

G A N S W

TESTING THE MEDIUM
DENSITY DESIGN GUIDE

THE MISSING MIDDLE
DESIGN COMPETITION

2017

DUAL

OCCUPANCY



Planning &
Environment



NSW is booming. We have a robust economy, a healthy jobs market and a capital city whose beauty rivals that of any in the world.

Our state is a highly sought after place to work and live, which means we need more housing for its growing population.

Supply is an important ingredient but not the only one. A greater variety of housing options is required to cater for a diverse range of needs and lifestyles such as an ageing population and growing families.

One of the NSW Government's solutions is to increase low-rise medium density housing, known as the 'Missing Middle'. That is housing somewhere between traditional freestanding homes and apartments.

This provides more affordable housing through smaller homes on smaller lots that still accommodate growing families with backyards and car parking. Such developments can also easily fit into established streetscapes and offers an alternative to apartments.

To help us achieve this, we announced a national Missing Middle Design Competition, an initiative of the Government Architect NSW in collaboration with the NSW Department of Planning and Environment. Its aim was to engage the architectural and design sector in the development and testing of NSW housing policy.

The design competition has encouraged innovative architects, designers and builders to submit their plans for dual occupancies (two properties on one lot), manor homes (two-storey buildings comprising 3-4 properties), and terraces.

The competition sought concept designs that represent excellence in low-rise medium density housing in the middle and outer ring suburbs of Sydney such as Beecroft, Eastwood, La Perouse, Canterbury, Campsie, Granville and Liverpool.

It also includes coastal areas of NSW such as Newcastle, Wollongong and Batemans Bay.

The new design guide promotes the fast-track approval pathway of complying development assessment for medium density housing across NSW, and the competition demonstrated how its use can support design excellence and innovation across a range of design criteria.

The competition has proved to be hugely successful. There were 111 innovative entries that showcased the potential for NSW's future housing landscape.

Better quality design will ensure new low-rise medium density housing is environmentally sustainable and contributes positively to the existing character of an area.

I thank all the competitors for their time, effort, creativity and innovation. It's by working together with the community and experts that we can start to enact the change that will positively shape the future of our growing city.

**The Hon Anthony Roberts MP
Minister for Planning, Minister for Housing,
and Special Minister of State**

In judging this competition 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* (draft MDDG) 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 found a significant correlation between those entries which were highly compliant with the draft MDDG, and those that were considered the most commendable in terms of design. The assumption can thus be made that following the MDDG will deliver reasonable design quality. Fewer proposals combined compliance with the MDDG with design excellence, innovation and strategic thinking, yet those chosen as winners and runners up did.

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. The prize winning entries used design to challenge 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 and in the ways that housing of this type might be practically achieved with our current pattern of lot divisions and ownership.



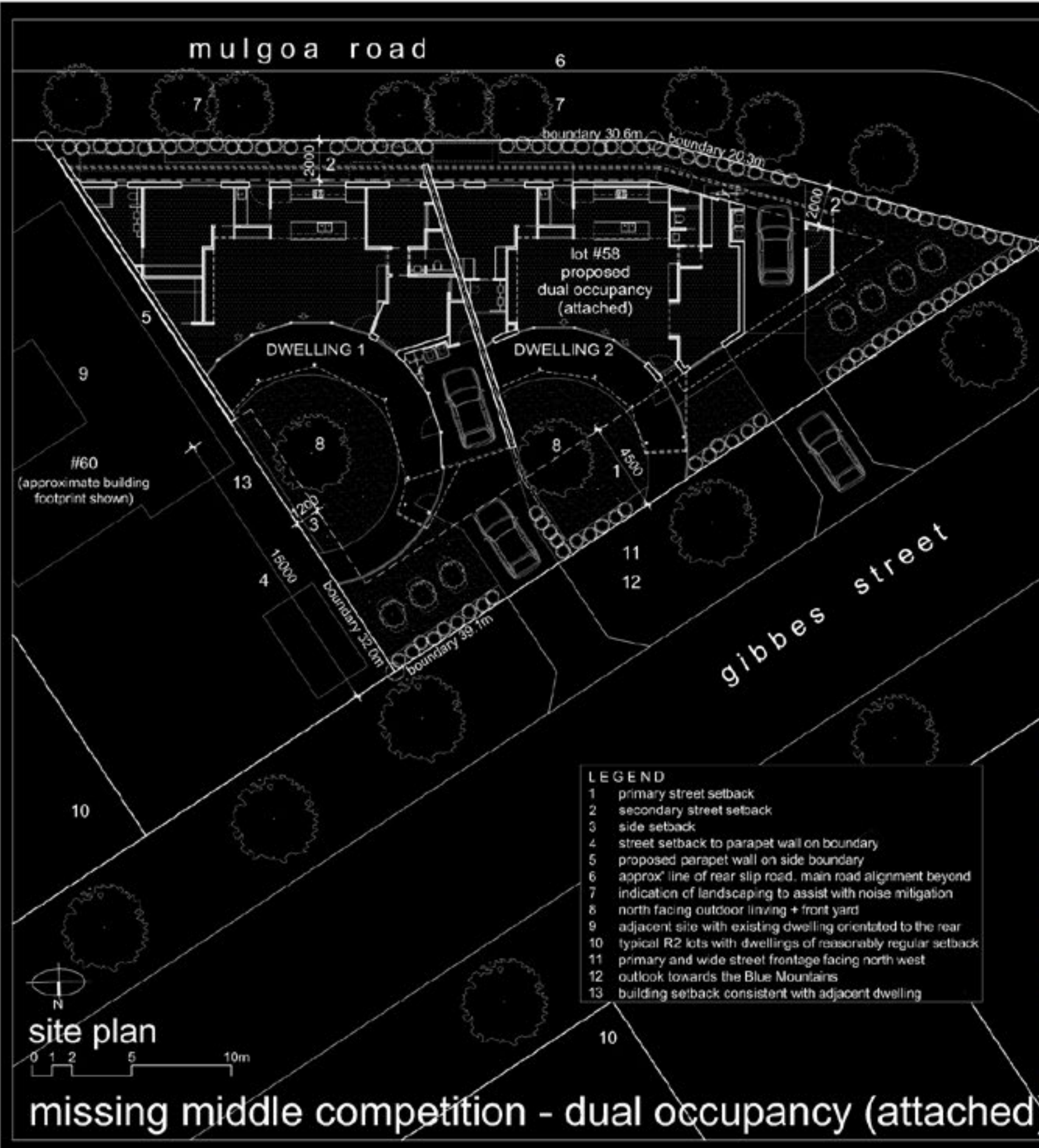
**Peter Poulet, NSW Government
Architect and Jury Chair**



Please note scale of submissions
may have been changed to fit.

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SITE:
 Lot 91 (No. 58) Gibbes Street, Regentville, NSW
 The site has an area of 705m² and is zoned R2.
 Permitted development includes dual occupancy (attached) subject to council approval (site area >650m²).
 It is located in the "outer metropolitan ring" of Sydney, is well located near local and regional facilities.
 It has been chosen as it was recently for sale, and one aspect of the promotion was that it was suitable for redevelopment. The existing dwelling is single storey circa 1970.
 The site has a few unique challenges. Whilst relatively flat, it has an irregular shape with 2 street frontages, one being a major local road with a roundabout intersection.

CONTEXT ANALYSIS
Local Character:
 The site is located on the edge of what appears to be typical low density single storey dwellings, many of what are 1970's era modest housing types. The location enjoys an outlook towards the Blue Mountains.
Neighbourhood:
 600m to Western Motorway
 1km to Jamisontown shopping centre
 4km to Penrith district centre
Streetscape:
 Typical low density arrangement with a predominance of single dwellings reasonably consistently set back from the street. The dwelling on the adjacent property is orientated to the rear street. There is one 4 unit development (circa 1990's) nearby in Gibbes Street.
Site scale:
 The site is irregularly (triangle) shaped. There is only one adjoining property. It has 2 long street frontages with the main one facing north-west. The site appears to be relatively flat, and has only one tree on site of reasonable size. Services include overhead power (on both sides of the street) and as such there are few street trees. The rear boundary has a slip road servicing the adjacent properties and the road reserve contains the main local road intersection. This may warrant sound mitigation.
 These provide an opportunity to create a development that is of appropriate scale to the location that combines the active outdoor living (private open space) and the front setback area - all on the northern, quiet and active street side of the site.

- LEGEND**
- 1 primary street setback
 - 2 secondary street setback
 - 3 side setback
 - 4 street setback to parapet wall on boundary
 - 5 proposed parapet wall on side boundary
 - 6 approx' line of rear slip road, main road alignment beyond
 - 7 indication of landscaping to assist with noise mitigation
 - 8 north facing outdoor living + front yard
 - 9 adjacent site with existing dwelling orientated to the rear
 - 10 typical R2 lots with dwellings of reasonably regular setback
 - 11 primary and wide street frontage facing north west
 - 12 outlook towards the Blue Mountains
 - 13 building setback consistent with adjacent dwelling



site plan
 0 1 2 5 10m
 missing middle competition - dual occupancy (attached)

CONTEXT



section a



LEGEND

1 entry (beyond)	5 northern verandah	9 rear boundary
2 meals	6 northern outdoor living/ front yard	10 solar panels/ solar h/w
3 kitchen	7 indicative vegetable garden location	11 single pitch roof line with rainwater harvesting
4 carport / garage (beyond)	8 front boundary	12 landscaping screening sound mitigation to rear



selected 3D visualisation images
missing middle competition - dual occupancy (attached)

3 CONCEPT

Item 1: clause 3.1C Landscaped Area

Design criteria

4. At least 1 medium sized tree with a minimum mature height of 6m is to be provided to the rear of the dwelling.

Comment:

The proposal seeks to maximise the outdoor living area by combining the opportunities for northern and street orientation. The required trees in this case are in the outdoor living area at the front of the dwellings.

Item 2: clause 3.1E Public Domain Interface

Design criteria

7. Private courtyards within the front setback are only to be located within the articulation zones and/ or behind the front building line.

Comment:

To maximise external site area, the design combines the front yard and the private outdoor living. To Dwelling 2 this extends past the articulation zone and fully to the front property boundary.



Item 3: clause 3.1O Car and Bicycle Parking

Design criteria

63. Setbacks

Comment:

The design locates the outdoor living on the northern (and quiet) parts of the site resulting in increased articulation to the front elevation and it is not possible to locate the parking behind the building line. To respond to this, the verandahs have been extended towards the street to both dwellings to achieve the objective.

Item 4: clause 3.1V Visual Appearance and Articulation

Design criteria

81. Articulation zone of 1.5m is provided forward of the building line

Comment:

Dwelling 2 includes an extension of the verandah forward of the building line consistent with that of Dwelling 1. The verandah extensions element are sized to be proportionate with the overall design, and whilst do not comply with the 1.5m, achieve the objective.



missing middle competition - dual occupancy (attached)

Context

INTRODUCTION

The middle-ring suburbs of Sydney are characterised by a fine-grained subdivision and generally arranged on a regular urban grid. With the right legislation, these inherent qualities provide the perfect framework for walkable communities that are vibrant, popular and diverse to emerge.

We believe the deployment of new, more-open land-use typologies will be key to the success of the Missing Middle. Our architectural proposals offer variations within traditional building types. Each explores a milieu of spatial conditions empowering occupants with the capacity to curate their own private and public lives.

The intent of these spaces is to break down 'consumer' notions of private ownership. This is achieved by curating small private moments with a hierarchy generous and memorable shared spaces at the heart of each site. It is hoped that the endearing nature of shared spaces provides opportunity for urban actors to evolve from private consumer to urban citizen.

Housing affordability in Sydney is at a crisis point effecting up to 60% of households according to some commentators. Importantly, our work offers housing configurations that empower and legitimise alternative models of housing delivery.

Procurement models such as co-housing, Nightingale Housing and Baugruppen offer a more affordable urbanism but more significantly, they allow residents to shape and manage their own housing together.

OUR SITE

We have selected a street block site in Granville, bound by John, Blaxcell and Louis Streets and The Avenue. The site is ideal for testing the limits of the SEPP as it contains a range of lot sizes, is traversed by a watercourse and has significant topographic variation.

THE DUAL OCCUPANCY

The dual occupancy housing type is best known for its appearance in the back yards of existing houses. Whilst there are many poor examples about, this building in the landscape is a potent metaphor for a deeper, symbiotic relationship between building and landscape.

Our proposal is a deliberate departure from the Australian suburban house, bracketed between front-yard and back-yard. We re-establish the suburban lot as a 'field' of plantings and activities - a productive garden. The typically consolidated dwelling spaces are then decomposed into a series of pavilions, dispersed within a productive garden.

A series of simple design devices unlock potential for sub-letting, reprogramming and other appropriations beyond the control of the draft SEPP...



Site in Granville - R3 Zoned Block 1:2000



30 minutes to CBD



15 minutes to Parramatta



10 minutes to Granville Station



Close proximity to Parramatta??



Close to Granville TAFE



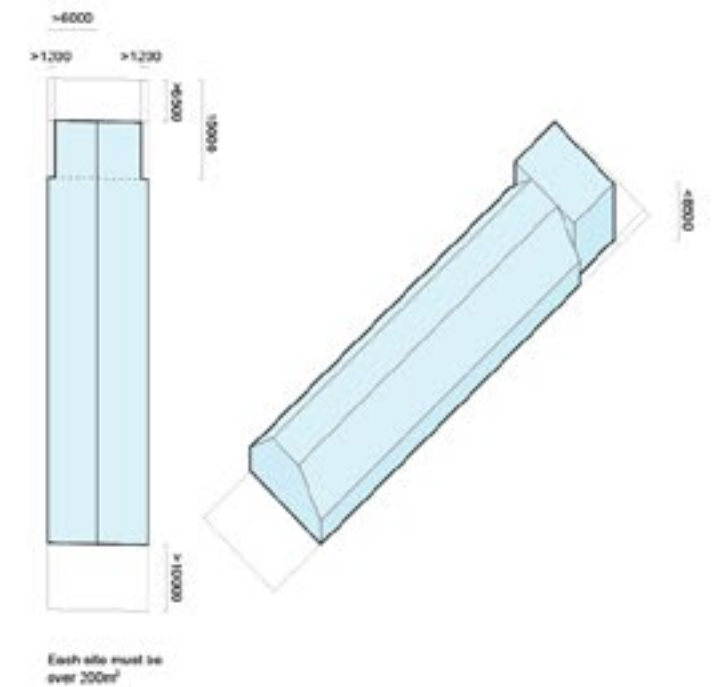
Site Location in Granville

Compliance Envelope

To understand compliance requirements for the Dual Occupancy we have produced a 3d envelope study on one of our selected lots.

The draft SEPP provides a fairly generous building envelope with plenty of 'looseness' between the permissible GFA / FSR and the envelope. This looseness will permit a variety of solutions and allow the architecture to be oriented appropriately for solar gain and street address on any given site.

We are particularly supportive of the zero-setback zone through the bulk of the site. We note the potential the zero set-back offers in solving the prevalent and problematic boundary interface of a 1.0m setback either side of the fence.



Suburban Domesticity

MISSING MIDDLE COMPETITION

Hyper-productive Dual-occupation

Concept Design

Intensified exchange

Provide a regularised structural and services "scaffold" that establishes a fine-grained urban rhythm in the streetscape and demarcates an overall volume for each dwelling. Design-life 100+ years

Re-programmable

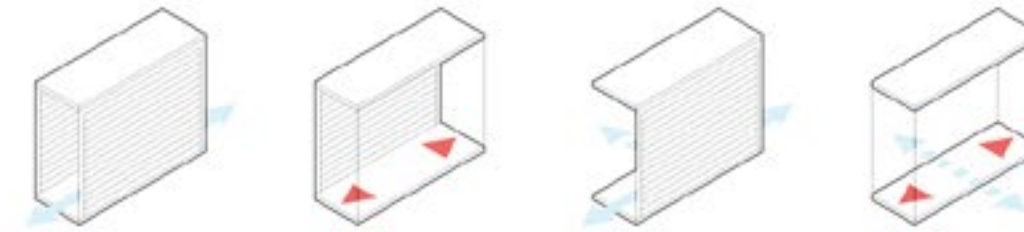
Spaces and surfaces are designed to be programmed by users of the site as needed with an emphasis on efficiency and production. The dual-occupancy has its own capacity to be divided into smaller dwellings.

Linking Frames

Linking frames connect a series of small pre-fabricated pavilions. The operation of transparent and timber shutters allows pavilions to de-couple from one another and provide various configurations of interconnected and autonomous spaces.

Productive Surfaces

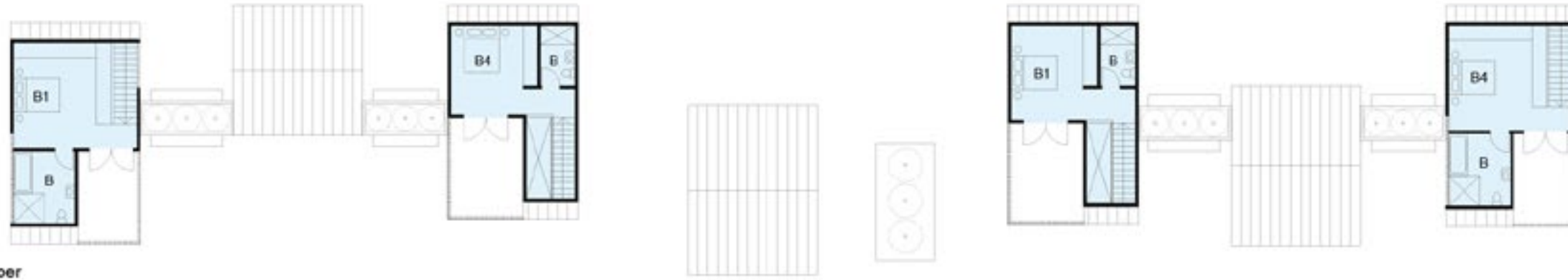
Rather than focus on maximising internal floor space we have pursued maximum productive surfaces. If a surface is not planted, collecting water or solar energy then it is under-utilised.



Adaptable Access Diagram



Concept Design



38 John St - Upper



38 John St - Ground



38 John St - Section 1:200

Suburban Domesticity
MISSING MIDDLE COMPETITION

Hyper-productive Dual-occupation

Testing the design guide



36 John Street - Micro-Dwelling and Business Plan 1:200

Business Space

Beyond draft SEPP code compliance the introduction of small and flexible business spaces will enrich the life and experience of the site. Home industries and small scaled establishments are ideal additions to medium density residential areas.

Shared Transport

Car and bicycle share schemes will minimise the need for private vehicle ownership and allow residents to live more affordably. Dedication of one space is appropriate for the location of a special needs private vehicle on an as-needs basis.

Open Linking Frames

Dual Occupancy becomes Sextuple Occupancy when all the linking frames are opened. With both shutters up the linking frame provides a threshold between each of the long boundaries connecting productive landscape across the site.

Architect Designed

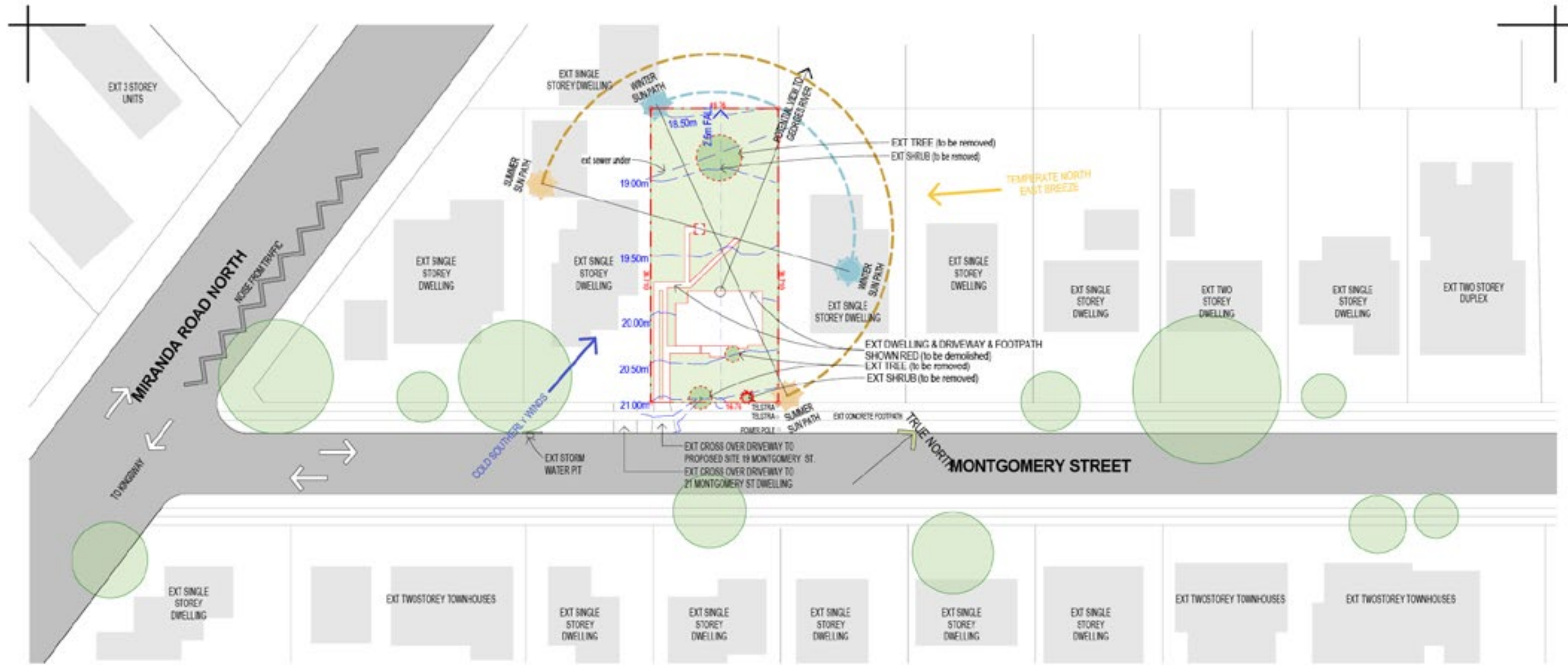
As the suburbs transition into more vibrant, dense and diverse places the need for a high quality design outcome becomes more acute. For the exempt and complying approvals pathway we recommend the SEPP be modified to ensure only registered architects are entitled to submit.



34 John Street - Maintain Existing Dwelling Plan 1:200

Suburban Domesticity
MISSING MIDDLE COMPETITION

Hyper-productive Dual-occupation



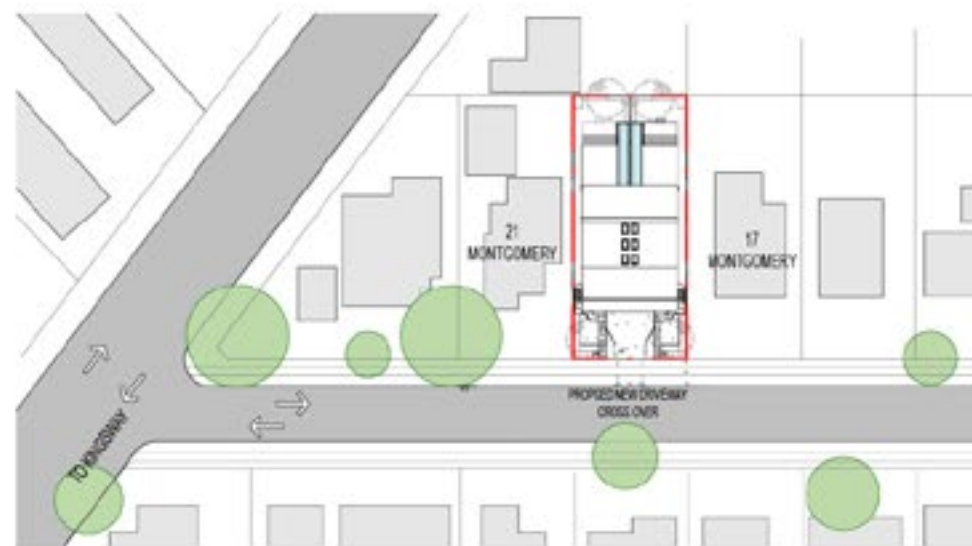
The subject site is located close to public transport trains and major retail centres of Miranda. It is a well established area with available infrastructure which provides good opportunity for redevelopment. This has been recognised through the current zoning of land in the general locality which allows various forms of residential development, including dual occupancy development.

This site is selected for this competition because the existing site condition that will potentially challenge the Draft Medium Density Design Guide for Complying Development and demonstrate the difficulties to achieve it without compromising great opportunities.

Under 'Sutherland Shire Local Council LEP 2015', current site is classified as R3 zone with FSR 0.7 / 5m Height / 30% landscape. The subject site comprise an area of 648.9m² with a frontage of 16.764m and a length of 38.710m. 2.5m cross fall to the rear. The proposed strategically use this 1-storey height difference by utilising extra height to habitable rooms which will enhance living quality and user experience.

The proposed dual occupancy comprise of 2 side-by-side 3-bed units with a feature 'multi-function' space on the ground floor which can be used as 'semi-open courtyard', or 'swimming pool' or 'feature landscape' or 'accessible ramp' to meet multi-generation of varying lifestyles' living arrangement and without major impact to building envelope.

The proposal tests against the Draft Medium Density Design Guide (MDDG) and Sutherland Shire DCP. The challenges of this site are: the site area is too small for terrace development although it is allow under R3, the FSR can't not be fully utilised and applying MDDG will required great further compromise.

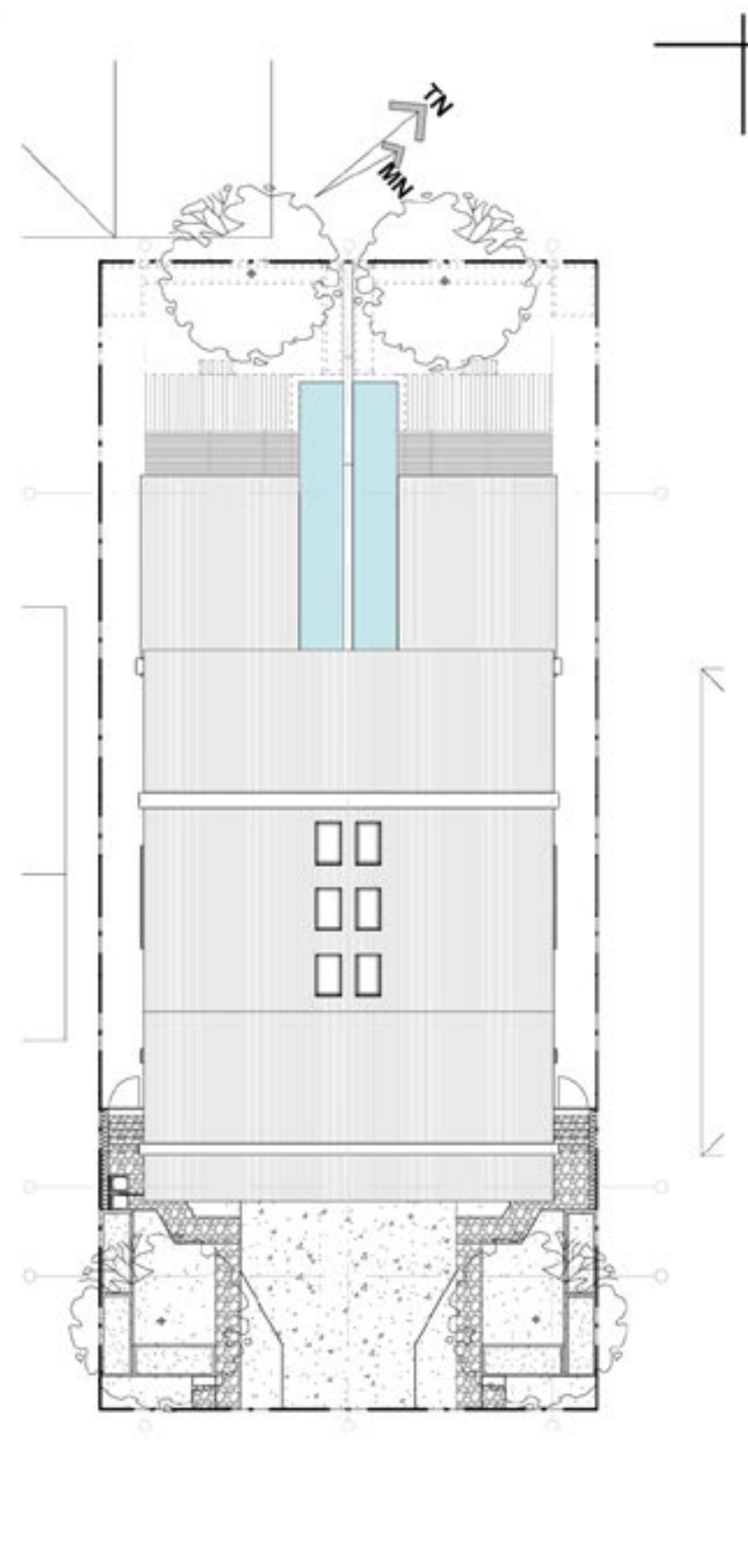
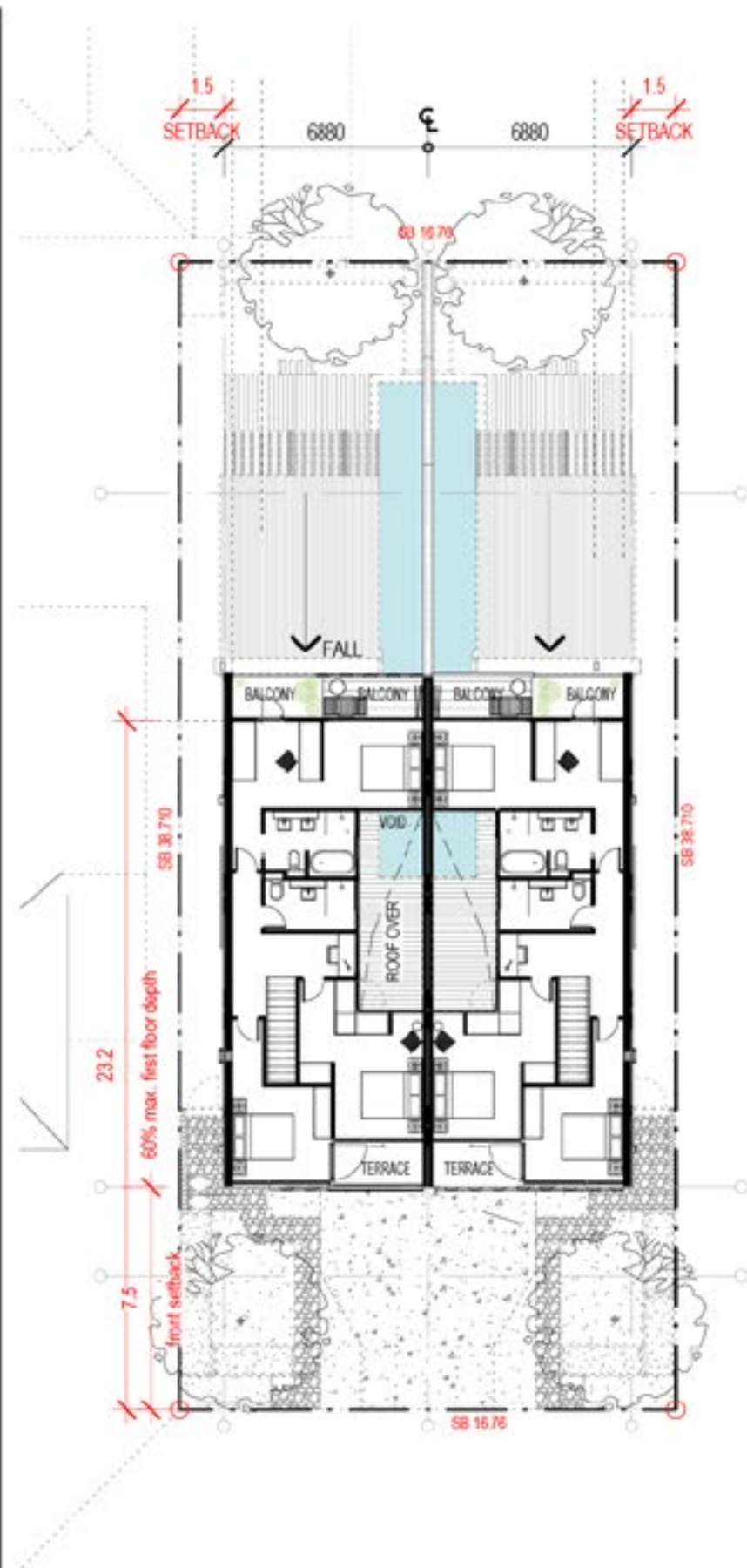


PROPOSED SITE PLAN
1: 1000

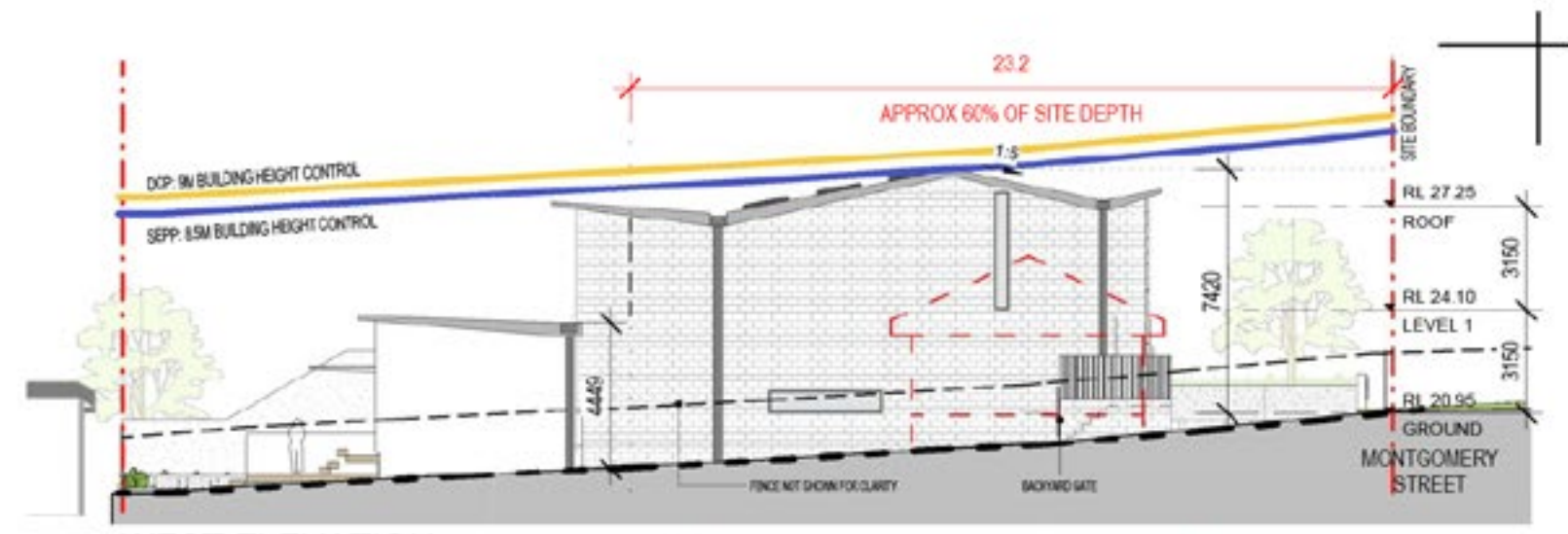


SITE - EXISTING

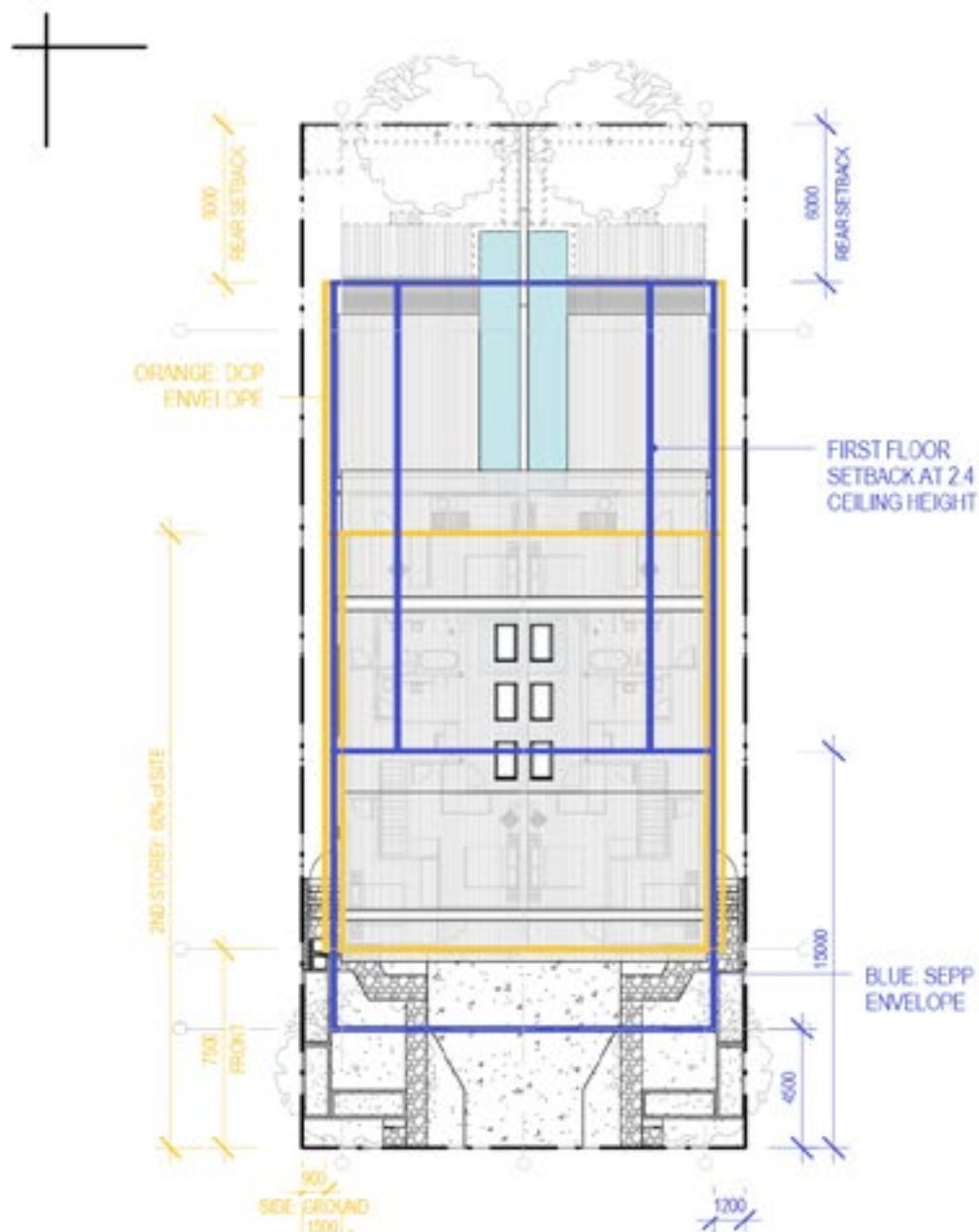
CONTEXT CP1 12/12/16



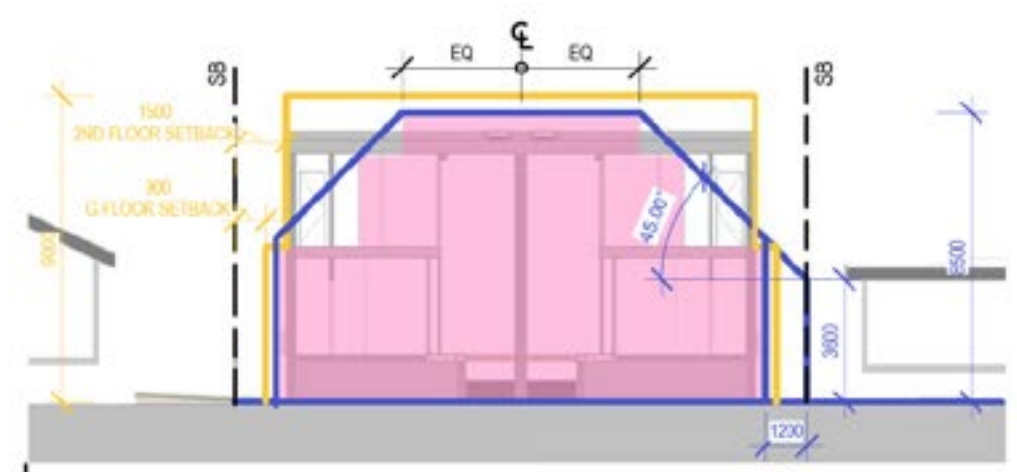
CONCEPT DESIGN_PLANS CP2 12/12/16



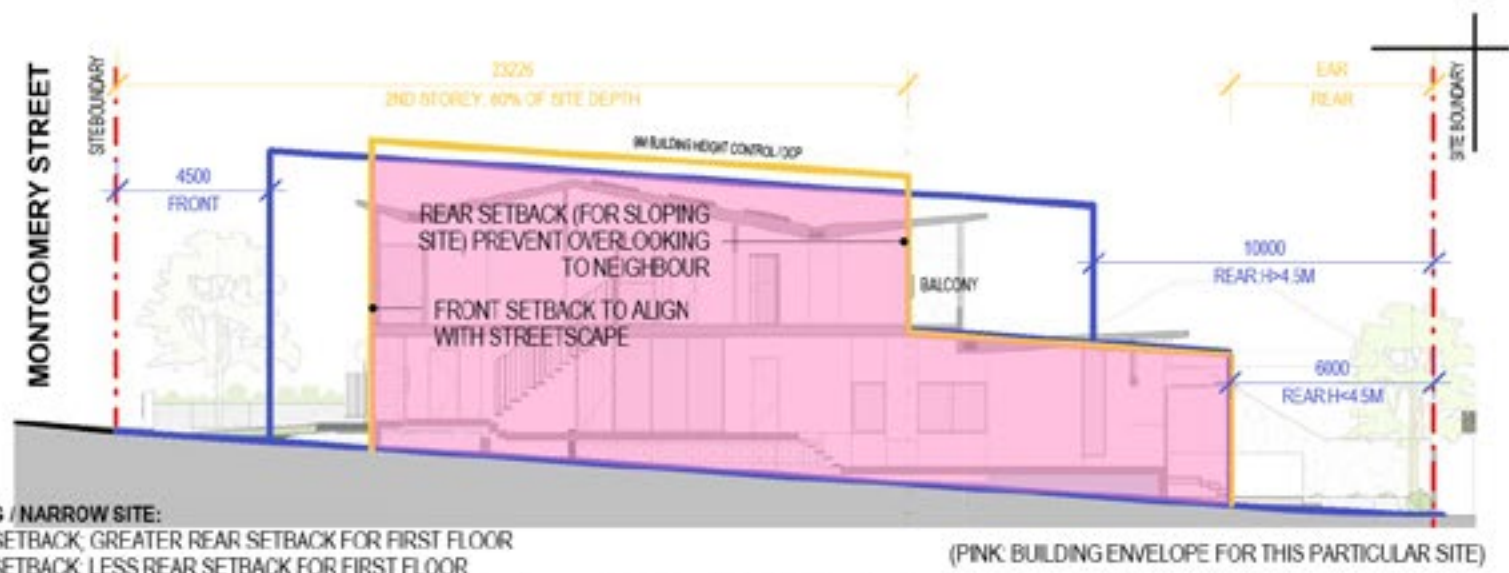
CONCEPT PLAN_ELEVATIONS AND SECTIONS CP3 12/12/16



SETBACK CONTROL
1:250



CROSS SECTION @ 50% OF THE SITE
1:200



CHALLENGE ON SLOPING / NARROW SITE:

LOCAL DCP: LESS SIDE SETBACK, GREATER REAR SETBACK FOR FIRST FLOOR
MDDG: GREATER SIDE SETBACK, LESS REAR SETBACK FOR FIRST FLOOR

The design principles outlined in the Medium Density Design Guide (MDDG) generally allows more flexibility to the building footprint as has shorter site setback than most local DCP. The guides whilst provide a generous building envelope of site front and rear setbacks. Where used on existing lots; many sites would required the frontage alignment with the adjoining sites, hence MDDG's smaller setback is detrimental to the context and neighbourhood character. Furthermore, on sloped sites such as the proposed, to utilised the MDDG setback would not address the overlooking compared to the council DCP (such as Sutherland Shire).

To meet the reasonable site alignment most existing council DCP produces a more truthful character, and when incorporating the 45 degree height line at 50% from lot depth, the MDDG further reduces the ability to create a usable first floor footprint on a narrow site, as demonstrated in the proposed.

The guide would work well on larger sites where site has longer frontage, as it allows more space to articulate the first floor setback and to integrate into the existing context. However, the amount of sites that are suitable for medium density development under council DCPs are much bigger in number, thus Guide's setback requirement gives less benefit in some occasions than intended.

With the DCP's setback controls it enables more useful envelope in this particular case. In this proposal, a proposed multi-functional space can cater various needs from different users

MULTI-GENERATION OF VARYING LIFESTYLES' LIVING ARRANGEMENT



POOL OPTION



COURTYARD OPTION

Residential Zoning
 Source: The Hills Local Environment Plan

R4 High Density Residential

R3 Medium Density Residential

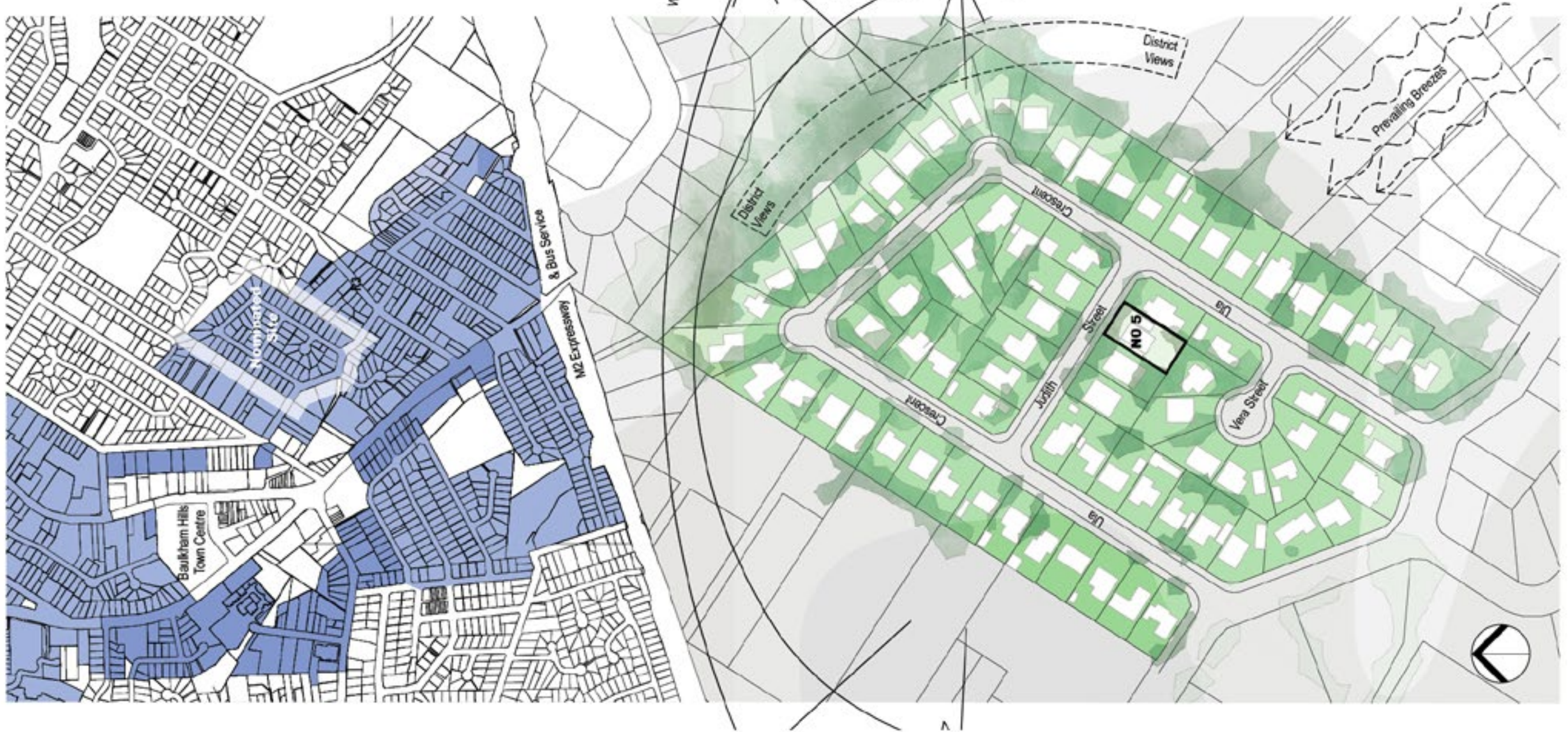
Site Description

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

5m average Front Setbacks with typically wide Side Setbacks.

Housing typified by 1960 - 1970s era development with later "lean-to" additions.

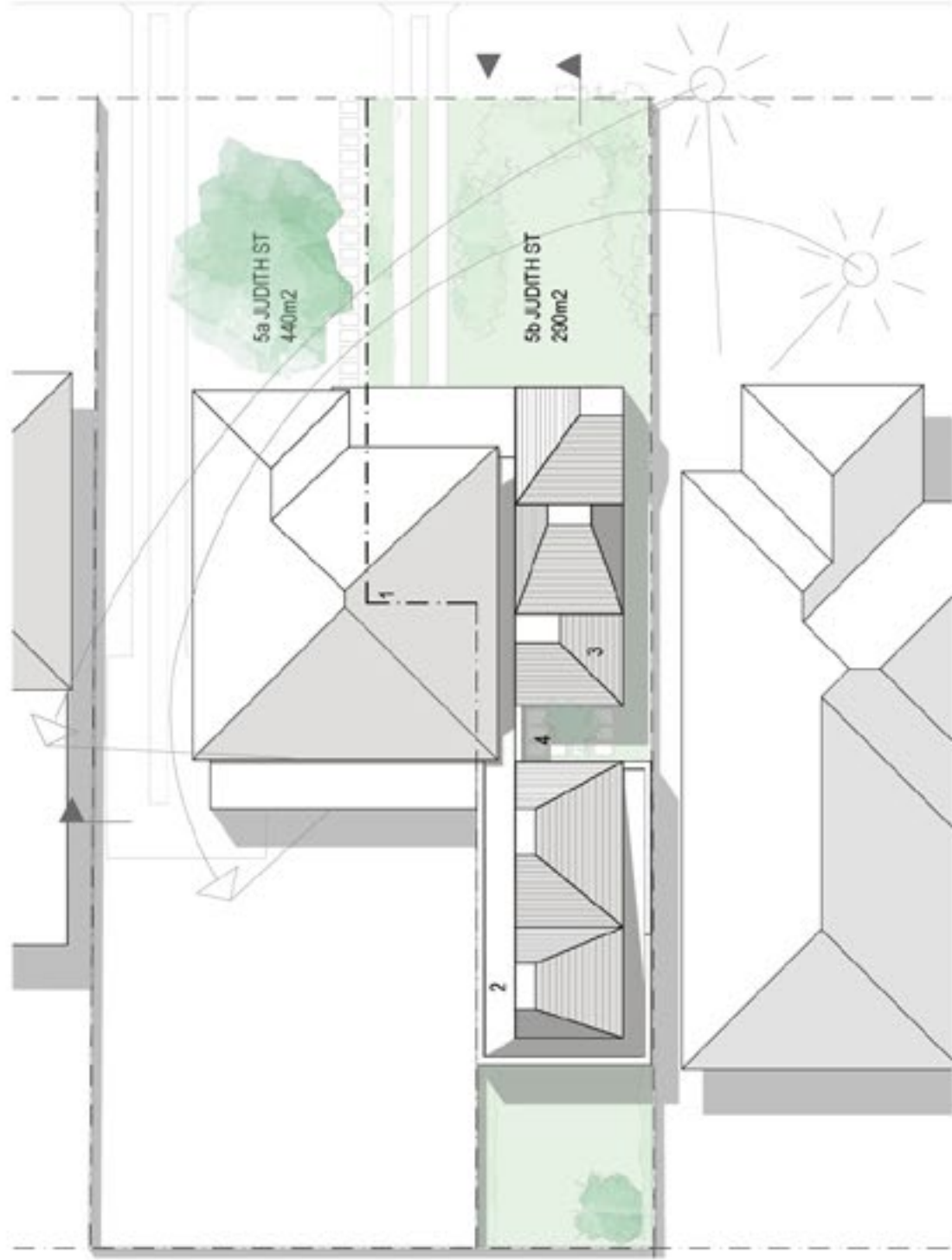
Single or double garages, detached / semi-detached, located beside house or via vehicular access way down side of lot.



5 Judith St Baukham Hills

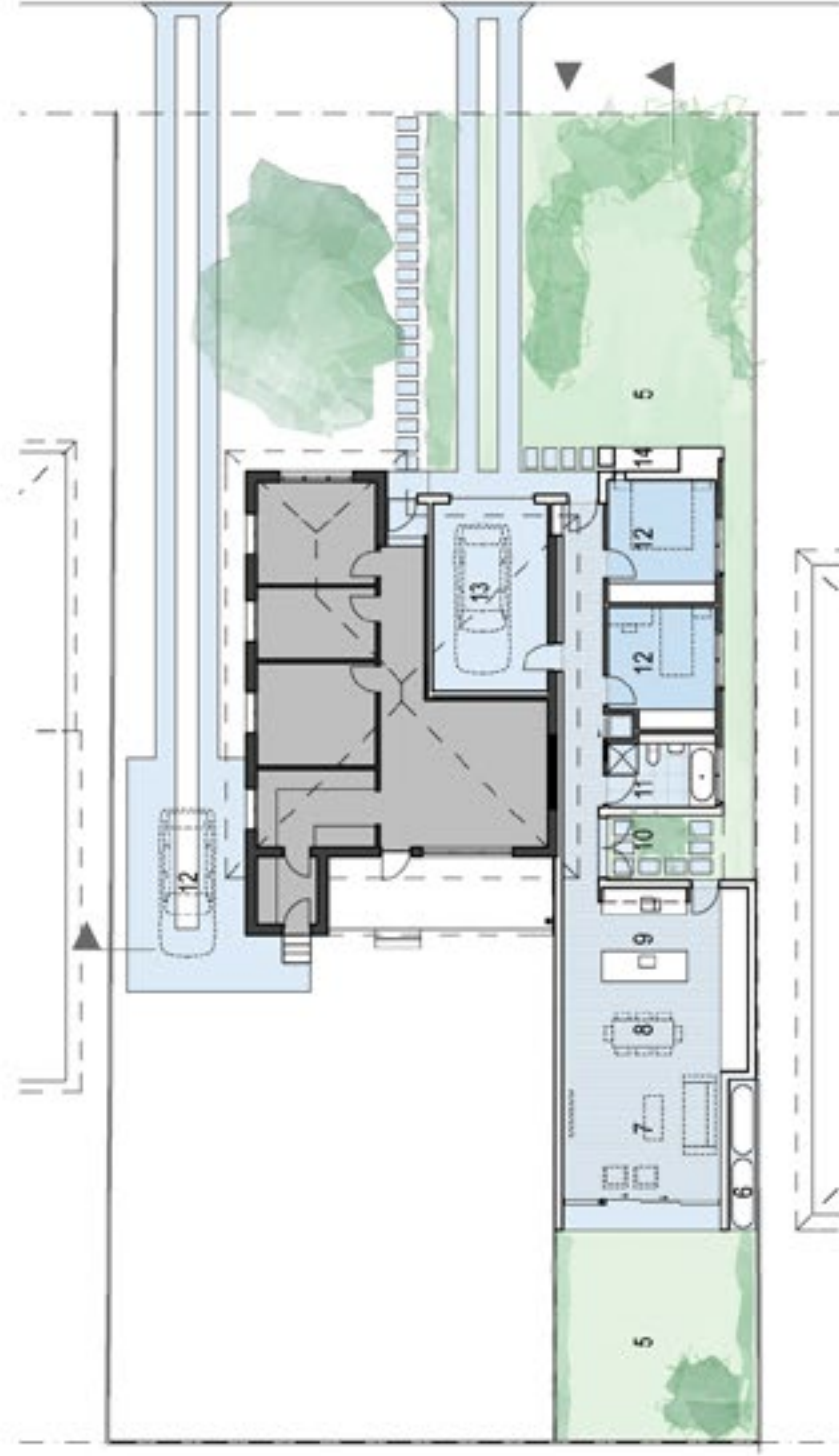
5 Judith St Baukham Hills is zoned medium density and has been selected for its proximity to public transport and anticipated regions of high population growth. This locality comprises of 70-76% "Empty Nest" Homes.

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.



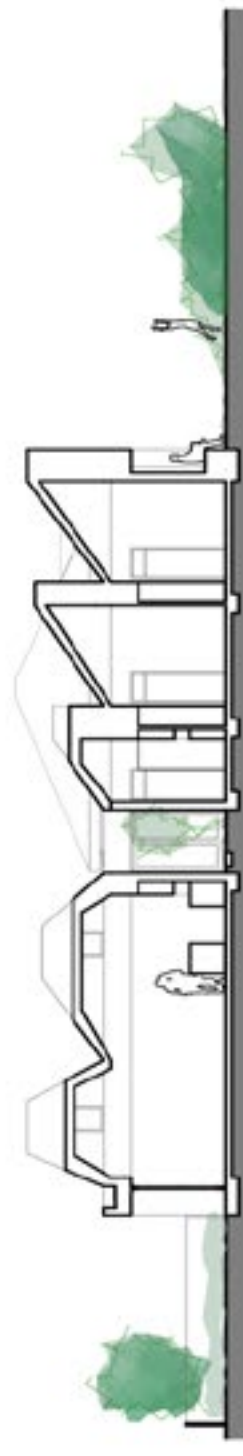
Roof Plan 1:200

- 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.



Ground Plan 1:200

- 5 Garden / Private Outdoor Area
- 6 Rainwater Harvesting Tanks
- 7 Living
- 8 Dining
- 9 Kitchen
- 10 Courtyard
- 11 Ensuite & Laundry
- 12 Bedroom
- 13 Car-park / Garage
- 14 Daybed



Long Section 1:200

- 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.

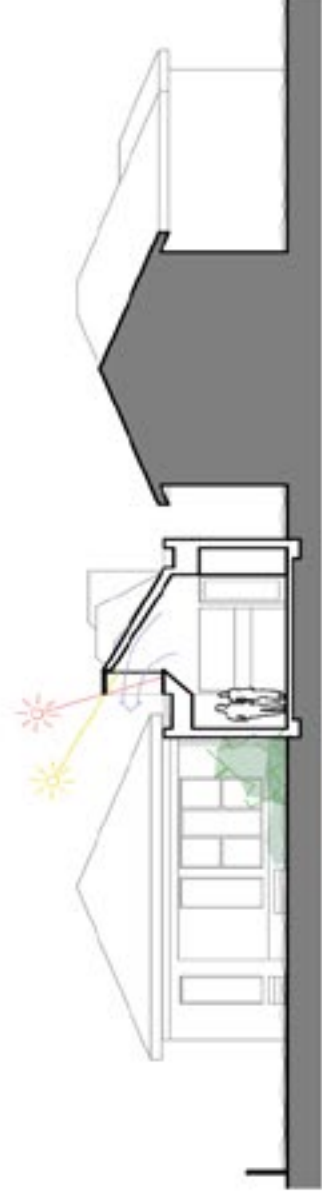
Landscape

The design seeks the greatest connection to landscape within a medium density context, with bedrooms and living spaces accessing front, courtyard and rear gardens. The design attempts to encourage recreational use of the front set-back through screening landscaping and a street facing daybed.



Street Elevation 1:200

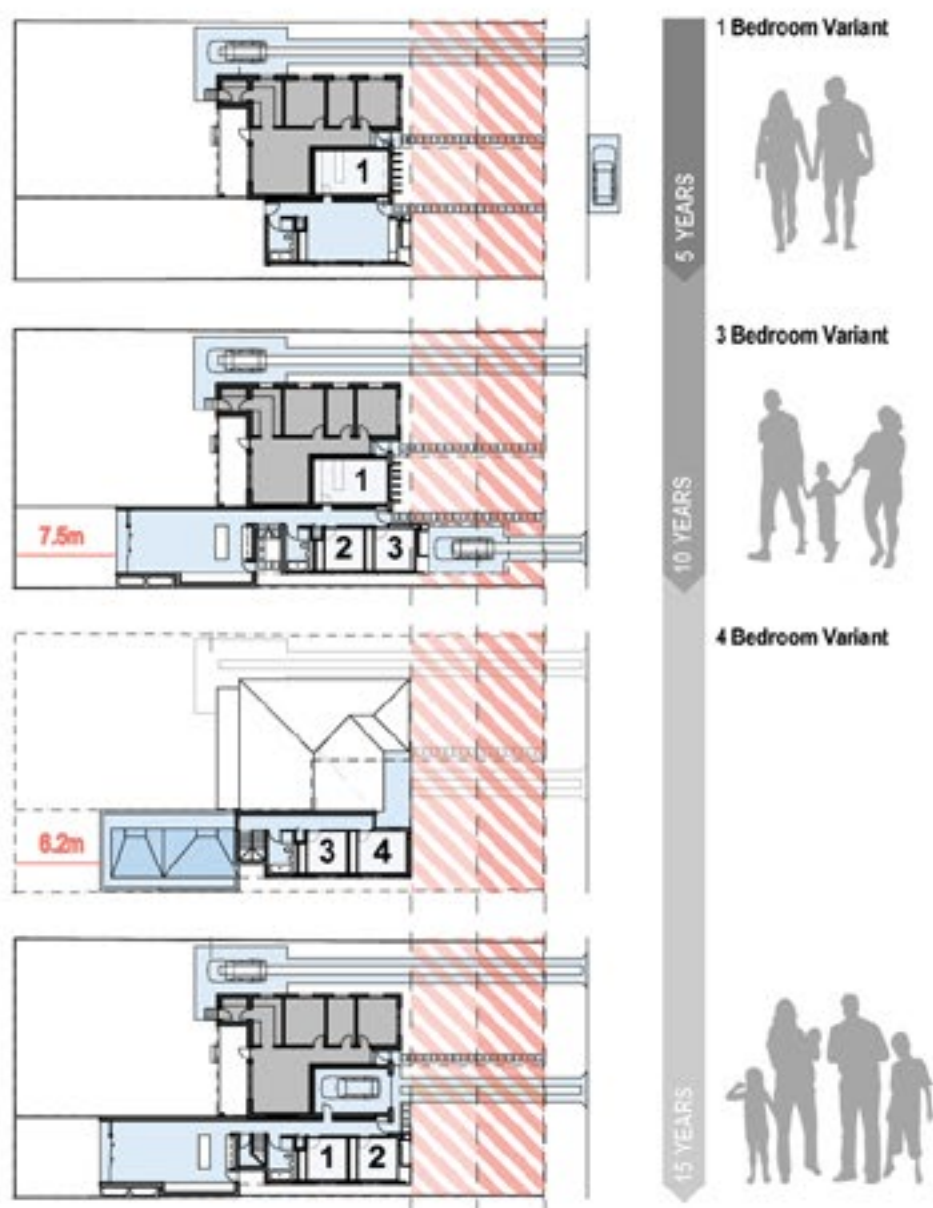
The concept does not prescribe a cladding or material choice, rather we envisage new walls with cladding selected to marry into each specific context, bricks, weatherboards etc. The scheme preserves suburban street-scapes character by salvaging homes that would otherwise be demolished in a redevelopment.



Short Section 1:200

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.

Concept Design



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.



Design Guidelines Feedback

Front Setbacks:

Lot Area (m2)	Setback
200 - 300	3.5m
>300 - 900	4.5m
>900 - 1500	6.5m
>1500+	10m

Existing 9m

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 setback 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.

DUAL OCCUPANCY

UNDERSTANDING THE BRIEF

The New South Wales Government requires greater variety of housing choice to meet the needs of the diverse and growing population and hopes to streamline its approval process by removing existing obstacles for delivery of this form of housing. The competition process utilises the expertise of industry experts to test drive the draft design standards for low-rise medium density products which is hoped to fast track development assessment of complying developments. It is therefore necessary to apply the Draft Medium Density Guidelines to specific sites to challenge and improve these guidelines through thorough design exercises and by exploring opportunities and innovation to achieve variety of housing choices, better design and planning outcomes for low-rise medium density housing.

SITE SELECTION

The subject site selected is 165 Fifth Avenue (RPD: Lot 2 DP1199136) in Austral NSW. It is located within the middle ring 30.5 kilometres from the iconic Sydney Harbour Bridge and zoned R3 which encourages medium density development. The site has a gross area of 1.21 hectares; with required road dedications net area is 0.92 hectares. The site has a gentle fall of around four metres from the southern side to the northern side and currently contains two residential homes. The site is in front of a future Civic Precinct on the corner of Edmondson Avenue and Fifth Avenue, is close to a proposed park on Sixth Avenue and Scalabrini Village Aged Care on Edmondson Avenue. Adjoining to the east is a proposed medium density development. The proposed site is also one kilometre from the Leppington Railway Station and 500 metres from the Unity Grammar College. The proximity to these amenities, makes the site ideal for a medium density development. It will serve as a transition from a low density housing area to a higher density development. For market purposes the proposed development demonstrates a good model and variety of non-competing products which suits different family formation and budget.



 SITE DEVELOPMENT PLAN
1:800

 SITE CONTEXT PLAN
NTS

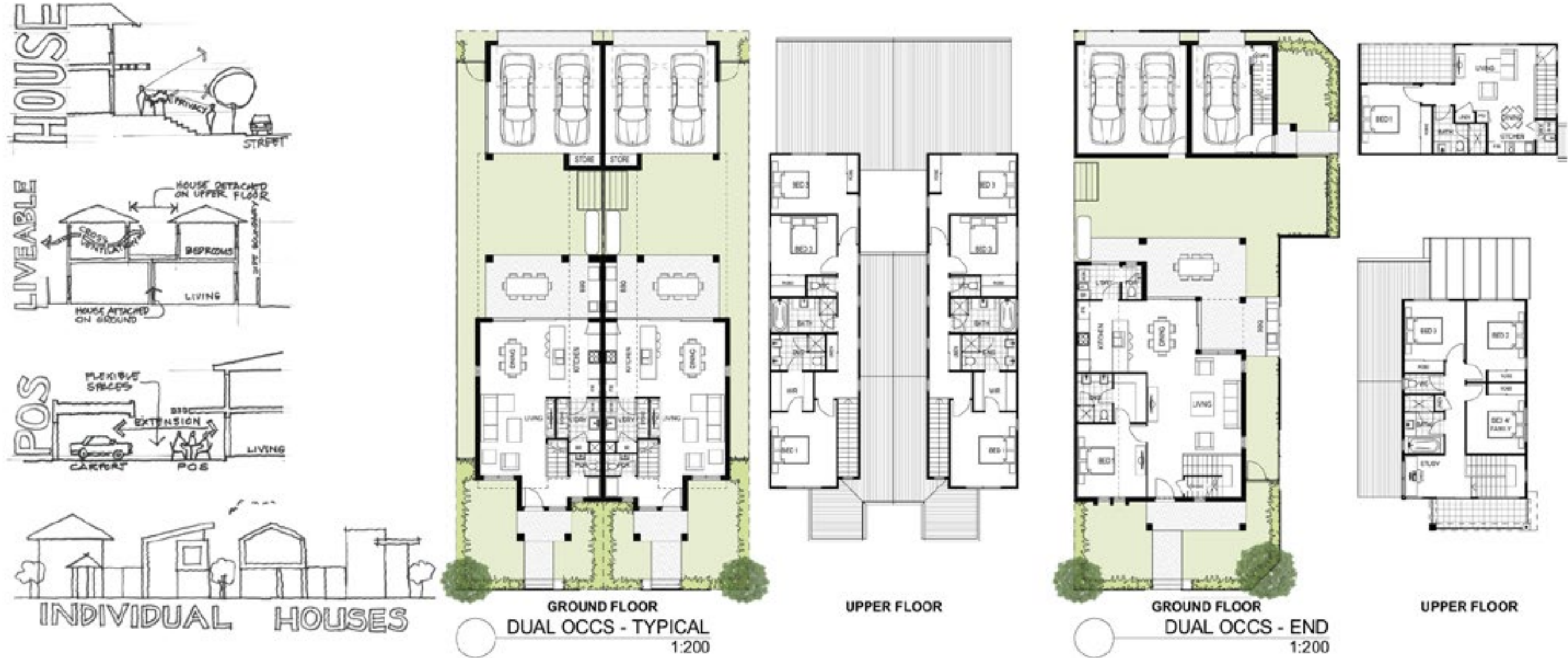

MISSING MIDDLE

DUAL OCCUPANCY

CONCEPT DESIGN AND DESIGN STRATEGIES

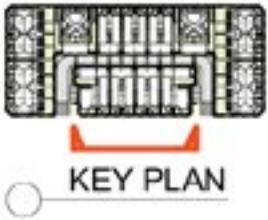
DESIGN PRINCIPLES

- All houses were designed in accordance with the Draft Medium Density Design Guidelines.
- Attractive residential environment in which houses express individuality and harmonious built form.
- Addresses housing diversity through housing typologies, individuality and diverse price point.
- Promotion of environmentally sustainable design addressing water conservation and energy efficiency.
- Houses are liveable and comfortable.
- House designs are appropriate and respectful to the neighbourhood character.
- Garages do not dominate the street.
- Dwellings have solar access to private open spaces and principal living areas.
- Private open spaces are contiguous to living areas.
- Affordability and value for money by efficient land-use, cost effective construction and climatically responsible design.
- Flexibility to spaces and layout to adapt to different family formations, age groups, lifestyle or multigenerational living arrangements.



MISSING MIDDLE

DUAL OCCUPANCY



CHALLENGING ONE OR MORE CONTROLS AND DEMONSTRATION OF A SUPERIOR DESIGN OUTCOME

AFFORDABILITY
BY CREATING
EFFICIENT
LOT
SIZES

- 3.2A Building Envelops-** Rear Setback - Where the part of a development has a height of building of 4.5m or more: 10m to lots of 200-1500 sqm.

10m rear setback is an enormous setback and a waste of land. If the setback is being used to solve overlooking problems this can better be resolved individually on the lots by either providing screens or appropriate window alignments, and landscaping with suitable choice of plantings. This reduces the requirement for expensive land use to achieve the same outcome.
- 3.2H Building Separation-** Provide adequate space between buildings to allow for landscape, provide visual separation, reduce visual bulk, and daylight access between buildings. Provide a break of 3m between rows of terraces more than 45m long.

Unnecessary additional land size reduces the affordability of the dwellings. The visual separation can be achieved by having deep articulations on the façades and/or setting the upper floor back from both side boundaries to create breaks (shown on the above streetscape). Keep lot sizes to minimum efficient sizes.
- On frontages less than 12.5m wide, limit the garage to a single width.**

A narrower lot width of 10.5m can accommodate a two car garage (side by side). If the dominance of the garage is a concern this can be reduced by such features as deeper overhang of the upper floor, recessing the garage door, and using the same cladding of the main facade for the garage door.



MISSING MIDDLE

DUAL OCCUPANCY

COMPLIANCE										
LOT NO.	STUDIO	LOT WIDTH (m)	LOT DEPTH (m)	LOT AREA (m)	TOTAL FLOOR SPACE RATIO	MAX. FLOOR SPACE RATIO	LANDSCAPED AREA PROVIDED	LANDSCAPED AREA REQUIRED	POS PROVIDED (m ²)	POS REQUIRED (m ²)
1		7.500	28.500	214	0.57	0.6	41%	30%	61	16
2		7.500	28.500	214	0.57	0.6	41%	30%	61	16
3		7.500	28.500	214	0.57	0.6	41%	30%	61	16
4		7.500	28.500	214	0.57	0.6	41%	30%	61	16
5		7.500	28.500	214	0.57	0.6	41%	30%	61	16
6		7.500	28.500	214	0.57	0.6	41%	30%	61	16
7	*	10.500	28.500	329	0.53	0.6	40%	25%	89	16
8		7.500	28.500	214	0.57	0.6	41%	30%	61	16
9		7.500	28.500	214	0.57	0.6	41%	30%	61	16
10		7.500	28.500	214	0.57	0.6	41%	30%	61	16
11		7.500	28.500	214	0.57	0.6	41%	30%	61	16
12		7.500	28.500	214	0.57	0.6	41%	30%	61	16
13		7.500	28.500	214	0.57	0.6	41%	30%	61	16
14	*	10.500	28.500	329	0.53	0.6	40%	25%	89	16



MISSING MIDDLE

70/30 HOUSE

Site: Prince Edward Avenue, Earlwood
 Site Area: 668sqm
 Typology: Dual-Occupancy

The 70/30 house attempts to provide a dual occupancy typology which is able to address the changing nature of our housing needs in light of property affordability and accelerating building costs.

The chosen site is located in Earlwood, 10km from the Sydney Harbour Bridge. It is home to a population that, when compared to the averages of greater Sydney, is more diverse in ethnic background, of a younger family composition and has an increasing preference for detached family dwellings. Lot sizes range between 400-700sqm and house a range of inter-war double brick bungalows, 1970s project homes and modern rendered blockwork "McMansions".

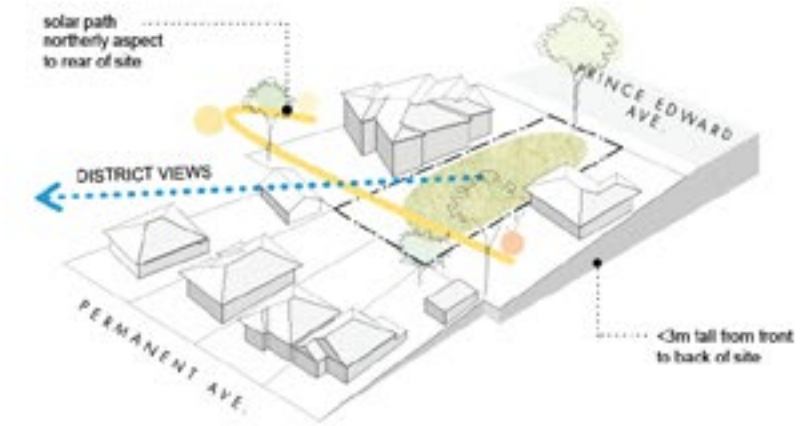
The proposed dual occupancy is designed to allow for the financial viability of the project with the 70/30 split of floor area responding to the occupant's development costs. Having purchased the site with an original brick bungalow, the occupants, a young family with two children, are seeking to build a home capable of providing for open plan living, a greater connection to the garden whilst also accommodating a retiring grandparent within a self contained living area. To fund the build both the housing of the grandparent is required as well as selling off part of the site with an attached two bedroom dwelling upon completion of the project.



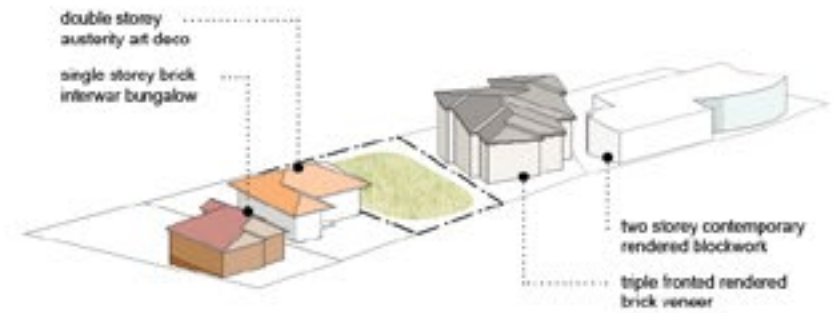
THE INHABITANTS



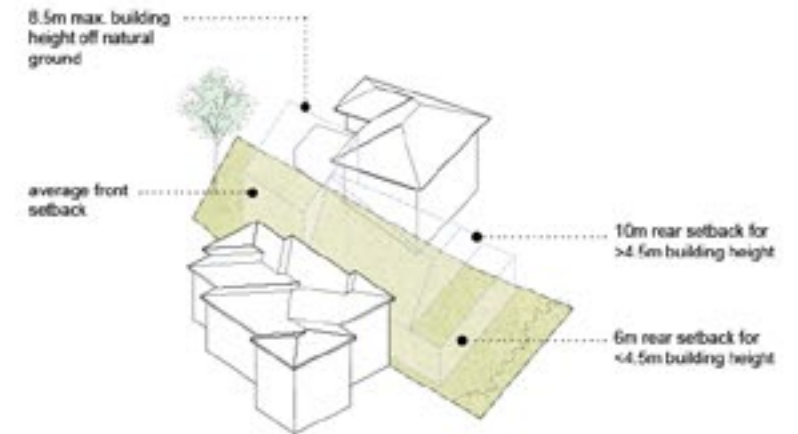
SITE PLAN 1:1500



SITE TOPOGRAPHY



NEIGHBOURING CHARACTER



SETBACKS/ BUILDING ENVELOPE

70/30 HOUSE



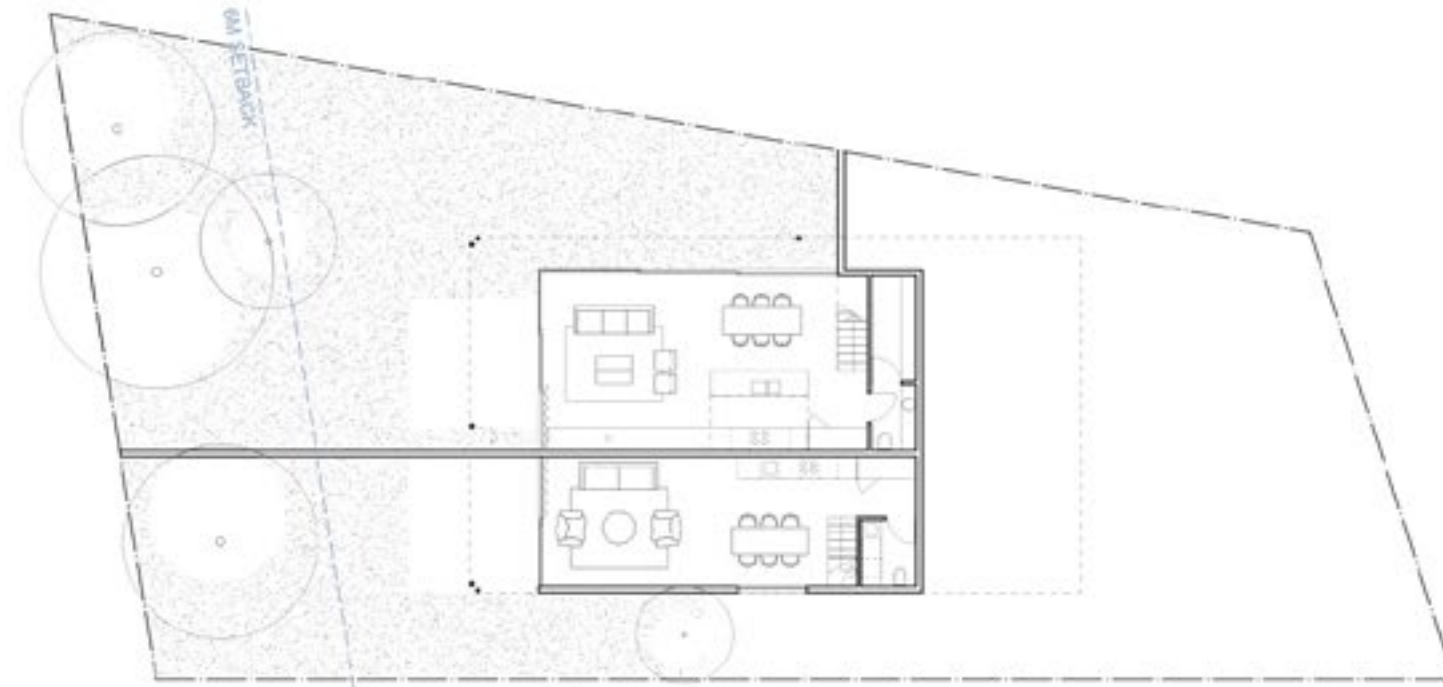
The proposed dual occupancy seeks to balance the provision of a multi-generational home whilst creating an attached dwelling to render the project economically viable. A 70/30 split of floorspace was determined - 70% being a three bedroom dwelling with 'studio' and 30% as a two-bedroom dwelling for sale. The Gross Floor Area of the scheme is dictated by today's accelerating building costs and whilst the site can accommodate a potential 400sqm, to align with the budget and satisfy the brief a GFA of 284sqm is provided. The reduction in floor space allows for increased landscape area and enables a siting in which a richer relationship of living area to external spaces is possible.

The 'studio' is designed to accommodate the current family composition and provides adaptability into the future. It is indistinguishably integrated into the overall building form yet allows for independent access and maintains passive surveillance to the public domain. The house, aided by the asymmetry of the 70/30 split, is intended to have a scale and massing commensurate with the predominantly single family homes of the suburb, whilst concealing a much greater efficiency of land use.

The design exploits the sloping site so as to reduce building bulk to the streetscape and gain protected living rooms and private open space on the lower level. 'Malqaf' elements acknowledge the pitched roof forms of the neighbours, whilst also capturing breezes and light from the opposite side of the property than the primary dwelling orientation - something not normally afforded to the dual-occupancy type.

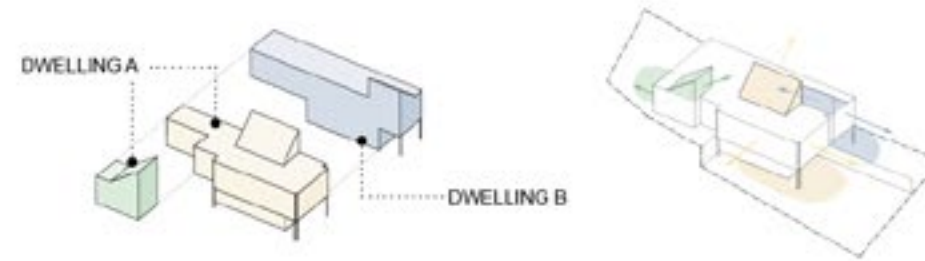


GROUND FLOOR PLAN 1:200

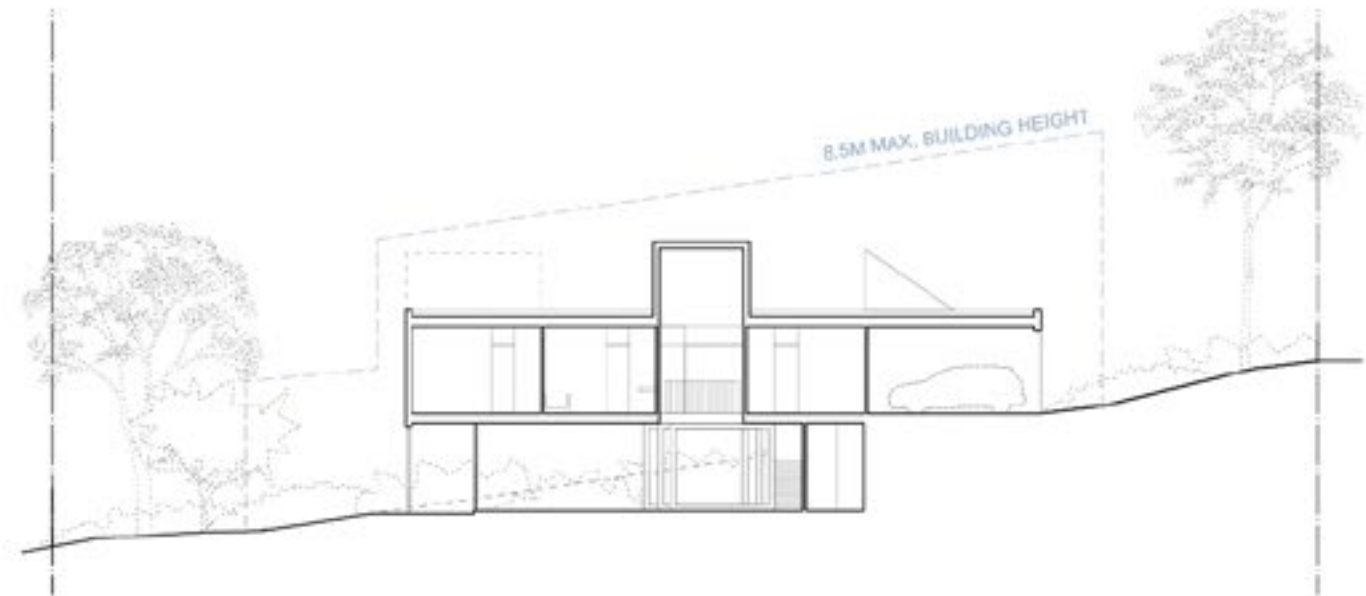


LOWER GROUND FLOOR PLAN 1:200

70/30 HOUSE



(l-r) streetscape & interpretations of context, division of dwelling/ ownership, orientation and outlook



LONG SECTION 1:200



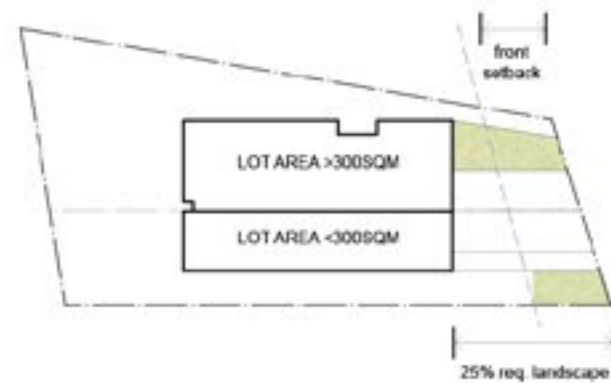
SHORT SECTION 1:200

70/30 HOUSE

TESTING THE DESIGN

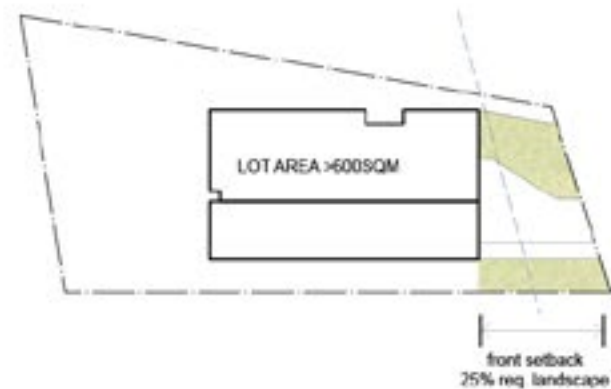
PRIVATE OPEN SPACE - DRAFT CONTROLS

The extent of private open space area on larger sites, and requirement of 25% of this to be located forward of the building line, results in a deeper front setback in some instances than is required by the average setback of the neighbouring dwellings. This may be exacerbated once separate driveways are introduced on Torrens titled individual lots >300sqm.



PRIVATE OPEN SPACE - PROPOSED

The proposed design minimises hardscaping to the front setback by providing a shared driveway in order to achieve the required landscape area. This requirement may dictate the ability of dual occupancy developments to be Strata or Torrens titled on completion. The relationship of the setback with neighbouring dwellings is considered important to maintain so as to ensure the building is able to contribute to the streetscape and public domain.

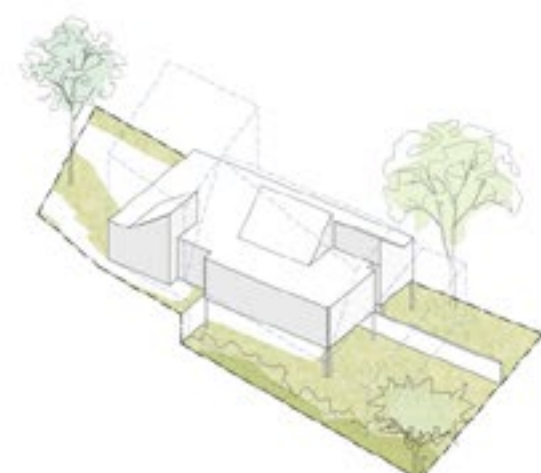


REAR SETBACKS - DRAFT CONTROLS

The rear setbacks promote a stepped "wedding cake" form which is considered undesirable for privacy to neighbours (as the introduction of terraces is likely) and reduces valuable private open space. This stepping is further exaggerated in smaller sites where a staggered 3m & 10m setback applies.



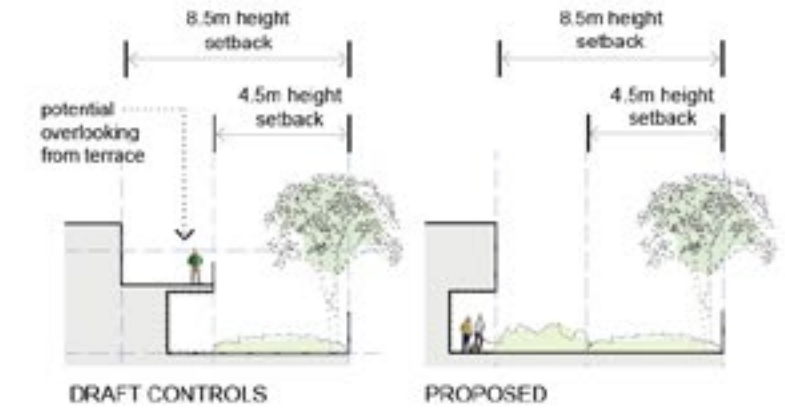
DRAFT CONTROLS - ENVELOPE



PROPOSED BUILDING FORM

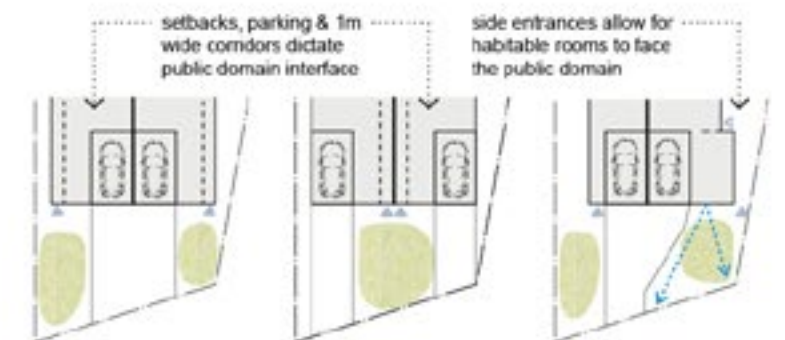
REAR SETBACKS - PROPOSED

The setbacks should consider an integrated architectural form in providing the required covering of 50% of the private open space through the extension the upper floor over the lower floor. The proposed design adheres to the furthest setback to achieve this, which is possible due to the size and shape of the chosen site. Smaller sites would require reconsideration of the 10m setback to allow for floor space to be adequately captured.



PUBLIC DOMAIN INTERFACE

The requirement for the front door to be directly visible from the public domain should be considered. The provision of parking and associated driveways impacts upon the ability for habitable rooms to be provided facing the public domain on sites <15m wide. Side entrance doors are able to contribute meaningfully to the typology without negatively impacting passive surveillance of each dwelling. The proposal provides an interpretation of this requirement by providing a secure access point before the front door proper.



MISSING MIDDLE

Dual Occupancy, Coastal

42 EMILY ST, Marks Point, NSW 2280

'The missing middle' competition brief seeks solutions for medium density housing; type of dwellings that have not quite won the hearts of the homeseekers of NSW but have the potential to offer affordable living with great qualities as well as better organised infrastructure and built environment in more general sense.

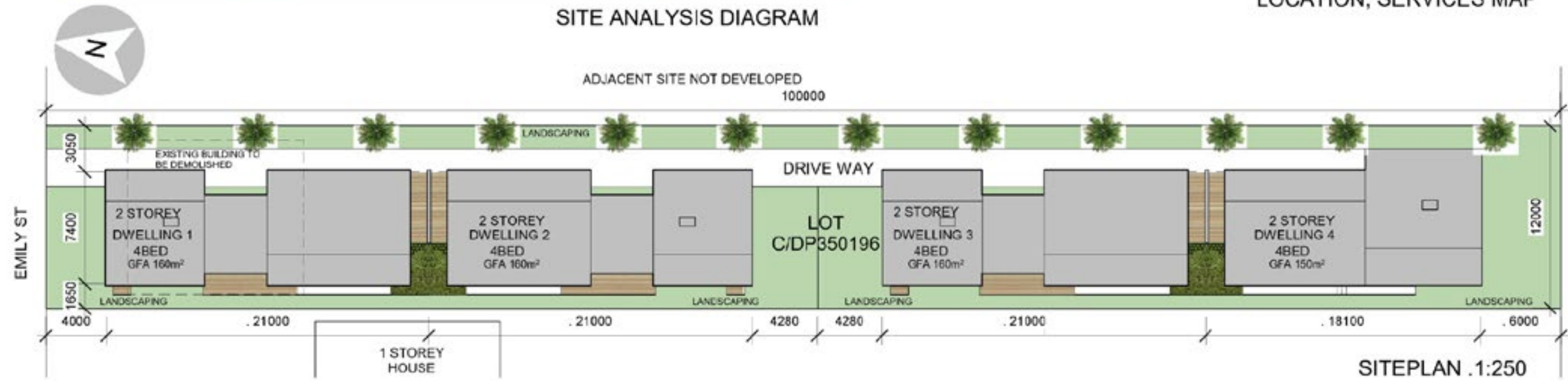
The chosen site is located in a coastal area in Lake Macquarie. It's in the close vicinity of both the lake and the ocean waterfront and has excellent connections to the closer city of Newcastle as well as Sydney. The site is very narrow and long which makes it both specific and typical. There is a number of lots with similar proportions in the area and in the suburbs alike more widely across the state. One of the challenges of the site is the site access and typically most of these sites are underused and partly wasteland. Another challenge of this particular suburb being situated on a narrow strip of land in between ocean and lake, is the predicted significant sea level rise. Design seeks to respond to both of these issues by lifting the habitable spaces to the first floor. The design concept suggests two dual occupancies on the site but could be replicated to a narrow site with one dual occupancy for a site not this long.



LOCATION, SERVICES MAP



SITE ANALYSIS DIAGRAM



SITEPLAN 1:250

MISSING MIDDLE

Dual Occupancy, Coastal

42 EMILY ST, Marks Point, NSW 2280



VIEW FROM THE STREET

Varied angled roofs and the use of varied materials suitable for the context provide visual interest (as per guide). Also more optimised angle for solar panels towards west is achieved.

Spaces are arranged so that the habitable spaces are in the first floor which will leave room to the ground floor for driveway and parking. There is a guest room with utilities, a laundry and a storage space downstairs. Upstairs is divided with a study/hallway to a bedroom side and to a living, kitchen&dining side to create hierarchy and also breathing space into the long plan. This makes it possible to also open up spaces to all directions and provide crossventilation to each of the rooms. This design concept is focusing testing minimum requirements of the guide but yet to provide inspiring homes and good quality of living.



1st FLOOR DIAGRAM 1:250

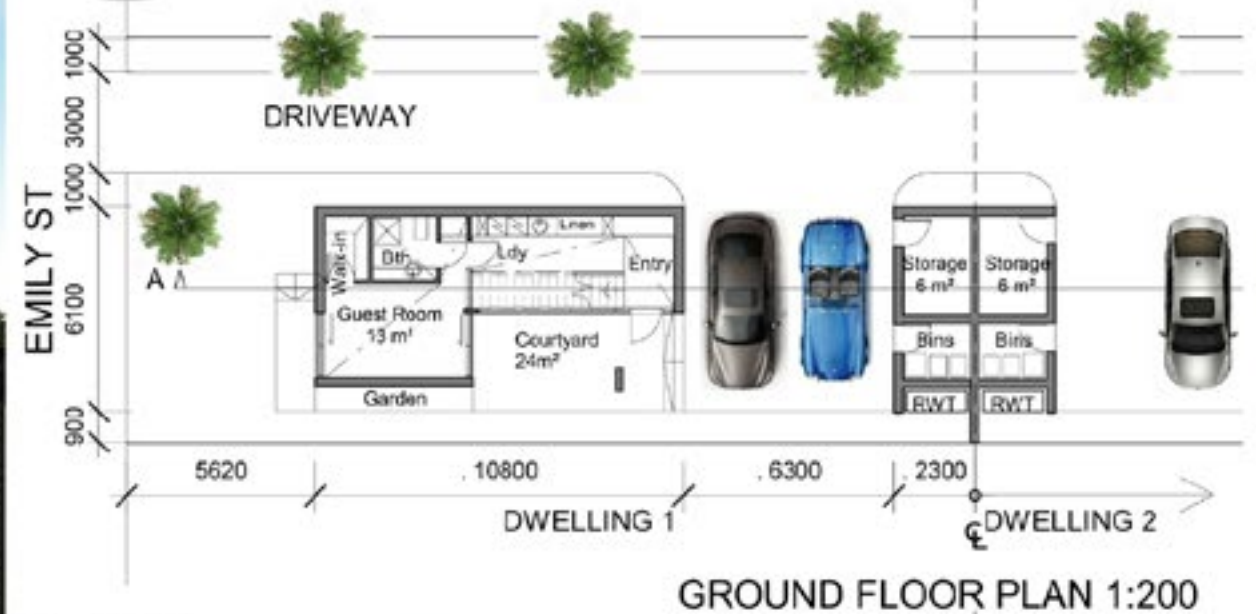
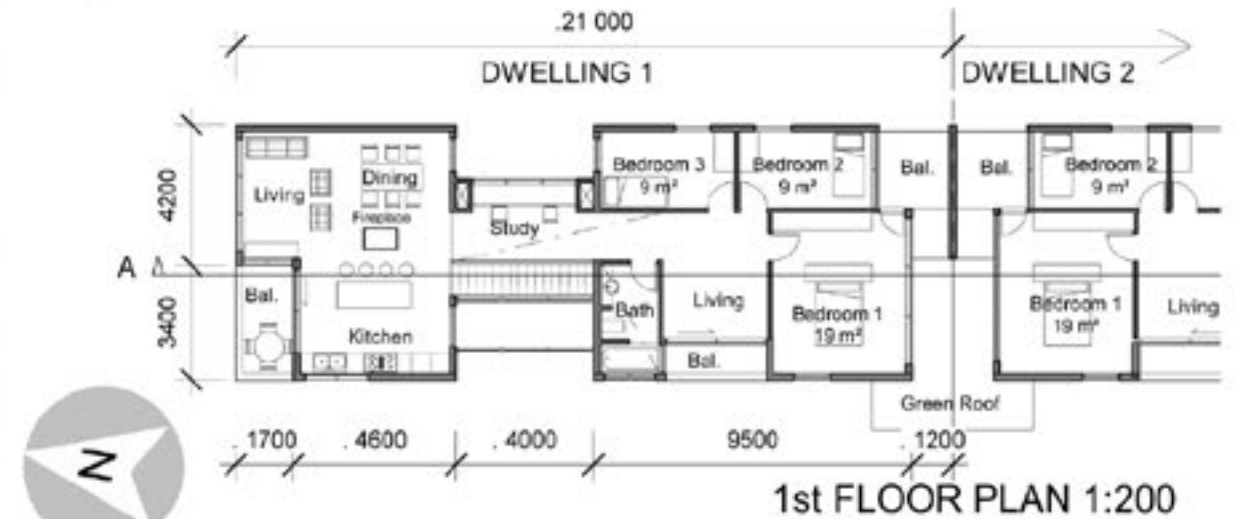


GROUND FLOOR DIAGRAM 1:250

MISSING MIDDLE

Dual Occupancy, Coastal

42 EMILY ST, Marks Point, NSW 2280



MISSING MIDDLE

Dual Occupancy, Coastal

42 EMILY ST, Marks Point, NSW 2280

For the future scenarios narrow and long lots like this would benefit from a shared driveway in between similar lots to be developed. Below a diagram for a scenario where the unbuilt half of the adjacent lot would be built with another two dual occupancies. Doubling the width of the lot would make two way driveway and pedestrian zones possible.

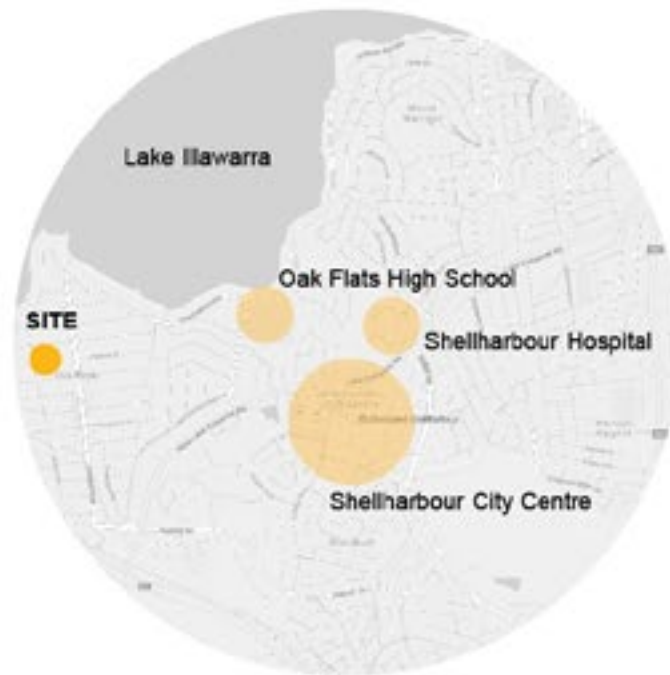
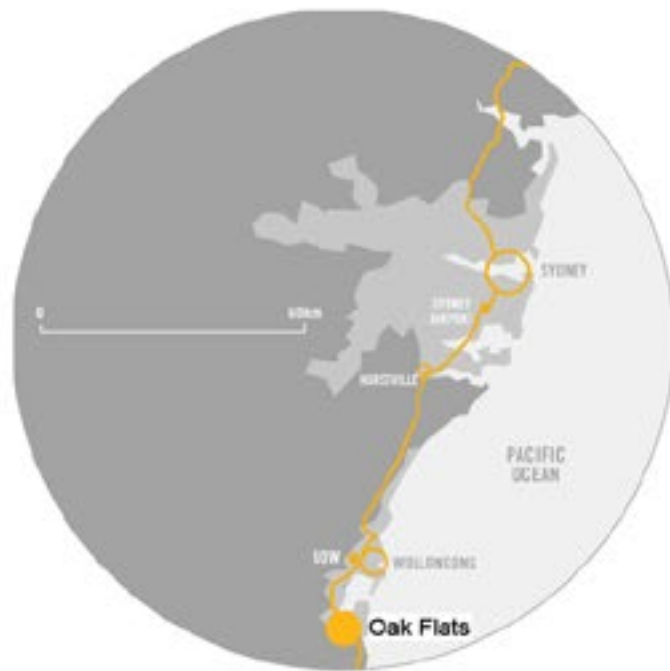


1st FLOOR DIAGRAM 1:250



GROUND FLOOR DIAGRAM 1:250

MISSING MIDDLE: DUAL OCCUPANCY

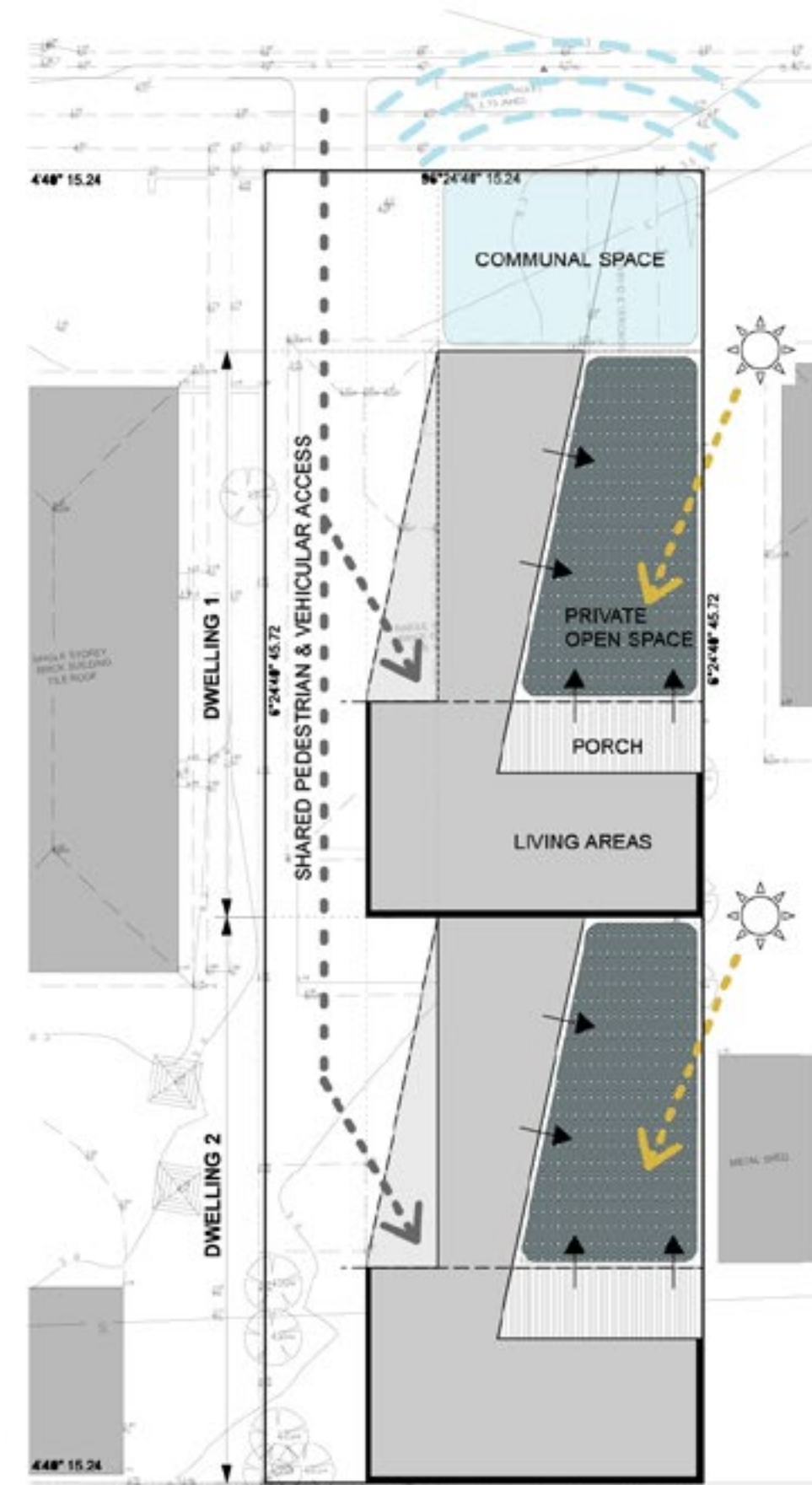


Housing our growing population comprises the largest single purpose of building within the greater metropolitan areas. And yet, despite the dominance of this building purpose, the typology of housing remains largely unchanged by the evolving needs of contemporary Australian society.

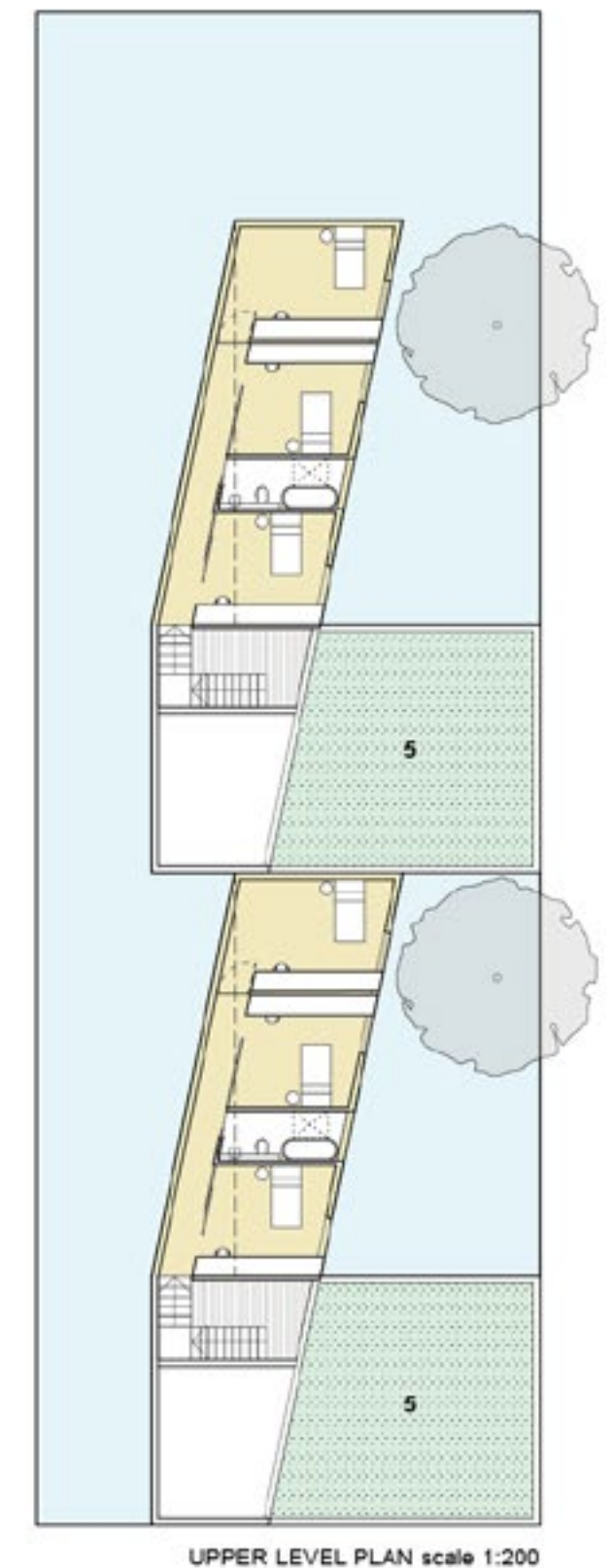
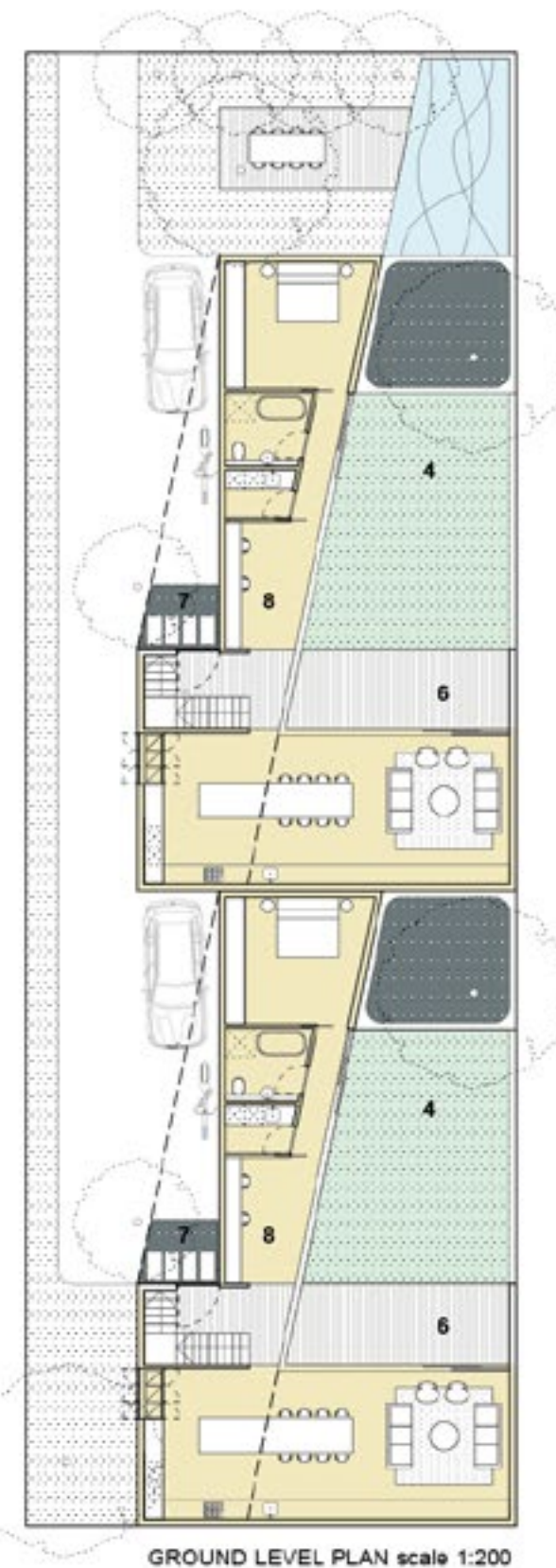
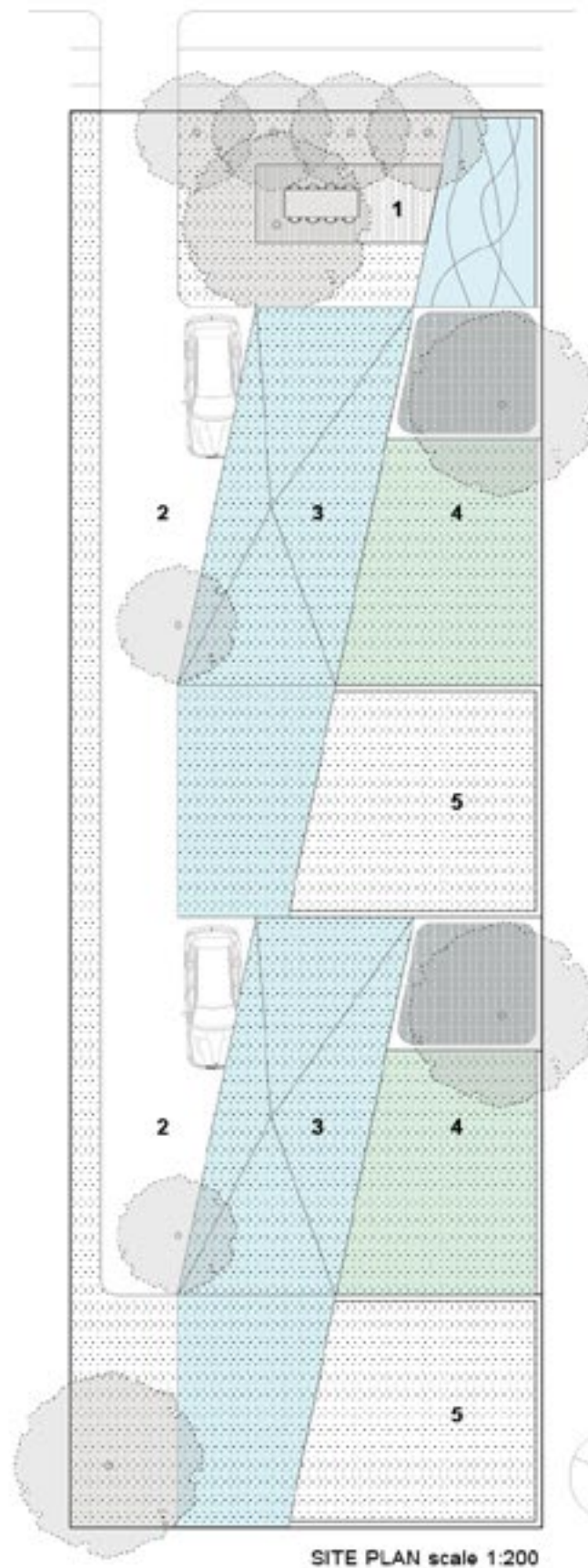
One of the biggest growth areas continues to be greenfield developments, perpetuating the traditional family house model. This project acknowledges the desirability and legitimacy of the single suburban dwelling, but reinterprets many of the essential qualities within a dual occupancy proposal. The role of most greenfield areas is to produce "family type" houses, with the largest group attracted to growth areas being younger families.

The site selection is based on fundamental principles of proximity, affordability and amenity. The area of Shellharbour immediately south of Wollongong encompasses all three. This region has a rapidly increasing housing stock, currently predominately freestanding dwellings, which needs to be tested and challenged. It is a desirable area because of its proximity to employment opportunities within Wollongong and surrounds, and allied tertiary education facilities at Wollongong University and TAFE. The coastal setting inherently provides amenity and lifestyle opportunities. The specific site chosen is a developed residential area in Oak Flats, close to Oak Flats High School, Shellharbour Hospital and the Shellharbour City Centre. It epitomises many of the key components conducive to family life.

The immediate context is freestanding houses replicated on a standard grid subdivision, the autonomous house opening towards the rear garden, the back yard. The Draft Medium Density Housing Code encourages investigating an alternate response, but with lingering restrictions on achieving an optimum design outcome. By imposing uniformity in setbacks and building envelope, repetition of the status quo is encouraged and explorations of alternate and more appropriate patterns of site coverage are eliminated. We are left with underused zones to the front of dwellings and generally unused land to the sides. This project aims to consider suburban development that both increases density and site amenity. Fundamental to achieving this is shifting the notion of 'backyard' and redefining the rules to distribution of private open space on a site. This project explores a home that envelopes the landscape, orientated to an 'inner yard' rather than a 'back yard'. It investigates a new pattern of density that offers landscape as integral to the internal experience of a house and instead shifts the built form to the boundaries.



- 1 Communal recreation space shared by the two dwellings, providing an active presence to the street that encourages a sense of community.
- 2 Landscaped pedestrian and vehicular access to the western boundary of the site.
- 3 The double storey form of the dwelling provides a protective buffer from the west and shields the internal components of the dwelling.
- 4 The private open space is centralised within the dwelling, the house wraps around it. It is positioned to achieve optimum solar access.
- 5 An elevated landscaped roof provides an additional garden for the upper levels to look on to. The single storey form ensures adequate solar access to the second dwelling.
- 6 All living spaces, both internal and external are orientated to north.
- 7 Entry points to the dwellings are orientated towards the street, demarkated by landscape and protected by the upper level overhang.
- 8 Home office and media area are centralised within the home as an adjunct space to the living areas.





SETBACKS (3.1A Building Envelopes)

It is nonsensical to promote an increased density housing model based on residual setback patterns established by freestanding suburban dwellings. Current setback requirements predetermine the distribution of the dwelling of the site, forcing private open space and therefore also living areas, to the rear of the property, irrespective of site proportion and orientation.

A new housing model requires a rethink and a new approach to the way a dwelling could be, or should be distributed across a site. Positioning of private open space and landscape areas should be derived from performance based criteria such as orientation, solar access and privacy considerations, rather than be dictated by historic subdivision patterns and arbitrary setback requirements.

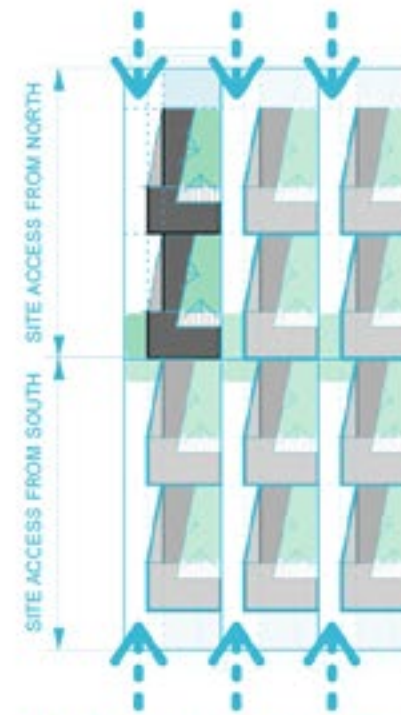
PRIVATE OPEN SPACE (3.1M Private Open Spaces)

It should be mandatory for Private open spaces and associated living and dining rooms to be orientated to the north. There are currently only stipulations on dimensions but no requirements for orientation. This is fundamental to optimum housing design and performance. The guide encourages POS to be lined up adjacent to neighbours resulting in lack of visual and acoustic privacy. Instead, the dwelling itself could provide the protective buffer to adjoining properties, and open space is then embedded within the house rather than pushed to the periphery, ensuring a truly private open space.

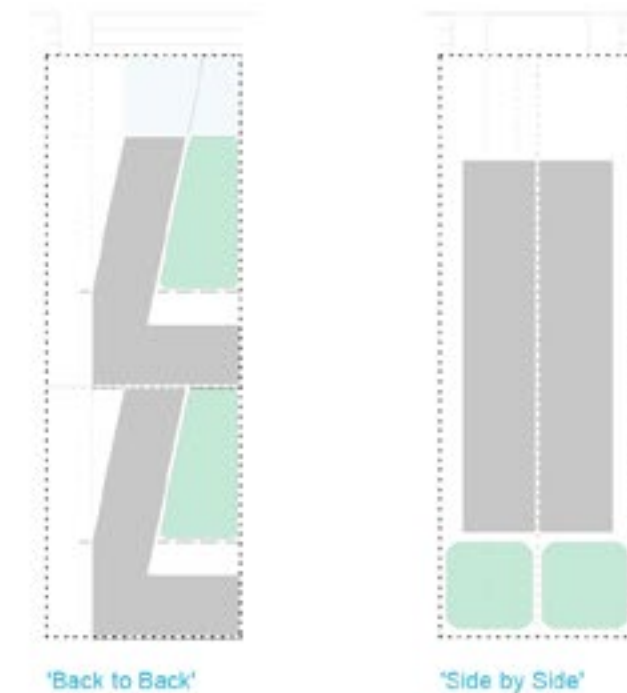
PUBLIC INTERFACE (3.1E Public Domain Interface & 3.1W Pools and Ancillary Development)

Public domain interface ought to be exactly that, developing a useable and socially activated transition zone between the public and private realms. It could be developed as a semi public area, a shared zone for the occupants that activates a neighbourly street presence. It could be viewed as a recreational zone as an extension of the street. Shared communal facilities, such as a pool, play area and communal garden that would foster concepts of community.

The Guide restricts using this valuable part of the site for recreational purposes. In traditional suburban layouts, the front yards of properties are largely unused areas. In order to increase density, all of the site needs to be given purpose and actively used, we should aim to avoid redundant areas.



ALTERNATE LAYOUT / POTENTIAL REPETITION (nts)

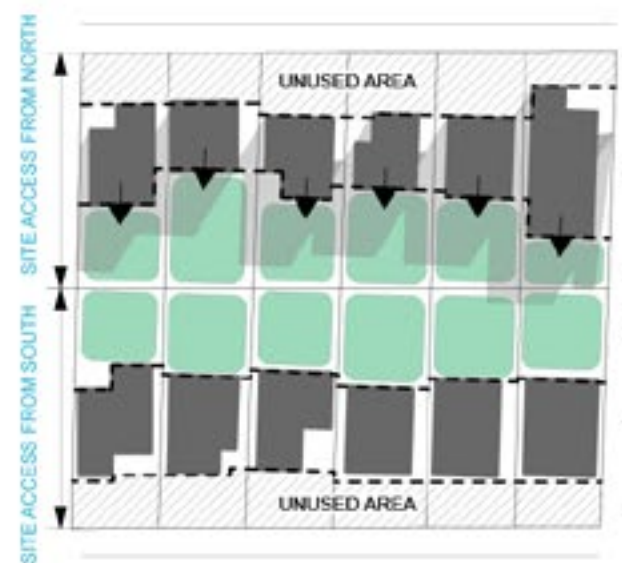


'Back to Back'

'Side by Side'

DUAL OCCUPANCY ARRANGEMENT

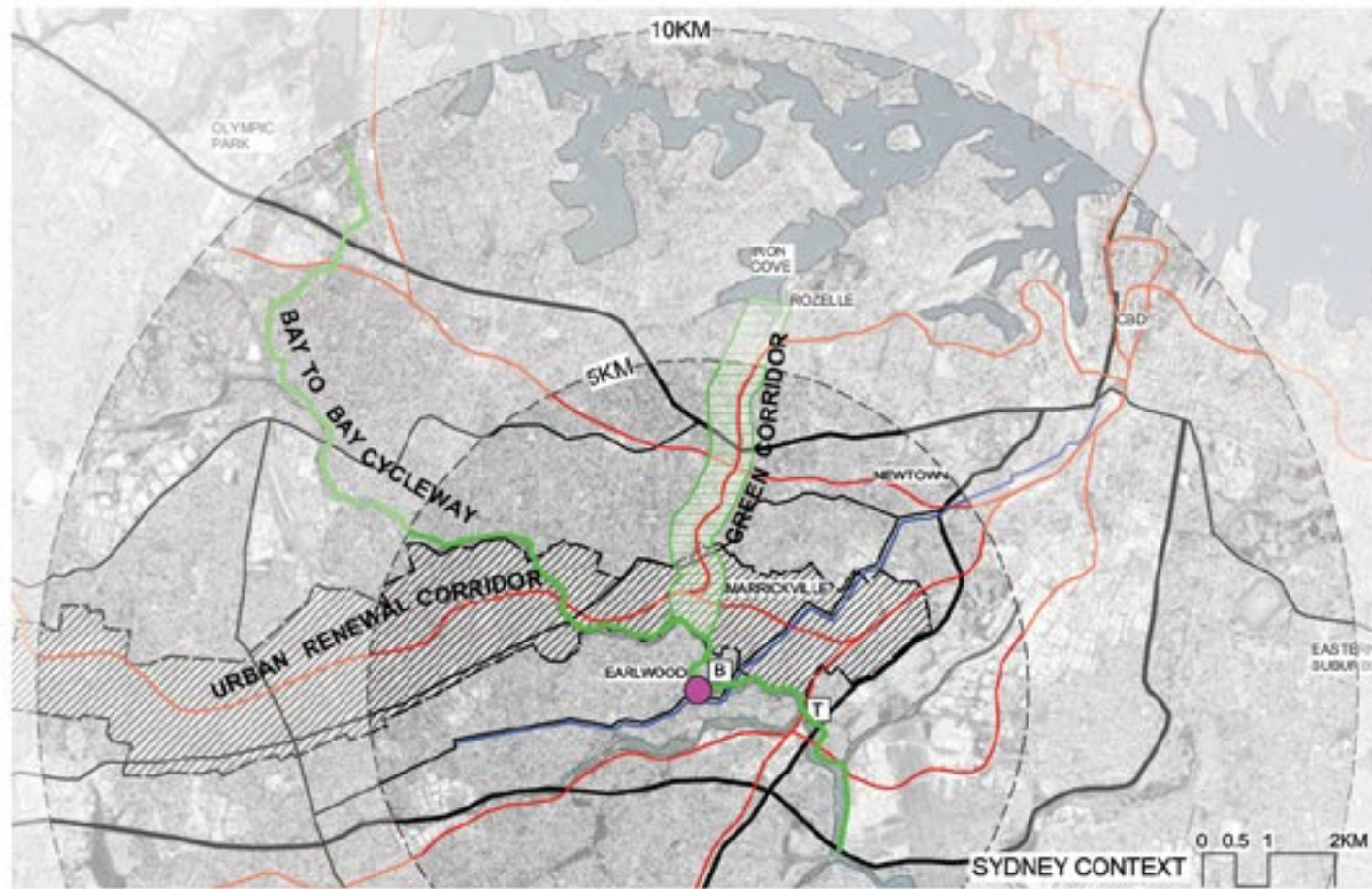
The requirement under the draft code for 'side by side' torrens title limits the responses available to site proportion and orientation. The definition should be expanded to allow for 'back to back' development to best exploit these conditions.



TRADITIONAL SITE LAYOUT (nts)

EXISTING CONTEXT ANALYSIS (nts)

- 1 Front yards facing the street are largely unused areas devoid of activity.
- 2 Freestanding houses are located centrally on the site.
- 3 Private open spaces are all aligned with each other to the south of the site, the majority of these areas are self overshadowed by the dwellings



LEGEND

- SUBJECT SITE : 47 RIVERVIEW ROAD, EARLWOOD
- MAJOR ROADS
- MINOR ROADS
- TRAIN LINE
- T CLOSEST TRAIN STATION : TEMPE
- BUS ROUTE
- B CLOSEST BUS STOP : HOMER STREET
- CYCLEWAYS
- GREENWAY : URBAN GREEN CORRIDOR
- SYDENHAM TO BANKSTOWN URBAN RENEWAL CORRIDOR
- SINGLE DWELLING HOUSES
- MEDIUM DENSITY HOUSING
- HIGH DENSITY HOUSING

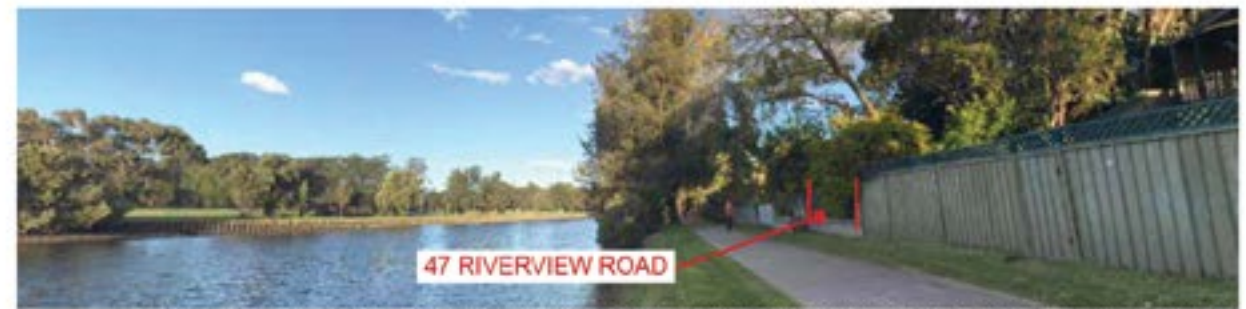


HIGH DENSITY HOUSING

EXISTING STREETSCAPE - VEHICLES, PARKING AND GARAGE DOORS

STEEP TOPOGRAPHY OF SITE

HIGH DENSITY HOUSING



EXISTING 'STREETSCAPE' ON PUBLIC WALKWAY ALONG COOKS RIVER LACKS INTERACTION WITH THE FORESHORE

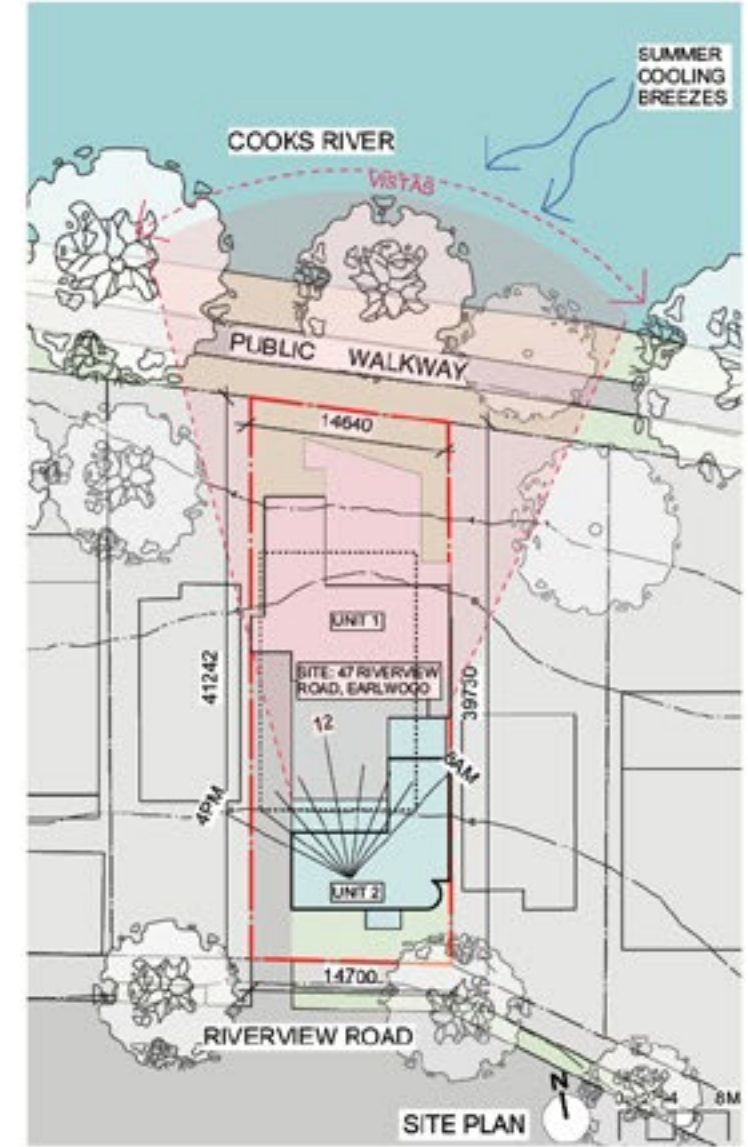
SITE AND CONTEXT

SITE: 47 RIVERVIEW ROAD, EARLWOOD

Earlwood sits just outside the border of the City of Sydney and is dominated by low rise, single dwelling houses. Current connections exist to inner west cultural hubs of Newtown and Marrickville. Further connections to Sydney's west and harbour are growing through urban renewal and green corridors. These connections will increase the liveability of the suburb, marking Earlwood as an area subject to an increase in density. The opportunity exists for medium density residential development that will retain or improve the character of the suburbs.

Rather than limit development to professional developers, the complying development pathway for medium density housing presents a unique opportunity for the regular homeowner to develop their own property. Our proposal is aimed at the typical suburban homeowner with a long and narrow quarter acre block. Our design proposes two dwellings on one block, a scheme that can be implemented on sites throughout Sydney. Additionally, the design can form the basis of a master plan for newly subdivided land on a neighbourhood-wide scale.

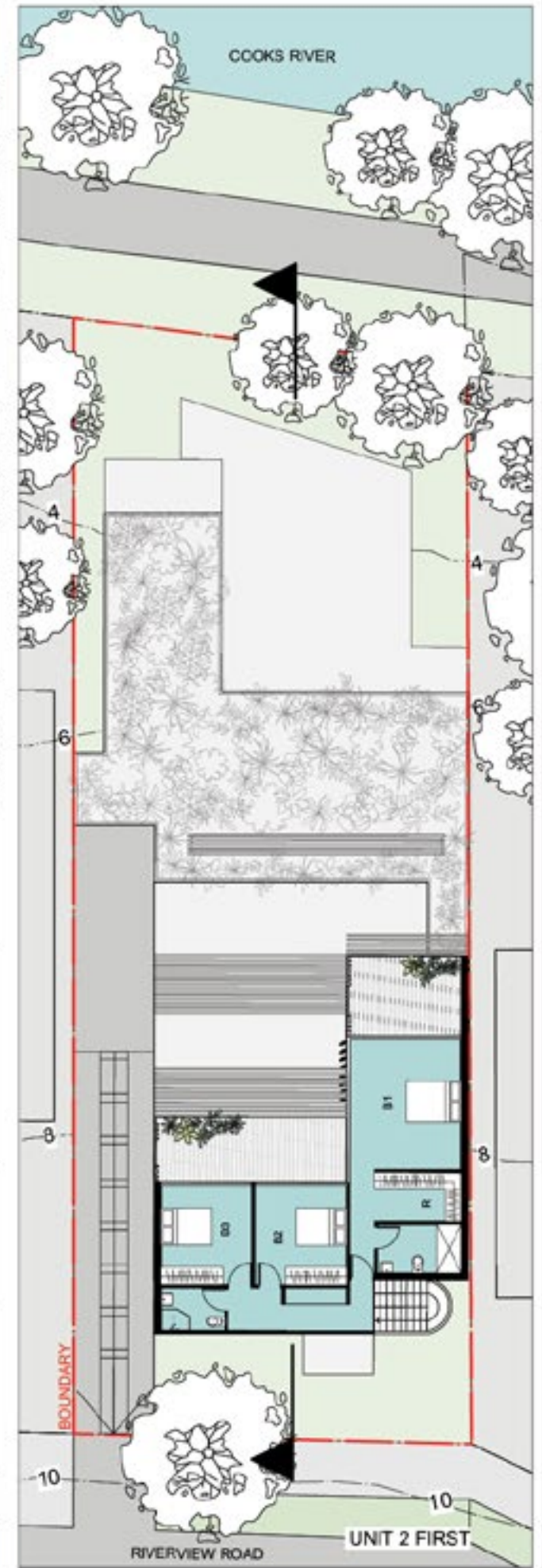
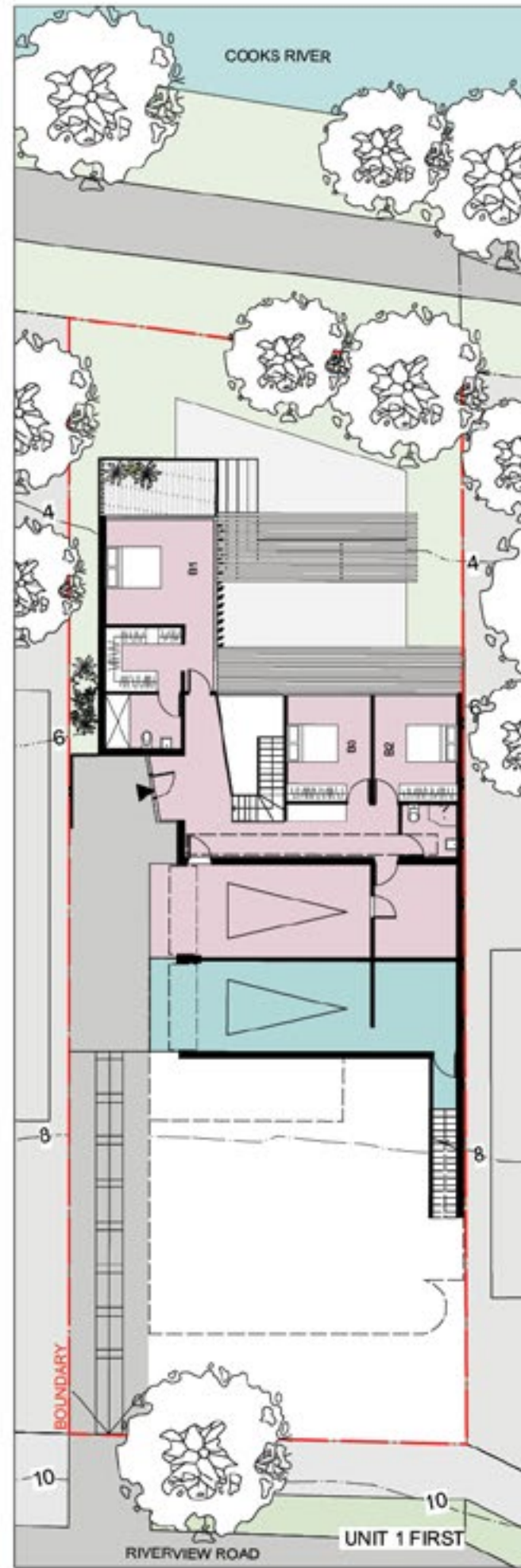
Currently, the existing dwelling lacks interaction with the public domain, via the street and the public walkway to the front and rear respectively. This lack of interaction, shared by the majority of single dwelling houses in the local vicinity, creates a distinct lack of character in the public domain. Our design splits the site, allowing the construction of two independent dwellings which actively interact with their respective 'streets'. Private courtyards create a seamless link between indoor and outdoor spaces, allowing ample opportunity for solar access and natural ventilation. The stepping down of the dwellings follows the steep site and maintains views for both dwellings over the Cooks River. Each dwelling is two storeys, allowing adaptation for future individuation of each dwelling.



SITE PLAN



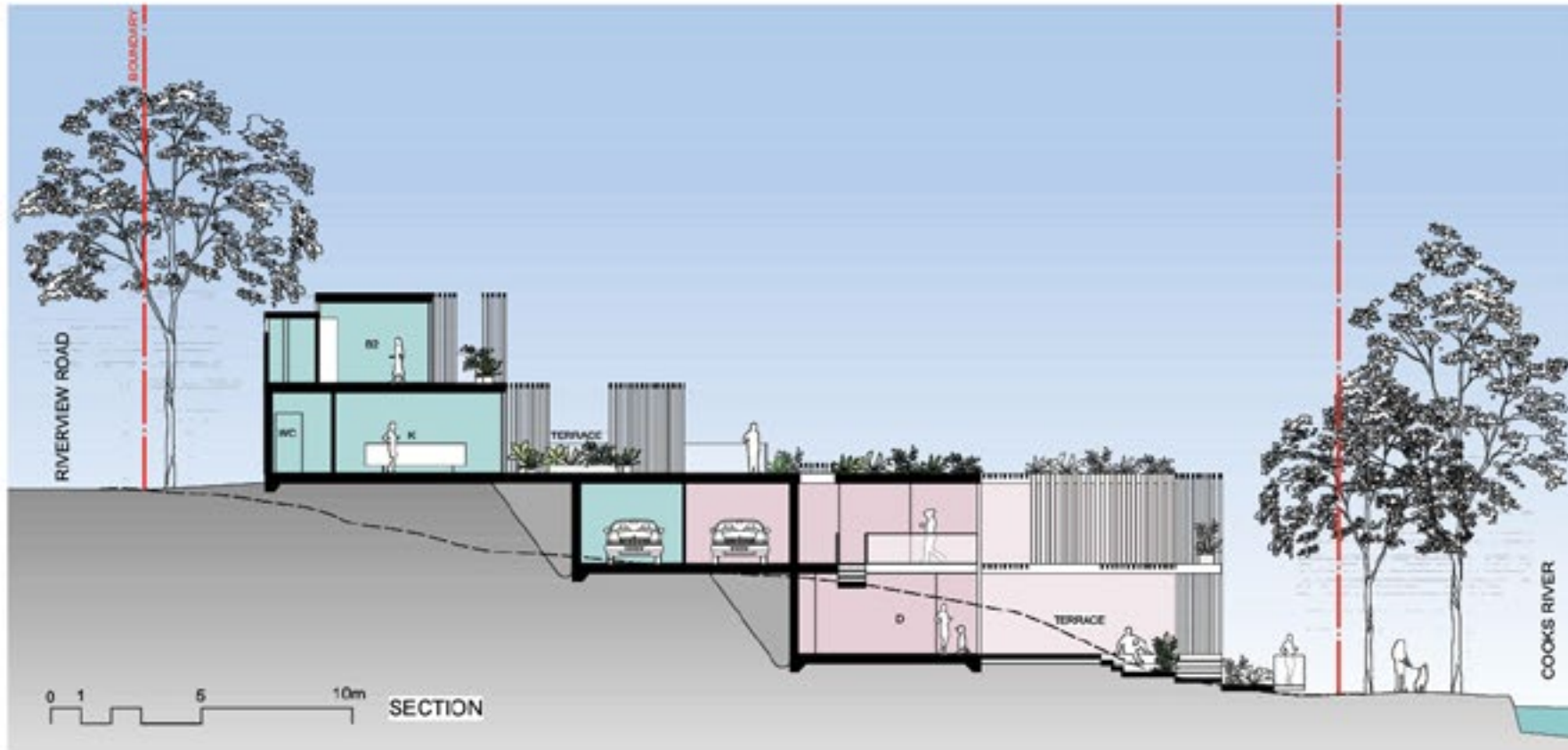
EXISTING STREETSCAPE ON RIVERVIEW ROAD DOMINATED BY VEHICLES, PARKING AND GARAGE DOORS



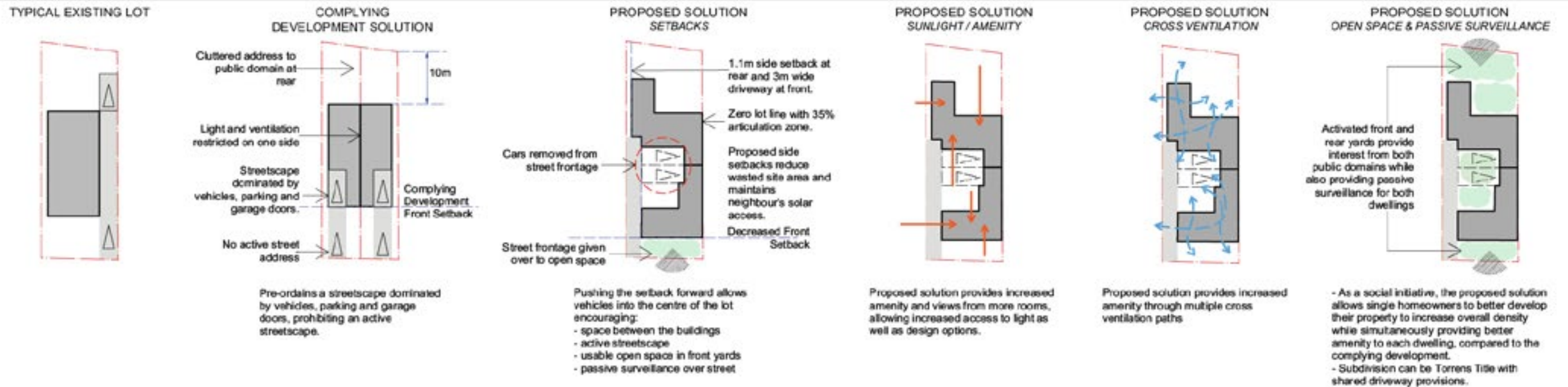
FLOOR PLANS



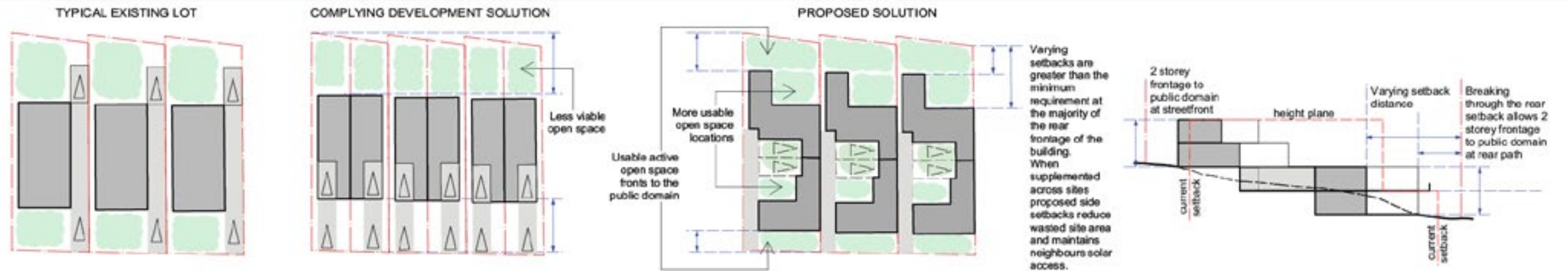
SECTION AND PERSPECTIVES



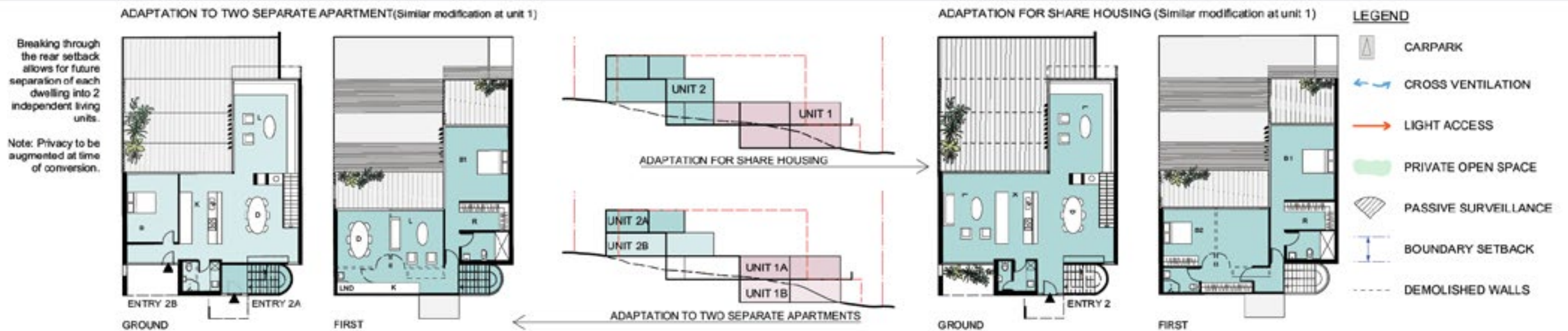
AT A SINGLE LOT SCALE



AT NEIGHBOURHOOD SCALE



OPPORTUNITIES FOR MULTI-GENERATIONAL CHANGE AND SHARED LIVING ARRANGEMENTS



Hypothesis: Can dual occupancy dwellings deliver on the performance metrics outlined within the MDDG and Fairfield planning controls whilst planning with Integrated mobility, cultural inclusiveness and Pre-fabrication in mind?

How to read this submission:

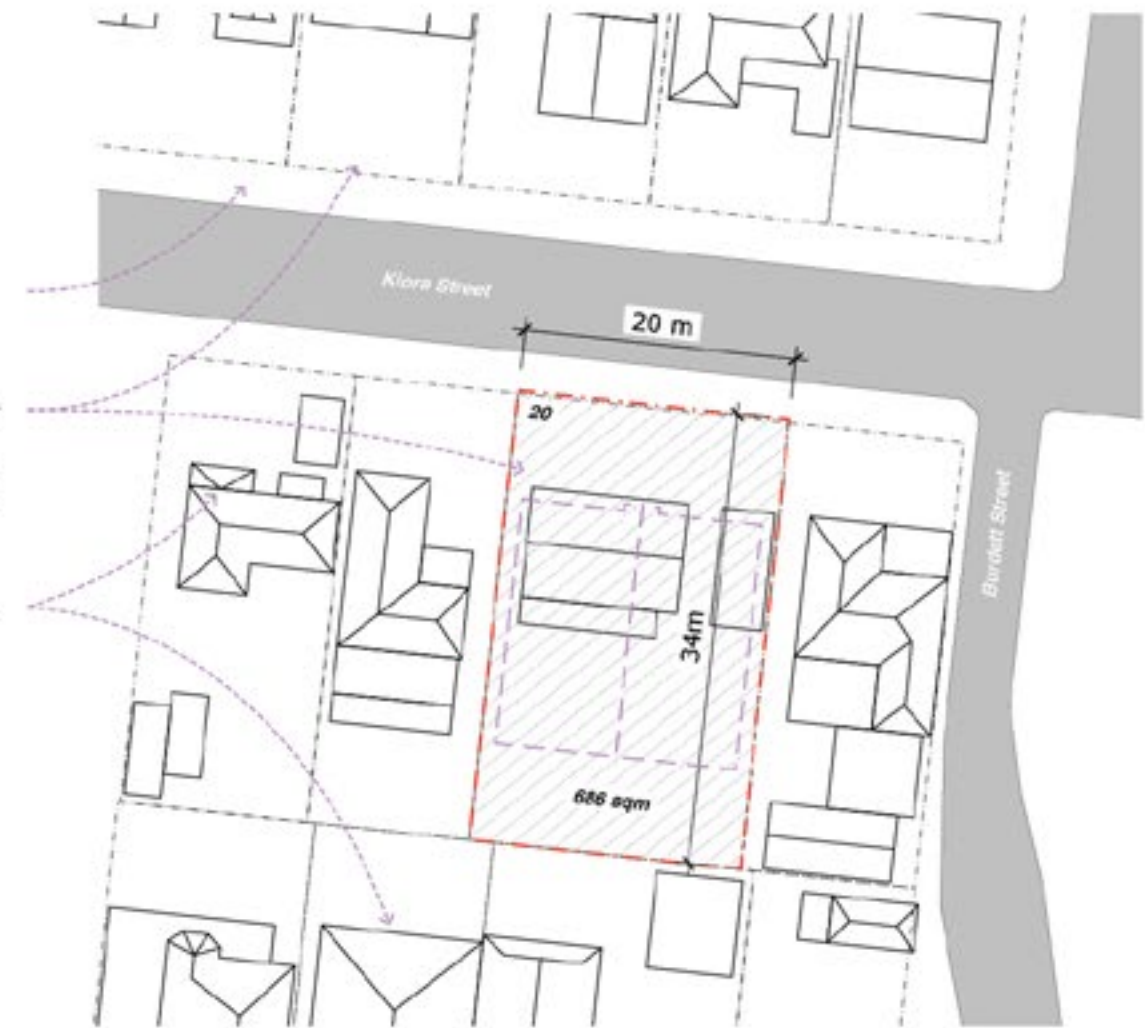
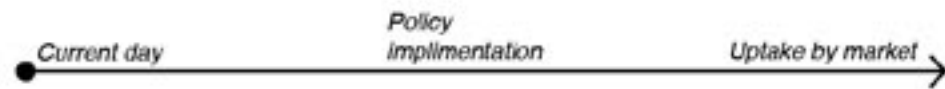
Testing through three key personas



Integrating information from key documents, discussion papers & statistics

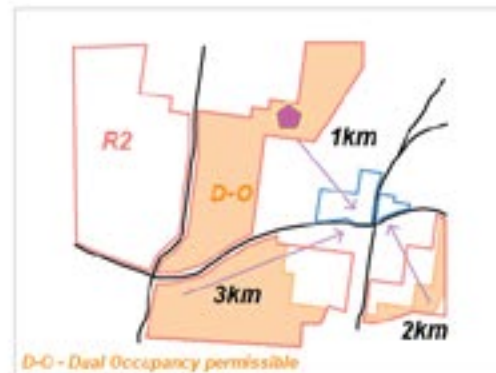


Propose behavioural lead change to be enacted over time



1:500

Unconnected R2: The 'forgotten' zone



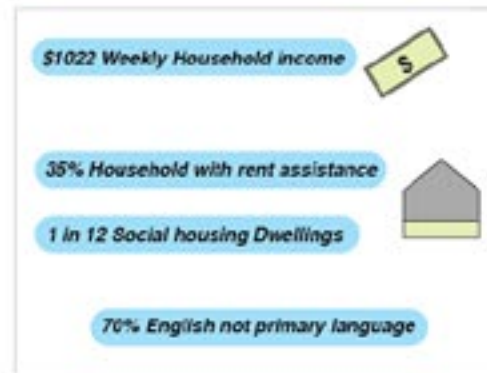
Heavily car dependant, the ubiquity of R2 is also its greatest strength. These areas have little to no shared common goods in proximity. Legislative intervention at a 'grass roots' level in a majority zone can create an inexorable shift towards better built outcomes within brown field sites.

Stuck in the middle



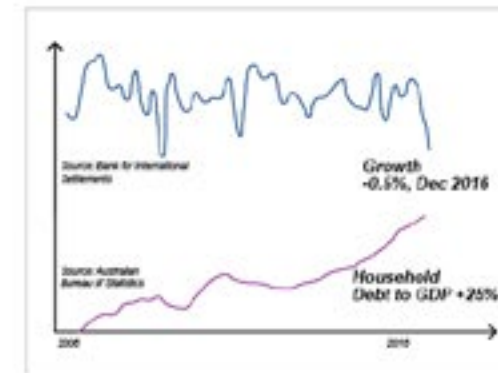
Fairfields projected population growth is less than half compared to Parramatta and Liverpool councils. However, as it is more affordable, a disproportionate amount of inbound residents are from lower socio-economic backgrounds. A typology that is designed with affordability and social inclusiveness as driving factors will help create positive contributions to lives.

Diverse demographic



Fairfield council will be resettling the majority of Sydney's 7000 Intake of Syrian refugees. In addition, an ageing population and millennial home ownership must all be considered as part of a holistic design/planning solution. Creating prudent choice architecture that nudges developers to implement social outcomes in tandem with resultant built form is critical.

High debt, low growth

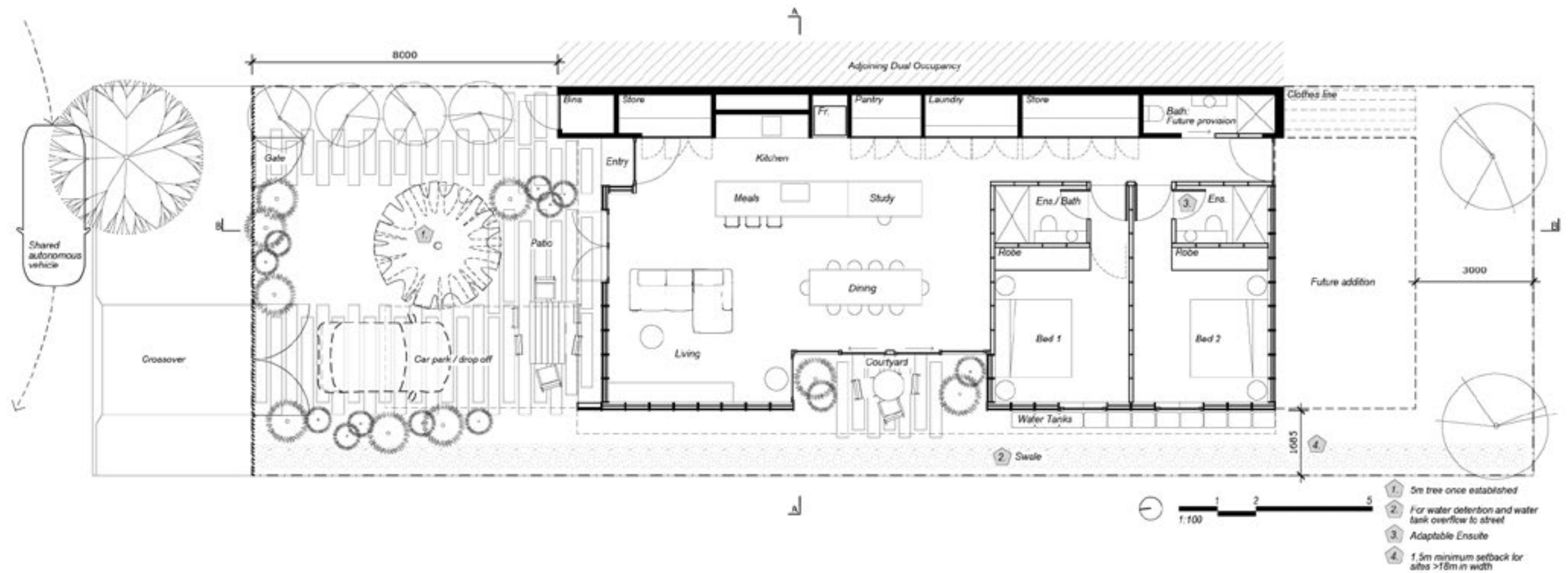


Many reputable financial experts have voiced concerns that due to Australia's high debt, low growth fiscal environment, an adjustment in the housing market is likely. Less expensive property will be comparatively less volatile and will require less debt to develop. Creating incentives to keep the smaller, nimbler engine spinning in a bear market to test transitional planning policy is advantageous long term.

Shared mobility market saturation



Aggregating housing in close proximity with existing public common goods has been the mainstay, albeit because planning has not been able to solve the 'last mile' conundrum. The uptake of autonomous, shared mobility in lower densities will be driven by nodal saturation. Undesirable, unconnected neighbourhoods are perfect test beds for encouraging a shared economy.

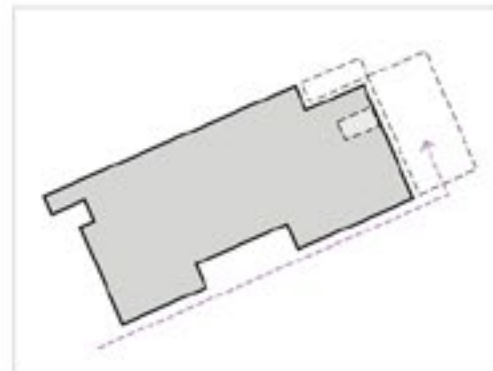


Living at the front



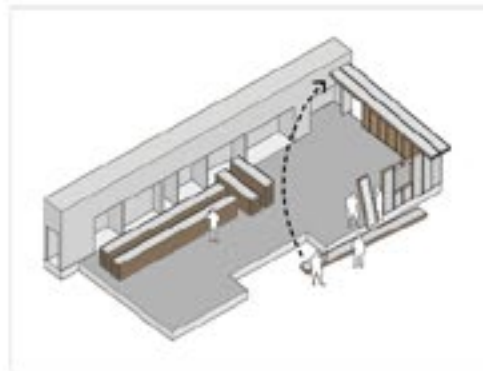
The public end of the house is flipped so to recognise the increased amenity at the front of the property. Liberated from car storage, the driveway becomes the main outdoor space, with layering to provide visual interest and privacy to the dwelling. Healthy neighbourhoods value visual aspect to the street, which opens up potentials for interaction and exchange.

Enough house for now



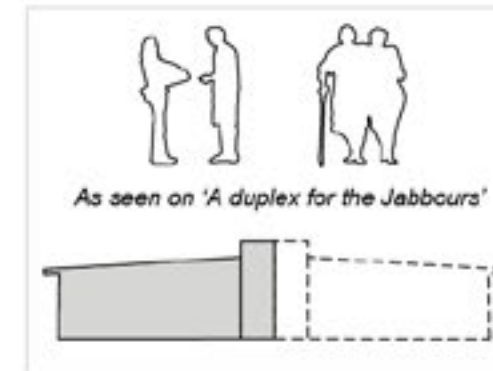
One can choose to add more at a stage of life using a Pre fabrication construction method. Future additions to be permissible within a timeframe that reflects a families growth and rate of savings.

Pre-fabricated 'Barn raising'



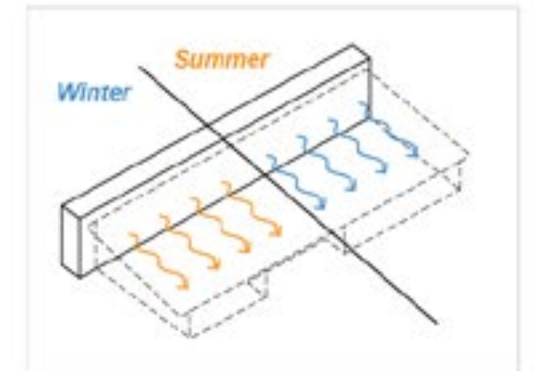
The simplicity of assembling and erecting digitally fabricated components unlocks many community engagement opportunities, such as participatory 'barn raising'. Various services could provide construction industry training to a growing refugee community and existing social welfare recipients.

One for the young, one for the old



One of the two dwellings must be at least a Class A adaptable house. This simple nudge allows for ageing in place and potential multi-generational living arrangements. It is particularly important in precincts that aren't well serviced.

Thermal mass service spine



A conventional double brick construction spine wall runs the length of the dwelling, which incorporates services, kitchen and wet areas within. Given the total width of the dual occupancy typology, the effectiveness of exposed thermal mass is greater, whilst giving the visual amenity and sense of solidarity and familiarity.



Light reflector

Dappled light undercover

Curated views through fence

Soft and shaded

Stack effect



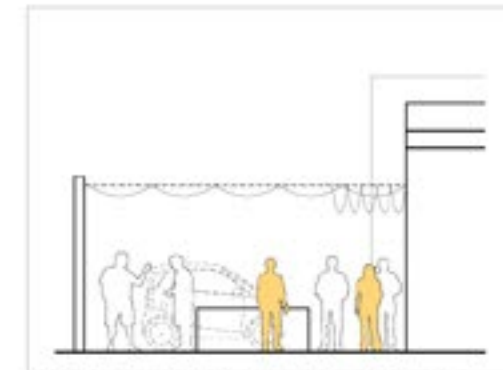
Horizontal reflector panels maximise the use of natural light by reflecting light onto the underside of the ceiling whilst protecting the threshold from the elements.



The roof over courtyard spaces incorporates semi transparent sheeting and battens to allow filtered light deeper into the living spaces.



By reversing the orientation of the angled blades, it opens up views through to landscaped areas and block views to the more private areas whilst achieving a high level of porosity.



Without the need for car storage, the front yard is reclaimed as an outdoor room for the enjoyment of the occupants. Lightweight and adaptable, these structures allow for entertaining whilst offering protection from the elements when required.



Trapped hot stale air is exhausted from the highest point internally out, naturally drawing in cooler air, creating passive air movement even during still days.

Key: Groups to action proposed

-  Appropriate Government department
-  Industry consultation and stewardship
-  Community groups and individuals

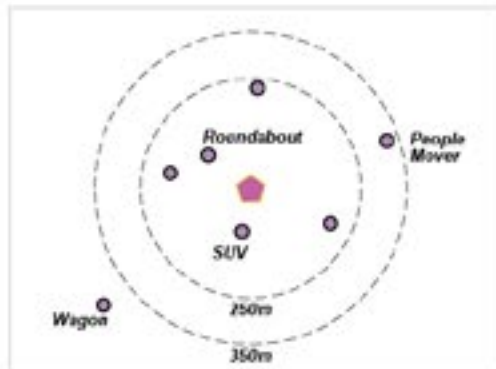
Emergent technology will offer the ability to synthesise all aspects of urban planning into one, integrated strategy. The testing of the MDDG is against not only architectural excellence, but also critically against how this can be achieved whilst embracing these technologies in the physical realm.

This submission proposes a change to 3.1M: Private Open Spaces, and the addition of the following 5 strategies to its remit or as appendices.

Incentivise car sharing




Will Davis, CEO Car Next Door





As a condition of Dual Occupancy development, the second car is to be made available for car share hire. Building an early adopter membership base will in turn make owning a car for sporadic use unattractive for all residents in the precinct.


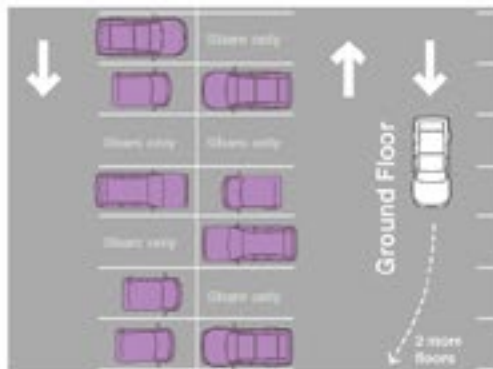
Vehicle co-location macro strategy



Hering & Co Martin, 1111 Lincoln Rd

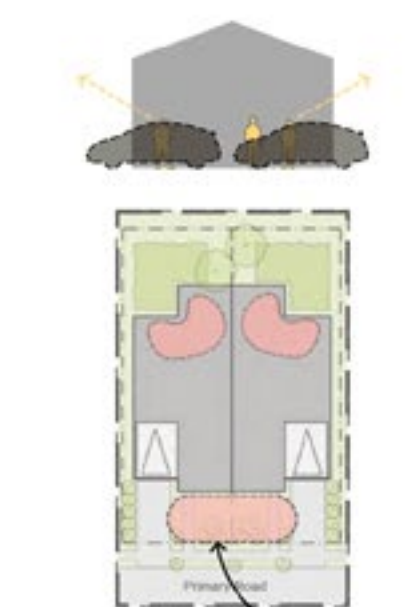


"TOGs could also be iconic event spaces"



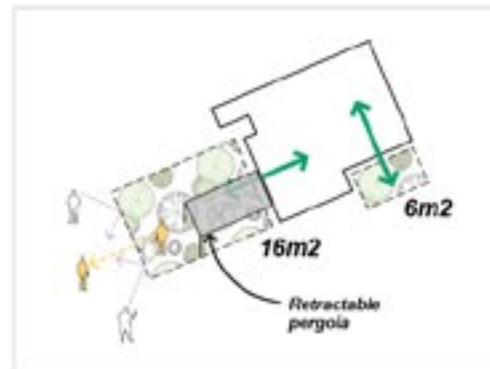



Encourage development to prepare for an autonomous mobility future. In as little as 10 years, peak car could occur. In the transitional period, shared private vehicles can be given priority parking in TOG (Transport Orientated Garaging) so others can use the vehicle whilst the owner is at work.

3.1M: Private open space flexibility



Proposed

If privacy is important, so too is publicness. If the primary POS is located at the front of the dwelling, a second POS behind the frontage must be included. Lightweight ancillary structures should become permissible in these instances to promote outdoor living at the front.

Recognising pre fabrication




Source: Australian Bureau of Statistics
Foreign Investment -50%, since 2014

"Local investment can make up the difference"

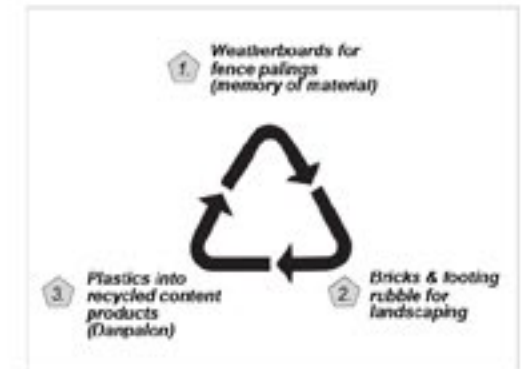




"Combine new materials with the nostalgic"

Formalising the Modular Construction Code will require state bipartisanship and consultation with council to grant permissibility for this construction type. Industry then can invest in RnD more confidently to cater for demand in the market.

Material re-use



Stipulating a minimum material re-use requirement, percentage determined with industry engagement is proposed. Encouraging either re-use, or material that can be re-purposed into recycled content new material will nudge industry to invest in closed loop processes.

PROPOSED DUAL-OCCUPANCY

22 Harrow Street, Sylvania, NSW, 2224

The subject land, is located on the southern side of the street, and has its frontage oriented towards the Georges River (middle ring). The site has an irregular shape and it is not perpendicular to the street. The average width is 15m, and it has a frontage of 18.6m and an average length of 80m, comprising a total site area of 1192m².

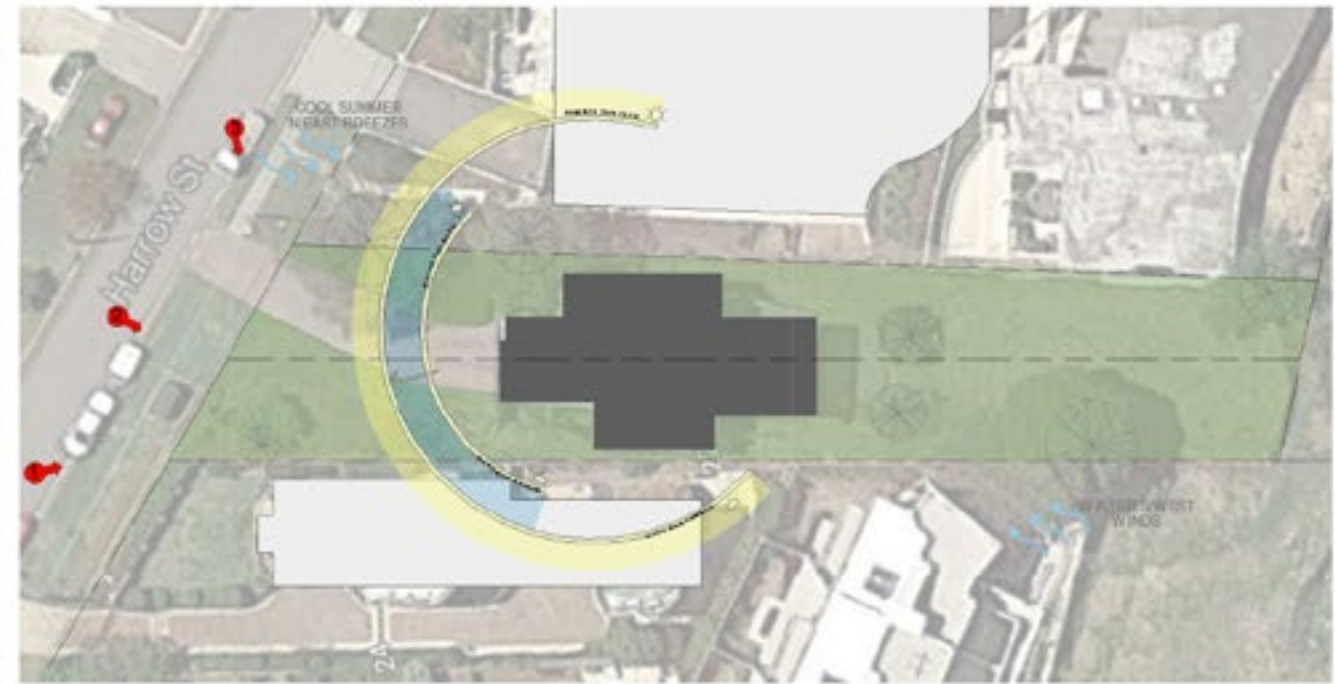
Currently the site comprises a double storey brick dwelling with associated structures.

The characteristics of the immediate locality are as follows:

- Interspersed detached, semi-detached, terrace style and multi-dwelling housing developments;
- Etherogenous front building line;
- No particular street tree planting theme;
- Standard road reserve with paved nature strips.

The existing subdivision pattern comprises allotments that vary in size and configuration due to different housing developments and other functions in the area.

The subject site is situated on a highly sloped terrain, that drapes towards the river, thus offering a very spectacular view towards the north.



EXISTING SITE PLAN AND SOLAR DIAGRAM
scale 1:500



CONTEXT ANALYSIS

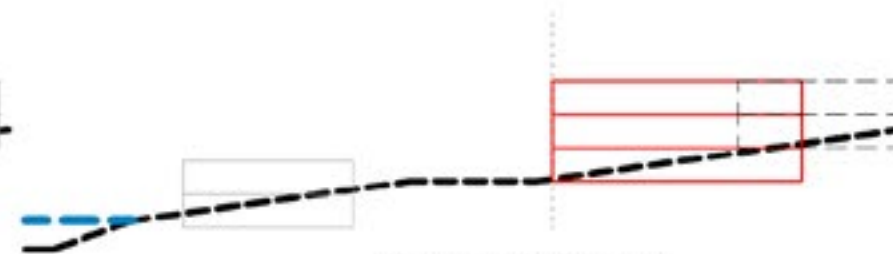
EXISTING STATE PHOTO - VIEW 1

EXISTING STATE PHOTO - VIEW 2

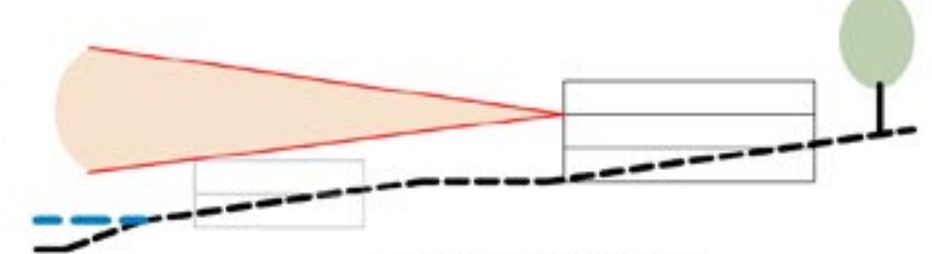
EXISTING STATE PHOTO - VIEW 3



EXISTING SITUATION
- very big street setback
- garage level has good water view



PROPOSED HOUSE LOCATION
- moved forward to average neighbour setback



ADVANTAGES OF NEW LOCATION
- bigger back yard
- livable areas have good view to the water

MISSING MIDDLE
OPEN IDEAS COMPETITION

ENTRY CATEGORY
DUAL-OCCUPANCY

CONTEXT - A3

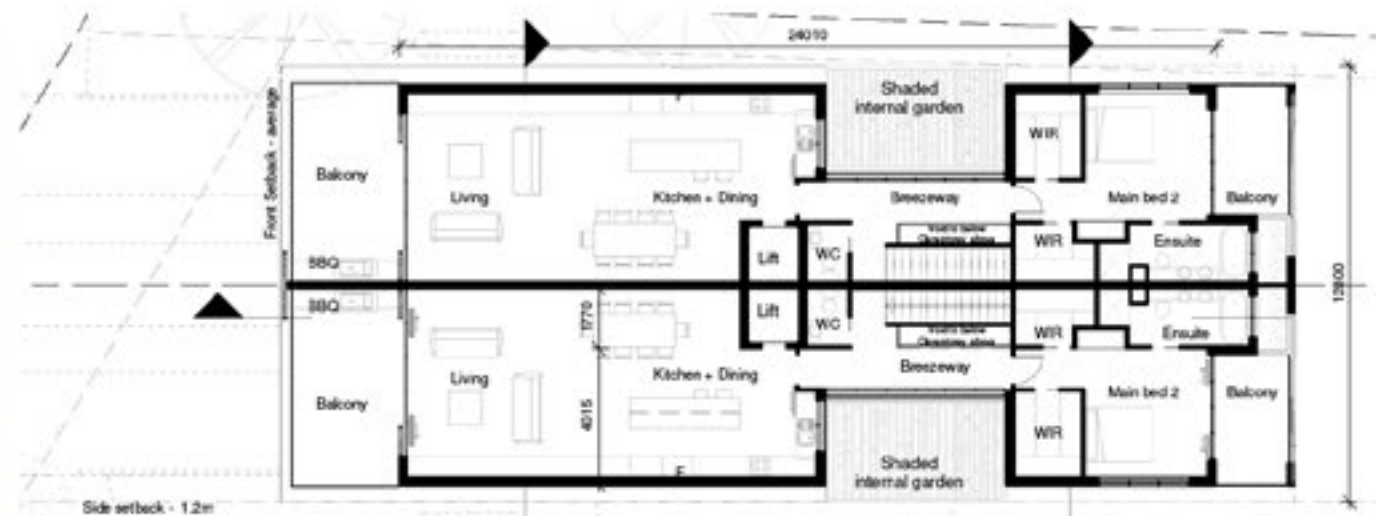
CO-01



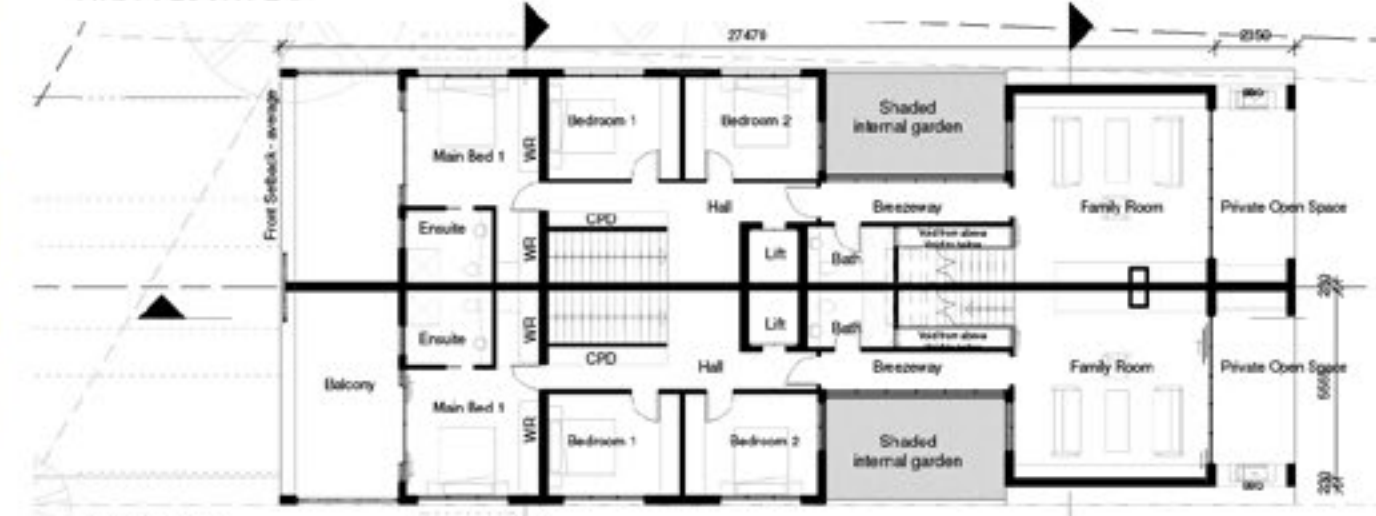
The proposed development proposes fulfilling the objectives of the R3 zoning, which pleads for a variety of housing types. We are also building in accordance with the extraordinary features (slope towards water on the north side) of the site and street and we are exploiting them to the maximum, thus promoting a good transition between the multi dwelling housing and detached houses. The subdivision component of the development will not affect the potential of the site in terms of density, in that two dwellings can be achieved on the site, regardless of what form of title (i.e., all forms of "residential accommodation" are permitted). However, given the existing landscape features and character of dwellings in the immediate locality, semidetached dwellings are considered to be the best option for development. The two resulting sites are in accordance with the minimum lot size map in SSLEP 2015. They have 571 and 620m². The proposed houses have a 2 car garage, 4 bedrooms, a family room, a living room, a dining, a kitchen, 3 baths and a WC. They are wheelchair accessible through the lift that connects the basement entry level to the first floor. The living room and one of the main bedrooms are facing the water, while the family room is directly connected to the private open space at the rear of the building.



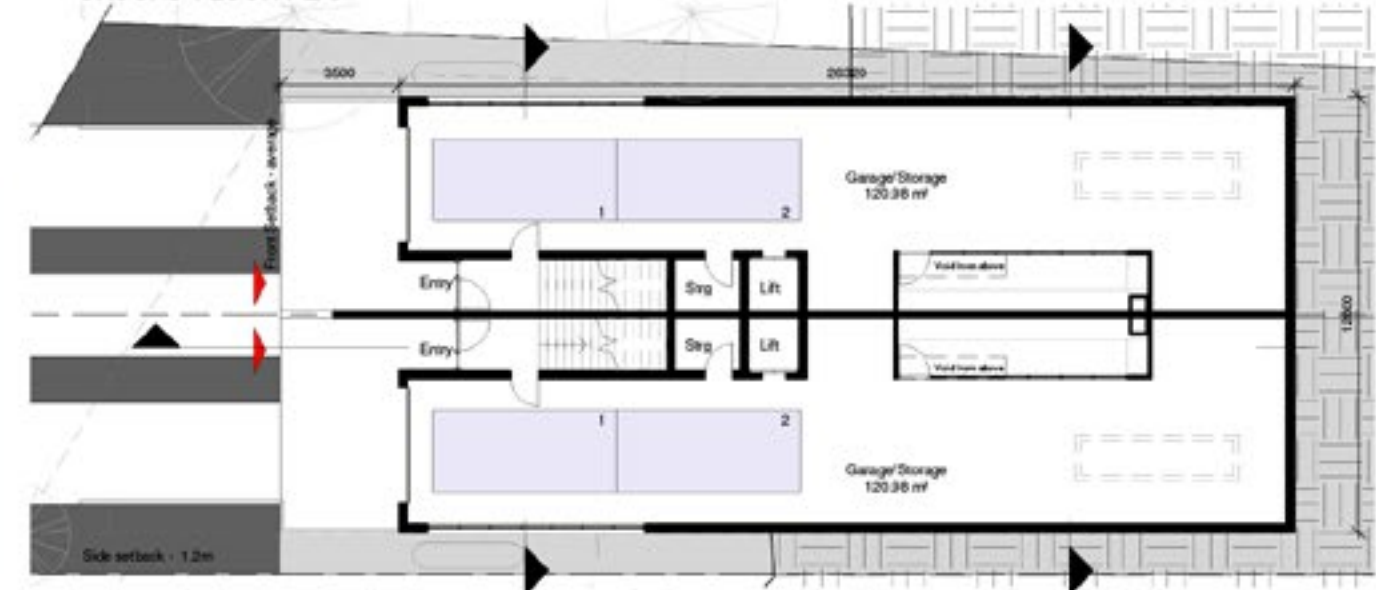
SITE PLAN



FIRST FLOOR PLAN



GROUND FLOOR PLAN



BASEMENT PLAN

MISSING MIDDLE
OPEN IDEAS COMPETITION

ENTRY CATEGORY
DUAL-OCCUPANCY

CONCEPT DESIGN 1 -
A3 CO-02



The proposed development takes advantage of the slope in the terrain, "framing" the spectacular view towards the Georges River. The scale is similar to the one of neighbouring properties, while still remaining in the MDG height limitations. The entry is made through the basement floor, which also lodges a 2 car garage. The ground floor consists of 3 bedrooms, the family room that opens to the generous private open space at the rear of the house and 2 baths. The main bedroom is oriented towards the water. The second floor, having the best view to the river, lodges the living rooms, the dining and the kitchen and a fourth bedroom that profits from the tranquility of the sloping backyard. The rooms in each dwelling have been appropriately orientated to receive access to natural sunlight, with exposure to habitable areas. Likewise, the Private Open Space areas will receive sunlight to 50% of the yard for 3hrs during winter. Privacy concerns are also addressed by minimising the number of first floor window openings facing the side boundaries, raised sills and obscure glazing where required, positioning low impact rooms, such as, bedrooms and bathroom amenities on the upper floor level, together with adequate side and rear boundary offsets.



SECTION A



SECTION B

MISSING MIDDLE
OPEN IDEAS COMPETITION



SOUTH ELEVATION



WEST ELEVATION



NORTH ELEVATION

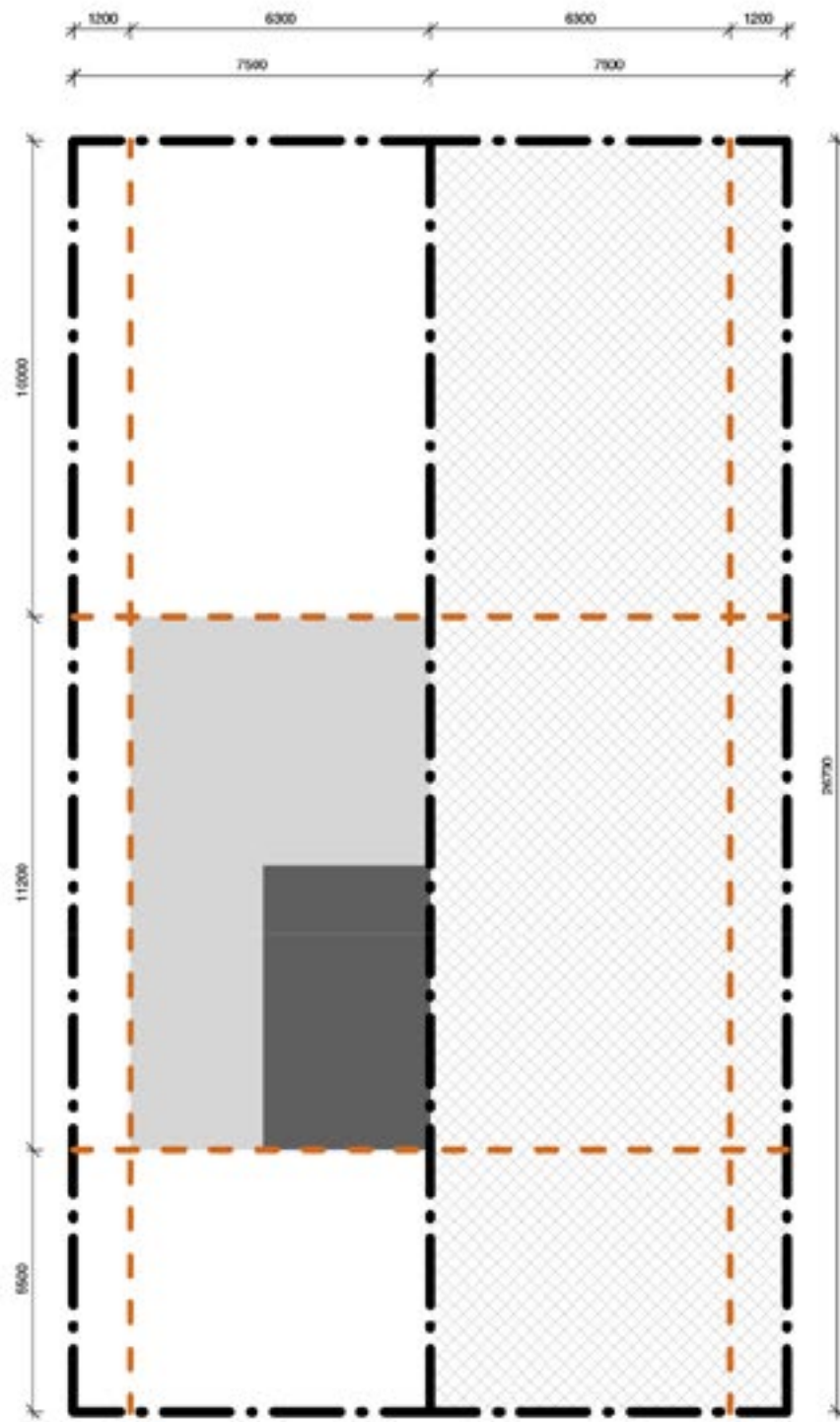


EAST ELEVATION

ENTRY CATEGORY
DUAL-OCCUPANCY

CONCEPT DESIGN 2 -
A3

CO-03

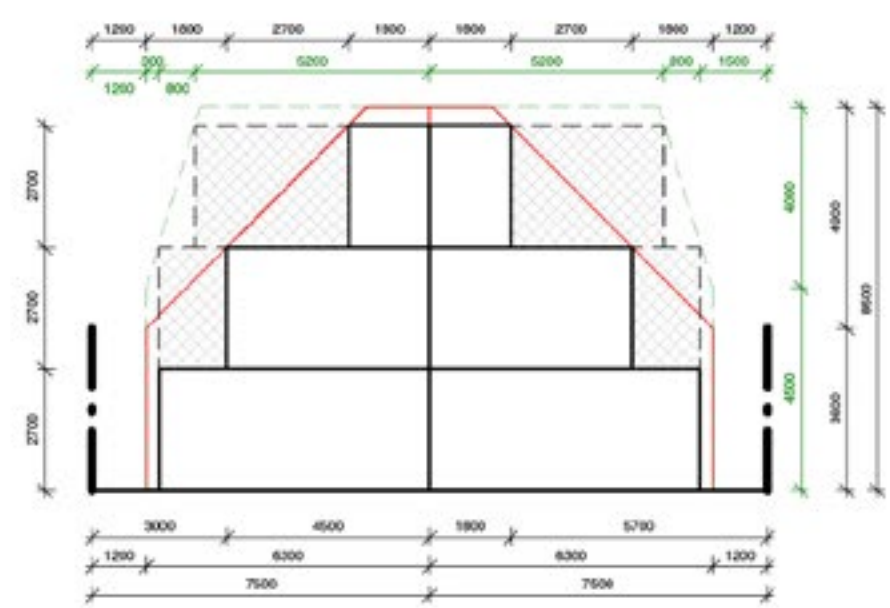
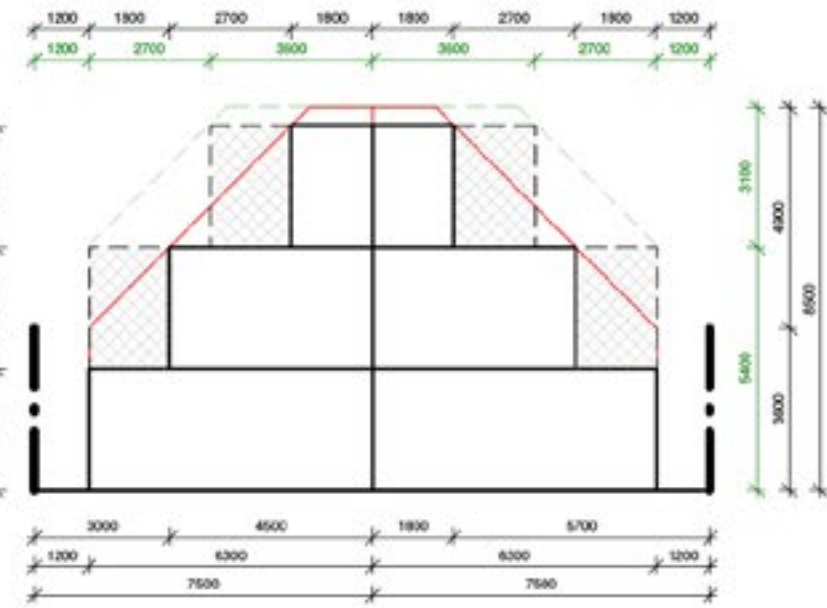
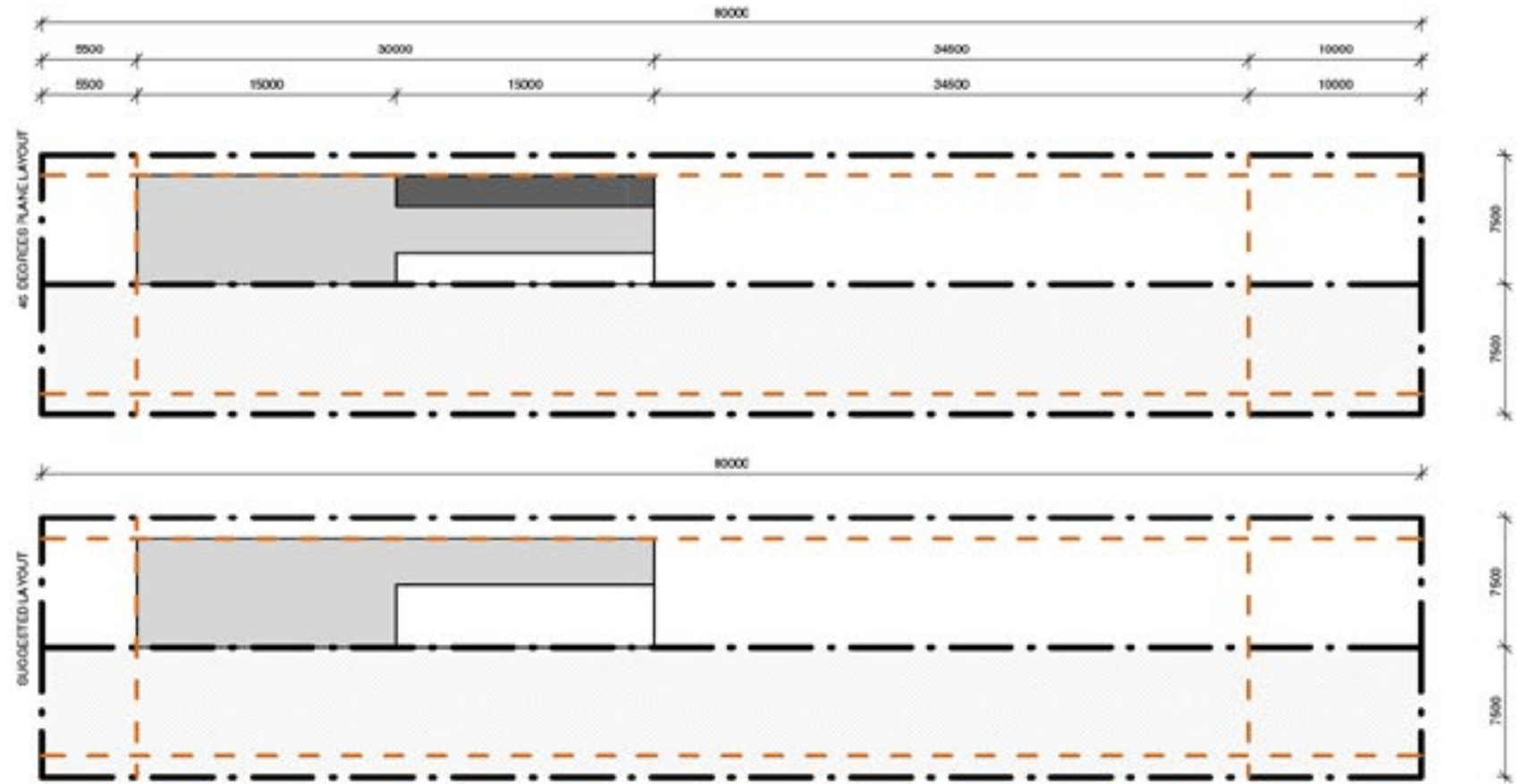


MINIMUM LOT SIZE - 7.5m X 26.7m - 200m²

The example chosen in the draft for explaining how to calculate floor area does not contain a garage and thus it is not clear if garage area is included in FSR calculations.
 For example: if we have the minimum lot size (200m²), a 2 level maximum development would have an area of 140m² (2 levels x 70m²) which is 0.7:1 FSR if we count the garage, while the area is 120 without the garage, which is 0.6:1 FSR - this would permit a smaller 3rd storey.

LEGEND

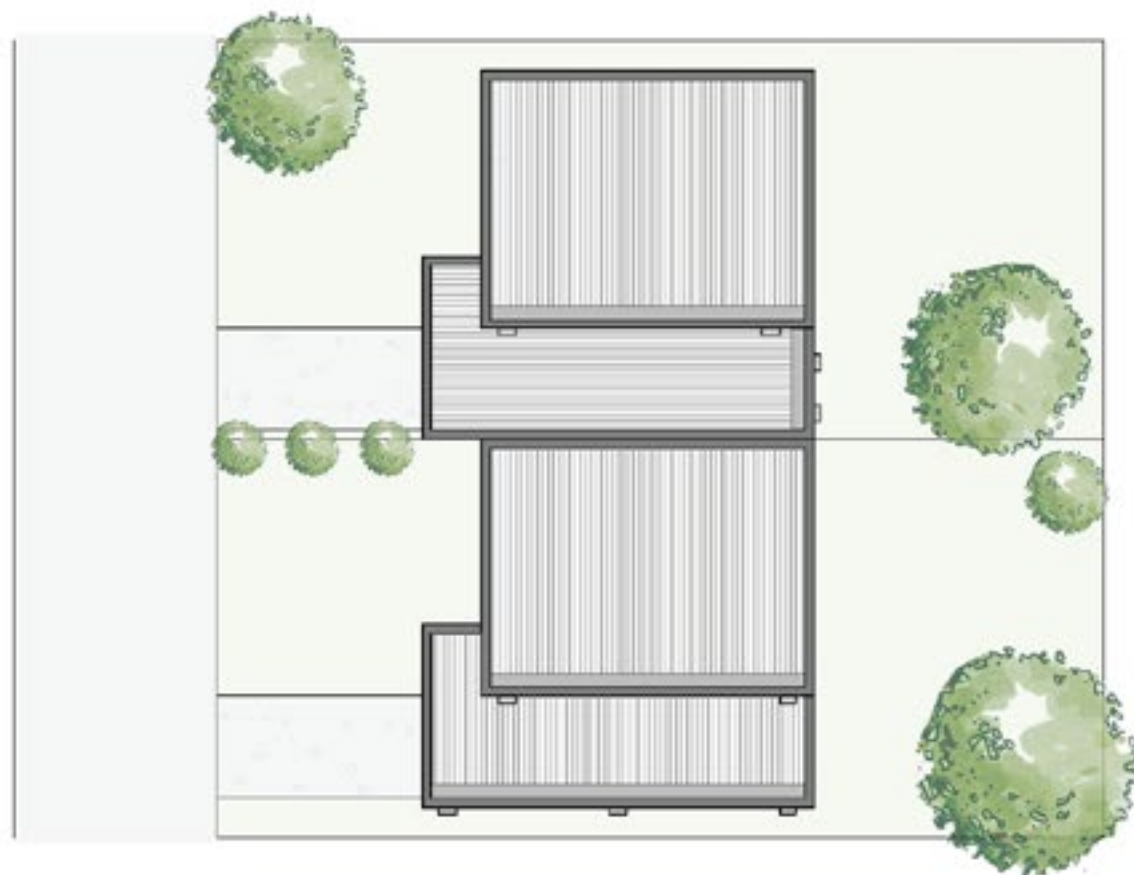
- Boundary line
- Existing setback
- Garage area
- Maximum development area



LEGEND

- Boundary line
- Existing setback
- Proposed setback
- Possible development outline
- Proposed development outline

We argue that the 45 degrees plane results in a non-compact, ziggurat like construction for the minimum lot width. This results in a non-habitable 3rd storey. Instead, we propose either raising the 3.6m limit to 5.4m or keeping the DA regulation (1/4 of additional height over 4.5m), both options resulting in the possibility of a better internal space organisation.



SITE PLAN

'LESS IS ONLY MORE WHERE MORE IS NO GOOD' - Frank Lloyd Wright.

This quote by Frank Lloyd Wright was the main inspiration for 'ADDapt', we wanted to show that less could be more by rethinking the way we design and more importantly how we use the space within our home. Australia has never been short on space and we have built our homes accordingly but ultimately it is due to the lack of space in our cities we are starting to experience these problems.

Our goal was to not only fit more dwellings per site to combat the high demand in real estate but to challenge and to rethink the way we use the space. Homes should be able to grow with our family, change to suit the occasion and adapt to our needs.

Nestled in Sydney where the high property prices continues to soar as the population grows and Sydney's property market isn't keeping up with this high demand on it. We looked for the source of this problem and found on average that the number of people per household is only 2.6 and we continue to build the biggest sized homes in the world.

Using the notion that less is more we set out to reuse spaces within the home. With more than 50% of Sydney's households having 2 or less people living within them we decided to reuse the third bedroom, ultimately allowing you to open and close this space doubling the size of the living or dining, creating a second lounge room and turning it back into a bedroom at night.

This smart use of space allowed us to reduce the overall size of the building reducing the footprint, making it more suited for Sydney's growing population but not subtract any of the luxuries that Australians have come accustomed to in our bigger homes.

The open plan living encourages communication as the family is urged to interact with one another and children are less drawn to disappear within their rooms. The design works great for a growing family or when a family member moves out turning it into a 2 or 3 bedroom home that feels and has all the luxuries of a home that is double its size.

Our second major focus was sustainability. 'ADDapt' achieves a NatHERS 10 Star energy efficiency rating, the highest rating a home in Australia can achieve.

We set out to make a design that was truly adaptable in every aspect. 'ADDapt' achieves its perfect 10 Star rating facing any direction, 360 degrees. Our goal was to create a home that could be placed on any street in Sydney and still achieve its perfect 10 Star rating, showing that a building doesn't necessarily have to have the perfect site or best orientation to achieve this rating. This is why we have not specified a specific site to further emphasis this point of adaptability.

We wanted to show that a 10 star home is achievable and affordable to the general population by not using costly materials and believe if more people knew this, there would be a rise in energy efficient homes around Australia.



GROUND FLOOR



FIRST FLOOR

LEGEND

1. ENTRY 2. LAUNDRY 3. BATHROOM 4. STORAGE 5. GARAGE 6. KITCHEN 7. LOUNGE/DINING 8. BEDROOM 3
 9. STUDY 10. HALLWAY 11. BATHROOM 12. BEDROOM 2 13. MASTER BEDROOM 14. WALK IN ROBE 15. ENSUITE



Nationwide House Energy Rating Scheme* Certificate
 Certificate Number: QVU927569 Date of Certificate: 16 Dec 2016 Star rating: 10

Assessor details
 Accreditation number: [blank]
 Name: [blank]
 Organisation: [blank]
 Email: [blank]
 Phone: [blank]
 Declaration of interest: [blank]
 Software: [blank]
 AAD: [blank]

Overview

Dwelling details
 Address: NA
 Suburb: Sydney
 State: NSW
 Type: New home
 Postcode: 2000
 NCC Class: Class 1a
 Lot/DP number: N/A
 Epa/zone: suburban
 Climate zone: 17

Key construction and insulation materials
 Construction: Wall: Reverse Brick Veneel / SPS
 Roof: Insulated Roof Panel
 Floor: Concrete Slab
 Insulation: Wall: R2.7
 Roof: R5.0
 Floor: N/A
 Ceiling: Utrac
 Double Glazed

Net floor area (m²)
 Conditioned: 103.3
 Unconditioned: 12.1
 Garage: 33.7
 TOTAL: 149.1

Annual thermal performance loads (MJ/m²)
 Heating: 1.6
 Cooling: 3.7
 TOTAL: 5.3

Dwelling penetrations
 This total is the maximum number of dwelling penetrations allowed to a dwelling under a valid NERS certificate. If this number is exceeded in construction then this certificate is NOT VALID and a new certificate is required. Items of dwelling penetration to the penetration table can have other info associated with the entry.
 Details: [blank]
 Unchecked: [blank]
 TOTAL: [blank]
 Principal daylight type: No daylight modeled

Window selection - default windows only
 See an alternate window table (not in this certificate) for the window table alternative. Only a 10% BANC tolerance is allowed with this rating.
 All the window U_f applies to BANC. The window U_f values are used to calculate the window U_f values for the certificate. If the window U_f values are not within the tolerance then the window U_f values will need to be revised to comply with the tolerance.

Plan documents
 Plan reference: Mixing Middle Design Comp
 Prepared by: N/A

Scan to access this certificate online and confirm this is valid

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

Page 1 of 6



CONFIGURATION 1 - 8AM

REST

- 1. 3RD BEDROOM WITH QUEEN BED AND PLENTY OF SPACE.

DINE

- 1. KITCHEN ISLAND BENCH SEATING AND TABLE FOR 2.

LIVING

- 1. LIVING ROOM WITH SEATING FOR 5 PEOPLE.



CONFIGURATION 2 - 6PM

DINE

- 1. GOLIATH DINING TABLE EXTENDS TO SEAT 8 PEOPLE, PROVIDING A SPACIOUS KITCHEN AND ENTERTAINMENT AREA.

LIVING

- 1. BEDROOM STACKER DOOR SLIDES AWAY TO DOUBLE THE SIZE OF THE LIVING AND DINING.
- 2. QUEEN BED TRANSFORMS INTO MODERN SOFA, NOW WITH SEATING FOR 8 PEOPLE.



CONFIGURATION 3 - 10PM

DINE

- 1. TUCK AWAY DINING TABLE AND CHAIRS TO ALLOW MORE ROOM FOR LIVING.

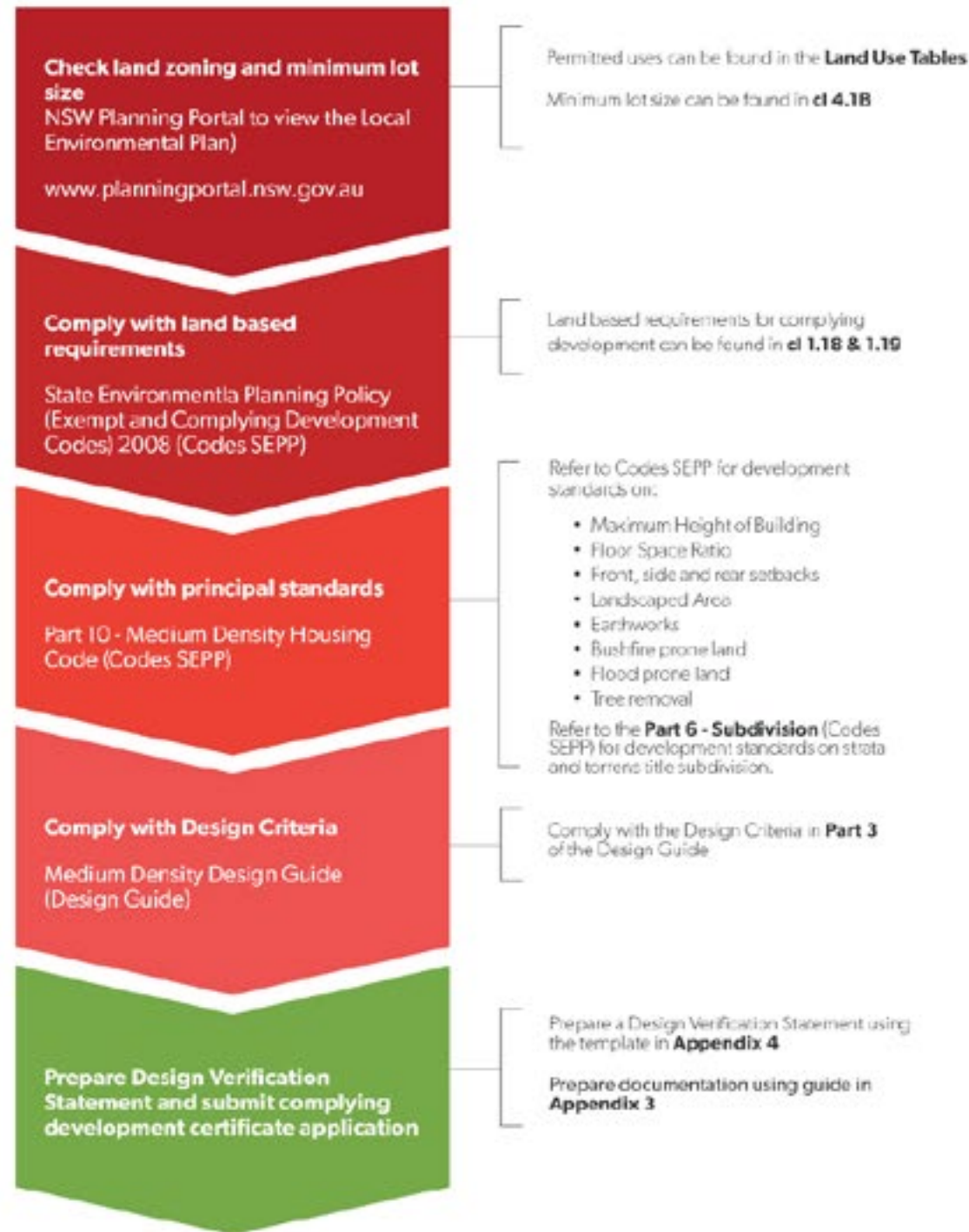
LIVING

- 1. TV SLIDES ASIDE TO REVEAL A DAY BED/SOFA NOW WITH SEATING FOR 11 PEOPLE OR A SPARE BED FOR AN OVERNIGHT GUEST.
- 2. OR, SLIDE ACROSS BEDROOM STACKER TO DIVIDE LIVING AREAS AND CREATE OWN CINEMA ROOM WITH DROP DOWN PROJECTOR.



0 1 2

Steps for Preparing a Complying Development Certificate



Steps for Preparing a Complying Development Certificate - Proposal



Testing the Design Guide

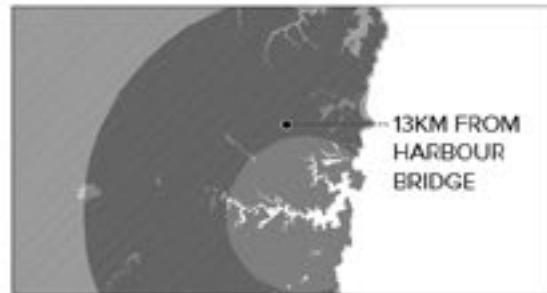
We are proposing that adding another tier in the Complying Development approval pathway dedicated solely to sustainable design will further promote more sustainable conscious architecture.

NatHERS is a nationwide rating scheme that scores a buildings thermal performance between 1 and 10 stars, it has been adopted in many states as a mandatory requirement for all new dwellings but is still yet to be brought into the New South Wales as a requirement and therefore overlooked by a lot of people, making it a great opportunity to introduce this as a new obligation.

By adding a standard in which a dwelling must achieve to gain Complying Development approval will help create a more sustainable future for Australia and push for environmentally friendly alternative solutions in building. This will also push for better design and in the end will create homes that are thermally comfortable to live.

This will also help Australia achieve its 2020 greenhouse gas emissions goal by reducing the amount of greenhouse gases produced by each home which is the number 1 contributor to Australia's greenhouse gases.

ADDapt has achieved a perfect 10 star rating using affordable materials and a well thought out design. We wanted to show it is possible to do so and is something that can be achieved and obtained by the general population on any site in Sydney.



WITHIN SYDNEY MIDDLE RING.
SITE ZONING: R3



CATEGORY: DUAL
OCCUPANCY (DETACHED)

SITE SELECTED DUE TO ITS:

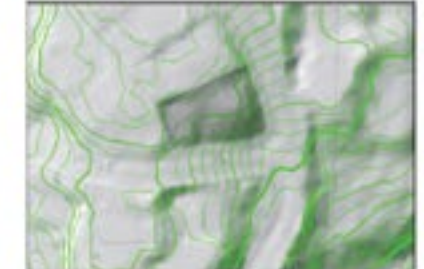
- STEEP TOPOGRAPHY
- IRREGULAR SHAPE
- CORNER POSITION, THAT SUITS HOME OFFICE (REFER STAGING DIAGRAMS, P2-3)

157 ST JOHNS AVE

GORDON
KU-RING-GAI CITY COUNCIL
SYDNEY



R3 & NOT A HERITAGE ITEM NOR WITHIN A CONSERVATION AREA



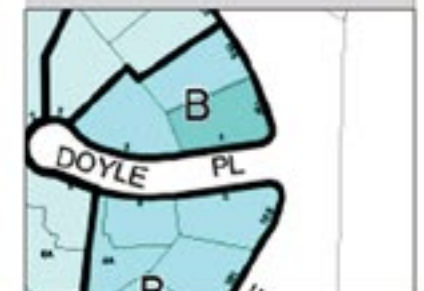
ON A STEEP SITE WITH 6M FALL FROM HIGHEST TO LOWEST RL



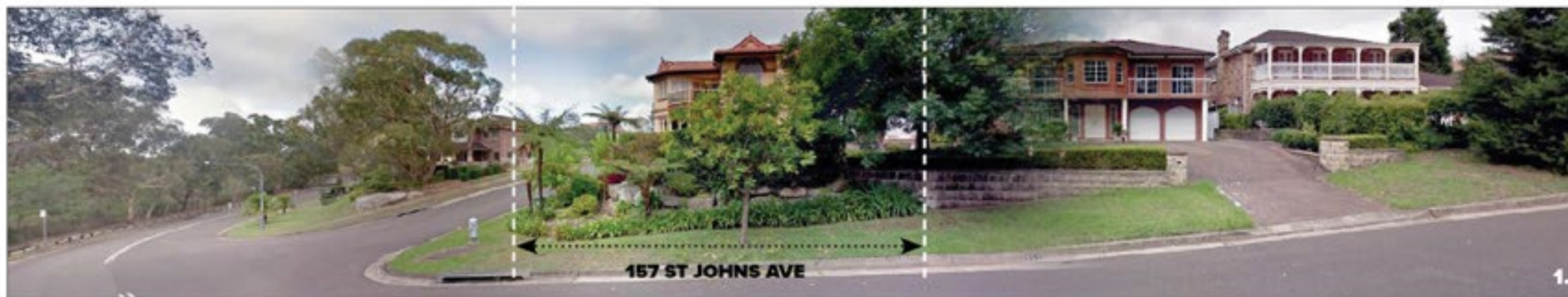
CORNER SITE NEAR ZONE OF SIGNIFICANT BIODIVERSITY

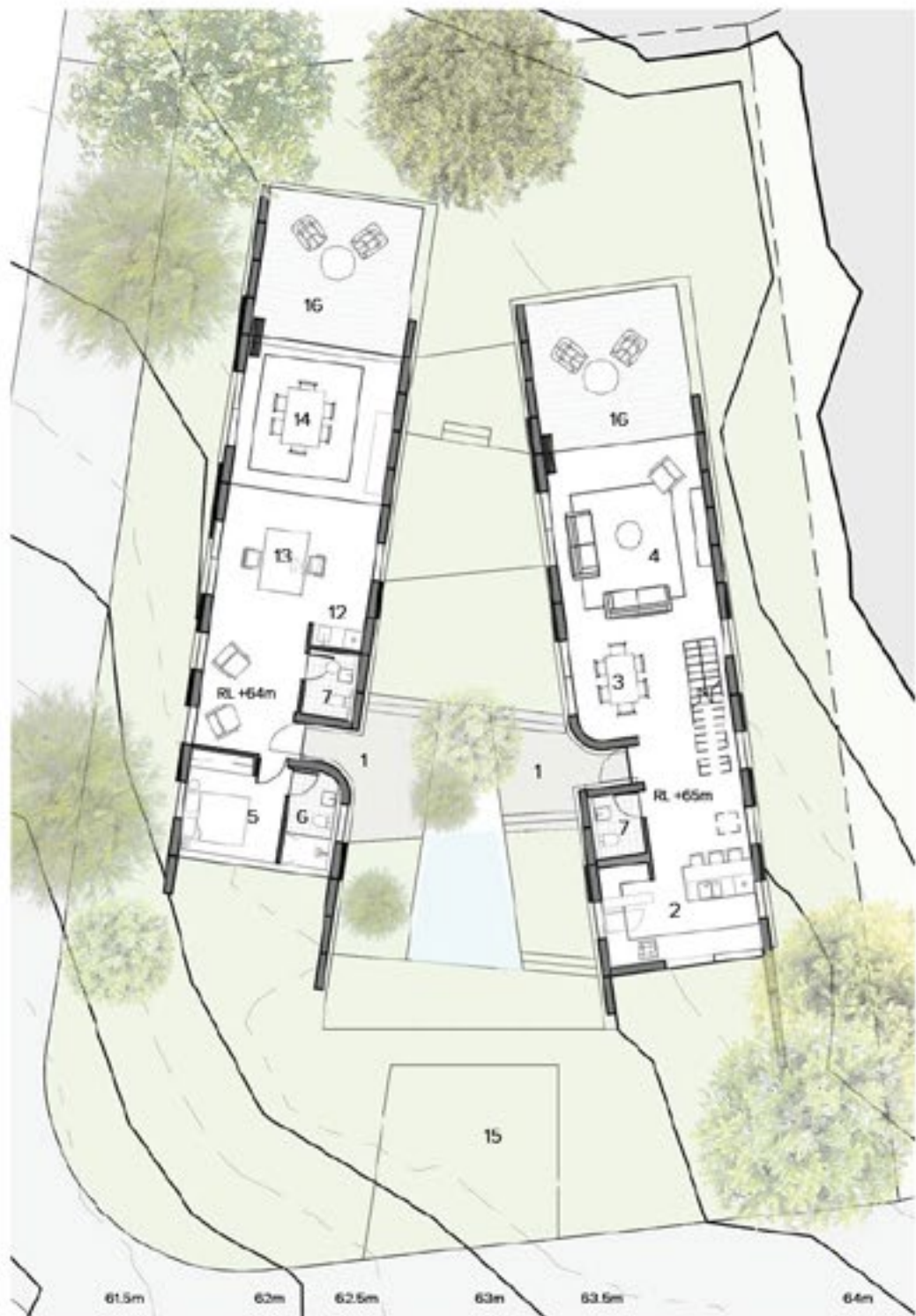


IN A BUSHFIRE PRONE ZONE, CLASSED AS A "BUFFER SITE"



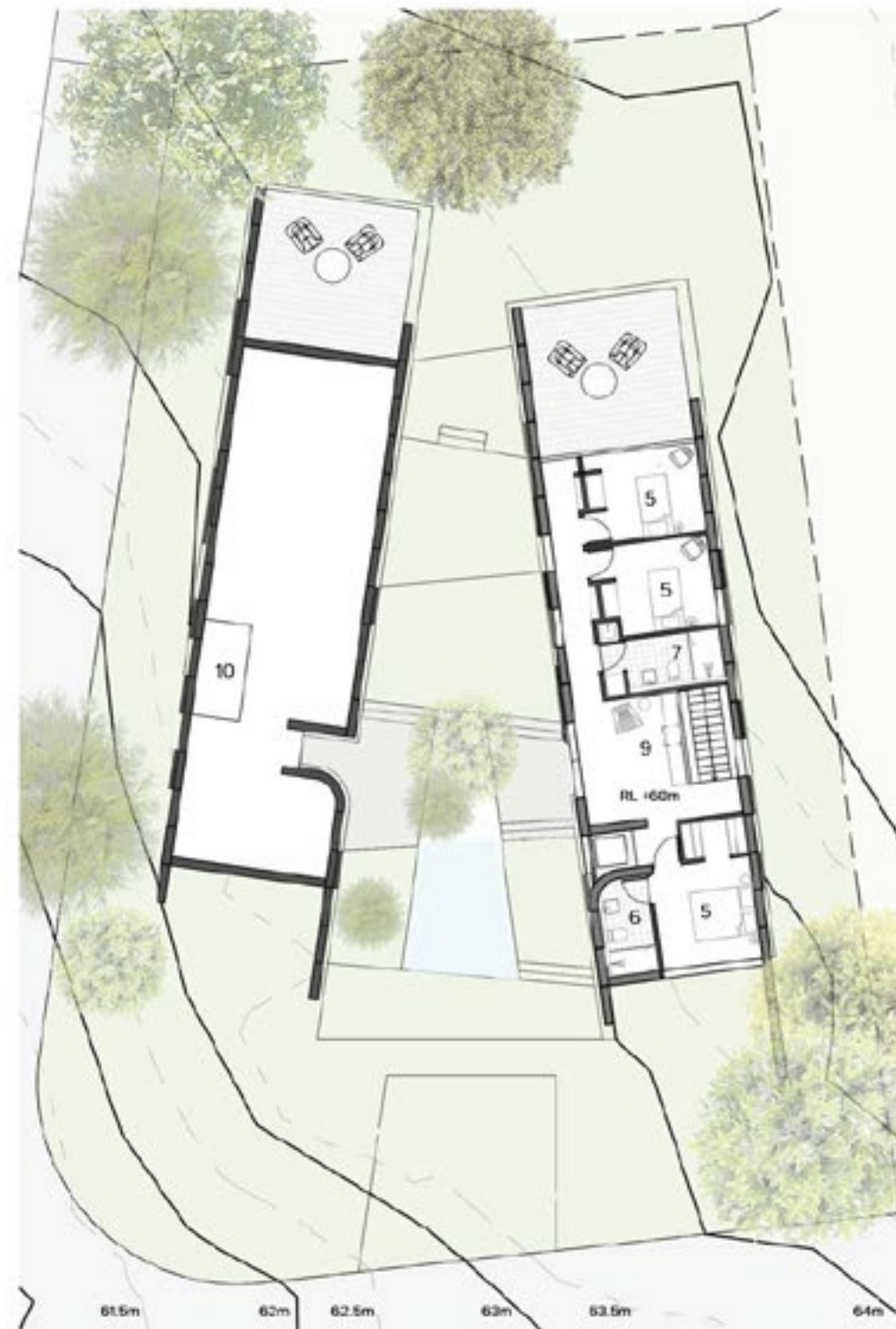
KU-RING-GAI COUNCIL FSR 0.4:1





- LEGEND**
- 1. ENTRY
 - 2. KITCHEN
 - 3. DINING
 - 4. LIVING
 - 5. BEDROOM
 - 6. ENSUITE
 - 7. WC
 - 8. LAUNDRY
 - 9. INFORMAL STUDY
 - 10. HATCH TO ROOF
 - 11. SKYLIGHT
 - 12. KITCHENETTE
 - 13. HOME OFFICE
 - 14. MEETING ROOM
 - 15. CAR PAD
 - 16. DECK

STAGE 2: **GROUND PLAN**



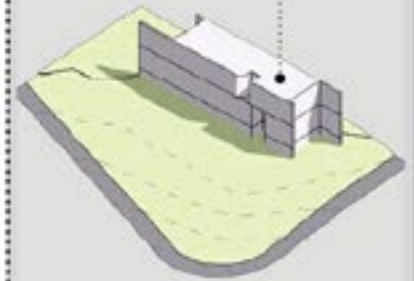
STAGE 2: **LEVEL 1 PLAN**



STAGE 2: **ENTRY SECTION**

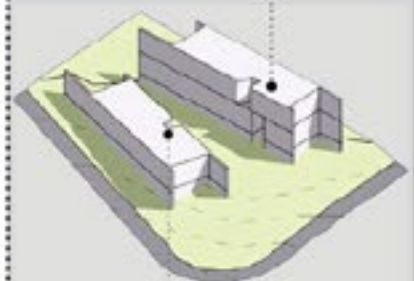
THE PROPOSAL ACCOMMODATES FUTURE CHANGE

→ **STAGE 1**
 FAMILY BUILDS 2 STOREY HOME WITH 3 UPSTAIRS BEDROOMS. **FSR 0.2 : 1**



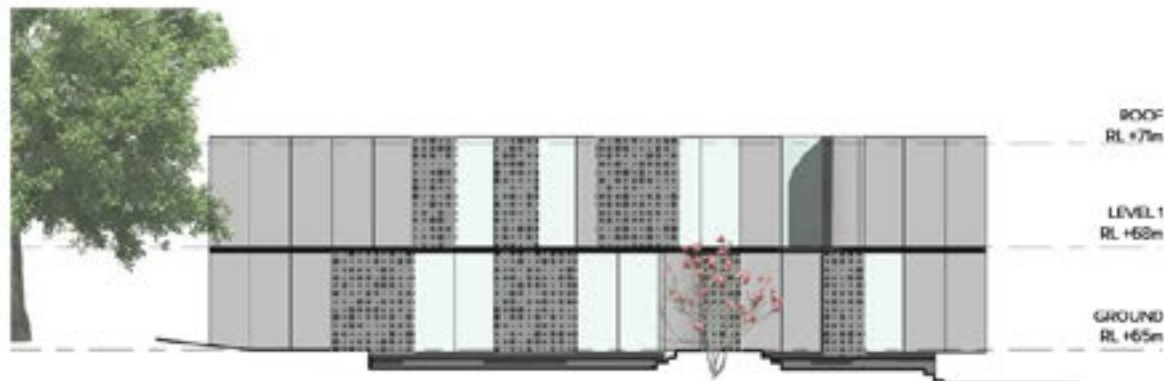
→ **STAGE 2**
 FAMILY BUILDS GRANNY FLAT & HOME OFFICE ADJACENT THEIR HOME, BRINGING TOTAL NUMBER OF BEDROOMS TO 4. **FSR 0.3 : 1**

THIS STAGE IS SHOWN IN THESE DRAWINGS





STAGE 2: **VIEW TO COURTYARD**



STAGE 2: **COURTYARD NORTHERN ELEVATION**



STAGE 2: **COURTYARD SOUTHERN ELEVATION**

• **STAGE 3**

FAMILY CONVERTS ADJACENT HOME OFFICE & GRANNY FLAT INTO 'TEEN RETREAT', RECONFIGURING KIDS' ROOMS INTO GUEST BEDROOM & STUDY **FSR 0.3: 1**

• **STAGE 4**

EMPTY-NESTERS DOWNSIZE, RECONFIGURING ADJACENT PROPERTY AS A DETACHED DUAL OCC. THEY SUBDIVIDE LOT, & SELL TO NEW OWNERS. **FSR 0.4: 1**

• **STAGE 5**

TIME ↓

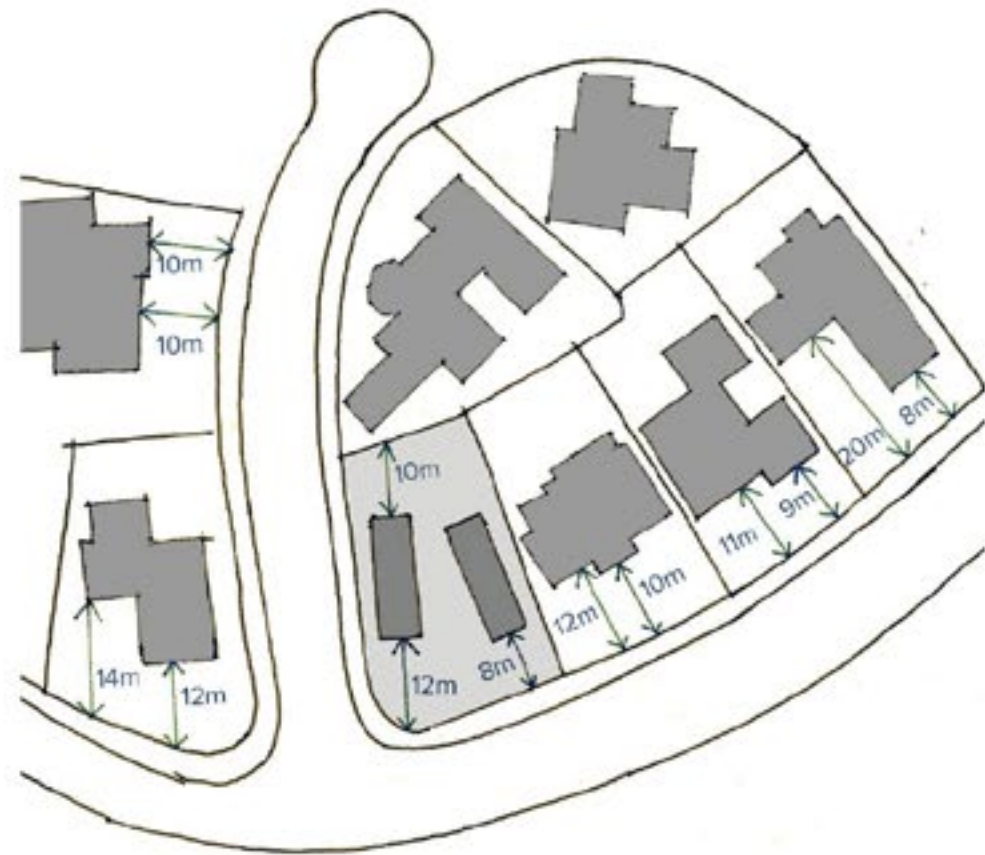
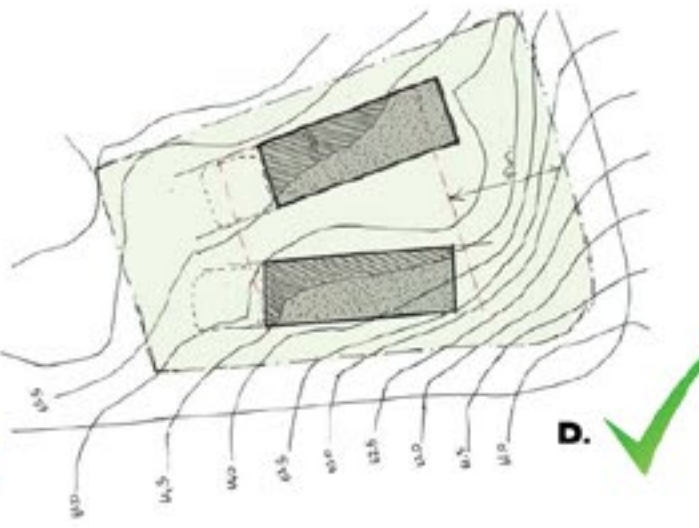
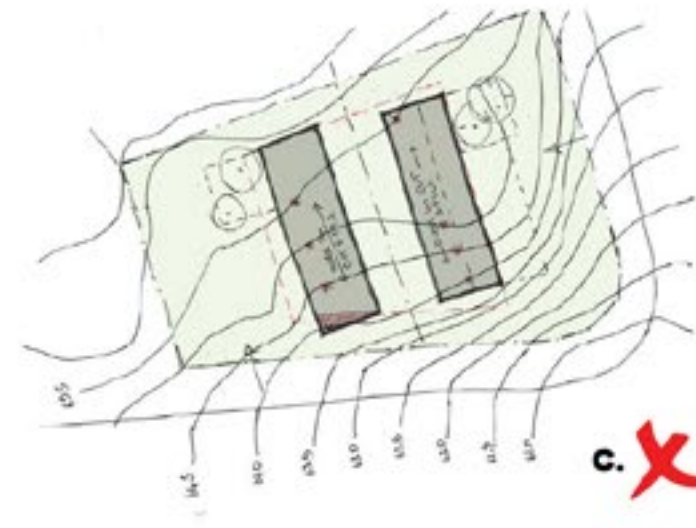
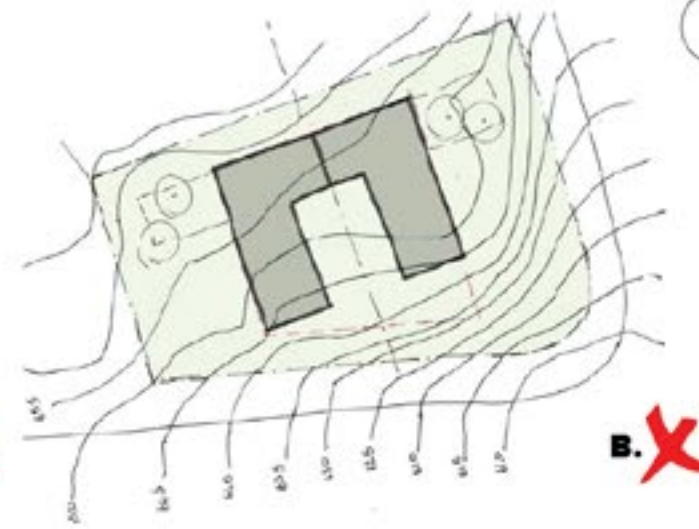
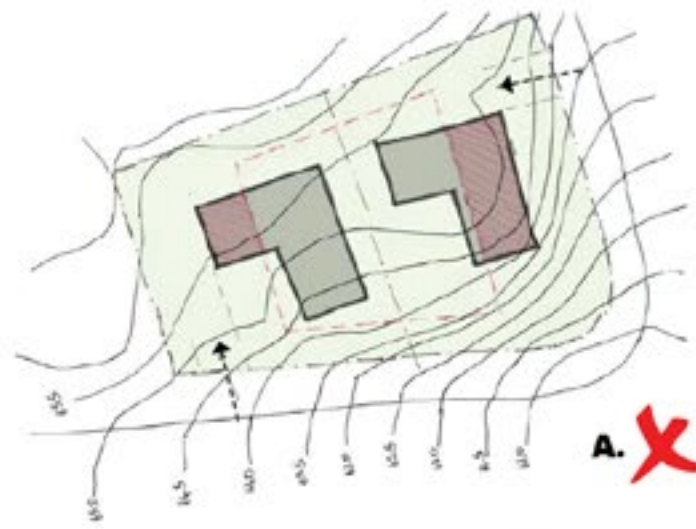
THE SETBACK CONTROLS WERE CHALLENGING TO RECONCILE WITH THE STEEP TOPOGRAPHY OF THIS CORNER SITE, IN PARTICULAR, THE FRONT SETBACK CONTROL

A THE TYPICAL LAYOUT OF TWO DUAL OCCUPANCY DETACHED DWELLINGS ON A CORNER SITE; BUT THIS ARRANGEMENT FAILED TO COMPLY WITH SETBACK CONSTRAINTS AND RESTRICTIONS ON CUT & FILL DEPTH.

B AN ATTACHED DUAL OCC. LAYOUT SITED WITHIN SETBACK CONTROLS. THIS FAILS TO PROVIDE PRIVATE OPEN SPACE TO BOTH DWELLINGS, AND IS NOT EASILY STAGED.

C BUILDING MASSES PLACED PARALLEL TO THE PRIMARY ROAD. THIS OPTION FAILED TO COMPLY WITH SETBACK CONSTRAINTS & RESTRICTIONS ON CUT & FILL DEPTH.

D THE SELECTED MASSING LAYOUT RESPONDS TO THE SITE TOPOGRAPHY (OBJECTIVE 3.1G-3); AND MINIMISES OVERSHADOWING OF THE SOUTHERN BUILDING BY ITS NORTHERN NEIGHBOUR BY SLIGHTLY SLIDING THE MASSES RELATIVE TO ONE ANOTHER, AND INTRODUCING SKYLIGHTS OVER LIVING AREAS..



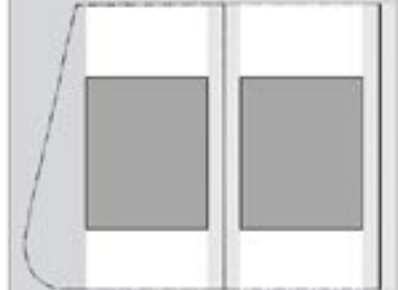
THE AVERAGE FRONT SETBACK IN THE VICINITY OF THIS SITE IS APPROX 10m, WITH THE MINIMUM FRONT SETBACK AT 8m. THIS PROPOSAL SETS THE BUILDING MASSES BACK AT 12m AND 8m FROM THE STREET, TO GIVE AN AVERAGE OF 10m.

WHILST THE BUILDINGS CAN BE ALIGNED TO ALLOW 10m SETBACK TO EACH MASS, SLIDING THE MASSES RELATIVE TO ONE ANOTHER ALLOWS SUNLIGHT TO THE LIVING SPACE OF THE SOUTHERN BLOCK, MINIMISING OVERSHADOWING.

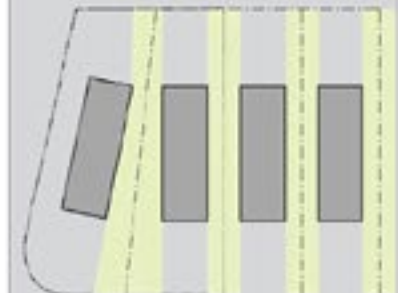
LASTLY, THE 'STAGED' CONSTRUCTION PROCESS OF THIS DESIGN ACCOMMODATES CHANGE, BUT COMPLICATES THE APPROVALS PROCESS VIA A COMPLYING DEVELOPMENT PATHWAY.

HOW CAN THE GUIDE RESPOND TO THOSE WHO WISH TO STAGE THEIR WORKS OVER AN EXTENDED TIMEFRAME, AND INTRODUCING 'ANCILLARY' 'GRANNY FLAT' AND HOME OFFICE SPACES INTO THEIR CONSTRUCTION STAGES?

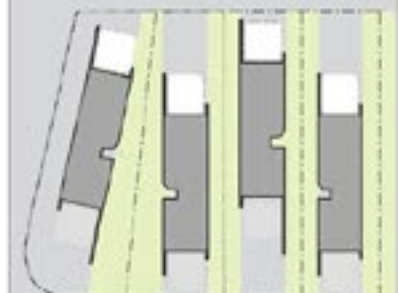
THE PROPOSAL INCREASES RATIO OF GREEN SPACE TO LOT AREA, & CAN BE SCALED UP ACROSS THE PRECINCT



EXISTING SUBURIA CREATES DEAD ZONES EITHER SIDE OF THE BOUNDARY FENCE BETWEEN ADJACENT HOUSES



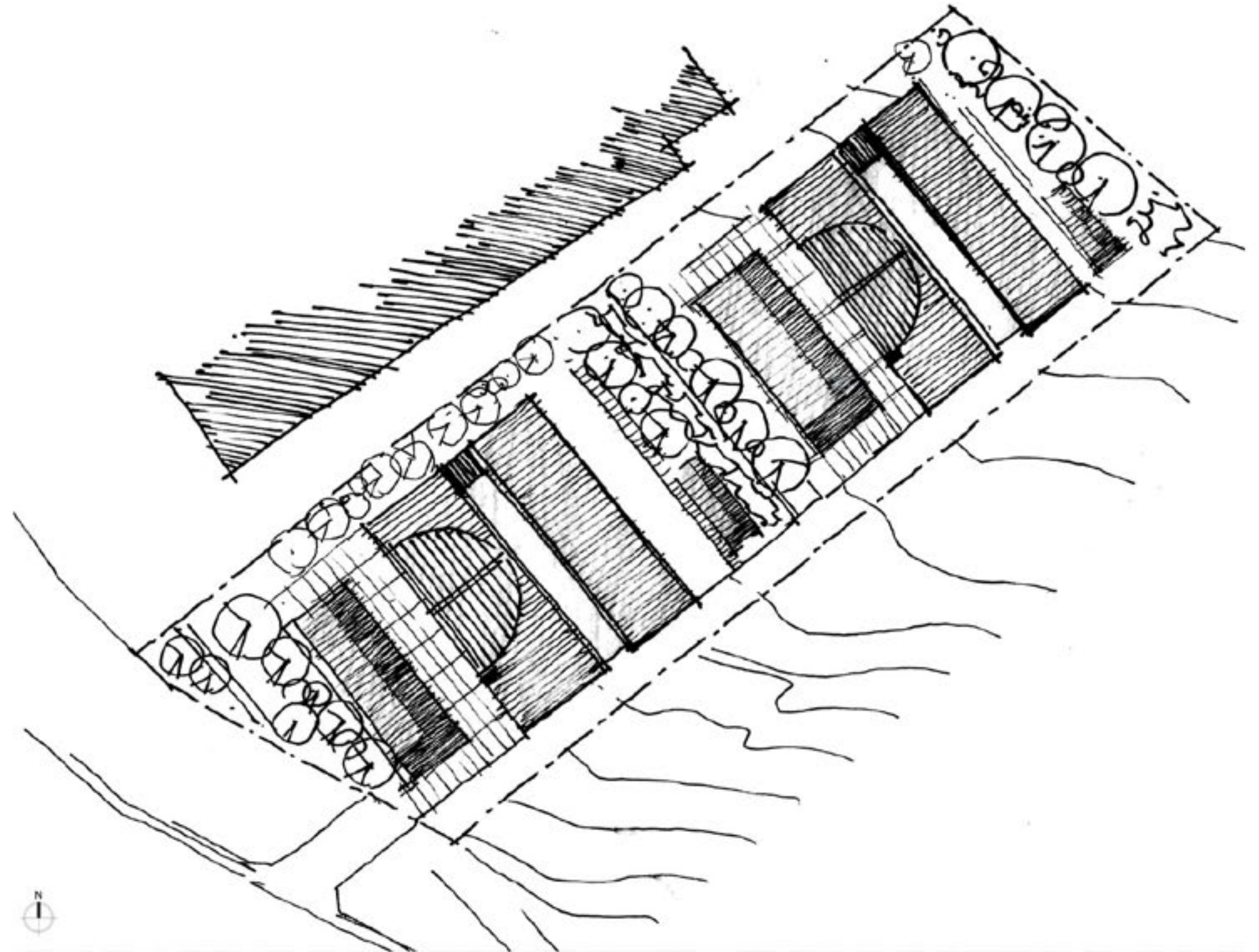
REMOVING BOUNDARY FENCES CREATES OPEN LANDSCAPED LANWAYS. WHILE STACKING BUILT FORM INCREASES DENSITY



STAGGERING & ARTICULATING THE EXTERNAL WALLS PROMOTES PRIVACY BETWEEN PROPERTIES, ENABLING LOT SUBDIVISION

4.

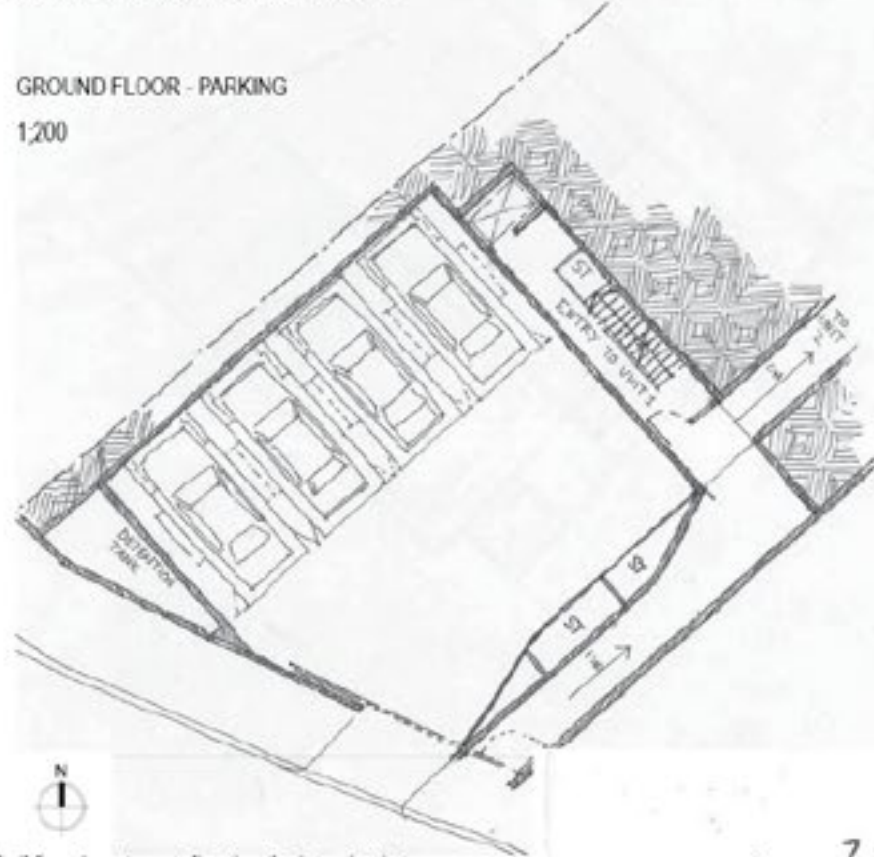
CONTEXT



CONCEPT DESIGN

net zero energy dual occupancy with scale of single dwelling

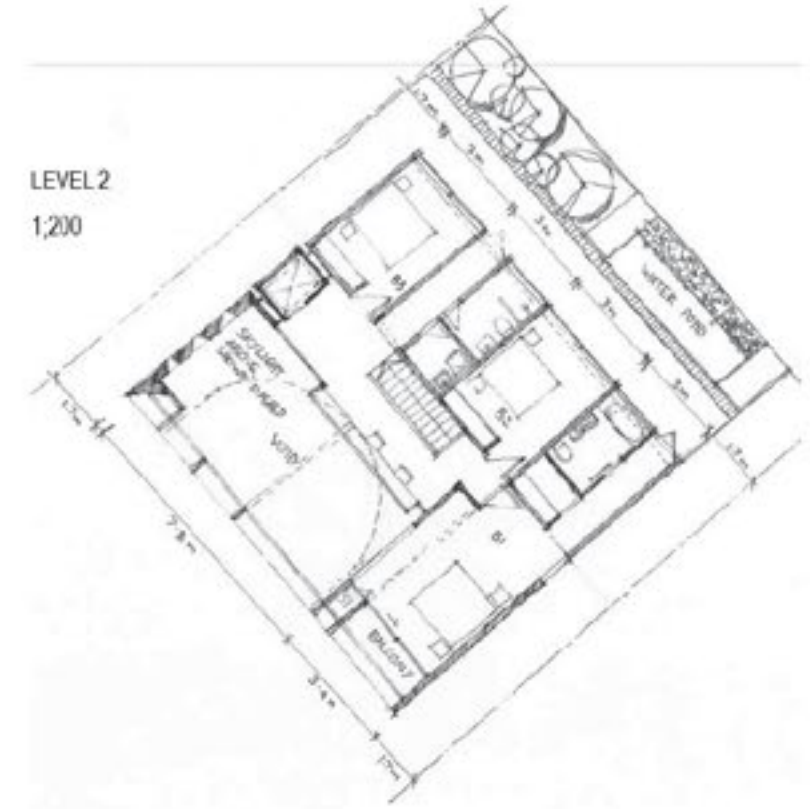
GROUND FLOOR - PARKING
1,200



LEVEL 1
1,200



LEVEL 2
1,200



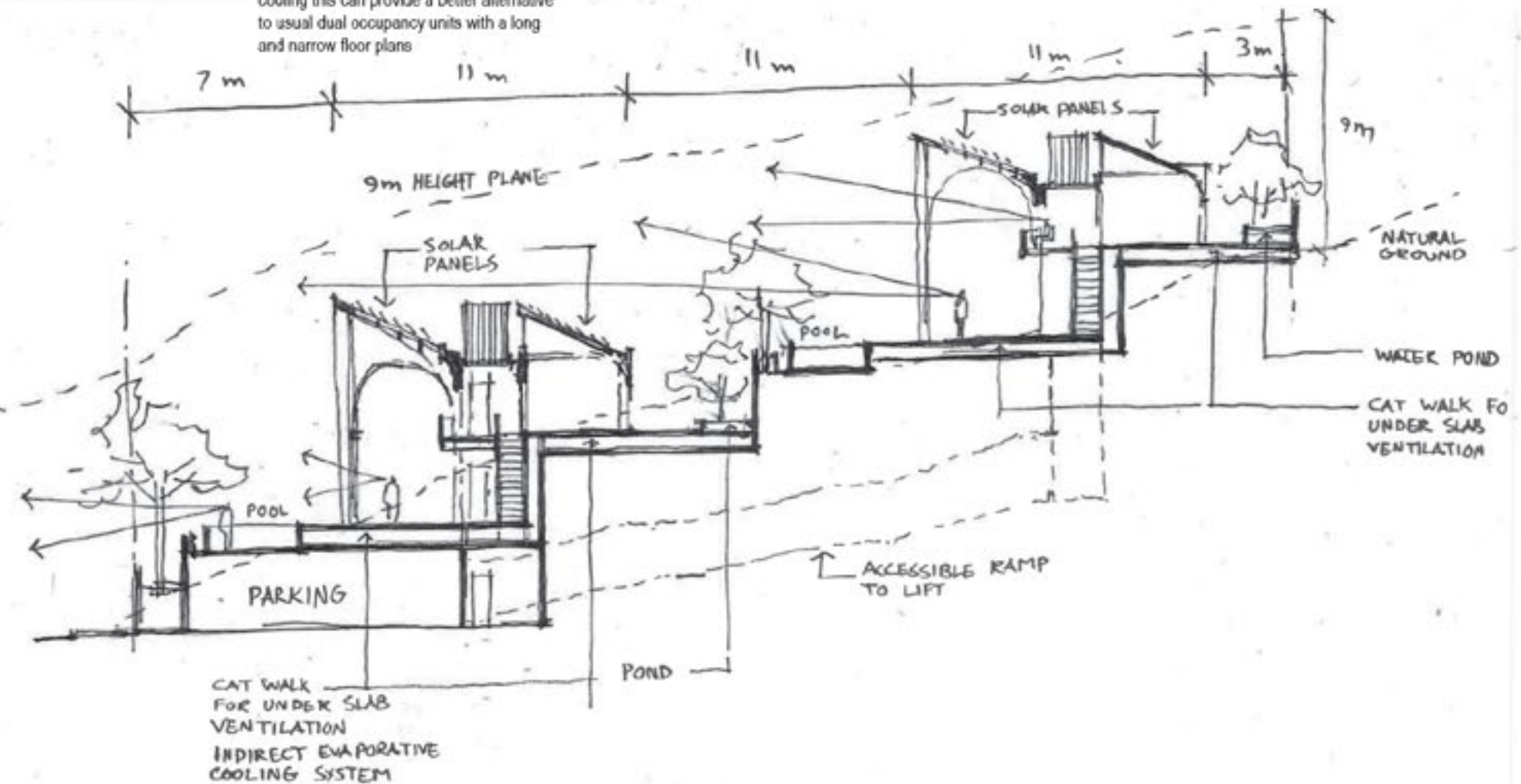
Single banked spaces on this floor provide great opportunity for access to natural light and cross ventilation. Accompanied by under slab cooling and heating as well as ventilation and redirect evaporative cooling this can provide a better alternative to usual dual occupancy units with a long and narrow floor plans

by orienting the buildings in east-west direction the intention is to provide better amenities for both units and provide them with great views, great level of privacy and much more spacious private open spaces.
Also the units can be NET ZERO ENERGY by combination of passive and active climate responsive design strategies.

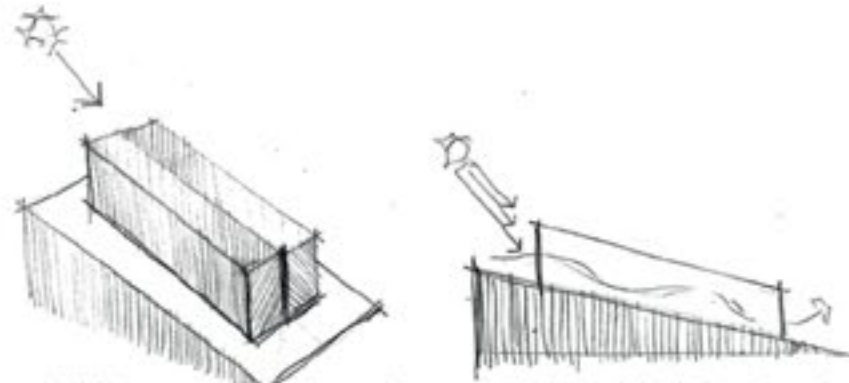
Climate responsive strategies:

- building orientation : building is orientated in east-west direction with maximum frontage towards north
- layout : layout provide shallow spaces which maximise access to natural light and improve significantly natural ventilation
- building is can be completely sealed in winter or hot summer days to help reduce active energy requirements
- use of thermal mass
- under slab cooling and heating
- cat walk under slab to improve ventilation
- swimming pool and water ponds and sunken gardens help improving thermal comfort and reduce energy requirements
- big north facing roof surfaces provide great opportunity for building integrated photovoltaic (BIPV) to be used for energy generation and hot water
- skylight over double height living room provides opportunity for daylight to penetrate deep into the floor plate when desirable
- wind catcher over the lift overrun provides extra ventilation in less windy days

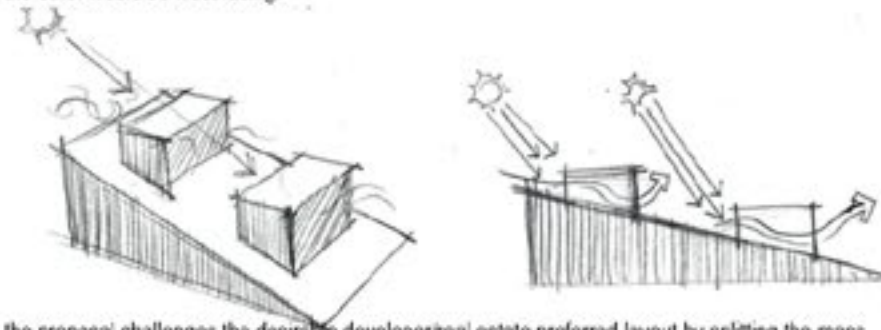
1,200



CONCEPT DESIGN

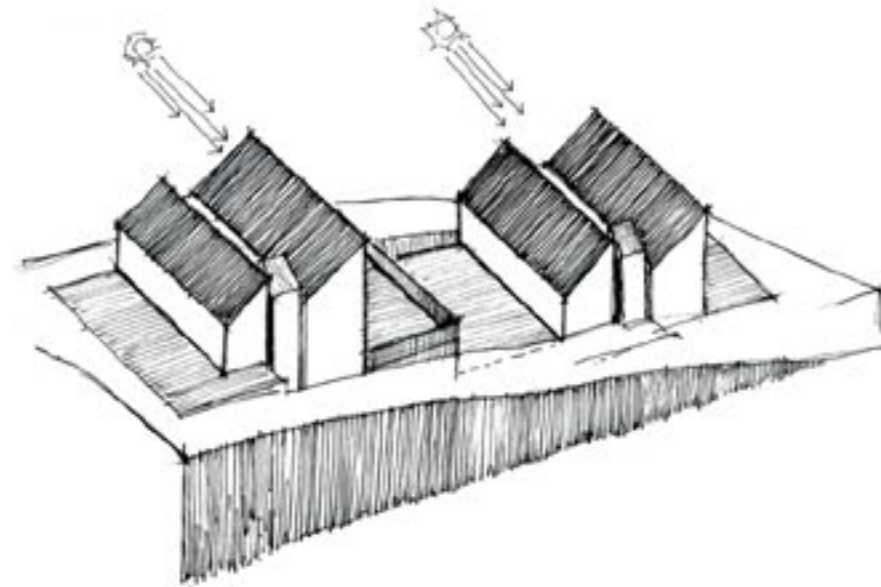


conventional dual occupancy units on long and narrow sites like this would be similar to above diagrams which are usually not orientated towards the right direction resulting in poor daylight access in some internal areas and poor cross ventilation. also the privacy is compromised and both units would be overlooking other neighbours private open spaces and one would be east facing unit and the other would be west facing



the proposal challenges the desirable developer/real estate preferred layout by splitting the mass into low identical masses which then can utilise the site in a much better way.

- both units have great level of privacy
- both have access to great view and maximised daylight access and great natural ventilation
- scale of the development is similar to single house while providing increased density



big north facing roof surfaces provide great opportunity for photovoltaic panels which are used for hot water generation (used for shower and under slab heating in winter) and electricity generation

south west view from street
single dwelling scale of the proposal while having a higher density



south east view from street
single dwelling scale of the proposal while having a higher density



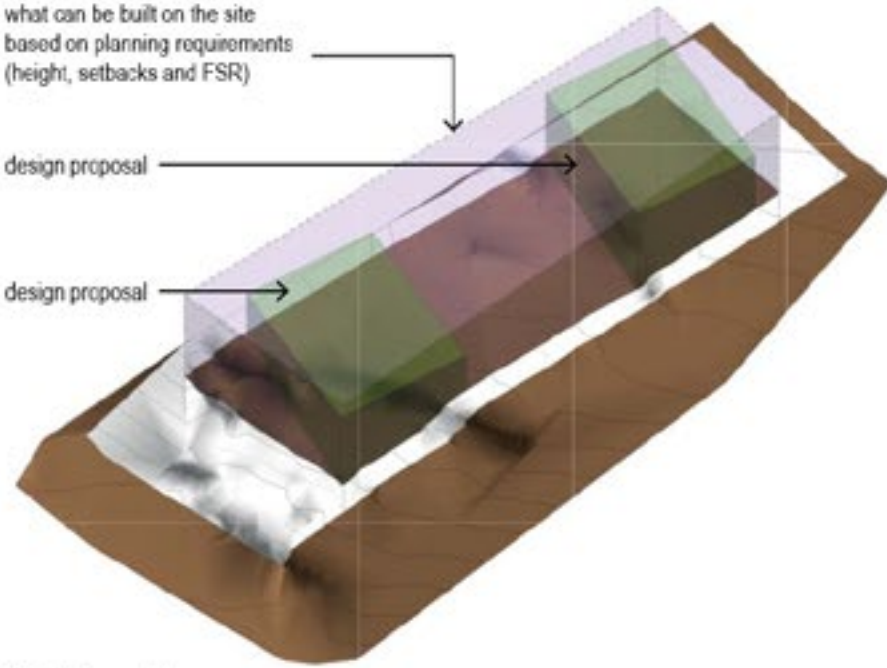
TESTING THE DESIGN GUIDE

building envelope

what can be built on the site based on planning requirements (height, setbacks and FSR)

design proposal

design proposal

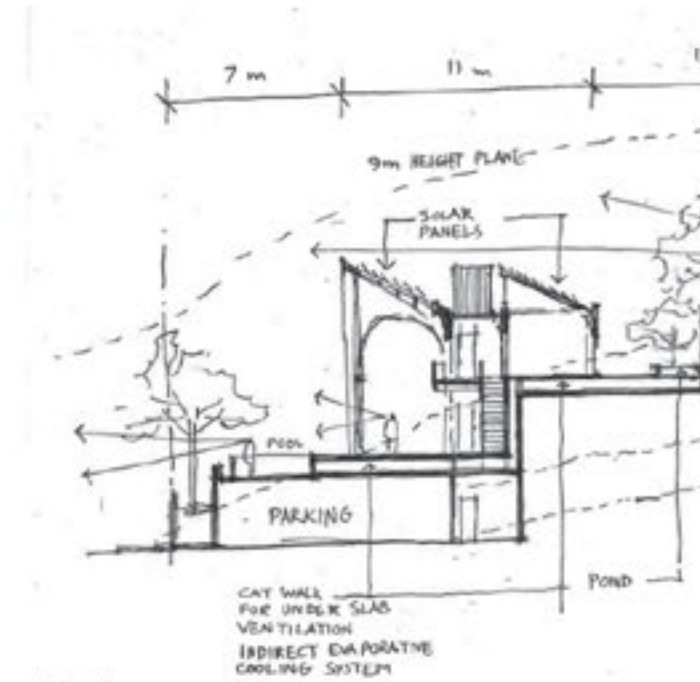


Orientation and siting
 building is orientate east west direction providing a 12m frontage for each building compared to conventional approach which would give 6m frontage for each

public domain interface

as it can be seen in the illustration, the garage door is not visible and public domain interface offers landscaped areas as well as use of natural materials such as sandstone and timber

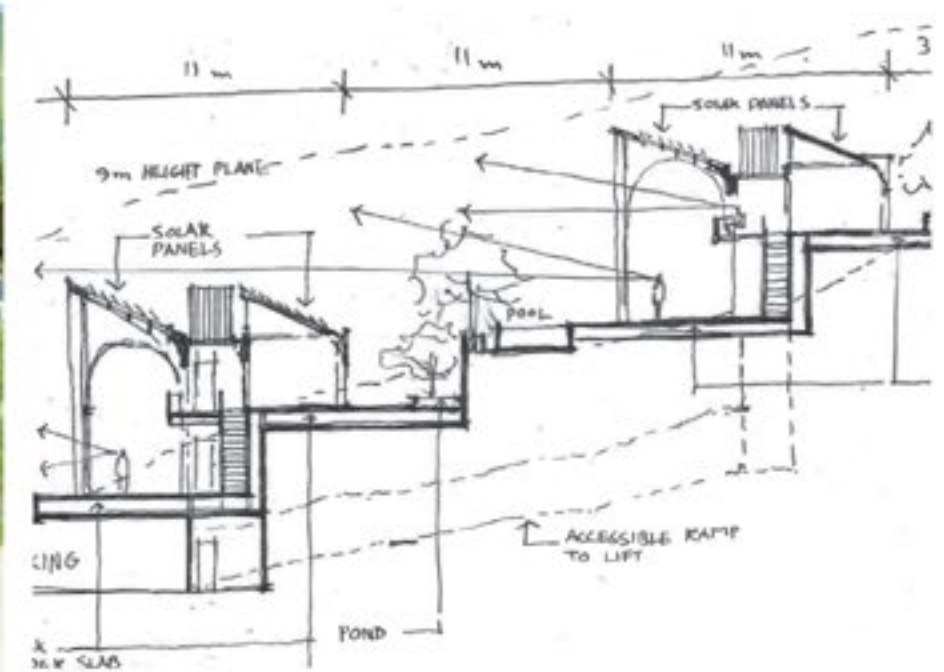
Environment
 section demonstrates how building takes advantage of passive environmental control systems



configuration
 universal design
 architectural form and design
 visual appearance

Amenity
 parking
 private open spaces
 storage
 visual privacy

building separation
 buildings are 11m apart which provides great privacy and opportunity for use of natural light and ventilation





Site Plan
Scale 1:500

The chosen site is 24 Turimetta Street Mona Vale.

Mona Vale is situated at the crossroads of the Northern Beaches approximately 30 kms from Sydney CBD. It sits at the meeting point of routes North to Barrenjoey and Newport, South to Manly and West to Lane Cove. It is also close to the shores of Pittwater.

The site is at the centre of the residential pocket that is bordered by Mona Vale Road and Pittwater Road. Turimetta Street was part of the first subdivision plan for the area in the early 1900's. It is an ideal location, close to Mona Vale Village shopping area, golf course, hospital and the beach. There is a smell of salt water in the air.

Turimetta Street is a long tree lined street with consistently large blocks. The houses are generally large two storey family homes of varying styles. Houses date from 60's through to 90's with some "Mc mansion" style residences recently built. Generally the houses on the street are either brick, rendered or weatherboard with a range of differently pitched gabled and hipped roofs. The existing style of the houses do not signal their beach location.

There are a small number of dual occupancy developments currently in the street. The generous size of the blocks makes them ideal for future subdivision without disrupting the current garden suburb feel of the area.

Mona Vale Road is currently undergoing extensive upgrades which will include more express buses to the city. It is also close to Ingleside which has been identified as a future land release area and will be injected with 3400 homes in the coming years.

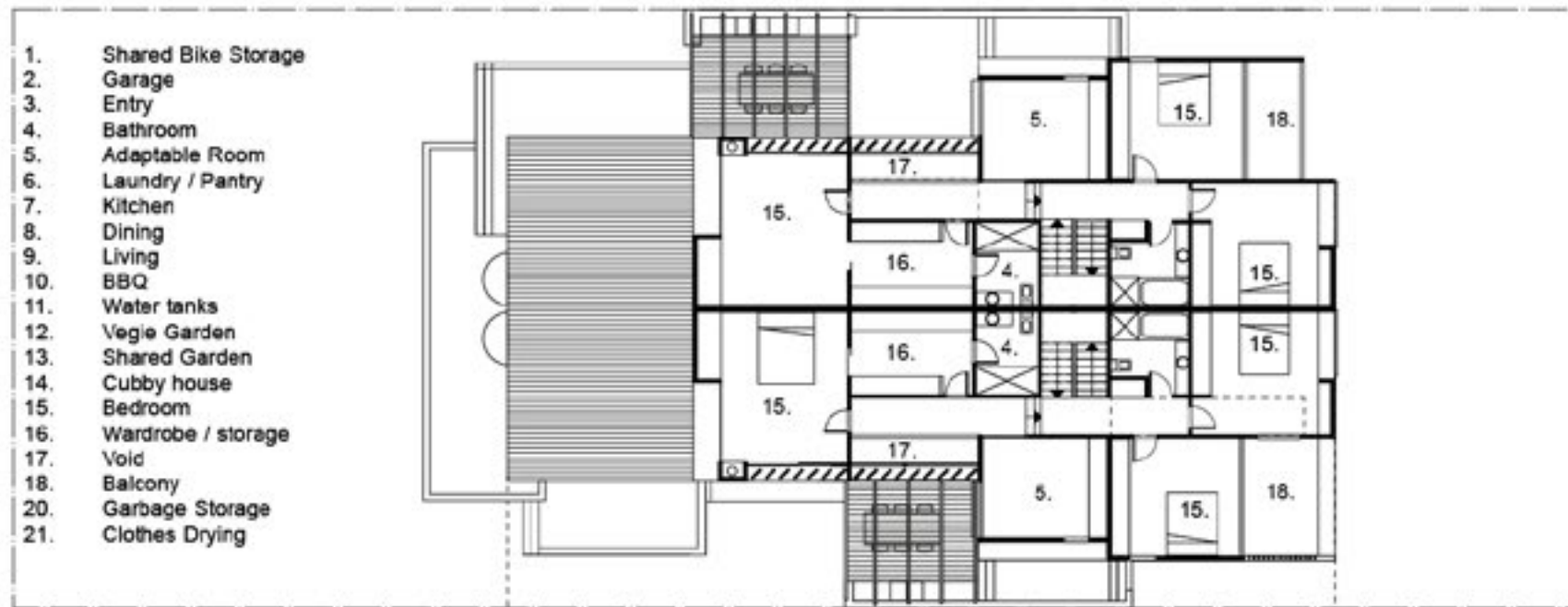
Area Plan

- Residential area
- Parks and recreational area
- Bushland
- Commercial and retail area
- Hospital
- Beach

Neighbourhood Plan

- Existing Dual Occupancy / Subdivisions
- Garden Area
- Trees
- Commercial and retail area

Context Missing Middle - Dual Occupancy



First Floor Plan
Scale 1:200



Ground Floor Plan
Scale 1:200

The design of the dual occupancy evolves around the garden.

The houses have been designed to accommodate both private gardens and shared gardens.

A shared bike storage area sits at the entry. It is fenced by a timber screen to allow light into the bathrooms and entry beyond.

Both houses have a series of private outdoor spaces situated on the edges of the site. Each outdoor space relates to the room it faces. Each kitchen has a void above that has access to a roof window. The East facing house has a West facing roof window and the West facing house has an East facing roof window allowing morning and afternoon light into the centre and hub of each house.

The private gardens are shielded from the shared garden at the rear of the site by a series of garden walls. These walls are to be made of earthy materials such as recycled brick and hardwood.

The shared garden is a large lawn with cubby house and possibly a future garden shed / studio. This space is left to the inhabitants to collaborate and design. Soccer games, cricket matches and gymnastics are just some of the communal activities that can take place in this large green space.

The concept of the shared garden at the rear can be applied to neighbouring developments and could eventuate in a park if consecutive sites were joined.



Concept Design - Garden House

Missing Middle - Dual Occupancy



West Perspective

The articulation of the front facade has been designed asymmetrically so as not to immediately signal the dual occupancy. The new building has the appearance of being a single residence which is typical of the street it sits in.

The balconies to the first floor bedrooms are treated differently in style yet both have good views of the street.

The forms and materials of the building are to be reminiscent of modernist beach houses. The materials are to be robust such as hardwood timber cladding and brick and allowed to weather over time.

The houses and garden step in line with the slope of the land. The change in level occurs at each zone - entry, kitchen / dining and living.

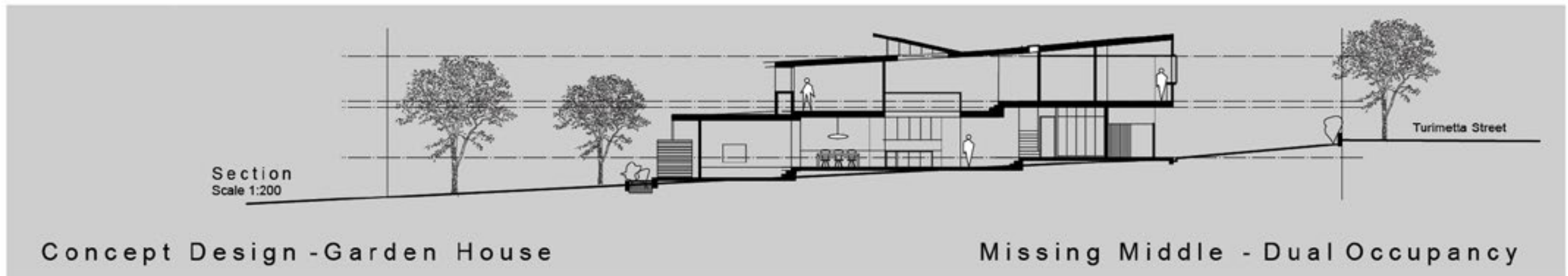
The roof design follows the fall of the land capturing all the roof water at the rear which is collected in water tanks. A raised communal veggie garden sits below the water tanks and has the potential to capture and filter a large quantity of additional water that can be used both for the garden and the house.

A shade structure to be made of timber and steel perches on the garden wall and shades the outdoor dining and BBQ area.

Sliding timber screens are features of the North facing master bedroom windows and the South facing bedroom windows and balconies.



Front Perspective



Concept Design - Garden House

Missing Middle - Dual Occupancy

Principal Controls

3.1A Building Envelope Side Setback Control

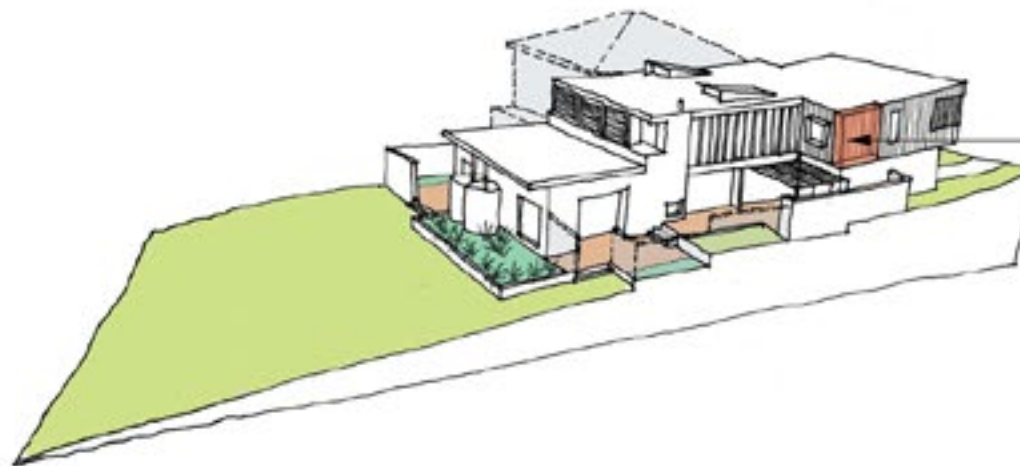
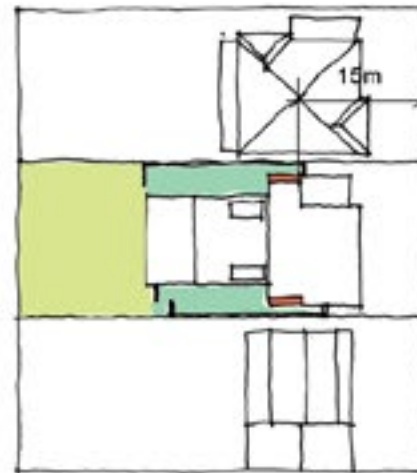
*Side Setbacks - Front half up to 15m is 1.2m
Rear half of the lot - Building envelope defined by
45 degree plane projected from a height of 3.6m above the boundary*

The first floor and overall shape of the design was compromised due to the fact that it needed to be setback 2100mm from the side boundary from a point of 15m from the front boundary.

This setback control has no relationship to the neighbouring houses that have first floors closer to the boundaries at this point.

The side setback control should relate to the length of the front setback and length of the site.

In this case the front setback is 9m which is an average of the neighbouring houses front setback. The first floor could then have a side setback of 1.2m or in this case 1.5m for at least a wall length of 11m.



The design could be improved if the side setback was relevant to the site length.

3.1A Building Envelope Rear Setback Control

*Where development is less than 4.5m in height Rear setback is to be
3m for lot sizes 200-600.*

For development less than 2.6m in height there should be 0 setback from rear boundary.

This allows a studio or shed to be placed in the backyard that will border the private open space and create a courtyard design. A low building on the Northern boundary will not affect neighbouring sites. Locating a studio structure back from the rear boundary 3m would create a dead space between the structure and the boundary that does not relate to the overall design of the landscape and main building.

Design Criteria

Design Criteria 63.

On grade carparking, garages and carports are setback from the boundary to the primary or secondary road by:

If the setback of the dwelling is less than 4.5m - 1m behind building line.

If the setback of dwelling is less than 4.5m - 5.5m.

The criteria for carparking does not make sense.

Design Criteria 88.

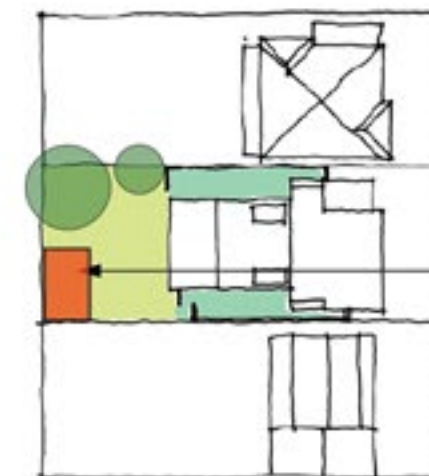
3m Setback to rear boundary for an outbuilding or detached studio.

This should be 0 setback for development less than 2.6 m in height as previously discussed.

Design Criteria 89.

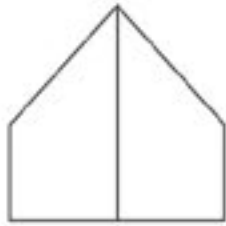
The floor area of a detached studio must not be more than 36sqm.

This criteria should be based on FSR. If the overall building design FSR is lower than required then a detached studio could be larger than 36sqm. A building of 5m x 8m would work well on this site to accommodate storage for surfboards and kyaks and act as a home office.



A low height detached studio in the backyard situated on the North back boundary could create a courtyard garden.

Missing Middle



Dual occupancy

A DUAL OCCUPANCY STRATEGY

This dual occupancy strategy applies to slender, sloping sites within ten-minutes' walk of a railway station. The chosen site is at 54 Chapman Avenue, Beecroft.

The strategy concentrates density around suburbs that can, and should, accommodate more residents. It focuses on sharing amenity at the level of the house, street and suburb.

SITE SELECTION

The long, thin suburban block is a common site condition across Sydney. Subdivisions are rectangular, with sites falling away from ridge roads towards bushland and bodies of water.

These lots are concentrated in Sydney's north and south, and are typically large. To the south, these sites run along the Woronora and Georges Rivers, as well as in rocky escarpments around Earlwood. To the north, ridge-lines from Chatswood through to Hornsby taper to bush and creeks.

To many, these suburbs represent the suburban ideal. The lots are peaceful and private, with plenty of land. Everyone has their own backyard, and occasionally a pool. There is room for all, and then some.

MAP OF BEECROFT



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.

ARCHITECTURAL RESPONSE

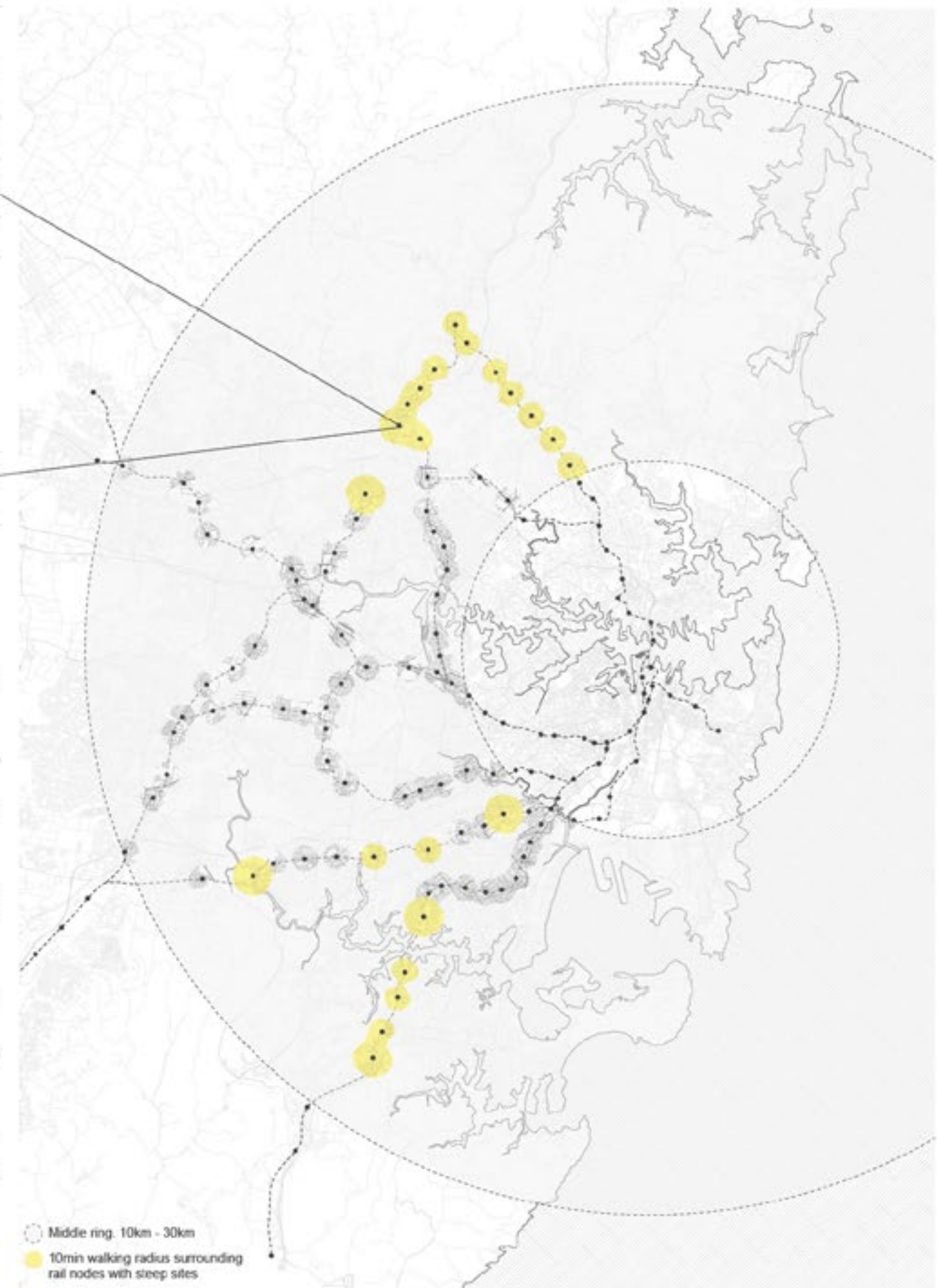
Slender, sloping sites are ideal for a fresh architectural approach. Steep topography prohibits conventional development - for example, project home developers refuse to build on sites steeper than 3° - and larger homes require drastic excavation or piling to support their mass.

This proposal is specifically suited to the natural qualities of these lots. Rather than aggressively cutting and filling, the strategy proposes a gradual stepping of spaces down the terrain.

At a human scale, the steps become subtle delineators of space. They define zones of living while keeping the family connected across a continuous, single storey.

This proposal forms a logical mediation between the single-family houses that typify the suburbs, and the unloved apartments that are sprouting up around transit nodes.

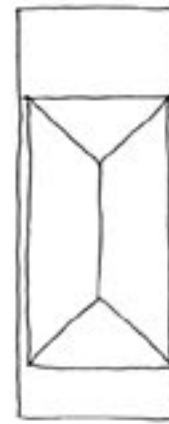
Accordingly, this dual-occupancy proposal is intentionally polite. It sneaks density behind a well-proportioned facade that relates to its context. Behind these walls, occupants are invited to live an interconnected life. In this way, our proposal returns to the ideals of modesty and community that once defined our suburbs.



○ Middle ring, 10km - 30km
● 10min walking radius surrounding rail nodes with steep sites

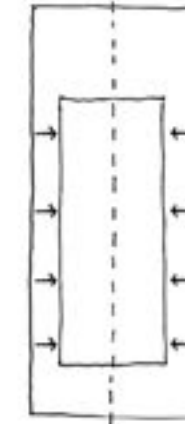


KEY ARCHITECTURAL STRATEGIES



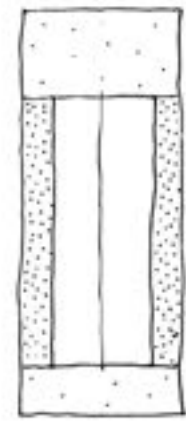
CURRENT SUBURBAN RESPONSE

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-occ. 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.



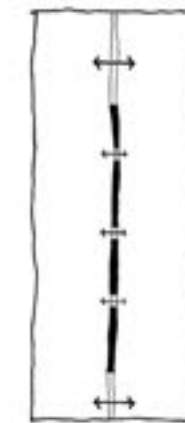
SHARED + PRIVATE OPEN SPACE

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.



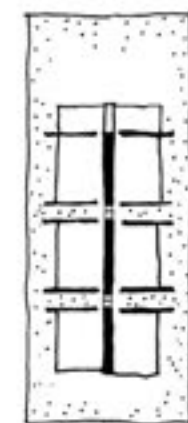
REORIENT TO SIDE GARDENS

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.

ARCHITECTURAL EXPRESSION

The scheme is located on Chapman Avenue in Beecroft. The neighbourhood character is a mixture of fifties brick homes and the occasional rendered house. Most of the houses are single-storey and modestly scaled.

The scheme is intentionally kind to its neighbours. Honouring the large front setbacks, the front yard is a generous space for play, gardening and rest. A low wall is placed on the street, encouraging use of the planted verge that lies between the boundary and street. In keeping with local character, carports are kept light and uncluttered, driveways are subtle, and garden is prioritised.

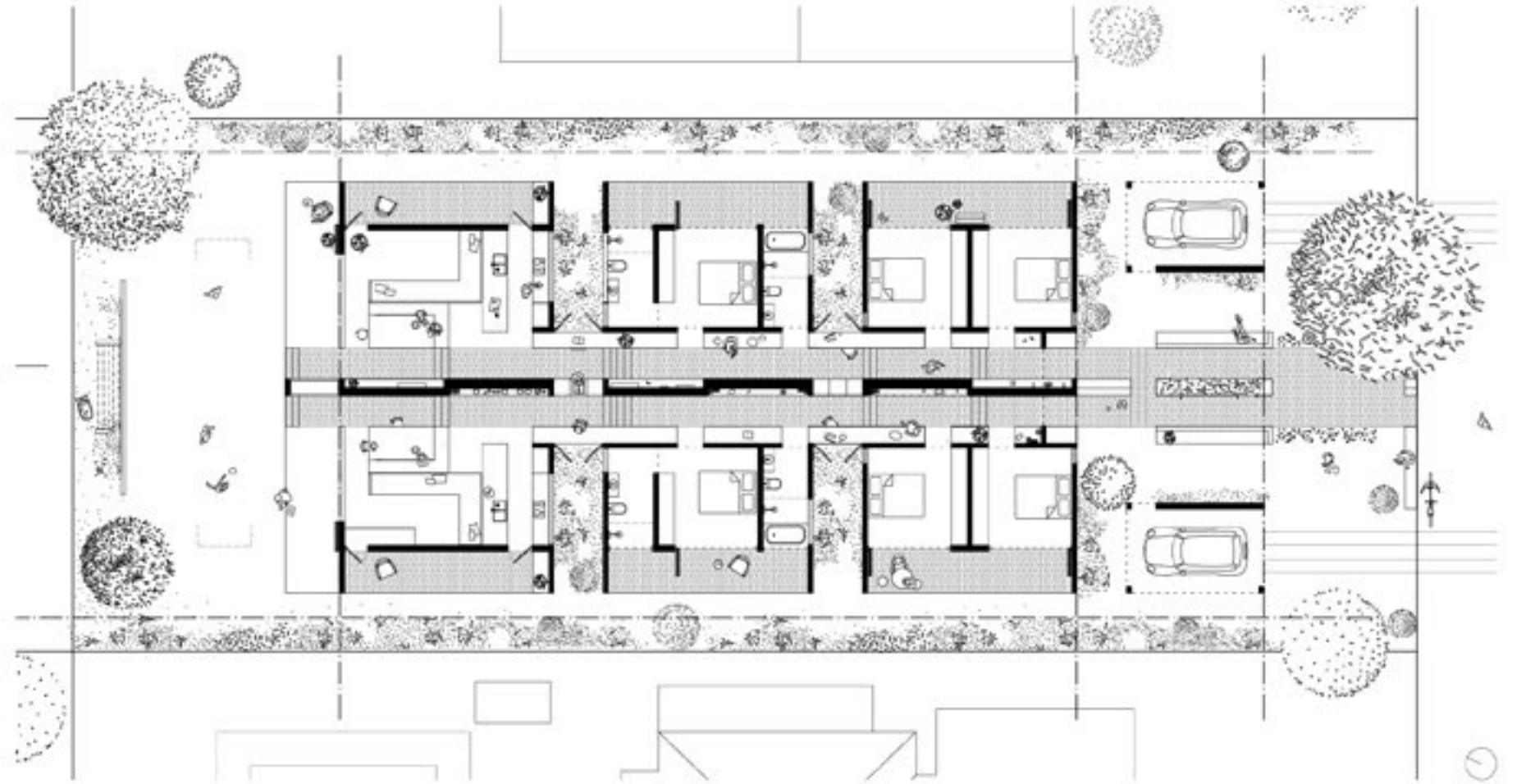
The house plan is defined by a simple strategy. A shared, thickened party wall divides the dwelling interiors. In the front and rear yards, the wall steps down to provide a looser, shared edge. The common wall is also a social spine, which disperses living throughout the house.

Off this public corridor, the rooms are arrayed in regular succession. Every room has a garden space, offering private, framed greenery and ventilation.

The material palette uses thinly proportioned blockwork - a reference to the street's brick facades that adopts this pattern without mimicking it. The roof is supported on fanned rafters, which lift north to capture sun.

The site maintains a five degree slope, which is explored rigorously, and joyfully, in section. Spaces tie together in height and length, with changes in level creating edges to work and perch on. Roofs lift up to capture sun and, in elevation, maintain the street pattern of hipped roofs pitching up from side boundaries.

This stepped section also has the potential to work on steeper lots. As slopes increase, the modules can create a similar procession through the home. If required, the courtyard spaces can accommodate drastic steps. These courtyards can also accommodate significant trees - a common feature in these suburbs.



PLAN 1:200



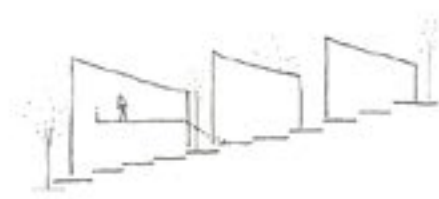
TYPICAL RESPONSE



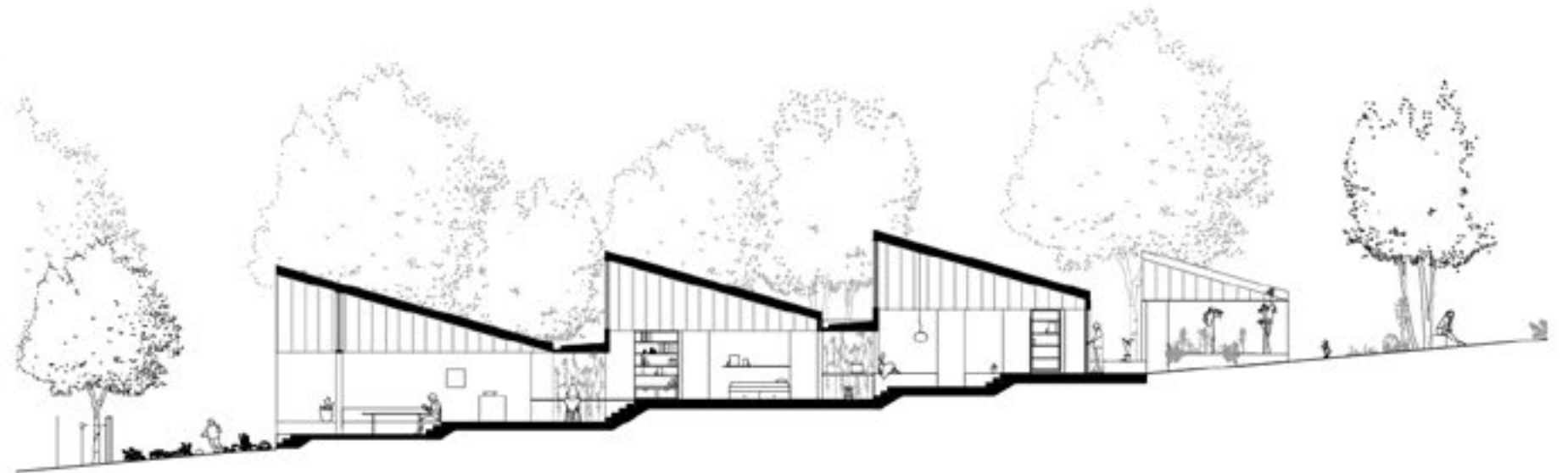
MODULES ON GENTLE 5° SLOPE



MODULES ON GREATER THAN 10° SLOPE



TALLER MODULES WITH MEZZANINE



LONG SECTION 1:200

TESTING THE DESIGN GUIDE

This scheme challenges the assumption that dual-occupancies require wide, shallow lots. Instead, this proposal is situated on a long, thin and sloped site. This condition reveals new opportunities for spatial division and public-private gradients.

The following challenges to the Guide enable long, thin sites to become ideal for medium-density development. Currently, the only path to density for these lots is a terrace house. However, since terraces need to happen 'in a row,' they prohibit the gradual proliferation of density.

It is critical that we adopt a more robust medium-density strategy for these lots, which dominate old, middle ring suburbs. This strategy is also a logical 'next-step' for suburbs reluctant to assimilate density.

PRIVATE OPEN SPACE

The design also challenges the controls around private open space. Dual-occupancies currently split front and rear yards down the middle. However, there are opportunities to share this space, providing larger yards for young families. This strategy is particularly ideal for young or multi-generational families who may want to interact around a shared garden.

FLEXIBILITY OF GARAGE LOCATION

In order to increase dual-occs in the suburbs, garages would ideally move closer to the front boundary. This gesture would drastically increase the number of lots that this dual-occ model could work on.

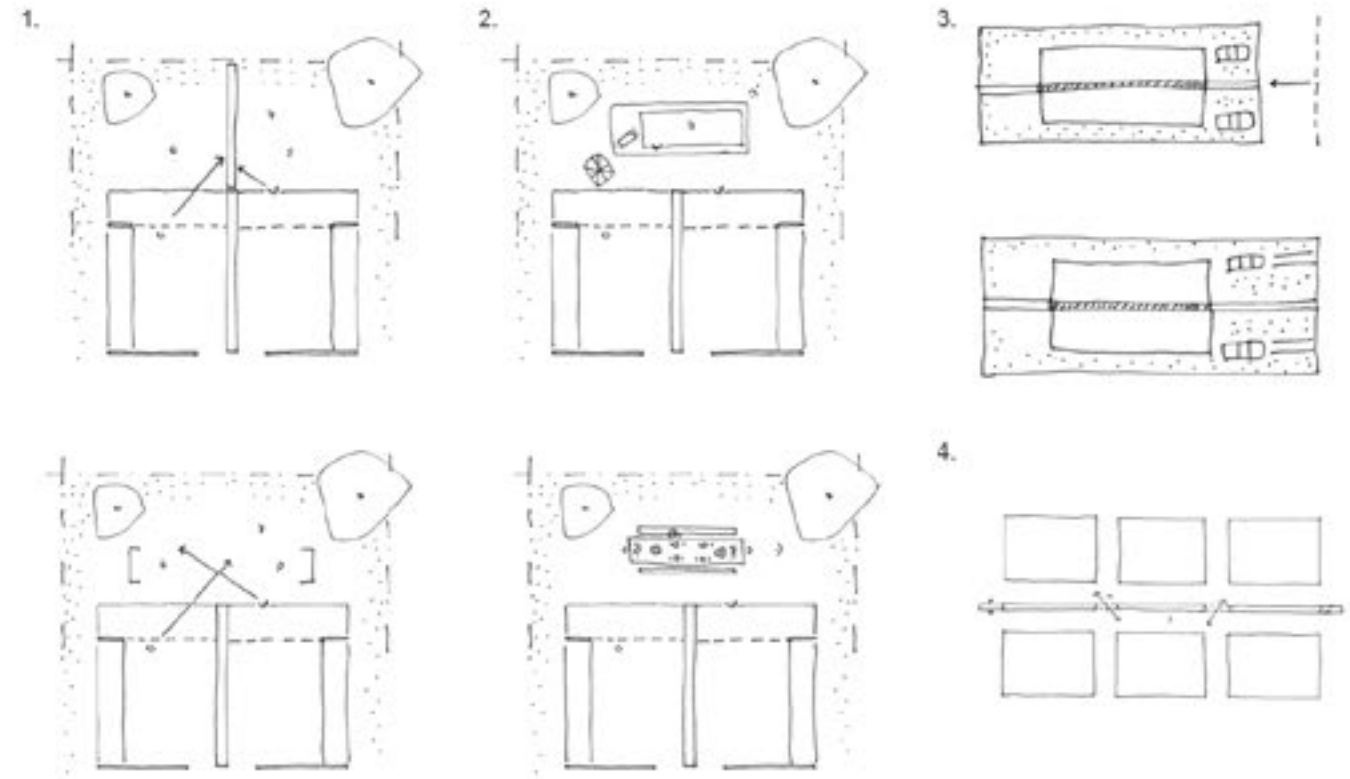
Doing this has additional benefits. Having garages closer to the street would add to neighbourhood life.

It is also a great future proofing strategy. As car ownership becomes less common, these structures would be ideal for new uses, such as workshops and home offices, adding a new layer of use to the suburbs.

Bringing garages to the front of the lot also minimises the amount of space devoted to driveways.

COMMON WALL

This proposal also challenges the idea that a dual-occ must be separated by an impenetrable common wall. Instead, the proposal shows potentials for eroding this wall in places to encourage interaction, and sharing, between households.



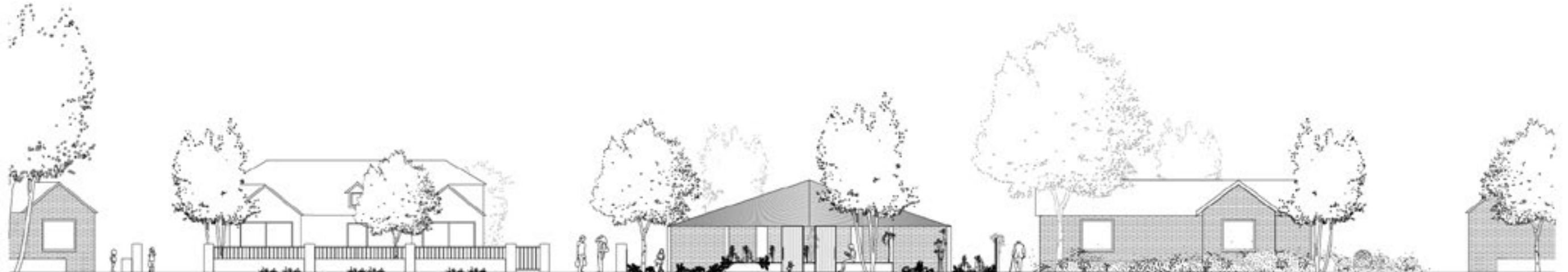
1. A conventional boundary can be lowered or removed to create a shared garden. Private open space can still be provided for each dwelling along each side boundary edge.

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

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

STREET ELEVATION 1:200





the site

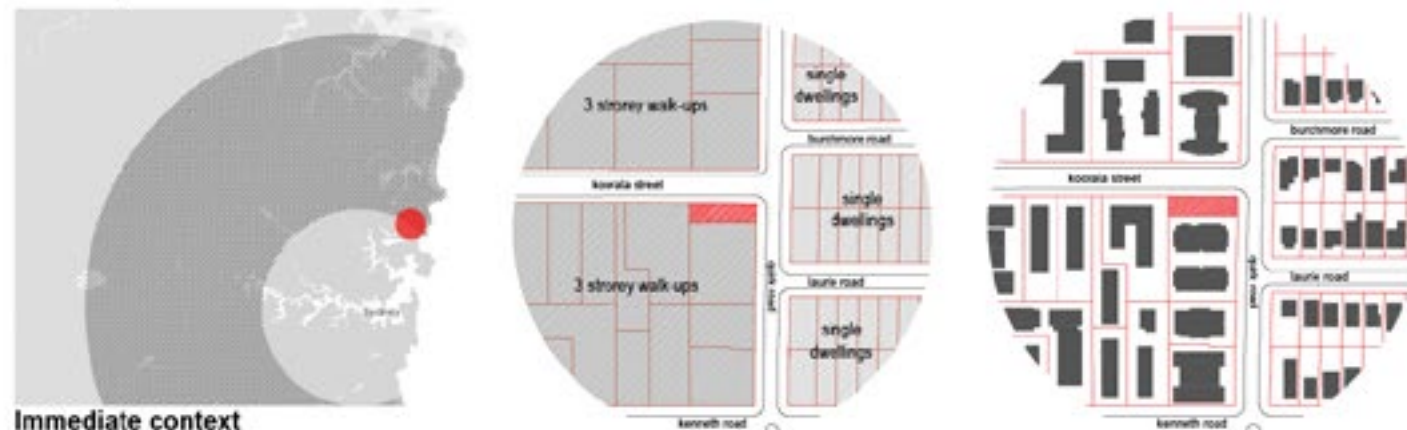
The selected site is a 'fringe' development in every sense. The site is located in Manly Vale on the border of the middle ring identified in the competition brief. The suburb is a mix of industrial, commercial and residential which is dissected by Pittwater Road - with development concentrated around this arterial road.

The immediate context of the site is the junction between the higher density R3 zoning and the low density R2 zone. The corner site is a smaller lot located within the higher density R3 zoning. Three storey walk-up apartment buildings constructed in the 1970s typify the surrounding development with almost all structures approaching a height of 12m. Quirk road provides a clear delineation in the zoning of the suburb with small scale one and two storey single dwellings populating the opposite side of the street and extending to the North, East and South.

The existing building of the site contrasts drastically with the scale of the surrounding development - with just a modest, single storey dwelling currently occupying the site. Previous lot amalgamations and developments have left the subject site isolated as an 'un-developable' in the conventional sense. Whilst the length of the site is substantial, the primary restraint on the development of the site is the narrow 10m frontage to Quirk road.

financial approach

Also relevant to the context of the development is our personal situation and the greater social context of housing affordability for younger generations. Faced with being priced out of purchasing a run down one bedroom apartment in the areas where we grew up - we have turned to another financial model to support our ambitions. Using a smaller scale collective housing approach of combining the funds of two interested parties, we have developed a plan where the purchase of a block of land is not beyond our means and with sufficient surplus funds to explore a modest construction. If economic construction strategies are utilised and with some fore thought for additional income streams - we believe this modest construction can provide a roof over ourselves and simultaneously increase density to a site which would have otherwise remained 'un-developable.'

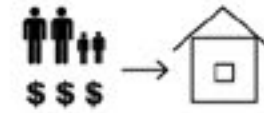


Immediate context

Financial model

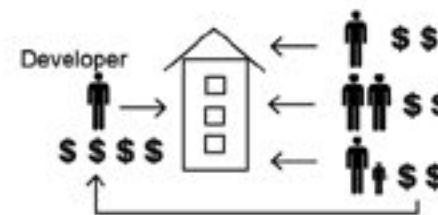
Existing house

Traditional model for the nuclear family. Not a viable financial solution for most young people nowadays.



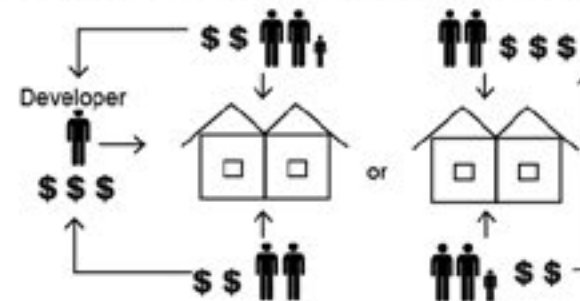
Typical development

One developer relying on investor driven property prices and inflexible layouts. Requires certain scale to be financially interesting for developers and relying on presales in today's lending market and results in a "standard saleable" unit type.



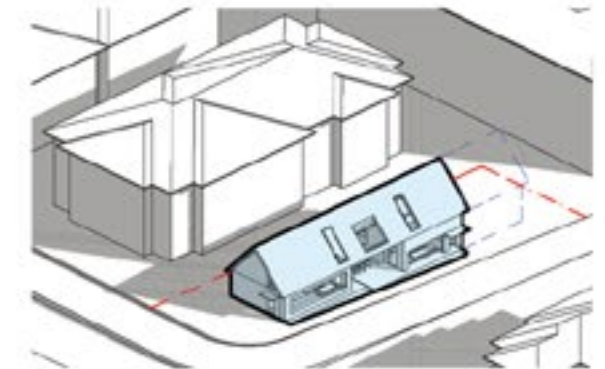
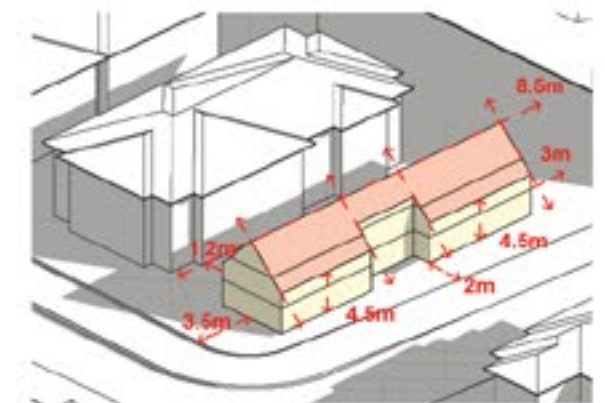
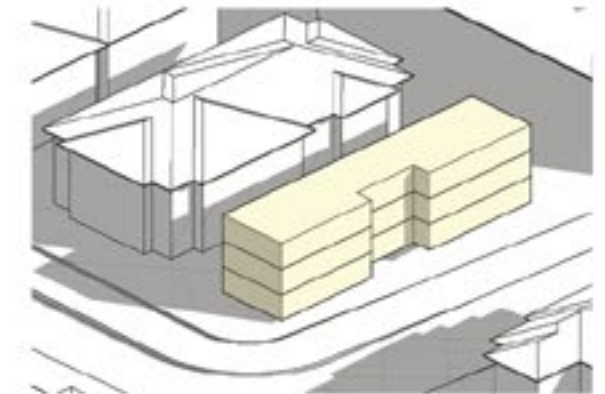
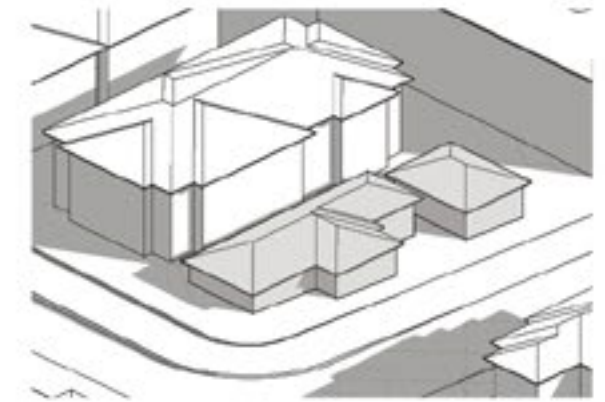
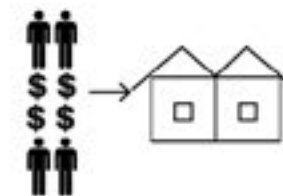
Missing Middle

Design guide constraints 8.5m height 4.5m wall height. Development could be both developer or private owner driven

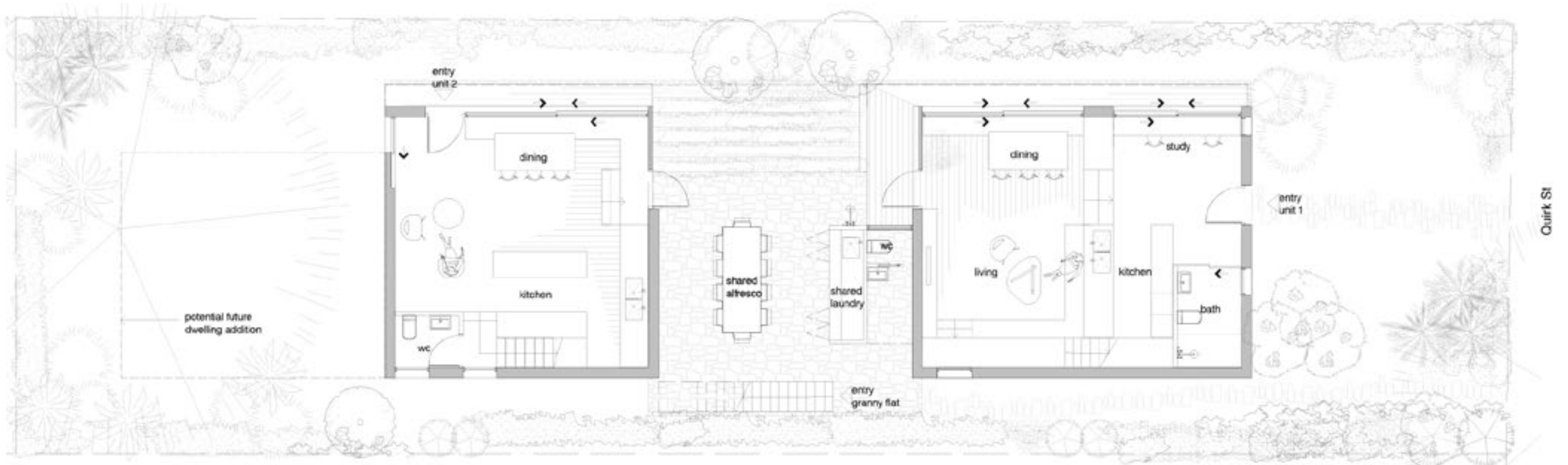


Affordable Missing Middle

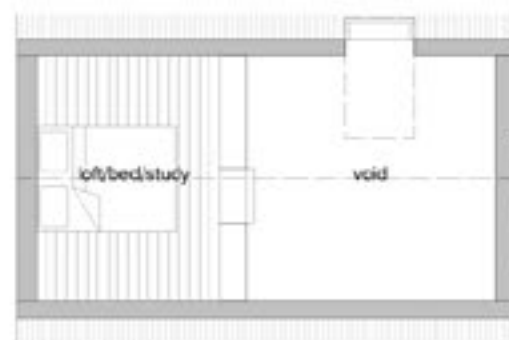
Co-development between owners with the footprint responding to the GFA we can afford to build, exploiting height and incorporating creative uses of space in roof. The proposal sets up for a possible future extension of an extra dwelling.



missing middle
density and housing affordability for those born later



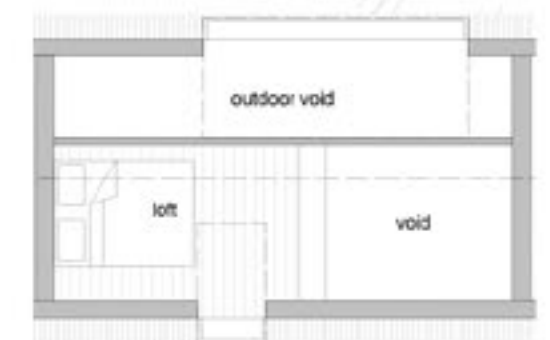
Ground floor plan
1:100



Unit 2 Loft plan
1:100



First floor plan
1:100



Studio Loft plan
1:100

the strategy

Pooling together the funds of 2 couples, we can realistically afford to purchase a comparable block of land and fund a modest construction. The primary strategy to reduce the cost of the construction works is to be is to reduce the size and scale of the development where possible. Also we have looked to 'do away with' some conventional facilities that are either unnecessarily duplicated in typical developments or have deliberately been excluded from the works. These include:

- shared private indoor, outdoor open space & laundry facilities
- limited bathrooms facilities to bare necessity
- removed on site parking to prioritise open space

In reality and similarly in this design competition we seek to construct a dual occupancy. However to ease the burden of mortgage lending for ourselves, the proposal seeks to include a studio dwelling to partially offset the mortgage burden. This is to be included without any additional building footprint to ensure that the initial costs do not outweigh the benefits of the long term gain. Similarly this studio does provide additional density and more variety in terms of the housing options currently available in the area. The proposal also opens up for a future extension of another, similar, dwelling on the site.

missing middle
density and housing affordability for those born later



missing middle 
density and housing affordability for those born later 

attached studios

The dual occupancy guide makes mention of controls regarding detached studios, however there is no mention of attached studios. We see no reason as to discourage attached studios if thoughtfully sited and integrated with the other dwellings.

ceiling heights & 2 storey control

Whilst retaining the maximum building height of 8.5m, we were able to explore the benefits of reduced ceiling heights in targeted areas. In lieu of clear 2.7m ceiling heights, voids are utilised to provide relief where needed - these are prioritised to living and dining spaces. Through this, we were able to include a 3rd storey within the permissible building envelope, making use of otherwise redundant built form. This is in contradiction of guide, however we feel it is a beneficial use of the space that has no further impact on the surrounding properties.

minimum dimension controls

The reasoning for minimum dimension controls is to ensure that pleasurable and usable spaces are provided for within dwellings. However the minimum dimension does take into account the 3 dimensional qualities of the space. If the space can be shown to be functional with furniture arrangements and if generous relief is provided by voids/vertical connection with spaces, then this control can be an unnecessary obstruction to creative solutions.

encourage flexibility in building types

Whilst we have approached this development as a dual occupancy, it contains 3 dwellings and has the potential for an additional dwelling to be easily added. This raises the question as to what typology this would be assessed as. If the building form is compliant, and if impact on adjoining properties is avoided then this increase in density should be encouraged.

borrowed light from light wells and voids

Whilst reliance on borrowed light is not-permissible in the guide, we would argue that if correctly thought through with appropriately sized and orientated voids - this can indeed be a viable solution.

visual privacy within lot

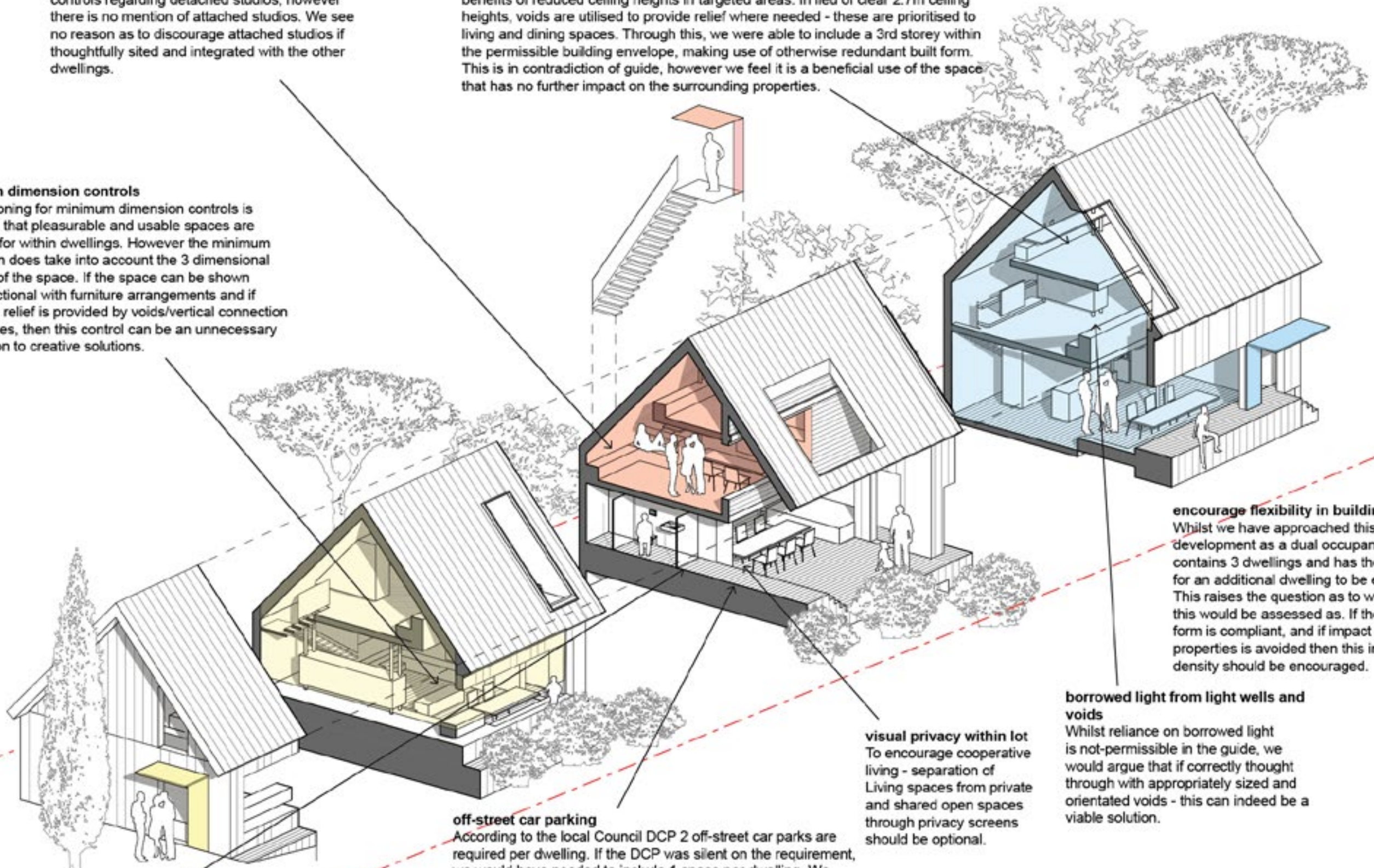
To encourage cooperative living - separation of Living spaces from private and shared open spaces through privacy screens should be optional.

off-street car parking

According to the local Council DCP 2 off-street car parks are required per dwelling. If the DCP was silent on the requirement, we would have needed to include 1 space per dwelling. We would encourage this requirement to be removed from the guide and instead for car-share systems and public transport to be prioritised. The logical location for these parks would have been the space identified as the shared open space, however we would argue the shared open space is a more desirable outcome. A car share on-street park could be located at the position of the 'would be' driveway access.

private / shared open space

To encourage cooperative living, it was decided to integrate the private open spaces of the development to create one larger outdoor / indoor space as the primary open space of all 3 dwellings. This is in contradiction of the guide, however we would argue that this is a more desirable outcome for the residents - encouraging more interaction between the building's inhabitants. This also allows for an increased landscaped / deep soil area.



missing middle
density and housing affordability for those born later

CONTEXT

Medium Density Dwelling

Our Interpretation of the brief "The Missing Middle" is to provide a flexible and adaptable housing solution that can be tailored to a host of medium density sites. An alternative solution to traditional free standing homes or standardized strata titled apartments is definitely required in Sydney. Housing options are required to maintain and enrich the suburban tapestry and encourage diverse communities. Looking at the Draft Medium Density Housing Guide, low rise medium density housing is proposed. A design led approach that can be adaptable to numerous configurations was our focus, all reachable within the complying development controls.

We have chosen one scenario here with our site. Flexibility is the goal and our site is one of many where these designs can promote better quality living. We chose a site in Mascot because it was typically suburban and a little out of date.

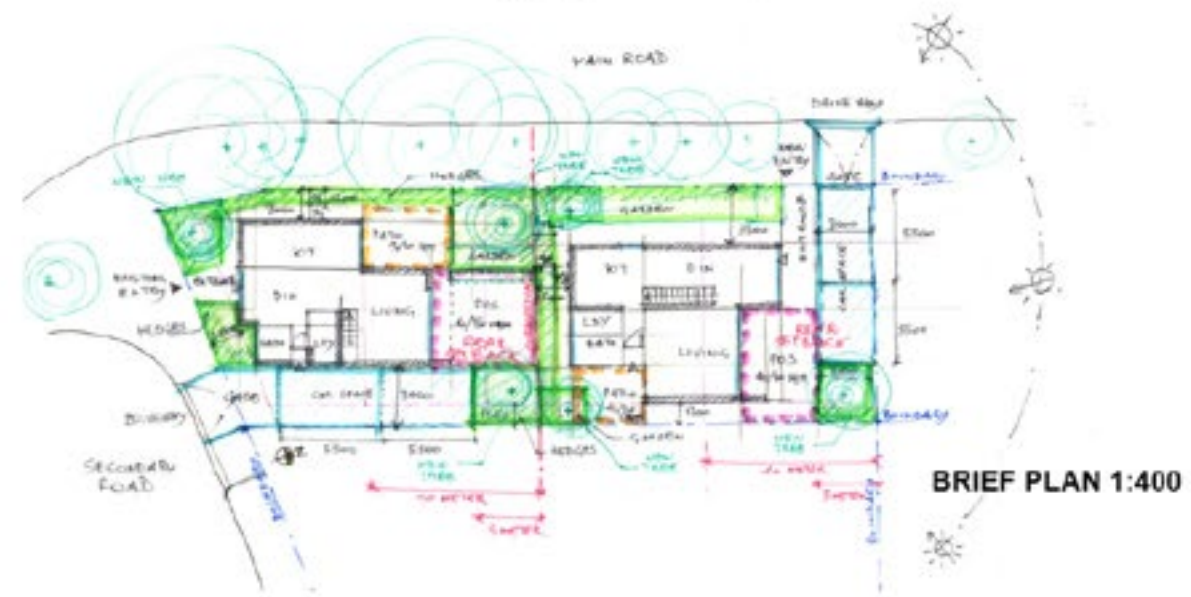
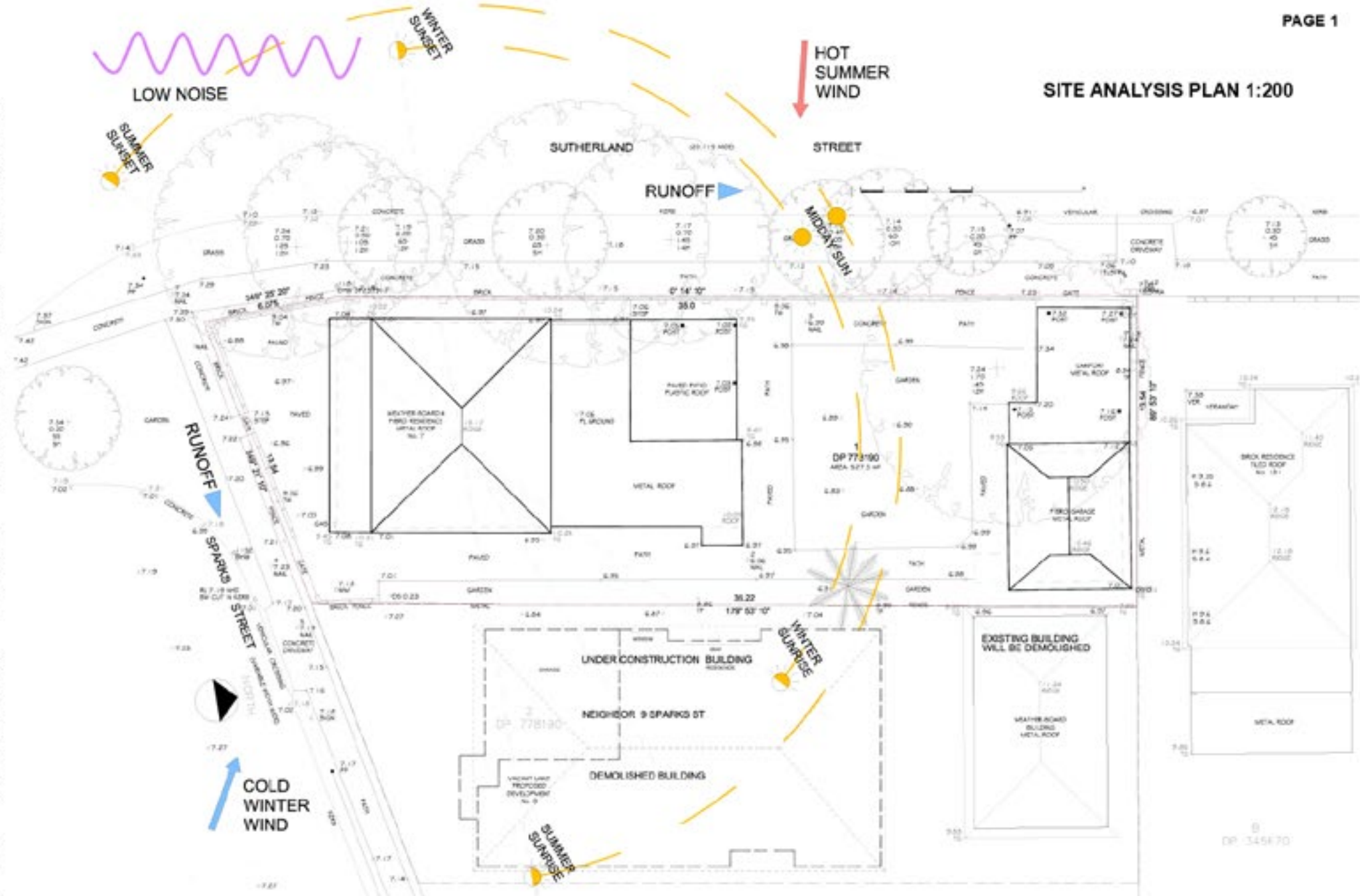
Located 7km south of Sydney's Central Business District, on a corner allotment at the western end of Sparks Street. The site is rectangular in shape having a width of 13.5m and a depth varying between 37.896m-43.128m. The total site area is 527.5m². Being a corner site, there are 2 orientations, each dwelling addresses this with a distinctive street presence and character. The resultant development will comprise of two detached dwellings, with dwelling 1 fronting Sutherland Street and dwelling 2 fronting Sparks Street.

The site presents good opportunities for developing a housing prototype in a generic setting. Sparks Street is characterised by predominantly single storey weatherboard houses. Sutherland Street is characterised by predominantly a mix of one and two storey dwelling houses of varying materials and roof forms, including brick and weatherboard dwellings with tiled or metal hipped, pitched and gable roof forms.

The development in its completed state will be complementary to the existing neighbours and surrounding development. It will be sympathetic with its surrounds in terms of its bulk, scale and overall built form. In particular, its second storey setback contained within the gable pitched roof form, minimises bulk and is in keeping with the scale of surrounding properties. Furthermore, the first floor terrace and balconies will increase solar access and ventilation on the first floor, with balconies setback within the gable roof form to maintain privacy. Balconies will be contained within the gable roof form, windows on the side of the property have been kept to a minimum.

The proposal will retain a significant portion of open space on the site, by way of courtyard gardens and soft landscaping (lawn), which is more than capable of holding deep soil plantings.

The orientation and layout of the new dual occupancy will have habitable areas located on the ground floor, with direct linkages to outdoor space. The provision of the large open plan living, dining and kitchen area, combined with large areas of glazing, will increase the penetration of natural light into the main living areas, in turn providing good solar access and ventilation, to assist in promoting thermal comfort for the occupants.



SITE PHOTO



CONCEPT DESIGN

Medium Density Dwelling



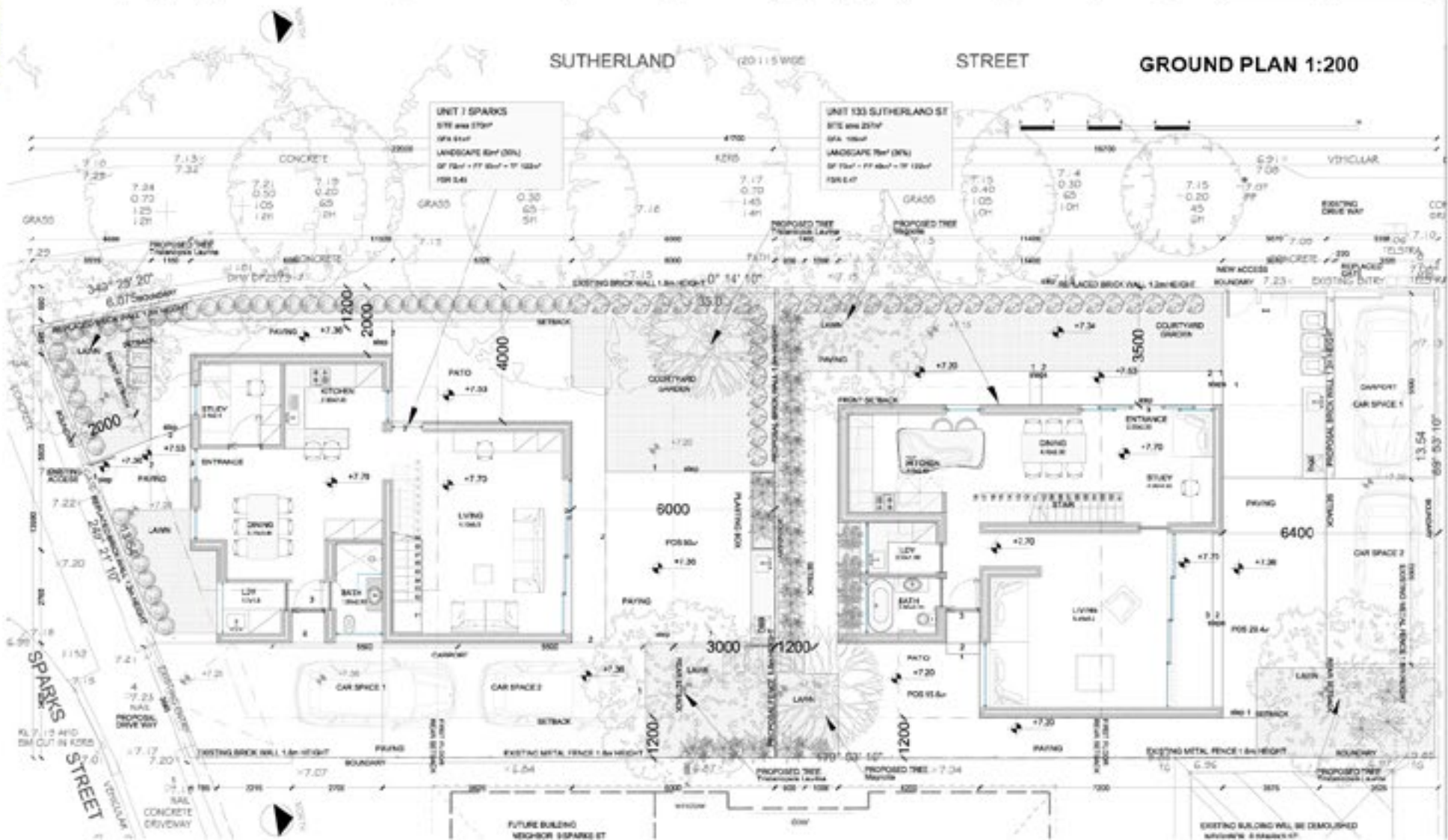
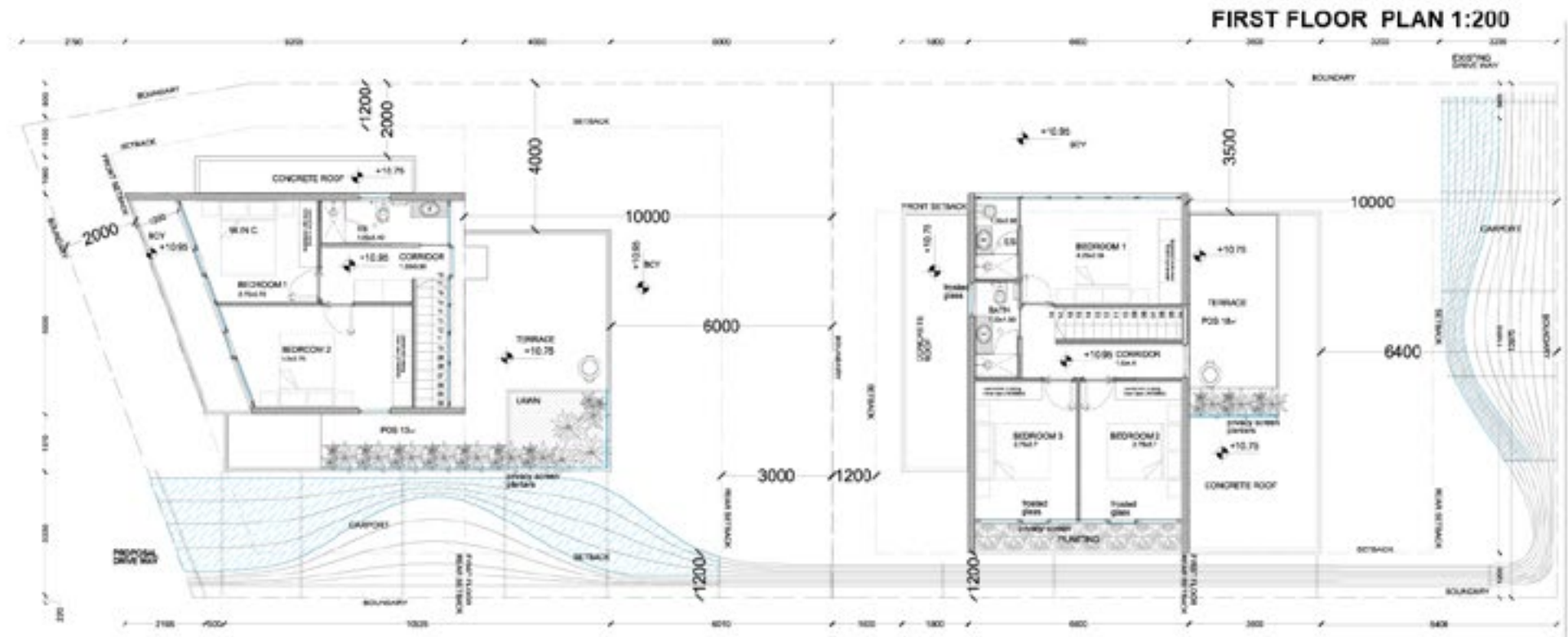
URBAN CONTEXT – “Out with the new and in with the Old.”

Pitched roofs are something that resonate with suburban living. Our adaptive approach seeks to remodel this vernacular and incorporate needed density and variety.

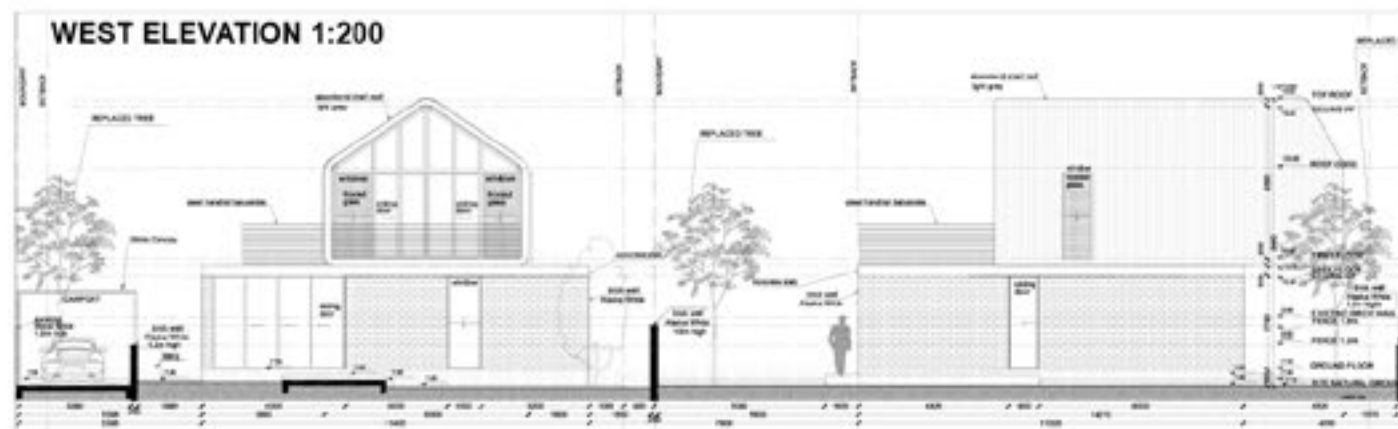
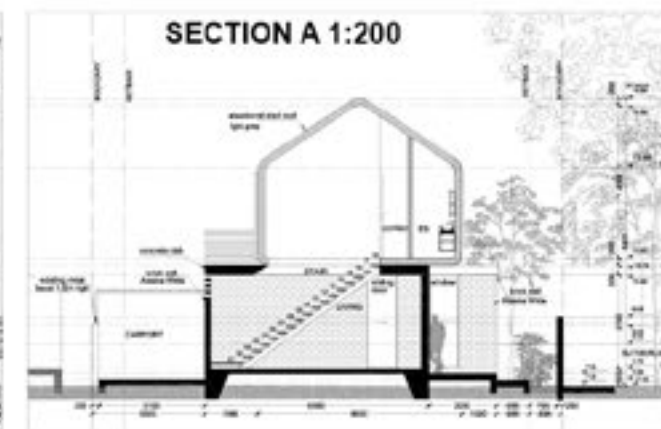
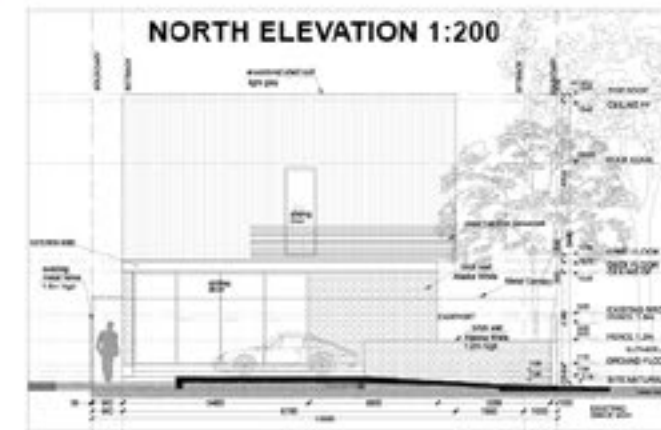
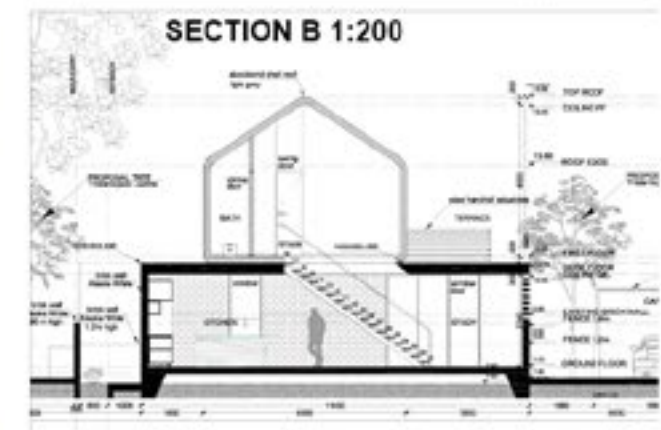
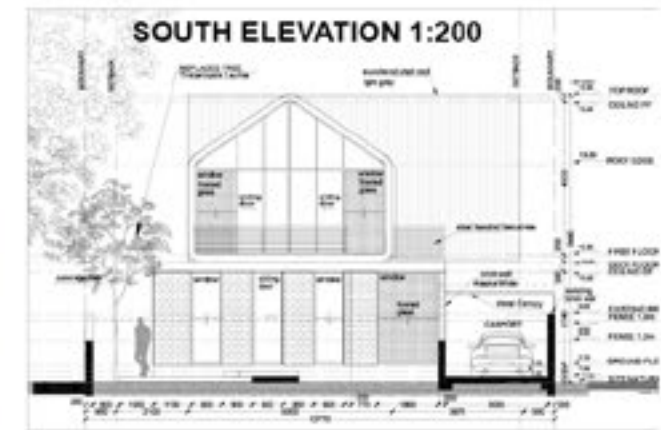
The pitched roof that is a familiar site in Sydney and the non-descript suburbs needs a makeover. An upgrade to the traditional familiar shape is the design premise, a contemporary makeover that is better ventilated, has better performance weather wise and is more suited to our climate of extreme hot and cold. A pitched roof for the 21st century and beyond, better light and retention of noble materials, wood steel and glass with much more efficient building techniques, contemporary styling, comfortable and modern for its occupants.

Our concept is to develop an affordable housing solution to the highest quality using new digital technologies and laser cutting techniques. Utilizing 3d digital technology. Construction of pre-fabricated pods a contemporary upgrade to a suburban context, with more effective construction time lines a cleaner site with less waste.

Strength through form principles. With a continuous loop beam idea, the form provides a structure. Using digital files for laser cutting derived from local boat building technology, harnessing this efficiency to streamline construction and organization on-site fabrication and boat building laser cutting techniques as each dwelling faces both streets, a structure that enables flexible space planning as the one above can be adapted to many sites.



CONCEPT DESIGN
Medium Density Dwelling



Incorporating a plywood frame provides less material mass, less waste and a shorter construction time. Material selection such as colorbond cladding are better suited to the Australian context. Large overhangs, balconies and outdoor spaces take advantage of the Australian outdoor lifestyle whilst still providing protection from the sun.

Externally, both units will be part one and two storey, with the second storey contained within the gable corrugated metal roof form. There will be large areas of fenestration and a front and rear balcony to each gable end. There are minimal side windows.

The first floor will comprise of a terrace and green roof. Large areas of landscaping and private open space will be retained on the site. In addition, a masonry boundary wall will be retained. One garage will be provided for each dwelling on the site.

Internally, the units will comprise of large open plan living and dining areas on the ground floor, with direct linkages to private outdoor space, as well as first floor bedrooms, with direct linkages to an outdoor terrace and balconies.

The proposed dual occupancy will provide a high level of residential amenity for the owners/occupants. It will provide two well-designed and comfortable units. Our bespoke modular concept will be erected quickly and robustly, something the occupants can be proud to call home.

"A HOUSE IN THE MIDDLE"



IN LOCATING A SITE TO TEST THE COMPLYING DEVELOPMENT PATHWAY FOR DUAL OCCUPANCY WE CONSIDERED SUBURBS THAT HAVE STARTED TO ADOPT THE SUBDIVISION OF LAND AND DUAL OCCUPANCY MODELS. WE COMPARE THIS TO THE TRADITIONAL TYPOLOGY OF THE QUATER ACRE BLOCK WITH A FREE STANDING DWELLING.

1. TRADITIONAL WESTERN MODEL:

IS THE PREVAILING TYPOLOGY FOR THE SUBURB. IT OFFERS A SCALED BACK SINGLE STORY FRONTAGE WITH RECESSED ENTRIES, PREDOMINANT HABITABLE ROOMS AND GENERALLY PITCHED ROOFS. VERANDAS AND LARGE OUTDOOR SPACES ARE ALSO FEATURED. CURRENTLY THIS IS NOT MEETING THE NEED OF THE INCREASING DEMAND FOR HOUSING IN THE SUBURBS.

2. CURRENT WESTERN MODEL:

THE CURRENT MODEL OFFERS TWO DUAL OCCUPANCY TYPES:

1. SHARED WALL, DUAL OCCUPANCY
2. SUBDIVIDED 2 DWELLINGS.

THIS TYPE USUALLY BRINGS WITH IT LARGE HOUSING THAT ARE REPLICATED ACROSS A SITE WITH SMALL OUTDOOR SPACES AND BREACHES IN FSR RATIOS. THE ECONOMIC MODEL THAT FOLLOWS SUITS THE DEVELOPER WHICH ALLOWS HIM/HER SELL TWO HOUSES WHERE THERE WAS ORIGINALLY ONE. PRICES ARE GENERALLY HIGH AS THE HOUSES ARE LARGE AND FILL MOST OF THE SITE.

HERE WE AIM TO FIND THE 'MISSING MIDDLE'; SOMETHING IN-BETWEEN THE TRADITIONAL WESTERN MODEL THAT DOES NOT NEED MEET THE HOUSING NEED OF SYDNEY AND THE CURRENT WESTERN MODEL THAT REGULARISES SOCIAL AND ECONOMIC FACTORS INTO A REPLICATED MODEL FOR LARGE HOUSES WITH MINIMAL LAND.

USING THE COMPLYING DEVELOPMENT PATHWAY WE WILL ATTEMPT TO ADDRESS THE ISSUES OF MULTI GENERATION LIVING ARRANGEMENTS, FLEXIBLE FORMAL OUTCOMES THAT PROMOTE A HIGH DESIGN QUALITY AND NEW OWNERSHIP MODELS THAT CAN EXIST SIDE BY SIDE IN OUR NEW MODEL FOR DUAL OCCUPANCY.



COMPLYING
DCP LEP



SUBURB.

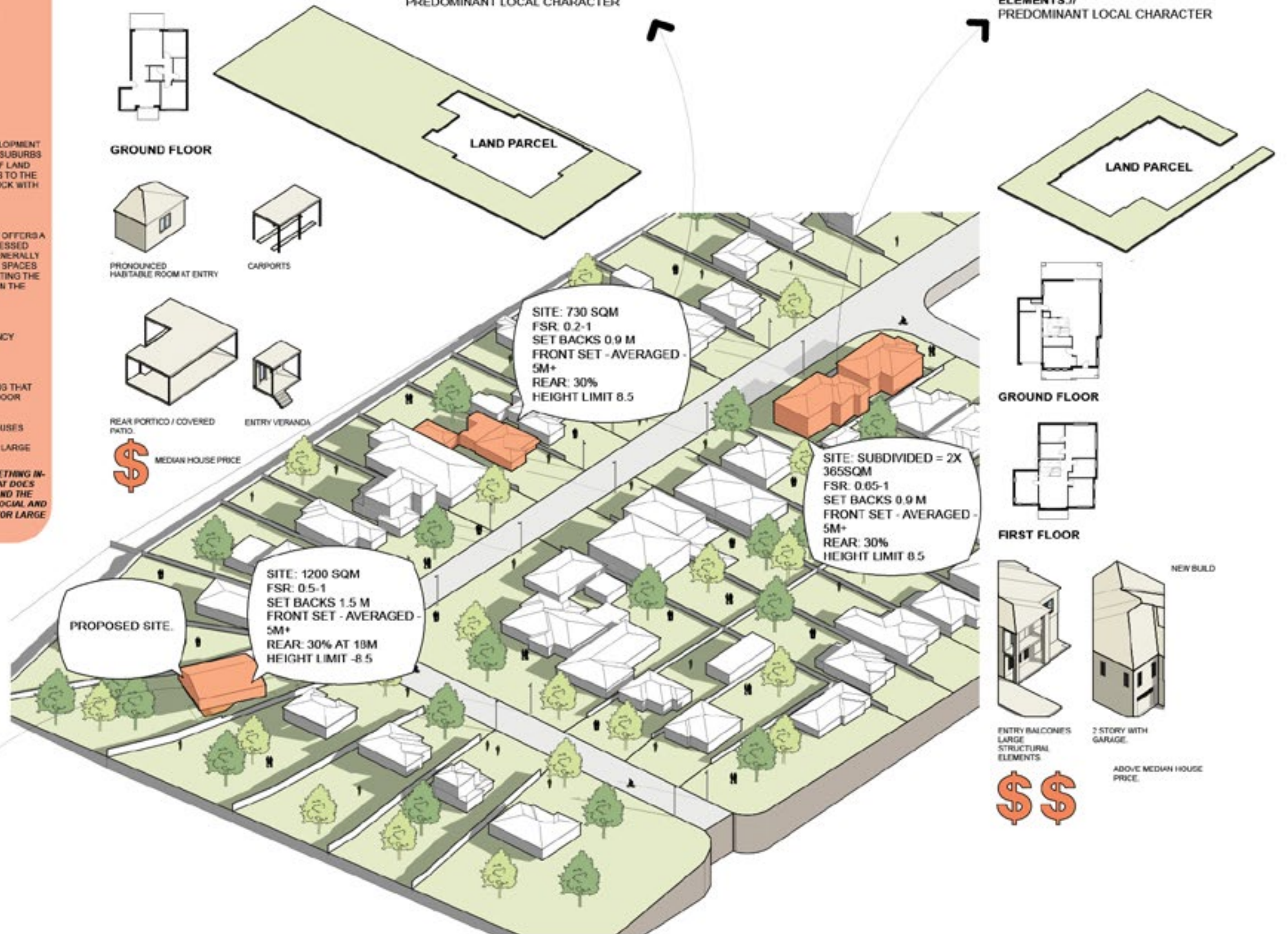
MIDDLE RING://
PENDLE HILL - LOCAL COUNCIL - PARRAMATA
BAGO & BURRA STREET.

TRADITIONAL WESTERN SUBURBAN MODEL.//

ELEMENTS://
PREDOMINANT LOCAL CHARACTER

CURRENT WESTERN SUBURBAN MODEL.//

ELEMENTS://
PREDOMINANT LOCAL CHARACTER



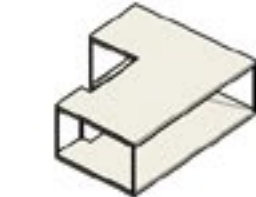
GROUND FLOOR



PRONOUNCED HABITABLE ROOM AT ENTRY



CARPORTS



REAR PORTICO / COVERED PATIO



MEDIAN HOUSE PRICE



ENTRY VERANDA

PROPOSED SITE.

SITE: 1200 SQM
FSR: 0.5-1
SET BACKS 1.5 M
FRONT SET - AVERAGED -
5M+
REAR: 30% AT 10M
HEIGHT LIMIT - 8.5

SITE: 730 SQM
FSR: 0.2-1
SET BACKS 0.9 M
FRONT SET - AVERAGED -
5M+
REAR: 30%
HEIGHT LIMIT 8.5

SITE: SUBDIVIDED = 2X
365SQM
FSR: 0.05-1
SET BACKS 0.9 M
FRONT SET - AVERAGED -
5M+
REAR: 30%
HEIGHT LIMIT 8.5

GROUND FLOOR



FIRST FLOOR



ENTRY BALCONIES
LARGE
STRUCTURAL
ELEMENTS



2 STORY WITH
GARAGE.

ABOVE MEDIAN HOUSE
PRICE.

NEW BUILD

A NEW DUAL OCCUPANCY MODEL:// SCENARIO 1.

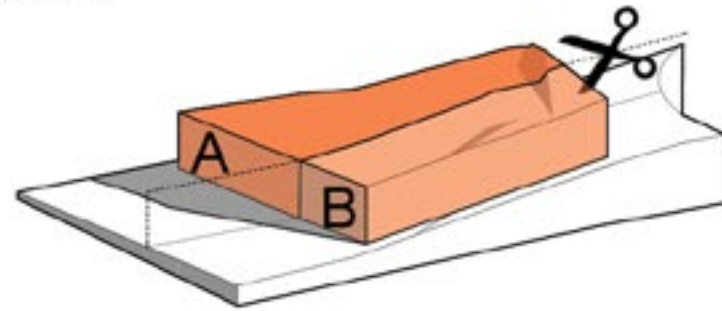
WE AIM TO CHALLENGE THE CONVENTIONAL MODEL OF DUAL OCCUPANCY THAT PROMOTES 50/50 SITE OCCUPATION WITH MIRRORED FLOOR PLANS AND MATCHING HOUSE PRICES. USING THE COMPLYING DEVELOPMENT ENVELOPE WE AIM TO INFILL THIS ENVELOPE WITH TWO DWELLINGS SIDE BY SIDE MEETING TWO DIFFERING ECONOMIC, SOCIAL AND FAMILY CONVENTIONS.

WE AIM TO SET UP A RULE SET FOR ARCHITECTS AND DEVELOPERS AND HOME OWNERS THAT FOSTERS SOCIAL INNOVATION, FLEXIBILITY AND THE CHANGING ECONOMIC NEEDS OF THE OCCUPANT

THE FORMULA CONSISTS OF:

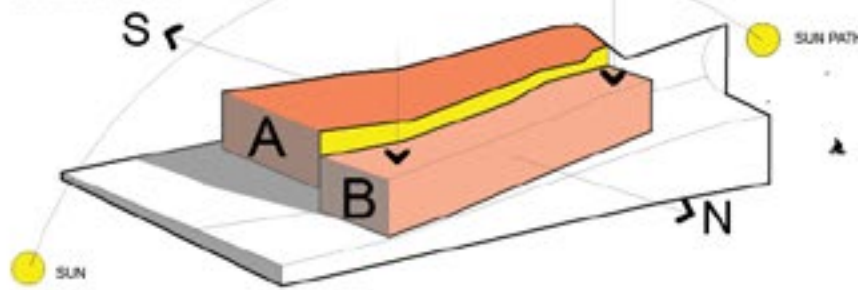
1. A LIVING BASE (FIXED GROUND FLOOR ELEMENTS THAT APPLIES TO BOTH SITES OF THE DUAL OCCUPANCY). THE BASE HARNESS ALL THE FIXED NEEDS OF A USER, EG, KITCHEN TOILET, LIVING, DINING ETC.
2. THE BEDROOM MODULE. THIS IS THE FLEXIBLE ELEMENT IN THE DESIGN THAT IS MEDIATED BY THE BASE BELOW. OVER THE LIFE OF THE HOUSE, ROOMS, ROOF TOP GARDENS CAN BE ADDED OR REMOVED TO FIT THE CHANGING NEEDS OF OCCUPANTS.

TESTING COMPLYING ENVELOPE//



COMPLYING ENVELOPE THE 8040 DUAL OCCUPANCY CUT CHANGES THE CONVENTION 5050 SPLIT DOWN THE MIDDLE.

SITE CONDITION:// ADDRESSING AMENITY: SOLAR ACCESS



THE FUTURE FAMILY



- 1. MASTER BEDROOM
- 2-4. KIDS BEDROOM
- 5. ENTRY
- 6. LIVING
- 7. KITCHEN DINING
- 8. SERVICE AMENITY
- 9. GARAGE

THE ESTABLISHED FAMILY



- 1. MASTER BEDROOM
- 2-4. KIDS BEDROOM
- 5. ENTRY
- 6. LIVING
- 7. KITCHEN DINING
- 8. SERVICE AMENITY
- 9. GARAGE

A

FLEXIBLE MODULE.
THE ABILITY TO ADD OR LEAVE OFF MODULES MEDIATES THE DWELLING PRICE, ALLOWING FOR A MIXED ECONOMIC MODEL.

B

1. ROOF LINE ALTERNATING ROOF LINE ORIENTATIONS PROVIDES SUN INTO SOUTHERN SITE, MAINTAIN LOCAL CHARACTER
2. FIRST FLOOR L&S A FLEXIBLE MODULE THAT PLUGS INTO THE FIXED GROUND FLOOR ACCORDANCE WITH THE NEED OF THE OCCUPANT.
3. GROUND L&S A FIXED LIVING MODULE THAT APPLIES TO THE GROUND FLOOR OF BOTH DWELLINGS

MATCH NEIGHBOURHOOD CHARACTER.

B A

1. ROOF LINE



2. ROOF LINE SKYLIGHTS

SKYLIGHTS IN ROOF LINE ENHANCE SOLAR ACCESS TO SITES ON SOUTHERN SIDE OF DUAL OCCUPANCY CUTS.

3. PRIVACY

SCREENING PROVIDES NEEDED PRIVACY FOR NEIGHBOURS AND OCCUPANTS.

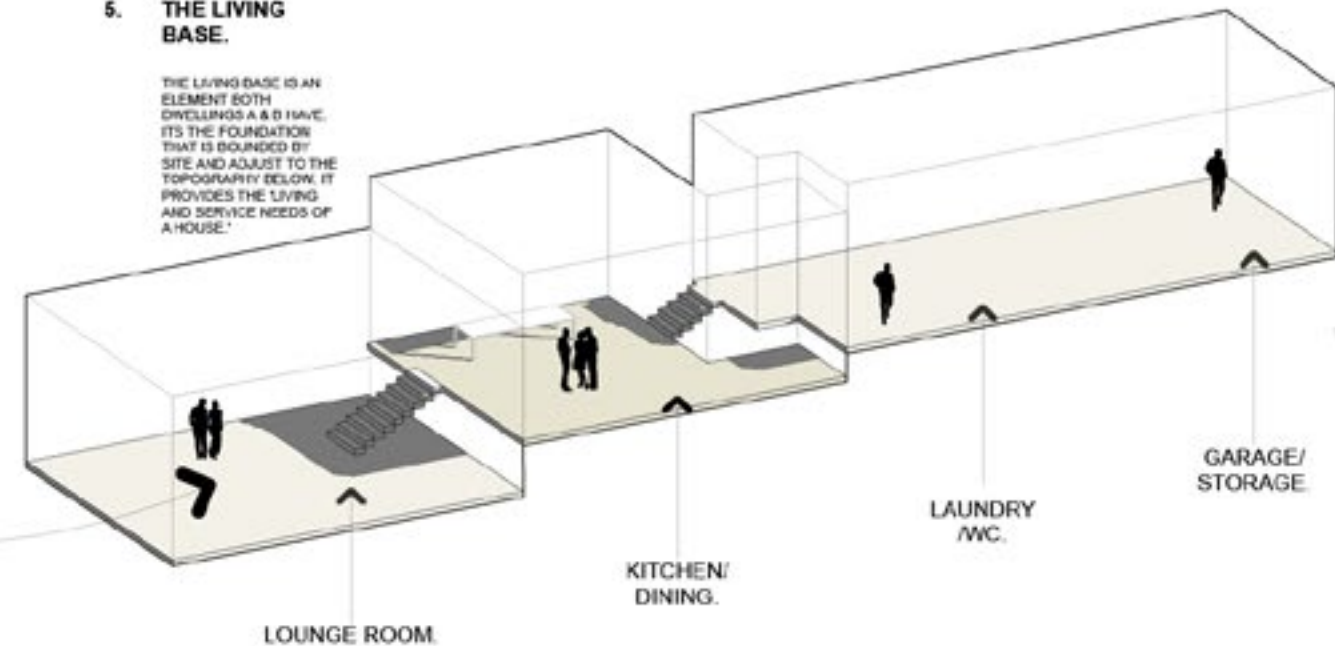
4. ROOF GARDEN.

TRANSITIONAL PLUG IN SPACES GENERATED ON FIRST FLOOR ACT AS ROOF TOP GARDENS. DURING THE LIFE OF THE HOUSE AND THE EVER CHANGING NEEDS OF OCCUPANTS THESE SPACES CAN BE FILLED WITH HABITABLE ROOMS.



5. THE LIVING BASE.

THE LIVING BASE IS AN ELEMENT BOTH DWELLINGS A & B HAVE. ITS THE FOUNDATION THAT IS BOUNDED BY SITE AND ADJUST TO THE TOPOGRAPHY BELOW. IT PROVIDES THE LIVING AND SERVICE NEEDS OF A HOUSE.



TESTING THE DESIGN GUIDE.//

WE DEVELOPED SCENARIOS IN WHICH WE WANT TO ADDRESS HOUSING THAT SUGGEST A SIDE BY SIDE LIVING BETWEEN MULTI-GENERATION CLASSES. THE FOLLOWING SCENARIOS ADDRESS THE NEED FOR THE DESIGN GUIDE TO CLARIFY DUAL OCCUPANCY LIVING TO INVITE A LARGER CONTEXT OF SIDE BY SIDE LIVING THAT CAN GO BEYOND "TWO DWELLINGS ON A SITE"

MAINTAINING THE COMPLYING ENVELOPE WE ARE ABLE TO PLUG IN MULTIPLE LIVING ARRANGMENTS FOR SHARED ECCELRY LIVING AND STUDENT LIVING.

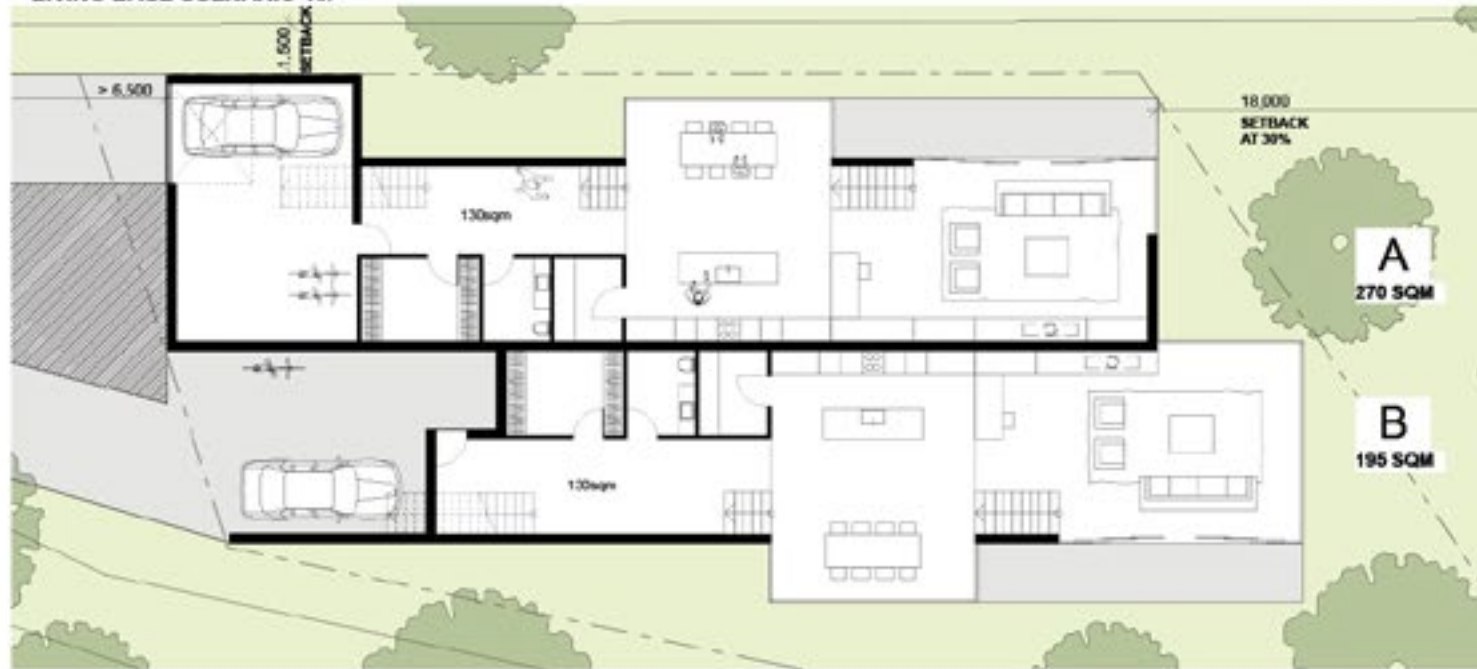
WHILE THE DESIGN GUIDE STATES ONLY "TWO DWELLINGS CAN EXIST NONE ABOVE OR BELOW". WE THINK THIS LIMITS THE OPPORTUNITY FOR CROSS GENERATION AND COMPLEX OWNERSHIP MODELS. WE BELIEVE MULTIPLE AND SINGLE DWELLINGS SHOULD EXIST SIDE BY SIDE. (E.G. A MULTIPLE DWELLING SHARE HOUSE ALLOWS 3 STUDENT TO HAVE A BEDROOM EACH WITH SHARED LIVING SPACES.

WE BELIEVE THE DESIGN CODE NEEDS TO ADDRESS INTER-SOCIAL AND GENERATIONAL LIVING BY PROVIDING THE ABILITY FOR MULTIPLE DWELLINGS WITH SHARED LIVING SPACES TO CO-EXIST ACROSS THE DUAL OCCUPANCY HOUSING TYPE. THESE TYPES SHOULD BE PAIRED WITH THE COMMON FAMILY HOMES TO PRODUCE NEW LIVING SCENARIOS FOR THE COMMUNITY.

FIRST FLOOR 1:200
FLEXIBLE MODULES SCENARIO 1://



GROUND FLOOR 1:200
LIVING BASE SCENARIO 1://



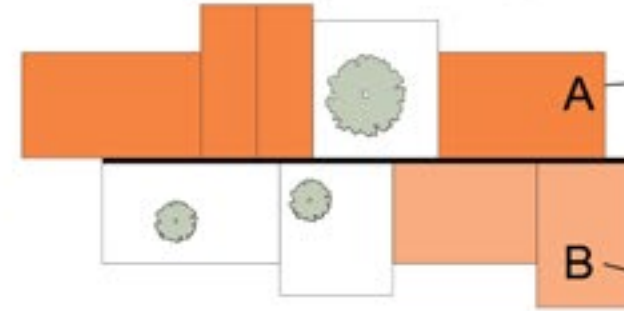
TEST SCENARIOS.//

SCENARIO 2://



FAMILY WITH TWO CHILDREN
1. MASTER BEDROOM
2-4. KIDS BEDROOM
5. ENTRY
6. LIVING
7. KITCHEN DINING
8. SERVICE AMENITY
9. GARAGE.

DAUGHTER "DADDY, MAY I INVITE A FRIEND? SHE WANTS TO SEE OUR ROOFGARDEN." FATHER "OF COURSE, DARLING YOU CAN PLAY IN THE ROOFGARDEN OR IN THE GARDEN."



BACHELOR
1. MASTER BEDROOM
2-4. KIDS BEDROOM
5. ENTRY
6. LIVING
7. KITCHEN DINING
8. SERVICE AMENITY
9. GARAGE.

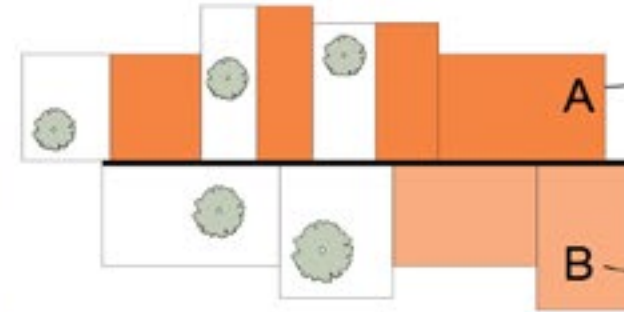
MAN "IT'S HARD TO FIND A HOUSE IN THE SUBURBS AS A BACHELOR. THIS HOUSE MATCHES MY NEEDS AND PROVIDES MANY OPTIONS HOWEVER MY FUTURE WILL LOOK LIKE."

SCENARIO 3://



SHARED STUDENT HOUSING
1. MASTER BEDROOM
2-4. KIDS BEDROOM
5. ENTRY
6. LIVING
7. KITCHEN DINING
8. SERVICE AMENITY
9. GARAGE.

GIRL "SO GLAD WE FOUND THAT SHARED HOUSE IN HERE." BOYS "YOU CAN'T AFFORD SOMETHING LIKE THAT IN THE CITY AS A STUDENT."



SENIOR COUPLE
1. MASTER BEDROOM
2-4. KIDS BEDROOM
5. ENTRY
6. LIVING
7. KITCHEN DINING
8. SERVICE AMENITY
9. GARAGE.

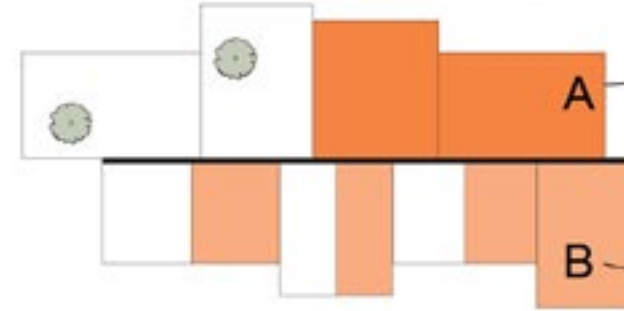
WIFE "DARLING, I'M SO HAPPY THAT WE CAN STAY IN THE HOUSE WHERE I'VE SEEN OUR CHILDREN GROWING UP."

SCENARIO 4://



SINGLE MOTHER
1. MASTER BEDROOM
2-4. KIDS BEDROOM
5. ENTRY
6. LIVING
7. KITCHEN DINING
8. SERVICE AMENITY
9. GARAGE.

DAUGHTER "MOM, MAY I GO OUTSIDE TO PLAY WITH MY FRIENDS, PLEASE?" MOTHER "OF COURSE, HONEY. THAT'S WHY WE STAYED IN THE SUBURBS."



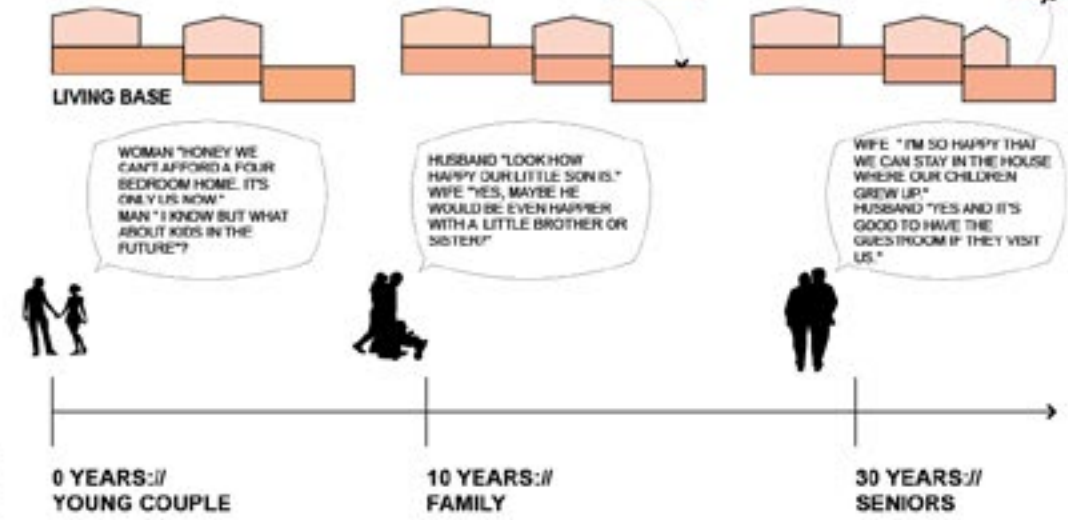
RETIREE
1. MASTER BEDROOM
2-4. KIDS BEDROOM
5. ENTRY
6. LIVING
7. KITCHEN DINING
8. SERVICE AMENITY
9. GARAGE.

RETIREE "I'M HAPPY THAT WE MOVED TOGETHER. I DON'T WANT A LONELY LIFE JUST BECAUSE I'M OLD."

SECTION 1:200
SCENARIO 1://



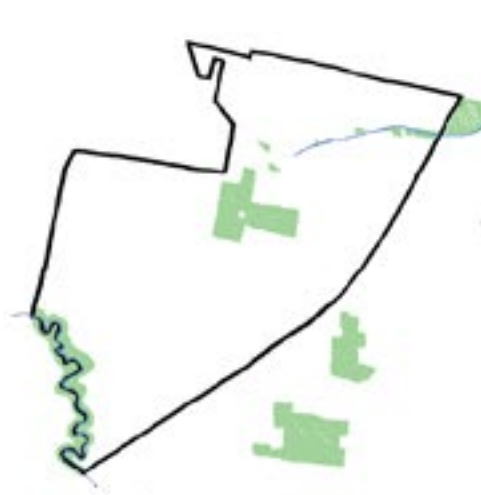
LIFE OF A HOUSE://



The Missing Middle: Context



Guildford is approximately 25km from the Harbour Bridge in Western Sydney, a middle ring suburb on the Cumberland Plain. The topography is reasonably flat, with low density housing typologies of one and two storey dwellings.



Nature Network : Green Grid

Duck Creek ends within Guildford (West) - Yennora and connects to Parramatta River which serves a role in GAO's Green Grid Strategy for Sydney. Prospect Creek also runs along the south, assisting the Sydney Water storage network.



Transport : Trains and Buses

Guildford (West) - Yennora is serviced by the buses 820 and 821 and Guildford and Yennora train stations on the T2 South and T5 Cumberland train line. The bus lines demarcate the residential area to the north from the industrial, Yennora Distribution Area to the south.



Neighbourhood : Street Pattern

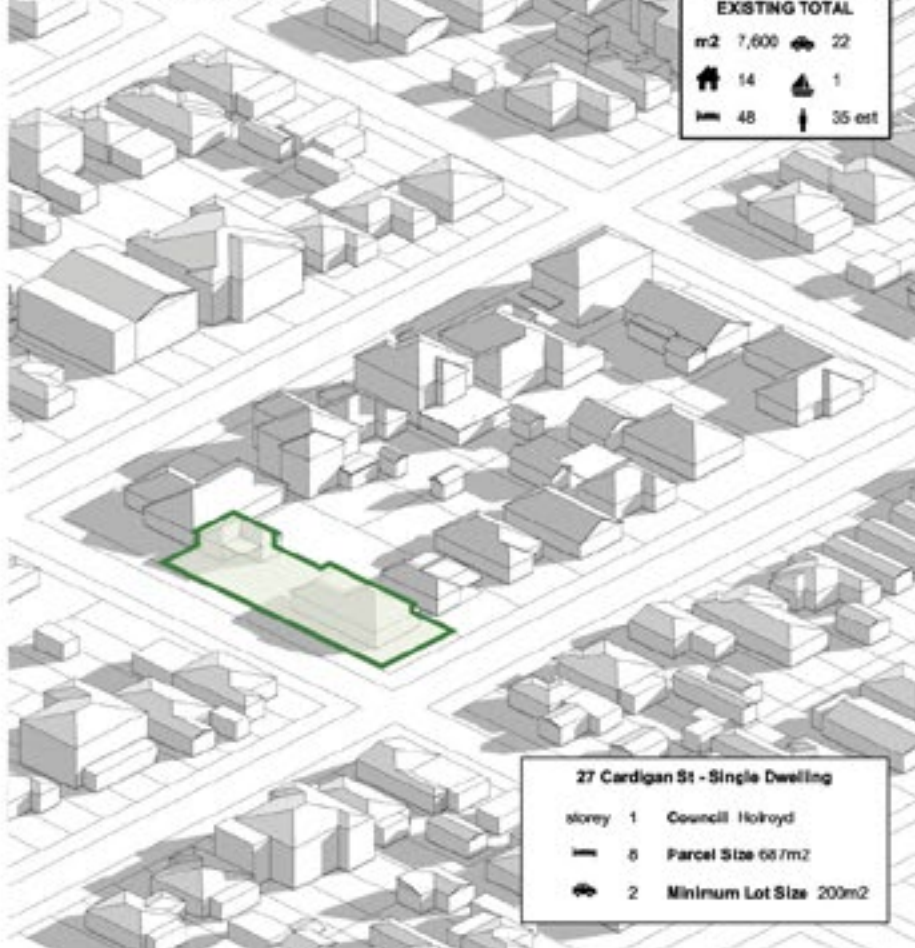
The Holroyd LGA has a neatly gridded neighbourhood bound by a Hawksview Street and Ducks Creek, the neighbourhood is zoned R3 for Medium Density Housing. The minimum lot size in this area is 200m².



Block : Sub Division

Our chosen block is part of a network of 16 lots with various shapes and lot sizes. The properties with average lot sizes of 400-600m² have not yet utilised smaller lot sub-divisions.

Existing Condition



Strategic Overview : Why here?

Our approach was to seek a real world subdivision arrangement in a generic street grid, that will likely be the focus of the Medium Density Design Guide & associated legislation. We took a strategic position to select a site which is:

- Located within 2km from a rail station
- Located within 0.5km of a bus stop
- Located in close proximity to schools, hospitals, shops, parks & government utilities for greater amenity & inclusion.

The strategy is to increase walkability, whilst increasing density.

Strategy : Site selection

The chosen block was considered a typical suburban subdivision. The existing housing stock is a mix of single storey 50's & 60's dwellings and some larger two storey 90's homes. It provided us with a typical context from which we could more fully test the Design Guide; from varying solar orientations, contexts, lot sizes, and adjacent conditions. This would allow us to test all 3 housing types [Terrace Houses, Manor Houses, and Dual-Occupancies] to see what type best fit where. This would give us greater scope to test the Design Guide and challenge the Controls.

Potential Future Condition



The proposal looks beyond the immediate site to reinterpret the history of suburban living into a more dense state, under the working title of (Sub) Urban Dreaming we sort to understand the existing suburban condition and show some common elements into the future urban block response.

We have carved out space to create two commons at the ends of the block. One for a productive garden, the other for the suburban pool. These offer different types of social connection and interaction that would offer the possibility of greater understanding and social cohesion within the local community

We have proposed roof terrace gardens to maintain a green band, limiting impact to the heat island effect that comes with increased site coverage. This configuration shows Manor Houses and Dual Occupancy on the corner sites and terraces in between.

The Missing Middle: Concept Design - Dual Occupancy

Design Excellence:

We believe design excellence for Dual Occupancy housing is to preference north facing orientations where possible to drive light and ventilation into the middle of the plan and living areas.

Locating the public rooms and balconies to the front activates the street and provides passive surveillance. This also allows the front garden to feel like an outdoor room, an extension of the living space into the public realm.

The corner block allows for the entries to front either the primary or secondary road.

A roof terrace allows for an active roof plane that better utilises the small parcel of land. Laundry facilities, productive gardens, solar panels and BBQ & social areas provide a great lifestyle.

Opportunities for Social & Cultural Sustainability, Diversity & Inclusiveness:

Greater density living with a strategic focus of locating this type of development within walkable distance to transport options, schools, hospitals, shops, government utilities and parks provide greater opportunity for social connection, cultural understanding & development. We applaud the Guide's agenda of greater multigenerational housing options which assist in creating diversity and inclusiveness.

Scale: Street, Precinct, Suburb.

Our strategic vision was to design these housing types at scale. These were never considered as individual elements but repeatable elements or pieces in a broader subdivision block & pattern.

The Commons:

The (Sub)Urban Dreaming approach with 2 common areas we believe add another layer of social & cultural sustainability, which we hope will also promote diversity and inclusiveness.

The Car & other individual transport solutions:

The car is a reality and can not be ignored. It would be silly & unrealistic to do so. However, nor should it be the focus or the overriding control for planning more liveable, more dense and more walkable suburbs. It is in fact usually counter to these desirable values.

Our planning controls have decades of car based planning sown into the strategic thinking. The Medium Density Design Guide has an opportunity to unwind these to promote a more socially, culturally and inclusive community. Instead, the Guide should have a Walkable streets, precincts, suburbs and cities at its heart.

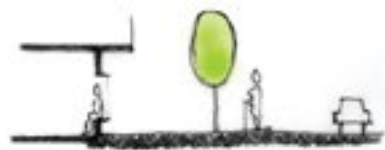
Master Plan:

By designing all 3 house types within a block we were able to develop row house at scale, but also house variety that provides for a varied and interesting streetscape. Key to this were strategic approach, lot size, possible subdivision potential, street pattern, Blue, Green and Black Grid intersection, location of commons and solar orientation.

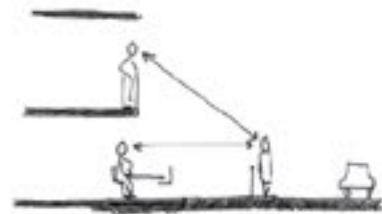


Dual-Occupancy: Ground Floor Plan
1:200

Design Principles: Ideas that underpin design quality and good urban responses.



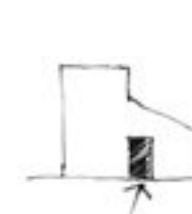
Street Activation & Connection to Landscape



Passive Surveillance



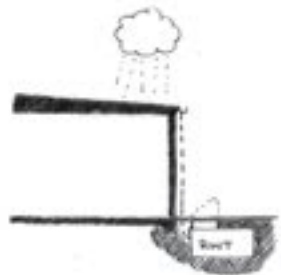
Active Roof Plane



Terrace Entry



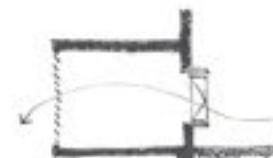
Front Door



Rainwater Harvesting & Reuse



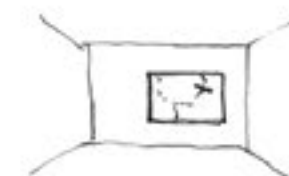
Shutters for Privacy



Cross Ventilation

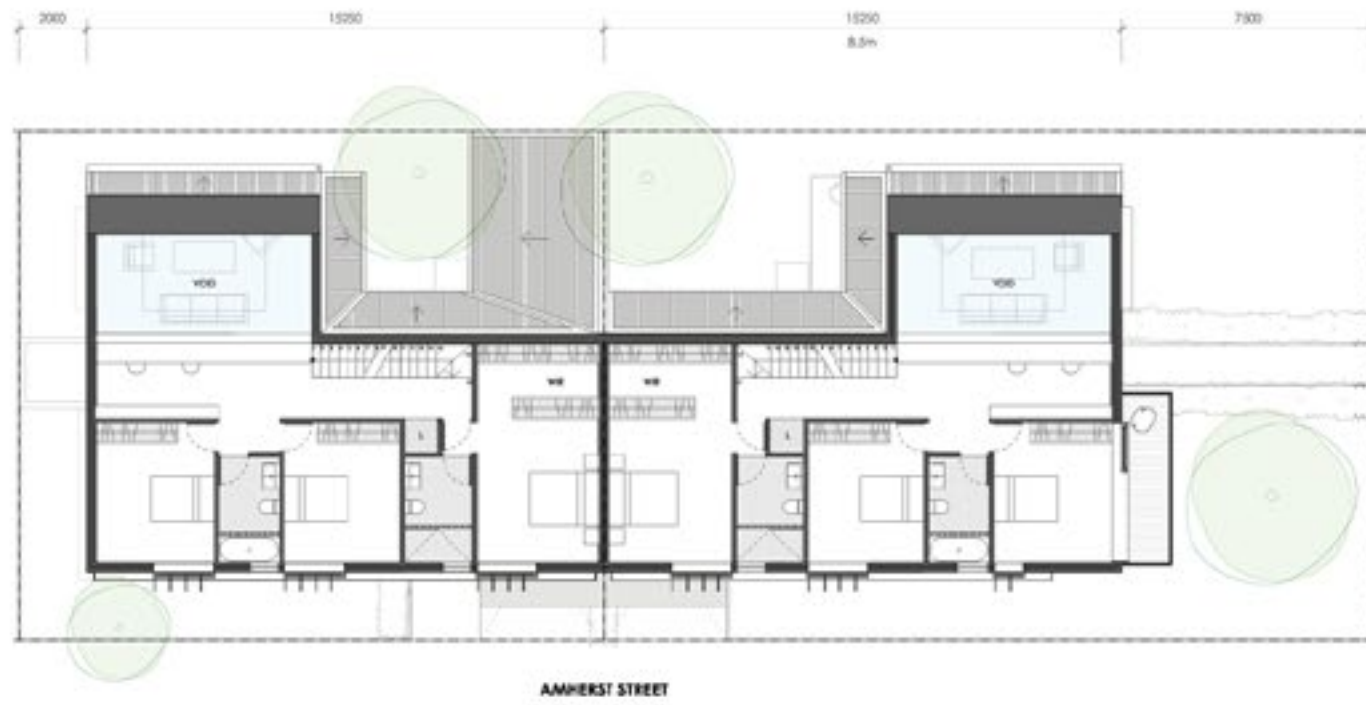


Inside Outside



Windows Frame Views

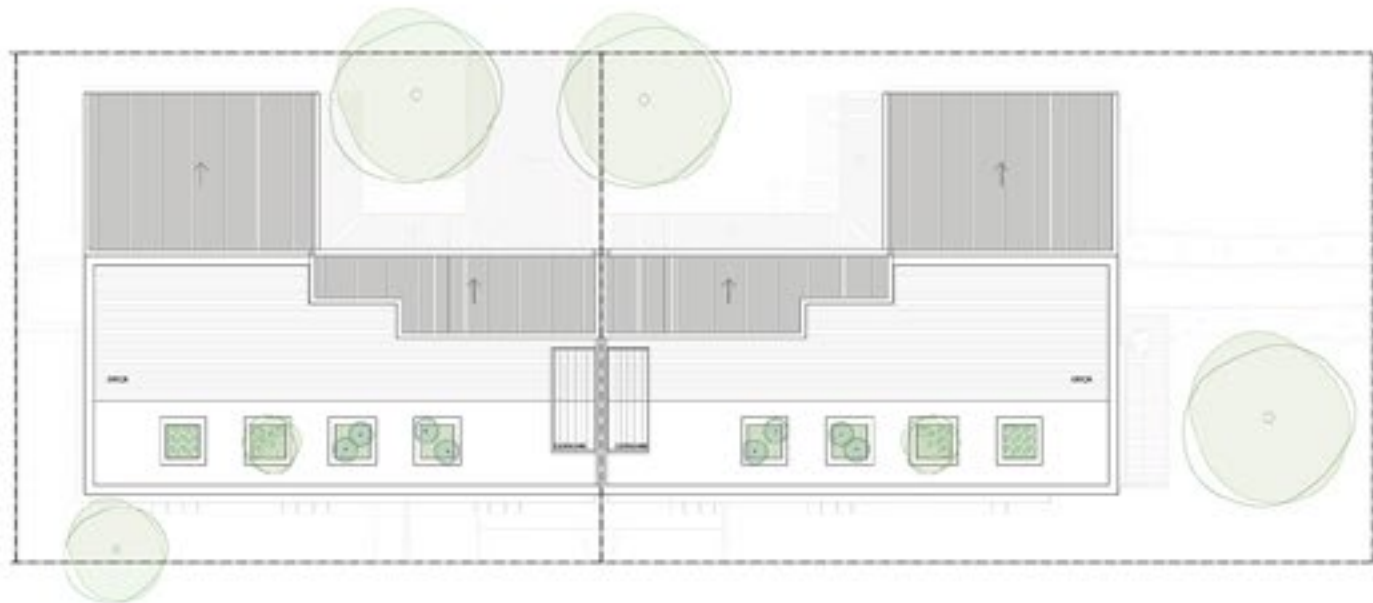
The Missing Middle: Concept Design - Dual Occupancy



Dual-Occupancy: First Floor Plan
1:200



Dual-Occupancy: View From Street



Dual-Occupancy: Active Roof Plan
1:200

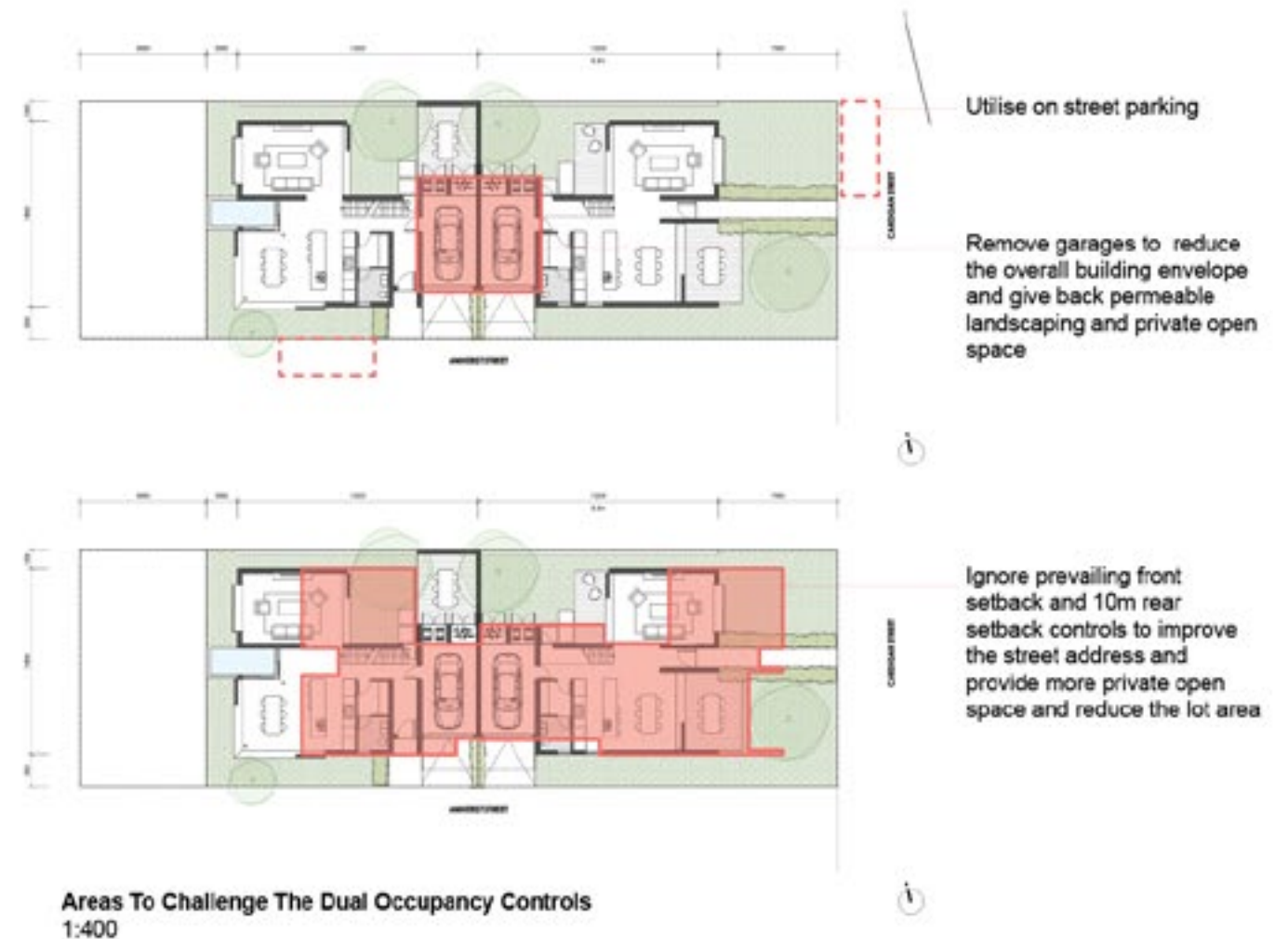


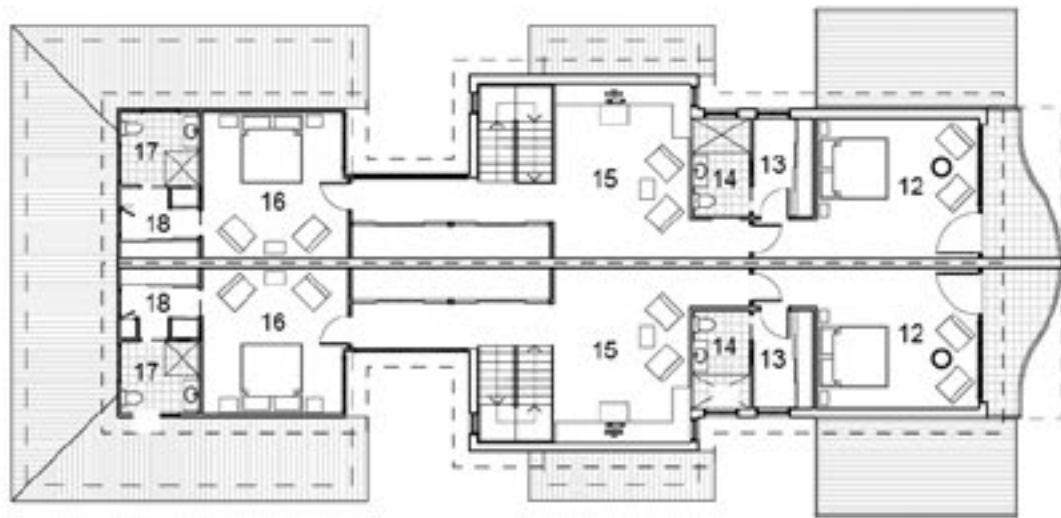
Dual-Occupancy: Section
1:200

The Missing Middle: Testing The Design Guide

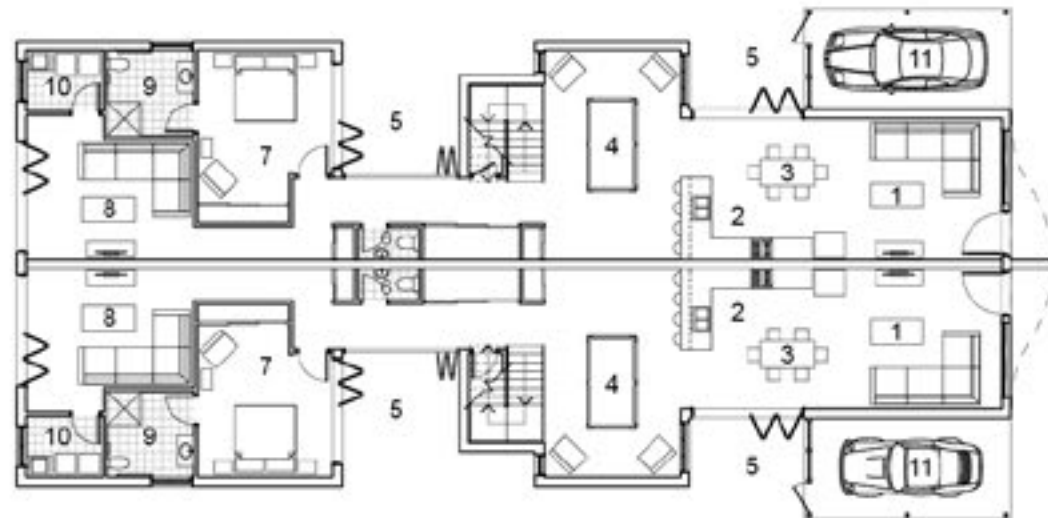
DESIGN QUALITY PRINCIPLE	RESPONSE
1. Context and Neighbourhood Character	<ul style="list-style-type: none"> - Prevailing setbacks don't allow the building to hold the street & address it. - Semi Detached Dwellings should use the setbacks provided in the Design Guide (where there are no dwellings within 40m). Smaller, minimal setbacks to the street, increase private open space to the rear. - Where subdivision depth doesn't provide rear lane parking/ garaging, Semi Detached Dwellings should preference on street car parking or parking in the front setback.
2. Built Form + Scale	<ul style="list-style-type: none"> - Semi Detached Dwellings should be permitted to ignore the prevailing setback to be closer to the street.
3. Density	<ul style="list-style-type: none"> - Minimum lot sizes are sufficient for Semi Detached Dwellings
4. Sustainability	<ul style="list-style-type: none"> - Car parking requirement could affect building size & urban response. This has an affect on all forms of sustainability. This control should be relaxed with the site's proximity to other forms of transport like, public transport, car sharing, cycling, walking.
5. Landscape	<ul style="list-style-type: none"> - Prevailing setbacks can un-necessarily affect the size of private open space.
6. Amenity	<ul style="list-style-type: none"> - This Guide strikes a good balance between density & privacy, with more density, we should expect a more urban & realistic privacy constraints. - The carparking / garaging controls affect the ability for better amenity to rooms adjacent to the garage/ carport, and impact on cross ventilation and natural daylight.
7. Safety	<ul style="list-style-type: none"> - Maintaining the prevailing setback from street frontages lessens the passive surveillance effect. - Street parking or allowing parking within the front setback will improve passive surveillance.
8. Housing Diversity	<ul style="list-style-type: none"> - The Medium Density Design Guide helps to add to the numbers of these housing types that already exist. - Accessibility requirements helps to add to diversity & age in place ideas for multi-generational housing.
9. Social Interaction	<ul style="list-style-type: none"> - Semi Detached Dwellings that address the street provide for better social interaction. - The Garage/ Car port provisions and effect the ability for social interactions. - Entry doors, windows, doors, balconies and Semi Detached Dwellings to the street will add to the social sustainability. - The Strip shopping potential to include corner shops hard to the street will increase the desire for people to engage with their local community & streets.
10. Visual Appearance	<ul style="list-style-type: none"> - Much like SEPP65 good design can not be code directed. This Design Guide can contain the rules, but it is not an architecture pattern language guide. SEPP65 mandates a suitably qualified designer is an architect. This is NOT a requirement of this code. - The greatest risk for this Design Guide is poor design outcomes. With no design review process, no Council oversight, or no requirement for an Architect, we expect the design quality to be poor and consistent with project home outcomes. - The majority of these houses will be in areas where cost will be the major driver for this type of development. With no mandated design standard/ professional we doubt good design will be a priority & expect poor design outcomes. - Currently less than 8% of all private residences outside SEPP65 required apartment buildings are designed by architects. This Design Guide does nothing to alter this statistic. - We feel this Design Guide will have a positive affect on amenity, but a limited affect on Design Quality. - We would recommend some or all of the following changes to the intent of the Medium Density Code: <ul style="list-style-type: none"> • Not permitting this Code to be Exempt & Complying Legislation. • Requiring a design review function within Council. Council's with a City Architect[s] like Blacktown, Parramatta, Liverpool, The City of Sydney have design review functions that drive high quality design outcomes. All LGA's should have a City Architect that can work with the Office of Government Architect [OGA -State] to drive a high quality designed built environment. • Requiring Council's to prepare a strategic approach to this Code, in accordance with State & GSC objectives. i.e: Located close to transport, schools, shopping, public utilities, hospitals etc. • Requiring Councils to assess DAs that comply with the Missing Middle Code within 40 working days. If they don't, it should be a Deemed Approval.

Challenging the Controls





FIRST FLOOR PLAN
1:200



GROUND FLOOR PLAN
1:200



FRONT PERSPECTIVE VIEW

KEY.

- | | |
|----------------|-------------------|
| 1. Living Room | 12. Bedroom Two |
| 2. Kitchen | 13. Dressing Room |
| 3. Dining Room | 14. Ensuite |
| 4. Family Room | 15. Study |
| 5. Courtyard | 16. Bedroom Three |
| 6. Powder Room | 17. Ensuite |
| 7. Bedroom One | 18. Dressing Room |
| 8. Rumpus Room | |
| 9. Bathroom | |
| 10. Laundry | |
| 11. Carport | |

CONCEPT DESIGN.

The proposed dual occupancy has been designed:

1. To benefit from its specific orientation;
2. To maximise solar and daylight access;
3. To maximise sustainability.

The design responds to the relatively temperate climate of Sydney's western suburbs.

The design facilitates interaction between indoor and outdoor spaces.

Dual Occupancy at 248 Stafford Street, Penrith NSW.

THE MISSING MIDDLE design competition.



NORTHERN ELEVATION
1:200



SOUTHERN ELEVATION
1:200



FRONT PERSPECTIVE SKETCH



EASTERN ELEVATION
1:200



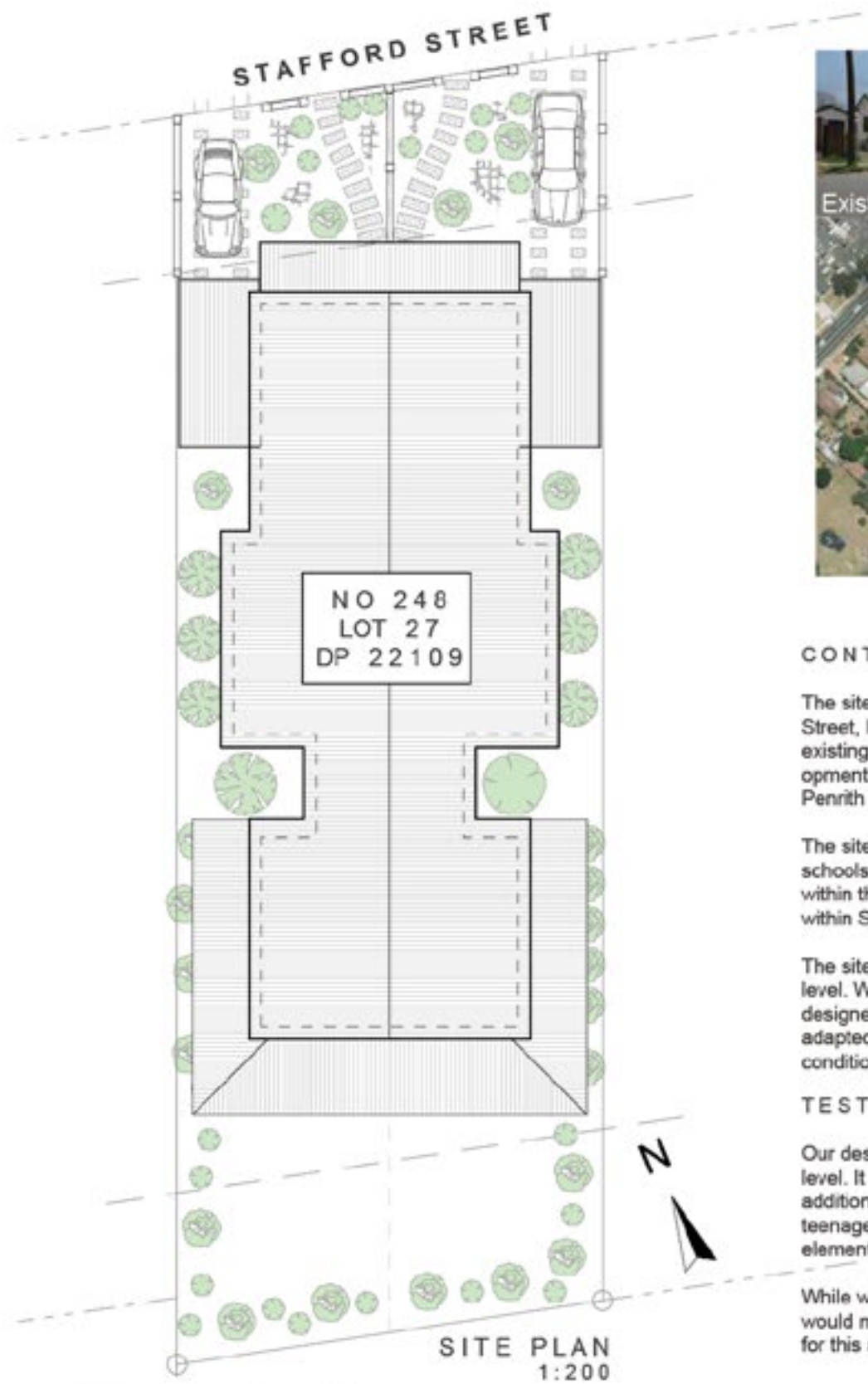
WESTERN ELEVATION
1:200



REAR PERSPECTIVE SKETCH

Dual Occupancy at 248 Stafford Street, Penrith NSW. THE MISSING MIDDLE design competition.

2 of 4



Existing street view of site.

LOCATION PLAN
NTS

CONTEXT.

The site chosen is a typical suburban block. It is 248 Stafford Street, Penrith (lot 27, DP 22109). The site presently contains an existing older residence. The site is one that is ready for redevelopment. The site is zoned R3 - Medium density residential under Penrith LEP 2010.

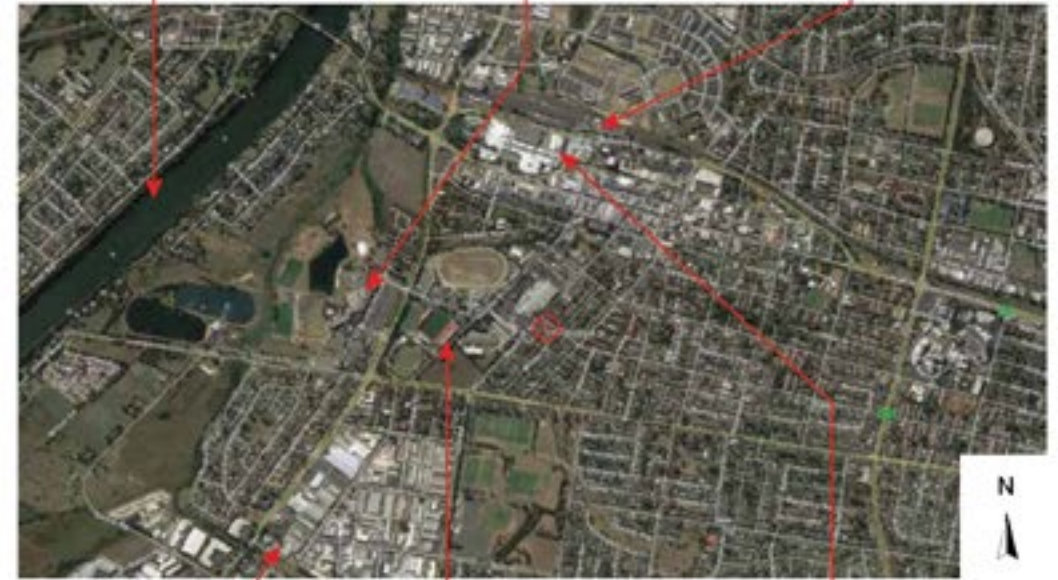
The site is within walking distance of shops, public transport, schools and other facilities. In many respects it is a typical site within the Penrith suburban area. It is typical of many other sites within Sydney's outer suburbs.

The site has an orientation north toward the street. The site is fairly level. While the proposed dual occupancy development has been designed for these specific attributes, the design could be readily adapted to other site orientations, and to different topographical conditions.

TESTING THE DESIGN GUIDE.

Our design could easily be modified to include an additional level. It is envisaged that this would be of small area (say an additional 20 square metres). This could well serve as a teenager's retreat, or a study or den. It could also serve as an element of visual interest.

While we explored this option, we did not pursue it given that it would mean exceeding the maximum allowable building height for this area (8.5 metres) under Penrith LEP 2010.



CONTEXT ANALYSIS DIAGRAM
NTS

Dual Occupancy at 248 Stafford Street, Penrith NSW.

THE MISSING MIDDLE design competition.



PRINCIPAL STANDARDS.	PROPOSED.	COMPLIES.
Minimum lot size for each dwelling:	333 m2	Yes
Height of Building:	7.6m	Yes
Maximum gross floor area for each lot:	0.65:1	Yes
Minimum landscaped area for each lot:	297m2	Yes
Proportion of area forward of building line that contains landscaped area:	27m2	Yes
Primary road setback:	5.5m	Yes
Secondary road setback:	na	na
Side setback:	2m	Yes
Rear setback:	7m	Yes

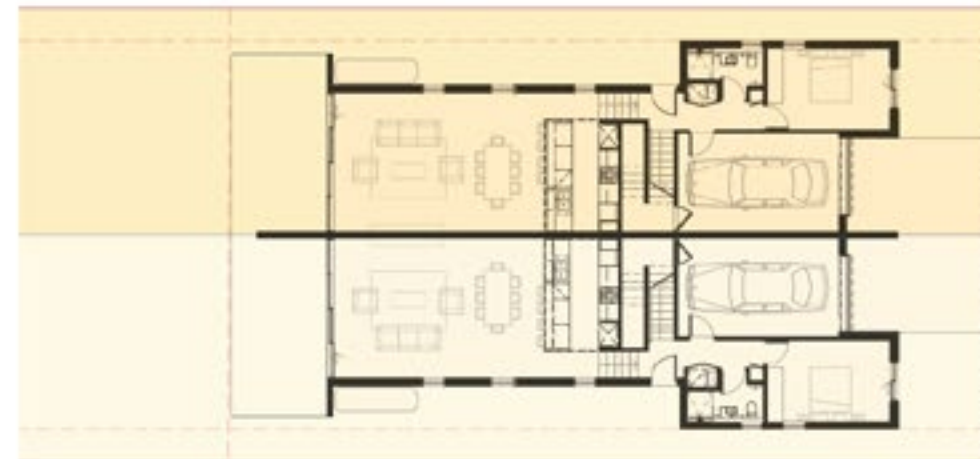
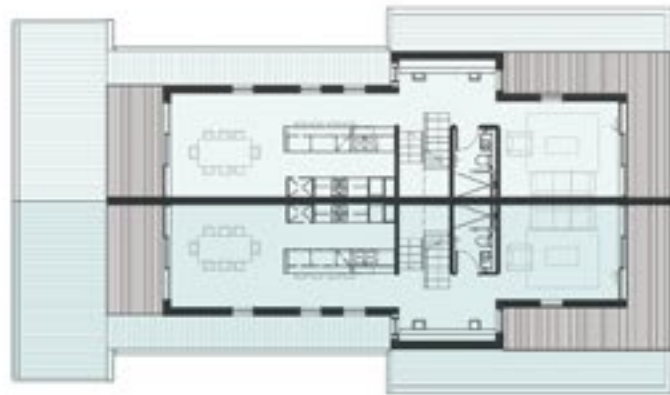
Dual Occupancy at 248 Stafford Street, Penrith NSW.
THE MISSING MIDDLE design competition.

4 of 4



Duplexes can appear easy to design when the site is large and the rear living area faces north. North is such a powerful orientation in Australian architecture. A duplex facing north has equity; both houses have the same access to sun. But that is very few sites. Most are smaller, with orientations away from north. This proposal is for a series of 3 duplex types that can accommodate these conditions. All have the same internals (L + D + K in open plan, 3 beds, 2 baths, one car etc), all have a similar complying envelope, a similar streetscape presentation, but on smaller sites they can provide excellent sun, light and cross ventilation in any orientation.

the 360 duplex context



n



The N type duplex has the rear facing north (assuming a street to the south), the most straightforward arrangement. Entry is in a side courtyard, L + D + K is open plan to a covered terrace at the rear. The car is 'buried' in the front centre, and a flexible use room (with bath / powder room) is closest to the street and entry (for home occupations / guests / student lodger etc). Two bedrooms, one with ensuite, and study are upstairs.

s

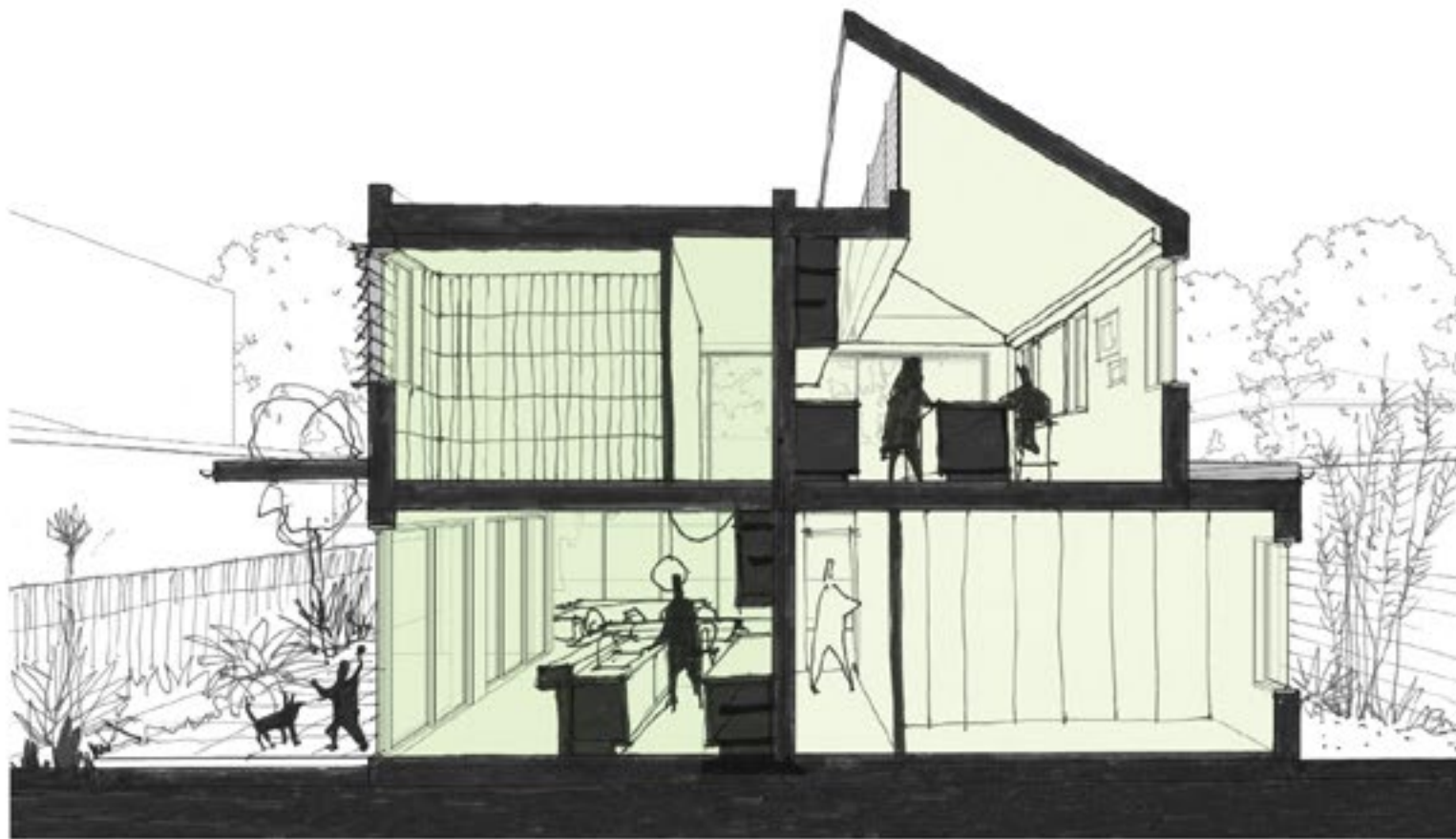


In the S duplex the rear faces south, very disadvantageous. Envelope and form are same as the N type, but plan is inverted with bedrooms downstairs and L + D + K up. Thus the living areas have sun and light from 3 sources: the front level 2 balcony, through the living room doors to that balcony, and through a clerestory window over the south of the upper living area. The entry, front flex room, carparking and overall form are as in the N type.

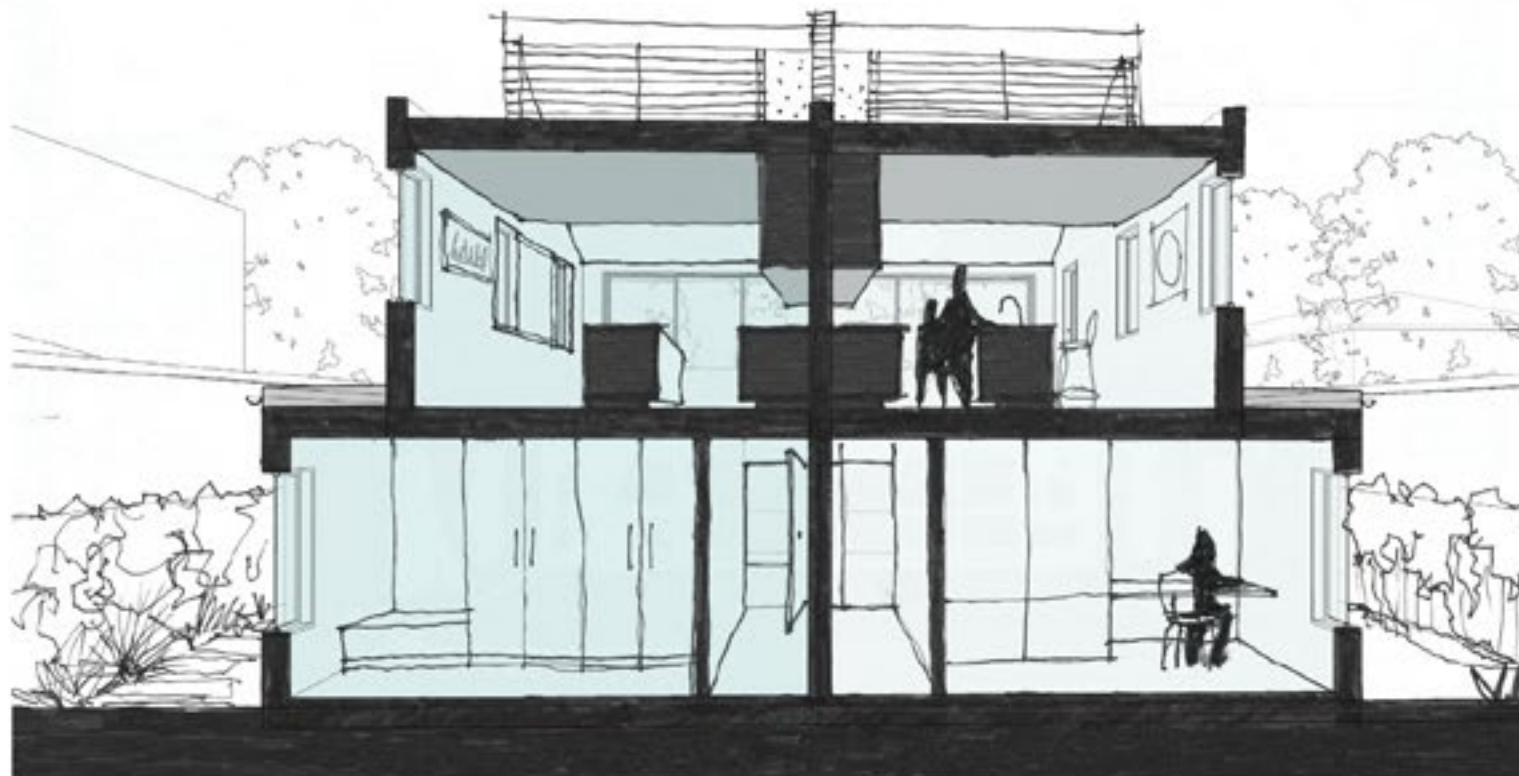
ew



The EW type has the most difficult orientation: one half has access to all day sun, the other has none. The temptation to mirror image is resisted, with the sun side taking the form of a courtyard at level 1; the south side house has the L + D + K upstairs with a large north facing clerestory lantern over the centre to flood the house with light and sun (filtered through operable louvres). The upper level of the northern house follows the N type, whilst the lower level to the south, being bedrooms, follows the S type.

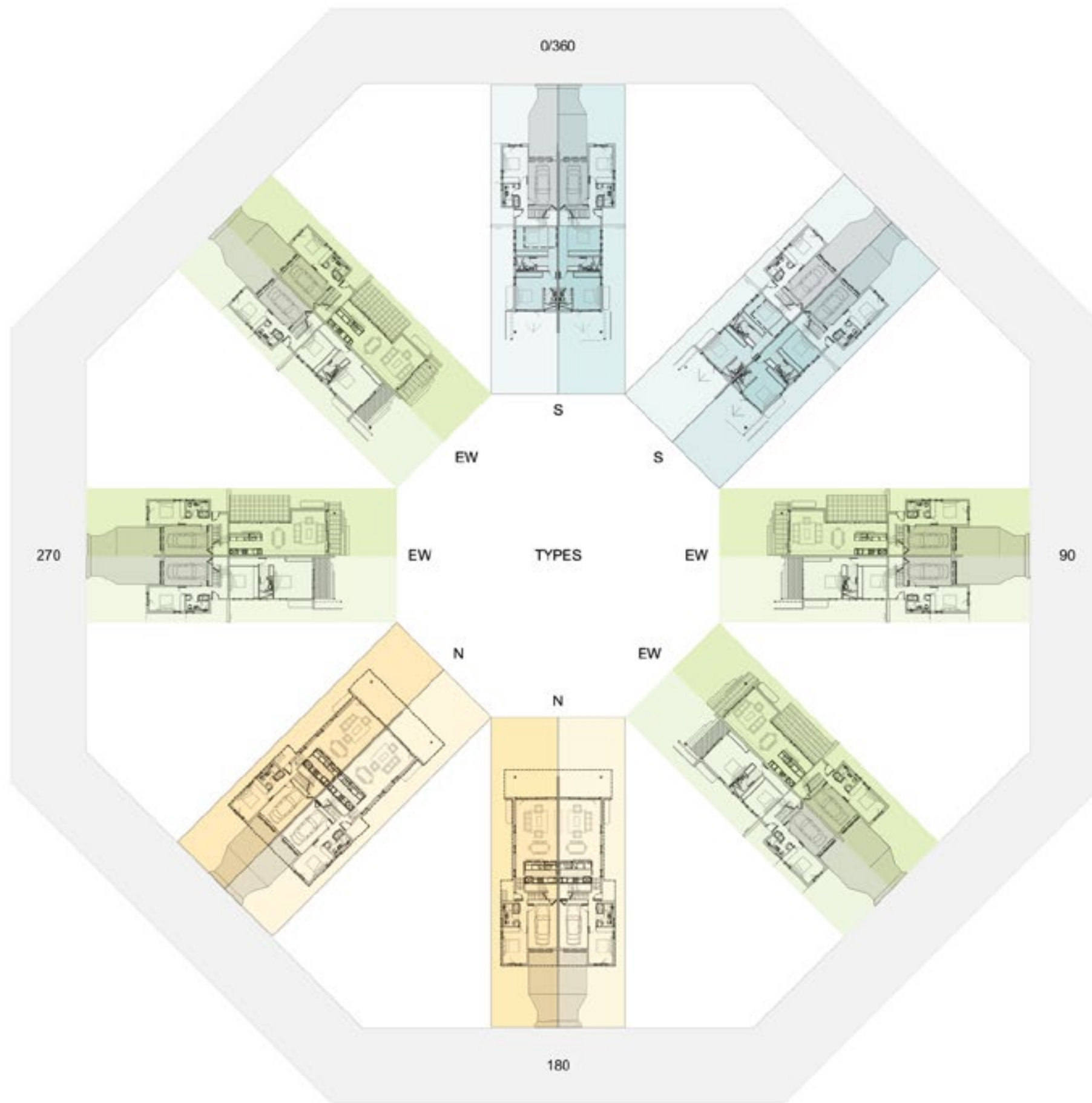


Section through the EW type showing a courtyard for house on the right (facing N) and the clerestory window into the living room for the house on the left so as to capture north light over its twin to the north. A section tells you everything you need about space and sustainability, in this case the possibilities for horizontal sun and air flow on the right, and vertical sun and heat exhaust on the left.



Section through the S type showing the bedrooms downstairs and the clerestory over the L + D + K on the upper level. Again a section tells you everything you need about space and sustainability, in this case the possibilities for sun and air flow on the upper level, and bedrooms on the lower level which will be warmer in winter (and insulated warmth) naturally cooler in summer from the diurnal cooling and high thermal mass (giving coolth) combined with small window openings.

the 360 duplex sections



The octagon, with roads represented on the outside edge, shows where each of the 3 duplex types would be used to achieve equitable sun to both in any orientation. The estimable NSW Sustainable Energy Development Authority (now disbanded) once produced a diagram similar to this one to stress the need for consideration of maximum solar gain to all houses. This proposal proves that with some consideration it is possible to achieve deep winter sun penetration and summer cross ventilation for any orientation for Duplexes.

The point challenged in the new code is that the requirement for solar and daylight access is weak, platitudinous in fact. The ADG requires increasingly stringent controls with 70% receiving 2 hours, and no more than 15% facing due south. That is for larger buildings. For smaller buildings like Duplexes the code should require 3 hours sunlight, mid-winter, for 100% of both duplexes. Sun is such a valuable commodity inside a house, the rise in density should not be trading away access to free winter heating and the cleansing qualities of good sun and light.

Bite the bullet, make architects and designers work hard to get better solutions where every house in every duplex, or terrace for that matter, has equitable and good access to northern sun in winter.

CONTEXT

UNDERSTANDING OF THE COMPETITION BRIEF

The draft Medium Density Design Guide identifies a number of opportunities to increase the housing density of NSW without adding significant height to low rise areas. This provides guidelines under which the overall suburban fabric of areas can be retained whilst increasing density, with the competition providing the opportunity for the industry to impact these guidelines before they are released. It is our understanding that by participating in the competition, we are exploring how the CDC pathway will enable or restrict us in practice, and how these guidelines may need to change to ensure higher quality outcomes to be achieved upon enactment.

SITE & CATEGORY SELECTION

After initial analysis of the brief it was decided that a Dual Occupancy would be the development to test as this housing typology follows a rather typical floorplan with much scope for improvement, and are generally undertaken on fairly straightforward sites, leading us to seek a more difficult plot. 210 Marsden Rd, Dundas Valley was chosen because of its steep topography and large size, providing a contextual change from the smaller and flatter sites dual occupancies are typically built on. The site slopes away from the street at an average grade of 1:5.

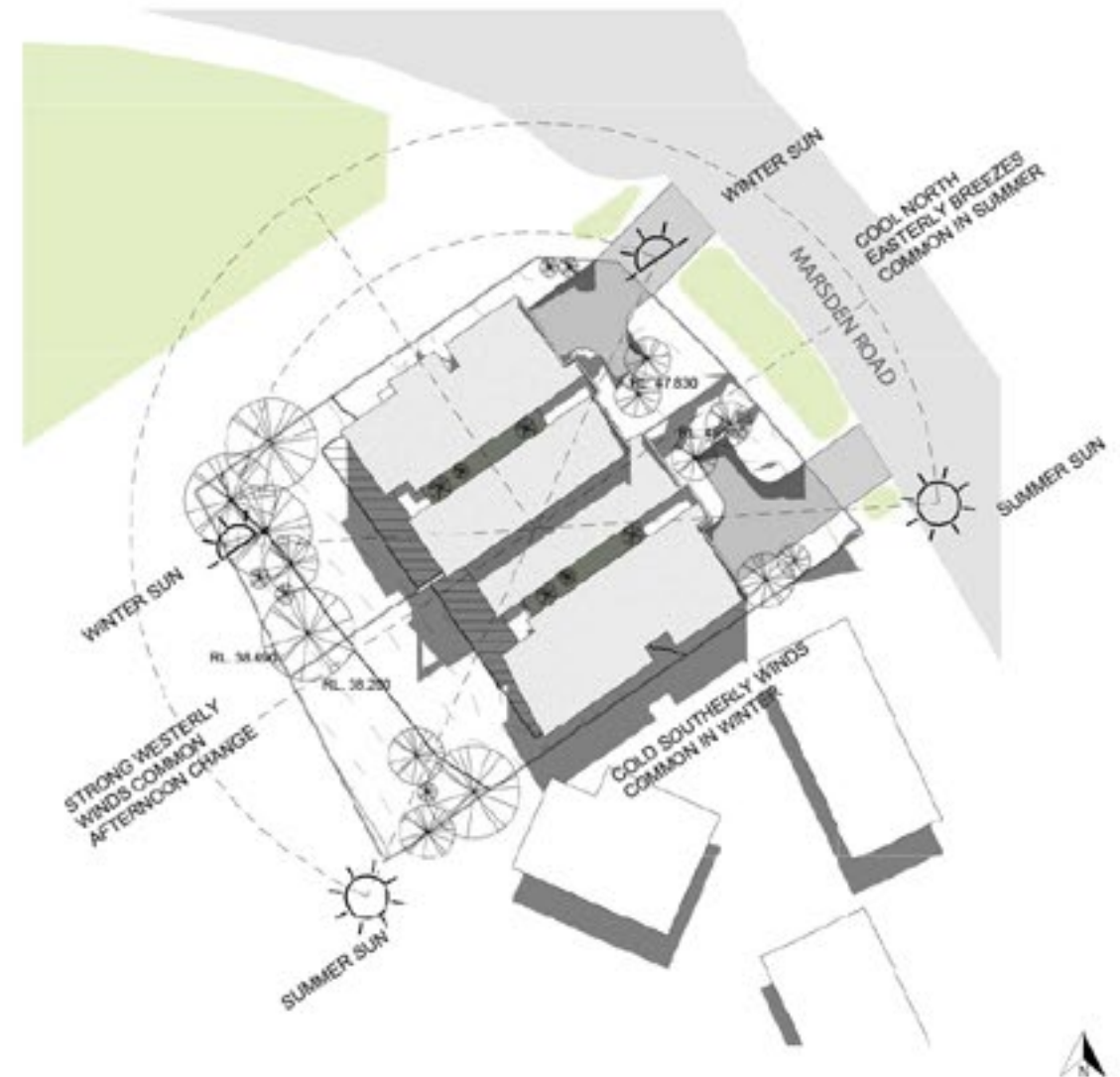
SITE CONTEXT

In the surrounding areas, a number of large scale multi-residential are underway or have been completed, with the former typical low density housing slowly being replaced with medium density. Currently these large-scale developments involve wide tabula rasa areas of mass demolition that are less sensitive to their surroundings than smaller scale medium density developments. Our chosen site is unsuitable for this type of development as the steep topography doesn't allow this to be easily achieved, and the zoning does not allow for multi-dwelling housing. The other sites to the south along Marsden Rd are similarly graded, and would allow for a row of this typology to be established in the future.

SITE PLAN 1:500



CONTEXT ANALYSIS 1:500



CONCEPT DESIGN

A LIVE-WORK BALANCE FOR YOUNG FAMILIES

With an ever-growing population, the Sydney region needs more accessible and affordable housing for younger families, and with Parramatta moving towards development as a new city centre, density is increasing in its surrounding areas. Around Dundas Valley, Eastwood & Epping, there are a number of large scale medium density projects underway and already constructed, leaving a gap between the original single house low density fabric of the area. With increasing numbers of young families housing that caters to this market is required.

With this in mind, we envisage young family households to require one parent to stay at home with younger children. As suggested in local census data, lower than average incomes are typical yet home loan repayments are rising, this parent may need to work part-time or from home in addition to their stay at home duties.

To support this kind of family on a site with such steeply sloping topography, a solution that minimises split-levelling whilst promoting flexibility of use is required. The use of a central courtyard to each dwelling provides this; surrounded by adaptable spaces with loosely defined uses and boundaries, whilst also allowing passive surveillance of children and providing a private open space on the lower ground that becomes the active core of the home throughout the year.

LOWER GROUND FLOOR PLAN 1:200

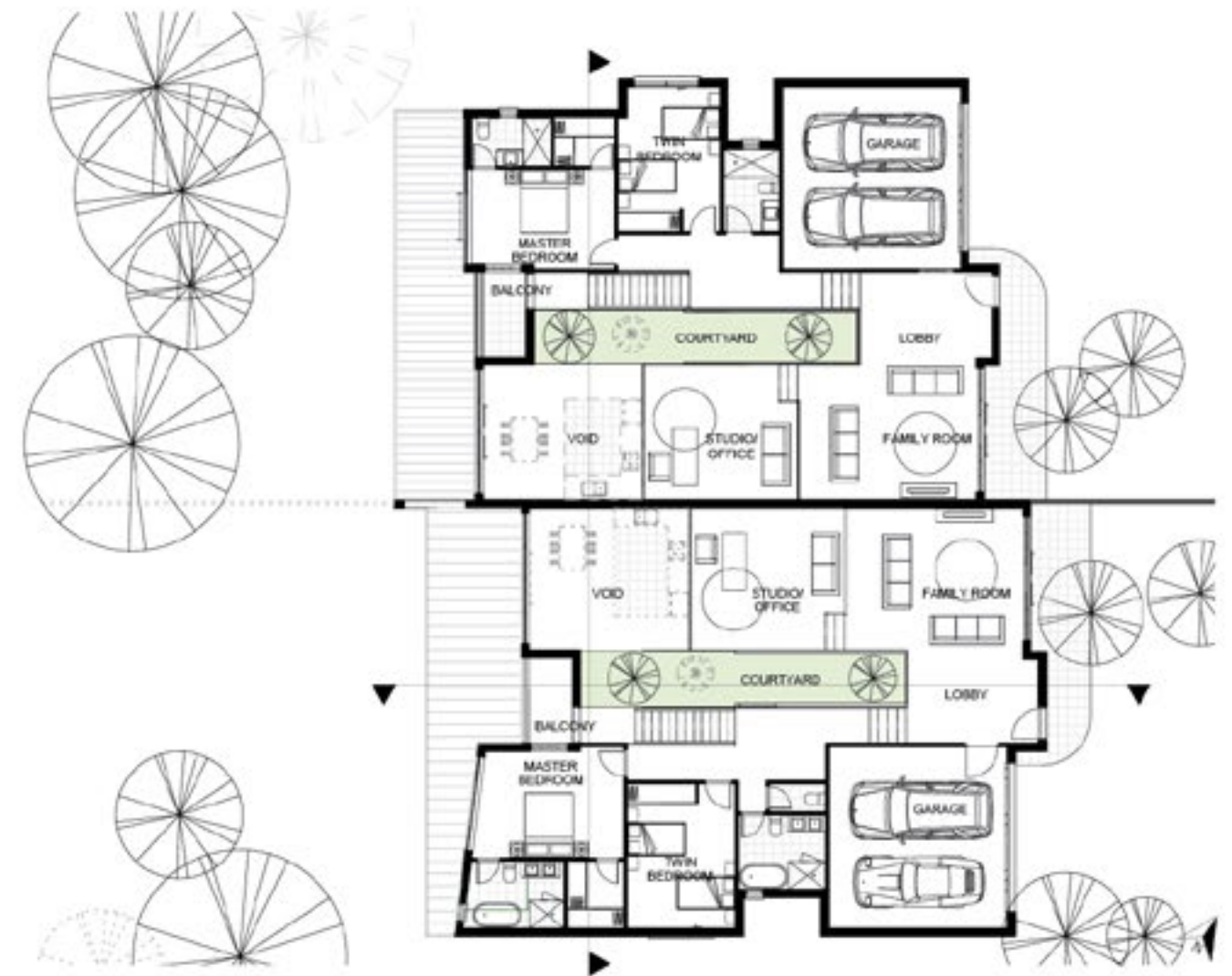


THE MISSING MIDDLE COMPETITION

FACADE ELEVATION



GROUND FLOOR PLAN 1:200



210 MARSDEN RD DUNDAS VALLEY NSW
02

CONCEPT DESIGN

THE COURTYARD SECTION

Sectionally, each dwelling is cut centrally by a large courtyard volume with a landscaped private open space on the lower ground floor that provides a link between the various adaptable living spaces that surround it. Whilst also providing this focal point to the living areas, the courtyard also establishes a void on the ground floor that separates living spaces from bedrooms whilst allowing light to filter between the two. When opened in conjunction with other windows in the house, the courtyard allows for ample cross ventilation and passive air circulation between levels.



UNIT 1 SECTION 1 - 1

CONTROLLING OF SPACE

As the courtyard is opened and closed in different configurations, different spaces are created to suit the desired activity of the space. When fully opened, an open-plan configuration of little control is formed, allowing maximum freedom of movement between spaces perfect for entertaining. When opened to the kitchen, a semi-outdoor space is created, where children can play with adequate supervision from the parent cooking, as is when the opposite side is opened, whether used as for dining, work or leisure. When completely closed, the surrounding spaces become more defined in their use through exclusion, and the volume becomes a view to an inner garden, adding to the views of the public reserve to the rear of the property.



UNIT 1 SECTION 2 - 2

TESTING THE DESIGN GUIDE

ISSUES ON STEEPLY SLOPING SITES

Attempting to design a dual occupancy for young families on a steeply sloping site (attempting to minimise split levels for young children) lead our design to difficulties caused by Objective 3.1G-3 of the draft Medium Density Design Guide.

Design Criteria 30. On Sloping sites the buildings are to respond to the topography with changes in floor level to minimise cut and fill. Unless a dwelling is over a basement, the ground floor is not to be more than 1.3m above ground level, and no more than 1m below ground level.

Due to the topography sloping away from the street along the site, the ground floor of Dwelling A was caused to sit higher than the allowed 1.3m above ground level toward the rear of the property. Utilising the 1m the design criteria allows would steepen the driveway, which is already heavily graded.

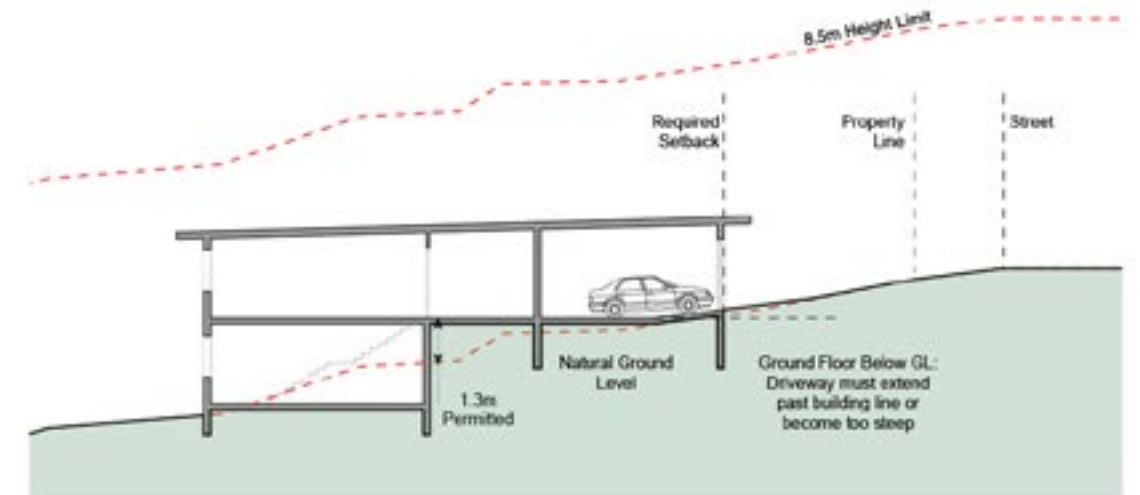
Adding a basement below the ground floor in this location (thus permitting a higher floor level) would lead to exceeding the dwellings maximum GFA, and creating a space without a window.

We would challenge this design criteria in allowing parts of the ground floor to exist higher than 1.3m above the ground level on sufficiently sloping sites (grades of 1:5 or more) provided that they satisfy the other criteria of the objective and maintain a roofline below the 8.5m CDC requirement. This would allow steeply graded sites to be more eligible for CDC proposals whilst minimising the need for split levels.

Addition to Design Criteria 30. When a sites average grade is steeper than 1:5, and sloping away from the street, the ground floor of a dwelling may exceed the permitted 1.3m without a basement above the ground level by up to 500mm to a maximum height of 1.8m so as to maintain a shallow enough grade to allow driveway access to a garage. All other design criteria must still be satisfied in the objective.

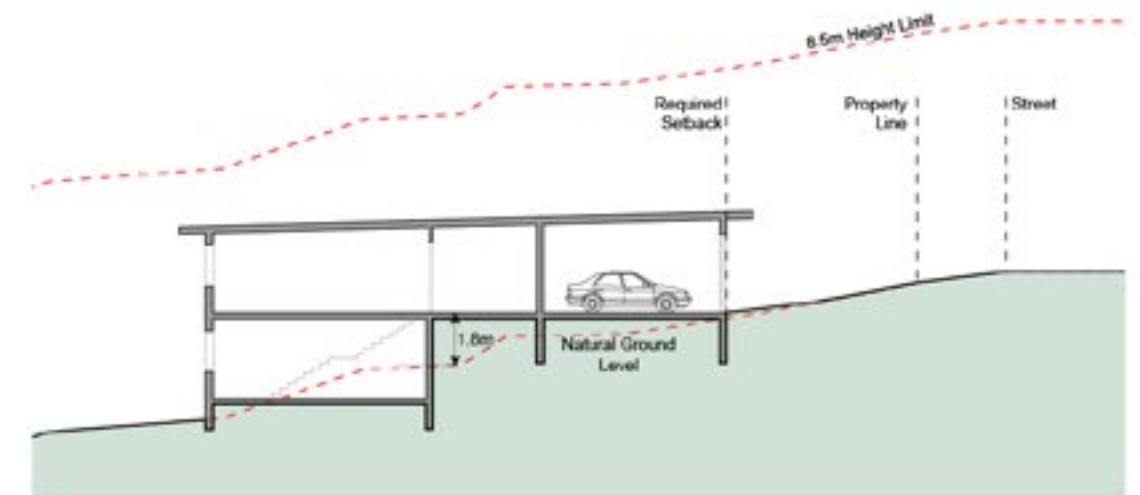


PERSPECTIVE IMAGE -THE SITE CONTEXT WITH ARCHITECTURAL RESPONSE



ISSUE ENCOUNTERED WITH DESIGN GUIDE CRITERIA

Excavating garage below ground level causes driveway to steepen, exceeding grades in Australian standards, so a longer ramp is required



PROPOSED SOLUTION

Ground Floor 1.3m maximum above natural ground level increased to 1.8m where overall site grade is steeper than 1:5

Introduction

This document outlines the housing proposal for a courtyard housing typology as a design solution to provide high levels of amenity including natural light and ventilation. As well the document explains how this building configuration is appropriate for the NSW climate and how the building considers energy, water and internal environmental quality.

Background

The courtyard building typology has an architectural lineage of more than 5000 years, typically found in hot arid dry areas in the Middle East, North Africa, Southern Spain, and the Mediterranean. In vernacular houses, the courtyard was the nucleus of the house surrounded by rooms with a direct connection to the internal outdoor space. In hot arid climates courtyards serve as a mechanism to funnel light and ventilation to the surrounding rooms as a way to control heating and cooling. During the day they were used as shaded private family gathering spaces and at night they help in creating comfortable sleeping conditions.¹ This project aims to develop a contemporary vernacular for a medium density residential building configuration.

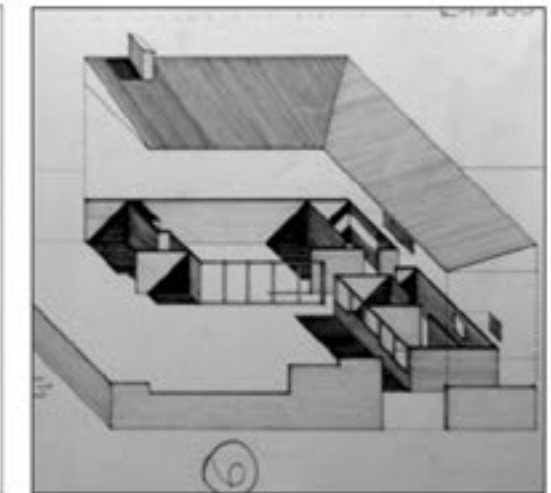
¹ Richards Hyde, Climate Responsive Design: A Study of Buildings in Moderate and Hot Humid, E&FN Spon ... 2000, p22

Traditional Courtyard House



Section of a Moroccan Riad - 1750 -
Talin building cross section <http://tiny.cc/q1b9by>

Contemporary Courtyard House



Utzon's Kings Housing scheme - 'L' plan - 1958
Utzon Photos Link: <http://www.utzonphotos.com/guide-to-utzon/projects/kingshouse-hebinger/>

Location



Satellite Image of the proposed site across two lots of approx 900sqm <http://tiny.cc/v2b9by>

The site is located at 2-4 Colins Street Lakemba, Sydney, Australia.

Population Cultural mix



Image of the main street of Lakemba <http://tiny.cc/A6b9by>

According to the 2001 Census, 67.7 per cent of Lakemba residents (14,647 persons) stated they had been born overseas — one of the highest proportions in Australia. From the mid-1970s, Lakemba became very popular with migrants from Lebanon and by the mid-1990s the area was considered a centre of Lebanese Australian life. Lakemba is best described as predominantly multi-ethnic and extremely diverse, but with an Arabic-speaking and Muslim plurality.²

² Bureau of meteorology link: http://www.bom.gov.au/climate/averages/tables/cw_066062_All.shtml

Working Climate Macroclimate



Fig 7 Image of the global region. <http://tiny.cc/v2b9by>

The climate in Sydney is temperate. Typically being in the southern hemisphere the colder months (winter) is in the middle of the year and warmer months (summer) are at the end with an average of approximately 2592 hrs of sunhours. Or an average annual sunshine daily mean of 6.8 hrs.

The maximum average monthly temperature is 22.4-31.9°C and a minimum average monthly temperature of -1.4-8.1°C. The hottest recorded temperatures is 45.8°C. In February the mean relative humidity is at its highest at 64%.³

³ Lakemba - https://en.wikipedia.org/wiki/Lakemba,_New_South_Wales

Mesoclimate



Fig 8 Satellite image of the local region. <http://tiny.cc/v2b9by>

The Sydney Basin Bioregion includes coastal landscapes of cliffs, beaches and estuaries. It consists of a geological basin filled with near horizontal sandstones and shales. Sydney harbour narrows to become the Parramatta river the to the north of the site and a dense urbanized city to the east.⁴

⁴ 'Office of environment and heritage' link: <http://www.environment.nsw.gov.au/bioregions/SydneyBasin-Landform.htm>

Microclimate



Fig 9 Image of the immediate area. <http://tiny.cc/v2b9by>

Running along the longest boundary of the site is a major road artery in an east / west direction. In the immediate vicinity while there are some trees there are a significant amount of hard surfaces to the North - road and footpaths used for vehicular and pedestrian movement. This urban landscape will contribute to radiant heat and airborne traffic noise. The surrounding area is a prodromently single story suburban houses and more 3 story residential and apartments to the North.

Proposal

Based on the Utzons 'L' plan of the famous Kingo housing scheme, the building wraps around a central courtyard. The fundamental difference between Utzons 'L' configuration and my layout is the consideration of climate. Kingo was designed for sub zero temperatures of Denmark where this site is situated in Sydney. On level one the living spaces in the Kingo plan are positioned to pick up maximum solar gain where my floor plan is to reduce direct heat by placing the habitable areas on the eastern side of the courtyard rather than the western side cutting out large amounts of direct sun through the mid morning. In Sydney the value of the courtyard is more beneficial to supply light and lifestyle as opposed to collecting solar gain for the risk of the house over heating.

An ambition for the brief is to provide a level of amenity that is comparable to a detached house. My view is that this proposal must offer more for it to be attractive to Sydney buyer. So the intention in the planning is to make the internal floor spaces as generous as possible and create a sense of luxury to offset a reduction of land size.

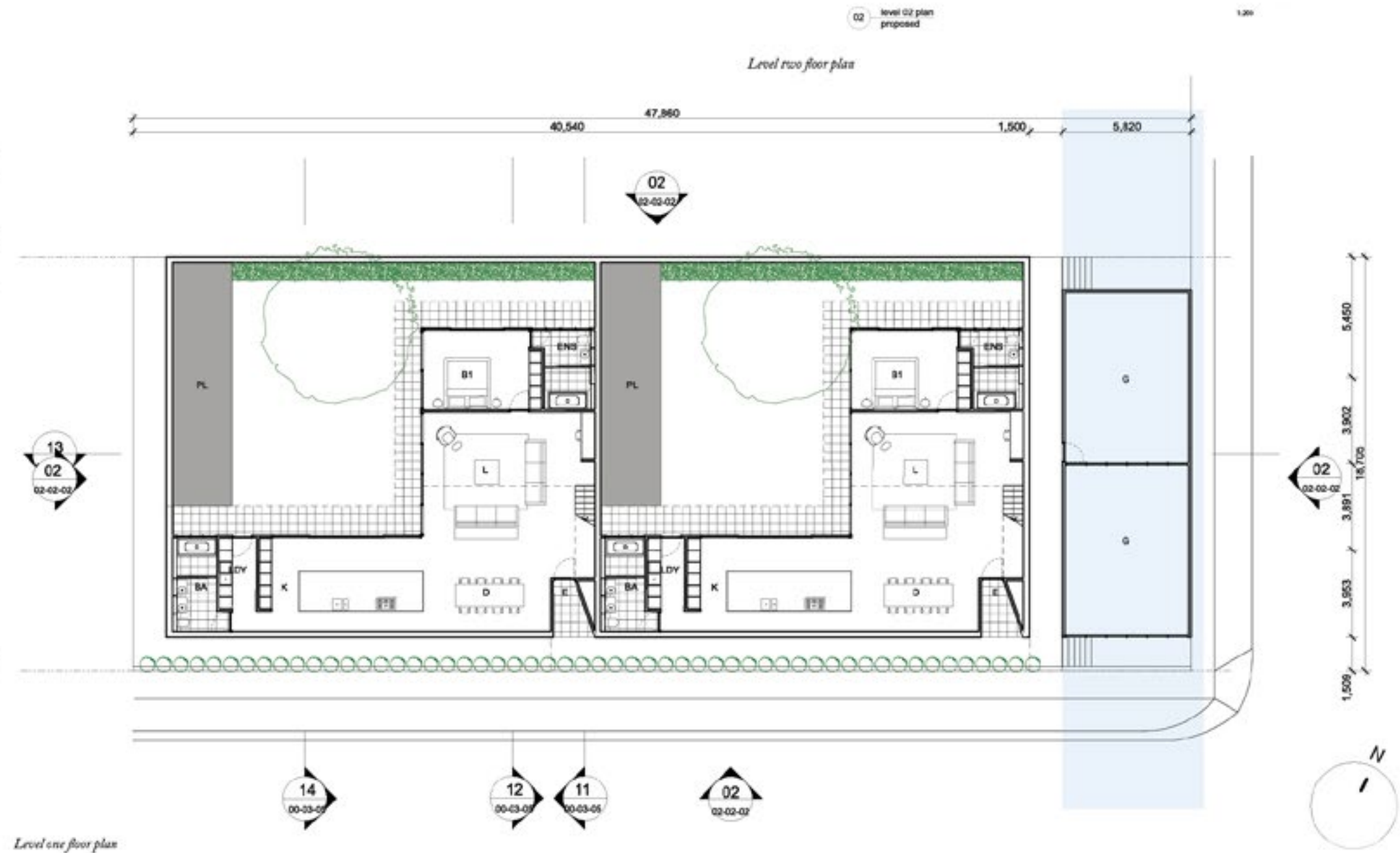
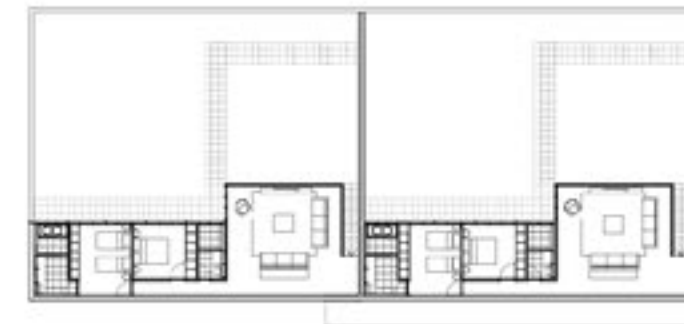
Level one contains the master bedroom with en-suite overlooking the Northern-facing private garden, a large formal living room and an open-planned kitchen equipped with island and extensive storage. The kitchen opens on to a dining room which seats 8 people. The bathroom, whilst hidden from view is close to the dining room but also services the pool.

Its proposed that double lock up garages with storage above would be on the eastern frontage of the site with undercover walkways along the southern boundary from the garages to the houses.

Level two contains the living and bedroom areas for the family. There are two bedrooms one with an en-suite and one with a shared bathroom. The bedroom with the en-suite can be configured as a double bedroom or split into a twin share, which gives a level of flexibility as the families' needs change. As well there is a second large living room to create a separation of living spaces between children and adults as the children get older.

Testing the design guide

Torrens titled development where two dwellings are constructed on one lot of land, but on a separate Torrens title lot.
The draft medium density design guide indicates that the primary and secondary road setback for a 900sqm site is 2-4.5m. This doesn't allow for a parking scenario as shown on plan (blue).
The difficulty in producing a two dwelling courtyard housing project on a single plot is the parking. Maximising land for privacy and lifestyle is central to the courtyard-housing scheme and parking located in the front of the site provides for that.
Cost of underground parking makes the end sale prohibitive and defeats the purpose of the courtyard house as an efficient use of land.



Elevation / Sections

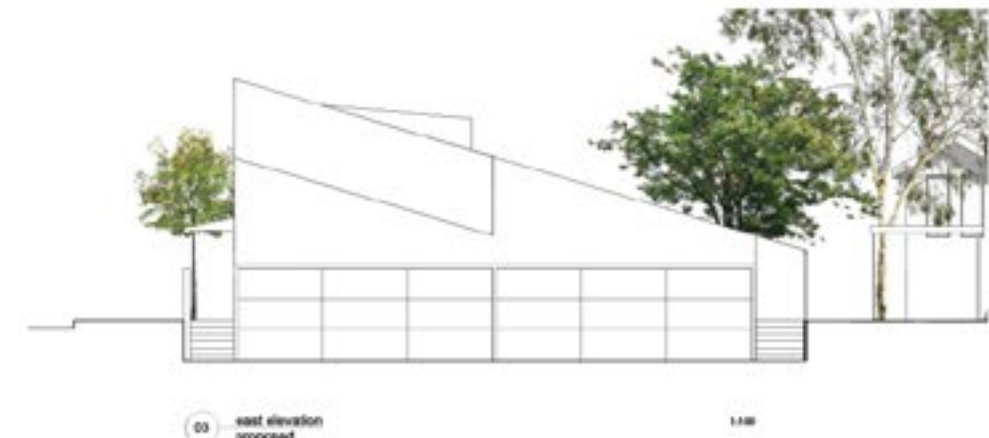
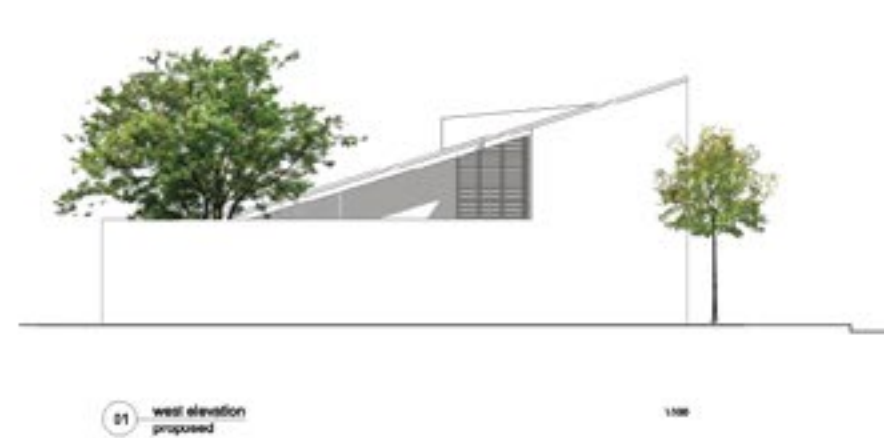
The pitched roof has been considered to relate to the street character of the typical pitched roofs found in the Sydney suburbs. The East elevation is a series of roof pitches in varying sizes and angles, the South is a clean plane, the West articulates the play of roof angles and clean triangular lines and the North is a large roof surface which exemplifies the concept of shelter and privacy.

High clerestory windows, dormer skylights, glass louvers offer light and ventilation throughout and vegetation adds a counterpoint to the ridged graphical nature of architecture.

All roof run off will be directed to on-site rain gardens that are planted within courtyard areas of the site. Rain gardens or bioretention systems are planted with native plants that filter out and treat pollutants typically found in storm water. Following natural treatment, ground water will be harvested in a large underground water tanks (not shown on plan) situated under each house internal courtyard.

This water will be used for:

- Green landscaping watering
- Grounds cleaning
- Toilet flushing
- Car washing
- Back up supply for fire fighting



Internal Environmental Quality



1:100 scale model - Courtyard housing configuration

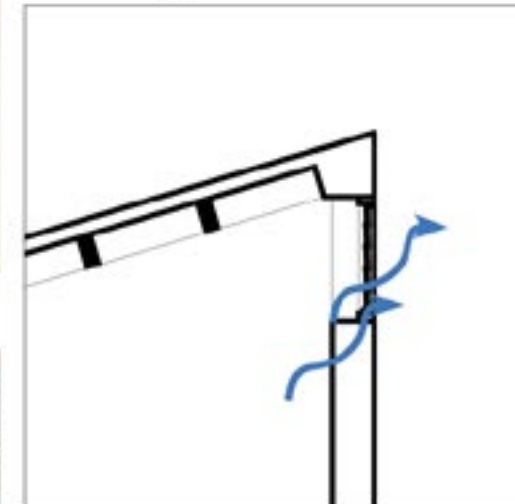


3D render showing the internal courtyard from the North - West corner on level one

Courtyard views

Floor to ceiling height windows along the North and North Western walls will allow residents to access views of the courtyard from almost every room. From the Northern windows on the second story the building is high enough to look over the neighboring buildings to see the horizon. As well the internal courtyard will offer day and night sky views providing connection to the external environment.

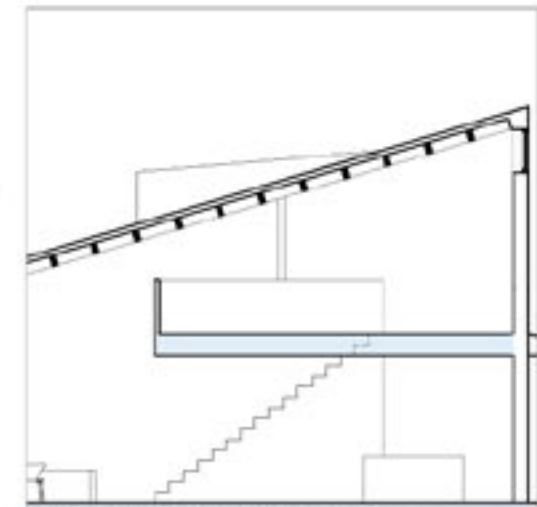
Stack effect ventilation



Clerestory windows on the South façades ventilate trapped heat

Each house will be able to capture the breezes by opening sliding doors on the lower ground on the North and North Western walls. The largest openings and shortest span of the building is aligned to those orientations to maximise cross ventilation. When winds are still the clerestory operable louvre windows will flush out rising low pressure warm air to be replaced with higher pressure cooler air which will generate stack effect ventilation. There will be no need for air conditioning.

Thermal Mass



Blue - thermally massive construction

It is proposed that the walls and floor be built of bulk material. All the walls will be constructed in double brick and floors in concrete slabs. The floors will be topped with higher density terrazzo tile made from recycled materials. The flooring slab will house hydronic heating tubes. The overall thermal mass will help to store some heat in winter but mainly to regulate the temperature for both heating and cooling throughout the day and night. As well as reduce noise transfer between party walls and from the street.

Occupant control

Occupants will have complete control over their environment with the flexibility of heating and cooling as required. When necessary thermostatically controlled hydronic heating will keep an optimum level of interior thermal comfort. Through the opening and closing of sliding doors and operable glass louvers in all façades in the second story occupants will be able to control the amount of ventilation. As well occupants will be able to control the amount of privacy and solar gain with adjustable aluminium louvers on North and North-Western windows.

DUAL OCCUPANCY

POTTERS CIRCUIT

Potters Circuit: dual occupancy.

6614-6416 Potters Circuit proposal offers a flexible sustainable approach to the Australian millennial generation.

We believe low-rise medium density developments in the middle ring should offer a favorable scenario for these potential new buyers. New constructions should facilitate a way to capitalize our continuous wasted investment into the real estate sector.

We propose a flexible system, which explodes the capacities of the dual occupancy typology by challenging its own definition:

“Two dwellings are constructed on one lot of land, however at the completion of the development each dwelling is located on a separate Torrens title lot.”

The system offers a flexible infrastructure, which optimizes the symbiotic characteristic of the typology. The house will grow over its own premises or towards the adjacent according to the requirements of its inhabitants.

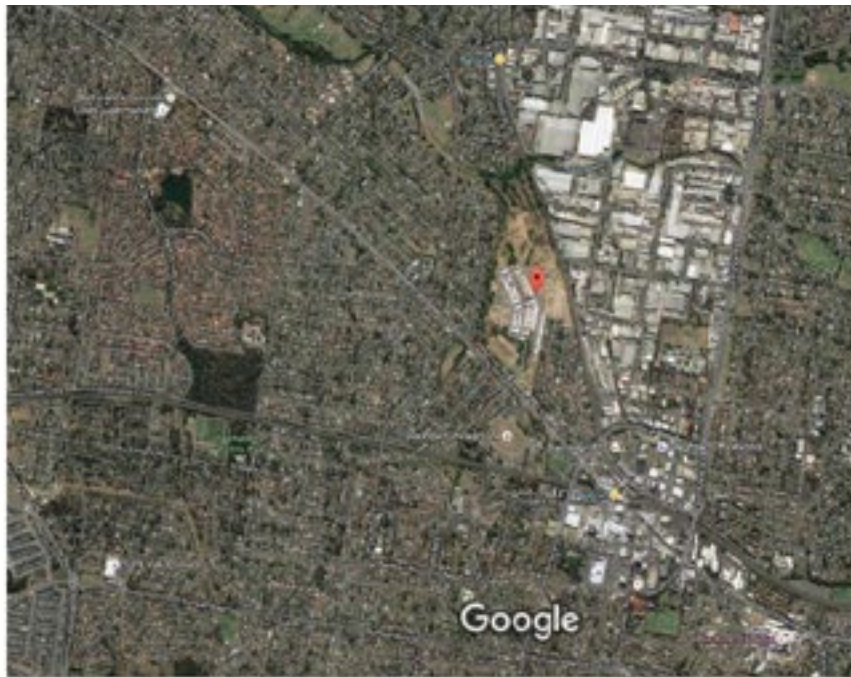
Traditional Sydney typologies are inherited from colonial British systems and do not optimise the extraordinary characteristics of their own weather. Our design explores this possibility by offering a series of rooms that can be completely opened out to the elements, allowing residents to make the most of good weather.

Site:

Just moments from the lively Blacktown CBD, you'll enjoy an authentic community atmosphere amid secure and tranquil surrounds that are linked by walkways and bike paths.

Formerly the site of a private golf course, Fairwater boasts more than 1.5 hectares of ponds, wetlands and waterways. You can stroll along a boardwalk, overlook the water and wildlife from the bridge or take the little ones to a water play area especially designed and built for toddlers.

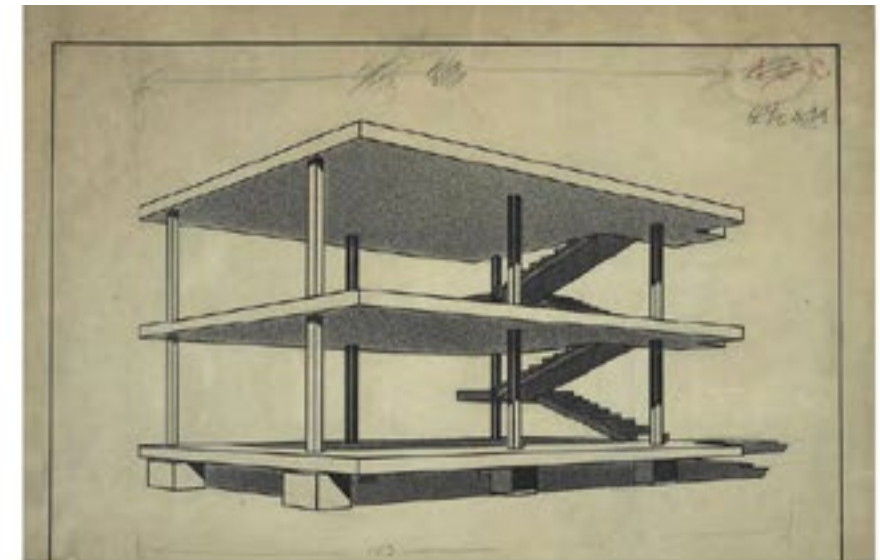
- Less than 1km to Blacktown CBD, bus & train interchange
- Easy access onto the M4, or M2 and M7
- Large entry lake with expansive boardwalk in a master planned community
- Close to an exciting array of recreation and entertainment activities
- Walking distance to Fairwater Park and the boardwalk



Site plan 01



Site plan 02



Maison Domiso by Le Corbiser (1914-1915)



Australian Santa Claus illustrates the lack of adaptation to specific conditions.

DUAL OCCUPANCY

THE GREENVUE



FIRST FLOOR PLAN



GROUND FLOOR PLAN

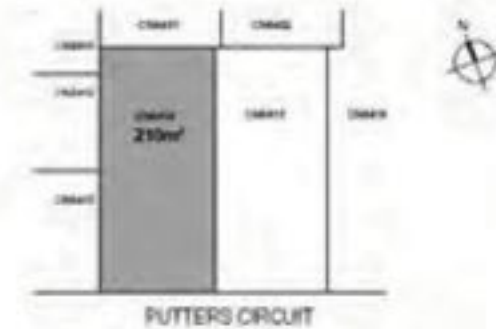
CN6414



Artist impression - Indicative only

3 2.5 2

Ground Floor :	64 sqm
First Floor :	92 sqm
Porch or Verandah :	6 sqm
Balcony :	11 sqm
Alfresco :	17 sqm
Garage :	34 sqm
Total area :	224 sqm



Please note that the floor plan is an artist's impression only and is not to scale. Whilst every care is taken to ensure that all content in this brochure is correct, the floor plan, all text, plans, drawings and all other information is approximate only and may vary. Final design may also vary for reasons outside of our control and may change during the development process. Dimensions, specifications and fittings may be changed without notice. The image and colour scheme shown above is for illustrative purposes only. All painted interior finishes are flagged. External finishes and surfaces are typically a composition of either brickwork, painted masonry that may include stone or alternative lightweight external composite finishes such as rendered and painted polystyrene or painted formwork elements. Purchasers must rely on their own enquiries and the Contract for Sale.

DUAL OCCUPANCY



DUAL OCCUPANCY

TESTING THE DESIGN GUIDE

We start challenging the own definition of the typology and we continue by challenging every single compositional traditional approach to the design.

Our design contradict the recommended size, the aesthetics recommendations as we consider them completely outdated.

3.1L Dwelling Size and Layout

44. Dwellings are required to have the following minimum internal floor areas:
- 1 bed 65m²
 - 2 bed 90m²
 - 3+ bed 115m²

2U Architectural Form and Roof Design

4. Reduce the apparent bulk and visual impact by breaking down the roof into small roof elements
A building that has a simple architectural form often needs a higher level of articulation, one that has a complex or more sculpted architectural form can have simple detailing.

7. The form should provide a balanced composition of solid and void.
8. A building that has a simple architectural form often needs a higher level of articulation, one that has a complex or more sculpted architectural form can have simple detailing.

2V Visual Appearance and Articulation

4. Design solutions for front building facades may include:
- a composition of varied building elements;
 - a defined base, middle and top of buildings;
 - revealing and concealing certain elements; and
 - changes in texture, material, detail and colour to modify the prominence of elements.
6. Use variation in materials, colours and key elements such as doors windows and balconies to order building facades with scale and proportions that respond to the contextual character.

The proposal is as uncooked as the own proposed regulation.

The proposal aims to trigger the housing debate in Sydney.

The proposal is a failure.

The proposal is to be continued.

