either a heat pump, clean-burning wood fire or pellet burner. These options would meet the HomeFit PLUS standard and, if you are renting out your property, likely to be compliant with the new Healthy Homes Standards.

More information on types of space heating can be found on the Energywise website [here](#).

What to submit for the rating

HomeFit and HomeFit PLUS: Non-centrally heated and centrally heated dwellings
Photograph of the heater type in the main living space. Photograph of any heating system remote from the main living space (e.g. ducted heat pump, central heating boiler). Confirmation that there are no open fires or unflued gas heaters.
Dwellings that are Passive House certified.
Passive House certificate

References

- 1) BRANZ 2015 House Condition Survey: Comparison of House Condition by Tenure. Vicki White, Mark Jones, Vicki Cowan, Saera Chun
- 2) Warm, dry, healthy? Insights from the 2015 House Condition Survey on insulation, ventilation, heating and mould in New Zealand houses. Vicki White and Mark Jones

Energy-efficient hot water supply

Summary

A HomeFit home must have an energy-efficient hot water supply.

Why this is important

According to the BRANZ HEEP studies, water heating accounts for around a third of energy use in an average New Zealand home. The most cost-effective ways to reduce hot water energy consumption in a typical home are to reduce the flow rate of showers and properly insulate any hot water cylinders.

According to the BRANZ HEEP report 33% of shower flow rates are more than 9 litres per minute and 43% of cylinders in New Zealand homes are poorly insulated.

Detail of what is required

Shower flow rate 9 litres/minute or less

All showers in the home (including ensuite) must have a shower flow rate of 9 litres/minute or less.

Either instantaneous hot water or well-insulated cylinder

Hot water generation should either be instantaneous (electric or gas), gas fired cylinder, hot water heat pump (cylinder or separate condenser) or come from a well-insulated electric hot water cylinder (which could be heated by electricity, solar or wetback systems).

A well-insulated cylinder is defined as:

- factory-fitted with A-grade insulation or Minimum Energy Performance Standards (MEPS) compliant. This may be marked on the side of the cylinder. Cylinders manufactured from 2003 onwards will be compliant by default and the date of manufacture is often marked on the cylinder.
- retrofitted with cylinder wrap. Note, only electric cylinders or hot water calorifiers can be retrofitted with cylinder wrap. Gas cylinders cannot be retrofitted in this way for reasons of safety and are in any case compliant by default. Heat pump hot water cylinders are also compliant by default.
- having insulation installed to the first metre of hot water distribution pipework or more if the cylinder is outside the thermal envelope (e.g. cylinders in subfloor spaces often have hot water pipe running the length of the house). Lagged pipes on cylinders inside the thermal envelope are recommended but not required for HomeFit.

Exceptions

In some cases, a cylinder will have insufficient clearance to allow for the installation of cylinder wrap. This is acceptable but needs to be noted on the HomeFit advisory report together with photographic evidence that the cylinder cannot be wrapped. Use your discretion when judging how difficult it would be to wrap the cylinder. Wrapping three quarters of the cylinder (and stuffing more insulation down the gap at the back) will improve cylinder performance.

HomeFit PLUS – optional measure: heat pump or solar hot water

The installation of either heat pump hot water heating or solar hot water heating (solar thermal or solar photovoltaic) contributes to the achievement of HomeFit PLUS. To be eligible, all showers and the main kitchen tap hot water supply must come from a heat pump or solar hot water system.

How to assess

HomeFit

The shower flow rate should be assessed by timing how fast it takes to fill a bucket. Turn the shower mixer onto its maximum capacity, achieve a suitable average showering temperature and run the water into a bucket for 15 seconds. Measure how much water is in the bucket and then multiply this figure by four to get the flow rate in litres/minute.

Alternatively, if the WELS rating of the shower(s) is known, this must be at least 3 Star WELS.

Determine the type of hot water system(s) present. Where electric hot water cylinders are present inspect the name plate label to find out if it is A-grade, MEPS compliant or manufactured from 2003 onwards. If the cylinder is not A-grade or MEPS compliant determine whether it has been retrofitted with cylinder wrap.

In addition, for HomeFit PLUS

The presence of either (or both) solar hot water heating or heat pump hot water heating should be evidenced during the site visit. Confirm that they feed all showers and the main kitchen tap as a minimum.

Advisory report text

General advice

How much hot water your household uses, and the electricity and gas prices in your area, determine if it is cost effective to pay more upfront for a highly efficient water heating system, or whether a conventional electric or gas system is sufficient. Choosing a highly efficient system that uses renewable energy, such as the sun's heat or electricity (which is about 80% renewable on average) also reduces the environmental impact of your hot water use.

EECA's Energywise website has good resources on choosing a hot water system [here](#).

The temperature of the water should be at least 60°C at the cylinder (to prevent the growth of Legionella bacteria), but not much higher than this. Even an extra 10°C on the thermostat of your hot water system could be costing you \$25 a year with a modern cylinder, or twice that with an older one. Depending on your cylinder, you may need an electrician or plumber to adjust your thermostat.

Home has shower flow rate of 9 litres/minute or less

Your shower flow rate is no more than 9 litres/minute. This will save \$240 or more a year for a household of three over a flow rate of 12 litres/minute. To save more water, try to keep showers to no more than 4 minutes. A simple egg timer or alarm can often help motivate children to get out of the shower!

Home meets the HomeFit standard for hot water efficiency

Your home meets the HomeFit standard for hot water system efficiency. You can further improve efficiency by lagging at least the first metre of the hot water pipe where possible.

Your home meets the HomeFit PLUS standard for an energy efficient hot water supply

Your home has a solar hot water or heat pump hot water system, or some other hot water system that is deemed to be compliant with HomeFit PLUS.

Home has shower flow rate more than 9 litres/minute

Your shower flow rate is more than 9 litres/minute which does not meet HomeFit. Swap your shower head for one with a more efficient flow rate of 9 litres per minute or less to cut your hot water use significantly. Or, you can install an inexpensive shower flow restrictor. Even reducing the flow rate by 3 litres per minute could save a household of three around \$240 per year.

Home has electric cylinder that is inadequately insulated

Wrap your cylinder with insulation to help reduce the heat lost while in use. Cylinder wraps are cheaply available from most DIY stores and are easy to fit. Since 2003, newly installed hot water cylinders have been required to be factory fitted with a minimum amount of insulation. Make sure to lag at least the first metre of hot water pipe at the same time. If your cylinder is on the outside of your home or under it then lag as much of the pipe as possible.

Home has a coal or diesel/oil boiler or other hot water system not compliant with HomeFit

Your hot water system is not compliant with HomeFit. Consider upgrading to an efficient gas or electric cylinder or instantaneous heater, heat pump water heater, solar water heater or wetback (with electric or gas back up).

What to submit for the rating?

All dwellings
Photograph of showers head(s) and confirmation flow rate < 9 litres/minute
Photograph of hot water cylinder name plate showing: <ul style="list-style-type: none">• cylinder grade or MEPS compliance, where present• cylinder wrap and lagging or lack thereof• if relevant, evidence that the cylinder cannot be wrapped
Photograph of other forms of compliant hot water generation including instantaneous, heat pump and solar hot water systems.

References

- 1) BRANZ Energy use in New Zealand Households - final HEEP report, SR221
- 2) AS/NZS 4692.2:2005 Electric water heaters - Minimum Energy Performance Standard

Adequate ventilation

Summary

A HomeFit home must have adequate means of ventilating kitchens, bathrooms, living spaces and bedrooms.

Why this is important

Kitchens and bathrooms are major sources of moisture in the home. Fitting dedicated mechanical extract systems to these rooms will help to reduce moisture levels and reduce the risk of mould and other problems associated with high humidity levels.

According to the BRANZ House Condition Survey 2015, homes without mechanical extract in the kitchen were more than 3 times more likely to have visible mould.

Other habitable spaces also require ventilation with outdoor air. Most commonly in New Zealand this is achieved with opening windows, but mechanical ventilation is also acceptable.

Detail of what is required

Mechanical kitchen and bathroom extract systems ducted to outside must be installed. Kitchen extract systems may either be a dedicated rangehood located over the hob or a separate extract fan. Separate WCs only require mechanical ventilation if they do not have an external window. Shower enclosures (such as shower domes) are valuable additions to bathrooms but are not recognised as alternative means of compliance for HomeFit.

Other habitable spaces must have some means of ventilation including either at least one openable window and/or mechanical ventilation. Rooms can be ventilated from adjacent rooms (as per NZBC G4) but the adjacent room must meet all of the following requirements:

- have an openable window
- have a permanent opening between the two spaces
- the furthest distance between the outside wall (of the adjacent room) and the furthest opposing wall must be less than 6m

HomeFit PLUS

Mandatory

A HomeFit PLUS home must have a dedicated rangehood

Verify that the kitchen rangehood is between 650mm and 900mm of the stovetop/hob and ducted outside. This contrasts with HomeFit, which allows an extract fan ducted outside.

For HomeFit PLUS, all kitchen and bathroom extracts must have adequate flow rates. If the flow rates are known, these should be at least 50 litres/second for kitchen rangehoods and 25 litres/second for bathroom extracts. As with HomeFit, separate WCs need only have a mechanical extract if no openable windows are present and there is no requirement to test the flow rate. As an alternative for testing flow rates in kitchens and bathrooms, an A4 paper test is acceptable: if the extract grille can lift a standard 80 gsm A4 piece of paper then flow rates should be deemed acceptable.

Optional measure: balanced heat recovery ventilation

The installation of balanced heat recovery ventilation contributes to the achievement of HomeFit PLUS. This may either come from a single heat recovery unit ducted to each room or from individual heat recovery units per room. In either case, mechanical ventilation must be provided to each habitable space (kitchen, living areas, bathrooms and bedrooms).

Heat recovery ventilation is most suited to well-insulated, air-tight homes in colder climates.

How to assess

HomeFit

The presence of mechanical kitchen and bathroom extract systems together with ventilation in other living spaces (either openable windows or mechanical systems) should be evidenced during the site inspection. For HomeFit, it is not necessary to establish the amount of air being vented through the extract systems.

Windows in each habitable room should be inspected and confirmed as openable. Where rooms do not have openable windows, the presence of mechanical ventilation should be confirmed. Balanced mechanical ventilation, positive pressure ventilation or whole house extract systems are all acceptable; however, all outdoor air intakes and exhausts must be to outside (i.e. air should not be taken from nor exhausted to the ceiling void).

Not acceptable

Kitchen and bathroom extract systems must vent directly to outside. Recirculating rangehoods and other systems that vent to other parts of the home including the ceiling space are not acceptable. Where possible, inspect that ducting running through a ceiling space is intact and still fully connected.

HomeFit PLUS

Verify that the kitchen rangehood is between 650mm and 900mm of the cooker. Confirm the flow rates of kitchen and bathroom extracts.

The presence of balanced heat recovery ventilation should be evidenced during the site visit and at least one supply and/or extract terminal confirmed in each kitchen, living room, bathroom and bedroom.

Advisory report text

General advice

Make sure you air the house for at least half an hour each day, preferably in the middle of the day when you won't be losing valuable heat. This will replace stale with fresh air and remove moisture from your home.

Ventilating your bedroom overnight is recommended for a better sleep by maintaining air quality, reducing excessive moisture and the risk of mould growth. In more airtight newer homes (1990s onwards) keep a window slightly ajar - a finger's width should be enough in winter. Use security stays, bolts or latches for your peace of mind. During cold winter nights, use an electric heater on a low thermostat setting in your bedroom.

To avoid condensation problems, ventilate when you turn off the heating, for example before you leave the home in the morning.

Home has kitchen moisture extraction that is compliant with HomeFit

Your home has kitchen moisture extraction ducted outside - this meets the HomeFit standard. To meet the HomeFit PLUS standard you would need a dedicated rangehood located between 650mm and 900mm above each hob or stove, and properly sized (having a flow rate of 50 litres/sec, or able to hold an A4 sheet aloft). Remember to use extractors every time you cook and keep lids on pots to reduce steam.

Home has kitchen moisture extraction that is compliant with HomeFit PLUS

Your home has kitchen moisture extraction that meets the HomeFit PLUS standard. Remember to use extractors every time you cook and keep lids on pots to reduce steam.

Home is not fitted with kitchen extract ducted to the outside

Your home does not have kitchen moisture extraction that is compliant with HomeFit. HomeFit requires kitchens to have extractor fans that are ducted to the outside. Kitchen rangehoods or extractor fans allow moisture from cooking to be exhausted at source, reducing the need to ventilate with opening windows and reducing the risk that cooking moisture migrates through the rest of the home. Kitchen rangehoods also capture grease and other cooking pollutants. A properly sized kitchen rangehood (with flow rate of at least 50 litres/sec) located between 650mm and 900mm above the hob or stove, and ducted to the outside, is required for the HomeFit PLUS standard.

Home is fitted with a bathroom extract

Your home has a bathroom extractor fan. This meets the HomeFit standard. Remember to use it every time you shower, perhaps by having it set to turn on automatically via a timer attached to the light switch. This uses a minimal amount of energy compared to the cost of heating a damp home. The fan must have a 25 litre/sec flow rate in order to meet HomeFit PLUS.

Home is fitted with a bathroom extract compliant with HomeFit Plus

Your home has a bathroom extractor fan that meets the HomeFit PLUS standard. Remember to use it every time you shower, perhaps by having it set to turn on automatically via a timer attached to the light switch. This uses a minimal amount of energy compared to the cost of heating a damp home.

Home is not fitted with a bathroom extract venting outside

Not all bathrooms in your home are fitted with an externally vented fan. This is a HomeFit requirement. Bathroom extract fans, if installed properly, allow moisture from showering to be exhausted outside, reducing the need to ventilate with opening windows and reducing the risk that bathroom moisture migrates through the rest of the home. Ideally, these extract fans should be properly sized (having a flow rate of 25 litres/second), located above the main source of steam (usually the shower) and fitted with a run-on timer allowing the fan to run for a set time after the occupant has left the bathroom. Internal toilets (that don't have an opening window) are also required to have a fan.

Bathroom and/or kitchen extract ducting does not comply with HomeFit

Your bathroom/kitchen extract does not comply with HomeFit because we were unable to inspect its ducting, or if we did inspect it, it was not ventilating outside or the ducting was not intact. This means that moist air could be vented back into the building. To comply with HomeFit, ensure that your bathroom/kitchen extract ducting is intact and connected to an external grille.

Home has ventilation compliant with HomeFit

Your home has either openable windows or mechanical ventilation in all living areas.

At least one bedroom, toilet or living area does not have a means of ventilation

At least one bedroom, toilet or living area does not have an adequate means of ventilation (either openable window or mechanical ventilation). Rooms must be fitted with an openable window or mechanical ventilation to comply with HomeFit.

Home has a balanced ventilation system that complies with HomeFit PLUS

Your home is fitted with a balanced heat recovery ventilation system that gives you extra points towards HomeFit PLUS. Heat recovery ventilation is most suited to well-insulated, airtight homes in colder climates.

What to submit for the rating

HomeFit
Photographs of the bathroom and kitchen extract systems including internal and external ventilation terminals (such as the rangehood), where applicable. Photographs of ducting where not connected or not intact. Photographs of windows in rooms where windows cannot be opened.
HomeFit PLUS
Photographs of the whole house ventilation system unit/controller, or of a heat recovery ventilation unit/controller and supply/extract terminals in each room.

References

- 1) BRANZ 2015 House Condition Survey: Comparison of House Condition by Tenure. Vicki White, Mark Jones, Vicki Cowan, Saera Chun
- 2) Warm, dry, healthy? Insights from the 2015 House Condition Survey on insulation, ventilation, heating and mould in New Zealand houses. Vicki White and Mark Jones

Adequate protection from ground moisture

Summary

A HomeFit home must have adequate protection from ground moisture to reduce the likelihood of this source of damp entering the home. Homes with no subfloor (e.g. ground floor is concrete slab on grade or upper floor apartments) or elevated homes (e.g. pole houses) are compliant by default.

Why this is important

Damp is a key problem in New Zealand homes and it is important that your home is protected from moisture. A key source of moisture coming into a house from the outside is from the ground underneath the floor. The subfloor is often a damp environment: BRANZ's House Condition Survey of 2015 found over 50% of NZ homes with subfloors had inadequate levels of subfloor ventilation. Even when you look under your house and the ground looks dry, BRANZ research says an average of 0.4 litres of water can evaporate from 1m² of uncovered ground in 24 hours. In a 150m² house that's up to 60 litres/day on average. This moisture works its way into the house and can have a significant impact on the level of internal moisture and deterioration of building materials. This adds to the moisture load of your home which has several key negative impacts. Damp air is harder to heat (you spend more on heating and still can't get the temperature up to comfortable healthy levels); and damp air and mould can worsen symptoms of illnesses such as asthma, bronchitis, other breathing disorders and some forms of gastroenteritis.

Detail of what is required

Any subfloors must be both well-ventilated AND dry:

Well-ventilated subfloor

Any subfloors must be well ventilated. Well ventilated means that the subfloor perimeter has:

- Base boards with a continuous 20mm gap on at least two sides of the house
- Trellis cladding

Dry subfloor

Any subfloors must be dry. This means that:

- there must be no evidence of **pooling water or obvious leaks** in any subfloors (as evidenced by water and/or mould on piles, framing perimeter foundations).
- Where the subfloor is enclosed in a concrete or timber perimeter with purpose vents, any subfloors must have a well installed **ground moisture barrier** that covers at least 80% of total subfloor area and is in good condition. "Installed well" means polythene sheets overlap each other by 150mm, flap up the foundation wall by 50mm and sheets are taped to piles. On sloping sites, the lower-most edge of the polythene should be at least 50mm short of the foundation wall to allow any moisture that may get on top of it to drain away.

Exceptions

The following types of ground floor are compliant by default (though note where a home has a mixture of ground floor types any subfloors present must comply with the above criteria):

- The home has a concrete slab on-grade ground floor and there is no evidence of rising damp through the concrete floor as a result, for example, of a missing damp proof membrane.
- The home is elevated, e.g. a pole house, and the subfloor area is open to the elements (e.g. rain can drive under the house)

How to assess

Required equipment: Good torch and suitable clothing (strong shoes and overalls) as you may need to crawl to assess subfloor.

Dry subfloor

Assess if the home is protected from moisture by going into the subfloor space.

Actively search to rule out pooling water or obvious leaks (as evidenced by water and/or mould on piles, framing perimeter foundations). Note if subfloor smells musty or damp. Fail if there is evidence of pooling water and/or obvious current leaks.

Where required, review ground moisture barrier to ensure it is well installed, covers at least 80% of total floor area, and is in good condition (i.e. not ripped).

Note that if the home is elevated (i.e. a pole house) or has a concrete slab-on-grade ground floor, it is exempt from the requirement for a moisture barrier. However, some concrete slabs do not have a damp-proof membrane; evidence of rising damp through the slab as a result would fail HomeFit.

Well-ventilated subfloor

Assess if the home has adequate ventilation by noting details as you can while in the subfloor and then backing this up by walking the perimeter of the building.

- If the subfloor space is clad with base boards, pass if they have a continuous 20mm gap on at least two sides of the house.
- If the subfloor space is clad with trellis, pass if this is present on at least two sides of the house.

Advisory report text

General advice

For a home to perform well, WHO recommends relative humidity (the amount of moisture in the air) inside our homes should fall in the range between 40%-60%. New Zealand's climate means many regions have moderate to high humidity, so our 'natural' humidity is often in excess of this WHO recommended band. As a result, it's critical for the health of our homes and people to exclude all direct sources of moisture. Regular checking and maintenance of your subfloor space is important, keep vents clear and check the condition of your ground moisture barrier annually. In addition, checking and maintaining roof, guttering, downpipes and cladding is critical to keeping your house weathertight.

Home is adequately protected from ground moisture

Your home meets the HomeFit standard for ground moisture. That means there is either adequate ventilation in your subfloor (and no sign of ponding or leaks) or you have a concrete slab or groundsheet (sometimes called a ground moisture barrier) covering the soil under your home.

Check if the groundsheet covers all the soil under the home, is not ripped, and is taped around piles. Also periodically check that there are no leaking pipes or water getting underneath the home and ponding on top of the groundsheet or coming up through the slab.

Home is not adequately protected from ground moisture

Your home is not adequately protected from ground moisture, a significant source of dampness inside the home. This means you risk mould issues in your home, which will undermine both the health of occupants and the durability of the building materials. Contact insulation installers or local energy trusts who can quote you to install a ground moisture barrier, or groundsheet. A DIY install can cost as little as \$200.

If there is evidence of pooling water under your home, you may have a drainage or plumbing issue that requires immediate attention. Call a plumber to find the source of leaks or a drainage company to deal with site-based issues related to the flow of water under your home. If the issue could be related to the stormwater system, call your local council.

What to submit for the rating

All dwellings
<p>Tick yes/no subfloor able to be accessed. Tick yes / no subfloor smells musty</p> <p>PASS</p> <p>Confirm that these elements of subfloor meet HomeFit requirements:</p> <ul style="list-style-type: none"> • Ground moisture barrier covers at least 80% of subfloor, is well installed and in good condition • No pooling water • No leaks/broken pipes • Ventilation adequate • Subfloor open to the elements due to house elevation (take a picture) <p>FAIL</p> <ul style="list-style-type: none"> • Water in subfloor: take picture of any pooling water, broken pipes or leaks • Ground moisture barrier inadequate: take picture to show coverage less than 80% of floor area and/or poor condition • Subfloor: take picture of stored material that would reduce effectiveness of ventilation

References

- 1) NZS 3604:2011 Timber framed buildings
- 2) NZS 4246:2016 Energy efficiency – Installing bulk thermal insulation in residential buildings
- 3) Installation of Ground Moisture Barriers: Eco Design Advisor factsheet: <http://ecodesignadvisor.org.nz/resources/ground-moisture-barriers-guide-installation/>
- 4) White, V.W., Jones, M., Cowan, V.J. & Chun, S. (2017). BRANZ 2015 House Condition Survey: Comparison of house condition by tenure. BRANZ Study report SR370. Judgeford, New Zealand: BRANZ Ltd.
- 5) BRANZ 2010 House Condition Survey reports more extensively on the subfloor (data analysis and reporting from 2015 still to come). Key insights include:

- A high proportion of both rented (74%) and owner-occupied homes (72%) had no ground moisture barrier. This is now understood to be a critical intervention that reduces the moisture load in homes.
- Concrete vents (common in houses built between 1940s-1970s) only have 50% clear space and so permit little air movement; this was not anticipated when first installed.
- Higher proportion of blocked vents found in owner-occupied homes often due to 'improvements' to the property, such as gardens (vegetation blocking vents, raised beds) and additions of decks which may cover vents.

Ceiling, subfloor and wall insulation

Summary

A HomeFit home must have adequate insulation in ceilings and subfloors (where present).

Why this is important

According to the House Condition Survey 2015 at least 40% of homes do not have adequate ceiling insulation and over 50% of homes with a subfloor do not have enough bulk insulation in the subfloor.

These combine to give an estimated 830,000 New Zealand properties (more than half the stock) that could benefit from retrofit insulation. Cold temperatures and high humidity levels in homes are a leading cause of respiratory health problems such as asthma in New Zealand.

Insulating your home is the single most effective thing you can do to keep your home warm and to save energy and money. A well-insulated home provides year-round comfort; it is cooler in summer and warmer in winter, and a warmer home is a drier, healthier home.

Detail of what is required

Acceptable types of insulation:

- Expanded (EPS) or extruded (XPS) polystyrene
- Macerated paper
- Mineral/glasswool segments or rolls
- Blown glasswool
- Polyester
- PIR/PUR
- Sheep wool

Unacceptable types of insulation:

- Foil or foil board (when installed in walls, subfloor, as roofing underlay, or as ceiling insulation). NB, foil in good condition meets the standards for existing homes under the Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016
- Loose polystyrene beads or polystyrene packaging chips in ceilings

Standard of installation and condition of insulation

Condition of insulation:

Insulation must be in good condition, with no gaps, settlement below nominal loft or compression, vermin nests or entrance holes, dampness, or patches of mould.

Standard of installation:

Installation should comply with the standards set out in NZS4246:2016, in order to achieve the required R-values. Inadequacies in the installation can substantially compromise the performance of the product.

As such, there should be no:

- Tucking in or folds
- Gaps, unless as required by NZS4246:2016
- Compression of product – maintaining the nominal thickness is essential to its performance

The insulation must cover all accessible parts of the floor or ceiling of the habitable spaces of the dwelling, except where clearances are required as per NZS4246:2016.

Ceilings

A HomeFit home must have insulation installed to the ceiling with a minimum R-value of 2.2. Most insulation installation since 2009 has required labels of product installed to be displayed, and these can be used to confirm R-value (if matching product installed). Where labels are not present on the installed product, a continuous depth of 120mm or greater will be accepted.

In all instances, the insulation should still have its original thickness consistently throughout the ceiling, as per the nominal thickness stated on the label or, where not labelled, a minimum of 120mm. The insulation should be installed in accordance with NZS 4246:2016.

For RTA compliance, the insulation depth of the ceiling space is generally accepted at 70mm. However, this does not meet the requirements of HomeFit, unless labelled with an R-value of 2.2.

NB: Foil is deemed non-compliant for HomeFit and should be removed and replaced with a compliant bulk insulant according to the NZS4246:2016 and WorkSafe and EnergySafe Code of Practice NZECP55. The retrofitting or repair of foil insulation has been banned since 1 July 2016 due to significant electrical risks.

Accessible ceilings

All homes with accessible ceilings must be inspected to check for condition, quality and safety of installation. Where the ceiling space is accessible, this space must have insulation of an appropriate condition and standard of installation fitted across its entirety.

Inaccessible ceilings

It may not be possible to access some or all the ceiling space, such as in an A-frame or skillion roof construction. Ceilings that are inaccessible in pre-1978 homes are deemed to comply with the RTA but not with HomeFit.

Homes with inaccessible ceilings built before 1978 are deemed to be non-compliant, unless evidence can be produced proving otherwise, or if this area makes up less than the areas outlined in the following table:

Table 2: Allowance for inaccessible roof spaces of a house (pre-1978)

Bedrooms	Allowed inaccessible roof area (m²)
1	6
2	10
3	14
4	18
5	22

Any inaccessible roof space built after 1978 can be deemed compliant.

In accordance with the insulation requirements of the Residential Tenancies Act 1986 (RTA), and the Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016, where any ceiling space that would normally be accessible (e.g. pitched profile roof) is inaccessible due to a lack of designated access point, this space may not be designated inaccessible unless significant structural building work would be required to create access. Access can be created either temporarily (e.g. removing a panel), or permanently (e.g. a hatch into a ceiling space).

Downlights

Downlights in roof spaces (i.e. not between floors) marked CA80, CA90, CA135, IC, IC-F or IC-4 that have insulation safely installed around and/or over to NZS 4246:2016 are deemed compliant. Any other downlight (no mark or any other mark) is deemed non-compliant as the clearance gaps or openings required significantly compromise the effectiveness of the insulation.

Subfloors

A HomeFit home must have insulation installed to the subfloor with a minimum declared R-value of 1.3. Most insulation installation since 2009 has required labels of product installed to be displayed, and these can be used to confirm R-value (if matching product installed). Where labels are not present on the installed product, a continuous depth of 60mm or greater will be accepted for HomeFit, but not HomeFit PLUS where documented evidence is required e.g. label, receipt.

Undamaged foil or bulk insulation of any thickness complies with the RTA standards and is likely to comply with the Healthy Home Standards.

Accessible floors

All homes with accessible underfloor spaces must be inspected to check for condition, quality and safety of installation. Where the underfloor space is accessible, this space must have insulation of an appropriate condition and standard of installation fitted across the entirety of the thermal envelope taking into account clearances required under NZS4246.

NB: Foil is deemed non-compliant and should be removed and replaced with a compliant bulk insulant according to the NZS4246:2016 and WorkSafe and EnergySafe Code of Practice NZECP55. The retrofitting or repair of foil insulation has been banned since 1 July 2016 due to significant electrical risks.

Inaccessible floors

It may not be possible to access some or all of the subfloor space due to insufficient clearance from the ground. Homes with inaccessible floors are deemed to be non-compliant, unless evidence can be produced proving otherwise, or if this area makes up 20% or less of the floor area. Floors that are inaccessible in pre-1978 homes are deemed to comply with the RTA but not with HomeFit.

In accordance with RTA Regulations 2016, where any subfloor space is inaccessible due to a lack of designated access point, this space may not be designated inaccessible unless significant structural building work would be required to create access. Access can be created either temporarily (e.g. removing a panel), or permanently (e.g. an entrance hatch).

Slab floors

Any part of a home that lies on a concrete slab is deemed to comply with both the RTA and HomeFit. To achieve the mandatory standard for HomeFit PLUS, a slab must have either underslab or edge insulation *and* achieve a minimum declared R-value of 1.3 (uninsulated slabs that meet R1.3 by virtue of their size do not comply with HomeFit PLUS). To achieve an extra optional point towards HomeFit PLUS, the slab must meet R1.8.

Outbuildings and garages

Uninhabited enclosed spaces such as garages are excluded from the insulation requirements, except where a wall, floor or ceiling is adjoining habitable space. For example, in the instance that a garage has habitable space above, the underside of the floor between the habitable space and garage needs to be insulated according to the subfloor requirements.

Table 3: Indicative R-value table*

Thickness (mm)	50	70	100	120	150	250
Foil (air gap)			0.8			
Polyester (low density)	0.9	1.2	1.8	2.1	2.7	4.5
Sheep wool	0.9	1.3	1.9	2.2	2.8	4.7
Glass wool (low density)	1.0	1.4	2.0	2.4	3.0	5.0
Polystyrene (EPS)	1.2	1.6	2.4	2.8	3.6	6.0
Polystyrene (XPS)	1.7	2.4	3.5	4.2	5.2	
Polyurethane (PUR)	1.9	2.6	3.8	4.5		
Polyisocyanurate (PIR)	2.0	2.8	4.0			
*Source: Design Navigator extrapolated						

Higher insulation levels

Homes that meet the higher insulation levels of HomeFit PLUS (see below) can use this to meet one of the 3 optional criteria required to meet the overall HomeFit standard.

HomeFit PLUS

A HomeFit PLUS home must have superior insulation levels in ceilings and subfloors and a minimum of 80% of walls surrounding the thermal envelope must be insulated.

Table 4: Superior insulation levels for HomeFit PLUS

	Climate Zones 1&2	Climate Zone 3
Ceiling	R3.2	R3.6
Floor	R1.3	
Walls	Any insulation if 80% coverage	

Walls

Most walls would be deemed inaccessible and therefore compliance with HomeFit PLUS can be demonstrated either with documentary evidence or with the age of the property.

Valid documentary evidence would include consent drawings or receipts/invoices for work completed.

Homes built during or after 1978 would be deemed to comply since wall insulation began to be required in new homes after this date.

NB: Foil or foil board, where identifiable, is deemed non-compliant. Refer to NZS4246:2016 and WorkSafe and EnergySafe Code of Practice NZECP55. The retrofitting or repair of foil insulation has been banned since 1 July 2016 due to significant electrical risks.

Higher insulation levels

HomeFit PLUS homes must achieve at least 6 further optional measures in order to meet the standard. Higher insulation levels as indicated in the table below contribute one of these further optional measures.

Table 5: HomeFit PLUS optional insulation levels

	Climate Zones 1&2	Climate Zone 3
Ceiling	R3.6	R4.0
Floor	R1.8	

How to assess

Required equipment: Good torch and suitable clothing (strong shoes and overalls) as may need to crawl to assess subfloor. Means of measuring the depth of insulation.

Inspect the ceiling and subfloor spaces to determine:

- Condition of insulation
- Quality of installation
- Safety of insulation installation (particularly in relation to lighting, electrical and heating equipment)
- Depth of insulation *and/or* R-value of insulation

Insulation should consistently meet or exceed the required value of insulation across the space being assessed. Please apply discretion here as some bulk insulants (e.g. polystyrene) can achieve required R-values with less than the stated minimum depth standards. The most important thing here is whether the insulation is installed correctly (e.g. fixings to stop underfloor segments from falling down, gaps only where required).

Where foil insulation is present, refer to NZECP55 and NZS4246:2016 for important safety information and guidance before proceeding with insulation inspection or any other work in the subfloor or ceiling space.

Inspect all downlights to determine whether they are IC rated or CA80, CA195 or CA135. IC rated downlights will be clearly marked as such. Note that downlights that are IC rated or better should be abutted and installed to top (excluding drivers/transformers as required), as per NZS4246:2016. If downlights are non-IC rated determine if there is sufficient clearance around the downlights according to NZS4246:2016. The 80/20 rule applies here too. If unable to inspect one in five lamps, and all others pass, then deem it a pass.

Acceptable evidence of insulation includes photographs and/or documentary evidence such as invoices. If unable to assess to above guidelines, mark as fail and advise homeowner to engage a qualified electrician or insulation supplier to assess.

Slab Floors

Verify whether the slab has underslab and/or edge insulation or otherwise meets the required R-values by reviewing the documented evidence. Where edge insulation is visible the entire perimeter of the house must be accessible to be checked to be compliant.

Advisory report text

Ceiling – meets RTA but fails HomeFit

Your ceiling insulation meets the Residential Tenancies Act standard but fails HomeFit. If you are considering upgrading, you can meet the HomeFit standard by installing insulation with a minimum R-value of 2.2. It is recommended that you install a minimum R3.2 insulation in the North Island (excluding Central Plateau) and R3.6 in the South Island and Central Plateau. This space will then meet or exceed the requirements for HomeFit PLUS.

Ceiling – meets HomeFit

Your ceiling insulation meets the HomeFit standard. If you are considering upgrading, install a minimum R3.2 insulation in the North Island (excluding Central Plateau) and R3.6 in the South Island and Central Plateau. This space will then meet or exceed the requirements for HomeFit PLUS.

Ceiling – meets HomeFit PLUS mandatory

Your ceiling insulation meets the minimum standard for HomeFit PLUS. If you are considering upgrading, install a minimum R3.6 insulation in the North Island (excluding Central Plateau) and R4 in the South Island and Central Plateau. This space will then give additional points towards HomeFit PLUS.

Ceiling – meets HomeFit PLUS optional

Your ceiling insulation meets the standard for HomeFit PLUS.

Ceiling – inadequate insulation

Your home has inadequate or no ceiling insulation and fails both the RTA and HomeFit. It is recommended that you install a minimum total of R3.2 in the North Island (excluding Central Plateau) and R3.6 in the South Island and Central Plateau. This space will then meet or exceed the requirements for HomeFit and HomeFit PLUS.

Ceiling – inaccessible and non-compliant with HomeFit but compliant with RTA

Your home has an inaccessible ceiling space that meets the Residential Tenancies Act but not HomeFit, due to the age of the house. The RTA treats houses with inaccessible ceiling spaces built before 1978 as compliant, as they are difficult to retrofit, whereas the HomeFit standard acknowledges that they are difficult to retrofit but will remain at risk to cold and damp without this work. Specialist options for insulating this space are available; it is recommended that you investigate these to improve the comfort of the indoor living environment. Until insulation has been installed, a HomeFit certificate cannot be issued.

Ceiling – non-compliant downlights

Your home has downlights that do not permit a continuous layer of insulation and therefore compromises its effectiveness. These lights should be replaced with IC-rated or surface mounted fittings, which allow for a continuous layer of compliant insulation.

Ceiling – non-IC/CA rated downlights covered/abutted

Your ceiling has downlights that are covered with or abutted to (up against) insulation but are not rated to allow this – *this is unsafe*. Any insulation fitted over the top of non-IC downlights, or insulation fitted up against non-CA downlights, should be removed due to potential fire hazard.

Ceiling – IC/CA rated downlights not covered/abutted

Your ceiling has downlights that may not be covered with or abutted to (up against) insulation but are rated to allow this – this is potentially a source of heat loss. We advise having a qualified insulation installer or electrician check this and repair if possible.

Floors – slab or suspended floor with adequate insulation for RTA but not HomeFit

Your home meets the Residential Tenancies Act (RTA) standard for insulation below the floor. If you are considering upgrading, you can meet the RTA and HomeFit standard by installing insulation with a minimum R-value of 1.3. However, it's better again to install a minimum R1.8 insulation to all accessible subfloor spaces, at little additional cost. This space will then meet or exceed the requirements for HomeFit PLUS.

Floors – suspended floor with inadequate insulation for RTA

Your home does not meet the Residential Tenancies Act or HomeFit standards for insulation below the floor. If you are considering upgrading, you can meet both by installing insulation with a minimum R-value of 1.3. However, it is better again to install a minimum R1.8 insulation to all accessible subfloor spaces at little additional cost. This space will then meet or exceed the requirements for HomeFit PLUS.

Undamaged foil or bulk insulation of any thickness complies with the RTA standards and is likely to comply with the Healthy Home Standards. If you are removing foil insulation, it is recommended that you contact an electrician and turn off the power before doing any work.

The government's Warmer Kiwi Homes programme provides grants for ceiling and underfloor insulation to eligible homeowners (owner-occupiers) on low incomes. For more information, see Energywise [Funding for Insulation](#).

Floors – slab or suspended floor with adequate insulation for HomeFit

Your home meets the HomeFit standard for insulation below the floor. If you are considering upgrading, install a minimum R1.8 insulation to all accessible subfloor spaces. This space will then meet or exceed the requirements for HomeFit PLUS.

Floors – slab or suspended floor with adequate insulation for HomeFit PLUS mandatory standard

Your home meets the HomeFit PLUS standard for insulation below the floor.

Floors – slab or suspended floor with adequate insulation for HomeFit PLUS optional point

Your home exceeds the HomeFit PLUS mandatory standard for insulation below the floor and meets the standard for an additional optional point.

Floors – inadequate insulation for HomeFit but meets RTA

Your home has inadequate or no insulation below the floor to meet the HomeFit standard. It is recommended that you install a minimum R1.8 insulation to all accessible subfloor spaces. This space will then meet or exceed the requirements for HomeFit and HomeFit PLUS. Undamaged foil or bulk insulation of any thickness complies with the RTA standards and is likely to comply with the Healthy Home Standards. If you are removing foil insulation, it is recommended that you contact an electrician and turn off the power before doing any work.

Floors – inaccessible

Your home has an inaccessible subfloor that meets the Residential Tenancies Act but not HomeFit. The RTA treats houses with inaccessible subfloors as compliant, as they are difficult to retrofit, whereas the HomeFit standard acknowledges that they are difficult to retrofit but will remain at risk to cold and damp without this work. Specialist options for insulating this space are available; it is recommended that you investigate these to improve the comfort of the indoor living environment. Until insulation has been installed, a HomeFit certificate cannot be issued.

Walls – adequate insulation

All or most of the exterior walls in your home are fitted with insulation that meets or exceed the requirements for HomeFit Plus. This could reduce heat loss from your home by as much as 25%.

Walls – inadequate insulation

Your home may have little or no insulation in the walls. Wall insulation is not a requirement of HomeFit but can significantly improve the interior comfort of a home. A home with 80% or more of exterior walls fitted with insulation will meet or exceed the requirements for HomeFit PLUS. For retrofitting wall insulation, see guidance on the Energywise [Installing wall insulation](#) webpage and the guidance for installers in NZS4246 (linked from that page).

What to submit for the rating

All dwellings
Photographs of insulation where present or documentary evidence insulation has been installed to HomeFit or HomeFit PLUS requirements.
Acceptable documentary evidence would include consent drawings or receipts/invoices for work completed.
Tick yes/no to subfloor accessible and ceiling space accessible.
Tick yes/no to the recessed downlights options.
Select R-values range or depth of insulation.
Tick yes/no to wall insulation present.

References

- 1) NZS4246:2016: <https://www.tenancy.govt.nz/assets/Uploads/Tenancy/NZS-42462016-Energy-efficiency-Installing-bulk-thermal-insulation-in-residential-buildings.pdf> (free download via Tenancy Services website)
- 2) Insulation Requirements: A Guide for Landlords: <https://www.tenancy.govt.nz/maintenance-and-inspections/insulation/compulsory-insulation/>
- 3) Warm Up New Zealand Quality Manual: <https://www.energywise.govt.nz/assets/Resources-Energywise/WUNZ-Healthy-Homes-quality-manual-July-2017.pdf>
- 4) NZECP 55:2016: <https://www.energysafety.govt.nz/documents/legislation-policy/electricity-act-regulations-codes/standards-and-codes-of-practice/nzecz-55-july-2016.pdf>

Heat loss from windows

Summary

Good curtains or blinds and double glazing are measures that count towards the achievement of HomeFit and HomeFit PLUS. To be eligible, good curtains/blinds and/or double glazing must be present in all living spaces and bedrooms.

Why this is important

The heat loss from windows can account for 40% or more of the total heat lost in a typical, otherwise reasonably well-insulated home. Once ceilings and floors are insulated, windows are usually the weakest part of the thermal envelope.

Well-installed curtains and blinds can help to reduce heat loss through windows. “Sealing” the curtain or blind - in other words stopping air movement between the window and the room - is much more important than the material it is made from.

Good double glazing can be twice as thermally efficient as single glazing and will significantly reduce cold draughts from windows.

Detail of what is required

Good curtains, blinds or double glazing need to be provided to all windows in living rooms and bedrooms. Any windows in the kitchen area of an open plan kitchen/living room may be excluded. The provision of both compliant blinds/curtains *and* double-glazing counts as one optional measure towards HomeFit or HomeFit Plus achievement.

Curtains

'Good' means that curtains are:

- floor-length and touch the floor, or have pelmets above them or close-fitting tracks with only a minimal air-gap between the top of the curtain and the wall (sill-length curtains are less effective)
- fitted tightly against the wall or window frame
- wider than the window frame
- double layer

Blinds

'Good' blinds must have a snug fit with the window frame, creating a good seal to trap the air in the gap between them and the window. Roman blinds and pleated (cellular, or honeycomb) blinds are often good; roller, wooden and Venetian blinds are usually not.

Double Glazing

All types of double and secondary glazing are acceptable but must, as with curtain and blinds, be present in all living rooms and bedrooms. A combination of good curtains/blinds in some rooms with glazing in the others is acceptable.

How to assess

The presence of good curtains and blinds and double glazing or secondary glazing should be evidenced during the site inspection.

Advisory report text

Curtains/blinds/double glazing – compliant with HomeFit

You have either good curtains or blinds, or double glazing, in all living spaces and bedroom. If upgrading curtains, choose double-layer, close-fitting curtains or blinds and ensure that there are no gaps around them to allow heat to escape.

Make sure to open curtains and blinds during the day and close them just before it gets dark to allow your house to gain heat from the sun during the day, and better retain it overnight. In summer, close curtains and blinds on the side facing the sun and open windows to help keep your home cool.

We recommend replacing window units with double glazing (IGUs), or retrofitting double glazed panes of glass, during any major refurbishment.

For more information on choosing double glazing refer to the Energywise website [here](#).

Curtains/blinds/double glazing – compliant with HomeFit PLUS

You have good curtains or blinds and double glazing in all living spaces and bedroom.

Make sure to open curtains and blinds during the day and close them just before it gets dark to allow your house to gain heat from the sun during the day, and better retain it overnight. In summer, close curtains and blinds on the side facing the sun and open windows to help keep your home cool.

For more information on double glazing refer to the Energywise website [here](#).

Curtains/blinds/double glazing – not compliant

Your home does not have good curtains or blinds, or double glazing in all living spaces and bedrooms. In a typical, otherwise reasonably well-insulated home, heat loss from windows can account for 40% or more of the total heat lost and represent the weakest part of the thermal envelope. Well-installed curtains and blinds can help to reduce heat loss through windows and will make the home feel more comfortable.

To be eligible for HomeFit your curtains must:

- floor-length and touch the floor, or have pelmets above them or close-fitting tracks with only a minimal air-gap between the top of the curtain and the wall (sill-length curtains are less effective)
- fitted tightly against the wall or window frame
- wider than the window frame
- double layer

Net curtains installed very close to the window, and in contact with the window frame, can be effective too.

To be eligible for HomeFit your blinds must have a snug fit with the window frame, creating a good seal to trap the air in the gap between them and the window (if there are gaps around the blinds,

their thermal effect will be minimal). Pleated blinds (sometimes described as ‘honeycomb’ or ‘cellular’ blinds) may provide additional insulation, but only if they can be installed without any gaps around them.

Note that roller blinds and wooden or venetian blinds do not usually meet the above criteria.

Make sure to open curtains and blinds during the day and close them just before it gets dark to allow your house to gain heat from the sun during the day, and better retain it overnight. In summer, close curtains and blinds on the side facing the sun and open windows to help keep your home cool.

We recommend replacing window units with double glazing (IGUs), or retrofitting double glazed panes of glass, during any major refurbishment.

For more information on choosing double glazing refer to the Energywise website [here](#).

What to submit for the rating?

All dwellings
Photographs of compliant windows showing curtains/blinds and/or double and secondary glazing.

References

- 1) BRANZ 2015 House Condition Survey: Comparison of House Condition by Tenure. Vicki White, Mark Jones, Vicki Cowan, Saera Chun
- 2) Warm, dry, healthy? Insights from the 2015 House Condition Survey on insulation, ventilation, heating and mould in New Zealand houses. Vicki White and Mark Jones

Energy-efficient fixed lighting - optional

Summary

Energy-efficient lighting is an optional measure that counts towards the achievement of HomeFit and HomeFit PLUS.

Why this is important

Efficient, long-lasting lights not only provide an appropriate level of lighting for your home but do so while saving money on both power bills and replacement costs. On top of this, efficient lighting reduces demand on the electricity grid during evening peaks, some of which is met by non-renewable forms of electricity generation. While incandescent light bulbs are still available for purchase in New Zealand, a typical 60W incandescent produces more heat than light and can be replaced by an affordably priced 9W LED that lasts significantly longer.

Detail of what is required

At least 80% by count of lamps in fixed light fittings must be energy efficient. Energy efficient is defined as having a lamp efficacy of more than 35 lumens per watt. "Fixed" means permanently wired. Any lighting plugged into a standard wall socket is excluded.

Fluorescent T5/T8 batons, any compact fluorescent (CFL) or light emitting diodes (LED) comply with this criterion by default. These could be both retrofit LED/CFL light bulbs fitting into standard screw / bayonet fittings as well as recessed downlights, fluorescent batons or other dedicated fittings.

Note that specific requirements regarding non-IC or CA90, CA135 or CA195 downlights are outlined in the Insulation and Draught-free building fabric criteria.

HomeFit PLUS – optional Measure: LED Lighting

The installation of LED lighting contributes to the achievement of HomeFit PLUS. To meet the criteria at least 80% by count of lamps (bulbs as opposed to light fittings) in fixed light fittings must be LED.

How to assess

Assessment should be via a walk-through visual audit of interior lighting. Where the assessor is unsure as to what type a light bulb may be, refer to the tenant/homeowner, check available packaging or test the light bulb by turning it on. The assessor should not attempt to physically remove the light bulb to inspect it but may ask the homeowner to.

Advisory report text

General advice

Most recessed downlights installed before mid-2012 allow draughts through the hole in the ceiling and require safety gaps in the ceiling insulation, reducing its ability to hold in the heat. In addition, their incandescent or halogen bulbs are inefficient, resulting in high running costs. These lights can be replaced with LED equivalents that allow insulation to be installed over the top. Alternatively, replace your recessed downlights with surface-mounted or suspended light fittings and ensure any

holes in the ceiling that result are sealed/plastered. For more information on energy efficient lighting see [here](#).

80% of lights in your home are LEDs or CFLs

Great, these are efficient light choices and meet the HomeFit standard. If you are upgrading remaining inefficient bulbs or replacing blown bulbs, choose LEDs. Existing CFLs meet the HomeFit standard but LEDs are more efficient, long lasting, and cost effective. If any of your lights are recessed into your ceiling, ensure they are enclosed and able to be covered or closely fitted with insulation (IC or CA rated downlights). If they are not IC or CA rated, they will not meet the insulation criteria of HomeFit.

80% of lights in your home are LEDs

Great, these are efficient light choices and meet the HomeFit PLUS standard. LEDs are efficient, long lasting, and cost-effective. If any of your lights are recessed into your ceiling, ensure they are enclosed and able to be covered or closely fitted with insulation (IC or CA rated downlights). If they are not IC or CA rated, they will not meet the insulation criteria of HomeFit.

Some lights are not LEDs or CFLs

Some or all of the lights in your home are not energy efficient. If you still have inefficient lights at home, upgrade them to LEDs. Existing CFLs meet the HomeFit standard but LEDs are more efficient, long lasting, and cost effective. LEDs come with a range of colour temperatures which allows you to recreate the familiar effect of incandescent lighting without the energy waste or cost. Every supermarket and hardware store will generally stock LED bulbs at a reasonable price. If any of your lights are recessed into your ceiling, ensure they are enclosed and able to be covered or closely fitted with insulation (IC or CA rated downlights). If they are not IC or CA rated, they will not meet the insulation criteria of HomeFit.

What to submit for the rating?

All dwellings
Photographs of any non-compliant lighting. Record of the total number of lamps and the number of non-compliant lamps.

References

- 1) <https://www.energywise.govt.nz/at-home/lighting/>

Draught-free building fabric

Summary

A HomeFit home must have no obvious air leaks. This includes gaps, holes or other obvious air leakage paths from inside to outside through (or around) windows, doors, walls, ceilings or other key pathways.

Why this is important

Keeping the heat in is a key element for good home performance and the overall comfort and health of a dwelling. When you turn on your heaters, you want to warm up your home, not your neighbourhood. A significant, and often invisible, source of heat loss are the small gaps and connections between the inside of your home and the outside. If you imagine your winter jacket having several holes: the wind will get in under the coat and make you cold. You want to stop these uncontrolled air exchanges between the cold outside and your warm home. Luckily, there are many simple DIY solutions to plug draughts to keep you warm and save money. It is well understood by building scientists that, as levels of insulation increase in NZ homes, the contribution of the draughts to heat loss becomes very important. Plugging these draughts supports the good work your insulation is doing to keep your heat in and optimises the investment you have made in your home.

Detail of what is required

A HomeFit home has the following key elements that mean the building fabric is draught free:

- All external doors, windows and ceiling access hatches in each room are intact (i.e. not broken, no holes) and can be closed effectively (well fitting). Cracked glazing that does not have an opening to outside is acceptable.
- When doors and windows are fully closed, all gaps wider than 2mm will have an effective draught stopping solution in place (brush, foam or rubber strips, v-seal).
- The interior linings of all external walls, floors and ceilings should be intact (no holes, watch out for old unused extractor fans that have been replaced but not blocked up). Strip wooden flooring is often a source of uncontrolled draughts; there should be no gaps wider than 2mm over a single continuous length of 50mm.
- As per the heating criteria, open fires must be unused and adequately blocked up to prevent draughts (a chimney on an open fireplace is a major source of heat loss). This means the fireplace is effectively boarded up, or the chimney is blocked (taking care that future occupants understand the fireplace is unusable).
- Cat flaps and pet doors should either be locked shut or boarded up (if not in use) or intact with brush strips so there are no gaps wider than 2mm over a single continuous length of 50mm around the door. The flap should stay shut and not open in the wind.
- Single-glazed louvre windows (often found in laundry and toilets) are a major source of draughts and should have a draught solution applied, such as secondary glazing.
- Ceiling downlights must be IC or CA80, CA90 or CA135 rated and insulation installed around or above as per NZS 4246:2016, or not be part of the thermal envelope (e.g. downlights on mid-floor between storeys of a home). Note these criteria are included in the insulation section.

Mechanical extractor fans, essential for moisture removal in kitchen and bathrooms, are not included in this section.

How to assess

Building fabric: visual inspection of internal ceilings, walls (internal walls between rooms are not an issue; focus on the inside of external walls), floors, windows and doors to confirm no holes, cracks, missing panes, etc.

External doors: inspect all external doors and confirm they are intact and well-fitted when closed. If the gap in a closed door is beyond 2mm over a single continuous length of 50mm, confirm an effective draught stopping solution is in place.

Windows: visual inspection of all windows (when closed). If gaps are present, inspect to see if a suitable draught stopping method is in place. Note that this aligns with your inspection of windows to check that each room has a window that can be opened for ventilation under 'adequate ventilation'. Where louvre windows are present, these should have an effective draught stopping solution in place. If the gap in a closed window is beyond 2mm over a single continuous length of 50mm, confirm an effective draught stopping solution is in place. Alternatively, feel if there is a noticeable draught (if a windy day) or if there is daylight showing through.

Open fires: inspect open fireplaces and connected chimneys to confirm they are adequately closed off to prevent draughts.

Ceiling downlights: this aligns with your inspection of the ceiling insulation. Old downlights that are not marked as IC or CA80, CA195 or CA135 rated do not pass this draught criterion.

Advisory report text

Draught-free building fabric – compliant

Your home is free of large gaps in windows, doors, walls and the building envelope.

Draught-free building fabric – not compliant

Your home has draughts that could be blocked up. At the moment you are less able to effectively trap the heat in your home to keep yourself comfortable and healthy (and it's costing you money). To be a HomeFit home, all holes in the building fabric (doors, walls, windows, floors and ceiling) should be remedied. Apply DIY fixes to gaps wider than 2mm in your doors and windows to ensure when they are shut, the heat from inside doesn't escape and cold air can't come in.

Unused extractor fans, unblocked fireplaces/chimneys, older recessed downlights and draughty cat/dog flaps are all key sources of draughts and should be sealed up/replaced to stop heat escaping and cold air entering from the outside.

What to submit for the rating?

All dwellings
<p>PASS:</p> <p>Confirm each of these features of the home meet the draught proof standard outlined in 'how to assess':</p> <ul style="list-style-type: none">• External doors• All windows, including louvred windows• Open fireplace• Exposed wooden floorboards

- Any downlights
- Any pet doors

FAIL (submit photo as evidence for all of these points where true):

- Building fabric has holes
- External doors – there is a gap >2mm in width and >50mm in length with no effective draught stopping solution in place.
- Windows (all) – there is a gap >2mm in width and >50mm in length with no effective draught stopping solution in place.
- Louvered windows with no effective draught stopping solution in place.
- Open fire is not adequately draught proofed (fireplace blocked off or chimney blocked)
- Wooden floorboards – there are gaps in exposed floorboards >2mm and >50mm in length
- Downlights – any downlights inside the thermal envelope that are not closed (CA) or integrated (IC)
- Pet-door – broken, loose (swinging in wind) or with gaps >2mm and >50mm in length

References

- 1) http://www.conference.net.au/cibwbc13/papers/cibwbc2013_submission_87.pdf

In an uninsulated home, heat loss from draughts is estimated to be less than 10%. But as the thermal envelope of a home improves (e.g. insulation, glazing, curtains), the significance of heat loss via draughts increases. In a well-insulated home heat loss from draughts can be as high as half. As a HomeFit home is required to have ceiling and underfloor insulation it is important that major sources of air leakage are also managed to minimise heat loss and not undermine the investment made in insulation. The referenced study indicates older homes (built before 1960) are likely to be draughty. Major sources of draughts in these homes are poorly fitting door and windows and open fires.

Further advice

Further information on draught stopping your home can be found on the EECA website [here](#).

Moisture from drying clothes - optional

Summary

Minimising the risk of moisture from the drying of clothes is an optional measure that counts towards the achievement of HomeFit and HomeFit PLUS.

Why this is important

Clothes drying is a major source of moisture in New Zealand homes leading to damp and potentially mould. Vented clothes dryers can release as much as 5 litres of moisture per load so it's important this moisture is vented to outside.

Detail of what is required

Clothes dryers must generally be ventilated to outside. Exceptions include condensing and heat pump dryers that drain moisture either into a water tank or to an outside drain. Combination washer-dryers are generally condensing.

If the home does not have a clothes dryer, then it must either have a permanent external covered washing line or ducting in place for the future installation of a clothes dryer (say by a prospective purchaser or tenant).

How to assess

The presence of any clothes dryers should be determined on site. Condensing or heat pump dryers have either a removable water tank or connect to a drain. These are acceptable.

If no water tank or drain connection is provided, then the dryer is likely to be a conventional vented dryer. Check for the presence of ducting and confirm that it is routed to outside with a permanent grille on an external wall.

If the home has no clothes dryer, confirm that the home has ducting installed for a future installation or, alternatively, a permanent external covered washing line to discourage the drying of clothes indoors. This could be, for example, a covered balcony (provided no covenants in place disallow clothes drying), covered deck or car port. Conservatories are also acceptable if they can be ventilated (openable windows) and are closed off from the rest of the home.

Advisory report text

Home has a permanent means of drying clothes

The home has a permanent means of drying clothes that is not going to add to moisture in the home. This contributes to your HomeFit or HomeFit PLUS rating. Drying clothes on racks or in unvented clothes dryers is a major source of moisture in New Zealand homes and can contribute to the formation of mould. If possible, put washing out on a covered line and use a vented dryer to finish it off.

No permanent means of drying clothes

The home has no clothes dryer ventilating outside, ducting to outside for a future clothes dryer or covered washing line. This means that occupants are likely to dry clothes inside on racks. Indoor clothes drying is a major source of moisture in New Zealand homes and can contribute to the formation of mould. Installing a covered washing line or ventilated dryer contributes to achieving HomeFit or HomeFit PLUS.

What to submit for the rating?

All dwellings
Photographs of any clothes dryers present in the home and if neither non-condensing nor heat pump dryers, photographs of any ducting to outside. Photographs of permanent external covered areas with a washing line.

Smoke alarms

Summary

A HomeFit home must be fitted with appropriately installed and working smoke alarms.

Why this is important

According to the New Zealand Fire Service there were over 42,000 residential house fires causing nearly 200 fatalities in New Zealand between 2005 and 2015. In most cases the fatalities were in houses with no working smoke alarms. These simple devices are very effective at detecting fires early and allowing occupants to evacuate. Moreover, any new house or one undergoing major renovation requiring consent will need smoke alarms as part of its building consent.

The Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016 (RTA) require smoke alarms in homes that are rented. The HomeFit requirements for smoke alarms are identical to the RTA amendment requirements.

Detail of what is required

Where smoke alarms are needed

There must be at least one working smoke alarm within 3 metres of each bedroom door or, alternatively, one working smoke alarm installed in every room where a person sleeps.

In addition:

- a) There must be at least one smoke alarm on each level within the household unit.
- b) Smoke alarms must be audible to sleeping occupants through closed doors.
- c) Sleepouts are a part of the household unit and therefore must include smoke alarm(s).
- d) Smoke alarms should be installed on or near the ceiling in accordance with NZS4514 and the manufacturer's instructions. Further guidance on the location of smoke alarms according to NZS4514 can be found [here](#).

How to assess

The presence of compliant smoke alarms should be evidenced during the site inspection. A visual inspection should be made to check that they are located as required above and by the RTA Amendment.

All smoke alarms should be tested to ensure that they are fully working.

Advisory report text

Smoke alarms – compliant with RTA and HomeFit

Your home meets HomeFit requirements for working smoke alarms and, if the dwelling is being rented, meets the requirements of the Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016 (RTA).

If you are installing new smoke alarms or if you are replacing an existing smoke alarm, you must install photoelectric smoke alarms that are hard wired or have long life batteries that have a life span of at least 8 years.

Smoke alarms – not compliant with RTA or HomeFit

Your home does not have adequate smoke alarms. This does not meet HomeFit requirements and, If the dwelling is being rented, it doesn't meet the requirements of the Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016 (RTA).

To comply with HomeFit and the RTA amendment, smoke alarms need to be installed EITHER within 3m of each bedroom OR in each room used for sleeping AND on each level of any multi-storey home. Guidance can be found [here](#).

To meet the RTA requirements (and recommended by HomeFit), if you are installing new smoke alarms or if you are replacing an existing smoke alarm, you must install photoelectric smoke alarms with long life batteries that have a life span of at least 8 years. This information will be displayed on the smoke alarm and its packaging. Smoke alarms must comply with one of the following manufacturing standards: Australian Standard AS3786:1993; or equivalent international standard: UL217 (USA), ULCS531 (Canada), BS5446: Part 1 (United Kingdom), BS EN 14604 (United Kingdom) or ISO12239 (International) – this should be prominently displayed on the packaging and on the alarm.

What to submit for the rating?

All dwellings
Photographs of the compliant smoke alarm(s). Tick both boxes to indicate there are smoke alarms and that you have tested them.

References

- 1) Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016
- 2) <https://www.tenancy.govt.nz/assets/Uploads/Tenancy/smoke-alarm-requirements.pdf>

Hot water safety – optional

Summary

Minimising the risk of scalding from taps in bathrooms and/or kitchens is an optional measure that counts towards the achievement of HomeFit PLUS. Legionella risk is also assessed and flagged in the advisory report.

Why this is important

Hot water coming out of the taps in kitchens and bathrooms must not be so hot that it could lead to scalding of skin. The recommended maximum tap temperature is 55°C, or 45°C where households include elderly (slower reaction time and thinner skin) or very young (sensitive skin). At the same time, hot water systems must heat water to high enough temperatures to avoid Legionella bacteria, which can lead to serious and notifiable illness. The bacteria don't survive when the water temperature exceeds 60°C, so thermostats on cylinders which store hot water should be set at not less than 60°C. If you have a solar hot water system or otherwise control/time your hot water heating, cylinders storing the water should have a controller to ensure the water regularly reaches 60°C. To balance water heating to exclude Legionella bacteria but deliver water safely at the tap, mixing devices (such as tempering valves) are often used to introduce cold water into the system between the water heater outlet and the tap. In short, water should be stored at a temperature of 60°C in the cylinder to avoid Legionella but delivered at 55°C or less at the taps to avoid scalding.

Detail of what is required

The hot water temperature at the nearest tap to all sources of hot water (typically bathroom and kitchen) should not exceed 57°C. Where hot water from cylinders is recorded below 45°C this will not be recorded as a fail, but applicants will be informed that the hot water system may be at risk of Legionella.

How to assess

Required equipment: hand-held thermometer (ideally with a digital read-out)

Visually inspect each hot water system and confirm there are no visible leaks. Measure the temperature of hot water in bathrooms and kitchens to check if temperatures exceed 55°C. Tap water temperature that is too low should also be investigated to address Legionella risk. Check that any stored water is at a temperature of 60°C in the cylinder to avoid Legionella but delivered at 55°C or less at the taps to avoid scalding.

Assessment procedure:

- Ask householder how many hot water systems they have (look for more than one)
- Visually inspect each hot water systems for leaks.
- Choose the hot tap in the kitchen and bathroom (don't use the shower) as both are important for scalding risk. (Note: Checking taps in both areas reduces risk of assessment missing a second hot water system but be vigilant for a secondary water heating system which may be present).
- Run hot tap until temperature stabilises (usually at least 30 seconds), hold thermometer under running tap until temperature steady, and note temperature. If using an infrared thermometer, water should be run into a cup for sufficient time to stabilise hot water temperature before recording.

Awarding pass/fail:

- PASS if temperature at the taps does not exceed 55°C
- FAIL if the temperature is greater than 57°C. We recommend that water at the tap at 60°C is considered too hot and is not acceptable: this means if your thermometer is reading 58°C /59°C, it is within a margin of error which means it could actually be 60°C and be too hot. This means 58°C or 59°C would be regarded as a FAIL.

Advisory report text

Hot water temperature – complies with HomeFit PLUS

The temperature of your hot water has been measured at less than 55°C. This meets the HomeFit PLUS optional standard for safe hot water and contributes to your home achieving HomeFit and HomeFit PLUS.

Hot water temperature at the tap is too high

The temperature of your hot water at the tap is too high (more than 55°C and so is a scalding risk).

If your water is heated by a hot water cylinder (fuelled by gas, electric, wetback or solar), there are several reasons why your tap water may be too hot:

- a) The hot water cylinder thermostat is set too high and should be adjusted to 60°C. This is the minimum temperature which avoids Legionella bacteria but does not deliver scalding hot water to your taps. Having your thermostat set too high can shorten your cylinder life, risk scalding tap users, and waste energy by losing heat from water sitting in the cylinder (standing losses). We recommend you ask a plumber or electrician to adjust your thermostat.
- b) The hot water cylinder thermostat is broken (thermostat is set to 60°C but the water is a higher temperature in the cylinder). This should be fixed immediately. High temperatures shorten cylinder life, risk scalding and can waste energy. You should urgently ask an electrician or plumber to assess the problem and help you solve this.
- c) You don't have a tempering valve, it's failed, or someone has adjusted it. This valve delivers cooler water at the tap than is heated in the cylinder. A plumber or electrician can assess the problem and fix this.

If your water is heated by instantaneous gas or instantaneous electric, and the delivery to the taps exceeds 55°C, this should be adjusted accordingly. Systems vary but, in most cases, can be set by the user to provide hot water below 55°C.

If your stored hot water is too cool (less than 45°C), this should be checked and rectified by a plumber or electrician to reduce the risk of Legionella.

What to submit for the rating?

All dwellings

Take a photograph of the measured taps.

PASS – record the temperature measured for each tap. If the home achieves a HomeFit pass for this section but the temperature is less than or equal to 45°C, add commentary (e.g. ‘cylinder recently emptied’, or ‘tempering valve working, and cylinder temperature confirmed at 60°C’)

FAIL – record the temperature measured for each tap (add commentary if cold temperatures cannot be explained by high use prior to assessment or specifically adjusted tempering valve)

References

Related standards are covered in the Building Code clause G12 (water supplies), specifically G12.3.6 which states “water must be delivered at a temperature that avoids the likelihood of scalding”. It covers bathrooms (personal washing, showering or bathing) and kitchens (utensil washing).

Assessors should note the following quirks in hot water systems:

- Hot water systems installed before the 1993 revisions to the Building Code often don’t have a tempering valve and old tempering valves may have failed. Solar systems and wetbacks can present risks for extremely high temperatures in cylinders and care is required when assessing older systems.
- Upgrades of older systems (e.g. through renovations) mean they should have tempering valve and thermostat set at 55-60°C.
- Hot water cylinders installed since 1993 should all have a tempering valve as part of the system and should have tap temperature at 55°C or below.
- Thermostats and thermostat settings are not adequate indicators of hot water cylinder minimum and maximum temperatures – many do not function accurately.

If you have the competency to assess Legionella risk then we suggest the following:

- Carry out additional assessment if the hot water is sourced from a cylinder and the temperature at the hot tap is consistently below 45°C, as this may indicate Legionella risk if the cylinder is failing to heat the water sufficiently (or the thermostat is set too low). There are valid reasons that the tap temperature could be below 45°C:
 - The tempering valve may be set to deliver water at lower temperatures; in this situation, an infrared thermometer could be used to gauge the temperature by measuring the hot water exit pipe temperature, at the top of the cylinder, after running the water. This can help to assess whether the cylinder is reaching the required 60°C temperature.
 - If you are assessing a house soon after the household has emptied the cylinder (showers, dishes etc.), then the cylinder may not be back to its thermostatically controlled temperature. Ask the homeowner about any hot water usage in the hours prior to assessment and recheck temperature at the top of the cylinder at the end of the assessment (once enough time to reheat cylinder has passed).

Water efficiency – optional

Detail of what is required

Dual-flush toilets are an optional requirement for the achievement of both HomeFit and HomeFit PLUS. Rainwater harvesting is an optional requirement for the achievement of HomeFit PLUS. The following are required to demonstrate compliance.

Dual flush toilets

All toilets in a home (including ensuite bathrooms) must be dual flush. Dual flush means that the toilet has two buttons or handles offering higher and lower flush volumes. HomeFit uses the presence of a dual flush as an indication of low flush volume since dual flush toilets are easy to assess (actual flush volume is hard to assess) and dual flush toilets tend to be more modern and higher performing.

Rainwater harvesting

Rainwater tanks must be of 1000 litre capacity or more and must be available for either garden watering or connected to at least one toilet/hot water cylinder.

Why this is important

Dual flush toilets and rainwater harvesting are recognised in HomeFit PLUS as cost-effective means of reducing mains water usage and gaining resilience in times of drought or civil defence emergency. Dual flush toilets that meet WELS 4 Star (4.5l full flush/3l half flush) are no more expensive than toilets with higher flush rates. Rainwater tanks of 1000l or higher capacity pay back for those on water rates within 10-15 years. For those who pay for their water in general rates, the social benefit is similar. [See BRANZ study SR391 *The Cost of Homestar*](#).

How to assess

The presence of compliant dual flush toilets should be evidenced during the site inspection. Similarly, for rainwater systems, check that the tank has a tap for garden use or that plumbing allows for connection to at least one toilet/hot water cylinder.

Advisory report text

All the toilets in your home are dual flush

Your home has dual flush toilets, which are recognised in HomeFit and HomeFit PLUS as a cost-effective means of reducing mains water usage.

Rainwater tank complaint with HomeFit PLUS optional

Rainwater harvesting is recognised in HomeFit PLUS as cost-effective means of reducing mains water usage and gaining resilience in times of drought or civil defence emergency.

One or more toilets in your home is not dual flush

Installing dual flush toilets improves the water efficiency of your home. Dual flush toilets are recognised in HomeFit and HomeFit PLUS as a cost-effective means of reducing mains water usage.

Dual flush toilets that meet WELS 4 Star (4.5l full flush/3l half flush) are no more expensive than toilets with higher flush rates.

No rainwater tank or rainwater tank non-complaint with HomeFit PLUS optional

Rainwater harvesting is recognised in HomeFit PLUS as a cost-effective means of reducing mains water usage and gaining resilience in times of drought or civil defence emergency. Rainwater tanks of 1000l or higher capacity pay back for those on water rates within 10-15 years. For those who pay for their water in general rates, the social benefit is similar.

What to submit for the rating?

All dwellings
Photographs of all toilets clearly showing the dual flush mechanism
Photographs of rainwater system

References

- 1) <https://www.smarterhomes.org.nz/smart-guides/water-and-waste/efficient-use-of-water/>
- 2) Payne, R, (2018) BRANZ study SR391 The Cost of Homestar
- 3) https://www.mfe.govt.nz/sites/default/files/suppliers-guide-nz-water-efficiency-labelling-scheme_0.pdf