NatHERS for existing homes Technical Note

Nationwide House Energy Rating Scheme®
Requirements for NatHERS for existing homes assessments

Version: 20250611

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Disclaimer

Acknowledgement of Country

We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present.

About the Nationwide House Energy Rating Scheme (NatHERS)

NatHERS supports improvements to the energy efficiency and comfort of Australia's dwellings by accrediting software and assessors and providing a standardised approach to assessing the energy performance of dwellings across Australia.

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

For more information visit https://www.nathers.gov.au/

Technical Note Change Log

Version number (YYYYMMDD)	**Comments**
20250520	Launch version – incorporating learnings from trial period and preliminary testing, and subject to updates based on future feedback and further testing. **Default values** specified for: floor height above ground; door sizes; garage door insulation R-value; floor insulation R-value; external window covering; skylight and roof window values; ceiling fan diameter; ceiling penetrations/insulation loss; battery size and chemistry; chimney with damper for non-permanent sealing devices; renewable energy generation values and evidence collection points. **Removed mandatory modelling** requirements: thermal bridging; wing walls; sealed recessed downlights and heater flue; ceiling penetrations/insulation loss. **Other key clarifications - model only:** one horizontal and one vertical shading device (the ones having the largest impact); the single dominant wall construction type in each wall. **Features no longer modelled**: pet doors; cast iron grate fireplaces. **New:** changed minimum age from 18 to 15 years for householder consent. Appendix 1 – Default insulation tables added. Addendum – Additional default inputs and settings for first generation software tools.
20250611	Year of construction – text update regarding determination of renovations/additions Partially glazed doors – text correction regarding modelling of the window portion as casement Obscure glazing – instructions added Internal window coverings – minor text updates for clarity, instruction added to model metal plantation shutters as venetian blinds Shading – minor text update regarding shading from a 2nd-storey eave Pools – minor text update to stipulate only permanent pools should be modelled

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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 an Assessor gathering evidence and data to calculate the energy performance of a home and generate a Home Energy Rating Certificate.

1.2 By Assessors adhering to this Technical Note, it will enable NatHERS for existing homes assessments to be completed in a consistent way for NatHERS compliance and other purposes. When using NatHERS accredited software tools for NatHERS for existing homes assessments, Assessors must apply the requirements outlined in this Technical Note.

1.3 To undertake NatHERS assessments of existing homes, Assessors must be NatHERS for existing homes accredited. Accredited Assessors will be subject to quality assurance processes that check the conduct of assessments 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 requirements.

1.4 Accredited NatHERS for existing homes software tools 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

1.5 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 a NatHERS for existing homes assessment. Assessors are responsible for their own compliance with all health and safety requirements.

1.6 If at some future stage additional regulatory requirements refer to NatHERS for existing homes assessments, this is where reference to those requirements will be made.

Status of this Technical Note

1.7 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.

1.8 AASPs may issue additional modelling guidance and practice notes that support this Technical Note. Where there is a perceived contradiction, this Technical Note prevails.

1.9 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.

1.10 Software tool providers provide software tool support. The AASPs provide modelling support.

Updates

1.11 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. Notification of updates will be provided to Assessors through their AASP.

Feedback on this Technical Note

1.12 Assessors must refer all enquiries and comments about this Technical Note to their 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

1.13 The material in this Technical Note must be followed when conducting NatHERS for existing homes assessments. This is made available for Assessors who use NatHERS for existing homes accredited software tools 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.

1.14 While reasonable efforts have been made to ensure the information in this Technical Note is accurate, correct and reliable, the Participating Bodies, and all individuals 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 individual'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 15 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 Assessor Accreditation Service Provider, or other third parties acting on behalf of the NatHERS Administrator, for quality assurance purposes.

2.2 If an occupant is or will be present for the assessment, Assessors must confirm that at least one person present is 15 years or older and has the capacity to consent. Assessors must not enter a home or undertake any part of the assessment in circumstances where only a person under 15 years of age is present.

2.3 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

2.4 Assessors are responsible for conducting all aspects of the assessment in compliance with federal, state and territory health and safety requirements, including any relevant electrical safety requirements.

Important Note

States and territories may have specific safety requirements relating to roof or subfloor space access (including requirements that apply while remaining on a ladder at attic access hatches).

Assessors are responsible for identifying and complying with all applicable regulatory requirements in the state or territory in which the assessment is being conducted and acting within the scope of their skills and training when undertaking NatHERS for existing homes assessments.

2.5 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.

2.6 Assessors are responsible for ensuring all equipment complies with relevant federal, state and territory health and safety requirements and standards and using Personal Protective Equipment (PPE) when required.

Conducting the assessment

2.7 NatHERS for existing homes software tools are used to assess an entire dwelling.

2.8 Assessors must provide photographic evidence and supporting documentation in line with the requirements set out in this Technical Note, tool provider requirements and for auditing and quality assurance purposes.

2.9 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.

2.10 Where access to attic and sub-floor access hatches is unsafe, or when a particular piece of information or evidence about an appliance or element of the dwelling construction is not able to be determined or is otherwise unsafe to collect, the assessor will need to apply the relevant default values specified in this Technical Note. Assessors must provide evidence, in the form of either written notes or photographs, to justify the use of defaults where applied. The reason for the use of defaults must be recorded in the Additional Information field of the rating file.

2.11 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 behaviour of 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.

2.12 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.

2.13 Thermostat settings for heating and cooling are based on standard assumptions, not the actual settings that the occupants may use.

Evidence Requirements – Default values

- Assessors must collect evidence, in the form of either written notes or photographs, to justify the use of defaults where applied, and explain the reason for the use of defaults in the Additional Information field of the rating file. Written evidence could include a description of the situation that made collecting the required information or evidence unsafe or not possible. Photo evidence could show why collecting the information or evidence was not possible or unsafe e.g. attic access hatch is inaccessible due to furniture.

3 Data entry and 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, 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 e.g. invoice for insulation installation indicating R-value.

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 Assessor must advise the householder where defaults have been made in lieu of actual gathered information, and that this may affect the outcome of the assessment. The reason for the use of defaults must be recorded in the Additional Information field of the rating file.

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. Evidence of these documents must be collected by 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 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

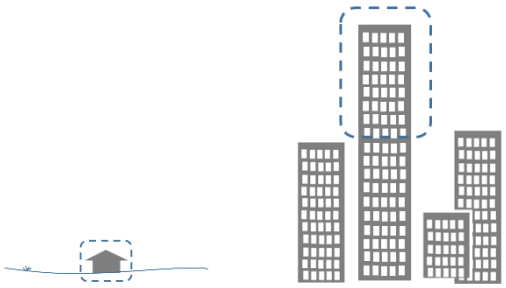
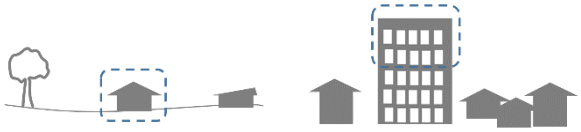
4.4 The exposure category best suited to the terrain surrounding the dwelling must be used. Exposure can vary for apartments in a single building and this must be considered in assessments. Table 1 provides guidance on the indicative characteristics of exposure categories.

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 true North it is an acceptable approximation to true north for NatHERS for existing homes assessments.

Table 1 – Exposure category guidance

Category	Terrain and built environment characteristics	Examples
Exposed	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	Few well scattered obstructions less than or equal to 10 m high relative to the dwelling 	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 relative to the dwelling 	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 10 m 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 has been added or significantly altered (e.g. renovations that are likely to have triggered development consent and/or involve structural changes like removing walls, adding rooms or altering rooflines), the same requirements apply for determining the year of construction. When there are differing ages of construction for different parts of a house, use the original age of construction unless documentary evidence of the addition/renovation year of construction can be provided. If documentary evidence of the addition/renovation year of construction is provided, Assessors should enter the appropriate insulation values from the default insulation tables for the added/renovated zones.

Evidence requirements — Year of construction

- For year of construction 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

5.1 Assessors must model and assign a zone type 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).

Zone types

5.2 A zone is defined as a room or group of rooms within a dwelling that have specific properties. Table 4 outlines NatHERS zoning types and definitions.

5.3 Each NatHERS zone type has different inbuilt assumptions and thermostat settings based on:

a. the function of the room and

b. 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.

5.4 A 'NatHERS conditioned zone' is a room that is expected to be occupied throughout the day/night and as such may require artificial heating and/or cooling to maintain appropriate levels of thermal comfort for the occupants. A 'NatHERS unconditioned zone' is a room that is expected to be primarily unoccupied throughout the day/night and as such will not require artificial heating and/or cooling. There are some exceptions for specific room types, see Table 4 for more detailed information. Note that in some existing homes there may be zones that NatHERS considers as 'conditioned' that do not currently have artificial heating and/or cooling appliances installed – these must still be modelled as per the NatHERS determination for the specific zone type.

5.5 There are six types of conditioned zones:

i. kitchen/living
ii. living
iii. daytime
iv. bedroom
v. nighttime
vi. garage – conditioned

5.6 There are two types of unconditioned zones:

i. unconditioned
ii. garage - unconditioned

5.7 Basement carparks and glazed common areas in apartment buildings are not modelled as separate zones (unlike NatHERS new homes assessments). 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

5.8 All dwellings must:

a. contain one main kitchen/living zone

b. contain a minimum of three zones excluding the garage

c. have walls, a floor and a ceiling and/or a roof for each zone.

5.9 Studios, bedsits and open-plan apartments must contain at least three zones (e.g. kitchen/living, bedroom and bathroom zone)

5.10 When there are no obvious features by which to zone a studio, bedsit or open-plan apartment, then it must be modelled as having:

a. a minimum of 30% of the total floor area in the kitchen/living zone

b. a minimum of 20% of the total floor area in the bedroom zone

c. a partition wall (plasterboard stud) between the kitchen/living zone and bedroom zone with a permanent opening in it that is ≤60% of the total wall area

Combining zones

5.11 Workshops, storerooms, water closets (WCs) and laundries may be included in the garage zone if they meet all of the following:

a. are within the garage

b. can only be accessed from the garage and/or by an external door, and

c. do not contain an internal door to the dwelling (other than to the garage).

Bathrooms, WCs and ensuites

5.12 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 either:
   i. is exclusively associated with a bedroom (i.e. no general access); or
   ii. has in-floor heating; either with or without external windows or doors

c. Refer to the parent zone to determine the zone type if it does not have in-floor heating and either:
   i. has no external windows or doors; or
   ii. cannot be closed off from other zones.

   When referring to the parent zone, 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 to the bathroom), model according to the larger of the two parent zones.

Airlocks

5.13 An airlock is a small, relatively airtight space that can be modelled as an unconditioned zone 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

5.14 Some software tools may allow modelling of double height voids (zones that extend across two levels of the dwelling with no floor construction between the entire upper zone and the zone below). If it is allowed by the software, 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.

5.15 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.

Staircases

5.16 Depending on the location and configuration, staircases are either combined into the adjoining zone or modelled as 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

5.17 Small non-habitable spaces, less than or equal to 700 mm 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.

Determining zone type in uninhabited dwellings

5.18 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. A bedroom is defined as a room that meets the following criteria:

a. A private room with a single internal entrance from a hallway or other living space with a closable door, which may or may not also have an external door directly to the outside and may or may not also have access to an ensuite or walk-in robe. The room cannot be a through space to another bedroom or living room.

b. Large enough to fit an adult sized single bed, plus space for a wardrobe (or have a built-in wardrobe), plus circulation space to access the bed, wardrobe and door (minimum size of 2.0 x 2.0m with a built-in wardrobe or 2.0 x 2.7m without a built-in wardrobe).

c. Has a window or skylight.

5.19 Situations may arise in unconventional dwelling designs where more than one zone option is possible. In these instances, Assessors should seek advice from their AASP and document the decision in the Additional Information section in the rating file.

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[1]	Living [2]	Daytime	Bedroom	Nighttime	Unconditioned	Refer to the parent zone to determine zone type[3]	Include in parent zone	Garage – unconditioned	Garage - conditioned
Airlock[4]			●			●				
Bathroom, unventilated[5] – see also ensuite					●		●			
Bathroom, ventilated[5] – see also ensuite					●	●				
Bathroom with in-floor heating ventilated or unventilated[5]					●					
Bedroom				●						
Cellar, conditioned			●							
Cellar, unconditioned						●				
Corridor within dwelling, fully enclosed by doors or open to other zones			●							
Dining room[2]		●	●							
Ensuite, ventilated or unventilated[5] – see also bathroom					●		●			
Family room[2]		●	●							
Garage, conditioned										●
Garage, unconditioned									●	
Gym			●							
Hallway, fully enclosed by doors or open to other zones, not solely associated with a bedroom[6]			●							
Hallway, solely associated with a bedroom that can be closed off from the main dwelling[6]					●					
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[2]		●	●							
Lounge[2]		●	●							
Media[2]		●	●							

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[1]	Living [2]	Daytime	Bedroom	Nighttime	Unconditioned	Refer to the parent zone to determine zone type[3]	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[5]					●		●			
Powder room, ventilated[5]					●	●				
Rumpus[2]		●	●							
Sauna			●							
Staircase[7]			●				●			
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[2]		●	●							
Voids e.g. wall, plumbing, service ducts								●		
Walk-in-robe (WIR)					●					
WC, unventilated[5]					●		●			
WC, ventilated[5]					●	●				

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:

a. the two largest living areas are zoned as "living" and

b. 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 5.13 are met, model as unconditioned, if not, model as daytime.

5. Refer to Bathrooms, WCs and ensuites zoning rules (5.12).

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. 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. Where zoning decisions are made based on features within a room (e.g. a bed or wardrobe), photographic evidence must be provided.

6 Floors

Important Note

States and territories may have specific safety requirements relating to roof or subfloor space access (including requirements that apply while remaining on ladder at attic access hatches).

Assessors are responsible for ensuring they identify and comply with all applicable regulatory requirements in the state or territory in which the assessment is being conducted, and are responsible for acting within the scope of their skills and training when undertaking NatHERS for existing homes assessments.

Floor height above ground

6.1 Assessors must input the average height of the lowest level of the dwelling above the natural ground level. Where the exact measurement cannot be determined, Assessors should apply the appropriate default value indicated in Table 5.

Table 5 – Default lowest level floor heights above ground

Lowest level floor type	Default floor height above ground
Concrete slab or waffle pod slab on ground	300 mm
Suspended floor with subfloor (enclosed, open or very open)	500 mm
Suspended floor above open air (no subfloor)	2000 mm
Apartment in a multi-storey building (when not on ground level)	Calculate the height based on 3 m for the ground floor plus 2.7 m per additional storey e.g. 5th floor apartment would be entered as a floor height of 13.8 m

6.2 Where a dwelling has multiple storeys, the floor height of the additional storeys above the lowest level should be calculated and input accordingly.

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 input 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 6.

Table 6 - 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 metres	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
Suspended floor above a conditioned zone of the same dwelling	Conditioned
Suspended floor above an **un**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 that 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 Assessors are responsible for identifying and complying with all relevant state or territory health and safety requirements relating to subfloor access.

6.9 Where the subfloor is enclosed, assessment of the floor insulation is only required to be undertaken from the sub-floor access hatch.

6.10 If access to the subfloor access hatch is available and it is deemed safe to do so, inspect and estimate the value of floor insulation, if any.

6.11 If under floor insulation is observed but the exact R-value cannot be determined, Assessors should apply the default value of R2.0 for batt type and R1.0 for board type insulation.

6.12 If access to the sub-floor is not available or deemed unsafe, Assessors must apply the default insulation based on the floor type, building class, age and location of the dwelling – see insulation tables in Appendix 1.

6.13 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

6.14 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

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

Evidence requirements — Floors

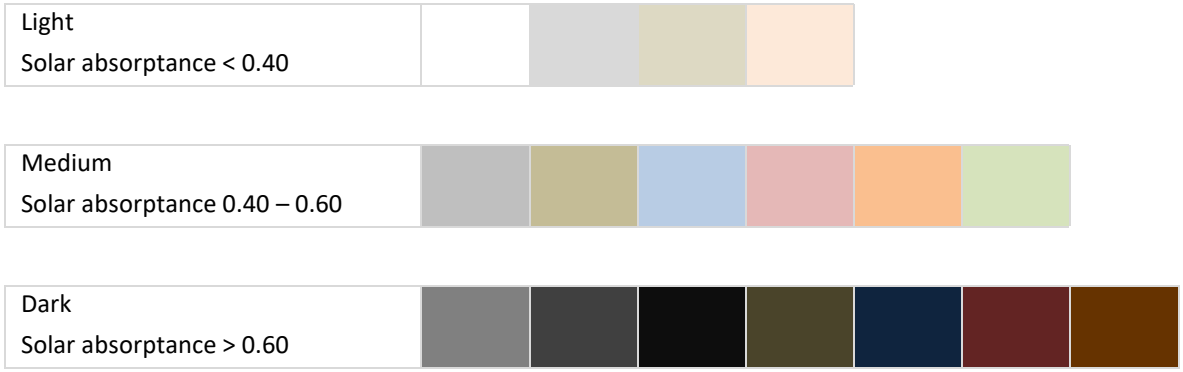
- Photos to identify the floor type (i.e. photos of the building exterior, sub-floor vents, or underfloor spaces).
- If claiming a waffle pod or floor insulation other than the default values based on the floor type, building class, age and location of the dwelling, provide photos showing the insulation or documentation showing the R-value of the insulation or the waffle pod's thickness (such as construction plans, product receipts and evidence of works, or past NatHERS Certificates).
- Photos of the two most predominant floor covering types (those that cover the greatest area) in the dwelling.

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 input the area of each wall in a zone. Some software tools may automatically calculate this measurement.

Wall orientation

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

Wall construction type

7.4 Assessors must input the wall construction type for each wall in a zone. Where a wall has more than one construction type enter the dominant type (the one with the largest area). Where there is no dominant type, input the construction type that is closest to the zone's floor level.

Wall insulation

7.5 Assessors must apply the default insulation based on the wall type, building class, age and location of the dwelling (see insulation tables in Appendix 1), unless there is documentary evidence.

Wall adjacency

7.6 Assessors must input the adjacency for each wall in a zone based on Table 7.

Table 7 – Internal wall adjacencies

Class	Wall adjacent to	Adjacency
Class 1 and Class 2	Another room in the same dwelling	Assign the zone(s) of the adjacent room 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: • an external wall • an entrance door • any horizontal shading • any vertical shading

Evidence requirements — Walls

- Photos of all external wall types, showing their cladding/construction and colour.
- If claiming wall insulation other than the default values based on the wall type, building class, age and location of the dwelling, provide 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.

8 Windows and doors

Doors and permanent openings

8.1 For different types of doors and permanent openings, Assessors must model the below inputs.:

a. External solid doors - size, construction type and insulation where applicable
b. External glazed doors - size, operating type, frame material, glazing type and glazing description. Externally glazed doors must be modelled as follows (see Table 8)
   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
c. Internal doors - size only
d. Permanent openings between internal zones – size only

8.2 Where the software tool does not automatically assign a size for a door or permanent opening, Assessors must either enter the size as measured or apply default values as listed in Table 9.

8.3 Assessors should input garage door insulation when applicable. Where there is evidence the garage door is insulated, but the R-value cannot be determined, Assessors should apply the default value of R1.1.

Table 8 - Modelling glazed and partially glazed doors

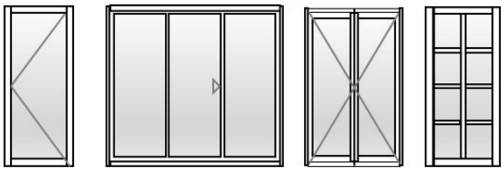
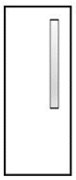
Glazing	Examples	How to model
Fully glazed		Model as a window with openability as per Table 10
Partially glazed (>25% to <75%)		Model as 50% casement window and 50% solid door
Minor (≤25%) or no glazing		Model as a solid door

Table 9 – Default door sizes

Door type	Default size
External access door	820 mm x 2100 mm
Single garage door (to accommodate car entry)	2400 mm x 2100 mm
Double garage door (to accommodate car entry)	4800 mm x 2100 mm
Internal single door or permanent opening	820 mm x 2040 mm
Internal double door or permanent opening	1640 mm x 2040 mm

Windows

8.4 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.

8.5 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, or low-e tint

The software will automatically apply NatHERS default window performance values.

8.6 Obscure glass (e.g. in a bathroom or WC) must be modelled as either:

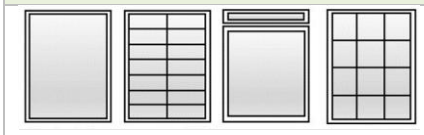
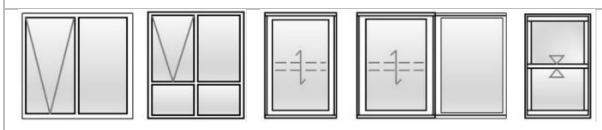
a. clear - if the glass is clear patterned or

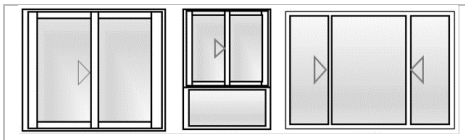
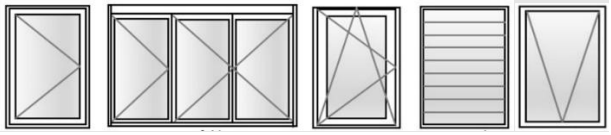
b. tinted – if the glass has a tint or translucent laminate

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

8.8 Where the NatHERS Software tool allows, the simplified openability of windows is to be entered as specified in Table 10 or alternatively a precise openability percentage may be entered.

Table 10 - 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 openable e.g. awning, casement, louvre, tilt 'n' turn

Internal window coverings

8.9 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.

8.10 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 conservative 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 that allow a more accurate rating.

8.11 The window covering types available for selection are:

i. holland blinds (roller)
ii. venetian blinds (includes metal plantation shutters)
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 – see also ii.)
vii. open weave curtains
viii. close weave curtains
ix. heavy drapes (multiple layers separated by air and low through airflow lining)

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

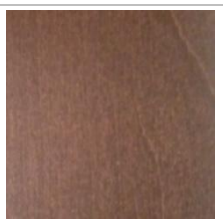
8.13 The 4 window covering characteristics, for use under Method 2, are:

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

Outside appearance of window coverings (colour)

8.14 When modelling windows using Method 2, Assessors must model the outward facing surface of the window covering, in accordance with Table 11.

Table 11 - 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.
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

8.15 Assessors using Method 2 must estimate the amount of light passing through the window covering when it is fully closed in accordance with Table 12. When making this classification:

a. do not consider light entering around the edges of the window covering, and

b. include all layers of the window covering together.

Table 12 - 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.

Classification	Example	Description when the covering is fully closed
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.

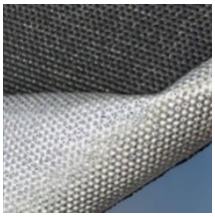
Insulative value of window covering

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

a. More insulating – must have either:
   i. bright metallic outside appearance
   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 8.16a above.

Table 13 - Examples of features found in 'More Insulating' window coverings

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

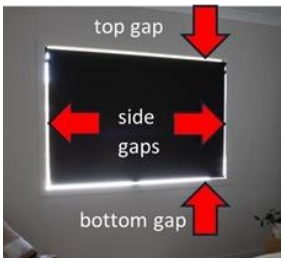
Window covering fit

8.17 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. the airflow that can pass through the window covering itself

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



8.18 Window covering fit should be determined using Table 14.

8.19 If there are multiple window coverings, only assess the one that gives the best classification in this category (smallest gaps and/or lowest through-airflow). If it is not clear which covering would give the higher classification, assess the covering closest to the window.

Table 14 – 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 ≥ 20 mm) Curtain with pelmet: no top surface (top gap ≥ 20 mm)
	≥ 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

8.20 Assessors must input all external window coverings when present. Where the exact shade factor cannot be determined Assessors should apply the default value of 70%.

Skylights and roof windows

8.21 In NatHERS for existing homes assessments, skylights and roof windows are defined differently based on the ceiling/roof type they are built into.

i. Skylights – model in zones with an attic roof space adjacent to the ceiling of the zone. Skylights typically have either plasterboard shaft walls or a reflective tube that funnels the light from the roof into the zone below
ii. Roof windows – model in zones with a flat or raked roof. Roof windows do not have a shaft or tube and are installed directly in the ceiling/roof construction of the zone

8.22 Assessors must input all skylights in each zone, including the area, type, openability, orientation and internal coverings if present. Where exact details cannot be determined for a specific input, Assessors should select the appropriate default value as per Table 15.

8.23 Assessors must input all roof windows in each zone, including the area, type, orientation, pitch and internal coverings if present. Where exact details cannot be determined for a specific input, Assessors should select the appropriate default value as per Table 15.

Table 15 - Skylight and roof window default values

Type	Input	Default values to apply
Skylight – standard	Azimuth	No default available, must be as per site details
	Pitch (slope)	No default available, must be as per site details
	Construction	Single glazed clear
	Outdoor shading	None
	Openability	0%
	Area	Standard size - 0.5 m^2 (select this option when both length and width are ≤1000 mm)
		Large size - 1.2 m^2 (select this option when either length or width are >1000 mm but both length and width are ≤1200 mm)
		Very large size – no default available, must be measured as per site details (select this option when either length or width are >1200 mm)
	Shaft length	1000 mm
	Shaft reflectance	0.75
	Shaft insulation (R-value)	0
Skylight - tubular	Azimuth	0
	Pitch (slope)	No default available, must be as per site details
	Construction	Single glazed clear

Type	Input	Default values to apply
	Outdoor shading	None
	Area	0.09 m2
	Shaft length	1000 mm
	Shaft reflectance	0.9
	Shaft insulation (R-value)	0
Roof window	Azimuth	No default available, must be as per site details
	Pitch (slope)	No default available, must be as per site details
	Construction	Single glazed clear
	Outdoor shading	None
	Indoor shading	None
	Openability	0%
	Area	Standard size - 0.5 m2 (select this option when both length and width are ≤1000 mm)
		Large size - 1.2 m2 (select this option when either length or width are >1000 mm but both length and width are ≤1200 mm)
		Very large size – no default available, must be measured as per site details (select this option when either length or width are >1200 mm)

Evidence requirements — Windows and doors

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

9 Ceilings and roofs

Important Note

States and territories may have specific safety requirements relating to roof or subfloor space access (including requirements that apply while remaining on ladder at attic access hatches).

Assessors are responsible for identifying and complying with all applicable regulatory requirements in the state or territory in which the assessment is being conducted, and for acting within the scope of their skills and training when undertaking NatHERS for existing homes assessments.

Roof colour

9.1 Assessors must estimate the roof colour as either light, medium or dark as per the colour estimation chart in 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 adjacency

9.5 Assessors must assign the appropriate ceiling/roof adjacency as per Table 16.

Table 16 - 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

9.6 Assessors must select the roof space ventilation category as per Table 17.

Table 17 - 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
	• Wind-driven roof space ventilator (whirly bird), or • ridge caps, or • eave vents, or • tiled roof without sarking	Natural
	Eave vents and powered roof space ventilator	Mechanical

Ceiling /roof insulation R-value

9.7 Assessors are responsible for identifying and complying with any relevant state or territory health and safety requirements relating to roof space access.

9.8 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.

9.9 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. Assessing the insulation in an attic roof space is only required to be undertaken from the attic access hatch whilst remaining on the ladder.

9.10 If there is no roof cavity (e.g. raked/flat) or access to the attic roof space is not available or deemed unsafe, and no documentary evidence is available, Assessors must apply the default insulation based on the building class, age and location of the dwelling (see insulation tables in Appendix 1)

Ceiling insulation coverage

9.11 Assessors must input the appropriate category of ceiling insulation loss (e.g. gaps between insulation products due to poor installation or removal) as per the categories in Table 18. This estimate must exclude clearances around exhaust fans and other ceiling penetrations. If insulation is not observable, Assessors must select the default value of 'moderate gaps'.

Table 18 - Categories of insulation loss

Category	Description
No gaps	0% missing
Minor	0% to < 2% missing
Moderate (default)	2% to < 4% missing
Significant	4% to < 8% missing
Very significant	≥ 8% missing

9.12 Assessors must also model insulation clearances around the ceiling penetrations listed in Table 19. Note that heating and cooling appliance duct outlets are not modelled as ceiling penetrations.

Table 19 – Default ceiling penetration sizing and insulation clearances

Type of ceiling penetration	Penetration size + insulation clearance
ceiling exhaust fan/rangehood/fan light heater	250 mm diameter + 50 mm clearance
ceiling vent/ceiling rose	250 mm diameter + 50 mm clearance
chimney/fireplace	500 mm x 350mm + 50 mm clearance
unsealed recessed downlight	90 mm diameter + 50 mm clearance

Ceiling fans

9.13 Assessors must input all ceiling fans when present. Where an exact diameter cannot be determined, Assessors should apply the default value of 1200 mm.

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).
- Photo of each ceiling fan.

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.

Horizontal shading

10.3 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. Figure 3 outlines the required measurements.

10.4 Where there are multiple horizontal shade features, Assessors are only required to model the single shade feature which the assessor determines to have the greatest influence on the walls and/or windows they are shading.

10.5 Assessors may ignore horizontal shading features if the depth of the overhang is less than the vertical offset (e.g. the shading impact of a 2nd-storey eave on a 1st-storey wall).

10.6 Where exact measurements of horizontal shading features cannot be determined, Assessors should select default values from the simplified categories in Table 20.

Figure 3 – Horizontal shading measurements

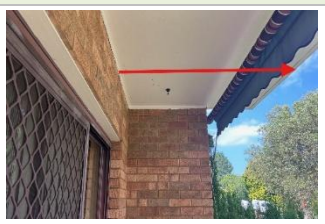
Measurement description	Example image
Projection of shade feature (overhang width) – measured from the face of the shaded external wall/window to the outer edge of the shading feature	
Vertical offset – measured from the top of the shaded wall to the underside of the shading feature (may be negative)	
Length – measured parallel to the shaded wall	
Horizontal offset - measured from the right end of the shading feature to the right end of the shaded wall (when looking out from inside the dwelling)	

Table 20 - Horizontal shading simplified method

Measurement	Simplification method
Projection of shade feature (overhang width)	Estimate and select appropriate category (300 mm increments)
Vertical offset	Estimate and select appropriate category
Length of the overhang	No input required Assumed to be equal to: the width of the wall plus 2 x the depth of the shading feature
Horizontal offset	No input required Assumed to be the same as the depth of the shading feature

Vertical shading

10.7 Assessors must model vertical shading features (obstructions parallel to dwelling) that shade the dwelling including neighbouring buildings, fences, opposite walls of the same dwelling (e.g. courtyards) etc. Figure 4 outlines the required measurements.

10.8 Where there are multiple vertical shade features, Assessors are only required to model the single shade feature which is considered to have the greatest influence on the walls and/or windows they are shading.

10.9 Assessors may ignore vertical shading features:

i. which are not directly opposite the centre of the shaded walls or windows (i.e. a line drawn perpendicular to the wall/windows, emerging from the wall's centre, would not pass through the shading feature)
ii. where there is no window in the external wall shaded by the feature in a particular zone
iii. 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°45' to 191°15'), except where the dwelling is located north of the Tropic of Capricorn where they must be modelled
iv. where the feature is a fence more than 6m away
v. where the feature is a single storey neighbour more than 10 m away and
vi. where the feature is a double storey or more neighbour more than 20 m away.

10.10 Where exact measurements of vertical shading features cannot be determined, Assessors should select default values from the simplified categories as indicated in Table 21.

Figure 4 - Vertical shading measurements

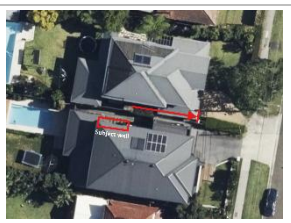
Measurement description	Example image
Height of shade feature – measured from the base height of the subject wall i.e. the wall the shade feature is being applied to	 Ground floor subject wall
Height of shade feature – measured from the base height of the subject wall i.e. the wall the shade feature is being applied to	 1st floor subject wall
Distance – as measured perpendicular from the middle of the subject wall to the shading feature	
Width of shade feature, measured parallel to the subject wall	
Horizontal offset – measured from the right end of the shading feature to the right end of the subject wall (‘right’ is from the perspective of someone when looking out from inside the dwelling)	

Table 21 – Vertical shading simplified method

Measurement	Simplified input
Height	Select appropriate height category in the software i.e. fence, single storey, 2 storey, 3 storey, 4-6 storeys, 7+ storeys. This height should be relative to the base height of the subject wall.
Distance	Select the appropriate distance category in the software i.e. <1 m, 1-2.5 m, 2.5-5 m, 5-10 m, 10 m+. This is from the subject wall.
Width of shade feature	No input required. Calculation of width is determined automatically by the software, based on the selected horizontal offset category, with the following values applied: Shade feature predominantly to the right: assumed width = wall width + 5 m Shade feature predominantly to the left: assumed width = wall width + 5 m Shade feature approximately centred: width = wall width + 10 m
Horizontal offset	Select as appropriate: • Shade feature is predominantly to the right • Shade feature is approximately centred • Shade feature is predominantly to the left.

10.11 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.

Evidence requirements — Shading

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

11 Airtightness

11.1 There are two options to measure air leakage in a NatHERS for existing homes assessment:

i. values from blower door test assessment documentation
ii. 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 m3/hr.m2 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 documentation from a blower door test is not available, Assessors must model all air leakage points as per Table 22 when present. Refer to Table 19 for default sizing to apply for ceiling penetrations.

Table 22 - Modelling air leakage

Air leakage points	Classification/Input	Description
Unsealed recessed downlights	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
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. Select this option where other non-permanent sealing devices are installed e.g. tight-fitting foam or board insert
	Without damper (default)	No damper/sealing mechanism
Ceiling vents/ceiling rose	Present/absent	Unsealed vents only. Ignore sealed vents. Vented ceiling roses should be modelled as an unsealed ceiling vent.
Wall vents	Present/absent	Unsealed vents only. Ignore sealed vents. (Default wall vent size 245 mm x 145 mm)

Air leakage points	Classification/Input	Description
Floorboard gaps	Present/absent	Floorboard gaps are considered present when there is a gap > 2 mm 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 > 2 mm 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 2 cm^2.
Fixed open louvre windows and permanently open holes	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, produced by a qualified and certified technician registered with the Airtightness Testing and Measurement Association Australia.
- 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 ceiling vents
    - an example of wall vents
    - an example of a ceiling rose
    - an example of each modelled level of air leakage around unsealed recessed downlights (minimal, moderate, large), and an example of any sealed recessed downlights
    - 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 2 cm^2
    - 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.

12 Heating and cooling systems

Important Note

States and territories may have specific safety requirements relating to roof or subfloor space access, that may impact data collection for some appliances in some homes.

Assessors are responsible for ensuring that they identify and comply with all applicable regulatory requirements in the state or territory in which the assessment is being conducted, and are responsible for acting within the scope of their skills and training when undertaking NatHERS for existing homes assessments.

12.1 Assessors must model the fixed heating and cooling appliance types found in each NatHERS conditioned zone.

12.2 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.

12.3 If no heating/cooling appliance is present in a particular zone:

a. If there is a permanent opening to an adjoining zone, the Assessor must model the same heating/cooling device as in the adjoining zone.

b. If there is not a permanent opening to an adjoining zone or there is no heating/cooling device in that adjoining zone, the assessor must select the default option in the software.

12.4 Where more than one cooling appliance is present in a zone, Assessors must model the cooling appliance with the highest energy consumption.

12.5 Where more than one heating appliance is present in a zone, Assessors must model the heating appliance with the highest energy consumption, with the following exceptions:

i. where a wood heater (either open fireplace or slow combustion) is one of the heating appliances, Assessors must model the appliance with the highest energy consumption other than the wood heater

ii. where an open fireplace and a slow combustion wood heater are the only heaters in a zone, Assessors must model the slow combustion wood heater as the appliance in the zone

iii. where an artificial fireplace is one of the heating appliances, Assessors must model the appliance with the highest energy consumption other than the artificial fireplace

12.6 Cast iron grate fireplaces (found in many older-style homes) that were originally used to burn wood or coal should not be entered as a heating appliance. However, they must still be entered in terms of air leakage as a chimney either with or without a damper.

12.7 In the case of a ducted system, Assessors must define all zones it services and enter the age of the ductwork as the same age as the heating and/or cooling system (to a maximum of 30 years).

12.8 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.

12.9 For gas fuelled appliances, Assessors must enter the type of gas i.e. natural or LPG.

12.10 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 23.

Table 23 – Proxy systems for centralised heating and/or cooling in apartments

Site details	Model as
Unknown centralised system capable of heating and cooling or cooling only; or Known to be a ducted air conditioner	Ducted air conditioner ≥19 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

12.11 Where access is available and it is deemed safe to do so, Assessors should obtain product information from the heating/cooling appliance for use in determining appliance efficiency.

12.12 Assessors should utilise the following data sources to ascertain efficiency values. The data sources are listed in order of preference (a lower data source must not be used if a higher source is available and safe to access):

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

12.13 For some appliances the efficiency value is fixed in the software. Assessors do not need to obtain efficiency information for these listed appliances:

i. electric resistance panel heater
ii. electric resistance heat bank
iii. electric resistance floor slab heater
iv. electric resistance ducted heater
v. heat pump hydronic floor slab heater
vi. heat pump hydronic panel heater
vii. gas hydronic floor slab heater
viii. gas hydronic panel heater
ix. 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 inputs for the modelled system as per this Technical Note (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 where permitted by this Technical Note.

13 Hot water systems

13.1 For a modelled hot water system, Assessors must enter the following inputs:

i. hot water system type
ii. size (if applicable)
iii. year of manufacture (if applicable)
iv. type of gas (if applicable) and
v. efficiency.

13.2 If there is more than one system, Assessors must input the water heater with the highest energy consumption.

13.3 If there is no hot water system or the dwelling is in a Class 2 apartment building with a centralised hot water system, Assessors must model the appropriate default/proxy system as per Table 24.

Table 24 – 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, with the following details: • Natural gas (unless known to be LPG) • Input efficiency based on either the age of the system (if obtainable) or the age of the building - Prior to 2013 - enter as 2-star - 2013 or later – enter as 4-star
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, selecting the below efficiency category based on either the age of the system (if obtainable) or the age of the building - Prior to 1999 - 1999 or later
It is a centralised system that is known to be instantaneous gas	Instantaneous gas, with the following details: • Natural gas (unless known to be LPG) • Input efficiency based on either the age of the system (if obtainable) or the age of the building - Prior to 2013 - enter as 2-star - 2013 or later – enter as 4-star
It is a centralised system that is known to be heat pump	Heat pump, with the following details: • Apply default STCs based on a system size of medium
It is a centralised system that is known to be solar with gas boost	Solar large – gas boost, with the following details: • Natural gas (unless known to be LPG) • Apply default STCs based on system size as per Table 26
It is a centralised system that is known to be solar with electric boost	Solar large – electric boost, with the following details: • Apply default STCs based on system size as per Table 26

Hot water system appliance efficiency

13.4 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.

13.5 Assessors should utilise the following data sources to obtain efficiency information for hot water systems. The data sources are listed in order of preference (a lower data source must not be used if a higher source is available and safe to access):

i. energy rating label on the product (e.g. AGA)
ii. product lookup (brand and model) in official registries and industry directories
iii. performance data shown on compliance plate or other literature (e.g. user manual)
iv. age of the appliance shown on compliance plate or other literature (e.g. purchase receipt)
v. age of the dwelling or part thereof where the appliance is installed or
vi. when none of the above are available, select the appropriate default value.

Gas hot water systems

13.6 Gas hot water system star ratings should be rounded to the nearest half star (e.g. if 3.1 stars round down to 3-stars and if 3.3 stars round up to 3.5 stars).

13.7 Where the efficiency of a gas hot water system cannot be determined, Assessors should apply the default values in Table 25. Select the age based on the age of the system (date of manufacture or installation if obtainable), or the age of the building if the age of the system is not known.

Table 25 - Default efficiency values for gas hot water systems

Age	Default efficiency value
Before 2013	2.0 Stars
2013 or later	4.0 Stars

Heat pump and solar hot water systems

13.8 Small Technology Certificates (STCs) are used as a measure of efficiency in NatHERS for existing homes assessments for heat pumps and solar hot water systems.

13.9 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

13.10 Assessors must obtain the brand and model number of the system, if possible, and look up the relevant register to find STCs that apply for the model in the relevant zone. Note there are four zones in Australia for solar and five zones for heat pump models.

13.11 If Assessors cannot identify the model number:

a. For solar hot water heaters, Assessors must enter the default number of STCs as calculated in the software based on system size as per Table 26.

b. For heat pump hot water heaters, Assessors must enter the default number of STCs as calculated in the software based on a default size of medium (250 L).

Table 26 - Default solar hot water system size

Type/description	Number	Model as
Flat plate collector	1 (default to apply if number unknown)	Small or collector area 2 m^2
	2	Medium or collector area 4 m^2
	3	Large or collector area 6 m^2
Evacuated tube	< 25 (default to apply if number unknown)	Small or tube number 24
	26 – 37	Medium or tube number 31
	≥ 38	Large or tube number 38

Solar photovoltaic diverter (PV diverter) hot water systems

13.12 Assessors must only model a solar PV diverter hot water system if it is one of the 3 types indicated in Table 27, else Assessors must model the system as electric storage.

13.13 If information on type of system is not available or cannot be established by the Assessor, then the solar PV diverter must be ignored.

13.14 'Home-made' or products not commercially available (either currently or previously) must be ignored.

13.15 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 27 - 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 as per this Technical Note (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 where permitted by this Technical Note.

14 Plug loads and cooking loads

14.1 Assessors are not required to enter any information about plug-loads. The software estimates the energy used by plug-in appliances based on floor area and assumed number of occupants.

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

14.3 If gas fuelled, Assessors must enter the type of gas i.e. natural gas or LPG.

15 Lighting

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

15.2 All other lighting is accounted for under the wattage per square metre input, which assumes a default value of 5 W/m2.

Evidence requirements — Lighting

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

16 Pools and spas

16.1 A pool (for the purposes of a NatHERS for existing homes assessment) is a permanent water-retaining structure designed for human use, which 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 bathtubs with jets) are currently modelled as pools.

16.2 If the pool enclosure area can be accessed and it is deemed safe to do, Assessors must input:

a. pool area

b. pump type – if unknown, select the default value of single speed

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).

17 On-site renewable energy generation

17.1 Only solar photovoltaic (PV) renewable energy generation systems are included in existing homes calculations.

17.2 Assessors must enter:

i. system/array capacity (size in kW)
ii. array orientation (azimuth)
iii. tilt of the array
iv. inverter kW capacity
v. export limit, and
vi. age of the system

17.3 Where PV arrays are located on multiple orientations, each array must be entered separately. If entered separately, the capacity of individual arrays should be calculated based on their proportion of the total PV system e.g. Array 1 has 16 panels out of a total of 27 panels in an 8 kW system so Array 1 is entered as 4.8 kW.

17.4 NatHERS currently cannot include 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.

17.5 Assessors should utilise the following data sources to obtain performance information when entering solar PV systems into the tool. The data sources are listed in order of preference (a lower data source must not be used if a higher source is available and safe to access): (in order of most to least reliable):

i. documentation, e.g. system specifications or installation documentation
ii. connection agreement, or local distribution network service provider (DNSP)
iii. PV app
iv. building plans.

17.6 Where the exact system capacity, orientation, tilt, inverter capacity or export limit cannot be determined from the above data sources, Assessors must estimate these values as per below.

Estimate system capacity

17.1 If the capacity of the PV system is not known, it must be estimated using one of the approved methods described below. Where the capacity cannot be estimated using one of the approved methods, it must not be included in the rating.

17.2 Method 1 - PV system inverter capacity method

i. where the inverter capacity (in kW) 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 kW.
ii. 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)
iii. this method is not suitable where micro inverters are used.

17.3 Method 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 this

and the year of installation into the software which will automatically calculate system capacity.

17.4 Method 3 - Default method – year of installation or number of panels. If the preceding methods are not possible, select the greater value of either:

i. the values as per Table 28 based on the year of installation, or
ii. number of panels (if observable) x 0.18 kW.

Table 28 - Default PV system capacity by year of installation

Year of installation	System capacity (kW)
Unknown	1.3
2001 or earlier	1.3
2002	1.4
2003	1.5
2004	1.6
2005	1.6
2006	1.7
2007	1.7
2008	1.8
2009	2.0
2010	2.1
2011	2.3
2012	2.5
2013	2.8
2014	3.0
2015	3.3
2016	3.6
2017	4.0
2018	4.3
2019	4.6
2020	4.8
2021 or later	5.0

Estimate array orientation

17.5 Assessors can use the following data sources to estimate the orientation of an array:

i. compass reading taken onsite
ii. reference to satellite imagery
iii. reference to the Land Information System of the local jurisdiction

17.6 Where exact array orientation cannot be determined from the above data sources, Assessors should select from the options in the software to estimate the orientation (azimuth) of the array - see Table 29.

Table 29 – Estimating orientation of PV arrays

Orientation range	Orientation to apply
337.5° to < 22.5°	N
22.5° to < 67.5°	NE
67.5° to < 112.5°	E
112.5° to < 157.5°	SE
157.5° to < 202.5°	S
202.5° to < 247.5°	SW
247.5° to < 292.5°	W
292.5° to < 337.5°	NW

Estimate array tilt

17.7 The tilt angle of an array may be estimated using the three categories in Table 30. If the tilt cannot be determined, select the default value of 'moderate'.

Table 30 - Estimating the tilt of a PV array

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

Estimate inverter capacity

17.8 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).

Estimate PV export limit

17.9 Where the PV export limit cannot be determined, select the appropriate value for the type of supply as per Table 31.

17.10 Assessors can use the following methods to determine the type of supply:

i. installation invoice showing system specifications
ii. documentation (e.g. from energy supplier) indicating type of supply
iii. counting the number of fuses/breakers in the dwelling's electrical meter box (if access is available and it is deemed safe to inspect) - one fuse/breaker indicates single-phase, three fuses/breakers indicate three-phase
iv. if the dwelling is at the end of a single wire earth return (SWER) line (more likely in rural areas)

17.11 If the type of supply cannot be determined, select the default value of single phase and then enter the corresponding default export limit of 3 kW.

Table 31 - Default PV export limit values

Type of supply	Default export limit
Single-phase (default)	3 kW
Three-phase	9 kW
Multi-phase	3 kW per phase
Single wire earth return	0 kW

Estimate PV system age

17.12 The PV system age is used to calculate the PV output degradation factor.

17.13 Where the PV system age cannot be determined, assessors should select from the appropriate age categories listed based on the year of construction of the dwelling (or in the case of a renovated dwelling, the year of construction of the part of the dwelling where the PV system is located)

i. ≤ 12 months old
ii. > 12 months old but < 10 years old
iii. ≥ 10 years old but < 20 years old
iv. ≥ 20 years

17.14 If the year of construction of the dwelling is unknown, select a default value of ≥ 20 years.

Evidence requirements — On-site renewable energy generation

- System/array capacity (kW) 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 year of installation 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

- Export limit may be evidenced with:
  - installation invoice showing system specifications
  - documentation e.g. from energy supplier
  - a photo of the meter box showing number of fuses/breakers
  - no evidence required if default is selected

- Age of the system may be evidenced with:
  - installation invoice showing system specifications
  - documentation showing the year of construction of the dwelling (e.g. house plans, local government plans or register of title documents)
  - no evidence required if default is selected

18 On-site energy storage

18.1 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.

18.2 Where information on the battery capacity is unavailable, select the default value of 2 kWh.

18.3 Where battery chemistry cannot be determined, select the default value of lithium ion.

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.

19 Finishing the assessment

19.1 Before producing a 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 user agreement is completed

19.2 After producing a 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.

19.3 For Class 2 dwellings (sole occupancy units), each unit must have an individual Home Energy Rating Certificate.

Appendix 1 – Default insulation tables

Table 32 - Class 1 default insulation R-values

State	NCC climate zone	Year of construction	Roof / Ceiling	External wall	Suspended floor[1]
ACT	7	Pre 1993	1.0	None	None
		1993 - 2005	3.0	1.5	1.0
		2006 - 2009	3.5	2.0	1.5
		2010 – 2019	4.0	2.5	2.5
		2020-present	4.5	2.5	2.5
NSW	2	Pre 2005	None	None	None
		2005	2.0	1.0	1.0
		2006-2010	2.5	1.5	1.0
		2011-present	4.0	2.5	1.0
NSW	4	Pre 2005	None	None	None
		2005	2.5	1.5	1.0
		2006-2010	3.0	2.0	1.0
		2011-present	4.0	2.5	2.0
NSW	5	Pre 2005	1.0	None	None
		2005	2.5	1.0	1.0
		2006-2010	3.0	1.5	1.0
		2011-present	4.0	2.5	1.0
NSW	6	Pre 2005	1.0	None	None
		2005	3.0	1.5	1.0
		2006-2010	3.0	2.0	1.0
		2011-2019	4.0	2.5	2.0
		2020 present	4.5	2.5	2.0
NSW	7	Pre 2005	1.0	None	None
		2005	3.0	1.5	1.0
		2006-2010	3.5	2.0	1.5
		2011-2019	4.0	2.5	2.0
		2020-present	4.5	2.5	2.0
NSW	8	Pre 2005	1.0	None	None
		2005	3.5	2.5	2.0
		2006-2010	4.0	3.0	2.0
		2011-present	6.0	3.5	3.0
QLD	1	Pre 2003	None	None	None
		2003-2008	2.0	1.0	1.0
		2009	2.5	1.5	1.0
		2010-present	3.0	2.5	1.5

[1] See Table 33 for concrete slab/waffle pod on ground floors

State	NCC climate zone	Year of construction	Roof / Ceiling	External wall	Suspended floor[1]
QLD	2	Pre 2003	None	None	None
		2003-2008	2.0	1.0	1.0
		2009	2.5	1.5	1.0
		2010-present	4.0	2.5	1.0
QLD	3	Pre 2003	None	None	None
		2003-2008	2.0	1.0	1.0
		2009	2.5	1.5	1.0
		2010-present	4.0	2.5	1.5
QLD	5	Pre 2003	1.0	None	None
		2003-2008	2.5	1.0	1.0
		2009	3.0	1.5	1.0
		2010-present	4.0	2.5	1.0
SA	4	Pre 2003	None	None	None
		2003-2005	2.5	1.5	1.0
		2006-2009	3.0	1.5	1.0
		2010-present	4.0	2.5	2.0
SA	5	Pre 2003	1.0	None	None
		2003-2005	2.5	1.0	1.0
		2006-2009	3.0	1.5	1.0
		2010-present	4.0	2.5	1.0
SA	6	Pre 2003	1.0	None	None
		2003-2005	2.5	1.5	1.0
		2006-2009	3.0	1.5	1.0
		2010-2019	4.0	2.5	2.0
		2020-present	4.5	2.5	2.0
TAS	7	Pre 2003	1.0	None	None
		2003-2009	3.5	1.5	1.0
		2010-2013	4.0	2.0	1.5
		2014-2019	4.0	2.5	2.5
		2020-present	4.5	2.5	2.5
TAS	8	Pre 2003	1.0	None	None
		2003-2009	3.5	2.5	2.0
		2010-2013	4.0	3.0	2.0
		2014-present	6.0	3.5	3.0
VIC	4	Pre 1991	None	None	None
		1991- 2005	2.0	1.0	None
		2006-2010	3.0	1.5	1.0
		2011-present	4.0	2.5	2.0
VIC	6	Pre 1991	1.0	None	None
		1991- 2005	2.0	1.0	None
		2006-2010	3.0	1.5	1.0
		2011-2019	4.0	2.5	2.0
		2020-present	4.5	2.5	2.0

State	NCC climate zone	Year of construction	Roof / Ceiling	External wall	Suspended floor[1]
VIC	7	Pre 1991	1.0	None	None
		1991-2005	2.0	1.0	1.0
		2006-2010	4.0	2.0	1.5
		2011- 2019	4.0	2.5	2.5
		2020–present	4.5	2.5	2.5
VIC	8	Pre 1991	1.0	None	None
		1991- 2005	2.0	1.0	1.0
		2006-2010	3.5	2.5	2.0
		2011- 2019	4.0	3.0	2.0
		2020-present	6.0	3.5	3.0
WA	1	Pre 2003	None	None	None
		2003-2005	2.0	1.0	1.0
		2006-2010	2.0	1.5	1.0
		2011-present	3.0	2.5	1.5
WA	3	Pre 2003	None	None	None
		2003-2005	2.0	1.0	1.0
		2006-2010	2.5	1.5	1.0
		2011-present	4.0	2.5	1.5
WA	4	Pre 2003	None	None	None
		2003-2005	2.5	1.5	1.0
		2006-2010	3.0	2.0	1.0
		2011-present	4.0	2.5	2.0
WA	5	Pre 2003	1.0	None	None
		2003-2005	2.5	1.0	1.0
		2006-2010	3.0	1.5	1.0
		2011-present	4.0	2.5	1.0
WA	6	Pre 2003	1.0	None	None
		2003-2005	2.5	1.5	1.0
		2006-2010	3.0	2.0	1.0
		2011-2019	4.0	2.5	2.0
		2020-present	4.5	2.5	2.0
NT	1	Pre 2003	None	None	None
		2003-2005	2.0	1.0	1.0
		2006-2009	2.5	1.5	1.0
		2010-present	2.5	1.5	1.0
NT	3	Pre 2003	None	None	None
		2003-2005	2.0	1.0	1.0
		2006-2009	2.0	1.0	1.0
		2010-present	2.5	1.5	1.0

Table 33 - Class 1 default insulation R-values - concrete slab/waffle pod

Type	Insulation	Slab thickness	R-value
Waffle pod	175 mm waffle (Default)	85 mm (default)	0.56
Concrete slab on ground	None (Default)	100 mm (default)	0.0

Table 34 - Class 2 default insulation R-values (only applied where the adjacency is not neighbour)

State	NCC climate zone	Year of construction	Roof / Ceiling	External Wall				Floor				
				Framed	Masonry	Masonry w/ furring channel	Concrete w/ furring channel	CSOG	Susp. over unenclosed[2] subfloor with carpet	Susp. over unenclosed subfloor without carpet	Susp. over enclosed[3] subfloor with carpet	Susp. over enclosed subfloor without carpet
ACT	7	Pre 1998	1.0	0	0	0	0	0	0	0	0	0
		1998 - 2005	2.0	1.5	1.5	1.5	1.5	0	0	0	0	0
		2006 - 2010	3.5	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0
		2011 – 2023	3.5	2.5	2.5	1.0	1.0	0	1.0	1.5	1.0	1.5
		2024-present	2.5	2.0	2.0	2.0	2.0	0.64	2.0	2.0	2.0	2.0
	8	Pre 1998	1.0	0	0	0	0	0	0	0	0	0
		1998 - 2005	2.0	1.5	1.5	1.5	1.5	0	0	0	0	0
		2006 - 2010	4.0	2.5	1.0	1.0	1.0	0	1.5	2.0	0	0
		2011 – 2023	4.5	3.5	3.5	3.5	3.5	1.0	1.5	2.0	1.0	1.5
		2024-present	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
NSW	2	Pre 2005	0	0	0	0	0	0	0	0	0	0
		2005-2010	2.0	0	0	0	0	0	0	0	0	0
		2011-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0.5	1.0
		2024-present	4.0	1.5	1.5	1.5	1.5	0	2.0	2.0	0.5	0.5
NSW	4	Pre 2005	0	0	0	0	0	0	0	0	0	0
		2005-2010	2.5	1.5	0	0	0	0	0	0	0	0

[2] Unenclosed subfloor includes the NatHERS floor adjacency categories: Subfloor open, Subfloor very open and Outdoor Air.
[3] Enclosed subfloor refers to the NatHERS floor adjacency category: Subfloor enclosed

State	NCC climate zone	Year of construction	Roof / Ceiling	External Wall				Floor				
				Framed	Masonry	Masonry w/ furring channel	Concrete w/ furring channel	CSOG	Susp. over unenclosed[2] subfloor with carpet	Susp. over unenclosed subfloor without carpet	Susp. over enclosed[3] subfloor with carpet	Susp. over enclosed subfloor without carpet
		2011-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2024-present	2.5	2.0	2.0	2.0	2.0	0	1.5	1.5	1.0	1.0
NSW	5	Pre 2005	1.0	0	0	0	0	0	0	0	0	0
		2005-2010	2.5	1.0	0	0	0	0	0	0	0	0
		2011-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2024-present	4.0	1.5	1.5	1.5	1.5	0	2.0	2.0	1.0	1.0
NSW	6	Pre 2005	1.0	0	0	0	0	0	0	0	0	0
		2005-2010	3.0	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0
		2011-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0.5	0.5
		2024-present	3.5	1.5	1.5	1.5	1.5	0.64	2.0	2.0	1.5	1.5
NSW	7	Pre 2005	1.0	0	0	0	0	0	0	0	0	0
		2005-2010	3.5	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0
		2011-2023	3.5	2.5	2.5	1.0	1.0	0	1.0	1.5	1.0	1.5
		2024-present	2.5	2.0	2.0	2.0	2.0	0.64	2.0	2.0	2.0	2.0
NSW	8	Pre 2005	1.0	0	0	0	0	0	0	0	0	0
		2005-2010	4.0	2.5	1.0	1.0	1.0	0	1.5	2.0	0	0
		2011-2023	4.5	3.5	3.5	3.5	3.5	1.0	1.5	2.0	1.0	1.5
		2024-present	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
QLD	1	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2024	2.0	0	0	0	0	0	0	0	0	0
		2025 onward	3.0	1.5	1.5	1.5	1.5	0	0	0	0	0
QLD	2	Pre 2006	0	0	0	0	0	0	0	0	0	0

State	NCC climate zone	Year of construction	Roof / Ceiling	External Wall				Floor				
				Framed	Masonry	Masonry w/ furring channel	Concrete w/ furring channel	CSOG	Susp. over unenclosed[2] subfloor with carpet	Susp. over unenclosed subfloor without carpet	Susp. over enclosed[3] subfloor with carpet	Susp. over enclosed subfloor without carpet
		2006-2024	2.0	0	0	0	0	0	0	0	0	0
		2025 onward	4.0	1.5	1.5	1.5	1.5	0	2.0	2.0	0.5	0.5
QLD	3	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2024	2.0	0	0	0	0	0	0	0	0	0
		2025 onward	4.5	1.5	1.5	1.5	1.5	0	1.5	1.5	0	0
QLD	5	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2024	2.5	1.0	0	0	0	0	0	0	0	0
		2025 onward	4.0	1.5	1.5	1.5	1.5	0	2.0	2.0	1.0	1.0
SA	4	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2010	2.5	1.5	0	0	0	0	0	0	0	0
		2011-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2024-present	2.5	2.0	2.0	2.0	2.0	0	1.5	1.5	1.0	1.0
SA	5	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2010	2.5	1.0	0	0	0	0	0	0	0	0
		2011-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2024-present	4.0	1.5	1.5	1.5	1.5	0	2.0	2.0	1.0	1.0
SA	6	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2010	3.0	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0
		2011-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0.5	0.5
		2024-present	3.5	1.5	1.5	1.5	1.5	0.64	2.0	2.0	1.5	1.5
TAS	7	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2013	3.5	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0

State	NCC climate zone	Year of construction	Roof / Ceiling	External Wall				Floor				
				Framed	Masonry	Masonry w/ furring channel	Concrete w/ furring channel	CSOG	Susp. over unenclosed[2] subfloor with carpet	Susp. over unenclosed subfloor without carpet	Susp. over enclosed[3] subfloor with carpet	Susp. over enclosed subfloor without carpet
		2014-present	3.5	2.5	2.5	1.0	1.0	0	1.0	1.5	1.0	1.5
TAS	8	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2013	4.0	2.5	1.0	1.0	1.0	0	1.5	2.0	0	0
		2014-present	4.5	3.5	3.5	3.5	3.5	1.0	1.5	2.0	1.0	1.5
VIC	4	Pre 1991	0	0	0	0	0	0	0	0	0	0
		1991- 2004	2.5	1.0	0	0	0	0	0	0	0	0
		2005-2011	2.5	1.5	0	0	0	0	0	0	0	0
		2012-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2024-present	2.5	2.0	2.0	2.0	2.0	0	1.5	1.5	1.0	1.0
VIC	6	Pre 1991	1.0	0	0	0	0	0	0	0	0	0
		1991- 2004	2.5	1.0	0	0	0	0	0	0	0	0
		2005-2011	3.0	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0
		2012-2023	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0.5	0.5
		2024-present	3.5	1.5	1.5	1.5	1.5	0.64	2.0	2.0	1.5	1.5
VIC	7	Pre 1991	1.0	0	0	0	0	0	0	0	0	0
		1991- 2004	2.5	1.0	0	0	0	0	0	0	0	0
		2005-2011	3.5	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0
		2012-2023	3.5	2.5	2.5	1.0	1.0	0	1.0	1.5	1.0	1.5
		2024-present	2.5	2.0	2.0	2.0	2.0	0.64	2.0	2.0	2.0	2.0
VIC	8	Pre 1991	1.0	0	0	0	0	0	0	0	0	0
		1991- 2004	2.5	1.0	0	0	0	0	0	0	0	0
		2005-2011	4.0	2.5	1.0	1.0	1.0	0	1.5	2.0	0	0

State	NCC climate zone	Year of construction	Roof / Ceiling	External Wall				Floor				
				Framed	Masonry	Masonry w/ furring channel	Concrete w/ furring channel	CSOG	Susp. over unenclosed[2] subfloor with carpet	Susp. over unenclosed subfloor without carpet	Susp. over enclosed[3] subfloor with carpet	Susp. over enclosed subfloor without carpet
		2012-2023	4.5	3.5	3.5	3.5	3.5	1.0	1.5	2.0	1.0	1.5
		2024-present	2.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
WA	1	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2011	2.0	0	0	0	0	0	0	0	0	0
		2011-2025	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0.5	1.0
		2026-onward	3.0	1.5	1.5	1.5	1.5	0	0	0	0	0
WA	3	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2011	2.0	0	0	0	0	0	0	0	0	0
		2011-2025	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2026-onward	4.5	1.5	1.5	1.5	1.5	0	1.5	1.5	0	0
WA	4	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2011	2.5	1.5	0	0	0	0	0	0	0	0
		2011-2025	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2026-onward	2.5	2.0	2.0	2.0	2.0	0	1.5	1.5	1.0	1.0
WA	5	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2011	2.5	1.0	0	0	0	0	0	0	0	0
		2011-2025	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0
		2026-onward	4.0	1.5	1.5	1.5	1.5	0	2.0	2.0	1.0	1.0
WA	6	Pre 2006	1.0	0	0	0	0	0	0	0	0	0
		2006-2011	3.0	1.5	1.0	1.0	1.0	0	0.5	1.0	0	0
		2011-2025	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0.5	0.5
		2026-onward	3.5	1.5	1.5	1.5	1.5	0.64	2.0	2.0	1.5	1.5

State	NCC climate zone	Year of construction	Roof / Ceiling	External Wall				Floor				
				Framed	Masonry	Masonry w/ furring channel	Concrete w/ furring channel	CSOG	Susp. over unenclosed[2] subfloor with carpet	Susp. over unenclosed subfloor without carpet	Susp. over enclosed[3] subfloor with carpet	Susp. over enclosed subfloor without carpet
NT	1	Pre 2011	1.0	0	0	0	0	0	0	0	0	0
		2011-onward	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0.5	1.0
NT	3	Pre 2011	0	0	0	0	0	0	0	0	0	0
		2011-onward	3.0	1.5	1.0	1.0	1.0	0	1.0	1.5	0	0

Addendum – Additional default inputs and settings in place for the first-generation software tools

19.4 Due to current limitations of the CSIRO-MagicPlan data collection tool and AccuRate Enterprise, there are a number of additional default inputs and settings in place that override some of the Technical Note requirements. These are listed in Table 35.

19.5 As improvements are incorporated into the first-generation software tools, this list will be updated, and this Technical Note will be re-issued.

Table 35 – Additional default inputs and settings in place for the first-generation software tools

Technical note requirement	Default input/setting to apply
7.4 Assessors must input the wall construction type for each wall in a zone. Where a wall has more than one construction type enter the dominant type i.e. the one with the largest area. Where there is no dominant type, input the construction type that is closest to the zone's floor level.	Assessors are not required to model differing external wall construction types to the one dominant type that is mapped into AccuRate from the CSIRO-MagicPlan data collection tool.
	Assessors are not required to model differing internal wall construction types to that mapped into AccuRate from the CSIRO-MagicPlan data collection tool.
Base floor/wall heights	Assessors are not required to model differing base floor/wall heights for zones on the same floor level e.g. split level or garage drop down
8.4 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.	Assessors are not required to update the horizontal offset of individual windows which are mapped into AccuRate from the CSIRO-MagicPlan data collection tool as a 1000 mm.
11.5 Where a blower door test is not conducted, Assessors must model all air leakage points listed in Table 22 when present	Where unsealed recessed downlights are present, Assessors should model all categories (minimal, moderate and large) as an unsealed downlight with dimensions 90 mm x 90 mm, 50 mm clearance.
	Where unsealed/non weatherstripped windows are present, Assessors should model this air leakage as not weatherstripped with gap size moderate.
	Where unsealed/non weatherstripped external doors are present, Assessors should model this air leakage as not weatherstripped with gap size moderate.
	Where floorboard gaps are present, Assessors should model this air leakage as an insulated, unsealed ceiling exhaust fan with dimensions 250 mm x 250 mm.
	Where skirting board gaps are present, Assessors should model this air leakage as an insulated, unsealed ceiling exhaust fan with dimensions 250 mm x 250 mm.
	Where general construction gaps are present, Assessors should model this air leakage as an insulated, unsealed ceiling exhaust fan with dimensions 250 mm x 250 mm.
	Where evaporative cooler duct outlets are present, Assessors should model this air leakage as an insulated, unsealed ceiling exhaust fan with dimensions 250 mm x 250 mm. (Ignore units with a baffle inside, winter cover and/or duct outlet covers).