NatHERS Technical Note

Nationwide House Energy Rating Scheme (NatHERS)
Requirements for NatHERS assessments

Version May 2019

Effective from 31 May 2019 (for use with software tools using CSIRO Chenath engine V3.13 and V3.21)

1. Introduction

Purpose

This Technical Note outlines the requirements that must be followed when conducting a NatHERS assessment. This enables NatHERS assessments to be completed in a consistent way for regulatory compliance and other purposes. When using NatHERS accredited software tools in the mode accredited under NatHERS, assessors must apply the requirements outlined in this Technical Note.

Accredited assessors will have quality assurance processes checked against this Technical Note. Any NatHERS assessment not completed in line with this Technical Note will be considered non-compliant with NatHERS assessment procedures.

Assessors must use this Technical Note for all NatHERS assessments commenced after the 31 May 2019. For NatHERS assessments commenced before 31 May 2019, assessors may use the requirements outlined in Technical Note 1 (version 1.2 – 2014). If the Certificate is produced after 31 May 2019, but the assessment was commenced before 31 May 2019 and Technical Note 1 (version 1.2 – 2014) is used, this should be noted in the 'Additional Notes' section of the NatHERS Certificate.

Software tools accredited under NatHERS are intended to be used for assessing new and existing dwellings and renovations. Class 1, 2 or 4 dwellings as defined in the Building Code of Australia (BCA) Volumes One and Two of the National Construction Code (NCC) can be modelled. Class 10a buildings attached to Class 1, 2 or 4 dwellings must be modelled as part of the assessment.

Regulatory requirements

Assessors conducting NatHERS assessments must apply the requirements in this Technical Note unless State or Territory regulatory requirements apply. State or Territory regulatory requirements prevail in the event of inconsistency. Refer to the NCC for jurisdictional variations and/or the state/territory regulator and/or council for requirements.

Status of this Technical Note

This Technical Note prevails in all matters covered by the NatHERS Assessor Handbook, specific software training manuals, help files, technical support, Assessor Accrediting Organisation (AAO) guidance, Registered Training Organisations (RTO) and software trainers' advice.

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

Assessors should use their own professional judgement where a complex modelling situation is not covered by this Technical Note. All supporting information that informs a decision must be kept with the plans and documentation.

Software tool providers provide software tool support. The AAOs and the NatHERS Administrator provide modelling support.

Updates

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 AAO, Software tool providers and jurisdictional building authorities.

The sections in this Technical Note correspond to the chapters of the NatHERS Assessor Handbook, which provides general principles and assessment guidance to support the Technical Note. The Assessor Handbook can be found on the NatHERS website (www.nathers.gov.au).

Feedback on this Technical Note

Assessors must refer all enquiries and comments about this Technical Note to their accredited AAO in the first instance, or the state or territory building regulator if assessor accreditation or licensing is not required in the jurisdiction. 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

The material in this Technical Note is to be followed when conducting a NatHERS assessment. This is made available for assessors who use NatHERS accredited software tools in the mode accredited under NatHERS only and on the understanding that the NatHERS Administrator, the state and territory governments, and the Commonwealth (the Participating Bodies) are not providing professional advice, nor indicating a commitment by the Participating Bodies to a particular course of action.

While reasonable efforts have been made to ensure the information in this Technical Note is accurate, correct and reliable, the Participating Bodies, and all persons acting for the Participating Bodies preparing this publication, accept no liability for the accuracy of, or inferences from, the material contained in this publication, and expressly disclaim liability for any person's loss arising directly or indirectly from the use of, inferences drawn, deductions made, or acts done in reliance on this Technical Note. The material in this Technical Note may include the views or recommendations of third parties, which do not necessarily reflect the views of the Participating Bodies, or indicate their commitment to a particular course of action.

NatHERS supports improvements to the thermal performance of Australia's residential buildings, by providing a standardised approach and guidelines for thermal performance rating software tools used to assess dwellings across Australia.

NatHERS is administered by the Australian Government on behalf of the Commonwealth, state and territory governments.

For more information visit www.nathers.gov.au

2. Before you start

2.1. The minimum design documentation required when modelling a dwelling is:

- site plan — including a north point
- floor plan/s
- elevations
- sections
- construction material details
- lighting location plan/electrical schedule (see 2.4)
- window, skylight, roof window and door schedule/details including size, glass and frame type, opening style, location.

2.2. Each dwelling must have its own individual rating modelled in accordance with this Technical Note. This includes all Class 2 dwellings in a single building or development.

2.3. NatHERS software tools are used to assess an entire dwelling. Additions or extensions to an existing dwelling must be modelled as part of the entire dwelling.

2.4. Assessors must input information in accordance with a lighting location plan/electrical schedule. If this information is unavailable and the assessment is completed, it must clearly state on the NatHERS Certificate the dwelling has been assessed without recessed light fittings. If these features are present in the dwelling, the assessment will need to be updated for compliance purposes. This may not be required in New South Wales and Victoria.

2.5. Retain design, assessment and supporting documentation in line with the jurisdictions' requirements and for auditing and quality assurance.

3. Data entry

3.1. The project details and modelling of the dwelling must be entered consistent with the design documentation.

3.2. If the design documentation used for producing a NatHERS Certificate changes, the certificate becomes non-compliant. A new assessment and NatHERS Certificate will need to be completed.

3.3. If assessors recommend a change to any element of the design, the client must update the design documentation before the assessor finalises the assessment and issues the NatHERS Certificate.

3.4. Where information is ambiguous or inconsistent, clarification must be sought from the client and any appropriate revisions must be made to the design documentation before issuing a NatHERS Certificate.

3.5. Requests for clarification and client responses must be kept with the assessment for audit purposes.

3.6. Where clarification has been sought but not received, an assessment must be undertaken using the provisions (previously termed 'default values') in this Technical Note. The client should be advised that some provisions represent the worst-case scenario and the rating may be adversely affected.

3.7. Any provisions used for the assessment must be detailed in the NatHERS Certificate 'additional notes'.

4. Climate, exposure, ground reflectance and orientation

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:

4.1.1. Assessments must use the postcode in NatHERS software tools that correspond 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 notes' section of the NatHERS Certificate.

4.1.2. Assessors should only use an alternative climate zone where there is a justification for doing so (e.g. change in altitude). This justification must be detailed in the 'additional notes' section of the NatHERS Certificate.

4.1.3. Where there is no alternative climate zone for the subject location, assessors must use the principal climate zone.

Exposure categories

4.2. 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.

Table 1: Exposure category guidance

Category	Terrain characteristics	Terrain examples
Exposed	Few or no obstructions	Flat grazing land, lake-side, ocean-frontage, desert, exposed high-rise unit without obstructions at a similar height to the dwelling
Open	Grasslands with few well scattered obstructions less than or equal to 10 m	Farmland with scattered sheds, lightly vegetated bush blocks, elevated units with a few obstructions of similar height to the dwelling
Suburban	Numerous closely spaced obstructions less than or equal to 10 m	Suburban housing, heavily vegetated bushland areas, townhouses
Protected	Numerous closely spaced obstructions greater than 10 m	City and industrial areas

Ground reflectance

4.3. A ground reflectance setting of 0.2 must be modelled at all times.

Orientation

4.4. Dwelling orientation must be based on the rotation of the dwelling with respect to true north, not magnetic north.

4.5. If an assessor is unsure whether the plans are depicting true or magnetic north, assessors must clarify the direction of true north.

5. Zoning

5.1. Assessors must assign zones for all parts of the dwelling that can be fully enclosed by the dwelling envelope (the physical separator between the dwelling being assessed and the outside environment or neighbour). Appendix 1 outlines software zoning type definitions and requirements.

5.1.1. All parts within the dwelling envelope must be allocated or included in a zone.

5.1.2. Conditioned outdoor living areas (i.e. mechanically heated or cooled) must be considered within the dwelling envelope and assigned a zone when capable of being fully enclosed by solid construction elements (e.g. walls, windows, bi-fold or sliding doors).

5.1.3. Unconditioned outdoor living areas, semi-open 'alfresco' spaces and detached garages are not allocated a zone, but must be considered for shading purposes.

5.2. The minimum zoning requirements for any dwelling are:

5.2.1. It must contain a minimum of three zones excluding the garage. For example, a kitchen/living, bedroom and an unconditioned zone.

5.2.2. Each zone must have walls, a floor and a ceiling and/or a roof.

5.3. The additional minimum zoning requirements for studios, bedsits and open-plan apartments are:

5.3.1. It must contain at least three zones (kitchen, bedroom and an unconditioned zone); and

5.3.2. Assessors must model an open-plan zone division by inserting a plasterboard-on-stud internal wall with a permanent opening no greater than 60% of the wall area between zones.

5.3.3. When there are no obvious features by which to zone the open plan studio or bedsit, the following minimum conditioned zone floor areas must apply:

- kitchen/living zone area(s) = minimum of 30%
- bedroom zone area = minimum of 20%.

Combining zones

5.4. There are only two situations where zones may be combined:

5.4.1. Workshops, store rooms and laundries may be combined with the garage if they meet all of the following:

- are within the garage; and
- can be accessed from the garage and/or by an external door; and
- do not contain an internal door to the dwelling.

5.4.2. If the dwelling contains more than 50 zones, adjacent zones (e.g. bedrooms) may be combined if they meet all of the following:

- have external windows or doors to the same orientation; and
- are the same zone and conditioning type; and
- open to the same internal zone (e.g. an internal hallway); and
- do not have external ventilation to more than one orientation.

6. Floors

Waffle pods

6.1. Where Expanded Polystyrene (EPS) waffle pods are specified, assessors must use the waffle pod thickness:

- closest to what is on the design documentation, but never higher; and
- measured from the underside of the top slab to the bottom of the waffle pod construction.

6.2. Where the waffle pod thickness is not shown on the design documentation, the provisional 175mm thickness option must be used.

Floor coverings

6.3. Where no floor coverings are specified, assessors must use the following provisions:

- Garages have concrete floors.
- Wet areas and kitchens have ceramic tiles.
- All other areas have carpets with rubber underlay.

Dwellings above car parks and public spaces

6.4. Assessors must model dwellings directly above carparks and unconditioned public spaces as per Table 2. If using Chenath engine V3.13, model dwellings directly above carparks and unconditioned public spaces as per Appendix 2.

Table 2: Floors in Class 2 and Class 4 buildings

Floor type	How to model
Dwelling above a highly ventilated car park that is greater than 50 per cent open to the outdoor air (e.g. an open car park with minimal or no external walls).	• Treat dwelling as above outdoor air.
Dwelling above an underground car park (e.g. a car park which is less than 50 per cent open to the outdoor air and with more than 50 per cent wall area adjacent to earth).	• Treat the dwelling as above 'Shared Basement Carpark'. • Include the entire 'Shared Basement Carpark' level in the rating of the apartment, including the floor, external walls, and the ceiling of the carpark. • Treat the underground external walls as retaining walls with a 5m thick soil layer at the back of the wall. • Include the entire 'Shared Basement Carpark' including those areas adjoining other dwellings, shared common areas or open areas. • If there is more than one 'Shared Basement Carpark' level, model the uppermost level directly under the dwelling and assume it is on ground.
Dwelling above commercial premises, or mostly enclosed common public areas.	• Treat dwelling as above a neighbour.
Dwelling above a highly ventilated common public area.	• Treat dwelling as above outdoor air.
Dwelling with 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.	• Treat the relevant dwelling's wall or floor as adjacent to a 'Garage' and include the garage as a zone within the rating.

7. Walls

Exterior colour

7.1. Assessors must model the exterior wall colour or solar absorptance as detailed on the design documentation. Where no exterior wall colours are specified, assessors must select the provisional colour 'medium'.

Internal colour

7.2. Where there is an option to nominate an internal wall colour in the software and no internal wall colours are specified on the design documentation, assessors must select the provisional internal wall colour as 'medium'.

Shared walls (modelling adjacency) in Class 2 Buildings

7.3. Assessors must model the dwelling as outlined in Table 3 where a dwelling wall does not have open air or another dwelling on the other side. If using Chenath engine V3.13 model the dwelling as outlined in Appendix 3.

Table 3: Apartment walls and entrance doors shared with common public areas

Apartment wall shared with …	How to model
Unconditioned common corridors with no glazing (e.g. unglazed corridors publicly accessed by lifts, stairwells or with an airlock between the corridor and external air, or with apartments on the opposite side of the corridor).	• Treat dwelling wall as adjacent to a neighbour. • Do not model an entrance door to the dwelling, as no ventilation is assumed through it.
Conditioned common corridors with or without glazing.	
Lifts and enclosed stairwells.	• Treat the shared wall as adjacent to a neighbour.
Common corridors open to external air (i.e. corridors with permanent openings).	• Treat dwelling wall as external wall with eaves the same length and width as the corridor, and an external shading system the same length as the apartment wall. • Model an entrance door in the external dwelling wall, as ventilation is assumed through it.
Unconditioned common corridors with glazing (e.g. enclosed corridors with the external wall being partly or fully glazed).	• Treat the corridor as a 'glazed common area' zone. • Where the glazed common area zone is longer than the apartment wall, as a minimum, model the external corridor wall as the same length as the apartment wall and treat either end of the zone as internal walls adjacent to neighbour. When an end wall is an external wall, model appropriate wall adjacency. • Model the attributes applicable to the external corridor wall, ceiling and floor (e.g. construction materials, windows and zone adjacency). • Do not model an entrance door to the dwelling, as no ventilation is assumed through it.

Insulation

7.4. Where insulation is added to a wall, assessors must remove any air gap thickness that has been partially or fully displaced by bulk insulation.

7.5. Compressed bulk insulation must not be modelled. Assessors must ensure that bulk insulation will fit within the wall cavity.

8. Windows and doors

8.1. Fully or partially glazed hinged doors and sliding doors are considered to be windows in NatHERS software tools. Only the glazed portion of a partially glazed door is to be modelled as a window. The remaining component of the partially glazed door is to be modelled as a solid door.

8.1.1. If the glazing component is less than 25% of the door, the door may be modelled as a solid door.

8.2. When modelling windows or glazed doors, assessors must use either:

- The Australian Fenestration Rating Council (AFRC) custom window codes corresponding to the windows specified on the design documentation; or
- Default windows.

8.3. If a custom window is specified on the design documentation but not available in the NatHERS custom window library, assessors must model a default window.

8.4. When using default windows, clear glass must be used in lieu of obscure glass (for instance, in a bathroom or WC).

8.5. In the absence of obscure glass in the custom windows library, assessors must model either:

- The clear window from the same range of custom windows that are being used (i.e. the same supplier, same frame type and frame material); or
- A default clear window.

8.6. When using custom windows, assessors must use the manufacturer's ventilation charts to determine the openable percentage of the window and/or door. If this information is not available, apply the provisional opening percentage in Table 5. These reflect the area of window that can open and deducts a percentage for the window frame.

8.7. When using default windows, assessors must apply the provisional opening percentage figures in Table 5. These reflect the area of window that can open and deducts a percentage for the window frame.

8.8. Assessors must use their judgement in applying opening percentages to default or custom windows that have complex opening arrangements and/or are made of different window types.

8.9. Assessors must adjust opening percentages to windows with restricted opening safety requirements and no complying security screen. If the restricted opening percentage is not specified on the design documentation, assessors must use the provisional opening percentage of 10% for all window types.

Table 5: Provisional window opening percentages

Type	Single pane window	Double pane window (half fixed, half openable)
Awning	90%	45%
Casement / tilt'n'turn	90%	45%
Double hung	45%	22%
Louvre	90%	45%
Sliding	N/A	45%
All windows types shown with safety restrictors (see clause 8.9)	10%	10%

9. Ceilings and roofs

Roof colour

9.1. Assessors must enter the roof colour or solar absorptance as detailed on the design documentation.

9.2. Where the roof colour or solar absorptance is not detailed on the design documentation, the assessor must apply the worst-case scenario.

- For example, select a 'dark' roof in tropical areas and a 'light' roof in a temperate or cool climate.
- Multiple runs may be required to ensure the worst-case scenario has been selected.
- These details must be recorded in the 'additional notes' of the NatHERS Certificate.

Ceiling colour

9.3. Where there is an option to nominate a ceiling colour in the software and no ceiling colour is specified in the design documentation, assessors must select the provisional internal ceiling colour as 'medium'.

Ceiling penetrations

9.4. Assessors must model all recessed light fittings (commonly referred to as downlights), vents and exhaust fans as ceiling penetrations.

9.5. Penetrations must be modelled as sealed or unsealed as stated by the fitting manufacturer. If unspecified, assessors must treat the ceiling penetration/s as unsealed.

9.6. Penetrations affecting insulation must be modelled as stated by the fitting manufacturer. If unspecified, assessors must include a minimum 50mm insulation clearance around ceiling penetrations.

9.7. Recessed light fittings must be modelled regardless of the adjoining zone (e.g. roof space, neighbour or second storey floor) and:

9.7.1. Treated as 'unsealed' if there is nothing specifically noted on the documentation.

9.7.2. Treated as 'sealed' when the documentation specifies that it is sealed to prevent the movement of air between a zone and another zone, neighbour or roof/attic space.

9.7.3. Treated as ‘insulated’ or with no insulation clearance only when specified in the documentation (e.g. IC/IC-4 downlights can be covered by insulation).

9.8. Treat permanent static ventilation openings in the building fabric (e.g. unflued gas heater vent) as a wall or ceiling vent.

9.9. Where a gas cooker exhaust is specified, treat as a ‘sealed’ exhaust fan.

9.10. Assessors must model rangehoods as ‘sealed’ exhaust fans, unless otherwise specified. Ductless rangehoods (commonly referred to as recirculating rangehoods) are not required to be modelled as ceiling penetrations.

Ceiling fans

9.11. Assessors must only model ceiling fans if they are included in the design documentation.

9.12. A provisional size of 900 mm diameter must be selected if the ceiling fan size is not specified.

10. Shading

10.1. Assessors must model all shade features shown in the documentation.

10.2. Where there is a limit to the number of shading features that can be modelled in the software tool, model the three that have the largest impact on the rating.

10.2.1. Fixed external shading devices shown on the documentation must be modelled.

Eaves

10.3. Assessors must model the width of an eave or shading device from the face of the external wall to the outer-most protrusion, including gutters. If the gutter width is not specified, assume a 100 mm width.

10.4. If the fascia board will cast a greater shadow than the gutter, assessors must model shading from the bottom of the fascia board.

Neighbouring buildings and features

10.5. Assessors must model neighbouring buildings and surrounding topographical features that obstruct the sun. On level ground, assessors must model at least all single-storey neighbours within 10m and two-storey neighbours within 20m of the dwelling. Assessors must consider the impact of level changes and retaining walls when modelling these features.

10.6. If the dwelling is located north of the Tropic of Capricorn, assessors are required to model high-rise/topographical features located between the midpoints SSE and S, and S and SSW; or within the range of 168°45’ to 191°15’. This is not required for dwellings south of the Tropic of Capricorn.

10.7. Where information on neighbouring buildings is not shown on the design documentation, assessors must request the documentation be updated or obtain supporting evidence of existing neighbouring buildings for the purpose of modelling (e.g. google maps).

10.8. Where neighbouring buildings are unknown because the dwelling is located in a new development, the following provisions must be applied:

10.8.1. The size of the neighbouring building is to fit into a square or rectangle having the same floor, wall and roof height (e.g. a two storey dwelling should presume a two-storey neighbour), length and width as the one being modelled; no other allowance is to be made for courtyards or building offsets of the dwelling being rated.

10.8.2. The setback from the street of the neighbouring building is to be the same setback from the street as the dwelling being rated.

10.8.3. The side and rear fence heights of the neighbouring building are to be 1.8m if local planning requirements are unknown.

10.8.4. Heights of the neighbouring building are to be modelled to include all known site level changes that will impact on shading the dwelling being rated.

10.8.5. Neighbouring building's setbacks must be located parallel to the fence line and at a distance equal to the shortest distance between the rated building and the fence line. This setback is to be calculated independently for each boundary where a neighbour is required to be modelled. Ignore dwellings to the south except if the dwelling is north of the Tropic of Capricorn (refer 9.6).

Glazed verandahs, loggias, winter gardens or porticos

10.9. Assessors must treat balconies or other similar spaces with solid, glazed or partially glazed walls to either side of the parent wall, as wing walls.

10.10. Assessors must treat balcony walls with solid building elements directly in front of the parent wall as a vertical shading device (i.e. external screen), and model:

- 100% shading for the portion of the wall that is solid.
- 10% shading for the portion of the wall that is glazed.

Protected trees

10.11. Assessors must only model trees with an existing preservation order or heritage protection. The design documentation must include:

- The tree canopy drawn to scale or dimensioned; and
- Existing preservation order or heritage listing; and
- May include a species shading schedule.

11. Finishing the assessment

Stamping requirements

11.1. Before stamping the design documentation with the NatHERS QR code stamp (also referred to as a mini-certificate) and producing a final NatHERS Certificate, the assessor must:

- Confirm all requirements detailed in this Technical Note have been met; and
- Confirm the information in the assessment aligns with the design documentation; and
- Ensure all provisions are noted in the additional information section of the NatHERS Certificate.

11.2. Electronically add the NatHERS QR code stamp to the design documentation. This links the NatHERS Certificate to each page of the design documentation that relates to the assessment.

- The stamp should not obscure any information on the design documentation or the mark of any other practitioner.

11.3. Accredited Assessors must include their AAO stamp if applicable (generally below the NatHERS stamp). The stamp must be smaller than the NatHERS stamp.

11.4. For Class 2 dwellings, the NatHERS QR code stamp must be the average dwelling rating and is to be stamped on each page of the documentation.

Final Documentation – NatHERS Certificate

11.5. The assessor must supply the client with the NatHERS Certificate and the stamped design documentation.

11.6. For Class 2 dwellings, each unit must have an individual NatHERS Certificate and the entire building must have a summary NatHERS Certificate with an average NatHERS rating.

11.6.1. Where a number of Class 2 multi-unit buildings are located in close physical proximity as part of the same development, or where the strata plan identifies separate lots, a Class 2 summary certificate must be completed for each building/lot separately.

11.6.2. At the request of a client, a single Class 2 summary certificate can be produced for buildings that are combined and share a lot (for example, by a bridge, shared underground space or an enclosed walkway) where NCC requirements for combined buildings are met.

Appendix 1: Software tool zone type definitions

Zone type	Example room names* *see description for correct classification	Description	Conditioning status
Living	Living, lounge, dining, family, rumpus, media, home theatre.	Any room shown on a plan as living, lounge, dining, family, rumpus, media or home theatre. If there are more than two living areas (excluding kitchen/living), the two largest living areas are zoned as living. The other areas are zoned as daytime.	Conditioned
Kitchen/living	Kitchen or kitchen & dining, kitchen & meals, kitchen & lounge, kitchen & living.	Any room shown on a plan as a kitchen or a kitchen combined with one or more living areas. This zone must include the main kitchen area and may include a lounge, meals or dining area. All dwellings must contain one main kitchen/living zone. There can be no more than one kitchen/living zone. All additional smaller kitchens/kitchenettes within the dwelling must be zoned as another zone type.	Conditioned
Daytime	Study, gym, lift, pool, sauna, cellar, pantry, storage, hall, hallway, corridor.	This is the default zoning for internal zones not covered by any other zone type. Daytime zones include studies (without a built-in wardrobe), gymnasiums, internal domestic lifts, indoor pool rooms, saunas, above ground wine cellars, walk-in pantries, storage areas or conditioned outdoor living areas capable of being fully enclosed (i.e. considered within the dwelling envelope). This zone type includes hallways and corridors (either fully enclosed by doors or open to other zones) as they are circulation areas that allow access to other zones. This includes zones such as ensuites or walk-in wardrobes that can be accessed by a hallway or corridor (e.g. a two-way bathroom accessible by both a bedroom and the hallway). This zone type could also include any living, lounge, dining, family, rumpus, media or home theatre room, if they are in addition to the two largest living areas. This zone may be selected when a laundry, WC, bathroom or powder room is not ventilated by a door or window on an external wall.	Conditioned
Bedroom	Bed, study.	Any room shown on the plan as a bedroom, whether or not it has any built-in wardrobes. Bedroom zoning must also be used for a study with either a built-in wardrobe, walk-in wardrobe or attached ensuite. In this case, the 'study' becomes a bedroom zone with the built-in wardrobe part of the same zone. A walk-in wardrobe or ensuite is to be zoned as night-time.	Conditioned
Night-time	Ensuite, WIR, parent's retreat, WC.	This applies to areas that can only be accessed from a bedroom or from a zone, which itself, is only accessed from a bedroom. These include ensuites, walk-in wardrobes, parent's retreats and WCs accessed from an ensuite.)	Conditioned
Unconditioned	Laundry, WC, bathroom, powder room, airlock, cellar.	Every dwelling must have at least one unconditioned zone. Laundries, bathrooms, airlocks, WCs or powder rooms that have an external wall with at least one or more ventilation openings (window or door). If there are no rooms that fit this description, then the smallest daytime zone must be modelled as an unconditioned zone. An airlock is a small, relatively airtight space that can be modelled as unconditioned space if: • it is located at a dwelling entrance and • has one or more external walls and • has one or more internal walls and • has an external door and • has one or more internal doors, of which, only one opens to a conditioned zone. Where an area labelled as an 'airlock' does not meet the above conditions, it is to be modelled as a daytime zone. Underground cellars may also be considered an unconditioned zone.	Unconditioned
Garage	Garage	Where a garage is shown on the documentation as attached to the dwelling, and does not have any heating or cooling indicated.	Unconditioned
Garage - conditioned	Garage	This zone type only applies when a garage has heating ducts, hydronic heating elements or air conditioners.	Conditioned
Glazed common area	Corridor or hall or common area (Class 2 or 4 only)	This zone type applies to unconditioned common corridors with glazing (e.g. enclosed corridors with the external wall being partly or fully glazed) in an apartment building or similar. This zone type must only be used in Class 2 and 4 dwellings. (More information available in Table 4)	Unconditioned
Shared basement carpark	Basement, shared carpark (Class 2 or 4 only)	Where there is a shared carpark underneath an apartment, and the carpark is equal to or greater than 50 per cent closed from the outdoor air, then the area directly under the apartment must be zoned as 'shared basement carpark'. Where a carpark under the apartment is greater than 50 per cent open to the outdoor air then this zone must be modelled as 'above outdoor air'. This zone type must only be used in Class 2 and 4 dwellings. (More information available in Table 3). This zone type must not be used when Class 2 dwellings have individual garages.	Unconditioned
Small air spaces	Pantry, robe, duct, storage.	Small air spaces such as small pantries (not walk-in i.e. less than or equal to 700mm in depth), built in robes, plumbing voids, wall voids, service ducts and other small non-habitable areas are included in the zone that they are attached to or located in. Storage areas located under a staircase can be included in the same zone as the staircase.	As per parent zone
Outdoor living areas	Verandah, portico, sunroom, wintergarden, conservatory or balcony (if enclosable)	Unconditioned outdoor areas are treated as shade, not a zone. Where the outdoor living area is capable of being fully enclosed by solid construction elements (e.g. walls, windows, bi-fold or sliding doors) and is shown on the documentation as conditioned (i.e. mechanically heated or cooled), it must be zoned as daytime.	-

Appendix 2: Floors in Class 2 and Class 4 buildings when using Chenath engine V3.13

Floor type	How to model
Floors above a shared car park, common basement, highly ventilated common public areas.	Treat dwelling as above outdoor air.
Floors above commercial premises, minimum or partially ventilated common public areas.	Treat dwelling as above a neighbour.
Any Class 2 or 4 car park that is different from a fully enclosed space with one or more entrance points (i.e. an open car park with minimum or no external walls).	Treat dwelling as above outdoor air.
A Class 2 or 4 dwelling that has a fully enclosed garage for its exclusive use, where it is accessed from and shares floors walls or ceilings with the dwelling and has a separate vehicular access door.	Treat the other side of the dwellings wall or floor, as applicable, as adjacent to a 'Garage' and include the garage in the rating of the apartment.

Appendix 3: Apartment walls shared with common public areas when using Chenath engine V3.13

Wall type	How to model
Apartment walls shared with minimum ventilated corridors (i.e. corridors publicly accessed by lifts, stairwells or with an airlock between the corridor and external air, or with apartments on the opposite side of the internal corridor).	Treat the internal space as adjacent to a neighbour.
Apartment walls shared with ventilated corridors (i.e. corridors which are open to external air by operable doors or windows.	Treat as external wall with eaves the same length and width as the corridor, and an external shading scheme the same length as the apartment wall.
Apartment walls shared with highly ventilated corridors (i.e. corridors with permanent openings to external air).	Treat as external wall with eaves the same length and width as the corridor, and an external shading scheme the same length as the apartment wall.
Apartment walls shared with corridors with fully glazed external walls (i.e. corridors with the major wall being fully glazed).	Model the external corridor as an unconditioned zone. Where the corridor zone is longer than the apartment wall, it is to have an external wall the same length as the apartment wall and internal walls to a neighbour at either end. Note: this is an interim measure until a number of new corridor zones are created and included in a subsequent software release.
Apartment walls shared with lifts and enclosed stairwells.	Treat the shared wall as adjacent to a neighbour.