

Narara Ecovillage Building Standards Stage 2 Recommendations

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Building Standards for Stage 2

Based on our updated vision, mission and aims (Dec. 2021):

- Our **Vision** is for an environmentally, socially and economically sustainable world.
- Our **Mission** is to create a sustainable ecovillage as a demonstration of this vision.
- Our **Aim** is to nurture a resilient and inclusive intergenerational community that inspires collaboration, innovation and fun; to live with kindness, aware of our interdependence with others and the natural world; and to learn and demonstrate ways to thrive within the earth's ecological capacity, drawing on Indigenous wisdom and fostering regenerative environmental, social and economic practices.

1. Executive Summary

Feedback from the Building Review Panel (BRP), Sustainable Design Appraisers (SDAs), members, builders, owner-builders and designers showed that changes to the Stage 1 Building Standards were needed, as noted in Appendix 10.

The scope of the standards is proposed to increase to the full life-cycle of building a member's homes, from increasing members building skills with regular meetings, to the final home build quality. It is also proposed to include infrastructure, Tiny Houses, and Existing Homes and Buildings that can be upgraded and converted to dwellings.

In the proposed Stage 2 NEV Building Standards, the Building Review Panel (BRP) assesses:

- the **design** of the Lot Owners' home against the criteria:
 - a. neighbourhood consultations including overshadowing,
 - b. those listed in the design component of the Scoresheet,
 - c. the updated Stage 2 Hill Thalys/Enviroecture guidelines concerned with Lot layouts, common gardens, drainage, parking, building setbacks, home sizes
 - d. the Landscape Standards regarding Lot plantings and
 - e. appliance compatibility with the Smart Grid standards, and
- and the **final build quality** against the criteria:
 - those listed in the as-built component of the Scoresheet, including updated as-built drawings and specifications.

Lot Owners undertake their designs with the help of their designers, their NatHERS assessors, builders and SDAs in an integrative design manner for optimum affordability. The Lot Owners consult with their neighbours at an early stage in their design, after aspects such as shadowing and other impacts become evident.

Table 1 shows the recommended changes to the Stage 2 Hill Thalys and Enviroecture Masterplan, for the reasons provided in Appendix 10.

Table 1 – Recommended changes to the Stage 2 Hill Thalys and Enviroecture Masterplan

Term	Stage 2 Proposed Meaning
Setbacks	No change – reverted to being measured to wall location, as in Stage 1
Site coverage (Building footprint requirement removed)	Area of hard surfaces of building, pavements, sheds etc excluding for Stage 2: <ul style="list-style-type: none"> • Uncovered pervious outdoor living areas, e.g. decks and pervious paving to a max of 10% of lot area - 1/4 of this may be covered • Eaves and awnings to a max overhang of 900mm • Water tanks (to a maximum area of 15m²)
Street frontage	If wall over 10m long, needs articulation (Council draft requirement)
Fences	If pets approved, special fences as per the CMS to be installed before occupation for Stage 2 Lots

The recommended setback, coverage, house areas and height limits for North-South, East-West and Special Lots are shown:

- in Table 2 for dwellings on single occupancy lots and
- in Table 3 for dwellings on dual occupancy lots.

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Table 2 - Stage 2 Single Occupancy Controls

Control (to boundary)		Min/Max/Av.	North-South Lots	East-West Lots	Special Lots (>900m ²)
Setbacks**	Front	Min.	3 - 4.5m*		
	Rear	Min.	3m		
	Side	Min.	1m***	-	1m***
	Side (North)	Av.	-	3m	3m
		Min.	-	0.9m***	0.9m***
	Side (South)	Min.	-	0.9m***	0.9m***
Site Coverage		Max.	45%		50%
Internal House Area	Principal Dwelling	Max.	150m ² preferred, 180m ² maximum		45% (to max 480m ²)
	Secondary Dwelling	Max.	60m ²		
Height		Max.	8m (minor encroachments up to 10m) No requirement for extra height to be concentrated towards the street		

* As per draft council rules

** Note that easements (e.g. common gardens) cannot be built over

*** If the height is less than 4.5m. For any part of the building with a height of more than 4.5m, setback is 0.9m plus one-quarter of the height of the building above 4.5m (draft council rules)

Table 3 - Stage 2 Dual Occupancy Controls (differences in purple)

Control (to boundary)		Min/Max/Av.	North-South Lots	East-West Lots	Special Lots (>900m ²)
Setbacks**	Front	Min.	3 - 4.5m*		
	Rear	Min.	4.5m*		
	Side	Min.	1m***	-	1m***
	Side (North)	Av.	-	3m	3m
		Min.	-	0.9m***	0.9m***
	Side (South)	Min.	-	0.9m***	0.9m***
Site Coverage		Max.	45%		50%
Internal House Area	Both****	Max.	45% (to max 300m ² , but a maximum of 180m ² for either)		45% (to max 480m ² , but a maximum of 240m ² for either)
Height		Max.	8m (minor encroachments up to 10m) No requirement for extra height to be concentrated towards the street		

* As per draft council rules

** Note that easements (e.g. common gardens) cannot be built over

*** If the height is less than 4.5m. For any part of the building with a height of more than 4.5m, setback is 0.9m plus one-quarter of the height of the building above 4.5m (draft council rules)

**** Secondary Dwellings not permitted by Council.

The SDA assists the Lot Owner to lodge the appropriate electronic design documents with the BRP to meet the NEV Building Standard appropriate performance pathway, with a design Scoresheet meeting the minimum total value.

The BRP will decide if the design meets the standards and if successful, the drawings are stamped and the Lot Owner can forward them for Development Consent along with any other documents to meet the council requirements. Once the Development Consent is obtained, a Construction Certificate can be obtained from a Principal Certifying Authority (Certifier), and a builder can be engaged.

During the build process, the Certifier will inspect the building, and the Lot Owner with the help of the SDA can gather as-built documentation that the build quality meets the design. Once the home is completed, the Lot Owner can obtain an Occupancy Certificate from the Certifier and move in to the completed home.

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2. Glossary & Abbreviations

Table 4 shows the glossary of terms and acronyms for the NEV Building Standards.

Table 4 – Glossary and Abbreviations (TBD)

Abbreviation/ Term	Acronym Extension	Meaning
Articulation		Where a home's straight wall is bent at 90° to the street and then continues parallel to the street. It prevents a long straight wall frontage onto the street.
BAC	Building Appeals Committee	Appointed by the Community Association to hear Member appeals of BRP decisions
BASIX	Building Sustainability Index	A compulsory NSW environmental scheme to reduce home greenhouse emissions and water consumption
BESS	Built Environment Sustainability Scorecard	A voluntary assessment tool created by local governments in Victoria
BRP	The Building Review Panel	Volunteer SDAs elected by the Community Association
Green Star		A voluntary Green Building Council of Australia sustainability rating system for buildings
NatHERS	Nationwide House Energy Rating Scheme	Measures a home's thermal comfort, space heating and cooling demand/load, and generates a star rating from 0 to 10
OC	Occupancy Certificate	The certificate provided by the PCA when the home complies with the development consent conditions
Passive House		Measures a home's thermal comfort, space heating and cooling demand/load, indoor humidity, air tightness and annual primary energy
Passive solar design		Uses features such as orientation, thermal mass, insulation and glazing to use natural sources of passive heating and cooling
Certifier	Principal Certifying Authority (Certifier)	Carries out mandatory inspections to ensure approved work is undertaken in accordance with the Council Development Consent
SDA	Sustainable Design Appraiser	Volunteers trained in the Building Standards and appointed by BRP
Scoresheet - Design	(also called Design Scorecard)	A NEV-developed spreadsheet that awards points to sustainability categories for a Lot Owner's design
Scoresheet – As-built	(also called As-built Scorecard)	A NEV-developed spreadsheet that awards points to sustainability categories after a Lot Owner's home is built
TBD	To be determined	Some issues are still to be resolved

3. Introduction

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

The Standards seek an outcome based on inclusive decision making, to build housing that fosters the wellbeing of all community members. They encourage small and inexpensive houses designed to provide thermal comfort, low water use and low energy consumption. The Standards are not prescriptive, but allow for and encourage innovation from community members in the design of their homes, and the use of recycled and locally sourced materials wherever possible. Homes built according to this principle have a significantly reduced impact on the environment when compared to the "average" house currently built in NSW and in Australia as a whole.

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

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Background to the Building Standards

Our Standards are aimed at:

- i) Conserving potable water and managing stormwater, greywater (wastewater from showers, basins and washing machines) & blackwater (wastewater from toilets, kitchen and dishwasher waste).
- ii) Reducing greenhouse gas emissions generated by a building's thermal performance and other energy use when inhabiting a building.
- iii) Supporting increased use of renewable energy.
- iv) Managing peak power demand.
- v) Lowering the environmental impacts of building materials by reducing their embodied energy, carbon and toxicity.
- vi) Minimising construction and domestic waste.
- vii) Managing the environmental quality within the building, including air quality, lighting, acoustics, thermal conditions, pollutants and ergonomics, and the effects of these elements on building occupants.
- viii) Encouraging innovation.
- ix) Rewarding livability, adaptability and resilient building design.

Compliance with the Standards is assessed against the parameters in the NEV Building Standards Scoresheet (Scoresheet), which measures various house categories such as water and energy (with targeted reductions better than BASIX targets), materials, waste and indoor environmental quality.

NEV's Standards can be found on the NEV Wiki at [NEV Building Standards](#)

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

Stage 1 Standards

We also included lessons learned from other assessment tools, such as BASIX, the Victorian Steps tool, BESS and Green Star, 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; The Ecovillage at Currumbin; and Mullum Creek.

The Standards have been independently reviewed by external reviewers, including experienced sustainability Architects, urban planners and builders.

Stage 2 Standards Recommendations

This version of the Standards incorporates the recommendations of the Stage 2 Building Standards Working Group and the background for the updates is in Appendix 10.

The scope is being extended to include:

- The full home lifecycle – education (design concepts, “green” materials, bonds, costs); NEV optional standard contract (extra documents, maybe SDA help); design (previous Stage 1 scope); the home build quality (extending the Scoresheet with an as-built component); any monitoring; member presentations of their build experience (education days, Open Days) including at regular member building meetings, informal Member Building Group.
- Other areas include infrastructure where

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- “green” materials that are locally sourced should be used e.g. concrete – eg. Boral’s lower carbon concrete, ENVIROCRETE® 30%/40% or similar from Hansen etc at similar prices to normal concrete
- Use of paving that is durable, low maintenance, climate resilient and non-plastic to prevent topsoil contamination;
- NEV to provide as-built Lot drawings with final locations of services
- Tiny houses & existing homes
- Collaborative housing with houses on larger lots, including dual occupancy which is allowed by council in the new draft LEP

4. The 5-Step NEV Building Process

The 5 steps in the NEV Building Process for Lot Owners to design, build and occupy their homes is shown in Figure 1 below.

Each Lot Owner shall provide the supporting documents for the Building Process to the BRP in electronic pdf format. These documents will be transferred by the Lot Owner to their dedicated NextCloud folder created for each lot by the Community Association for document exchange.

Step 1 – Site & Neighbourhood Analysis

Neighbourhood Consultation

A significant step in creating a sustainable community is how Lot Owners communicate the impact of their home on their neighbours. The approval pathway encourages Lot Owners to participate in a neighbourhood exchange at an early stage of their home design.

The aim of the exchange is to optimise the location of houses on Lots:

- to achieve equity across the neighbourhood with respect to solar access and overshadowing (Appendix 1),
- to consolidate at an early stage of the design both
 - Hill Thalys/Enviroecture and Central Coast Councils building setbacks and building envelopes (see Appendix 4), and
 - to incorporate common garden and services easements.

The agreed Neighbourhoods for Stage 1 are available in the Wiki at

https://wiki.nararaecovillage.com/download/attachments/16155978/NEV%20Neighbourhoods_V1-1.pdf?version=1&modificationDate=1499079629897&api=v2

The Stage 2 Neighbourhoods will be agreed once the new roads are named. The Neighbourhood Consultation process is detailed in Appendix 5.

Documents required:

- Shadow diagrams
- Neighbourhood Consultation Form
- Neighbour Concern Form (if required)

Step 2 – Design Development & Assessment

The objective of this step is to prepare all documents needed for the Lot Owner to design their home in sufficient detail for a builder to estimate the cost, for the BRP to approve the home design and for the Council’s to provide development consent.

a. Building Standards Assessment Scoresheet

The home designs of Lot Owners are assessed using the Building Standards Assessment Scoresheet (Scoresheet), a NEV-created spreadsheet that gives scores for a dwelling based on how well it meets the NEV sustainability categories.

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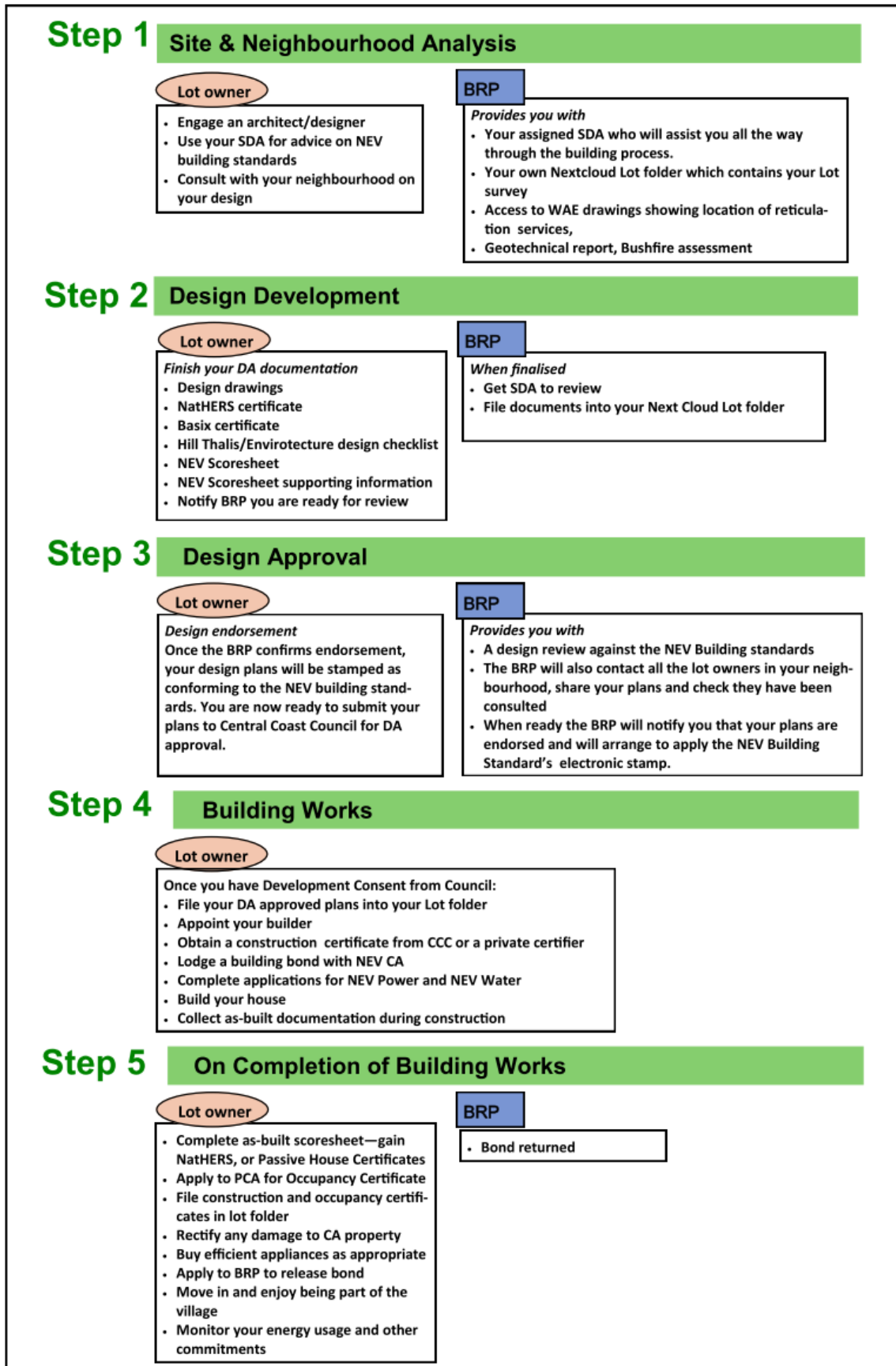


Figure 1 - Steps in the NEV Build Process for Lot Owners in Stage 2

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The recommended Stage 2 Scoresheet contains two components: 1) a design component similar to Stage 1 (required for BRP approval) and 2) an as-built component, which checks the home standard after it is built. The overall final rating of the building will be based on the as-built component.

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 BASIX benchmark. Goals for each category in the Scoresheet are provided in Table 2 of Appendix 2.

The owner must demonstrate that the design has achieved a score of **at least 70 (TBD) points** in the NEV Design component of the Building Standards Scoresheet, which encompasses:

- a. The design meets the thermal performance standards (See Appendix 7 for details):
 - i. a minimum NatHERS 7.5 star rating with reductions in the **BASIX cooling load** to prepare homes for warmer summers or
 - ii. the Passive House standard and is designed by an accredited Passive House designer
- b. The home generates sufficient or additional solar power to supply all its energy needs for the year (i.e. net zero operational energy and net zero carbon performance)
- c. The design has a NSW Government BASIX certificate
- d. The design meets the masterplan requirements of the
 - i. the Stage 2 Envirotecture Design Report at <https://files.nararaecovillage.com/index.php/s/a8EwGSgyd5ffERP> and
 - ii. updated Stage 2 Hill Thalys/Envirotecture guidelines (see Appendix 4)
- e. The landscape design conforms to the NEV Landscape standards
- f. Appliances are installed as appropriate and comply with the Smart Grid standards

Gaining Approval

Scoresheets may be filled out by either the lot owners or the lot owner's design consultants with the assistance of the Sustainable Design Appraiser (SDA) appointed by the BRP to that Lot.

The SDA is responsible for ensuring

- all the owners design documents are complete,
- that the design meets the minimum standards required ready for review by the BRP, and
- submitting the documents to the BRP.

The design will then be reviewed and if endorsed by the BRP, the Scoresheet will be signed and the design documents of the Owner will be stamped with the NEV Building Standards Certificate.

If the BRP has issues with the design not complying with the Building Standards, the Lot Owner can resubmit the design documents. The Lot Owner also has the right to appeal the decision to the Building Appeal Committee.

Research has shown that affordable home designs are achieved using Integrative Design, when a designer works with the NatHERS assessor, the builder and in NEV's case, a Sustainable Design Appraiser (SDA) who understands the NEV Scoresheet.

Latest Scoresheet

The latest version of the Design Assessment Scoresheet is at <https://files.nararaecovillage.com/index.php/s/YmZkQQZgCHTK9yX>

within the Step 2 - Design Development & Assessment section of <https://wiki.nararaecovillage.com/display/NBLS/Building+Approvals+-+Useful+Reports+and+Templates>

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The details of the recommended Scoresheet and new weightings are in Appendix 2.

b. Updated Hill Thalys/Enviroecture Design guidelines

The village engaged the services of Hill Thalys in developing the original design concept plan for the village. This was upgraded by Enviroecture to suit the Stage 2 Lots and the 2021 council Local Environmental Plan (LEP) requirements.

Details of the proposed changes to the Hill Thalys/Enviroecture Design guidelines are shown in Tables 4-7 in Appendix 4, and the reasons for the Stage 2 updates are in Appendix 10.

c. Landscape Standards

NEV's Landscape Standards are also located on the NEV Wiki at [NEV Landscape Standards](#)

This document should be read in conjunction with these Building Standards.

d. Smart Grid Compatible Equipment

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

The latest [schedule](#) of smart grid compatible equipment, including smart meters and inverters is maintained for members to benefit from the Smart Grid.

NEV encourages the use of Electric Vehicles (EVs) when private vehicles are unavoidable, and charging them using renewable energy. Accordingly, the building standard encourages future-proofing of the houses with EV charging infrastructure with solar panels and possible 3 phase power.

Documents required:

- Supporting document requirements by Council for either a:
 - Development Application, or
 - Complying Development Application (for existing houses).
- Design Statement addressing:
 - Energy Demand Assessment
 - Smart Grid Equipment Selections
 - Stormwater & Water Management Strategy
 - Building Materials Selection
 - Lighting and Ventilation Strategy
- Construction Management Plan (template is available)
- NEV Design part of the Scoresheet* endorsed and submitted by your SDA
- Supporting documents for the NEV Scoresheet, including:
 - Livable Housing Certificate
 - Innovation Strategy statement
 - Sustainable materials
 - Construction waste
 - BASIX Certificate**
 - NatHERS Design certificate** or Accreditation Certificate of your Passive House designer

* The as-built Scoresheet component is lodged in ***Step 5 – On Completion of Building Works***

** BASIX and NatHERS Certificates are to be obtained by the Lot Owner at their cost as part of their design development.

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Step 3 - Design Approval

Once NEV's Building Standards Certificate is affixed to the design drawings, the Lot Owner can proceed to lodge their plans for Development Consent of the Development Application (DA).

Documents required:

- NEV's Design Confirmation Certificate
- A statutory approval certificate:
 - Council's Development Consent, or
 - A statutory certifier's statement of a Complying Development (for existing homes)

Step 4 - Building Works

Once the Council's Development Consent is obtained, the Lot Owner obtains a Construction Certificate and lodges the Builder's Bond (see the amount in Schedule 1) with the Community Association before commencing with the building works.

The bond is kept as a security to manage potential damage to Community Association and Co-operative owned property within the ecovillage site caused during the Lot Owner's building works.

NEV Members can use the standard Fair Trading contract template for building works, which may assist Lot Owners in completing their home. A set of Special Conditions to suit the NEV site will be made available for Members including such items as builder and other stakeholder site induction (See Appendix 8).

Principal Certifying Authority

A requirement of building homes in NSW is to employ a Principal Certifying Authority (PCA or Certifier) www.fairtrading.nsw.gov.au/housing-and-property/building-and-renovating/preparing-to-build-and-renoate/finding-and-appointing-a-certifier

The Certifier carries out mandatory inspections during construction to ensure compliance with the National Construction Code (including BASIX and NatHERS) and any conditions of consent issued by the council in response to the Owner's Development Application. After the final inspection, the Certifier will issue an occupation certificate if all requirements are met.

As-built Scoresheet - Documentation Collection

As there are items in our NEV Scoresheet which are not checked by the Certifier, the SDA can assist the Lot Owner collect additional documentation for the as-built Scoresheet regarding the Scoresheet sustainability aspects. The as-built Scoresheet assesses the Lot Owner's home for critical items during the build (see details in Table 5 in Appendix 2).

Documents required:

- The Construction Certificate
- Builders details, or in the case of Owner Builder's their subcontractor details, including:
 - Contact details: including Company name; Builders license number; Primary contacts name; Mobile number; Email address.
 - Statement of Currency for insurance including: Public & Product Liability; Vehicle insurance; Workers Compensation.
- The Construction Management Plan (**and other Plans eg. Waste, with links TBD**) signed in agreement by the Lot Owner's Builder.
- Builder's Bond as security for damage to NEV or Community Association property.

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Step 5 – On Completion of Building Works

Once the building works are completed, the SDA can assist the Lot Owner to complete the As-Built Scoresheet which measures:

- commitments made during the design approval stage and their implementation
- improvements and changes made during the build
- the willingness of members to educate others about the sustainability features of their designs, their build techniques and their as-built performance results.

The Lot Owner applies to the Certifier for an Occupancy Certificate (OC), and then applies to the Building Review Panel to release the bond once:

- any damage to the Community Association Common Property or Co-operative property is rectified, and
- the OC has been sent to the BRP.

Then 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 generation and consumption with the Lot Owner to establish strategies for returning to annual carbon neutrality.

Differential charges for power may also be applied, with higher rates charged when consumption is more than the amount generated by the household.

Water Use will also be monitored by NEV Water.

Documents required:

- As-Built Scoresheet including
 - An updated NatHERS certificate based on updated as-built drawings and specifications, or a Passive House Certificate with Blower Door test (See Appendix 6)
- An Occupancy Certificate

5. Narara Ecovillage Average Standard

NEV will also calculate the average Scoresheet of all dwellings in the village for the As-Built NatHERS scores by using the scores provided for individual lots by Lot Owners.

The village aspires to achieve an average As-Built NatHERS rating across all the homes of greater than 8 stars.

6. Building Approval Appeals

NEV's building standards, building approval and appeals processes are addressed in our Community Management Statement (CMS).

If Lot Owners have any concerns about meeting the requirements of the Standards, they should discuss the issue with their SDA and the BRP as soon as possible.

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

- i) Both Lot Owners and SDAs can seek the opinion of the BRP 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 BRP can make Interim Arrangements with Lot Owners on design matters prior to the formal submission of a design subject as long as the Interim Arrangements:
 - Do not contravene the Building and Landscape Standards; and

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- Are made available to the whole NEV Community via publication on the BRP's wiki page and weekly Despatch.
- iii) A Lot Owner may also make application to the BRP requesting additions or alterations to the Building Standards or the Landscape Standards applying either generally or to Lot Owner's design. In response the BRP may refer the application to the Executive Committee of the Community Association for determination by members in a General Meeting by Special Resolution as per the CMS.
- iv) If the matter cannot be resolved by the BRP, the Lot Owner can make a written application to the Building Appeals Committee (BAC).

7. Conflict of interest

The Conflict of Interest provisions of the CMS apply to NEV Building Approval processes.

The BRP, the BAC and SDA members shall remove themselves from any approval or consent process in which they have an interest.

8. Roles and Responsibilities

NEV Building Group

Lot Owners will be able to attend regular meetings of the NEV Building Group, an informal Stage 2 group that can assist members to design their homes, and which may be made up of:

- Lot Owners who have built their homes and keen to share their experience,
- SDAs and BRP members,
- members with building expertise, and
- external building and design experts.

In addition, the CMS of the Community Association establishes these roles with key responsibilities to oversee the building approval process.

Building Review Panel

The Building Review Panel (BRP) reviews the home designs of Lot Owners prior to their submission for development consent. Members of the volunteer BRP should be recognised as the best of the Sustainable Design Appraisers (SDAs) and are elected by a General Meeting of the Community Association.

The BRP's decision to approve or not a design application shall be provided in writing to the Lot Owner within **21 business days (TBD)** of receiving all documentation required for the application. If there is no response to the Lot Owner within that timeframe, the design is deemed to be approved unless the BRP provides a written disapproval or requests additional information for the Lot Owner. In the latter case, the time period is paused until the information has been received, and then the timeframe continues.

The BRP maintains a list of accredited volunteer SDAs on the BRP's Wiki page [Sustainable Design Appraisers](#). These SDAs are recruited through an Expression of Interest process, trained in the NEV Standards, and are then available to assist the owner in preparing the design documentation required.

The BRP monitors the Scoresheets completed by the SDAs, and ensures they meet the standard required.

The BRP may appoint a list of Consultants to provide expert advice and these may include members or non-members who are Architects, Town Planners or Engineers or those who are part of the Member Building Group.

Sustainable Design Appraiser

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Successful Sustainable Design Appraiser (SDA) candidates demonstrate skill in interpreting domestic building plans, specifications and the NEV Excel Scoresheet, understanding the NatHERS, BASIX and Passive House standards, as well as the statutory approval process in NSW for residential dwellings.

Lot Owner Engagement

SDAs support the requirements of a Lot Owner and assist them to create the documentation needed to obtain approval for the building design, including any innovations and how they are implemented. In practical terms, SDAs are at the forefront of the Ecovillage's building approval process.

At the discretion of lot owners, several SDAs or the NEV Building Group can engage with a lot owner when discussing Standard matters - accessing the wisdom of the crowd.

Lot Allocation

SDAs are appointed to each Lot by the BRP on a rostered basis, except for where conflicts of interest are identified e.g. where there are relationships that may influence the Scoresheet marking. The SDA assigned to your Lot is listed at link <https://wiki.nararaecovillage.com/pages/viewpage.action?pageId=16754706>, and shown after expanding the Table 1 link.

Building Appeals Committee

Lot Owners can appeal decisions made by the BRP to the Building Appeals Committee (BAC) if they feel the decision is incorrect. They pay the Appeal Application Fee shown in Schedule 1 and 50% is refunded if the appeal is successful.

The BAC is formed for the appeal in accordance with the CMS, and will notify the Lot Owner, the BRP and the Community Association Executive Committee of the outcome. The BAC may make recommendations to the Community Association if the Member requests an exemption from or change to the Standards as it applies to the appeal, in accordance with the CMS.

Community Association

The BRP reports to the CA Executive Committee, and has a responsibility to approve homes according to the standards. The CA Executive Committee may undertake random checks on home approvals to ensure that

- the standards are appropriate
- adequate processes are in place for prompt approvals, and
- the approvals satisfy our standards.

9. Request for Changes to the Standards

A Lot Owner may also make an application to the BRP requesting changes to the Standards generally or to how they are applied to their own lot, as per the CMS. On receiving such a request, the BRP shall refer the request to the Community Association's Executive Committee for determination by the members in a General Meeting in accordance with the CMS.

Appendix 1 - Solar Access*

For all dwellings, including Principal and Secondary dwellings on Single and Dual Occupancy Lots:

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- On June 21 (winter solstice), 50% of the required **living areas and principal private open space areas** for all dwellings should receive at least 3 hours of unobstructed sunlight access between 9am and 3pm.
- On June 21, 50% of the required **living areas and principal private open space** on adjoining land should receive at least 3 hours of unobstructed sunlight access between 9am and 3pm.
- All developments shall provide **shadow diagrams** based on a survey of the site and adjoining development, showing shadow casting at 9 am, 12 noon and 3 pm on June 21. The shadow diagrams shall show the impact of shadowing from the proposed development, fencing, cut and fill as well as existing development, on the proposed development and adjoining properties.

*Based on the Draft Central Coast Development Control Plan 2018, & is subject to change

Appendix 2 – Scoresheet for Stage 2

The village will rely on the Building Standards Scoresheet to capture and rate the building both as-designed and as-built Scoresheet.

The design Scoresheet component for Stage 2 is similar to the Stage 1 Design Scoresheet and is described in **Step 2 – Design Development & Assessment**.

The As-Built Scoresheet

- checks the build quality and is summarised in Step 5 – On Completion of Building Works,
- considers the documentation collected in the right column of Table 5, and
- evaluates the willingness of the Lot Owner to share their building experience with other members, and also for Open/Village Days.

The SDA can assist the Lot Owner with gathering the additional documentation such as.

- receipts and photos
 - Construction waste disposal
 - Materials
 - Timber origins, low carbon concrete, use of plastics etc.
 - Recycled certificates or photos e.g. second hand timber with nails
- the design Scoresheet commitment checklist after the build
- an updated NatHERS certificate after the building is completed
 - this should be a small effort if there are few design changes, and requires updated as-built drawings and specifications
- if the home is a Passive House design, a Blower Door test is required as part of the Certification process
 - if the home fails this for a Passive House design, do NatHERS star rating and check if the cooling energy is less than 50% below the BASIX minimum

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The summary of the documentation supplied by the Principal Certifying Assessor (Certifier) during the build process is provided in Table 5.

Table 5 - As-Built Inspections and Documentation

Principal Certifying Authority (Certifier) Building Inspections	As-Built Inspections & Documentation
At the commencement of building work	
	Materials receipts and photos
	Waste disposal receipts
	Evidence of the installation of critical thermal performance elements e.g. insulation type and location, windows, air-tightness
After excavation for, and prior to the placement of any footings	
Prior to pouring any in-situ reinforced concrete building element	Photos & evidence of type of insulation – underfloor, walls, roof, ceiling
Prior to the covering of any framework for any floor, wall, roof or other building element	
Prior to covering any stormwater drainage connections	
After the building work has been completed and prior to any Occupation Certificate (OC) being issued in relation to the building.	
	Design Scoresheet commitments – checklist – peak energy; recycled materials etc
	Updated as-built house drawings and specifications for Performance Certificates: 1) Passive House Certificate after a successful Blower door test if a Passive House 2) NatHERS certificate from updated drawings and specifications

Categories of NEV Design and As-Built Building Ratings Scheme

Table 6 shows a summary of the goals, measures and targets of the NEV design and as-built Building Scoresheet categories.

Note that for the categories:

1. The initial 2004 minimum reduction in the BASIX benchmark of average NSW household usage per person. As-built measures will be introduced to the actual scoresheet with additional columns for ticking, and some extra detailed rows.
2. Homes should achieve 8 stars where costs are not prohibitive to help achieve this average for the village.
3. See Appendix 9 for preferred materials. In addition, for embodied carbon of materials in the home, the floor should be added since a concrete slab can have a larger impact than a timber floor especially if sustainable concrete mixes are not used.
4. See Appendix 8 for house monitoring.
5. Innovative elements are only awarded in special cases – they need approval from BRP before the design is submitted.

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Table 6 - NEV Building Scoresheet Categories – Target Reductions & How Measured

CATEGORY	SUB-CATEGORY	GOAL	MEASURE	TARGET & HOW MEASURED*
Management & Process	SDAs, As-Built Scoresheet	Assist owners with building standards	Having SDA, designer, builder and assessor communicating on design; evidence of critical inspections during build; NatHERS results before and after; blower door test after; publishing of results	(Points are awarded here)
Water	Potable Water Usage	Conserve drinking water	Water efficient devices; Water effective landscaping & gardens; Use of recycled water in house; Strategies for high water demand features e.g. irrigation	70% reduction – points within BASIX
	Stormwater Greywater & Black-Water Management	Conserve drinking water; reduce stormwater, greywater, blackwater; reduce recyclable surplus	Water Sensitive Urban Design (WSUD); how stormwater is harvested; ponds; rain gardens; infiltration systems; buffers incl. water tanks; swales; waterless toilets	70% reduction – points within BASIX
Energy	Thermal Performance	Decrease Energy usage	Passive solar house design considering orientation, windows, insulation, thermal mass, shading and ventilation	NatHERS 7.5 stars, or Passive House**
	Other Energy Usage	Decrease Other Energy usage	Heating & cooling methods; Heat pump hot water units; Appliances; Lighting (type, flexibility & optimizing); Standby power usage; Clothes drying	70% reduction - (Points are awarded here)
	Renewable Energy	To at least meet annual demand	Photovoltaic panels - energy supply to at least meet annual demand, monitored	Based on bedrooms initially
	Peak Power Demand	Reduce summer and winter peak loading	Standby switches/ power boards; Energy monitoring system; Basic control system e.g. timer; Remote control system (app?); Separate circuits for non-essential appliances; load shifting by Electricity Provider; have PV plus battery system; surplus renewable energy above that required to meet the energy demand over the year	(Points are awarded here)
Materials***	Materials	Lower the health & environmental impact of materials for sourcing, production and disposal	Having a minimum amount of materials; being durable; designing for ease of deconstruction at end of building life; low embodied energy; high recycled content; natural and renewable resource materials; low human health impact materials; locally sourced materials	(Points are awarded here - embodied carbon/person TBD)
Waste	Waste	Domestic and construction	Recycle waste streams; reuse and recycling of construction wastes; design to minimise offcuts & waste with prefabrication, using standard sizes etc.	(Points are awarded here)
Indoor	Indoor Environmental Quality (IEQ)	Optimum ventilation & acoustics; low pollutant level; good thermal comfort	Daylighting; type of walling, flooring and design for the acoustic consideration of neighbours; low emission materials, control of mold and condensation	(Points are awarded here)
Other	Other	Adaptability; Resilience; Noise; Livability Resilience; Noise; Ecological Site Value; Monitoring	The ease of adapting house for future uses; ability to withstand severe external forces including fires; noise control measures e.g. pump locations (including heat pumps); Ability to improve access for occupants over time; Ecological Site Value (Topsoil, Reuse of land, reclaimed land, less external light pollution; sustainable site; reduced Heat Island Effect); House sustainability monitoring**** (eg. energy, water, waste, comfort, indoor environmental quality (IEQ)).	(Points are awarded here)
Innovation*****	Innovation	New ideas e.g. new materials; external living areas; Trombe walls; Natural cooling; New construction techniques; Blower Door Test (if not a Passive House)	Owners to demonstrate how elements exceed Category minimums	(Extra points above 100% can be awarded for innovative elements)

* Initial 2004 minimum reduction in the BASIX benchmark of average NSW household usage per person. **As-built** measures will be introduced to the actual scoresheet with additional columns for checking, and some extra detailed rows.

** Homes should achieve 8 stars where costs are not prohibitive, and there are cooling energy restrictions.

*** See Appendix 9 for preferred materials.

**** See Appendix 8.

***** Innovative elements are only awarded in special cases – they need approval from BRP before the design is submitted.

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Recommended Scoresheet Category

Table 7 shows the new Stage 2 categories proposed for the Scoresheet and their changed weightings. This improves the overall management to put more emphasis on assisting members, and increases the emphasis on indoor environmental quality.

Table 7 - Scoresheet Categories - Stage 1 and Proposed Stage 2 Weights

	Existing Stage 1 Design	Proposed Stage 2 Design & As-Built	
Category	Max Weightings	Recommended weighting	Difference – Recommended vs Stage 1 Scoresheet
Management & Process		10%	10%
Water	19%	20%	1%
Energy	44%	28%	-16%
Materials	21%	18%	-3%
Waste	10%	5%	-5%
Indoor Environmental Quality (IEQ)	5%	15%	10%
Other*	1%	4%	3%
Total	100%	100%	0%
Bonus Points – Innovation*	16%	10%	-6%

*See Table 6.

Appendix 3 - Landscape Standards

The Landscape standards are provided at:

<https://wiki.nararaecovillage.com/display/NBLS/Schedule+2+of+CMS++Landscape+Standards>

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Appendix 4 – Hill Thalys/Envirotecture Masterplan – Updates

The Hill Thalys masterplan was updated for Stage 2 by Envirotecture, and the concepts shown now in the front Glossary in Table 4 were defined to assist Members to understand where their home building envelope can be situated within the Lot.

Table 8 - Definitions for the Masterplan of Lot Layouts and Building Envelope

Term	Meaning
Dual Occupancy	When a Lot has 2 Principal dwellings (attached or detached)
Floor area	Internal floor area (excluding the wall thickness)
Principal Dwelling	Main dwelling on a Single Occupancy lot
Secondary Dwelling	Self-contained dwelling on the same lot as a principal dwelling on a Single Occupancy lot
Setbacks	The distance from boundary to the building
Site area*	For one lot, the site area is the Lot area.
Site coverage	The proportion of a site area covered by buildings and hard surfaces (see below for more details).
Single Occupancy	When a Lot has a principal dwelling (and a possible secondary one)
Special Lot	A NEV Stage 2 term for larger lots for more affordable living

* Based on the Draft Central Coast Development Control Plan 2018, subject to change

Figure 2 shows the 3 main types of Lots:

- those with the long axis running North-South (called North-South Lots),
- those with the long axis running East-West (called East-West Lots), and
- the special Lots (pink) intended for higher density living.

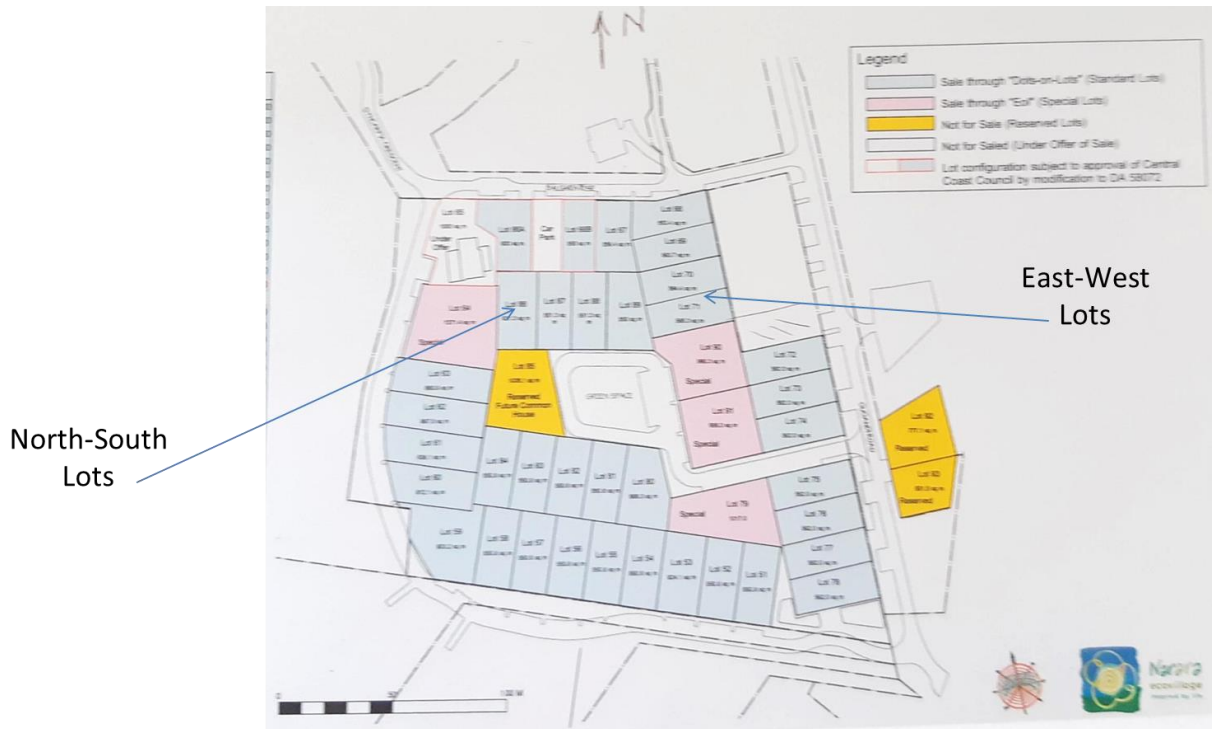


Figure 2 - Lot aspect definition - North-South and East-West lots
Stage 2 Hill Thalys and Envirotecture Masterplan Changes

The changes to the Hill Thalys and Envirotecture Masterplan shown in Table 9 are recommended by the Stage 2 Building Standards Working Group for Stage 2

Table 9 – Recommended changes to the Stage 2 Hill Thalys and Envirotecture Masterplan

Term	Stage 2 Proposed Meaning
Setbacks	No change – reverted to being measured to wall location, as in Stage 1
Site coverage (Building footprint requirement removed)	Area of hard surfaces of building, pavements, sheds etc excluding for Stage 2: <ul style="list-style-type: none"> Uncovered pervious outdoor living areas, e.g. decks and pervious paving to a max of 10% of lot area - 1/4 of this may be covered Eaves and awnings to a max overhang of 900mm Water tanks (to a maximum area of 15m²)
Street frontage	If over 10m* needs articulation (i.e. not a straight wall throughout)
Fences	If pets approved, special fences as per the CMS to be installed before occupation for Stage 2 Lots

* A council draft requirement

The recommended setback, coverage, house areas and height limits for North-South, East-West and Special Lots are shown:

- in Table 10 for dwellings on single occupancy lots and
- in Table 11 for dwellings on dual occupancy lots.

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Table 10 - Stage 2 Single Occupancy Controls

Control (to boundary)		Min/Max/Av.	North-South Lots	East-West Lots	Special Lots (>900m ²)
Setbacks**	Front	Min.	3 - 4.5m*		
	Rear	Min.	3m		
	Side	Min.	1m***	-	1m***
	Side (North)	Av.	-	3m	3m
		Min.	-	0.9m***	0.9m***
	Side (South)	Min.	-	0.9m***	0.9m***
Site Coverage		Max.	45%		50%
Internal House Area	Principal Dwelling	Max.	150m ² preferred, 180m ² maximum		45% (to max 480m ²)
	Secondary Dwelling	Max.	60m ²		
Height		Max.	8m (minor encroachments up to 10m) No requirement for extra height to be concentrated towards the street		

* As per draft council rules

** Note that easements (e.g. common gardens) cannot be built over

*** If the height is less than 4.5m. For any part of the building with a height of more than 4.5m, setback is 0.9m plus one-quarter of the height of the building above 4.5m (draft council rules)

Table 11 - Stage 2 Dual Occupancy Controls (differences in purple)

Control (to boundary)		Min/Max/Av.	North-South Lots	East-West Lots	Special Lots (>900m ²)
Setbacks**	Front	Min.	3 - 4.5m*		
	Rear	Min.	4.5m*		
	Side	Min.	1m***	-	1m***
	Side (North)	Av.	-	3m	3m
		Min.	-	0.9m***	0.9m***
	Side (South)	Min.	-	0.9m***	0.9m***
Site Coverage		Max.	45%		50%
Internal House Area	Both**** Dwellings	Max.	45% (to max 300m ² , but a maximum of 180m ² for either)		45% (to max 480m ² , but a maximum of 240m ² for either)
Height		Max.	8m (minor encroachments up to 10m) No requirement for extra height to be concentrated towards the street		

* As per draft council rules

** Note that easements (e.g. common gardens) cannot be built over

*** If the height is less than 4.5m. For any part of the building with a height of more than 4.5m, setback is 0.9m plus one-quarter of the height of the building above 4.5m (draft council rules)

**** Secondary Dwellings not permitted by Council.

The Neighbourhood Consultation Process is:

- Share your house design and shadow diagrams with all your neighbours as soon as you feel ready (and at least 4 days before the Neighbourhood meeting) showing position of house on site and main materials, and to answer questions etc.
- Hold your neighbourhood meeting.
- If all neighbours agree:
 - neighbours sign the Neighbourhood Consultation Form and forward it to the BRP
- If a neighbour has concerns with your design
 - Send them to the Lot Owner in writing on the Neighbour Concern Form with
 - the design feature the neighbour thinks the Lot Owner is trying to solve, and
 - possible alternative suggestions to solve the issue.
- Lot Owners and neighbours should aim to satisfy concerns within 28 days the Neighbourhood meeting
- It is hoped that the concerns will be resolved on the advice of the Lot SDA or else at a Strategy Meeting of designers, owners, neighbours and other SDAs
- If not, the Supporters Circle can advise the Lot Owner and Neighbour
- The Consultation Form is either agreed by all neighbours or if there is a concern unresolved, it is sent to the BRP with the rest of the building application in which case the application fails.
- This means that the Lot Owner can appeal the decision of the BRP with the Building Appeal Committee
- NB: When a Lot changes hands, NEV or the previous owner should handover any previous neighbour negotiations to the new Lot owner, because neighbouring Lot owners need to be aware of changes of ownership.
 - When members have purchased a Lot that has already been through the neighbourhood consultation process, and will use a different house design, the process for their house approval needs to start again.
 - The new Lot owner needs to consider that neighbouring houses may have already locked in their designs, or even started to build, after previous negotiations.
- If at any time in the future you would like to alter your design in a way that impacts your neighbour, consultation is required before any work commences.

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Neighbourhood Consultation Form – draft template

While the Neighbourhood Consultation Form replaces the Stage 1 Neighbourhood Agreement, it is similar in that it states the considerations for the placement and size of Lot Owners' homes and associated structures across the entire neighbourhood.

It will include a statement such as:

"We acknowledge that our meeting considered the following matters relating to and affecting each lot:

- Site Coverage, size, shape and height of built structures
- Overshadowing
- Visual privacy
- Sharing views
- Materials used on facades, decks and roofs
- Management and design of common boundaries
- Street frontage and lot access
- Car parking
- Access to Common Gardens
- Noise and light spillage across properties
- Storm water management, particularly "inter-site drainage" for retaining walls or other drainage near neighbours
- Lot Access – construction
- Other:

Name1: _____ Lot No: _____ Signed: _____ Dated: _____

Name2: _____ Lot No: _____ Signed: _____ Dated: _____

Name3: _____ Lot No: _____ Signed: _____ Dated: _____

Name4: _____ Lot No: _____ Signed: _____ Dated: _____

Etc.

Neighbour Concern Form – draft template

I <Name>, of <Lot No>, am the neighbour of <Name> of <Lot No.>, and have discussed my neighbour's design with them. I have the following concern(s):

- Concern 1: <concern summary name>
 - Details: <details>
- What is the issue you think your neighbour is trying to solve with their design features:
 - <neighbour issue e.g. privacy, pet enclosure>
- Alternative suggestions:
 - <what could assist to solve this concern e.g. smaller trees, wire fence with hedge>
- Concern 2: <concern summary name> etc.
- Signed: _____ Dated: _____

Appendix 6 – Thermal Performance Requirements for Types of Homes

All Homes

We would like to minimise the use of gas as per CMS clauses:

- 43. Poisonous Substances, in particular 43.1,
- 57. Energy and Emissions Goals and Principles, in particular clauses 57.1 b), c) and d).

For homes, this means that for:

- **Natural Gas - that we propose this not to be in the CMS**
- **LPG - some houses have this already - that we propose to minimise its use**
- **Biogas - reduce the impact of this - that we propose to minimise its use**

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New Homes

Performance Pathways

To meet the thermal performance of new homes at NEV, Lot Owners should:

- Keep an aspirational target in mind of 8 NatHERS stars, like the original Stage 1 goals
- Obtain the help of SDAs, other members and the NEV Building Group for:
 - NatHERS Pathways
 - Achieve 7.5 stars with 50% reduction in BASIX maximum cooling load (for heatwave protection and climate change effects)
 - If the site is difficult e.g. for orientation or steep slope etc., or if the Lot Owner makes an application for a concession because of other difficulties, then the design shall achieve 7.5 stars but with only a 25% reduction in the BASIX maximum cooling load
 - Passive House Certified Design* Pathway
 - Achieve an infiltration rate of 0.6 air changes per hour (ACH) at 50 pascals (Pa) or less (0.6ACH50) in a blower door test
 - If house fails the blower door test, obtain an As-Built NatHERS star certificate for display

*A Passive House design (not to be confused with the general passive solar design concepts) is certified by a qualified Passive House designer. The built house needs to

- meet the Passive House standard, with an installed MVHR (Mechanical Ventilation with Heat Recovery) system
- have a blower door test from an organisation accredited by the Air Tightness Testing & Measurement Association (ATTMA).

Existing Buildings and homes (TBD)

The aim is for existing dwellings, or buildings that may be converted to a National Construction Code (NCC) Class 1 (detached or attached) or Class 2 (apartment style, including one above another) dwellings, to follow the values of the CMS.

Buildings being converted into dwellings and existing homes shall:

- have sufficient renewable energy to cover its energy consumption over year as per the CMS clause 54. Electricity System, in particular 54.2,

Performance Pathways

- For large retrofits & renovations e.g. greater than \$50,000, the home design shall pass BASIX (NSW regulation)

Tiny House (on wheels)

There is no NatHERS or Passive House performance pathway requirement, but the tiny house is subject to NSW regulations where for continuous occupation, the Tiny House:

- Needs to be on land occupied by that in connection with the owner's house
- Should be registered
- Occupier should be related to the household

The BRP has provided these current [Tiny Houses guidelines](#) which include:

- Having neighbourhood consultations
- Installing at least 2 kWh of Solar panels
- Managing services such as water, electricity and any sewer

In addition to this, the Stage 2 recommendations are that the Tiny House should:

- Meet some of the Scoresheet provisions (TBD eg. materials etc. embodied carbon/person, recycling)

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- The Tiny House area and associated hard surfaces shall be included in Hill Thalys/Enviroecture site coverage area of the Lot
- Minimise the use of any natural gas as per CMS clauses:
 - 43. Poisonous Substances, in particular 43.1,
 - 57. Energy and Emissions Goals and Principles, in particular clauses 57.1 b), c) and d).

Appendix 7 – Building Contract – NEV Special Conditions

The Standard Home Building contract templates from Fair Trading are recommended for NEV members:

- Home building contract for work over \$20,000 - suitable for new homes, major alterations and additions
[www.fairtrading.nsw.gov.au/_data/assets/pdf_file/0010/389854/Home_building_contract_more-than-\\$20,000.pdf](http://www.fairtrading.nsw.gov.au/_data/assets/pdf_file/0010/389854/Home_building_contract_more-than-$20,000.pdf)
- Home building contract for work between \$5,000* and \$20,000 - suitable for trade work, maintenance and repair work as well as smaller alterations or improvements likely to cost less than \$20,000
[www.fairtrading.nsw.gov.au/_data/assets/pdf_file/0007/938050/Home-building-contract-\\$5000-to-\\$20000.pdf](http://www.fairtrading.nsw.gov.au/_data/assets/pdf_file/0007/938050/Home-building-contract-$5000-to-$20000.pdf)

*The Home Building Act 1989 no longer requires contracts for work valued under \$5,000 (including labour and materials), although it is recommended to have a written agreement.

Alternatively, your builder or tradesperson may wish to use their own contract or one purchased from an industry association for residential building work worth more than \$20,000, but it should contain:

- the **Contract checklist** for owners entering a building contract - www.fairtrading.nsw.gov.au/housing-and-property/building-and-renovating/preparing-to-build-and-renoate/contracts/contract-checklist
- all of the items listed on the **Contracts page** - www.fairtrading.nsw.gov.au/housing-and-property/building-and-renovating/preparing-to-build-and-renoate/contracts

Proposed Special Conditions - Narara Ecovillage Examples (TBD)

For Narara Ecovillage, some of the important Special Conditions to be attached as a schedule to your contract are:

- Site Induction – All designers and builders will need to attend a site induction briefing from the nominated Project Control Group representative before they begin
- Site Services
 - The Stage 2 Project Control Group of Narara Ecovillage will provide a plan with the location of the Lot services including for potable and recycled water, sewer, and storm water.
 - Members shall apply to connect with NEV Power and NEV Water
- Site Access - If there are access problems to the site during the course of the work, for example from inclement weather, agreement should be reached as to how to deal with this matter by extensions of time, or any additional cost, and who is responsible for managing these.
- How the builders allow the collection of as-built evidence
 - Owner Materials receipts and photos
 - Waste disposal receipts
 - Evidence of the installation of critical thermal performance elements e.g. insulation type and location, windows, air-tightness
 - Photos & evidence of type of insulation – underfloor, walls, roof, ceiling
 - Design Scoresheet commitments – checklist – peak energy; recycled materials etc
- Designer updates for as-built house drawings and specifications for Performance Certificates:

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- Passive House Certificate after a successful Blower door test if a Passive House
- NatHERS certificate from updated drawings and specifications

Appendix 8 – House Sustainability Monitoring

House sustainability monitoring can be carried out to show the home's sustainability per person at regular intervals (e.g. snapshot) or on an on-going basis using reliable sensors which could provide information on:

- energy (consumption, generation, storage),
- water consumption,
- waste,
- comfort and
- indoor environmental quality (IEQ).

House IEQ monitoring can provide information on:

- Dwelling Artificial Ventilation
- Natural Ventilation
- Thermal Comfort (e.g. temperature, humidity and air speed)
- Internal Noise Levels
- Hazardous Materials and Volatile Organic Compounds (VOCs) including from paints and furniture glues e.g. formaldehyde
- Electric Lighting Levels – internal and external

Appendix 9 – Materials and Appliance Guidelines

Materials

Members and NEV should use sustainable materials that are durable, non-toxic, and have low embodied carbon. Material guidelines from Mullum Creek (2016)* have guidelines which are highly recommended. These include:

- Reduce the use of
 - Steel e.g. by using sustainably-harvested timber
 - Concrete e.g. by using sustainably-harvested timber, or use low carbon concrete – (a supplier list will be available eg. Boral ENVIROCRETE® 30%/40%, Hanson Green Concrete),
- Use:
 - recycled timber where supplier receipts can prove it was used before, or photos of nail holes
 - manufactured wood products which have low formaldehyde emissions to E0 standard

Minimise the use of timber with copper-chrome-arsenate (CCA)

Use timber-framed windows in preference to aluminium- or plastic-framed windows

*Mullum Creek (2016). *Mullum Creek | Mullum Creek Design Guidelines*. Mullum Creek Residential Community. <https://mullumcreek.com.au/design-guidelines/mullum-creek-design-guidelines>

Appliances

Discourage **wood fires** in this urban area, but where installed, ensure via the as-built Scorecard they are installed and operate according to the manufacturers' specifications

The CMS can already place limits on the operation of wood fires during weather inversions notified by the Bureau of Meteorology. It is further recommended that limits can also be placed on their operation when there are complaints from members of health issues.

Owners using slow combustion fires or where they have filter fabrics on chimneys have lower amounts of small cancerous particulate emissions than with open fires with no filters.

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Appendix 10 – Reasons to Update the Building Standards for Stage 2

The BRP identified issues with the Stage 1 building standards, and requested the Community Association to start a review process in line with the CMS. The Standards outlined here are based on the review that was conducted in 2021-22 incorporating a warming climate, changed council regulations, different Stage 2 site conditions, and more stringent Australian and NSW building standards.

These recommended Stage 2 Standards are based on home design and construction experiences from the Stage 1 development, with feedback from members, circles, designers and builders. They included that the Scoresheet was too easy to pass; the BASIX section in the Scoresheet required enhancement with the NEV water exemption no longer valid; that the embodied carbon calculator required more emphasis and it units need changing to embodied carbon per person; that important design features such as ceiling insulation may be missing from the completed home; and that the benefits of improvements during construction were lost or difficult to measure.

In particular, the reasons were:

- The Australian and NSW sustainable building standards (e.g. NatHERS, BASIX) and the National Construction Code) are being revised in 2022 e.g.
 - NatHERS has energy caps; its minimum compliance benchmark is moving from 6 stars to 7 stars; and is looking at energy neutrality for major appliances
 - BASIX also has energy caps and is increasing its stringency to 7 stars equivalent performance
 - NCC changes to Class 1 (houses) and Class 2 (sole-occupancy units) including the increase of NatHERS ratings to 7 Stars; introducing limits on energy used by fixed appliances; allowing onsite renewables; and measuring operational carbon emissions.
- We needed to take into account the potable water supply from the council
- New research and increasing evidence indicated that climate change will make homes less comfortable, and their star rating may reduce as the region becomes hotter and as the NatHERS weather files are updated
- A new council local environmental plan (LEP) governing zoning rules is being introduced and will probably allow dual occupancy
- The Hill Thalys guidelines needed changes because of:
 - the desire to allow higher density living where appropriate
 - more difficult lots to Stage 1, some with narrow north aspects and steeper slopes
 - several larger collaborative living lots in Stage 2
 - different common gardens and drainage easements to Stage 1
 - dual occupancy allowed in the new council LEP
 - adjusting setbacks for smaller Stage 2 common gardens

Schedule 1 – Fees

Initial amounts are set here, but can be varied by a determination of the Executive Committee of the Community Association.

Item	Amount	Comment
Builder's Bond	\$1,500	Refunded in accordance with clause 9. The Construction Stage
Building Appeals Committee - Appeal Application Fee	\$750	50% is refundable if the application is successful

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