MINISTRY OF HOUSING
AND URBAN DEVELOPMENT

Briefing

Preferred Options for the Healthy Homes Standards			
Date:	15 November 2018	**Security level:**	In Confidence
Priority:	High	**Report number:**	18/19 110060

Action sought

	Action sought	Deadline
Hon Phil Twyford **Minister of Housing and Urban Development**	• **Agree** the recommendations for the healthy homes standards by 19 November 2018 to allow officials sufficient time to finalise the Cabinet paper • **Discuss** options with officials at your earliest convenience by 21 November 2018 to allow Cabinet papers to be prepared for Ministerial and party consultation by 30 November 2018 • **Note** the dates above are proposed in order for decisions to be considered at SWC on 12 December 2018 so that drafting instructions can be provided to Parliamentary Counsel Office prior to the summer break • **Note** the Healthy Homes Guarantee Act requires regulations to be made by 1 July 2019	19 November 2018

Contact for discussion

Name	Position	Telephone		1st contact
Claire Leadbetter	Policy Manager, Tenancy and Rental Housing Quality	04 901 8751	s 9(2)(a)	✓
Anita Balakrishnan	Principal Policy Advisor			

Other agencies consulted

Energy, Efficiency and Conservation Authority, Ministry of Business, Innovation and Employment, Ministry of Social Development, Ministry of Health, Ministry for the Environment, Heritage New Zealand/Ministry of Culture and Heritage, Housing New Zealand Corporation, Te Puni Kōkiri, Department of Prime Minister and Cabinet

Minister's office to complete

- ☐ Noted
- ☐ Seen
- ☐ Approved
- ☐ Needs change
- ☐ Not seen by Minister
- ☐ Overtaken by events
- ☐ Declined
- ☐ Referred to (specify)

_____

Comments

Date returned to MHUD:

_____

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Preferred options for the healthy homes standards

For:	Hon Phil Twyford, Minister of Housing and Urban Development		
Date:	15 November 2018	**Security level:**	In Confidence
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Purpose

1. This briefing seeks your agreement on the healthy homes standards as required under the Healthy Homes Guarantee Act 2017.

Executive summary

2. In December 2017, this Government passed the Healthy Homes Guarantee Act 2017 (the Act). The Act enables healthy homes standards to be set to make rental homes warmer and drier, and requires the standards to be made by 1 July 2019 and be implemented by 30 June 2024. The standards cover heating, insulation, ventilation, moisture ingress and drainage, and draught stopping.

3. In March 2018, Cabinet further agreed that ensuring everyone has a warm and dry home is a priority in order to improve the wellbeing of New Zealanders and their families [CPC-18-MIN-0001 refers].

4. A number of options for the standards were developed in a discussion document and summary information, released for public consultation from 4 September to 22 October 2018 [CAB-MIN-0401.01 refers]. The discussion document evaluated the options for the standards against the following criteria:

    - able to achieve the objective (warm, dry rental homes)
    - costs and benefits to landlords and industry (time and money)
    - costs and benefits to tenants (time and money)
    - costs and benefits to government (clear and enforceable standards, court administration)
    - enduring, flexible, and enabling adoption of future innovation and building solutions.

5. Following the conclusion of the consultation, we analysed 1,777 submissions from a range of stakeholders, of which 222 were written submissions or phone calls, 915 were received through an online survey and 640 were pro forma responses received through Renters United. Broadly, tenants and health advocates supported the higher standards, while landlords and property managers tended to prefer the status quo or minimal change.

6. We evaluated the options for the standards against the same criteria in the discussion document. The proposed standards and compliance timeframe aim to be pragmatic and enduring, without imposing unreasonable burden on landlords or tenants or industry. Landlords and suppliers need time to build resources to successfully implement the standards. Equally, tenants and wider society need to experience the benefits at the earliest opportunity.

7. The standards proposed reflect the feedback received through public consultation, the cost benefit analysis, qualitative and quantitative research, and further conversations with building industry researchers and experts. As a result of feedback during consultation, we have clarified the wording or proposed modified standards for the heating, insulation, moisture ingress and drainage, and draught stopping standards. This ensures the standards better reflect the policy intent, ensures they are easy to understand and implement, and they are enduring.

8. Following your agreement to the healthy homes standards in this briefing, we will prepare a paper for you to seek Cabinet's approval before the final Cabinet meeting of 2018. This timing is necessary to allow sufficient time for drafting and gazetting, and the development of education and information material to support the changes.

Recommended actions

9. It is recommended that you:

1. **Agree** on the proposed standards for the healthy homes regulations

Heating standards

a. Where in the rental home should landlords be required to provide heating:
   i. Option One – **preferred**: landlords be required to provide heating in the living room only (including open plan areas), or
   ii. Option Two: landlords be required to provide heating in the living room and bedrooms

Agree / Disagree

b. What achievable indoor temperature should heating devices be sized for:
   i. Option One – **preferred**: heaters that landlords provide must be capable of achieving an indoor temperature of at least 18°C in rooms applicable to the heating standard, or
   ii. Option Two: heaters that landlords provide must be capable of achieving an indoor temperature of at least 20°C in rooms applicable to the heating standard

Agree / Disagree

c. Should landlords be required to provide heating devices where portable electric heaters are not capable of achieving the required temperature in rooms covered by the heating standard:
   i. Option One – **preferred**: landlords should be required to provide fixed heating devices only, and only in cases where portable electric heaters are insufficient to heat the required rooms to the required indoor temperature, or
   ii. Option Two: landlords provide fixed and portable heating devices that are capable of reaching the required temperature in rooms covered by the heating standard

Agree / Disagree

d. The standard should include a list of heating devices that are considered to be 'not acceptable' because they are deemed to be inefficient, unaffordable, or unhealthy

Agree / Disagree

Insulation standard

e. What should be the minimum level of ceiling and underfloor insulation installed in rental homes:

   i. Option One: minimum level for existing insulation akin to the 1978 insulation standard/new insulation being installed to the 2008 Building Code (the status quo), or

   ii. Option Two: a higher minimum level of ceiling and underfloor insulation than the status quo, where the minimum level of existing insulation is akin to the 2001 Building Code/new insulation is akin to the 2008 Building Code, or

   iii. Option Three – **preferred**: an even higher minimum level of ceiling and underfloor insulation, so the minimum level for both existing and new insulation is akin to the 2008 Building Code *Agree / Disagree*

f. What should be the appropriate level that insulation can degrade over time before it needs to be replaced:

   i. Option One: insulation can settle or degrade by about 30% before it is in unreasonable condition, or

   ii. Option Two: insulation can settle or degrade by up to and around 10% before it is in unreasonable condition or

   iii. Modified Option – **preferred**: either the minimum level for both existing and new insulation is akin to the 2008 Building Code, OR a minimum thickness for existing ceiling insulation of 120mm *Agree / Disagree*

Ventilation standard

g. What is the appropriate method of ventilation in rental homes:

   i. Option One: the status quo: openable windows in all habitable rooms, or

   ii. Option Two: openable windows in the living room, dining room, kitchen, and bedrooms, and appropriately sized and installed extractor fan(s) in rooms with a shower or bath, or

   iii. Option Three – **preferred**: openable windows as for option two, and appropriate sized and installed extractor fan(s) in rooms with a shower, bath or indoor cooktop *Agree / Disagree*

Moisture ingress and drainage standard

h. How should landlords protect rental homes against moisture entering the home and inadequate drainage:

   i. Option One: status quo: landlord maintains the premises in a reasonable state of repair with adequate subfloor vents and efficient drainage and storm water removal, or

   ii. Option Two: landlords must ensure efficient drainage and guttering, downpipes and drains at their rental home and ensure the subfloor has a ground moisture barrier, unless there is already adequate subfloor ventilation, or

   iii. Modified Option Two – **preferred**: landlords must ensure efficient drainage and guttering, downpipes and drains at their rental home, and wherever practicable ensure the subfloor, if enclosed, has a ground moisture barrier *Agree / Disagree*

Draught stopping standard

i. What is the appropriate level of draught stopping to create warm and dry rental homes:
    i. Option One: status quo: the rental home is maintained in a good or reasonable state of repair, sheathed to the satisfaction of the local authority, and floors are kept in a good or reasonable state of repair, and free from crevices, holes and depressions, or
    ii. Option Two: landlords must block any unused fireplaces and chimneys and stop any unnecessary gaps or holes that cause noticeable draughts and a colder home, and are 3mm or greater in and around windows and doors, walls, ceilings, floors, and access hatches, or
    iii. Modified Option – **preferred**: Landlords are required to stop any unreasonable gaps or holes in walls, ceilings, windows, floors, and doors that cause noticeable draughts, and block unused fireplaces and chimneys *Agree / Disagree*

2. **Agree** to the date to comply with the healthy homes standards (for private landlords):
    a. Option One – **preferred**: landlords must comply with the standards within 90 days of a new or renewed tenancy starting after a single compliance date of 1 July 2022 with all homes compliant by 30 June 2024, or *Agree / Disagree*
    b. Option Two: a single compliance date, or
    c. Option Three: Stagger compliance dates between 1 July 2019 and 30 June 2024 either by the standard or by the location of the rental home

3. **Note** a single date of compliance is expected for all Housing New Zealand Corporation (HNZC) rental homes and Community Housing Providers *Agree / Disagree*

C. O Leadbetter

Claire Leadbetter
Policy Manager
Tenancy and Rental Housing Quality
15 / 11 / 18

Hon Phil Twyford
Minister of Housing and Urban Development

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Background

10. Last year, this Government passed the Healthy Homes Guarantee Act 2017 (the HHG Act). The HHG Act enables healthy homes standards to be made for rental homes. The standards aim to make rental homes warmer and drier, and deliver the greatest benefit to tenants without imposing an unreasonable burden and cost on landlords and industry.

11. At-risk groups will benefit from the healthy homes standards. Damp, cold and mouldy rental homes are associated with ill health and other negative social outcomes.[1] Poor quality homes raise the likelihood of contacting respiratory infections, and increase the severity of existing conditions (e.g. asthma), contributing to higher medical costs, avoidable hospitalisations, and winter deaths. At-risk groups include tenants in low-income households, [2,3,4] the elderly,[5] children,[6,7] and disabled persons.[8] Māori and Pacific peoples have the highest rates of renting, so are more likely to be impacted by cold, damp homes.[9]

12. A discussion document and summary information were prepared to seek feedback on the five proposed standards covering heating, insulation, ventilation, moisture ingress and drainage and draught stopping. Feedback was also sought on the feasible compliance timeframes for implementing the standards.

13. The discussion document was released for public consultation on 4 September 2018 [CAB-18-MIN-0401.01 refers], and closed on 22 October 2018. In addition to the public consultation, five targeted workshops were held in Whangārei, Auckland Central, South Auckland, Wellington, and Christchurch. A total of 1,777 submissions were received over the consultation period from a range of stakeholders.

14. Officials have now considered the feedback from the consultation process as well as the cost benefit analysis that underpinned the options for the suite of standards. This briefing proposes the standards that will support Government's aim to have warm and dry rental homes.

15. Under the HHG Act, The standards must come into effect on 1 July 2019, with implementation between 1 July 2019 and 30 June 2024. In order to allow sufficient time for drafting and gazetting, and the development of education and information material to support the changes, we require Cabinet's decision at the final Cabinet meeting of 2018.

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[1] Telfar Barnard, L.F. (2010) Home truths and cool admissions: New Zealand housing attributes and excess winter hospitalisation (University of Otago); Hirvonen M.R., Huttunen K., & Roponen M. (2005) Bacterial strains from mouldy buildings are highly potent inducers of inflammatory and cytotoxic effects. Indoor Air 15(s9), 65-70; Ormandy D., Ezratty V. (2012) Health and thermal comfort: from WHO guidance to housing strategies, Energy Policy 49(2012);

[2] Witten K, Wall M, Carroll P, Telfar-Barnard TL, Asiasiga L, Graydon-Guy T, Huckle T & Scott K (2017), The New Zealand Rental Sector. Study Report ER22. BRANZ Ltd and Massey University SHORE and Whariki Research Centre

[3] Howden-Chapman P., Viggers, H., Chapman, R., O'Sullivan, K., Barnard, L.T., & Lloyd, B. (2012). Tackling cold housing and fuel poverty in New Zealand: a review of policies, research and health impacts. Energy Policy, 49, p. 135-136.

[4] Davie GS, Baker MG, Hales S & Carlin JB (2007), Trends and determinants of excess winter mortality in New Zealand: 1980-2000; BMC Public Health 2007,7.

[5] Telfar Barnard L & Preval N (2018) *Healthy Homes Guarantee Standard Cost Benefit Input: Warm Up New Zealand evaluation rental sector sub-analysis: differences in health events and costs by existing insulation status;* Housing and Health Research Programme, University of Otago Medical School, Wellington May 2018.

[6] Ministry of Health data as at 8 August 2018; "children" are counted as 'individual person' by the Ministry of Health and are aged under 15 years old in this dataset. "Hospitalisations" are counted as 'hospital events' by the Ministry of Health. A person can have more than one hospitalisation in a year. This figure has been relatively stable since 2014. To note, only the medical conditions of 'Pneumonia', 'Acute bronciolitis', 'Unspecified LRTI+Bronchiti', 'Broncietasis' and 'Asthma' are "potentially housing related" rather than all respiratory diseases in children.

[7] Somerville M, Mackenzie I, Owen P & Miles D (2000) Housing and health: does installing heating in their homes improve health of children with asthma? Public Health, 114(6).

[8] Statistics New Zealand (2013) Disability and housing conditions: 2013: Wellington: Statistics New Zealand

[9] Statistics New Zealand Census data 2013; Europeans have the higher homeownership rate at 57% compared with Māori at 28% and Pacific peoples at 19% as at 2013

Key themes from public consultation

16. Public consultation took place from 4 September to 22 October 2018. We received 1,777 submissions over the consultation period, of which 222 were written submissions, 915 were received through an online survey and 640 were pro forma responses received through Renters United.

17. The largest proportion of submissions received were from tenants (44%), followed by landlords (38%). Submissions were also received from a range of stakeholders, including social housing providers, equipment suppliers and installers, public health experts, researchers, engineers, building inspectors, and home performance advisors. Many of the submitters were also affiliated with Māori interests.

18. Broadly, tenants and health advocates were more likely to support higher standards, while landlords and property managers were more likely to support the status quo.

19. A number of ideas were raised during consultation that fall outside the healthy homes standards, including the need for more tenant education, dryer ventilation, improving enforcement provisions, taking a whole-of-house approach, fuel poverty and affordability, the inclusion of curtains and a shower dome, and further exemptions. We have given these ideas consideration in our analysis. Many of these ideas could not be incorporated into these standards, as they were not feasible or appeared costly to implement. We have noted where we can strengthen the information and guidance that is prepared to support the standard, particularly around tenant education. Further information on these themes can be found in Annex 1.

20. We are preparing a formal summary of the submissions, with the intention that this be proactively released later this year. We will provide you with this document before 12 December 2018.

The proposed healthy homes standards

21. The discussion document considered the options for each standard against a number of objectives. The same approach has been used in the assessment of the proposed healthy homes standards in this briefing. The objectives seek to strike a balance between the costs and the benefits of these proposals to ensure the regulations reflect the outcome of the public consultation, and are enduring and fit-for-purpose:

    - tenants experience the benefits from warmer, drier homes, and can understand landlords' obligations to allow them to raise issues with the landlord or the Tenancy Tribunal
    - landlords can clearly understand their obligations and have time to prepare to comply with their new responsibilities, and costs on landlords are reasonable
    - suppliers have clear and certain requirements to build capacity to help implement the standards
    - government sees the benefits from warmer, drier homes through less reliance on public services (such as the reduced use of publicly funded health services), and has clear requirements to ensure higher compliance and reduce administrative burden
    - the standards are enduring, flexible, and enable adoption of future innovation and building solutions.

22. In determining the proposed healthy homes standards, we analysed all submissions and considered the options against the above assessment criteria and the Cost Benefit Analysis prepared by the New Zealand Institute of Economic Research (NZIER). We also sought clarity on specific points from building and industry experts where needed, such as the Building Research Association of New Zealand (BRANZ).

Heating standards

23. Many New Zealand rental homes' winter indoor temperatures are colder than recommended by World Health Organisation guidance.[10] Cold homes are associated with poor health, higher rates of winter death, and negative social outcomes. Heating can reduce illness by maintaining a healthy air temperature, lowering relative humidity and dampness, and reducing the risk of mould and fungi.[11]

24. We sought feedback on four areas under the heating standard:

- Location: should landlords be required to provide heating in the living room only, or the living room and bedroom?
- Indoor temperature: should heating devices be capable of achieving an indoor temperature of 18°C or 20°C?
- Heating devices: should landlords be required to provide fixed heating devices only, or fixed and portable heating devices?
- Acceptable or unacceptable devices: should we not accept and specify particular heating devices known to be inefficient, unaffordable, and unhealthy?

Location: where in the rental home should landlords be required to provide heating?

25. Currently, the *Housing Improvement Regulations 1947* requires every 'living room' to be fitted with a fireplace and chimney or other approved form of heating.[12] The BRANZ 2015 House Condition Survey found that 22 per cent of New Zealand rental homes have no fixed heating, compared to 7 per cent of owner occupied properties with no fixed heating.[13]

26. Two options were put forward in the discussion document:

- Option 1: in the living room only (including kitchen and dining room if open plan rental home)
- Option 2: in the living room and the bedroom.

27. The majority of respondents (mostly tenants) considered that landlords should be required to provide heating in living room(s) and bedrooms, citing factors such as the risk of illness and of overcrowding. The majority of landlords and property managers supported the living room only option due primarily to cost factors. Both landlords and tenants commented on the possibility that fixed heating may be a large cost imposition on landlords if not used by the tenants due to running costs.

28. Table 1 on the following page summarises the analysis of the two options considered for the location of the heating device. The summary incorporates the information from the cost benefit analysis, other quantitative and qualitative research, and the high level comments from public consultation.

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[10] World Health Organisation (1087) Health Impacts of Low Indoor Temperature: Report on a WHO meeting, Copenhagen 11-14 November 1985, Copenhagen: WHO

[11] WHO Regional Office for Europe. 2009. Guidelines for Indoor Air Quality; Dampness and Mould. Copenhagen: WHO

[12] Regulation 6 of the Housing Improvement Regulations 1947

[13] White, Jones M (2017) *Warm, dry, healthy? Insights from the 2015 House Condition Survey on insulation, ventilation, heating and mould in New Zealand houses.* SR372. BRANZ Ltd

Table 1: Summary of options for location of heating device

Options	Advantages[14]	Disadvantages
Option One Landlords provide a heating device in the living room only (includes kitchen and dining room if open plan rental home)	• Estimate of 179,000 (18°C) to 285,200 (20°C)[15] homes would receive new heaters in living rooms, or use their existing living room heating more.[16] Benefits per affected household of $3,741(18°C) - $2,681(20°C). Cost benefit ratio of 1.34(18°C) -1.28 (20°C). NPV of $168 million if heated to 18°C, and $169 million if heated to 20°C. Some benefits could not be quantified[17] • Tenants that use heating may gain health benefits • Landlords will have a clear, modern standard to comply with • Government / taxpayers likely to benefit from less demand on publicly funded services (such as health) and reductions in carbon emissions from more efficient heating devices • Tenants who are currently using heating may see a reduction in energy costs • Portable electric heaters will be sufficient for most bedrooms (average purchase cost is $30-50 including GST), and tenants can provide these themselves	• Landlords incur cost for new heating if not already provided. The average installed cost for a medium-sized heat pump of 5-7 kilowatts is about $3,000-3,500 including GST[18] • Tenants who are not currently using heating may see an increase in energy costs • At risk groups - children and the elderly - may continue to live in rental homes that are not able to achieve the necessary temperature in bedrooms for their particular needs. • Relative to option two, there may be an increased risk that people will (functionally) crowd into one heated room to live and sleep increasing the risk of infectious disease transmission • Tenants continue to experience higher energy costs if they need to heat larger bedrooms with less effective and more costly to operate, portable heating devices • In some rental homes, portable heaters will be insufficient to heat certain bedrooms, so tenants will not be able to heat these bedrooms to the appropriate temperature unless the landlord voluntarily provides adequate fixed heating
Option Two Landlords provide a heating device in the living room(s) and the bedrooms	• **Living rooms:** option one above states benefits of heating living rooms • **Bedrooms:** an estimate of 71,300 (18°C) - 125,900 (20°C) homes[17] would receive new heaters in bedrooms or use existing bedroom heating more. Benefits per affected household from bedroom heaters are $58 (18°C) -$194 (20°C) with a benefit cost ratio of 0.26 (18°C) – 0.8 (20°C).[19] • **Combined living/bedroom:** cost benefit ratio of 1.30 (18°C) – 1.26 (20°C). Some benefits could not be quantified[20] • Tenants that use heating in bedrooms may gain health benefits • Government / taxpayers likely to benefit from less demand on publicly funded services, reductions in carbon emissions.	• Landlords incur cost for new heating if not already provided. Larger living rooms will require fixed heating (e.g. heat pump) at about $3,000-3,500 including GST • Tenants who are not currently using heating may see an increase in energy costs

[14] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.
[15] This figure relates to the assumption that the home will be heated to 18°C. If the home is heated to 20, the number will be 285,219 houses
[16] Modelling assumes 50% of households pursue target temperature.
[17] The CBA does not include unquantifiable benefits such as subjective wellbeing, effects on mental health and reductions in school absences and property maintenance.
[18] As a present value, discounted over 15 years at 4% this cost including maintenance would be $2,800 GST exclusive per affected household.
[19] See Table 8, p. 21 of NZIER (2018) Cost Benefit Analysis for the heating standard. The total benefits ($4,155m) have been divided by the properties affected (71,373) = $58.
[20] CBA does not include some benefits that were unquantifiable such as subjective wellbeing, effects on mental health and reductions in property maintenance.

29. We propose the standard be **Option 1: in the living room only (including open plan areas).** Most living rooms are of a size that would require fixed heaters of a higher capacity than portable heaters, which tenants cannot provide or are not permitted and unlikely to install themselves, and living rooms are the most heated rooms in a rental home, with bedrooms less commonly heated. Tenants would be able to heat their living room to a healthy temperature and therefore are likely to experience a warmer home and a consequential reduction in ill health.

30. General public health advice is that people benefit from heating in bedrooms, particularly in winter months. With this proposed standard, tenants can continue to provide their own portable heating devices for their bedrooms, and government assistance is available where necessary.

Indoor temperature: what indoor temperature should heating devices be sized for in a rental home?

31. The World Health Organisation (WHO) currently recommends indoor temperatures of 18°C for the general population, and 20°C for elderly people, children, and at-risk groups.[21] It is noted that the new guidelines from WHO, expected to be released in February 2019, will only refer to the 18°C option, and not refer to a higher temperature.

32. Data from a BRANZ study indicates that, during the winter months, mean living room temperatures in New Zealand fall below the recommended range.[22] Living room and bedroom mean temperatures are typically 15.8°C and 14.2°C respectively during the day, and fall to 13.5°C and 12.6°C respectively overnight.

33. Two options were put forward in the discussion document:

    - Option 1: heaters that landlords provide must be capable of achieving an indoor temperature of **at least 18°C** in the rooms applicable to the heating standard
    - Option 2: heaters that landlords provide must be capable of achieving an indoor temperature of **at least 20°C** in the rooms applicable to the heating standard

34. The majority of tenants chose 20°C, noting a higher temperature would be particularly important for children and the elderly who are more susceptible to illness related to a cold home. Those that supported 18°C as an achievable indoor temperature considered this to be a temperature that is realistic, adequate and achievable, and applicable to the general population. The 18°C temperature was supported by the majority of landlords.

35. The creation of an online tool was widely favoured as a proactive and simply way to guide landlords to understand and meet the necessary requirements. The formula within the online tool, and within the guidance information, expects the required indoor temperature can be reached within a reasonable time, and compensates for particular characteristics of the house and the average outside temperature.

36. Table 2 on the following page summarises the analysis of the two options considered for the indoor temperature. The summary incorporates the information from the cost benefit analysis, other quantitative and qualitative research, and the high level comments from public consultation.

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[21] WHO (1987) Health Impact of Low Indoor Temperatures: Report on a WHO meeting, Copenhagen 11-14 November 1955, Copenhagen WHO

[22] BRANZ (2010) Energy Use in New Zealand Households: Final Report on the Household Energy End-use Project, BRANZ Study Report SR221: the Household Energy End-use Report

Table 2: Summary of options for a minimum indoor temperature of 18°C or 20°C

Options	Advantages[23]	Disadvantages
Option One Heaters that landlords provide must be capable of achieving an indoor temperature of at least 18°C in the rooms applicable to the heating standards	• Estimate of 179,000 homes would receive new living room heaters or use their existing heating more[24]. Benefits per affected household of $3,741.[25] Cost benefit ratio of 1.34. Some benefits could not be quantified.[26] • Bedrooms: Estimate of 71,300 homes would receive new heaters in bedrooms or use their existing heating more. Benefits per affected household $58 with a benefit cost ratio of 0.26 • Combined living room/bedroom: cost benefit ratio of 1.30. Some benefits could not be quantified.[27] • Homes where heating is upgraded will be capable of meeting a healthy temperature under this option • Tenants are likely to benefit from improved health and lower energy bills. • Fewer landlords are likely to need to incur costs compared to option two. • Landlords will have a clear and modern standard to comply with. • Government/taxpayers likely to benefit from less demand on publicly funded services, reductions in carbon emissions. • Heaters that have capacity to reach 18°C even during very cold weather are capable of reaching higher temperatures most days of the year	• At risk groups - children and the elderly - may continue to live in rental homes that are not able to achieve the necessary temperature for their particular needs.
Option Two Heaters that landlords provide must be capable of achieving an indoor temperature of at least 20°C in the rooms applicable to the heating standards	• Living rooms: Estimate of 285,200 homes would receive new heaters in living rooms, or use their existing living room heating more. Benefits per affected household of $2,681. Cost benefit ratio of 1.28. Some benefits could not be quantified.[28] • Bedrooms: Estimate of 125,900 homes would receive new heaters in bedrooms or use their existing heating more. Benefits per affected household $194 with a benefit cost ratio of 0.80 • Combined living room/bedroom: cost benefit ratio of 1.26. Some benefits could not be quantified.[28] • Tenants, including at-risk groups, will have heating capable of achieving the necessary temperature for their particular needs at all times of the year • Landlords will have clear, modern standards to comply with	• Landlords would be upgrading their homes to a higher standard, regardless of the needs of the tenant • The higher temperature will be more than what is required by most of the general population to avoid ill health

[23] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.
[24] Modelling assumes 50% of households pursue target temperature.
[25] The total benefit is calculated using NZIER (2018) Cost Benefit Analysis for the heating standard. Total benefit (669,950 divided by 179,071) equals $3,741.
[26] CBA does not include some benefits that were unquantifiable such as subjective wellbeing, effects on mental health and reductions in property maintenance.
[27] Ibid
[28] The CBA does not include unquantifiable benefits such as subjective wellbeing, effects on mental health and reductions in school absences and property maintenance.

37. We propose the standard be **Option 1: heaters that landlords provide must be capable of achieving an indoor temperature of at least 18 °C (in the living room)**. This imposes less cost on landlords, as a smaller number of fixed heaters would need to be provided, and, where fixed heaters are required, the upfront cost could be slightly lower than for the 20°C option. Heating devices capable of achieving 18°C will be capable of achieving 20°C the majority of the time, except on a few exceptionally cold days during the year where they may not be able to operate as efficiently.

38. This is also consistent with the new WHO guidelines, which will only refer to the 18°C option, and will no longer refer to the 20°C option (anticipated to be released on 25 February 2019).

Heating devices: what heating devices should landlords provide in rental homes?

39. Certain heating devices may achieve the required indoor room temperature. An online tool and information material will be developed to assist landlords and tenants to determine the adequate device(s) required, depending on the characteristics of the home (such as room size, existing insulation levels, window type and size of glazing, and so on).

40. The standards can impose requirements for things to be installed or provided in the home. In some cases, fixed heating devices will be the best device to heat a room to the appropriate indoor room temperature. In other cases, portable plug-in heating devices will likely to be sufficient to heat the room to the appropriate temperature. There may be instances where a combination of fixed and portable heating is required to reach the appropriate temperature.

41. Two options were put forward in the discussion document:

    - Option 1: landlords provide fixed heating devices only in the room(s) covered by the heating standard
    - Option 2: landlords provide fixed **and** portable heating devices in the room(s) covered by the heating standard

42. The majority of respondents, dominated by tenants, considered that fixed heating devices were the most appropriate as they were most likely to be efficient, healthy and affordable. The majority of landlords and some tenant advocacy groups were of the view that portable heating devices that are not easily secured could be stolen or taken in error, that portable devices are relatively cheap for tenants to purchase, and that tenants had personal preferences on the types of portable heating.

43. Table 3 on the following page summarises the analysis of the two options considered for whether landlords should provide fixed, or fixed and portable, heating devices.

Table 3: Summary of options for fixed, or fixed and portable heating devices

Options	Advantages[29]	Disadvantages
Option One Landlords only provide fixed heating devices in cases where portable electric heaters are insufficient to heat the required rooms	• Landlords would incur only the cost of providing and maintaining a fixed heating device(s) • Tenants have the choice and discretion on the design and type of portable electric heating they use • Landlords would avoid investing in the types of heaters that tenants already own and can easily provide themselves. • Portable electric heaters are present in about half of all rentals[30]	• Landlords would incur new cost for heating if not already provided, e.g. average installed cost for a medium sized heat pump of 5-7 kilowatts is about $3-3,500 incl GST, with maintenance costs of $20-100 per year • Less likely to meet the objective of a warm, dry home where tenants are unable to provide their own portable heater (estimated cost of $30-$50) • Tenants may need to seek financial assistance to purchase portable heaters if required
Option Two Landlords must provide fixed and portable heating devices to heat the required rooms	• This option is more likely to meet the objective of warm and dry home where tenants are unable to afford their own portable heater • All tenants, including those who cannot afford to buy a portable heater, can still heat a room to the appropriate indoor temperature, and so more likely to experience health benefits	• Landlords incur higher capital costs for this option to provide both fixed and portable heating devices. E.g. average installed cost for a medium sized heat pump of 5-7 kilowatts is about $3-3,500 incl GST, and average cost per portable heater is about $30-50, with maintenance costs of $20-100 per year for heat pumps

44. We propose the standard be **Option 1: landlords should be required to provide fixed heating devices only, and only in cases where portable electric heaters are insufficient to heat the required rooms (to an indoor temperature of at least 18°C in the living room only)**, given tenants are able to provide their own portable heating device if a higher temperature is required (and the existing fixed heating device is unable to reach this higher temperature).

Should we accept some heating devices and not others?

45. A large proportion of New Zealand rental homes have no, inadequate, costly to operate or unhealthy heating available for tenants to reach a required indoor temperature.[31]

46. The discussion document sought feedback on whether the heating standard should be set so that unhealthy, inefficient, or unaffordable devices would not meet the standard.

47. Submitters were broadly in support of the need to ensure the heating devices in rental homes are efficient, healthy and affordable for tenants.

48. We also asked if particular forms of heating devices should be considered 'not acceptable' in the heating standard, as these devices are particularly inefficient, unaffordable, and unhealthy to run. The heating standard could be set so that these heating devices would not meet the standard.

49. We considered the following heating devices would not be acceptable in the heating standard:

    - **unflued heaters**, including gas and kerosene heaters, as these release moisture and toxic gases in the air and are one of the most expensive heating options
    - **open fires**, as these generally operate between 5 to 15 per cent efficiency, with the majority of heat escaping through the chimney, and they significantly contribute to indoor and outdoor air pollution

[29] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.
[30] White V, Jones M (2017) op cit
[31] White, V. Jones, M (2017) op cit

- **all electric heaters (except heat pumps) with a heating capacity of greater than 2.4 kilowatts** because they are expensive to run and reduce the likelihood of tenants using them
- **multiple portable electric heaters in one room** with a combined capacity greater than 2.4 kilowatts, because they could overload electrical wiring, cause fire hazards, and are expensive to run and thus reduce the likelihood of tenants using them

50. The advantages of not accepting certain heating devices include:
    - landlords do not incur capital costs on inefficient, unaffordable or unhealthy heating devices
    - tenants are not exposed to noxious gases or particular emissions
    - tenants see a reduction in energy costs on their primary heating if replaced by devices that are more affordable and efficient to operate
    - government and the public benefit from acceptable heating devices through a reduction in carbon emissions, and from improved heating behaviours through less demand on publicly funded health and social services
51. There was a high level of agreement from respondents that these forms of heating devices should be considered as 'not acceptable' in the heating standard, particularly unflued heaters.
52. We propose the standard **include a list of heating devices that are considered unacceptable in the heating standard because they are inefficient, unaffordable to operate, and unhealthy to run.**

Further considerations in the heating standard

53. Some exceptions or further aspects of the heating standard may need to be considered, such as where it is not possible to install fixed heating devices in multi-storey units, or properties managed by a Body Corporate under the *Unit Titles Act*, or how the standards will impact on boarding houses. We will explore these exceptions during the drafting of the regulations.
54. An online tool will be developed to assist landlords and tenants in determining the capacity required for a heating device to achieve the appropriate indoor temperature, based on the pertinent characteristics (such as insulation levels, size and type of windows), and location of the house. The tool is intended to be user-friendly, and was widely supported during the consultation process.

Insulation standard

55. Many rental homes do not have adequate insulation to retain heat. Therefore, they are more likely to be cold, damp and mouldy. Insulation in the ceiling and underfloor of a home helps to retain heat, and keeps a home warm during cooler periods, or reduces heat gain in warmer months.
56. Ceiling and underfloor insulation can be fairly easily retrofitted where rental homes have accessible roof and/or subfloor spaces. In contrast, retrofitting wall insulation and double glazing is more costly and often involves considerable building work. For this reason, current insulation requirements and the options proposed in the discussion document were limited to requirements for ceiling and underfloor insulation retrofitting.
57. We sought feedback on two areas under the insulation standard:
    - Minimum level installed: what should be the minimum level of ceiling and underfloor insulation installed in rental homes:
        - Option 1: (status quo) minimum level for **existing** ceiling and underfloor insulation akin to the **1978** insulation standard, and **new** insulation being installed to the **2008** building code

- Option 2: a higher minimum level of ceiling insulation than the status quo, where the minimum level for **existing** insulation is akin to the **2001** Building Code, and **new** insulation is akin to the **2008** Building Code
- Option 3: an even higher minimum level of ceiling insulation, where the minimum level for both existing and new insulation is akin to the 2008 Building Code

- Reasonable condition: what should be the appropriate level that insulation can degrade over time before it needs to be replaced:
  - Option 1: insulation can settle or degrade by about 30% before it is in unreasonable condition
  - Option 2: insulation can settle or degrade by up to and around 10% before it is in unreasonable condition

58. For the minimum level of insulation installed, the majority of submitters, driven by tenant respondents, supported the minimum level installed described in option 3. They noted that it made sense to use current building code standards for best outcomes. Landlords and property managers were more likely to support option 1 for the minimum level installed. For them, the existing standards were sufficient and many had already upgraded their insulation to comply with existing requirements. There was little support for option 2.

59. For the level of reasonable condition, a majority of submitters, driven by tenant respondents, supported the degradation level detailed in option 2, with the main themes being that there would be health benefits for tenants and lower heating costs. Those in support of option 1 considered the current rules easy to understand and apply. The majority of submitters also expressed the view that the current exceptions should continue (such as accessibility into the roof cavity).

60. Tables 4 and 5 on the following pages summarise the analysis of the two options considered for the minimum level of insulation installed and for reasonable condition. The summary incorporates the information from the cost benefit analysis, other quantitative and qualitative research, and the high level comments from public consultation.

Table 4: Summary of options for minimum level of insulation installed

Options	Advantages[32]	Disadvantages
Minimum level installed		
Option One (status quo) Akin to 1978 Building Code for existing, and 2008 Building Code for new	• Landlords incur less capital costs and do not need to understand new obligations • Most tenants will at least have some level of ceiling and underfloor insulation in their rental home, and be experiencing health benefits and some energy savings (compared to those without insulation) • Government may incur less cost compared to the other options to communicate the requirements • Government may benefit from less demand on publicly funded services	• Tenants in rental homes with some, but not optimal, levels of insulation are not targeted under this option so may miss out on the benefits from insulation improvements to their home. This could lead to negative health outcomes and higher heating costs than the other options • If a more stringent level of 'reasonable condition' for insulation was applied, an estimated additional 40,000 rental homes would require ceiling insulation top up
Option Two Akin to 2001 Building Code for existing and 2008 Building Code for new	• A higher number of rental homes (10,000-70,000), depending on how 'reasonable condition' is assessed will benefit from an insulated rental home than Option One so it is likely that more rental homes will be warmer and drier • Benefits per affected household of about $2,056. Cost benefit ratio of 1.54 • Tenants potentially experience reduced costs from improved health and lower energy bills • Government and taxpayers benefit from homes being able to be heated more efficiently, leading to a reduction in carbon emissions, and less demand on publicly funded services in health and social support	• More landlords will incur capital costs to purchase and install ceiling insulation top ups (estimated average of $1,665 including GST)[33]. An estimate of 10,000-70,000 homes would require ceiling insulation top up, depending on how 'reasonable condition' is assessed • Government will likely incur greater costs to develop and deliver an information and education campaign and assist with enforcement
Option Three Akin to 2008 Building Code for existing and new	• A higher number of rental homes (80,000-190,000) will benefit from increased insulation, depending on how 'reasonable condition' is assessed, with benefits per affected household of $2,017-2,025. • The cost benefit ratio of 1.50-1.51 is slightly lower than Option Two, however, as it covers more homes, it produces greater total benefits than Option Two • Tenants potentially experience improved health and lower energy bills • Landlords and government have a single standard that is clear and applies to all rental homes (including new build homes) • Government and taxpayers benefits from homes being able to be heated more efficiently, leading to a reduction in carbon emissions, and less demand on publicly funded services in health and social support	• More landlords will incur capital costs to purchase and install insulation ($1,665 including GST), compared to Options One and Two • An estimate of 80,000-190,000 rental homes will be required to top up their insulation • Due to diminishing returns in thermal performance from additional insulation, up to 50,000 homes would receive reductions in heat loss of less than 3 percent • Industry capacity constrains could mean longer compliance timeframes are required • Government is likely to incur greater costs to develop and deliver information and education campaigns to explain the new requirement and prevent confusion

[32] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.

[33] Energy, Efficiency and Conservation Authority, *Warm Up New Zealand Programme* 2017 average cost of ceiling top up including GST

Table 5: Summary of options for reasonable condition of insulation

Reasonable condition		
Option One (status quo) Insulation can settle or degrade by about 30% before it is in unreasonable condition	• Likely to meet the objective to make rental homes warm and dry by ensuring existing ceiling and underfloor insulation, as installed, is reasonably effective • Landlords and government have clear guidance on the definition of the insulation condition. Tenants will also be able to check if the insulation complies • A higher allowance for ceiling insulation settlement or compression means fewer landlords will be required to top up insulation so landlords will incur less costs	• A generous allowance for ceiling insulation or settlement means some tenants will miss out on the benefits of insulation improvements to their home, leading to negative health outcomes and higher heating costs • Difficult for landlords and tenants to assess "30% degradation" without industry assistance, thus putting industry resources under pressure
Option Two Insulation can settle or degrade by up to and around 10% before it is in unreasonable condition	• More likely to meet the objective to make rental homes warmer and drier • More tenants are likely to experience health benefits and heating cost savings • Government may benefit from a reduction in energy use and reduced carbon emissions	• Landlords face higher costs as it will require more rental homes to top up their ceiling insulation • Difficult for landlords and tenants to assess 10% degradation without industry assistance, thus putting industry resources under pressure
New Option Three Insulation in the ceiling must be a minimum thickness of 120mm	• Likely to meet the objective of warm and dry rental homes • Simpler for tenants and landlords to determine • Allows for clear and enforceable standard • Captures homes where the condition may not be ideal • Aligns with industry practice • Equivalent to 30% degradation in climate zone 3, and 20% for rest of the country • Avoids additional top ups that would have only minimal benefit	• More rental homes may need to top up their insulation (140,000) • Landlords may incur capital costs to purchase and install additional insulation

61. In assessing the two questions under the insulation standard, we propose combining **option three, akin to the 2008 Building Code** for the minimum level standard with a modified assessment of 'reasonable condition' for existing ceiling insulation to be **a minimum thickness of 120mm**, where 120mm is equivalent to 30% degradation in climate zone 3 (South Island and middle of the North Island), and 20% for the rest of the country. The 120mm thickness measure avoids additional top ups where doing so would provide minimal additional benefits. Where existing insulation does not achieve this level, or is not in 'reasonable condition' (e.g. gaps, dampness or other contamination), new ceiling and/or underfloor insulation must be installed to the 2008 standard.

62. Therefore, the proposed standard for insulation would be **akin to the 2008 Building Code OR a minimum thickness for existing ceiling insulation of 120mm.**

63. This proposed standard is likely to meet the objective of warm and dry rental homes, allows for clear and enforceable standards, and is future proofed by aligning to the current code. The 'reasonable condition' measure of 120mm (rather than 30% or 10%) aligns with industry

practice and the Energy Efficiency and Conservation Authority's *Warm Up New Zealand* and *Warmer Kiwi Homes* programmes for the past decade.

64. A high number of rental homes (140,000) will benefit from additional insulation under this proposed standard. Further, the simplified measure for 'reasonable condition' is easier for tenants, landlords and industry to check the thickness of existing insulation, rather than relying on R-value records. This proposed standard captures those homes where the condition is not ideal, given that insulation with a thickness of 120mm is likely to have been installed recently and not be of concern.

65. However, more landlords will incur capital costs to purchase and install insulation ($1,665 including GST) as more rental homes (140,000) will need to top up their insulation.

66. The proposed standard does not require further work from landlords who have installed insulation to meet existing 2016 insulation requirements. The propose standard affects a new group of rental properties that were not required to retrofit insulation.

Further considerations in the insulation standard

67. The provisions in the 2016 insulation requirements will continue, such as no new foil insulation installations, new installation to be installed to NZS4246, the insulation is in reasonable condition including no gaps, no dampness, and not excessively settled or compressed.

68. We recommend the following exceptions to the insulation standard will continue from the 2016 regulations[34], if:

- it is not reasonably practicable to install insulation, e.g. unable to access the roof or underfloor cavity space
- the landlord intends to demolish or substantially rebuild the home within 12 months and applied for any necessary resource consent or building consent before the tenancy commenced
- for 12 months from the date the tenancy commences, if the tenant is the former owner of the home, e.g. compulsorily acquired properties by the New Zealand Transport Agency in areas designated for roading projects

Ventilation standard

69. Many New Zealand rental homes are poorly ventilated, leading to dampness and mould.[35] Mould can lead to poor health outcomes for tenants, and damage to walls, floors, ceilings, and personal property.

70. The presence of dampness and mould is a particular problem in areas where there tends to be high moisture due to activities such as showering or cooking. A study by BRANZ shows New Zealand rental homes had visible mould at greater levels than owner-occupied homes in all areas of the home. Bathrooms were the most common rooms with mould, followed by the laundry and the kitchen.[36]

71. BRANZ data supplied to guide the discussion document suggests that around 37 per cent of rental homes in New Zealand do not have mechanical ventilation in the kitchen, and 44 per cent do not have mechanical ventilation in the bathroom. A further 17 per cent of kitchens and 12 per cent of bathrooms have mechanical ventilation that is not vented outside. Bathrooms without mechanical extract fans were twice as likely to have moderate or worse patches of mould compared to those with extractors. Kitchens without any mechanical

[34] Regulations 18 to 21 of the *Residential Tenancies (Smoke Alarms and Insulation) Regulations 2016*

[35] White, V. Jones M (2017) op cit

[36] White V, Jones M, Cowan V, Chun S, (2017) BRANZ 2015 House Condition Survey: Comparison of house condition by tenure. Study report SR270. BRANZ Ltd

ventilation were three times as likely to have visible mould compared to those with mechanical ventilation.[37]

72. We sought feedback on three options for the ventilation standard:

- Option One: (status quo):
  - every bathroom has at least one window that opens to the outside air unless other adequate means of ventilation area provided to the satisfaction of the local authority
  - each habitable room must be constructed with windows with an area amounting to not less than one twentieth part of the area of the floor can be opened for the admission of air
  - every room which is not habitable shall be provided with a window or windows that the local authority considers necessary for adequate ventilation
- Option Two: openable windows in the living room, dining room, kitchen, and bedrooms, unless an exemption applies, and appropriately sized extractor fan(s) in rooms with a shower or bath
- Option Three: openable windows in the living room, dining room, kitchen, and bedrooms, unless an exemption applies, and appropriately sized extractor fan(s) in rooms with a shower, bath, or indoor cooktop

73. The majority of respondents preferred option three (driven by tenant preference, and health and industry groups), considering it would improve the health of the home by reducing condensation, mould, and dampness. Landlords and property managers were more likely to support option one, noting that current requirements are sufficient. A majority of those that responded to this question agreed that there should be exemptions for certain rental homes from requiring openable windows, such as those in multi-storey complexes.

74. Many respondents considered that there needs to be greater education provided to tenants on the activities that generate moisture inside the home, and how to properly ventilate a room.

75. Table 6 on the following page summarises the analysis of the two options considered for the ventilation standard. The summary incorporates the information from the cost benefit analysis, other quantitative and qualitative research, and the high level comments from public consultation.

[37] White, V. Jones M (2017) op cit

Table 6: Summary of options for ventilation standards

Options	Advantages[38]	Disadvantages
Option One (status quo) Openable windows	• No additional cost to landlords , tenants and government	• Some rental homes will continue to be damp and mouldy • Landlords do not have clear, modern standard to comply with
Option Two Openable windows and extractor fan(s) in rooms with a shower or bath	• Estimate of 252,600 homes would require bathroom fans • Most moisture-prone area on a home likely to be drier, with less mould and associated health benefits • Landlords will incur less capital cost to install extractor fans in just the bathroom (compared to option three)	• 252,600 homes would require new bathroom fans, costing approximately $211-301 incl GST per household[39] • Landlords incur more cost than option one but less than option three • The cost benefit analysis could not quantify the benefits of the proposed ventilation options on health, reduced heating costs, school absences and productivity, decreased maintenance and subjective well being. The cost benefit ratio is 0.05 but only additional benefits of $19.43 per year per household are required to break even • Higher costs to government to educate landlords and tenants and enforce compliance • Rooms with an indoor cooktop may continue to be inadequately ventilated and potentially damp and mouldy • Government is likely to incur greater costs to develop and deliver information and education campaigns to explain the new requirement and prevent confusion
Option Three Openable windows and extractor fan(s) in rooms with a shower or bath and indoor cooktop	• Most likely to achieve the objective of warm, dry rental home • 212,300 rental homes will require kitchen extraction fans in addition to 252,500 homes requiring bathroom fans • Tenants who are able to use mechanical ventilation in rooms with showers, baths, and indoor cooktops will have a drier, less mouldy home, and less likely to experience poor health	• Landlords for an estimated 212,300 homes would incur costs to purchase and install new kitchen fans if not already provided, in addition to fans required under option two costing approximately $211-301 incl GST per household[40] • The cost benefit analysis could not quantify the benefits of the proposed ventilation options on health, reduced heating costs, school absences and productivity, decreased maintenance and subjective well being. The cost benefit ratio is 0.04 but only additional benefits of $48.36 ($28.93 and $19.43) per year per household are required to break even • Tenants may not use the equipment • Government is likely to incur greater costs to develop and deliver information and education campaigns to explain the new requirement and prevent confusion

[38] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.
[39] As a present value, this cost would be $216 GST exclusive per affected household
[40] As a present value, this cost would be $322 GST exclusive per affected household

76. We propose the standard be **Option 3: openable windows in the living room, dining room, kitchen, and bedrooms, unless an exemption applies, and appropriately sized extractor fans in rooms with bath or shower, or indoor cooktop** as it is the most likely of all the ventilation options to achieve a warm and dry home.

Moisture ingress and drainage standard

77. Moisture entering the home from outside contributes to damp and mould issues inside the home, exacerbating health issues.[41]

78. New Zealand-based research shows that the most effective method of stopping ground moisture from entering a home is to install a ground moisture barrier (black polythene) under houses with a suspended floor.[42] [43] Subfloor moisture is potentially the largest source of moisture in the home, depending on occupant habits. BRANZ research shows this could be up to 40 litres each day under a 100m^2 house, even if the soil appears dry.[44]

79. The options proposed in the discussion document aimed to target rising dampness from under the home. We sought feedback on two options for the moisture ingress and drainage standard:

    - Option One: (status quo)
        - every house shall, to the extent the local authority deems necessary, be provided with efficient drainage for the removal of storm water, surface water and ground water
        - every house shall be provided with gutters, downpipes and drains for the removal of roof water to the satisfaction of the local authority
        - timber floors shall have adequate space and vents to ensure proper ventilation to protect the floor from damp and decay
    - Option Two: landlords must ensure efficient drainage and guttering, downpipes and drains at their rental home, and ensure the subfloor has a ground moisture barrier, unless there is already adequate subfloor ventilation

80. Overall, submitters were in favour of Option Two, and considered this option would better support drier, healthier homes. Those that preferred Option One (the majority of landlords and property managers) considered that current legislation was sufficient, and that the focus should be on enforcing current requirements rather than creating new ones. Some also noted that retrofitting older homes can be difficult and expensive.

81. Concern was raised during the public consultation period regarding the requirement for adequate subfloor ventilation in the form of vents, where the instalment of these vents could compromise the structural walls. Concerns were also raised around the difficulty of establishing whether existing subfloor vents were adequately sized, which is difficult for a landlord or tenant to measure. Further discussion with BRANZ identified that ground moisture barriers were the most effective means of preventing moisture from entering the home, and vents made little material difference as long as there was a ground moisture barrier installed.

82. Table 7 on the following page summarises the analysis of the two options considered for the moisture ingress and drainage standard. The summary incorporates the information from the cost benefit analysis, other quantitative and qualitative research, and the high level comments from public consultation.

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[41] WHO (2009) Dampness and mould: guidelines for indoor temperature, available at https://www.euro/who/int

[42] McNeil S, Li Z, Cox-Smith I, and Marston N (2016) Managing subfloor moisture, corrosion and insulation performance. Study Report SR354, BRANZ Ltd

[43] Trethowen H.A, Middlemiss G (1988) A survey of moisture damage in southern New Zealand buildings. Study Report SR007, BRANZ Ltd

[44] NcNeil S (2015) BRANZ Build 149 August/September 2015:; Ventilation and sub floors

Table 7: Summary of options for moisture ingress and drainage standards

Options	Advantages[45]	Disadvantages
Option One (status quo) Landlord maintains the premises in a reasonable state of repair with adequate subfloor vents and efficient drainage and storm water removal	• No additional cost to landlords , tenants and government	• The overall objective of drier rental homes is unlikely to be met • Tenants continue to live in damp and mouldy homes, leading to poor health and higher energy bills to heat a home • Government is unlikely to benefit from a reduction in carbon emissions or a reliance on public health and social services
Option Two In addition to Option One (the status quo), landlords must ensure a suspended floor has a ground moisture barrier, unless there is already adequate subfloor ventilation	• Objective for drier rental homes is more likely to be met • 191,900 homes would require ground moisture barriers or additional subfloor ventilation • Tenants will likely live in a less mouldy home, with potentially fewer illnesses and less damage to their personal property • Landlords may incur lower maintenance costs because of reduced mould damage to wall and ceiling linings, carpeting, curtains, and other supplied soft furnishings • Tenants may experience energy savings if a rental home has reduced moisture levels, making it easier to heat • The ground moisture barrier is easy to install	• 191,900 homes would require ground moisture barriers, costing approximately $800 GST incl per household[46] • The cost benefit analysis could not quantify the benefits of the proposed options on health, reduced heating costs, school absences and productivity, decreased maintenance, and subjective well being. The cost benefit ratio was 0.08 but the analysis calculated that if these benefits only had a value of $52 per year per household, this option would break even
Modified Option Two Landlords must ensure efficient drainage and guttering, downpipes and drains at their rental home, and wherever practicable ensure the subfloor, if enclosed, has a ground moisture barrier	• Removes the requirement to otherwise have adequate subfloor ventilation • Simpler than option two for landlords to comply and government to enforce • Removes risk of requiring vents in structural walls • Objective for drier homes more likely to be met than status quo • Homes likely to be easier to heat – tenants likely to benefit from drier home and may see energy savings • Some homes that have sufficient subfloor ventilation but damp subfloor soil or poor natural ventilation (ie suburban areas) will benefit from a ground moisture barrier	• 287,918 homes would require ground moisture barriers, costing approximately $800 GST incl per household[47] • Up to 104,698 of these homes may currently have adequate subfloor ventilation. Of these homes those with dry subfloor soil and good local wind conditions will receive minimal benefit from a ground moisture barrier.

[45] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.
[46] As a present value this cost would be $583 GST exclusive per affected household
[47] As a present value this cost would be $583 GST exclusive per affected household

83. Following assessment of this option, and taking on board the feedback received through consultation and from BRANZ, we propose a revised standard to Option Two, being **landlords must ensure efficient drainage and guttering, downpipes and drains at their rental home, and wherever practicable, ensure the subfloor, if enclosed, has a ground moisture barrier.**

84. The revised option, which requires a ground moisture barrier regardless of the number and size of subfloor vents, captures a large proportion of homes that currently have sufficient subfloor ventilation but do not have a ground moisture barrier. Based on BRANZ data, we estimate that potentially 104,000 rental homes that currently have sufficient subfloor ventilation would require a ground moisture barrier. The proportion of these homes that will benefit has not been quantified but input from technical experts suggested many of these homes would still experience a benefit. The revised option also simplifies compliance and enforcement for landlords, tenants and government because the revised standard prevents the need to test the adequacy of existing subfloor ventilation.

Further considerations in the moisture ingress and drainage standard

85. Some exceptions to aspects of the moisture ingress and drainage standard will need to be considered, such as where a rental home has insufficient access to install a ground moisture barrier.

Draught stopping standard

86. Draughts are common in many New Zealand rental homes, particularly those built before 1960. Draughts increase the risk of cold indoor temperature.[48] Homes need to be well ventilated, but reducing draughts prevents uncontrolled heat loss making a home colder and more difficult and costly to heat. Draughty homes can also limit the benefits of improved insulation and heating.

87. We sought feedback on two options under this standard:

- Option One: status quo
    - the walls and ceiling of every habitable room, bathroom, kitchen, kitchenette, hall, and stairway shall be sheathed, plastered, rendered or otherwise treated and shall be maintained to the satisfaction of the local authority
    - every floor shall be kept in a good state of repair, free from crevices, holes and depressions
- Option Two: Landlords must block any unused fireplaces and chimneys, and stop any unnecessary gaps and holes that cause noticeable draughts and a colder home, and are 3mm or greater in and around windows and doors, walls, ceilings, floors, and access hatches

88. The majority of respondents were in support of Option Two, with main responses noting that addressing draughts is critical to being able to efficiently heat a home, and improve the condition of the houses, thus benefitting both the landlord and the tenant. Of those in support of Option One, the broad themes were that there should not be different standards for rental properties and owner occupied properties, and that a degree of ventilation is necessary to keep homes healthy. However, many respondents expressed concern at how a requirement for '3mm or greater' would be enforced or measured.

89. Table 8 on the following page summarises the analysis of the two options considered for the draught stopping standard. The summary incorporates the information from the cost benefit analysis, other quantitative and qualitative research, and the high level comments from public consultation.

[48] McNeil S, Plagman M, McDowall P, Bassett M (2015) The role of ventilation in managing moisture inside New Zealand homes. BRANZ Study Report SR341. BRANZ Ltd

Table 8: Summary of options for draught stopping standards

Options	Advantages[49]	Disadvantages
Option One (status quo) Landlords are responsible for maintaining the rental home in a good or reasonable state of repair, sheathed to the satisfaction of the local authority, and floors are kept in a good or reasonable state of repair, and free from crevices, holes and depressions	• No additional cost to landlords , tenants and government if no change to the existing requirements	• Rental homes are less likely to be warmer • Tenants may continue to live in cold homes, and be exposed to associated health risks • Tenants will experience high energy costs
Option Two Require landlords to stop any unnecessary gaps or holes that cause noticeable draughts and a colder rental home, and are 3mm or greater in and around windows, doors, walls, ceilings, floors and access hatches, and block any decommissioned chimneys and fireplaces	• An estimated 172,200 homes that receive draught stopping would receive benefits per affected household of $782. Cost benefit ratio of 3.37[50] • Tenants in homes where draught stopping has occurred may gain health benefits and energy saving benefits • Landlords and government will have clear, modern and simple standard to comply with • Homes that use less heating can lead to fewer carbon emissions • Many draught stopping measures are easy for the landlord or tenant to undertake • Government and taxpayers likely to benefit from less demand on publicly funded services	• Landlords would incur costs to draught stop an estimated 172,200 homes, of approximately $124-250 incl GST per household[51] • Landlords may misunderstand the requirements and seal drainage and ventilation openings, causing the house to not be adequately ventilated • Government as a higher administrative cost to educate landlords and tenants
Modified Option Two Landlords to stop any unreasonable gaps or holes in walls, ceilings, windows, floors, and doors that cause noticeable draughts, and block unused fireplaces and chimneys	• Removes the notion of a 3mm gaps, which is potentially difficult to measure and difficult to enforce if it is not causing unreasonable drafts	• Needs to be supported with very clear guidance and examples to assist landlords and tenants in determining what is an 'unreasonable' gap or hole

[49] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.
[50] NZIER (2018) Healthy Homes Standards Cost Benefit Analysis: results are based on 30% of houses requiring draught stopping measures, and a 1°C gain. The cost benefit ratio is positive is 30% of houses require draught stopping measures and there is a 0.28°C gain
[51] As a present value this cost would be $232 GST exclusive per affected household

90. We propose the standard be a revised option 2 that recognises the challenges with prescribing a 3mm gap. Therefore, the standard would be **to stop any unreasonable gaps or holes in walls, ceilings, windows, floors, and doors that cause noticeable draughts, and block unused fireplaces and chimneys**. The standard would be supported with clear guidance and examples to assist landlords and tenants in determining what is considered an unnecessary gap or hole and how to address these.

Date of compliance with the standards

91. The Healthy Homes Guarantee Act 2017 allows for a phased implementation of the healthy homes standards between 1 July 2019 and 31 June 2024.

92. The timeframe needs to balance the needs of tenants, landlords, industry, and government, so that:

- tenants see the benefits of a warmer, drier home as soon as possible
- landlords and property managers have sufficient time and support to understand and comply with the changes, and procure and install necessary requirements
- industry capacity is able to respond to the changes, particularly if impacted by other government initiatives such as KiwiBuild
- government has sufficient time to provide advice through information campaigns, develop necessary guidance, and expand enforcement capacity where necessary
- the timeframe does not restrict flexibility and innovation to meet a higher quality of rental home

93. We sought feedback on three options:

- Option One: comply within 90 days at the start of a new or renewed tenancy
- Option Two: a single compliance date
- Option Three: staggered compliance dates over five years, either by the standard or by the location of the rental home

94. The majority of individual tenant and landlord submissions supported Option One or Three for implementation. Submissions by landlord and industry organisations supported Option One, notably:

- New Zealand Property Investors Association
- Independent Property Managers Association
- Real Estate Institute of New Zealand
- Community Housing Aotearoa
- Insulation Association of New Zealand
- Tasman Insulation (PinkBatts)
- Community Energy Network (modified option one)
- He Kainga Oranga University of Otago (modified option one)

95. Table 9 on the following page summarises the analysis of the three options considered for the compliance and implementation timeframes. The summary incorporates the information from the cost benefit analysis, other quantitative and qualitative research, and the high level comments from public consultation.

Table 9: Summary of options for compliance timeframes

Options	Advantages[52]	Disadvantages
Option One Landlords must comply with the standards within 90 days of a new or renewed tenancy, starting after a single compliance date (eg 1 July 2022), with all homes compliant by 30 June 2024	• Landlords have time to ensure their rental home complies with the standard when they know the tenancy is ending • The obligation is clear and simply to understand • Industry is likely to have sufficient time to build capacity to meet demand, as there will not be a surge in demand closer to a fixed deadline • Government could find some enforcement straight forward as it can use existing databases, such as the bond database, to identify new or renewed tenancies	• Landlords do not have the certainty of a single compliance date to plan the improvements • Landlords may find it difficult to comply if faced with unplanned costs from an unexpected new tenancy or change to the tenancy • Landlords with large portfolios will not be as easily able to plan and undertake an upgrade to minimise cost and ensure suppliers and installers are available • Tenants who are on an existing periodic tenancy that continues over the next five years may have to wait longer to benefit from improvements to their rental home • Industry may experience peak demand when many tenancies start in February
Option Two A single compliance date	• All rental homes will be warmer and drier by 1 July 2022, which is likely to be earlier than Options One and Three in some cases • Landlords have a clear and certain date to plan upgrades, spread costs, and meet their obligations • Tenants can easily understand one set compliance date and ensure compliance • Government can easily inform and educate one set date	• Landlords may defer compliance until close to the compliance deadline, and may then not be able to source material or installers due to high demand • Some tenants may not benefit from improvements until close to the compliance deadline • Tenants may not have their leases extended if some landlords wish to complete the work in a vacant home, which may put pressure on a tight rental market • Industry may suffer strained capacity if landlords defer compliance until close to the deadline • Installations may be of poor quality or cause safety issues if unqualified installers are relied upon due to insufficient industry capacity

[52] Estimates and costings based on NZIER (2018) Cost Benefit Analysis of proposed healthy homes standards.

Options	Advantages[52]	Disadvantages
Option Three Staggered compliance dates over five years	• Implementation date could be tailored to consider the integrated nature of the home (e.g. insulating a home before heating it) • Landlords can spread the costs • Industry capacity is potentially able to meet demand • Tenants may benefit from early implementation of the standards in key areas (such as heating) or locations	• More difficult for landlords and tenants to understand multiple compliance dates • Landlords may decide to defer compliance for each standard until close to the compliance deadline • Tenants in some rental homes may not gain the full benefit of all the standards until 2024 in some cases • Tenants may experience repeated disruption as more work is undertaken over the five years • Government may incur greater cost from advising, informing, and enforcing a more complex approach of staggered implementation dates

96. We propose the clearest compliance timeframe, that best balances the impacts on tenants, landlords, industry, and government, is **Option One** where **landlords must comply with the standards within 90 days of a new or renewed tenancy, from a single compliance date of 1 July 2022, with all homes compliant by 30 June 2024**. This later starting compliance date than that suggested in the discussion document (of 1 July 2021) is more realistic to ensure a higher level of compliance, as it ensures landlords and industry are able to meet the demand, and is therefore more likely to be successfully implemented than other options.

97. A compliance date from 1 July 2022 also recognises the impact on industry capacity caused by the backlog of those who have not complied with the 2016 insulation requirements [BN3773-17-18 refers].

98. A single compliance date will apply for Housing New Zealand Corporation (HNZC) rental homes and Community Housing Providers. While the intention is that this single compliance date is 1 July 2022, HNZC is undertaking further work to determine the feasibility of this date with other mandatory requirements, such as those arising from the new Income Related Rent Subsidy contract and the RTA No 2 Bill, balanced with the availability of contractors nationally to undertake the work.

99. Officials are working with HNZC to finalise cost estimates for the proposed standards and can discuss these impacts with you on Monday 19 November. HNZC has previously indicated they can fund mid-range options from operational funding. This includes insulating to 2001 levels, installing heating devices capable of reaching 18°C in living rooms, and installing ground moisture barriers and draught stopping measures. This is dependent on final cost estimates, compliance timeframes, and alignment with existing retrofit programmes.

100. s 9(2)(f)(iv)

101. Other relevant government agencies that hold tenanted properties (New Zealand Defence Force, the Ministry of Education, Land Information New Zealand, and the Department of Corrections) will likely have the same compliance date as HNZC to implement the standards, and will potentially have financial implications for government.

102. We also propose setting a single compliance date of 1 July 2022 for boarding houses, which have tenancies that turn over regularly. A single compliance date will avoid confusion for boarding houses to comply.

Risks

Timing

103. On 1 July 2019 the Healthy Homes Guarantee Act 2017 will come into force and amend the Residential Tenancies Act. Existing insulation requirements will be replaced with the healthy homes standards. To prevent a legislative gap the healthy homes standards must be gazetted prior to 1 July 2019.

104. Table 10 on the following page sets out the timeline required to develop the healthy homes standards in time for the regulations coming into force on 1 July 2019.

Table 10: Timeline to develop the healthy homes standards

Deliverable	Date
Minister consideration and indication of healthy homes standards	By 19 November 2018
Draft Cabinet paper incorporating Minister feedback	21 November
Ministerial consultation on proposed healthy homes standards	22-30 November
Updated package, including key messages, Q&As, talking points	5 December
Lodge with Cabinet Office for SWC consideration	6 December
SWC Consideration	12 December
Regulations package to Minister for feedback	s 9(2)(f)(iv)
Draft Cabinet paper incorporating Minister feedback	
Ministerial consultation on regulations	
Updated package, including key messages, Q&As, talking points	
Lodge with Cabinet Office for LEG consideration	
LEG Consideration	
Regulations established by Order in Council	
Regulations come into force	

105. If final policy decisions are not made in December this will place pressure on the drafting of complex regulations. Temporary provisions will need to be made if the regulations are unable to come into effect on 1 July 2019.

106. Further, sufficient time is needed to ensure we can develop a suitable information and education campaign and commence building a robust online tool to support the standards.

Exceeding the Building Code

107. The following three proposed standards exceed requirements in the Building Code for existing houses:

- Heating – Heating requirements in the Building Code are only specified for childcare facilities and retirement homes
- Ventilation – Both openable windows or mechanical ventilation are acceptable solutions under the Building Code, but are not currently a requirement
- Moisture Ingress and Drainage – The Building Code only requires ground moisture barriers where a subfloor cannot meet subfloor ventilation requirements

108. The Ministry of Business, Innovation and Employment is currently considering revising the aspects of the Building Code that do not align with the proposed healthy homes standards. You will be kept informed of this progress.

109. There is a risk that a new build would not meet the healthy homes standards. Based on current building practices officials consider this scenario to be unlikely. The majority of new builds are on concrete slabs so do not require on ground moisture barriers and anecdotally, mechanical extract ventilation in bathrooms and kitchens is included in the majority of new builds. However heating remains a feature that may not be installed in new homes.

Industry capacity

110. The standards will require a significant portion of the rental housing stock to undertake retrofit work to meet the standards. Given the current skills shortages in the construction sector there is a risk that industry capacity could limit the ability for landlords to meet their obligations. Officials have considered industry capacity when setting the compliance approach to mitigate this risk.

Maintaining supply in the rental market

111. The Ministry of Business, Innovation and Employment provided advice to you in March on the likely behaviour changes that would be seen in the rental market resulting from the introduction of regulations under the Healthy Homes Guarantee Act (BN 2604 17/18 refers). It noted that the standards would likely have a moderate effect on landlords overall, stating that while owners of high quality rental stock would incur minimal costs (as they likely already meet or exceed the standards), that many owners of low-quality stock would need more substantial repairs to meet the standards which may lead to the sale of some properties.

112. NZIER estimates it would cost in the region of $8,625 to $11,500 including GST to outfit a house to comply with all the standards (assuming a home was deficient in all of them to begin with). NZIER noted that it is unlikely that landlords would pass these costs through in full. Most private landlords hold property in hope of capital gain as much as for rental income, and will likely be reluctant to incur the opportunity cost of vacancy and expense of recruiting new tenants by raising rents for works when other properties may not be doing so.

Transitional provisions

113. We will seek from Cabinet delegated authority for you to make minor policy decisions as they relate to any transitional issues regarding the development and implementation of the standards. We will provide a briefing to you in early 2019 on this aspect.

Consultation

114. Significant consultation with government agencies and key stakeholders was undertaken in the development of the discussion document.In determining the proposed standards, we also considered all the submissions received through the public consultation process, and sought further clarification from BRANZ where needed.

115. We supplemented the public consultation with workshops with targeted groups of stakeholders, such as the New Zealand Property Investors Federation, tenant advocacy groups, researchers, the Real Estate Institute of New Zealand, the Independent Property Managers Association, registered community housing providers, key building industry representatives, and iwi housing providers and health advocates.

Next steps

116. Following your agreement to the proposed healthy homes standards, we will finalise a paper for you to take to Cabinet. This paper will include the estimated costs to government of the proposed standards, and will be accompanied with a Regulatory Impact Statement.

Annexes

117. The following annexes are attached to this briefing:

- Annex A: Other issues raised during consultation

Annex A: Other issues raised during consultation

Issue	Comment
Additional tenant education would support healthy home objectives.	Many submitters highlighted the importance of tenant behaviour in achieving warmer, drier homes. Officials agree and intend to run educational/information campaigns as part of the healthy home standards implementation.
Enforcement	Tenant, health and industry groups commented that effective enforcement of the healthy homes standards is needed to ensure the objective of warmer, drier rental homes. Concerns were raised regarding tenants feeling empowered to enforce compliance through the Tenancy Tribunal and landlords not having sufficient technical knowledge to accurately assess compliance with the standards. Many submitters supported a requirement for mandatory inspections by qualified professionals to ensure compliance with the standards. Officials recommend landlords seek professional advice where they are uncertain of their obligations but do not support a mandatory inspections regime. Mandatory inspections introduce significant regulatory costs and should only be considered after existing enforcement changes as part of the reform of the RTA are deemed insufficient. To support compliance with the standards MBIEs Tenancy Compliance and Investigations Team has received additional funding to undertake 2000 risk based interventions per year.
A whole of house approach will better achieve healthy home objectives.	A small number of submitters, including Community Energy Network, advocated for a more comprehensive 'whole house' assessment of a rental home's heating needs, rather than a room by room approach. They were also concerned that spaces other than living rooms and bedrooms (such as kitchens, hallways or bathrooms) were not included in the heating options that were consulted on. Officials consider that a 'whole house' assessment of a rental home's heating needs would impose unreasonable cost and burden on landlords. It would likely require a detailed on-site expert assessment for every rental home, with associated costs. Because such assessments are currently uncommon in New Zealand, industry capacity for experts that could conduct such assessments is likely to be too small to cater for every rental home within the implementation timelines of the HHG Act (ie by 1 July 2022). Instead, we propose that landlords, tenants and industry can use a simple online-tool to establish what heating landlords need to provide. The tool would take into account relevant factors such as current heating devices (such as central heating units), a rental home's insulation, room size and climatic location, and whether it is a passive-design house.
Fuel poverty and high electricity prices mean many tenants are unlikely to use equipment in place to ventilate and warm their home	Many submitters were concerned that some tenants could not afford to operate heating and ventilation equipment that landlords would be required to provide. A healthy home requires certain physical features to be warmer and drier (i.e. heating, insulation and ventilation) as well as the ability and willingness of residents to use these features. The proposed standards ensure homes have the capacity to reach healthy temperatures (considering affordability) but additional Government initiatives will be required to ensure tenants can and do use the features provided to achieve a warm dry home. The Government's Welfare Expert Advisory Group, Child Poverty Reduction Bill, the Electricity Price Review and Winter Energy Payments all contribute to achieving warmer drier homes.

Curtains	Some submitters suggested that landlords should be required to provide curtains in rental homes, to address the significant heat loss that occurs through predominantly single-glazed windows in rental homes. Heat loss through windows makes homes harder and more expensive to heat, and can cause thermal discomfort to occupants. Limited existing research on curtains suggests that they are only effective at reducing window heat loss if they are fitted to very precise specifications (close-fitting, with pelmet or curtains touching the floor). More research would be required to establish whether curtains are a cost-effective, practicable solution for reducing heat loss in rental homes, and whether there is a market failure that requires regulation for curtains.
Shower domes	Some submitters suggested shower domes should be an acceptable alternative to extractor fans in bathrooms. Shower domes 'seal' the top of a shower cubicle to contain moisture but cannot be installed in every situation. Officials do not consider shower domes a suitable substitute for a bathroom extractor fan. Shower domes can reduce the amount of steam released into a bathroom, but ventilation is still required to remove moisture and prevent dampness and mould.
Laundry drying	Indoor clothes drying can release significant amounts of moisture, increasing the risk of mould and damp. Some submitters suggested that landlords should be required to provide ventilation for clothes dryers to the outside (either by ducting clothes dryers directly to outside or through the provision of extractor fans in spaces with clothes dryers). Some submitters also suggested that landlords should provide outdoor clothes lines. Including a requirement for providing ventilation for clothes dryers in the Healthy Homes Standards carries the risk of landlords no longer providing clothes dryers to tenants (to avoid compliance costs). The need and ability to provide outdoor clothes lines is also highly situation specific, e.g. depending on the site and household size. We recommend that the issue of avoiding dampness from indoor clothes drying be best addressed through education of landlords and tenants.
Exemptions	We propose that exemptions will apply in cases where it is not reasonably practicable to meet the requirements, e.g. where insufficient access prevents the installation of insulation or of a ground moisture barrier, or where rooms cannot have openable windows because they do not have an external wall. In such situations, the objective of warmer, drier rental homes will only be partially achieved. Some submitters suggested that instead of exempting such rental homes, they should be either declared 'unsafe for habitation', or that landlords should be required to install compensatory measures. Compensatory measures that submitters suggested include installing additional heating, wall or window insulation or lifting floorboards to enable installation of underfloor insulation and ground moisture barriers. The proposed online heating tool will consider a rental home's insulation characteristics and therefore require landlords to provide additional heating capacity in rental homes that are not fully insulated. Other suggested compensatory measures would place and unreasonable cost and burden on landlords.