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## **7.9 Zoning – Spaces with physical separation**

- 7.9.1 Physical separation of a space is considered to occur when a wall separates one air space from another and contains either: no openings, a controlled opening such as a door, or a permanent opening of any size.
- 7.9.2 Spaces with physical separation are zoned as separate zones unless one of the spaces is considered a small air space, in which case it may be combined with the zone from which it is entered (Clause 7.6).

## **7.10 Airlocks**

- 7.10.1 An airlock at a dwelling entrance way is defined as being a small, relatively airtight space, that is not a hallway and as having:
- one or more external walls with or without windows
  - one or more internal walls
  - an external door
  - one or more internal doors, of which one only opens to a conditioned zone
  - a floor
  - a ceiling or a combined ceiling/roof.
- 7.10.2 Air locks are treated as 'Unconditioned' zones.
- 7.10.3 Some airlocks on plans are not genuine airlocks (i.e. airtight spaces) but only spaces that reduce airflow from the outside of the building to the inside. If an assessor is in doubt then the default position would be to deem the space a conditioned zone.

## **8. Windows, Glazing and Insect Screens**

- 8.1 Windows and glazed doors must be modelled in accordance with the sizes noted on the Window Schedule or design documentation and include accurate modelling of:
- glass and frame type
  - openable percentage
  - default or custom values
  - size, location and offset
- 8.2 If a client has a preferred window supplier and that window supplier's codes and sizes are shown on the drawing sets then the assessor may specify custom windows (if their chosen software has this function) and use that manufacturer's ventilation charts to determine the openability of the window and/or door. If that information is not available then the default values apply (refer Clause 10.10).
- 8.3 Where the window manufacturer is not nominated, as in Clause 8.2, the default openable percentage figures should always apply (refer Clause 10.10). Where a window has both fixed and openable components, assessors are to calculate the total opening area based on the entire unit.

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- 8.4 The new default windows performance values (U and SHGC) are defined by their operating type. If the type of window including opening style, is not clearly indicated on the design documentation, for example, sliding (Group B) or awning (Group A) then the drawing sets need to be referred back to the client and the drawing set is NOT to be rated.
- 8.5 Windows include fully or partially-glazed hinged doors and sliding doors.
- 8.6 Glazed verandahs, loggias, wintergardens, porticos or balconies are not internal zones. They are external areas which are treated as balconies which are partially or fully enclosed by glass.
- 8.6.1 If the balcony has solid or glazed walls to either side of the parent wall they are to be treated as wing walls. If the balcony wall directly in front of the parent wall contains a solid building element, the solid portion is treated as an external screen with 100% shading and the glazed portion is treated as an external screen with 10% shading. The living area/bedroom area would end at the bedroom or living area window/sliding doors – where they interact with the verandah.
- 8.6.2 See clause 7.4.6 for examples where the space may meet the NCC definition of an outdoor living area.

## 9. Shading and Eaves

- 9.1 Fixed external window shading devices shown on the design documentation must be included in the rating.
- 9.2 Protected trees with an existing preservation order or heritage protection are the ONLY type of vegetation that may be modelled. Protected or 'regulated' trees (including canopy) must be indicated on drawings to scale. Supporting information showing the existing preservation order or heritage listing, and a species shading schedule, MUST be provided to the assessor otherwise they must not be modelled.
- 9.3 Outdoor living areas (as defined in the NCC) attached to the dwelling must always be rated as shade features.
- 9.4 Exterior shading devices must not be modelled unless they are shown on the design documentation. If these are suggested by an assessor to improve a rating then the documentation must be updated with their inclusion before the rating documentation is completed.
- 9.5 The width of a shading device is measured from the face of the external wall to the outer-most protrusion, including gutters. If the gutter width is not specified, then assume 100 mm width.
- 9.6 If the gutter is on a deep fascia board where the board will cast a greater shadow than the gutter, then the measurements (projection and offset) are to be taken from the bottom of the fascia.
- 9.7 The thickness of the construction elements are to be taken into account when modelling shading (for example, the thickness of timber slats in a solar pergola).
- 9.8 Shading from the width of eaves is the horizontal distance from the wall to the furthest point on the building envelope on the vertical plane at right angles to the wall.

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## 10. Default Settings (for new dwellings)

- 10.1 Where there is insufficient information on the design documentation and a request for further information has been made but not received, an assessment can still be undertaken but default values (shown below) are to be used. The client must be advised accordingly and told that **some** defaults are worst case and the rating may be adversely affected. This clause does not apply to details on window size and opening types which must be known. If no electrical schedule is available then ceiling penetrations and subsequent loss on ceiling insulation cannot be modelled and the NatHERS certificate will clearly show this. Assessors need to consider this when quoting on jobs as two assessments may need to be completed.
- 10.2 The correct identification of the worst case defaults may require multiple simulations. This is to ensure that the rating provided from the drawing set is the minimum that should be achieved. Selection of differing materials after the rating process should then not compromise the rating.
- 10.3 **Roof Colour:** If the roof colour or roof solar absorptance is not nominated on the design documentation, then the worst case default is used. For example, in tropical areas a 'dark' roof would be selected; conversely in a temperate or cool climate a 'light' roof would be selected.
- 10.4 **Wall Colour:** For walls, the default colour is 'medium', if not shown otherwise on the drawing set.
- 10.5 **Floor Covering:** If no floor coverings are specified, then the default settings are:
- garages have concrete floors
  - wet areas and kitchens have ceramic tiles
  - all other areas have carpets and rubber underlay
- 10.6 **Internal colours:** Internal ceiling and internal wall colour must be modelled as 'not specified' or 'medium' where the software has this option.
- 10.7 **Ground Reflectance:** The ground reflectance default setting of 0.2 must be modelled at all times.
- 10.8 **Ceiling penetrations:** All vents and penetrations (including exhaust fans and recessed downlights) are to be treated as unsealed/worst performance if not shown otherwise.

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- 10.9 **Loss of ceiling insulation due to ceiling penetrations:** All recessed downlights, vents, exhaust fans or anything that requires a penetration through the ceiling with a subsequent loss of required ceiling insulation are to be modelled. The NatHERS certificate will show all sealed and unsealed ceiling penetrations. All ceiling penetrations to uninsulated spaces, whether to the external envelope or to an intermediate floor above are also modelled.
- 10.9.1 Unless otherwise stated by the manufacturer, the loss of insulation allowance for each ceiling penetration must also include a minimum 50mm clearance from any bulk insulation.
  - 10.9.2 Unless clearly specified on the plans and/or any accompanying specification documentation, assessors are not to assume that a ceiling penetration will not result in a loss of required ceiling insulation.
  - 10.9.3 Ductwork: Where an open vent (for the ventilation of a gas cooker) is required and it is shown with ductwork in the ceiling space - treat as a 'sealed exhaust fan'.
  - 10.9.4 Where no ductwork is shown - treat as 'an unsealed exhaust fan'. Permanent openings for unflued gas heaters need to be treated as permanent openings in the building fabric.
  - 10.9.5 A sealed luminaire (meaning the complete downlight or electric light unit), can be treated as 'sealed' when the design of the luminaire is such that it prevents the complete movement of air between a zone and an attic or roof space.
  - 10.9.6 In Class 2 and 4 buildings where there is a downlight or ceiling penetration to a ceiling space that is not an 'attic space' and there is a floor above this ceiling space and there is no insulation shown on the drawings, model as a ceiling penetration. This also applies to two storey Class 1 dwellings between floors.
  - 10.9.7 Note that the universal software certificate clearly itemises if sealed and unsealed ceiling penetrations have been modelled, the rating and certificate only apply to the dwelling with the specifications noted.
- 10.10 **Window Openability:** If opening percentages for window types are not specified by the window manufacturer, then the default percentages built into the software must be used.
- 10.10.1 It is not feasible to list every possible permutation of window sashes available. Subsequently window and door units containing multiple sashes (the portion of the window or door that opens) must be calculated accurately according to the proportion of each.
  - 10.10.2 The openability of awning windows is calculated from the area of the frame that the sash or sashes occupy and stated as a percentage of the overall window size.

10.10.3 Indicative opening areas for windows without transoms are given below.

**Table 5: Sample default window opening percentages**

	Single pane window	Double pane window. (1 fixed, 1 operable)
Awning	90%	45%
Casement	90%	45%
Double hung	45%	22%
Louvre	90%	45%
Sliding	45%	45%

Note: These are default values where the manufacturer has not provided other information and the plans do not specify a value.

10.11 Windows with **restricted openings and no complying security screen**: windows complying with the height safety rules in the NCC, need to have a restricted openings. If no information is noted on the plans or elevations the default setting of 10% opening is to be used for all window types. If there is doubt as to when the height safety rules apply, the assessor should refer back to the designer or client for the required information.

10.12 **Neighbour and sun obstruction defaults**: If neighbouring buildings are not identified on the drawing sets and cannot be readily gathered from internet sources or the client, then presume all distances and heights given in this clause as default values and also include the offset described.

10.12.1 If modelling on a **new** development site and no neighbouring houses are present or indicated on the drawing set (but may be developed in the future), presume that the neighbouring building(s) will fit into a square or rectangle having the same floor starting height, wall and roof height, length and width as the one being modelled, no other allowance is to be made for courtyards or building offsets existing in the one being modelled, as per the following:

10.12.1.1 Presume a straight building line for the neighbour, the same set back from the street and common boundary as the dwelling being rated (ignore dwellings to the south – except in the tropics), see 5.1 for south definition.

10.12.1.2 If a two storey house is being modelled, presume two storey neighbours are present on all sides. For a single storey presume single storey neighbours.

10.12.1.3 Presume a 1.8 m high side and rear fence if local planning requirements are unknown. If these are known or are noted on the plan then rate as known or noted.

10.12.1.4 Include all level changes between lots, both ground level and dwelling level, that will impact on the rating.

10.12.2 The same principles as listed in this section for future neighbours to the side are to be applied to future neighbours to the rear of the property. This may also apply to obstructions to the front of the dwelling in certain circumstances such as a battle-axe block; assessors may need to model the feature to determine if it should be included in the assessment.

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- 10.12.3 Neighbouring building offset: The building line for the presumed neighbour (offset) must be taken as a straight line - equidistant from the dividing fence line – at a distance equal to the shortest measurement between the rated house and that fence line. This rule still applies if the boundary of the building structure does not represent a straight line. The offset is to be calculated independently for each boundary where a presumed neighbour is required to be modelled.

## 11. Modelling Waffle Pods

- 11.1 The following values should be followed by assessors in all accredited software products when modelling waffle pods, no higher values can ever be used:
- For waffle pods of 175mm thickness – use R0.6
  - For waffle pods of 225mm thickness – use R0.7
  - For waffle pods of 300mm thickness – use R0.8
  - For waffle pods of 375mm thickness – use R0.9
- 11.2 Assessors can only use these values for the 175 - 375mm pods when the thickness of the pod is shown on the plans and the direction to use pods is clearly notated. When another thickness is given that is not shown above, round down to the nearest available thickness shown.
- 11.3 Where the thickness of the pod is **not** indicated, but their use is – the lower R-value (i.e. R0.6) should always be used as the default value.
- 11.4 The above values are for Expanded Polystyrene (EPS) waffle pods (with or without air cavities) only and cannot be used for other underfloor insulation types.

## 12. Minimum drawing set stamping requirements

- 12.1 Before stamping drawing sets at the completion of the rating process with the NatHERS QR code stamp and producing a final certificate, the assessor is to confirm:
- 12.1.1 The full details of the construction materials are detailed on the drawing sets, and are in accordance with the assessment.
- 12.1.2 The window specification details are complete including;
- 12.1.2.1 Either an individual window and door size schedule or clearly noted floor plans or elevations showing window type, operating type, window height, width and frame type.
- 12.1.2.2 Skylight and roof window details.
- 12.1.3 Ceiling and wall penetrations are noted.
- 12.2 If the above details are not present on the drawing sets, or differ from the rating assessment, the drawing sets are to be returned to the architect or building designer for completion (except where defaults apply). Details on the drawing sets and relevant schedules/addendums/ specifications, must align with the assessment and vice versa.



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### 13. Stamping of Design Documentation

- 13.1 Drawing sets are not to have the NatHERS 'stamp' added or a certificate completed if the information on the drawing sets and specifications does not align with the information on the NatHERS certificate. Drawing sets are to be returned to the designer or client to be amended before a final certificate can be issued by a NatHERS assessor.
- 13.2 For all dwellings the unique NatHERS QR code stamp linking the certificate to the drawing set is to be electronically added to every **principal page** of the plans/drawing set that relate to the assessment (i.e. the cover sheet, floor plans, elevations and specifications). The stamp should not obscure any information on the plans or the mark of any other practitioner.
- 13.3 Accredited Assessors need to follow directions from their AAO and include their AAO stamp when required generally below the NatHERS stamp to verify their membership currency. The stamp cannot be a larger size than the NatHERS stamp.
- 13.4 For Class 2 dwellings all the above requirements apply and a Class 2 Summary sheet also needs to be provided. The NatHERS stamp needs to show the average building rating.

### 14. Final Documentation – NatHERS Certificate

- 14.1 For ratings completed in 'regulatory' mode: The assessor will supply the client with the stamped plans including the NatHERS QR code and the AAO stamp (if required) and a hard copy or electronic format (PDF) of the NatHERS software certificate.
- 14.2 For Class 2 dwellings each individual unit must have a certificate. 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, the heating/cooling load and documentation must be completed for each building/lot separately.
  - 14.2.1 Assessors need to prepare a document for each building that will separately comply with the BCA that identifies the rating of all individual sole occupancy units in the building and the average rating of all units in the building. The documentation required and the separation of buildings must be confirmed with the client, particularly where buildings are connected e.g. via a bridge, an enclosed walkway or underground carpark.
  - 14.2.2 The NCC allows for united buildings - buildings are united if they are connected through openings in the walls dividing them (e.g. by a bridge between buildings or a joint underground carpark) and together comply with all the requirements of the BCA as though they are a single building. This means separate averages would not need to be calculated for each building. This example is different to whether a building crosses a lot boundary or not. The assessor needs to confirm with the client how they are intending to comply and what documentation they require – the assessor should not assume the requirements.

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### Feedback on these principles

All enquiries and comments about the principles should be referred to your accredited assessor organisation (ABSA or BDAV) in the first instance, or your state and territory building regulator if accreditation or licencing is not required in your jurisdiction. Where necessary, these organisations will then refer the matter to the NatHERS National Administrator for advice, who may then issue an amended document.

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

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