BASIX®

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BASIX GUIDE :

Certifying Thermal Comfort

NSW GOVERNMENT | Planning & Environment

Version 1.2 \\ 01 May 2016

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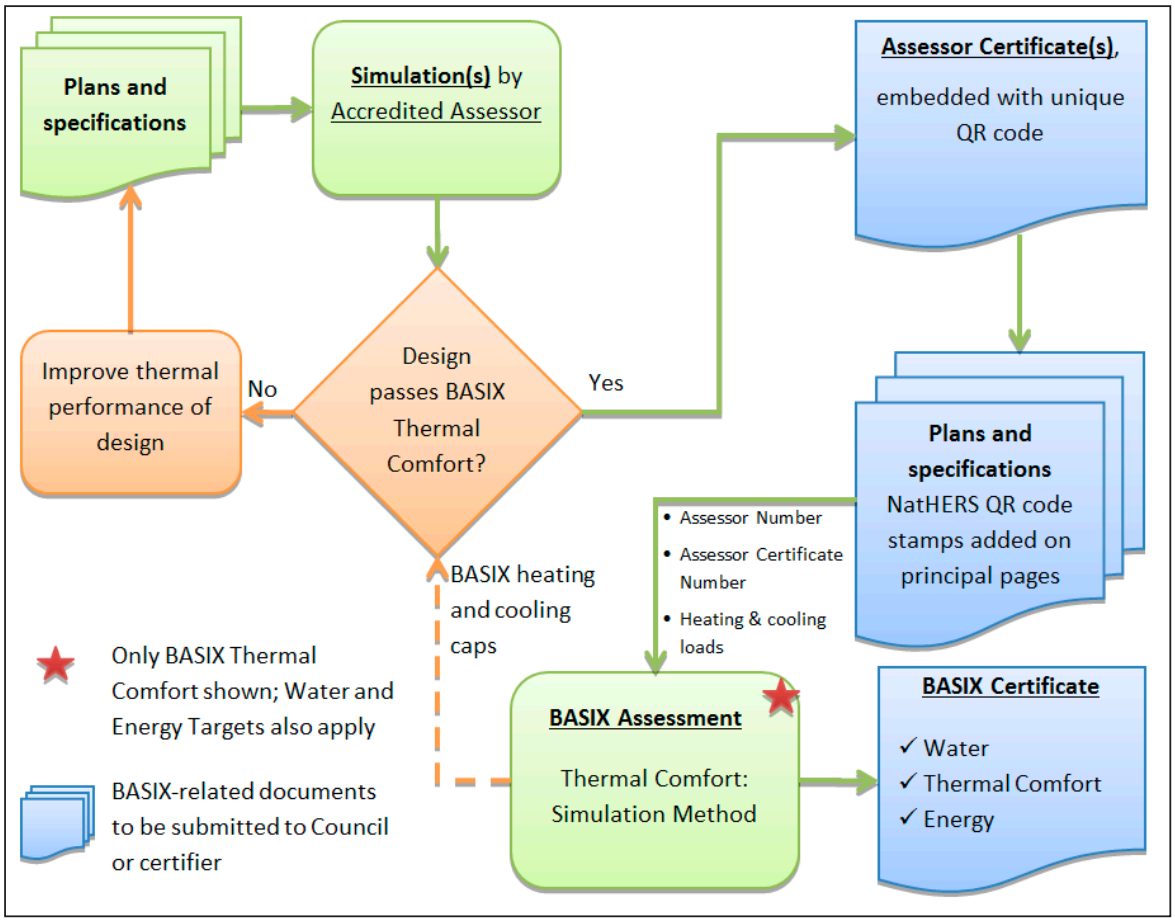
Introduction

This Guide describes how councils and certifiers can check that the information submitted in the Thermal Comfort section of BASIX using the Simulation Method is valid. Accredited Assessors may also find it useful to understand what documents must be prepared when using Simulation.

The diagram below shows the process of completing the Thermal Comfort section of BASIX using the Simulation Method, beginning with the original plans. Simulation means the modelling of a new dwelling using Approved Software for the purposes of demonstrating compliance with the BASIX Thermal Comfort Index.



There are four elements that must be checked by the consent authority at approval stage, and by the certifying authority during construction, to ensure the validity of the assessment:

1. the development details;
2. the Accredited Assessor details;
3. the Assessor Certificate details; and
4. the heating and cooling loads.

This document describes how and why to check these elements. If these elements are inconsistent or invalid, then the application should be returned to the proponent to resolve.

1. Checking the Development Details

BASIX Certificate: means a certificate issued by the Secretary of the Department of Planning and Environment in relation to the sustainability of a proposed development. See clause 164A of the Environmental Planning and Assessment Regulation 2000.

Sample BASIX Certificates are shown in Section 4: Checking the Heating and Cooling Loads.

Check that the address or lot details shown on the plans, the Assessor 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. Checking the Accredited Assessor Details

Accredited Assessor: means a person accredited by an Accrediting Organisation to conduct Simulations for the Thermal Comfort Index of BASIX.

Accrediting Organisation: means an organisation approved by the Department of Planning and Environment to accredit assessors for the purposes of conducting Simulations.

Currently, the Association of Building Sustainability Assessors (ABSA) and the Building Designers Association of Victoria (BDAV) are Accrediting Organisations.

Assessor Number: means the unique number assigned to that Accredited Assessor by the relevant Accrediting Organisation (ABSA or BDAV).

It is a requirement that the Simulation for BASIX Thermal Comfort is conducted by an Accredited Assessor. Every Accredited Assessor is issued with an Assessor Number, assist with their identification. As an Accredited Assessor, they must:

- have completed relevant training and examination, and stay up-to-date with Continuing Professional Development;
- conduct Simulation using Approved Software in a manner consistent with accepted standard procedures; and
- act in a professional manner consistent with the requirements of their accrediting organisation, including quality assurance and holding relevant insurance.

3. Checking the assessor certificate details

Assessor Certificate means the Nationwide House Energy Rating Scheme Certificate issued from the online generation system by the software provider, with the first page showing the NatHERS logo, and the unique QR-code.

The first page of the Certificate for individual dwellings contains an overview section, and subsequent pages list the building features of that dwelling.

For a multi-dwelling project such as an apartment building, the Certificate consists of a summary ("Class 2 Summary") that includes the certificate details (including the heating and cooling loads) of the individual dwellings. Certificates of individual dwellings need to be attached to the summary.

Assessor Certificate Number means the unique Certificate Number shown on the Assessor Certificate.

The Assessor Certificate Number may also be referred to as the "Certification Number".

The Assessor Certificate shows:

- the location of the project;
- the version of Approved Software used;
- the Accredited Assessor who generated the certificate;
- the conditioned floor area and unconditioned floor area of the dwelling; and
- the adjusted heating and cooling loads (total load may also be included).

The front page of the Assessor Certificate must also include a unique QR-code at the bottom right-hand corner.

Check that all of the Assessor Stamps are complete, signed and consistent. Check that the Assessor Certificate Number shown on the BASIX Certificate matches the details on the Assessor Certificate.

Sample BASIX Certificates are shown in Section 4: Checking the Heating and Cooling Loads.

It is possible to further verify the validity of an Assessor Certificate by contacting the Accrediting Organisation of the Assessor who carried out the assessment.

For ABSA assessors: www.absa.net.au

For BDAV assessors: www.bdav.org.au

Below is a sample NatHERS Certificate.

For Assessor Certificates prepared before Dec 2014 using AccuRate, before Feb 2015 using FirstRate 5 or before May 2016 using BERS Pro, please refer to previous version of the Guide (version 1.0: 10 May 2013)

Individual dwellings (single or multi-dwellings)

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 87654321 Date of certificate: 12 April 2014 ★ Star rating: 6.5

Assessor details

Accreditation number:	12345678
Name:	Fred Williams
Organisation:	Capital Building Assessors
Email:	frederick.williams@cbassessors.com.au
Phone:	0412 123 456
Declaration of interest:	Employed by designer of the building
Software:	FirstRate5 v5.5.11
AAO:	ABSA

6.5
The more stars the more energy efficient
NATIONWIDE HOUSE ENERGY RATING SCHEME
Predicted annual energy load for heating and cooling based on standard occupancy assumptions
1234 MJ/m²
For more information on your dwelling's rating see:
www.nathers.gov.au

Overview

Dwelling details

Address:	Unit 15, 237 Edwina Mountbatten Drive		
Suburb:	West Wyndham		
State:	NSW	Postcode:	2345
Type:	New dwelling	NCC Class:	01
Lot/DP number:	9/53	NatHERS climate zone:	14
		Exposure:	Suburban

Key construction and insulation materials
(see following pages for details)

Construction:	Brick veneer Ceramic tile roof Slab on ground
Insulation:	R1.5 wall insulation R3.5 ceiling insulation
Glazing:	Timber frame Single glaze clear

Ceiling penetrations
(see following pages for details)

Sealed:	5
Unsealed:	18
TOTAL:**	23

**NOTE: This total is the maximum number of ceiling penetrations allowed to a ceiling (under a roof) for this certificate. If this number is exceeded in construction then this certificate IS NOT VALID and a new certificate is required. Loss of ceiling insulation for the penetrations listed has been taken into account with the rating.

Principle downlight type: Compact fluorescent

Net floor area (m²)

Conditioned:	55
Unconditioned:	23
Garage:	12
TOTAL:	90

Annual thermal performance loads (MJ/m²)

Heating:	576
Cooling:	658
TOTAL:	1234

Window selection – default windows only

Note on allowable window values: With a 10% tolerance to the nominated SHGC window values shown on page 2, the following ratings are achieved:

-10% SHGC	6.3
+10% SHGC	6.6

NB: This tolerance ONLY applies to SHGC, the U-value can always be lower but not higher than the values stated on page 2.

If the rating listed above falls below 6.0 stars or the required rating, then the window with this tolerance can NOT be selected.

Scan to access this certificate online and confirm this is valid.

Plan documents

Plan ref/date:	Ref24/88
Prepared by:	Wyndham Sustainable Homes

* Nationwide House Energy Rating Scheme (NatHERS) is an initiative of the Australian, state and territory governments. For more details see www.nathers.gov.au

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Nationwide House Energy Rating Scheme* Certificate

Certificate number: 87654321 Date of certificate: 12 April 2014 ★ Star rating: 6.5

Building features

Window type and performance value

Window ID	Window type	U-value	SHGC
ALM-001-01 A	Aluminium A, single glazed, clear	5.75	0.69
ALM-002-01 B	Aluminium B, single glazed, clear	7.27	0.58
ALM-003-25 A	Aluminium A, double glazed, toned glass	6.23	0.65

Window schedule

Window ID	Window no.	Height (mm)	Width (mm)	Orientation	Zone name	Outdoor shade
ALM-001-01 A	001	2100	1000	SSE	Kit/liv	No
ALM-001-01 A	002	2100	1000	SE	Kit/liv	No
ALM-001-01 A	003	2100	1000	E	Kit/liv	No
ALM-001-01 A	004	1500	1000	SW	Br1	Yes
ALM-001-01 A	005	1500	1000	WSW	Br1	Yes
ALM-001-01 A	006	1500	1000	N	Br2	Yes
ALM-002-01 B	007	1500	1000	N	Br2	Yes
ALM-002-01 B	008	1500	1000	N	Br2	Yes
ALM-002-01 B	009	1200	1500	S	Br3	No
ALM-002-01 B	010	1200	1500	S	Br3	No
ALM-002-01 B	011	1200	1500	E	Ensuite	No
ALM-002-01 B	012	1200	1500	W	Bath	Yes
ALM-003-25 A	013	900	1200	W	Bath	Yes
ALM-003-25 A	014	900	1200	N	Living	Yes
ALM-003-25 A	015	900	1200	N	Living	Yes
ALM-003-25 A	016	900	1200	N	Living	Yes

Roof window and skylight type and performance value

ID	Window type	U-value	SHGC
SC-001-02-234	Single glazed, clear glass, timber/uPVC	5.75	0.69
SO-213-03-123	Single glazed, toned glass, aluminium	7.27	0.58

Roof window and skylight schedule

ID	Roof window/ skylight no.	Area (m²)	Orientation	Zone name	Outdoor shade	Indoor shade/ diffuser
SC-001-02-234	017	1.1	NNE	Kit/liv	20%	No
SC-001-02-234	018	2.0	NE	Kit/liv	40%	Yes
SO-213-03-123	019	1.1	N	Living	20%	Yes
SO-213-03-123	020	2.0	NNW	Living	60%	No

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 87654321 Date of certificate: 12 April 2014 ★ Star rating: 6.5

Building features continued

External wall type

Type	Insulation	Wall wrap
Brick veneer	Glass fibre batt: R2.0	Yes
Solid brick	Glass fibre batt: R2.0	Yes
Reverse brick veneer	Glass fibre batt: R2.0	No

External wall schedule

Wall type	Area (m²)	Orientation	Zone name	Fixed shade	Eaves
Cust-BV-123-Ac	8.5	N	Kit/liv	No	Yes

Internal wall type

Wall type	Area (m²)	Insulation
Plasterboard	8.5	Glass fibre batt: R3.0

Floors

Location	Construction	Area (m²)	Sub floor ventilation	Added insulation	Covering
Living	CSOG: slab on ground	5.2	none	R2.5	Carpet
Garage	CSOG: slab on ground	2.1	Encl	0	None

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 87654321 Date of certificate: 12 April 2014 ★ Star rating: 6.5

Building features continued

Ceiling type

Location	Material	Added insulation	Roof space above
Living	Plasterboard	R2.5	Yes
Bedroom	Timber	0	No

Ceiling penetrations

Location	Number	Type	Diameter (mm)	Sealed/unsealed
Living	8	LED downlight	90	Sealed
		Light fitting	100	Sealed
		Exhaust fan	400	Sealed
		Ceiling air vent	250	Unsealed

Ceiling fans

Location	Number	Diameter (mm)
Living	2	900
Bedroom	1	1200

Roof type

Material	Added insulation	Roof colour
Metal	R2.5	Dark
Concrete tile	Sarking	Light

Nationwide House Energy Rating Scheme* Certificate

Certificate number: 87654321 Date of certificate: 12 April 2014 ★ Star rating: 6.5

Additional information

Explanatory notes

About this report

Residential energy ratings address the quality of the building fabric i.e. walls, windows, floors and roof/ceilings. Ratings do not cover the energy or water efficiency of appliances including heating and cooling, hot water, dishwashers, ovens, fridges, TVs etc. or solar panel or water tank requirements. The efficiency or specification of these items is generally covered by other regulations, standards or guidelines.

General Information

A NatHERS House Energy Rating is a comprehensive, dynamic computer modelling evaluation of the floorplans, elevations and specifications to predict an energy load of a home. Not all of us use our homes in the same way, so ratings are generated using standard assumptions. This means homes can be compared across the country.

The actual energy consumption of your home may vary significantly from the predicted energy load figures in this report depending on issues such as the size of your household and your personal preferences, e.g. in terms of heating or cooling.

While the figures are an indicative guide to energy use, they can be used as a reliable guide for comparative purposes between different house designs and for demonstrating that the design meets the required regulatory compliance.

Homes that are energy efficient use less energy, are warmer in winter, cooler in summer and cost less to run. The higher the star rating the more energy efficient.

This NatHERS House Energy Rating report was carefully prepared by your assessor on the basis of comprehensive modelling using standard procedures to rate your home using an underlying engine developed by the Australian Commonwealth Scientific and Industrial Research Organisation (CSIRO).

All information relating to energy loads presented in this report is based on a range of standard assumptions in order to allow for comparisons with reports prepared for other homes and to demonstrate minimum regulatory compliance. The standard assumptions include figures for occupancy, indoor air temperature and are based on a unique climate file for your region.

Accredited Assessors

To ensure you get a high-quality, professional NatHERS House Energy Rating report, you should always use an accredited assessor, accredited assessors are members of a professional body called an Assessor Accrediting Organisation (AAO).

AAOs have specific quality assurance processes in place and continuing professional development requirements to maintain a high and consistent standard of assessments across the country. Non-accredited assessors do not have this level of quality assurance or any on-going training requirements.

If you have any questions or concerns about this report, please direct them to your assessor in the first instance.

If your assessor is unable to address your questions or concerns, please contact their AAO listed under 'assessor details'. You can also find a range of information about accredited assessors on the AAO websites.

Disclaimer

The energy values quoted are for comparison purposes only; they are not a prediction of actual energy use. This rating only applies to the floor plan, construction details, orientation and climate as submitted and included in the attached drawing set that bears a stamp with the same number as this certificate. Changes to any of these details could affect the rating.

Contact

For more information on the Nationwide House Energy Rating Scheme (NatHERS), visit www.nathers.gov.au

For more information on energy efficient design and insulation visit www.yourhome.gov.au

Summary for a multi-dwelling project

Nationwide House Energy Rating Scheme* — Class 2 summary

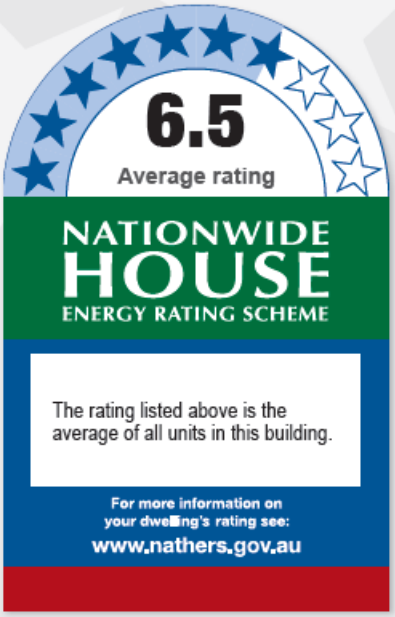
Certificate number: 11220001 Date of certificate: 12 April 2014 ★ Average star rating: 6.5

Assessor details

Accreditation number:	12345678
Name:	Fred Williams
Organisation:	Capital Building Assessors
Email:	frederick.williams@cbassessors.com.au
Phone:	0412 123 456
Declaration of interest:	Employed by designer of the building
Software:	FirstRate5 v5.5.11
AAO:	ABSA

Dwelling details

Address:	237 Edwina Mountbatten Drive
Suburb:	West Wyndham
State:	NSW
Postcode:	2345



Summary of all dwellings

Certification details

Certificate number	Unit number	Annual thermal performance loads (MJ/m²) Heating load	Cooling load	Total load	Star rating
11220001_001	1	102	40	142	6.5
11220001_002	2	100	35	135	7
11220001_003	3	111	43	154	6
11220001_004	4	111	43	154	6
11220001_005	5	100	35	135	7
11220001_006	6	111	43	154	6.5
11220001_007	7	102	40	142	6.5
11220001_008	8	100	35	135	7
11220001_009	9	111	43	154	7
11220001_010	10	111	43	154	6
11220001_011	11	100	35	135	6.5
11220001_012	12	111	43	154	7
11220001_013	13	102	40	142	6
11220001_014	14	100	35	135	6
11220001_015	15	111	43	154	7
11220001_016	16	111	43	154	6.5
11220001_017	17	100	35	135	6.5
11220001_018	18	111	43	154	7

continued

* Nationwide House Energy Rating Scheme (NatHERS) is an initiative of the Australian, state and territory governments. For more details see www.nathers.gov.au

For all dwellings a unique NatHERS QR code stamp as shown below is to be electronically added to every principal page of the plans/drawing such as cover sheet, floor plans, elevations and specifications. The purpose of this QR code stamp is to link the NatHERS Certificate to the drawing set.

CHECK

Check that details of the unique NatHERS QR code stamp found on the principal pages of the plans match with the details of the NatHERS Certificate.

4. Checking the heating and cooling loads

Simulation is used by the Accredited Assessor to calculate the heating and cooling loads for each dwelling in the project.

4a Single dwellings

CHECK

For single dwelling projects, check that the heating and cooling loads shown in the BASIX Certificate are the same as on the Assessor Certificate

The following BASIX Certificate extract shows the position on page 2 of the Assessor Number, the Assessor Certificate Number, and the heating and cooling loads for a single dwelling project.

Description of project

Project address	
Project name	Test house single
Street address	1 Test Drive Test 2640
Local Government Area	Albury City Council
Plan type and plan number	Deposited Plan 99
Lot no.	11
Section no.	-
Project type	
Project type	separate dwelling house
No. of bedrooms	3
Site details	
Site area (m²)	867
Roof area (m²)	269
Conditioned floor area (m2)	240
Unconditioned floor area (m2)	15
Total area of garden and lawn (m2)	284

Assessor details and thermal loads	
Assessor number	12345
Certificate number	1234567890
Climate zone	20
Area adjusted cooling load (MJ/m².year)	25
Area adjusted heating load (MJ/m².year)	100
Other	
none	n/a

Project score		
Water	✓ 42	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 30	Target 25

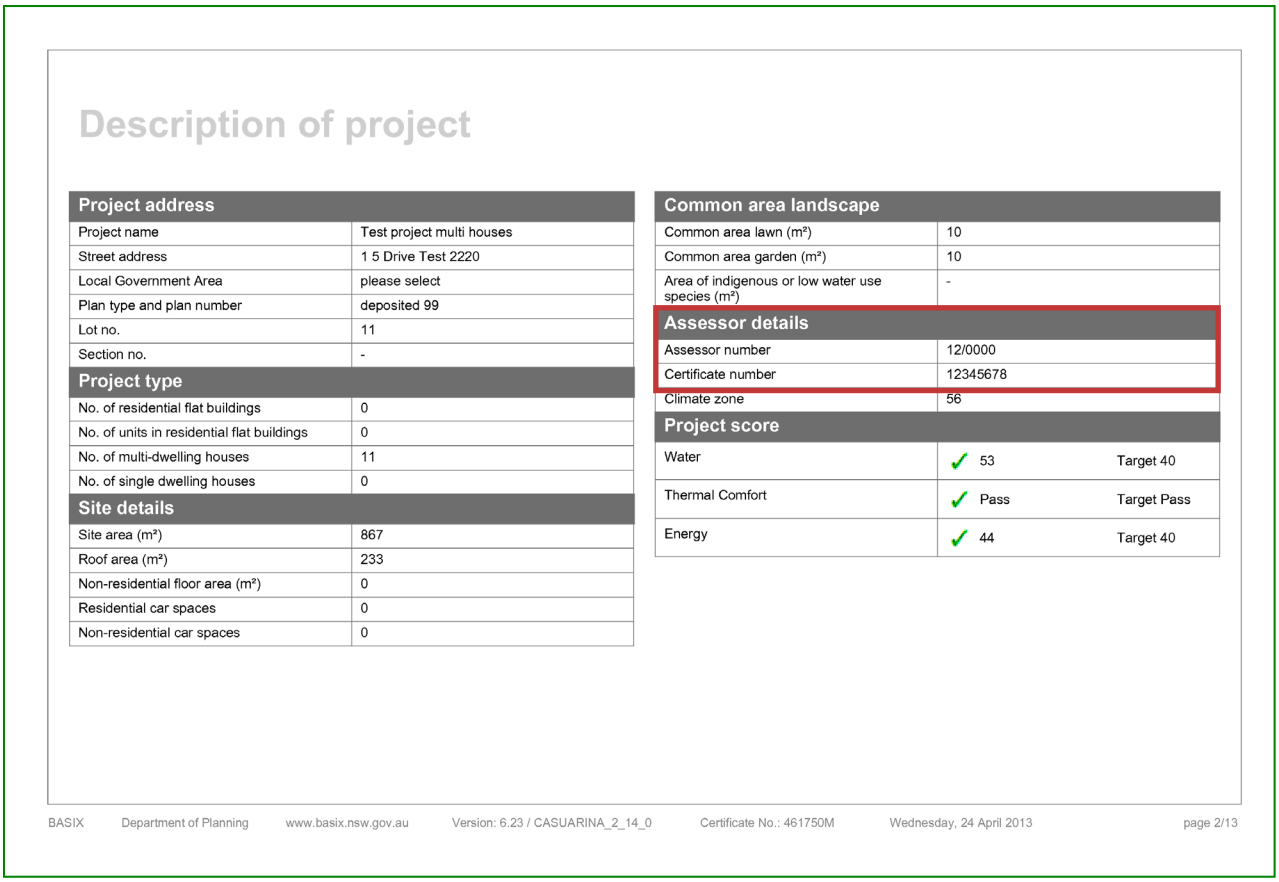
4b Multi-dwellings

In a multi-dwelling project, the Assessor Certificate includes a summary of the individual heating and cooling loads for each dwelling.

CHECK

For multi-dwelling projects, check that the heating and cooling loads shown for each individual dwelling in the Thermal Comfort section of the BASIX Certificate are the same as listed in the summary.

The following BASIX Certificate extracts show the position on page 2 of the Assessor Number and the Assessor Certificate Number, and the position on a later page of the heating and cooling loads for each dwelling in a multi-dwelling project.



Description of project

Project address	
Project name	Test project multi houses
Street address	1 5 Drive Test 2220
Local Government Area	please select
Plan type and plan number	deposited 99
Lot no.	11
Section no.	-
Project type	
No. of residential flat buildings	0
No. of units in residential flat buildings	0
No. of multi-dwelling houses	11
No. of single dwelling houses	0
Site details	
Site area (m²)	867
Roof area (m²)	233
Non-residential floor area (m²)	0
Residential car spaces	0
Non-residential car spaces	0

Common area landscape		
Common area lawn (m²)	10	
Common area garden (m²)	10	
Area of indigenous or low water use species (m²)	-	
Assessor details		
Assessor number	12/0000	
Certificate number	12345678	
Climate zone	56	
Project score		
Water	✓ 53	Target 40
Thermal Comfort	✓ Pass	Target Pass
Energy	✓ 44	Target 40

BASIX Department of Planning www.basix.nsw.gov.au Version: 6.23 / CASUARINA_2_14_0 Certificate No.: 461750M Wednesday, 24 April 2013 page 2/13

(iii) Thermal Comfort	Show on DA plans	Show on CC/CDC plans & specs	Certifier check
(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.	✓	✓	✓

	Thermal loads	
Dwelling no.	Area adjusted heating load (in mJ/m²/yr)	Area adjusted cooling load (in mJ/m²/yr)
1	27	14
2	39	20
3	48	19
4	46	16
5	45	20
6	41	34
7	32	24
8	62	18
9	62	19
10	66	21
All other dwellings	56	28

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