



# NatHERS for Existing Homes Technical Note

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Nationwide House Energy Rating Scheme (NatHERS)  
Requirements for NatHERS for Existing Homes Assessments

Version: 20241119

Application: Trials of Existing Homes Assessments

NatHERS software is an energy rating model. All models are representations of real-world scenarios and include approximations and assumptions. NatHERS modelling is based on decades of science and consultation with stakeholders and is under constant review.

### About the Nationwide House Energy Rating Scheme (NatHERS)

NatHERS supports improvements to the energy efficiency and comfort of Australia's dwellings by standardising the approach and guidelines for NatHERS accredited software to assess dwellings across Australia.

The Australian Government administers NatHERS on behalf of the Commonwealth and state and territory governments.

**For more information visit [www.nathers.gov.au](http://www.nathers.gov.au)**

### Technical Note change log

Version number (YYYYMMDD)	Comments
20240628	Draft version for TAC comment
20241001	<p>Draft version with updates following TAC review</p> <ul style="list-style-type: none"> <li>- Year of Construction dates added to align with the introduction of insulation requirements in individual states.</li> <li>- Reference to required ground reflectance settings removed due to standard default in software</li> <li>- Zoning – additional instruction added for zoning double height voids, staircases, small spaces and determining zone type in uninhabited dwellings</li> <li>- Requirement to artificially add an unconditioned zone even when one does not exist has been removed.</li> <li>- Evidence requirements – updated throughout</li> <li>- Floor adjacency – clarifications added</li> <li>- Minor adjustments to wording regarding insulation inspection of attic roof space and subfloor space to better indicate that assessors are only required to inspect from the access hatch.</li> <li>- Window modelling instructions updated to provide improved onsite method for assessors and alignment with NatHERS default windows</li> <li>- Window openability simplified to a choice of 3 categories with instruction provided for how an assessor should determine which to apply</li> <li>- Simplification for modelling partially glazed doors</li> <li>- External window coverings were inadvertently left of the previous version, these have been added due to significant impact on ratings</li> <li>- Added default value (moderate) of ceiling insulation loss when not observable</li> </ul>

	<ul style="list-style-type: none"> <li>- Shading (general) – references to the precise method as the preferred method have been removed to reduce assessor time on site and ensure consistency across assessors</li> <li>- Vertical shading method has been simplified into rationalised categories for ease and speed of assessors on site</li> <li>- Heating and cooling appliances – when no appliance is present in a zone – added text to align with new homes stating that assessors may model the same appliance as in the adjoining zone if there is a permanent opening between the zones</li> <li>- Heating and cooling appliances – when more than one heating or cooling appliances in a zone – updated the wording from “least efficient (i.e. highest energy cost)” to “highest energy consumption to allow comparison across fuel types and account for solar PV</li> <li>- Heating appliances – added text as per the working groups to clarify modelling of fireplaces</li> <li>- Heating appliances – removed requirement to model unflued portable gas heaters which were originally included despite not being a ‘fixed’ appliance. These are still included if they are ‘fixed’ to the home.</li> <li>- Hot water systems - when more than one – updated the wording from “least efficient (i.e. highest energy cost)” to “highest energy consumption to allow comparison across fuel types and account for solar PV</li> <li>- Other – additional small text updates and clarifications</li> </ul>
20241024	<p>Draft version for use in Trials</p> <ul style="list-style-type: none"> <li>- Privacy and consent - text updated to reflect instances where a home may be unoccupied at time of assessment</li> <li>- Climate zone selection – text updated re: selection of alternative climate zones</li> <li>- Year of construction - evidence requirement deleted if prior to years in Tables 2+3</li> <li>- QA references to Additional Notes section of certificate updated to Additional information section of rating file</li> <li>- Zoning – requirement that all dwellings must have an unconditioned zone removed</li> <li>- Zoning - clarifications for Bathrooms, WCs and ensuites; zoning table updated for clarity in terms of referring to the parent zone for zoning type or including in the parent zone</li> <li>- Windows &amp; Doors – evidence requirement added for skylights and roof windows</li> <li>- Other – additional small text updates and clarifications</li> </ul>
20241115	<p>Draft version for use in Trials</p> <ul style="list-style-type: none"> <li>- Airtightness – gap classifications for external doors, windows, floorboard, skirting board and general construction gaps changed to sealed/unsealed or present/absent; collection requirements for attic access hatch + internal cavity sliding doors removed, instruction added for ceiling roses to be modelled as unsealed exhaust fan for time onsite optimisation, reverted to current Chenath assumptions for exhaust fans, ceiling and wall vents venting location</li> <li>- Window coverings – added in window covering type as a time optimised method of modelling window coverings which are then assigned default values</li> <li>- Centralised heating, cooling and hot water proxy values added to allow ratings of apartments with centralised services</li> <li>- Skylights/roof windows - minor text updates</li> <li>- Other – minor text updates</li> </ul>
20241119	<p>Final version for use in Trials – DRAFT watermark removed; header/footer text added</p>

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# 1 Introduction

## Purpose

- 1.1 This Technical Note outlines the requirements that must be followed when conducting a NatHERS for Existing Homes assessment. A NatHERS for Existing Homes assessment is undertaken by the Assessor visiting the home and gathering evidence and data to calculate the thermal performance and Whole of Home energy performance of the home.
- 1.2 By Assessors adhering to this Technical Note, it will enable NatHERS assessments to be completed in a consistent way for NatHERS compliance and other purposes. When using NatHERS accredited software tools for Existing Home assessments in 'Disclosure' mode, assessors must apply the requirements outlined in this Technical Note. Disclosure mode is intended to be used as part of voluntary or mandatory disclosure of a home's energy performance at the point of sale or lease.
- 1.3 To undertake assessments in Disclosure mode, Assessors must be accredited under NatHERS. Accredited assessors will have quality assurance processes checked against this Technical Note. Any NatHERS for Existing Homes assessment not completed in line with this Technical Note will be considered non-compliant with NatHERS for Existing Homes assessment procedures.
- 1.4 Accredited assessors may undertake assessments of Existing Homes by using NatHERS accredited software in non-disclosure modes, for other purposes, e.g. as-occupied assessments, but these other modes of assessment are not covered by this Technical Note and must not be advertised as NatHERS assessments.
- 1.5 Software tools accredited in Disclosure mode under NatHERS are intended to be used for conducting a NatHERS for Existing Homes assessment for Class 1 detached or multi-unit dwellings, Class 2 apartments and Class 4 parts of buildings.

## Regulatory requirements and exemptions

- 1.6 Assessors must comply with all federal, state and territory health and safety requirements and are required to act within the scope of their skills and training when undertaking NatHERS assessments.
- 1.7 If at some future stage additional regulatory requirements refer to NatHERS for Existing Homes, this is where reference to those requirements will be made.

## Status of this Technical Note

- 1.8 This Technical Note prevails in all matters covered by the NatHERS Assessor Handbook and Guidance Notes, specific software training manuals, help files, technical support, Assessor Accrediting Service Provider (AASP) guidance, Registered Training Organisations (RTOs) and software trainers' advice.
- 1.9 AASPs may issue additional modelling guidance and practice notes that support this Technical Note. Where there is a perceived contradiction, this Technical Note prevails.
- 1.10 Assessors should use their own professional judgement where a complex assessment situation is not covered by this Technical Note. All supporting information that informs

a decision must be kept on record by the assessor. Recording of the evidence is to be facilitated by the tool through an ability for the assessor to note the evidence for each part of the assessment.

- 1.11 Software tool providers provide software tool support. The AASPs and the NatHERS Administrator provide modelling support.

### Updates

- 1.12 This Technical Note will be updated from time to time. It is the responsibility of assessors to ensure they are using the appropriate version. The latest version is available from [www.nathers.gov.au](http://www.nathers.gov.au). Notification of updates will be provided to assessors through their AASP and Software tool providers.

### Feedback on this Technical Note

- 1.13 Assessors must refer all enquiries and comments about this Technical Note to their accredited AASP in the first instance. Where necessary, these organisations will refer the matter to the NatHERS Administrator for advice. The NatHERS Administrator may provide guidance and/or issue an amended Technical Note.

### Disclaimer

- 1.14 The material in this Technical Note must be followed when conducting NatHERS for Existing Homes assessments of existing homes. This is made available for assessors who use NatHERS accredited software tools in the 'Disclosure' mode accredited under NatHERS only and on the understanding that the NatHERS Administrator, the state and territory governments, and the Commonwealth (the Participating Bodies) are not providing professional advice, nor indicating a commitment by the Participating Bodies to a particular course of action.
- 1.15 While reasonable efforts have been made to ensure the information in this Technical Note is accurate, correct and reliable, the Participating Bodies, and all persons acting for the Participating Bodies preparing this publication, accept no liability for the accuracy of, or inferences from, the material contained in this publication, and expressly disclaim liability for any person's loss arising directly or indirectly from the use of, inferences drawn, deductions made, or acts done in reliance on this Technical Note. The material in this Technical Note may include the views or recommendations of third parties, which do not necessarily reflect the views of the Participating Bodies or indicate their commitment to a particular course of action.



## 2 Before you start

### Privacy and consent

- 2.1 Assessors must have received written consent from the householder (who must be a responsible adult over the age of 18 years) in order to:
  - 2.1.1 Enter the home to undertake the assessment, acknowledging this will involve taking photographs that may contain private or sensitive information.
  - 2.1.2 Collect, use and store data and information, and to share that information with the NatHERS Administrator and other parties, as required for audit and assurance purposes, noting that data and information collected will be managed in accordance with the Australian Privacy Principles.
  - 2.1.3 Grant permission, or not, for follow-up contact from the NatHERS Administrator, or accreditation service providers, or other third parties acting on behalf of the NatHERS Administrator, for quality assurance purposes.
  - 2.1.4 If an occupant is or will be present for the assessment, assessors must confirm that at least one person is a responsible adult over the age of 18 years. Assessors must not enter a home or undertake any part of the assessment in circumstances where only a minor under 18 years of age is present.
  - 2.1.5 Assessors must declare any potential, actual or perceived conflict of interest to the householder, and obtain the householders written acknowledgement of the declaration.

### Assessor safety and equipment

- 2.2 Assessors must conduct a health and safety risk assessment at each site and ensure that appropriate controls are implemented to manage any identified hazards and risk.
- 2.3 Assessors must ensure all equipment complies with relevant federal, state and territory health and safety requirements and standards and will utilise Personal Protective Equipment (PPE) when required.
- 2.4 Assessors must conduct all aspect of the assessment in compliance with federal, state and territory health and safety requirements.

### Conducting the assessment

- 2.5 NatHERS software tools for existing homes are used to assess an entire dwelling.
- 2.6 Assessors must provide photographic evidence and supporting documentation in line with the NatHERS evidence collection guidelines, tool provider requirements and for auditing and quality assurance purposes.
- 2.7 To effectively conduct a NatHERS for Existing Homes assessment assessors will require access to all rooms of the house, and if accessible and deemed safe, access to attic and sub-floor access hatches.
- 2.8 Where access to attic and sub-floor access hatches is unsafe, or when a particular piece of information about an appliance or element of the dwelling construction is not able to

be determined, or is otherwise unsafe to collect, assumptions will need to be made in-line with the requirements of this Technical Note. Assessors must provide evidence, either written notes or photographic, to justify the use of defaults where applied.

- 2.9 A NatHERS for Existing Homes assessment is an assessment of the thermal performance of the building, the energy-using fixed appliances and renewable energy produced and stored on-site – not the people who live in it. This allows the rating to be as independent as possible of variable occupancy behaviour and allows homes to be compared against each other.
- 2.10 The number of occupants is calculated based on floor area, not the actual number of people living in the home. This occupancy number is used to calculate several factors within the Assessment such as hot water usage.
- 2.11 Thermostat settings for heating and cooling are based on standard assumptions, not the actual settings that the occupants may use.

#### **Evidence Requirements**

- Assessors must provide evidence, either written notes or photographic, to justify the use of defaults where applied. Written evidence could include a note entered in the software explaining why obtaining the non-default value is impractical/unsafe. Photo evidence could show why access to obtain evidence is impractical/unsafe e.g. attic access hatch inaccessible due to furniture.

### 3 Data entry and documentary evidence

- 3.1 The project details and modelling of the dwelling must be entered consistent with the information gathered on site.
- 3.2 If new information becomes available that changes the results shown on the Certificate, the Certificate may become invalid and a new Certificate needs to be generated to accurately reflect the performance of the home.
- 3.3 Where information is ambiguous or inconsistent and it is unclear how to incorporate the information into the NatHERS for Existing Homes assessment, the Assessor should seek clarification from their AASP and document the response.
- 3.4 Information provided by a householder about aspects of the home that are not otherwise able to be determined by the assessor, must be supported by third party documentation to be included in the assessment.
- 3.5 Where information is not available relating to a specific aspect of the home, the assessment must be undertaken using the defaults as noted in the relevant section of this Technical Note. The householder should be advised where defaults have been made in lieu of actual gathered information, and that this may affect the outcome of the assessment.
- 3.6 Should a motivated homeowner choose to commission more rigorous/invasive testing to establish the presence or otherwise of insulation in areas where it cannot be easily observed by an assessor, the testing results must be documented in a form that can be verified by and is acceptable to the assessor.
- 3.7 Data collection type i.e. measured, documented or default value must be indicated by assessors when inputting data into the software tool, so it is included on the Home Energy Rating Certificate.
- 3.8 Visual evidence overrides default assumptions within this Technical Note. For example, if it can be seen that a house has no ceiling insulation, this overrides any default assumptions that might be made about the dwelling based on its age.
- 3.9 Evidence gathering is a formal part of the NatHERS for Existing Homes assessment process. Where documentary evidence is required, it is noted within each of the following sections of this Technical Note.

## 4 Climate, exposure, orientation and year of construction

### Climate zone selection

- 4.1 In NatHERS software tools, each postcode is allocated a 'principal climate zone' and sometimes one or two alternative climate zones. Assessors are to use the principal climate zone in most cases. The following rules apply when selecting a climate zone:
- 4.2 Assessments must use the postcode in NatHERS software tools that corresponds to the location. If a newly developed suburb has not yet been allocated a postcode or the postcode is not available in NatHERS software tools, the postcode of the nearest existing suburb with similar climatic properties must be used. This must be detailed in the Additional Information section of the rating file.
- 4.3 If the principal climate zone is not considered representative of the climate on site (e.g. because of a change in altitude), the assessor may choose to use one of the alternative climate zones allocated to the postcode in the NatHERS software tool or available on the NatHERS website. The assessor must not use a climate zone other than those allocated to the postcode. Where the assessor has chosen to use one of the alternative climate zones, a justification must be detailed in the Additional Information section of the rating file.

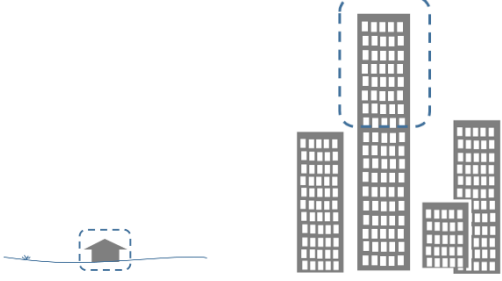


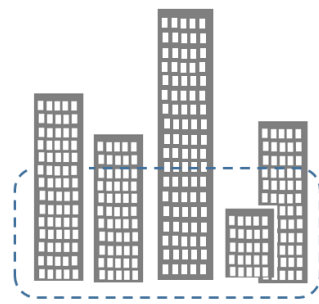
### Exposure categories

- 4.4 The exposure category best suited to the terrain surrounding the dwelling must be used. Exposure can vary for apartments in a single building and this must be considered in assessments. Table 1 provides guidance on the indicative characteristics of exposure categories.

### Orientation

- 4.5 Dwelling orientation must be based on the rotation of the dwelling with respect to true north, not magnetic north.
- 4.6 An Assessor can use a compass or Global Positioning System (GPS) on site or refer to online land information system from the relevant jurisdiction or a map app or website, or potentially all, to confirm true north. Note that map apps and websites use grid north and whilst this is not exactly the same as the true North it is an acceptable approximation to true north for NatHERS in existing homes.

Table 1 – Exposure category guidance

Category	Terrain and built environment characteristics	Examples
Exposed Or	Few or no obstructions 	Flat grazing land, lakeside or ocean frontage, desert, exposed high-rise unit (above 10 storeys) without obstructions at a similar height to the dwelling
Open Or	Grasslands with few well scattered obstructions less than or equal to 10 m high 	Farmland with scattered sheds, lightly vegetated bush blocks, elevated apartment (4-10 storeys) with a few obstructions of similar height to the dwelling
Suburban	Numerous closely spaced obstructions less than or equal to 10 m high 	Suburban housing, heavily vegetated bushland areas, townhouses, low level apartments (G – 3 storeys)
Protected	Numerous closely spaced obstructions greater than 10 m high 	City and industrial areas buildings with many obstructions over 10m in height

### Year of construction

- 4.7 As the year of construction is used to determine default values for insulation when they cannot be confirmed by the Assessor, if the year of construction is on/after the dates referred to in Table 2 and Table 3, assessors must obtain documentary evidence to apply the specified date of construction. The onus is on the householder to provide such evidence, else the assessor should enter the year as 'unknown' or an approximate year prior to these dates.

**Table 2 – Class 1 year of construction start date for evidence requirements by state**

State	Year
ACT	1993 onwards
NSW	2005 onwards
QLD	2003 onwards
SA	2003 onwards
TAS	2003 onwards
VIC	1991 onwards
WA	2003 onwards
NT	2003 onwards

**Table 3 – Class 2 year of construction start date for evidence requirements by state**

State	Year
ACT	1998 onwards
NSW	2005 onwards
QLD	2006 onwards
SA	2006 onwards
TAS	2006 onwards
VIC	1991 onwards
WA	2006 onwards
NT	2011 onwards

- 4.8 Where part of a house is renovated, the same requirements apply for determining the year of construction. When there are differing ages of construction for different parts of a house, either use the original age of construction or, if documentary evidence of the renovation year of construction can be provided, assessors should enter the appropriate insulation values from the default insulation tables to the renovated zones only.

#### **Evidence requirements — Year of construction**

- For year of constructions dates on/after the dates referred to in Table 2 and Table 3, assessors must provide documentation showing the year of construction (e.g. house plans, local government plans or register of title documents).

## 5 Zoning

### Zone types

- 5.1 A zone is defined as a room or group of rooms within a dwelling that have particular properties. Each NatHERS zone type has different inbuilt assumptions and thermostat settings based on:
- the function of the room and
  - how the different rooms within a dwelling are used throughout the day e.g. nighttime zones are heated and cooled to different temperatures at different times compared to living or daytime zones.
- 5.2 A conditioned zone is a room that is artificially heated and/or cooled. There are 6 types of conditioned zones:
- kitchen/living
  - living
  - daytime
  - bedroom
  - nighttime
  - garage – conditioned
- 5.3 An unconditioned zone is a room that is not artificially heated and/or cooled. There are two types of unconditioned zones:
- unconditioned
  - garage - unconditioned
- 5.4 Assessors must assign zones for all parts of the dwelling that can be fully enclosed by the dwelling envelope (the physical separator between the dwelling being assessed and the outside environment or neighbour). Table 4 outlines software zoning types and definitions.
- 5.5 Situations may arise in unconventional dwelling designs where more than one zone option is possible. In the absence of definitive advice from an AASP or the NatHERS Administrator, Assessors may need to use discretion, considering for example the intent of the zone. In such circumstances Assessors must document their decisions for quality assurance purposes in the Additional Information section in the rating file.
- 5.6 In Class 2 and 4 dwellings, basement carparks and glazed common areas (e.g. internal entrance hallways to an apartment) are not modelled as separate zones. Where apparent, assessors must model the dwelling adjacency as subfloor enclosed for a basement carpark and neighbour for a glazed common area.

### Minimum zoning requirements

- 5.7 All dwellings must:
- contain one main kitchen/living zone
  - contain a minimum of three zones excluding the garage

- c. have walls, a floor and a ceiling and/or a roof for each zone.
- 5.8 Studios, bedsits and open-plan apartments must:
- a. contain at least three zones (e.g. kitchen/living, bedroom and an unconditioned bathroom zone) and
  - b. when there are no obvious features by which to zone the open plan studio or bedsit, then (for modelling purposes only):
    - i. kitchen/living zone floor area(s) = minimum of 30%
    - ii. bedroom zone floor area = minimum of 20% and
    - iii. these two zones shall be separated by an artificial plasterboard-on-stud internal dividing wall(s) with a wall area of no less than 40% between zones.

### Combining zones

- 5.9 Workshops, storerooms, water closets (WCs) and laundries may be combined with the garage if they meet all of the following:
- a. are within the garage
  - b. can be accessed from the garage and/or by an external door and
  - c. do not contain an internal door to the dwelling.

### Bathrooms, WCs and ensuites

- 5.10 Bathrooms, WCs and ensuites must be zoned as follows:
- a. Unconditioned if it can be accessed from the main dwelling, has external windows or doors, can be closed off from other zones and does not have in-floor heating
  - b. Nighttime if it is exclusively associated with a bedroom (i.e. no general access); and/or has in-floor heating; either with or without external windows or doors
  - c. Refer to the parent zone to determine zone type if it does not have in-floor heating and either has no external windows or doors; or cannot be closed off from other zones. If the parent zone is a kitchen/living, living or daytime zone, then model as daytime; if the parent zone is bedroom or nighttime, model as nighttime; if the parent zone is unconditioned, model as unconditioned. If there are two parent zones (i.e. 2 entries), model according to the larger of the two parent zones.

### Airlocks

- 5.11 An airlock is a small, relatively airtight space that can be modelled as unconditioned space if it:
- a. is located at a dwelling entrance
  - b. has one or more external wall/s
  - c. has one or more internal wall/s
  - d. has an external door and



- e. has one or more internal doors, of which, only one opens to a conditioned zone.

### Double height voids

- 5.12 Some software tools may allow modelling of double height voids i.e. zones that extend across two levels of the dwelling with no floor construction between the entire upper zone and the zone below. In this instance, assessors must select the upper zone as a double height void zone and the software will combine it with the zone below. Where this functionality is not available, assessors must model the two zones separately and insert a horizontal opening in the floor of the upper zone that extends over the entire floor area.
- 5.13 The double height void zone must only be selected where an upper floor zone has no floor construction between itself and the zone below. Where the opening does not extend over the entire floor area of the upper zone e.g. a staircase, this must be modelled as two separate zones with a horizontal opening in the floor of the upper zone to account for the staircase opening only.

### Determining zone type in uninhabited dwellings

- 5.14 Where a dwelling is uninhabited and without furniture, it may be more difficult for assessors to determine the purpose of some zones, particularly when determining if a room is a bedroom or living/daytime zone. In this instance a bedroom is defined as follows:
  - a. a private room with a single entrance from a hallway or other living space with a closable door. The room cannot be a through space to another bedroom or living room.
  - b. must be large enough to fit an adult sized single bed + space for a wardrobe (or have a built-in wardrobe) plus circulation space to access the bed, wardrobe and door. (Approx 2.0m x 2.0m with a built-in wardrobe or 2.0 x 2.7m without a built-in wardrobe)
  - c. must have a window or skylight
  - d. may have an external door directly to the outside
  - e. may have access to an ensuite or walk-in robe

### Staircases

- 5.15 Depending on the location and configuration, staircases can be treated either as part of an existing zone or a separate zone. If the staircase has internal walls on both sides extending to the upper floor i.e. enclosed staircase, it must be zoned separately.

### Small Spaces

- 5.16 Small non-habitable spaces, less than or equal to 700mm in depth, (e.g. pantries, built-in robes, plumbing voids, wall voids and service ducts) must be included in the zone they are adjacent to or located in. Where a cupboard or other space is larger than this, it must be zoned as a separate zone with the exception of small storage spaces located under a staircase which can be included in the same zone as the staircase.

Table 4 - NatHERS zoning types and definitions

Rooms/ spaces/ areas  Ventilated: has a door and or an openable window on an external wall  Unventilated: has neither an openable window nor door on an external wall	Zoning									
	Kitchen / living <sup>1</sup>	Living <sup>2</sup>	Daytime	Bedroom	Nighttime	Unconditioned	Refer to the parent zone to determine zone type <sup>3</sup>	Include in parent zone	Garage – unconditioned	Garage - conditioned
Airlock <sup>4</sup>			•			•				
Bathroom, unventilated <sup>5</sup> – see also ensuite					•		•			
Bathroom, ventilated <sup>5</sup> – see also ensuite					•	•				
Bathroom with in-floor heating ventilated or unventilated <sup>5</sup>					•					
Bedroom				•						
Cellar, conditioned			•							
Cellar, unconditioned						•				
Corridor within dwelling, fully enclosed by doors or open to other zones			•							
Dining room <sup>2</sup>		•	•							
Ensuite, ventilated or unventilated <sup>5</sup> – see also bathroom					•		•			
Family room <sup>2</sup>		•	•							
Garage, conditioned										•
Garage, unconditioned									•	
Gym			•							
Hallway, fully enclosed by doors or open to other zones, not solely associated with a bedroom <sup>6</sup>			•							
Hallway, solely associated with a bedroom that can be closed off from the main dwelling <sup>6</sup>					•					
Kitchen (main) with or without meals/lounge/living/dining	•									
Kitchen (second) /kitchenette		•								
Laundry, unventilated							•			
Laundry, ventilated with door to another zone						•				
Laundry, ventilated open to another zone							•			
Lift			•							
Living <sup>2</sup>		•	•							
Lounge <sup>2</sup>		•	•							
Media <sup>2</sup>		•	•							

Rooms/ spaces/ areas  Ventilated: has a door and or an openable window on an external wall  Unventilated: has neither an openable window nor door on an external wall	Zoning									
	Kitchen / living <sup>1</sup>	Living <sup>2</sup>	Daytime	Bedroom	Nighttime	Unconditioned	Refer to the parent zone to determine zone type <sup>3</sup>	Include in parent zone	Garage – unconditioned	Garage - conditioned
Outdoor living area, capable of being fully enclosed and conditioned			•							
Pantry, not walk-in								•		
Pantry, walk-in			•							
Parents' retreat					•					
Pool room			•							
Powder room, unventilated <sup>5</sup>					•		•			
Powder room, ventilated <sup>5</sup>					•	•				
Rumpus <sup>2</sup>		•	•							
Sauna			•							
Staircase <sup>7</sup>			•				•			
Storage							•			
Storage under staircase								•		
Study or office with either built-in wardrobe, walk in robe (WIR) or ensuite				•						
Study or office without either built-in wardrobe, WIR or ensuite			•							
Theatre, Library, prayer room <sup>2</sup>		•	•							
Voids e.g. wall, plumbing, service ducts								•		
Walk-in-robe (WIR)					•					
WC, unventilated <sup>5</sup>					•		•			
WC, ventilated <sup>5</sup>					•	•				

1. All dwellings must contain only one main kitchen/living zone. All additional smaller kitchens/kitchenettes within the dwelling must be zoned as "living".

2. If there are more than two living areas (excluding kitchen/living), then:

- the two largest living areas are zoned as "living" and
- the other areas are zoned as "daytime".

3. The parent zone is the larger zone that the smaller zone is accessed from. If the parent zone is a kitchen/living, living or daytime zone, then model the smaller zone as daytime; if the parent zone is bedroom or nighttime, model the smaller zone as nighttime; if the parent zone is unconditioned, model the smaller zone as unconditioned. If there are two parent zones (i.e. 2 entries), model the smaller zone according to the larger of the two parent zones.

4. If the airlock requirements in 5.11 are met, model as unconditioned, if not, model as daytime.

5. Refer to Bathrooms, WCs and ensuites zoning rules (5.10).

6. For example, a hallway connecting a bedroom with a walk-in robe and/or ensuite

7. If enclosed, zone as a separate zone, else incorporate into the zone it is accessed from.

**Evidence requirements — Zoning and floorplan**

- If data collection software was used, documentation showing the floorplan generated by the software. The floorplan must include dimensions, show all windows and doors, and each room must be clearly named. Where zoning decisions are made based on features within a room (e.g. a bed or wardrobe), photographic evidence must be provided. Otherwise, a photo of a hand-drawn floorplan, with measurements taken onsite. The floorplan must clearly show dimensions, all windows and doors, and each room must be clearly named.

## 6 Floors

### Floor height above ground

- 6.1 Assessors must enter the height of the lowest level of the dwelling above the natural ground level as follows:
- the finished floor level (FFL) of the concrete slab thickness above the natural ground
  - the average height of the FFL of a suspended floor above the ground and
  - in the case of an apartment in a multi-storey building, if the exact height is unknown, it may be calculated as 3 metres for the ground floor plus 2.7 metres per storey for each additional storey.
- 6.2 Floor heights on sloping sites may vary across the building footprint. The floor height above ground level on a sloping site is measured from the midpoint of the dwelling across the slope i.e. average floor height across the building footprint.

### Floor area

- 6.3 Assessors must input the floor area of each zone. Some software tools may automatically calculate this measurement.

### Floor construction type

- 6.4 Assessors must enter the floor construction type for each zone.
- 6.5 Concrete slabs on ground are assumed to be uninsulated unless documentary evidence is available indicating the R-value/type of insulation installed or the presence of a waffle pod.
- 6.6 Where documentary evidence indicates a waffle pod slab, assessors must model as such.

### Floor adjacency

- 6.7 Assessors must assign an adjacency for each zone based on Table 5.

**Table 5 - Assigning floor adjacency**

Floor	Adjacency
Concrete slab or waffle pod slab on ground	Ground
Dwelling above another separate dwelling	Neighbour
Suspended floor above fully enclosed, non-habitable sub-floor	Subfloor - enclosed
Suspended floor above open or partially open subfloor with one or two sub-floor walls, and clearance height of less than 2 m	Subfloor - open
Suspended floor above fully open space with average clearance height of less than 2 metres	Subfloor – very open
Suspended floor above fully open space with average clearance height of 2 metres or more	Elevated/Outdoor air

Floor	Adjacency
Suspended floor above a conditioned zone of the same dwelling	Conditioned
Suspended floor above an <b>un</b> conditioned zone of the same dwelling	Unconditioned
Apartment directly above a common underground car park that is fully enclosed apart from required mechanical ventilation	Subfloor - enclosed
Apartment directly above an underground car park (e.g. a car park which is <50% open to the outdoor air and with >50% wall area adjacent to earth)	Subfloor - open
Apartment directly above a highly ventilated car park that is ≥50% open to the outdoor air (e.g. an open car park with minimal or no external walls)	Elevated/outdoor air
Apartment directly above commercial premises, or mostly enclosed common public areas.	Neighbour
Apartment directly above a highly ventilated common public area.	Elevated/outdoor air
Apartment directly above a fully enclosed garage for its exclusive use, where it is accessed from the dwelling and shares floors, walls or ceilings with the dwelling, and has a separate vehicular access door.	Garage (include the garage as a zone within the rating)
Apartment directly above a fully enclosed individual garage with no direct access to the dwelling.	Subfloor - enclosed

### Floor insulation

- 6.8 Where the subfloor is enclosed, assessment of the floor insulation is only required to be undertaken from the sub-floor access hatch.
- 6.9 If access to the sub-floor access hatch is available and it is deemed safe to do so, inspect and estimate the value of floor insulation, if any.
- 6.10 If access to the sub-floor is not available or deemed unsafe, the assessor must apply the default in the software.
- 6.11 By design, the default assumptions are intended to be conservative. Should a motivated homeowner choose to commission more rigorous/invasive testing to establish the presence or otherwise of insulation in areas where it cannot be easily observed by an assessor, the testing results must be documented in a form that can be verified by and is acceptable to the assessor.

### Floor coverings

- 6.12 Input the floor coverings (e.g. vinyl, carpet, tile) above the floor structure identified in all zones. Where a zone contains more than one floor covering type enter the one with the largest area. Ignore removable coverings e.g. rugs or mats.

## Floor openings between levels

6.13 Assessors must model all horizontal openings between floors e.g. staircases.

## Metal framing

6.14 If there is no evidence (from documentation or via visual inspection) that a dwelling with a suspended floor has a metal framed floor structure with repeating steel frame elements, then by default assume a timber framed floor system. Note: metal support beams in an otherwise timber structure do not constitute a metal framed building.

6.15 Where a metal framed floor system is evident, assessors must input:

- a. thermally bridged: yes/no
- b. thermal bridging mitigation measures (thermal breaks) if apparent: yes/no.

### Evidence requirements — Floors

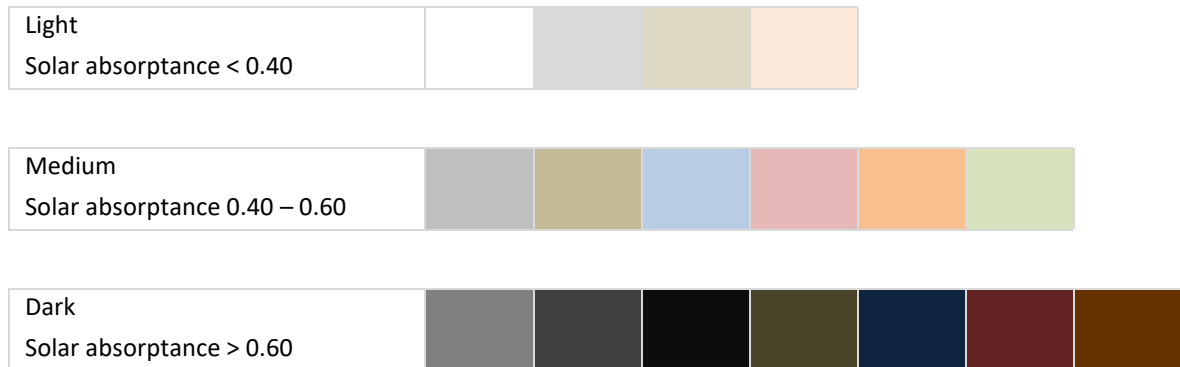
- Photos to identify the floor type (building exterior, sub-floor vents, or underfloor spaces).
- If claiming floor insulation other than the defaults (including waffle pod slabs), provide photos showing the insulation or documentation showing the R-value of the insulation (such as construction plans, product receipts and evidence of works, or past NatHERS Certificates).
- Photos of the two most predominant floor covering types in the dwelling.
- If claiming thermal bridging mitigation measures, provide documentation to indicate presence (such as construction plans, product receipts and evidence of works, or past NatHERS Certificates).

## 7 Walls

### External colour

- 7.1 Assessors must enter the external wall colour or solar absorptance. Wall colours must be classified as light, medium or dark (Figure 1) and be based on the dominant wall colour where there are multiple colours.

**Figure 1 - Colour estimation guide**



### Wall area

- 7.2 Assessors must enter the area of each wall in a zone. Some software tools may automatically calculate this measurement.

### Wall orientation

- 7.3 Assessors must enter the orientation for each wall in a zone. Some software tools may automatically calculate this.

### Wall construction type

- 7.4 Assessors must enter the wall construction type for each wall in a zone.

### Wall insulation

- 7.5 The software applies the default insulation based on the wall type, location and age of the dwelling. However, the assessor may consider:
- where documentation of wall insulation is available<sup>1</sup> e.g. architectural documentation, product receipts and written evidence of works, enter the R-value (not thickness) of the insulation or
  - where there is insulation visible, but the R-value is unknown, enter the material type (or default) and its thickness or

---

<sup>1</sup> Thermal imaging may assist in determining the presence or otherwise of insulation in a wall cavity, but a definitive reading is not possible, and it cannot be used for the purpose of determining thermal performance.



- c. if the visual inspection reveals thickness and material are different to documentation that is provided, the visual identification overrides the documentation.

### Wall adjacency

- 7.6 Assessors must enter the adjacency for each wall in a zone based on Table 6.

**Table 6 – Internal wall adjacencies**

Class	Wall adjacent to ...	Adjacency
Class 1 and Class 2	Another room in the same dwelling	Assign the zone(s) as known
Class 1 and Class 2	Neighbouring dwelling	Neighbour
Class 1 and Class 2	Ground	Ground
Class 1 and Class 2	Roof space	Roof space
Class 2	Unconditioned common corridors with or without glazing	Neighbour
Class 2	Conditioned common corridors with or without glazing	Neighbour
Class 2	Lifts and enclosed stairwells	Neighbour
Class 2	Common corridors open to external air (i.e. corridors with permanent openings).	Model: <ul style="list-style-type: none"> <li>• an external wall</li> <li>• an entrance door</li> <li>• any horizontal shading</li> <li>• any vertical shading</li> </ul>

### Metal framing

- 7.7 If there is no evidence (from documentation or via visual inspection) that a dwelling has a metal framed wall structure with repeating steel framed elements, then by default assume a timber framed wall system. Note: metal support beams in an otherwise timber structure does not constitute a metal framed building.
- 7.8 Where a metal framed wall system is evident, assessors must input:
- a. thermally bridged: yes/no
  - b. thermal bridging mitigation measures (thermal breaks) if apparent: yes/no.

**Evidence requirements — Walls**

- Photo of all external wall types, showing its cladding/construction and colour.
- If claiming wall insulation other than the defaults, photos showing wall insulation or documentation showing the R-value of the insulation (such as construction plans, product receipts and evidence of works, or past NatHERS Certificates).
- If there is an adjacent wall (e.g. adjacent to a neighbour/common area), photos demonstrating the adjacency of the wall (if accessible). Or an aerial photo showing wall adjacency.
- If claiming thermal bridging mitigation measures, provide documentation to indicate presence (such as construction plans, product receipts and evidence of works, or past NatHERS Certificates).

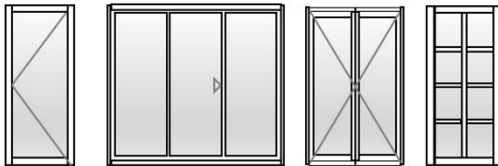
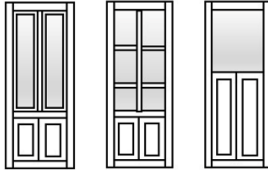

## 8 Windows and doors

### Doors and permanent openings

8.1 Assessors must input all:

- a. external doors including construction type (Table 7) and insulation where applicable
  - i. fully glazed doors are modelled as windows
  - ii. partially glazed doors are modelled as 50% fixed window for the glazed portion, and 50% solid door for the remaining component
  - iii. if the glazing component is less than 25% of the door, it is modelled as a solid door
- b. internal doors – the assessor must apply a default size of 820 x 2040 mm for single doors and 1640 x 2040 mm for double doors where the software tool does not automatically assign a size.
- c. permanent openings between internal zones.

**Table 7 - Modelling glazed and partially glazed doors**

Glazing	Examples	How to model
Fully glazed		Model as a window with openability as per Table 8.
Partially glazed (>25% to <75%)		Model as 50% fixed window and 50% solid door.
Minor ( $\leq 25\%$ ) or no glazing		Model as a solid door

### Windows

- 8.2 Assessors must input all windows, including the area, head height and offset in the wall and assign these to the appropriate walls in each zone. Some software tools may automatically calculate some of these values.
- 8.3 When inputting windows and glazed doors, assessors must select the appropriate:
  - a. operating type – Type A (e.g. awning, casement, bifold, tilt n turn) or Type B (e.g. sliding, fixed, double hung, louvre)


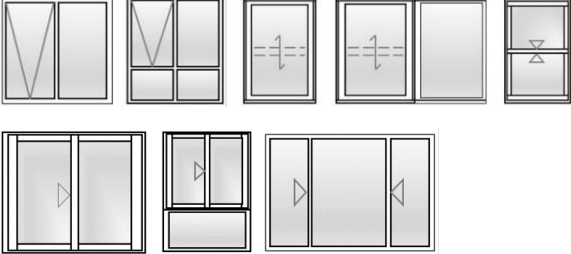
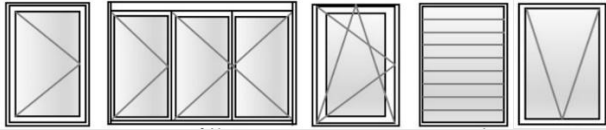
- b. frame material – aluminium, timber, uPVC, composite or thermally broken aluminium
- c. glazing type – single, double air filled, or double argon filled
- d. glazing description - clear, tinted, low-e clear, low-e tint

8.3.2 The software will automatically apply NatHERS default window performance values.

8.4 Low-e glazing, argon filled double glazing and thermally broken aluminium frames must only be selected when documentary evidence can be provided.

8.5 Where the NatHERS Software tool allows, the simplified openability of windows is to be entered as specified in Table 8 or alternatively a precise openability percentage may be entered.

**Table 8 - Modelling window openability**

Examples of windows	How to model
	Fixed
	Openable e.g. sliding, double hung and combination windows (i.e. part fixed and part operable).
	Highly operable e.g. awning, casement, louver, tilt 'n' turn

### Skylights and roof windows

- 8.6 Assessors must input all skylights in each zone, including the area, type, openability, orientation and internal coverings if present.
- 8.7 Assessors must input all roof windows in each zone, including the area, type, orientation, pitch and internal coverings if present.

### Internal window coverings

- 8.8 Internal window coverings must be modelled where present. Assessors must only input window coverings that fully cover the window. Where there are multiple window coverings, only include those layers that fully cover the window.
- 8.9 There are two methods for window coverings to be entered into the software:
  - i. Method 1 – the assessor enters only the type of window covering and default window covering characteristic values are applied in the software

based on the window covering type

- ii. Method 2 – the assessor enters the type of window covering and also enters the 4 window covering characteristics which allows a more accurate rating.

8.10 The window covering types available for selection are:

- i. holland blinds (roller)
- ii. venetian blinds
- iii. roman blinds
- iv. vertical blinds
- v. honeycomb blinds (multiple layers separated by air and low through airflow fabric)
- vi. plantation shutters (thick solid layers not made of metal)
- vii. open weave curtains
- viii. close weave curtains
- ix. heavy drapes (multiple layers separated by air and low through airflow lining)

8.11 Where pelmets or any other improved window covering features are present, these must be entered using Method 2.

8.12 The 4 window covering characteristics, for use under Method 2, are:

- i. outside appearance
- ii. light transmittance through the window covering
- iii. fit of the window covering
- iv. insulative value of the covering material

### Outside appearance of window coverings (colour)

8.13 When modelling windows using Method 2, assessors must model the outward facing surface of the window covering, using Table 9 as a guide.

**Table 9 - Outside appearance of window coverings**




Classification	Example	Description
Bright metallic		Very bright, shiny metallic surface finish or coating on fabric similar in appearance to chrome or shiny kitchen foil. Metallic coatings which are dull silver or darker in colour should be classified as 'Medium'.
Light		Light coloured fabric, paint, coating, natural timber or timber finish. White, off-white to very pale pastel colours.

Classification	Example	Description
Medium		Medium coloured fabric, paint, coating, natural timber or timber finish. Note the 'medium' category for window coverings is still quite light in tone.
Dark		Darker coloured fabric, paint, coating, natural timber or timber finish.

### Light transmittance

- 8.14 Assessors using Method 2 must estimate the amount of light passing through the window covering when it is fully closed (Table 10). When making this classification:
- do not consider light entering around the edges of the window covering and
  - include all layers of the window covering together.

**Table 10 - Light transmittance through window coverings**

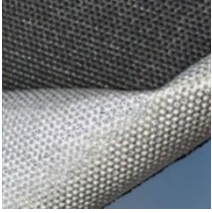



Classification	Example	Description when the covering is fully closed
Little to no light		A completely or almost totally dark room. It is not possible to see through the window covering. No light, tiny pinpricks of light or a very faint glow may be visible from bright outdoor light through the window covering.
Some light		A dim or shaded room but not totally dark. It may be possible to see a darkened view of the outside through the window covering, or it may be possible to see a soft glow from bright outdoor light through the window covering.
A lot of light		A brightly lit room. It may be possible to see a bright view of the outside through the window covering, or it may be possible to see a bright glow from outdoor light through the window covering.

### Insulative value of window covering

- 8.15 As part of Method 2, Assessors must estimate the window covering (all layers together) insulative value. There are two classifications:

- a. More insulating – must have either:
  - i. bright metallic outside appearance or
  - ii. multiple layers separated by air and one layer being low through-airflow or
  - iii. is a thick (>5 mm) solid non-metallic layer
- b. Less insulating – all other coverings not covered in 8.15a above.

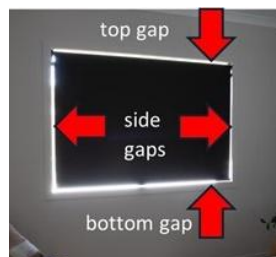
**Table 11 - Examples of features found in 'More Insulating' window coverings**

			
Bright metallic street-side surface	Multiple layers separated by air, low through-airflow fabric	Multiple layers separated by air, low through-airflow lining	Thick solid layers not made of metal

### Window covering fit

- 8.16 Assessors using Method 2 must estimate the window covering fit (air flow through and around) based on:
- a. gaps between the window covering and the nearest frame or wall surface at the top, sides and bottom – see Figure 2. Note the location of the edge gaps depends on the type and mounting of the window covering – some gaps may be located behind the window covering
  - b. any airflow that can pass through the window covering itself

**Figure 2 - Top, side and bottom edge gaps of window coverings**



- 8.17 Window covering fit can be determined using Table 12 and:
- a. if there are multiple window coverings, only assess the one that gives the highest classification in this category (smallest gaps and/or lowest through-airflow) or
  - b. if it is not clear which covering would give the higher classification, assess the covering closest to the window

Table 12 – Classification of window covering fit

Classification	Largest measured gap size	Through airflow	Examples
Loose fitting	Not applicable	High flow	Venetian blinds, vertical blinds, mesh or lace curtains Cellular blind (low through-airflow) with large edge gaps Curtain on rod or rail not touching ceiling (top gap $\geq$ 20 mm) Curtain with pelmet: no top surface (top gap $\geq$ 20 mm)
	$\geq$ 20 mm	Not applicable	
	$<$ 20 mm	High / restricted / medium	
Medium fitting	$<$ 20 mm	Low	Plantation shutters (medium through-airflow) with small ( $<$ 4 mm) edge gaps Curtains with a pelmet and small edge gaps without block-out/thermal lining or coating (medium through-airflow) Reveal-mounted roller blind with small top and edge gaps
	$<$ 4 mm	Restricted / medium	
Close fitting	$<$ 4 mm	Low	Reveal-mounted pleated or cellular blind (low through-airflow) with very small edge gaps (gaps $<$ 4 mm)
	$<$ 1 mm	Restricted / medium	
Fully enclosed	$<$ 1 mm	Low	Roller blinds (with block-out coating) with enclosed side channels Cellular blinds with enclosed side channels Curtains hanging to floor or sill with an enclosed pelmet and with block-out/thermal lining or coating (low through-airflow)

### External window coverings

8.18 Assessors must input all external window coverings when present.

#### Evidence requirements — Windows and doors

- Photo or documentation for each type of window and glazed door clearly showing frame material, glazing type and window tinting.
- Documentary evidence (such as architectural specifications, invoices or new home NatHERS certificates) must be provided for all low-e glazing, argon filled double glazing and thermally broken aluminium frames.
- Photo or documentation for each type of skylight and roof window.
- Photos of each type of internal window covering.
- Photos of window covering characteristics when modelled using Method 2 i.e. outside appearance, light transmittance, insulative value and window covering fit.
- Photos of external window coverings.



## 9 Ceilings and roofs

### Roof colour

- 9.1 Assessors must estimate the roof colour as either light, medium or dark as per the colour estimation chart Figure 1.

### Ceiling/roof area

- 9.2 Assessors must input the area of the ceiling in each zone. Some software tools may automatically calculate this measurement.

### Ceiling/roof construction and type

- 9.3 Assessors must input the ceiling/roof construction type in each zone.
- 9.4 In the case of an attic roof, assessors must input the shape of the roof i.e. hip, gable or single pitch.

### Ceiling /roof insulation R-value

- 9.5 Assessing the insulation in an attic roof space is only required to be undertaken from the attic access hatch whilst remaining on the ladder.
- 9.6 If access to the attic roof space access hatch is available and it is deemed safe to do so, inspect and estimate the value of ceiling insulation, if any.
- 9.7 If access to the attic roof space is not available or deemed unsafe, the assessor must apply the default in the software.
- 9.8 Where there is no roof cavity (e.g. raked/flat), assessors must select the default in the software.
- 9.9 Where documentation of ceiling/roof insulation is available (e.g. NatHERS New Home Certificate or product receipts) assessors must input the R-value of the insulation indicated unless a visual inspection reveals the documentation to be incorrect in which case the visual inspection overrides the documentation.

### Ceiling insulation coverage

- 9.10 All insulation clearances over and around ceiling penetrations must be modelled including recessed light fittings (downlights), vents, flues, chimneys, fireplaces and exhaust fans.
- 9.11 Where documentation is available or a label on a light fitting state that a recessed light fitting (downlight) is IC (insulation contact) rated, assessors may model these without insulation clearances provided a visual assessment does not override this.
- 9.12 Rangehoods ducted to the outside through the wall are not modelled as ceiling penetrations and no gap in insulation is assumed.
- 9.13 Assessors must also estimate the total percentage loss of ceiling insulation (e.g. gaps between insulation products due to poor installation or removal) based on the categories in Table 13. This estimate must exclude clearances around downlights, exhaust fans and other ceiling penetrations (see 9.10). If insulation is not observable, by default, assessors must select moderate gaps.

**Table 13 - Categories of insulation loss**

No gaps - 0% missing
Minor - 0% to < 2% missing
Moderate - 2% to < 4% missing (Default)
Significant - 4% to < 8%
Very significant - ≥ 8%

### Ceiling fans

- 9.14 All ceiling fans and their diameters must be entered for each relevant zone. Where an exact measurement is not possible, assume a default size of 900 mm.

### Ceiling/roof adjacency

- 9.15 Assessors must assign the appropriate ceiling/roof adjacency as per Table 14.

**Table 14 - Ceiling/roof adjacencies**

Ceiling/roof adjacent to ...	Adjacency
Roof space e.g. attic roof	Roof space
Neighbouring dwelling	Neighbour
An upper floor of the same dwelling	Internal

### Roof space ventilation

- 9.16 Assessors must select the roof space ventilation category based on Table 15.

**Table 15 - Roof space ventilation categories**

Type	Description/Options	Specifications
Roof surface	Metal, tile or concrete roof with sarking	Continuous
	Tile roof without sarking	Discontinuous
Roof space ventilation	No dedicated roof space ventilator	Min
	<ul style="list-style-type: none"> <li>• Wind-driven roof space ventilator (whirly bird) or</li> <li>• ridge caps or</li> <li>• eave vents</li> <li>• or tiled roof without sarking</li> </ul>	Natural
	Eave vents and powered roof space ventilator	Mechanical

### Metal framing

- 9.17 If there is no evidence (from documentation or via visual inspection) that a dwelling has a metal framed ceiling/roof structure with repeating steel framed elements, then by default assume a timber framed roof system. Note: metal support beams in an otherwise timber structure do not constitute a metal framed building.

- 9.18 Where a metal framed ceiling/roof system is evident, assessors must input:
- a. thermally bridged: yes/no
  - b. thermal bridging mitigation measures (thermal breaks) if apparent: yes/no.

**Evidence requirements — Ceilings and roofs**

- If the dwelling sits below another dwelling, a photo that shows the dwelling above.
- If the dwelling has a roof, a photo (or similar image, such as satellite or aerial imagery) showing roof colour.
- If claiming ceiling/roof insulation other than the defaults, photos showing the insulation or documentation showing the R-value of the insulation (such as construction plans, product receipts and evidence of works, or past NatHERS Certificates).
- If IC (insulation contact) rated recessed lights are modelled without insulation clearances, an example photo of the IC label or documentation indicating the IC rating (such as a past NatHERS Certificate or product receipt) must be provided.
- Photo of each size of ceiling fan.
- If claiming thermal bridging mitigation measures, provide documentation to indicate presence (such as construction plans, product receipts and evidence of works, or past NatHERS Certificates).

## 10 Shading

- 10.1 Shading inputs in existing home assessments are simplified compared to new home assessments.
- 10.2 Vegetation, including protected trees, must not be modelled.
- 10.3 Where possible assessors should collect shading information for the dwelling/site from map applications and websites prior to the assessment e.g. estimation of wall orientations and distances from the dwelling to adjacent buildings.

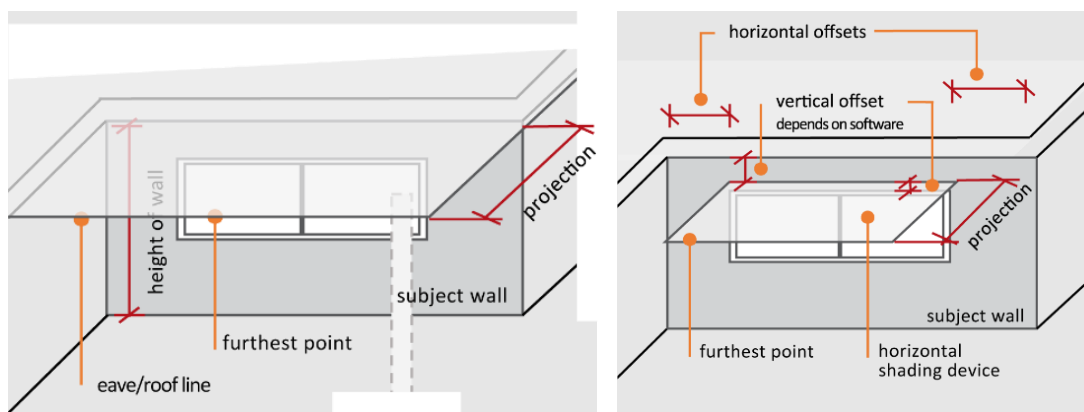
### Horizontal shading

- 10.4 Assessors must input horizontal shading features that shade the walls and/or windows of each zone including eaves, pergolas, balconies from upper levels, window hoods etc.
- 10.5 When inputting horizontal shading features, assessors must input values as indicated in Table 16 and Figure 3.
  - 10.5.1 Assessors may ignore horizontal shading features if the depth of the overhang is less than the vertical offset (e.g. a second storey eave).

**Table 16 - Horizontal shading measurements**

Dimension	Precise measurement	Simplification method
Projection of overhang	From the face of the external wall/window to the outer edge of the overhang	Estimate to the nearest 300 mm
Vertical offset	From the top of the wall/window to the underside of the overhang (may be negative)	Estimate and input in categories
Length of the overhang	Distance parallel to the wall/window	No input required (Assume to be equal to the width of the wall/window plus 2 x the depth of the eave/overhang)
Horizontal offset	From the right end of the projection to the right end of the wall/window (when looking out from inside the dwelling)	No input required Assume to be the same as the depth of the eave/overhang

Figure 3 - Horizontal shading terminology



### Vertical shading

10.6 Assessors must input vertical shading features (obstructions parallel to dwelling) that shade each zone including neighbouring buildings, fences, opposite walls of the same dwelling (e.g. courtyards) etc.

10.6.1 Assessors may ignore vertical shading features:

- a. which are not directly opposite the centre of the wall
- b. where there is no window in the external wall in a particular zone
- c. located to the south of a dwelling being assessed (between the midpoints SSE and S, and S and SSW, i.e. within the range of  $168^{\circ}45'$  to  $191^{\circ}15'$ ), except where the dwelling is located north of the Tropic of Capricorn where they must be modelled
- d. where the feature is a single storey neighbour more than 10 m away and
- e. where the feature is a double storey or more neighbour more than 20 m away.

10.6.2 Wing walls are perpendicular vertical shading structures – see section 10.9.

10.7 When inputting vertical shading features, assessors must input values as indicated in Table 17.

**Table 17 – Vertical shading measurements**

Dimension	Precise measurement	Simplification method
Height (Figure 4)	Exact height	Select appropriate height category in the software i.e. fence, single storey, 2 storey, 3 storey, 4-6 storeys, 7+ storeys.
Distance	Exact distance perpendicular from the middle of the subject wall/window to the shading feature	Select the appropriate distance category in the software i.e. <1m, 1-2.5m, 2.5-5m, 5-10m, 10m+
Width of shade feature	Distance parallel to the wall/window	No input required (This is automated in the software)

Dimension	Precise measurement	Simplification method
Horizontal offset	From the right end of the shading feature to the right end of the wall/window (when looking out from inside the dwelling)	When looking out from inside the dwelling, input either: <ul style="list-style-type: none"> <li>• Shade feature is predominantly to the right</li> <li>• Shade feature is approximately centred and</li> <li>• Shade feature is predominantly to the left.</li> </ul>

Figure 4 - Vertical shading - height



- 10.8 When measuring the height of a shading feature, assessors must allow for any slope in the landscape e.g. if a neighbouring house is 3 m high, but the floor level of that house is 2 m above the house being assessed then the height of the shading feature is 5 m.

### Wing walls

- 10.9 Assessors must input wing walls (e.g. perpendicular walls of the dwelling and attached side fences) that shade the walls and/or windows of each zone.

10.9.1 Assessors may ignore wing walls if:

- projection is  $\leq 2$  m
- wing wall top is more than 600 mm below the top of the wall
- located to the south of a dwelling being assessed (between the midpoints SSE and S, and S and SSW, i.e. within the range of  $168^{\circ}45'$  to  $191^{\circ}15'$ ), except where the dwelling is located north of the Tropic of Capricorn
- where the horizontal offset is either greater than 6 m or
- where the horizontal offset is greater than the projection of the wing wall.

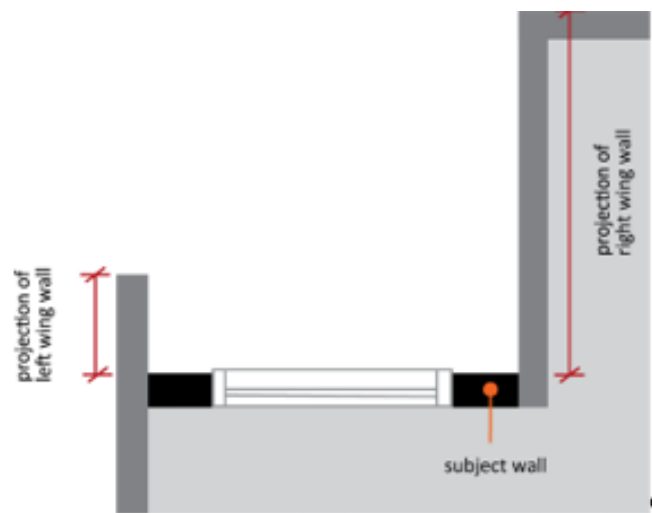
f. where the wing wall does not extend down to floor level of the zone.

10.10 When inputting wing walls, assessors must input values as indicated in Table 18 and Figure 5.

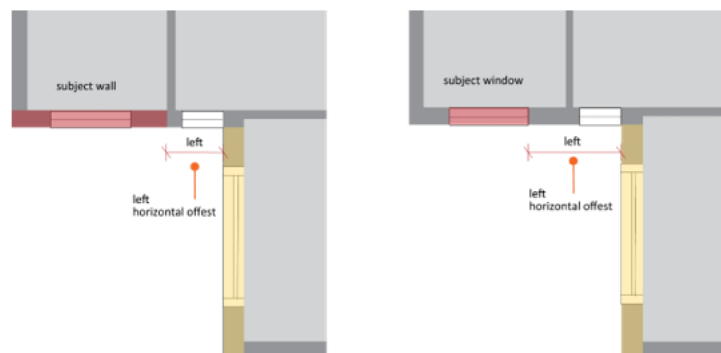
**Table 18 - Measuring wing walls**

Wing wall dimensions	Precise measurement	Simplification method
Height	Exact height from the floor level of the zone	Number of storeys
Projection (distance)	Measured perpendicular to the face of the wall or window it shades	Estimate to nearest 2 m
Horizontal offset	Measured from the right end of the wall to the wing wall (when looking out from inside the dwelling)	Estimate to nearest 300 mm

**Figure 5 - Wing wall projections**



**Figure 6 - Wing wall horizontal offsets**



10.11 Courtyards are entered as two wing walls per wall/window.

**Evidence requirements — Shading**

- Documentation (such as construction plans or past NatHERS Certificate) or external photos of the house showing all shading features of the dwelling (eaves, pergolas, louvres, screens, awnings, vertical screens, wing walls) in relation to the outer wall. For eaves, photos must show the projection (depth).
- Photos or documentation (from relevant aerial/satellite imagery, map apps, or land information systems) showing the proximity and size of any neighbouring buildings that shade the external walls and windows of the dwelling, showing the slope of the surrounding land if relevant.



## 11 Airtightness

- 11.1 There are two options to measure air leakage in a NatHERS existing homes assessment:
- a blower door test assessment, at the homeowner's cost or
  - a visual airtightness assessment.

### Blower door test

- 11.2 Blower door tests can identify the sources of air leakage in a dwelling and represent the best available and most accurate method for measuring a dwelling's airtightness.
- 11.3 A blower door test must be undertaken by a qualified and certified technician registered with the Airtightness Testing and Measurement Association (ATTMA) Australia.
- 11.4 Blower door test results are entered in terms of the air permeability of the building envelope in m<sup>3</sup>/hr.m<sup>2</sup> i.e. the cubic meters per hour of air leakage for every square metre of building envelope (floor, ceiling, and walls).

### Visual airtightness assessment

- 11.5 Where a blower door test is not conducted, assessors must model all air leakage points listed in Table 19 when present.

**Table 19 - Modelling air leakage**

Air leakage points	Classification/Input	Description
Recessed Downlights	Nil	Sealed downlight
	Minimal	Thin ring downlight - some air leakage
	Moderate	Gimballed downlight – light can swivel within housing
	Large	Older style 'tin can' downlight – typically larger fitting with incandescent/compact fluorescent globes
Exhaust fans	Sealed	Sealed with self-closing mechanism
	Unsealed (default)	No sealing mechanism. Vented ceiling roses can also be counted as an unsealed exhaust fan
External Doors	Sealed	Door has weatherstripping at the base and no gaps anywhere around the frame or the door is sealed by the nature of its construction
	Unsealed (default)	Door has gaps anywhere around the frame
Windows	Sealed	Window has no gaps between the operable part and the window frame or is sealed by the nature of its construction (e.g. weather-stripped, fixed/non-operable)
	Unsealed (default)	Window has gaps anywhere between the operable part and the window frame
Chimney/open fireplace (ignore if permanently blocked)	With damper	Damper can be opened or closed to prevent uncontrolled airflow when not in use
	Without damper (default)	
Wall and ceiling vents	Present/absent	Unsealed vents only. Ignore sealed vents.

Air leakage points	Classification/Input	Description
Floorboard gaps	Present/absent	Floorboard gaps are considered present when there is a gap > 2mm between the boards which creates an unbroken path to the subfloor/outside air. Only applies where > 20% of the floorboards in the zone are affected.
Skirting board gaps	Present/absent	Skirting board gaps are considered present when there is a gap > 2mm which creates an unbroken path to the subfloor/outside air. Only applies where > 50% of the skirting boards in the zone are affected.
General construction gaps	Present/absent	There are 3 or more gaps in the zone that are more than 2cm <sup>2</sup> .
Fixed open louvre windows and permanently open holes including pet doors	Calculate and measure total area of hole	Holes in the building envelope (walls, floors, ceiling/roof) that are adjacent to outside air. These are entered in the software as permanent openings. Note that operable louvre windows are entered as windows.
Evaporative cooler duct outlets	Present/absent	Only enter unsealed outlets. Ignore units with a baffle inside, winter cover and/or duct outlet covers

#### Evidence requirements — Air leakage

- If a blower door test has been completed, documentation showing the results from the test.
- If a blower door test has not been completed, photos of the following when present:
  - fireplaces including any dampers or permanent blockages where modelled
  - an example of an exhaust fan – if modelling sealed exhaust fans the photo must show the sealing mechanism or there must be documentation showing that the fan is sealed
  - an example of wall and ceiling vents
  - an example of a ceiling rose
  - an example of each modelled level of air leakage around recessed light downlights (nil, minimal, moderate, large)
  - an example of sealing/weatherstripping around external windows
  - an example of the sealing/weatherstripping around external doors
  - an example of skirting board gaps
  - an example of general construction gaps, showing 3 or more gaps of more than 2cm<sup>2</sup>
  - an example of an evaporative cooling duct and duct outlet covers (or documentary evidence e.g. product receipt) if present — if a baffled evaporative cooling system is modelled, there must be documentation demonstrating the baffle (e.g. user manual)
  - an example of a fixed open louvre window
  - any permanently open holes, including pet doors.

## 12 Appliances

### Heating and cooling

- 12.1 Assessors must model the main fixed heating and cooling appliance for each NatHERS conditioned zone. If no appliance is present in a particular space, the assessor must:
- select the default option in the software or
  - model the same appliance as in the adjoining zone if there is a permanent opening between the zones.
- 12.2 Where more than one heating or cooling appliance is present in a zone, the assessor must model the heating or cooling appliance with the highest energy consumption. This may require multiple simulations to determine.
- 12.3 Where a zone is serviced by a heater as well as an open fireplace, the heater other than the open fireplace is assumed to be the main conditioner irrespective of its performance relative to the open fireplace.
- 12.4 In the case of a ducted system, the assessor must define all zones it services and enter the age of the ductwork. The age of the ductwork is assumed to be the same age as the heating and/or cooling system. The age of the ductwork cannot exceed 30 years.
- 12.5 Multi-split systems that service multiple zones, must be modelled as non-ducted heat pump units in each serviced zone using the external unit (compressor) for the efficiency rating.
- 12.6 For gas fuelled appliances, assessors must enter the type of gas i.e. natural or LPG.
- 12.7 Ornamental woodfired/gas heaters must only be entered when they are the only heater present in a zone.
- 12.8 Assessors must only include 'fixed' appliances i.e. it must be attached to or built into the home. Portable 'non-fixed' heaters and coolers are not included in the rating.
- 12.9 If there is a centralised heating and/or cooling system in a Class 2 apartment building, assessors must model the appropriate proxy system as indicated in Table 20.

**Table 20 – Proxy systems for centralised heating and/or cooling in apartments**

Site details	Model as...
Unknown centralised system capable of heating and cooling or Known to be a ducted air conditioner	Ducted air conditioner $\geq 19\text{kW}$ ; fixed capacity. Input the building age to obtain efficiency
Unknown centralised system capable of cooling only or Known to be a ducted air conditioner	Ducted air conditioner $\geq 19\text{kW}$ ; fixed capacity. Input the building age to obtain efficiency
Unknown centralised system capable of heating only or Known to be a ducted gas system	Ducted gas (natural gas) Input the building age to obtain efficiency

**Heating and cooling appliance efficiency**

- 12.10 Where access is available and it is deemed safe to do so, assessors should obtain information from the energy rating label or compliance plate of the system to ascertain the heating/cooling appliance efficiency.
- 12.11 Assessors should utilise the following data sources to obtain performance information (in order of most to least reliable):
- a. energy star rating label on the product [e.g. GEMS (Greenhouse & Energy Minimum Standards) or AGA (Australian Gas Association)] plus date of manufacture
  - b. product lookup (brand and model) in official registries and industry directories plus date of manufacture
  - c. performance data shown on compliance plate or other literature (e.g. user manual)
  - d. type and age of the appliance shown on compliance plate or other literature (e.g. purchase receipt)
  - e. appliance type and age of the dwelling or part thereof where the appliance is installed
  - f. when none of the above are available select the software default value
- 12.12 If defaults are used in an assessment, this should be clearly indicated on the certificate to avoid a scenario where a householder commissions upgrade works based on assumed default levels.
- 12.13 For some appliances the efficiency is fixed in the software e.g. electric resistance heater, evaporative coolers.

**Evidence requirements — Heating and cooling systems**

- Photos of all heating and cooling systems, showing the type of system and all information used to determine the modelled system (for example, the manufacturer's compliance plate, year of manufacture, model number, and efficiency information such as star rating or seasonal performance factor).
- If the photos of the system do not give all the required information, documentation (such as user manual or invoice) may be used to show the relevant information.

**Hot water systems**

- 12.14 Assessors must enter:
- a. hot water system type
  - b. size (if applicable)
  - c. year of manufacture (if applicable)
  - d. type of gas (if applicable) and
  - e. efficiency.

- 12.15 If there is more than one system, the assessor must input the water heater with the highest energy consumption.
- 12.16 If there is no hot water system or there is a centralised hot water system in a Class 2 apartment building, assessors must model the appropriate default/proxy system as indicated in Table 21.

**Table 21 – Default/proxy hot water systems**

Site details	Model as...
There is a gas meter, gas heater and/or gas stove at the property or It is a centralised system that is known to be gas	Gas storage Input the building age to obtain efficiency
There is NO gas meter, gas heater and/or gas stove at the property or It is a centralised system that is known to be electric	Electric storage – large Input the building age to obtain efficiency
It is a centralised system that is known to be instantaneous gas	Instantaneous gas Input the building age to obtain efficiency
It is a centralised system that is known to be heat pump	Heat pump - medium Apply default STCs based on location
It is a centralised system that is known to be solar with gas boost	Solar large – gas boost (natural or LPG) Apply default STCs based on location
It is a centralised system that is known to be solar with electric boost	Solar large – electric boost Apply default STCs based on location

**Hot water system appliance efficiency**

- 12.17 Where access is available and it is deemed safe to do so, assessors should obtain information to ascertain the efficiency of the hot water system from the energy rating label or compliance plate.
- 12.18 Assessors should utilise the following data sources to obtain performance information when entering appliances into the tool (in order of most to least reliable):
- energy rating label on the product (e.g. AGA)
  - product lookup (brand and model) in official registries and industry directories
  - performance data shown on compliance plate or other literature (e.g. user manual)
  - age of the appliance shown on compliance plate or other literature (e.g. purchase receipt)
  - age of the dwelling or part thereof where the appliance is installed or
  - when none of the above are available select the software default value.
- 12.19 If default values are obtained using options d, e, or f this should be clearly indicated on the certificate to avoid a scenario where a householder commissions upgrade works based on assumed default levels.

**Small Technology Certificates (STCs)**

- 12.20 STCs are used as a measure of efficiency in NatHERS assessments for heat pumps and solar hot water.
- 12.21 The Clean Energy Regulator maintains a register of solar and heat pump water heaters that are eligible for STCs. See <https://cer.gov.au/schemes/renewable-energy-target/small-scale-renewable-energy-scheme/small-scale-renewable-energy-systems/solar-water-heaters/register-solar-water-heaters/>
- 12.22 In the relevant register, find the installed model and enter the required STC for the relevant zone from the table for this model. Note there are four zones in Australia for solar and five zones for heat pump models.
- 12.23 If assessors cannot identify the model number, for solar hot water heaters they must enter the appropriate size of the system and default STC values will be applied. For heat pump hot water heaters select the default.

**Solar photovoltaic diverter (PV diverter) hot water systems**

- 12.24 Assessors must only model a solar PV diverter hot water system if it is one of the 3 types indicated in Table 22, else assessors must model the system as electric storage.
- 12.25 If information on type of system is not available or cannot be established by the assessor, then the solar PV diverter must be ignored.
- 12.26 “Home-made” or non-commercial systems must be ignored.
- 12.27 Time clock systems (Type 1) must only be entered if evidence of the timer control and time settings can be presented to the assessor, otherwise the system must be entered as electric storage.

**Table 22 - Solar PV diverter hot water systems**

PV diverter type	Details
Type 1: Simple timer	A standard electric storage hot water system with a timer installed so it heats water during the day rather than overnight
Type 2: Modulated input into an existing storage tank – add-on product	A system with a retrofitted external control added to an existing standard electric storage hot water system. The controller monitors the house load and PV generation and diverts any excess local PV generation to the water heater.
Type 3: Bespoke PV Diverter - dedicated product	A specifically designed system where the controller monitors the house load and local PV generation and diverts excess solar energy to the water heater.

**Evidence requirements — Water heating**

- Photos of all water heating systems, showing the type of system, all components (including both on-ground and on-roof (if safe to view)), and all information used to determine the modelled system (for example, the manufacturer's compliance plate, year of manufacture, model number, size, and efficiency information such as star rating or annual energy consumption).
- If the photos of the system do not give all the required information, documentation (such as user manual or invoice) may be used to show the relevant information.

**Plug loads and cooking loads**

12.28 Assessors must enter the energy source(s) of installed cooktops and ovens. Plug-in (e.g. bench-top) cooking appliances are not included.

12.29 If gas fuelled, assessors must enter the type of gas i.e. natural gas or LPG.

**Lighting**

12.30 Assessors must enter the number of halogen lights in each zone (wattage is not required) regardless of whether they are ceiling mounted or downlights.

12.31 LED lights are not counted and a wattage per square metre is assumed in the software.

**Evidence requirements — Lighting**

- Photo of an example of a halogen light, if present.

**Pools and spas**

12.32 A pool is a water-retaining structure designed for human use, holds more than 680 litres of water and incorporates, or is connected to, equipment capable of filtering and/or heating the water. It includes any waterslide, wave pool, hydrotherapy pool or other similar structures. Spas (excluding bath tubs with jets) are currently modelled as for pools.

12.33 If the pool enclosure area can be accessed and it is deemed safe to do, assessors must enter:

- a. pool area
- b. pump type – if unknown, select software default.

**Evidence requirements — Pools and spas**

- Photos of each pool or spa showing relative size.
- If claiming pool or spa pump efficiency other than the default, photos of the pump showing the manufacturer's compliance plate and model number, and photos or documentation (such as user manual) showing the information used to determine the efficiency (such as star rating or pump type).

**On-site renewable energy**

- 12.34 Only solar photovoltaic (PV) systems are included in Existing Homes calculations.
- 12.35 Assessors must enter system/array capacity (size), orientation, tilt of the array, inverter capacity, export limit and age of the system.
- 12.36 The capacity of the PV system must be known or estimated. Where the capacity cannot be estimated using one of the approved methods, it must not be included in the rating.
- 12.37 Where PV arrays are located on multiple orientations, each array must be entered separately. Capacity of individual arrays may need to be calculated based on their proportion of the total PV system.
- 12.38 NatHERS currently cannot specify centralised PV systems for Class 2 buildings or Class 4 parts of a building. Where these are present assessors should make a note in the additional note section of the certificate stating that these have not been included in the assessment.
- 12.39 Assessors should utilise the following data sources to obtain performance information when entering solar PV systems into the tool (in order of most to least reliable):
- a. documentation, e.g. system specifications or installation documentation
  - b. connection agreement, or local distribution network service provider (DNSP)
  - c. PV app
  - d. building plans
  - e. compass reading
  - f. reference to google earth maps or
  - g. reference to the Land Information System of the local jurisdiction
- 12.40 Where exact system capacity cannot be determined and data sources are not available or unclear, assessors should choose from the options in the software to estimate the system capacity.
- 12.41 Estimate system capacity
- 12.41.1 PV system inverter capacity (in kW<sub>AC</sub>) method
- a. Where the inverter capacity can be reliably determined (e.g. via the nameplate where it is accessible and it is deemed safe to do so), multiply this value by the oversize factor of 1.2 to estimate the system's kWp.



- b. the estimated PV system's rated capacity must not exceed the number of panels (which may be observable via satellite imagery) x 0.4 kW (i.e. 400 W per panel)
- c. this method is not suitable where micro inverters are used.

#### 12.41.2 Array square metre method:

Calculate the total array area in square metres (by measurement of building plans or satellite imagery – correcting for slope) and enter the year in software.

#### 12.41.3 Default method

If the preceding methods are not possible, select the greater value of one of the following:

- i. the age method – enter year of installation; or
- ii. number of panels method.

#### 12.42 Estimate array orientation

12.42.1 Where exact array orientation cannot be determined and data sources are not available or unclear, assessors should choose from the options in the software to estimate the array orientation See Table 23

**Table 23 - Defined quadrants to estimate orientation of PV arrays**

Cardinal direction and corresponding degrees	
N	337.5° to < 22.5°
NE	22.5° to < 67.5°
E	67.5° to < 112.5°
SE	112.5° to < 157.5°
S	157.5° to < 202.5°
SW	202.5° to < 247.5°
W	247.5° to < 292.5°
NW	292.5° to < 337.5°

#### 12.43 Estimate array tilt

12.43.1 The tilt angle of an array may be estimated from the categories in Table 24.

**Table 24 - Estimating the tilt of a PV array**

Category	Tilt angle range
Flat	< 10°
Moderate (Default)	10° to 35°
Steep	> 35°

## 12.44 Estimate inverter capacity

12.44.1 Where the inverter rated capacity is not available (e.g. where micro inverters are used), apply a default value of 75% of the total rated capacity of the array(s).

## 12.45 Estimate PV export limit

12.45.1 Where the PV export limit cannot be determined, select the default value.

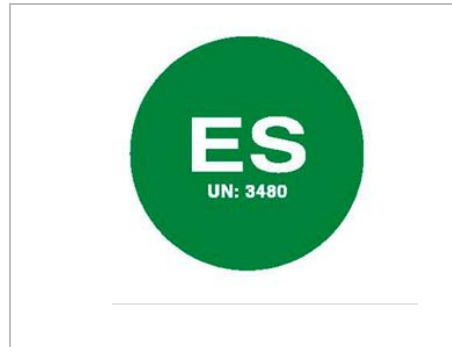
**Evidence requirements — On-site renewable energy**

- System/array capacity (kWp) may be evidenced with any of the following options depending on the method used to obtain the capacity:
  - installation invoice showing system specifications (exact method)
  - connection agreement document showing system capacity (exact method)
  - screenshot of PV app or portal showing system capacity (exact method)
  - photo of inverter name plate indicating inverter capacity (estimate based on inverter capacity method)
  - screenshot of measured area of array on satellite image or building plans (estimate based on array square metre method)
  - evidence to indicate the age of the system e.g. installation receipt (estimate based on age method)
  - site photo or screenshot of satellite image or building plans showing number of panels (estimate based on number of panels method)
- System/array orientation may be evidenced with:
  - screenshot of satellite image or building plans
  - screenshot of onsite compass reading
- System/array tilt may be evidenced with:
  - installation invoice showing system specifications
  - site photo
  - screenshot of satellite image or building plans
- Inverter capacity may be evidenced with:
  - installation invoice showing system specifications
  - a photo of the inverter name plate
  - no evidence required if default is selected

## On-site energy storage

- 12.46 Where a battery is present and accessible and it is deemed safe to do so, assessors must enter the rated storage capacity of the battery and the battery chemical type which can typically be found on the rating plate, in specification documentation or via signage in the switchboard (Figure 7).

**Figure 7 - Switchboard signage indicating battery chemistry**



- 12.47 Where information on the battery capacity is unavailable, select the default in the software.
- 12.48 Where battery chemistry cannot be determined, select the default in the software.

### **Evidence requirements — Onsite energy storage**

- Photo of each modelled battery system, showing the system rating plate and model number, and demonstrating the system capacity and chemistry type.
- If the system rating plate is not available or does not demonstrate the system capacity and chemistry type, documentation (such as installation documentation, user manual, existing connection agreement, switchboard signage, evidence from the distribution network service provider or battery manufacturer, or evidence from the system's app or online portal) may be used to show the capacity and chemistry.

## 13 Finishing the assessment

- 13.1 Before producing a NatHERS Home Energy Rating Certificate, assessors must:
- a. confirm all requirements detailed in this Technical Note have been met
  - b. record any conflicts of interest in the Additional Information section in the rating file.
  - c. confirm the assessment aligns with the evidence obtained and
  - d. ensure data collection type i.e. measured, documented or default value is indicated in the software tool, to be included on the Home Energy Rating Certificate.
  - e. confirm the software declaration is completed
- 13.2 After producing a NatHERS Home Energy Rating Certificate, assessors must:
- a. supply the householder with the certificate
  - b. explain the contents of the certificate to the householder, particularly the key results and explanations behind those results
  - c. identify to the householder the main sources of energy consumption in the home and the main potential strategies for improvement, taking into account
    - i. improving home comfort
    - ii. reducing energy costs
    - iii. reducing greenhouse gas emissions and
    - iv. any other specific needs.
- 13.3 For Class 2 dwellings (sole occupancy units), each unit must have an individual NatHERS Home Energy Rating Certificate.