

NatHERS (Thermal) software standardisation

This document supplements the NatHERS Software Accreditation Protocol (Thermal) and is a repository of software guides and rules. In regulation mode software tools must incorporate the following additional data sets, fixed inputs, validation rules and locks.

Some items may be repeated in the Certificate field Specifications document or Terms and Conditions.

Versioning

This is a living document that is continually edited and updated as new issues arise. To ensure you have the latest version, please contact the NatHERS Administrator.

Version/date YYYYMMDD	Comments
0.1, 8 Nov 2021	Draft for Software Tool Provider comment
20220713	Review with feedback received from tool providers. Prototype supplied to NatHERS Steering Committee
20220810	Additional comments received from tool Software Tool Providers by 8 August 2022. Version provided to ETWG.
20220901	Incorporated software provider (HERO and SV) feedback. Added: 1. lock internal entry door to garage openability to 0% see item 28 2. Courtyard definition see item 29

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Governance

1. Declaration of interest

Dropdown field with three options:

- Yes - not managed
- Yes - managed
- No

The assessor must be directed (via user manual and/or on-screen prompt) to summarise any perceived, potential or actual conflict of interest in the ‘additional notes’.

2. Rating preview reports

Preview reports of ratings created in the software tool prior to generating the NatHERS Certificate must be easily distinguishable from the NatHERS Certificate and the NatHERS Rating Report. It cannot contain a NatHERS logo.

An uneditable header or footer or watermark on each page must state either:

- “This document is NOT for regulatory purposes” and/or
- “Preview only”.

3. Categories of construction

Drop-down field with three options:

- New home
- Renovation
- Existing home¹

4. Data verification / validation rules / warning

The following items will be itemised in the user agreements, however, because realistically most users never read these, we propose to reiterate some of the key requirements in the form of tick boxes, etc. It also keeps a record of these consents and agreements with the individual rating for Quality Assurance and compliance purposes.

All of these boxes must be ticked before an accredited NatHERS Certificate or Rating Report (formerly a non-accredited certificate) can be generated.

4.1. Validation: AAO membership number for accredited certificates

- A checking mechanism must be in place so that when a new software licence is granted to an accredited assessor, their details are confirmed by an Accrediting Assessor Organisation (AAO) before certificates can be generated. Confirmation can, at its simplest, be in the form of written confirmation from the relevant AAO. Another acceptable solution would be for new accredited assessor accounts to be locked until unlocked by the relevant AAO through their portal access. This would give the AAOs a chance to confirm assessor details before certificates can be produced.

4.2. Tick box: adherence to the Technical Note (Tech Note)

- Mandatory tick box: the software user, in regulation mode, is required to tick to confirm adherence to the NatHERS Technical Note prior to a certificate being able to be generated.
- Suggested text:
I acknowledge that I have applied the relevant NatHERS Tech Note and will ensure that persons working under my direction adhere to the Tech Note. Specifically, I have specified default values I have used, in the "Additional Notes".
I understand that if I do not apply the Tech Note I may face quality assurance and corrective action, and/or lose access to the certificate portal or rating software.

4.3. Tick box: abiding by the software user terms

- Mandatory tick box: The assessor confirms they are abiding by software user terms (provide link to these).

4.4. Tick box: user's express agreement to provide all information

- The user agrees that the Software Provider provides to the NatHERS Administrator (NA) and other NatHERS stakeholders all information relevant to the user's use of the software and assessments performed by the user for the purposes of quality assurance and compliance purposes.

¹ Potentially subject to modification as In Home and Whole of Home come online

- The user's express agreement to fully participate in and cooperate with any investigation or audit conducted by the NA or persons authorised by the NA.

4.5. Tick box: client's signed consent

- *in prep.*

4.6. Tick box: user's acknowledgement of Software Provider's responsibilities to the NA

- The user's acknowledgement that the Software Provider has responsibilities to the NA and that the Software Provider may be directed by the NA to take certain steps or action (including termination of the software licence), and where applicable to the user, the user will comply with those steps or action. This should occur at the certificate generation stage.

Technical

5. PLACEHOLDER: thermal bridging

6. PLACEHOLDER: thermal breaks

7. Conditioned floor area measurement

The reported floor area is measured up to the inside edge of the dimensioned wall. This is the value that must be applied when calculating MJ load per square meter.

8. Apartment access doors

The input field for apartment entrance door openability must be locked to 0% openability If the door opens out to any type of common corridor which is NOT open to external air (i.e. corridors with no permanent openings). This is to ensure ventilation cannot be modelled.

9. Ceiling fans

The dwelling's star-rating calculations must include the ceiling fan watt-hours (converted to MJ) in the total sensible cooling load.

Table 1. Required parameters for ceiling fan used in NatHERS rating.

Fan Diameter (m)	Target area (m ²)	Power for NatHERS Rating (W)	Air speed (m/s)
0.9	2.54	60	0.50
1.2	4.52	60	0.66
1.4	6.16	60	0.77
1.8	10.18	60	1.00
2.1	13.85	60	1.14
2.4	18.10	60	1.16
2.7	22.90	60	1.17
3.0	28.27	60	1.18

See **Fan Speed and Target Area for Large Size Ceiling Fans**, Dong Chen, CSIRO Energy, June 2021

10. Curtains / internal window coverings²

The input field for internal coverings on windows (including garage windows but excluding roof windows) and sliding doors must be set to the shading and insulation default value of Holland blinds.

Additional thermal resistance: 0.03, Solar transmittance: 0.2, Solar absorptance: 0.3

11. Double height void floor area

If the Software tool creates a phantom floor area, then this area cannot be counted towards total floor area and cannot be reported in the Certificate.

12. Exposure types

Dropdown field with four exposure options and corresponding shielding factors are:

- Exposed
- Open
- Suburban
- Protected

The shielding factors applied to the air change rate calculated in zones that participate in the network flow model are:

- 0.88 Exposed
- 0.74 Open
- 0.57 Suburban
- 0.31 Protected

13. Ground reflectance

The ground reflectance setting must be locked at 0.2.

14. Orientation

The following degrees apply when using cardinal directions on the certificate:

North (N)	>337.5° to 22.5°
North-east (NE)	>22.5° to 67.5°
East (E)	>67.5° to 112.5°
South-east (SE)	>112.5° to 157.5°
South (S)	>157.5° to 202.5°
South-west (SW)	>202.5° to 247.5°
West (W)	>247.5° to 292.5°
North-west (NW)	>292.5° to 337.5°

15. Insect screens

In NatHERS regulatory mode the input field must be locked to include an insect screen on all operable glazing (including roof windows).

The insect screen percolation factor is 85% (where 100% is completely unobstructed).

² Potential item up for review in the future so as to contribute to better star ratings.

16. Heating and cooling load limits

The software must implement the ABCB maximum heating cooling load limits. Ideally this process will be fully automated to determine the correct maximum heating and cooling load for the dwelling and whether or not the allowable limits have been exceeded. The table at Attachment A lists the maximum heating and cooling load limits determined by climate zone, building class and the presence or not of outdoor living areas and ceiling fans. This table combines all eight tables of the ABCB Standard.

17. Solar absorptance

When applying “provisional” (default) values for solar absorptancies, the following settings apply:

- Light: 0.3
- Medium: 0.5
- Dark: 0.85

18. Floor plans

At a minimum, the floor plan (not the entire drawing set) must be included/embedded with file sent to the HSTAR portal for certificate generation.

19. Garage zone windows and external doors — gap sizes

Lock gap size to “medium” for windows and external doors of conditioned garages and unconditioned garages.

All other zone doors and windows are “weatherstripped” i.e. small gaps.

Refer to Infiltration Calculations in AccuRate V2.3.3.13, Dong Chen, CSIRO Sustainable Ecosystems, 15 February 2019, for infiltration factors of small, medium and large.

20. Edge batts

- Software must have the ability to include multiple ceiling insulation zones so that edge batts can be modelled.
- When the design documentation specifies edge batts then their presence must be disclosed on the certificates. The edge batt R-value is reported on the certificate in the ceiling schedule. The area or % proportion is not reported on the certificate at this stage (1 Sep 2022).

21. Preventing openability of garage doors and windows

For ventilation purposes – external garage doors and windows must be fixed (i.e. not openable).

22. Protocol for reporting constructions that are simultaneously floors and ceilings

Internal/intermediate floor constructions – for the purposes of the certificate specify the construction as a floor, rather than as a ceiling

23. Starband reference table

For NCC 2022, use 20200610 version.

24. Climate files

The software must have a mechanism to ensure climate files in the software cannot be manipulated or swapped in regulatory mode.

25. Climate files

For NCC 2022, use v2 2016 RMY files

26. Area correction factor

For NCC 2022, use 20220901.

This is the same version as one first circulated in 2020 but due to Sigbox failure we cannot ascertain the actual file name.)

27. Occupant data

Use version for NCC 2022 – contact NatHERS Administrator

28. Internal access door to garage

Set and lock openability of internal door from dwelling to garage, to zero %.

29. Courtyard and wing wall modelling

A (Chenath) courtyard is a space surrounded by three or four walls, not sealed by a roof. At least three walls must be 900mm or higher. The ventilation pressure coefficient calculations for this scenario is different compared to a wing wall. Further information: *Calculation of c_p values for scratch file*, 8 August 2015.



30. Placeholder: modelling roof spaces & soffits

ATTACHMENT 1 ABCB Heating Cooling load limits — maximum loads MJ/m2.pa **Interim values as at 1 June 2022**

NatHERS climate zone	State / territory	Class 1												Classes 2 and 4			
		Class 1 dwelling				Concession: with outdoor living area (NCC CZ 1 and 2 only)				Concession: with outdoor living area & ceiling fan (NCC CZ 1 and 2 only)				Average (entire development)		Maximum (individual dwelling)	
		CSOG		SF		CSOG		SF		CSOG		SF		—	—	—	—
		Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling
1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	WA	3	46	7	47	NA	NA	NA	NA	NA	NA	NA	NA	4	45	9	54
5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	Qld	34	71	42	64	NA	NA	NA	NA	NA	NA	NA	NA	51	57	71	79
7	Qld	9	84	13	85	12	92	17	93	15	102	21	104	7	84	20	102
8	Qld, SA	52	45	48	53	NA	NA	NA	NA	NA	NA	NA	NA	51	50	68	72
9	Qld	34	39	33	34	37	43	37	38	40	47	41	43	44	30	59	43
10	Qld	13	36	18	37	16	39	21	38	18	43	23	41	20	30	21	45
11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
12	WA	21	32	22	30	NA	NA	NA	NA	NA	NA	NA	NA	25	23	40	33
13	WA	48	30	26	38	NA	NA	NA	NA	NA	NA	NA	NA	46	33	61	44

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		CSOG		SF		CSOG		SF		CSOG		SF		—	—	—	—
		Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling
14	Qld	127	10	110	17	NA	NA	NA	NA	NA	NA	NA	NA	135	6	163	11
15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
16	SA	46	32	34	41	NA	NA	NA	NA	NA	NA	NA	NA	36	29	54	45
17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
18	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
19	Qld	42	50	43	52	NA	NA	NA	NA	NA	NA	NA	NA	49	41	63	60
20	Vic	77	26	60	28	NA	NA	NA	NA	NA	NA	NA	NA	83	12	105	26
21	Vic	41	38	38	32	NA	NA	NA	NA	NA	NA	NA	NA	43	27	55	38
22	Vic	99	9	91	14	NA	NA	NA	NA	NA	NA	NA	NA	102	10	127	15
23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
24	ACT, Vic	117	30	108	35	NA	NA	NA	NA	NA	NA	NA	NA	118	24	145	33
25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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		CSOG		SF		CSOG		SF		CSOG		SF		—	—	—	—
		Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling
27	Vic, SA	62	36	59	52	NA	NA	NA	NA	NA	NA	NA	NA	64	40	81	54
28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
30	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
32	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
33	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
34	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
36	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
37	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
40	WA	18	81	15	86	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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		CSOG		SF		CSOG		SF		CSOG		SF		—	—	—	—
		Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling
41	WA	15	67	28	65	NA	NA	NA	NA	NA	NA	NA	NA	23	67	39	81
42	WA	15	65	29	63	NA	NA	NA	NA	NA	NA	NA	NA	22	66	38	80
43	SA	22	61	38	60	NA	NA	NA	NA	NA	NA	NA	NA	28	66	50	83
44	WA	40	33	40	43	NA	NA	NA	NA	NA	NA	NA	NA	39	41	50	56
45	SA	60	28	54	35	NA	NA	NA	NA	NA	NA	NA	NA	55	30	68	43
46	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
47	WA	71	31	46	39	NA	NA	NA	NA	NA	NA	NA	NA	57	31	75	42
48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
49	WA	93	25	76	36	NA	NA	NA	NA	NA	NA	NA	NA	86	21	106	29
50	Qld	61	25	60	27	NA	NA	NA	NA	NA	NA	NA	NA	64	26	78	35
51	WA	51	37	45	44	NA	NA	NA	NA	NA	NA	NA	NA	52	33	65	45
52	WA	23	29	18	37	NA	NA	NA	NA	NA	NA	NA	NA	20	25	26	34
53	SA	45	34	38	44	NA	NA	NA	NA	NA	NA	NA	NA	43	33	56	46

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		CSOG		SF		CSOG		SF		CSOG		SF		—	—	—	—
		Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling
54	WA	26	23	18	32	NA	NA	NA	NA	NA	NA	NA	NA	24	24	34	35
55	WA	35	13	29	21	NA	NA	NA	NA	NA	NA	NA	NA	36	11	47	17
56	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
57	WA	71	23	59	40	NA	NA	NA	NA	NA	NA	NA	NA	71	13	89	21
58	WA	51	4	49	6	NA	NA	NA	NA	NA	NA	NA	NA	52	4	68	9
59	SA	177	9	171	21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
60	Vic	82	22	77	30	NA	NA	NA	NA	NA	NA	NA	NA	75	48	103	49
61	Vic, SA	104	12	95	19	NA	NA	NA	NA	NA	NA	NA	NA	104	6	129	12
62	Vic	70	17	67	32	NA	NA	NA	NA	NA	NA	NA	NA	73	22	91	28
63	Vic	100	8	99	19	NA	NA	NA	NA	NA	NA	NA	NA	107	5	136	12
64	Vic	86	7	82	16	NA	NA	NA	NA	NA	NA	NA	NA	84	9	104	14
65	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
66	Vic	152	16	144	35	NA	NA	NA	NA	NA	NA	NA	NA	152	19	188	30

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		CSOG		SF		CSOG		SF		CSOG		SF		—	—	—	—
		Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling	Heating	Cooling
67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
68	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
69	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA