Department of Planning, Housing and Infrastructure

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BASIX Guide: Checking thermal performance for the Simulation method

A guide for councils and certifiers

September 2026

Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land, and we show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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BASIX Guide: Checking thermal performance for the Simulation method

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Contents

Introduction **4**

The Simulation method **5**

What is the Simulation method? 5

How to determine if the Simulation method has been used 5

Verifying documentation for the Simulation method **8**

1. Check the development details 8

2. Check the NatHERS certificate. 9

3. Verify the NatHERS stamp 12

4. Check the heating and cooling loads on the BASIX certificate 13

Appendix A: Review checklist 17

Appendix B: Glossary 18

Introduction

This guide is for councils and certifiers to use when checking that the information in the 'Thermal performance' section of a BASIX certificate is valid where the accredited assessor has used the Simulation method. Accredited assessors may also find the guide useful to check that they have prepared all required documents when using this method.

There are 4 elements that must be checked by both the consent authority at the approval stage and by the certifying authority during construction. These checks ensure the assessment is valid.

The 4 elements are the:

1. development details
2. Nationwide House Energy Rating Scheme (NatHERS) certificate details
3. NatHERS stamp
4. heating and cooling loads

This document describes how to check these elements. If any of these elements are inconsistent or invalid, you should return the application to the proponent to address.

The **Building Sustainability Index (BASIX) standards** apply to all residential dwelling types and are part of the development application process in NSW.

BASIX certificate means a certificate issued by the Secretary of the NSW Department of Planning, Housing and Infrastructure under section 71 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

Check

Check boxes appear throughout the guide summarising the steps to be taken when reviewing a BASIX certificate.

A one-page checklist that compiles all checkpoints is provided at Attachment A.

The Simulation method

What is the Simulation method?

The Simulation method is one of the pathways to demonstrate compliance with the BASIX Thermal performance standards for new dwellings.

Simulations must be conducted by a NatHERS accredited assessor. Every assessor has a NatHERS assessor number that they must use on NatHERS and BASIX certificates. NatHERS accredited assessors must follow the NatHERS assessor code of practice.

Simulations must be done using software approved by the Federal Government's Nationwide House Energy Rating Scheme (NatHERS) Administrator. Each simulation generates heating and cooling loads (measured in MJ/m^2.year) that must be entered into the BASIX Thermal Performance section. To meet the BASIX standards, the heating, cooling and total loads *must* be below the maximum loads (as calculated by BASIX based on the relevant climate zone).

To complete the Simulation method, an applicant must:

- engage an accredited assessor who will simulate the dwelling with an approved software tool; and
- enter the calculated heating and cooling loads from the NatHERS certificate into BASIX.

The BASIX Thermal Performance Protocol must be followed when using the Simulation method. This sets requirements for:

- the accreditation of organisations that may accredit assessors to do simulations
- the accreditation of assessors by these organisations
- software that accredited assessors can use for simulations
- how accredited assessors must conduct simulations.

For more information, visit https://www.planningportal.nsw.gov.au/simulation-method.

How to determine if the Simulation method has been used

If the Simulation method has been used, the 'NatHERS assessor details and thermal loads' section on page 2 of the BASIX certificate will be populated (see Figures 1 and 2). If the Simulation method has not been used, these fields will have 'n/a' for 'not applicable'.

Description of project

Project address	
Project name	Single dwelling A
Street address	11 TEST STREET SYDNEY 2000
Local Government Area	Sydney City Council
Plan type and plan number	Deposited Plan DP99999
Lot no.	4
Section no.	-
Project type	
Project type	dwelling house (detached)
No. of bedrooms	2
Site details	
Site area (m²)	150
Roof area (m²)	80
Conditioned floor area (m²)	70.0
Unconditioned floor area (m²)	20.0
Total area of garden and lawn (m²)	40
Roof area of the existing dwelling (m²)	0

Assessor details and thermal loads	
NatHERS assessor number	24243252
NatHERS certificate number	234234324529
Climate zone	17
Area adjusted cooling load (MJ/m².year)	14
Area adjusted heating load (MJ/m².year)	16

Project score		
Water	✔ 51	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 96	Target 68
Materials	✔ -36	Target n/a

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Figure 1. NatHERS assessor number and NatHERS certificate number on page 2 of a sample BASIX single-dwelling certificate

Description of project

Project address	
Project name	Sample certificate - apartment building
Street address	TEST STREET SYDNEY 2000
Local Government Area	SYDNEY
Plan type and plan number	Strata Plan SP12345
Lot no.	1
Section no.	-

Project type	
No. of residential flat buildings	1
Residential flat buildings: no. of dwellings	12
Multi-dwelling housing: no. of dwellings	0
No. of single dwelling houses	0

Site details	
Site area (m²)	300
Roof area (m²)	250
Non-residential floor area (m²)	-
Residential car spaces	12
Non-residential car spaces	0

Common area landscape	
Common area lawn (m²)	20
Common area garden (m²)	0
Area of indigenous or low water use species (m²)	0

Assessor details and thermal loads	
NatHERS assessor number	12345
NatHERS certificate number	1234567890
Climate zone	17

Project score		
Water	✔ 40	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 70	Target 62
Materials	✔ -4	Target n/a

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Figure 2. Assessor number and NatHERS certificate number on page 2 of a sample BASIX multiple-dwelling certificate

Verifying documentation for the Simulation method

1. Check the development details

Check

Check the Development Application includes both:

- a BASIX certificate; and
- a NatHERS certificate.

Check that the address or lot details shown on the plans, the NatHERS certificate and the BASIX certificate all match the details in the:

- development application or the application for a complying development certificate;
- construction certificate;
- occupation certificate.

2. Check the NatHERS certificate.

A NatHERS certificate can only be issued by the software provider's online generation system. The first page of the certificate shows the NatHERS logo and will be in the same format as the samples shown in Figure 3 or Figure 4.

- Figure 3 is the overview section for an individual dwelling. It precedes the building features of that dwelling on the following pages.
- Figure 4 is called a Class 2 summary. It is the first page of a certificate generated for a multiple-dwelling project such as an apartment building. It provides a summary for all the individual dwellings that form part of the development. Certificates for each individual dwelling need to be attached to the Class 2 summary.

Each certificate will display a unique **NatHERS certificate number** and can only be generated by a **NatHERS accredited assessor,** with a **NatHERS assessor number**.

The first page of every NatHERS certificate and Class 2 summary must include a unique QR code. **The QR code can be scanned to verify that the certificate is valid**.

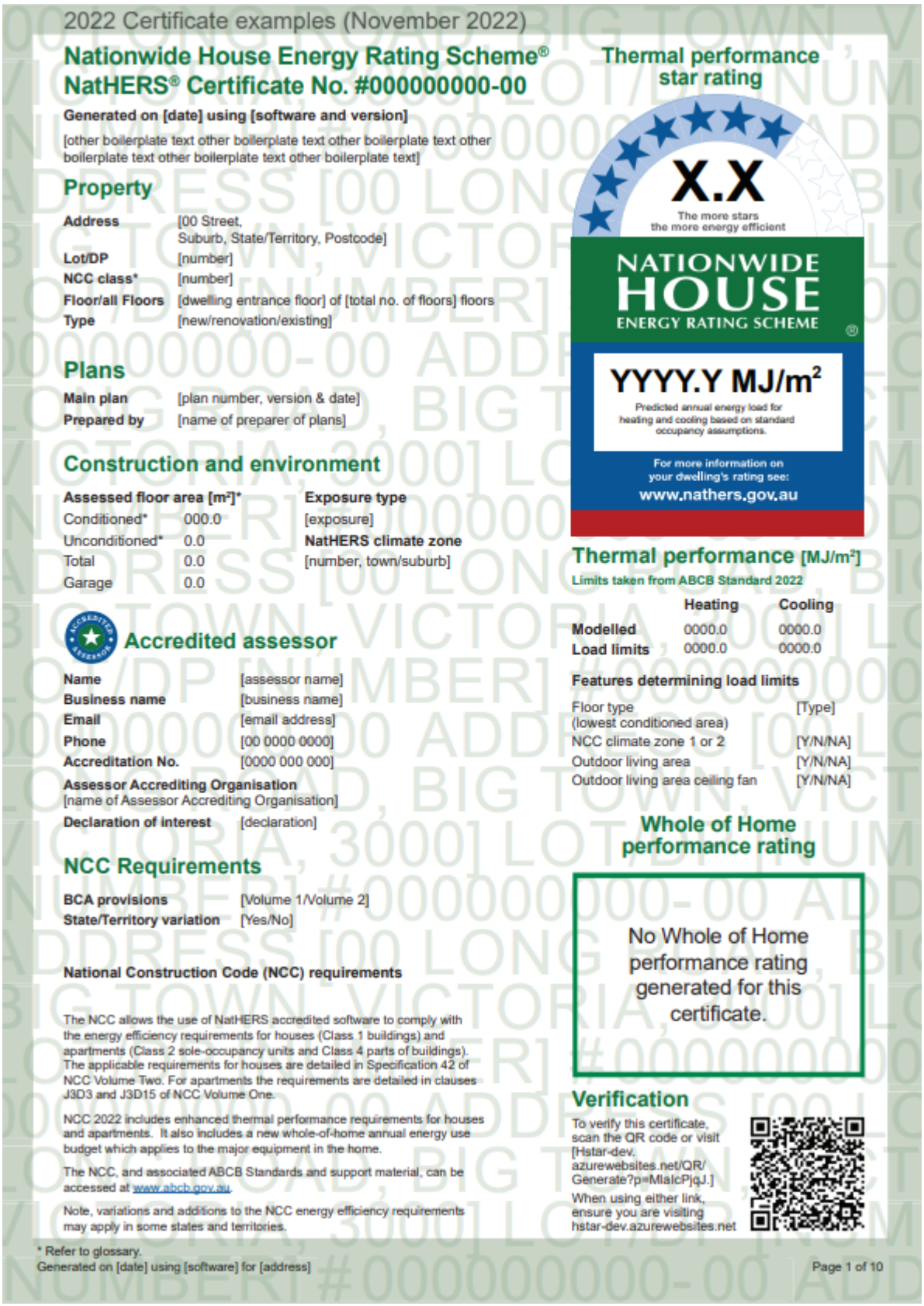
Check

To ensure the validity of a NatHERS certificate, the following 3 items should be checked on every certificate:

- **Template** – ensure the certificate generated matches the template at Figure 3 or 4 below.
- **QR code** – scan the QR code to verify the submitted certificate matches the one linked to by the QR code.
- **Assessor Details** – ensure the NatHERS assessor number and certificate number on the BASIX certificate match the NatHERS certificate.

A NatHERS certificate that fails any of the above criteria

is not to be accepted



2022 Certificate examples (November 2022)

Nationwide House Energy Rating Scheme®
NatHERS® Certificate No. #000000000-00

Generated on [date] using [software and version]

[other boilerplate text other boilerplate text other boilerplate text other boilerplate text other boilerplate text other boilerplate text]

Property

Address	[00 Street, Suburb, State/Territory, Postcode]
Lot/DP	[number]
NCC class*	[number]
Floor/all Floors	[dwelling entrance floor] of [total no. of floors] floors
Type	[new/renovation/existing]

Plans

Main plan	[plan number, version & date]
Prepared by	[name of preparer of plans]

Construction and environment

Assessed floor area [m²]*		**Exposure type**
Conditioned*	000.0	[exposure]
Unconditioned*	0.0	**NatHERS climate zone**
Total	0.0	[number, town/suburb]
Garage	0.0	

Accredited assessor

Name	[assessor name]
Business name	[business name]
Email	[email address]
Phone	[00 0000 0000]
Accreditation No.	[0000 000 000]

Assessor Accrediting Organisation
[name of Assessor Accrediting Organisation]

Declaration of interest	[declaration]

NCC Requirements

BCA provisions	[Volume 1/Volume 2]
State/Territory variation	[Yes/No]

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance star rating

X.X

The more stars the more energy efficient

NATIONWIDE HOUSE ENERGY RATING SCHEME®

YYYY.Y MJ/m²

Predicted annual energy load for heating and cooling based on standard occupancy assumptions.

For more information on your dwelling's rating see:
www.nathers.gov.au

Thermal performance [MJ/m²]

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled	0000.0	0000.0
Load limits	0000.0	0000.0

Features determining load limits

Floor type (lowest conditioned area)	[Type]
NCC climate zone 1 or 2	[Y/N/NA]
Outdoor living area	[Y/N/NA]
Outdoor living area ceiling fan	[Y/N/NA]

Whole of Home performance rating

No Whole of Home performance rating generated for this certificate.

Verification

To verify this certificate, scan the QR code or visit [Hstar-dev.azurewebsites.net/QR/Generate?p=MIaIcPjqJ.]

When using either link, ensure you are visiting hstar-dev.azurewebsites.net

* Refer to glossary.

Generated on [date] using [software] for [address]

Page 1 of 10

Figure 3. First page of a sample NatHERS certificate (Source:https://www.homeenergyrating.gov.au/resources/new-homes-certificate)

2022 Certificate examples (November 2022)

Nationwide House Energy Rating Scheme®
Class 2 Summary
NatHERS® Certificate No. [#000000000-00]

Generated on [date] using [software and version]

[other boilerplate text other boilerplate text other boilerplate text other boilerplate text other boilerplate text other boilerplate text]

Property

Address	[00 Street, Suburb, State/Territory, Postcode]
Lot/DP	[number]
NatHERS Climate Zone	[number]

Accredited assessor

Name	[assessor name]
Business name	[business name]
Email	[email address]
Phone	[00 0000 0000]
Accreditation No.	[0000 000 000]

Assessor Accrediting Organisation
[name of Assessor Accrediting Organisation]

Verification

To verify this certificate, scan the QR code or visit [Hstar-dev.azurewebsites.net/QR/Generate?p=MlaIcPjqJ.]
When using either link, ensure you are visiting hstar-dev.azurewebsites.net

National Construction Code (NCC) requirements

The NCC allows the use of NatHERS accredited software to comply with the energy efficiency requirements for houses (Class 1 buildings) and apartments (Class 2 sole-occupancy units and Class 4 parts of buildings). The applicable requirements for houses are detailed in Specification 42 of NCC Volume Two. For apartments the requirements are detailed in clauses J3D3 and J3D15 of NCC Volume One.

NCC 2022 includes enhanced thermal performance requirements for houses and apartments. It also includes a new whole-of-home annual energy use budget which applies to the major equipment in the home.

The NCC, and associated ABCB Standards and support material, can be accessed at www.abcb.gov.au.

Note, variations and additions to the NCC energy efficiency requirements may apply in some states and territories.

Thermal performance Star rating

X.X
Average rating

NATIONWIDE HOUSE ENERGY RATING SCHEME®

The rating above is the average of all dwellings in this summary

For more information on your dwelling's rating see:
www.nathers.gov.au

NCC heating and cooling maximum loads MJ/m²/p.a.

Limits taken from ABCB Standard 2022

	Heating	Cooling
Modelled block average	0000.0	0000.0
Maximum block limit	0000.0	0000.0

Whole of Home performance rating

No Whole of Home performance rating conducted for this summary certificate
or
not completed for all dwellings

The rating above is the lowest of all dwellings in this summary

Summary of all dwellings

Certificate number and link	Unit Number	Heating load (load limit) [MJ/m2/p.a.]	Cooling load (load limit) [MJ/m2/p.a.]	Total load [MJ/m2/p.a.]	Star Rating	Whole of Home Rating
0000000000	A1	0000.0 (000)	0000.0 (000)	0000.0	0.0	000
0000000000	A2	0000.0 (000)	0000.0 (000)	0000.0	0.0	000
0000000000	A3	0000.0 (000)	0000.0 (000)	0000.0	0.0	000

* Refer to glossary.
Generated on [date] using [software] for [address]

Page 1 of 2

Figure 4. First page of a sample Class 2 summary certificate (Source: https://www.homeenergyrating.gov.au/resources/new-homes-certificate)

3. Verify the NatHERS stamp

For all dwellings, a unique NatHERS stamp (as shown in Figure 5) **must be added electronically to all the design documentation relevant to the NatHERS certificate**.

At a minimum this includes, but is not limited to:

- site and floor plans
- elevations and sections
- materials documentation
- window, skylight and door schedules
- shadow drawings
- electrical plans, including lighting and mechanical ventilation
- insulation information (for example, in construction drawings) where provided
- any design changes
- supporting reports.

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

Figure 5. Sample NatHERS stamp to be added to design documentation

Check

- **Verify** the details of the NatHERS stamp (Figure 5) on the design documentation match the details on the NatHERS certificate.
- **Scan** the QR code to verify that it links to the same certificate as the one that's been submitted.

4. Check the heating and cooling loads on the BASIX certificate

The heating and cooling loads calculated through the Simulation method are to be displayed in the following 2 locations:

- On the NatHERS certificate; and
- On the BASIX certificate itself.

The calculations on both certificates must match for the assessment to be valid.

Figure 6 is an extract of a sample BASIX **single-dwelling certificate**, highlighting where you will find heating and cooling loads on page 2.

Figures 7a and 7b are extracts of a sample BASIX **multi-dwelling certificate**, showing the heating, cooling and total thermal loads of each dwelling across 2 pages.

Check

For BASIX Single-Dwelling Certificates

Check that the heating and cooling loads shown on page 2 of the BASIX certificate (Figure 6) are the same as those on page 1 of the NatHERS certificate (Figure 3).

For BASIX Multi-Dwelling Projects

Check that the heating and cooling loads shown for each individual dwelling in the Thermal performance section of the BASIX certificate (Figure 7a and 7b) are the same as those listed on the NatHERS Class 2 summary (Figure 4).

Description of project

Project address	
Project name	Single dwelling A
Street address	11 TEST STREET SYDNEY 2000
Local Government Area	Sydney City Council
Plan type and plan number	Deposited Plan DP99999
Lot no.	4
Section no.	-
Project type	
Project type	dwelling house (detached)
No. of bedrooms	2
Site details	
Site area (m²)	150
Roof area (m²)	80
Conditioned floor area (m²)	70.0
Unconditioned floor area (m²)	20.0
Total area of garden and lawn (m²)	40
Roof area of the existing dwelling (m²)	0

Assessor details and thermal loads	
NatHERS assessor number	24243252
NatHERS certificate number	234234324529
Climate zone	17
Area adjusted cooling load (MJ/m².year)	14
Area adjusted heating load (MJ/m².year)	16

Project score		
Water	✔ 51	Target 40
Thermal Performance	✔ Pass	Target Pass
Energy	✔ 96	Target 68
Materials	✔ -36	Target n/a

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Figure 6. Heating and cooling loads on page 2 of a sample BASIX single-dwelling certificate

(iii) Thermal Performance	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(a) The applicant must attach the certificate referred to under "Assessor details" on the front page of this BASIX certificate (the "Assessor Certificate") to the development application and construction certificate application for the proposed development (or, if the applicant is applying for a complying development certificate for the proposed development, to that application). The applicant must also attach the Assessor Certificate to the application for a final occupation certificate for the proposed development.			
(b) The Assessor Certificate must have been issued by an Accredited Assessor in accordance with the Thermal Comfort Protocol.			
(c) The details of the proposed development on the Assessor Certificate must be consistent with the details shown in this BASIX Certificate, including the details shown in the "Thermal Loads" table below.			
(d) The applicant must show on the plans accompanying the development application for the proposed development, all matters which the Thermal Comfort Protocol requires to be shown on those plans. Those plans must bear a stamp of endorsement from the Accredited Assessor, to certify that this is the case.	✔		
(e) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), all thermal performance specifications set out in the Assessor Certificate, and all aspects of the proposed development which were used to calculate those specifications.		✔	
(f) The applicant must construct the development in accordance with all thermal performance specifications set out in the Assessor Certificate, and in accordance with those aspects of the development application or application for a complying development certificate which were used to calculate those specifications.		✔	✔
(g) Where there is an in-slab heating or cooling system, the applicant must: (aa) Install insulation with an R-value of not less than 1.0 around the vertical edges of the perimeter of the slab; or (bb) On a suspended floor, install insulation with an R-value of not less than 1.0 underneath the slab and around the vertical edges of the perimeter of the slab.	✔	✔	✔
(h) The applicant must construct the floors and walls of the development in accordance with the specifications listed in the table below.	✔	✔	✔
(i) The applicant must show on The plans accompanying The development application for The proposed development, The locations of ceiling fans set out in The Assessor Certificate.	✔		
(j) The applicant must show on the plans accompanying the application for a construction certificate (or complying development certificate, if applicable), the locations of ceiling fans set out in the Assessor Certificate.		✔	

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
1	20	15	35.000
10	30	16	46.000
11	31.00	14	45.000
12	25	17	42.000

BASIX Department of Planning, Housing and Infrastructure www.basix.nsw.gov.au Version: 4.03 / EUCALYPTUS_03_01_0 Certificate No.: 1371460M Thursday, 27 June 2024 page 11/16

Figure 7a. Heating, cooling and total thermal loads of each dwelling on a sample BASIX multiple-dwelling certificate (page 1)

	Thermal loads		
Dwelling no.	Area adjusted heating load (in MJ/m²/yr)	Area adjusted cooling load (in MJ/m²/yr)	Area adjusted total load (in MJ/m²/yr)
2	23	12	35.000
3	21	17.8	38.800
4	18	17.9	35.900
5	16	16.7	32.700
6	27	15	42.000
7	33	18	51.000
8	31.5	14.6	46.100
All other dwellings	25.8	17.9	43.700

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Figure 7b. Heating, cooling and total thermal loads of each dwelling on a sample BASIX multiple-dwelling certificate (page 2)

Appendix A: Review checklist

1. Check the development details

- When using the Simulation Method, check the development application includes both:
  - a BASIX certificate; and
  - a NatHERS certificate.

- Check that the address or lot details shown on the plans, the NatHERS certificate and the BASIX certificate all match the details in the:
  - development application or the application for a complying development certificate;
  - construction certificate; or
  - occupation certificate.

2. Check the NatHERS certificate details

- To ensure the validity of a NatHERS certificate, the following 3 items should be checked on every certificate:
  - **Template** – ensure the certificate generated matches the template at Figure 3 or Figure 4 below.
  - **QR code** – scan the QR code to verify the submitted certificate matches the one linked to by the QR code.
  - **Assessor Details** – ensure the NatHERS assessor number and certificate number on the BASIX Certificate match the NatHERS certificate.

3. Check the NatHERS stamp

- **Verify** the details of the NatHERS stamp (Figure 5) on the design documentation match the details on the NatHERS certificate.
- **Scan** the QR code to verify that it links to the same certificate.

4. Check the heating and cooling loads on BASIX certificates

- For <u>BASIX Single-dwelling certificates</u>
  - **Check** that heating and cooling loads shown on page 2 of the BASIX certificate (Figure 6) are the same as those on page 1 of the NatHERS assessor certificate (Figure 3).

- For <u>BASIX Multi-dwelling projects</u>
  - **Check** that the heating and cooling loads shown for each individual dwelling in the Thermal Performance section of the BASIX certificate (Figure 7a and 7b) are the same as listed on the NatHERS Class 2 summary (Figure 4).

Appendix B: Glossary

Assessor Accrediting Organisation (AAO): an organisation approved by the NatHERS Administrator to accredit assessors to use NatHERS software.

Nationwide House Energy Rating Scheme (NatHERS): the national scheme to rate the energy and thermal performance of a home's design using NatHERS software. It is administered by the Australian Government on behalf of all states and territories.

NatHERS accredited assessor: a person accredited by an AAO to use NatHERS software and create NatHERS certificates. The AAO issues each assessor with a unique accredited assessor number.

NatHERS certificate: a certificate created from NatHERS software by a NatHERS accredited assessor that shows the heating and cooling loads, which reflect the thermal performance of the home. It has a unique certificate number and QR code. For the BASIX Simulation method, the user must enter information from the NatHERS certificate into the BASIX project.

NatHERS software: a software tool accredited by the NatHERS Administrator that models the thermal performance of the home based on its design. It calculates the heating and cooling loads (that is, how much energy is required in winter and summer to keep the home at a comfortable temperature).

NatHERS stamp: a unique stamp that is generated when the accredited assessor creates a NatHERS certificate. The stamp includes the NatHERS certificate number and a QR code that links to the NatHERS certificate stored by the NatHERS software provider. The stamp is to be added electronically to all the design documentation.