

2017

MISSING MIDDLE

OPEN IDEAS COMPETITION:
Testing policy through design

GOVERNMENT
ARCHITECT
NEW SOUTH WALES



INTRODUCTION

In judging the entries it was important to acknowledge the intentions of the Competition as being firstly to engage with the design industry and seek their feedback on the Draft Medium Density Design Guide, and secondly to demonstrate how the use of that Guide can support and encourage design excellence in developing medium density housing.
— Competition Jury Report

The 'Missing Middle Design Competition' was an open ideas competition that engaged architects and designers in the development and testing of a new medium density housing policy for NSW, the Medium Density Housing Code. The competition was an initiative of the Government Architect NSW (GANSW) in collaboration with the NSW Department of Planning and Environment (DPE).

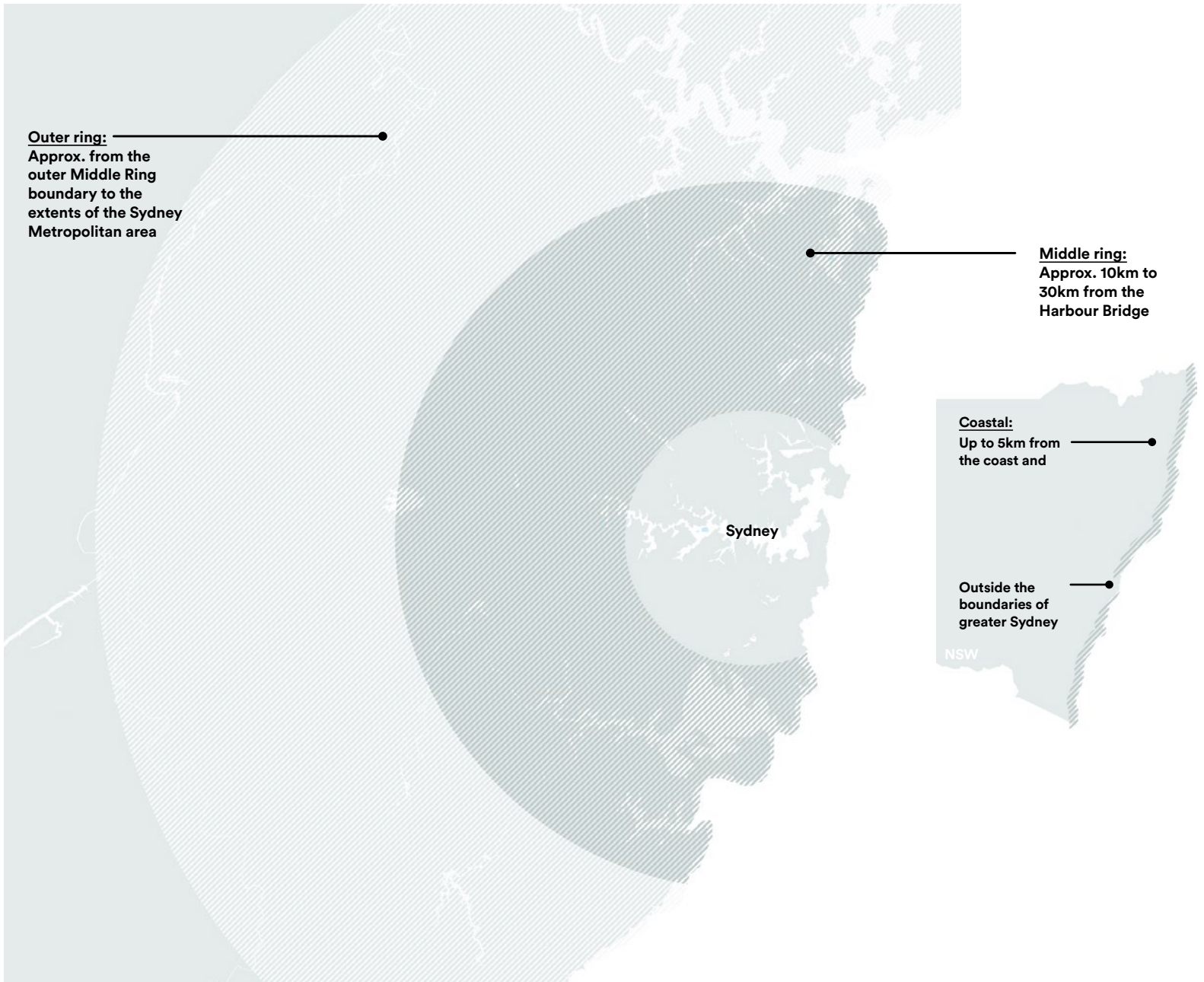
The **Medium Density Housing Code**, is intended to provide a faster planning approval process for low-rise medium density housing and to thereby increase the availability of housing of this type. It is one of a range of policy initiatives intended to increase housing delivery generally across NSW and Greater Sydney.

The aim of the competition was the generation of exemplary concept proposals that would test the performance of draft

design guidelines established to support the Code. All submissions were to include a design that complied with the draft guidelines, along with design alternatives or diagrams illustrating how changing one or more of the controls could lead to an improved outcome. Entrants were also asked to look for complex sites, such as those with steep topography, and to seek opportunities for their projects to address key issues affecting the city, such as changing demographics, aging in place and housing affordability.

The awarded competition entries used design to explore a broad range of ideas including the impact of increased medium density housing on the suburb or city, on the construction industry, on sustainability, public space and infrastructure. Projects also looked at the ways that housing of this type might be practically achieved with our current pattern of land divisions and ownership, and identified models of shared and flexible use that could support different ways of living over time. Ideas around the retention of neighbourhood character whilst increasing housing density were also key to several schemes.

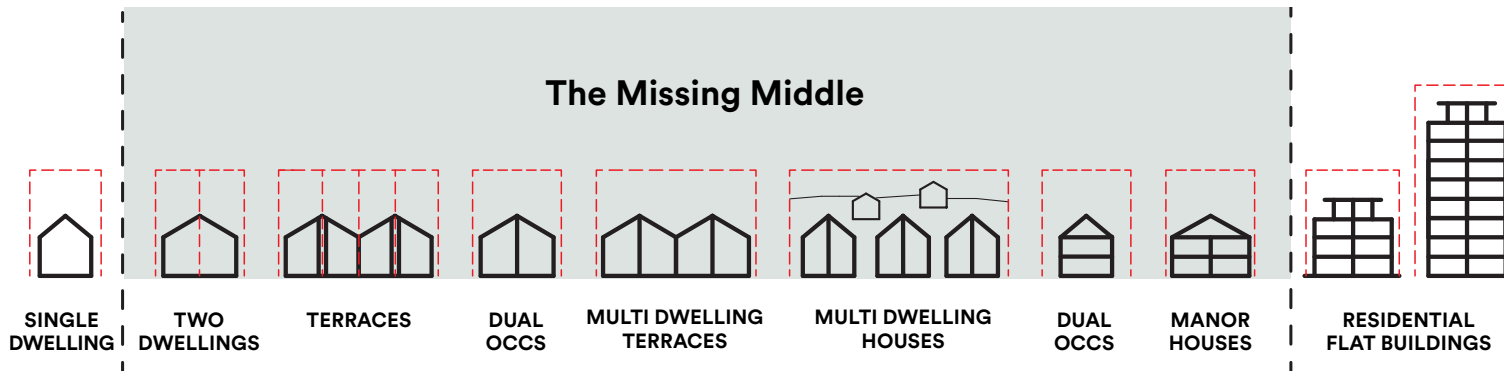
The competition results were high quality and succeeded in making the case that the design guidelines would not preclude good design nor prevent some level of innovation. Nevertheless, several key areas of change for the guidelines were noted, including open space allowances and built area. The jury also raised concerns at the collective impact that development of this type could have on existing suburbs where this took place without the benefit of strategic planning.



Site selection

Entrants were asked to find sites within the middle and outer ring suburbs of Sydney and coastal areas of NSW, in compliance with local planning controls. The zones for site selection were defined as follows:

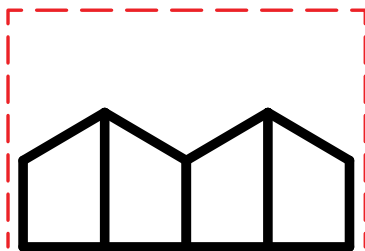
- **Middle Ring:** Approximately 10 to 30 km from the Harbour Bridge as the crow flies;
- **Outer Ring:** Approximately from the outer Middle Ring boundary to the extents of the Sydney metropolitan area;
- **Coastal:** Up to approximately 5km from the coast and outside the boundaries of greater Sydney.



What is the 'Missing Middle'?

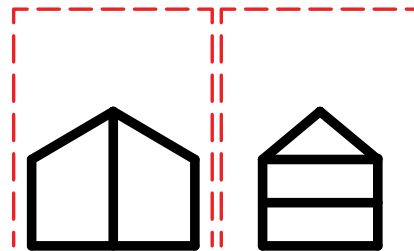
The 'Missing Middle' has a dual meaning. It refers to a type of low rise medium density housing and to the lack of that housing type in the 'middle' areas of Australian cities – the areas between inner urban cores and suburban fringes. In Sydney, and large regional cities in NSW, residential building stock is dominated by detached suburban houses. The primary alternative is a form of high-density apartment development that is occurring across the city, primarily in urban renewal districts. There is a policy gap in the provision of planning and design guidance for housing types that sit between these two types – the 'Missing Middle'.

The **Medium Density Housing Code** addresses development in this Missing Middle area; types such as dual-occupancies (two dwellings on one block), terrace houses and manor homes (a new term for an older housing type – a low rise building with three to four apartments). The competition asked entrants to test the draft guidelines developed to support the design of these three main housing types.



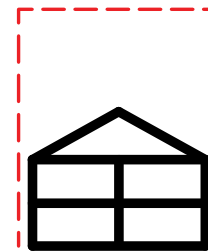
Terraces:

Three or more attached dwellings which have a frontage to the street.



Dual Occupancy:

Two dwellings on one lot of land, attached or detached. Dual Occupancies can be side-by-side, or one on top of another.



Manor Houses:

A two-storey building containing three or four dwellings on one lot of land.

MISSING



MIDDLE

OPEN IDEAS COMPETITION:

Testing the Draft *Medium Density Design Guide*


GOVERNMENT
ARCHITECT
NEW SOUTH WALES

 | Planning &
Environment

Competition Process

Competition dates:

4th November -16th December 2016.

Jury deliberation: 18th January 2017.

Awards announced: 10th April 2017

Submission Format:

Four A3 pages and one A4 page to be submitted electronically.

Entries received:

a. Terrace Housing	42
b. Manor Houses	28
c. Dual Occupancy	22
Total	92

Entrants:

56%	Registered Architects
23%	Graduate
13%	Building designers
6%	Architecture students
2%	unknown

Jury Panel:

Peter Poulet; NSW Government

Architect and Jury Chair

Rachel Neeson; Director, Neeson

Murcutt Architects

Timothy Hill; Director, Partners Hill

Jan McCredie; Urban Design Manager,

Parramatta City Council

Les Dickson; Building Designer

Technical Advisor – Peter Smith;

Director, Smith & Tzannes

Competition Registrar – Michelle Tabet;

Founder, Left Bank &Co.

COMPETITION PROCESS

Comments from the Jury Chair

In judging the entries it was important to acknowledge the intentions of the Competition as being firstly to engage with the design industry and seek their feedback on the Draft **Medium Density Design Guide**, and secondly to demonstrate how the use of that Guide can support and encourage design excellence in developing medium density housing. The role of the Jury was primarily to assess the second aim, though considerable discussion took place around the success and appropriateness of many of the specific Medium Density Design Guide controls as they were being demonstrated by the proposals and direct feedback was given by the Jurors to the authors of the Guide.

The Jury were pleased to have a very large number of entries to judge. In choosing the prize winners the Jury were drawn to those which were innovative in their thinking across a range of scales and themes. A number of common themes emerged, for consideration in the development of the final version of Medium Density Design Guide.

- a. The need for our suburbs to provide a variety of accommodation types and styles and for those dwellings to be adaptable to support our needs as we move through the various phases of life. Successful proposals showed developments that incorporated 1, 2, 3 and 4 bedroom dwellings and allowed for the re-configuration of those dwellings over time.
- b. The provision of light and air becomes a more complex design consideration when density increases. The successful entries

made good use of internal courtyards, both to increase the amenity of the interior spaces and to provide private open space.

- c. An increase in density can be seen to be relative to the context of the suburb. Where the established building pattern was very low density, the proposals, even when providing double the accommodation or more, were not seen to be particularly dense. Many of the better submissions in these areas did not maximise the floor space or area ratio allowable under the design guidelines, instead preferring to retain a greater proportion of open space for contextual reasons. This raised the issue of retaining established built form in the face of increasing density and the importance of open space in achieving design excellence.
- d. The impact of medium density development needs to be carefully considered in terms of its effect on streetscape, tree canopy and urban heat island effect. Many proposals found it difficult to maintain a reasonable outcome in these areas. Those proposals that were successful chose to retain open space and deep soil zones by choice, rather than maximising building footprint within the controls.

The awarded proposals show the breadth of potential in this housing type, from reinventions of the traditional terrace or semi-detached house, through to innovation on a relatively new housing type for Sydney, the Manor House.



AWARDED ENTRIES

Terrace Houses

PLATFORM ARCHITECTS
Winner

OLIVIA VAN DIJK ARCHITECTURE
Runner-up

pH+
Commendation

Manor Houses

**MADIGAN ARCHITECTURE /
UNIVERSITY OF SOUTH AUSTRALIA**
Winner

KIERAN WARD
Runner-up

HENRY FOLEY & ISOBEL LORD
Commendation

Dual-occupancy

YOUSSEFZAY & HART
Winner

TRIAS
Runner-up

EELES TRELEASE ARCHITECTS
Commendation



**TERRACE HOUSES
WINNER**

RECLAIMING THE FRONT YARD

Platform Architects

This design challenges the way garages and driveways dominate the streetscape of the Australian suburb. Instead of providing a street-front garage for each individual dwelling, the design looks towards the traditional carriage-house model that provided a single shared access way to the rear of the site. Four terrace houses are arranged to share a common central driveway that allows cars to be parked at the back. Rear garages flank the paved driveway area that can be doubled up for use by all residents for play and recreation.

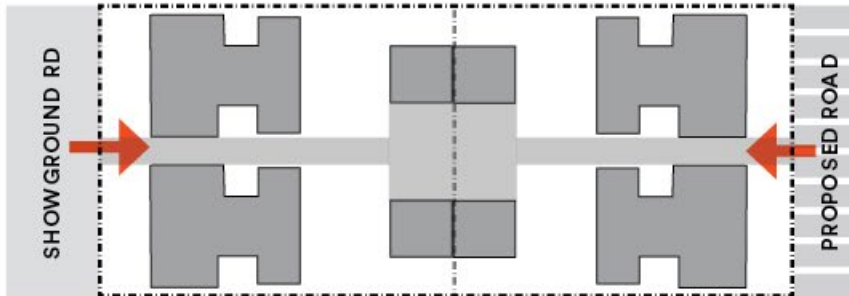
The front yards are reclaimed and reactivated as extensions of the living areas, providing greater passive surveillance and the opportunity for neighbourly interaction. The street frontage is improved through more continuous footpaths, space for street trees and better safety.

The individuality of each dwelling and private open space is achieved with the added prospect for a centralised community courtyard available through flexible use of the shared driveway. Overall the proposal balances private, shared and public zones throughout the development and creates comfortable and generous dwellings that are applicable to a variety of sites.



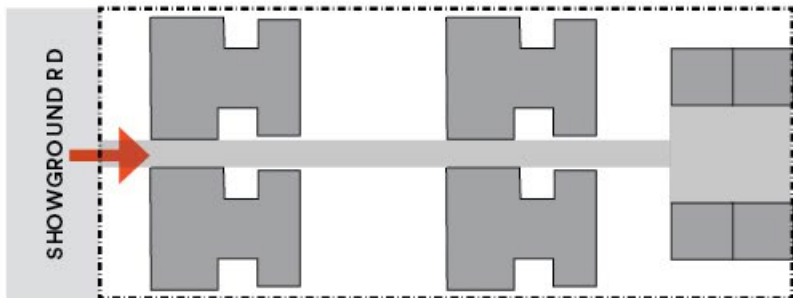
Site Plan

The site is located in Sydney's north-west growth area near the future Showground metro station. The proposal responds to the high-density development planned around the station by developing an alternative form of housing for the area. The design works as a single infill development or can be replicated across an entire street or block.



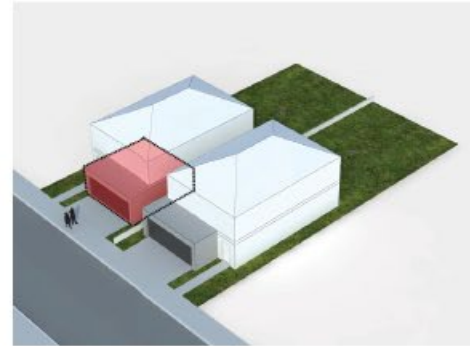
Scenario 1

The proposed new road to the south allows the site to be divided into two, each facing its own street for a better urban outcome



Scenario 2

If the proposed road would fail to materialise, the garages would be located to the rear and a second row of terrace houses in the middle,



Current situation - garage in front



Garage to the rear

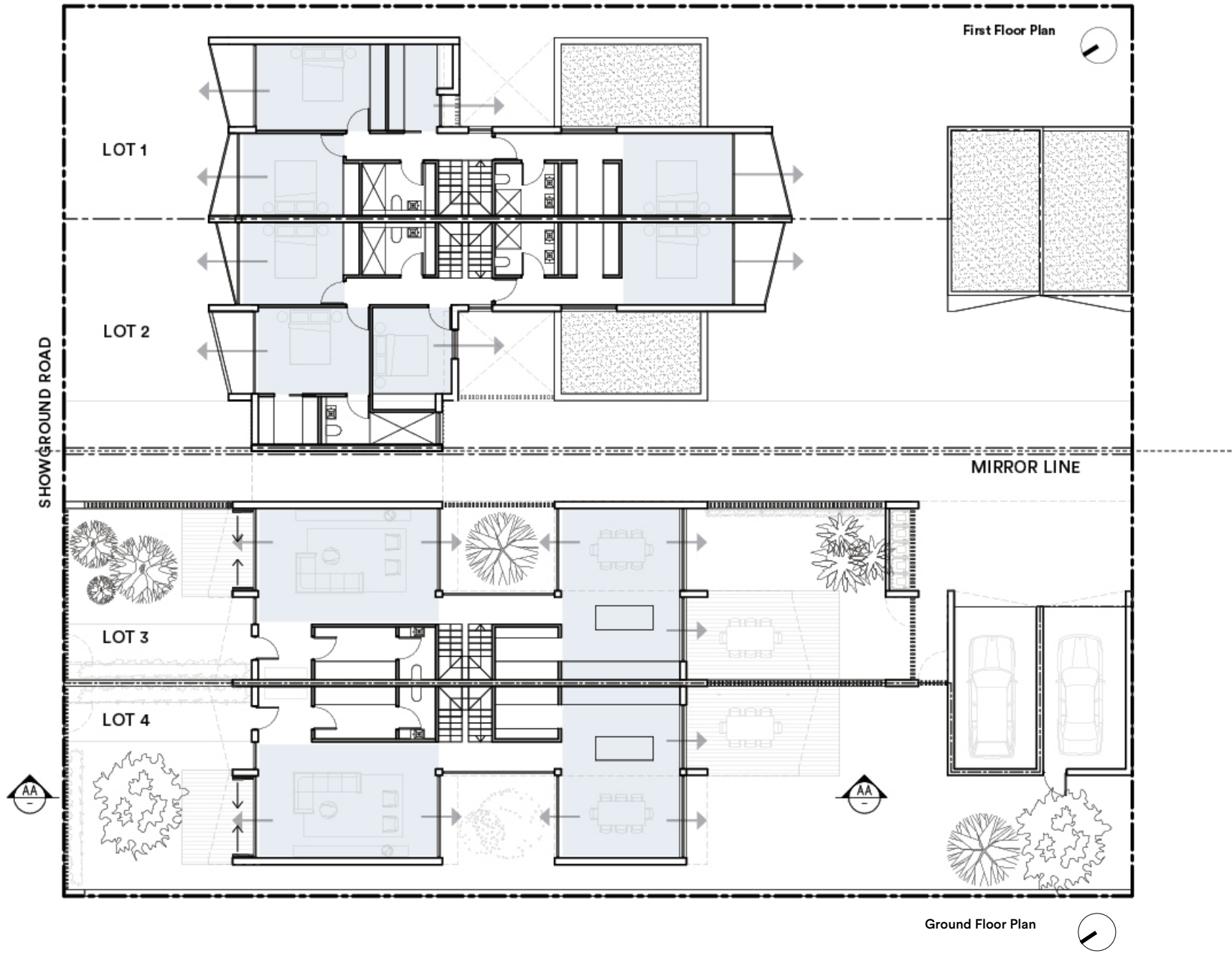


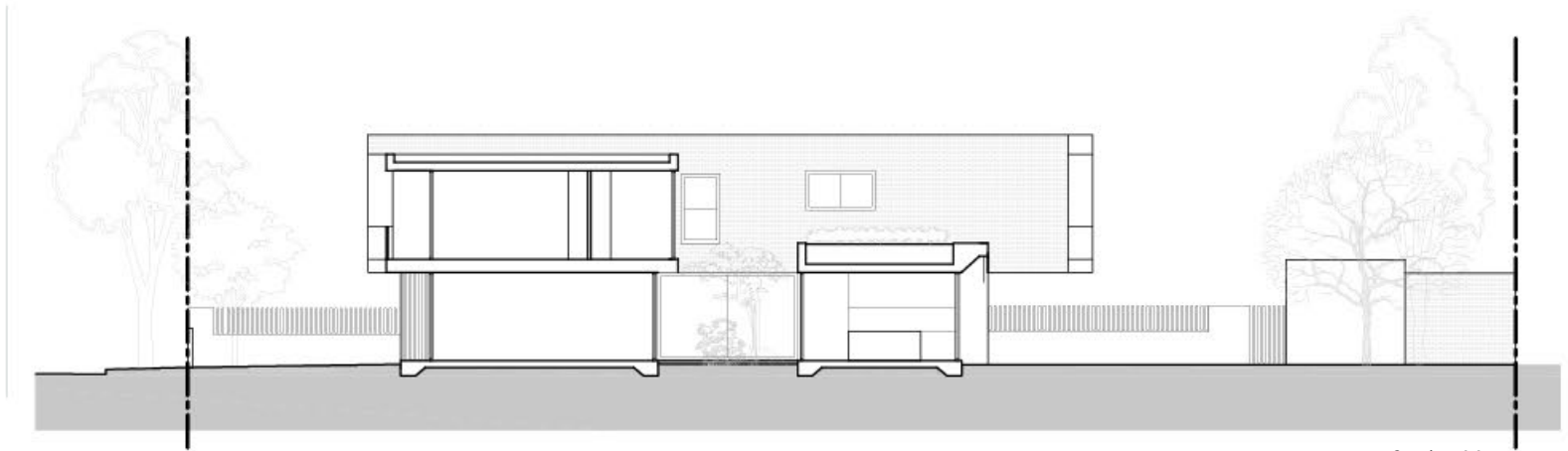
One driveway per two houses



One driveway per four houses

Reclaiming the street frontage





Section AA



Street Elevation



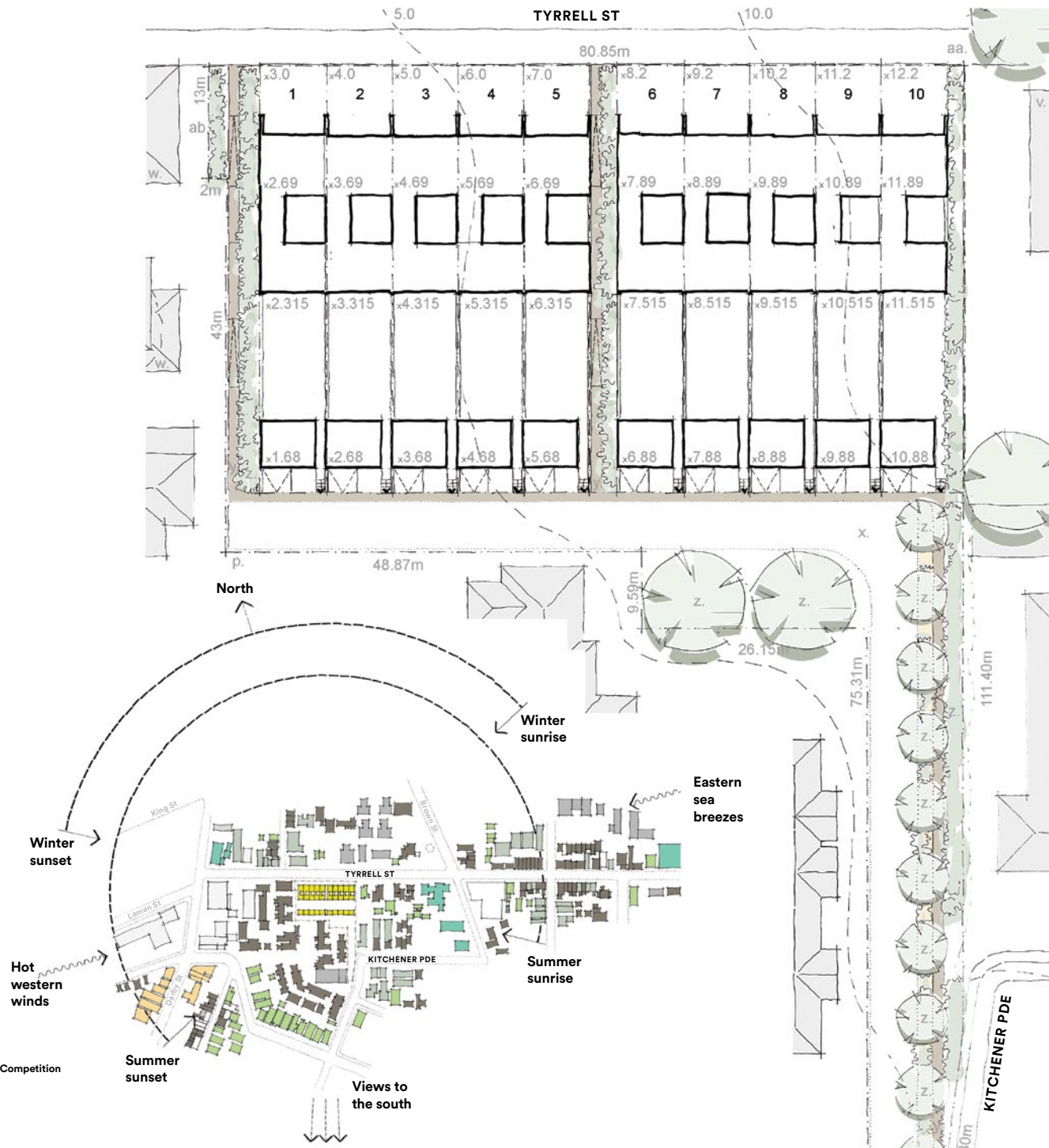
**TERRACE HOUSES
RUNNER UP**

**MINIMISING THE FOOTPRINT
TO MAXIMISE OUTDOOR LIVING**

Olivia Van Dijk Architecture

Developed for a sloping site near the historic heart of Newcastle, a large regional city, this design provides a reinterpretation of the traditional row-housing of the area.

A series of improvements to the early New South Wales terrace house model shows the potential of this housing type for contemporary urban life. The insertion of interior courtyards improves light and air to the dwellings through passive environmental controls and the consolidation of built form into a two-storey block provides a larger garden to the rear. However, the benefits are not only in the backyard, the typical stepping roofs of the old terrace house are traded for a single roof terrace that can be used for outdoor living. While this challenges the design guide controls in relation to height and rooftop-use, the result is added outdoor space which also works to reduce heat load as a green roof.

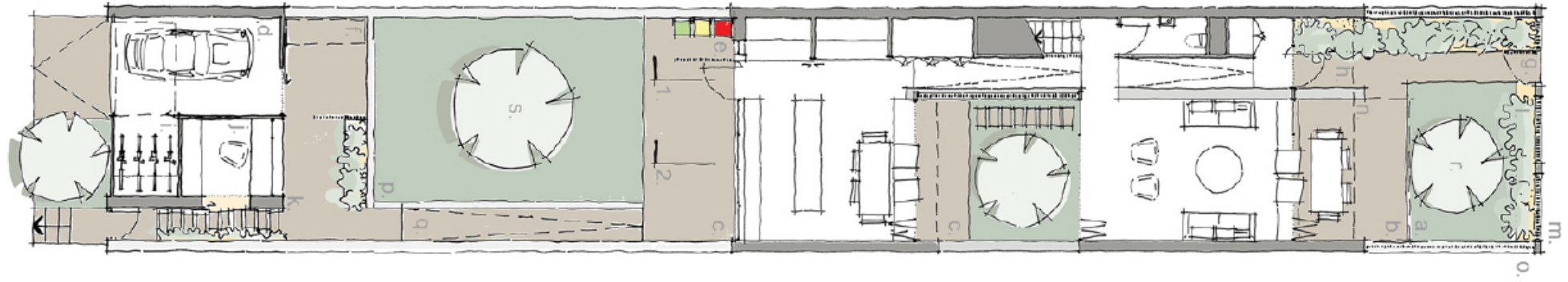


Site Plan

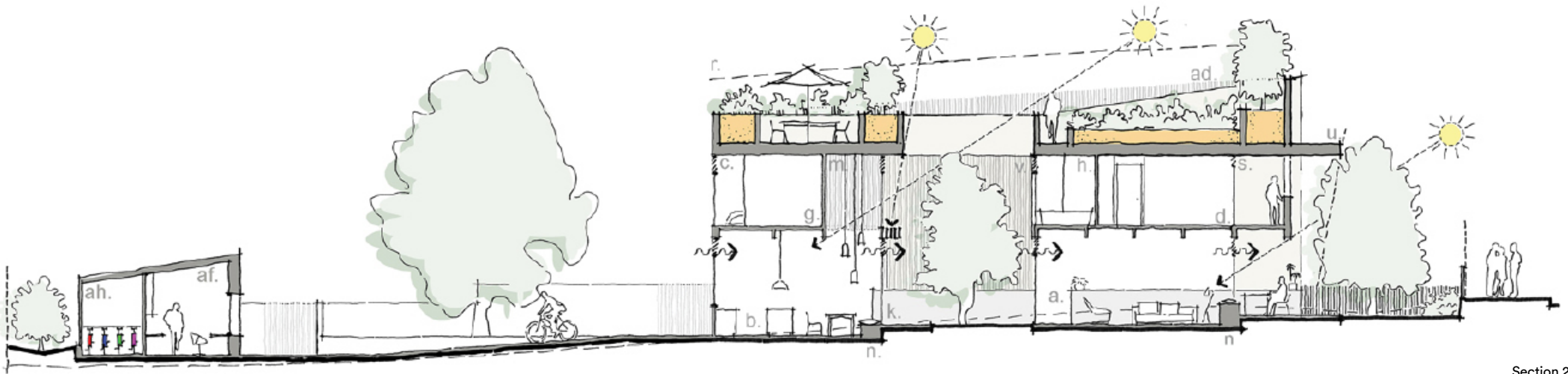
A site was selected that provided rear vehicular access to each dwelling from a secondary street. The garage is setback to create space for tree planting and a landscaped rear laneway.

Context Analysis Diagram

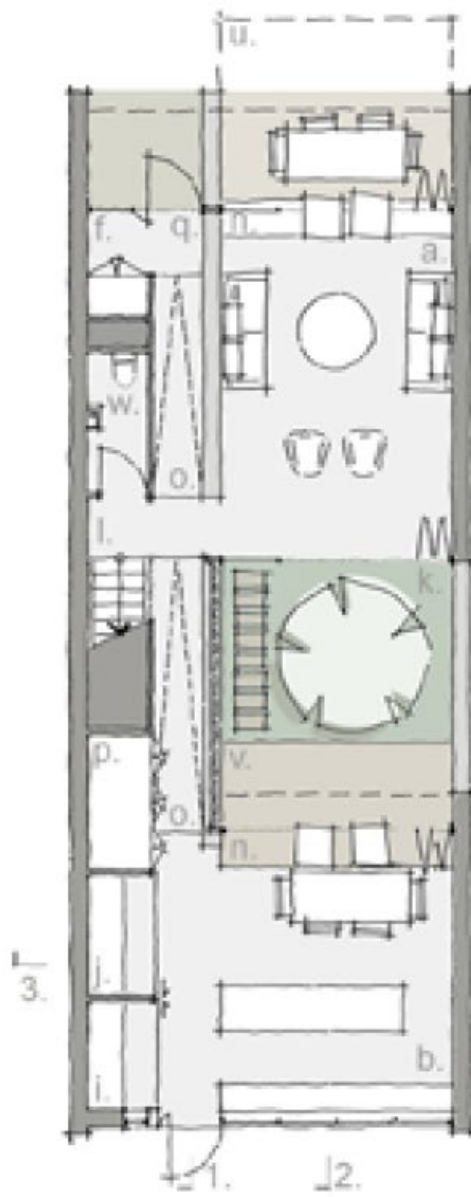
The site borders The Hill Conservation Area typified by sloping streets lined with mature street trees and a mix of housing types including Victorian terraces, with views to the Newcastle coastline.



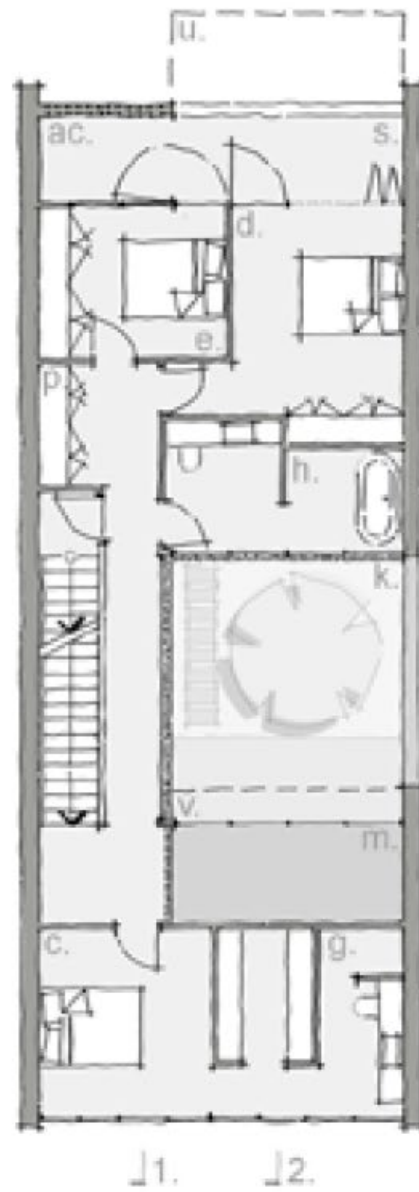
Site Plan



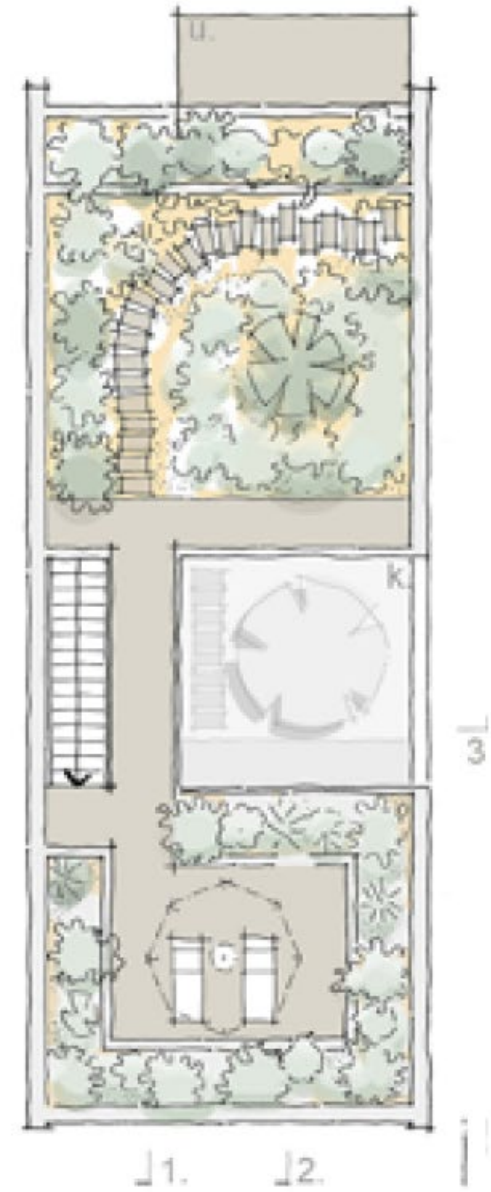
Section 2



Ground



First



Roof Garden



Drawing Legend (a) Living 6800x4600mm FFL 0 CH 3000 (b) Kitchen/Dining 5900x4600mm FFL -380 (3.2K) (c) Bed 1. 3800x3500 ex robe. FFL 3420mm CH 2450mm (3.2K) (d) Bed 2. 4100x3400 ex robe. FFL 3420mm CH 2450mm (3.2K) (e) Bed 3. 3000x3200 ex robe. FFL 3420mm CH 2450mm (3.2K) (f) Entry with coat store 1200x2300mm FFL 310mm CH 2700mm (g) Ensuite adjacent WIR 3500x1700mm FFL 3420mm CH 2450mm (h) Bathroom 4600x2000mm FFL 3420mm CH 2450mm (i) Laundry concealed behind sliding panel 2400x1400mm (j) Workspace/Study nook concealed behind sliding panel. 2400 x 1400mm (2L.9) (k) Internal courtyard 5230x4580mm (3.2J-1) (l) 1200mm landing (3.2S-1) (m) Void to upper level. (3.2I-1) (n) Built-in seating (o) Ramp Max 1:14 gradient (3.2S-1) (p) Storage including space for larger items. (2N) (q) 1000mm clear path of travel (3.2S-1) (r) Max building height allowable from existing ground level 9m (s) Upper level balcony overlooking public domain (3.2E-1.8) (t) Floor Structure 400mm min (3.2K) (u) Building articulation zone (v) Vertical Screen to west. Louvers behind screen (w) Accessible WC 2800x1200mm. Min 1200mm clear space (3.2S-1) (x) Small trees (2C) (y) Shrub planting (2C) (z) Paved area (aa) 45° angle from 3600 above existing ground <15m from boundary (ab) 3m gap between terrace rows (ac) Breeze wall to brickwork (ad) Privacy screen (ae) Privacy screen (ef) Studio (ag) Car park (ah) Bike store



**TERRACE HOUSES
COMMENDATION**

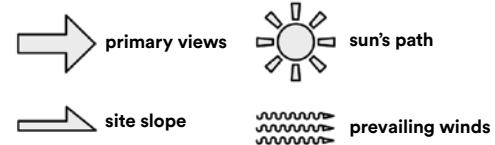
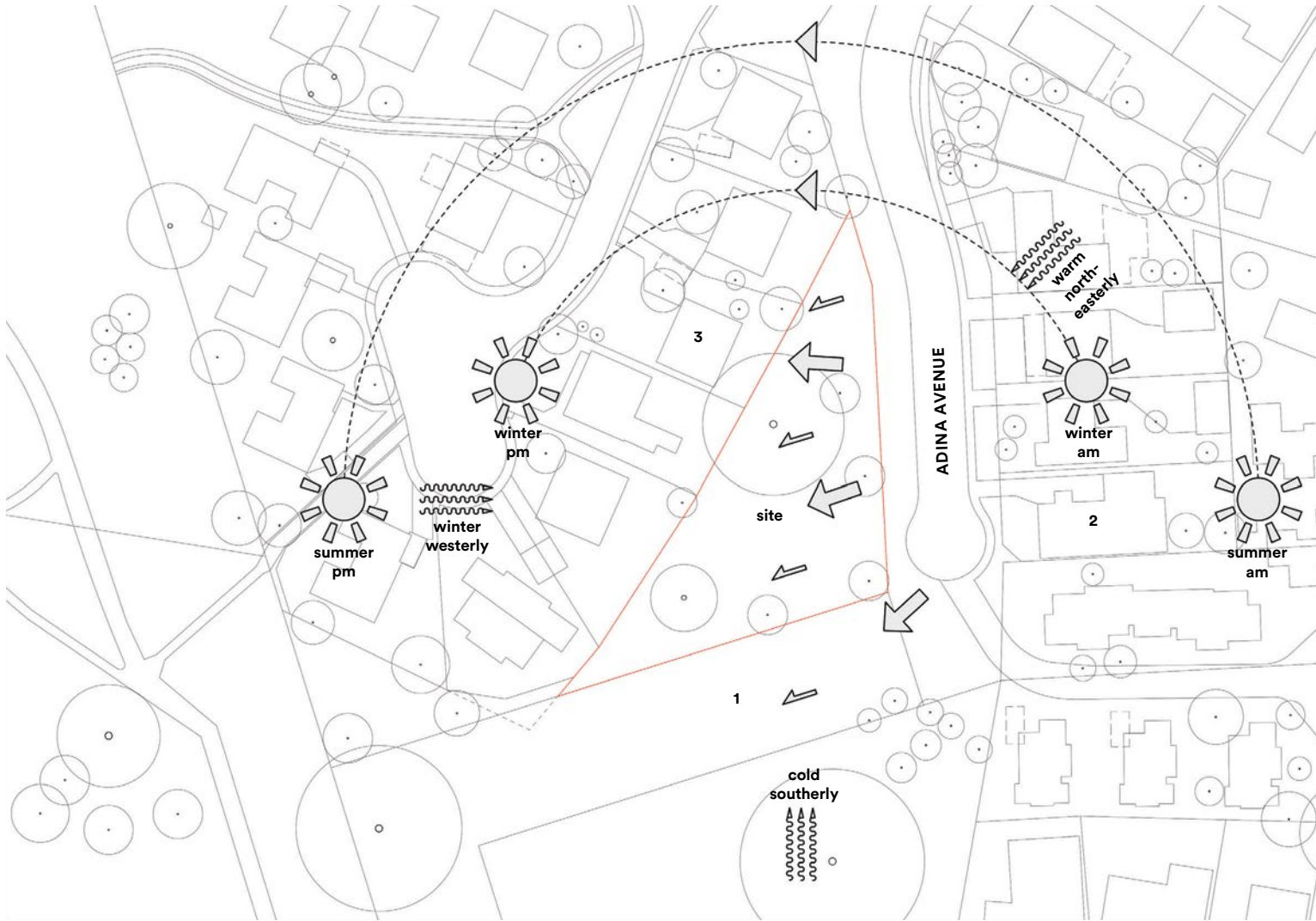
**USING A STEEP SITE TO
CONCEAL DENSITY**

pH+

Within a context of single storey bungalows, this design hides increases in density by selecting a site that falls steeply away from the street. The proposed terrace houses match the height of the streetscape, then step down one level to create two-storeys at the rear with views towards Botany Bay. The staggered plan responds to the triangular site increasing the street setback of each dwelling as each allotment lengthens. Front doors are emphasized by the bridge access that connects recessed garages to the street.

One design innovation the project explores outside the design controls is a sunken courtyard garden to create separation and privacy for bedrooms along the street. Access to light and ventilation has allowed for an additional bedroom on the lower ground floor, which would not have been possible if the setback was backfilled for street-level landscaping.

Another innovation to the terrace house typology is the incorporation of a roof opening and clerestory windows to bring natural light into the deep plan.



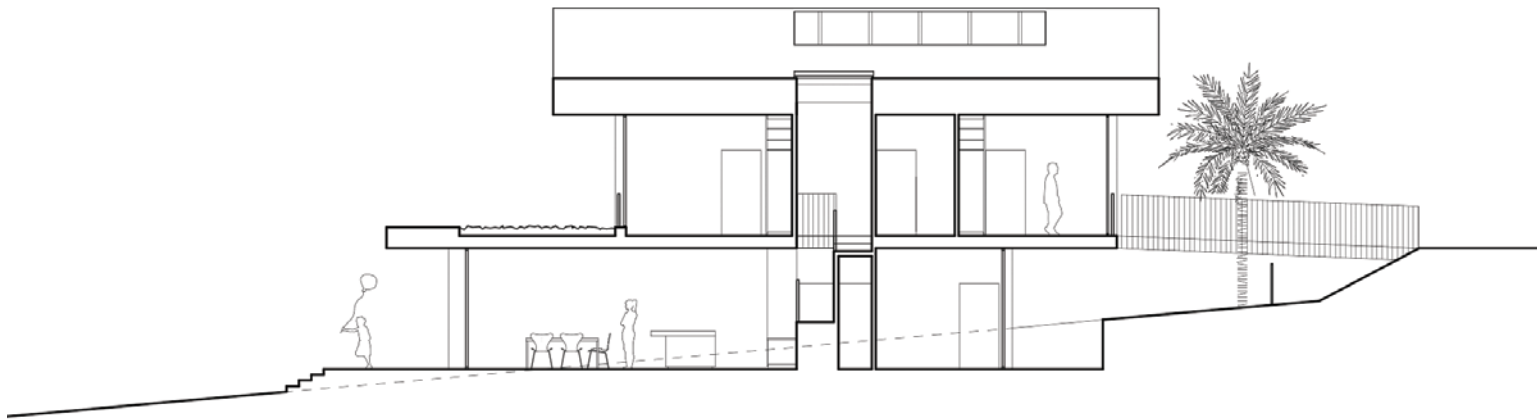
The site is currently vacant land adjacent to a broad tract of public open space with views to Botany Bay. It was selected to demonstrate the potential of an irregularly formed site to attract medium density housing in a low density content with compelling design outcomes.



Views west of Botany Bay



Steep topography of site

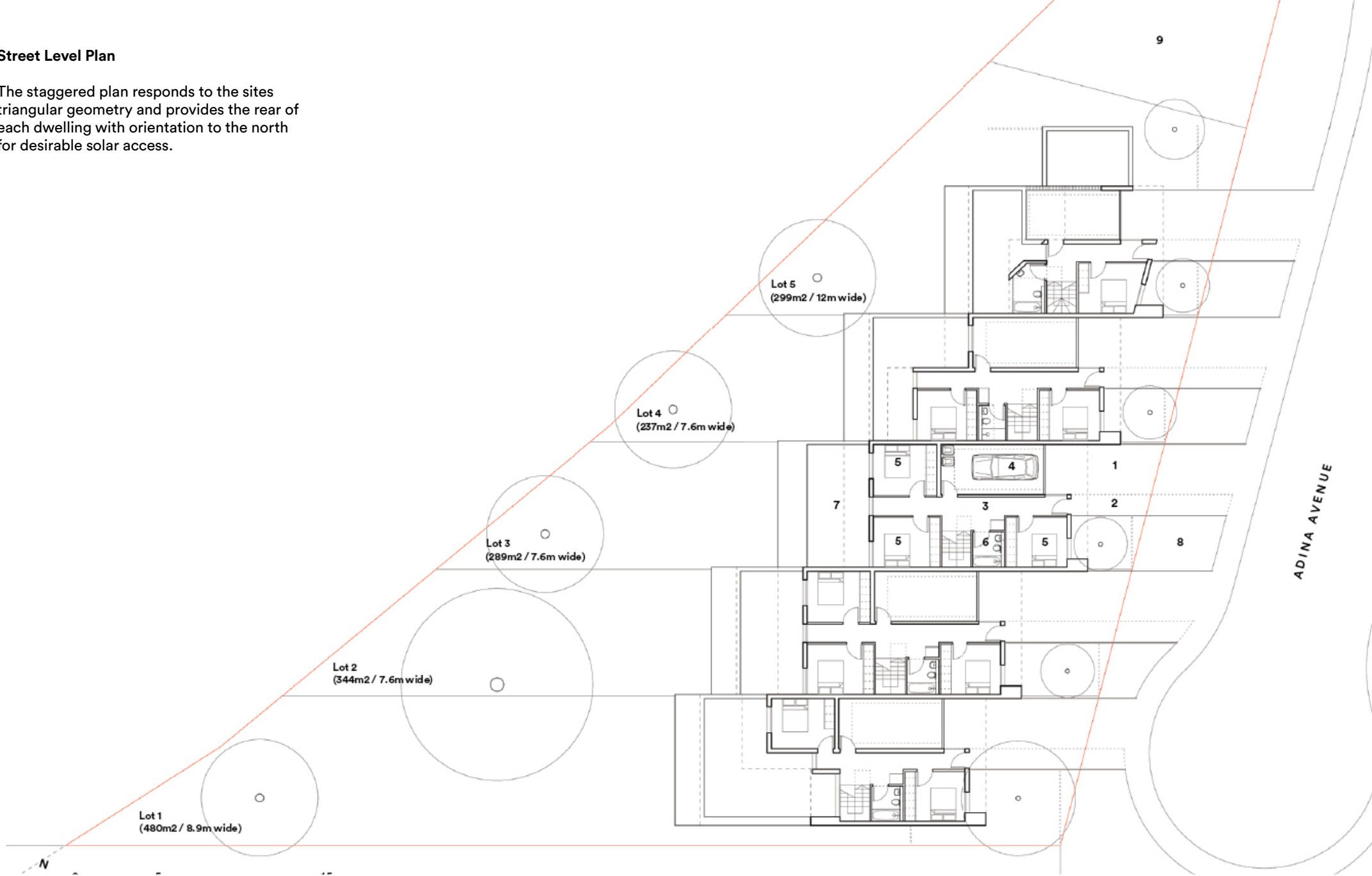


Long section

The two storey dwellings are arranged to follow the sites steep topography. Bridged entries spans across the sunken courtyards along the street.

Street Level Plan

The staggered plan responds to the sites triangular geometry and provides the rear of each dwelling with orientation to the north for desirable solar access.



Lower Ground Plan

The proposal includes larger four bedrooms terrace houses with generous backyards to the south and three bedrooms dwellings to the north.



ADINA AVENUE

Ground Floor Plan



MISSING MIDDLE: Open Ideas Competition

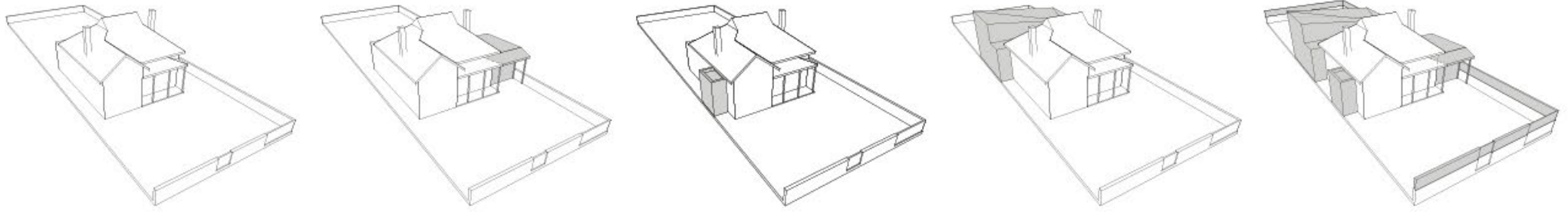
**MANOR HOUSES
WINNER**

**'ESTABLISHED MANORS' - GIVING
NEW LIFE TO OLD HOUSING STOCK**

**Madigan Architecture /
University of South Australia**

In place of the conventional knock down and rebuild approach, this proposal infills the space between two old homes to create four new ones. As a model for development, the project demonstrates how density can be increased, largely within existing built fabric and with a minimal new-build footprint. This model holds potential to be adapted to suit different sites, suburbs, individuals or families and their life situations. Internally the design includes dwellings of different sizes, which can be combined or separated to meet the changing accommodation needs of households over time.

Critically the design makes a strong argument for preserving and enhancing the character of older neighbourhoods, which is often threatened by new development that discounts its cultural memory and value. The design approach is not only spatially and materially innovative, but sustainable, ethical and practical. The architectural expression of the infill component playfully responds to the language of the federation style cottages it brings together.



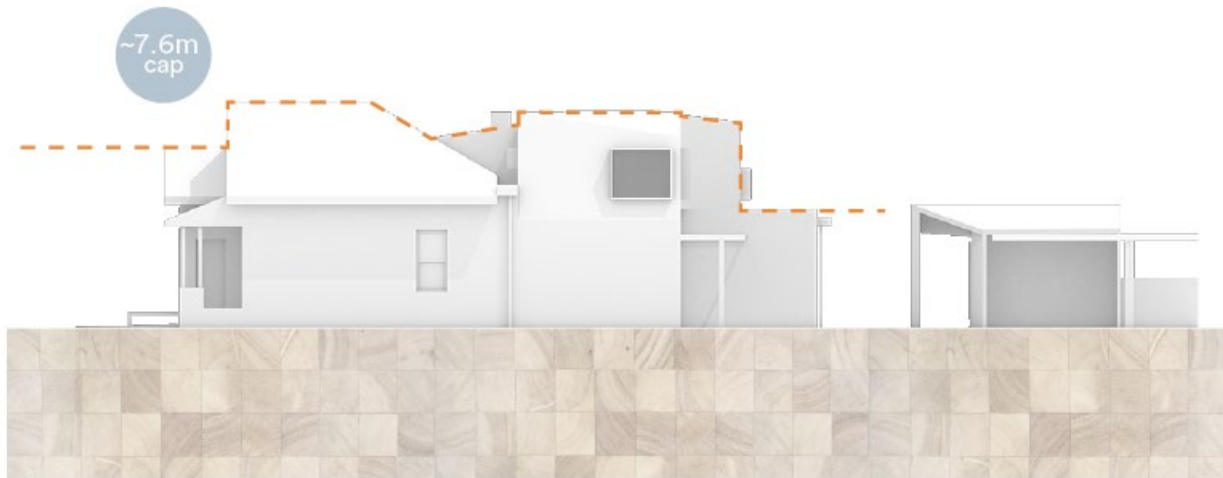
Suburban anomalies – the typical approach to adding density.

Site Plan

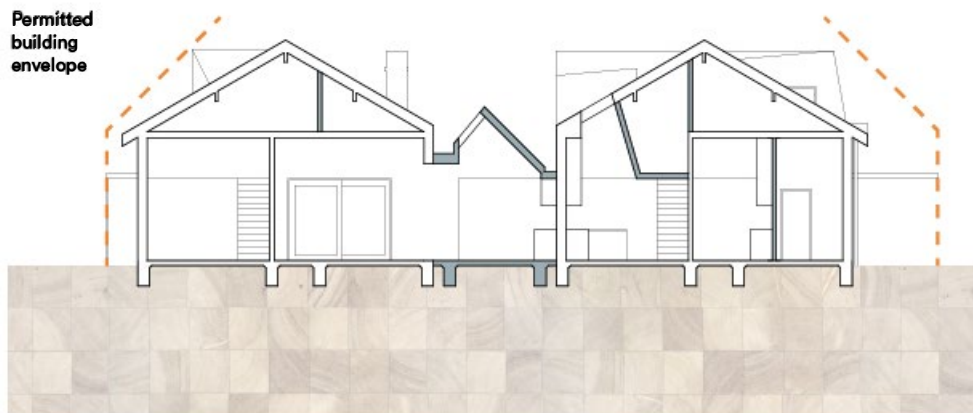
Two adjacent sites were selected in Canterbury, a suburb along the Sydenham to Bankstown rail corridor. The development pattern of detached bungalows is representative of early suburban expansion in Sydney. The design doubles the density to achieve an average of 50 dwellings per hectare.



Two detached houses are retained and joined through an infill addition along the driveway in-between the houses. The second driveway is kept, providing access to four car spaces at the rear. Shared spaces and facilities transform the previously segmented backyard including bicycle storage, laundry, drying area, a shed and waste bin enclosure.



North (driveway) elevation



Permitted
building
envelope

Section through bungalows and driveway/
walkway intervention



Ground Floor Plan

Dwelling 1 – 1 bedroom.

Dwelling 2 – 2 storeys with 2 bedrooms upstairs.

Dwelling 3 – 2 bedrooms designed to the Platinum level of the Livable Housing Design Guide with more generous spaces for accessibility and ageing in place.

Dwelling 4 – 1 bedroom with work space upstairs.



The design puts forward four challenges to the proposed controls of the Medium Density Design Guide. These would significantly increase amenity, encourage a more communal way of living and a broader design approach to support contemporary household structures.

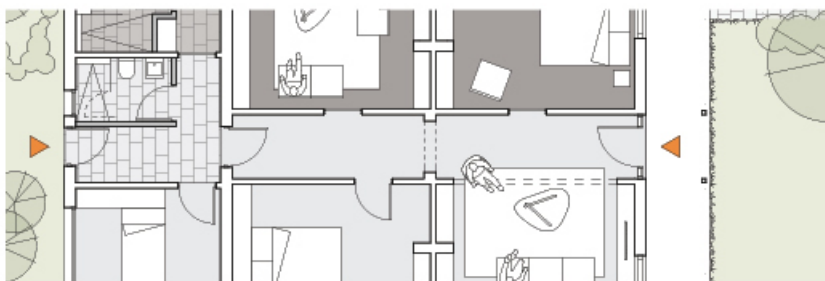
1. Permitted Overlooking

Balconies and upper storey windows that are screened to prevent overlooking assume that overlooking itself is a bad thing. Balconies with planter beds distribute landscape across space more broadly and their need for maintenance gives people another reason to go outside, thereby encouraging incidental interaction.



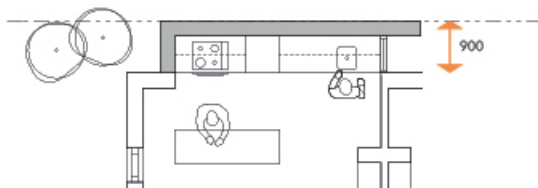
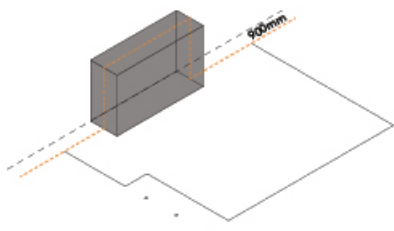
2. Shared Yards

Sometimes high quality shared space is better than low quality private space. Whilst not for everyone, many occupants would prefer to share a larger space with their neighbours. True housing diversity requires us to not just reconfigure the size and form of dwellings and yards, but the manner in which they are organised and enjoyed.



3. 'Informal' Party Walls

Whilst existing doorways in bungalow hallways can be blocked to permanently separate tenancies, retaining them as operable doors gives the choice of segregation or connectedness over to the users as they deem appropriate.



4. Boundary Construction

Even a walkway width of 900mm can accommodate a kitchen when opened to an existing room via a lintel in an external wall. Resulting in minimal impact on neighbours, this small gesture triggers an additional dwelling by converting a front bedroom to a living space. It requires that consideration be given to allowing living areas at the front of the dwelling and for the front yard to become an active space.

Established manors

Manifesto

Our suburbs accept all manner of change. The traditional four-roomed cottage, described by Robin Boyd as the 'bungalow' and represented throughout the country in subtle variations, supports a variety of what might be described as suburban anomalies. Living spaces are moved to new rear extensions, cars find homes in garage additions and bathrooms are added in side pods. Sheds and outbuildings dot backyards, filling the suburbs with activity. Fencing is raised as living spaces are oriented to backyards and front gardens become decorative thresholds. These observations are not value judgements, but merely a description of what is.

What if we leverage off these conditions to provide the additional housing we need? Perhaps much of our suburbs can continue to adapt over time in both an ad hoc manner, and significantly, in an exercise of strategic suburban infill perhaps our homes can continue to evolve organically while new housing models find a place within that established grain.

Across New South Wales, nearly \$8.8bn will be spent on housing renovations across 2016-17, rising to almost \$9.5bn by 2020.* If Sydney could marshal a fraction of that investment, it could make a dramatic contribution to housing targets.

More compelling, however, is the fact that the mannerisms of suburban alterations and additions that drive this economy, once

acknowledged, can be deployed as a set of suburban infill tactics to create housing that is similar, but subtly different.

If we can accept a garage between houses, for example, what about a kitchen and dining space that triggers an additional dwelling? Such a proposition can hold in the absence of any statutory obligation to retain an existing house. Whilst many houses in established suburbs are protected by local or state heritage listings (and this extends to entire precincts that receive protection as Conservation Zones) there is an overriding logic to why we might keep such houses in the absence of these protections. What happens if we retain these houses not because we must, but because it makes sense?

Bungalows are robust. Formed of masonry, they resist wholesale deterioration and demolition. Space can be transformed, connected and extended through deploying simple lintels, as has been done for generations. Conventionally framed roofs provide occupiable space not afforded by contemporary trusses. The four-roomed structure continues to adapt to contemporary life internally whilst accepting new additions.

And bungalows provide cultural memory. They establish a necessary continuum that speaks of a suburb's life over time.

'Established Manors' is a design speculation that creates a complying Manor development utilising what already exists both physically, in terms of the base buildings of a suburb, and conceptually, where the manners of our suburban

adaptations have already been set. It asks what might be achieved if much of what we need is already here.

By nature, the rules that define any form of complying development face a dilemma: how do we provide measures that allow designers to proceed with clarity and confidence without limiting opportunities for innovation?

At the same time, we understand more than ever that as our household structures change and we work to accommodate more diverse occupants, innovation in our housing is needed more than ever before.

The Established Manors design speculation offers a mix of small housing choices that provide individualised space and privacy where practicable. Windows are either oriented away from others' private space or shrouded to limit over- and inter-looking between dwellings. But what if individual privacy is not a trump card that beats other aspects of such new housing? How might we accommodate scenarios where individualised space is important, but not more so than the capacity for residents to share aspects of their homes and lives if they wish?

The four dwellings of this speculative scheme are particularly suited to those seeking a form of shared living and whilst extended families are an obvious audience, so too are house owners who might team with their friends or neighbours when the house next door comes on the market and provides a group of people the opportunity to downsize, upsize or simply live differently.

* HIA New Housing Outlook, Housing Renovations Forecast, August 2016



**MANOR HOUSES
RUNNER-UP**

**AN ADAPATABLE CORNER HOUSE
FOR CHANGING HOUSEHOLD NEEDS**

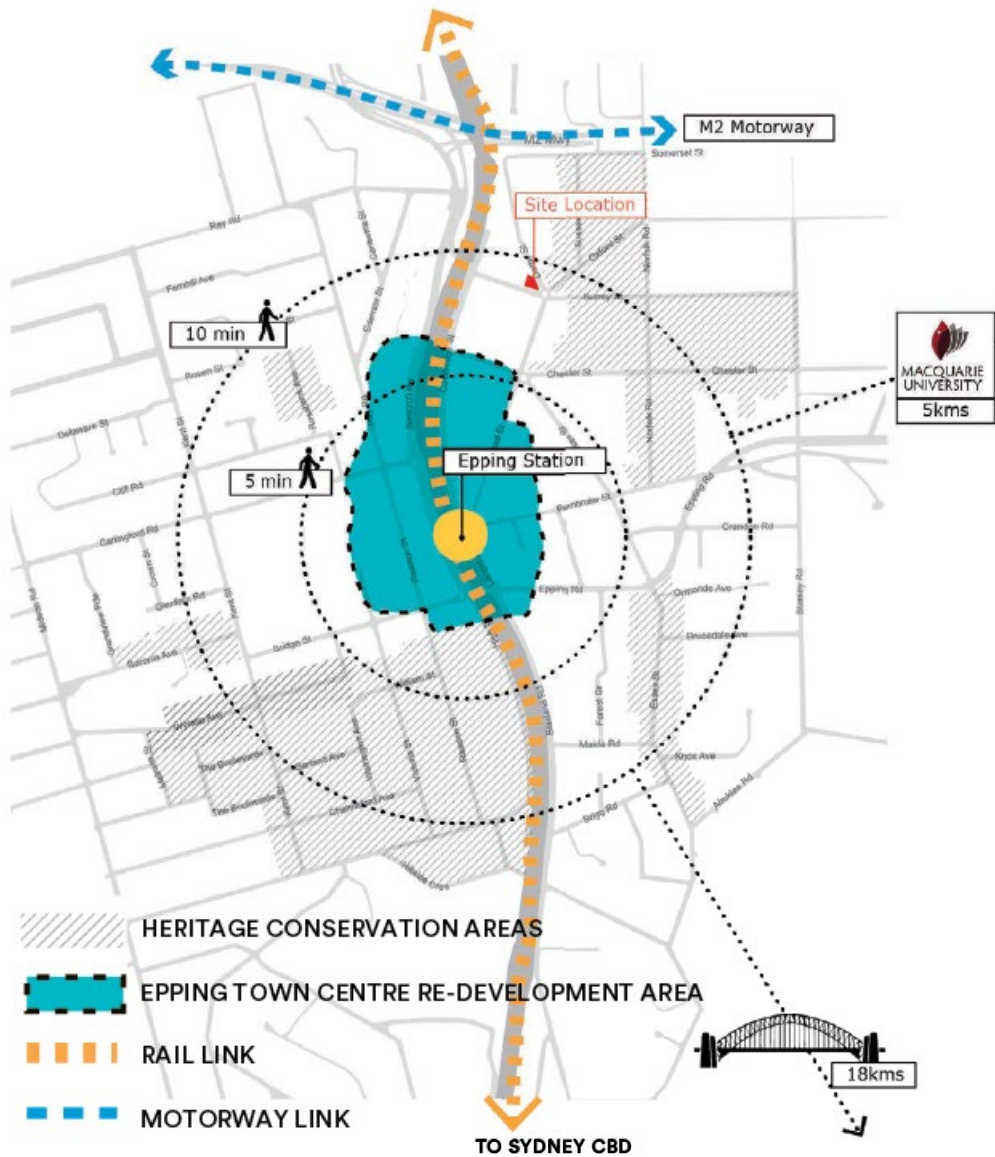
Kieran Ward

Designed to support a shared ownership model, this proposal creates four adaptable dwellings within what appears to be a large suburban home. The project takes advantage of the extended perimeter of a corner block and generates a building envelope that provides entry from both streets.

The proposal shows design innovation in built form that departs from the typical monolithic stacked Manor House. The hybrid approach interlocks two dwellings, aligning each to a street frontage and extending them through the addition of two studio flats.

This creates a variety of spatial experiences both indoors and outdoors providing privacy, individuality and amenity for each dwelling. In place of a typical front and back yard, the design includes several garden areas for communal use in addition to required private open space.

The varied housing form allows for flexible use over time, that can meet the needs of different residents and their lifestyles. The two studio units can be used on their own or amalgamated with the 2-bedroom units to create larger 3-bedroom homes. Alternatively, they can be used as a live work unit or home office for one of the other dwellings.

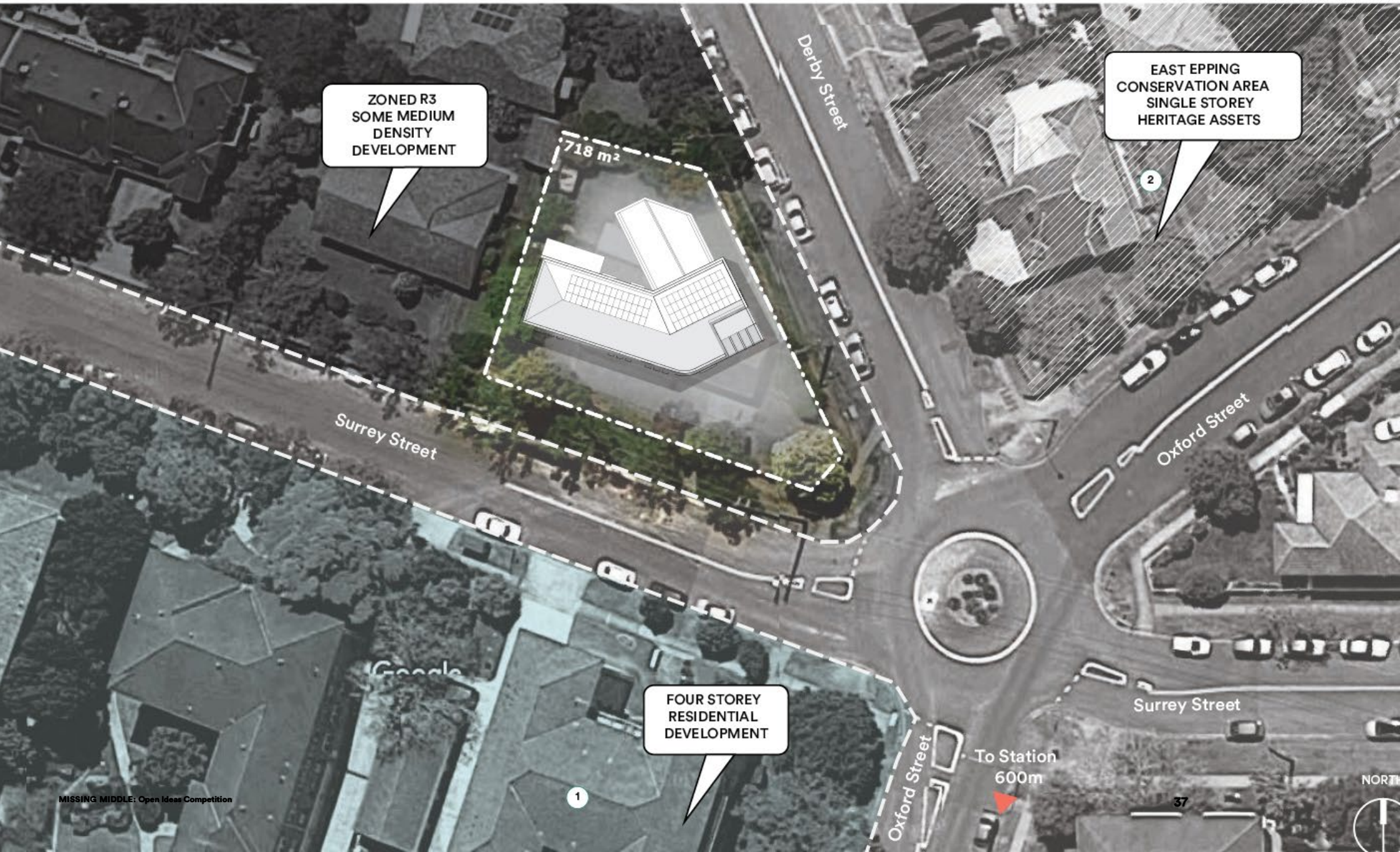


Wider context plan

Site Selection

A corner site was chosen within walking distance of Epping Station and the town centre development which will add a large number of high density apartments and new commercial uses to the area.

Located at an intersection between an established and an emerging context, the angular site presents an opportunity for a design that adds density without impacting the older suburban character of the area.



ZONED R3
SOME MEDIUM
DENSITY
DEVELOPMENT



EAST EPPING
CONSERVATION AREA
SINGLE STOREY
HERITAGE ASSETS

2

FOUR STOREY
RESIDENTIAL
DEVELOPMENT

1

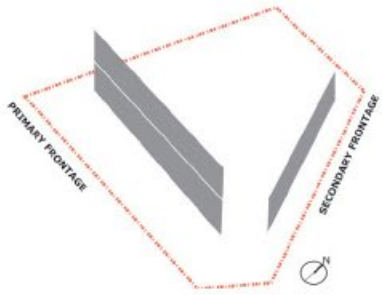
To Station
600m

Surrey Street

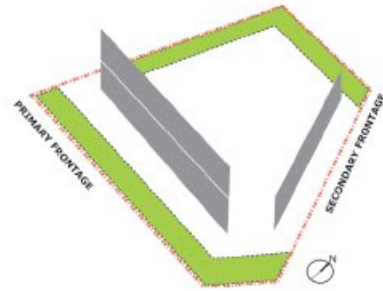
Oxford Street

37

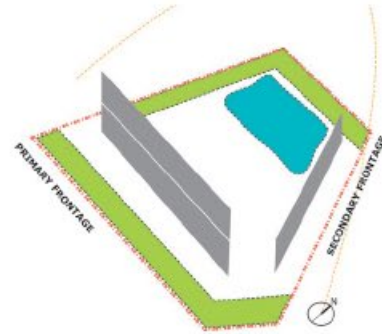
NORTH



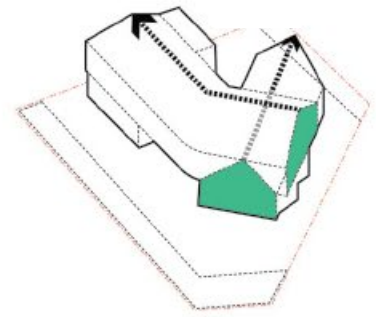
Massing towards primary frontage



Retention of mature site planting

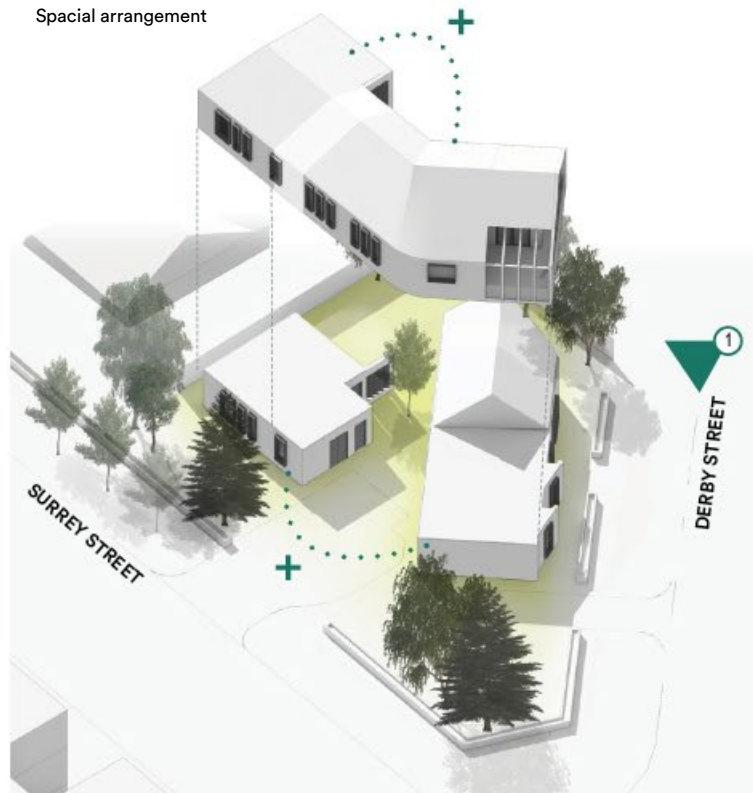


Solar access for outdoor spaces



Mimic geometry of adjacent heritage assets

Spatial arrangement

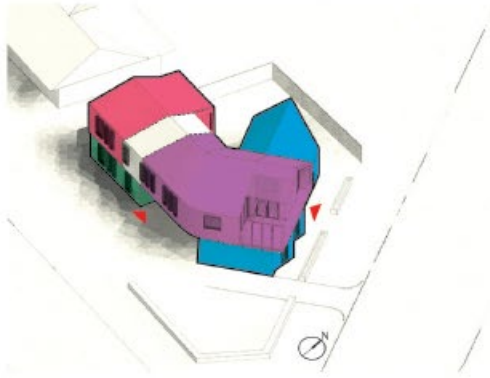


Massing

The design closely responds to the context and breaks away from the traditional stacked approach of the manor house offering an aggregated arrangement and diverse unit mix.

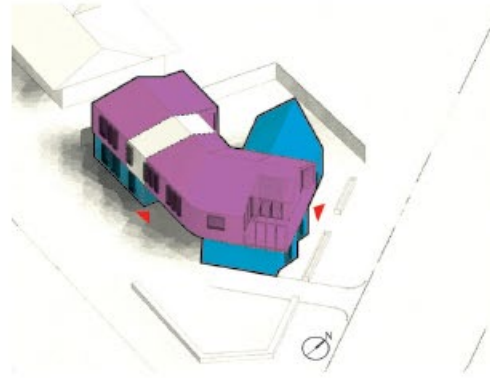
Materiality

The form and materials make reference to the red brick of the 1920-30 homes of the neighbouring East Epping Heritage Conservation Area. The roof and upper floors are of lightweight construction reflecting the older federation style features.



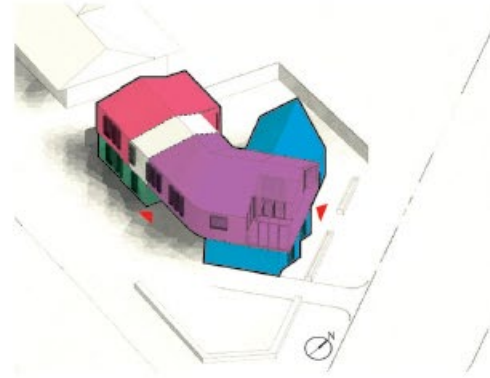
0-5 YEARS

Cost of the development can be split up to four times between different owner groups in a strata arrangement. The total capacity is 12 adults with two, two bed apartments and two studios allowing for family growth or changing circumstance.



5-15 YEARS

The initial owners can decide to purchase the adjoining studio flat for a multitude of reasons. They may have growing teenagers, be expecting another child, or need to accommodate ageing parents. Alternatively, the studio lends itself to a home office or artist space.



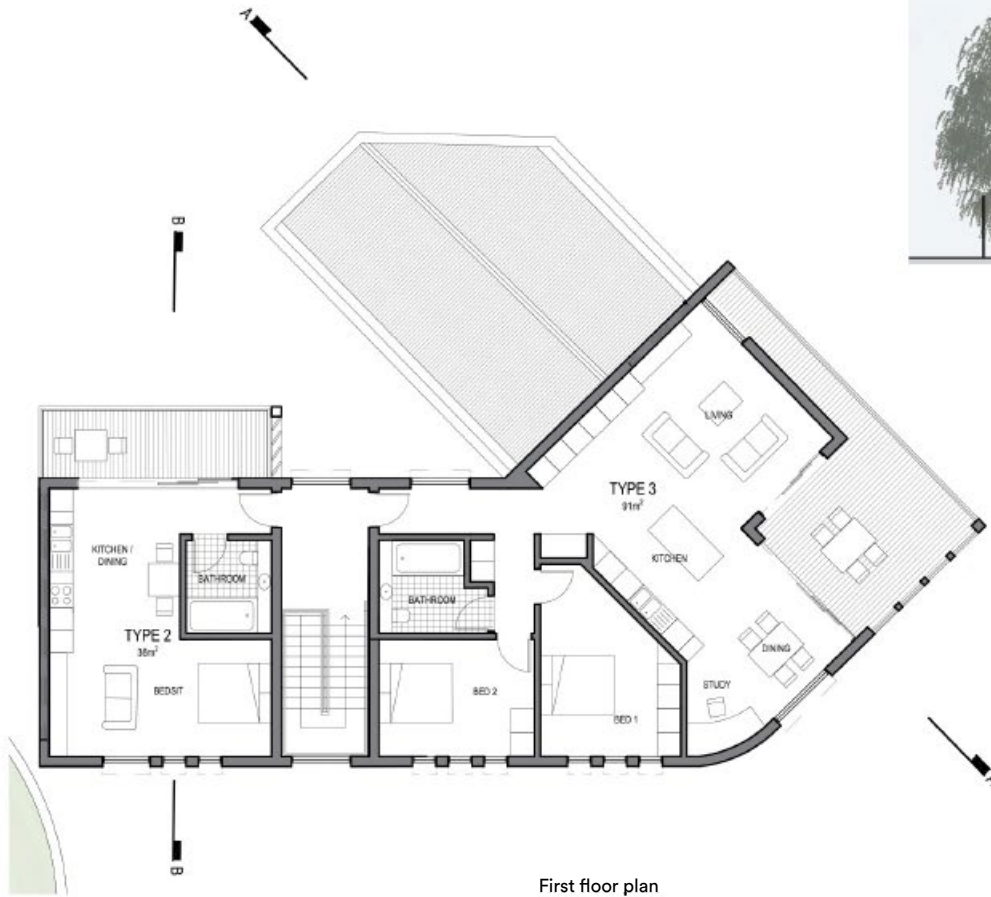
ONWARDS

Circumstances change and with time the studio could be sublet to a student from the nearby university, rented short term on Air BnB, or occupied by adult children.



Potential ownership configurations over time

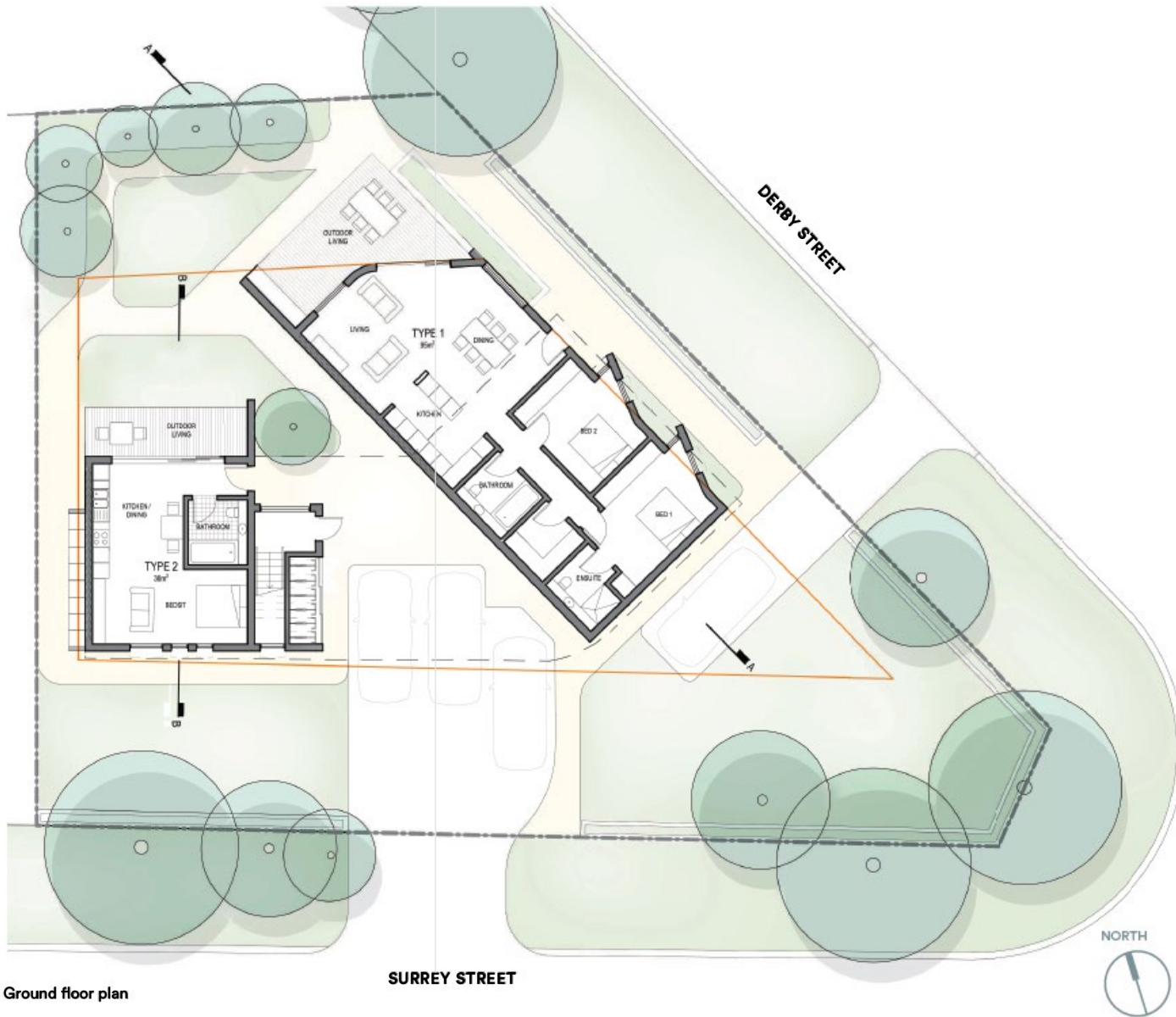
Designed to adapt to changing family dynamics using a strata title arrangement, the design offers a variety of ownership configurations aimed at increasing the affordability and adaptability of suburban housing stock.



First floor plan

Upper Level

Extending over the ground floor dwelling, the upper level creates a sheltered area for parking that can be adapted for bicycle storage or communal activities. Dwelling Type Three has an outdoor area facing Derby Street, activating the street and allowing for passive surveillance. All habitable rooms have windows facing the street and all living areas have a dual aspect and access to northern light.



Ground floor plan

SURREY STREET

DERBY STREET

NORTH



Ground Level

The scheme deviates from the traditional 'front yard' / 'back yard' approach. Instead, the building form defines public, semi-public (communal) and private outdoor areas. Each apartment has a generous, north facing private outdoor open space overlooking a landscaped communal garden. The unusual shape of the site creates unexpected interstitial spaces with landscaping, sunlight and maintains glimpses of the mature landscaping from from the street.



**DUAL OCCUPANCY
WINNER**

**SIDE BY SIDE
MULTI-GENERATIONAL LIVING**

Youssofzay & Hart

This design for a side addition to an established suburban home, allows for older households to age-in-place while accommodating a younger generation to live alongside. The addition utilises the space of a wide driveway and side setback to insert a new house that can be occupied independently or flexibly in combination with the main dwelling, and that can grow and adapt over time. This arrangement encourages mutual support between generations, often made difficult by the high-cost of housing that forces younger people to move away from their parents and local communities.

The proposal integrates with the suburban pattern of development, yet also challenges the front street setback controls, by demonstrating alternative site configurations which push the addition closer to the street to create more generous rear gardens.

An innovative 'periscope' roof form brings natural light into the addition while maintaining privacy along the side boundary and contributing interest to the streetscape.



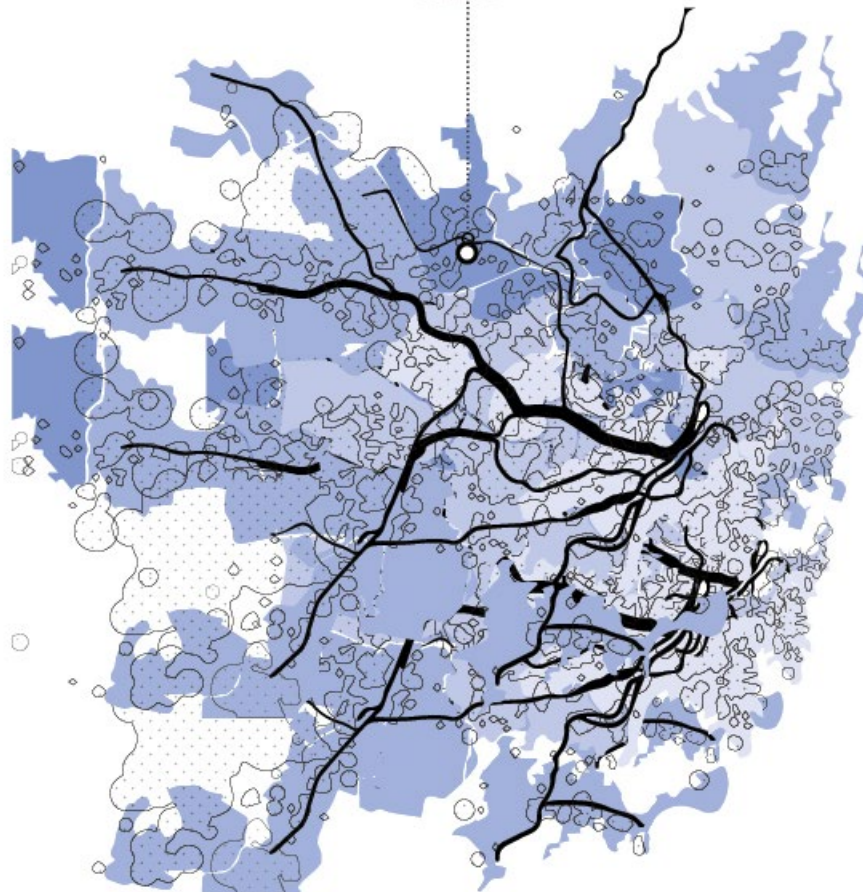
5 Judith St Baulkham Hills

5 Judith St Baulkham Hills is zoned medium density and has been selected for its proximity to public transport and anticipated regions of high population growth. This locality comprises of 70-76% “Empty Nest” Homes.

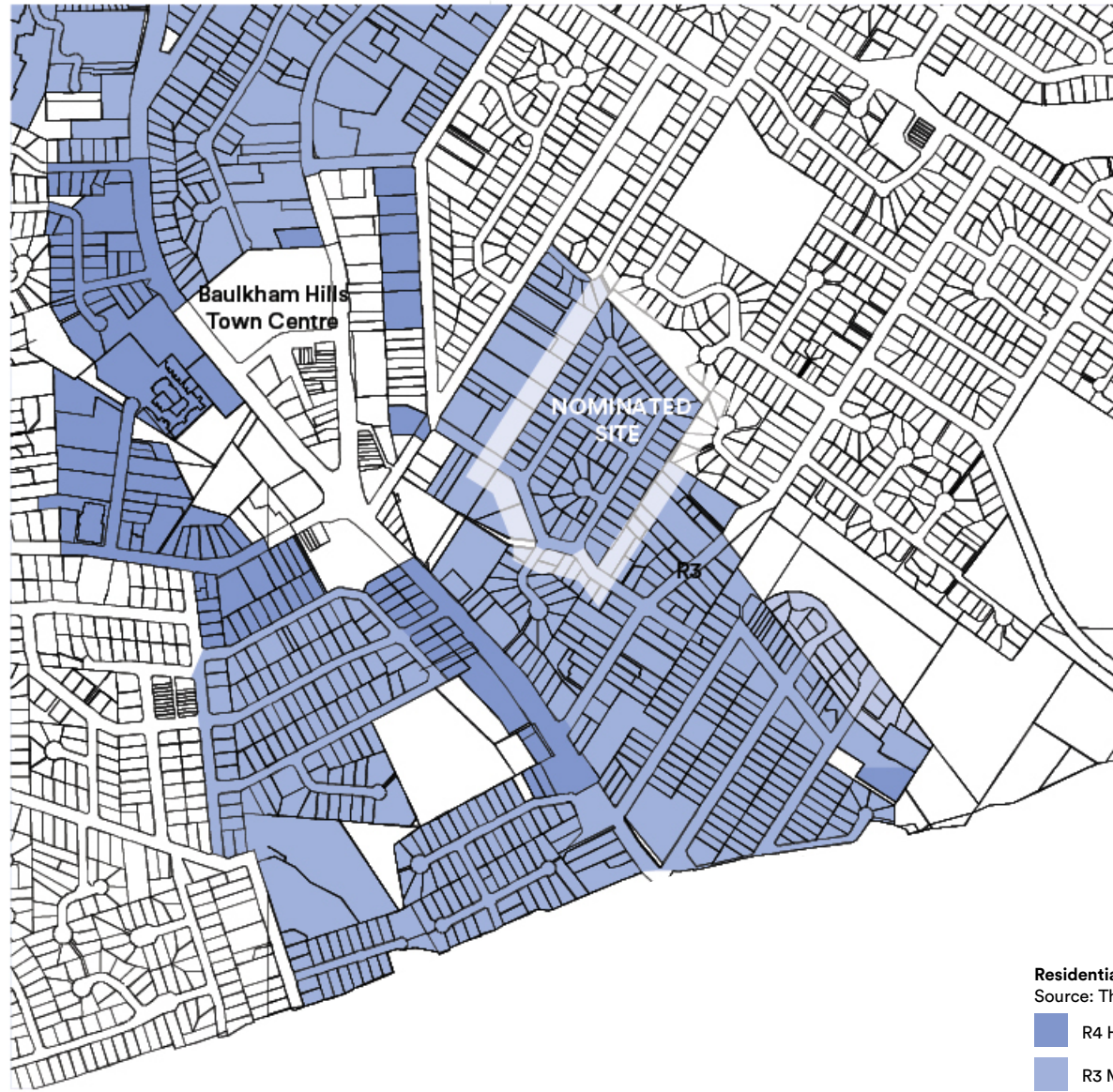
The site contains a 3 bedroom brick home with wide side setbacks and a detached free-standing single garage. The home appears to have been built in the 1950s or 60s. Little alteration has occurred since. The selected property is representative of the surrounding locality.

Sydney’s Empty Nests

Percentage of 2016 Sydney Households, headed by a person aged 65 years or older with two or more spare bedrooms



Source: “Twenty years of Sydney housing supply locked up in spare rooms” Lisa Visentin, Sydney Morning Herald 28-10-2016 & “Rail options for the Sydney Greater Metropolitan area - Draft options paper” Nov 2011, NSW Government



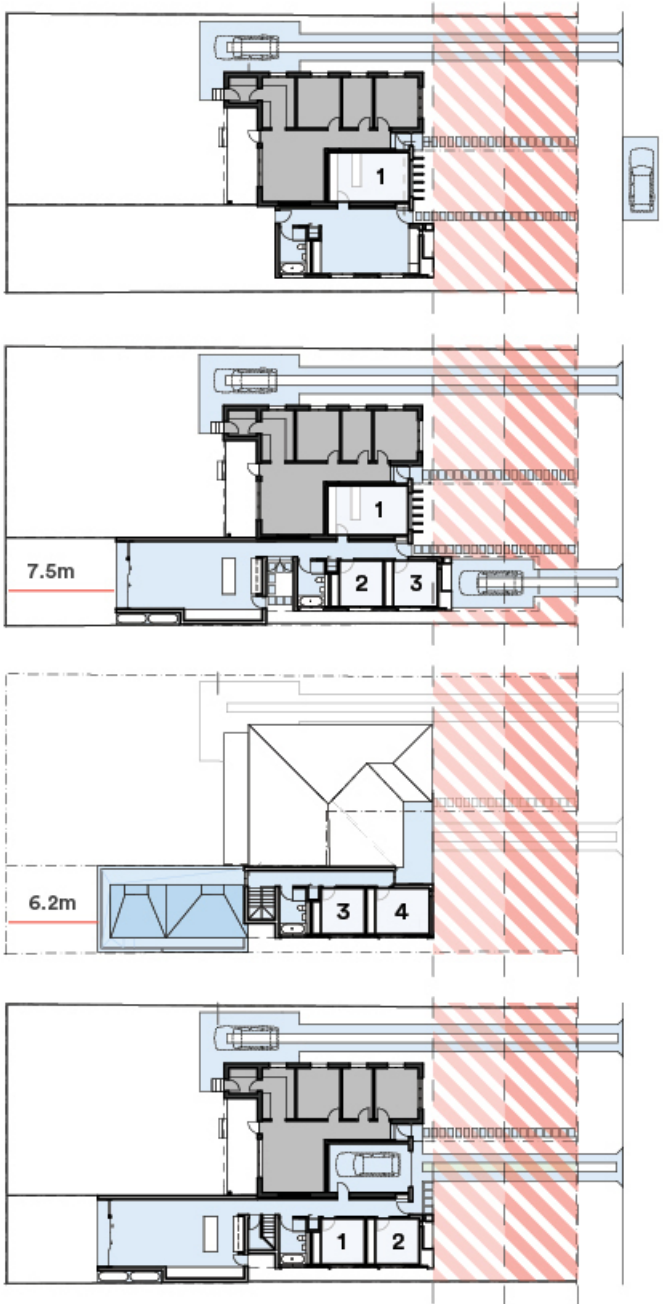
Site description

Locality-wide high proportion of soft-landscaped area with established mature trees.

9m average Front Setbacks with typically wide Side Setbacks.

Housing typified by 1950 - 1970s era development with later "lean-to" additions.

Single or double garages, detached / semi-detached, located beside house or via vehicular access way down side of lot.



1 BEDROOM VARIANT



3 BEDROOM VARIANT



4 BEDROOM VARIANT



5 YEARS

10 YEARS

15 YEARS

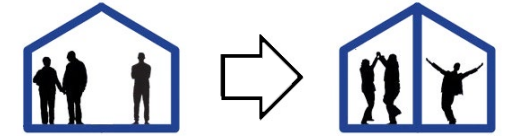
The Empty Nesters

The Baby Boomers in their lifetimes have built some of the largest family homes in the world and now, as they enter old age, face the challenge of transitioning to smaller housing and assisted living.



Generation Y (can't I afford a home?)

Housing inaffordability in Sydney means many under 35s today face the prospect of never owning their own home.



Can we learn to live together?

Rather than choose a site with unique spatial constraints we have elected to test the Medium Density Housing Code against a challenging adaptive re-use scenario:

Refit the existing suburban home into a "multi-generational" dual occupancy dwelling.

A Suburban Housing Prototype

This housing concept can be readily applied over the medium density suburban context in any orientation with flexible bedroom options.

The design facilitates several distinct stages of construction. A first home buyer can move into a cheap single bedroom unit and construct the full scheme over time without moving away from home.



Non-compliant
Ideal front/rear garden split

Compliant
Reduced private open space

Design Guidelines Feedback

Front Setbacks:

Lot area (m ²)	Setback
200-300	3.5m
>300-900	4.5m
>900-1500	6.5m
>1500+	10m

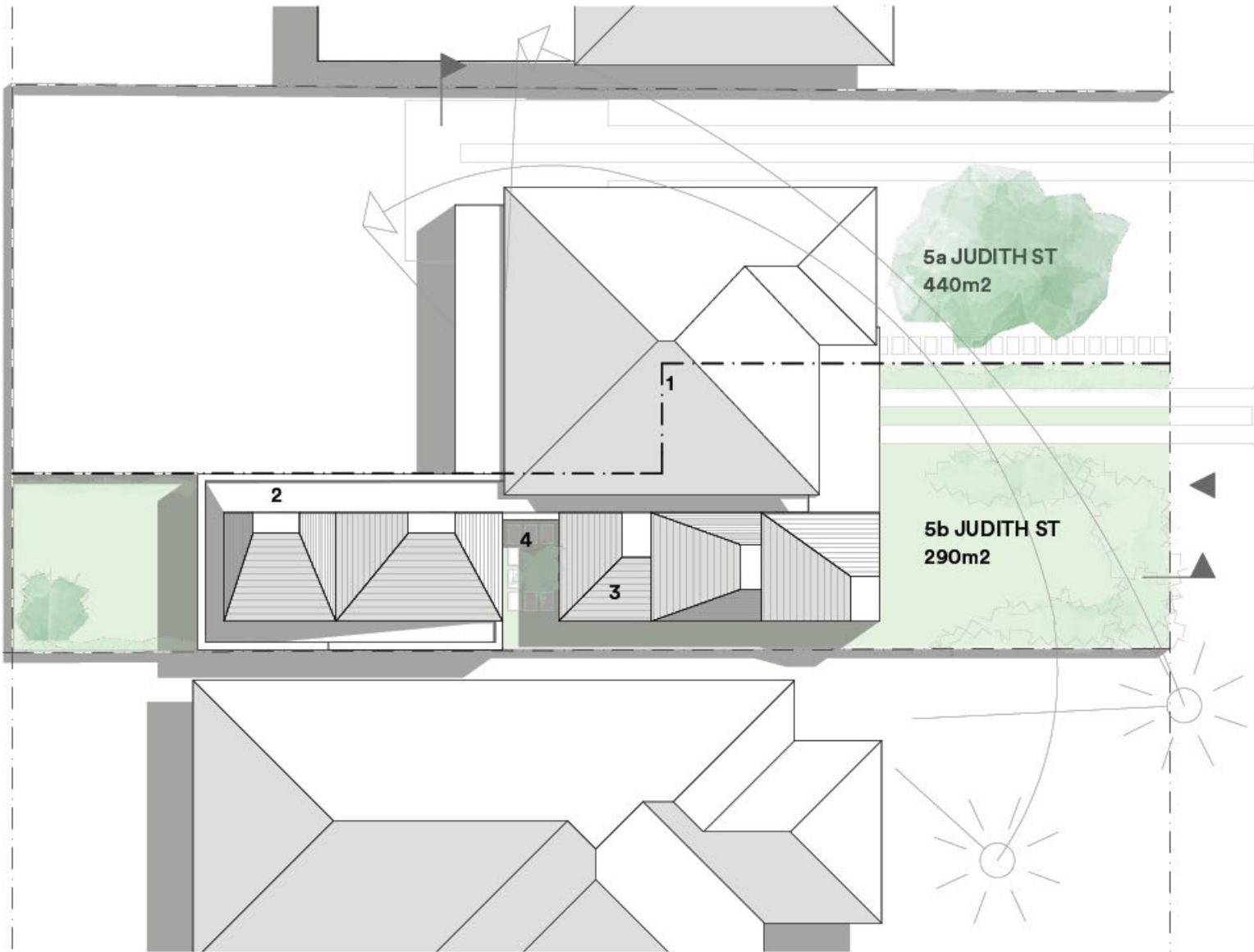
The established 9m street setback in this instance results in a rear garden that is arguably too small to function well for a family.

If medium density housing develops in this area honouring the existing wide frontages, productive suburban gardens and backyard cricket may become a thing of the past.

We would argue that a generous rear set-back is more valuable than the front in preserving the character and livability of the “middle ring” suburbs.

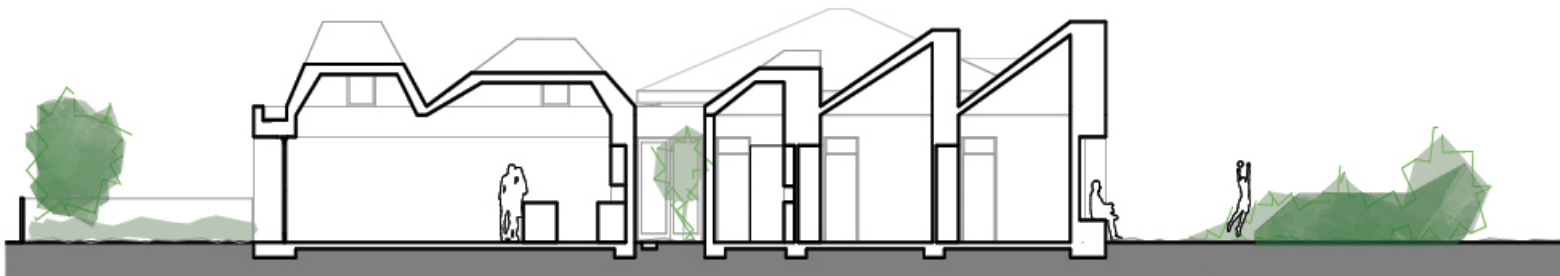
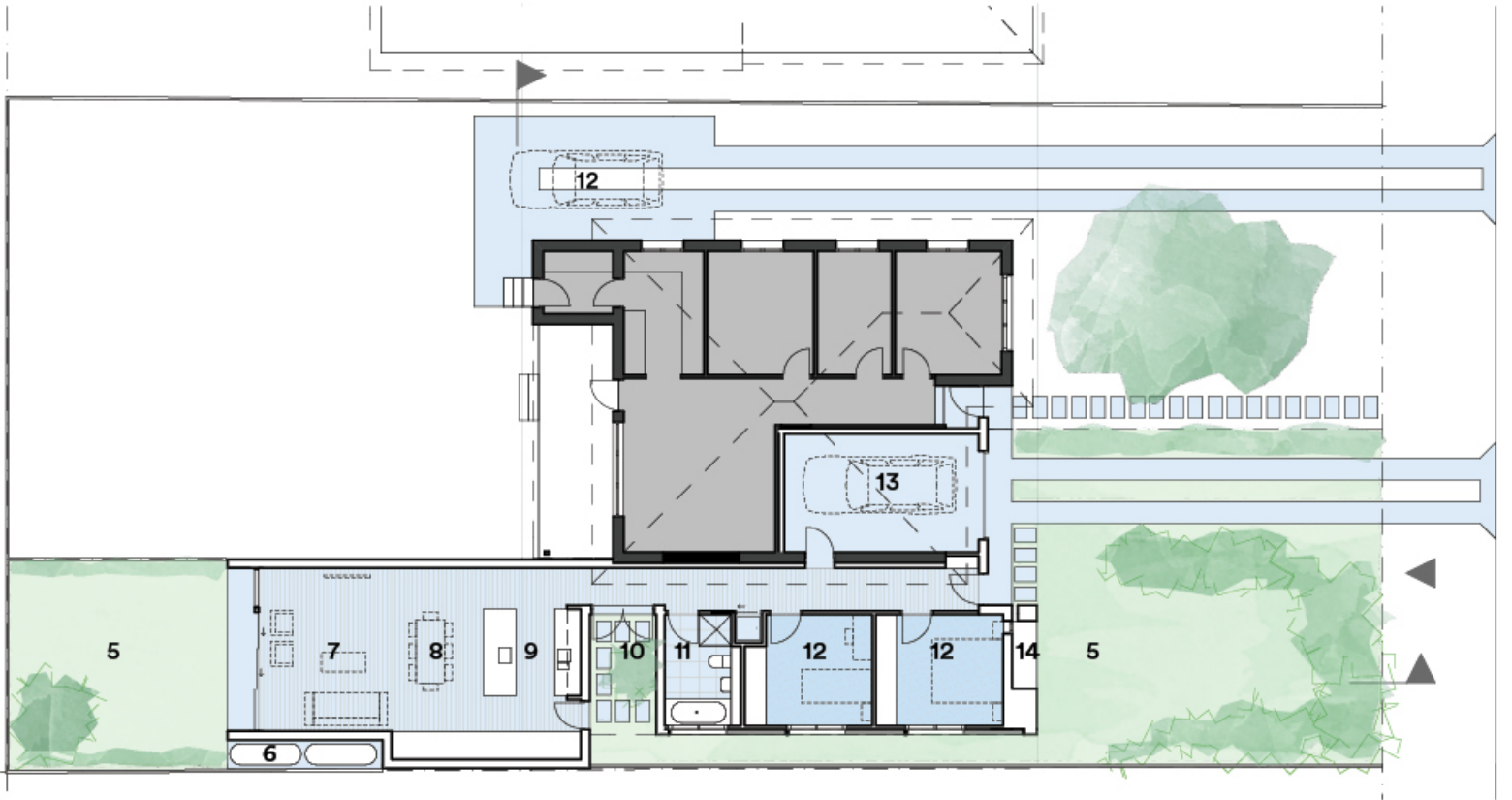
Provisions in the design guidelines should allow for some encroachment into established frontages by either:

- allowing car-parking forward of the building line on narrow lots
- allowing suitably screened or landscaped private open space within the front set-back
- allowing encroachment into the front setback for part of the site width large enough to accommodate a new bedroom
- where several lots are being developed concurrently, allowing the construction of a new reduced street frontage.

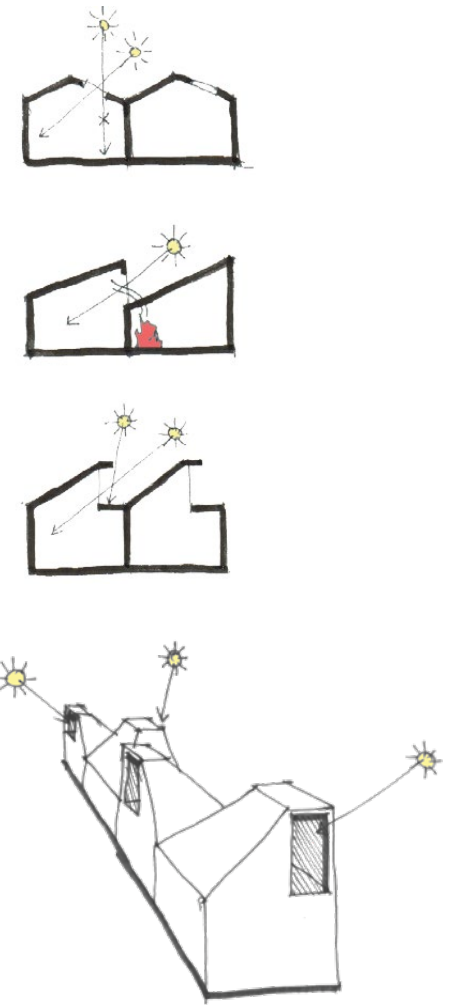
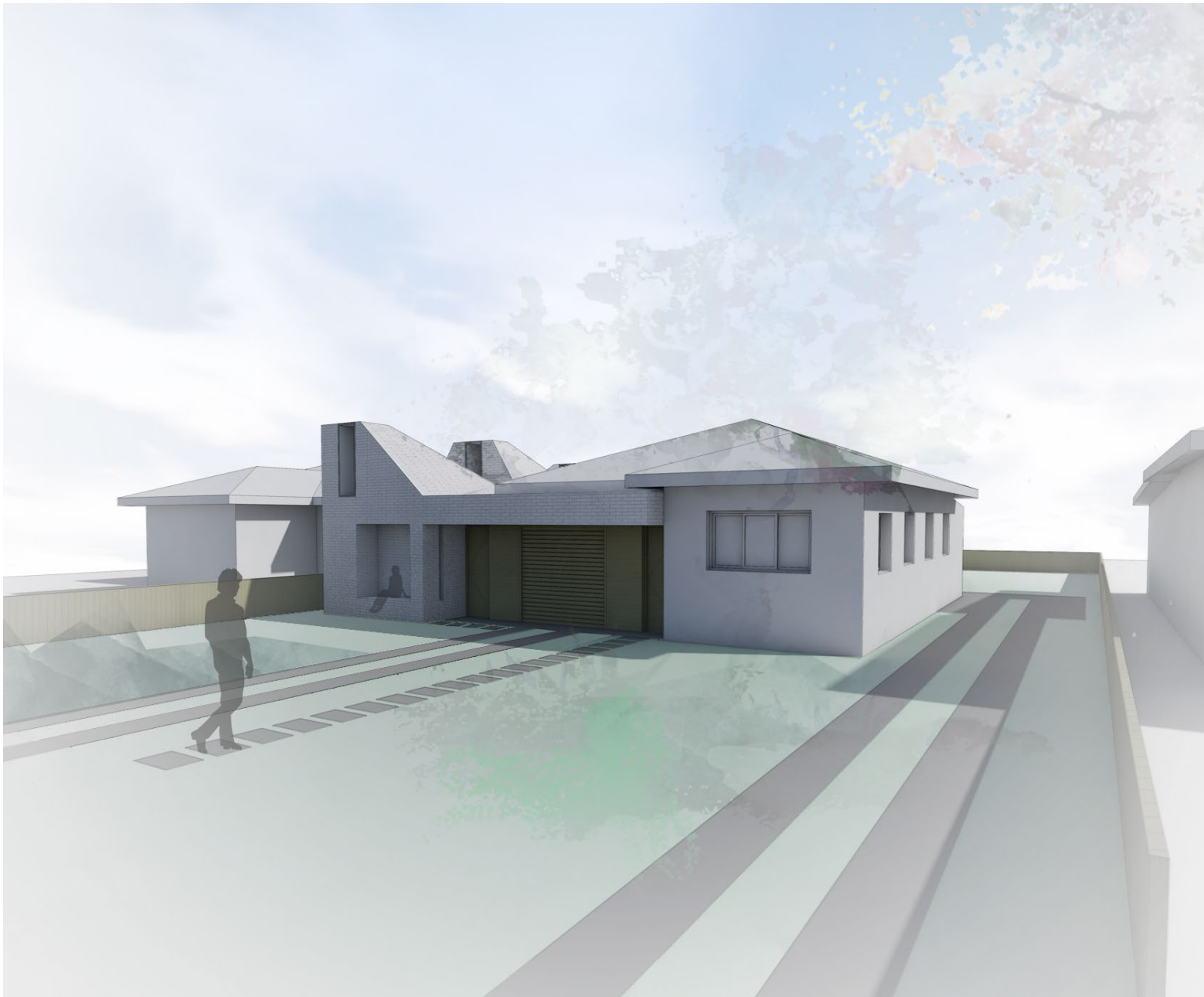


Roof plan

1. New Site Subdivision through existing house & fire rating to walls reduces to 2 bedroom dwelling.
2. Box Gutter provides set-back to existing dwelling. Facilitates 100% roof area rainwater collection.
3. "Periscope" roof concept.
4. Linear footprint with central courtyard provides daylight to centre of building and promotes passive cooling through natural ventilation.



Long Section
 Awning panels above bedroom doors promote cooling cross ventilation.
 A daybed niche and screening vegetation encourages recreational use of the front set-back.



Periscope Roof

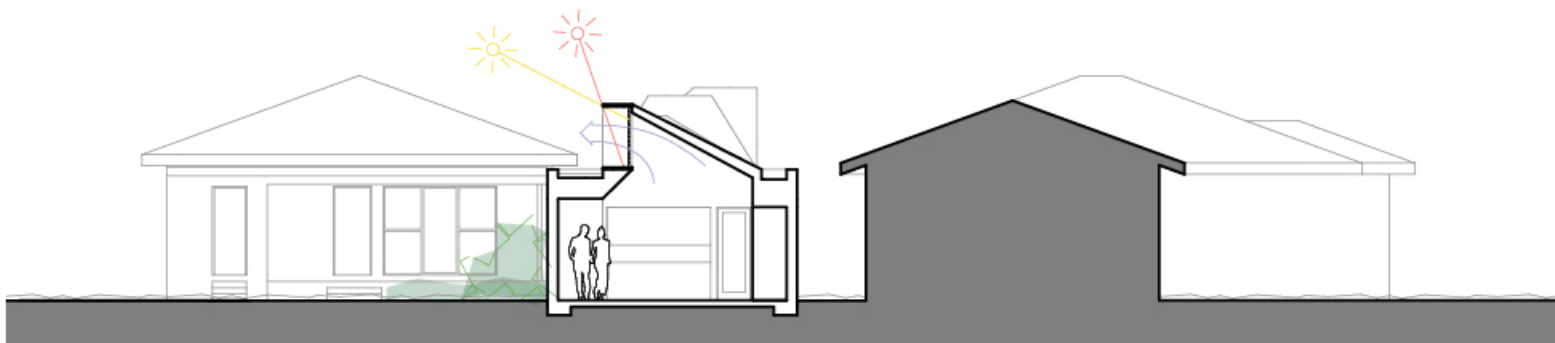
The “Periscope” Roof concept can be oriented in any direction to access natural daylight with minimal overshadowing in a dense built context.

This frees the design to be used on any site with any solar orientation as an example housing model.



Street Elevation

The concept does not prescribe a cladding or material choice, rather we envisage new walls with cladding selected to marry into each specific context, bricks, weatherboards etc. The scheme preserves suburban street-scape character by salvaging homes that would otherwise be demolished in a redevelopment.



Short Section

The unique roof shape facilitates natural daylighting throughout the year whilst excluding the worst of the summer sun. High level ventilation draws hot air and promotes cooling cross ventilation.



**DUAL OCCUPANCY
RUNNER-UP**

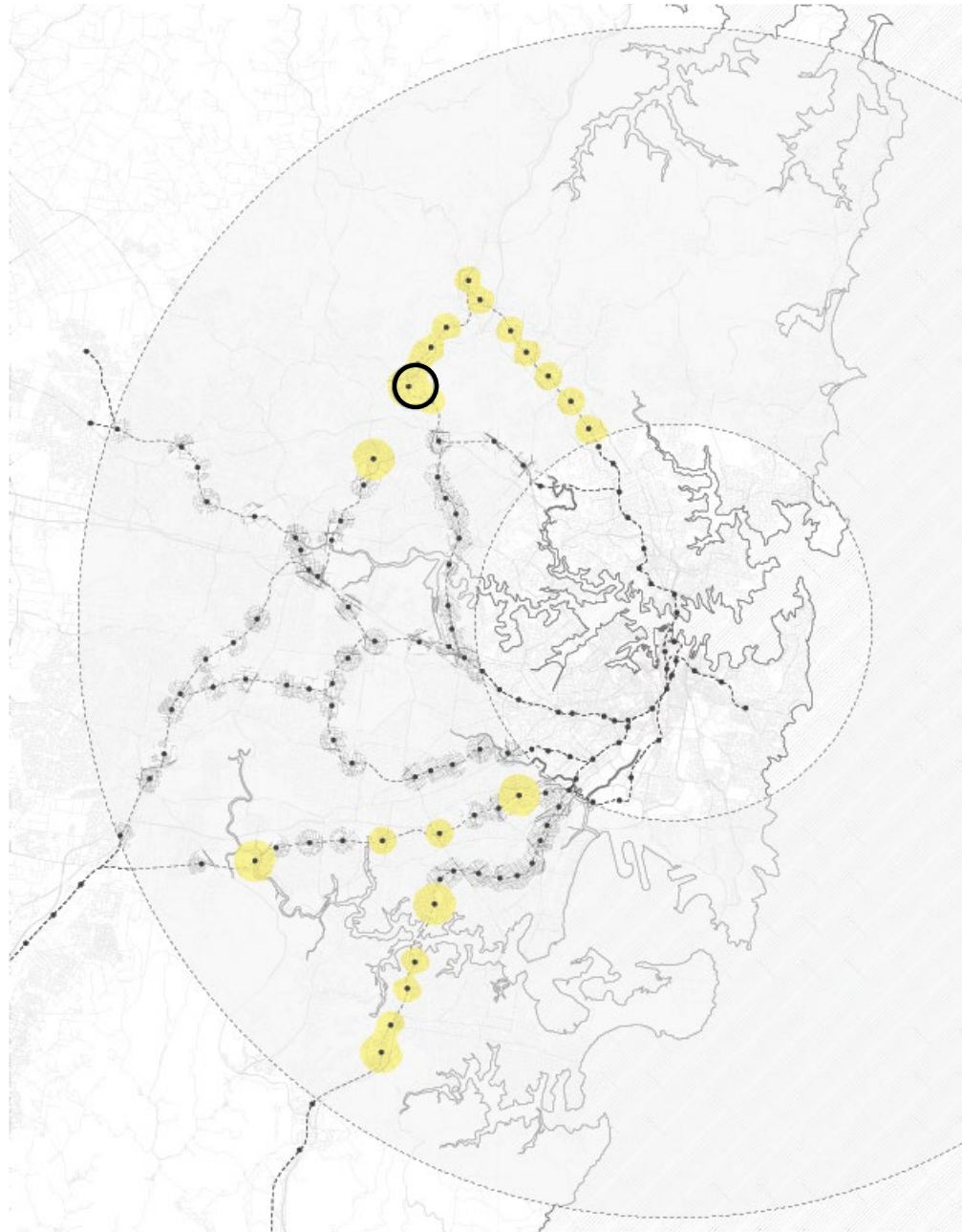
**SHARING SPACE ACROSS
THE PARTY WALL**

Trias

This design significantly improves on the typical single-storey dual occupancy model by breaking apart the form to improve solar access and airflow and encourage the sharing of space between neighbours. The design creates generous spaces that are in keeping with the large-scale homes of the leafy Sydney suburb of Beecroft.

Design innovation is shown in the plan and section where a proposed series of building modules are arranged along the length of the site and stepped to match the incline via interspersions with pocket gardens. Modules are linked by corridors and share a common central wall. Envisioned as a 'social spine', the wall is deep enough to incorporate storage, niches and openings to facilitate interaction between residents or modification to suit different household needs over time, meaning that the two dwellings can work as one or as many.

Instead of dividing the front and rear yards for each house, the proposal challenges the design guidelines to create larger communal outdoor spaces that can be shared by young or multi-generational families who may want to interact around a shared garden.



- Middle ring. 10km-30km
- 10min walking radius surrounding rail nodes with steep sites



Towards density

This strategy is designed to bring density into conservative suburbs that are reluctant to share amenity. Many of these suburbs squarely 'miss the middle.' They are staunchly anti-development, fearing that density will compromise their own way-of-life.

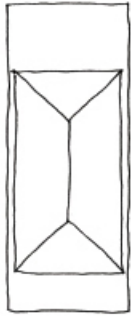
This proposal attempts to correct this imbalance by sharing these suburbs with more people, without compromising what makes them great places to live.

It also aims to right the social isolation that is increasingly plaguing the suburbs. The suburban home has become an enclave that shuns the outside world. Instead, this dual-occupancy rekindles relations between neighbours.

Sharing amenity

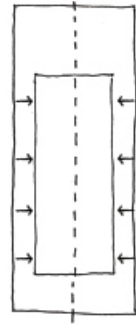
All of the sites we have studied are serviced by rail, making them ideal for development. We have concentrated on a 'ten-minute-walk' zone, feathering density from high to low out as it moves from transit nodes. Specifically, we have concentrated on Beecroft, a leafy north-shore suburb that enjoys high amenity, particularly for families. A medium density approach opens this suburb to more people, more affordably.

- Potential sites in Beecroft
- Chosen site
- Potential sites with amendment to SEPP setbacks



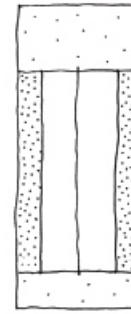
Current suburban response

A typical response places a large single-family home on the block. Side boundaries are tightened to maximise size. These neglected edges are rarely used, becoming a dumping ground for household services. They offer little to the home's experience.



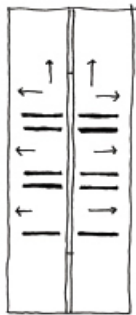
Dual-occupancy strategy

A single family home is replaced with a dual occupancy. Density is instantly added, with minimal impact on the streetscape and neighbourhood amenity. The long, thin floor plan mimics the site shape, compressing inwards to make the side boundaries generous and usable.



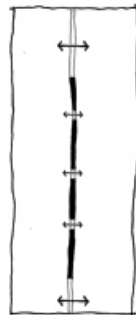
Shared and private open space

The side boundaries become private gardens for each side of the dual-occ. Meanwhile, the front and back yard are shared. This encourages interaction between the families, who can share these spaces for socialising, play and supervision.



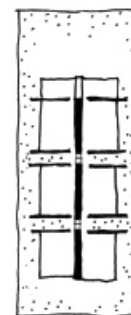
Reorient to side gardens

Using blade walls, the house is reoriented towards the side boundaries. Through this, the two houses gain both private outdoor space and a large communal garden. The indoor spaces of the home are compact, encouraging people to make use of every square metre of the site - inside and out.



Erode the party wall

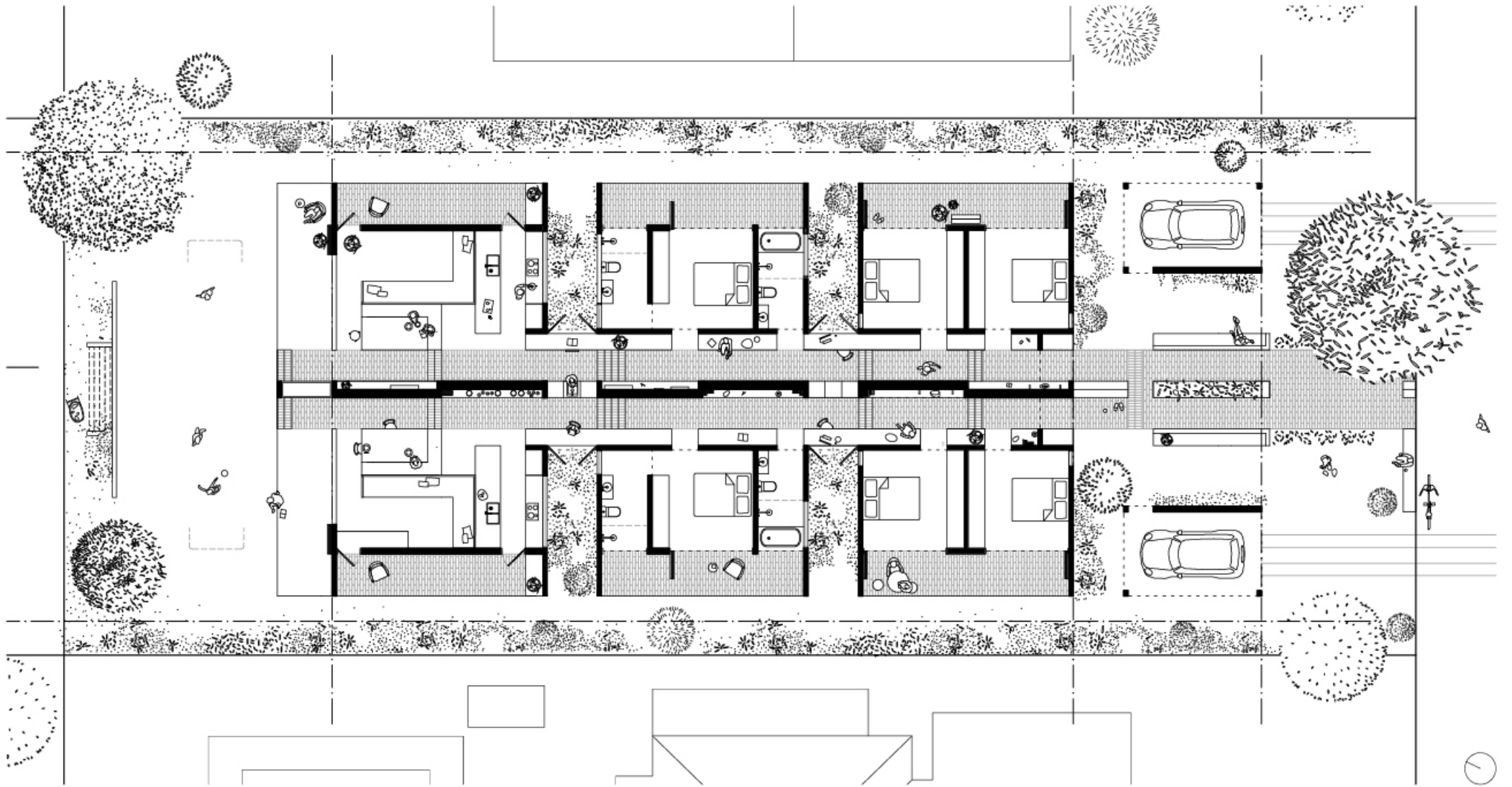
The party wall is widened to contain a shared laundry and storage. Within each home, this spine also acts as a usable corridor, containing studies, niches and daybeds upon which to perch, read and work. It replaces the traditional large lounge room with flexible, interconnected spaces.



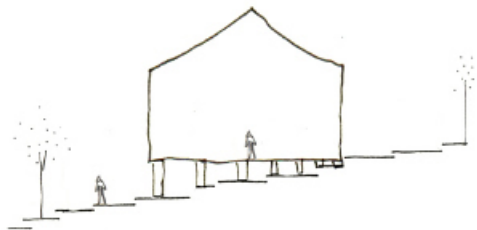
Bring light, life and green in

The home is broken up by gardens, which bring light, air and outlook into the occupants' daily experience. Northern light is scooped into each bay, admitting the sun. The room arrangement makes the most of co-occupancy, balancing social connectivity with privacy and independence.

Key architectural strategies



Site plan



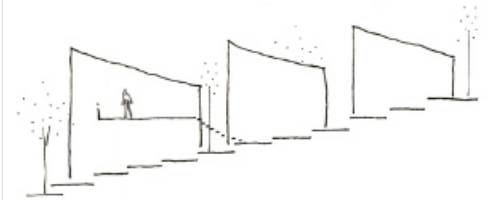
Typical response



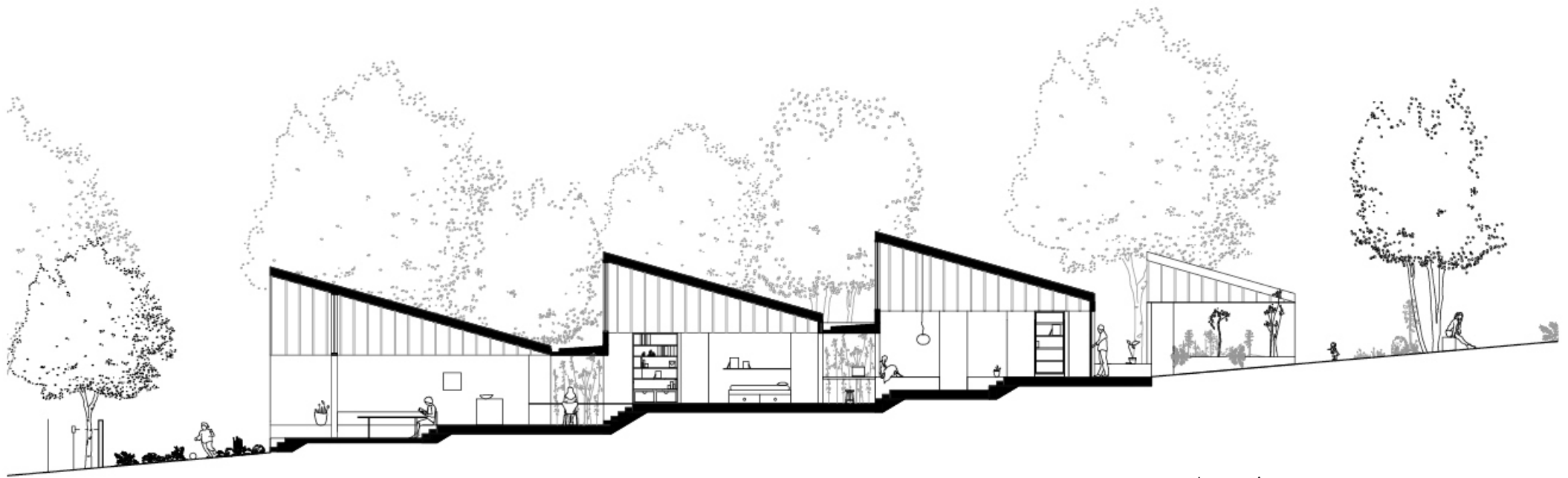
Modules on gentle 5° slope



Modules on greater than 10° slope

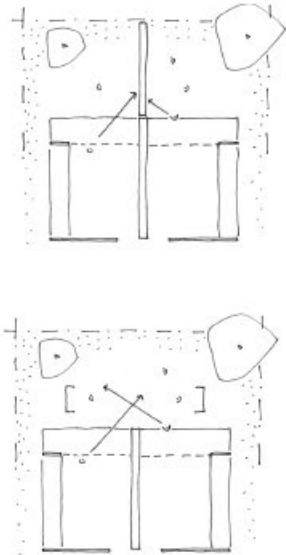


Taller modules with mezzanine



Long section

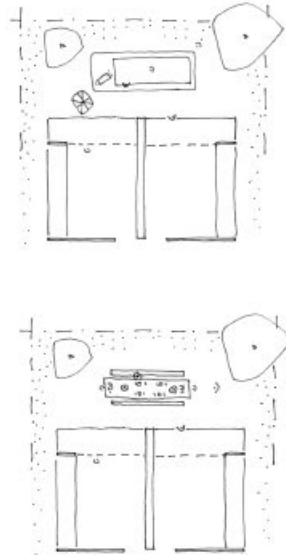
1.



1.

A conventional boundary can be lowered or removed to create a shared garden. Private open space can still be provided for each dwelling along each side boundary edge.

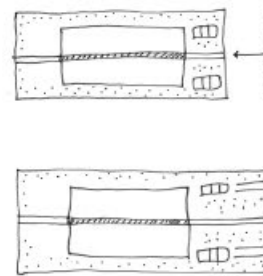
2.



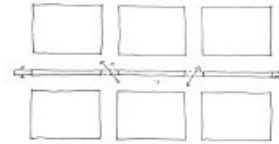
2.

The larger backyard can accommodate suburban luxuries like a pool. It can also become a gathering place for shared meals, play equipment and productive gardens.

3.



4.



3.

The possibility of using smaller lots is increased with an amended garage location.

4.

The eroded party wall allows new opportunities for co-occupation.

Site Strategy

The design blends into the existing streetscape of 1950s single-story brick homes with large front setbacks.



Street elevation



**DUAL OCCUPANCY
COMMENDATION**

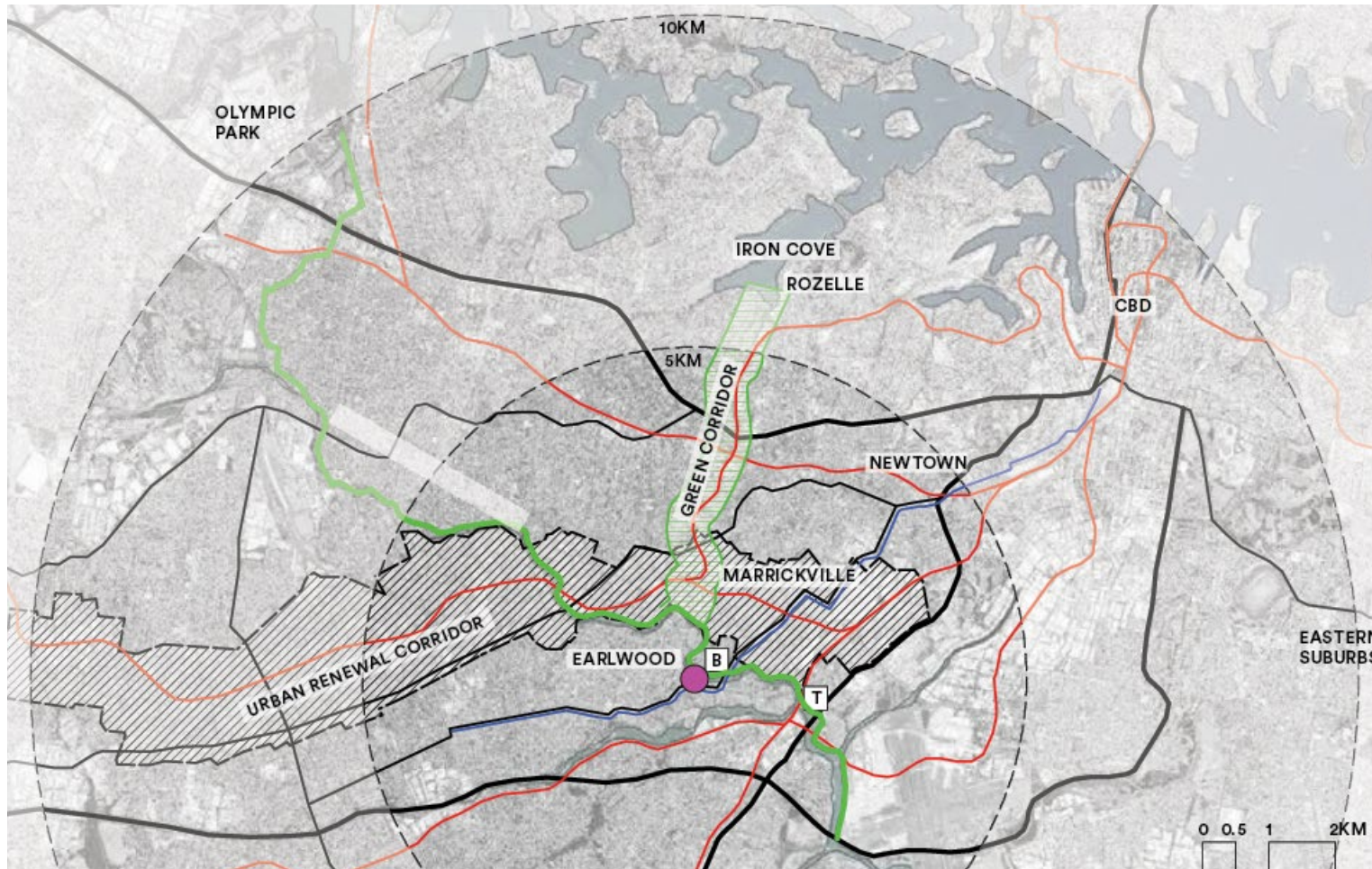
ADDRESSING THE RIVER

Eeles Trelease Architects

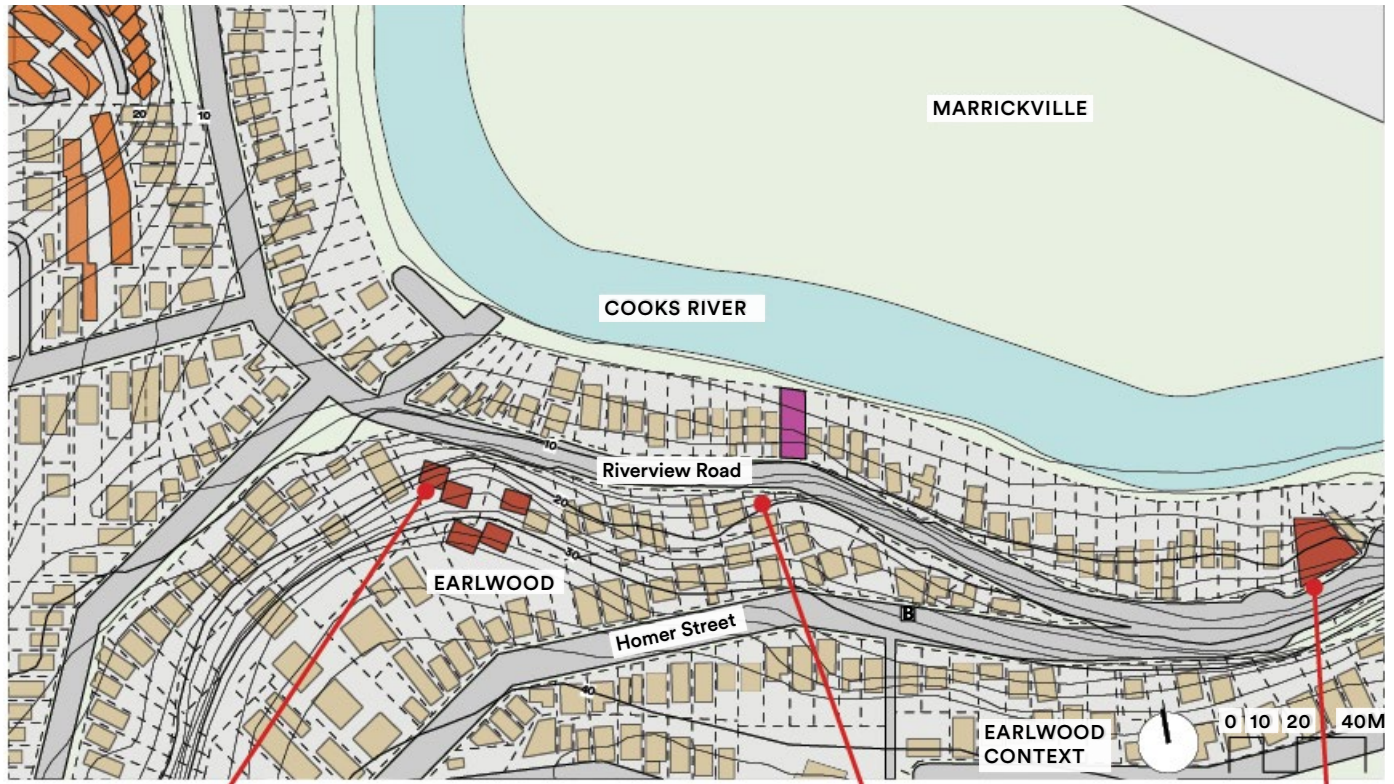
Rather than continue the line of boundary fences along the river walkway, this proposal creates a new public frontage to the Cooks River in Sydney's inner west. The project rethinks commonly held assumptions around private to public space transitions.

The design cascades two dwellings down a sloping site, providing street access and views of the river to both dwellings. The terraced design integrates the built form into the site topography and includes green roofs that expand the landscape of this important river corridor. The Cooks River and shared pathway form part of the 'green-grid' green infrastructure network that connects parklands and ecosystems across Sydney's suburbs and natural environments.

Internally the design allows for further subdivision of one of the dwellings into two separate units or as share housing, providing more ways to inhabit the home.



Sydney context



High density housing



Existing streetscape – vehicles, parking and garage doors

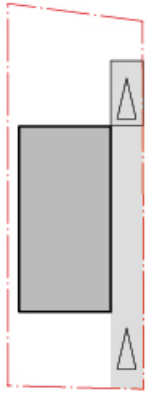


Steep topography of site

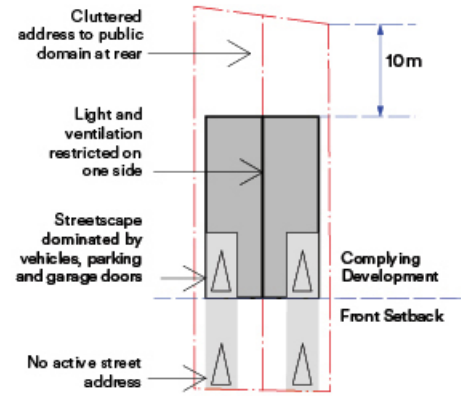


High density housing

Typical existing lot

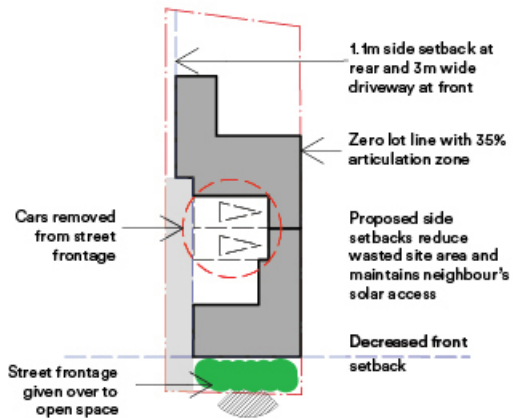


Complying development solution

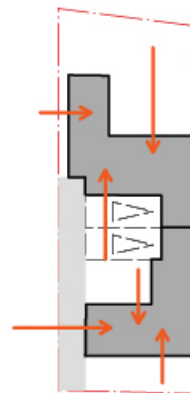


Pre-ordains a streetscape dominated by vehicles, parking and garage doors, prohibiting an active streetscape.

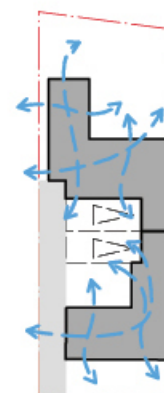
Proposed solution
Setbacks



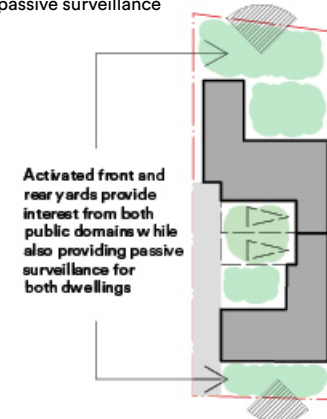
Proposed solution
Sunlight/amenity

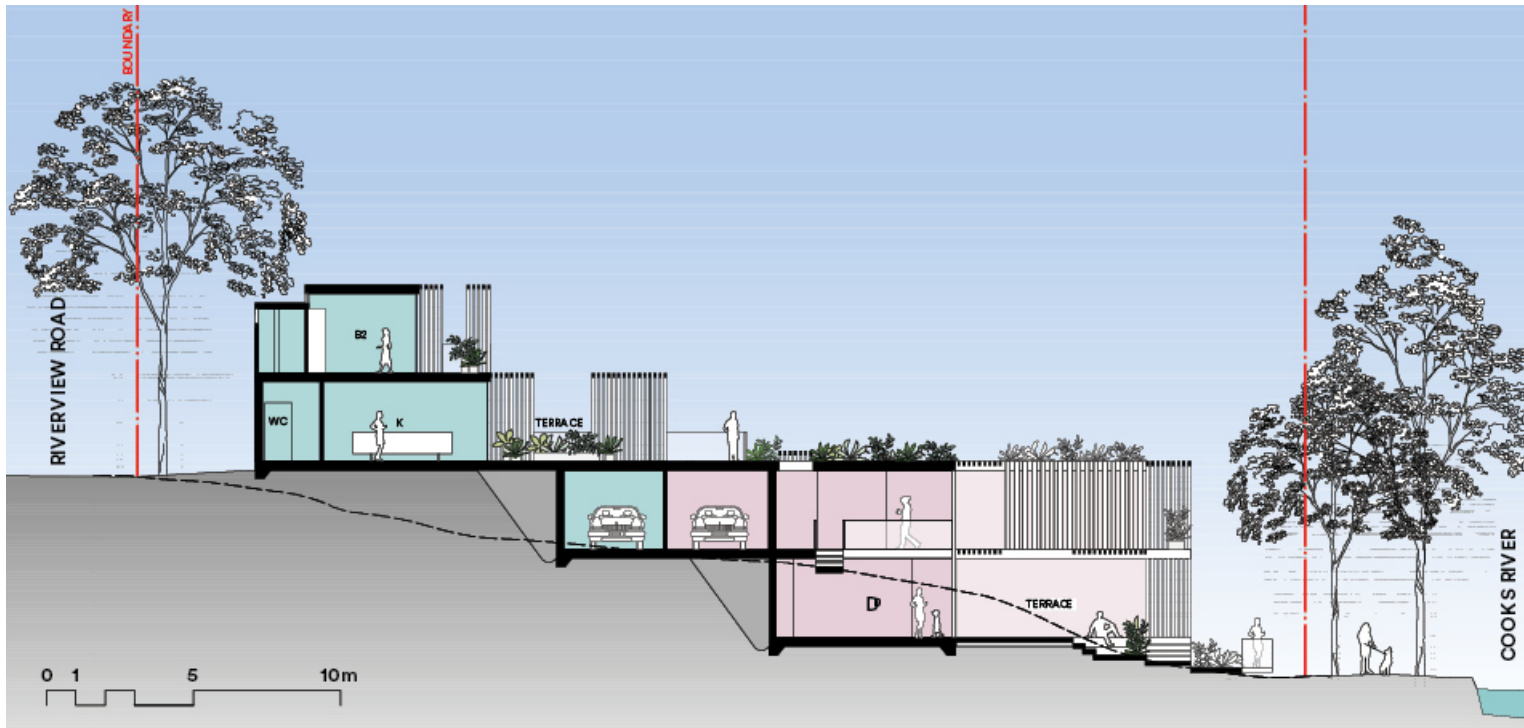


Proposed solution
Cross ventilation



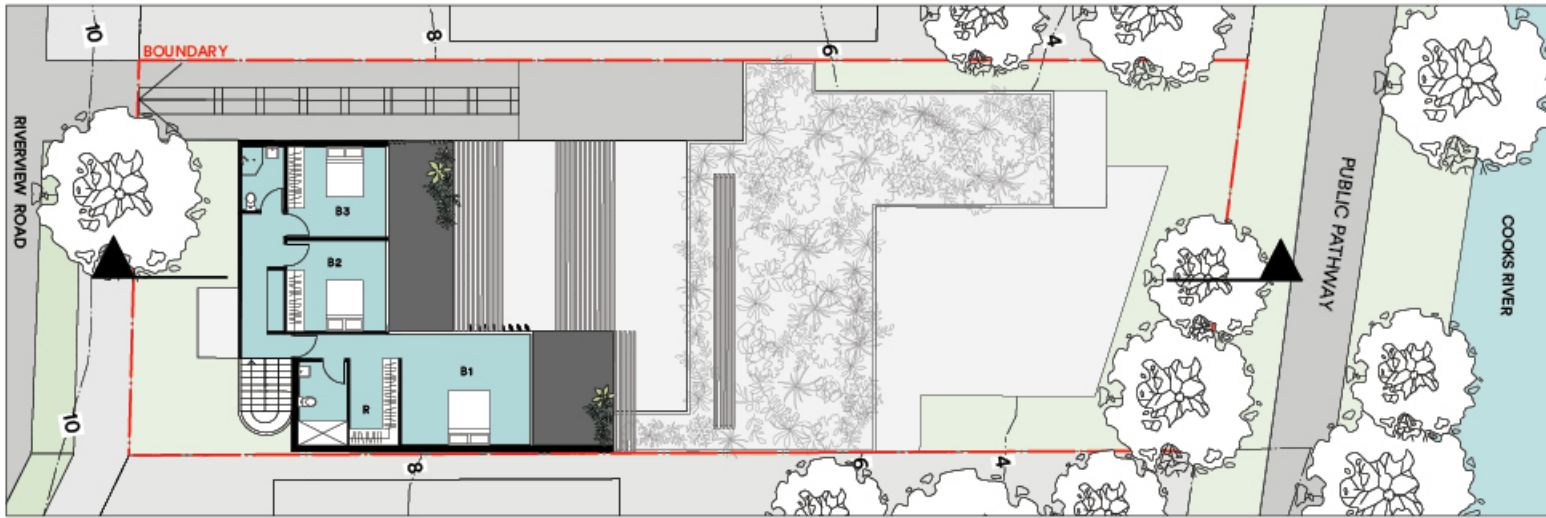
Proposed solution
Open space and
passive surveillance





Section

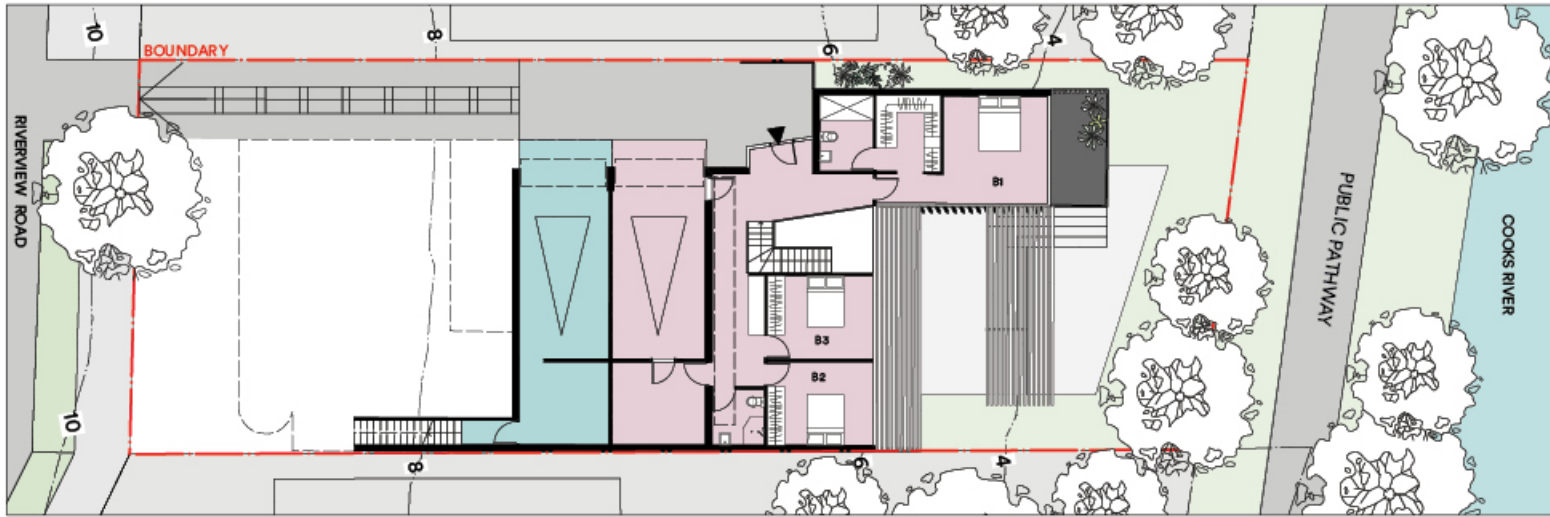
The architecture follows the topography of the sloping site towards the river and shared public pathway.



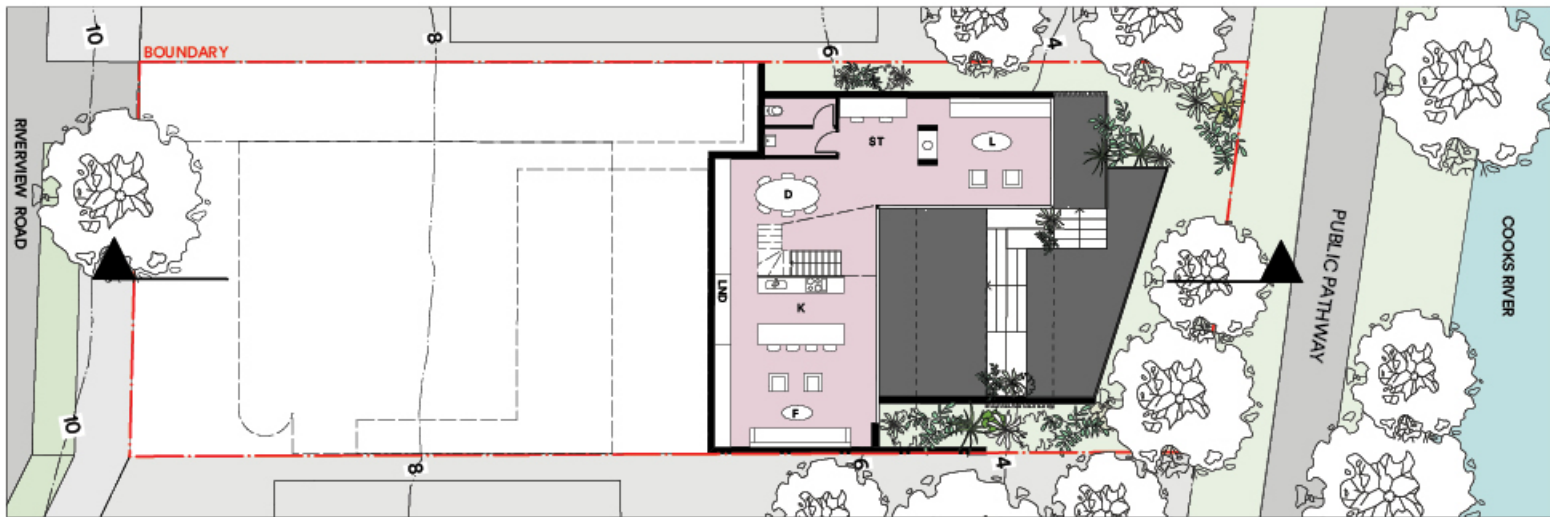
Unit 2 First Floor



Unit 2 Ground



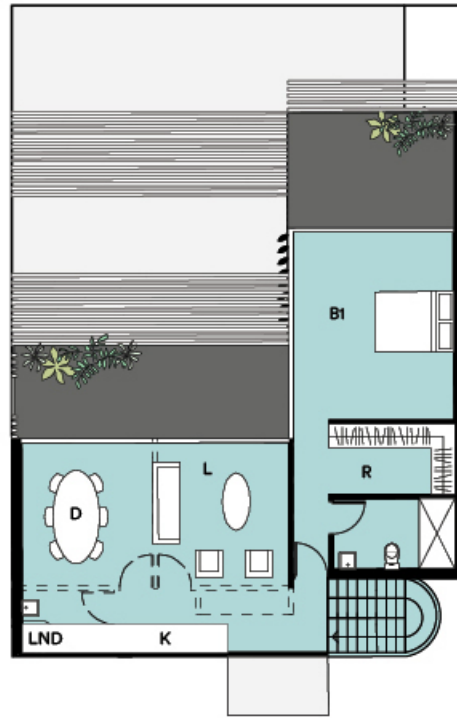
Unit 1 First Floor



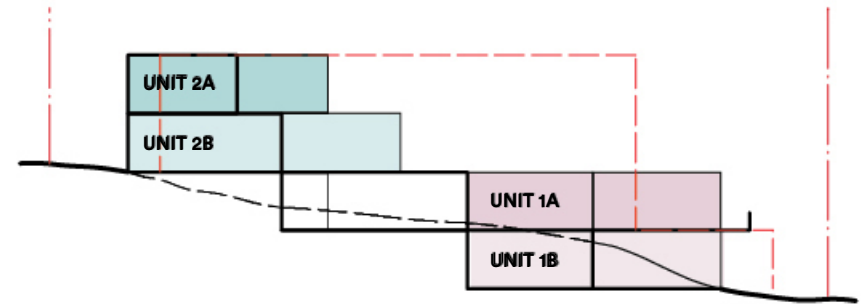
Unit 1 Ground



Ground



First

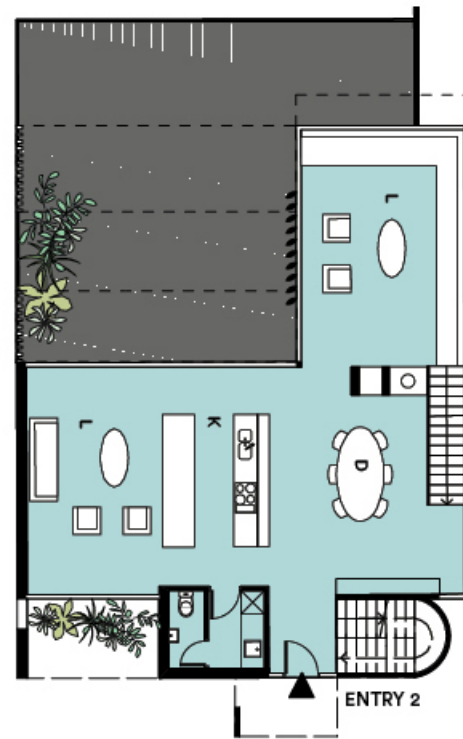
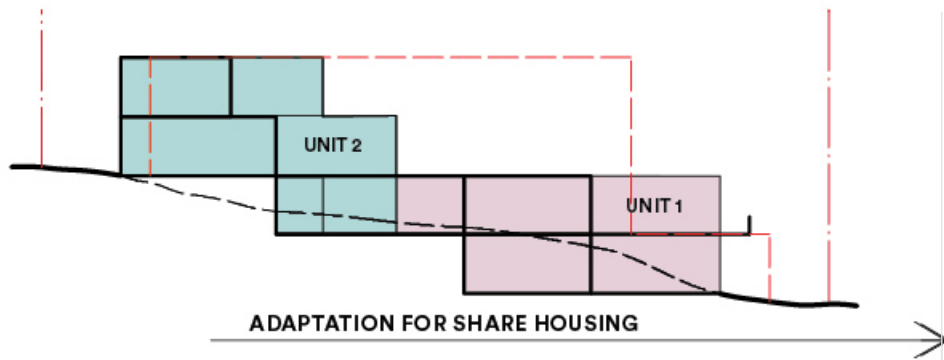


ADAPTATION TO TWO SEPARATE APARTMENTS

**Adaptation to two separate apartments
(similar modification at Unit 1)**

Breaking through the rear setback allows for future separation of each dwelling into 2 independent living units.

Note: Privacy to be augmented at time of conversion.



Ground



First

Adaptation for share housing
(similar modification at Unit 1)

GOVERNMENT
ARCHITECT
NEW SOUTH WALES

