

Building Standards - Stage 1

The Narara Ecovillage Building Standards (the Building Standards) have been developed in support of the community's [vision, mission and aims](#).

The NEV Building Standards have been developed and implemented by the NEV Community to further our aims to research, design and build a thriving Ecovillage which demonstrates our commitment to ecological and social sustainability

The standards seek an outcome based on inclusive decision making, good design, good health and the wellbeing of all community members. They encourage small and inexpensive houses knowingly designed to provide thermal comfort, low water use and low energy consumption. The standards also seek innovation from community members in the design of their homes and the use of recycled and locally sourced materials wherever possible. We are all seeking homes with a significantly reduced impact on the environment when compared to the "average" house currently built in NSW and in Australia as a whole.

We aim for standards equal to the current best practice, and which incorporate higher sustainability and performance outcomes than those set by other commonly used rating tools. In addition, we seek cost-effective outcomes for all sustainability elements incorporated into the homes of community lot owners.

The Building Standards will be reviewed regularly by the Building Review Panel, who will report to the Community Association. The Building Review Panel is focused on improving the standards with reference to our community aims, affordability and building performance.

Please contact the Building Review Panel (brp@nararaecovillage.com) if you have any questions regarding these Standards.



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1. Background to the Building Standards

Our Building Standards are based on:

1. Conserving potable water and managing stormwater, greywater & blackwater. (*Greywater* is waste water from showers and basins and *blackwater* is water from toilets.)
2. Reducing greenhouse gas emissions generated by a building's thermal performance and other energy use in a building.
3. Supporting increased use of renewable energy.
4. Managing peak power demand.
5. Lowering the environmental impacts of building materials by reducing their embodied energy and toxicity.
6. Minimising construction and domestic waste.
7. Managing the indoor environmental quality of building, including air quality, lighting, thermal conditions, pollutants and ergonomics, and the effects of these elements on building occupants.
8. Encouraging innovation.
9. Placing livability, adaptability and resilience at the core of good building design.

The Building Standards:

- Extend the sustainability targets for energy and water set by the Building Sustainability Index (BASIX), which is the sustainable planning measure implemented under the Environmental Planning and Assessment Act. BASIX applies to all residential dwellings and is part of the development application process in NSW. <https://www.basix.nsw.gov.au/>
- Incorporate lessons learned from other assessment tools in common use, and from the building standards of other ecovillages, community associations and green developments including Lochiel Park, South Australia; Aldinga Arts Eco Village; The Bend Neighbourhood Association BEND; The Ecovillage at Currumbin; Green Star; BASIX; STEPS & BESS
- Have been independently reviewed by external reviewers, including experienced sustainability Architects and Builders

Like BASIX, the Building Standards establish mandatory minimum standards for some sustainability elements.

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2. Building Performance Targets

BASIX requires a 40% reduction of greenhouse gas emissions and town water usage for a standard NSW house. This standard was set in 2004, and NSW has fallen behind other states in energy efficiency standards that were adopted in 2011.

The Building Standards have benchmarked reductions like those used in the state of Victoria's Built Environment Sustainability Scorecard (BESS) and we have set an initial reduction level compared to the BASIX standard 2004 house, at:

- 70% for greenhouse gas emissions,
- 70% for potable water usage, and
- a similar reduction for other categories.

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3. Smart Grid Compatible Equipment

Narara Ecovillage infrastructure incorporates advanced smart grid technology which uses a variety of operational and energy measures including smart meters, smart appliances, and renewable energy resources to control the production and distribution of electricity within the NEV mini-grid

A schedule of [smart grid compatible equipment](#), including smart meters and inverters is located on the wiki. The page is maintained and updated by NEV so that Lot Owners can be informed on the correct equipment to choose for installation in their home to achieve the maximum benefit from the smart grid.

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4. Hill Thalys Design guidelines

The village engaged the services of Hill Thalys in developing the overall design concept plan for the village.

Key guidelines developed as part of the design concept plan have been incorporated into the NEV Building standards. The following are now assessed as part of the design review.

- Street setback at least 3m
- Northern boundary setback an average of at least 3m
- Southern boundary setback an average of at least 0.9m
- Rear boundary setback 6m for lots with common garden or 2m
- Fencing discouraged
- Building footprint less than 40% of lot size
- Site coverage less than 45% of lot size
- Internal house area maximum 180sqm – 150sqm preferred
- Dual occupancy – maximum of 240sqm – 180sqm preferred
- Secondary dwelling – maximum of 120sqm – 70sqm preferred
- Building height – 8m
- Solar access & overshadowing – more than 3 hours of winter solstice sun to major living areas of all houses

Note: setbacks are calculated to the external wall of the dwelling excluding any external decking or verandahs.

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5. Landscape Standards

NEV's [Landscape Standards](#) are also located on the NEV Wiki and should be read in conjunction with these Building Standards.

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6. Design Assessment Scoresheet

The home designs of Lot Owners are assessed against the Building Standards using the **Design Assessment Scoresheet**.

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The Scoresheet measures the resources that a NEV dwelling uses, and considers the house energy emissions and water consumption in a similar manner to the 2004 BASIX benchmark, but seeks an initial reduction of estimated consumption that is less than 70% of the BASIX 2004 benchmark for both. Goals for each category in the Scoresheet are provided in [Table 1 of the NEV Building Standards](#).

Scoresheets may be filled out by either the lot owners, the lot owner's design consultant(s). The Lot Owner is responsible for any cost incurred in completing the NEV Scoresheet.

The scorecard includes 3 ratings that new homes must achieve. They are:

- a. At least a 7-stars [NatHERS rating](#) for building thermal performance.
- b. Reduce water consumption through installation of the highest rated WELS tap.

This requirement will be assessed using BASIX (which is the Department of Planning and Environment's building sustainability index tool used by all local Councils when approving housing developments in NSW).

- c. Energy generated by a home exceeds annual average consumption.

Typically, solar photovoltaic panels (PV) will be used by home owners at Narara to generate power. To meet mandatory requirements, we call for PV sets to be sized at 2 kWp for the first bedroom and 1kWp for each additional bedroom.

Compliance with these 3 requirements will yield home designers 37 points on our assessment scorecard.

With 37 points achieved through designing in the mandatory performance items, the home designer then needs to achieve a further 33 points to reach the minimum targeted score of 70 points. The additional points are attained by adopting design strategies supported by the option matrix provided in the **Design Assessment Scoresheet**. Many options and combination of options are supported by the scoresheet and Lot Owners are encouraged to discuss with their designer the elements that best suit their requirements. Some, though not all, of the available options are presented below:

- o More bedrooms and smaller homes
- o Appropriate selection of construction materials
- o Reduce embodied energy in house construction.
- o Using sustainable materials such as mud-brick, straw bale and cob etc.
- o Avoiding material with high human health impact such as VOC paints and PVC piping.
- o Adding more than the mandatory number of solar photovoltaic panels.
- o Selection of high star rated appliances (clothes dryers, air conditioners for example) or not having them at all.
- o Managed energy consumption to reduce peak loads.
- o Management waste during both home construction and after construction.
- o Maximising the home's environment quality through solar access and cross ventilation.
- o Livability considerations such as permitting disability access in the future.

Bonus points have been built into the scorecard to account for the fact that some home owners may have difficulty in reaching 70 points because, for example, the NatHERS star rating system does not recognise innovations such as earth-ship construction, food production, water tanks and composting toilets.

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7. NEV design approval criteria

The Building Review Panel will assess the lot owners design against the following criteria

1. The owner must demonstrate that they have consulted with the owners in neighbourhood and that neighbours have been given the opportunity to propose changes to the design to resolve any concerns they may hold.
2. The design has achieved a minimum NatHERs 7star rating
3. The design has a NSW Govt BASIX certificate
4. The design meets the Hill Thalys guidelines
5. The design has achieved a score of at least 70 points in the NEV Design Assessment Scoresheet
6. The landscape design conforms to the NEV Landscape standards

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8. Narara Ecovillage Average Standard

Narara Ecovillage will also calculate the average score of all dwellings in the community by using the scores provided for individual lots by Lot Owners.

The Ecovillage may also be assessed against additional criteria; including:

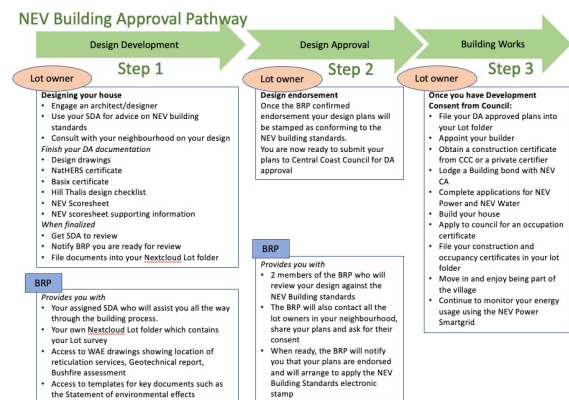
- Food (where the ecovillage will grow some of its food) and
- Transport (e.g. sharing vehicles).

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9. Building Design and Approval

A 3-Steps Approval

The Narara Ecovillage Building Approval Process is shown in Figure 1.



A significant test in building sustainable communities is how Lot Owners deal with their neighbours when placing and sizing their homes. The approval pathway sets down a requirement for Lot Owners to participate in a neighbourhood exchange at early stage of their home design and we recommend the exchange is facilitated by a design professional.

The aim of the exchange is to optimise the location of houses on lots to achieve equity across the neighbourhood in respect of solar access and overshadowing, and to consolidate at an early stage of the design consideration of both Hill Thalys and Central Coast Councils building setbacks and building envelopes and incorporation of common garden and services easements.

The Building Review Panel's recommendation with respect of access to sunlight is set out in [Appendix 3 – Solar Access](#) of these Building Standards. While the criteria are guidelines only and not mandatory they should inform each neighbourhood exchange.

The neighbourhoods for Stage 1 have been agreed and are available in the Wiki.

Outcomes from the Facilitated Exchange are to be documented in a Neighbourhood Agreement, which states the placement and size of Lot Owners' homes and associated structures across the entire neighbourhood.

Experience has shown that whilst the neighbourhood agreement represents an aspiration, individual lot owners retain the right to vary their design if required. Their design must meet as a minimum the requirements outlined in the building standards.

The objective of this step is to prepare all documents needed for the Lot Owner to tender their building works and to gain NEV's building approval and Council's development consent.

[NaTHERS](#) and [BASIX](#) certificates are to be obtained by the Lot Owner at their cost as part of their design development. A list of NatHERS assessors located on the Central Coast is found online at [Building Standards - NatHERS Assessors](#) wiki page.

Lot Owners also complete the Design Assessment Scoresheet and provide any documentation needed to support the information provided in the scoresheet.

The Sustainable Design Appraiser assigned to a Lot Owner is available to assist the owner in completing the scoresheet and is responsible for ensuring all the owners design documents are complete and meeting the minimum standards required are ready for review by the Building Review Panel. The design will then be reviewed and endorsed by the Building Review Panel. If approved design documents of the owner are then stamped with the NEV Building Standards Certificate. If issues are noted, the Lot Owner can resubmit the design documents after responding to the issues raised or the Lot Owner has the right to take the issues to the Building Appeal Committee.

Once NEV's Building Standards Certificate is affixed to the design drawings, the Lot Owner can proceed to lodge their plans with Council.

Once the Council's Development Approval (DA) is obtained the Lot owner will then need to obtain a Construction Certificate and lodge the Builder's Bond with NEV to proceed with the building works. A site induction will be provided for the Lot Owner and builder.

Once the building works are completed and an Occupancy Certificate(OC) is issued, the Lot Owner sends the OC to the Building Review Panel, and the home can be occupied and enjoyed.

Energy use will be monitored by NEV Power. In a situation where energy use significantly varies from design expectations, the Community Association may review energy consumption with the Lot Owner to determine where the variance from design occurs, and to establish strategies for reducing the demand for power.

Differential charges for power may also be applied, with higher rates charged when consumption is more than an agreed limit.

Figure 1: Building Approval Pathway

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10. The Construction Stage

Lot Owners are to lodge a refundable bond (currently \$1,000) with the Community Association. This is to manage potential damage to Community Association and Co-operative owned property within the ecovillage site caused by a Lot Owner's building works.

Where damage to Common property or Co-operative Property has occurred because of building activity, the Lot Owner shall ensure such damage is rectified in full before the bond is refunded.

Lot Owners may also wish to engage a building inspector to independently check that their work proceeds in accordance with approved construction drawings and specifications, and with the Construction Management Plan.

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11. Supporting Documentation

The Lot Owner is to arrange for supporting documents required for the building approval to be made available to the Building Review Panel in electronic pdf format. Documents must be transferred by the lot Owner to their dedicated NextCloud folder created for each lot by the Community Association.

Documents may be provided together or progressively in accordance with the NEV approval process.

- i) The Neighbourhood Agreement
- ii) Supporting document requirements by Council for either a:
 - o Development Application, or
 - o Complying Development Application.
- iii) Basix Certificate
- iv) NatHERs Certificate
- v) Design Statement addressing:
 - o Energy Demand Assessment
 - o Smart Grid Equipment Selections
 - o Stormwater & Water Management Strategy
 - o Building Materials Selection
 - o Light and Ventilation Strategy
- vi) Construction Management Plan

- vii) NEV Scoresheet endorsed by your Sustainable Design Appraiser.
- viii) Supporting documents if relied on in NEV Scoresheet. Including:
 - Liveable Housing Certificate
 - Innovation Strategy Statement
- ix) A statutory approval certificate:
 - Council's Development Consent, or
 - A statutory certifier's statement of a Complying Development
- x) NEV's Design Confirmation Certificate.
- xi) Construction Certificate
- xiv) Builders details or, in the case of Owner Builders, their subcontractor details, including:
 - Contact details:
 - Company name,
 - Primary contacts name,
 - mobile number,
 - email address.
 - Statement of Currency for insurance including: Public & Product Liability; Vehicle insurance; Workers Compensation.
- xv) The construction management plan signed in agreement by the Lot Owner's Builder.
- xvi) Bond lodgement to address damage to the Community Property.
- xvii) An occupancy certificate.

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12. Roles and Responsibilities

NEV's Community Management Statement establishes several roles to oversee the design approval process within the ecovillage and assigns to those roles some key responsibilities. A summary of those roles and responsibilities follow.

The Building Review Panel (the Panel) is empowered by the Community Association to review Lot Owners' designs prior to submission of those designs to Council for development consent. Members of the Building Review Panel must be qualified SDA's. The Panel's approval or disapproval of designs is made solely on the matters set out in the Community Association's By-laws, its Rules and Building and Landscape Standards referenced in the Community Management Statement

A Lot Owner can make a submission to the Panel concerning their design for the Panel's consideration.

The Panel must provide its decision in writing to the Lot Owner within 40 days of receiving all documentation required in support of an approval application.

Designs are deemed approved unless the Panel provides a written disapproval or requests additional information for the Lot Owner.

The Panel can impose conditions on its approval.

The Building Review Panel maintains a list of accredited Sustainable Design Appraisers (SDAs) who have been trained in the NEV building Standards and are available to assist the owner in preparing the documentation required for the Building Review Panel to conduct their review of Lot Owners designs described above.

The Building Appeals Committee hears Lot Owners appeals against decisions made by the Building Review Panel.

An appeal application fee of \$300 applies to any appeal raised by a Lot Owner, of which 50% is refundable if the appeal is successful.

On determining an appeal, the Committee will notify the Lot Owner, the Building Review Panel and the Executive Committee of the outcome, and may make recommendations to the Community Association regarding exemptions from or changes to the Building Standards in regards to the appeal. A Lot Owner may make application to the Building Review Panel or Building Appeals Committee requesting changes to the Building Standards applying to the standards generally or to their own lot. On receiving such a request, the Building Review Panel must refer the request to the Executive Committee for determination by the members in a General Meeting by Special Resolution.

13. Sustainable Design Appraisers & NEV Building Approvals

In practical terms, Sustainable Design Appraisers are at the forefront of the Ecovillage's building approval process.

They are to assess the wide variety of building techniques it is hoped Lot Owners will present for approval, and they are asked by the Building Review Panel to welcome innovation in building design and to assist with its implementation. They are required to understand the background to a Lot Owner's design approach, and to support the reasonable requirements of a Lot Owner.

While Lot Owners are expected to make all reasonable endeavours to achieve the outcomes of the Building Standards, if the situation denies them the ability to do so, they should discuss the issue with their SDA and the Building Review Panel as soon as possible, so that alternative arrangements can be discussed and wherever possible implemented.

A list of Sustainable Design Appraisers is maintained by the Building Review Panel. Members of the Building Review Panel must be qualified SDA's. The list is displayed on the Building Review Panel's Wiki page.

[Sustainable Design Appraisers](#)

The SDA's role is a voluntary one.

Beyond the minimum requirements set out in the NEV's building approval pathway, the extent of engagement between Lot Owners and SDAs is solely at the discretion of lot owners. It is expected, however, that SDAs will assist each other in their dealings with Lot Owners. At the discretion of lot owners, several SDAs can engage with a lot owner when discussing Building Standard matters - accessing the wisdom of the many.

SDAs are recruited through an Expression of Interest process. For selection, a candidate demonstrates technical skill in the interpretation of domestic building plans and specification and a working understanding of NatHERS, BASIX and the statutory approval process in NSW for residential dwellings. Once recruited, the SDA is further trained through workshops and worked assessments commissioned by NEV to achieve a standardized approach to the assessment of building designs.

Once trained, the SDA demonstrate their ongoing competency through their knowledge of the NEV building approval process and their ability to engage with lot owners in an efficient and productive way, supporting lot owners throughout their project, from the time of the initial site assessment to the day of occupation.

The primary role of the SDA is to champion the NEV Building Standards within the NEV community by providing ongoing advice and guidance to lot owners on how the objectives of Building Standards can be achieved.

The core responsibility of the SDA is to demonstrate veracity in reviewing and endorsing completed NEV Scoresheets.

14. Building Approval Appeals

NEV's building standards and building approval processes are addressed in our Community Management Statement, the following by-laws being relevant:

Part 3

By-Law 17. New constructions by community association

By-Law 18. Construction on association property

By-Law 19. Internal fencing

Part 4

By-Law 36 - Building & Landscape Standards

By-Law 37 - Building Review Panel

By-Law 38 - Alterations to Building & Landscape Standards

By-Law 39 - Current Copy of Building & Landscape Standards

By-Law 40 - Building Appeals Committee

By-Law 41 - Conflict Of Interest Committee

Informal and formal approval appeals mechanism are available to Lot Owners and the following key points are noted:

- i) Both Lot Owners and Sustainable Design Appraisers (SDAs) can seek the opinion of the Building Review Panel on any design and approval matter arising during the Lot Owner's engagement with SDAs throughout the entire design and construction of their project.
- ii) The Building Review Panel at its discretion can make Interim Arrangements with Lot Owner on design matter prior to the formal submission of a design subject to the Interim Arrangement:
 - Not contravening either the Building Standards nor the Landscape Standards; and
 - Being made available to the whole NEV Community via publication on the Building Review Panels wiki page.
- iii) A Lot Owner may also make application to the Building Review Panel requesting additions or alterations to the Building Standards or the Landscape Standards applying either generally or to Lot Owners design. In response the Building Review Panel will refer the application to the Executive Committee of the Community Association for determination by members in a General Meeting by Special Resolution.
- iv) If the matter cannot be resolved by the Building Review Panel then the Lot Owner can make a written application to the Building Appeals Committee.

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15. Conflict of interest

The Conflict of Interest provisions of the Community Management Statement apply to NEV Building Approval pathways. Building Review Panel, Building Appeals Committee and SDA members must remove themselves from any approval process in which they have an interest.

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