

Cohaus

Apartment and terrace
housing



PROJECT OVERVIEW

Cohaus is a twenty-unit housing development in Grey Lynn, Auckland. Its name refers to the underlying cohousing principles that have informed all aspects of this project. The development consists of a mix of single level apartments in a three storey walk-up and two-level terraces.

The vision was to build affordable housing using smart design and innovative technology to create a community with sustainability and the minimising of resources at its heart.

This development was reviewed by Auckland Council's urban designers and landscape architects, as well as by external specialists on the Auckland Urban Design Panel.

General cohousing principles:

Cohousing is often designed, built and lived in by people who plan to be long-term residents. This helps to create a shared sense of community responsibility for the development.

The majority of cohouses place sustainability and the benefits for the group at the forefront of lifestyle and decision-making.

Project costs can be divided between the people who wish to participate. These will usually include ongoing costs once the project is completed such as maintenance, insurances, rates and utilities.

Cohousing makes social and economic sense in that it offers a sense of connection and community and allows for the sharing of resources. It can produce high quality housing and with costs shared it can be more affordable than comparable commercial developments.



Building facade facing Surrey Crescent
Image credit: New Zealand Institute of Architects

PROJECT INFORMATION

Project type:

Terraced housing (Seven) +
Apartments (12) +
Existing villa retained

Rohe/Location:

Grey Lynn, Auckland

Owner/Developer:

Designed, financed and built in collaboration
with the residents who included the architects

Client:

The residents

Funding and affordability:

Project costs divided among residents.
At time of completion two bedroom unit was
\$810k approx

Year Completed:

2021

Project stages and duration:

2017 – Site purchased
2018 – Resource consent granted
Late 2019 – Construction started
Mid 2021 – Cohaus completed

Landscape Architecture:

Resilio
Studio Nord
Residents
Beca
Xanthe White Design

Architecture/Urban Design:

Studio Nord Architects

Energy:

Re/volve Energy

Recognition:

NZIA Auckland Branch Award 2023 - Medium
Density Housing
NZILA award 2024 - Residential and Gardens
Category Award Winner
SEANZ - Best Environmental Impact Award
2021



Architect/artist rendition of the building's Surrey/Browning Street corner
Image credit: Studio Nord

LOCATION/WHENUA

Cohaus is located in Grey Lynn, an inner suburb of Auckland, New Zealand.

The site is well connected to transport links with major bus routes nearby on Great North Road via Surrey Crescent, the road onto which Cohaus fronts. It is also close to motorways and smaller local shopping centres.

There are several schools and parks within a short walk.



Aerial view of Cohaus in context of its neighbourhood
Image credit: New Zealand Institute of Architects

PLANNING CONTEXT

Auckland plan 2050

The Auckland Plan 2050 sets the direction for how Auckland will grow and develop over the next 30 years. It responds to the key challenges we face today – high population growth, sharing prosperity among all Aucklanders, and reducing environmental damage.

To address these challenges, the plan identifies six outcomes that will deliver a better Auckland:

- Belonging and Participation
- Māori Identity and Wellbeing
- Homes and Places
- Transport and Access
- Environment and Cultural Heritage
- Opportunity and Prosperity

Cohaus addresses the following Auckland Plan 2050 outcomes in particular:

- **Belonging and participation**
- **Homes and places** – Specifically Direction 1: Develop a quality compact urban form to accommodate Auckland's growth and support a low carbon future
- **Environment and Cultural Heritage** – Uses resources efficiently; employs sustainable building technologies

Auckland unitary plan 2016 - Chapter B: Regional policy statement (RPS)

The sections relevant to this development include:

- **B2 Tāhuhu whakaruruhau ā-taone - Urban growth and form B2.2.1. Objectives: (1) A quality compact urban form**
- **B7 Toitū te whenua, toitū te taiao – Natural resources**
- **B7.1 Issues: The pressures on natural resources need to be managed not only for environmental well-being but also for social, economic and cultural well-being.**

In selecting more compact built forms, that is, apartments and terraces, and utilising sustainable design principles and materials wherever practicable Cohaus reduces its use of resources when compared to conventional housing.

PLANNING CONTEXT

Auckland Unitary Plan 2016

Unitary plan chapter H - Zones:

Cohaus in its entirety is zoned SHZ (Single House Zone) with a Special character overlay.

This development presents a very sustainable development in terms of efficient land use. However as a slightly larger and more intensive development, it did not comply with the existing, lower scale zoning provisions of the Single House Zone. There was also debate as to whether the building complied with the Special Character Overlay standards and assessment criteria.

The application was consented as an Integrated Residential Development. At the time of receiving its consent the SHZ provided for this activity; overall the application was assessed as discretionary and the following standards applied:

- **Height:** 10.5m. Exceeding the 9m (incl 1m roof bonus) permitted
- **HiRB:** Both the apartment and terraced housing buildings infringed along the entire south western boundary by a maximum height of 5.14m which exceeded the 3m+45 degrees recession plane (under the special character overlay).
- **Yards:** Front yard standard of 3m exceeded, side and rear complies.
- **Building coverage:** 35% building coverage exceeded at 43%
- **Private outdoor living spaces:** Each unit has either a patio and direct access to the common courtyard area, or a balcony ranging between 7m – 16m². A **communal outdoor living space** is provided. As a shared amenity the central, soft landscaped courtyard is a main feature of the development. It contains vegetable gardens and fruit trees, a garden house, areas for composting, seating and areas for play.

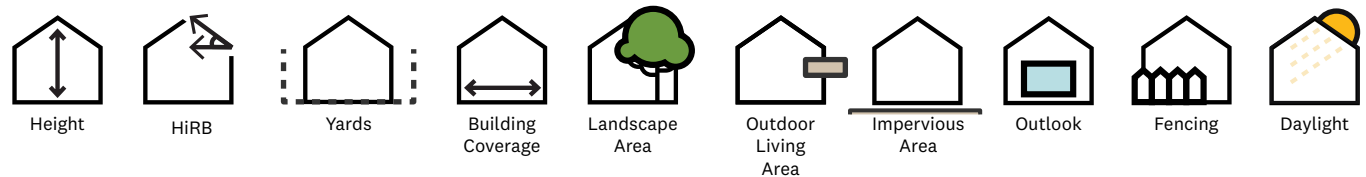


Illustration of the Auckland Unitary Plan standards applied to residential zones

DESIGN ELEMENT



Climate resilience and sustainability

Built form:

From a passive solar design perspective, building blocks were intentionally arranged on the site, and individual units were designed to achieve maximum solar gain. All dwellings have two aspects at least and achieve natural cross ventilation and high levels of daylight.

Windows are generally modest in size except full-height sliding doors to living areas that are protected against overheating by verandah roofs or overhead decks.

Materials selected:

Timber structure and framing was maximised, including the use of mass timber for stairs, decks and some intermediate floors. Steel structure was kept to a minimum and excluded from the external envelope to reduce embodied carbon and thermal bridging. The thermal envelope was insulated with wool/polyester insulation to 150% of the Building Code at the time.

All external materials were selected for low maintenance requirements and their ability to age gracefully, elements were left in a 'natural' uncoated state. Wherever possible locally sourced and sustainable products were selected. This included the majority of radiata timber cladding, radiata decking, timber structural elements, insulation and roofing. The aluminium joinery used 100% recycled aluminium. Garden walls were built from Tāmaki basalt paddock stones.

Rendered aerial view of Cohaus showing the building block layout on site.
Image credit: Cohaus

DESIGN ELEMENT



Climate resilience and sustainability

Landscaping:

The existing 3m fall across the site was accepted by the buildings stepping down, and landscaping developed as a composition of banks, walls and terraces.

The sunny central courtyard includes gardens, paths and seating as well as on site organic waste management, amenity planting, a productive garden, an orchard and a communal studio space. A range of native and productive plants were selected.

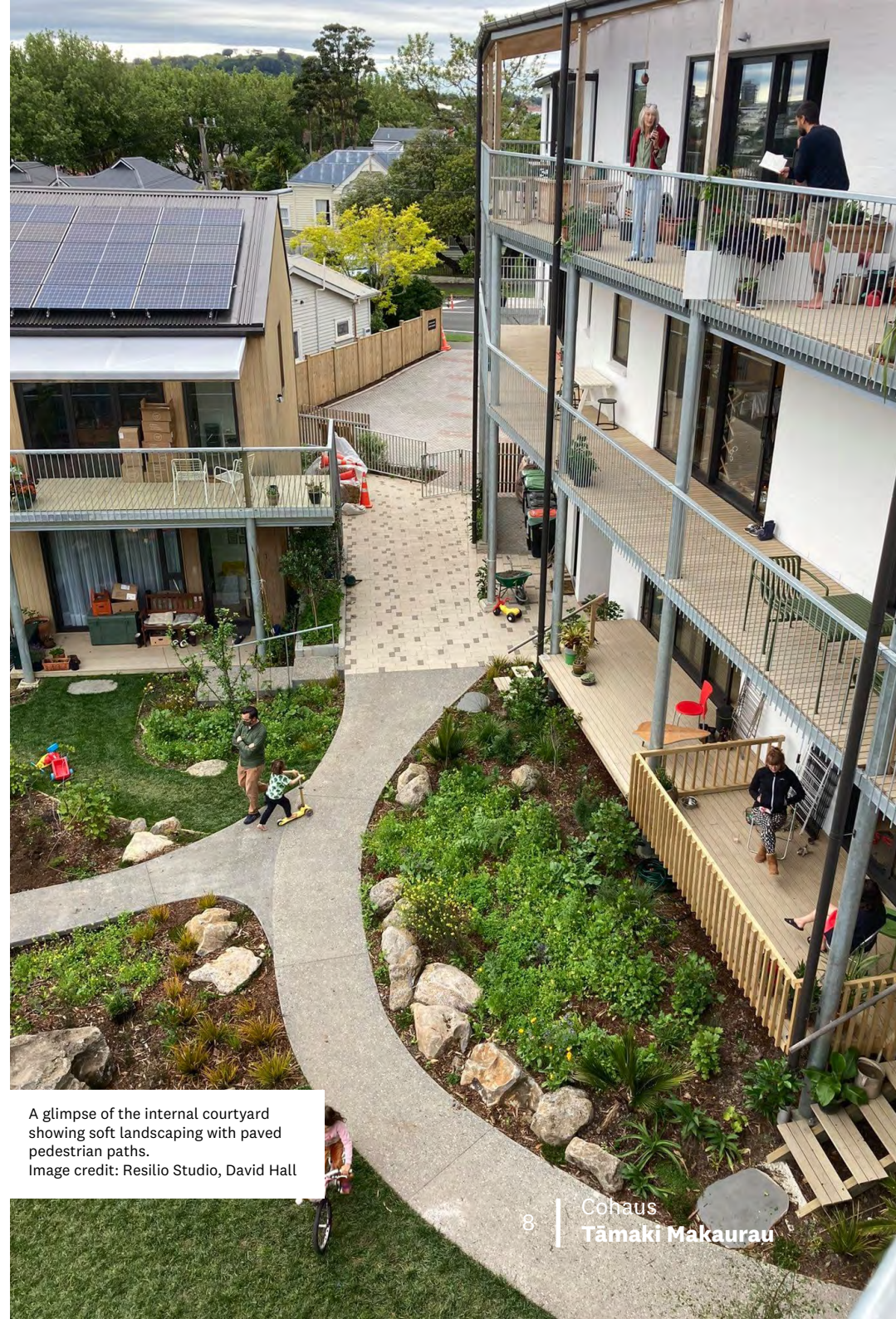
Soft landscaping was maximised to absorb stormwater, increase residents' amenity, grow food, utilise household food waste through composting and reduce summer overheating effects. Apart from the exposed aggregate access paths, all hard paving is unitised, permeable and infinitely reusable.

Stormwater:

A detention tank was installed to restrict stormwater flows to pre-development levels. Given the increasing severity of Auckland rain events rainwater gutters, downpipes and buried stormwater drains were sized to 200% of the NZBC maximum rainfall intensity and soft landscaping was maximized.

Electricity and heating:

Solar panels are located on the roofs. There is one central heat-pump hot water system with 48 hours of storage capacity that acts as an energy store for excess photovoltaic generation. Built-in space heating was not provided. After three climate seasons environmental performance has exceeded expectations. Summer overheating is considered difficult to manage in only one unit, which is on the upper level of a west-facing terrace.



A glimpse of the internal courtyard showing soft landscaping with paved pedestrian paths.
Image credit: Resilio Studio, David Hall

DESIGN ELEMENT



Climate resilience and sustainability

Cultural/Social resilience

The intention of “cohousing” is to create a community where beneficial outcomes for the group are prioritised for the good of all community members. Community living is proven to reduce feelings of isolation and loneliness. Community residents interact with each other frequently and participate in maintaining and improving their shared spaces and gardens.

Sharing resources and skills allows for a more sustainable way of life that reduces the impact on the environment and is much more affordable than traditional housing models.

The health of the community is sensitive to the situations of individual residents and people tend to look for ways to help other residents who are in need. Cohaus identifies with the Māori concepts of kaitiakitanga, stewardship of the natural environment and natural resources, and whanaungatanga, the purposeful creation and maintaining of kinship relationships outside your nuclear family that go beyond simple social contact.



Before (top) and after (bottom) planting over time. The gradual maturity and lushness of plants reflect the love and care of the residents. Image credit: Adam Luxton (top), Here Magazine (bottom)



DESIGN ELEMENT



Neighbourhood and subdivision design

Topography:

This is a generally flat site with a 3m fall away from the main road, Surrey Crescent, to the northeast. The site is located on a street corner and has three street frontages - see site plan. The unusual position terminates two streets of single-storey character houses at the main road and acts as an interface between this low residential scale and the varied and higher density structures along Surrey Crescent.

Block structure:

The two blocks form a perimeter-type development around a central courtyard oriented north. This works well for optimal solar gain. The taller front block wraps around the two main street frontages providing visual and aural privacy for the main shared courtyard/garden area that is at the heart of Cohaus. The development has gardens and entrances directly off the street.

Dwellings on the upper levels and those of the terraced house 'Courtyard Building' are accessed through broad, open passageways and through the corner carpark and yard.

Identity and street character:

The immediate neighbourhood has a variety of zones. Therefore the nearby buildings are a mix of historic houses, medium density residential dwellings, mixed use commercial and four to five level apartment buildings.

Overall :

The buildings present a friendly interface with the surrounding streets and the neighbourhood.



1. Surrey Building
2. Courtyard Terrace
3. Garden House
4. Villa
5. Carpark
6. Car Stackers
7. Bike Stable
8. Common Laundry
9. Passageway
10. Garden
11. Productive Garden
12. Lawn

Illustrative site plan of Cohaus.
Image credit: Here Magazine

DESIGN ELEMENT



Movement and parking

As a sustainable community the site was purposely selected because of its central location and easy access and/or walking distance to public transport, the city centre, local shops, schools and essential services.

As the development is located on a reasonably busy arterial road the car park is accessed by way of a new 4.5m wide vehicle crossing off the adjacent side road.

Movement around the site:

The design provides clear entrance ways to both blocks. Paths throughout the site and central courtyard follow desire lines.

Cars:

There are six shared cars - three electric and three hybrid - that are owned collectively thereby reducing car ownership.

Car parking:

The cohousing model has a focus on sustainability and sharing of resources. As a result, on-site parking is limited to nine carparks.

Bicycles:

The Surrey Building includes a storage area able to accommodate at least 25 bicycles adjacent to the carpark.



Residents taking out their bikes from the bike stable.
Image credit: Here Magazine

DESIGN ELEMENT



Landscaped areas and outdoor spaces

Landscaping:

The central garden courtyard is the focus of the development. With pathways throughout, this garden is a popular place for children to play. A large communal garden house is used by residents for meetings and parties.

Deep soil areas were provided with plantings of native trees. A bed of high quality composted soil has been gradually developed over three seasons throughout the central productive garden.

The road frontages of the site were planted with native specimen trees, including Kotukutuku, Tawhirikaro, Kowhai and Puriri trees.

Low height brick walls delineate the front boundary of the property, while also providing informal seating.

Outdoor spaces:

Each unit has either a patio and direct access to the common courtyard area, or a balcony ranging between 7m² – 16m².



Communal central garden courtyard with a large garden house shown the background
Image credit: Here Magazine

DESIGN ELEMENT



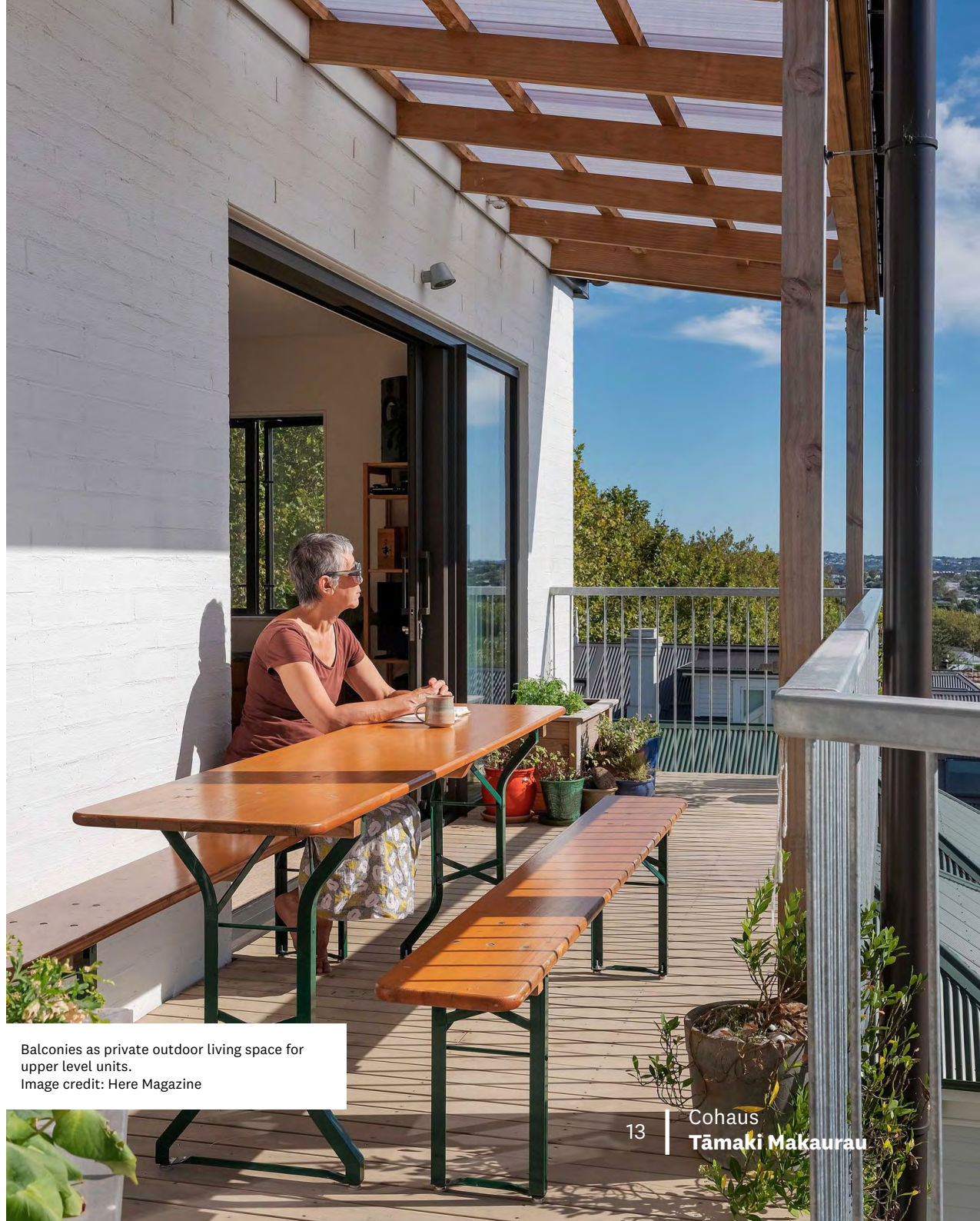
Overlooking and privacy

Privacy for the ground floor units varies depending on the owner's wishes, with some being made more private by way of planting and/or screens.

The upper level 'living decks' of the Surrey building are not separated between units. It is possible to traverse from one end of the block to the other across the face of internal living spaces. Even though there is some impact on personal privacy, residents consider these decks a great success for creating a sense of openness and community at each building level.

Effects on neighbours:

Some generally minor visual dominance and privacy effects for the immediately neighbouring properties were identified. As a result the application was limited notified and a planning hearing required. This planning process enabled those adjacent or affected parties to submit on the application.



Balconies as private outdoor living space for upper level units.
Image credit: Here Magazine

DESIGN ELEMENT



Internal arrangements and spaces

The 20 units range in size from one bedroom to five bedrooms.

There are shared facilities including a guest bedroom, a common room, storage, laundry, bike parking, cars and car parking, covered clothes lines, garden shed and compost bins.

Dwelling layouts follow these common principles:

- Dual aspect (at least).
- Minimum space wasted in circulation.
- Living spaces orient inwards to the centre of the site away from the three adjacent roads.
- Large outdoor living spaces (deck or patio) that are sheltered from sun and rain.
- Combined kitchen / dining / living space as generous as possible with a wide sunny aspect to a private outdoor living space and, beyond that, the courtyard.
- Fully fitted kitchens with broom cupboard.
- Courtyard building units have attic storage.
- All bedrooms fit a queen bed and wardrobe but are otherwise modest in size.
- Compact bathrooms, usually with a shower only or shower over bath for flexibility.
- All bathrooms have natural light and natural ventilation from a window or skylight.
- Surrey building units have lockers in the common storage mezzanine.



Well lit, open plan living, dining and kitchen with minimum space wasted for circulation.
Image credit: Here Magazine

DESIGN ELEMENT



External building design

Site response:

The proposed site layout is designed to form a built edge that relates to the Surrey Crescent street frontage. The buildings are stepped to blend with the neighbouring residential environment. This layout also responds to the natural topography, stepping and reducing in height from the site's high point at Surrey Crescent.

Form and appearance:

The apartment "Surrey" block has a character which visually mediates, in scale as well as character, between the nearby very urban apartment blocks and the traditional villas lining the smaller local streets that run down from the ridgeline.

This largest building is broken up by the recessive brick linking elements. It turns the corner neatly to present a new frontage that relates well to both the smaller local road and the re-located and refurbished Cohaus villa.

Each unit has a clearly identified front entrance address.



Rendered elevation facing Surrey Crescent (bottom) and actual built outcome (top).
Image credit: Studio Nord (bottom), Here Magazine (top)

DESIGN ELEMENT



Building performance

Building orientation and design:

With sustainability in its widest sense as the dominant driver for Cohaus, much attention was paid to the buildings' performance. To this end the placement of the buildings on the site was key. Careful building arrangement and design ensure that natural light and ventilation is maximised, while shading devices including covered louvres over the decks offer protection from sun and rain. The dual aspect design of the units provides good cross ventilation to prevent internal overheating in summer.

Materials:

All materials were selected to be as natural and durable as practicable with timber structure and framing maximised. Steel structure was kept to a minimum and excluded from the external envelope to reduce embodied carbon and thermal bridging. The thermal envelope was insulated with wool/polyester insulation to 150% of the Building Code (at the time). The aluminium joinery used 100% recycled aluminium.

External materials were selected for low maintenance requirements and were left in an uncoated state.

Garden walls were built from Tāmaki basalt paddock stones and garden paths are constructed in reusable hard paving.

Insulation:

The thermal envelope was insulated with wool/polyester insulation to 150% of the Building Code at the time.



Closer view of vertical timber cladding
Image credit: Adam Luxton and Abodo

DESIGN ELEMENT



Services

Utilities:

Cohaus has a utilities system of integrated customer networks to provide power, hot water, cold water and internet to units. No units require external utility accounts. The system meters at point-of-use and automatically generates combined monthly invoices. Household utility bills are extremely low: units average \$180 per month for water, internet, electricity, and laundry.

Part of the electricity billing is used to repay the solar photovoltaic installation, which was funded by debt. When this debt is paid down in two years the unit cost of power paid by residents can be reduced further.

Rubbish:

This is managed by private collection. Bins are collected from the parking area which has sufficient space for truck manoeuvring.

Recycling:

Waste is separated into streams by residents: general recycling, cardboard, soft plastic, e-waste, batteries and landfill. Food waste is diverted to on-site composting and worm farms, or to a central Council organic waste bin.



A fenced communal rubbish area with level access for easy movement of bins in and out.

DESIGN ELEMENT



Maintenance and management

Clothes washing and laundry:

There is a communal laundry with washing machines and heat pump dryers. The laundry also functions as a community hub for bulk container-less refill of common household cleaning products and milk. Several households with children also choose to have their own laundry facilities. Two shared covered clotheslines in the garden are used by all residents.

Shared facilities:

Include a guest bedroom, a common room, storage, laundry, bike parking, hybrid/ EV cars and car parking.

Fire safety and rooftop plant:

The buildings are three stories and under, so only require a monitored fire alarm system. Other than the solar photovoltaic the rooftops are not utilised for services so access safety systems are not required.

Building maintenance and management:

As a unit title development Cohaus has a Body Corporate Executive Committee made up of residents that is responsible for building maintenance and management. The scheme architects and other designers all live in the community and provide expertise to solve maintenance issues collectively. Regular trade work like plumbing, electrics, alarms, auto door maintenance and building wash are contracted out.

Garden and grounds:

The residents who are interested in gardening put in as much time as they wish to maintain the productive garden and mow the lawns. The community has regular working bees to maintain general landscaping. Individual ground level unit owners improve and maintain the garden immediately around their own unit.



Residents enjoying the landscaping right outside their private outdoor space.
Image credit: Here Magazine



akdesignmanual@aucklandcouncil.govt.nz