GANSW

TESTING THE MEDIUM DENSITY DESIGN GUIDE

THE MISSING MIDDLE DESIGN COMPETITION

2017

TERRACE HOUSES

NSW GOVERNMENT 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.

CONTENTS

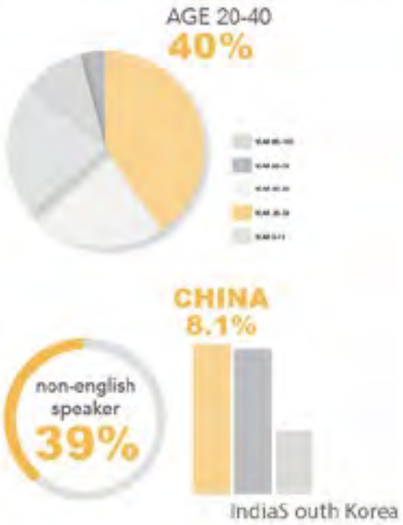
A "SKEWER" HOME

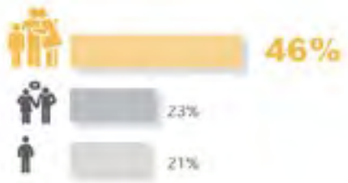
SITE LOCATION : 1 BARHAM STREET ,NORTH PARRAMATTA

The existing terrace housing model as one of the competition focused housing type, which has been losing its potential to adapt to changing demographics, diversified cultural background and varied lifestyles. The significant awareness of the rising number of medium density housing development has been realized by a number of suburbs in the middle ring especially for the Parramatta council.

he major population of Parramatta is made up of young workforce, parents and home builders. Additionally, the family structure of Parramatta contains 46% families with children, 23% couples without children and 21% alone person households. Apparently, from the view of masterplan, Parramatta has a rapid development in the nigh density housing complex in the city area while there are left low density single dwelling among the suburban area like north Parramatta.

The selected site located on the corner of Barham Street and Symonds Ave in the North Parramatta precinct. Firstly, this site is belong to the R3 zone(medium density) according to the council LEP, and it sits between R2(low density) zone and R4 (high density)zone. It is a opportunity to test the design guide in order to archiving a transition between the single dwelling housing zone and flat housing complex zone. Secondly, the corner site can be seen as a meet up point between the neighborhoods. The propoted new terrace housing model will also focus on the relationship with the community.





1:1000 site plan @ A3

1

2

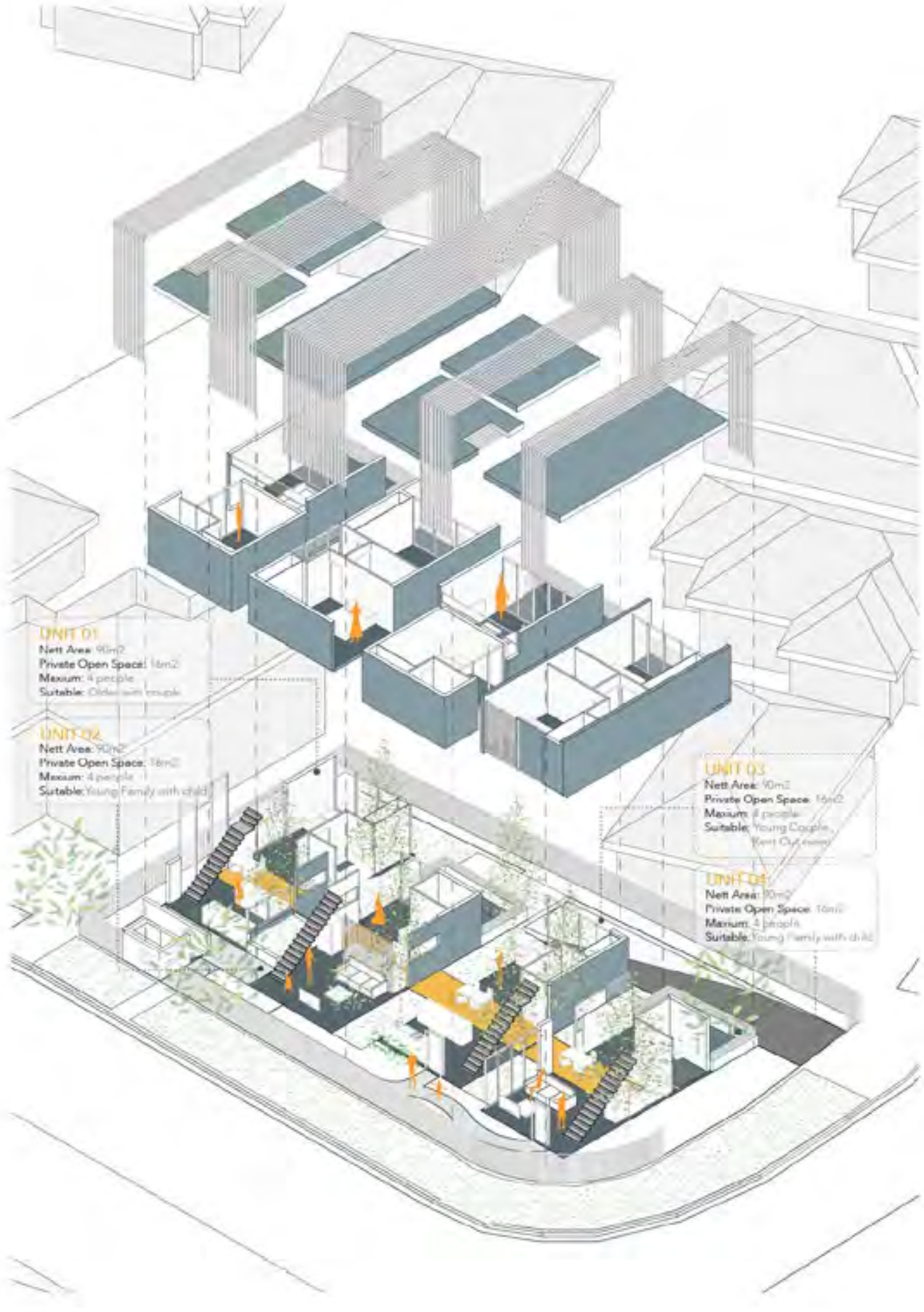
1. 1:200 Ground floor plan
2. 1:250 Level 1 plan
3. 1:200 Long Section
4. Street Perspective
5. Exterior Perspective
6. Internal Sharing Space Perspective

3

4

5

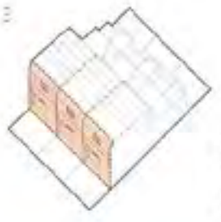
6



Traditional Terrace House

Existing terrace housing usually have a large backyard area

Existing terrace housing usually have the partition wall between each dwelling



Existing terrace housing usually have a long facade and no street engagement

Existing terrace housing usually have the tradition layout

New Proposing Terrace House

Proposed terrace housing model allocate the size of back yard to a sharing space in the middle

Proposed terrace housing model have the "breaking-up" gap introduce the nature to the site

Proposed terrace housing have the connection to highlight the transparence of the site

Proposed terrace housing have the connection with the dinning space of each dwelling

FEEDBACK AND IMPROVEMENT ON GUIDE

According to the Draft medium Density Design Guide, the preliminary set up And basic restrictions has been outlined clearly along with the design quality. However, it still have some potential to improve the design guide in three main aspects including the private open space, partition wall(flexible layout) and communal space requirement.

PRIVATE OPEN SPACE (BACKYARD)

The traditional terrace house is usually accompanied with a large backyard at rearlat least 3m depth with connection to the living or dining space). This type of area as defined as the private open space which has not been properly utilized by most of the residents in today's context. Along with the changing demographics and emerging communal lifestyle, there is an opportunity to allocate the area of backyard to the collective space through the middle. As can be seen from the diagram, the proposed terrace housing model create the space in the gap between two dwellings with the operable swing door to allow some sheering activities during the weekends, such as sheared cooking experience, BBQ party.

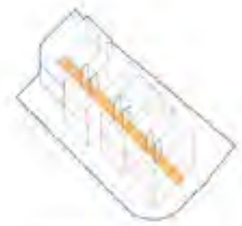
Existing

Proposed

PARTITION WALL & FLEXIBLE LAYOUT

Each dwelling is typically orientated front to back, with a solid partition wall located in between adjacent two neighbors. As there is no opening on two sides, the natural light and sun access may not be adequate according to the site location and contextual character. By split the adjacent dwelling with a 2m gap instead of the partition wall, the natural light and sun access could possibility penetrate from the sine wall to the middle of each dwelling. Additionally, this could also contribute to making the flexible room in the middle with its changing functions through the time frame.

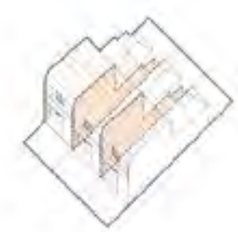
Existing



Proposed

COMMUNAL SPACE AND STREET ENGAGEMENT

Long facade and repetition of the existing terrace housing model has barely minimum street engagement and communal living style. The "breaking-up" gap between each dwelling has allowed the transparency of the site between the semi-public space and the public street. From the experience of the residents, the dining activities can be seen as one of the most popular communal activities. The layout of proposed new terrace housing model typically arranged the dinning space in the middle with the operable sliding wall which could open up to connect the neighbor next door during the weekends.

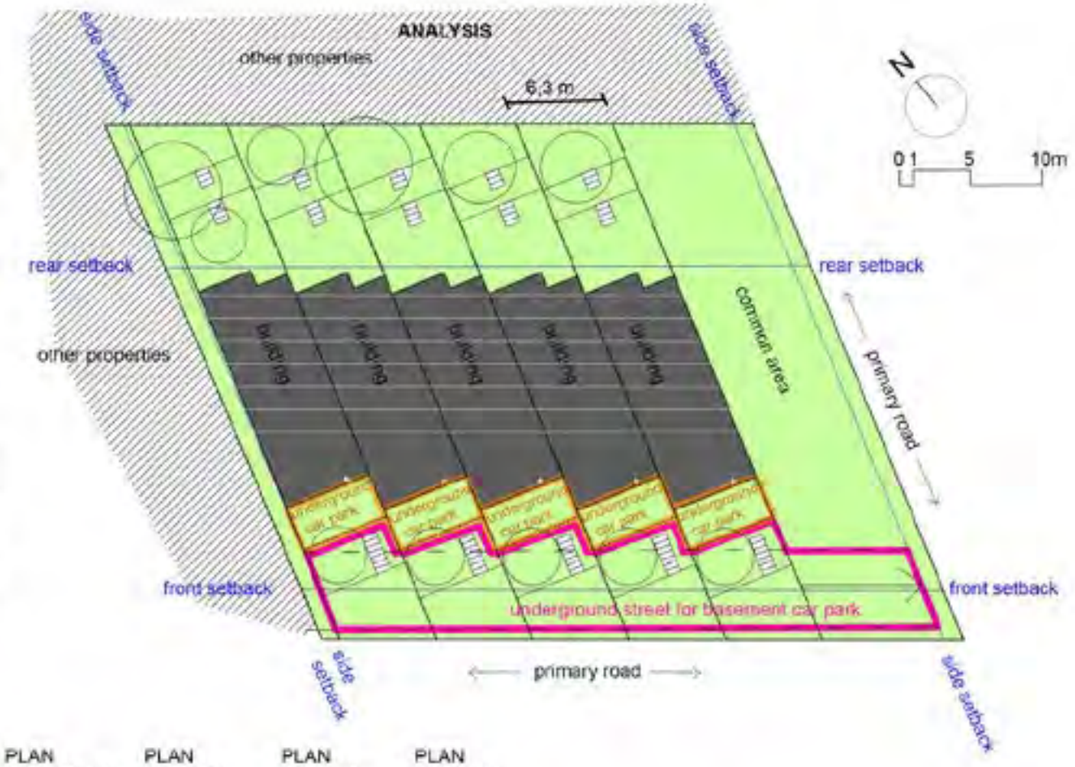


Existing

Proposed

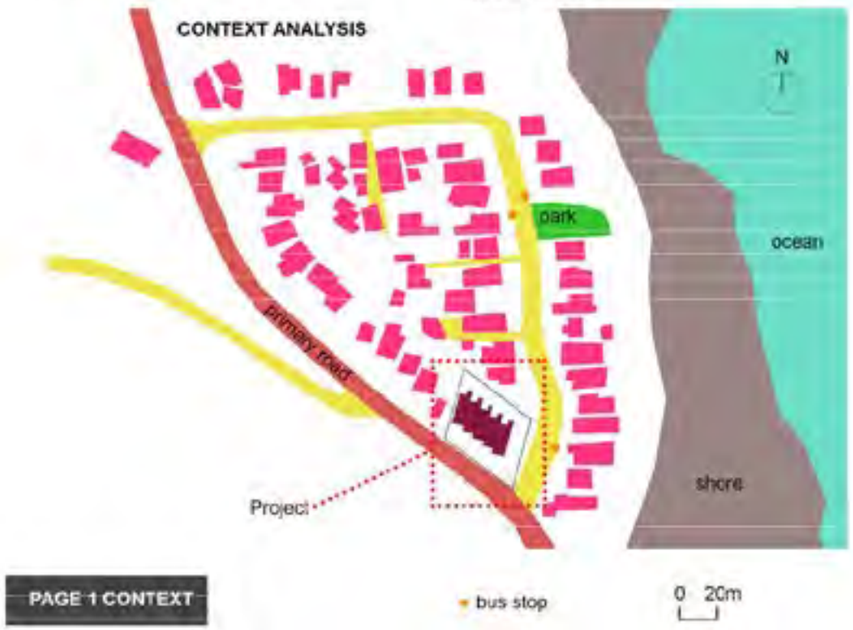
LAND ZONING

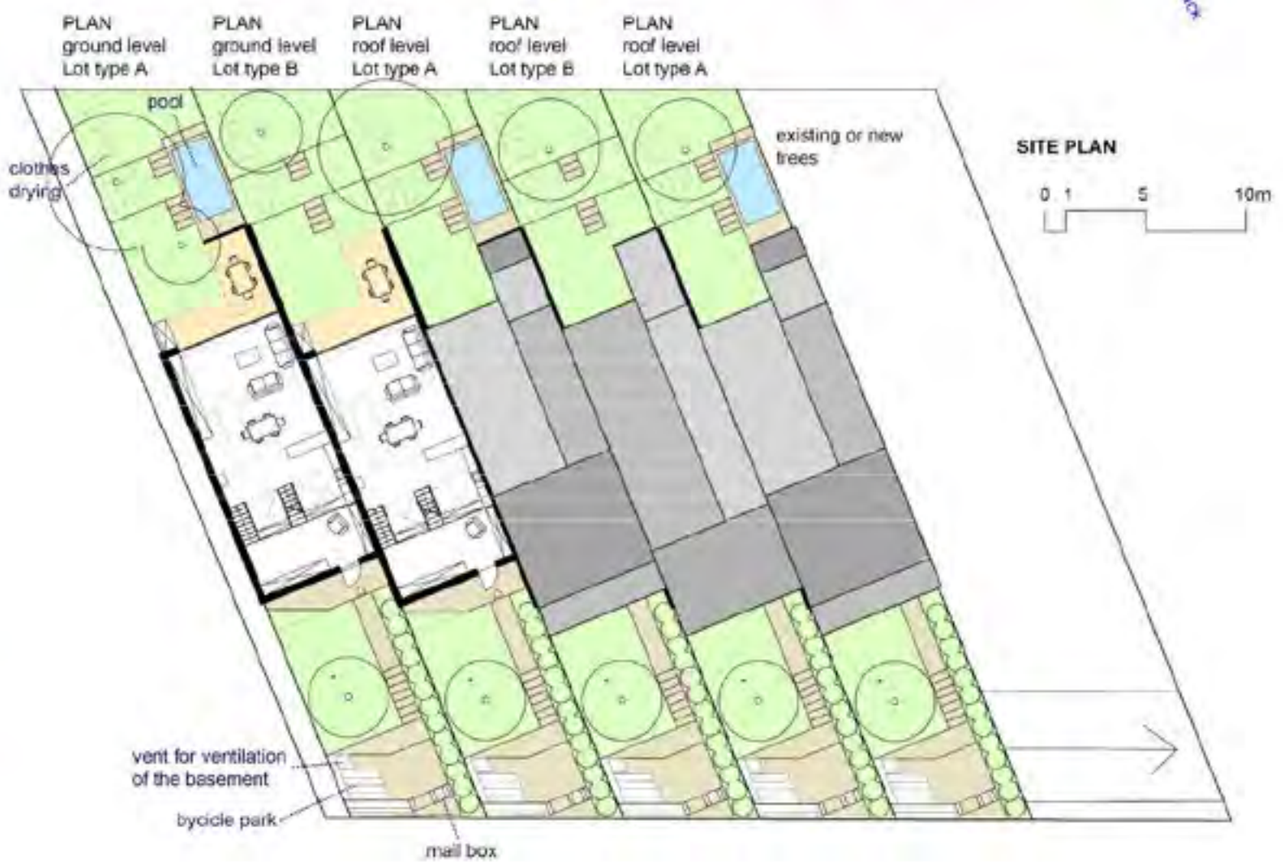
Each dwelling is built at some distance from the road in order to limit the noise as much as possible while still keeping the roaddwelling relationship typical of surrounding areas. This freed space hosts basement car parks which are blended together with their respective dwelling yet not readily visible from the road. The basement car parks can also be used as domestic recycling centers.
Two kinds of dwellings are proposed (A and B) in order to create a degree of dynamism along the facade. Furthermore, in order to prevent the creation of a monotonous block of terraced houses, single household units are built on areas placed at different heights with respect to each other.



My working area of choice is characterized by some challenging features. The area slopes down along both its long side and its short side direction. Moreover, it has just one side facing the main road, which is noisy and characterized by a heavy load of traffic and no pedestrian access. In the surrounding areas the most common dwellings are single household units built at some distance from the road and having one or two storeys.

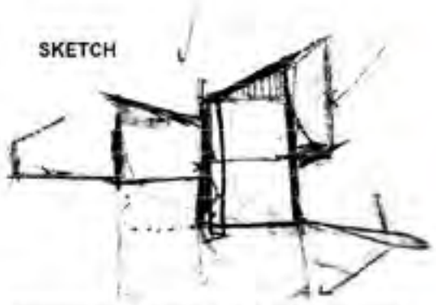
The area has been divided into subareas in order to create a Strata titled development project. Each subarea has a single household unit with the whole area resulting in a terraced houses style dwelling with two exposures, one towards the north and one towards the south, the other two sides being in common with surrounding buildings. A portion of the area has been reserved for creating common recreational spaces. Existing trees have been maintained and green spaces whole area kept at a maximum.





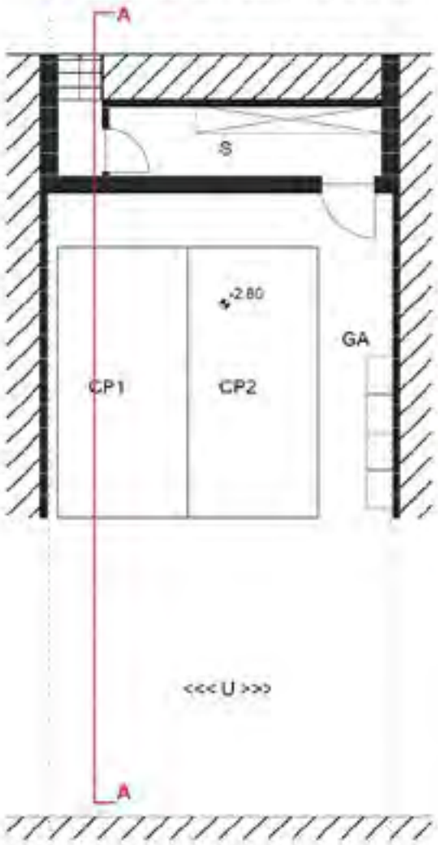
PAGE 1 CONTEXT

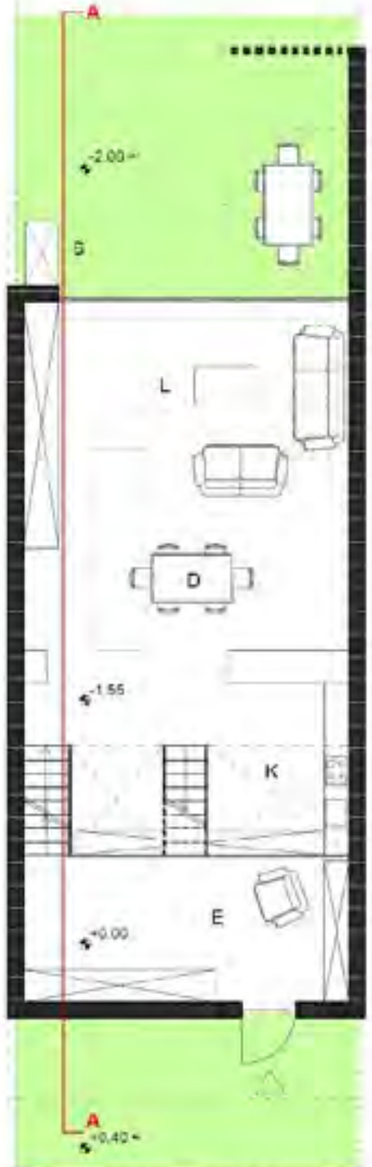
SKETCH



Dwellings have 2 storeys plus the underground storey. Due to the changing slope of the working area, these are organized on 5 different levels as a whole. A stairwell allows to move between storeys and a lift can be installed if necessary. A skylight opening in the stairwell allows natural light to be enjoyed on all levels in the stairwell.
Both on the northern and on the southern side there are BBQ and relax areas, bike bases, mail boxes and air intakes to allow for natural flow of the air into the underground storey. On the southern side there is a porch, a garden equipment storage facility and a swimming pool. Underground car parks are linked via a common access way.

P1 PLAN BASEMENT CARK PARK, 1/100





P2 PLAN GROUND - FIRST FLOOR, 1/100

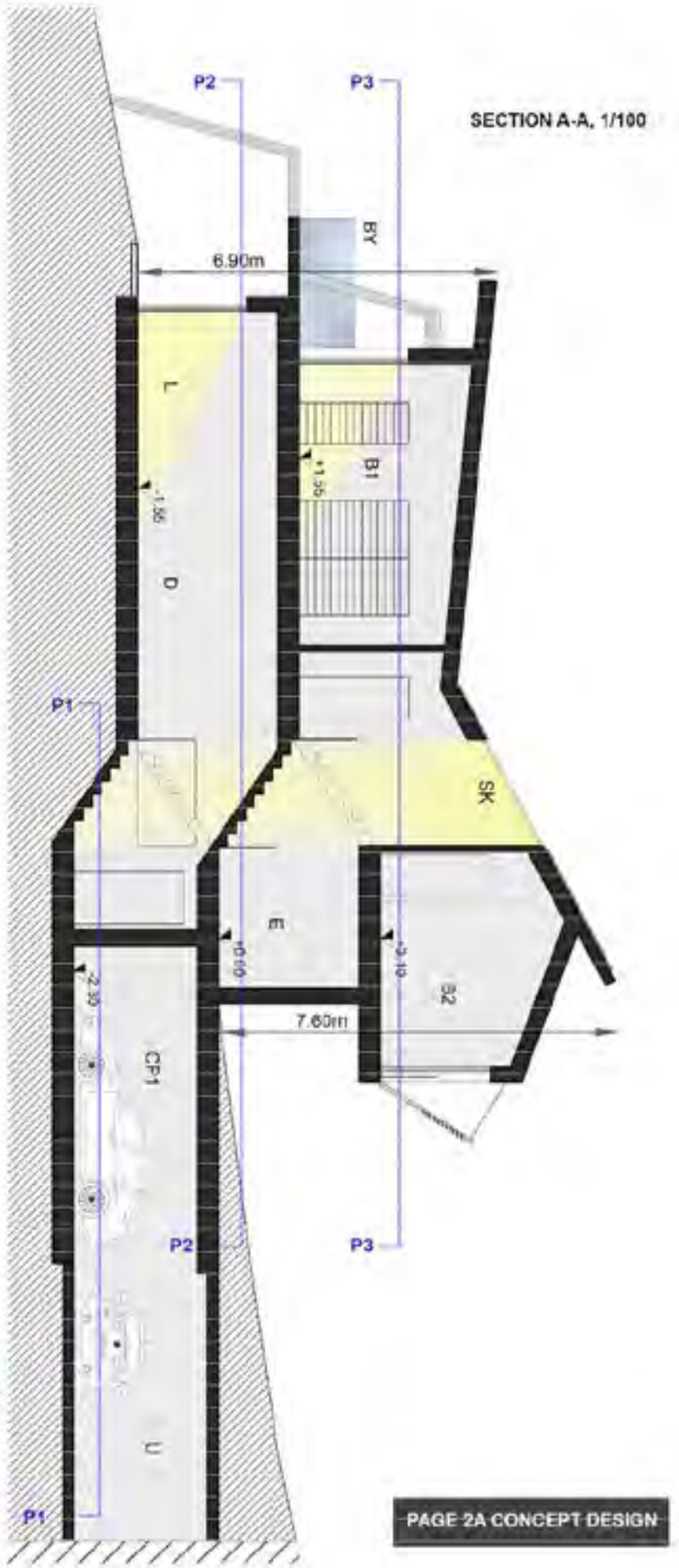
P3 PLAN SECOND - THIRD FLOOR, 1/100

Legend

K = kitchen
D = dining room
L = living room
E = entrance area
B = bedroom
BA = bathroom
BY = balcony
W = wardrobe
S = storage
CP = car parking
GA = garbage area
U = underground street
SK = skylight above the stair

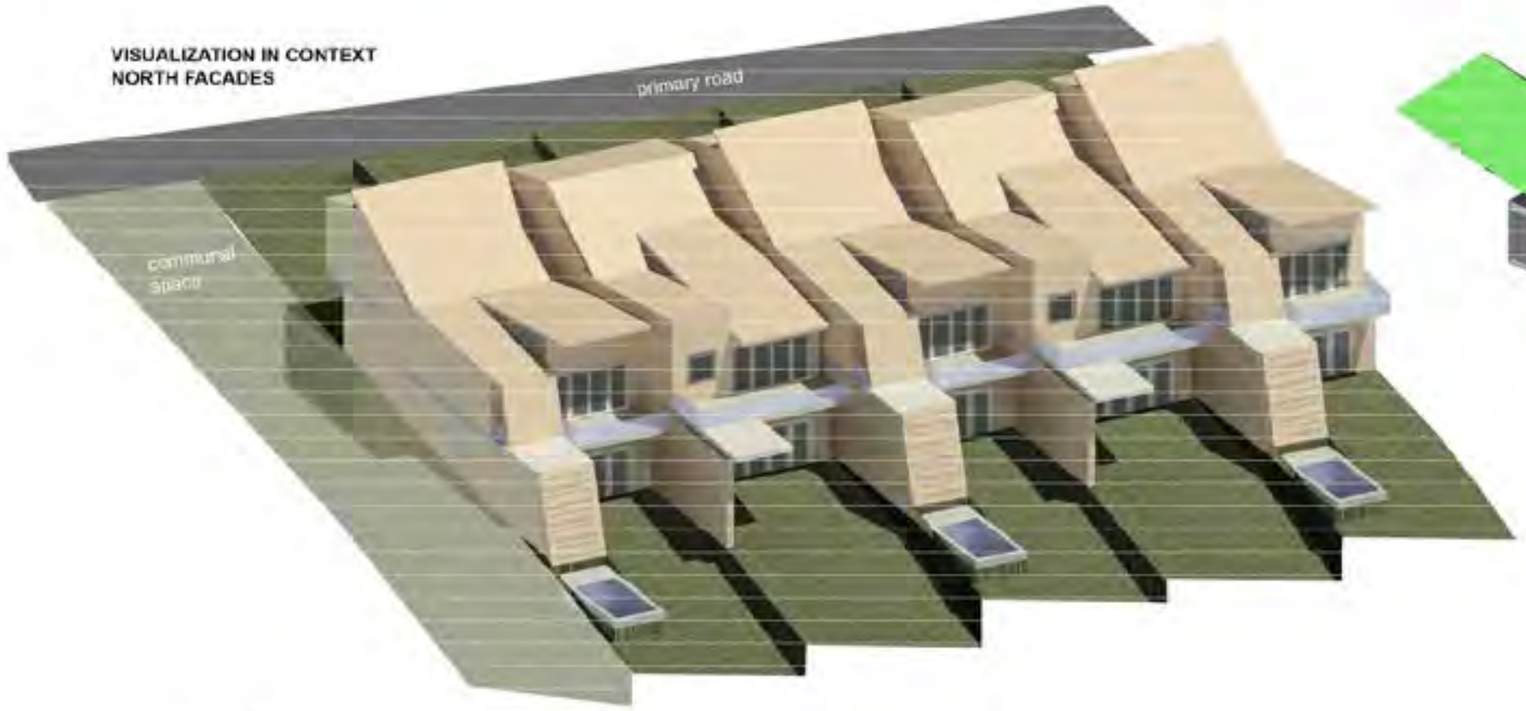
DIAGRAM

SECTION A-A, 1/100

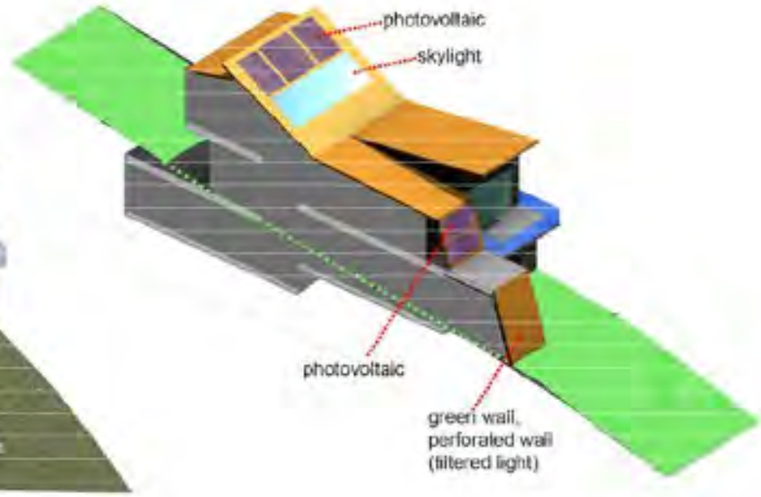


PAGE 2A CONCEPT DESIGN

VISUALIZATION IN CONTEXT
NORTH FACADES



3D VIEW



Deep groundwater aquifer have been chosen having in mind that a degree of dynamism would serve the purpose of a much pleasant visual impact to the public but also that a suitable steepness would allow for photo-voltaic panels to be installed facing the north and for green walls to be built. Through a game of varying slopes it is possible to collect rain water at soil level. Private gardens allow the possibility to install water tanks as well.

NorthSouth orientation allows for a choice of living areas to face the north, thus having access to more natural light during the day, while having other areas facing the south. Windows are at a minimum on the southern side in order to limit thermal dispersion. The main difference between dwelling A and B is in the groundwater aquifer arrangement: they are facing each other in order to create a degree of dynamism with facades changing continuously. Material are lightweight and replaceable: wood cladding.

landscape-scale, energy landscape

VISUALIZATION
SOUTH FACADES

NORTH ELEVATION

0 1 5 10m

PAGE 2B CONCEPT DESIGN

To ensure solar access, it should be also considered the protrusion of the floor above
(2I Solar and Daylight Access)

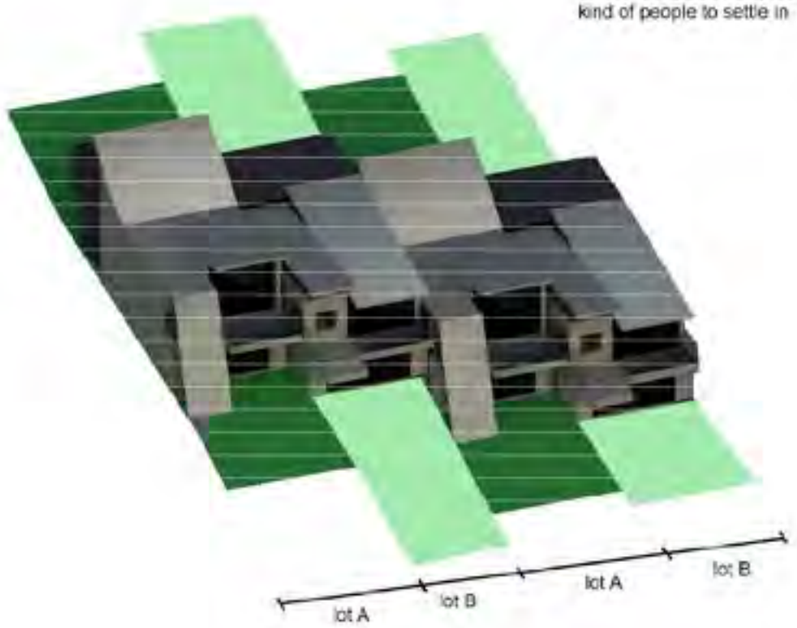
from 2X Energy Efficiency 6. *"Provide substantial insulation in walls, ceilings, floor (for timber framed construction) and roof spaces."*

It's also important to prevent storing heating during summer season that's why it should be adopted solutions to enhance thermal inertia

Regarding the installation of photovoltaics:
whenever installing photovoltaics system is not feasible careful considerations of water and waste cycle management should be considered

avoid to build too much times the same shape on the street. The aim should be to make people love their home giving the chance to have a unique and characterized home.

alternate tipology of building in order to create a different built-landscape and to further different kind of people to settle in



PAGE 3 TESTING THE DESIGN GUIDE

Missing Middle Housing
Proposed Terraces

CONCEPT DESIGN

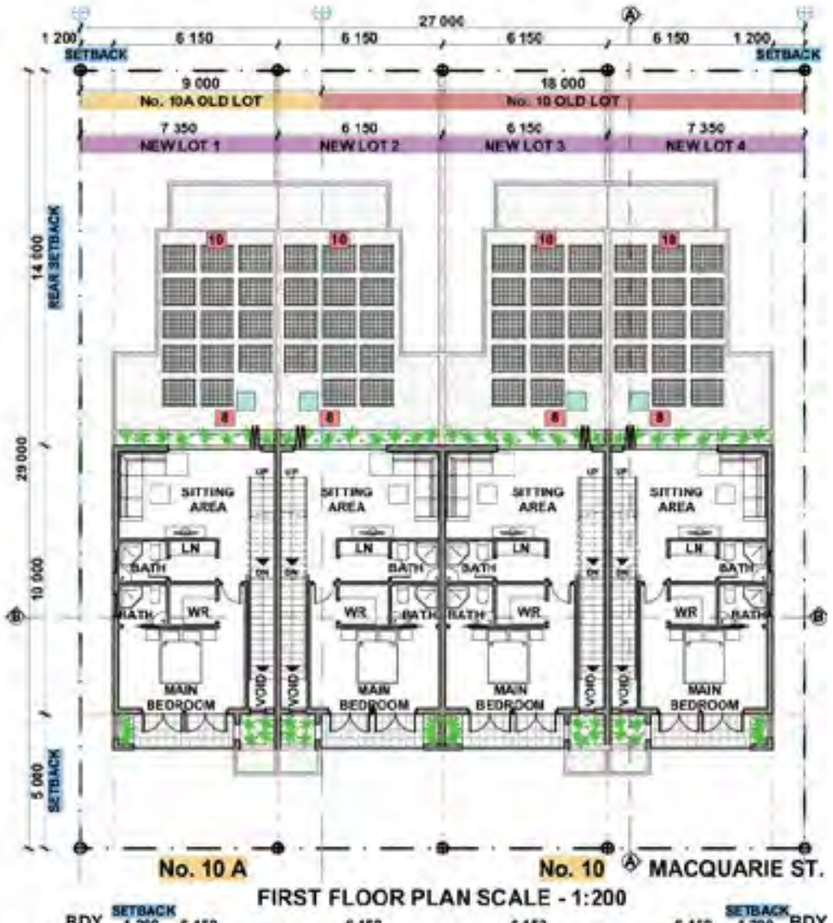
LEGEND	
1	Open Space
2	Tree Planting in Rear Setback
3	Tree Planting Front Setback
4	Garage Setback From Building Line
5	Rain Water Tank
6	BBQ Area
7	Bike Space
8	Skylights
9	Voids
10	Solar Panels
11	Soft Landscape
12	Planter Boxes
	New Lot Widths

DROP IN SYSTEM

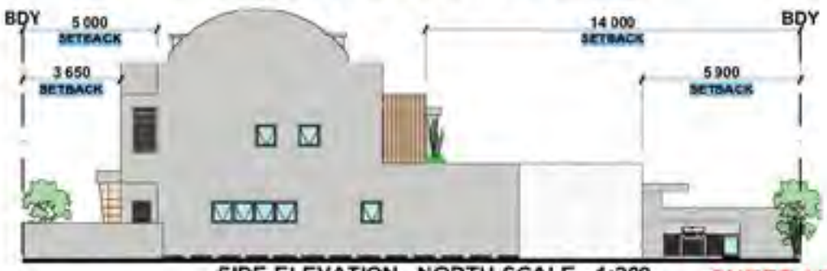
A REVOLUTIONARY PRE FABRICATED WAY TO CONSTRUCT TERRACES

Drop in a pre fabricated concrete boundary wall
Drop in a pre fabricated concrete or timber floor
Drop in a pre fabricated architectural roof structure with bedrooms
Drop in a wall
Drop in a entry
Drop in a prefabricated planter box
Drop in a bbq area
Drop in a rainwater tank
Drop in a prefabricated stairs
Drop in a prefabricated facade
Drop in a roof vent box
Drop in a front fence
Drop in an awning
Drop in a pergola
Drop in a prefanricated boundary fence
Drop in to relax and enjoy your adobe you created

GROUND FLOOR PLAN SCALE - 1:200



FIRST FLOOR PLAN SCALE - 1:200

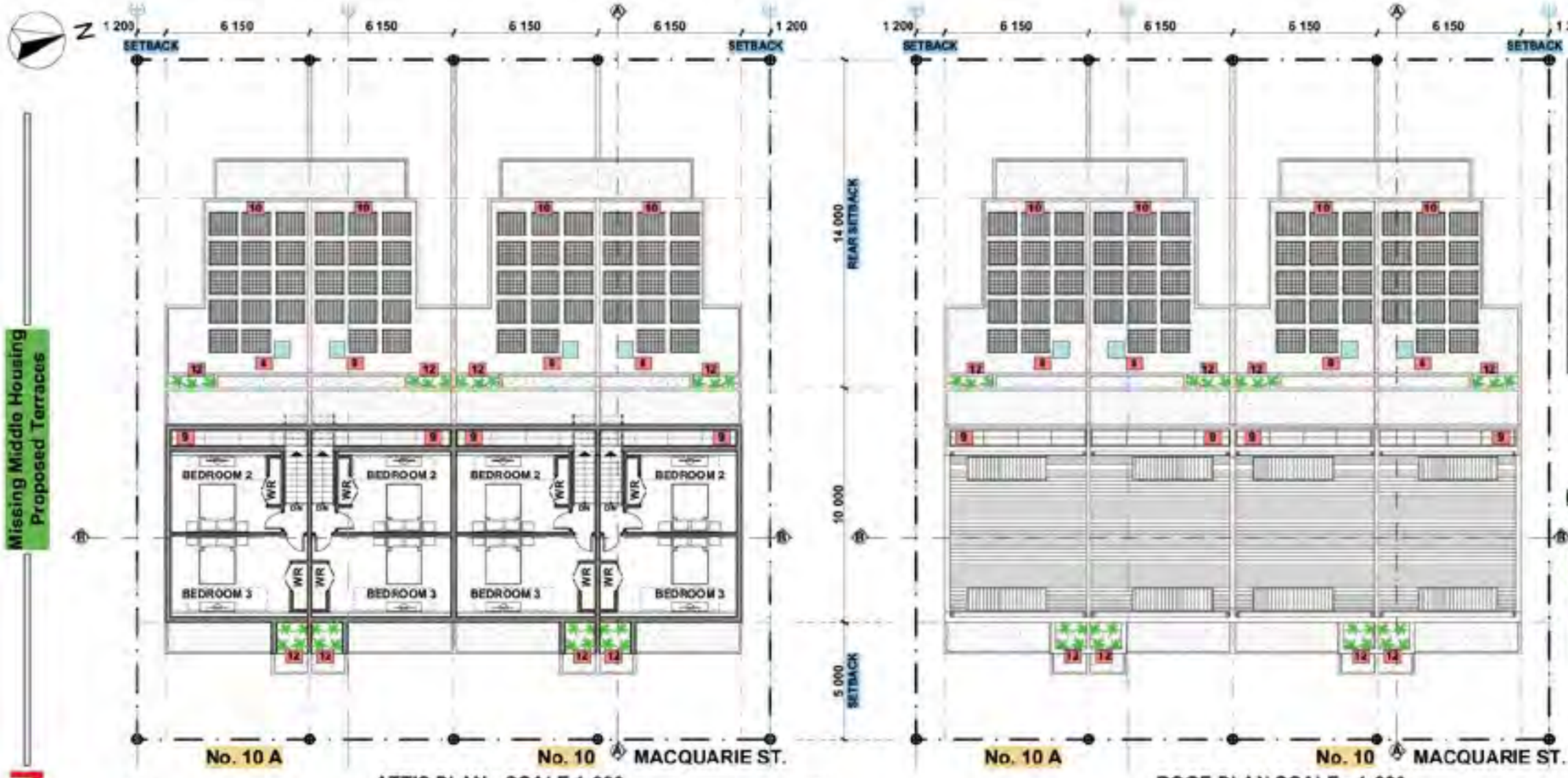


10A + 10 MACQUARIE STREET ROSEBERY

SHEET 1/2

Missing Middle Housing
Proposed Terraces

CONCEPT DESIGN



ATTIC PLAN - SCALE 1:200

ROOF PLAN SCALE - 1:200

LEGEND	
1	Open Space
2	Tree Planting in Rear Setback
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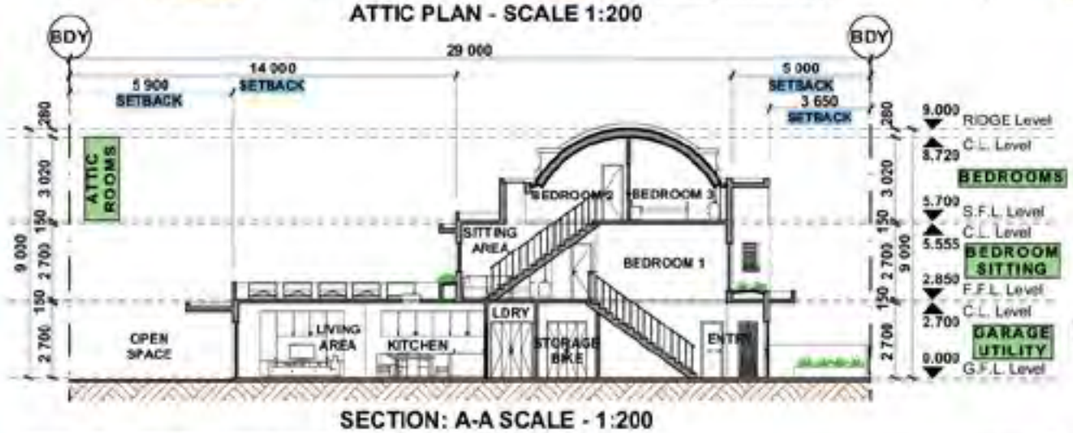
10	Solar Panels
11	Soft Landscape
12	Planter Boxes

SECTION: B-B SCALE - 1:200



SECTION: A-A SCALE - 1:200

FRONT PERSPECTIVE
MACQUARIE STREET

REAR PERSPECTIVE

REAR PERSPECTIVE 2

PROJECT OBJECTIVES		
To achieve 4 x 2 storey Terraces with garages to the Primary Road by amalgamating 2 small sites 10A & 10 Macquarie Street Rosebery & to demonstrate that on narrower lot sizes the development controls & design criteria in the Draft can still be applied with my proposed example.		
Total Size Area 794 m² =	2 x end lots @ 214 m² ae and 2 middle lots being 178 m² ae	2 x end lots at 7.35 m width & 2 middle lots 6.150 m width

10A + 10 MACQUARIE STREET ROSEBERY

SHEET 2/2

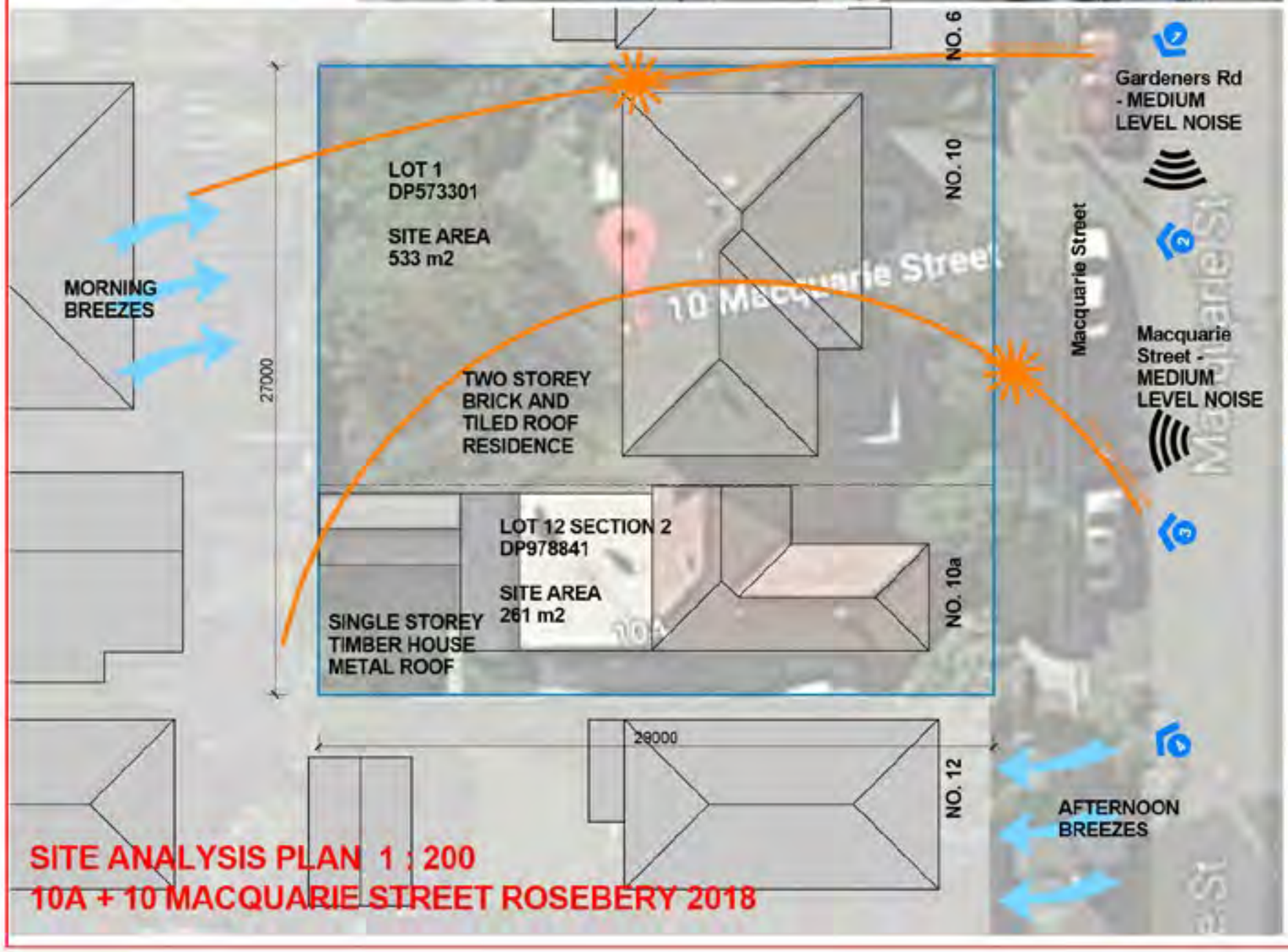
CONTEXT

UNDERSTANDING OF THE (MISSING MIDDLE HOUSING) BRIEF: - to road test the NSW Governments Draft Medium Density Design Guide. To apply the planning and design standards as outlined in the guide by implementing them with a design solution to one of the 3 Missing Middle Housing categories of dwellings on a chosen site, which currently allows for this type of dwelling. To challenge & manipulate the guide to suite new alternatives to the standards required for a CDC.

SITE SELECTION: - 10a + 10 Macquarie Street Rosebery 2018 (Middle Ring Zone) - R2 Low Density Residential - Multi Dwelling (Terraces) permitted under Botany Bay LEP 2013.

REASON: - permitted with consent - under supplied type of dwellings in this and surrouncing suburbs of the Botany Bay Municipality - uptake is inevitable - lot sizes suites this type of development.

SITE AMALGAMATION -TO ACHEIVE 4 X TERRACES			
SITE 1	10a Macquarie Street Rosebery	Area	261 m2
SITE 2	10 Macquarie Street Rosebery	Area	533 m2
TOTAL SITE AREA			794 m2

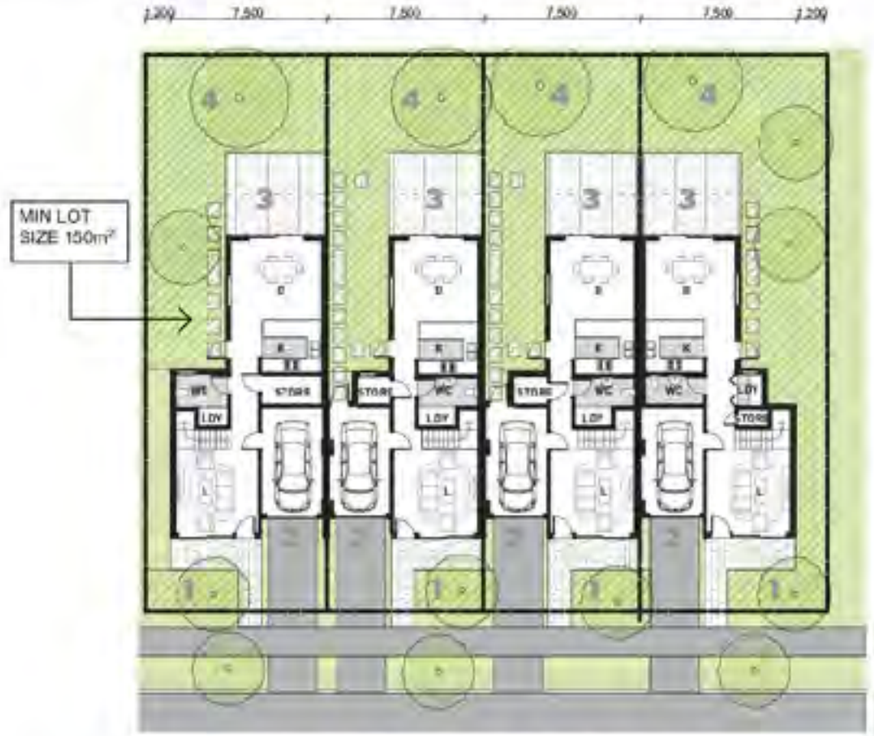


SITE ANALYSIS PLAN 1 : 200
10A + 10 MACQUARIE STREET ROSEBERY 2018

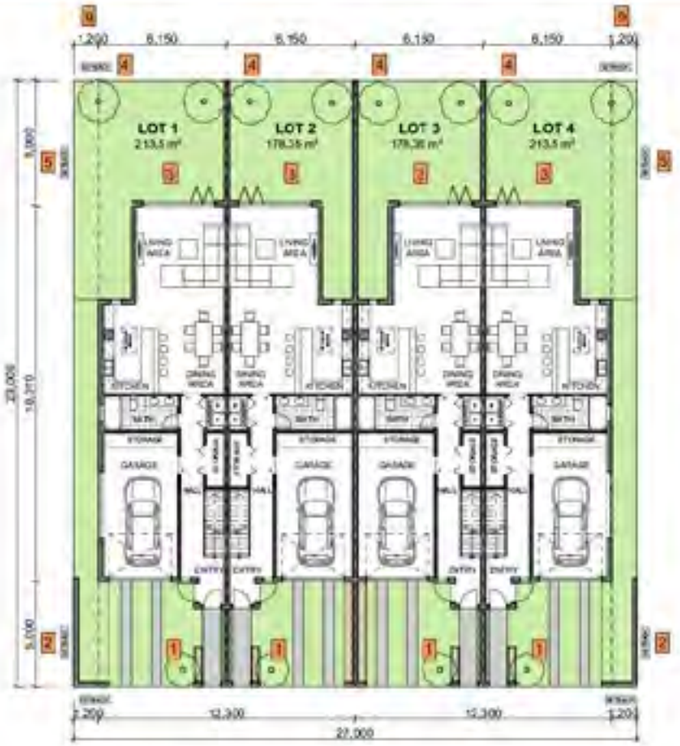
TESTING THE DESIGN GUIDE — Missing Middle Housing

GENERAL FEEDBACK	**Overall a credit to the NSW Department of Planning, for the initiative and foresight to deliver this Draft Design Guide. It will help in the shortfall of providing the Missing Middle Housing deficit in NSW.** **With this implementation of Complying Development for the three types of dwellings being, Terraces, Duplex's & Manor Homes, It will also increase the employment opportunities for consultants required to deliver the CDC for these types of proposed dwellings.** **The outcome of the proposed Design Guide will also improve the context, character and the housing diversity of the existing suburbs in the Coastal, Middle and Outer zones as identified in the Design Guide proposal.**
ALTERATION TO MISSING MIDDLE HOUSING DRAFT DESIGN GUIDE REQUEST	**LOT WIDTHS ALTERATION REQUIRED FOR MIDDLE TERRACES IN DEVELOPMENTS WITH GARAGES TO PRIMARY ROADS**

DWELLING TYPES - TERRACES	Principal Development Controls Requirements	Variation Required To Development Control
	Current width 7.5m for Terraces with garages to Primary Road	Variation to the development control minimum Lot width for Terraces with garages to Primary Road required for sites in the Middle Ring Zone, when 3 or more Terraces are to be built in a line. An overall internal minimum dimension of 6.0m would be acceptable, and achieve the principal standards and design criteris of the Design Guide. The lots still must have minimum site area of 150m2 to achieve an acceptable functional dwelling, but are longer in the depth.



PRINCIPAL DEVELOPMENT CONTROL



MIN LOT WIDTH VARIATION

1. Tree planting in front setback
2. Garage setback from building line
3. Private open space
4. Tree planting in rear setback
5. Rear Set Back - complies
6. Minimum lot size - complies
7. FSR could be increased to (0.8:1)
8. Landscape area - complies

Adjust front setback description

9. Side setback - complies

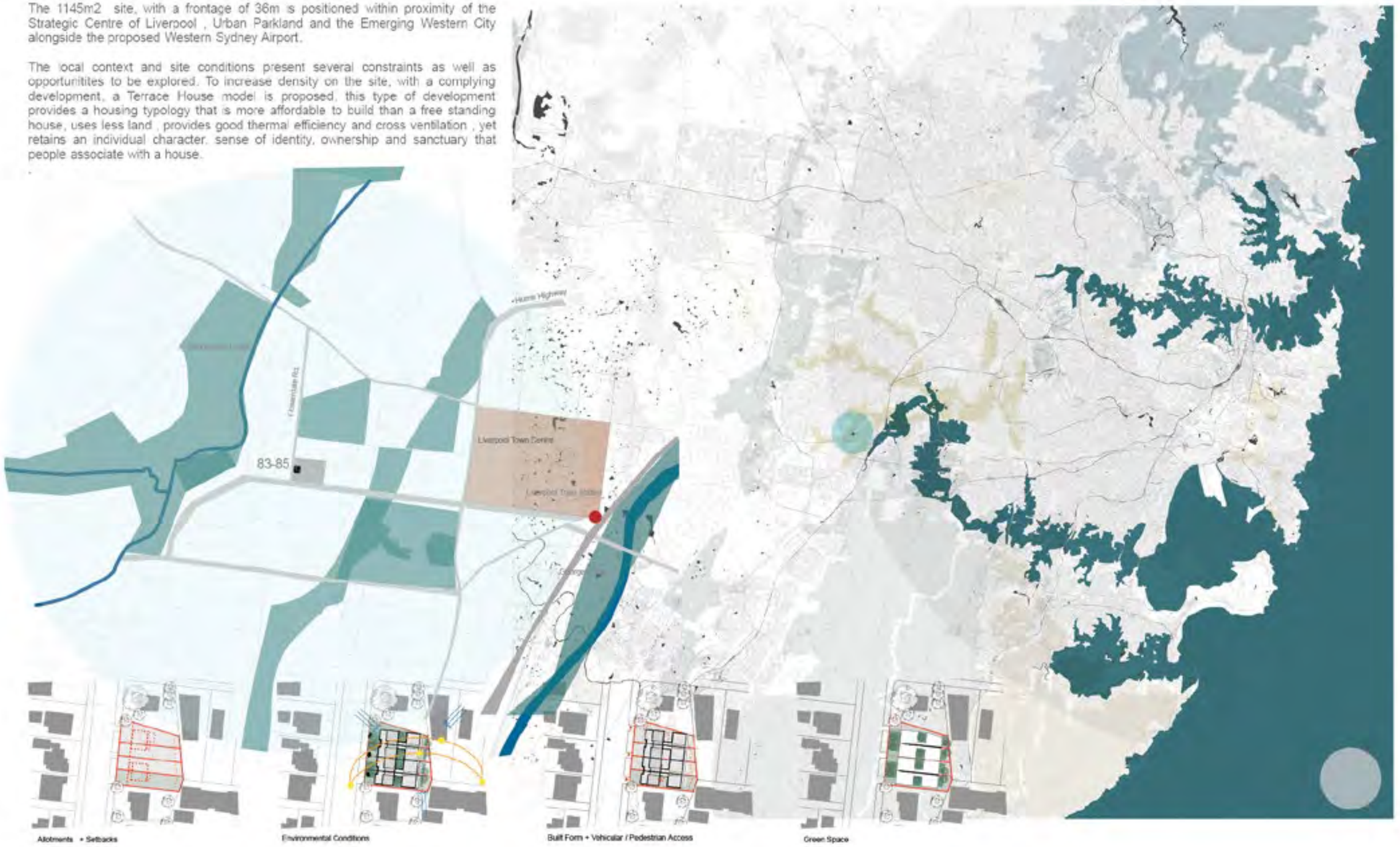
10A + 10 MACQUARIE STREET ROSEBERY 2018

MISSING MIDDLE- Crafted Space

The site at 83 -85 Flowerdale Road, Liverpool, currently housing two lots being sold as one, has been selected to test the Missing Middle Controls. It presents a unique opportunity to analyse an existing development opportunity within the fastest growing district in Sydney.

The 1145m2 site, with a frontage of 36m is positioned within proximity of the Strategic Centre of Liverpool , Urban Parkland and the Emerging Western City alongside the proposed Western Sydney Airport.

The local context and site conditions present several constraints as well as opportunitites to be explored. To increase density on the site, with a complying development, a Terrace House model is proposed. this type of development provides a housing typology that is more affordable to build than a free standing house, uses less land , provides good thermal efficiency and cross ventilation , yet retains an individual character, sense of identity, ownership and sanctuary that people associate with a house.



MISSING MIDDLE- Crafted Space

The Terrace House Typology is elongated and crafted to reflect contemporary cultural diversity, address housing affordability and excellence in design.

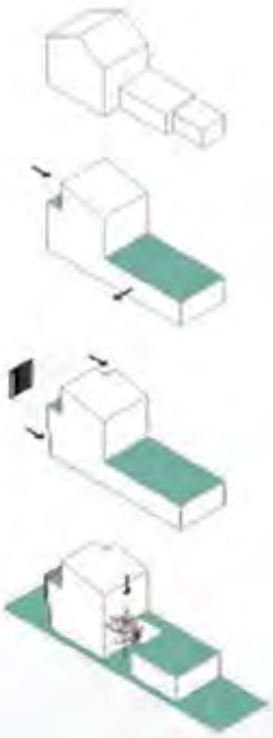
Through a series of inserted indoor-outdoor spaces the house is reconnected to the natural environment in multiple ways , highlighting and celebrating identity, ownership , flexibility and sense of place

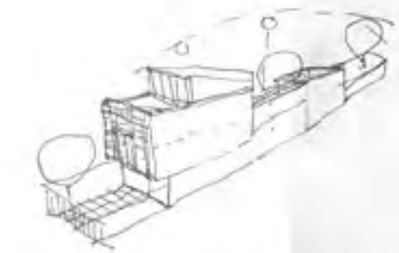
Rooms of dual purpose are ordered around an internal garden , giving a flexibility of function ,with the house embraces mult-generational / shared living and improved environmental control . Daylight , breezes and greenery are bought into the centre of the home.

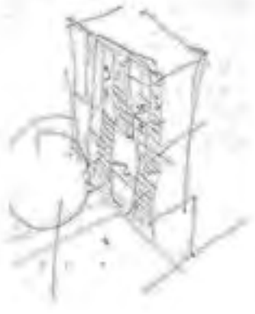
Panelised perforated and solid brick screening for acoustic and visual privacy is introduced to the facade , a singular building material is used in a multitude of ways. Recesses modulate the facade and give articulation to the Streetscape, with the Ground Floor Entry and dual purpose garage set back behind the front building line.

"The house does not have to tell anything to the exterior, instead, all it's richness must be manifest in the interior."

Aldolf Loos.







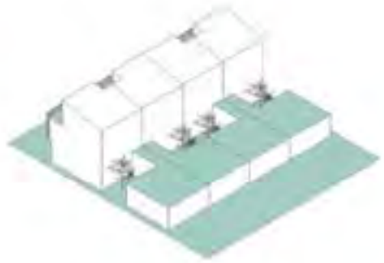
The Local Character and Context is defined by Red Brick Houses and Apartments.

The proposal uses brick and concrete in a multitude of ways to highlight this material as an appropriate contextural, robust and affordable material.

Using the innovative technology of Brick + Concrete Pre-Cast Panels with Carbon Zero Bricks for the walls and Green Concrete floor construction, the building is standardised to improve affordability and passive environmental control is optimised.

Garden | Car / Living | Bedroom | Garden | Living | Garden

MISSING MIDDLE- Crafted Space

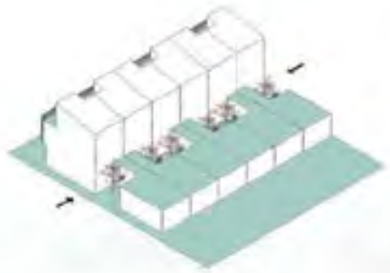


Complying :

7.5m frontage

35 Dwellings / hectare

↓



Propcsed :

5.2m frontage

52 Dwellings / hectare

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 these 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.

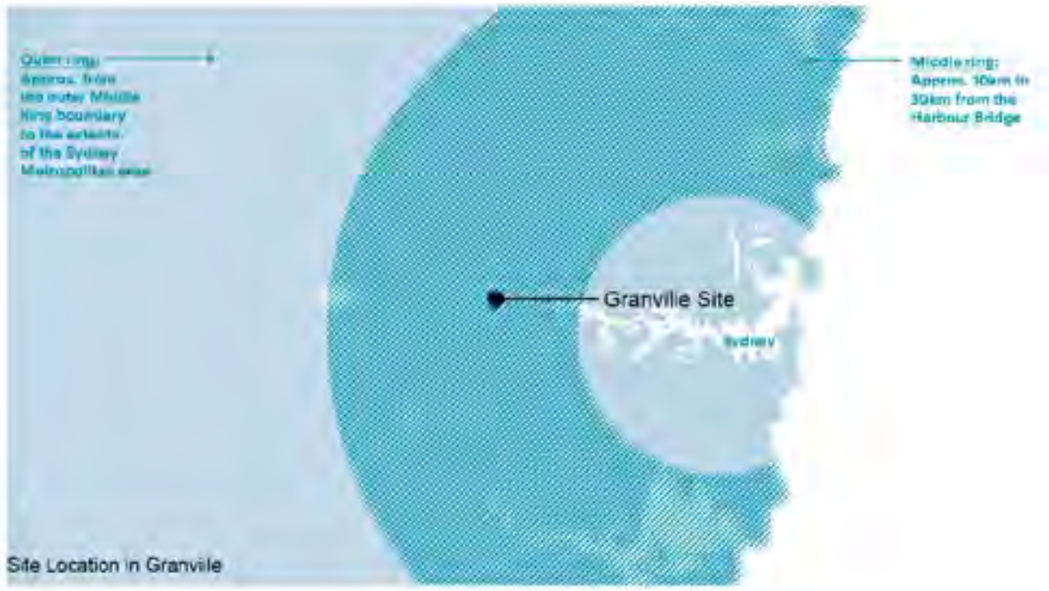
OUR SITE
We have selected a street block site in Granville, bound by John, Blaxcell and Louis Streets and The Avenue. The site is ideal for testing the limits of the SEPP as it contains a range of lot sizes, is traversed by a watercourse and has significant topographic variation.

THE TERRACE
The tried and true terrace house typology is an ideal middle-ring housing type. The type lends itself to a myriad of internal configurations without imposing this diversity on the streetscape.

In sequence, the expressed party walls, full-width first floor balcony, customised garden and front door combine to create an organised yet richly diverse street-wall.

It is from these observations that we begin exploring further possibilities in the model - accessible housing, co-housing, and beyond the draft code, the integration of no-residential program and so on...

Site in Granville - R3 Zoned Block 1:2000



Site Location in Granville

Suburban Domesticity

MISSING MIDDLE DESIGN COMPETITION

Compliance Envelope

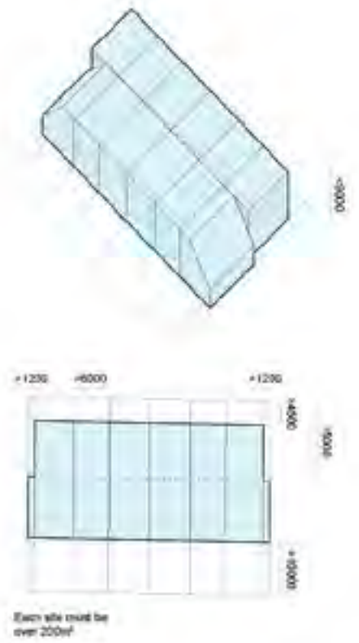
To understand compliance requirements for the Terrace House typology we have produced a 3d envelope study over a series of our selected lots.

The draft SEPP provides a reasonably generous building envelope however the end-condition house is severely disadvantaged by the 45 degree setback angle. The control does make some sense in the intermediate state of an existing free-standing house as neighbour though.

For the end condition we recommend a zero set-back in the first 15.0m for street-wall continuity, followed by a more traditional lean-to arrangement in the rear that combines a zero-setback ground floor with a 2.0m set-back upper level.

Our architectural prototypes provide other opportunities for visual, and physical connections between the street wall and internal landscaped areas. Achieving this porosity via the 'lived' spaces rather than peripheral setbacks ensures they are activated and useful.

The 3.0m break every 45m control will inevitably disadvantage the last sites to be developed in the street. We saw a similar problem with original SEPP65 'building' separation controls rather than 'boundary setback' controls. Here, the last missing tooth needs to accommodate setbacks all-round wholly within their land parcel.

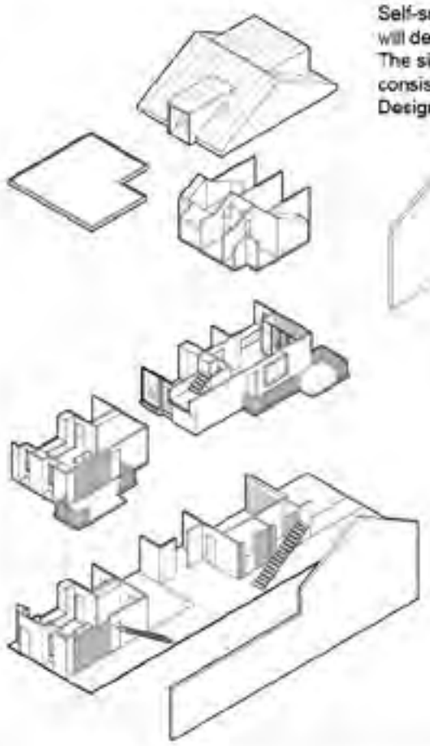


Hyper-flexible Terrace

Hierarchy of Publicness

The greater urban block and various terrace house prototypes within are conceived of as a city in miniature. The once-private domesticity of suburban life is prized open through a more civic and interconnected ground plane and collective backyard.

Decomposing traditional walls and fences helps provide a range of spaces where each occupant of the site can find their comfort zone. Street engagement, through-site access, common, shared, threshold and private spaces help curate a weave of superimposed rituals.

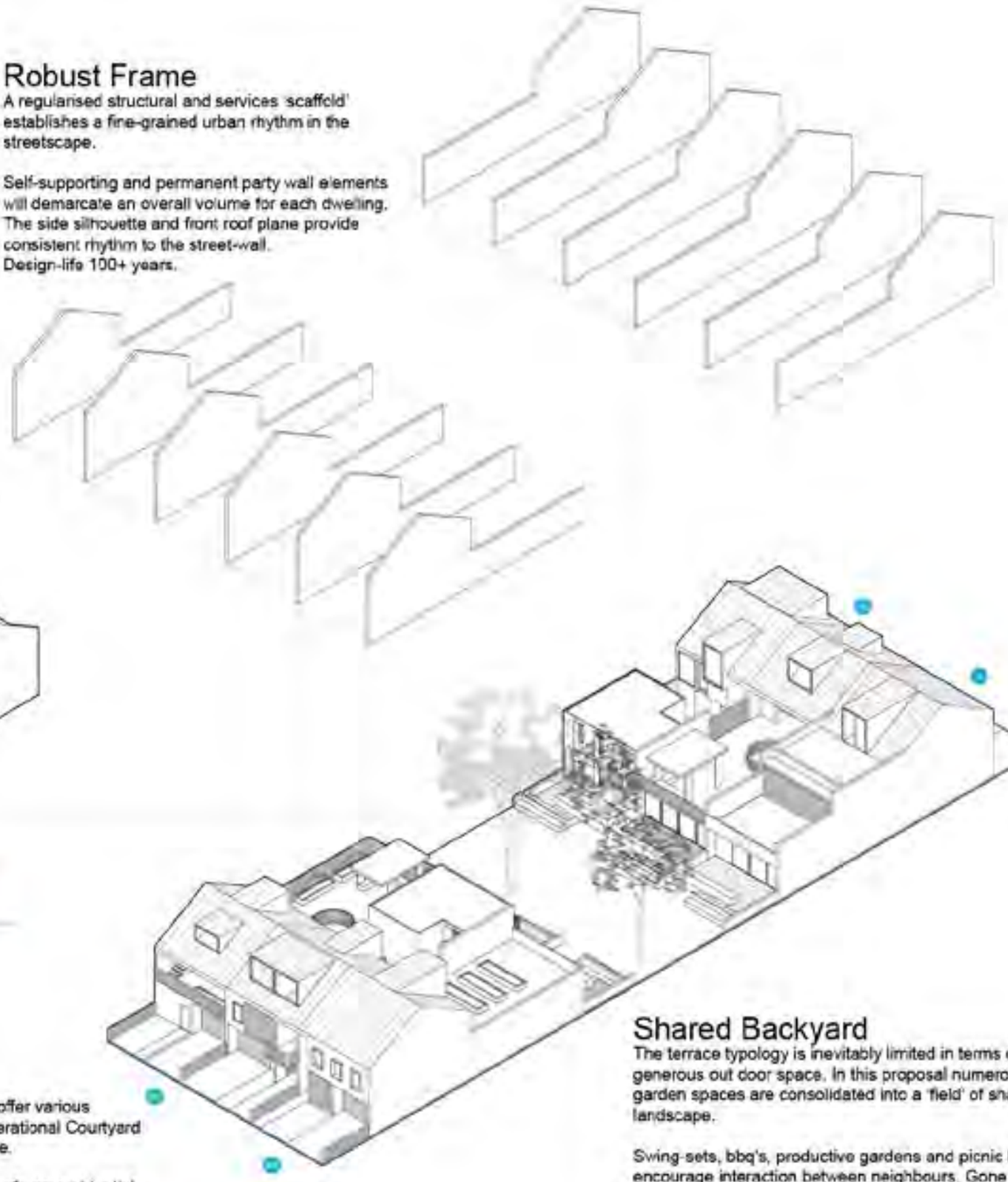


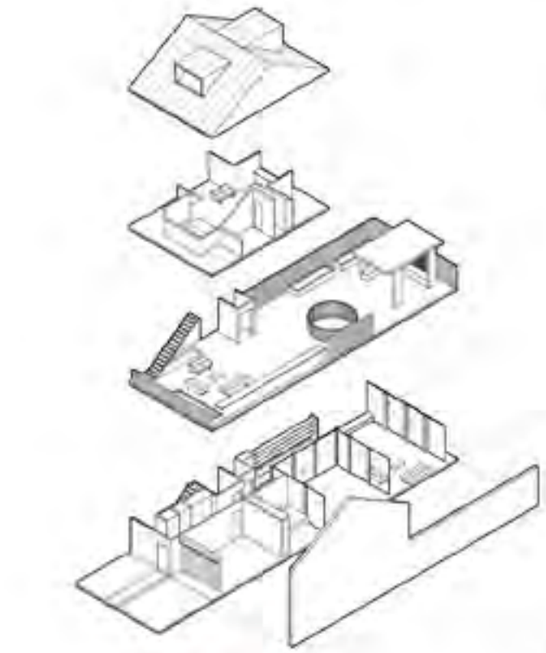
Multi-generational Courtyard Home

Robust Frame

A regularised structural and services 'scaffold' establishes a fine-grained urban rhythm in the streetscape.

Self-supporting and permanent party wall elements will demarcate an overall volume for each dwelling. The side silhouette and front roof plane provide consistent rhythm to the street-wall.
Design-life 100+ years.





Accessible home + Carer loft

Flexible Fit-out

Diverse and evolving fit-outs made by owners offer various dwelling configurations including the multi-generational Courtyard home and Accessibility and Carers home above.

Beyond the controls of the draft SEPP a series of non-residential program and alternative ownership models could provide a finer gradient of program effectively future-proofing the site.
Design-life 25-35 years.

Shared Backyard

The terrace typology is inevitably limited in terms of generous out door space. In this proposal numerous rear garden spaces are consolidated into a 'field' of shared landscape.

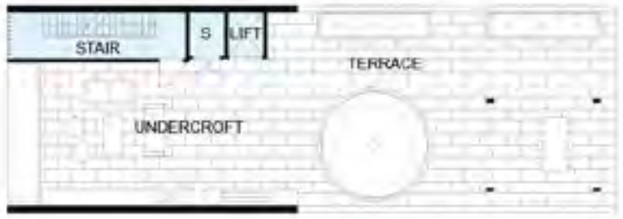
Swing-sets, bbq's, productive gardens and picnic lawns encourage interaction between neighbours. Gone are the redundant private pools and trampolines trapped behind paling fences.

Suburban Domesticity

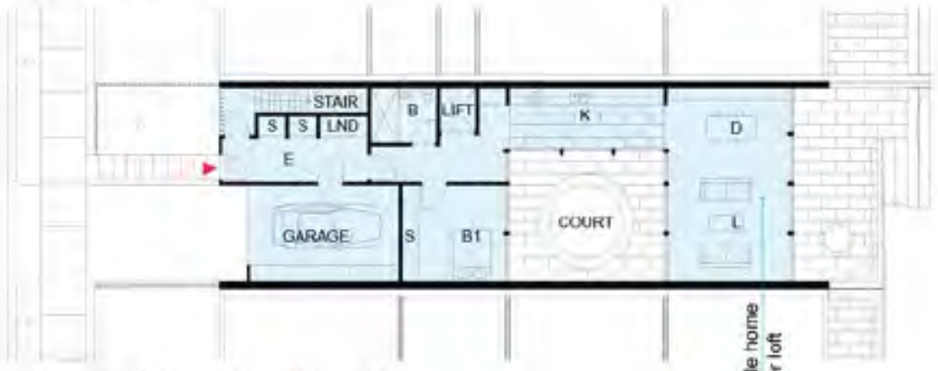
Hyper-flexible Terrace

Concept Design

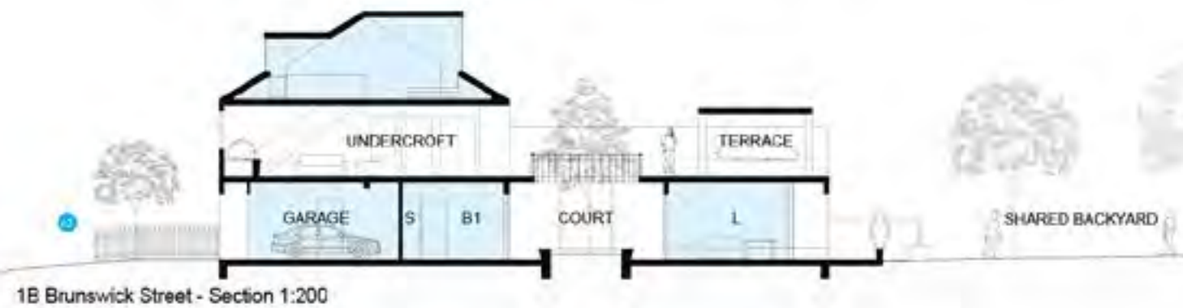
1B Brunswick St - Loft



1B Brunswick St - Upper



1B Brunswick St Accessible with Carer - Ground



1B Brunswick Street - Section 1:200

46 John St - Loft

46 John St - Upper

46 John St Multi-generational - Ground

46 John St - Section 1:200

Suburban Domesticity
MISSING MIDDLE COMPETITION

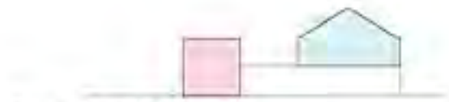
Hyper-flexible Terrace

Testing the design guide

Porous Wall

Terrace prototypes combine a clear street-wall definition with visual porosity. These spaces work to break down notions of boundary we are accustomed to in the suburbs.

Architectural devices such as breezeways, courts, under-crofts, bay windows, ledges, benches and screens are employed to reinforce a blurring between public and private realms. The resultant porosity is achieved through the 'lived' spaces in the project ensuring they are activated and useful.



Community + 2 Bed

Community + 2 Bed Loft + Undercroft Business

4 Dwelling 'Nightingale'

2 Bed + Shared-space Studio

Alternative Ownership

Beyond compliance with the draft SEPP, we explore the space between party walls of our Robust Frame and their capacity to be filled with any manner of building fabric or program. A cohesive architectural solution is maintained so long as the side silhouette, street-wall and roof incline profiles are maintained.

The above examples include a 2 bedroom loft apartment with a full-width under-croft. Moving across the ground plane beneath leads to a community oriented building such as a childcare center or co-working space. This community building has dual orientation to the inner landscaped area and the street.

Another example (seen above and to the right) shows a Nightingale Housing or co-housing Baugruppen with four separate entry doors and a range of shared spaces and facilities. This arrangement offers a more affordable urbanism but more significantly, empowers residents to shape and manage their own housing together.

46 John St - Loft

46 John St - Upper

46 John St Nightingale Housing - Ground

46 John St - Section 1:200

Suburban Domesticity
MISSING MIDDLE COMPETITION

Hyper-flexible Terrace

CAMPSIE TERRACES

We chose this site at Anzac Square, Campsie, because it is within close proximity to Campsie train station, shops and community buildings, it has frontage to a park, and the roads surrounding the site are such that there are a number of interesting and irregular shaped lots to deal with. The site is situated in a medium density residential zone and is surrounded by large areas of land zoned for high density residential. Despite this, the prevailing housing typology is single dwelling houses on large lots. The site currently suffers from an inconsistent streetscape dominated by cars. The existing houses do not create a connection to the public domain and they fail to engage with the park opposite.

We felt these conditions presented an opportunity to introduce new medium density terrace housing to the area which could activate the public spaces around the park, increase urban density around public transport hubs, and attenuate the transition between larger scale apartment developments, which are in the early stages of construction, and the typical single houses that dominate the area. The unusual ring road around the park offers a chance to explore a housing typology that can address multiple street frontages and the challenge of deep lots with minimal street frontage. The site is also somewhat typical of other street conditions both in the immediate area and near train stations in neighbouring suburbs. The site therefore offers an opportunity to explore design concepts that could then be transferred to other sites.

Site Context Diagram 1:4000

Site Plan 1:500

FLOOR PLANS

House type A
3 bed + study
3 courtyards

Ground Floor Plan 1:250

House type B1
4 bed + study
2 courtyards

House type B2
3 bed + study/workshop
4 courtyards

Ground Floor Plan 1:250

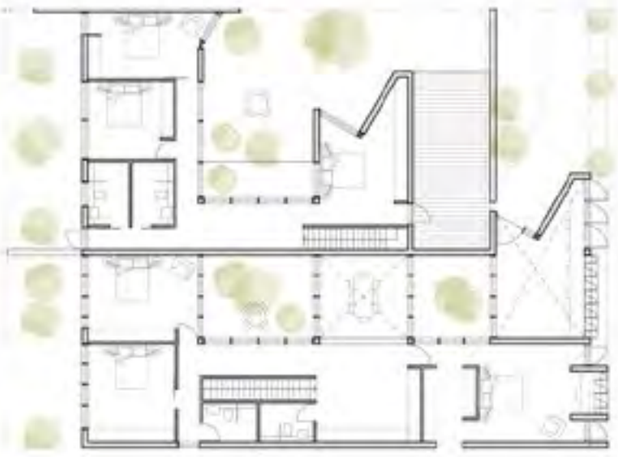
House type C1
2 bed + study
3 courtyards

House type C2
3 bed + study
2 courtyards

Ground Floor Plan 1:250

House type A

First Floor Plan 1:250



House type B1 + B2

First Floor Plan 1:250

House type C1 + C2

First Floor Plan 1:250

Streetscape Perspective

CONCEPT

The basis of our design proposal is simple: small lot terrace housing with courtyards connecting living areas. In our proposal we seek to show that this effective housing typology can be applied to both the traditional long and narrow lot as well as to lots of varying and unusual shape. In combination these terrace houses create a street wall that can address the public realm on multiple frontages and traverse multiple corners.

Additionally, our design principles included:

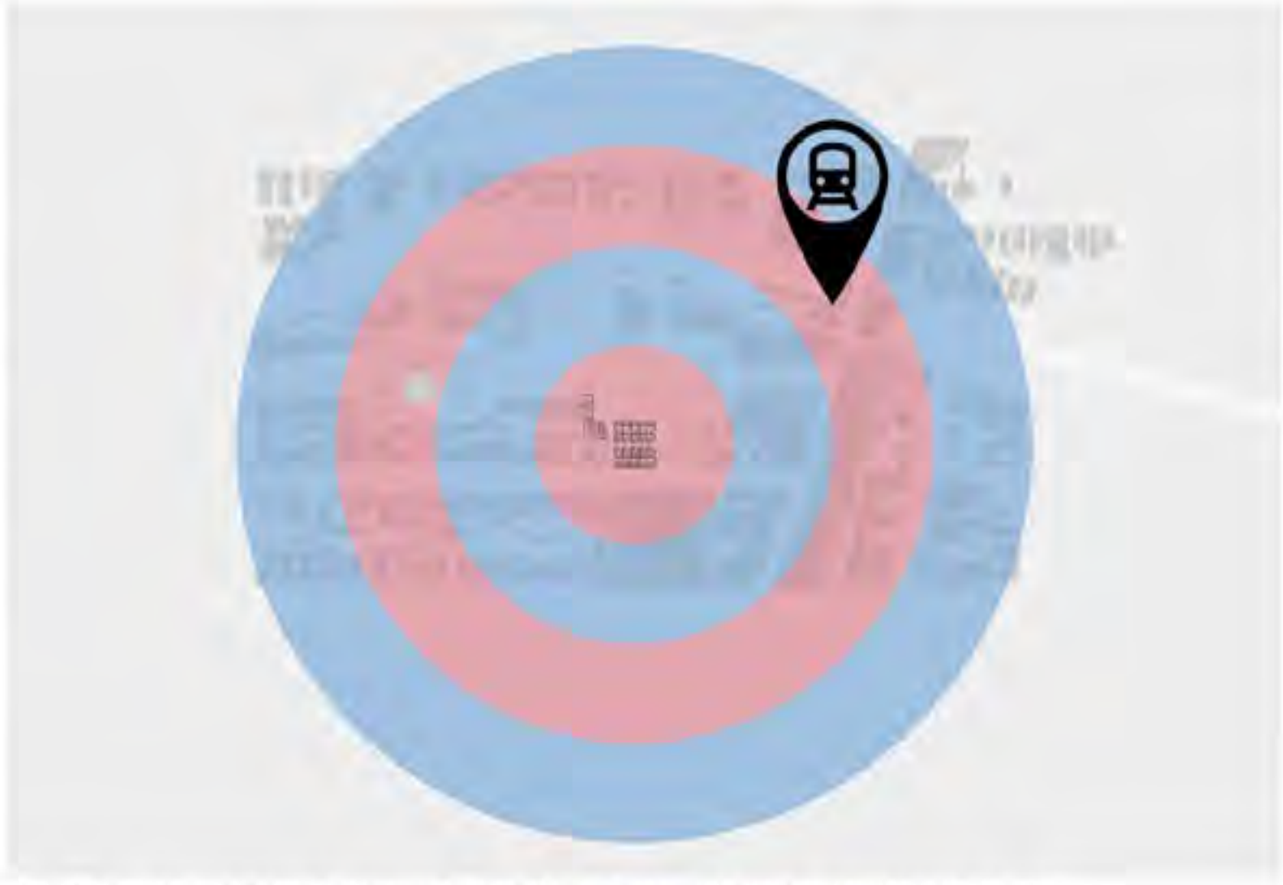
- using simple and durable materials that are long lasting and require very little maintenance
- utilising architectural roof forms that maximise northern sunlight to both individual houses and to the development as a whole
- providing study / work spaces in rooms fronting the street for passive surveillance of the public domain
- creating a strong, articulated street wall that activates the public domain and addresses multiple street corners
- providing new laneways allowing pedestrian access links between park and village centre

Section 1:200

TESTING THE GUIDE

Once we began designing within the constraints of the Medium Density Design Guide we discovered almost immediately that the very specific requirements around car parking began to dominate the design process. We offer the following comments to improve the guide.

- We chose our site partly because it was close to mass public transport and could therefore support higher density housing without a reliance on cars. The requirement to provide at least one car space per dwelling in our opinion is not in the spirit of increasing urban density sustainably. On small lots, a car space takes up a significant area which could otherwise be used for landscaping and useable outdoor space. Perhaps the requirement for a car space could be optional where the site is within close proximity to public transport hubs. Alternatively, spaces for car share schemes could be provided across an entire development in lieu of car spaces for each individual dwelling.
- The requirement that car spaces be set back behind the building line directly opposes an inherent strength in terrace housing which is the ability to create a strong and beautiful street wall that engages with the public domain. Reducing the impact of car spaces can be achieved better through articulation of the facade and use of materiality than through very prescriptive setback requirements.
- Requiring the mandatory car space to be provided from a secondary or rear road where the lot width is less than 7.5m wide significantly reduces the ability to develop terrace housing on small and difficult lots where secondary access is not possible.



Sites within close proximity to mass public transport should not require mandatory individual car spaces for each dwelling

Impact of Car Spaces on Floor Plans

Existing plan dominated by car space

Amended plan allowing for increase landscaping

Amended plan allowing for additional bedroom

THE MISSING MIDDLE

TESTING THE DRAFT MEDIUM DENSITY DESIGN GUIDE

THE MISSING MIDDLE OPEN IDEAS COMPETITION PROVIDES AN EXCITING OPPORTUNITY FOR ARCHITECTS AND DESIGNERS TO ENGAGE WITH AND TEST THE MEDIUM DENSITY DESIGN GUIDE WHICH WILL SHAPE THE FUTURE OF LOW RISE MEDIUM DENSITY HOUSING IN NSW. THE OPPORTUNITY TO TEST THE GUIDE AND EXPLORE ITS CONSTRAINTS THROUGH THE DESIGN COMPETITION FORMAT ON ACTUAL SITE IN THE MIDDLE AND OUTER RING OF SYDNEY WILL RESULT IN A MORE RIGOROUSLY DESIGN RESPONSIVE GUIDE.

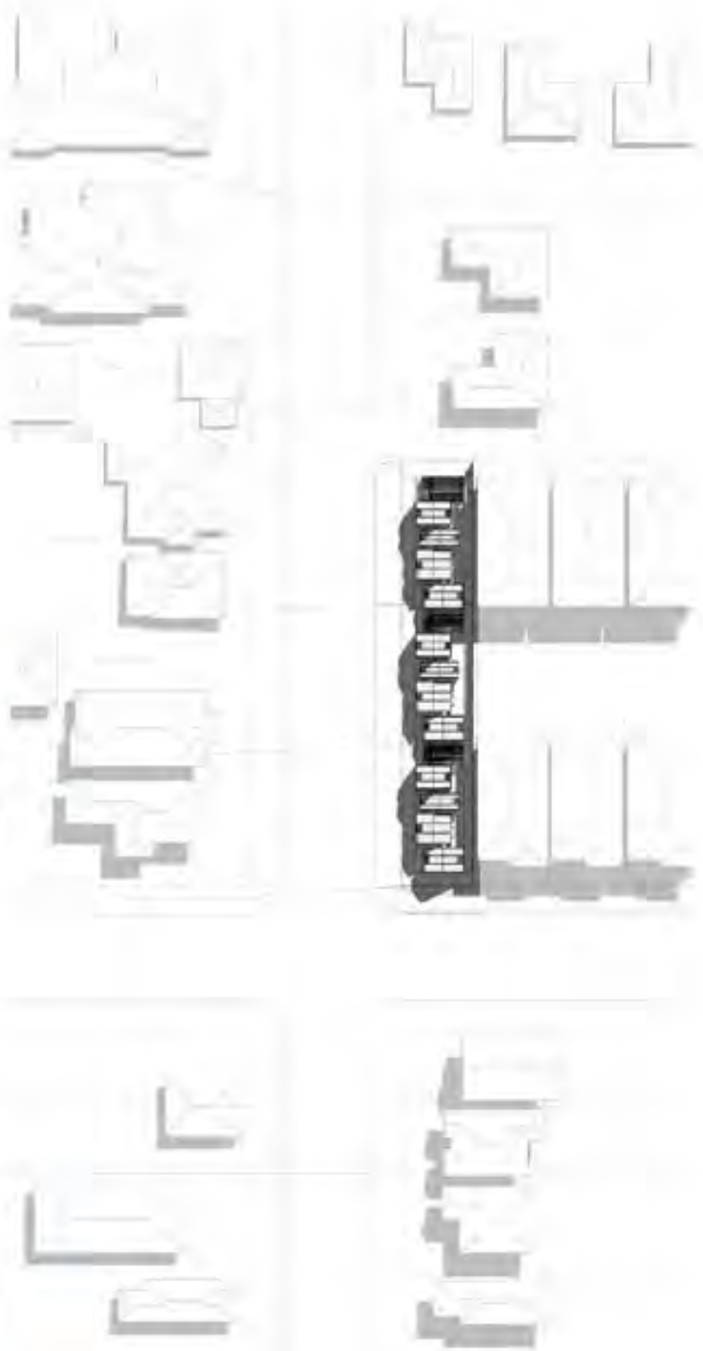
THIS PROPOSAL STRIVES TO ACHIEVE INNOVATION AND DESIGN EXCELLENCE IN THE GEOGRAPHICAL CENTRE OF SYDNEY AN AREA WHICH WILL UNDERGO SUBSTANTIAL GROWTH OVER THE NEXT 10- 20 YEARS. THE SUBURBS OF HARRIS PARK, ROSEHILL AND GRANVILLE ARE AREAS WHERE UPTAKE OF MEDIUM DENSITY DEVELOPMENT IS ALREADY OCCURRING. THE CHOSEN SITE IS 20KM FROM THE SYDNEY CBD AND 1.5KM FROM THE PARRAMATTA CBD. IT WAS AN AREA OF INTEREST BOTH FOR IT'S PROXIMITY TO THIS GROWING CENTRE AND TO PUBLIC TRANSPORT. WITHIN 5-20MIN WALK OF 5 TRAIN STATIONS, INCLUDING PARRAMATTA AND GRANVILLE STATIONS, GIVES RESIDENTS AMPLE TRANSPORT AMENITY. ALSO ADVANTAGEOUS TO THE AREA IS THE PROPOSED PARRAMATTA LIGHT RAIL LINE WHICH WILL RUN THROUGH CAMELLIA TO THE NORTH OF ROSEHILL.

BY THE SELECTION OF A NON-STANDARD, NARROW SLOPING SITE AT 29 ELEANOR ST ROSEHILL, NUMEROUS ASPECT OF THE GUIDE HAVE BEEN TESTED AND ENGAGED WITH IN THE DESIGN PROCESS. THE SITE SELECTED IS A NARROW CORNER BLOCK WITH REAR LANE ACCESS. ALONG ELEANOR ST AND ADJACENT VIRGINIA ST ARE A NUMBER OF EXISTING LOW RISE, MEDIUM DENSITY DEVELOPMENTS. THE PRECEDENCE FOR SUCH DEVELOPMENT IN THIS AREA AND THE CHALLENGING CONFIGURATION OF THE SITE PROVIDED OPPORTUNITY TO TEST AND QUESTION VARIOUS ASPECTS OF THE DESIGN GUIDE. NEIGHBOURING THE PROPERTY IS A GROUP OF 6 RECENTLY COMPLETED DWELLINGS UTILISING ONE LARGE LOT. THE CHOSEN SITE APPEARED LEFT OVER AS IT HAD NOT BEEN INCORPORATED IN THIS DEVELOPMENT AND THUS PRESENTED AND INTERESTING DESIGN CHALLENGE.

THE SURROUNDING AREA IS CONSISTS OF LOW RISE, LOW DENSITY RESIDENTIAL HOUSES ON MEDIUM SIZED LOTS. DUE TO THE CHARACTER AND AGE OF THE AREA MANY OF THE LOTS AND EXISTING WORKER'S STYLE COTTAGES DO NOT HAVE WIDE FRONTAGES. THIS PRESENTED A CHALLENGE IN SITE SELECTION AS THE GUIDE FOR COMPLYING DEVELOPMENT LENDS ITSELF TO WIDE LOTS OR CORNER BLOCK TO ACCOMMODATE MORE THAN ONE STREET FRONTAGE. THE PROPOSAL SEEKS TO QUESTION AND CHALLENGE THESE CONSTRAINTS AND THE TERRACE HOUSING TYPOLOGY BY TRANSFORMING ITS CONFIGURATION AND RELATIONSHIP TO THE STREET. PITCHED, SINGLE STORY ROOFS ARE TYPICAL IN THE AREA. THE DESIGN REFERENCES AND DISTORTS THIS FORM THROUGH REPETITION AND VARYING HEIGHT. ALSO THROUGH FAÇADE ARTICULATION AND BREAKING DOWN THE MASS OF A TRADITIONAL HOUSE THE DESIGN AIMS TO REFERENCE THE CONFIGURATION OF LOTS ACROSS THE STREET THAT HAVE THE SHORT SIDE AND BUILDING FRONTAGE TO ARTHUR STREET.

MAJOR ROAD AND RAIL ROUTES

SITE LOCATED WITHIN 1.5KM RADIUS OF 5 LOCAL TRAIN STATIONS



SITE PLAN TERRACE PROPOSAL 1-1000
29 ELEANOR ST ROSEHILL

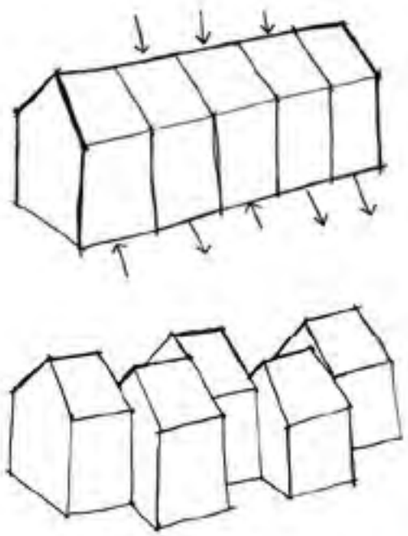
TERRACE PROPOSAL-
29 ELEANOR ST ROSEHILL

THE DESIGN EVOLVED THROUGH ANALYSIS OF THE EXISTING CONSTRAINTS OF THE LOT AND THE CHARACTER OF THE LOCAL AREA. THROUGH A PROCESS OF MAPPING OF THE SITE, REFERENCING THE MEDIUM DENSITY DESIGN GUIDE AND SURROUNDING BUILT FORM THE DESIGN EVOLVED INTO A MEANDERING LINE OF ARCHETYPAL TERRACE FORMS STRUNG TOGETHER TO CHALLENGE AND TRANSFORM THAT HOUSING TYPOLOGY.

THIS APPROACH TO THE DESIGN OF A LINE OF TERRACES REDUCES VISUAL BULK BY BREAKING DOWN THE BUILT FORM INTO SMALLER SCALE ELEMENTS AND INTERSPERSING THESE WITH LANDSCAPING AND SCREENED CARSPACES. THE RESULTANT STRATA TITLED RESIDENCES, WITH COMMON WALLS TO THE GARAGE/DINING, CONTRIBUTE TO THE AESTHETIC AND SCALE OF THE LOCAL AREA BY REFERENCING THE EXISTING FORMS AND SENSITIVELY INCREASING THE DENSITY OF THE AREA. THE INTERNAL AMENITY OF THE SPACES IS ENHANCED BY RAKED CEILINGS, COUPLED ABUNDANT NATURAL LIGHT GIVING THE INTERIORS A FEELING OF SPACIOUSNESS EVEN WITHIN THE CONSTRAINTS OF A SMALL FOOTPRINT.

REVERSE BRICK VENEER CONSTRUCTION HAS BEEN UTILISED TO PASSIVELY HEAT AND COOL THE SPACES WITH THE EXTERNAL CLADDING CONSTRUCTED FROM WEATHERBOARD IN REFERENCE TO THE EXISTING SURROUNDS. COMPLIANCE WITH THE ADAPTABLE HOUSING CODE IN THE PROPOSAL IS ABLE TO TRANSFORM WITH THE NEEDS OF ITS INHABITANTS.

THE DESIGN OF THE SCREENED CAR PARKING AIMS CHALLENGE CONVENTIONAL APPROACHES TO GARAGE DESIGN AND CATER FOR FUTURE ADAPTATION. AS ATTITUDES TO CAR OWNERSHIP CHANGE A CAR SHARE POD COULD BE INCORPORATED AS PART OF THE DEVELOPMENTS USING ONE OF THE PROVIDED SPACES AND THE REMAINING CARSPACES TRANSFORMED INTO OUTDOOR LIVING SPACES.



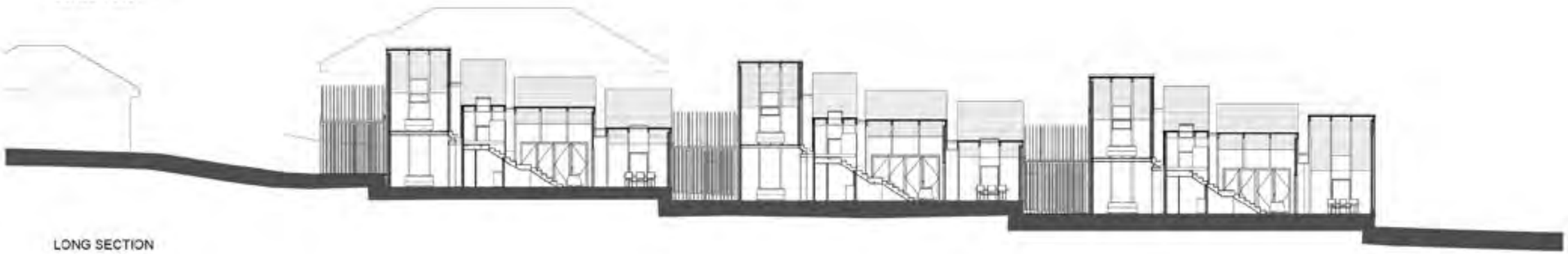
CONCEPT SKETCHES

SHORT SECTION 2
SCALE 1-200

GROUND FLOOR PLAN
SCALE 1-200

SHORT SECTION 2
SCALE 1-200

FIRST FLOOR PLAN
SCALE 1-200



LONG SECTION
SCALE 1-200

TESTING THE DESIGN GUIDE-
CONTROLS TO CHALLENGE

STREET FRONTAGES:

UNDER THE CURRENT DRAFT MEDIUM DENSITY DESIGN GUIDE MOST COMPLYING DEVELOPMENTS WILL BE FOR WIDE OR CORNER LOTS. IN OLDER AREAS SUCH AS ROSEHILL LOTS ARE LONG AND NARROW, OFTEN WITHOUT REAR LANE ACCESS. DUE TO THE REQUIREMENT THAT EACH DWELLING HAVE A STREET FRONTAGE THE MAJORITY OF MEDIUM DENSITY HOUSING WILL STILL HAVE TO BE APPROVED THROUGH DEVELOPMENT APPLICATION. PERHAPS AN ADDITIONAL SET OF CONSTRAINTS FOR BATTLEAXE DEVELOPMENTS TO CONTROL OVER SHADOW AND PRIVACY COULD BE INCORPORATED.

CDC COMPATIBLE CORNER LOTS
CORNER LOTS WITH TWO STREET FRONTAGES
GRANVILLE / HARRIS PARK / ROSEHILL

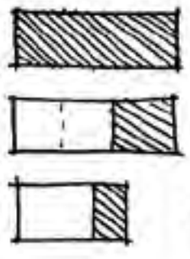
AVERAGE LOT WIDTH IN GRANVILLE / HARRIS PARK / ROSE HILL

GARAGE SETBACK:

SUCH A LARGE SETBACK TO ON GRADE PARKING IS PROHIBITIVE IN MANY INSTANCES ESPECIALLY ON NARROW CORNER LOTS WITHOUT REAR LANE ACCESS. PROVISION FOR GARAGES LESS THAN 5.5M FROM THE BOUNDARY SHOULD BE ALLOWED IF THEY AREA INTEGRATED WITH THE OVERALL DESIGN. GARAGES MAYBE DESIGNED TO MINIMISE IMPACT ON STREETSCAPE.

MINIMUM LOT SIZE:

THE GUIDE REFERS TO MINIMUM LOT SIZE FROM THE LEP, MINIMUM LOT SIZE PER DWELLING AND STRATA SUBDIVISIONS THAT DO NO MEET THE MINIMUM LOT SIZE. THE DISTINCTION COULD BE CLEARER, ESPECIALLY BETWEEN LEP OVERALL LOT SIZE AND THE DWELLING LOT SIZE. ADDITIONALLY 'LOTS' ARE REFERRED TO THROUGHOUT THE GUIDE WITHOUT CLARIFICATION OF WHICH LOT IS BEING REFERRED TO.



REDUCED SETBACKS:

THE CURRENT SETBACK FOR TERRACES REQUIRES AN AVERAGE THE NEIGHBOURING SETBACKS, HOWEVER IN PREVIOUSLY LOW DENSITY RESIDENTIAL AREAS, TERRACES AREA NEW HOUSING TYPOLOGY AND THE SUITABLE SET BACK FOR A SINGLE STAND ALONE HOUSES MAY NOT BE SUITABLE FOR THE FUTURE OF THE AREA.

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.

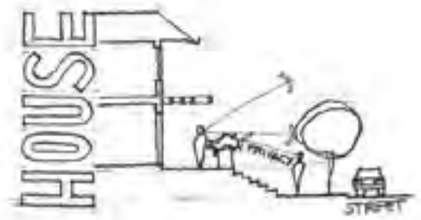
SITE DEVELOPMENT PLAN
1:800

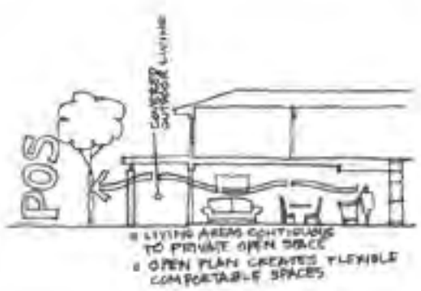
SITE CONTEXT PLAN
NTS

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.





TERRACES - TYPICAL
1:200

TERRACES - END
1:200

TERRACES

KEY PLAN

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

- **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.**

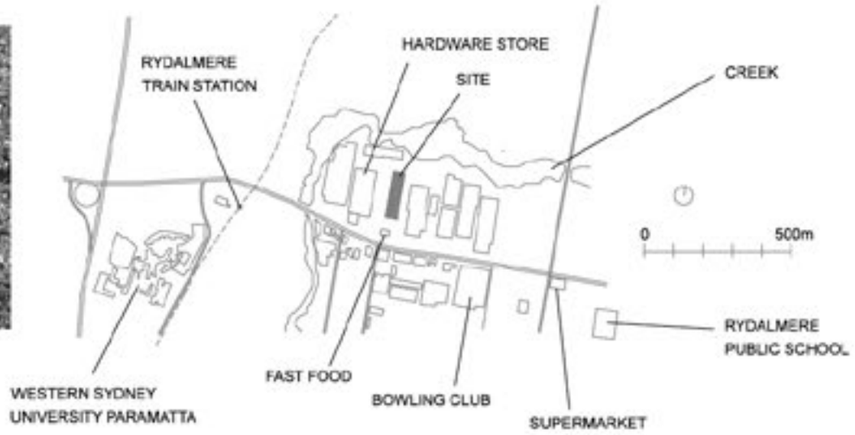
  A narrower lot width of 10.5m can accommodate a two car garage (side by side). If the dominance of the garage is a concern this can be reduced by such features as deeper overhang of the upper floor, recessing the garage door, and using the same cladding of the main facade for the garage door.

TERRACES

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		9.500	28.500	266	0.51	0.8	48%	20%	95	16
2		7.000	28.500	200	0.65	0.8	35%	20%	70	16
3		7.000	28.500	200	0.65	0.8	35%	20%	70	16
4		8.500	28.500	242	0.56	0.8	43%	20%	85	16
5		8.500	28.500	242	0.56	0.8	43%	20%	85	16
6		7.000	28.500	200	0.65	0.8	35%	20%	70	16
7		7.000	28.500	200	0.65	0.8	35%	20%	70	16
8		9.500	28.500	266	0.51	0.8	48%	20%	95	16
9		9.500	28.500	266	0.51	0.8	48%	20%	95	16
10		7.000	28.500	200	0.65	0.8	35%	20%	70	16
11		7.000	28.500	200	0.65	0.8	35%	20%	70	16
12		8.500	28.500	242	0.56	0.8	43%	20%	85	16
13		8.500	28.500	242	0.56	0.8	43%	20%	85	16
14		7.000	28.500	200	0.65	0.8	35%	20%	70	16
15		7.000	28.500	200	0.65	0.8	35%	20%	70	16
16		9.500	28.500	266	0.51	0.8	48%	20%	95	16

MISSING MIDDLE

CONTEXT PLAN



SITE PLAN
SCALE 1:1000

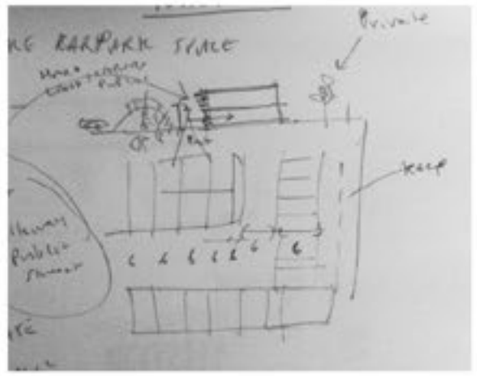
MISSING MIDDLE COMPETITION

UNDERSTANDING OF CONTEXT

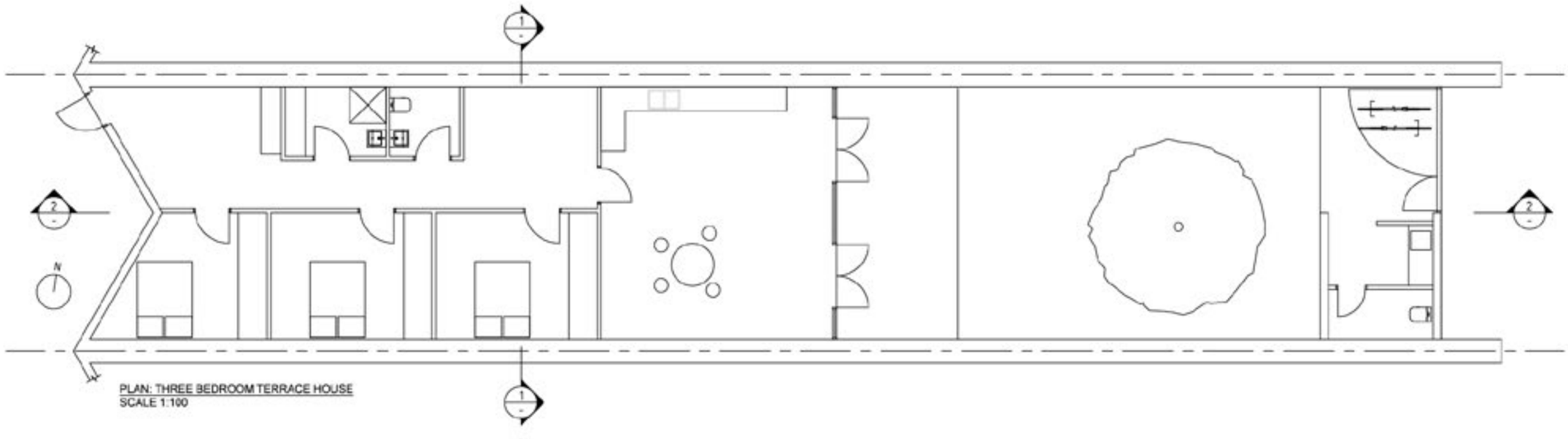
CURRENTLY NEW HOUSING IN NSW IS EITHER ONE OF TWO TYPES; FREE STANDING HOMES OR STRATA TITLED APARTMENTS. WHAT IS MISSING ARE LOW RISE MEDIUM DENSITY HOUSING. THE POPULATION IS PROJECTED TO INCREASE BY 2.1 MILLION BY 2036. THE DRAFT MEDIUM DENSITY DESIGN GUIDE AIMS TO FAST TRACK DEVELOPMENT OF MEDIUM DENSITY HOUSING. THESE DEVELOPMENTS ARE FORECAST TO OCCUR IN THE MIDDLE RING OF SYDNEY, 10-30KM FROM THE CBD. THE BRIEF IS TO SELECT A SITE IN THE MIDDLE RING WHERE THIS TYPE OF DEVELOPMENT IS ALLOWED, PROVIDE A MEDIUM DENSITY DWELLING PROPOSAL AND CHALLENGE THE DRAFT POLICIES OF THE GUIDE.

THE STRATEGIC RATIONALE FOR THE SITE SELECTION OF A CARPARK WAS ITS SUITABILITY AND ADAPTABILITY TO MULTIPLE DEVELOPMENT. THE SITE IS FLAT AND HAS LOW EXISTING CONSTRAINTS THAT WOULD HINDER DEVELOPMENT. IT IS WITHIN WALKING DISTANCE TO EXISTING AMENITIES THAT SUIT ALL AGE GROUPS. THE RESALE OF THESE DEVELOPMENTS WOULD BE GOOD. THE AREA IS CURRENTLY ZONED GENERAL INDUSTRIAL. THERE IS SURPLUS CARPARKING ADJACENT TO THE DESIGN AND NONE HAS BEEN PROVIDED. MEDIUM DENSITY DEVELOPMENTS ARE ALLOWED IN THE AREA.

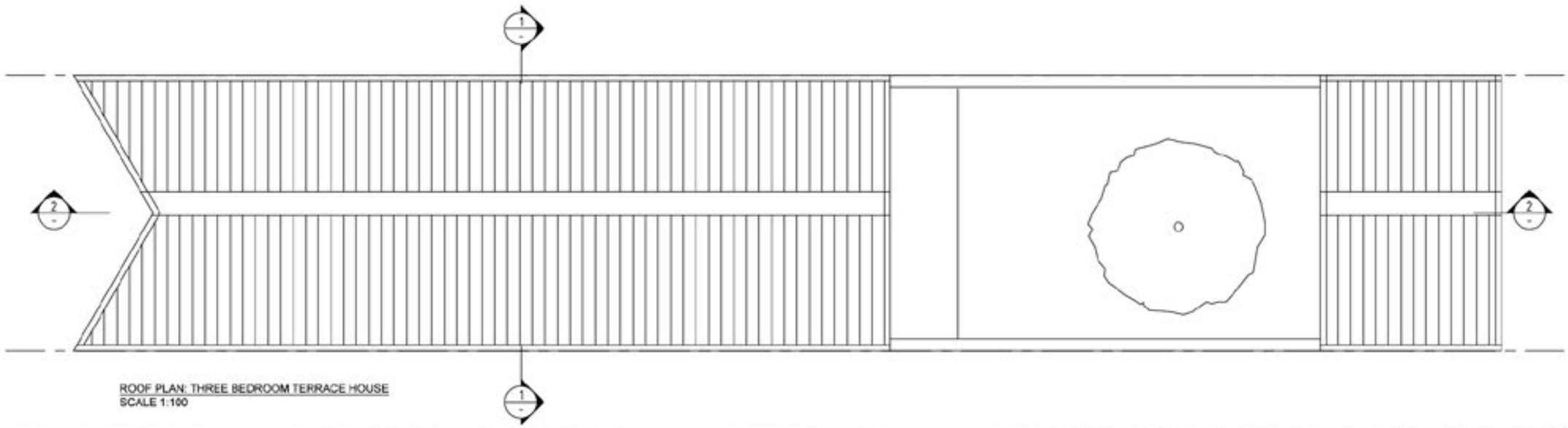
THE SITE IS LOCATED IN PARRAMATTA, APPROXIMATELY 20KM FROM THE SYDNEY HARBOUR BRIDGE. THE GROSS SIZE OF THE SITE IS 6700m2. THE PROPOSED DEVELOPMENT IS FOR EIGHTEEN THREE BEDROOM TERRACE HOUSES. THE PROPOSAL IS TO BUILD OVER 210 EXISTING CARBAYS.



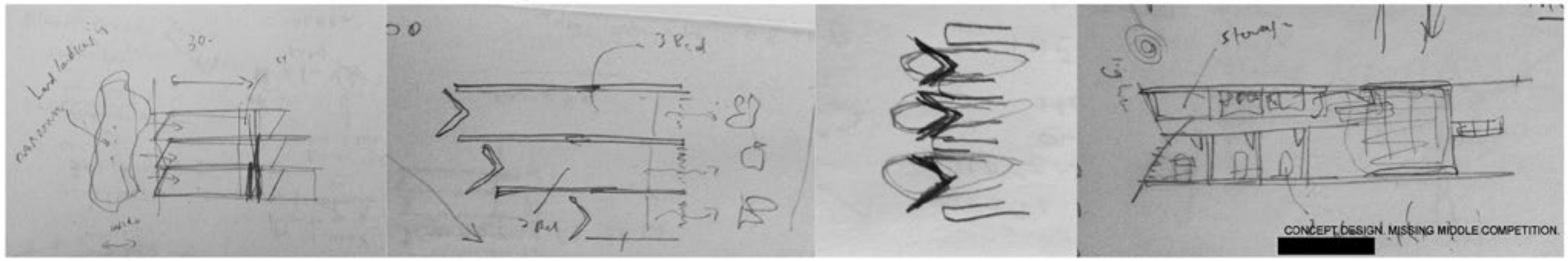
CONTEXT. MISSING MIDDLE COMPETITION.

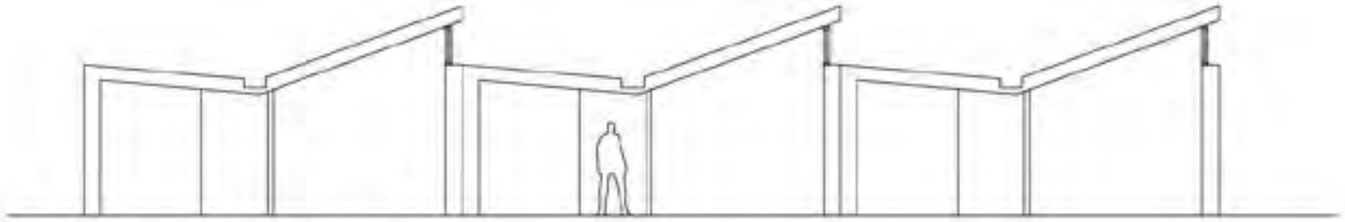


PLAN: THREE BEDROOM TERRACE HOUSE
SCALE 1:100

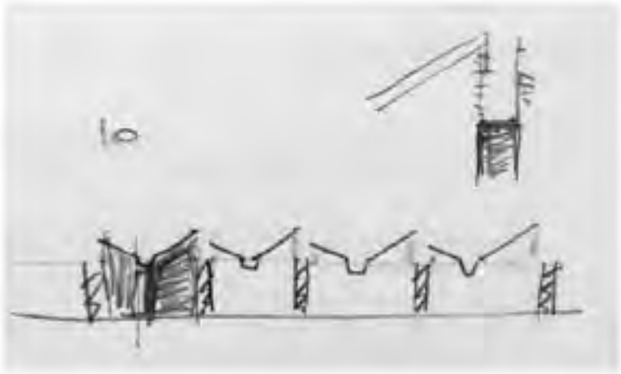


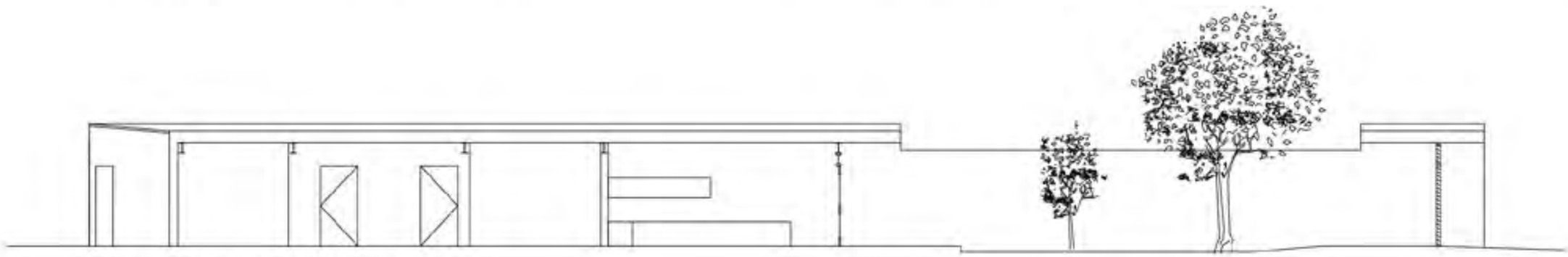
ROOF PLAN: THREE BEDROOM TERRACE HOUSE
SCALE 1:100





SECTION 1: THREE BEDROOM TERRACE HOUSE
SCALE 1:100

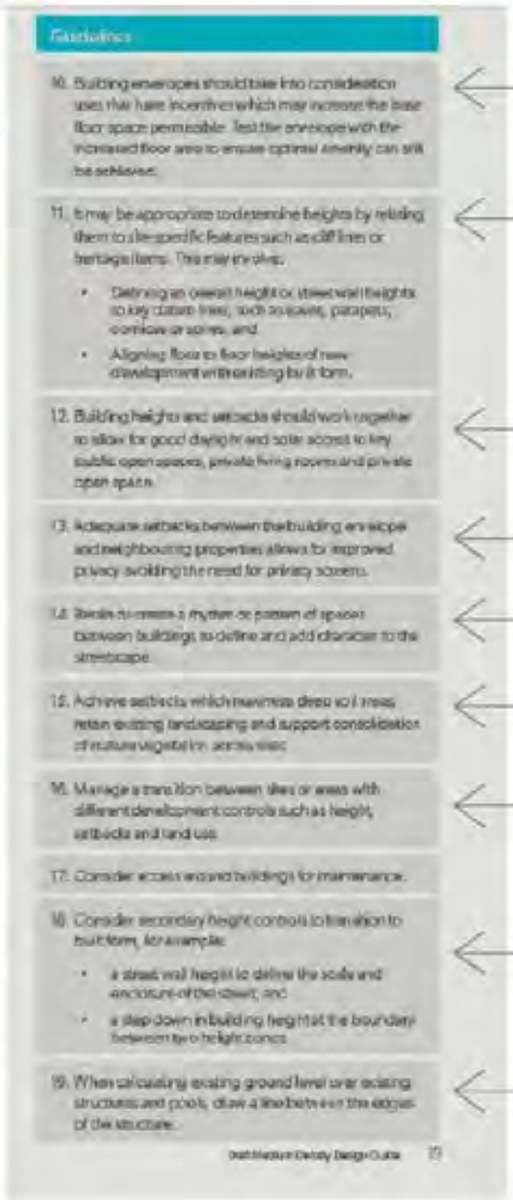




SECTION 2: THREE BEDROOM TERRACE HOUSE
SCALE 1:100

THE DESIGN HAS A DEFENSIVE FRONT TO THE CARPARK, THE TERRRACES PROVIDE POWER. THE DESIGN HAS A PEDESTRIAN SCALE. IT PROVIDES A STRONG CHALLENGE TO THE MISSING MIDDLE. IT IS UNTRADITIONAL. THE FRONT IS PUBLIC, THE REAR IS PRIVATE. THIS DESIGN IS PHASE ONE OF FUTURE URBAN DESIGN OF THE AREA. IT DEFINES THE PRINCIPAL ROUTES OF TRAVEL THROUGH THE SITE.

FEEDBACK ON THE GUIDE.



CONFUSING.

VAGUE

USE SOLAR ACCESS AND DAYLIGHT EFFECTIVELY?

IN CERTAIN CASES.

OK.

OK.

OK.

OK.

OK.

STREET SETBACKS

P19

THE MISSING MIDDLE

CATEGORY - TERRACE HOUSING
SITE - 1-3 LEMONGROVE ROAD, PENRITH NSW 2750

IF ONE IS TO HAVE SIBLINGS, IT IS SAID THAT THE ORDER IN WHICH THEY ARE BORN INTO THE FAMILY HAS A DIRECT RELATIONSHIP TO THE DEVELOPMENT OF PARTICULAR CHARACTERISTICS AND PERSONALITY TRAITS. THE ELDEST IS OFTEN ACHIEVEMENT ORIENTATED, COMPETITIVE & CONVENTIONAL. THE YOUNGEST SIBLING IS GENERALLY MORE CREATIVE, ATTENTION SEEKING AND OFTEN GETTING AWAY WITH THINGS. THE **MIDDLE CHILD** HOWEVER IS OFTEN TO A COMPROMISER OR PEOPLE PLEASER. WHAT RELEVANCE DOES THIS HAVE TO DEVELOPMENT YOU MAY ASK? THERE ARE THREE KEY DENSITY CATEGORIES IN NSW, HIGH, MEDIUM AND LOW. **THESE ARE THE THREE CHILDREN OF THE FAMILY.** FOR TOO LONG, THE OPPORUNITY FOR DESIREABLE MEDIUM DENSITY HOUSING TYPOLOGIES HAVE BEEN IGNORED. WE HAVE SETTLED FOR A REPEATED, MEDIOCRE MODULATED STYLE. THE MEDIUM DENSITY DESIGN GUIDE MUST INITIATE THIS CHANGE IMMEDIATELY.

IN NSW, SPECIFICALLY SYDNEY, **WE MUST ACT NOW** TO ACCOMMODATE FOR THE PROJECTED POPULTION GROWTH. INCREASED DENSIFICATION IS ESSENTIAL AND THE MDDG WILL ACT AS A CATALYST FOR DEVELOPMENT.

MY UNDERSTANDING OF THE COMPETITION IS THAT IT AIMS TO ACHIEVE TWO KEY OUTCOMES;
- TO EXPOSE ANY POTENTIAL ISSUES OR OVERSIGHTS WHICH MAY RESULT IN UNDESIREABLE DEVELOPMENT OUTCOMES.
- TO DEMONSTRATE THE ABILITY TO EXHIBIT DESIGN EXCELLENCE WITHIN THE COMPLYING DEVELOPMENT GUIDELINES.

MY ENTRY AIMS TO ILLUSTRATE HOW INTELLIGENT, PEOPLE-BASED DESIGN CAN CREATE A PRECEDENT FOR FUTURE MEDIUM DENSITY HOUSING IN NSW.

SO WHY PENRITH YOU ASK?
IN 2014, PETER POULET STATED THAT **"WE WANT TO MAKE SURE THAT THE WEST IS EQUALLY ATTRACTIVE AND PEOPLE ASPIRE TO WORK,LIVE AND ENTERTAIN THEMSELVES THERE"**. OVER THE PAST FIVE YEARS IN PARTICULAR, PENRITH AND THE SURROUNDING SUBURBS HAVE ATTRACTED A LARGE AMOUNT OF DEVELOPMENT INTEREST. WITH THIS, INFRASTRUCTURE AND PLANNING IS IMPROVED AND IT PROVIDES A FANTASTIC OPPORUNITY TO CREATE A NEW HUB WITHIN THE GREATER SYDNEY REGION.

SYDNEY NEEDS TO PREPARE ITSELF FOR POPULATION GROWTH AND WE CAN CONFIDENTLY SAY THAT INCREASED DENSIFICATION IS THE MOST LOGICAL WAY. IT IS THE JOB OF THE MDDG TO **GUIDE** ARCHITECTS/DESIGNERS INTO CREATING DESIRABLE DEVELOPMENT WHICH IS PEOPLE BASED, SUSTAINABLE AND AIMS TO IMPROVE THE DAY-TO-DAY ACTIVITIES AND LIVES OF THE PEOPLE WHICH INHABIT THESE SPACES.

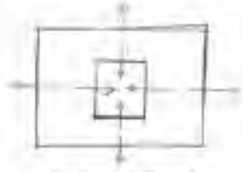
ALTHOUGH IT MAY NOT BE DESIREABLE, THERE IS A REGULARITY OF DESIGN AND MATERIALS WHICH CONTRIBUTE TO DEFINE THE LOCAL CHARACTER OF THE AREA. THE MATERIAL CHOICES FOR THE PROPOSAL HAVE BEEN SELECTED NOT ONLY TO AESTHETICALLY CONTRIBUTE TO THE CHARACTER OF THE LOCAL AREA, BUT ALSO TO PROMOTE A SUSTAINABLE WAY OF LIVING.

OVER THE NEXT 5-10 YEARS, THE GREEN NETWORK STRATEGY IS GOING TO UNDOUBTEDLY IMPROVE THE AMENITY & QUALITY OF SUBURBS. WE MUST CREATE NEW, WHILST ENHANCING EXISTING NETWORKS WHERE POSSIBLE.

THE SUBJECT SITE IS LOCATED WITHIN R3 (MEDIUM DENSITY) ZONING, DIRECTLY TO THE SOUTH-EAST THERE IS R4 (HIGH DENSITY) ZONING ALONG WITH RECREATIONAL PARKLAND. COREEN AVENUE IS A HEAVILY USED PATH OF TRAVEL, WHILST LEMONGROVE ROAD PRESENTS LOCAL AND PREDICTABLE TRAFFIC CONDITIONS.

THE SURROUNDING CONTEXTUAL INFLUENCES ACT TO DRIVE A DESIREABLE DESIGN WHICH IS REACTIVE RATHER THAN UNRESPONSIVE, TO THE OPPORTUNITIES AND CONSTRAINTS THEY PRESENT.

OPPORTUNISTIC TOPOGRAPHY



BRING THE OUTSIDE IN

APPROPRIATE ATMOSPHERE

EXTEND & BUILD GREEN NETWORK

"I THINK CONSTRAINTS ARE IMPORTANT. THEY'RE POSITIVE BECAUSE THEY ALLOW YOU TO WORK OFF SOMETHING" - CHARLES GWATHMEY

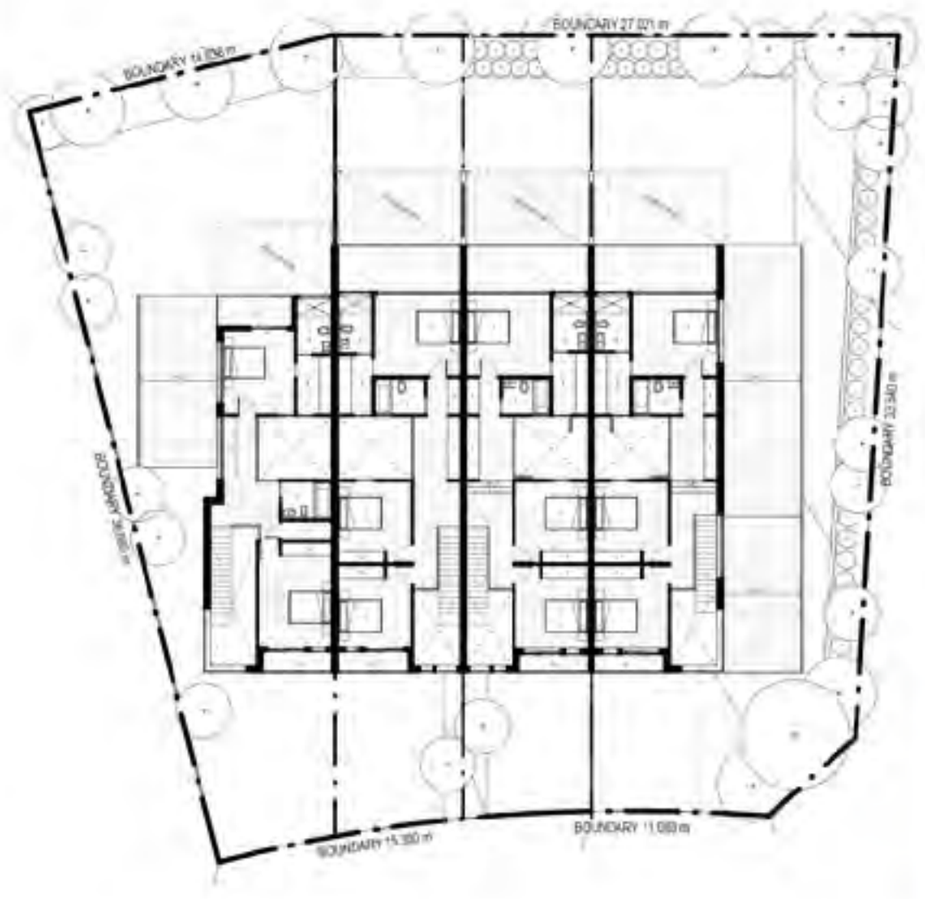
IN MY EYES, THE ONLY WAY MEDIUM DENSITY HOUSING WILL ATTRACT THE DESIRED LEVEL OF POPULARITY, BOTH COMMERCIALLY & SOCIALLY, WILL BE THROUGH INNOVATIVE, INTELLIGENT & HUMAN CENTRED DESIGN. WE DO NOT NEED TO RE-INVENT THE WHEEL, IN FACT QUITE THE OPPOSITE. I CHOOSE TO SIMPLIFY THE DESIGN PROCESS BY FOCUSING PRIMARILY ON HUMAN EXPERIENCES TAKING PLACE ON A DAY-TO-DAY BASIS.

ANY NEW BUILDING SHOULD REACT TO THE SURROUNDING CONTEXT. THE CHOSEN SITE PRESENTS A UNIQUE SET OF CONSTRAINTS WHICH ARE UNLIKE ANY OTHER IN SYDNEY. AS CHARLES GWATHMEY ONCE SAID, "I THINK CONSTRAINTS ARE IMPORTANT. THEY'RE POSITIVE BECAUSE THEY ALLOW YOU TO WORK OFF SOMETHING". I BELIEVE STRONGLY IN THIS PHILOSOPHY AS IT ESSENTIALLY TURNS THE CONSTRAINT INTO AN OPPORTUNITY AND CHALLENGE TO OVERCOME.

AT FIRST, A DEVELOPER'S VOICE WAS IN MY EAR TELLING ME TO PUT AS MANY TERRACE HOUSES AS POSSIBLE. AFTER TESTING A FEW DIFFERENT SCENARIOS, I DISCOVERED THAT HAVING ANY MORE THAN FOUR HOUSES ON THIS SITE WOULD SACRIFICE THE QUALITY OF DESIGN AND REDUCE THE OPPORTUNITIES EXTERNALLY TO THE BUILT FORM. A RESULT OF THAT GESTURE ALLOWED SIGNIFICANT LANDSCAPING AROUND THE PERIMETER OF THE SITE AND EASIER ACCESSIBILITY FOR VEHICLES ENTERING AND EXITING FROM THE DRIVEWAYS.

THE SITE HAS A SLOPE WHICH RUNS FROM COREEN AVENUE DOWN TO ROBERT STREET. I HAVE DESIGNED TWO TERRACE HOUSES WHICH SIT ON ONE LEVEL AND TWO WHICH SIT ON ANOTHER. ADDITIONAL TO THIS, THE LAYOUT OF THE FAIR HAVE VARIOUS LEVEL CHANGES WITHIN. NOT ONLY CAN THESE LEVEL CHANGES CREATE DIFFERENT ATMOSPHERES AND SPACE FUNCTIONALITIES, THEY ALSO PROVIDE VARIATION IN A DOMINANT HORIZONTAL GENERAL ARRANGEMENT. THE ADVANTAGE AND DESIREABLE OUTCOME FROM THIS ALSO IS THAT HALF OF THE TERRACE HOUSES ARE SUITABLE FOR THE ACCESSIBLY CHALLENGED OR ELDERLY.

THE GREEN NETWORK STRATEGY WILL BE HUGELY INFLUENTIAL IN THE FUTURE OF SYDNEY, CONNECTING A NETWORK OF LANDSCAPING AND PUBLIC PLACES IS CRUCIAL. FORTUNATELY, THERE IS A PUBLIC PARK ACROSS THE OPPOSITE SIDE OF LEADBITTER ROAD. IN ORDER TO LEVERAGE THE POTENTIAL TO PLANT AND ENHANCE THIS NETWORK IN SPIRITH, I HAVE ADJUSTED THE ORIENTATION OF THE LOTS TO OPEN UP THE CORNER OF THE SITE FOR MAXIMUM TREE PLANTING. ALTHOUGH THIS IS IMPERATIVE EXTERNALLY TO THE BUILDING, I ALSO BELIEVE THAT THE CONNECTION TO NATURE WITHIN THE TERRACE HOUSES IS EQUALLY IMPORTANT. EACH TERRACE HAS THEIR OWN CENTRAL COURTYARD. THIS FEATURE WILL PROVIDE ADDITIONAL LIGHT, IMPROVE NATURAL VENTILATION, CREATE VARYING HEIGHTS WITHIN THE BUILDING WHILST RE-CONNECTING HUMAN EXPERIENCE TO THE OUTDOORS. THIS IS A GESTURE WHICH SHOULD BE UTILISED MORE OFTEN.



FLOOR PLANS - GROUND & LEVEL 1
1:250

GENERALLY SPEAKING, A MAJORITY OF TERRACE HOUSES WITHIN THE MEDIUM DENSITY ZONING WILL BE TWO LEVELS. TO AVOID A LACK OF VARIATION, CHANGING LEVELS AND VOLUME HEIGHTS SHOULD BE ENCOURAGED AS IT CAN INTELLIGENTLY BE USED TO CREATE DIFFERENT ATMOSPHERES THROUGH LIGHT, HEIGHT, SURROUNDINGS AND PURPOSE VARIATIONS.

THE CLIMATE IN PENRITH VARIES SIGNIFICANTLY THROUGHOUT THE YEAR, HOWEVER IT IS KNOWN TO HAVE SOME OF THE HOTTEST TEMPERATURES IN SYDNEY IN THE PEAK OF SUMMER. TAKING THIS INTO ACCOUNT, PERGOLA SHADING DEVICES HAVE BEEN INCORPORATED INTO THE PRIVATE OPEN SPACE, ALONG WITH WIDE ROOF EAVES, TO MAXIMISE LIGHT AND REDUCE THE RELIANCE OF ARTIFICIAL LIGHTING. A HIGHLIGHT WINDOW RUNS AROUND THE PERIMETER OF THE ROOF. THIS ALLOWS 'SOFT LIGHT' TO ENTER THE BUILDING THROUGHOUT THE DAY WITHOUT THE DIRECT HEAT.

AT THE REAR OF EACH TERRACE HOUSE THERE IS EXTENSIVE LANDSCAPED AREA, WHILST PROVIDING PRIVACY AND AN IDEAL OUTLOOK FOR THE OCCUPIERS, IT ALSO CONTRIBUTES TO THE LOCAL GREEN NETWORK OF THE AREA. THE PAVING AND GRASS AREA PROVIDE ADEQUATE SPACE FOR SOCIAL GATHERINGS OR FOR KIDS TO PLAY AROUND.

EAST ELEVATION

WEST ELEVATION

THE MEDIUM DENSITY DESIGN GUIDE HAS GREAT IMPORTANCE CONTROLLING THE FUTURE FOR DEVELOPMENT OF THIS KIND THROUGHOUT AND SPECIFICALLY AT THE CONCLUSION OF THE DESIGN PARTICULAR ISSUES CAME TO LIGHT

WHO IS REALLY DESIGNING THE FUTURE OF HOUSING IN SYDNEY?

UNLIKE THE STATE ENVIRONMENTAL PLANNING POLICY 65 (SEPP65), THERE IS NO REQUIREMENT TO BE A REGISTERED ARCHITECT TO BE ABLE TO DESIGN AND SIGN OFF WORK THROUGH COMPLYING DEVELOPMENT. ARCHITECTS ARE TRAINED PROFESSIONALS IN A FIELD WHICH CARRIES A LARGE AMOUNT OF RESPONSIBILITY. I BELIEVE IT SHOULD BE "UNLAWFUL TO SIGN AS A REQUIREMENT THAT A REGISTERED ARCHITECT EITHER DESIGNS OR APPROVES (WITH THEIR NAME ATTACHED) ANY DESIGN WHICH IS TO BE CONSIDERED FOR COMPLYING DEVELOPMENT.

MY BIGGEST CONCERN WITH THIS MATTER IS THAT THE QUALITY IN ALL ASPECTS, WILL BE SACRIFICED DUE TO THE LACK OF CONTROL FROM THE CERTIFIER. ALTHOUGH THE MDDG WILL ASSIST TO PREVENT BAD QUALITY HOUSING, IT WILL NOT ELIMINATE CHEAP, POORLY CONSTRUCTED HOUSES WHICH WILL NOT CONTRIBUTE TO THE FUTURE CHARACTER OF THE LOCAL AREA. RATHER DETRACT FROM IT.

ALSO THE GUIDE COMMONLY REFERS TO LOCAL CHARACTER AND THIS TERM SEEMS TO DRIVE THE OVERALL AESTHETICAL QUALITIES OF THE DESIGN. I BELIEVE THAT ALTHOUGH THE LOCAL BUILDINGS AND CONTEXT IS IMPORTANT, IT SHOULD NOT NECESSARILY BE THE KEY DRIVER FOR NEW BUILT FORM. FOR EXAMPLE, IF THERE IS NEW RESIDENTIAL DEVELOPMENT IN AN INDUSTRIAL RUNDOWN AREA, WHERE DOES ONE DRAW INSPIRATION IN ORDER TO CREATE A BUILDING OF BEAUTY AND POTENTIALLY START A NEW HIGHLY DESIRED CHARACTER FOR THE AREA?

PUBLIC INTERFACE

THERE IS SOMETHING GREAT ABOUT A NEIGHBOURHOOD WHICH LIVES AND INTERACTS WITH ONE ANOTHERS DAILY ACTIVITIES. CHILDREN AND PARENTS SHOULD BE MAKING MORE OF AN EFFORT TO UTILISE LOCAL PARKS AND PLAYGROUNDS, WHILST TRYING TO GET TO KNOW THE LOCAL NEIGHBOURHOOD. IN SAYING THIS, THERE ARE NUMEROUS REASONS WHY SOME PEOPLE PREFER TO KEEP MORE PRIVATE THAN OTHERS AND WE MUST LEARN TO RESPECT THAT DECISION. IN THE MDDG, THERE ARE A FEW POINTS THAT I BELIEVE ARE NOT NECESSARY IN THE DESIGN GUIDE. IT STATES THAT WALLS FACING A PUBLIC SPACE MUST HAVE 25% MINIMUM GLAZING. IT MAKES NO REFERENCE TO WHAT THE PUBLIC SPACE IS. IT COULD BE ANYTHING AND MORE IMPORTANTLY SOMETHING WITH AN UNDESIRABLE OUTLOOK.

IT ALSO STATES THAT GARAGES LOCATED AT THE FRONT OF THE PROPERTY SHOULD BE RECESSIVE, SUGGESTING THAT THEY SHOULD BE A SECONDARY FEATURE OF THE FACADE. HOWEVER IT ALSO STATES THAT THERE MUST BE CLEAR, DIRECT VISIBILITY TO THE GARAGE DOOR. THESE I FIND TO BE CONTRADICTORY TO ONE ANOTHER. WHAT IS THE PURPOSE OF PROVIDING A CLEAR DIRECT VIEW TOWARDS A FEATURE WHICH IS DESIRABLY RECESSED INTO THE FACADE?

SETBACKS

FORTUNATELY, THE SITE I HAVE SELECTED IS A TOTAL OF 0.02HA FALLING BELOW THE 1500M² SAVIGER ZONE. I USE THIS TERM BECAUSE IT WILL BE THE MOST IMPORTANT NUMBER FOR DEVELOPERS... SOMETHING I HATE TO ADMIT IT, BUT WITHOUT OPPORTUNISTIC DEVELOPERS, SYDNEY WOULD NOT BE ABLE TO KEEP UP WITH THE PROJECTED POPULATION GROWTH. THE GUIDE FOR COMPLYING DEVELOPMENT STEPS UP DRAMATICALLY WHEN EVER THE SITE IS GREATER THAN 1500M² AND I BELIEVE AN ADDITIONAL SITE AREA CATEGORY SHOULD BE INTRODUCED, 1500-2500M² BY DOING SO, IT WILL ENCOURAGE THE MEDIUM DENSITY HOUSING GROWTH IN SYDNEY.

THE FRONT AND REAR SETBACKS NEED TO CHANGE. THE FRONT SETBACK GUIDELINES STATE THAT WHERE EXISTING DWELLINGS ARE WITHIN 40M, AVERAGE OF TWO CLOSEST DWELLINGS. IF ONE NEIGHBOURING DWELLING IS 6M SETBACK AND THE OTHER 30M, THE SETBACK REQUIRED WOULD BE 22M. THIS NEEDS TO BE ADDRESSED AND I SUGGEST THAT THERE ARE SIMPLE FIXED FIGURE RELATING TO ZONING (EG: R3 = 6.5M). SIMILARLY, THE REAR SETBACK NEEDS TO BE REDUCED. IF SYDNEY IS TO ACCOMMODATE THE PROJECTED POPULATION INCREASES, WE ARE TO FORGET ABOUT THE IDEA OF THE 'AUSSIE DREAM AND ACQUIRE THE NECESSITY TO HAVE A BACKYARD BIG ENOUGH FOR A GAME OF CRICKET. USING THE BUILDING SEPARATION DISTANCES IN THE SEPP65 AS A PRECEDENT, WHY ARE THE REAR SETBACK IN MEDIUM DENSITY HOUSING REQUIRED TO BE LARGER THAN A HIGH DENSITY HOUSING?

GREEN NETWORK

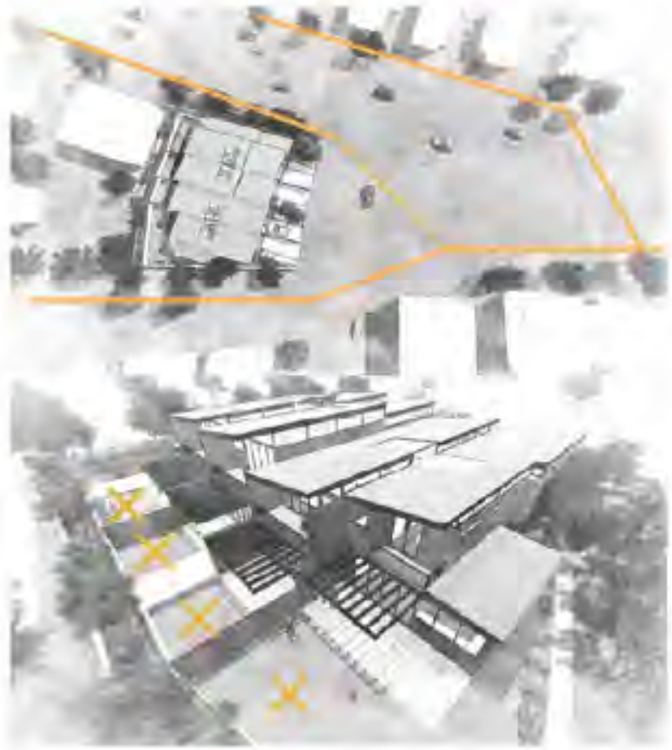
I CANNOT STRESS THE IMPORTANCE OF THE GREEN NETWORK STRATEGY MOVING FORWARD. IT IS ABSOLUTELY CRUCIAL IN IMPROVING THE AMENITY OF OUR SUBURBS AND TOWNS. I BELIEVE IT SHOULD BE INCORPORATED INTO THE MEDIUM DENSITY DESIGN GUIDE MORE AGGRESSIVELY. ALTHOUGH THERE ARE INDICATIONS OF TREE PLANTING AND LANDSCAPED AREA, THE GREEN NETWORK SHOULD HAVE A VISION WITHIN EACH LOCAL COUNCIL AND DEVELOPMENTS SHOULD USE THESE DESIRED NETWORKS TO AID THEIR DESIGNS.

DIFFICULTY IN ACHIEVING DESIGN EXCELLENCE

AS WITH ANY COMPLYING DEVELOPMENT DESIGN, THERE ARE ALWAYS DIFFICULTIES IN ACHIEVING DESIGN EXCELLENCE WITH ALL MATTERS. (I THIS IS A MORE CONSERVATIVE APPROACH AND THE SITE PRESENTED CERTAIN NATURALLY CHARACTERISTICS. OTHERS ARE I STRUGGLE FOR A FEW REASONS.

FIRSTLY, SITES WHICH ARE ORIENTATED TRUE NORTH WILL SURPRISINGLY CAUSE MORE DRAMA THAT ONE MIGHT INITIALLY THINK. ASSUMING THE LOT WIDTH IS APPROXIMATELY 67M, THERE WILL BE NO WIDTH TO ACCOMODATE A BEDROOM OR LIVING ROOM ALONGSIDE IT. FORCING THE LIVING ROOM INTO THE FIRST FLOOR. THIS GESTURE ALONE MEANS THAT ACCESSIBLY CHALLENGED PEOPLE WILL REQUIRE A STAIR LIFT OR LIFT TO ACCESS ANY SPACE IN THEIR HOME. ADDITIONAL TO THIS, AS THE LIVING ROOM AND KITCHEN ETC. IS RELOCATED TO THE FIRST FLOOR, IT REDUCES THE OPPORTUNITY TO PROVIDE AS MANY BEDROOMS AND IN TURN, REDUCING THE OPPORTUNITY FOR DENSIFICATION.

ANOTHER DIFFICULTY WHICH WILL CAUSE ISSUES IS THE CUT AND FILL GUIDELINES ON SLOPING SITES. FORTUNATELY, THE SITE WHICH I SELECTED DID NOT CAUSE ANY ISSUES, HOWEVER ON SITES WHERE THE GRADIENT IS HIGHER, IT ELIMINATES THE POTENTIAL FOR DEVELOPMENT AND WILL INEVITABLY DETER DEVELOPERS FROM BUYING THEM.



THE GREEN NETWORK STRATEGY SHOULD HAVE NO BARRIERS. EACH DEVELOPMENT SHOULD CONNECT TO AN EXISTING NETWORK OF BEING TO WORK TOWARDS ONE.

THE AUSTRALIAN DREAM CAN NO LONGER EXIST IN SYDNEY. REAR SETBACK MUST BE REDUCED IN ORDER TO INCREASE DENSIFICATION.

the multi-generational household

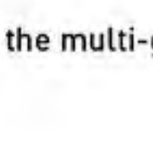
the scenario

John and Viktoria purchased the North Epping property in 2000 when their children were in high school. Due to high property prices in Sydney, their eldest son Tom has moved back home along with his new family. In the same year, their daughter moved back home after living overseas for 5 years and Harry, a family friend moved from interstate to study at Macquaire University. The exsiting single dwelling residence no longer provides the private and communcal space necessary to meet the needs of a multi-generational household.

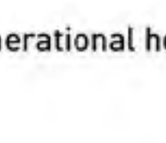
the family

Viktoria
Working part-time at Epping Library. Loves gardening and walking her two dogs.

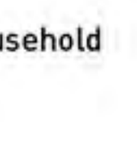
John
Semi-retired builder, likes to build motorbikes in his spare time and cook.



Harry
Student at Macquane Uni. Needs a quiet space to study.



Yasmine
Architect. Works from home 1 day a week.



Tom
Electrician. Needs workshop space and place to put his boat and trailer.

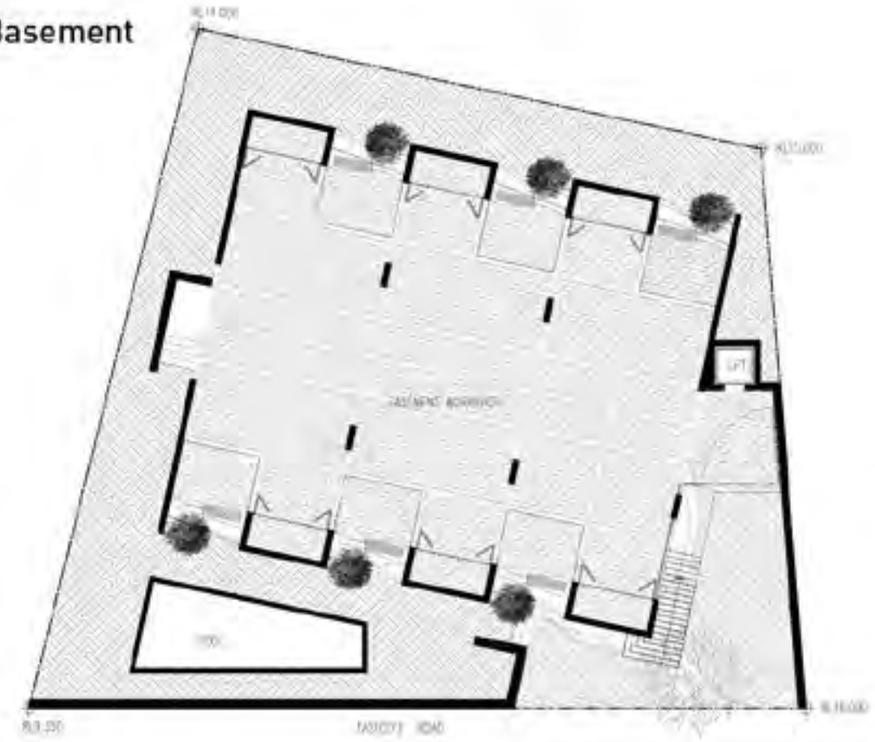
Tina
Working part-time whilst studying a certificate III in Floristry. Needs wet-areas and studio space to make a mess.

Chloe
Starting kindy at Epping North Public School.

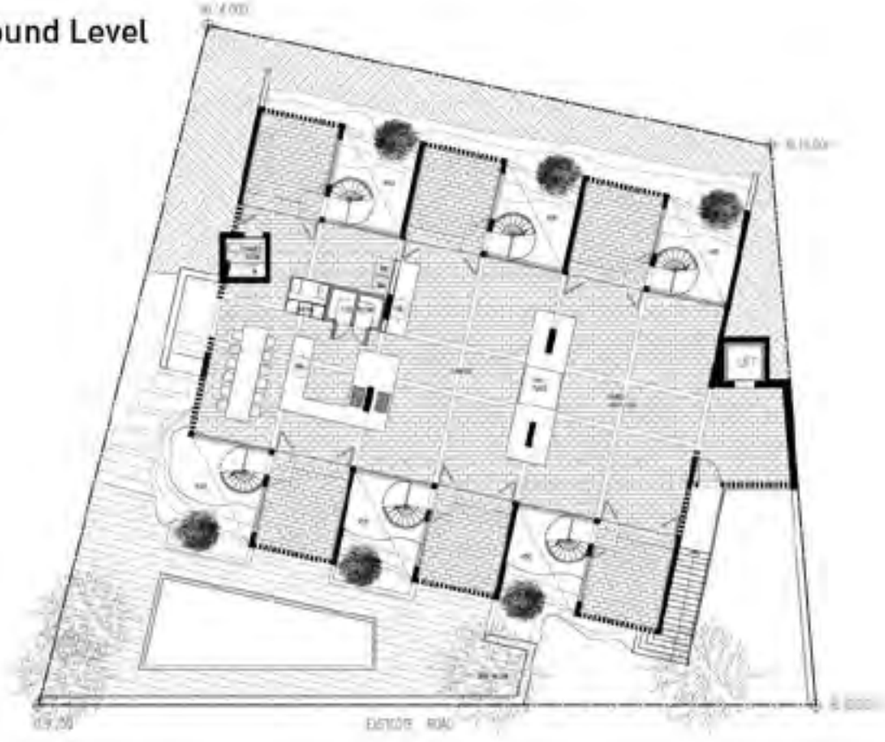
SNAPSHOT

Site	743 sqm
Council	Hornsby Council
Existing House	2 Storey red brick house
Local context	Single dwellings
Max Building Height	8.5m
Min Lot Size	500sqm
Land Zone	R2 Low Density Residential
Bushfire Prone Land	Yes, Buffer Zone

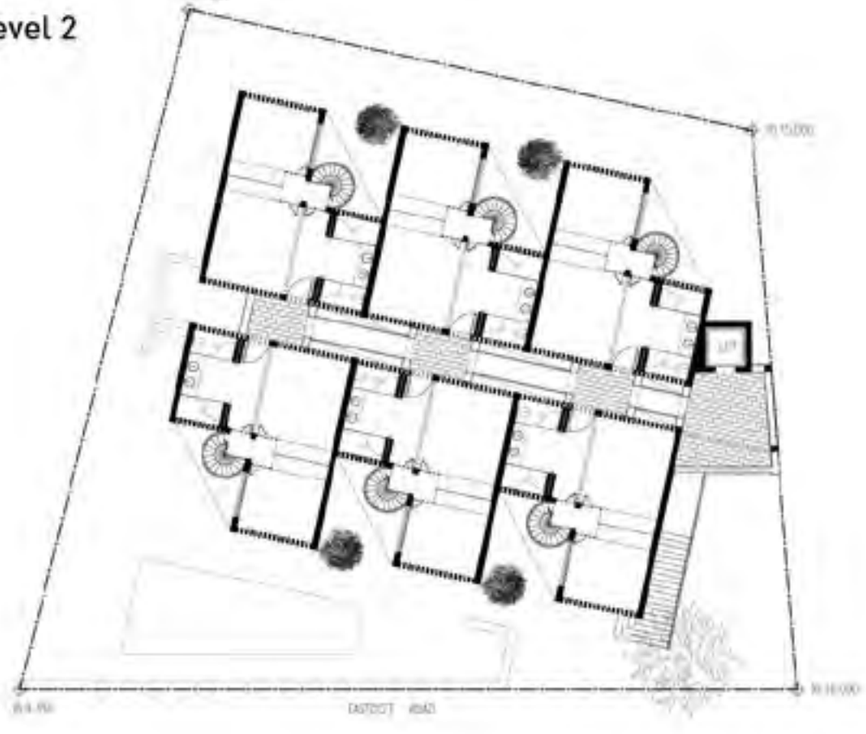
Basement



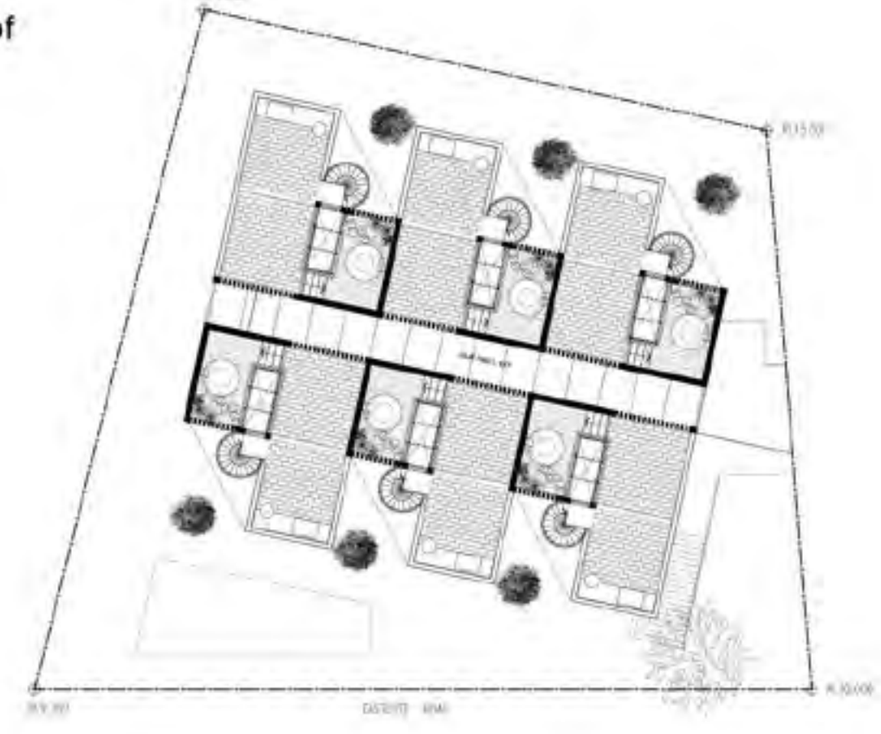
Ground Level



Level 2



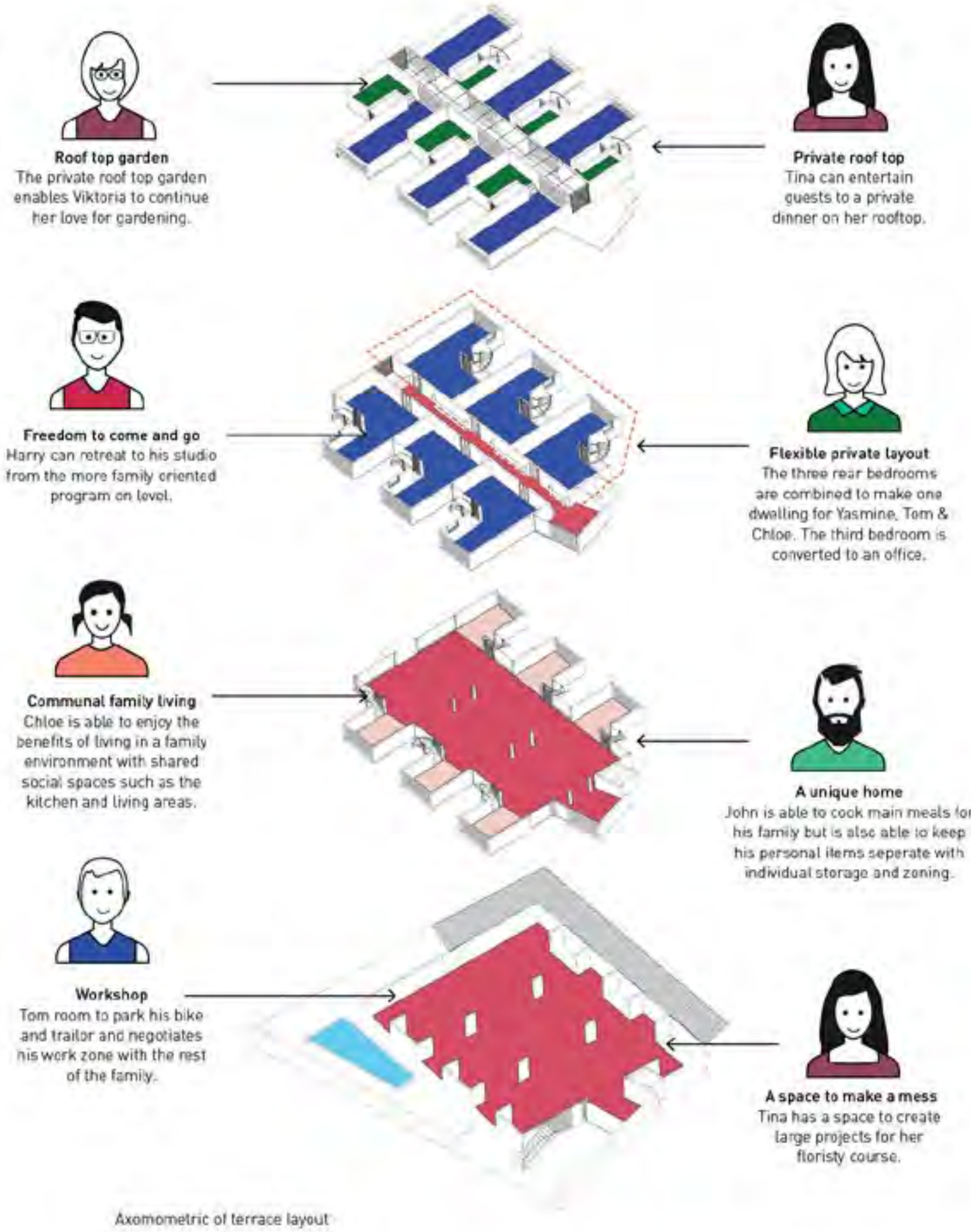
Roof



the multi-generational household

As you ascend the dwelling, the program shifts from fully-communal living to semi-private and fully private spaces on the roof top.

This enables the multi-generational household to retreat to their own private spaces when necessary but also live in an integrated and contemporary family environment without the feeling isolated or the 'hostel' typology.

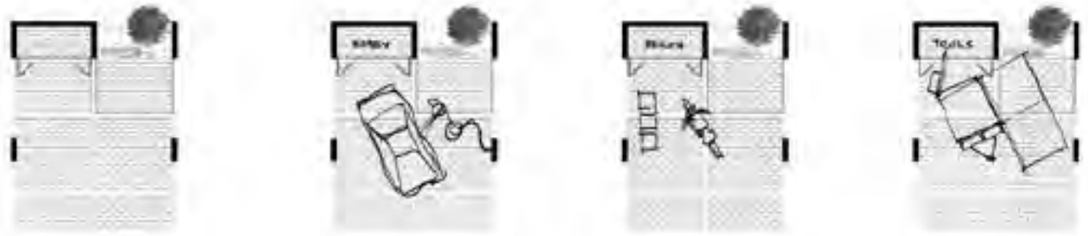


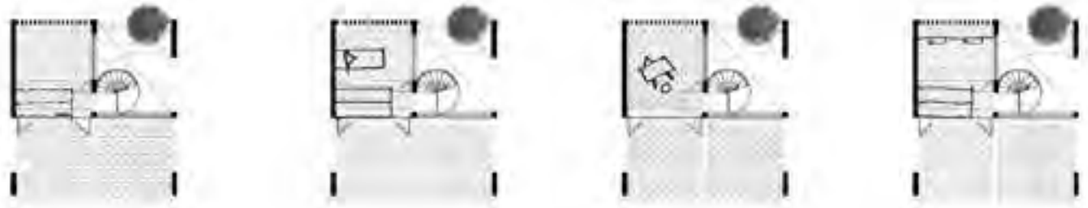
Axomometric of terrace layout

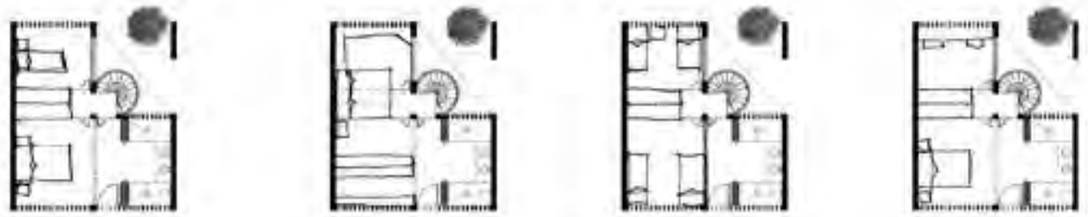
Testing the design guide

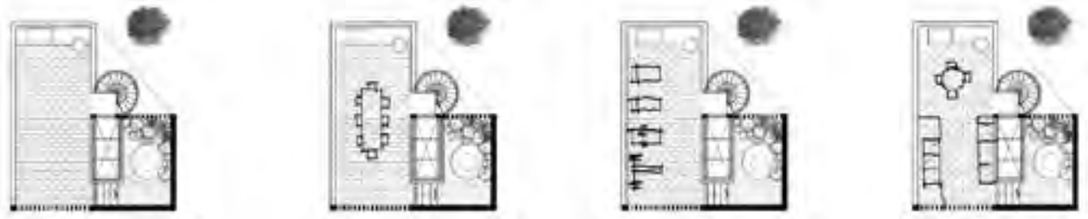
A matrix of possible uses over time shows how the arrangement and flexibility of the plans enables the multi-gernattional dwelling to tranisition parallel with the changing nature of the family

The communal and fully shared zones replciate the family living arrangemetn such as a communal kitchen with space for entertaining groups however, these are balanced with areas that are semi-private to balance the indepedent needs of the adult children.









REDEFINING SYDNEY

UNDERSTANDING THE BRIEF

What quality and character do we want in our suburbs? This question may sound simple but it is at the heart of the current discussion about densifying Sydney. Our city is in the early stages of a significant transformation from a monocentric city to a more decentralised network of urban clusters. Our conception of the city - particularly how we perceive density - is changing and the Medium Density Design Guide will be a significant contributor to this transformation. As we embark on this next chapter in Sydney's history it is important to ensure that the systems which define our city's fabric will result in the urban realm we desire.

Since their inception as workers cottages, terraces have naturally evolved to become the quintessential Australian urban housing typology. Why has this happened? What characteristics of terraces make them so appealing? What are their flaws? Analyses such as these should form the basis for applying terrace housing to suburban Sydney. The challenge of this task is not to merely mimic existing buildings but rather to understand their qualities and to see how they can best be utilised in a different setting.

JUSTIFICATION FOR SITE SELECTION

Two factors were important in selecting a site. Firstly, it must be a location likely to experience urban transformation and able to receive its full benefits. Secondly, it should represent the generic Sydney suburban condition.

The structure to support Sydney's transition to a polycentric city will be the major transportation corridors, specifically the train network. In the expanse of Sydney's suburban fabric, train stations will increasingly be the nodes around which urban life gathers. Streets in close walking distance to stations will be the first to see the impact of medium density housing and will be important in determining the success or failure of the scheme.

Apart from selecting a site which encompasses the full potential of the guide, it is also important that the site have many of the characteristics which are common throughout suburban Sydney. The central challenge of densification is adapting this condition, maintaining its best qualities and improving on its weaknesses.

The site at the corner of Pioneer Street and Artillery Crescent in the suburb of Seven Hills has both of these conditions. Its large blocks, wide streets, low density and so on are typical of suburban Sydney whilst its close proximity to Seven Hills station, programmatic mix and other factors have the makings of a vibrant and healthy neighbourhood.

Urban Clusters

Neighbourhood Program

Characteristics of Terraces

A FLEXIBLE HOUSING MODEL

Site Plan

Scale 1:500

The success of terraces lies in their resilience and adaptability to suit the needs of a large variety of users. They achieve this by being highly flexible. By fulfilling structural requirements in the party walls, a free interior zone is created which can be configured and reconfigured in endless ways.

This flexibility has played an important role in shaping our inner city neighbourhoods as it has populated them with a diverse group of inhabitants. In densifying suburban Sydney this is an aspect that cannot be overlooked. Currently, higher density housing is severely oversupplied with generic apartments types (studios and 1/2/3 bed apartments). The people who live in these homes however, cannot so easily be categorised. As we densify Sydney, we need to create a vast assortment of different housing types to meet the needs of our diverse community. The adaptability and flexibility of terraces makes them an idea housing type meet this challenge.

The design proposal investigates how such a development could achieved. The site consists of 10 terraces each inhabited by one or two different households. Key aspects of each plot are defined but the tenants are free to modify the in-between zone. The result is a row of terraces consistent in massing, volume and rhythm which each have their own character and identity. The street elevation is a patchwork ensemble representative of the households within.

3/4 adults shared flat	assisted disability housing	1 child family	immigrant family with adult children	3 child family	young family (social housing)	multi generation household	young couple renovation project	rental flat above	business owner / operator
		elderly couple						soon to be empty nesters	small business

Household Types

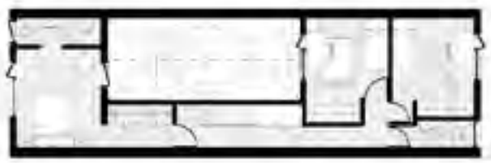
MULTI-GENERATIONAL DWELLING

As the baby boomer generation ages, senior housing needs to be a priority. To meet this challenge, new household structures and models of home ownership will be necessary. The building design for this project proposes one such dwelling - a multi-generational home - which incorporates two separate homes within a single terrace unit. The design also represents a deeper investigation into one of the household types found in the full block plan.

The organisation of the proposal is simple - the ground floor is for the senior couple (the grandparents) and the upper floors are for a couple with two children (the family). Each has their own home but the building is owned as a single terrace, significantly reducing the cost of the home.

By combining the two families, they are able to form a close yet independent family unit who can enjoy the benefits of living with each other without the downsides.

The key element of the proposal is the central courtyard With a retractable roof, this space behaves like a large winter garden. It is inhabitable all year round and brings light to rooms in the centre of the building. Most importantly, the courtyard space occupies the transitional zone between the two households. It is at the same time a communal space where the family can come together and also a buffer space that gives the two houses a sense of independence from one another.



Level 2 Plan

Level 1 Plan

Ground Level Plan

Scale 1:200

Organisational Diagram

Section

CHALLENGING THE GUIDELINE

In applying the terrace typology to suburban sites, a road block is constantly reached which is the result of two conditions - private car parking and minimum building widths. Rear access lanes are not a feature of suburban blocks as they are in inner city suburbs. Parking must therefore be located to the front which increases building widths to at least 7.5m (Fig 1). Wider buildings penetrate less far into the block so a second row of houses must be inserted behind the street row in order to reach density targets (Fig 2). This unavoidably transforms the terrace typology into a mews housing typology. This approach can already be seen throughout suburban Sydney and its consequences are clear. An increase in vehicular circulation space is required to access the rear houses which often results in the heart of the block being dominated by hard surfaces. The remaining spaces are used for gardens which are generally overlooked and poky. Contrastingly, the benefit of terraces is that vehicles are clearly seperated to the exterior of the block. Internally, rows of adjacent gardens have a sense of togetherness and community. As all dwellings view these gardens from the same orientation, they feel surveilled rather than overlooked.

The solution is to decrease the width of each building (Fig. 3). Inner city terraces are generally 4-5m wide and have proved more than capable of overcoming to resulting challenges such as daylighting. Regarding parking, the minimum rear setback ensures a laneway zone remains clear. Multiple site developments must find methods to get car access to the rear of their sites which over time can connect forming laneways.

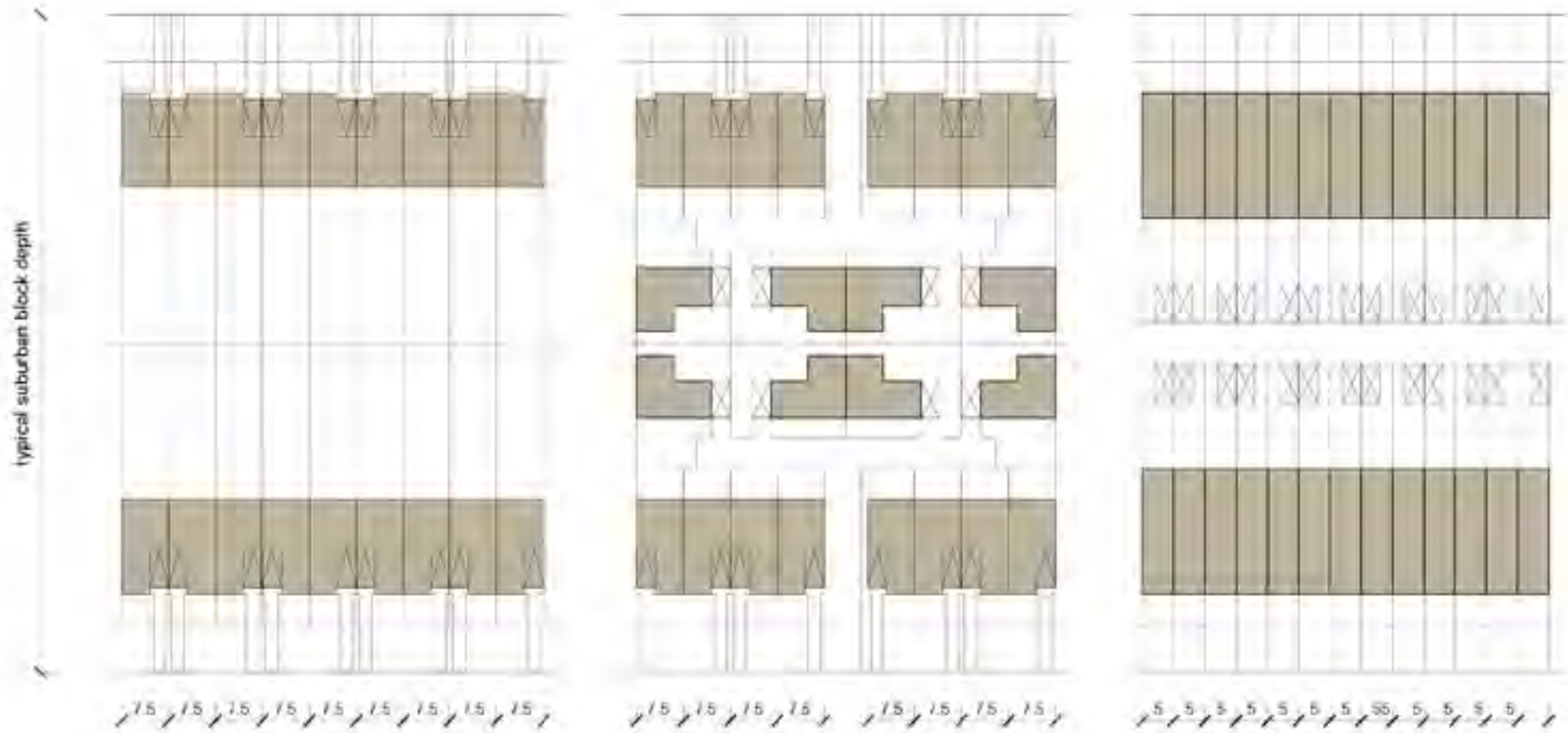


Fig. 1 - terraces with parking at front

Fig. 2 - mews housing

Fig. 3 - terraces with parking at rear

THE CONTEXT

143 Railway Terrace, Schofields

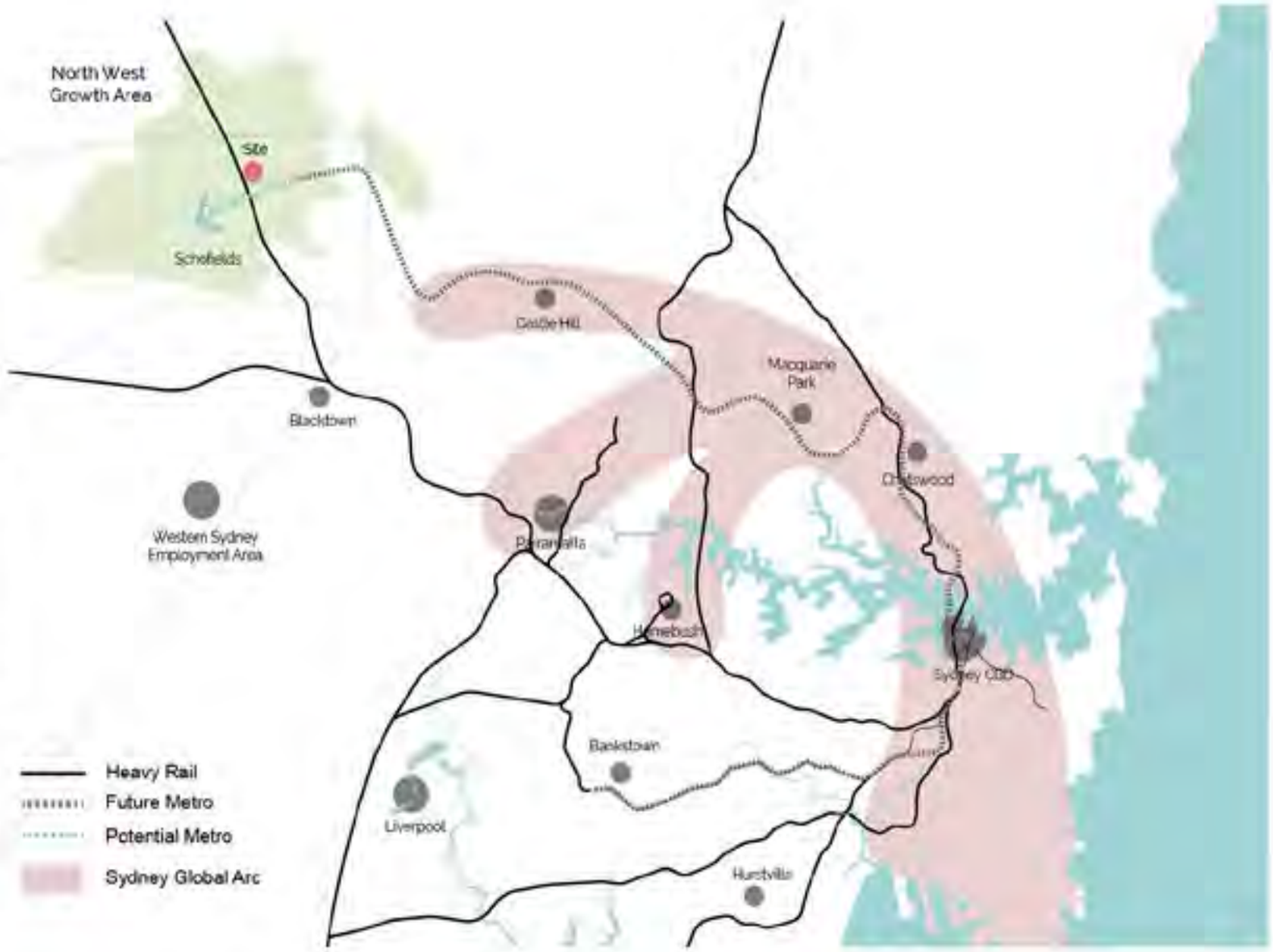
Site on a District Context

Schofields is located within the Blacktown local government area and is part of Greater Western Sydney. The surrounding districts have been earmarked by the NSW State government as the North West Priority Growth Area. As part of the concept for the region it is anticipated that Schofields and the surrounding precincts will house 177,000 new residents in 61,900 new homes.

The site shown is located 45 km west of Sydney CBD, 5 km west of Rouse Hill, and 4 km east of Marsden Park. Marsden Park is planned to become a major hub of employment in the region with the development of the Sydney Business Park and a major retail shopping precinct.
As part of the North West Priority Growth Area the NSW Government has committed to the construction and upgrading of existing public transport infrastructure in the Schofields area. There is a possibility that the North-West Metro could extend west through Schofields, making the suburb a key transport interchange along with the existing heavy rail service.

Current development in the area is a mixture of single story detached dwellings on lots typically above 1000 sqm in a semi-rural setting. The site chosen has a street frontage of 22 m with a depth of 50 m. It is located adjacent to the railway line and Railway Terrace, which could become a major thoroughfare with development.

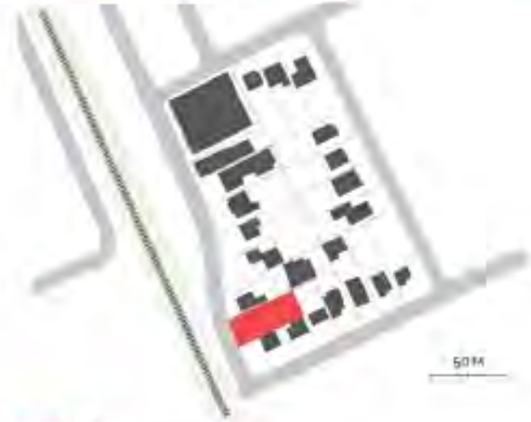
The site is strategically important on a regional, district and local level as it located close to a potential future key transport interchange , major town centre as well as presenting local noise issues. Sites such as this present the opportunity for high quality, low rise, medium density, public transport-oriented redevelopment in a suburban context.



500 m radius of train station

500 m radius of metro station

Site on a Local Context



Development Site

Site on a Neighbourhood Context

THE DESIGN

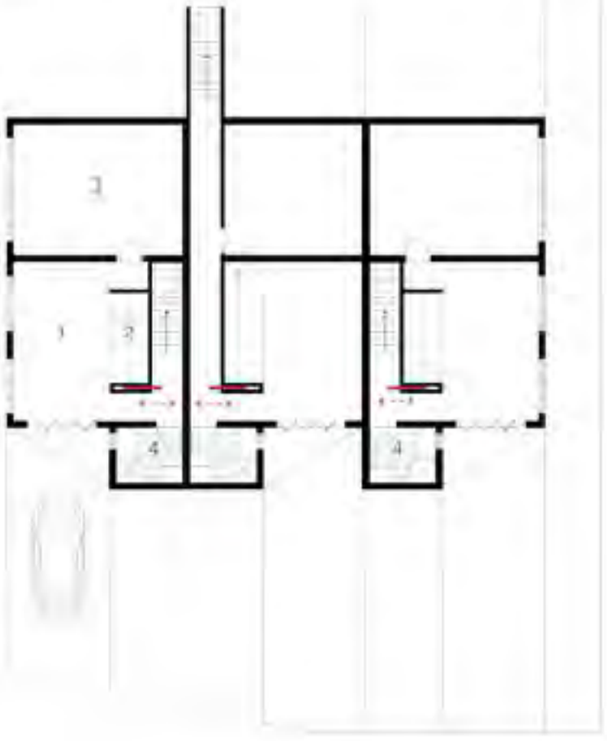
Floor Plan 1:200

N

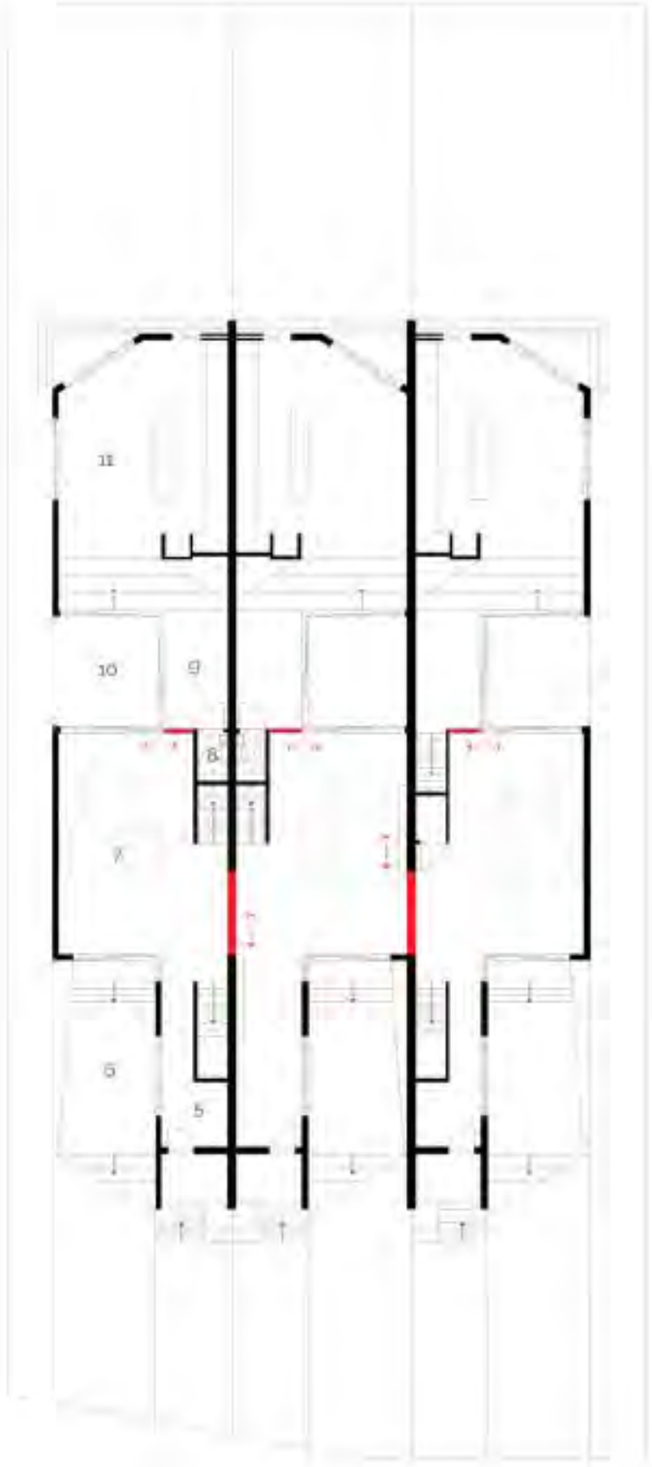
Doors and siding walls dividing key rooms and linking adjacent terraces allow occupants to create flexible spaces suiting different living arrangements within a single or combination of terraces.

KEY

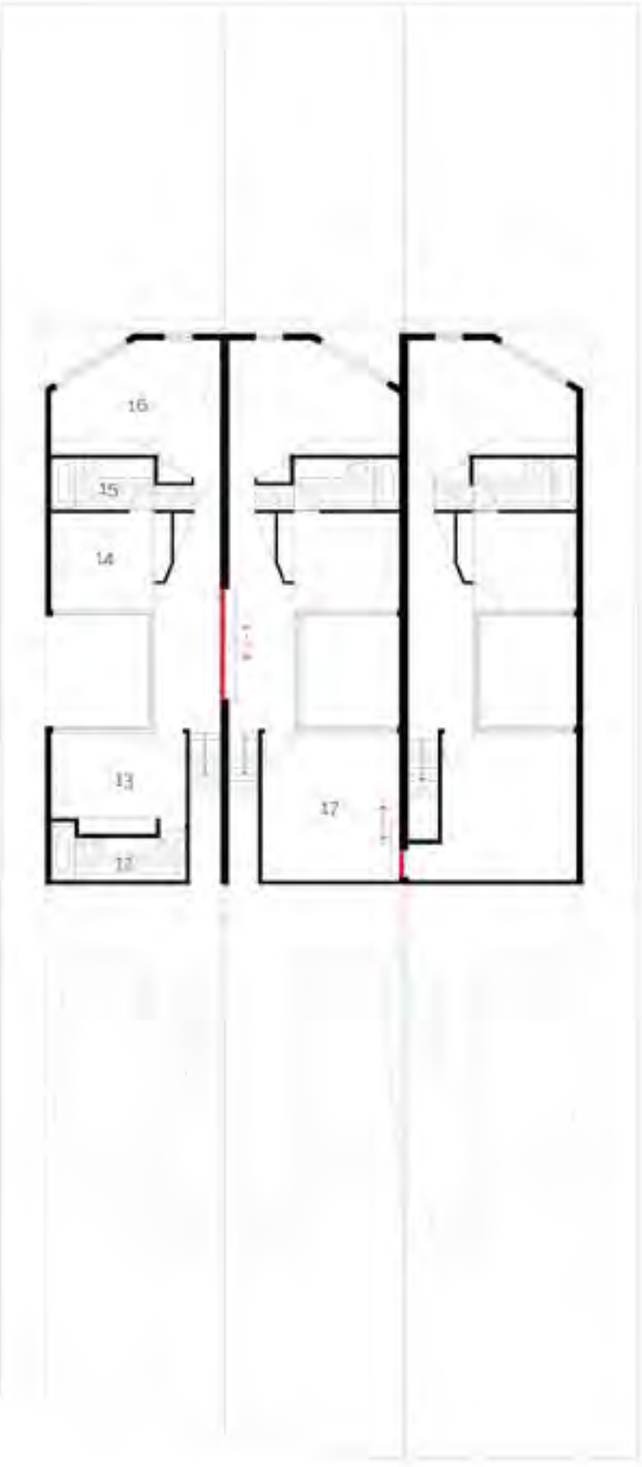
1. Garage/ Self-Contained Room
2. Kitchenette/storage
3. Guest Room/ Rumpus room
4. Bathroom/Laundry
5. Reception
6. Outdoor Terrace
7. Living Room
8. Toilet & Shower
9. Library
10. Courtyard
11. Kitchen & Dining / Studio
12. Bathroom
13. Bedroom 1
14. Bedroom 2
15. Bathroom
16. Bedroom 3
17. Study Room/ Bedroom



Basement



Ground



Level 1

Page 2

THE CONCEPT

1 Terrace: Flexible Living

The ability to subdivide spaces within one terrace enables the following living arrangements:

Single terrace unit :

Family + Car

Basement Studio + Upper Division :

Family + Guest/Teenager

Rear Unit and Backyard + Front Division :

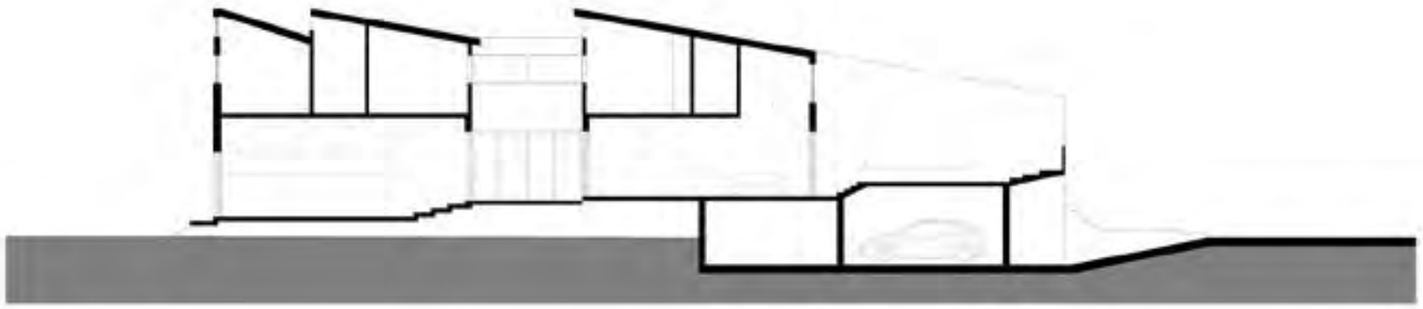
Family + Grandparents

2 Terraces: Flexible Living

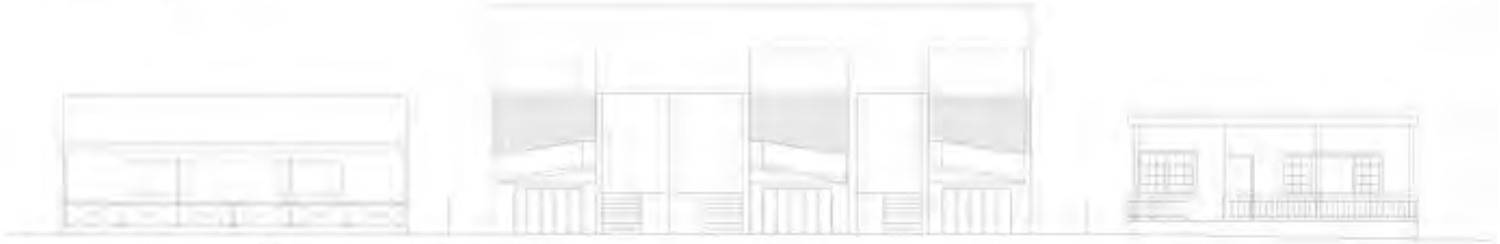
By owning two terraces side by side, walls between the units can be opened to create the following arrangement:

Large Terrace + Apartment + Basement Studio:

Big Family + Young Couple + Student/ Bachelor



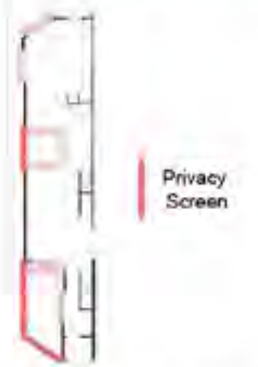
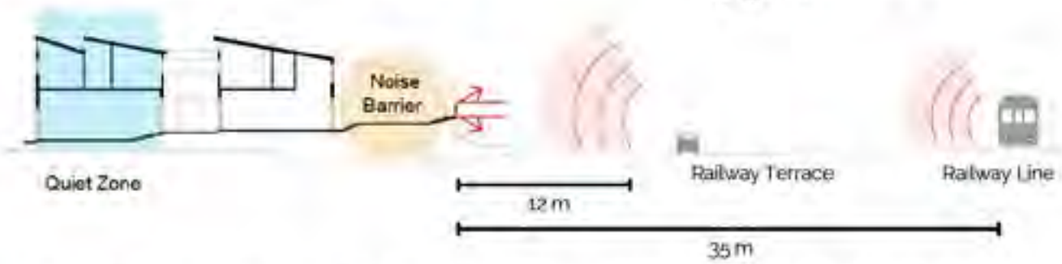
Long Section 1: 200



Elevation in Context 1: 200

Perspective View

COMPLIANCE Challenges to Complying Development Controls

Controls	Challenge	Rationale
Clause: 3.13 MAXIMUM HEIGHTOF DWELLING HOUSES AND OUTBUILDINGS		
Single storey dwelling house	The proposed architecture is three stories 	Although three stories the architecture fully complies with height and setback conditions. Building up to three stories allows space requirements to be met while minimising site coverage on small lots.  Habitable area is 260 sqm while site coverage is 200 sqm, below the 55% condition for the 413 sqm lot size
Clause: 3.12 SETBACKS AND MAXIMUM FLOOR AREA FOR BALCONIES, DECKS, PATIOS, TERRACES AND VERANDAHS		
(1) The total floor area of all balconies, decks, patios, terraces and verandahs on a lot must not be more than 12m2 if: (a) any part of the structure is within 6m from a side or the rear boundary,	The proposed architecture has two private outdoor terraces with an area of 27 and 15 sqm respectively, within 6 m of a side boundary. 	This clause limits the design of useable outdoor spaces in a narrow width terrace lot context. The non-compliant internal courtyard leads the following superior design outcomes:  1) Allows all rooms to have abundant natural light  2) Promotes effective cross ventilation  3) Minimises the need for windows overlooking neighbouring properties
(2) A balcony, deck, patio, terrace or verandah must not have any point of its finished floor level: a) if it is located within 3m of a side or the rear boundary—more than 2m above ground level (existing), (3) Any detached balcony, deck, patio, terrace or verandah (including any alterations or additions to the detached balcony ,deck, patio, terrace or verandah) must not have a floor level that is more than 600mm above ground level (existing).	The two private outdoor terraces/patios in the design have a maximum finished floor level of 1350 mm and 2200 mm respectively, within 3 m of a side boundary 	 Noise levels would be a concern as the site is located adjacent to a railway line and main road .Elevating the floor plate at the front creates a noise buffer that shields primary living spaces at the rear, on a lower elevation.

LOCAL OPPORTUNITIES (see fig 01)

The site selected is well serviced by both existing educational & public facilities. Bankstown station is due to be upgraded to a Metro line, with the possibility of that line, being extended to Parramatta. Designated green grid & rapid transit connections could be encouraged to expand transport options. The Hume Highway urban renewal corridor (similar to Parramatta Rd) could develop the Enterprise Corridor, as well as help in the creation of a new Super Campus in the Chullora Industrial zone, which already neighbours both TAFE & university campuses.

SITE CONDITIONS (see fig. 02)

The address, 72-78 Conway Rd, is zoned R3 for medium density. It has falls of 6-7m across the 60m lot. Mature street trees (Brush Box) form an impressive address, but hinder vehicle access. Subdivision of the lots has already occurred, using Price Lane as an entry.

NEW HIERARCHY OF STREETS (see fig. 03)

The proposal reorientates the development pattern from East/West to North/South, providing more cost effective passive solar access to all dwellings. An added benefit is the ability for the narrow terraces to step down the slope in small 500mm increments. Less cut and fill creates easier universal design access across each dwelling.

Expert opinion suggests, very soon, people will buy 'mobility' in lieu of private cars. Garage spaces should be easily reconfigured as the universal design requirement for ground floor bed and bath accommodation.

Vast tracts of space occupied by private cars parked in public space can be further reconfigured as pedestrian/bike space, establishing a new hierarchy of streets.

A strata titled, pedestrian version of the San Francisco's famous "Lombard Street" creates a semi-public space, encouraging greater interaction between residents. As the main dwellings front a ramped pedestrian space, the Lombard provides universal access to each dwelling, with slopes suitable for wheelchair or bicycle use.

The "Woonerf" is a shared paved street, and provides garage access to each dwelling. This means vehicles can access the site from Conway Rd, without disturbing the avenue of existing trees. Each Woonerf can act as a useful buffer to existing developments.

The Principle Controls require a 3m break at 45m intervals. These village alleyways are called "Play Lanes", with pergola netting connecting green corridors.

Further space saving devices could be achieved by the gradual replacement of council wheel bins, with centralised recycling and waste collection points. 16 visitor and 2 car share spaces could be provided in Conway Rd, and Corbett St.

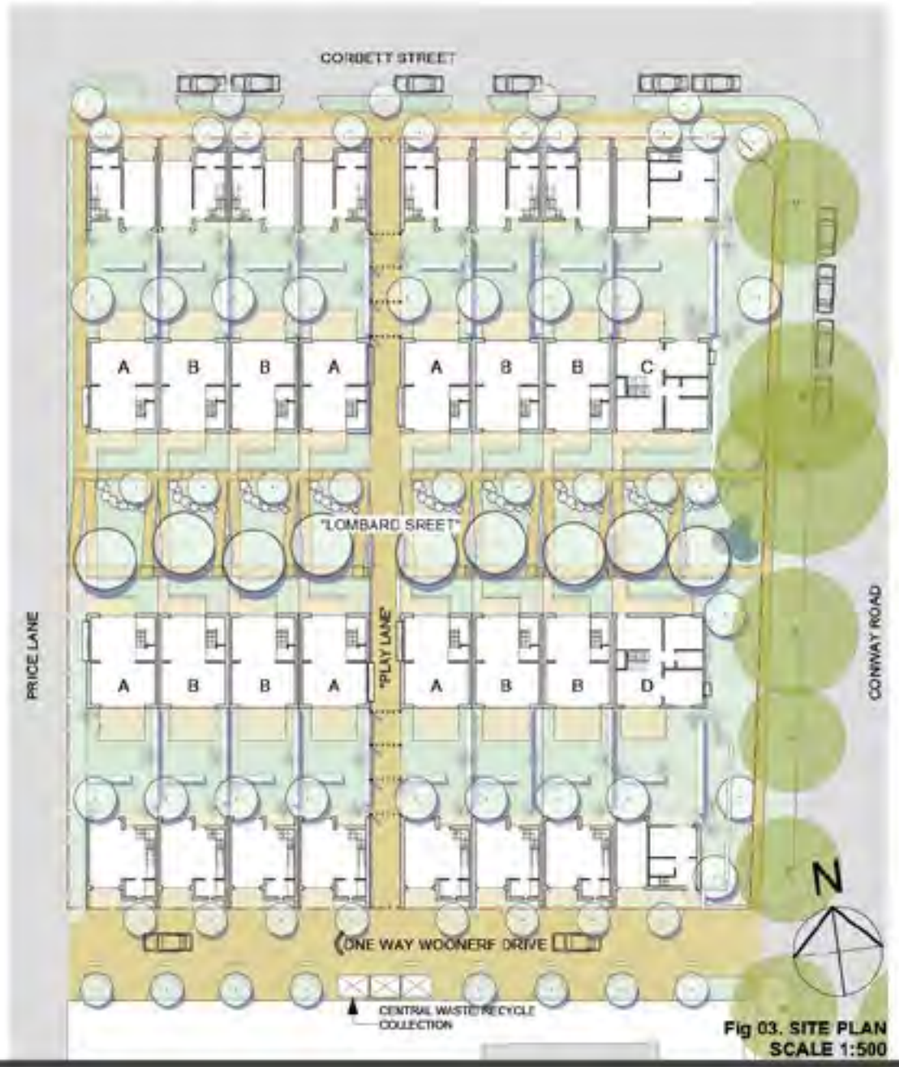
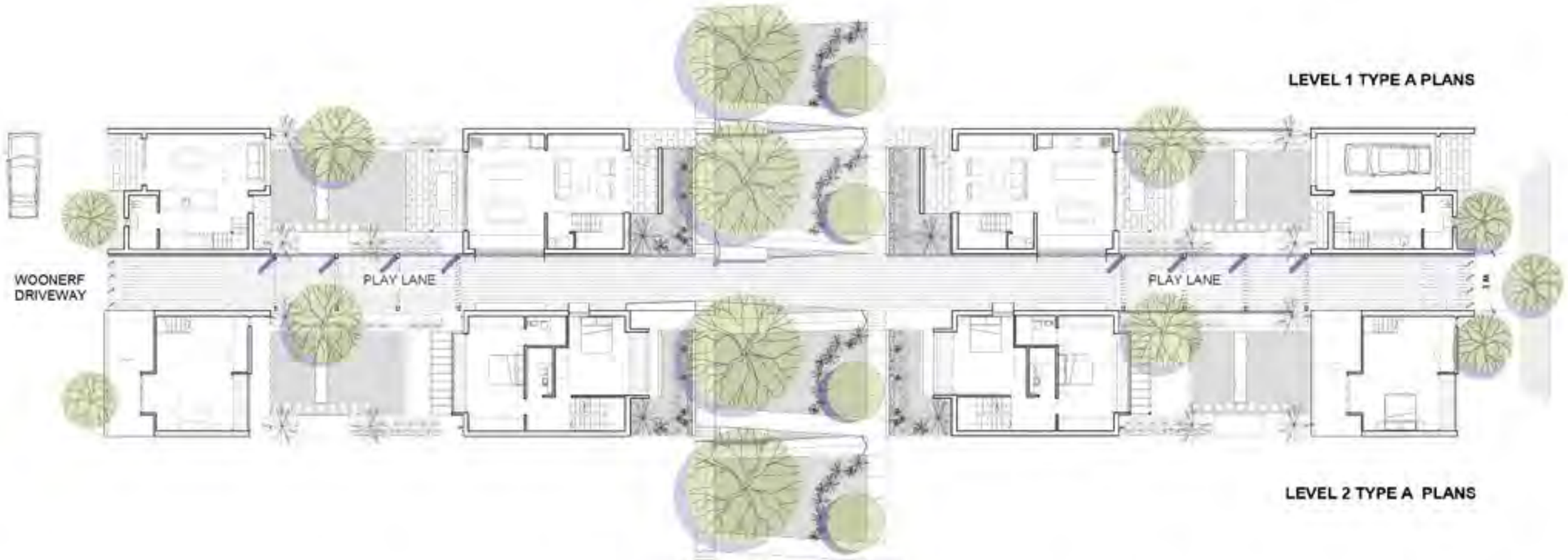


Fig 03. SITE PLAN
SCALE 1:500

Fig 01. DEVELOPMENT OPPORTUNITIES
SCALE 1:40000

Fig 02. CONTEXT CONDITIONS
SCALE 1:2000

MISSING MIDDLE : CONTEXT



TRADITIONAL TERRACE HOUSE TYPOLOGY

The strength of terraces comes from their ability to make streets, and stack spaces over 2-3 storeys, even on steep sites. Their weakness, tracitionally, is access to light and air, while rear service wings create overshadowing and privacy issues. The advantages of the rear lanes have been largely ignored by councils, which often results in lanes acting as bin storage areas.

A NEW TERRACED HYBRID

The "Terrace Courtyard house", with its detached studio, is vital in providing flexibility to the long term use of the house. Addressing both first-home owners and "empty nesters", it provides semi-independent zones within the same household. A family may see the rotation of children, parents and grandparents through the life cycle of the building, which could allow improved intergenerational functionality. It also transforms rear service lanes into smaller, vibrant streetscapes.

ACCOMODATING INTERGENERATIONAL & AFFORDABILITY

The emerging trend of intergenerational housing can help provide more affordable housing. Different scenarios could see younger generations moving into the detached studio and occupying the car space as a living room if they were to start a family. When the family grows, they may move back into the main house. As parents become grandparents, perhaps later, with one needing universal ground floor access, they could swap back into the smaller detached studio.

UNIVERSAL DESIGN

Universal design is enabled by the allowance for a bathroom and bedroom on the ground floor of the studio, with the kitchen, living and dining areas in the main building.

The "Play Lane" and "Lombard" pedestrian street also enhances the ability for young and elderly to interact, enriching community life, in a way that is lost with the segregation and isolation of generational specialist facilities.

MISSING MIDDLE : CONCEPT PLANS & ELEVATIONS

Driveway access from Corbett St & Entry to the "Play Lane"

The "Play Lane"

Conway Rd address "Lombard" pedestrian street

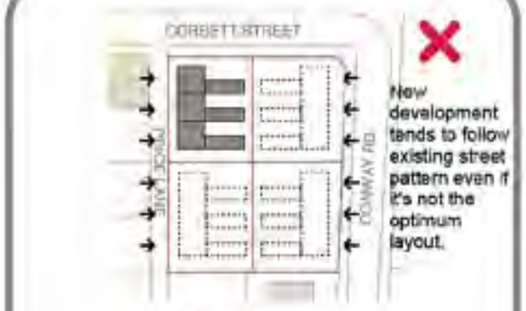
"Woonerf" created for vehicle access

A new Terrace Courtyard house typology, located within a redefined heirarchy of streets, presents expanded possibilities for the making of places. These corridors can be private or communal, active or passive, sunlit or shaded. All of them accessible to parents with prams, kids on bikes, and grandparents on e-trikes.

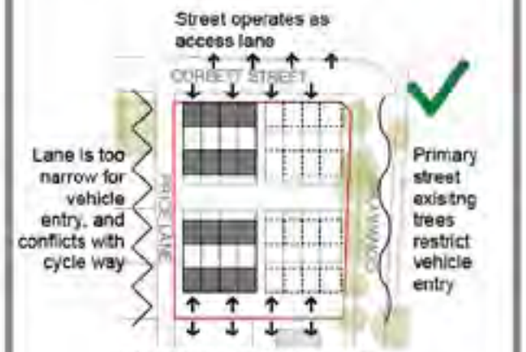
The character of Lombards can vary from productive vegetable gardens, to native wetland alternatives, to active lawns for playing. Cobbled Woonerfs will calm traffic allowing pedestrians and vehicles to coexist. "Play Lanes" provide a safe surface for children to play. Netted pergolas provide shaded links to green corridors as well as containing ball games.

Corbett St acts as rear lane for vehicle access

MISSING MIDDLE : CONCEPT PERSPECTIVES



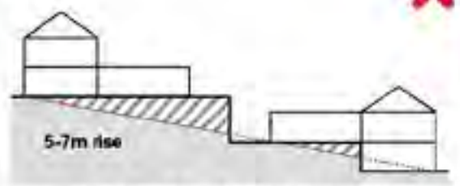
New development tends to follow existing street pattern even if it's not the optimum layout.



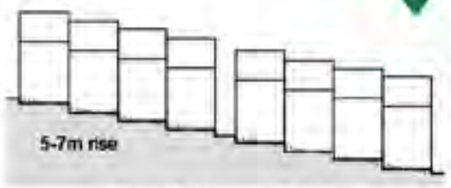
Lane is too narrow for vehicle entry, and conflicts with cycle way

Primary street existng trees restrict vehicle entry

CDC should offer incentives to achieve a more useable street hairachy.

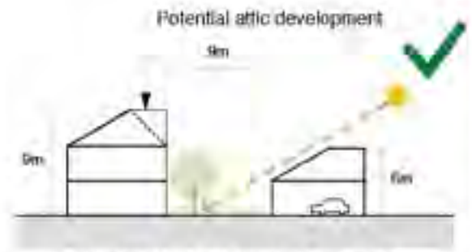


The current street pattern means a large amount of cut and fill in order to have level sites for development.



Orient the terraces following natural topography to minimise cut and fill.

Traditional terraces with rear lanes have minimal landscaped area and poor solar access



Terrace Courtyard Houses allow more space for landscape creating useable gardens. Potential attic development can use bonus FSR.

Our proposal presents the following challenges to the draft Design Guide.

1. Allow detached studios fronting the existing street (i.e. Corbett street)

- Reimaging the rear "service lanes" as more positive smaller streets, i.e. utilising existing Corbett St as a "lane" for servicing.
- Detached studios can be used as intergenerational housing with a streetscape presence.
- Mirrored driveways allow single crossing increasing landscape and street parking.

2. Encourage Terrace Courtyard house vs. Traditional Victorian terrace type

- Instead of an attached rear wing, which occupies potential garden space, a detached studio with a rear lane access allows a courtyard gardens to be better utilised by both dwellings.
- Instead of single storey wings, encourage development with 2 & 3 storey dwelling with larger landscaped open space.

3. Encourage new street hierarchy with Bonus Floor Space Ratio (say increase from 0.8:1 to 0.9:1)

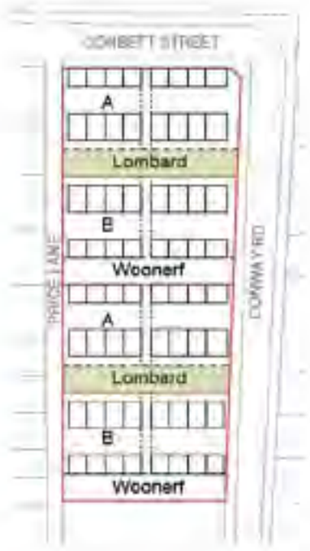
- "Lombard" pedestrian street and Woonerf driveway create landscaped corridors which would ease the transition to a different housing type.
- By housing people rather than cars both public and private space is saved.

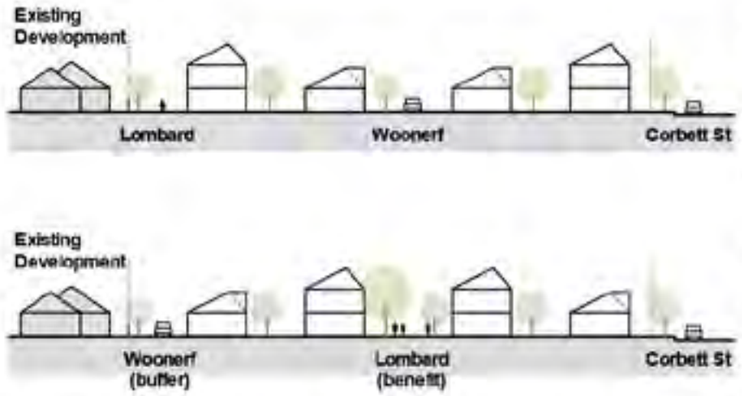
4. Increase landscape requirement from 20% to 30%

- Encourage establishment of "Green corridors" connecting existing street trees and park land.
- Relocate single storey wings into the attic space of 2 & 3 storey development.

The difficulty lies in that the best result more often comes from a considered response to the unique local conditions of site and context. The issue is not whether good architects/designers will be able to exemplify design excellence, rather will average architect/designers be sufficiently guided to achieve a reasonable result most of the time.

Green corridors connect street trees and park with Green Grid cycle way. Incentive should be given to have more landscaped area by using 2&3 storey development.





The development pattern can repeat. Lombard type pedestrian street and Woonerf driveway can alternate to allow for future adjoining development. The proposed layout allows the "Lombard" to benefit main dwellings and, the Woonerf to act as a buffer to existing development.

MISSING MIDDLE : TESTING THE GUIDE

ATRIUM TERRACE HOUSES PROPOSAL IN „MISSING THE MIDDLE" COMPETITON

CONTEXT AND SITE SELECTION

Location of developement - coastal in the middle ring approx. 30km from the Harbour Bridge (Newport, Foamcrest Ave)

Diagram shows the diversity of housing types in neighbourhood and sites with marked single family housing selected for our proposal

Diagram shows proposed terraced houses

Aerial photo with development in a 200m radius

Panoraming streetscape photo of Foamcrest Ave that includes proposed development. From the left: no 91 - existing residential flat building, no. 85-89 - proposed terraces, no. 79-83 - existing multi dwelling houses. Photo shows the scale of buildings, variety of housing types, relation of the colours on proposed elevation and the neighbours, continuation of fencing and preservetion of existing vegetation.

Selected sites are located in northern part of Newport, very close to the coast line.

Building development in zone R3 is already in a process of changing its character. Previous single family houses built on single lots in 70'-80' are being gradually redeveloped into residential flat buildings and other various types of medium density developement. The process will proceed with time. That is why we have choosen those sites - to propose a good design in such a various types and varied scale of neighbouring developerment.

Terrace houses seemed the most appropriate type, because they build a streetscape in a organized way. They double number of actuall houses on each site, but still each house has its owner, its own entrance and garden.

Our main challenge was to fit terrace houses on very narrow lot (size 6m x 45m) and solve problems of car spaces, solar access and ventilation.

← SITE PLAN - 85-89 Foamcrest Ave

- site coverage/ ground floor plan
- single garage
- green areas
- hard surfaces
- front/ rear setback line

a - outdoor car space
b - landscaped area in front of building
c - screened bin area
d - garden at the backyard
e - garden pond
f - outdoor deck
g - watertank location
h - atrium/ internal garden

ATRIUM TERRACE HOUSES - PROPOSAL IN „MISSING THE MIDDLE" COMPETITON

CONCEPT DESIGN

Our concept design based is on narrow lot size. Most of the single family houses lots in this area are 12m wide, combining 3 lots together gives us 6 terraces houses on typical lot size 6m. Second thought was to provide a design that is flexible, suits different locations in Newport (different orientation to the North). Those two factors leaded us to **„atrium"** solution - a vertical opening in the middle of the house, which is a garden with glass walls you can fully open. This solves also other problems - solar access and natural ventilation. Furthermore this solution gives us an extraordinary space in proposed floor plan.
Another problem with narrow site is to provide two **parking spaces**. We proposed single garage and outdoor car space partially covered by first floor green balcony. Garage door are designed to be finished with the same material as elevation, so they will not be that visible.
Big part of our design is **sustainability**. We propose internal garden, green balcony at front elevation and green roof at the back over ground floor, solar panels on the roof and 1kL watertank collecting rain water from the roof located at the backyard.

Side elevation scale 1:200

Long section scale 1:200

ATRIUM TERRACE HOUSES - PROPOSAL IN „MISSING THE MIDDLE" COMPETITON **CONCEPT DESIGN**

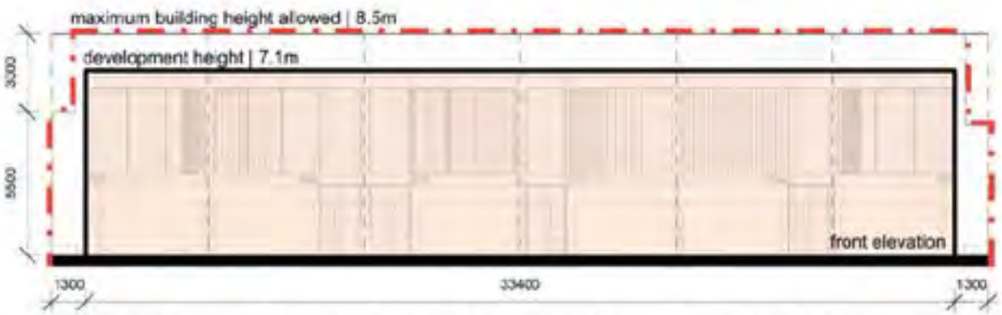
Ground floor plan scale 1:200

Back elevation scale 1:200

First floor plan scale 1:200

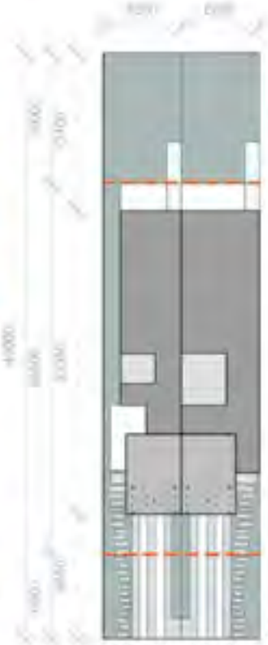
Front elevation scale 1:200

ATRIUM TERRACE HOUSES PROPOSAL IN „MISSING THE MIDDLE" COMPETITON | TESTING THE DESIGN GUIDE



Side Setbacks in relation to paragraph 3.16 in State Environmental Planning Policy (Exempt and Complying Codes) 2008.

Diagram showing access to sunlight and max. 8m depth from window for habitable rooms and private open space. Additional sunlight access is provided by the antrium garden, cut out from the building plan.

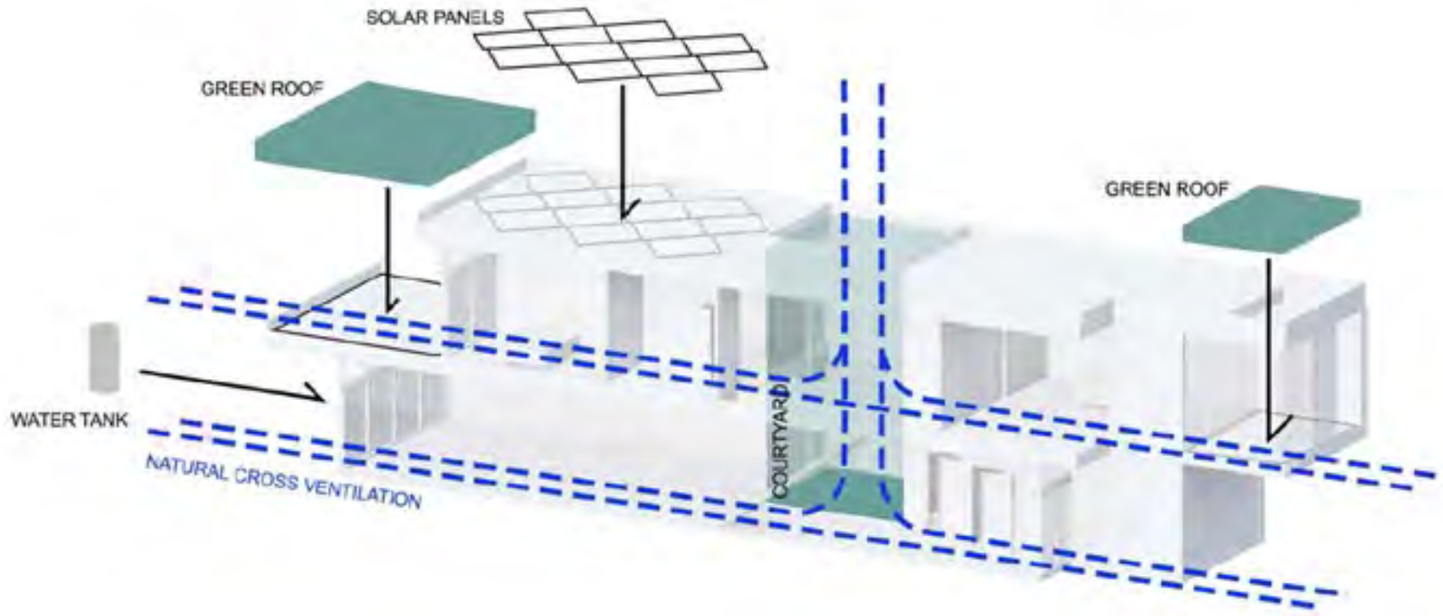


Corner dwelling calculations:

Site area:	270m²
Floor area:	179m²
Site coverage:	126.1m²
Floor space ratio:	0.66:1
Landscape:	79.4m²
Courtyard:	5.76m²
Garden pond:	3.2m²
Private open space and balconies:	16m²
Hard surface:	20m²

Middle dwelling calculations:

Site area:	270m²
Floor area:	201.6m²
Site coverage:	148.6m²
Floor space ratio:	0.75:1
Landscape:	79.7m²
Courtyard:	12.84m²
Garden pond:	3.2m²
Private open space and balconies:	16m²
Hard surface:	22.5m²



PROPOSED TERRACES

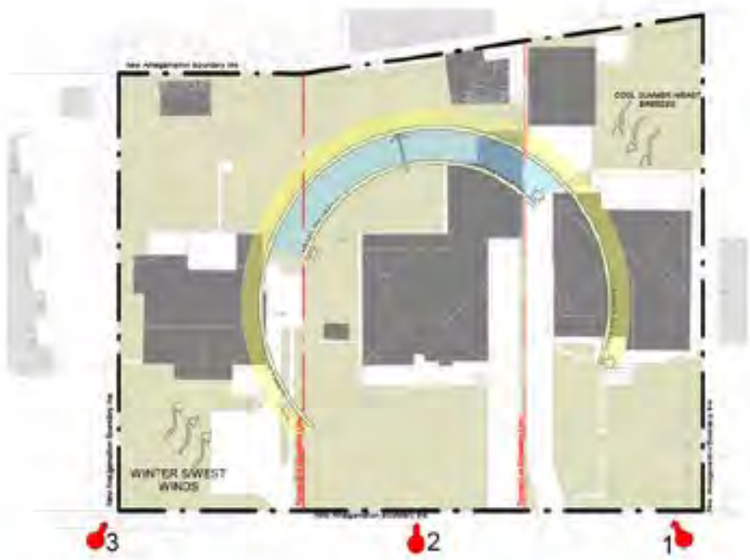
147-151 President Avenue, Miranda, NSW, 2228

The subject site is located in Miranda in Sydney's southern suburbs in the eastern part of the Sutherland Shire Local Government Area. The surrounding suburbs are Caringbah, Gymea and Sylvania.

The subject site is legally identified as Lots 5, 6 & 7 in DP 36423 and known as 147,149 and 151 President Avenue, Miranda. The site is irregular in shape, with a frontage to a slip road off President Avenue of 52.88m, a maximum site depth of 44.83m and a total site area of 2,175m2. Refer to the Existing Site Plan below.

The proposed development takes into consideration the site opportunities and constraints in its streetscape context including the following:

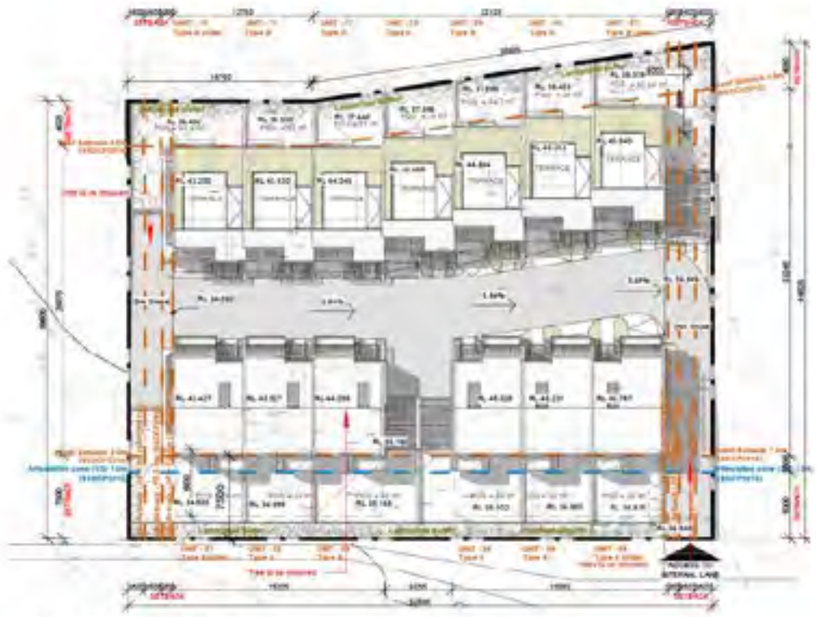
- **Surrounding Development and streetscape character:** Key characteristics of the surrounding area includes the immediately surrounding area comprises of single dwellings and dual occupancy dwellings, some of the dwellings have been recently renovated, some recently built whilst some are still essentially in original condition, accordingly architectural styles vary from modern to traditional. The development to the west is villa style housing while the orientation of the western side of the subject development needs to take this into consideration. Laguna primary school is located 1.4km to the southeast, there are numerous parks within the area including Kareena Park, and Camellia Gardens and the Miranda Train Station is located 1km to the north of the site and Westfield Miranda shopping centre is located 1.1km to the north. Also, there are numerous bus services within walking distance of the site.
- **Existing development on site:** Existing development on the site includes a single storey brick dwelling with tile roof at No.151 President Avenue, a single storey brick dwelling with tile roof at No.149 President Avenue and a 1-2 storey clad dwelling with tile roof at No.151 President Avenue.
- **Existing vegetation:** There are a number of mature trees on the site as well as a variety of shrubs and grassed areas.
- **Topography:** The site has a cross fall of approximately 4.56m from the northeast corner to the southwest corner.
- **Views:** There are no significant views through the subject site;
- **Solar access/shadow and privacy:** The site has a northern rear aspect providing adequate solar access opportunity.
- **Pedestrian and vehicular access points:** Vehicular and pedestrian access are available via existing driveways off President Avenue.
- **Services:** Services such as electricity, sewer and water are all available to the existing development and there are no other known services constraints.
- **Other site constraints:** The site is not known to be contaminated and there are no other known site constraints such as flooding, groundwater or contamination.
- **Surrounding noise sources:** The site adjoins President Avenue which is a busy road however external noise sources are comparable with other suburban street locations.
- **Heritage:** The site is not heritage listed and there are no nearby heritage listed properties



EXISTING SITE PLAN + SOLAR DIAGRAM Scale 1:500

STREETSCAPE ANALYSIS DIAGRAM

EXISTING STATE PHOTO - VIEW 1 EXISTING STATE PHOTO - VIEW 2 EXISTING STATE PHOTO - VIEW 3



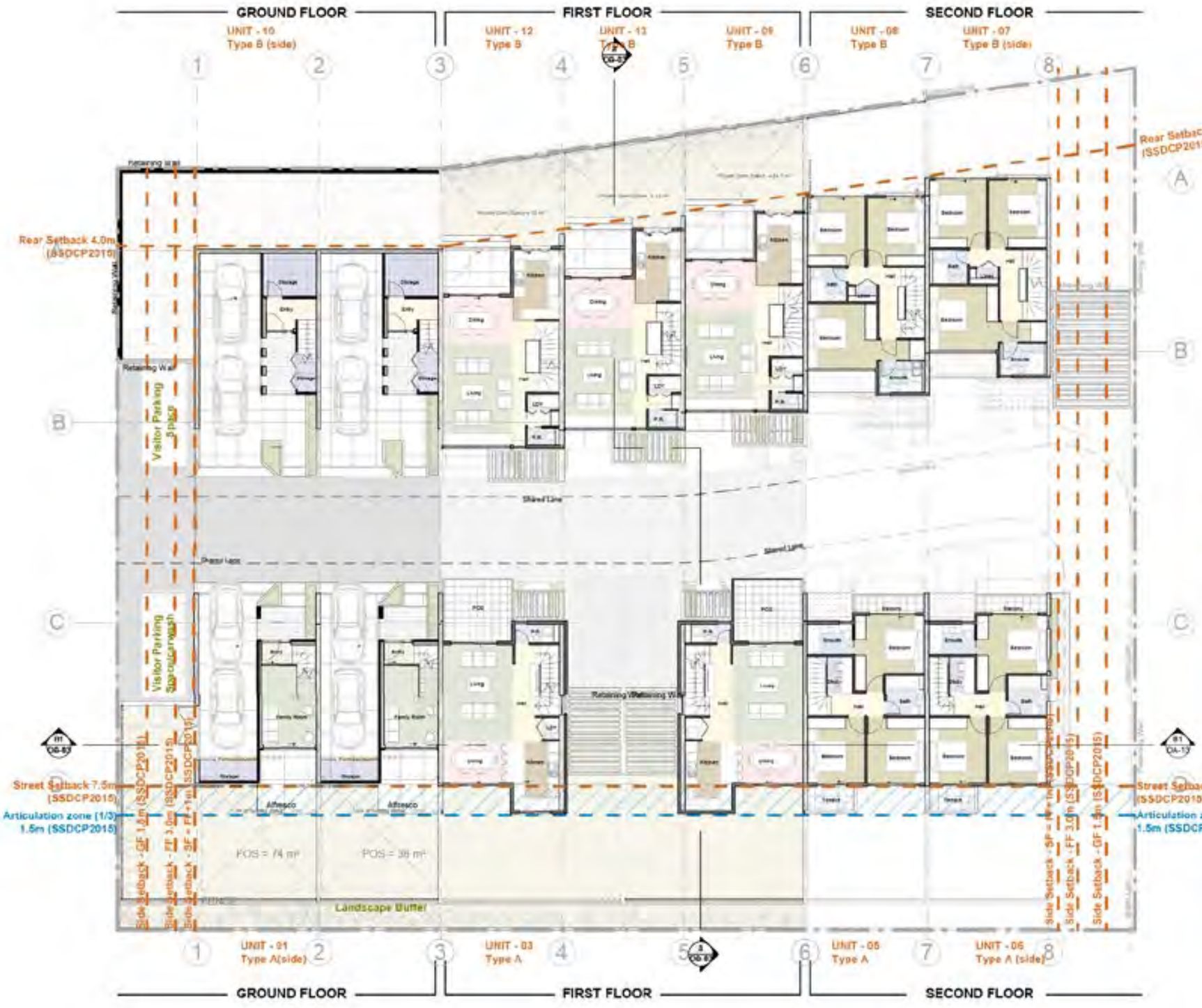
PROPOSED SITE PLAN Scale 1:500

MISSING MIDDLE
OPEN IDEAS COMPETITION

ENTRY CATEGORY
TERRACES

CONTEXT - A3

CO-01



The proposed development has been designed in response to a careful consideration of the opportunities and constraints of the site. The development seeks to achieve the objectives and satisfy the controls of the relevant SEPP's, LEP and DCP.

It comprises 13 dwellings with an individual GFA of approx. 117m² organized in 2 rows, divided by a shared lane for car and pedestrian access. Each dwelling hosts a carport for 2 cars in tandem, an entrance area and a storage space at the Ground Floor.

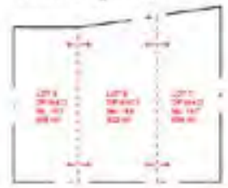
The livable areas organized in an open-space layout are hosted on the first floor, while the bedrooms are part of the second floor.

The development considers the general design principles from clause b.1.1 of Chapter 4 of the SSDCP2015 to ensure that it makes a positive contribution to the streetscape and natural features of the area, creates desirable and safe private and visitor spaces and a compatible scale and character with design excellence principles for aesthetics, functionality and for end-user satisfaction.

Visual and Acoustic Privacy principles have been taken into consideration by maximizing the distances between both building rows. This also contributes to the solar access for both livable areas and private open spaces to meet the required sunlight stated in SSDCP 2015.

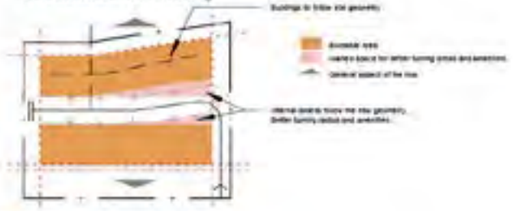
Design principles

1. Site amalgamation

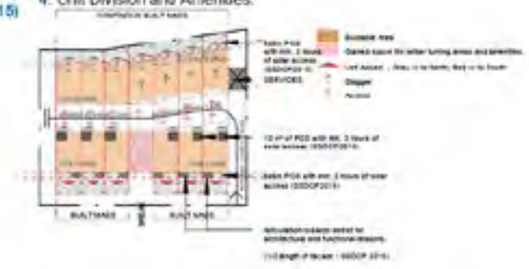


2. Constrains + buildable area

3. General Bulk & Massing



4. Unit Division and Amenities.



MISSING MIDDLE
OPEN IDEAS COMPETITION

ENTRY CATEGORY
TERRACES

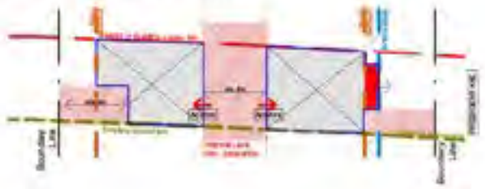
CONCEPT DESIGN 1 -
A3 CO-02

SECTION A

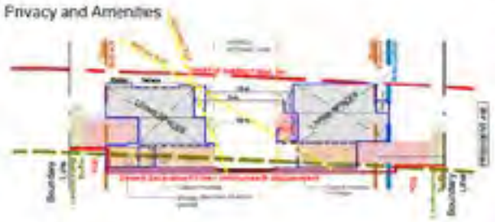
Contextual Street View

1. General Controls and Buildable Mass

2. Access and Private Open Space



3. Privacy and Amenities



For better streetscape and aesthetics, the southern row is marked by an articulation zone hosted at first floor which creates a pleasant combination of rhythm and repetition through the length of the street frontage. To comply with the maximum length of the facade stated in the SSDCP the southern row has a gap which hosts 2 visitor parking spaces and allows sunlight to private open spaces facing the street.

For a minimum impact on the terrain and to maximize the yield as well, the units are staggered on the terrain natural slope with minimum excavations for the southern row. The northern row has the northern part of the unit completely mostly under the natural ground line, which hosts storage spaces. Also, the Private Open Spaces that are following the northern units levels are balancing the amount of earth that is excavated using it for infills to even the ground for the courtyards. This way a minimum quantity of earth will be needed to be transported off-site.

SECTION B

Aerial View

1. General Controls and Buildable Mass

2. Bulk and Massing - building envelope test

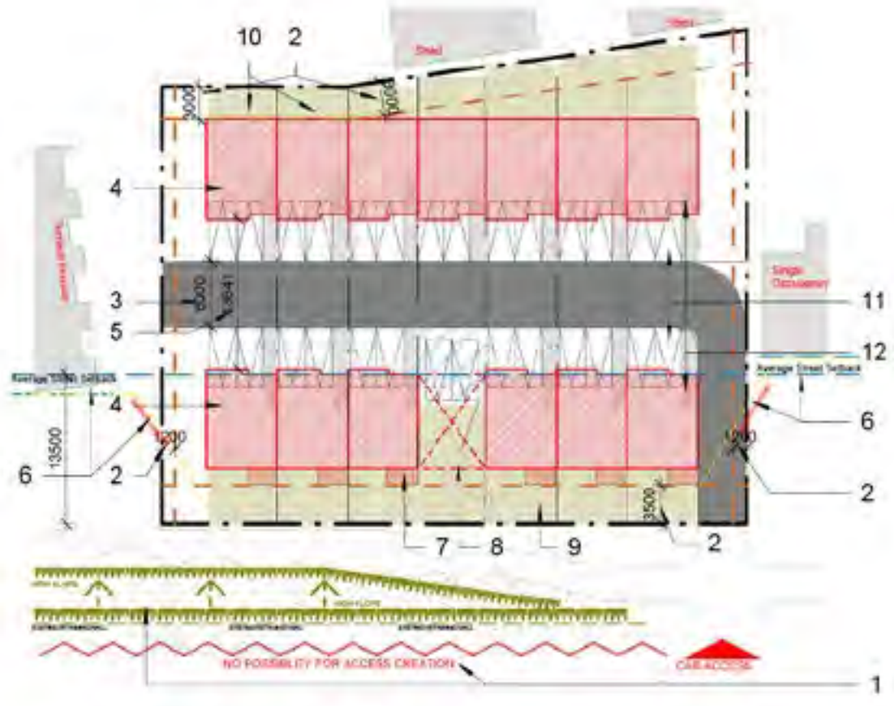
3. Relationships between building, terrain and street

Rear eye-level view

MISSING MIDDLE
OPEN IDEAS COMPETITION

ENTRY CATEGORY
TERRACES

CONCEPT DESIGN 2 -
A3 CO-03



Special site condition:
1. High slope and retaining wall allow just 1 entry point to the site area. This is the main challenge of the current site, together with a highly sloped terrain.

Applied Draft MDDG contols:

2. MDDG minimum setbacks
3. Minimum Internal Lane width
4. Built area to match site FSR (0.7:1)
5. Building separation.

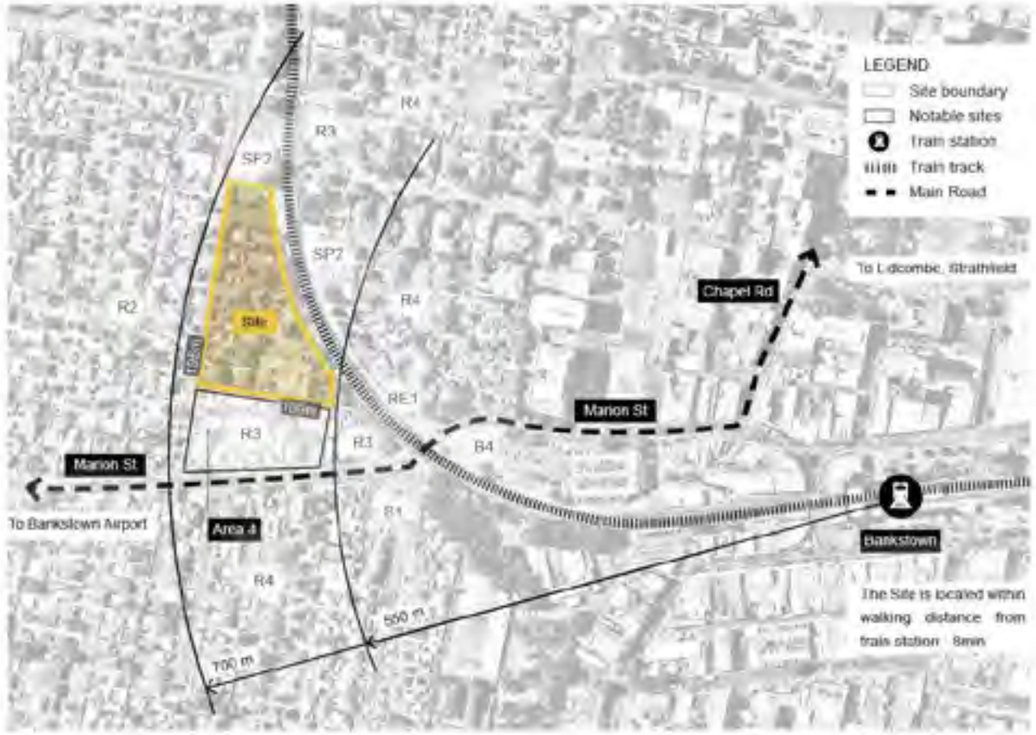
Results:

6. Setback contrast - the neighboring buildings have a greater setback. The contrast between the average setback and the minimum street setback is significant.
7. Articulations in building form break the monotony of the street facade.
8. Break in-built mass - allows sunlight access to front private open spaces, visitor parking spaces.
9. Street- facing Private open space - 7x3m. Southern Aspect, accessed from the ground floor.
10. Rear-facing POS - 7x3m. Northern aspect accessed from First floor.
11. Private parking spaces. Narrow courtyard with (12)
12. Narrow entrance path.

The MDDG requirements cannot be fully met without compromising the quality of the amenities. The street setback needs to be at the minimum allowed just to allow the access from the rear lane, and to maintain a functional interior layout.

The Proposed Version allows for a better landscape buffer towards the street (13) and much generous Private Open spaces for all instances. This is because the ground floor of all instances is transformed into a carport just with a closed entry space for access into the dwellings. By incorporating the cars within the building line, much more space is dedicated to amenities and the cars are also protected against the elements.

SITE LOCATION, CONTEXT



SCALE 1 : 2500

SITE LOCATION

The Site is located in Bankstown within walking distance from the Bankstown train station (8min). Currently, the site is used for detached housing and a place of worship that can be relocated to a more central location within the community.

The site is zoned R3 and its borders are defined by railway on the east, Brancourt Avenue on the west and Marion Street on the south, which connects to Bankstown Airport. The site has northern and southern halves determised by flood zoning. The southern half is defined in the LEP as AREA 4 (home-based, small-scale businesses on the fringe of the Bankstown CBD) and is excluded from this competition. The northern half is residential and contains a renewal of the flood zone as a part of landscape area within the proposed road reserve.

The Site in Bankstown location was chosen because of the transitional zoning pattern in the area between high density in the CBD to low density toward the west, which requires a focus on creating a smooth transition between zones (R2 in the west, R4 from the south and north and finally SP2 followed by R4 and B4 on the eastern side).

Another reason for picking the site is its irregular shape, which will challenge the proposal (to work with different types of spaces, ranging from fully-private to fully-public) and prove its application in nonstandard conditions. Moreover, the quality of existing public open space in the area is questionable and the possibility of local residents spending time in these spaces are limited. However, we can observe underestimated effects that public spaces have on the community not only in the chosen location, but also in many other places within the Middle Ring. This issue is the focus of this proposal and the design concept aims to resolve this issue.

LEP	
Zone:	R3 Medium Density Residential
Min. lot size:	450 m²
Max FSR:	0,75:1
Max. height:	10 m

SCALE 1 : 1250

CONCEPT DESIGN

Each dwelling is on 8.5m wide lot with 300m2 (min lot size is 450m2 – 60% is required for multi dwelling housing – min 270m2)

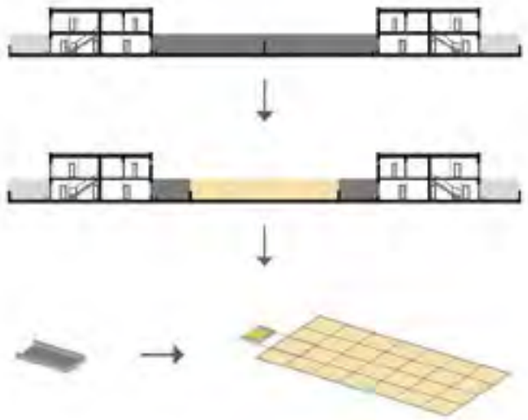
300 m²

Variety of open spaces is shown in Masterplan as follows:

Max. privacy → Semi-public

The typical subdivision pattern with front and rear garden is divided into 3 subareas – front garden, rear garden (smaller, but still spacious enough) and community space, which is created by merging the taken part of the lot of each terrace.

Community space



1. BBQ – BBQ area is located in the northern part of the site with existing greenery that will be extended to create a natural buffer from the noise pollution from the railway
2. Gym – The gym is separated from the internal street by large flower pots and consists of not only gym equipment but also facilities other recreational sports such as table tennis and petanque
3. Swimming pool – Swimming pool area is the largest of the designed community spaces with seating for individuals and groups
4. Gardening – Flower beds provide opportunities for gardening and adds an educational, sustainable and environmental aspect to the community
5. Bin areas – There are 2 designated bin areas for the community
6. Visitor parking – Parking spots for visitors are situated along the proposed road on the southern border of the site (short term parking can also be used as a 5.5m wide internal road)
7. Car-share – There are 3 allocated car-share parking spots for the community

CONCEPT DESIGN

The design intends to create a variety of open spaces (private, semi-private, semi-public and community spaces) by strategically positioning terraces.

Both levels of each terrace contain a small inner courtyard, which is designed to be completely visually private. The ground floor courtyard is followed by a private garden, from which the residents can access the shared community space.

The first level courtyard extends visually the living area (when folding door is fully open, the living area and courtyard become one living space with connection to the natural environment). Another semi-private area is the master bedroom balcony, which offers a visual connection with the shared community space below.

Ground floor		1. Floor	
1.01	Hall	2.01	Living Area
1.02	Garage	2.02	Storage room
1.03	Workspace	2.03	Bathroom
1.04	Corridor	2.04	Bedroom
1.05	WC	2.05	Bedroom
1.06	Laundry	2.06	Master bedroom
1.07	Kitchen, Living Area	2.07	Bathroom

SCALE 1 : 200

Garages are located behind the main building façade. An additional parking spot is created in front of the garage door. Due to the site's proximity to the train station and the provision of 3 car-share spots for the community, secondary cars are not anticipated.

Section

SCALE 1 : 200

TESTING THE DESIGN GUIDE

Testing of the Medium Density Design Guide is focused on the public space around terraces. The quality and variety of public open spaces are significant for the residents. These should be designed as carefully as the buildings themselves.

2 Storeys	GFA
1. Floor	90 m²
Ground floor	75 m²
TOTAL	165 m²

2 Storeys	GFA
2. Floor	55 m²
1. Floor	90 m²
Ground floor	75 m²
TOTAL	220 m²

The fact that developers nowadays endeavour to maximise the FSR is inevitable and therefore quality of open space depends on FSR. The ideal result is achieving the highest possible FSR for the developer, the while also creating a quality and functional environment for the architect and the actual client – the resident.

The max FSR is based on the highest possible GFA. Accordingly, to achieve max open spaces, the max amount of levels should be incorporated.

Site Area: 12 950 m² → Max FSR 1 : 0,75 → Max GFA: 9 712 m²

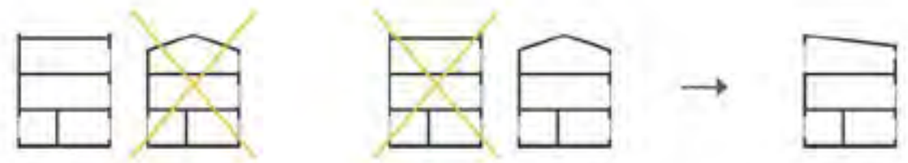
Option 1	GFA
2 - Storey Buildings **58** Dwellings (GFA = 9 570 m²)	

Option 2	GFA
3 - Storey Buildings **44** Dwellings (GFA = 9680)	

Note: This type of site does not allowed to reach the max. allowable floor space due to specific shape of site

CONCLUSION

As per EIE the limit for terraces' development are 2 storeys plus attic. However, Bankstown DCP 2015 allows 3 storeys with no attic. This results in the complying development being allowed to have only 2 storey terraces without extra space in the attic.



Bankstown DCP

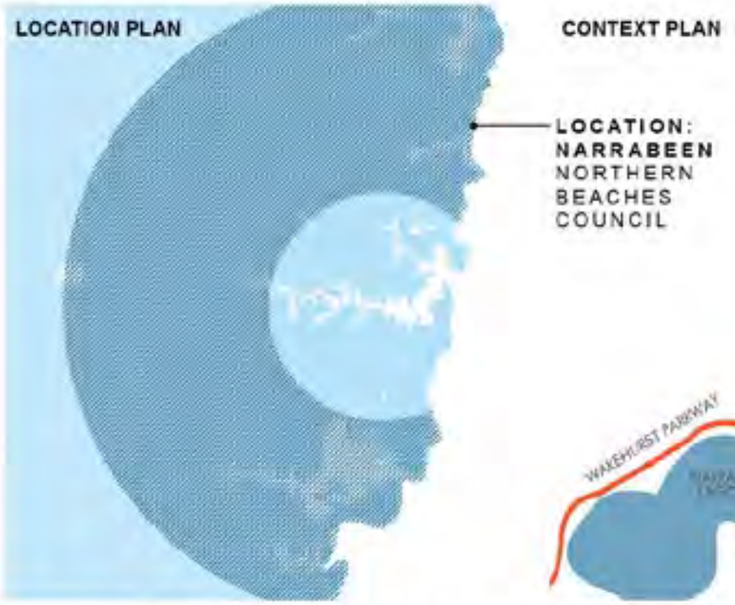
The storey limit for multi dwelling housing is 3 storeys. Council does not allow attics

EIE

The complying development under the code, 1 or 2 storey development, no attic is permitted

MDDG

The recommendation is to design the third level with a shed roof in order to fulfil the council restrictions and EIE requirements or find another solution in order to enable the construction of the maximum number of storeys within the council area (which allows a 3 storey development and does not allow attics) and provide a possibility for creation of a better living environment.



The subject site for our entry into the "Missing Middle" ideas competition is in Malcolm Street Narrabeen, in the Middle Ring location for the competition. It sits only one block from North Narrabeen beach and is in Northern Beaches Council (previously Warringah). It is at the very end of the R3 zoning – directly across Malcolm Street it returns to low density. As such, it was important that the design respected both settings. Transitional sites – sites between two zonings – should in our opinion be expected to respond to both sets of requirements, even if it formally needs to comply with only one.

It would be impossible to hide that this is actually a real, completed project. However, as a speculative development without a client, it was created with the very same intent behind the Missing Middle concept – to find unique and successful answers to increasing the density within our suburbs.

It is also the genus of a very deliberate "ideas competition" all of its own. The end result is four large-scale four-storey terraces from what was originally two weatherboard cottages and therefore we are calling it "4 from 2". This wasn't the only option explored, however. The project could also have been called "6 from 2" or even "8 from 2", as a 6 unit and 8 unit design was explored.

In the end, the best answer was 4 modern terraces. They are described as "modern" terraces, because they cleverly incorporate more lifestyle options than a traditional terrace and yet, like a traditional terrace, they are vertically stacked with your own front door and garden, divided from neighbours by party walls only.

This scheme obtained DA approval, however it would have been a much more desirable option for it to have been undertaken as a CDC – had that option been available. It is therefore a worthwhile exercise comparing this approved development against the proposed CDC numerical controls.

This submission provides something that you cannot get from an ideas competition – tested on-the-ground feedback. Since the development was completed in 2015, not only was it quickly sold but it has been really well received by the local community. It is a highly deceptive building – masking the increased density of the development in well landscaped surrounds and hiding its 4 storeys behind an attractive, articulated and responsible two-storey streetscape appearance.

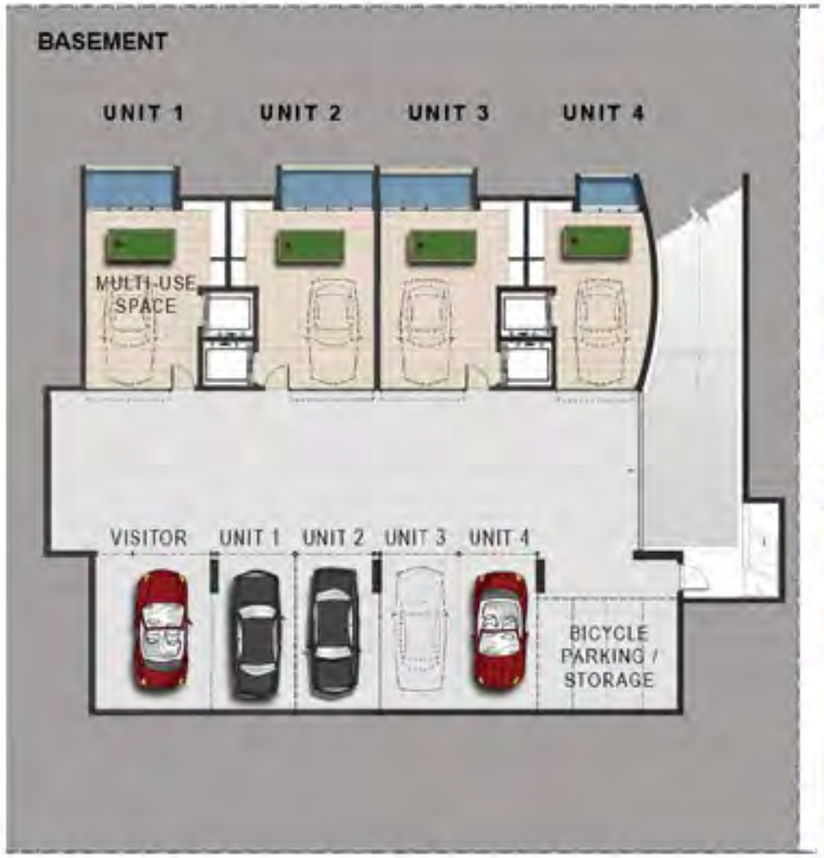
EXISTING SITE - 2 WEATHERBOARD COTTAGES

PHOTOMONTAGE - 4 MODERN TERRACES

4from2 Missing Middle

TURNING 2 SINGLE DWELLINGS INTO 4 LUXURY FAMILY SIZED TERRACE HOUSES WITH UNDERGROUND GARAGES

COMPLETED DEVELOPMENT



CONCEPT PLANS

The concept design plans show each of the four levels, but in reality it is the section (on the next page) that really demonstrates what the individual perception of the building is.

Each of the 4 units have their own street entry, entering into totally private four storey terraces with North and South aspects (the side units also having East and West outlooks).

The unique features of this development include the following:

- Four storeys in total, with underground garage and rooftop terraces, but presenting to the streetscape as only 2 storeys.
- Individual lifts (not shared) servicing your own internal garage space, bedroom level, living level and roof terrace.
- Shared underground garage, but with individual multi-purpose rooms – either garage space or rumpus/games rooms with north-facing windows.
- Individual and private roof terraces including kitchenettes and roof-top plunge pools.
- Individual front and rear gardens. The end unit benefits from a large scale, wide side garden.
- Internal flexibility to allow each unit to be either a 3-bed or a 2-bed unit

As an ideas model, the "4 from 2" design makes the specific decision to locate the bedrooms on the Ground Floor and Living Levels on the First Floor.

This is partly because of its context – gaining views of the ocean on the First Floor that cannot be seen from the Ground Floor – but also from a lifestyle perspective.

4from2

The "4 from 2" design creates vertically-separated living spaces with a variety of external living areas. In this development the gardens, while important and attractive buffer zones, are not the main entertaining space. Instead, the Living level has throw-open front windows, creating an indoor-outdoor feeling and also a small rear terrace. But only one floor above (acceseds by either stair or lift) is the roof terrace and plunge pool.

Without the "Missing Middle" the extreme options are the ¼ acre block with wrap-around garden; or the residential flat building totally disconnected to the natural world. Intelligent terraces, townhouses and other medium-density options provide the key to filling in the gap.

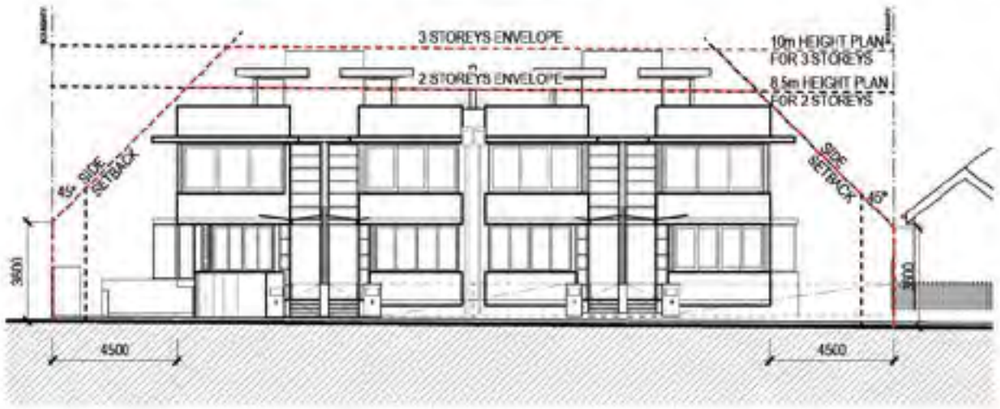
The end result of the "4 from 2" design is not the only option available from this modern terraces layout.

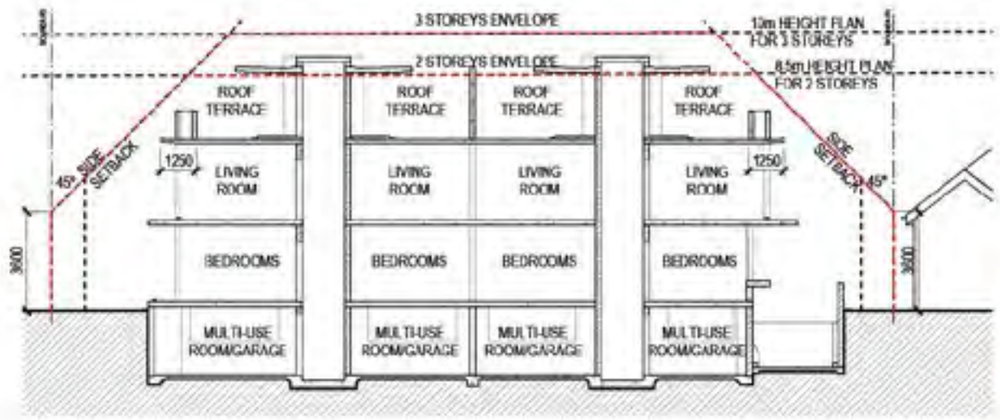
Other more cost-effective or code-compliant options can be applied to the same basic footprint, including:

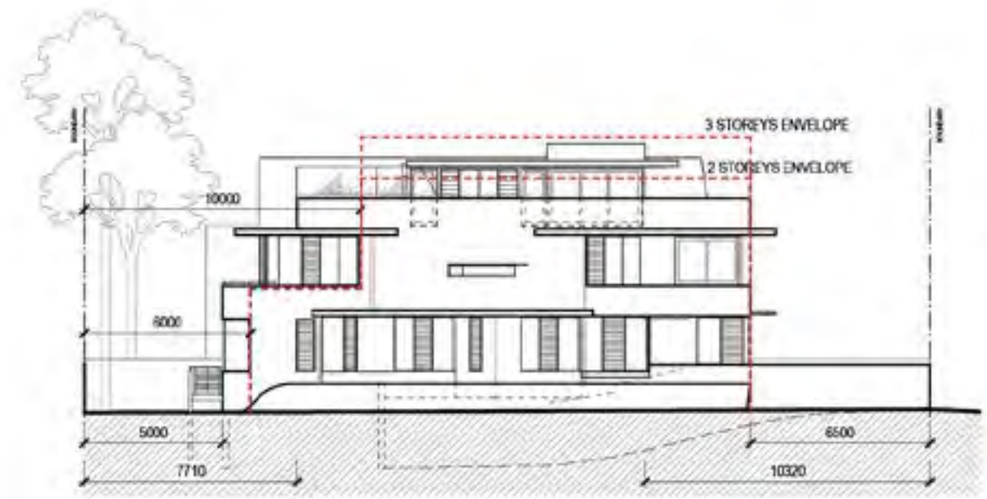
- No roof terraces option, with a flat roof and clerestory windows replacing them.
- No lift option. The lifts are included for a specific market – namely down-sizers and sea-changers but works even without these lifts
- Rear lane garages. This site did not have rear-lane access and as such the underground garages were critical. This did, however, turn the building over into different BCA classifications and the sites could not be Torrens titled. With rear-lane access and scope for rear garaging, removal of the excavation and the 4th storey would be a major benefit.

4from2

TESTING THE DESIGN GUIDE







The design has been run against the Principal Standards for the Missing Middle guide. The design complies with all the numerical controls, with the exception of the following.

1. No. of stories
The proposed design (terrace house with underground garage) is a 4-storey building, if the Roof Terrace is counted as a storey. In this design a small area (less than 5%) of internal floor is officially 4 storeys. The remainder of the roof terrace is external area. But roof terraces are a highly effective use of the building envelope.

Potentially the code could be adjusted for a small percentage of floor area to be allowed as a 4th floor, as long as it complies with the overall 10m height and building envelope control.

Possible amendment to code:

- Floor-space over 3 storeys is allowable if it complies with the height control of 10m, envelope control from all boundaries and is less than 5% of the GFA

2. Roof Terrace privacy / overlooking
Protection from overlooking from a roof terrace is a reason they are so rarely allowed. Under a CDC, this needs to be protected in a numerically provable way. In the "4 from 2" design, large side setbacks and planter-box edges reduced overlooking.
The following could be applied as a general rule of protection of neighbours on side boundaries

Possible amendment to code:

- The balustrade for all external areas facing side boundaries must be of solid/opaque material and comply with envelope control.
- All windows facing side boundaries must include privacy screens that restrict vision by 50% of the window area when view at 90° to the boundary.
- For external area over 3 storeys, the deck/terrace floor must be stepped back by 600mm min to the side and rear external face of the floor below, by way of planters or stepped in solid/opaque balustrades

3. Rear setback
The guide requires a 6m Ground Floor rear setback, increased to 10m when over 4.5m. The proposed design does not comply with this, with a rear setback of 5m for the Ground Floor and 7.7m for the First Floor. For the Development Application, this was justifiable on merit, as there is a public rear-lane and there was a row of substantial screening trees.

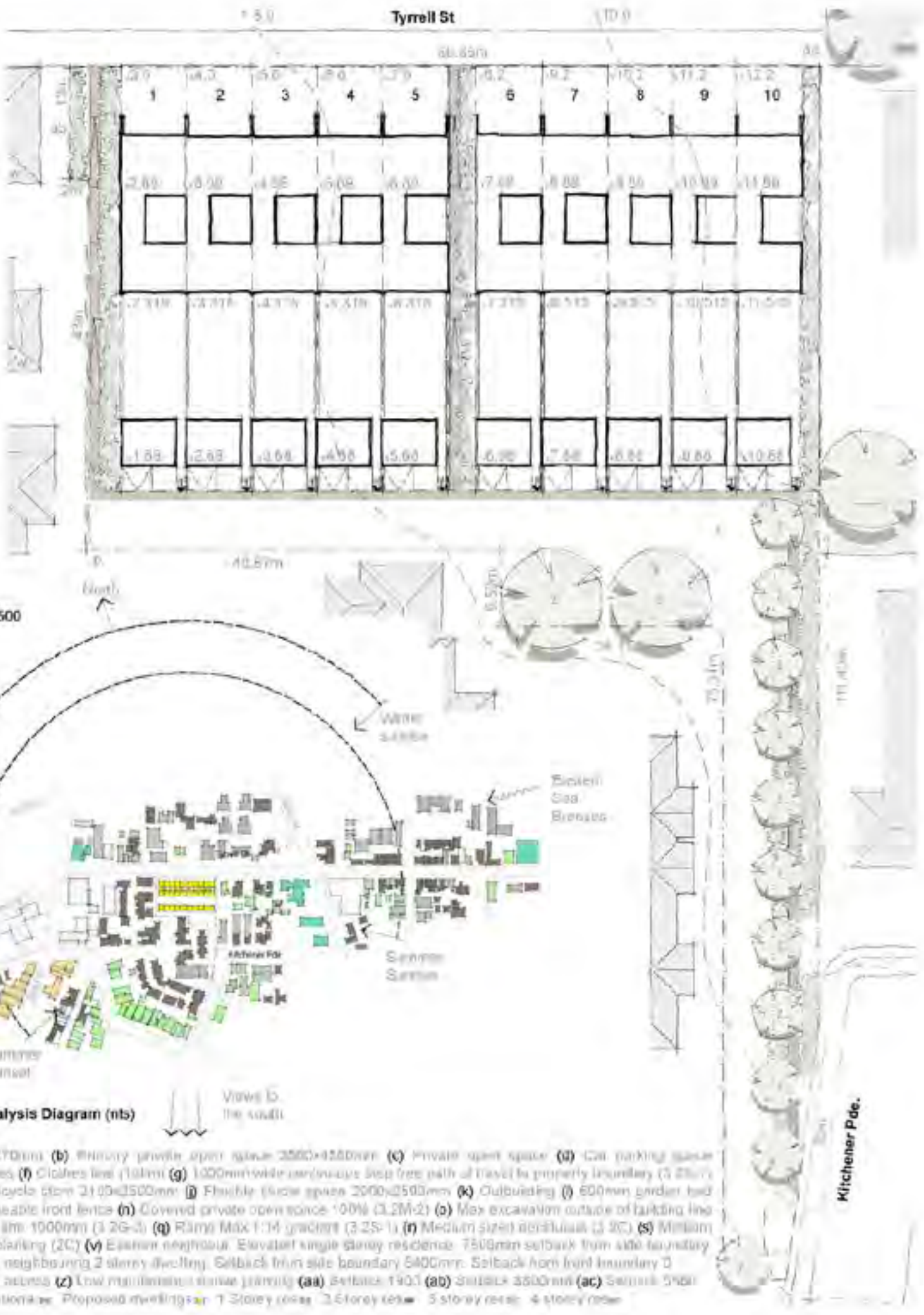
Under a CDC, merit based arguments are not possible, however it is reasonable to allow for the possibility of a secondary rear street access and reduce the required setback for those instances.

Possible amendment to code:

- Rear setback for rear boundaries *adjoining* public space can be reduced to 4.5m for the Ground Floor and 7m for other floors over 4.5m

4from2

Lot Site Plan 1:200



Drawing Legend (a) Primary road setback 4270mm (b) Primary private open space 2560x4550mm (c) Private open space (d) Car parking space 5200x5400mm (3.2E-1) (e) Bin store to council req (f) Clothes line (16lm) (g) 1000mm wide continuous step free path of travel to property boundary (3.2B-1) (h) Covered entry 1300x2280mm (3.2E-1) (i) Bicycle store 2100x2500mm (j) Flexible living space 2000x2500mm (k) Outbuilding (l) 600mm garden bed (3.2E-3 (m) max 1200mm high (m) Visually permeable front fence (n) Covered private open space 100% (3.2M-2) (o) Max excavation outside of building line 1000mm (3.2G-3) (p) Max fill outside of building line 1000mm (3.2G-3) (q) Ramp Max 1:14 gradient (3.2S-1) (r) Medium sized deciduous (3.2C) (s) Medium sized tree (3.2C) (t) Small trees (2C) (u) Shrub planting (2C) (v) Eastern neighbour. Elevated single storey residence. 7500mm setback from side boundary 5000m setback from front boundary (w) Western neighbouring 2 storey dwelling. Setback from side boundary 5400mm. Setback from front boundary 0 (x) Pedestrian access in AS 2890.1 (y) Pedestrian access (z) Low maintenance native planting (aa) Setback 1400 (ab) Setback 3500mm (ac) Setback 5500 Municipal Civic Commercial Retail Educational Proposed dwelling 1 Storey range 2 Storey range 3 storey range 4 storey range

Understanding of the brief

The NSW Department of Planning and Environment has developed a draft Medium Density Design Guide to provide a consistent set of design standards for low-rise medium density housing in NSW. The aim of the guide is to encourage development outcomes that will have a high level of design quality, sustainability and amenity that will contribute positively to the public domain, and work cohesively with the character of the neighborhood. The brief is to provide a concept design that exemplifies design excellence that could be carried out via the complying development pathway. The design must comply with the Principal Controls in Part 3 of the Guide and the Explanation of Intended Effects, and clearly respond to the Design Quality Principles noted on page 168 of the Guide. The brief is also to provide feedback on the guide, and challenge one or more of the controls under the complying development pathway.

Site Selection

The site is located in the suburb of The Hill, approximately 3 km from the coastline of Newcastle NSW. There are two street frontages, Tyrrell St to the north, and Kitchener Parade to the south. The site has steep topography and slopes in two directions, approximately an 8° gradient along the primary Tyrrell St frontage, and a 3° degree gradient from north to south, and dropping down further towards Kitchener parade. The site was selected to test the guides' ability to cope with a steeply sloping site, particularly while balancing the requirements of 3.2S (Universal Design), 3.2G-3.33 (fill outside of the building footprint) and 3.2G-3.32 (maximum excavation within 1m of a boundary line). Part 1 of the Livable Housing Guide (Silver Level) requires a safe, step free, continuous path of travel from the front boundary or car parking space on an allotment, because the topography of the front path along Tyrrell St is so steep, it was considered prudent to provide access from both entry points to increase accessibility to the site. Because the site frontage is one of the steepest in Newcastle, there was opportunity to test the guide on a precinct level, given that the levels along the frontage would be worst-case scenario. The site was also chosen to test the guide in terms of providing solar access to habitable rooms on a deep, south sloping site with a northern primary street frontage. Also factored into the site selection strategy was the ability to provide vehicular access to the site from a secondary street.

Context description

The site borders The Hill Heritage Conservation Area. The Newcastle City Council describes The Hill as 'the historic heart of Newcastle', with large Moreton Bay Figs lining steeply sloping streets containing a range of historically significant residential types including 1 & 2 storey detached dwellings, attached two and three storey Victorian Terraces, and four and five storey apartments. The Darby Street shopping district, local schools, public transport, churches, parks and the civic precinct are within 5 minutes walking distance, and the Hunter St Mall and Newcastle & Bar beach are a 10-minute walk away.

Roof Garden 1:200

Section 1 1:200

Drawing Legend (a) Max permissible height allowable from existing ground level line (b) 10m height limit for enclosed stair (c) Enclosed stairs to roof garden (d) Pavers/tiles (e) Planting to roof or stair (f) Privacy screen (g) Continuous softened balustrade (h) Courtyard to 1st level

It's proposed to introduce an exception to the 9 metre height limit, and to allow enclosed stairs for roof garden access to have a 10m height limit, providing they still fit within the required site setbacks.Each dwelling has access to a private roof garden. The roof gardens would require maintenance on a regular basis to ensure the longevity of the plants, therefore access needs to be easy and safe for the inhabitants. The roof gardens are currently accessed via an uncovered stair within the vertical circulation zone of each dwelling. The design would have been improved by providing an enclosed stair to access the roof garden. This improvement wasn't achievable on all lots due to Principal Control 3.2A - 9m height limit. Enclosing the stair would improve waterproofing outcomes and minimise the risk of flooding of the lower landing during a deluge. The battened balustrade at ground floor level could be continued up to the roof level, creating a strong visual connection between the levels, while opening up the corridor to the first floor level.

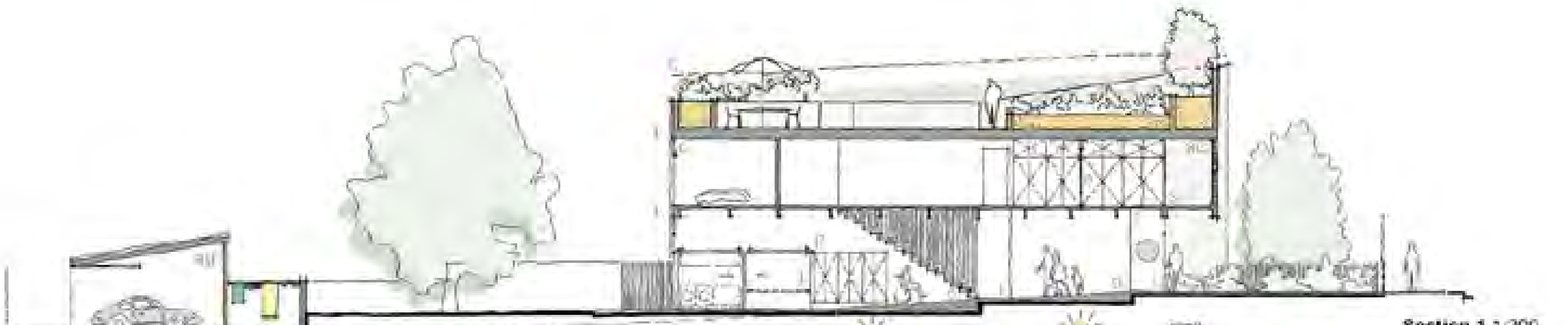
The maximum building height of the dwellings across the site was informed by 3 main factors:

- Stepping of the floor levels to follow the topography of the site (3.2G-3)
- Generous ceiling heights at ground level to increase sunlight penetration into the southern section of the floor plate and to cope with changes in floor level (3.2I)
- The step free continuous path of travel, enabling the ground floor to be enjoyed by a range of users (3.2E)

The proposed concept design is a Strata Titled Multi Dwelling housing development comprising of two sets of five attached terraces with a primary frontage to Tyrrell St. Vehicular access to the site is from Kitchener Parade via a driveway that services each lot from the south. Each row of terraces is separated by a 3m space (32 H-1.35), providing access for bikes, pedestrians and bins on collection day. Basement car parking was not used to avoid the expense of lifts for accessibility.

Each lot contains a 3 bedroom, double aspect dwelling with the living spaces focused around a central courtyard (2L 10). The central courtyard allows natural light to penetrate deep into the dwelling during winter, enables cross ventilation, and extends the living spaces. A mid height wall forms the backbone of the ground floor level, delineating an obvious path of circulation, while maintaining a feeling of spaciousness and allowing living spaces to be easily furnished. A network of ramps creates a clear path of travel from the front boundary line to the car parking/ bikes storage/ flexible studio space, enabling the ground floor of the dwelling and site to be enjoyed by a range of users with varying abilities and needs. The ramps connect the living and the kitchen/ dining spaces, each with sunken floor levels so that sunlight can reach further into the dwellings, and respond deftly to the topography of the site (2G 8).

Missing Middle Concept Design



Section 1 1:200

Section 2 1:200

Ground 1:200

First 1:200

Roof Garden 1:200

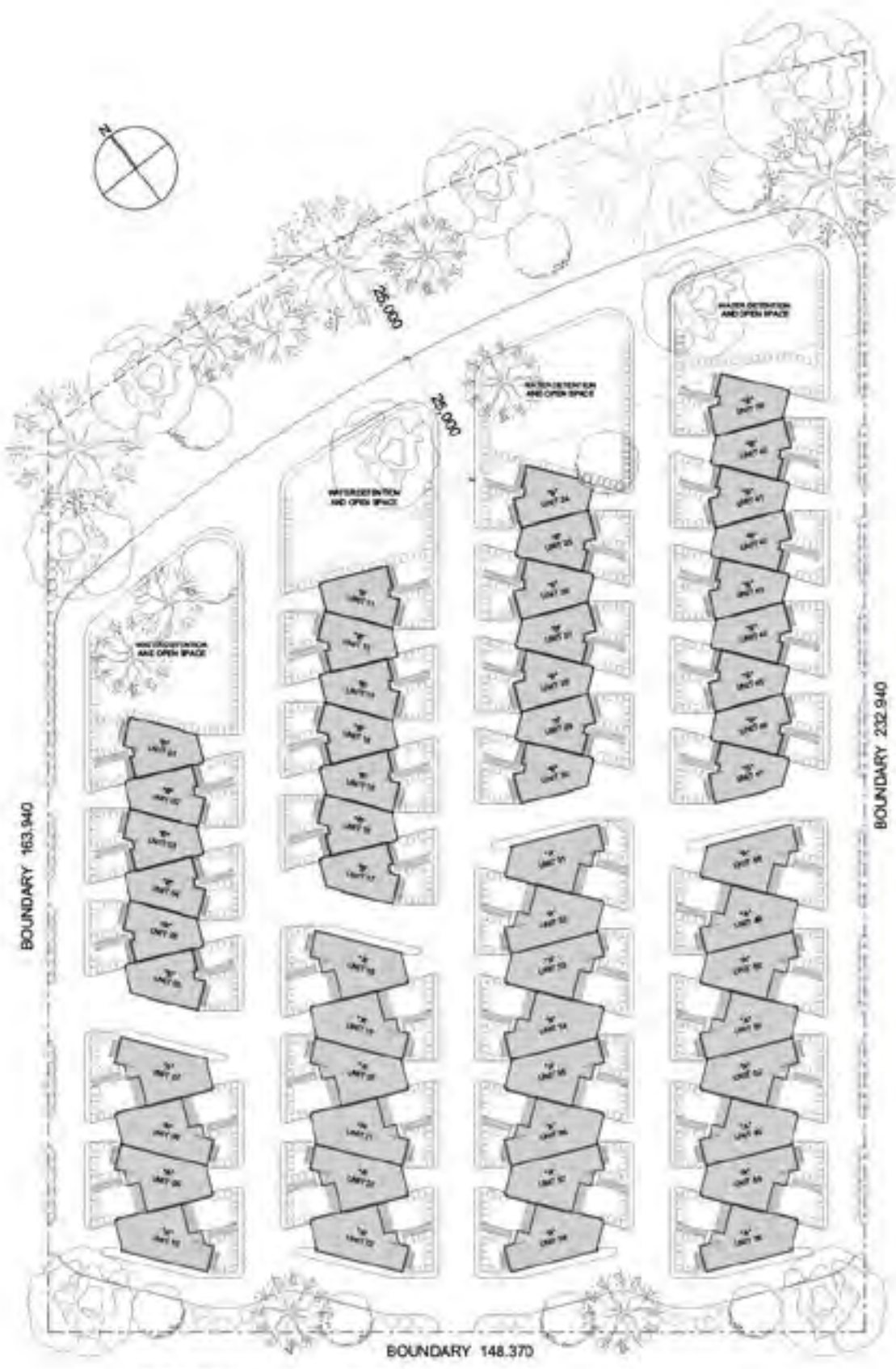
Section 3 1:200

Drawing Legend **(a)** Living [illegible] **(b)** Kitchen/ Dining [illegible] **(c)** Bed 1 [illegible] **(d)** Bed 2 [illegible] **(e)** Bed 3 [illegible] **(f)** Entry [illegible] **(g)** En suite [illegible] **(h)** Bathroom [illegible] **(i)** Laundry [illegible] **(j)** [illegible] **(k)** Internal courtyard [illegible] **(l)** [illegible] **(m)** [illegible] **(n)** Built-in seating **(o)** Ramp [illegible] **(p)** Storage [illegible] **(q)** [illegible] **(r)** [illegible] **(s)** Upper level balcony overlooking public domain [illegible] **(t)** Floor Structure [illegible] **(u)** Building [illegible] **(v)** Vertical Screen [illegible] **(w)** Accessible WC [illegible] **(x)** Small trees (2C) **(y)** Shrub planting (2C) **(z)** Paved area **(aa)** [illegible] **(ab)** [illegible] between terrace rows **(ac)** Breeze wall in brickwork **(ad)** Privacy screen **(ae)** Privacy screen **(af)** Studio **(ag)** Car park **(ah)** Bike store

All rooms excluding the ground level WC have access to a window in an external wall and all habitable rooms have windows in external walls that do not border a courtyard (2L.11). Appropriately sized eave overhangs and horizontal and vertical screening were integrated into the design, ensuring that windows are protected from summer sun, and winter sun is welcomed. A void was introduced over the dining space to allow direct sunlight into the kitchen in winter via the courtyard windows. The living and the primary private open spaces are positioned to the north of the dwellings in order to receive optimal access to northern light (2G.4), and so that they would engage directly with the streetscape, rather that hide away from it. Reminiscent of the traditional front porch, inhabitants would be able to sit and watch the world go by and be able to interact easily with neighbours. If more privacy is required, private open space is also available in the courtyard, the garden to the south, or within the roof top garden. Each dwelling has a roof top garden (2C.20) with intensive garden beds, giving the inhabitants of this south sloping site the opportunity to maintain successful gardens with a high level of solar access. Screens to 1400mm in combination with strategically positioned garden beds provide privacy between dwellings, increasing the amenity of the space.

The Missing Middle Concept Design

Multi Dwelling Terraces @ 61 Tyrrell St, The Hill **4**



SITE PLAN 1:1000

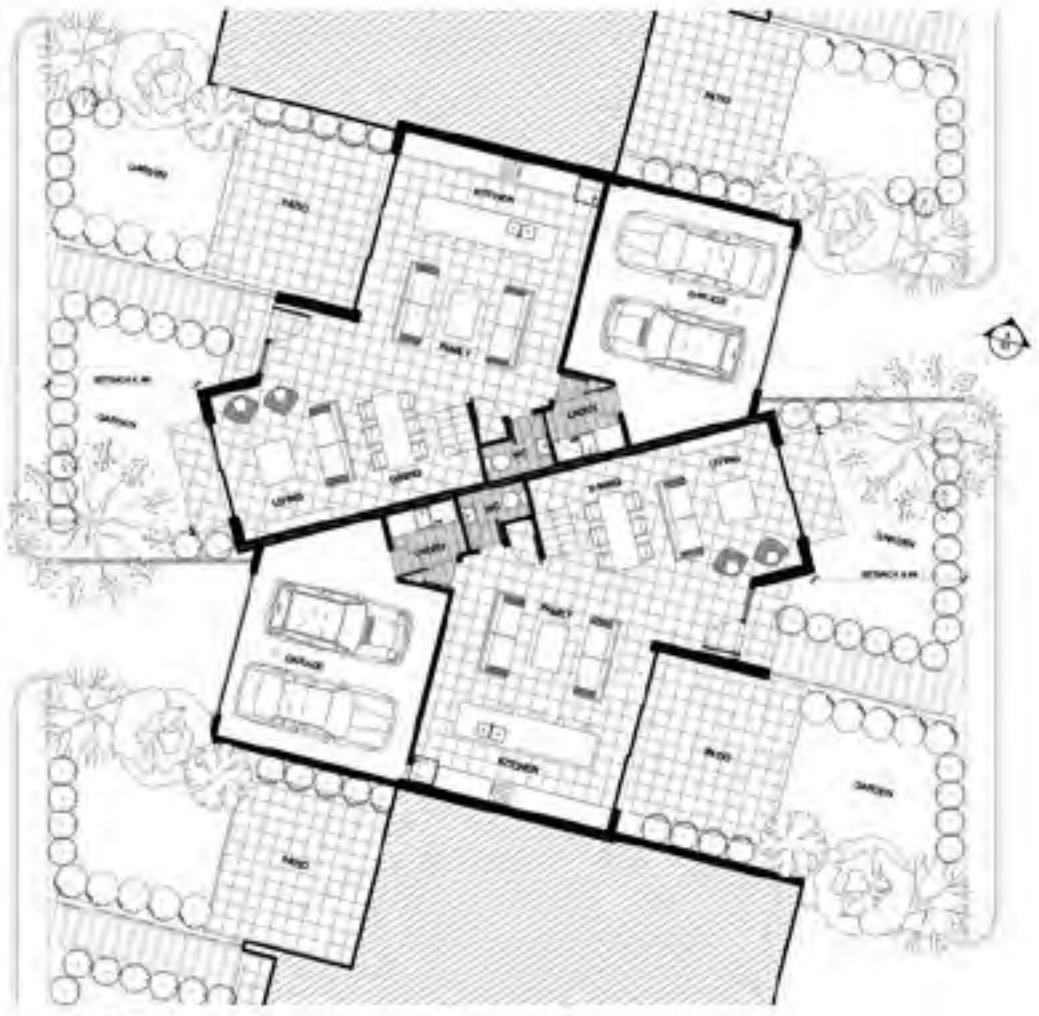
FAN TERRACE HOUSES

DEPT OF PLANNING - MISSING MIDDLE COMPETITION

18 Macpherson Street Warriewood December 2016

DWG NO: 01

UNIT TYPE "A"
SECTION A 1:200



UNIT TYPE "A"
GROUND FLOOR PLAN. 1:200

UNIT TYPE "A"
FIRST FLOOR PLAN. 1:200

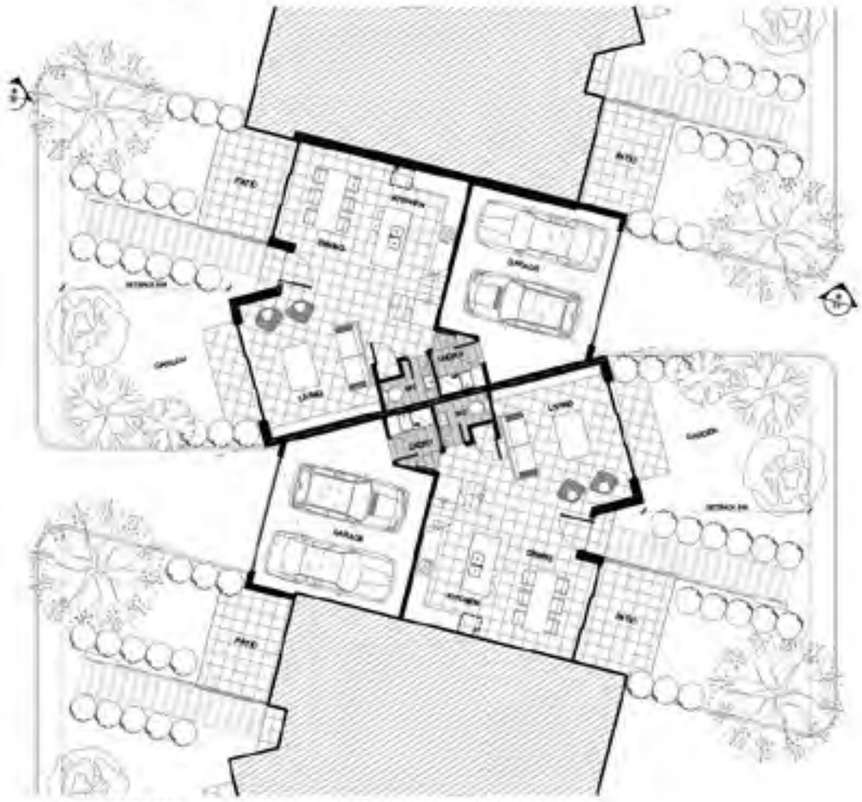
FAN TERRACE HOUSES

DEPT OF PLANNING - MISSING MIDDLE COMPETITION

18 Macpherson Street Warriewood December 2016

DWG NO: 02

UNIT TYPE "B"
SECTION A. 1:200



UNIT TYPE "B"
GROUND FLOOR PLAN. 1:200

UNIT TYPE "B"
FIRST FLOOR PLAN. 1:200

FAN TERRACE HOUSES

DEPT OF PLANNING - MISSING MIDDLE COMPETITION

18 Macpherson Street Warriewood December 2016

DWG NO: 03

CHALLENGE TO THE DRAFT COMPLYING DEVELOPMENT PATHWAY

All complying developments should have the direct input from a Registered Architect

The traditional idea of backyards has been removed by flipping each alternate terrace plan. See enclosed floor plans.
Roads can be reduced in width where there is no driveway to vary the streetscape and follow the contour.

The fan shape of the individual terraces provides for a minimum width frontage at the garages and a maximum width for the living areas and garden.

Living areas are separated by drive ways and garages. This will ensure better privacy between terraces.

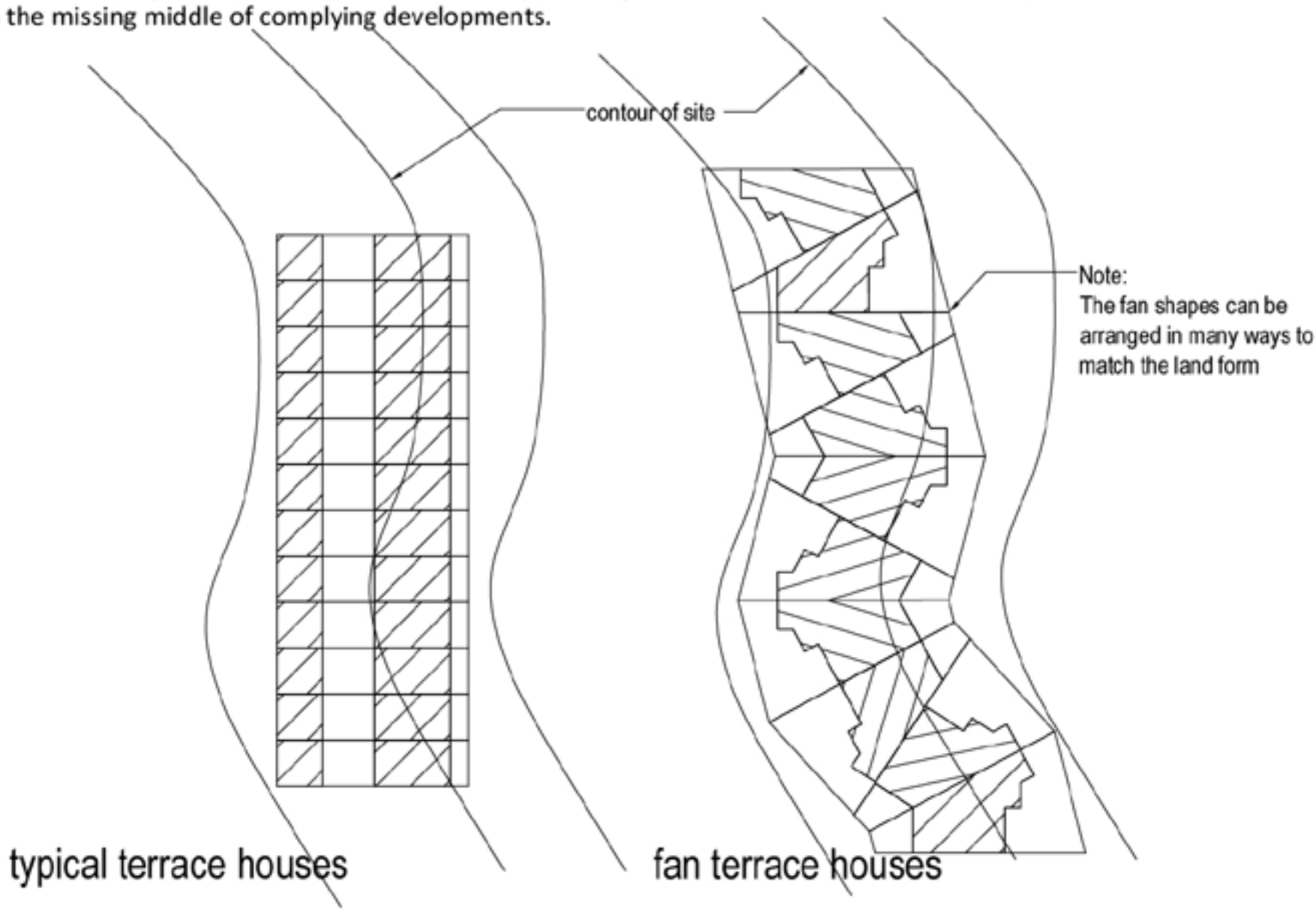
The setback at the front is from the furthest projection (see table on page 5). This will not comply with the typical street setback in complying developments. However, where the terraces are within a self-contained development setback conditions should be varied so there is adequate open space but not a front setback like the public road frontage. The recessed elevations make the need for a strict setback regime unnecessary.

Both the terrace designs are 2 storey. House plans (plus garage) designs are for Type A 193 & Type B 144 m2. See page 5 for the description and advantages of the fan configuration.

The site area is in the region of Type A 260 & Type B 215 m2. Terrace housing requires a reasonably large block of land in order to establish a community.

The orientation of terrace houses in this scheme is such that they receive morning or afternoon sun. Terraces will have water tanks, solar panels and skylights.

The fan shape gives a practical and aesthetically pleasing alternative to the terrace box and provides choice in the missing middle of complying developments.



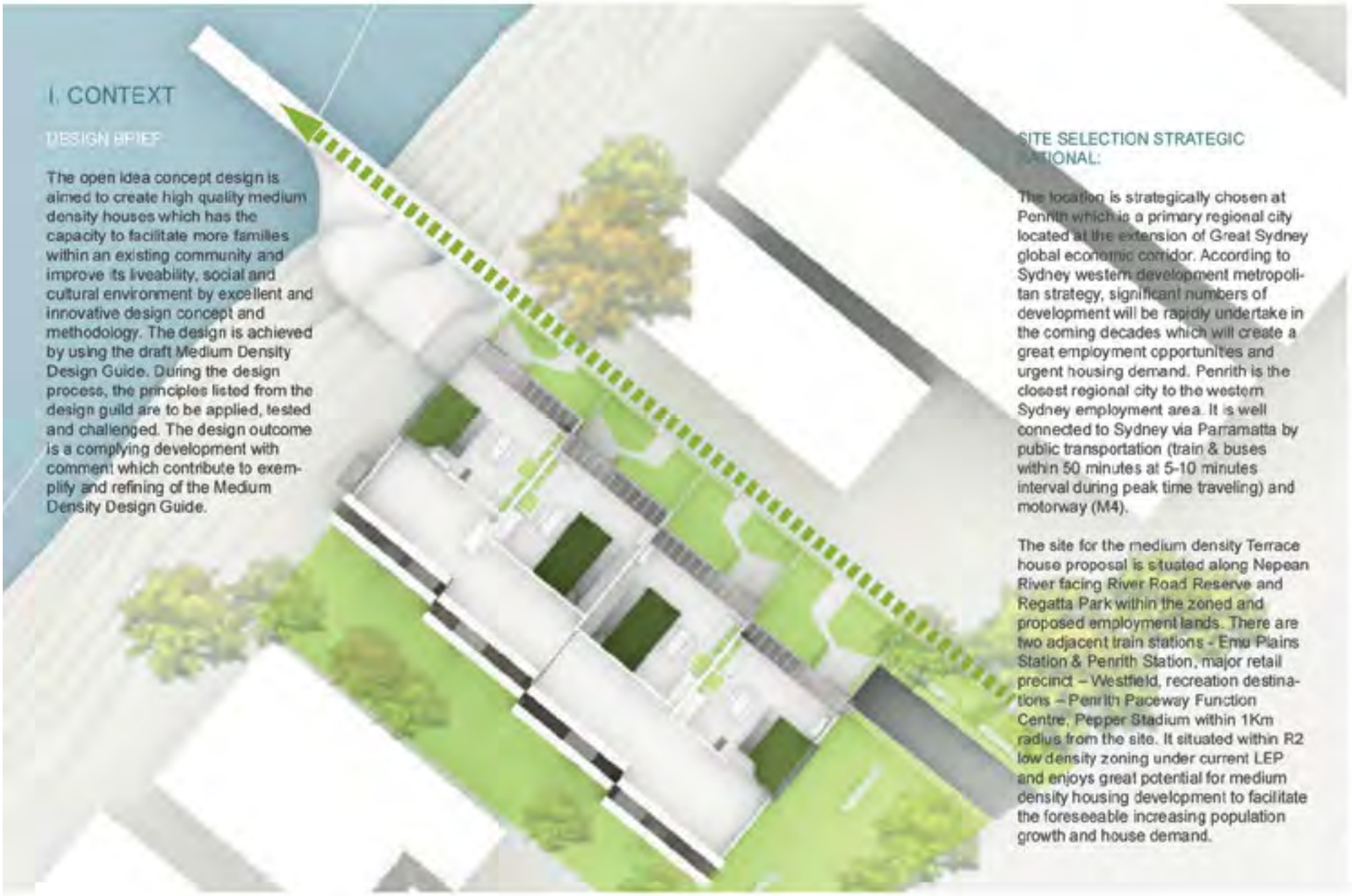
FAN TERRACE HOUSES

DEPT OF PLANNING - MISSING MIDDLE COMPETITION
18 Macpherson Street Warriewood December 2016
DWG NO: 04

I. CONTEXT

DESIGN BRIEF

The open idea concept design is aimed to create high quality medium density houses which has the capacity to facilitate more families within an existing community and improve its liveability, social and cultural environment by excellent and innovative design concept and methodology. The design is achieved by using the draft Medium Density Design Guide. During the design process, the principles listed from the design guild are to be applied, tested and challenged. The design outcome is a complying development with comment which contribute to exemplify and refining of the Medium Density Design Guide.



SITE SELECTION STRATEGIC RATIONAL:

The location is strategically chosen at Penrith which is a primary regional city located at the extension of Great Sydney global economic corridor. According to Sydney western development metropolitan strategy, significant numbers of development will be rapidly undertake in the coming decades which will create a great employment opportunities and urgent housing demand. Penrith is the closest regional city to the western Sydney employment area. It is well connected to Sydney via Parramatta by public transportation (train & buses within 50 minutes at 5-10 minutes interval during peak time traveling) and motorway (M4).

The site for the medium density Terrace house proposal is situated along Nepean River facing River Road Reserve and Regatta Park within the zoned and proposed employment lands. There are two adjacent train stations - Emu Plains Station & Penrith Station, major retail precinct – Westfield, recreation destinations – Penrith Paceway Function Centre, Pepper Stadium within 1Km radius from the site. It situated within R2 low density zoning under current LEP and enjoys great potential for medium density housing development to facilitate the foreseeable increasing population growth and house demand.

STRATEGIC VISION & CONTEXT ANALYSIS:

Sydney Metropolitan Strategy:
Western development & Global Economic Corridor

Connectivity:
Train & Bus routes, CBD Linkage

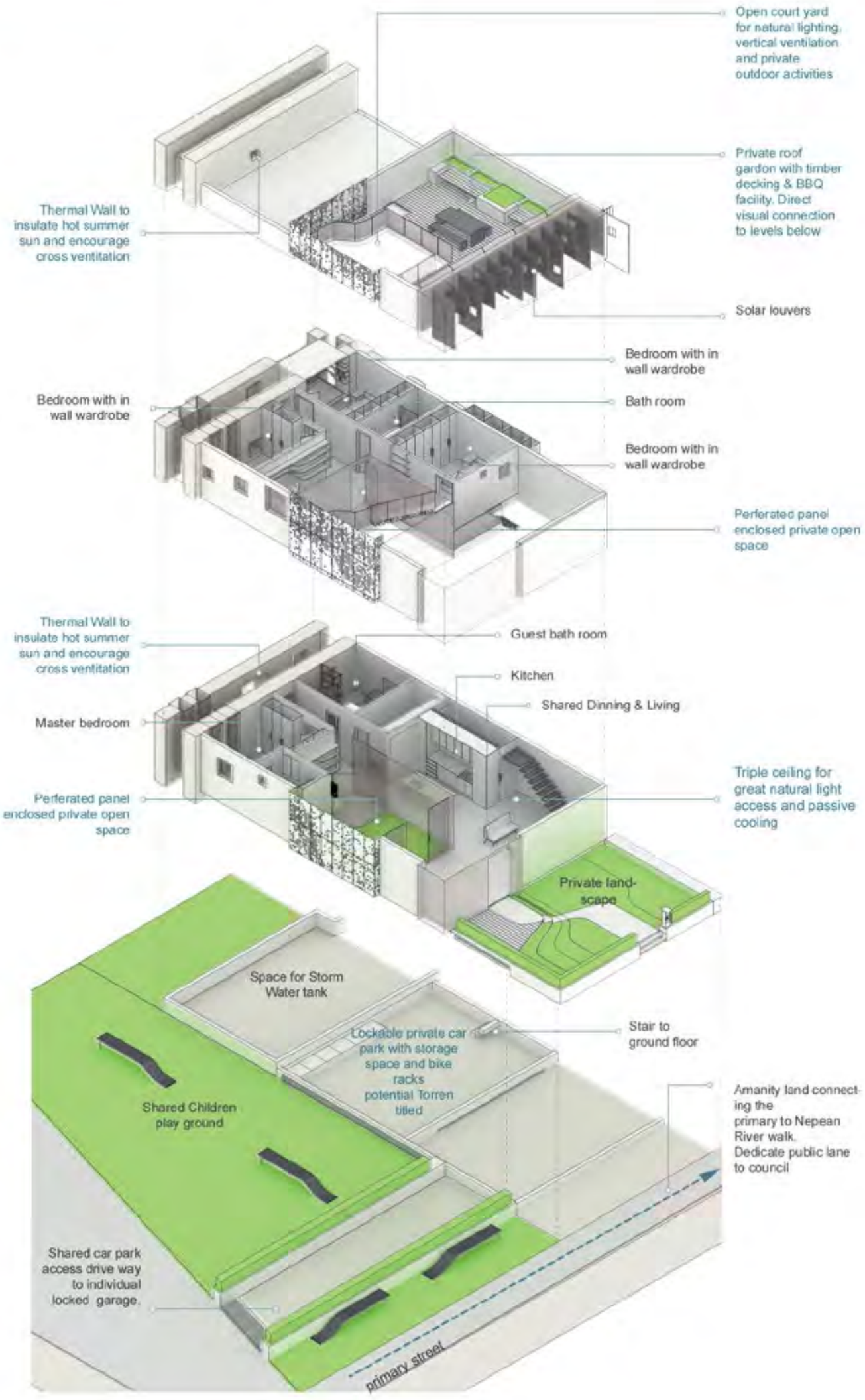
Employment zone:

Public service and amanity:

Mixed zoning context

Context Analysis Diagram:

II. CONCEPT DESIGN:



II. CONCEPT DESIGN:

Roof Plan
1:200 scale

Section
1:200 scale

Level 1 Floor Plan
1:200 scale

Ground Floor Plan
1:200 scale

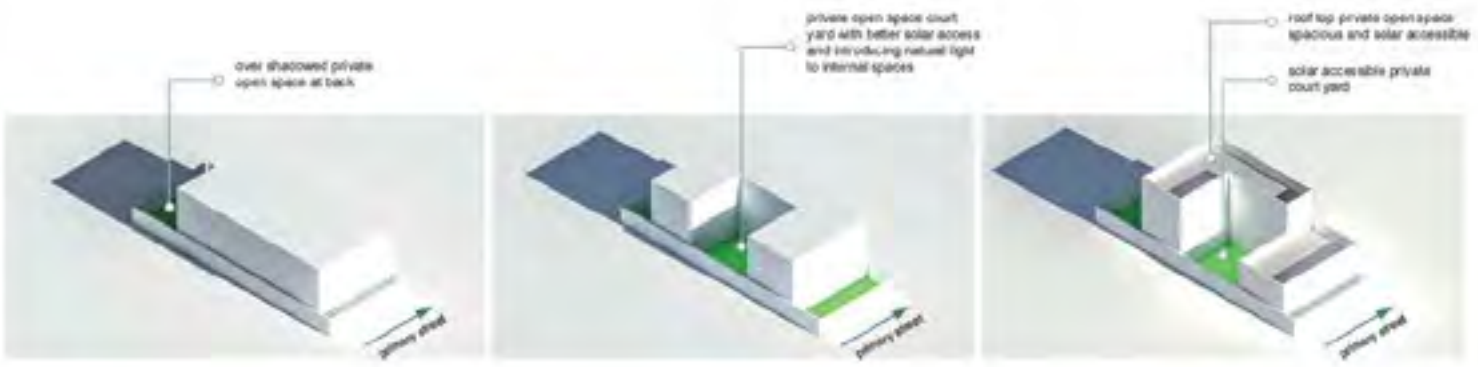
III. TERRACE HOUSE DESIGN GUIDE TESTING:

Key characteristic:

Design Guide:
"The private open space is generally located at or near ground level."

Challenge:
The private open space is to be located at area where visual and acoustic privacy is protected.

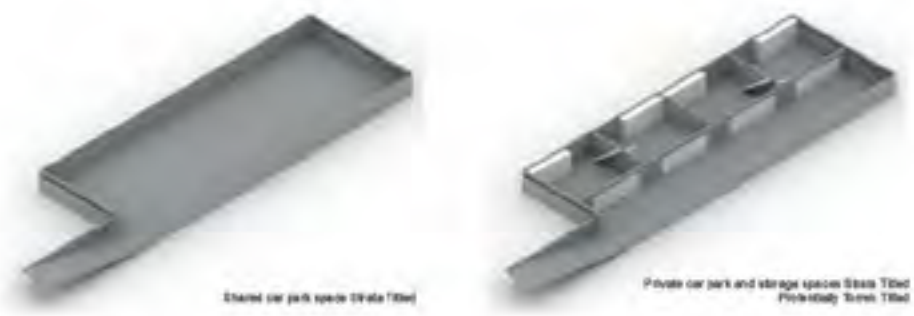
Reason: Due to building orientation, there are occasions where the private open space is over shadowed by the building during most of time of a day. The suggestion above enables flexible quality private open space placement and design potential.



Strata titled development:

Design Guide:
" Dwellings are strata titled if they have basement car parking."

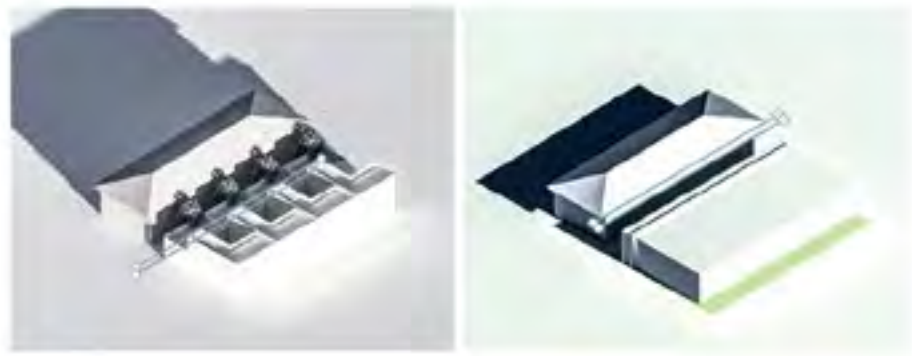
Challenge:
Terrace with a basement car park can still potentially be Torren titled when each dwelling has a shared access drive way and individual lockable garage for car parking and storage.



Landscaped Area:

Design Guide:
"At least 1 medium sized tree with a minimum mature height
of 8m is to be provided to the rear of the dwelling."

Challenge:
Planting mature trees to the rear of a north facing dwelling may block natural lighting and solar access to the adjacent dwelling. With 2 dwellings at immediate conjunction to each other, shading or thermal mass function as ESD solutions.



ONE
CONTEXT

BRIEF & THE SITE

Why is 64-68 Princes Highway, Sylvania a great place to live?
- Less than 20km to the city.
- Two bus stops within 400m.
- 500m to a shopping centre.
- 250m to a school.
- 635m to a childcare centre.
- North facing.
- Great views across Princes Highway to the Georges River.

Why did we choose 64-68 Princes Highway, Sylvania as a site?
- R3 and R4 zoning already allows for apartments which means realistically developers will seek to maximize the potential value and so terrace houses. This site is zoned R2 low density residential in Sutherland Shire so Multi Dwelling Housing is permitted and the *Draft Medium Density Design Guide* will open up more development opportunities.
- There are 60,000 cars and trucks a day passing the site on the Princes Highway, a classified road.
- There is a conflict between the search for views and northern sun and the road noise.
- Objective 3.2E-2 14 permits the use of acoustic fencing and Objective 3.2I-239 permits borrowed daylight in a habitable room that fronts a classified road.
- These two provisions permit a strong response to the problems of living adjacent to a busy road and triggered the proposal that uses the terrace type, on classified roads, in low density areas that are not adjacent to town centres.
- The current solution that zones major roads as high density residential is a poor solution for the occupants as SEPP65 and the economic costs of requiring more than three apartments per core force living rooms and bedrooms to front the roadway without adequate noise protection.
- We see an opportunity to explore a more appropriate building type for busy roads, by exploring the options provided in the *Draft Medium Density Design Guide*. In particular, terraces.
- We think that terraces provide a realistic option for increasing density on classified roads while still improving the quality of living conditions.

Who are the clients and what was their brief?
- The three long time owners united to develop the proposal themselves in order to stay where they are living but generate a nest egg ready for retirement. They love the area and will each keep a house and sell the rest.
- The brief was to develop the site to the maximum permissible envelope and to keep the construction costs under control. A basement car park was economically unfeasible.
- Strata title was chosen as the individual dwellings do not meet the minimum Torrens title lot size requirements. Strata title also allows for a common driveway and shared open space.
- The last concern was that all the houses had some character...

DEVELOPMENT TYPES

▲ Low Density - Detached Dwellings:

+ front garden landscaping potential

- front garden is often neglected
- road is noisy so rooms & windows fronting the road is often compromised
- low density where public transport is most likely to run or trips are shortest
- individual driveways straight onto high speed traffic

▲ High Density - Apartments:

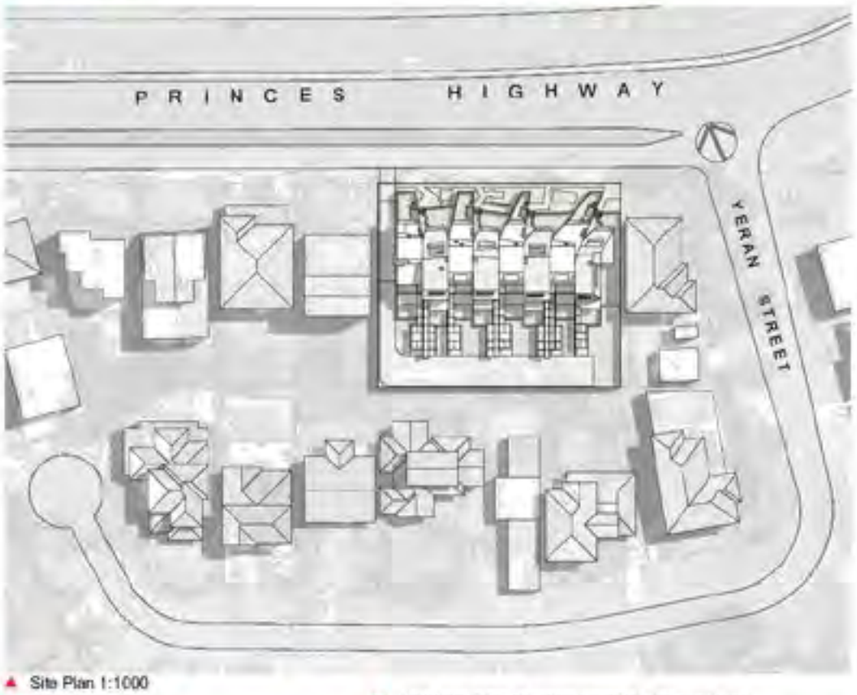
+ high density where public transport is most likely to run or trips are shortest
+ blocks out traffic noise for lots behind

- building planning will often result in units facing solely onto the road
- more people are forced to live in worse conditions
- units don't work on street level and commercial is not viable in non-hub strips

▲ Medium Density - Terraces:

+ higher density where public transport is most likely to run or trips are shortest
+ blocks out traffic noise for lots behind
+ control over roof space allows ventilation and light without the noise
+ terraces stretches into the depth of the site making planning quieter rooms possible
+ can be converted into commercial use when economically viable

▲ Context analysis



▲ Site Plan 1:1000

▼ View from main bedroom towards Georges River

TWO
CONCEPT DESIGN

THE QUAVERS

The driver for the design is to create a housing type that will provide more liveable conditions on a classified road. Our solution to this is the terrace type.

The *Draft Medium Density Design Guide* has special provisions for development adjacent to busy roads. Acoustic barriers to the front of the properties and wintergarden on the upper level minimises noise intrusion. The amalgamation of three sites also make it viable to create a driveway and parking at the rear of the property. This creates a large common garden area and the ability to have an entry from the rear of each house.

Having the primary living areas to the rear means that the house can be open to the garden without being affected by the noise and allows the living room to have a large picture window to the north and towards the view of the Georges River.

The common landscaped area at the front of the site acts as a buffer to the road and is designed to create spaces for the neighbours to enjoy with seating, exercise space, bicycle parking and a sculpture garden. The acoustic barrier is utilised as the walls to this shared space.

The individual houses are just that, individual. They are designed to be simple to build but each having its own character. They form a group that still sits comfortably in amongst the rest of the single dwellings in the street.

The overall form is designed to utilise the available building envelope including the stepped setback to the eastern boundary that allows the houses to turn towards the east. Each house has an open plan living/dining/kitchen and three bedrooms including an attic.

aerial view ▲
ground floor plan 1:200 ▶

THREE
CONCEPT DESIGN

A QUAVER

Although the *Draft Medium Density Design Guide* prefers Torrens title subdivision there are two reasons that Strata title is chosen on this site. The first is that the requirement for Torrens title lots to be 200m2 and 6m wide, meaning a reduction to six dwellings. We wished to test the maximum that is possible to be developed on this site. The reduced lot sizes allowed by strata title means that eight dwellings are possible. The second reason is that a common driveway is very difficult to provide for with Torrens titling as one or more lots would be burdened with the driveway as a right of way.

The individual houses have a variety of plans but all provide three bedrooms and living/dining/kitchen spaces that open onto both front and back gardens. They are designed to minimise the traffic noise but maximise the views and northern aspect. The upper level main bedrooms that face the view all have a winter garden with fixed glazing towards the road, acoustic vents to the side and opens in the roofline. Two have a literal winter garden with a planter in the attic space to allow light and greenery into the house and again to mitigate the noise.

▲ attic 1:200

▼ level one plan 1:200

▲ section through terrace G

section through wintergarden at terrace G ►

rear of terraces & communal garden ▲

street view from northeast corner ►

FOUR
TESTING THE DESIGN GUIDE

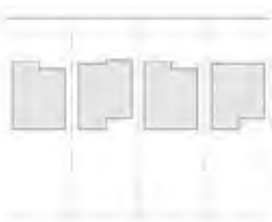
LEP ZONES & PERMISSIBLE USE

The *Draft Medium Density Design Guide* specifies that terraces are only permissible in R1, R2, R3 zones which allow Multi Dwelling Housing. While this covers a great area of Sydney's residential zones, realistically it would be a lot more economically viable in R2 zones as R3 usually allows higher density to be built. Listed below are all the local areas which allow Multi Dwelling Housing in R2 zones:

- Manly
- Lane Cove
- Ryde
- Botany Bay
- Hurstville
- Barkstown
- Sutherland
- Campbelltown

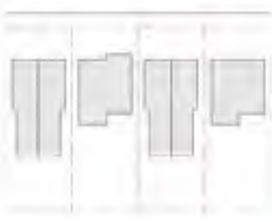
As shown on the map to the right, this is unfortunately only a small portion of the overall residential area. Considering also the brief of this project, which is to utilize the residential lots located on busy roads, there are great potentials throughout many parts of Sydney

Integrated map with multi dwelling housing in R2 zone and Busy roads in Greater Sydney ▶



◀ 1. existing street - detached dwellings

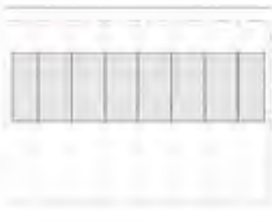
Cons
- low utilization of land
- everyone maintains their own gardens
- everyone has their own garage and driveways
- loss of usable land



◀ 2. single site development

Pros
+ easier to develop (do not have to amalgamate sites)

Cons
- side setbacks required = discontinuous streetscape
- torrens title results in everyone minding their own backyard
- everyone has their own garage and driveway
- loss of usable land



◀ 3. amalgamated sites >1500 sq.m

Pros
+ continuous streetscape
+ large common gardens
+ shared common amenities to replace individual amenities
+ stronger sense of community
+ common parking access
+ reduced amenities maintenance costs
+ potential to sustain cafes / shops

DEVELOPMENT SIZES

The *Draft Medium Density Design Guide* currently penalises the larger site, by requiring increased setbacks, additional visitor parking and loading/unloading. While this encourages individuality and character of each particular development, it greatly restricts the opportunity to combine services and sharing common areas. In addition, side setbacks required between sites will result in a discontinuous streetscape which defeats the main design ment of the terrace form.

Currently Sydney has a developer driven model of development where the primary consideration is to maximize profits. As housing becomes unafforable and the younger generation lose interest in home ownership this model desperately needs to change.

A more long term, affordable and sustainable form of housing development is the investment in large scale housing by Superannuation funds. While this is currently more in the provision of affordable housing, there is the potential for funds to invest in normal rental housing as a positive and long term committment.

The key benefit for developing for rental is that buildings will be designed and constructed for the long term. Higher initial costs associated with improved construction and better environmental performance can be ameliorated over the life of the building. This effect is amplified when the investors are superannuation funds that have a social responsibility agenda to their investment.

The scale of development that is required to attract the investment of superannuation funds is large, but should be encouraged. For this reason we would recommend that the development site size related restrictions be removed (3.2A). These requirements discourages large scale developments and encourage piecemeal development instead of cohesive streetscape that the terrace form is known for.

BEACH HOUSE

10-16 Surfview Road, Mona Vale, presents a contemporary interpretation of the terrace typology common to Sydney's inner city suburbs. Located in an R3 Medium Density Residential Zone along the forefront of Mona Vale Beach, our proposal provides for a level of density comparable to inner city terraced suburbs whilst allowing residents a much greater level of amenity.

Employing the terrace form as our module, strategies of slipping in plan, shifting in section, and cutting for formal articulation simultaneously differentiate each house from the next and unify the development through a shared formal language. These formal operations are exploited to allow each house a small balcony and garden spaces, and a more fluid relationship between interior and exterior, and between socially active and personally reflective spaces, producing a gradient of spatial experience within the houses. These operations also articulate the houses' massing, and allow for multiple dwelling types and sizes to co-exist within the same development.

The introduction of pitched roofs, which project beachward, provide the houses with a symbol of domesticity and relate each house strongly to the street and to the beach beyond. They mark the houses within the landscape, designating place and position.

We've also inverted the typical terrace plan, moving the living spaces to the top floor and the sleeping spaces to the bottom floor, to allow more natural daylighting of the living spaces and take advantage of cross ventilation and views.

A truss language is employed to raise the second volumes off the ground and reduce the amount of structural support in the areas where the top floor cantilevers over the first, freeing the ground plane and allowing for covered outdoor spaces and car ports. These private outdoor spaces then spill into a shared backyard. Whilst the draft design guide allows for such a shared backyard through its rear setback requirements, it is difficult to retain high levels of density whilst still satisfying the 10m setback requirement for a lot of our size. We would contend that this setback is overly restrictive, and should be reduced to allow higher levels of density.

Taking the terrace's identifiable character and flexibility, its main strengths, and adapting these to Australia's current social and climactic setting, our proposal argues for a more diverse, more communal, more sustainable form of living, reliant on smaller dwelling sizes, shared ground floor green spaces, and pre-fabricated, cross-laminated-timber (CLT) construction.

TERRACE TOPOLOGY

Implemented first to provide housing to industrial workers in the suburbs of Sydney and Melbourne, the terrace house in Australia has had a long and convoluted history.

Appropriated multiple times according to changes in society and corresponding changes in its forms of urbanism, the terrace has remained relevant as a reconfigurable shell with an understood urban character, despite many shortfalls in its climatic and organisational performance.

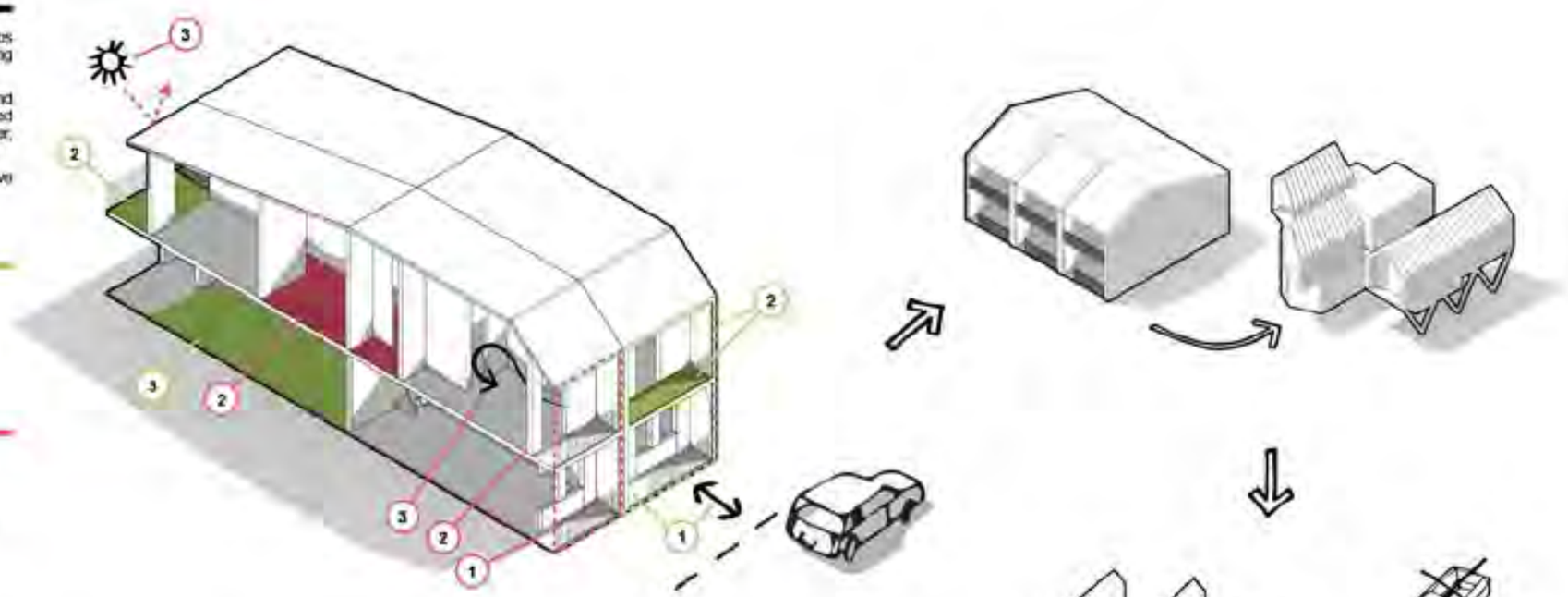
Our proposal attempts to appropriate the terrace, retaining its positive features and resolving its climactic and organisational difficulties.

OPPORTUNITIES

1. Positive relationship to street through entry setback and balconies
2. Familiar and recognisable urban character
3. Ability to take on multiple programs and occupant types with ease

CHALLENGES

1- Uniformity of formal language and lack of façade articulation
2- Outmoded spatial organisation
3- Poor climactic performance (lack of views, sunlight and air-flow)

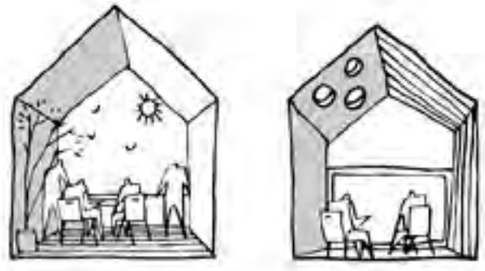


TERRACE RECONFIGURATION

In our proposal, the singular massing appropriate to inner-city suburbs is tailored to suit developments in Sydney's middle ring and coastline.

The massing is broken up through processes of volumetric articulation which convey the houses as a series of individual elements sharing a common formal language.

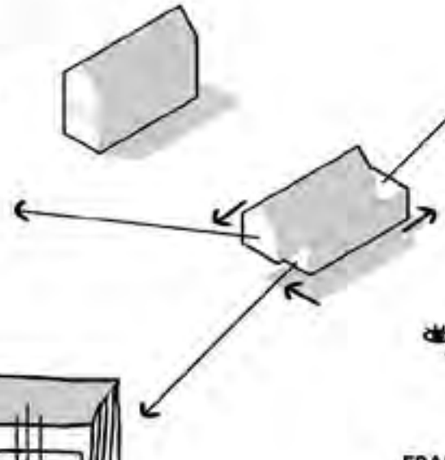
From the binary conditions of the terrace – inside or outside, active or inactive, public or private – our proposal exhibits a more nuanced spatiality, where a gradient of conditions exists.



PROGRAM REVERSAL
For each house, a top volume with a pitched roof is stacked on top of a prismatic bottom volume.

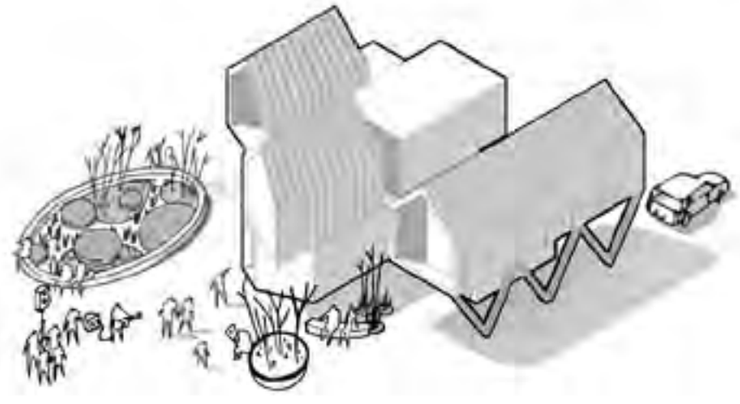
The bottom volume houses the sleeping spaces, whilst the top volume houses the living spaces.

This reverses the typical organisational strategy in residential design to allow greater solar penetration into the living spaces and greater views, in this case to the beach.



INTERSTITIAL SPACES
These volumes are then slipped in plan and shifted in section to create and articulate a diversity of nuanced spaces, including balconies, nooks, and small garden spaces which occupy an in-between condition and break the binaries conventionally associated with terrace houses.

FRAMING ASPECT
Following the processes of slipping and shifting, the top volumes are cut back to frame particular views, improve occupant privacy, and improve solar penetration for natural daylighting.

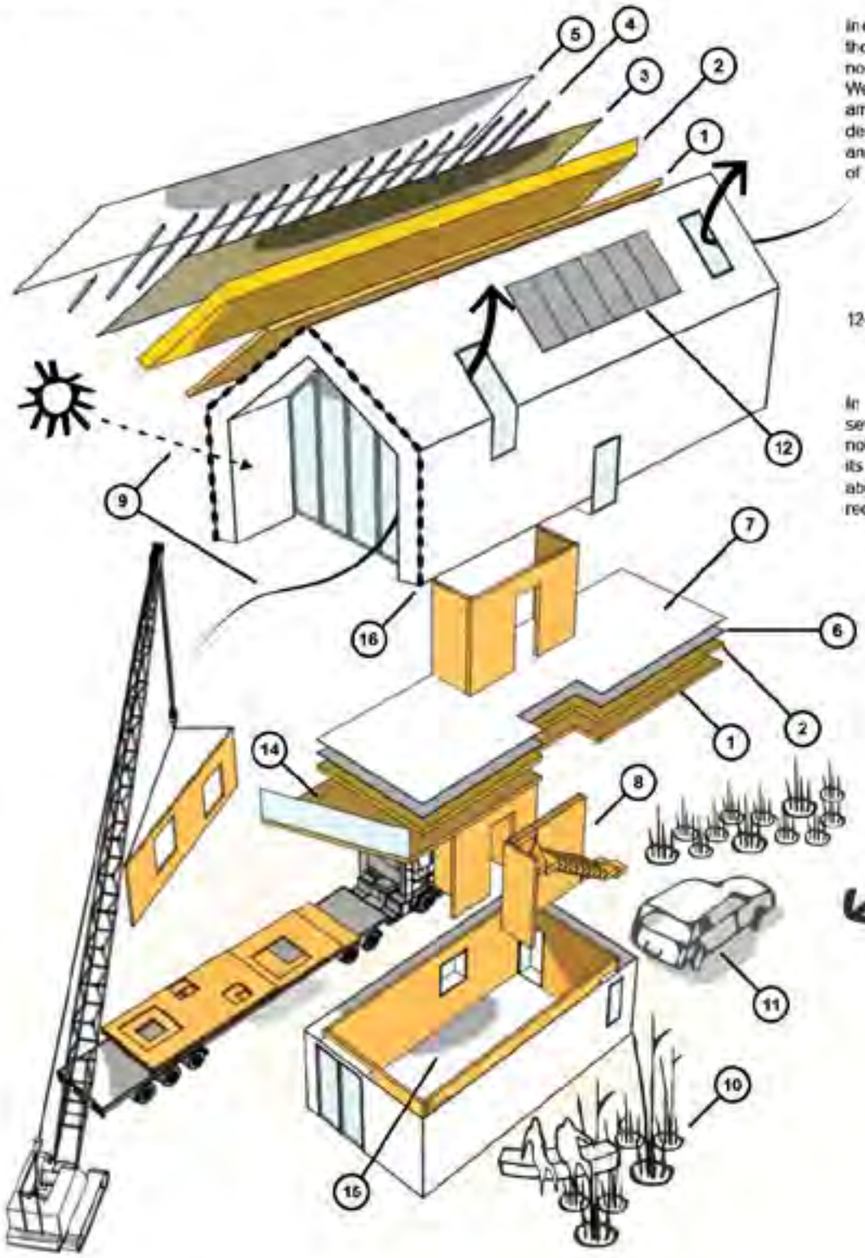


TERRACE 2.0

Terrace houses are typically constructed in masonry, which requires intensive on-site labour and is non-renewable and generally non-recyclable, and not climactically appropriate to Sydney.

Recent advances in pre-fabricated timber construction systems, particularly cross-laminated-timber (CLT) panel systems, allow buildings to be produced in a manner which is efficient, sustainable, and climatically sound.

As noted throughout this proposal, it is our belief that pre-fabricated timber technologies, in particular CLT, should be incorporated in residential design as part of the Sydney's sustainable future. Following, we believe that the Draft should note the potential of CLT as a construction methodology, and should suggest its use.



CONSTRUCTION TECHNOLOGY

1- Cross Laminated Timber
2- Insulation
3- Water proofing membrane
4- Cladding frame
5- Cladding
6- Sound absorption layer
7- Finish floor

IMPROVEMENTS

In opposition to this, we have sought to improve those aspects of the terrace house which are no longer socially or environmentally relevant. We have also sought to include additional amenity where possible, in the form of designated parking spaces and green space, and improve the environmental performance of the building where possible through best practice sustainable design.

8- Organisation
9- Climate (ventilation, solar orientation)
10- Green space
11- Parking
12- Technology (photovoltaic, domotic system)

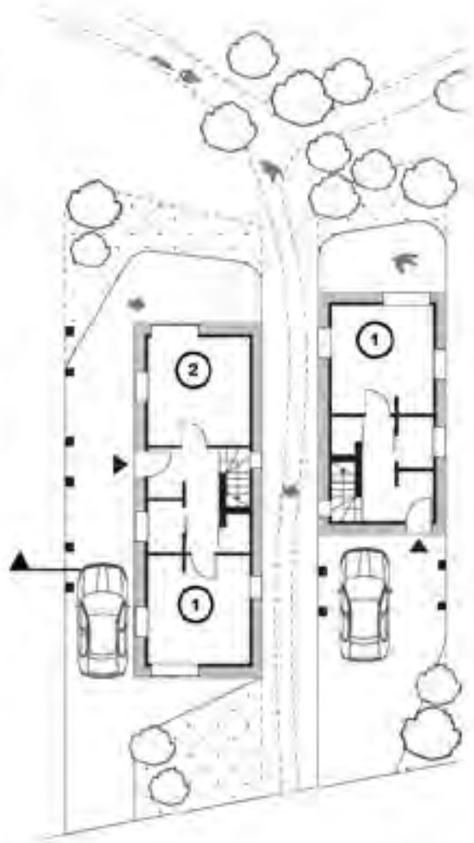
POINTS TO KEEP

In our proposal, we have chosen to keep several positive aspects of the terrace house, notably its relationship to the street, through its ground level entry and balconies, its ability to be spatially and programmatically reconfigured, and its recognisable formal language.

13- Relationship to street
14- Balcony
15- Reconfigurable
16- Recognisable language

GROUND FLOOR 1:200

1- Room one
2- Room two



FIRST FLOOR 1:200

3- Living
4- Dining

SECTION 1:200

GRAPHIC KEY

LOT SIZE (Dwelling)

FLOOR AREA (GFA)

DENSITY: GFA (sqm) / PERSON

assuming 4 people per dwelling

GREEN SPACE (% of lot area)

from the draft recommended 35%

RESPONDING TO THE DRAFT

Our proposal complies with the Draft Medium Density Design Guide in all cases except those listed below as a Strata Titled Terrace House Development.

Our proposal recognises the Draft as a positive vehicle in improving the supply and quality of medium density residential development in Sydney, particularly as it relates to massing and façade articulation.

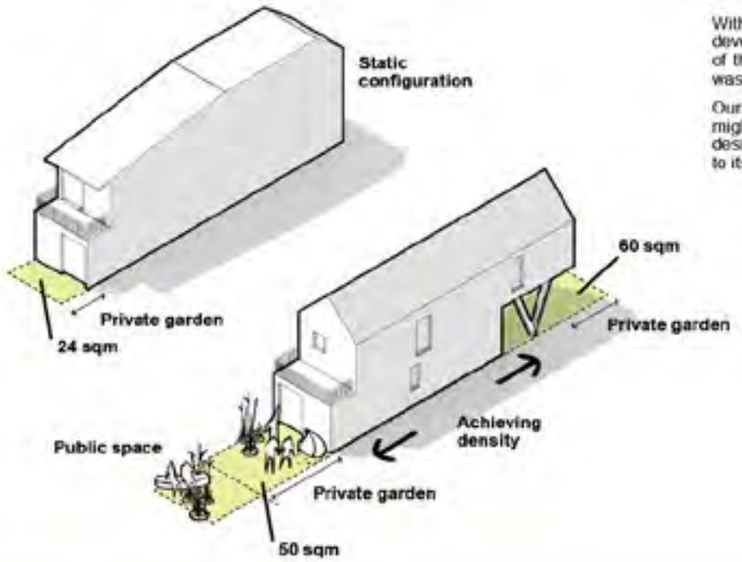
ACHIEVING DENSITY WITH SETBACK REQUIREMENTS

For a lot of our size, the rear setback required by the Draft is 10m.

This requirement reduced the level of density that we could achieve in our project, particularly as our site was triangular.

As our design strategy included allowing green space between houses, to add a degree of separation and privacy, this also meant we achieved well in advance the required amount of green space.

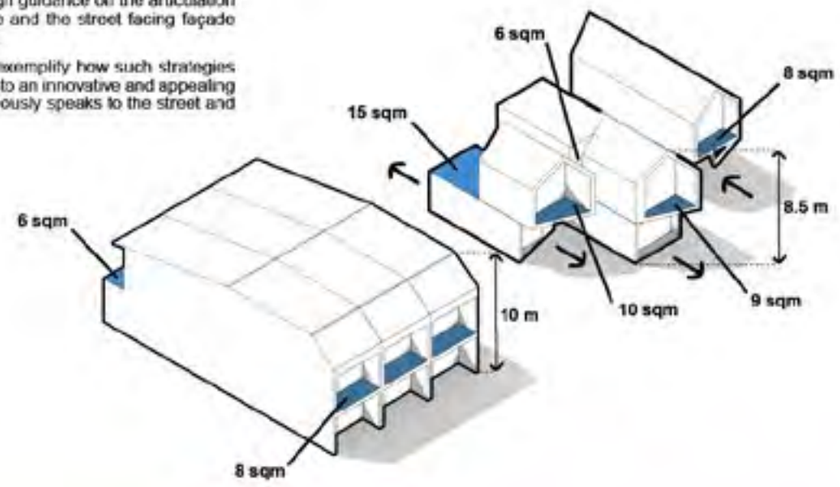
Potentially, the Draft should reconsider this requirement and reduce it to a more appropriate distance, or add contingencies for design strategies which include green space not only within the front and rear setback.

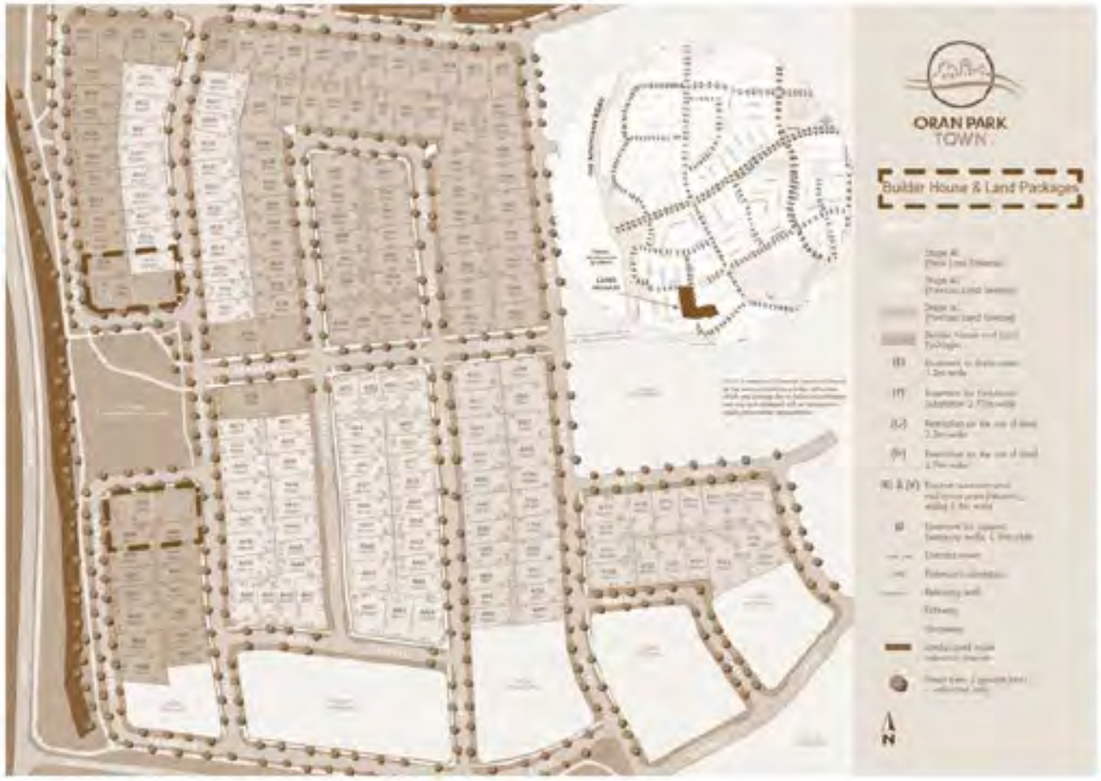


MASSING STRATEGIES

Within the portion of the Draft concerning terrace house developments, the design guidance on the articulation of the building envelope and the street facing façade was found to be of note.

Our proposal seeks to exemplify how such strategies might be incorporated into an innovative and appealing design, which simultaneously speaks to the street and to its occupants.





ORAN PARK: SUBDIVISION & LAND RELEASE

SITE PLAN

SITE LOCATION

SITE SELECTION : KEY POINTS

- Oran Park Land Release Area.
- Sites available from Landcom as "Builder House & Land Package.
- "Superlot available for Project Home builders.
- Site suitable for denser housing typologies.

OPPORTUNITIES
- Facilitate development with greater density, amenity and landscape.
- Provide urban frontage to Park.

STRATEGIC APPROACH

With increasing pressures on housing and housing affordability particularly, the need for a broad range of solutions is blindingly apparent. The majority of new housing in NSW is delivered by developers and project home providers with little or no input from architects. With only multi-residential projects requiring an architect, as mandated by SEPP 65, it is likely that the majority of developments delivered under the Medium Density Design Guide will not be designed by architects. How then can architects find opportunities to not only contribute to the design of a larger number of these dwellings, but also realise these dwellings in locations that are not normally the domain of architect designs?

To understand some of the issues in relation to the Project Home market we spoke to the CEO of a mid-sized project home builder. His company's work sits within the mid-range price bracket builds in land release areas across NSW and is currently considering alternative "products" for their future market. He is well placed to understand the issues:

"My strategy would be not to try and integrate [Architect designed project homes – directly referencing The Sociable Weaver: http://thesociableweaver.com.au] into the McMansion estates but to team up with a developer on a smallish subdivision and build it out. Like they did in the 60's and 70's"
"I think there's a future in modern terraces particularly on corner lots and villas of some kind on regular lots."

Using a car analogy for housing, he also indicated that the market (as he perceived it) were generally only interested in "Corollas and Commodores, not European cars". In plain terms, the project home market is incredibly conservative and departures from the status quo within the land release areas for project homes would therefore need to be particularly strategic. An approach was therefore developed that proposes a divergent "product for prime sites with higher value and therefore greater desirability or resilience against a conservative market.

DESIGN STATEMENT

The Terrace House Case Study provides 8 terraces of high amenity by proposing:

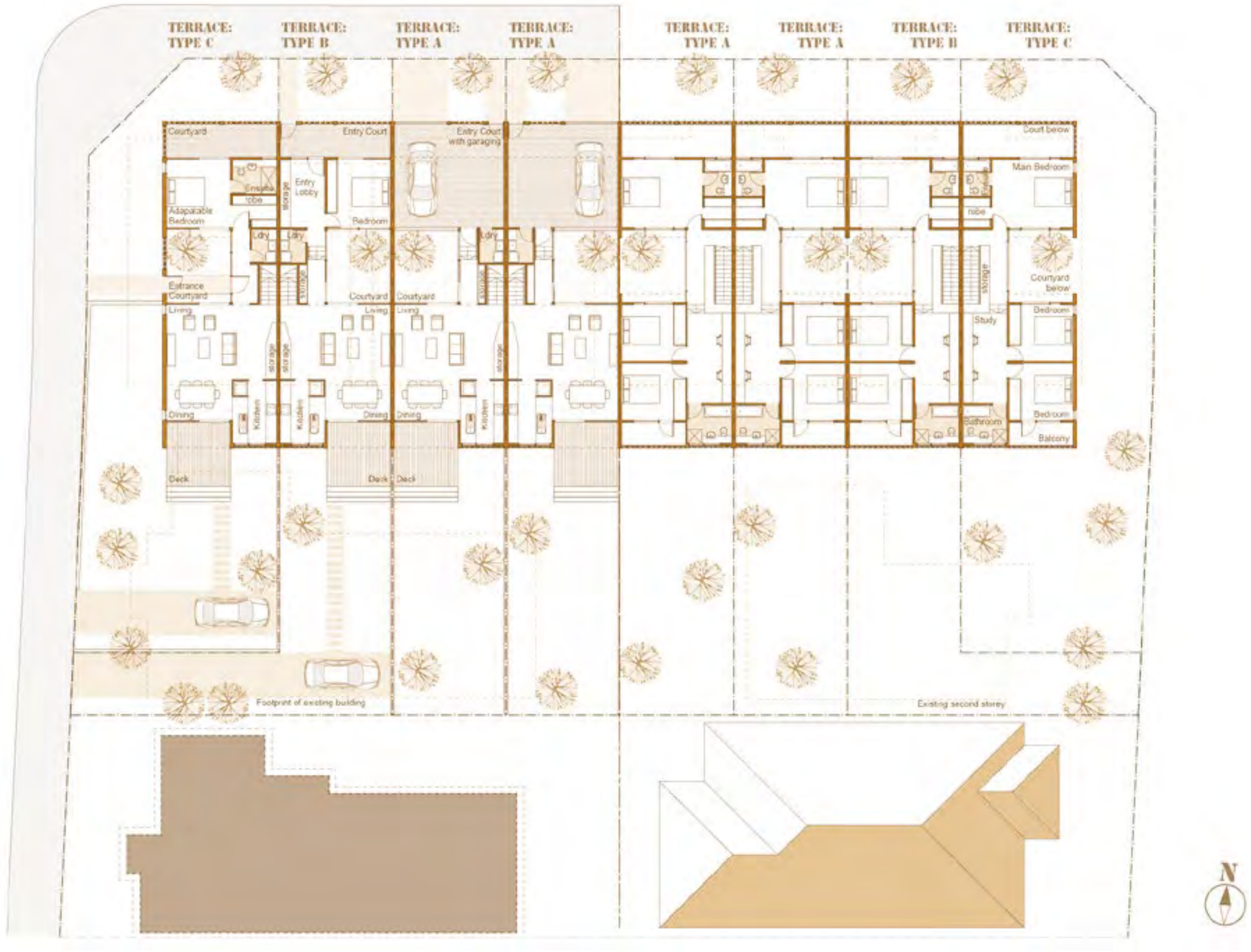
- Urban Design response to the Park
- Dual aspect design approach
- Front entry court or undercroft, to be utilised as garaging but also provides a flexible use semi-outdoor area screened from the street. Central landscaped courtyard. Rear garden and deck.
- Maximising both landscape area and utility.
- Impact of the vehicle is minimised.
- Typical plan is designed with flexibility in mind, with two alternate arrangements shown, allowing for additional bedrooms, media rooms, family rooms or a level ground floor to meet adaptable housing requirements.

Terrace Yield:
Type A : 4 x 132m^2 (excludes entry court) 3 bedroom Terrace.
Type B : 2 x 156m^2 (excludes entry court) 4 bedroom Terrace.
Type C : 2 x 156m^2 (excludes entry court) 4 bedroom Terrace. with level ground floor and adapatable bedroom.

TERRACE HOUSE: CASE STUDY CONCEPT DESIGN

GROUND FLOOR PLANS 1:200

1:200 FIRST FLOOR PLANS



TERRACE HOUSE: CASE STUDY

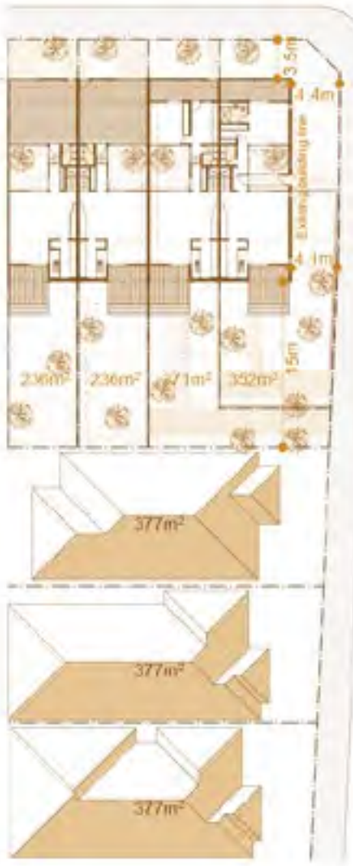
CONCEPT DESIGN

MONTAGE

SECTION 1:100

FRONT ELEVATION 1:100

CONTEXT : SETBACKS



TESTING THE DESIGN GUIDE

ASSUMPTIONS

- Street setbacks relate to the proposed subdivision of the design proposal, not the existing lot sizes
- Subdivision will be approved as parts of the CDC process for the design proposal. NB: Is this the intention?
- Floor Space calculations are consistent with the standard instrument LEP definition, not as defined in Single Residential CDC.
- Landscape areas included in calculations are paved areas, but not covered areas.
- Eave overhangs or sun protection are exceptions to courtyard compliance requirement to be *open to the sky*.

NON-COMPLIANCE QUANDRIES

- The corner terrace will typically have a larger block area, tipping the setback requirement to a larger front setback. It would be desirable for all terraces in a run to have a consistent frontage.

LAND RELEASE AREAS

- Where no neighbouring dwellings have as yet been built it is not possible to establish an average setback, or one consistent with the proposed neighbours. An allowance should be made in the Design Guide to allow the development's setbacks to roads (primary and/or secondary) to meet those proposed under the controls for the land release subdivision.
- Given the general conservatism within land release areas, and their predilication for Project Home packages, any terrace style development is likely to challenge. The somewhat contradictory nature of such a proposal is therefore unlikely to meet *Local Character and Context*. The Guide should take a role in encouraging change within these areas and allowing for some variation of character within the context.

SIDE ELEVATION 1:100

THE MISSING MIDDLE

TORRANCE CRESCENT QUAKERS HILL
CONTEXT

MANIFESTO...

The original scheme for 19 Torrance Crescent designed and built in 1988, envisaged Quakers Hill as a medium density suburb. This precedent was created during a time when a wave of low density Urban sprawl was overtaking the Western Suburbs of Sydney.

Despite the strong precedent set, the Low density model continued throughout Quakers Hill and surrounding suburbs. Now as the site plan shows, low density urban sprawl is the overwhelming typology for the suburb and its surroundings. The selection of the site itself is a critique on the Urban sprawl of Sydney's Western suburbs.

The development is the the only multi-residential type surrouned by an ocean of large oversized single dwellings. We believe that this is the perfect site to reimagine the medium density typology to adress some of the issues regarding urban sprawl and the inevitable problems that it is asociated with.

LOCATION MAP

ROUTE FROM SITE TO TRAIN STATION 1.9KM

This site allows us to challenge the current typlogy of the area. By showing the increase benefits of medium residential housing in Western Sydney we are able to establish controls to support healthy and livable cities. An increase in density and a focus on a more viable transport system is an essential way forward for any new development. By applying this medium density template to the Quakers Hill we are able to increase the density three times over.

CONTEXT MAP (ORIGINAL SCHEME BUILT IN1988)

OVER 3 X POPULATION DENSITY

Contextual Information

Address: 19 Torrance Cres Quakers Hill. Project completed 1988

Distance: Approx 30km (as the crow flies) from the Sydney Harbour bridge.

Site Area: 6240 m²

Current Number of Residences: 30

Current Density of Site: 1 residence per 208m²

Current Density of Suburb: 1 residence per 500m²

Proposed Number of Residences: 32.

Proposed density of Site and suburb: 1 residence per 195m²

Current car population: 2 cars per residence

Proposed car population: 1/2 car (smart car) per residence

Distance from public transport hub: Quakers Hill Train Station 1.9km . 5min drive. 20min walk. 7min bike ride

PAGE 1

THE MISSING MIDDLE

TORRANCE CRESCENT QUAKERS HILL
CONCEPT COMPARISION OLD SCHEME VS PROPOSAL

ORIGINAL SCHEME 1:1000

23% ROADS AND PARKING

30 UNITS

NO WAVE POOL

PROPOSED CONCEPT 1:1000

15% ROADS AND PARKING

32 UNITS

1 WAVE POOL

MORE TRAFFIC NO SURF

APARTMENT LAYOUT / LOT SIZE

Ground Floor Plan
1:200

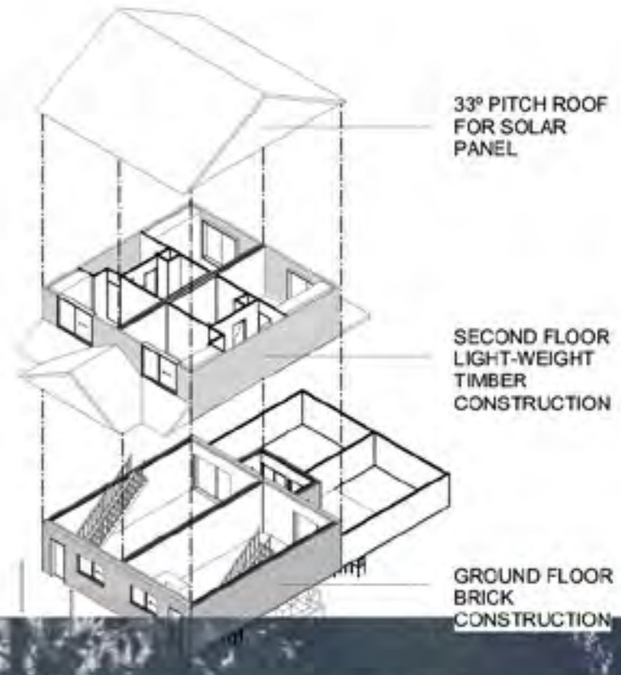
Lot size: 92m²

First Floor Plan
1:200

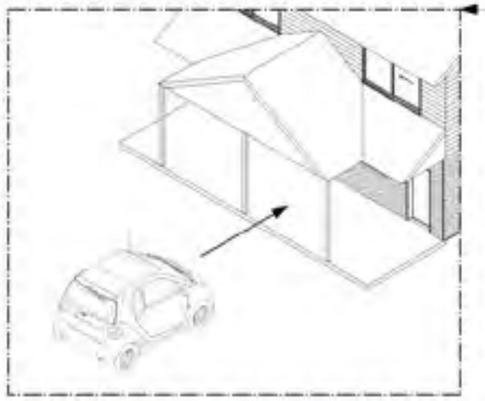
LESS TRAFFIC MORE SURF

THE MISSING MIDDLE

TORRANCE CRESCENT QUAKERS HILL
CONCEPT DESIGN



1 EXPLODED AXONOMETRIC
ANONOMETRIC SITE PLAN
1 : 250



2 ANONOMETRIC SITE PLAN

KELLY SLATER WAVE POOL 2015

PAGE 3

THE MISSING MIDDLE

TORRANCE CRESCENT QUAKERS HILL
TESTING THE DESIGN GUIDE

CHALLENGING THE CURRENT CAR PARKING REQUIRMENT VS THE CURRENT CAR PARKING REQUIRMENT

A reduced car parking scheme is one step towards solving some of the most prominent problems Sydney faces in regards to urban sprawl and traffic congestion.

In the proposed car parking scheme we have challenged the idea of a compulsory 5.5m long car park for each residence. Instead we have provided a half car space which allows for a smart car or a number of bicycles. The benefits of include.

1. **7% Increase in Density** with 2 extra units.

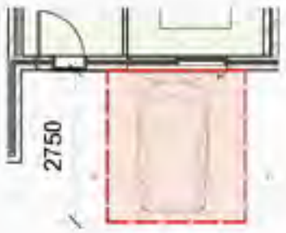
2. **30% Reduction of roads and car spaces.**

3. With the reduction of cars we now have room and money for extras such an **added wave pool!**

4. With less space for cars the design can be manipulated into a more **people friendly and more efficient design.**

5.

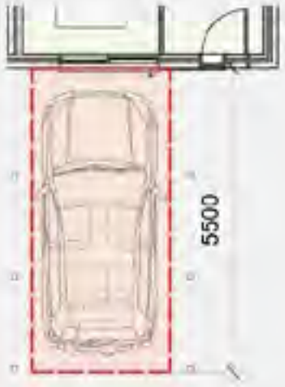
1/2 The Traffic In Sydney With Smart Cars



Proposed Control Car Parking: 5.5m long, 2.5m wide.

Provisions for cars site (including internal street) : 23% of Total Site.

Total area of car spaces: 412.5 msq. .



Current Control Car Parking : 2.75m long, 2.5m wide.

Provisions for cars site (including internal street) : 16% of Total Site.

Total area of car spaces: 275 msq.

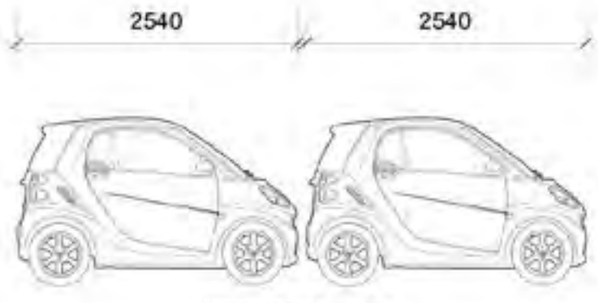
The Current Car Parking Requirement as specified in the Australian standards is 5.5m long and 2.5m wide. This car parking standard is designed to allow for large cars such as the Toyota Prada, a popular large car for many Australians.

The current guide is wrong. It is far too focused on a 1950's car culture. Accommodating for such vehicles requires large amounts of space on development site not only for the car park itself but also the space allowing the vehicle to manoeuvre.

We need a guide for the 21st century, that deals with the problems of urban sprawl, climate change and traffic congestion.

At the moment, the majority of Australians living in the outer suburbs are faced with 45 min + commute every day. The current control for residential development and parking only facilitates these problems and does nothing to alleviate the pressures of urban sprawl or traffic congestion.

Our philosophy is that the controls should be more centred around living amenities, green space and Urban density and promoting healthy activity.



Smart Car ForTwo

Toyota Prada

1. Context

1A & 1B HERARDE STREET, BATEMANS BAY, NSW

This 4,340sqm coastal site, south of Sydney, is currently on the market (approx $3million through Elders Batemans Bay). This proposal is for the 'missing middle', 16 terrace houses in two rows – a dwelling style and layout that responds best to the site's particular social and community context. The block is zoned R3, and while the proposed development is an incremental shift from the current use, it is consistent with the future, desired character of this area.

The subject property occupies a prominent position on Herarde St and Beach Rd located close to the town centre and represents one of the few undeveloped waterfront reserve development sites in Batemans Bay. The surrounding properties include a variety of multi-unit residential development, single residential dwellings and retail/commercial accommodation.

The subject property is located on a level, prominent high exposure corner and overlooks the Clyde River. It is approximately 200m from Batemans Bay Marina and 600m from Batemans Bay town centre on Orient St. The eastern boundary of the site is flanked by a two storey tourist accommodation and a single dwelling building. The northern boundary a dedicated road reservation for Beach Road and the southern boundary is the road reservation for Herarde Street.

Requirements and Constraints under the Eurobodalla Local Environment Plan 2012
There is no minimum lot size restrictions applicable for the site.
The building height cannot exceed 15 metres and there is no Floor Space ratio limitation.

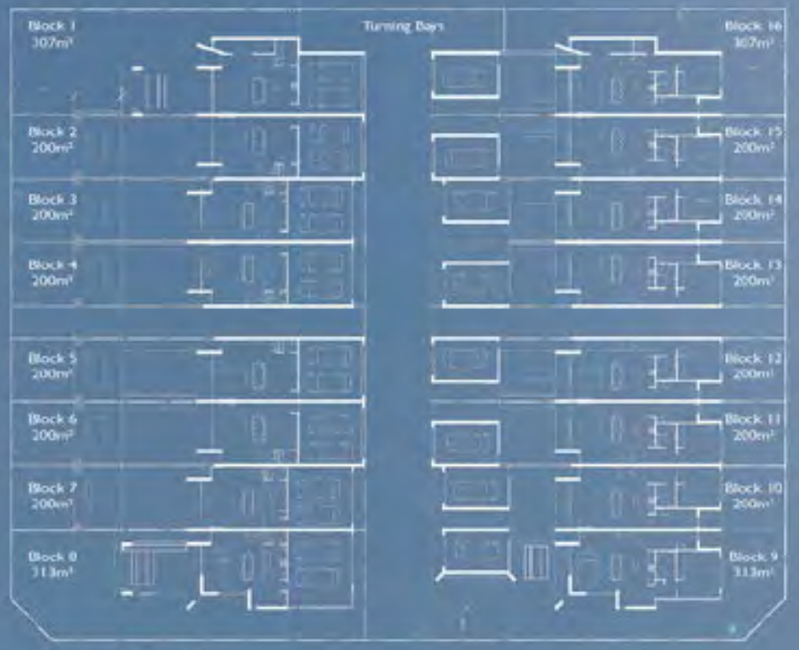
The Brief

The brief for this project was to develop a proposal for low-rise medium density housing, accordance with the CDC pathway of the Draft Medium Density Design Guide (the 'Guide'). The proposed development must be sited on a block 10 km from the city of Sydney or on the coast of NSW. Importantly the development must make a positive contribution to the local area. An additional, and challenging aspect of the project, is to give constructive feedback on the Guide and suggest improvements.

Strategic rational for site selection
The proposed low-rise medium density development is aligned with the Eurobodalla Council's direction for the area. In particular, the region has a significantly older age profile than NSW, with the 65+ age group the fasted growing demographic. The Council regards supporting the availability of a range of housing options for the ageing population of the Shire as an important priority.

The site represents a prime opportunity to contribute to meeting this objective. Importantly the site is located within 600m from the centre of town and associated services and the path of travel into town, as well as the block itself, is level. In acknowledgement of the aged population of the Shire, eight of the 16 dwellings achieve the Platinum Level of the Living House Design. This proposed development makes best use of this attractive site and represents an attractive proposition for the Council as well as for any future potential developer.

2. Concept



Ground Floor Plan
1:500

First Floor Plan
1:500

North Elevation

West Elevation

South Elevation

Aerial Perspective

3. Concept

Concept

1. The north-facing terrace houses features a light and airy interior with a storey and half height above the living and kitchen area with full glazing to the north.
2. The master bedroom is on upper level, with the two other bedrooms a split level above the living area.
3. The internal bedroom and the stairwell are lit by clear storey glazing which also promotes good cross ventilation through the house.
4. These dwellings have substantial gazebos at the front setback with controllable screens to control views and weather and a green roof.
5. All dwellings have north facing integrated solar panel roofs (at optimum angle)
6. Green walls and slat screens seperate the dwellings
7. Rain water tanks with perspex fixed lids provide garden benches to the courtyards and the comibined natural ponds and grennery provide natural evaporative cooling to the courtyard and interiors.
8. Dwelling sizes alter across the row with a lower house on the east edge boundary to fit building envelope and a higher west corner unit addressing the street.

The dwellings facing south are similar but will include a ground floor bedroom to provide Platinum level dwellings. These dwellings will feature a green garage wall and roof to give the upper bedrooms an enhanced garden view and cut down on any glare from the garage roofs.

Solar Passive

Natural Ventilation

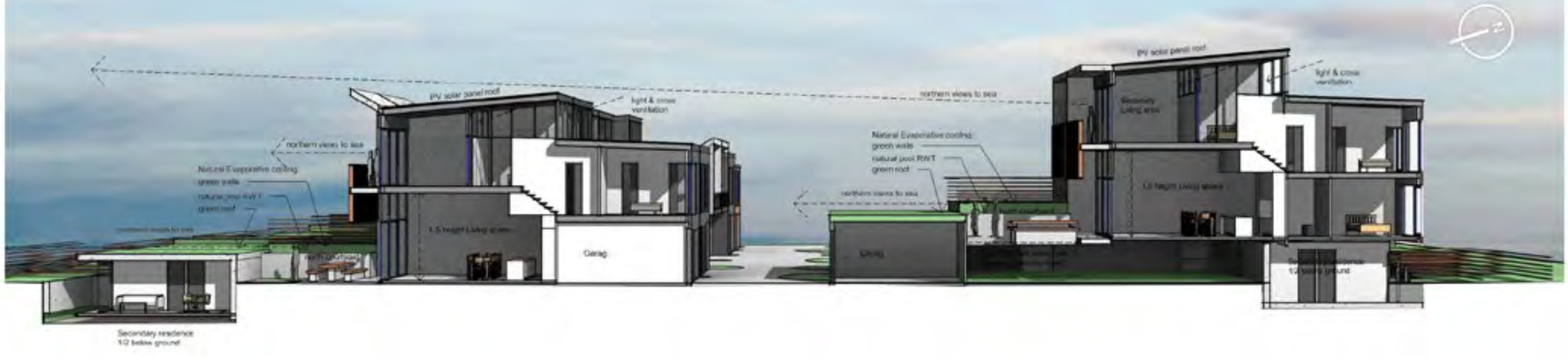
4. Testing the Design Guide

Consideration could be given to allowing for a secondary residence, at around 36sqm, in terrace house developments where the lot size is at 200sqm or greater where the LEP allows for higher density & height. Secondary residences, a dwelling in addition to the primary residence, can be useful to address the housing shortage – they can provide for additional income, accommodation for elderly parents, teenagers and carers. It should not be possible to subdivide the secondary residence.

To facilitate this, it would be necessary to increase the plot ratio, while mandating that the secondary residence met the provisions of the CDC track of the Medium Density Design Guide particular in relation to setback, height and building envelope.

This concept has been developed on this sheet. In this proposal, the secondary residence for the North-facing block replaces the current gazebo in the front yard. The SR would be stepped down so that the green roof would be at 1.2m above ground level, with a blank wall to the primary residence – this will allow views over the top of the SR and preserve the privacy of both residents. A Courtyard to the North would provide outdoor space for the SR.

The SR for the South facing block would be positioned to the south side (stepped down in the site) which also pushes the rear building up a half story higher than the northern units to facilitate greater solar access as well as views to the sea.



The Helensburgh Terraces

Missing Middle Design Competition

Responding to Strong Local Heritage Tradition

The local heritage character of Helensburgh is of a closely knit mining community. This continues today with the Metropolitan Mine being one of the oldest continuously operating coal mines in Australia which has been an integral part of the Helensburgh community for 129 years. Miners were housed in picturesque small scale weatherboard cottages with steep front roofs and rear skillions. Many of these remain today and are heritage-listed e.g. the Junction Street group pictured above. We are taking our inspiration for our design from the rows of traditional miners' cottages with small scale, reduced front set-backs and no solid fencing maintaining an open landscape character at the front and no built garages at the front.


New developments


Parkes Street Cottages


Junction Street Cottages

Keeping the Community Together

Recent infill development has not been sympathetic to this tradition. New houses tend to be over-scaled, expensive 'McMansion type' houses in anonymous suburban layouts that could be anywhere in Sydney's western suburbs. These are unsustainable, out of character with the town and wasteful of space. Average prices for this type of house are now over $900,000. Lack of housing affordability is driving out many young people from the area. There is a demand for smaller dwellings, so medium density infill development is appropriate.

Site Selection

This site chosen is typical for Helensburgh in that it has challenges for development. Our site is not affected by bushfire rating, but has a challenging east-west orientation, irregular shape and steep topography. However it is close to railway station and Public School. We selected this site to demonstrate that there is potential for medium density development to be achieved elsewhere in Helensburgh despite these challenges.


Current site view

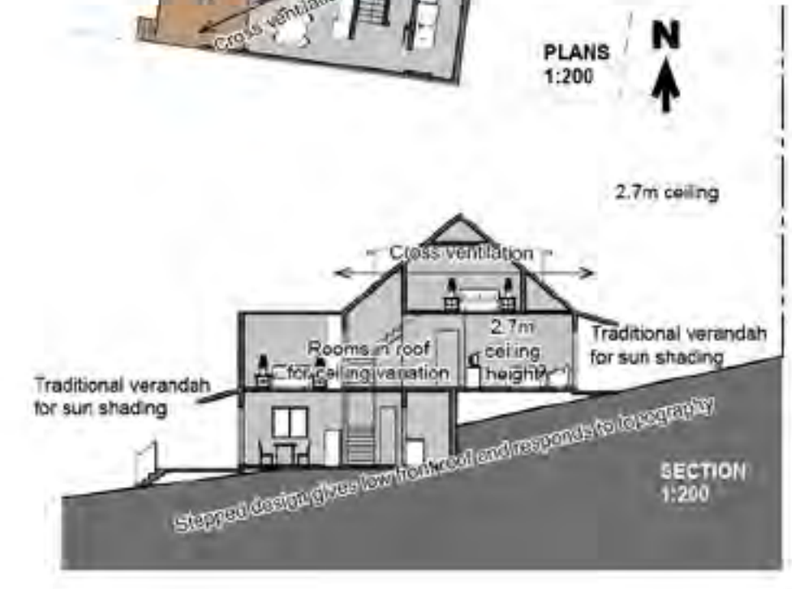
SITE PLAN
1:500

The Helensburgh Terraces

Missing Middle Design Competition

3-BEDROOM HOUSE - 124.6m² floor area

2-BEDROOM HOUSE - 85.6m² floor area



The Helensburgh Terraces

Missing Middle Design Competition

Typical Miners Cottages in Helensburgh

Typical Miners Cottages in Helensburgh

The Helensburgh Terraces

Missing Middle Design Competition

TESTING THE DESIGN GUIDE

To provide medium density development within the context of an historic township with an estalished pattern of development where new land release is restricted due to environmental considerations.

The scale of the medium density development allowed for under the guidelines was found to be oversized: lot sizes, gross floor area and setbacks resulted in large scale development that was not appropriate within the context of the town of Helensburgh.

By using a traditional style of medium density development, the terrace house, we are providing a family home that is manageable and sustainable, with generous landscaped areas and designed to fit into the historic pattern of development of the locality.

Our design includes:

- Smaller houses that provide a more sustainable and affordable option as demonstrated by the recent popularity of the 'tiny house' concept.
- Narrower terraces than the 6 metres stated in the design guides because historically many terraces were narrower.
- Individual lot sizes are below 200m² however, strata plan ownership allows for shared communal landscape area for vegetable gardens, rainwater storage, solar power storage etc.
- Front setback is less than the 10metres stated in the design guide in order to make full use of hte available depth of hte site and harmonise witheth established pattern of development.
- Rear setback is less than the 15metres stated in the design guide in order to make full use of the available depth of the site. However a rear entry road is provided that effectively increases setbacks from adjacent properties.

Existing site - 5 houses

6m wide houses - 9 houses

4.5m wide houses - 13 houses

Overall Elevation

Dist 3m 6m 9m 12m 15m
Scale Bar 1:300

Site Plan - Cronulla Suburb

Modular House

The chosen site is situated at 20 Excelsior Road, Cronulla 2230 which is under the control of Sutherland Shire Council . According to the Sutherland Shire Local Environmental Plan, the site is under zoning R3 Medium Density Residential development. It is approximately 28km from the Harbour Bridge and is classified as Middle Ring for the proposed Low-rise Medium density residential development. The site is close to public transport - Cronulla Station, which is within 500mtrs and bus route along Burraneer Bay Road.

Surrounding context
The surrounding context is mainly residential housing and Cronulla Public School is located just opposite to the site With the increasing one parent families' demographic, the site is a perfect testing ground for the proposed residential development.

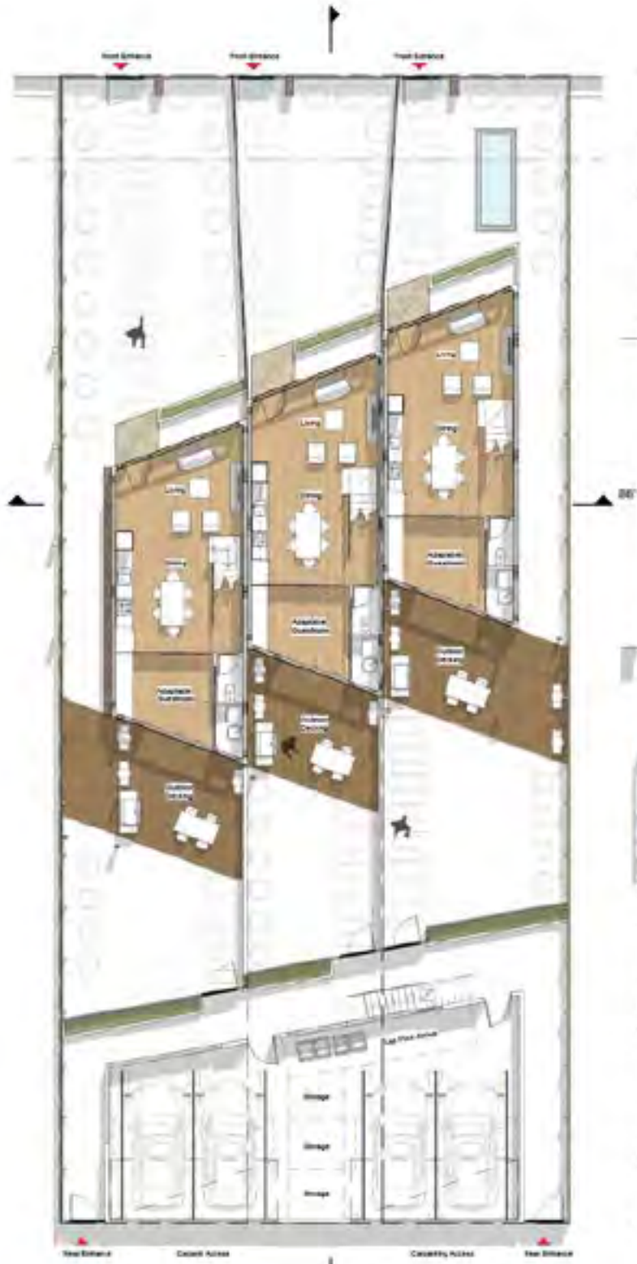
Town House
Single Parent families are the fastest growing family type in Australia In June 2012 there were 641,000 one parent families with dependants in Australia.

Concept
The Townhouse concept is to construct a simple cost effective adaptable dwelling that contributes positively to the single parent family type while also creating areas of connection to the adjacent residents with communal spaces. This can be achieved through modular prefabricated constructions the benefits of which are: Reduced onsite construction time, reduced site disruption, provide more consistent quality with reduction of site defects, financial savings and increase flexibility of use. Modular engineered structural timber frame is both carbon neutral and natural insulator.

Demographic

One parent families with dependent children, 2011, Enumerated

Modular House 20 Excelsior Road, Cronulla 2230
SITE PLAN



Ground Floor Plan

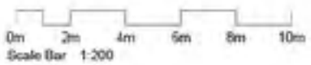
1st Floor Plan

Roof Plan

View From Rooftop Balcony

Looking towards the Common Area

Lap Pool and Community Graden



Modular House 20 Excelsior Road, Cronulla 2230

Concept Design 01

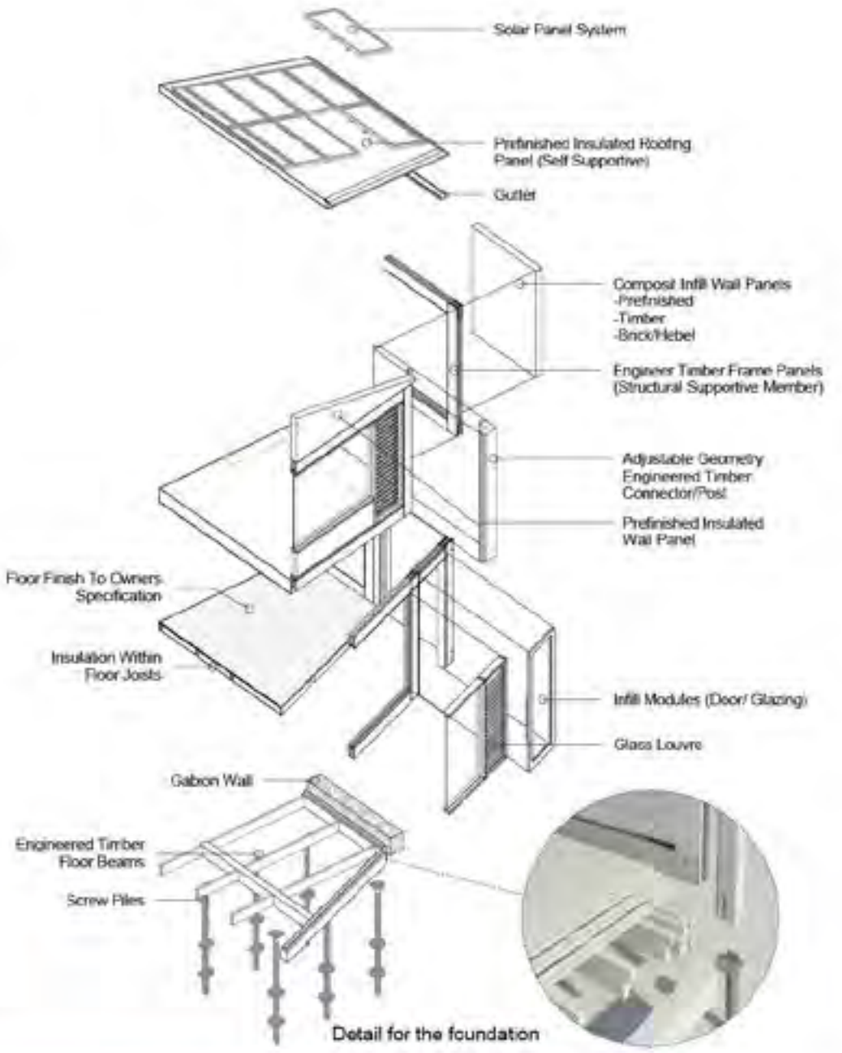
Construction Method:

Piers: Screw piles
Floor: Timber perimeter and internal floor beams with a rebated profile for connection to wall panels and timber floor joists. Floor covering can vary from timber,carpet tiles, vinyl etc.

Walls:
Timber frame modules of adjustable sizes.All panel joiner posts and corner posts are constructed of engineered timber.Infill wall panels vary from light weight timber frame construction to masonry to fully glazed with operable windows and louvers. The systems flexibility allows windows to be installed into any orientation to make use of prevailing winds, solar access and views of the surrounding environment. The infill panels provide the flexibility for the system to adapt to different climate regions. Internal finishes can be adapted to suit individual requirements.

Roof:
Engineer timber roof beams with prefinished self supporting insulated sandwich panels.
Internal wet areas to be prefabricated bathroom modules.

Perspective From Excelsior Road



Detail for the foundation

Section AA'

Section BB'

Modular House 20 Excelsior Road, Cronulla 2230

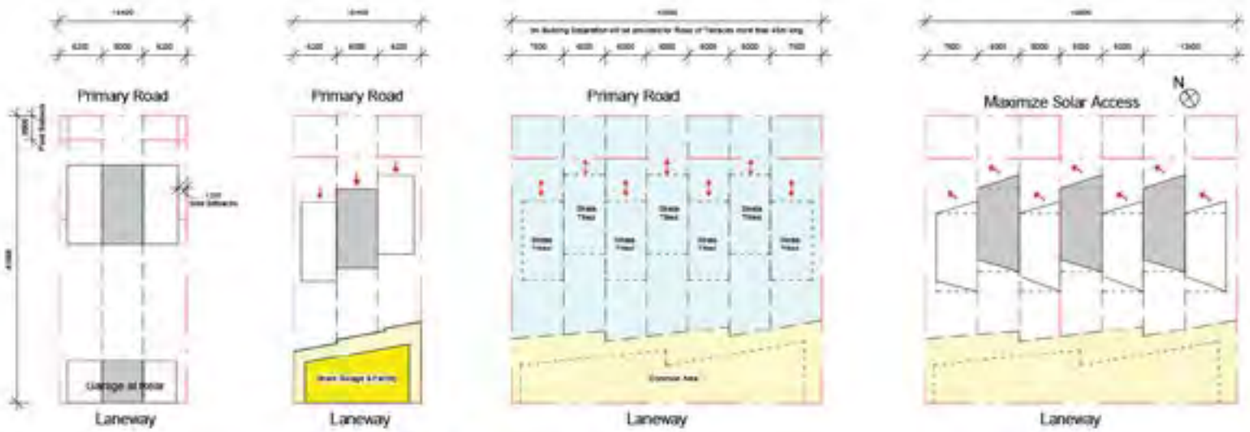
Concept Design 02

Typical model
with one lot

Activate Frontage
& Shared Facility

Subdivision of Lots
Strata Titled Development +
Common Area

Orientation and Siting



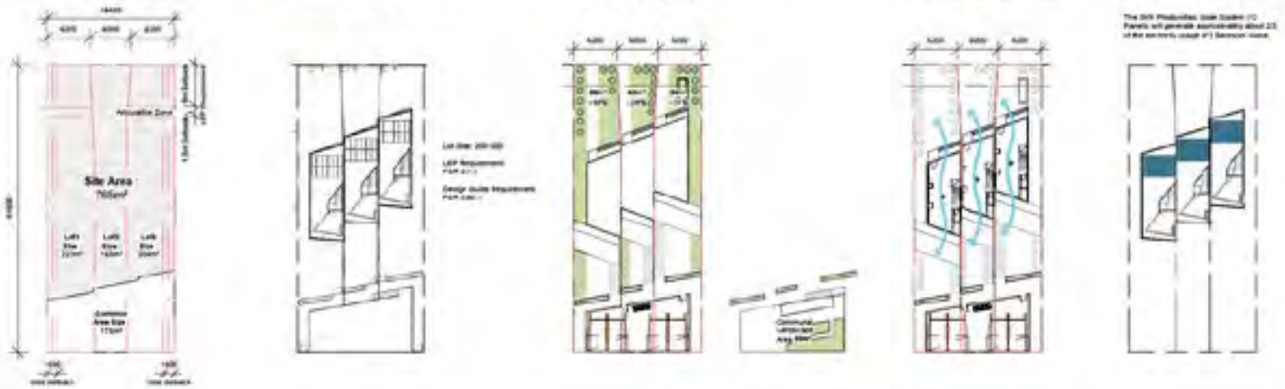
1a. Building Envelopes

1b. Floor Space Ratio

1c. Landscape Area

1d. Natural Ventilation

1e.Sustainability



1f. Dwelling Size and Layout

Modular House 20 Excelsior Road, Cronulla 2230

Testing The Design Guide

Site Plan | 1:1000

SITE ADDRESS

43 Prairie Vale Road Mount Lewis NSW 2190.

SITE SELECTION | RATIONALE

- Low density area within close proximity to transit & CBD
- Diversify housing stock in middle ring - currently single detached housing, large in size relative to household size.
- Challenge fears/phobias (NIMBYism) of increased density compromising garden/ natural setting of suburbs.
- Construction of a new rapid mass transportation system in the form of high speed Metro line to halve travel times to the CBD and North West growth area.
- R2 zoning and minimum lot size compatible with multi-dwelling housing.
- Corner lot location compatible with creation of a rear laneway for separating vehicular access and improving public domain interface to the primary street frontage
- North orientation to primary street frontage provice opportunities for scooping in natural light all year round.
- High demographic of families born overseas with lower incomes and large households, not being catered for by existing stock of residential flats in Bankstown, and absence of an affordable (and flexible) housing alternative.

Attic Level Floor Plan

Terrace 1 | Established family, pastry makers, work from detached studio

Terrace 2 | Multi-generational family, grandparents live in detached studio

Terrace 3 | Young family, income generated from renting out detached studio to students on airbnb

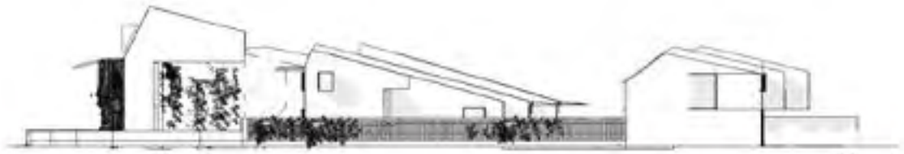
First Floor Plan | 1 : 200

Ground Floor Plan | 1 : 200

Long Section | 1 : 200

2 / 5

D1



D2

D3

Key Design Moves

- Test application/suitability of a low-rise and small-scale medium density housing development model as a way to gently integrate into garden suburbs through stepping down of volumes. (D1, D3, V1)
- Select typical suburban lot with irregular shape to test application of terrace housing as a higher autonomy model alternative to strata units and town houses (D2).
- Break down mass across sites for maximum light, air, private open space, flexible space to suit diverse occupation types; rentable flat (income generation), home office/workshop (increase daytime activity in suburbs and less reliance on commuting to work), granny flat (V2).
- Separate vehicle and people movement by adding a common rear lane to provide superior public domain interface, improve passive surveillance of street, and provide opportunities for secondary dwellings (D3).
- Provision of Detached Studio to support inter-generational living or extended families living on one plot of land.
- Encourage mixed use activity in the suburbs.
- Provide operability in the facade and screening systems for solar and privacy control as well as activating the street through dynamic architectural aesthetic (V1).
- Projected and sculpted openings to provide shading to glazing, scoop in sunlight and provide articulation of facades (D3).
- Bottom garage level as extension of outdoor covered outdoor living space (SECTION).
- Front room as flexible space; bedroom for Universal Access, lounge for large families, as study/guest room for smaller families or home office (PLAN).
- Green walls and planted pergolas to soften the building into the landscape and provide visual and solar screening (V1, V2).

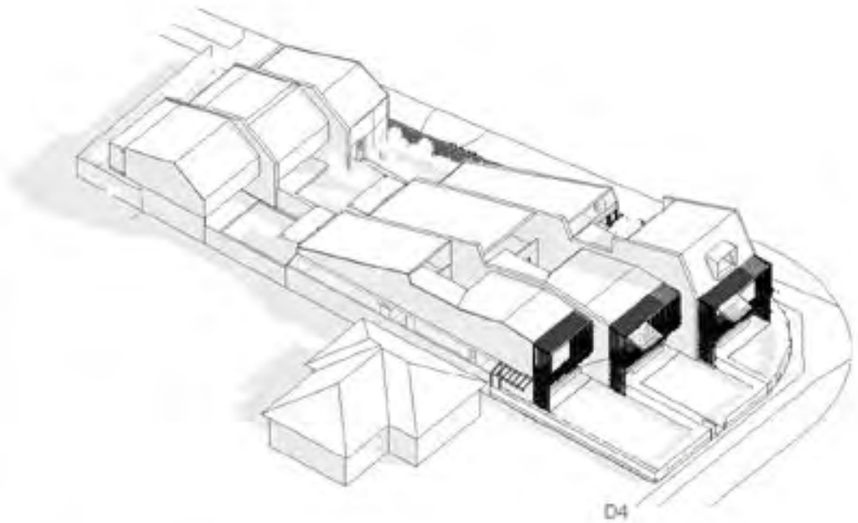
V1 - FROM NORTH EAST

V2 - FROM WEST

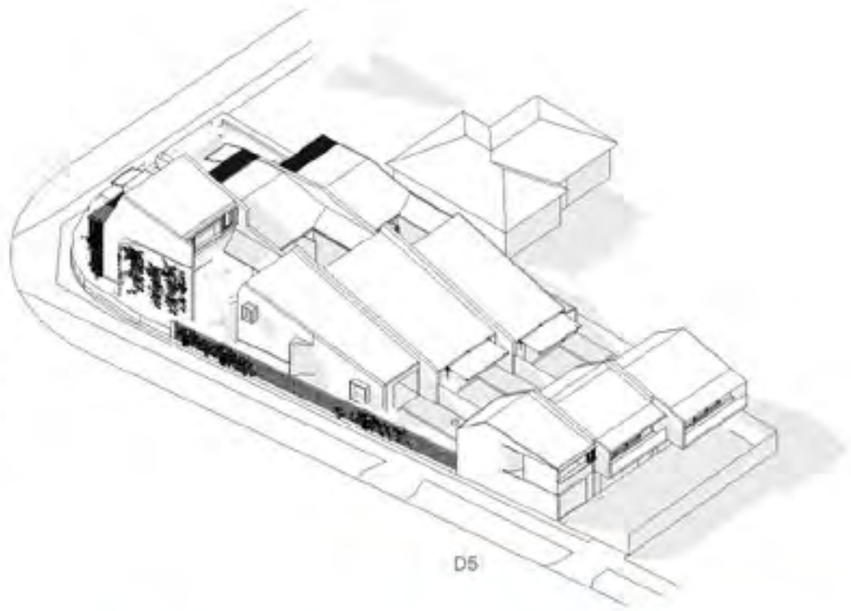
3 / 5

Testing the Design Guide

- There are few LEP's that allow for minimum lot size conducive to medium density on any zone other than R3 and R4. Multi-dwelling housing not permissible in most R2 metro areas.
- No clear definition if requirement to meet minimum lot width is only at street frontage or across the whole site. We assumed at street frontage as this provided suitable response to MDDG objectives for the Complying Development pathway as follows: applicable to narrower and irregular site shapes typically found in target areas of metro Middle and Outer Rings, sympathetic to smaller scale infil development where lot boundary alignments are typically non-parallel, narrower lots are more suited to space efficient layouts (2L) and good natural cross ventilation (2J) when coupled with internal courtyards (2M, 2I).
- Terrace housing typology 6m or greater is excessively wide for single stacked room arrangements, particularly if off-street parking provision is challenged or revised in future.
- Requirement for provision of 1 car space for Complying Development and 0.5-1 per MDDG is restrictive and contrary to objectives to interface with public domain. Minimum lot width and size should factor in alternative transportation modes near to the site (such as train, tram, bus, bicycle, motorcycle).
- 60% concession of minimum lot size is difficult to work with when average sites are only just above minimum size. Density of the LEP not challenged except in small pockets.
- Setback concessions are limited and do not challenge existing site massing. Averaging front setbacks of neighbours within 40m will not challenge large front setbacks of existing suburban plots.
- The Side setback of the last terrace in a row of terraces of three or more should be allowed to have zero setback to Side and Secondary Road boundaries.
- Second storey limit is not consistent with the 9m maximum building height allowance.



D4



D5

V3 - FROM NORTH

4 / 5

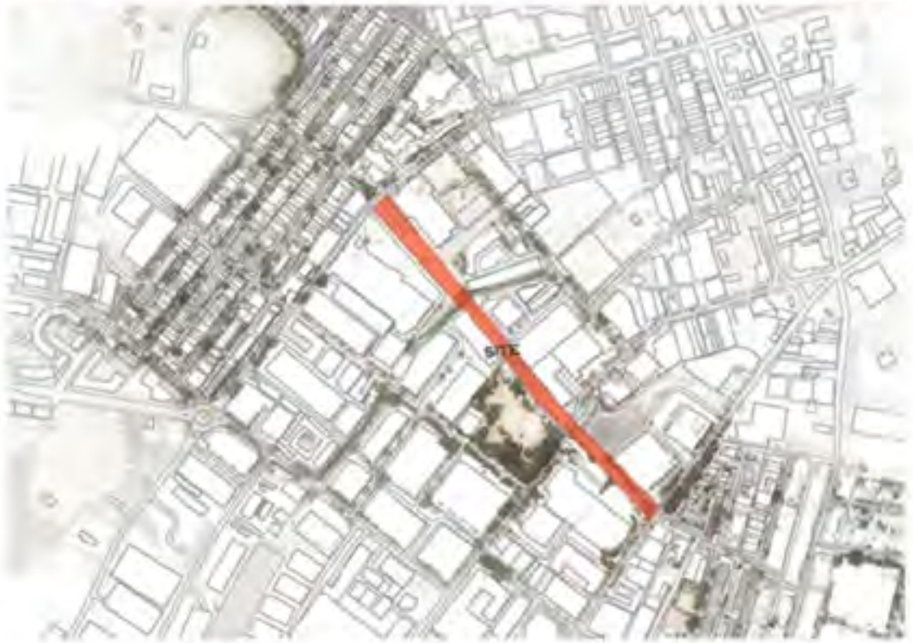
CONTEXT

The low-rise medium density housing types are an alternative solution to the increasing housing demand other than building high-rises. I believe that these types of housing promote a healthier community where more social activities could be generated or achieved. It could be as simple as meeting your neighbor at your front step and having a conversation. The proposed development, The Pipeline is located in Alexandria, NSW. Alexandria is a suburb with post-industrial characteristic that is undergoing transformation, where it is generating houses with potential pockets of left out spaces that provides opportunity for The Pipeline. The suburb is situated just 4.6km away from the central business district of Sydney. Alexandria with a total area of 4km2 is one of the 30 suburbs that falls under the responsibilities of the City of Sydney council. With its proximity to the city center, the housing demand increases. Alexandria has a population of 7,971 in with a population density of 20.01 persons per hectare, which consider having very little population with its huge area. The 3 main populations are made up of maturing and established independence, independent youth and maturing couples and families. The chosen site is a long and narrow void between McEvoy Street and O'Riordan Street with a width of 20m and approximately 700m long. The void houses the elevated sewer pipeline that was built in 1891. The elevated pipeline is Sydney's Southern Main Outfall sewer system that represents a period of major improvement to the public infrastructure in the Alexandria area around the turn of the century. The pipeline is an uncommon example of an above-ground, elevated segment of the Southern Main Outfall sewer system, which otherwise runs mostly underground. It demonstrates late nineteenth century methods for sewer construction utilizing cast iron pipes raised on sandstone plinths. The elevation of this segment on an aqueduct reflects its gravity–assisted operation and a late nineteenth century engineering solution for running a sewer line across the low-lying, flood-affected land of a former creek. Aesthetically, the iron pipeline raised on sandstone plinths contributes to the area's distinctive character derived from its low-lying topography and industrial history. The development aims to provide a solution in revitalizing the void into a new neighborhood that has a unique characteristic of its own and show appreciation to this unique historical infrastructure of Australia.

SITE PHOTOGRAPHS

TRAIN LINE

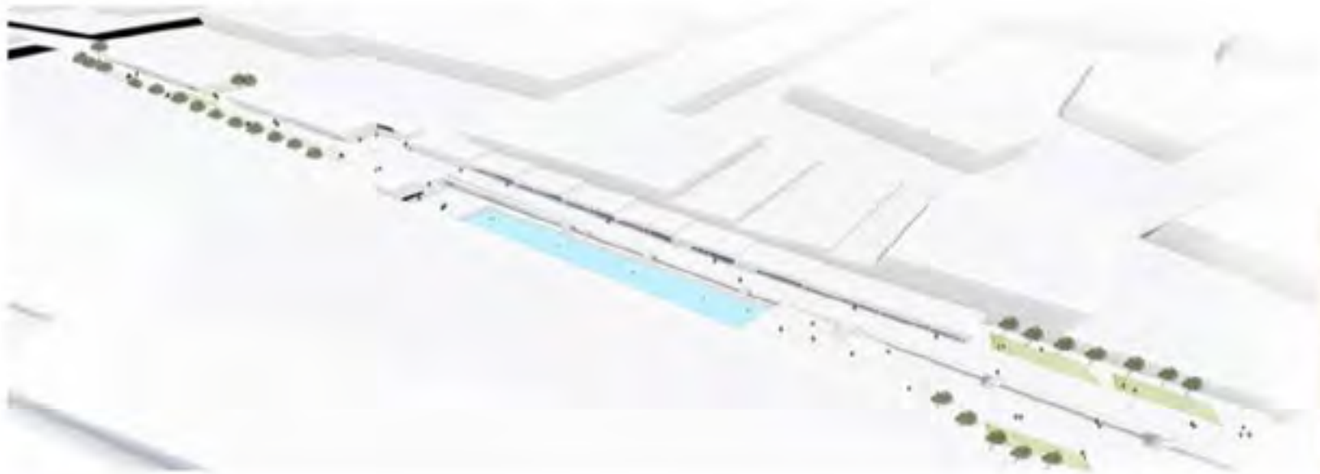
ZONING



SITE PLAN

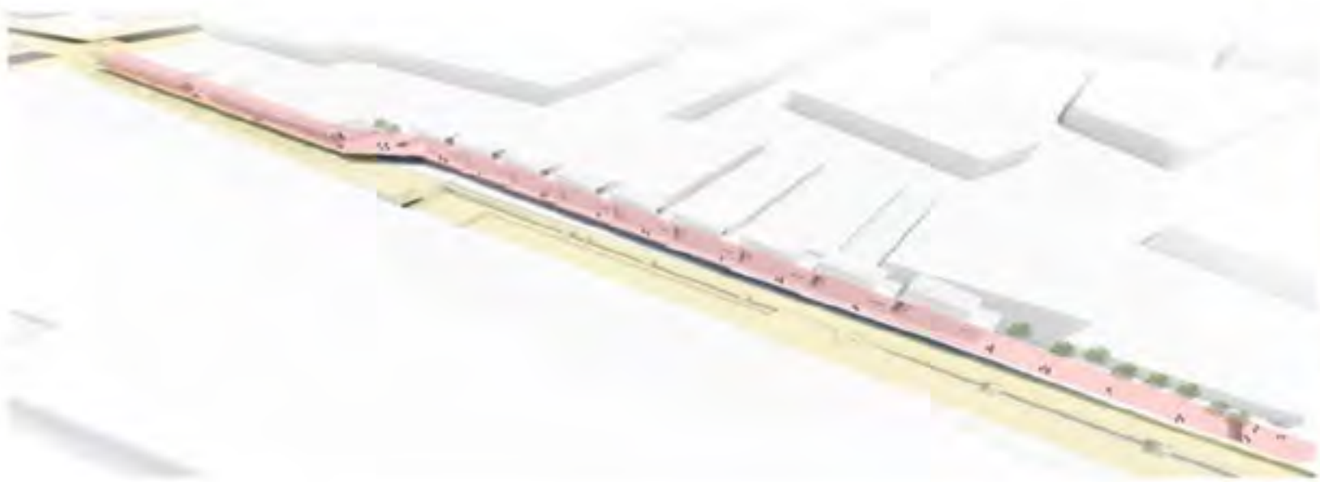
SITE PLAN

CONCEPT DESIGN



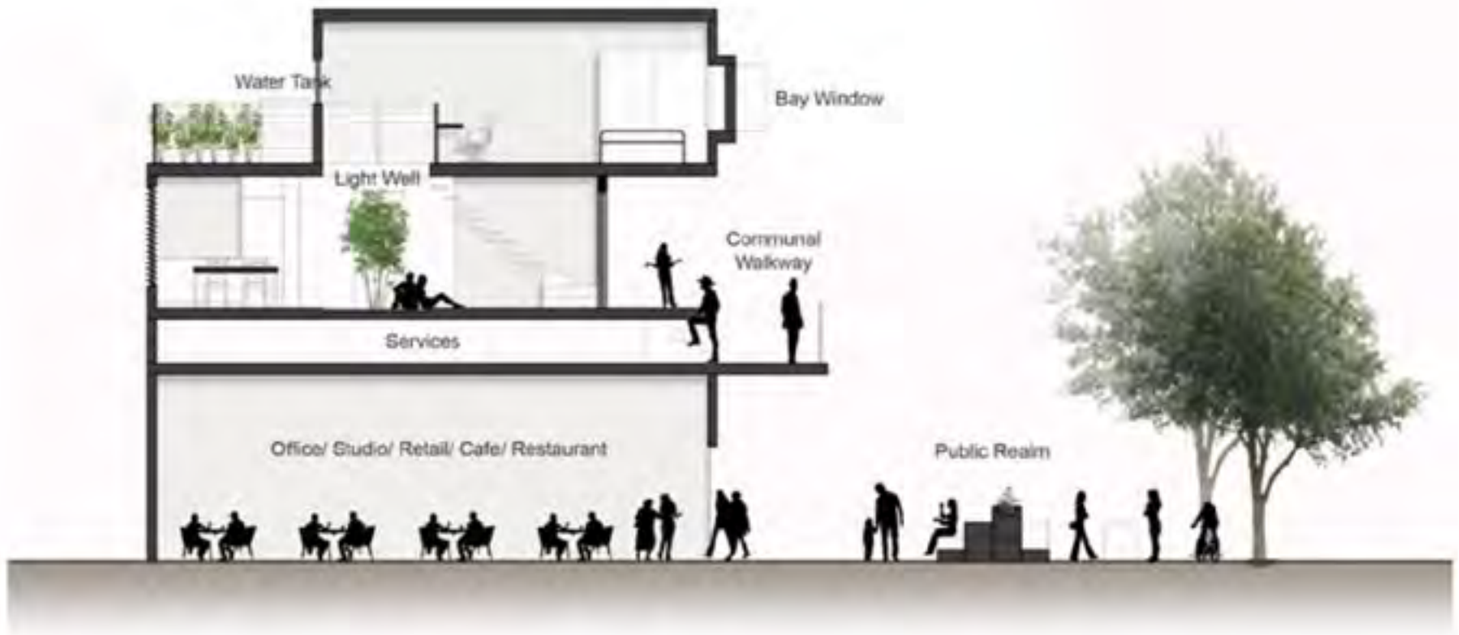
The project aims to activate the ground plane with diverse activities including offices, studios, retails, cafes, restaurants, pop up markets, public pool, etc. The ground plane is a platform in generating social activities.

The new neighborhood is created on the higher level for privacy purposes. A communal walkway is proposed as private circulation for the residents. Breaks between rows of houses provide social platform for the residents. Interaction between upper and lower level is promoted through visual permeability.



The project aims to connect the residential areas from north to south of Alexandria. The project also aims to triger a dentritic effect where houses start filling up the voids at other pockets. The project will then be an infilled green spine of Alexandria that show appreciation to the historical infrastructure.

CONCEPT DESIGN



SECTION
SCALE 1:100

Northern Light is obtain through celestory and a internal light well.

Stormwater collected for services.

Cross Ventilation

Verandah

Due to the unique typology, the proposed controls under the Complying Development pathway have been challenged to achieve design excellence. The development focuses more on communal spaces hence individual lot were eliminated. However, provide open spaces are still provided through verandah, balcony and an internal light well/courtyard. The development forms an internal pedestrian friendly street where vehicles are eliminated. In return, specified car parking spaces or building are to be dedicated. The main proposed control challenged was the dwelling size. The proposed 1 bed and 2 bed dwellings has a floor area of 35m2. This is to accommodate more dwelling without compromising in comfort. The development proposed a new way of living where commercial and residential is present at once, with commercial at the ground level and residential at the top. It is believe that quantity and quality can be both achieved with the entire development.

1.CONTEXT

LAKEMBA
MICRO 1:1000

The selected location of the site in Lakemba, within 800m of the metro station, takes advantage of the government initiative to develop the Sydenham to Bankstown Urban Renewal Corridor. Our position is that high rise density should be generally confined to the areas within 400m of the transport node and low rise density should occupy the 400m-800m radius zone. This will create an urban entity with an approximate diameter of 1.6km that can be traversed by a pedestrian in about 15 to 20 minutes. This becomes the limit of the 'city'. There is no good reason why areas beyond this limit should get any uplift and in fact it would be better, if over the next 50-100 years, that these areas are returned to large tracts of open space such as urban forests, large parks and intensive urban agriculture and aquaculture.

High rise density needs space for towers to 'breathe' as well as a fine network of public spaces, but low rise density needs proximity and intimacy for residents to interact. It is simply not enough to introduce low rise density into a suburban framework. The sub-urban configuration is and always has been essentially about the privatisation of open space at the expense of the public open space. The introduction of density must be done through the configuration of the public realm. The wide roads and large block pattern of the suburban arrangement is unsuitable for low rise density unless supplemented by a more permeable network of streets, laneways and footways.

The selected site consists of typical suburban subdivision lots with some irregularities and some topographical variation. The approach that is taken in this submission would work in any sub-urban area of Sydney and could be implemented incrementally, with the introduction of a floor space trading mechanism avoiding the need for 'gifting' of FSR to landowners who contribute nothing to the development process.

SITE ANALYSIS

CURRENT LEP CONTROLS

CANTERBURY LEP 2012

SITE CONTROLS
FSR: 0.5:1
HEIGHT OF BUILDING: 8.5m
ZONE: R3 Medium Density Residential

- B5: Business Development
- R3: Medium Density Residential
- R4: High Density Residential
- RE1: Public Recreation
- B2: Local Centre

FUTURE CHARACTER

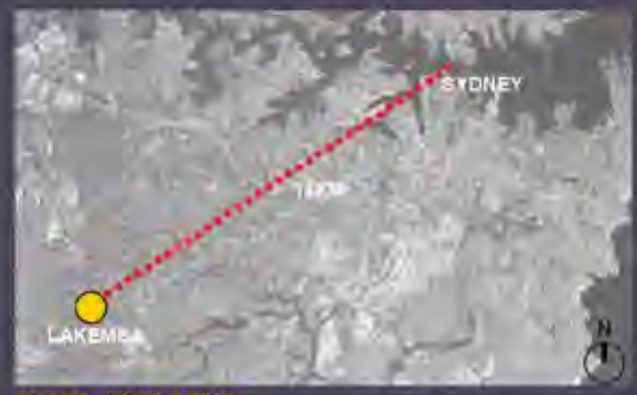
SYDENHAM TO BANKSTOWN
URBAN CORRIDOR STRATEGY

LOW RISE HOUSING
* 2-4 STOREYS IN HEIGHT

- Low rise housing
- Medium rise housing
- High rise and mixed use
- Main street shop top housing
- Mixed use enterprise corridor
- Public open space

The Competition Brief seeks to test the assumptions of the Draft Medium Density Design Guide. The Draft Guide itself lacks any real urban vision, being preoccupied with an outmoded sub-urban idea of density. It merely promulgates a future of dense suburbs, but it is the idea of the suburb that is the fundamental problem of the Sydney metropolis. Suburban density is an unsustainable folly. As Richard Sennet identified: suburbs are conceived as places of 'sameness and separation', while cities are places of 'otherness and encounter'. A dense suburb is no substitute for a small city – the Sydney metropolitan area needs lots of small cities and lots of open space between them.

The development of multiple major urban centres throughout the metropolitan area, together with the emergence of a network system rather than purely radial transport strategy, is already moving in the right direction. However, many more 'mini-cities' and a more comprehensive cross-linked transport network is required if the metropolis is to become genuinely accessible and social equity is to be achieved.



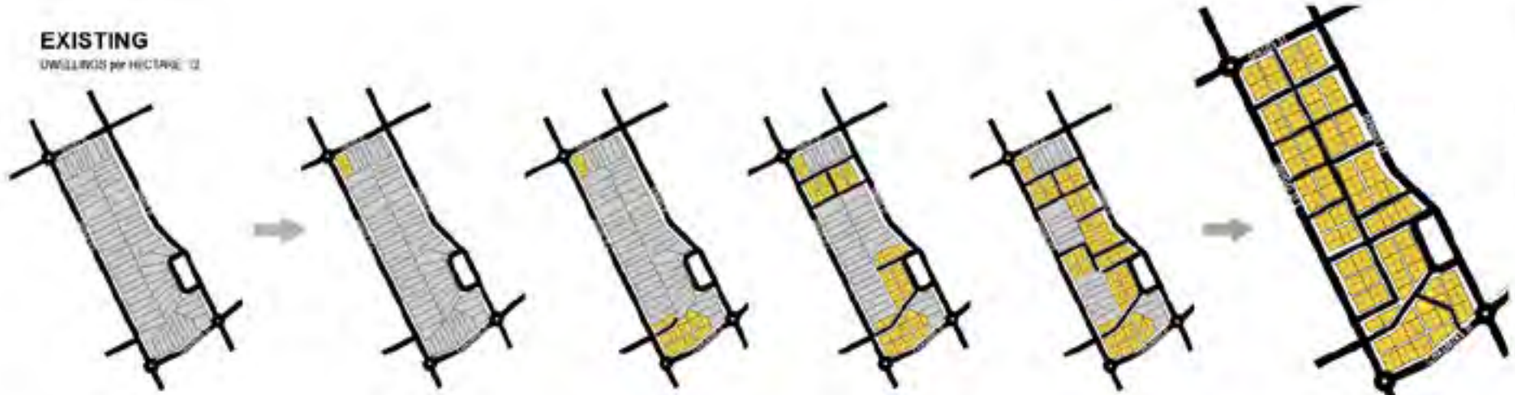
MACRO - MIDDLE RING

MESO 1:24000

2.TESTING THE DESIGN GUIDE

There are too many misconceptions in the Draft Medium Density Design Guide to provide a comprehensive critique within the scope of this submission. The likely outcomes appear to be quite boring and anti-urban, although the dwelling performance criteria are well considered. Therefore, the following points, both positive and negative, will be made as examples rather than as a total overview.

- The assumption that only large sites can introduce a hierarchy of new streets and lanes is incorrect. However, it is important to develop sites in the context of an authority's urban master plan, which should provide an appropriate fine grain network of streets, lanes, footways and squares to guide the development of smaller parcels of site amalgamation.
- The introduction of vehicle, cycle and pedestrian shared zones is commended. However lane shared spaces of 6m minimum width are insufficient to allow vehicles to access on-site parking if it is required. There is no need to provide basements for low rise density. The introduction of a fine grain street pattern will provide more than sufficient car spaces for all dwellings at 45du/hectare, together with the potential to provide 30% of all dwellings with the opportunity for at-grade on-site parking if required, although this should not be encouraged.
- FSR targets are far too low to achieve meaningful increases in low rise density. Existing suburban subdivisions have approximate existing FSR's of about 0.5:1 so 1:1 will at best only triple the number of larger dwellings. This means that the site cost component will not deliver an affordable product to the market. Between four and five times the number of dwellings will be required to ensure feasibility.
- Private open spaces need to include landscaped roof terraces, so that more of the ground plane can be devoted to the public realm. Associated with this is the need to allow for up to three storeys over a limited proportion of a site so that FSR targets of 1.5:1 can be achieved.
- The Design Guide fails to consider the courtyard house typology, which is a major shortcoming of the document. Anglo-centric forms such as terraces (urban), dual-occupancies (a sub-urban waste of space) and manor houses (sub-urban masquerading as urban) have their place, but courtyard typology and fine grain street pattern goes hand in hand. Furthermore, courtyard typology works well in hot climates, needs no side boundary setbacks, is very flexible, and addresses the expectations of a broader demographic.

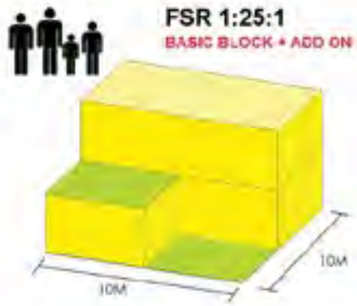


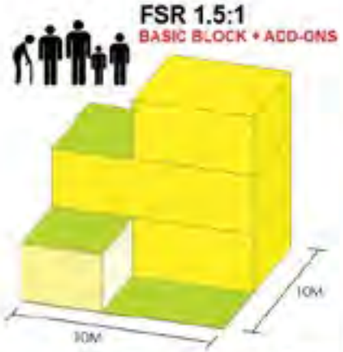
3.CONCEPT DESIGN

COURTYARD HOUSING

- Existing suburban road patterns are not appropriate for dense low-rise urban form. The existing street patterns cannot provide sufficient street addresses. Based on typical suburban street frontage of arcund 10 metres, dwelling numbers can only be doubled if everyone wants a street address.
- The first step towards low-rise density is to ensure that development patterns enable the incremental formation of a fine grain hierarchy of streets and footways. More edges means more addresses
- The increased perimeter to block size ratio of a fine street grain pattern creates the possibility in a low rise form for up to five times as many dwellings as the existing suburban block pattern.
- Urban courtyard houses are well suited to an urban structure of fine grain streets and footways and are more flexible than terrace configurations in the capacity to respond to privacy issues and favourable orientation.
- Courtyard housing and terrace housing can work together to take advantage of dimensional opportunities and constraints, as terrace housing achieves a similar density to courtyard housing.
- Three-storey elements and some non-residential uses are required in order to achieve appropriate densities, activity and an appropriate urban scale.
- Existing suburban areas in the missing middle have floor space ratios of around 0.5:1 with decreasing rates of occupancy – large houses with fewer occupants. Floor space ratios need to increase to 1.5:1 in order to deliver four to five times as many dwellings. This will also ensure development feasibility.
- Increases in density must be accompanied by increases in open space. Floor space trading can deploy a market driven mechanism to enable the creation of open space in both small areas and large tracts.

FLEXIBLE MODULE ARRANGEMENTS





4.CONCEPT DESIGN

Context

‘Missing Middle’ Design Competition, Dec 2016
50 Adina Avenue, La Perouse NSW 2036

The ‘Missing Middle’ ideas competition asks entrants to propose Concept Designs that represent excellence in low-rise, medium density housing, for the middle and outer ring suburbs of Sydney, or for coastal areas of NSW.

Design proposals should meet the criteria for Complying Development, as set out in the new Draft Medium Density Housing Guide (MDDG), whose aim is to deliver better design and planning outcomes for low-rise, medium density housing, whilst providing a fast-track pathway to unlock the potential of currently under-utilised sites (the ‘missing middle’ between single dwellings and residential flat buildings), that can accommodate high-quality, low-rise, medium density housing, and help meet the needs of a diverse and growing population.

Entrants are required to select a particular Medium Density Housing type, produce a high-quality, innovative and compliant design on an eligible site, and to then ‘test’ and ‘challenge’ the criteria for the Complying Development pathway, set out within the Draft MDDG. In doing so, illustrating, through a design-led approach, how the Design Guide could be improved to overcome challenges in producing projects that exemplify design excellence, in particular relating to challenging site conditions.

The site we have selected is located within the ‘Middle Ring’ approximately 12km due south from the Harbour Bridge, in La Perouse. We have deliberately selected a ‘non-standard’ site that has the following characteristics:

- a triangular plan.
- steep topography, with a 6.5m fall from front to back.
- located directly adjacent to public open space.

The site, currently vacant open land, is located within an ‘R3 – Medium Density Residential’ Zone and accessed from the north by Adina Avenue, which runs along its eastern boundary. On the opposite side of Adina Avenue to the east, are a number of 1 and 2 storey, detached residential dwellings. To the northwest sit a series of lower single storey bungalows, set behind the rear boundary of the site, that runs diagonally at an angle from the northeast corner to southwest corner. The topography of the site falls sharply from Adina Avenue down to the west, affording fine views of Botany Bay beyond, over the nearby bungalows. These stunning views continue over public open space that runs adjacent to the site along its southern boundary, and is used as pedestrian access by locals to reach the foreshore/beaches of Botany Bay approximately 150m west.

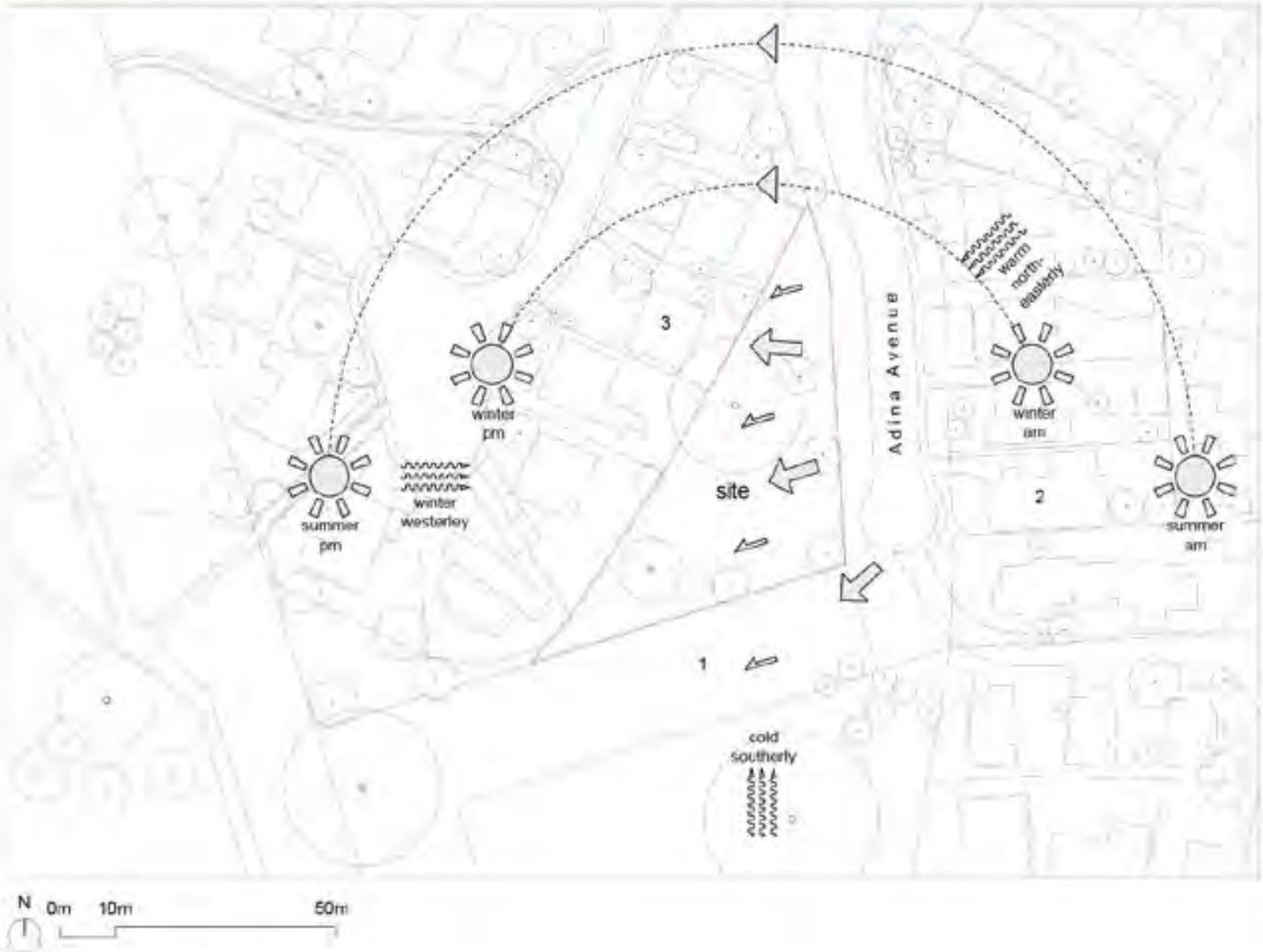
A number of existing trees are currently located on the site. Where possible we have sought to retain these, and supplement them with new trees as required under Complying Development criteria set out within the Draft MDDG (Objective 3.2C-2). We have, however, assumed that some could be removed, under a separate CDC as set out under the same Objective.

In summary, the site is laden with potential opportunities, whilst also posing significant challenges given it’s shape and topography.

It was these challenges, and the impact that they might have when applying the criteria for Complying Development, as set out in the Draft MDDG, that led to its selection.

Views west of Botany Bay

Steep topography of site



Concept Design 1

The proposals respond directly to both the surrounding context and site characteristics. Given the plan depth of the site, the nature of surrounding housing types (all with their own demise, entry and garden), and to maximise the development potential of the site, we elected to split the development site into 5 lots (each with the prescribed minimum area of 200m2 and 6m lot width), accommodating 5 no. terraced houses. With the lot boundaries set parallel to the southern boundary, a staggered street façade to Adina Avenue was created, along with a gesture towards the primary direction of approach from the north, and maximising the size of the lot at the narrower end.

The 2 storey dwellings work with the existing topography of the site, meeting criteria to reduce cut and fil and also height limitations, with the ground floor set below street level and entry level on the upper floor, off Adina Ave. This minimises bulk and scale from street level and is more in keeping with the nearby bungalows, also west of Adina Avenue. The staggered plan also responds to the nature of the site, with each dwelling sequentially moving down the length of the increasingly longer lots, in doing so generating natural privacy from their neighbour.

In order to provide ample daylight, deep in to the heart of each dwelling, the cross section shows a 'concealed' roof form that provides a high-level, clerestory window along the majority of the entrance hall. This is supplemented by a rooflight set over the central stair, flooding light into the lower level, and framed views west to Botany Bay from the primary circulation on entry.

Long section

Short section

Key

1. driveway
2. pedestrian approach
3. entrance hall
4. garage
5. bedroom
6. bathroom
7. green roof
8. planting
9. communal open space
10. public open space

'Missing Middle' Design Competition, Dec 2016
50 Adina Avenue, La Perouse NSW 2036

Entry Level Plan @ 1:200

Concept Design 2

Visualisation of the proposal in context

A bridged approach over low-level planting, provides clearly defined pedestrian and vehicular access to each dwelling. Along side a recessed garage, bedrooms at entry level are set to the primary facades front and back, with bathroom and stair set centrally.

On ground level below, the master bedroom suite is set to the front of the house, with its own external terrace formed into the planted, sloping topography. To the rear, each home enjoys an expansive living, dining, kitchen space spilling out through fully retractable, full height glazing, onto a 3m deep terrace, with generous garden beyond. Internal layouts meet all criteria, including distances to windows from within habitable rooms and from kitchen worktops.

The dwellings on lots 4 and 5, respond to the narrowing site and subsequent setbacks, each having 3 bedrooms, rather than the typical 4. In particular, the dwelling on lot 5 adjusts at lower level, with an expansive dual aspect living room extending north, opening onto ample external amenity space, typical of all dwellings.

At the other end of the site, the dwelling on lot 1, incorporates glazing to it's side gable and a semi-permeable boundary condition below, positively addressing the adjacent, public open space.

The general massing and architectural language ensures generous overhangs to the east and west, with the strong roof form (capturing north light) folding down to creating a clear identity to the upper floor of accommodation, set above the lower level plinth. A language generated in direct response to the site topography.

Through innovative and considered design, the proposals turn these challenges of site topography and shape, into key design drivers, in doing so meeting the draft MDDG ambition of producing high quality residential design that unlocks the potential of the missing middle.

Key

1. master bedroom
2. ensuite
3. bathroom
4. kitchen
5. dining
6. living
7. terrace
8. garden
9. planting
10. public open space

Ground Floor Plan @ 1:200

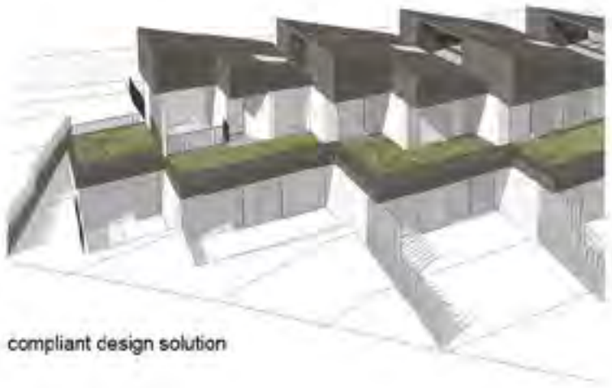
Testing the Design Guide

'Missing Middle' Design Competition, Dec 2016
50 Adina Avenue, La Perouse NSW 2036

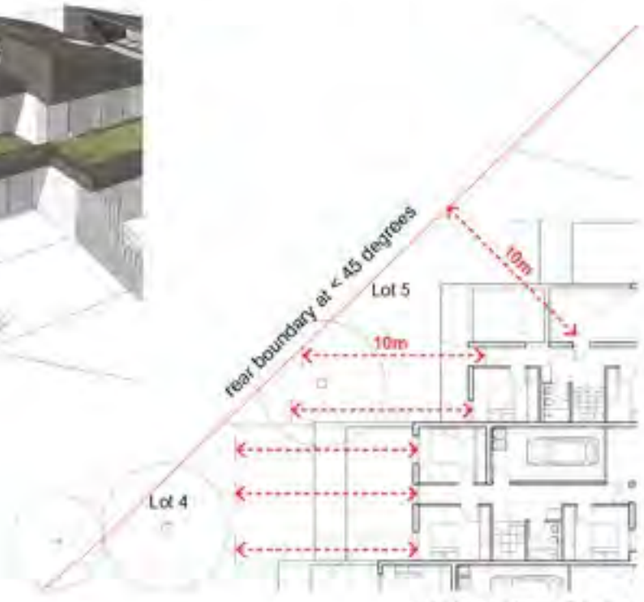
1. Rear setback on an angled boundary

Control 3.2.A - Building Envelopes, specifies that 'Rear Setbacks' for lots of 200-1500m2 are to be a minimum of 10m, where development has a height greater than 4.5m. Again, presumably to negate any potential detrimental impact a neighbouring property,

However, as in our case, not all lots are rectangular. The 10m prescribed setback does not acknowledge this, nor the nature of resulting 'oblique' views in such circumstances, and unnecessarily stifles potential development. In our case a better design outcome can be provided (additional bedrooms to Lots 4 + 5, and a more resolved massing) with rear windows remaining a true 10m from the rear boundary and being oblique to neighbours, with no impact on privacy. In such instances where the angle of the rear boundary is < 45° the 10m rule could be reviewed / relaxed.



compliant design solution



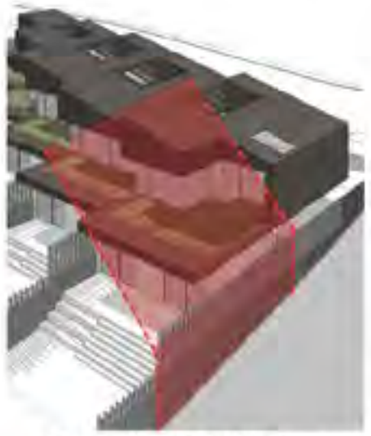
window setback diagram

superior design outcome

2. Side setback adjacent to public open space

Control 3.2.A - Building Envelopes, specifies that 'Side Setbacks' for the front half of the lot (or a length of 15m) are to be a minimum of 1.2m. However, for the rear half of the lot (or a distance >15m from the front boundary) the building envelope is to be defined by 'a 45° plane projected from a height of 3.6m above the boundary'. Presumably to negate potential detrimental impact a neighbouring property on the adjacent lot.

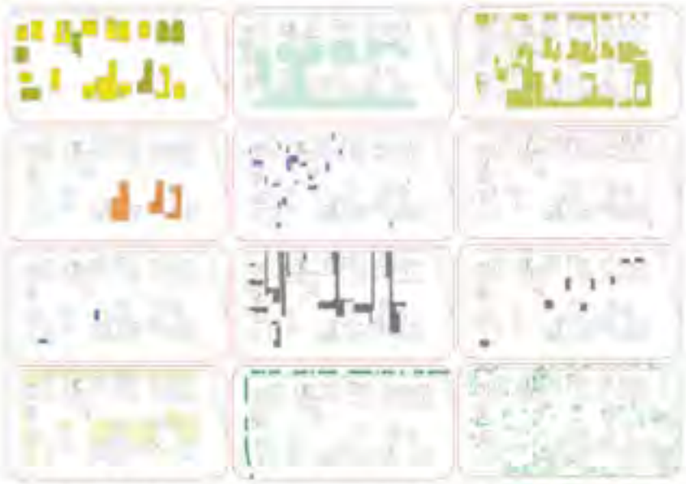
In our case, however, where the adjacent lot is public open space, and will not be built on, maintaining the 1.2m flat setback along the entire side boundary would allow for improved design resolutions, without any detrimental impact on the neighbouring land.



compliant building setback envelope

superior design outcome

close up of Adina Avenue facade



MAPPING ANALYSIS OF BLOCK INDICATED BY RED IN SUBURB PLAN

EXISTING BLOCK WITH LAND OWNERSHIP/ FENCE LINE DEPICTED AS LIGHT PINK

Belfield displays a humble 1360km^2 with a population according to the 2011 census of 1362 people. This results in a population density of *1.001 person per sq km*

CONTEXT

Belfield, Sydney, NSW

This competitions aims to explore the missing housing typology to provide an alternative to the rising concerns of population density concentrated around Sydney. This extends itself to test design standards for Low-rise medium density housing to provide efficient assessment to enable a fast tracked guideline to appropriating a design guideline which suits the rising populations needs.

Belfield exhibits itself as a small and humble suburb situated in the inner west Sydney. This is an area which is a 20 minute drive to the CBD. These inner west suburbs right on the outskirts of the city are the suburbs which need to be utilized efficiently to react to the increase in population density. However just as important as it is to cater for the future residents, preserving and embellishing the character of the existing suburbs is imperative to maintain elements of the Australian vernacular. Additionally thorough consideration of the amenities to service the new residents is imperative. Land division is something which has stemmed from an oligarchy era with strong capitalism influences to maximize private ownership of land, despite the inefficient utilization of more than half the land in Australian suburbs.

This project broke down the various constituents within the block of Belfield to examine how to reorganize the existing spatial fabric to cater for the gradual surge of occupants within Sydney. Admittedly the design stems from the concept of the humble granny flat, where a built structure is inserted in the fabric of a conventional block. This exaggerated and proliferated exhibits a scheme similarly appropriate to the missing middle

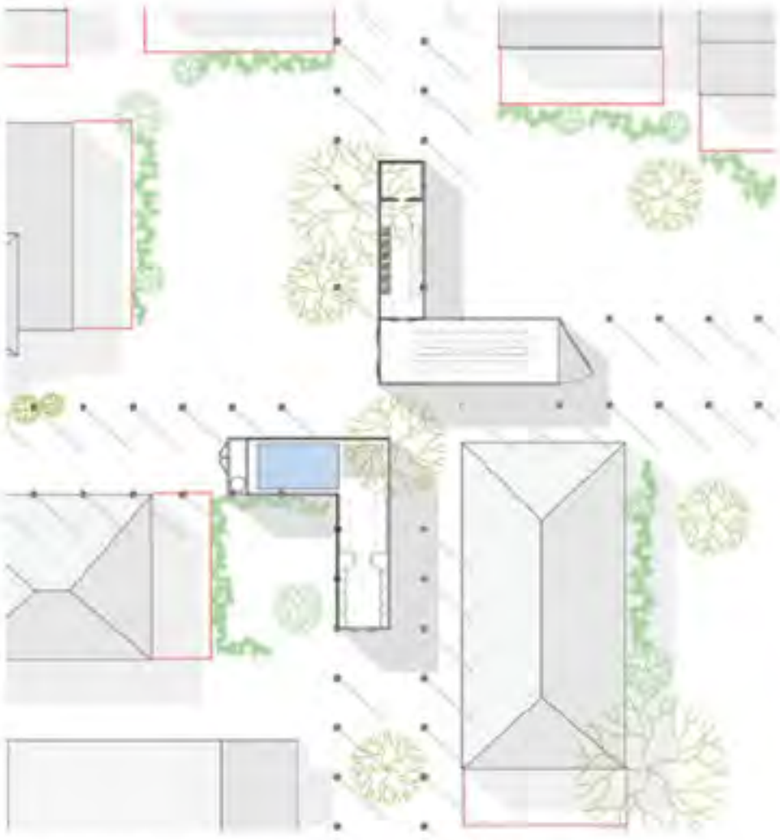
Having a close look at the existing spatial fabric three spaces were continuously underutilized throughout all suburbs.

> The Driveway: A concrete plane on ground level which is intermittently used only as a circulation path for the vehicle. (This was also inclusive of on street parking which takes up a width of six metres within the road)

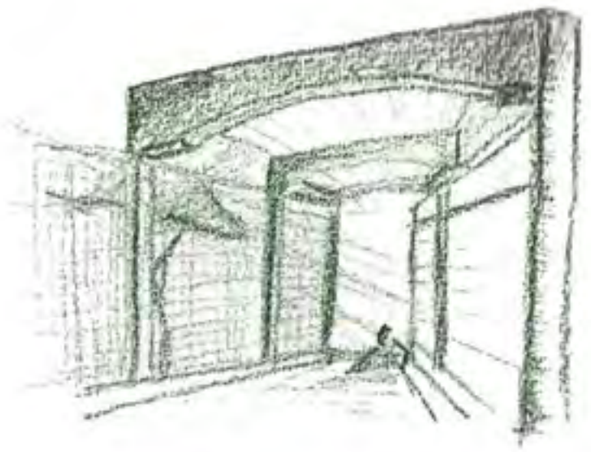
> Backyard/Front Yard: These spaces although quite nice to extend the interior spaces of the home to the outside are often neglected and seen as the consequence of looking at land as an investment more than a functional canvas to encourage and proliferate life within the suburbs.

> Street Green Strip: This space is usually around 1500mm wide and is occupied by the odd tree and some grass. The streets should be given back to the pedestrian with expanding this space with more vegetation public amenities such as popup stores or even cafes and corner shops as well as seating.

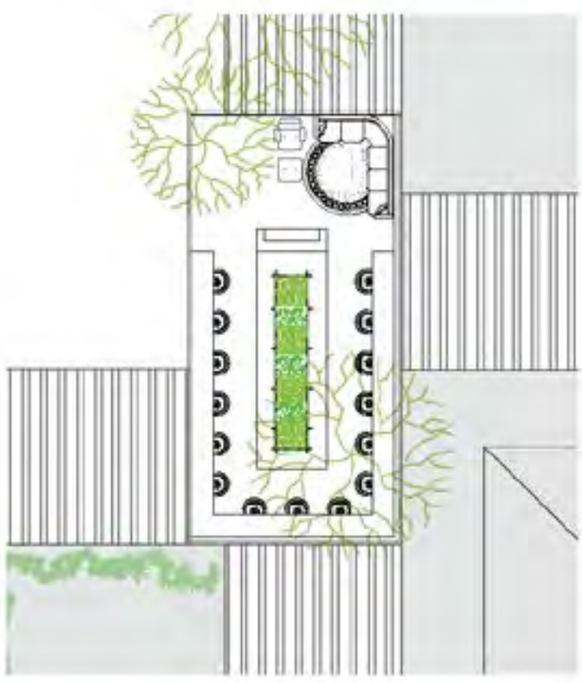
CONCEPT DESIGN



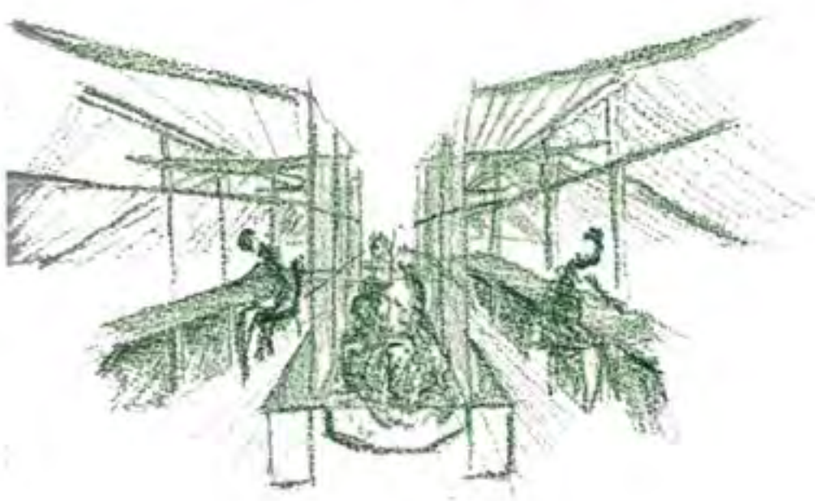
Ground Level: Communal Kitchen, Dining & Bath house



First Level: Bedroom, Living, private outdoor space



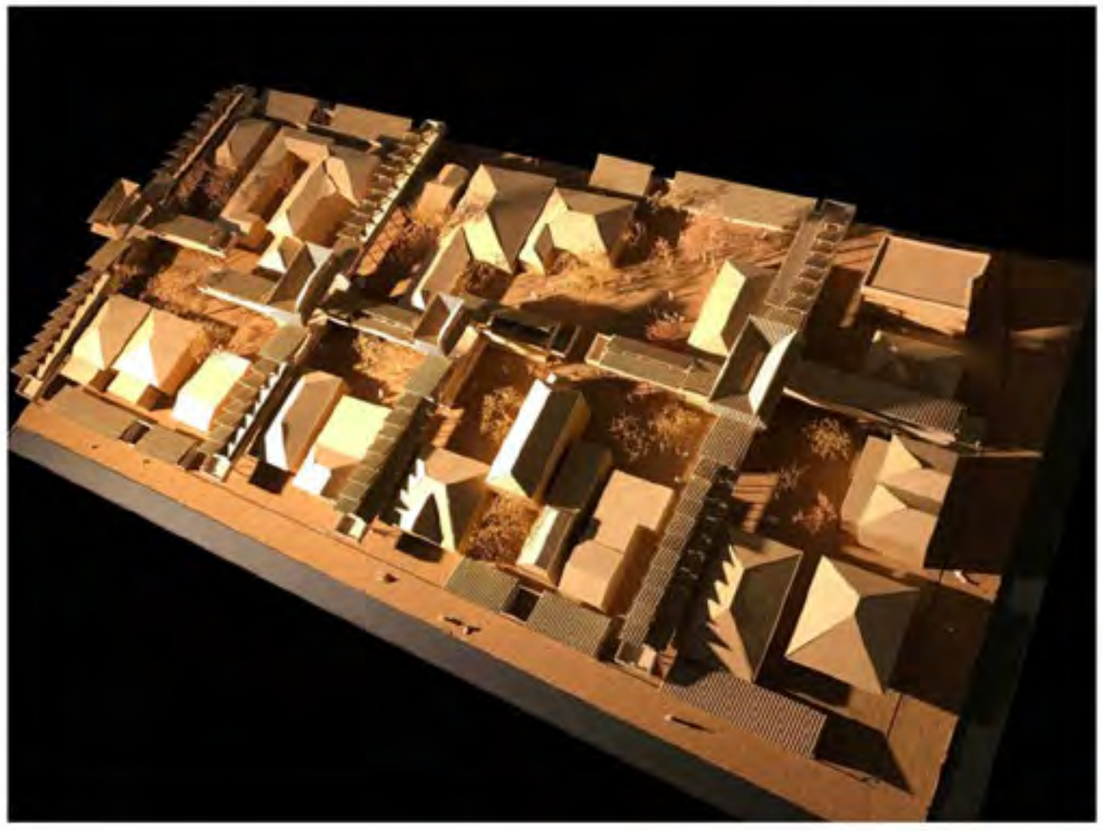
Second Level: Communal Study/ Meditation Room.

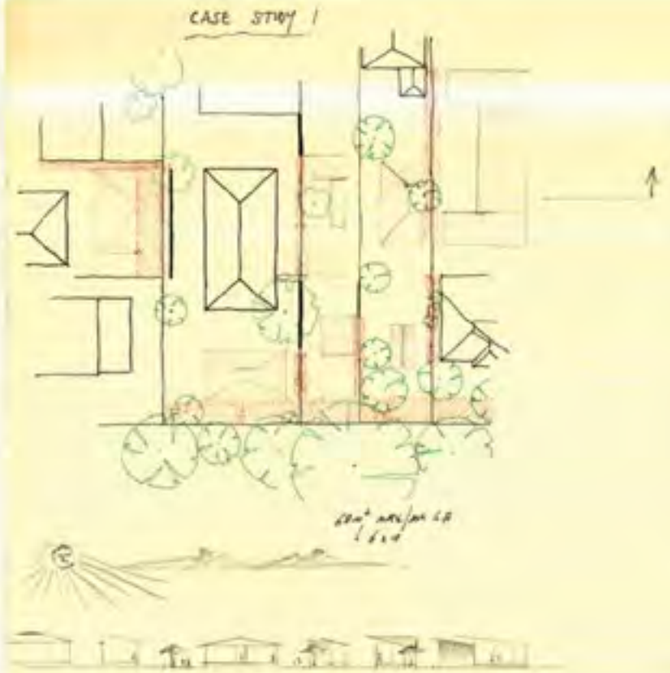


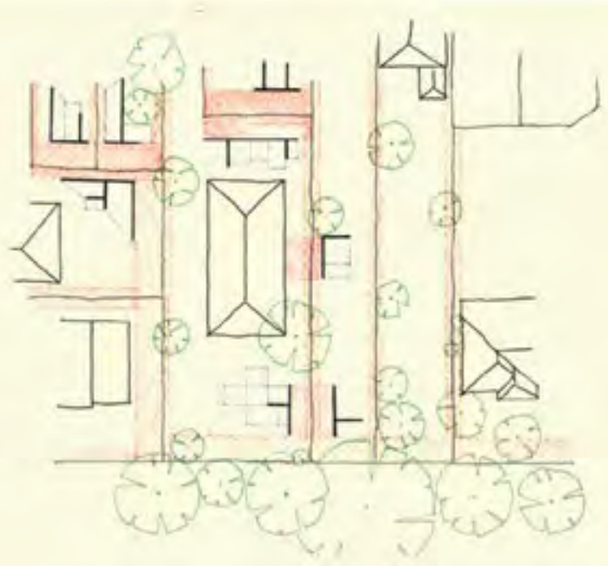
Ground Level: The design is on stilts allowing a formal circulation path on ground level and providing a communal usage of the ground level amenities like the open dining room and communal kitchen.

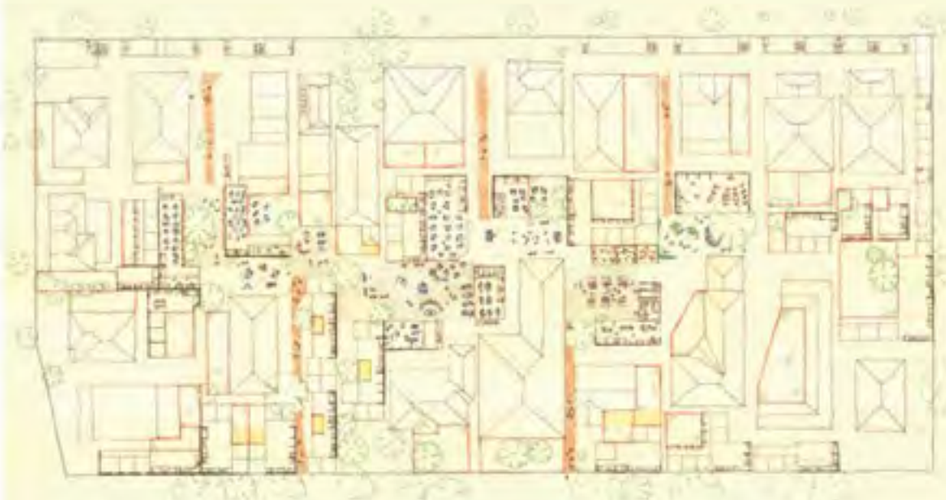
Top Level: The highest and most sacrad space is the meditation or work space. contemplative and detached yet still remains connection through its elevation

First Level: The bedrooms are aligned along the driveway to maximise density and converge on communal decks. This proposal is more a critique and pushes the boundaries of which western culture is comfortable in dwelling in vastly social environment.









Here exhibited are three case studies explored to propose a granny flat which is positioned to react more sensitively to site rather than conform to the limitations of council regulations.

- Case Study 1: Utilizing the setback in the backyard as the courtyard or semi public outdoor courtyard with the adjacent residents.

- Case Study 2: Utilizing the land plot line as a symbiotic wall which both adjacent sites mutually benefit from

- Case Study 3: A hybrid of both where the symbiotic amenities spine is expanded to allow for a courtyard to form where the site setback occurs.

To the left exemplifies Case Study 2 being implemented across the block to bleed in the public amenities into the core of the block.

TESTING THE DESIGN GUIDE

The incentives of the draft medium density design guide remain to be encouraging and imperative in aiming for a cohesive and symbiotic housing schemes in the medium density scale. However from my studies and experimentation conducted on Sydney suburbs there needs to be a redevelopment of the fundamental incentive of the limitation provided by these regulatory design guides. Issues such as setbacks and street setbacks are precisely what limits the character of a suburb and dissallows creative interpretation of site with such limited area one can design and build.

This guide strictly regiments and determines the position and vantage point a dwelling has, limiting its need to work sensitively with its surrounding contexts. Personally I believe the guideline should revolve around fundamental principles of design and allow for idiosyncrasy to develop. The detailed and thorough nature of the design guide is simply the reason why the suburbs in Australia struggle so much to provide a semi private/public domain as compared to our European counterparts. The notion of the village came about through understanding site and people instead of designing a manuscript which further dictates every element of design.

Re-Terrace - The Missing Middle

Opportunity

Our answer to the "Missing Middle" is a two-fold solution. On one hand it is a massing shift, and on the other, a reconsideration of program and zoning controls.

We propose the introduction of a flexible space capable of multiple uses as a new "public" front room, addressing the street. This new space is scalable and becomes both an income generator and community facilitator. Shops, studios, home offices, workshops and other amenities are introduced into the singular residential suburban framework.

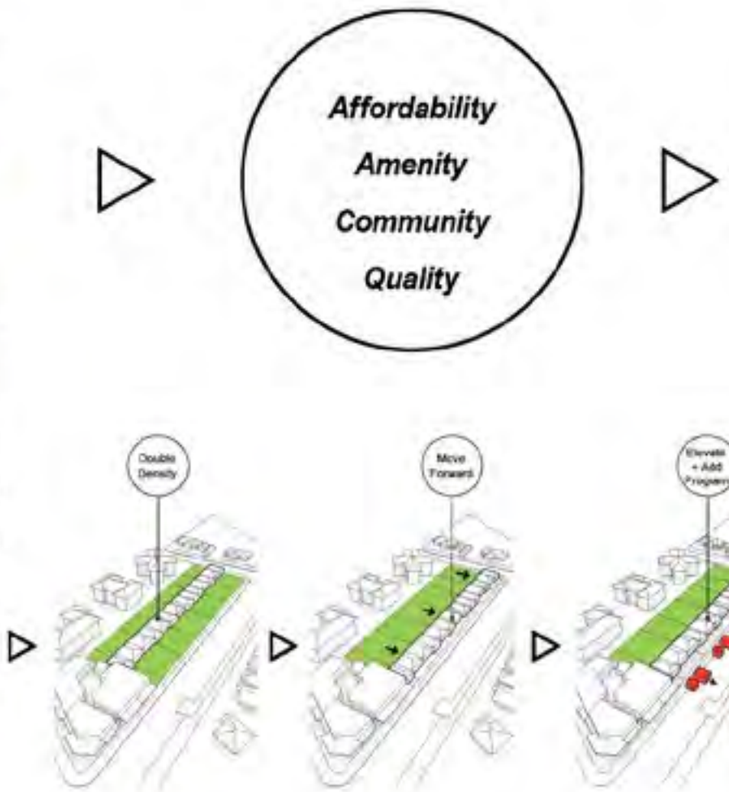
This new space is housed in a repackaged dwelling, with zero side setback and minimal front setback. This provides closer street interaction and zero wasted side passages. However the most significant advantage of this massing strategy is the creation of a large shared park with a significant amenity improvement.

Site

The Study Site chosen is 95 -105 Mercury Street, Narwee. Narwee is located in south-western Sydney. It is 16km as the crow flies from the Sydney CBD. The site is a 1 minute walk to Narwee train station. The T2 Airport line will take 16 minutes to Sydney Airport and 29 minutes to Central Station. The M5 Motorway entry is 5 minutes from the site which give access in or out of the city.
Narwee Public School is a 2 minute walk from the site through the small retail district opposite the train station. There are three public parks within a 3 minute walk of the site.
The site is an amalgamation of 7 existing residential sites creating one site of 2945m². The site is within the Georges River Council district and is zoned R3 Medium Density.

Location

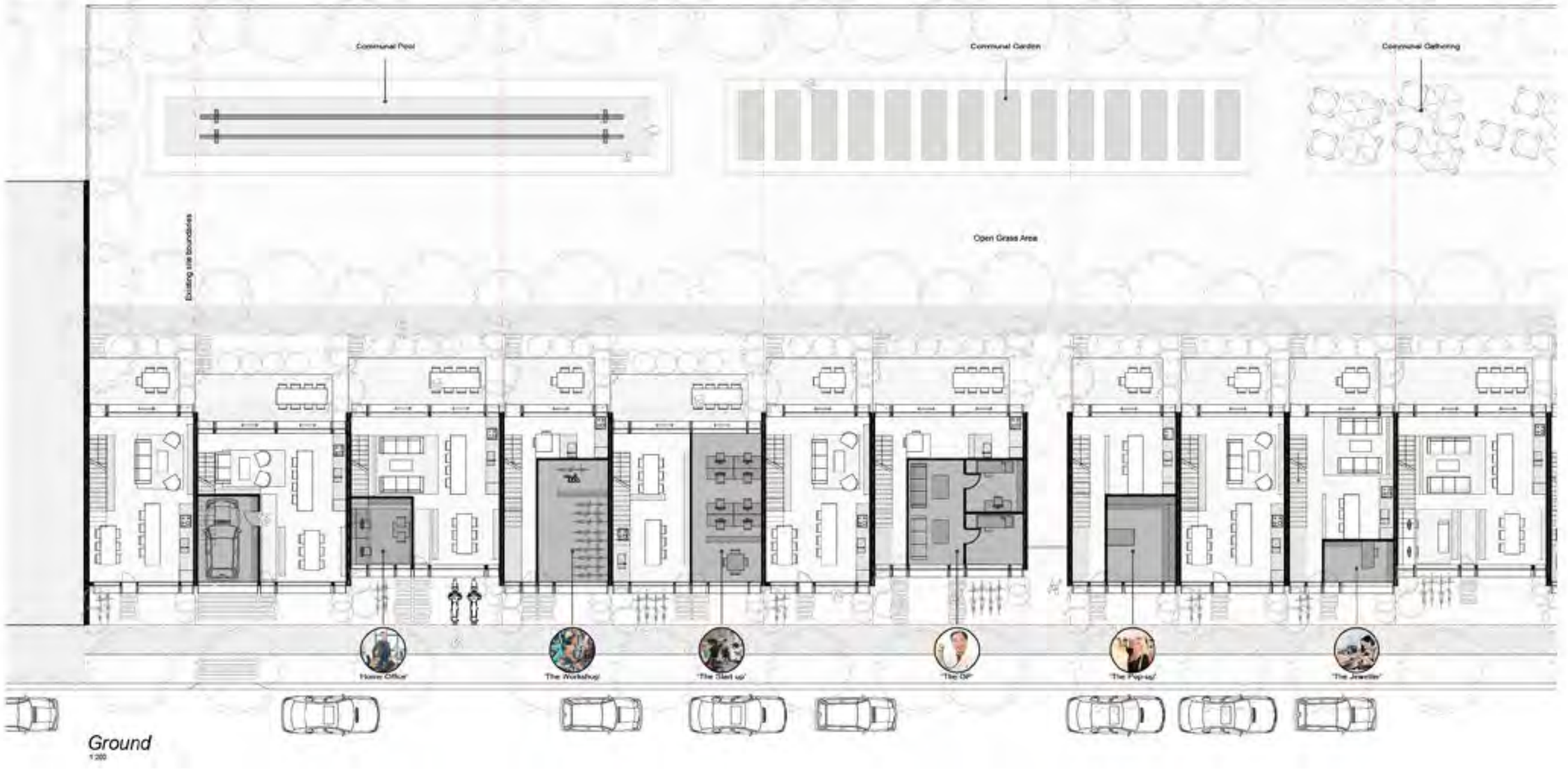
Opportunity



Solution


2
5
6

L1
1:200

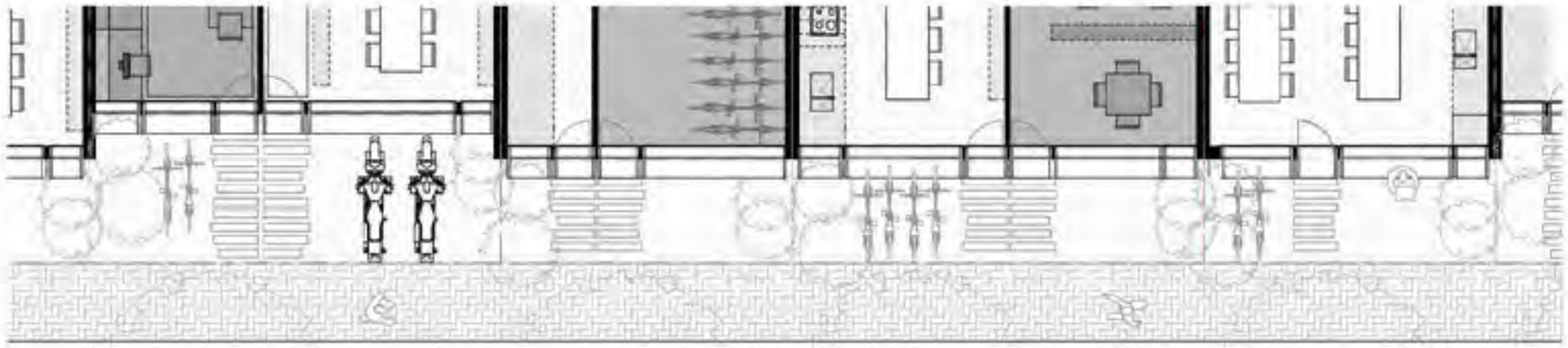


Ground
1:200

Testing the Design Guide

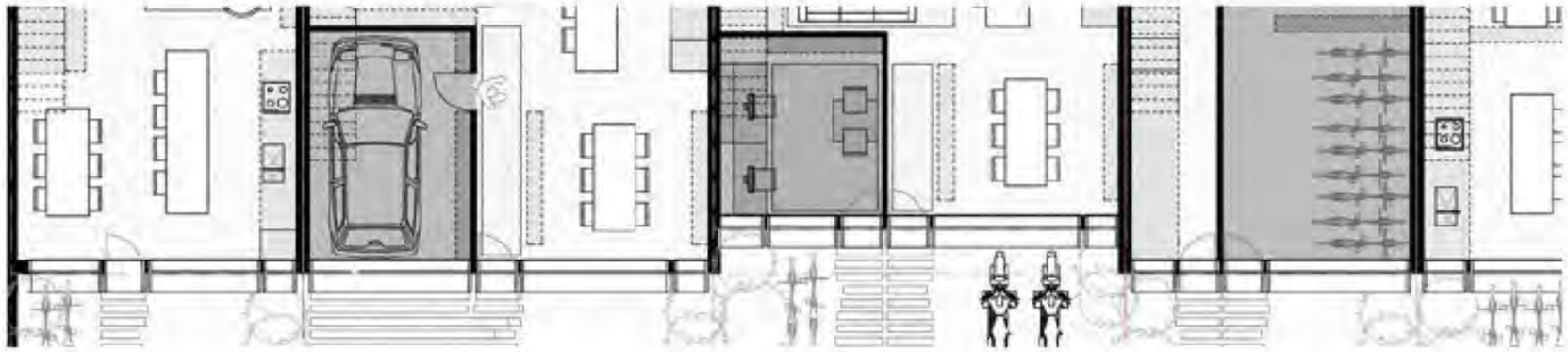
Front Setback / Visual Privacy

The current Design Criteria for the Front Setbacks and Visual Privacy dictate a very insular approach to planning. This restricts the level of interaction possible with the street intern reducing a sense of community.
Our design proposes a more inclusive typology with potential for the less private spaces such as the Dinning Room. Kitchen and Studies to face onto the street.
The secondary overlay of alternate programs occupying the street frontages help not only with affordability in the form of an income for the owner occupier. But also help to activate the street frontages with an added texture of retail activity and passive surveillance.



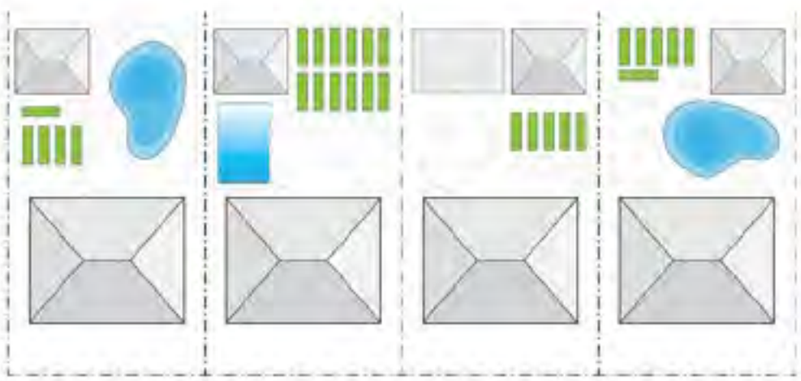
Car Parking

By requiring a minimum of 1 car space per lot the Design Criteria restricts the configuration of lots. The location of a garage in many contexts without a rear lane means it is at the front of the dwelling. This large static surface once again disconnects the dwelling from the street limiting interaction. The relevance of a garage could be debated in certain more urban contexts with better public transport infrastructure. The future of private car ownership is also up for debate given the progression of autonomous vehicles.
Our design proposes to create the best living spaces first that could accommodate a car should it be required. This approach frees up the front of the dwelling and allows more area for recreational activities.



Lot Sizes

By restricting the minimum lot size to 200m² the Design Criteria does not allow for alternate configurations of land usage.
Our design proposes Torrens title lots with the boundaries spanning the width of the lot to the rear of the site. The dwellings are supported by one large communal backyard that would be held as a right of way across all sites. This backyard contains multiple types of amenities to service all inhabitants. By amalgamating the backyards of all of the dwellings greater amenity is created for all and inhabitants and helps to create a sub-community. This is somewhat in-line with current progressive housing models including Baugruppen in Berlin and the Nightingale apartment models in Melbourne.



1:2,000,000

SYDNEY BASIN
A LARGE BAY SURROUNDED BY HIGHER GROUND

1:400,000

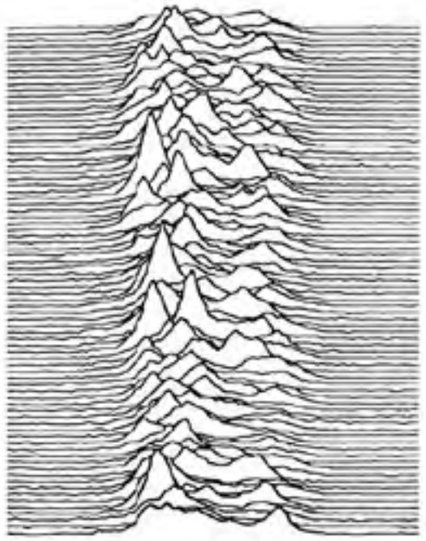
ACCOMMODATING GRID WITHIN RIDGES AND VALLEYS

1:20,000

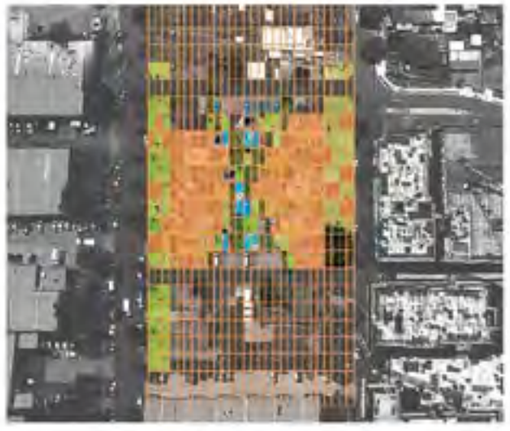
MEETING OF GRIDS - CLEMPTON PARK

1:2,000

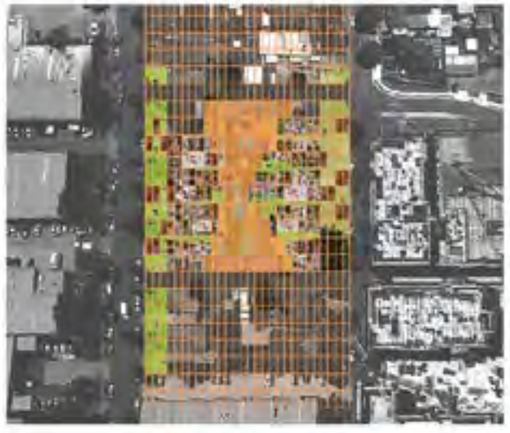
SITE: BETWEEN ELIZABETH AND CHARLOTTE ST
INCREMENTAL CHANGE



CONCEPT SKETCH OF DOUBLE RIDGE TERRACE - AS RECEDING MOUNTAINS



PRIVATE SPACE

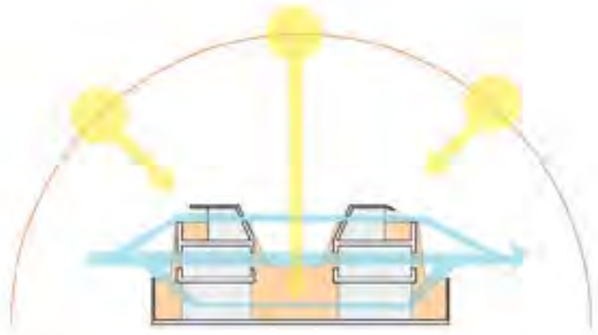


PUBLIC SPACE

OPEN SPACE ENCLOSED BY FORM

CONTEXT

Typical terrace party wall (single ridge) promotes a deep footprint
Poor natural light, ventilation, and private open space.
Requires more energy to heat, cool, and ventilate spaces
Does not accommodate for semi-independent, private, multi-generational space.



PROPOSED

Ridge-valley-ridge (double ridge) promotes courtyards
Allows for passive light and ventilation. Allows for improved private open space and privacy between generations
The double ridge allows for a variety of expressions

Testing the Design Guide + Design Statement

Our primary aims in this proposal are balancing, in equal parts, Environmental, Social and Economic requirements.

Below are 3 areas, which we believe require more reflection.

Design Guide - Front setback of 3.5m with permeable fencing is restrictive.
This does not satisfy our social, economic or environmental requirements.

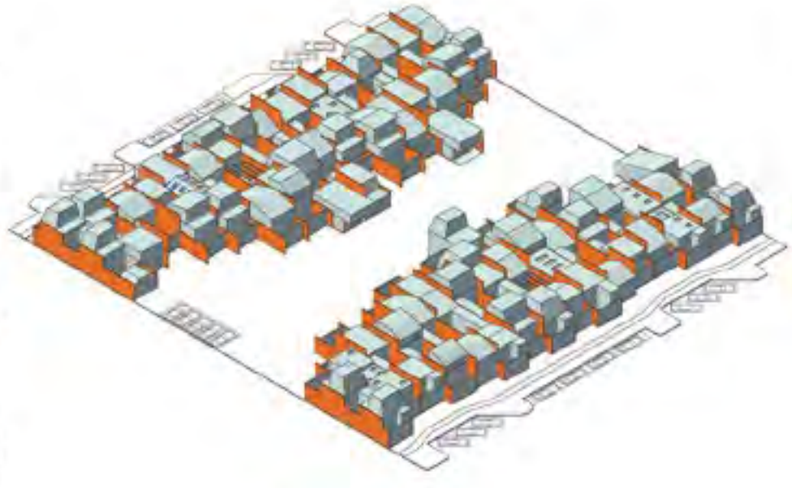
1. It reduces affordability by requiring more land
2. Restricts a hard edge urban frontage/ window shop house
3. Restricts diversity
4. A tall blank wall to the street allows for the street to be occupied while minimising disturbances to residents
5. A tall blank wall to the street allows for private open space at the front of the house and larger secure openings which increase natural ventilation and solar access

Design Guide – Carparking of one space per dwelling potentially destroys the streetscape.

1. Reduces the ability of street trees to be established
2. Pavements become dangerous with a driveway every 3m
3. Streets become uninhabitable

We propose consolidated parking in spaces that can be repurposed when the personal vehicle has become obsolete due to self -driving vehicles that are stored remotely.

Design Guide – Minimum lot width 6m.
We see this as unnecessary and reduces affordability.
Standard lot widths in Clempton Park are 15m x 45m.
One could not put 3 terraces on this standard lot.
Most inner city standard Sydney terraces are under 5m in width.



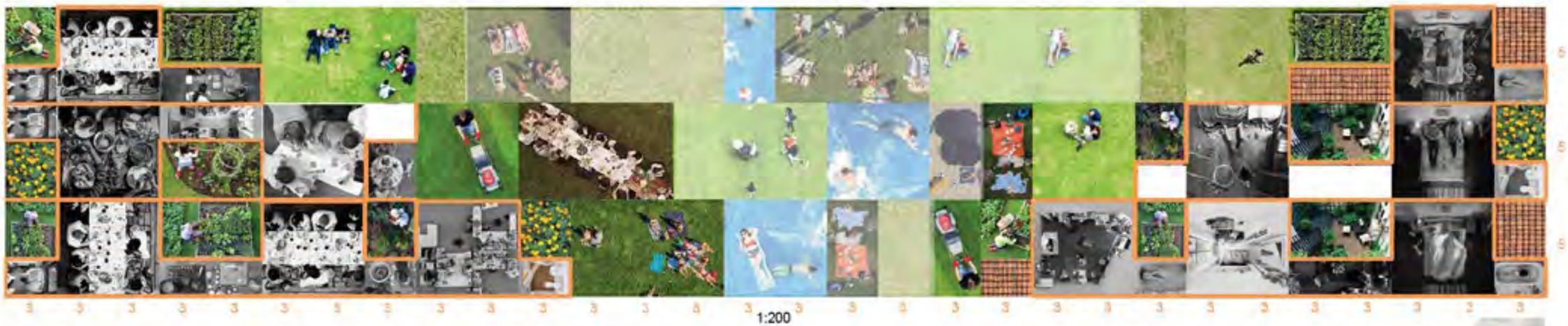
STRUCTURAL STRATEGY

ENVIRONMENTAL STRATEGY

PRIVATE

PUBLIC

PRIVATE



1:200

MISSING MIDDLE DESIGN COMPETITION 4 of 4

AFFORDABLE ADAPTABLE HOUSING

CONTEXT

LOCATION PLAN | NTS

SITE ANALYSIS PLAN | 1:10,000

N

Kingswood, is located in Penrith Council, just under an hour drive from the Sydney CBD. It is home to the Nepean Hospital and University of Western Sydney. The area is undergoing a change in demographics and development types with a large number of health care and medical workers moving to the area, along with an influx of younger singles attending the university.

The proposed site at 4-6 Edward Street was recently sold and is a prime opportunity for development, following the approval of a new boarding house next door at 2 Edward Street. The area is currently characterised by single dwellings, but with the large amount of singles and workers in the area, there is a move toward more multi-dwelling and townhouses developments.

SITE PLAN | 1:500

MISSING MIDDLE

FLOOR PLANS | 1:200

SITE SECTION 1 | 1:200

SITE SECTION 2 | 1:200

SITE SECTION 3 | 1:200

SITE SECTION 4 | 1:200

DESIGNING THE CONCEPT

The site is a standard shape, however the design constraints meant that the front of the site also faced north, posing an issue for getting daylight into the living spaces and private open space. This meant both living areas were raised to the first floor to achieve the maximum lighting, and optimising cross ventilation. The secondary bedrooms downstairs share a small courtyard and main bathroom, with access to the backyard area. This ground floor acts as the service level and children's retreat including the garage and laundry areas. The parents have a top floor retreat with study, walk-in robe and private deck.

The floor plan feels spacious, but the layout is efficient and utilises a panellised pre-fabricated system for quick on-site construction times. The lightweight system is complimented by the thermal mass of the concrete floor at the ground level as well as utilising well designed shading.

DESIGNING THE MISSING MIDDLE

CONCEPT

The standard prefabricated panel system can be customised in a variety of colours, and is complimented by the rhythmic terracotta louvres to the ventilation shaft. This gives the terraces a sense of repetition and warmth, that reflects the traditional brick veneer development of Sydney's suburbs. The permeable paved driveway also allows storm-water runoff and reduces the heat load of the neighbourhood.

The front yard includes a variety of native trees as well as a small pond at the base of the ventilation shaft. This allows cool air to be drawn into the building in summer, naturally ventilating the houses. The louvres keep out the hot summer sun, yet allow the warming winter sun to penetrate deep into the building across the perforated steel stairs. This void also gives the building a sense of openness and connection to all areas.

FRONT NORTHERN ELEVATION | 1:200

SIDE WESTERN ELEVATION | 1:200

REAR SOUTHERN ELEVATION | 1:200

SIDE EASTERN ELEVATION | 1:200

PROJECT DETAILS - DESIGNING THE MISSING MIDDLE

PRINCIPAL STANDARDS

STANDARD	PROPOSED	COMPLIES
Zoning	R3 Medium Density (Multi-dwelling housing permissible)	YES
Minimum lot size for each dwelling	210sqm - 254sqm	YES
Height of Building	9m maximum	YES
Maximum gross floor area of each lot	266sqm (0.79-0.65 FSR)	YES
Proportion of area forward of building line that contains landscaped area	14sqm (33.3% of 42sqm)	YES
Primary road setback	7m to match neighbourhood	YES
Secondary road setback	NA	
Side setback	1.25m (to side boundaries)	YES
Rear Setback	7.9m to ground, 16m to second	YES

DESIGN CRITERIA

- lot width 6m and lot depth 35m
- deep soil landscaping 60sqm and other landscaping suitable for planting 33sqm (all min width of 1.5m) has a total of 93sqm (44.3% of site)
- mature trees provided to front and rear landscaping for privacy and outlook
- balconies and windows overlook public domain
- mail box integrated into front fence which is 12m high with approximately 75% visibility to street
- single car garage and driveway provided to each dwelling with minimum 3m width with opening of 2.4m
- open plan living and dining area recipes approximately 4 hours of direct sunlight in winter through doors and shaded windows designed for winter sun access
- private open space to rear receives approximately 2.5 hours direct sunlight - between 9am and 10am, and between 1:30pm and 3pm. This is raised to the first floor to achieve daylighting
- windows and glass doors exceed more than 10% of floor area for every room
- Courtyard is approximately 11sqm in size with minimum dimensions of 3.3m
- dwelling is cross ventilated with all rooms ventilated through one or more openings
- first and second floors are 2.7m in height while master bedroom is 2.4m in height
- minimum dwelling size for 3 bedroom, 2 bathroom house is 120sqm - proposed dwelling is 166sqm
- Private open space to first floor is 37sqm and located adjacent to the open plan living space. secondary outdoor spaces are provided off all bedrooms
- 11.4 cubic metres of storage provided between ground floor hallway and garage in dedicated cupboards
- 2 bicycle spaces provided in garageable windows facing boundary have terracotta privacy screen to prevent downward views
- screening to rear facade and 1.5m high wall to private open space prevent overlooking to neighbours
- 3m deep dense planting to master bedroom terrace prevents overlooking
- clothes line and drying area provided to rear yard
- 2,000L rainwater tank provided on site to collect water for reuse in watering gardens and flushing toilets

Context - Suburban Ashfield

"The most important single task for architectural criticism is to rise in defense of public space. Threatened by the repressive sameness of global culture, contracted by breakneck privatization, devalued by contempt for public institutions, and victimized by the loss of the habits of sociability, the physical arena of collective interaction - the streets, squares, parks and plazas of the city - are in their free accessibility, the guarantors of democracy."

Michael Sorkin – in Advice To Critics
All Over The Map; Writings on Buildings and Cities
Verso London 2011

We understand the aim of the project is to provide a framework for development of medium to low medium density dwellings.

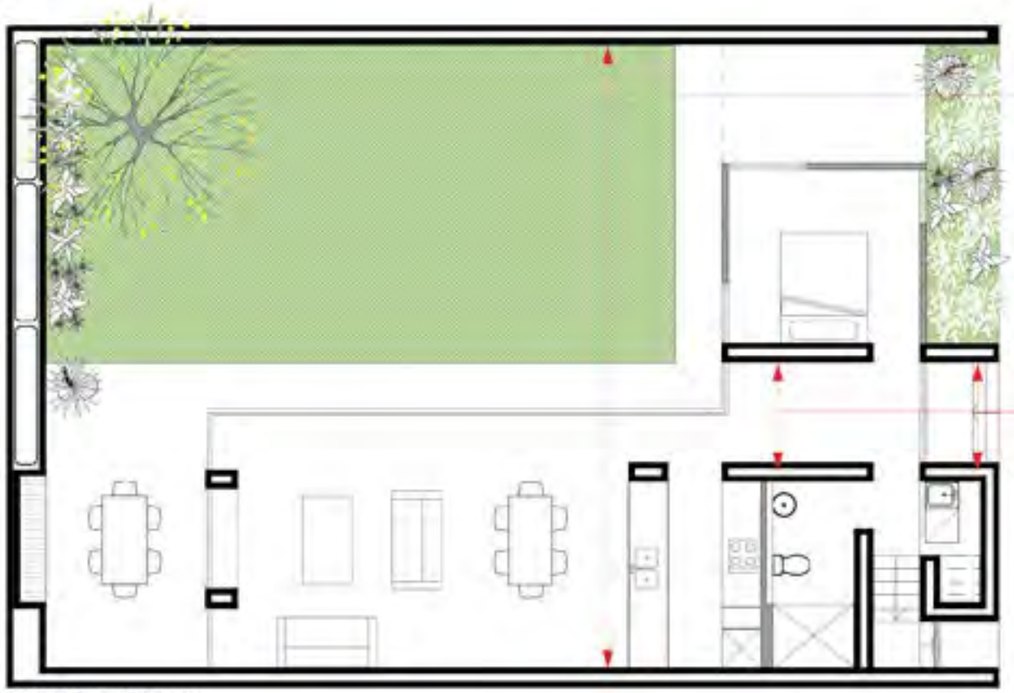
We have been prompted to enter our "critique or model" as we are most concerned at the some of the "types" shown in the missing middle Appendices. **Specifically the "Multi-Dwelling Mews"** the **"Multi-Dwelling Row Houses"** and the **"Large Lot Masterplans and Communities"** are just the types that this document should be discouraging. Their development all over Sydney and along the coast are like a cancer, eating away at the soft landscape and social fabric of the City, with developments centred on private driveways instead of streets or lanes.

EXISTING BLOCK - **2.09** Hectare
34 Torrens Title Dwellings on **20900** sqm

SHANNNON RESERVE
An urban comparison, NOTE. Even finer lot sizes.

PROPOSED BLOCK - **2.09** Hectares
48 Torrens Title Dwellings on **8640** sqm
66 Apartments on **4438**sqm @ 1.5:1 = **6657**sqm developable area.
1 Public-Community Building on **630**sqm
1 Public Park on **3240**sqm
4 Streets on **3934**sqm

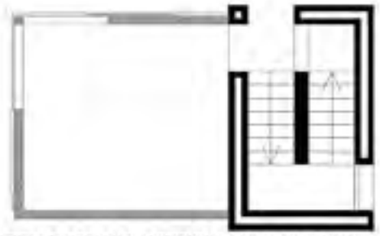
FIGURE GROUND
Showing range of footprint permutations.



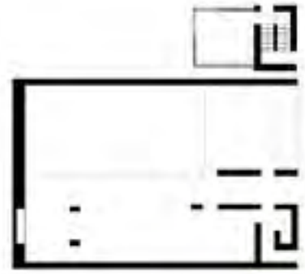
STREET LEVEL PLAN @ 1:100

Demolished dwelling bricks recycled into new perimeter walls

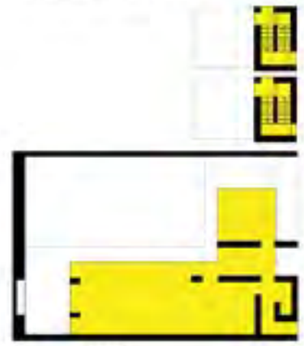
New brick walls to the dwelling + tower



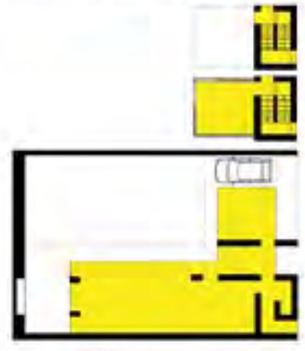
FIRST FLOOR PLAN / SECOND FLOOR PLAN @ 1:100



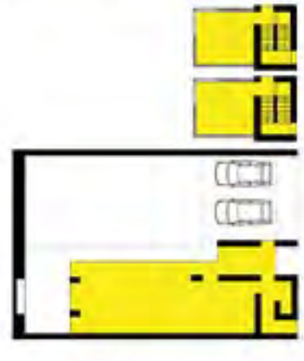
The beginning - a brick shell



85M2
1 bedroom /2 terraces/ 0 carspace

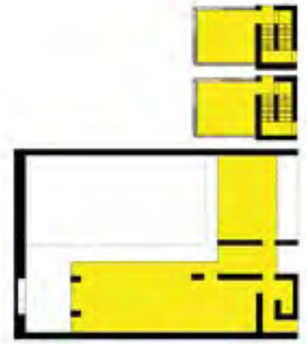


100M2
2 bedroom /1 terrace/ 1 carspace

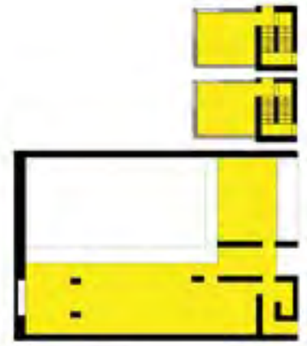


115M2
3bedroom /1 terrace/ 2 carspaces

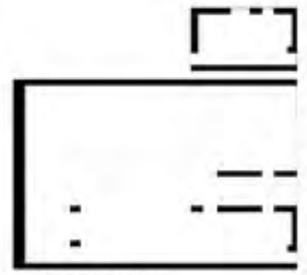
SECTION @ 1:100



130M2
3 bedroom/study /1terrace/ 0 carspace

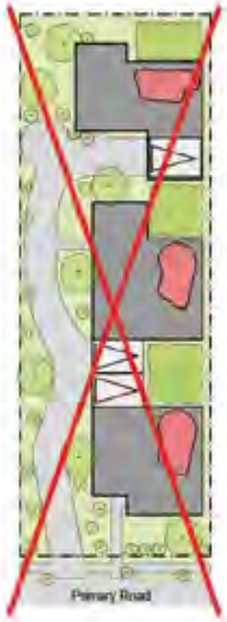


145M2
3 bedroom/study / 0terrace/ 0 carspace



The end - a brick ruin
PERMUTATIONS

216SQM LOT
CONFIGURATION PERMUTATIONS
Showing range of footprint



This proposal builds on the Peter Myers thesis of the "Third City", whereby the suburb is transformed initially at the scale of the block and then at the lot.

The monoculture of the free standing house is replaced with a richer sustainable urbanism that facilitates a range of housing types and public space.

Existing houses are removed and bricks retained. The block is re-laid out with new one way streets and lanes that define the preserved *close-nurtured forest* and give street address to the new smaller lots. Dual rows of smaller and larger torrens title lots reflect the old and new street hierarchy. Larger end lots allow for modestly scaled apartments to bookend the block with a public/community building at one end. A variety of housing types is created to cater for the changing demographi of , espcially empty nesters and younger couples that cannot afford to buy ahouse in the current market and tax conditions.

Around the entry and stair core, living rooms and bedrooms can be extended and extruded to suit individual programs. Over time a rich aggregation of clipped on, attached, flat pack type rooms come and go reflecting the changing demographic, household budgets and fashion. The northfacing courtyard remains.

The street is re-enlivened with balconies, roof decks and terraces, which over look and engage with it.

In our view the MIssing Middle Guide is seriously lacking in it's acknowledgment of the need for public infrastructure, specifically streets and lanes, and landscape heritage- necessary to meet the needs of increasing density.

1 CONTEXT

Sydney's lack of well-designed medium-density housing poses a problem that can be resolved through unique and innovative architectural solutions. By challenging the out-dated CDC Guidelines, designers and developers can offer economic and environmentally sustainable plans to improve upon the quality of the built environment and liveability for increasingly diverse communities.

We have researched the areas within the required parameters of the brief and have located a perfect example of where our concept design meets the criteria for low-rise medium density housing. Located in the middle ring, approximately 10-30km from the Harbour Bridge as the crow flies, it is a non-standard site with sloping topography and varying scaled neighbouring development. The site is currently zoned R3 and contains 3 typical 1980's brick veneer, project homes in fair condition. The site address is 27-31 Mercer Street in Castle Hill, NSW 2154.

The reason for the selection of this particular site is that there is a realistic possibility to acquire the land at a reasonable cost. There is also an opportunity to expand on our concept further by acquiring additional neighbouring houses, meaning our concept could become a reality.

Our concept design is a strata development, consisting of six two-storey terraces centred around a single story accessible dwelling. This development supports and encourages an inclusive community culture while supplementing the needs of the individual through green design. The design ideology aims to provide affordable living spaces to accommodate all sized families, individuals, the elderly, people with disability and low social economic people.

The green infrastructure incorporated is a network of green spaces including green roofs, vertical gardens, trees and water systems that work in harmony to provide environmental, social and economic benefits.

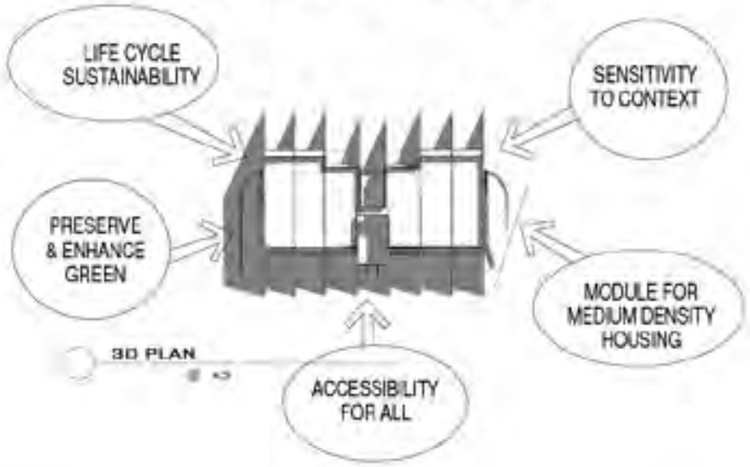
Green roofs increase bio-diversity and create their own mini eco-systems, acting as natural insulators from both the weather and noise. Plants improve air quality and act as a protection barrier against UV rays. Plants and soil absorb and store the rainwater minimising impact on local storm water catchment systems.

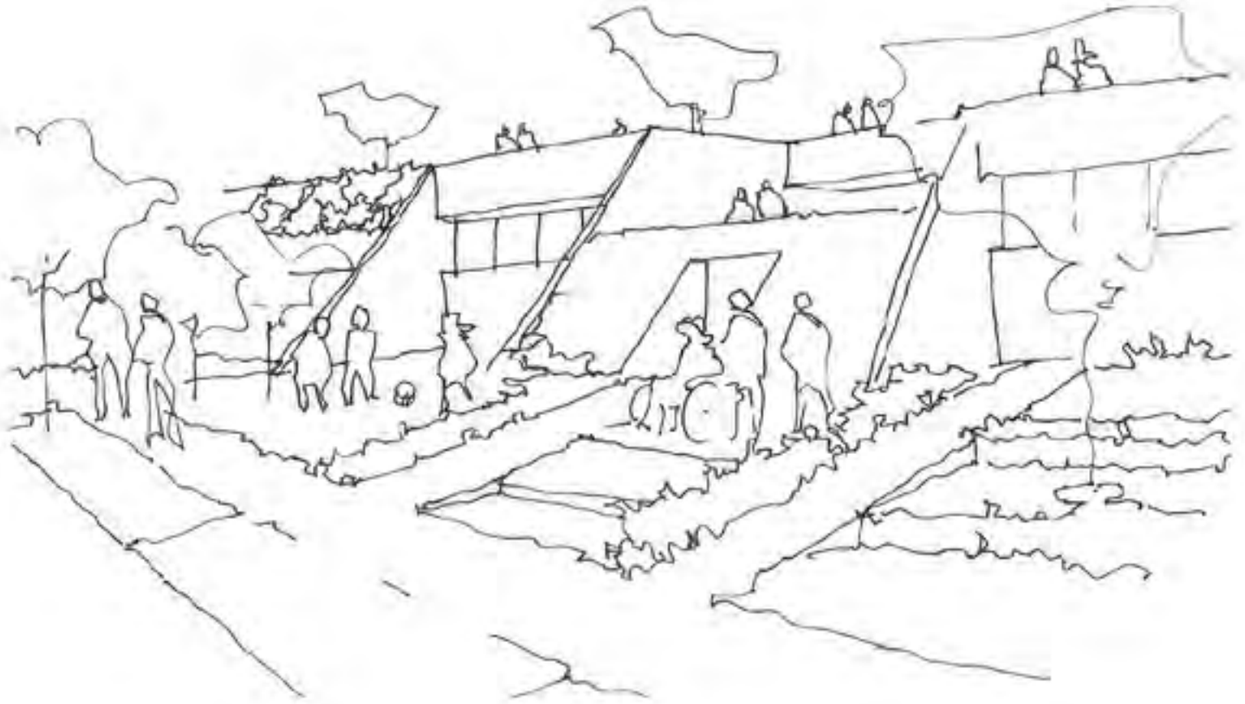
The challenge of the sloping topography enables underground parking, which is inclusive of people with disability. Residents will be able to access the roof top garden via the carpark lift or communal staircase. Underground rain-water and grey water storage tanks enable recycling of onsite water.

Consumer expectations are to have sustainable environmental solutions that include outcomes of economic benefit. Most councils do not consider green roofs and vertical gardens as green space, and the existing CDC requirements of setbacks from the side boundaries impacts on the ability to realise this vision. Introducing FSR/Site Coverage dispensation on projects where green spaces are included should be mandatory, as it encourages developers and designers to include more green spaces.

Experiencing social change within our own personal spaces embeds deeply in our lived experience. These impacts translate intergenerationally, enabling positive change to be a social expectation and not a dream.. By meeting the 'Missing Middle' shortage in our cities' housing stock, designers can fulfil the expectations and needs of our increasingly diverse community.

2 CONCEPT DESIGN





SITE PLAN

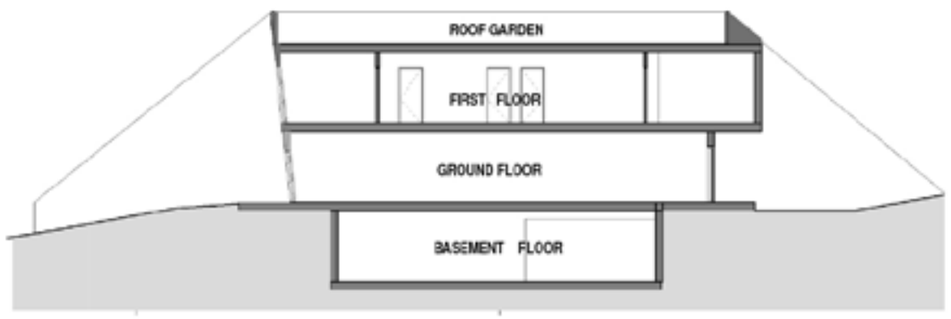
The concept design being submitted is a strata development, consisting of six two storey terraces centred around a single story accessible dwelling. Each dwelling has a private rear courtyard. This development supports and encourages an inclusive community culture while supporting the needs of the individual through green design.The green infrastructure incorporated is a network of green spaces including green roofs, vertical gardens, trees and water systems that work in harmony to provide environmental, social and economic benefits. Green space usage includes, entertainment and barbecue areas, community gardens and spaces for relaxation for all to enjoy. Green roofs increase bio-diversity and create their own mini eco-systems with many benefits and are a natural insulator from both the weather and noise. Plants improve air quality and act as a protection barrier against harmful and damaging UV rays. Plants also and soil absorb and store the rain water min mising impact on our local storm water catchment systems. Built with light-weight materials, and clad with low maintenance mosaic tiles, each dwelling will be insulated. Through passive solar design, and performance glazing, sustainable livable homes providing year round comfort are created.The challenge of the sloping topography enables underground parking, that is inclusive of people with disability. Residents will be able to access the roof top garden via the carpark lift or communal staircase.
Car-share and accessible parking spaces are to be negotiated with the local council. An underground water storage tanks and grey water storage tanks enables recycling of the water onsite.

3 CONCEPT DESIGN

Consumer expectations are to have sustainable environmental sciutions that include outcomes of economic benefit. This expectation drives service providers to meet this expectation. Implementation of environmental economic sustainable practises will lead to increased recognition and a growth in credibility as an evidence base develops.

Evidence that we can make an impact as an individual, is a catalyst for continued social change. Experiencing social change within our own personal spaces embeds deeply in our lived experience. These impacts translate intergenerationally, enabling positive change to be a social expectation and not a dream. Change can only be sustainable when its impact on our environmental economic and social framework are viewed holistically.

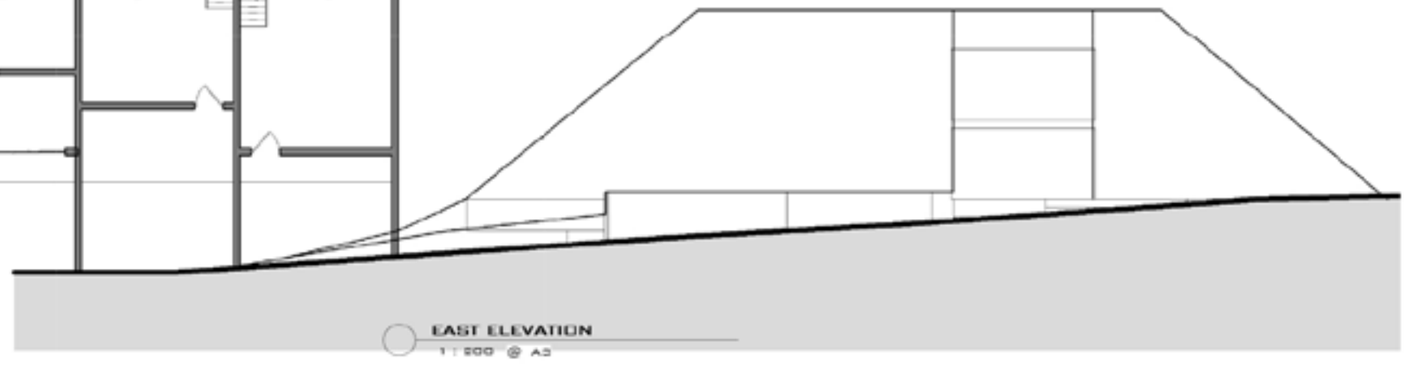
Upper floor plan
1 : 200 @ A3



Section 2
1 : 200 @ A3

Ground Floor Plan
1 : 200 @ A3

3
1 : 200 @ A3



EAST ELEVATION
1 : 200 @ A3

4 TESTING THE DESIGN GUIDE

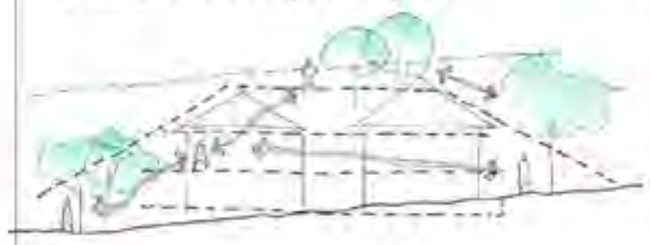
The CDC Guidelines are outdated. The opportunity to expand and test the guidelines enables designers the ability to future proof their designs by taking into account, the increasing diversity of our communities and their expectations. Challenging the FSR/Site Coverage controls in relation to the inclusion of green roofs and vertical gardens enables property owners and developers to have a powerful impact on the three key areas of sustainable communities. Such challenges will support socially, environmentally and economically sustainable communities. Currently most councils do not consider green roofs and vertical gardens as green space. Introducing green walls and roofs will provide additional landscaping and assist in meeting FSR compliance. Green spaces are heat and noise insulators and minimise the buildings loading on the storm water during rainfall. They add to the aesthetics and value of the building and help reduce the ever growing heat island effect.

Introducing FSR /Site Coverage dispensation on projects where green spaces are included should be mandatory. If included this would encourage developers and designers to include more green spaces. The environment benefits through its decreased carbon footprint which has an economic benefit to the property owner or developer. The social impact of green spaces is well documented as it supports and encourages people to create communities rather than remain isolated bubbles.

The existing CDC requirements of setbacks from the side boundaries also impacts on the ability to realise this vision. The lack of clarity and conformity reduces the opportunity to think laterally about urban growth.

Context ,Character & FSR implication to the site

Building from & envelope development



Building height remains with neighbors (2 storey) to max 7.2m

New building diagonal facade in harmony with surrounding roof forms and Green gardens in different levels to interact with existing vegetation

Landscape & Green walls

Landscape areas were introduced to enhance existing changing topography and also adding change of levels and views

Sustainability features

Community garden housing with varied volumes create sustainability features such as more open living with natural cross ventilation, sunlight with livability spaces, rain water harvesting, re cycled grey water system Green garden on Roof top and lower level accessibility interactive terrace further maximise the visual effectiveness.

Housing diversity & Social interaction

Meduim Density Community Garden -MDCG caters to varied sectors families 4 bed room houses to small scale studio and interctive accesibilty unity as central feature
MDCG as modular unit to the demanding housing sector will interact with any existing or new developemnts by featuring positive cost effective and sustainable needs of the regional planning.

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.

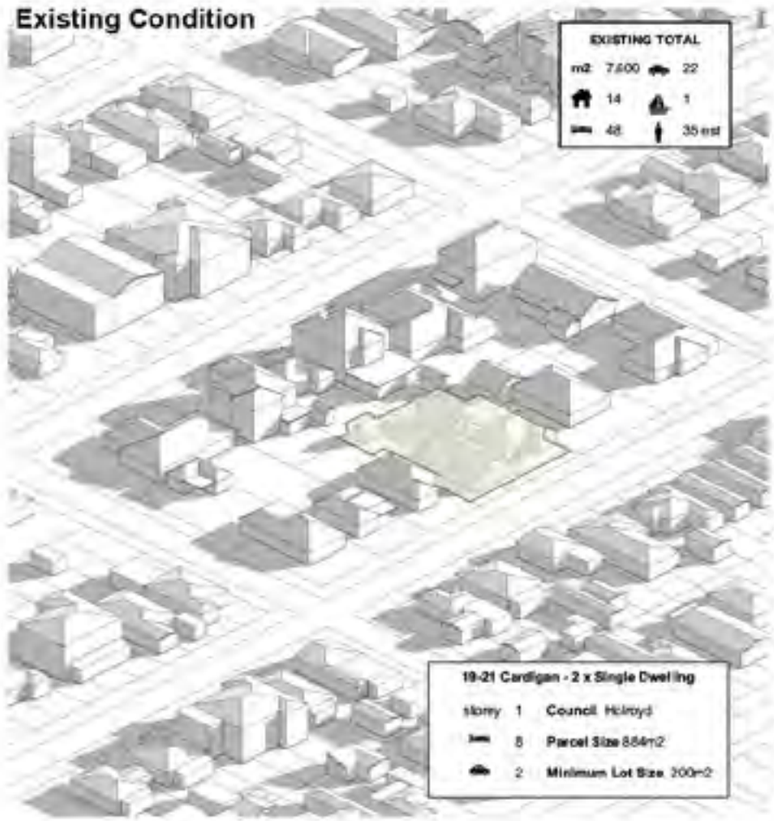
Neighbourhood : Street Pattern

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 200m^2

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 400-600m^2 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 sow 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

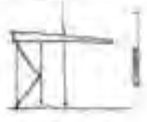
We have proposed roof terrace gardens to maintain a green band, limiting impact to the heat island effect that comes with increased site coverage. This configuration shows Manor Houses and Dual Occupancy on the corner sites and terraces in between.

Terrace House: View From Street

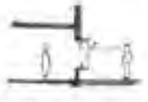
Design Principles: Ideas that underpin design quality and good urban responses.

Street Activation & Connection to Landscape

Active Roof Plane

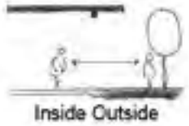


Entry & Front Door

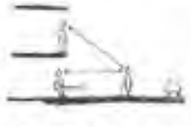


Shutters for Privacy

Rainwater Harvesting & Reuse



Inside Outside



Passive Surveillance

Cross Ventilation

Windows Frame Views

Terrace House: Ground Floor Plan
1:200

Design Excellence:
We believe design excellence for terrace housing is to drive a centrally located courtyard in the middle of the plan to be the light and lungs of the home. North facing living rooms are prioritised over other solar orientations where possible.

By drawing the house as close to the street as possible, and locating the public room to the street, with on-street carparking, much the same way as Victorian terraces do, offers the best urban design outcome. This also allows the private garden to be larger and better used as an outdoor room.

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.

Terrace House: First Floor Plan
1:200

Terrace House: Active Roof Plan
1:200

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.

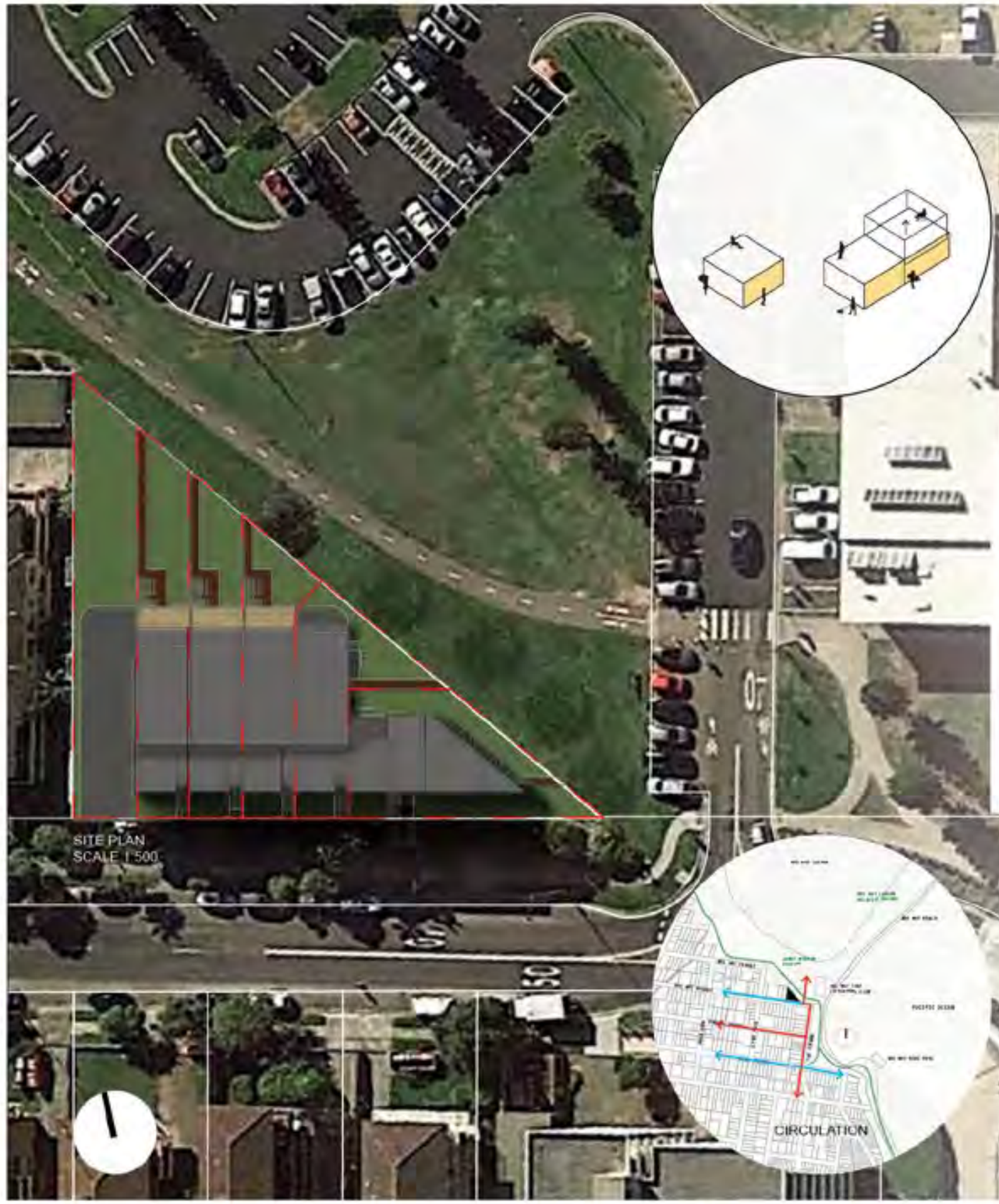
Master Plan:
By designing all 3 house types within a block we were able to develop row house at scale, but also house variety that provides for a varied and interesting streetscape. Key to this were strategic approach, lot size, possible subdivision potential, street pattern, Blue, Green and Black Grid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

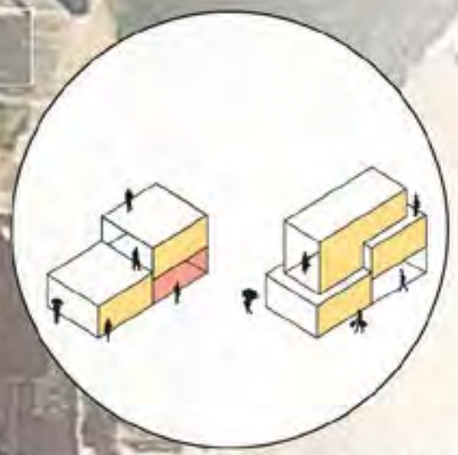
Terrace House: Section
1:200

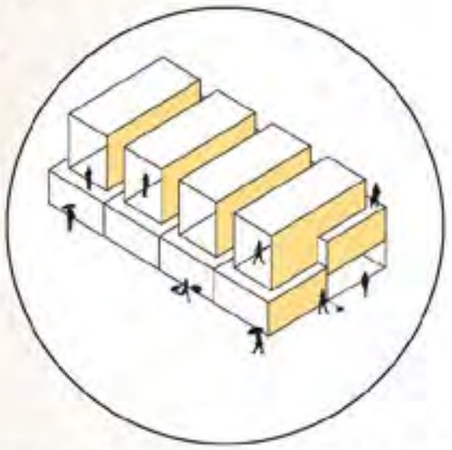
DESIGN QUALITY PRINCIPLE	RESPONSE
1. Context and Neighbourhood Character	- Prevailing setbacks don't allow the building to hold the street & address it. - Terraces should all use the setbacks provided in the Design Guide where there are no dwellings within 40m. Smaller, minimal setbacks to the street, increase private open space to the rear. - Car parking & Garaging controls dominate frontages which provide a poor urban response. The Victorian Terraces that allow living [the public] rooms to the street are a better urban response. - Where subdivision depth doesn't provide rear lane parking/ garaging, 6m wide terraces should preference on street car parking, like Paddington, Balmain etc.
2. Built Form + Scale	- Terraces should be permitted to ignore the prevailing setback to be closer to the street. - Side setbacks un-necessarily limit efficient planning & built form. - Limiting row of housing to 45 metres may not be the best way to provide variety
3. Density	- Minimum widths are too wide 4m & 5m widths also work. - Minimum lot sizes could be reduced to 180m2 for 5m wide terraces, & 150m2 for 4 metre wide terraces. This will improve density.
4. Sustainability	- Car parking requirement affects building size & urban response. This has an affect on all forms of sustainability. This control should be relaxed with site's proximity of other forms of transport like, public transport, car sharing, cycling, walking.
5. Landscape	- Setbacks un-necessarily affect the size of private open space on tighter sites.
6. Amenity	- 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 behind the garage/ carport and impacts on cross ventilaton and natural daylight.
7. Safety	- Maintaining the prevailing setback from street frontages lessens the passive surveillance effect. - Garaging to the primary frontage has an adverse affect on passive surveillance & car strike & crashing with cars crossing footpaths & reversing blind onto streets.
8. Housing Diversity	- The Medium Density Design Guide helps to add to the numbers of these housing types that already exist. - Accessibility options helps to add to diversity & age in place ideas for multi-generational housing. - The requirement for garaging limits a ground floor bedroom opportunity, parking should be optional.
9. Social Interaction	- Terraces that address the street provide for better social interaction. - The Garage/ Car port provisions affects the ability for social interactions. - Entry doors, windows, doors, balconies and terraces to the street will add to the social sustainability. - The Strip shopping potential of the Terrace house to include a corner shop hard to the street will increase the desire for people to engage with their local community & streets.
10. Visual Appearance	- 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; • 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

Areas To Challenge The Terrace House Controls
1:400





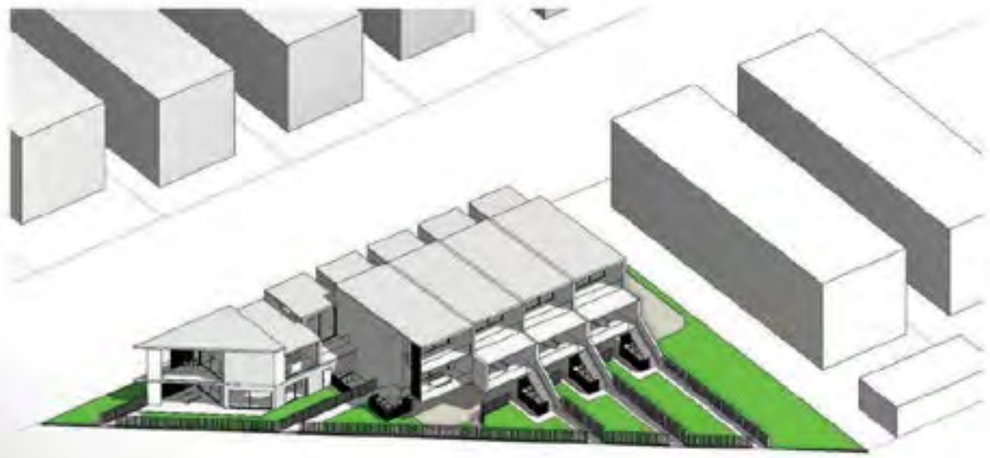


Having terraces as complying development is a fantastic opportunity to unlock the potential for housing diversity and supply in New South Wales. We've seen how well received the Apartment Design Guide (ADG) was across councils and industry, and we've seen how it has improved the quality of stock. The momentum gained from good government policies in recent time, like the ADG, means that we can now make policies like the missing middle become a reality.

We are in such a curtail time in Sydney when it comes to housing supply and diversity. It is crucial we provide more diversity in our housing stock while maintaining exceptional levels of design and quality. We think the Medium Density Design Guide does this. There has never been a better time to be a missing middle typology.

The approach we took in this design competition was simple and focused on two things: first we wanted to choose a challenging site and secondly we wanted to push the controls to their limits while producing an innovation design. No one likes ugly terraces, but I think what we have achieved a great outcome that shows that you can design an innovative and elegant design for terraces even as complying development.

With regards to choosing a challenging site, we found a triangular site coming in at 1535 sqm located at 98 Dee Why Parade, Dee Why. We chose it because it is located in a great location, by the beach and recreational areas. We also thought that choosing a triangle site would be a good way to challenge and test the controls. We wanted to see how the terrace typology would work on a site like this. We think that there is a lack of 'beach' terraces. And who wouldn't want to live in a beach terrace close to a park, the beach and services to give families the opportunity to live and play in this unique environment. The Australian way of indoor/outdoor living is ultimately related to the way you live at the beach.



On the 1535sqm site we managed to fit 4 x 6m wide terraces and 1 x corner terrace. It was challenging given the site is a triangle but it is possible using a few innovation solutions: mainly around the parking using a common driveway to the middle of the site. This allowed us to lift the house from the ground, which resulted in active frontage by adding a habitable room facing the primary road.

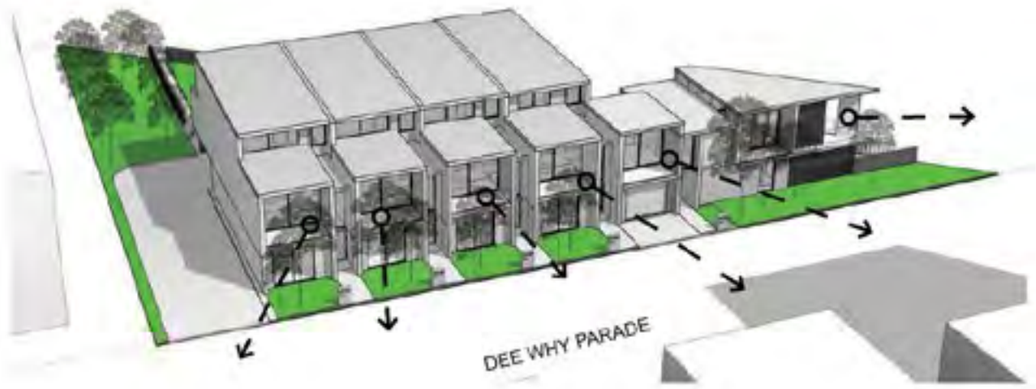
In addition, we used an innovative approach to connect the private open space directly to the living space through stairs over the internal vehicular access. This resembles the typical Australian beach house.

Pedestrian access through public park

Main entrance from primary road

Vehicle access from primary road

DEE WHY PARADE



1. Private Open Space
2. Clothes Line
3. Bins
4. Garage
5. Laundry
6. Storage
7. Watertank
8. Bathroom
9. Bedroom
10. Kitchen
11. Living
12. Dining
13. Balcony
14. Powder Room
15. Pantry
16. Terrace

TESTING THE DESIGN GUIDE

Our feedback for testing the guide focuses on the experience we had designing on a triangle shaped corner lot. Looking at the guide from a general perspective, we found that the controls were manageable, sensible and allowed us to innovative in a number of ways.

The areas that we had more complications with are:

Illustrating the principal controls

We think that the guide could be enhanced by providing visuals / diagrams that help explain the principal controls.

Boundaries and setbacks

Based on our experience testing the design guidelines on a three boundary (triangle) lot, we found it difficult to clarify building separation where the site is not square or rectangular. The guide should provide clarity for three sided lots. There should be some flexibility for sites that front public areas like our site that faces the park.

Car Parking and lot minimum lot widths

Due to our site being a triangle and having a larger depth at one end, we challenged the control by having 4.5m wide terraces that comply with the minimum lot area and provided a larger middle internal courtyard. This resulted in an innovation solution in the area of social innovation, provide the highest yield on the site and creates common areas for neighbours to interact. The treatment of the front façade is mainly aesthetic exercise of the garage door by giving it an extra use as a workshop. This solves the issue of activating the ground level.

The Missing Middle Design Competition is targeted to seeking high-quality, innovative design solutions for low-rise medium density housing; an alternative housing option for residents that bridges the gap between free-standing houses and the myriad of apartment buildings options on the design board or being realized each day. The process is intended to challenge, question and push the boundaries; as well as meet the appropriate design criteria and proposed outcomes as outlined in the NSW Draft Medium Density Design Guide.

Improving the way of life for residents through better spatial planning, connectivity with the public and private open space, improving massing and relationship of scale, natural light and ventilation all play a critical role in the health and wellbeing of how we all live in the modern city. This opportunity to explore how we can implement new, cutting edge ideas in a real context is an exciting chance for all professionals in the building industry, particularly designers. Accordingly, we have selected a site in Kellyville, 27km North West of Sydney's CBD. The 6,000sqm sloping bush covered site falls from South to North of Fairway Drive in the heart of the expanding suburb of Kellyville.

Currently zoned R3 Medium Density under the Hills Shire Local Environmental Plan (and rezoned by the NSW State Government as entirely R3 Medium Density as part of the draft Bella Vista Station Precinct Plan - Dec 2015) the challenging site is vertically dissected from North to South by a Riparian Corridor which provides an important environmental component to the treatment of storm water runoff within the precinct. Layering on these elements, contextually the site forms part of a wider expansion of medium density residential development from the neighbouring Bella Vista and Baulkham Hills estates and is in walking distance to both the Bella Vista and Norwest Metro Stations as well as bordering the Kellyville South Public School, Sports complex and nearby expansive and pivotal Norwest Business Park. Further, the locality of the site provides opportunities to improve urban connectivity to the adjacent developed areas as part of the overall site master planning phase.

Design Excellence and sustainability are at the core of this proposal. Where possible we have individualised the design of each homes personality, taken finishes inspiration from the surrounding natural elements and incorporated the latest 'green' technology. Homes have been created and influenced by the position of the sun and water. Everything has been considered including residents amenities to help contribute towards their personal happiness. Cars will be electric and have been positioned to the outer areas of the masterplan, leaving the occupants, safer and more landscaped spaces to enjoy, (towards the riparian link). All these factors come together to build upon the existing topography and features of the site, amalgamating them into the design of the development and its relationship with the wider context.

MASTERPLAN

23-29 FAIRWAY DRIVE, KELLYVILLE

MASTERPLAN 1:1000

PERSPECTIVE

WESTERN ELEVATION 1:500

EASTERN ELEVATION 1:500

MATERIAL PALLET

DESIGN CONCEPT

Whilst planning this project it became apparent that a one-size-fits-all approach, (whilst simplifying the documentation and construction process and providing some commercial advantage) the current standards do not provide the best benefits to the community. Our design investigation revealed differing forms and spatial arrangements were needed; where private open spaces could be arranged internally with courtyards or light wells that poured light into interiors. Alternatively these outdoor/ solar spaces could slide to the rear of the lots for an amalgamated plan to be realized. These differing arrangements demonstrate the ability to achieve better outcomes in alignment with the design guide where light, privacy (both visual and acoustic) could be achieved.

These ideas were further explored to ensure the massing of our design created adequate separation and relief to the façade, so that each terrace within the development reads as standalone form and allowed the occupant to identify where they lived, who their neighbours were and how their home specifically connected to the wider community and amenities.

23-29 FAIRWAY DRIVE, KELVYNVILLE TOWNHOUSE TYPOLOGY

TOWNHOUSE TYPE 1

FIRST FLOOR

GROUND FLOOR

SUSTAINABLE APPROACH - TESLA

TOWNHOUSE TYPE 2

FIRST FLOOR

GROUND FLOOR

TOWNHOUSE TYPE 3

FIRST FLOOR

GROUND FLOOR

DESIGN CONCEPT (cont.)

Diving deeper into the process the natural forms, in particular the Riparian Corridor our design direction and site context allows for the integration of building and landscape to reinforce buildings are not just about a place to prepare a meal, or rest but they can enhance the connectivity with the outdoors and encourage kids to put down the PlayStation and pick up a ball. Interiors are designed so that people can be greeted at the entry and are encouraged to interact with one another.

We asked ourselves – why should the home have a front and a rear elevation? why not two front elevations – why can we not provide a place to park the car and where visitors come, but equally a place to access communal spaces only, a place for the kids to play and safely learn to ride a bike. We took this concept and provided links and circulation into the plans. In doing so, we removed what is otherwise a redundant and visually unappealing rear fence (that will only get old and grey) and created a link that helps form relationships with neighbours, ultimately building a safer, stronger community, and greater awareness of our respective lives.

Australia needs to lead the way in terms of innovative sustainable design. Our research shows that occupants consider sustainable design as a given – but are too rarely offered it. We incorporated the best in new technology with the efficient Tesla Powerwall and Tesla Solar Powered roof into each terraced house. A Clubhouse could also be provided in the communal green area, to provide extra amenities and solar roof allowance. Occupants would be able to save money whilst enjoying all the guilt-free benefits, such as heated pools. Residents would be encouraged to use electric cars, improving air quality and money in the long term. The idea would be to provide a "grid independent" lifestyle community.

PRINCIPLE 1

3.3 H - BUILDING SEPARATION

Objective 3.3H-1

Provide adequate space between buildings to allow for landscape, provide visual separation, reduce visual bulk, daylight access between buildings.

44. The minimum separation between two or more buildings on the same lot is:

- where a wall height is less than 7.5m - 3m
- where a wall height is 7.5m or greater - 6m

RESPONSE

Under current guidelines specific to a CDC pathway and relating to low density development, building separation and setbacks are 0.9m GFL and 1.5 at 1FL. These clearances are deemed sufficient separation between buildings and allow for appropriate amount of landscaping, maintenance access and a break down of bulk and massing to individual lots.

The draft Medium Density Guide stipulates a greater separation for higher density living which seems counterproductive considering the context allowable under a CDC. Specific to the design concepts prepared, opportunities to create a mix of rear and courtyard living which in turn allow for light to enter deeper spaces within the plan, and segregate external PPOS from neighboring lots mitigates the need for such a rigid approach. Residual visual privacy issues can be managed through the implementation of high quality screening devices, use of landscaping and articulation of form.

3.3 H - BUILDING SEPARATION

Objective 3.3H-1

Provide adequate space between buildings to allow for landscape, provide visual separation, reduce visual bulk, daylight access between buildings.

45. The building length does not exceed 45m

RESPONSE

Making consideration for the individuality of a site and the diversity of constraints which affect the planning of the lot boundaries, often lineal or rectilinear arrangements are not possible and as such blanket approach of 45m is not appropriate. The length of the building (containing two or more units) should make consideration for the extent of façade articulation and the merit of materiality, depth and relief, staggering the facades all contribute to a better design outcome. Through considered design and relaxation of rigid planning controls like the building length, improved natural light and ventilation can be achieved.

PRINCIPLE 3

3.3 M - PRIVATE OPEN SPACE

Objective 3.3M-2

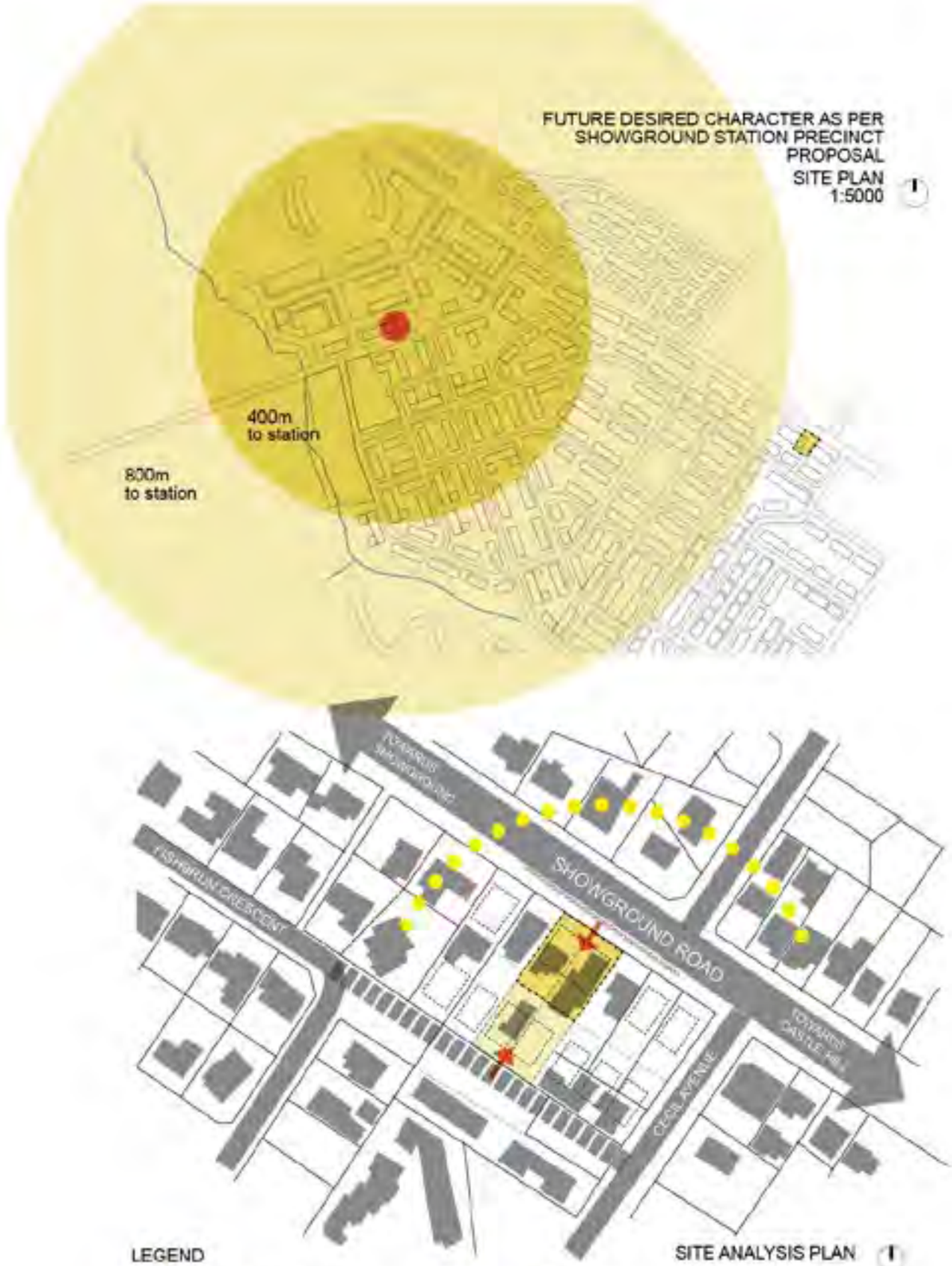
Primary private open space and balconies are appropriately located to enhance livability for residents.

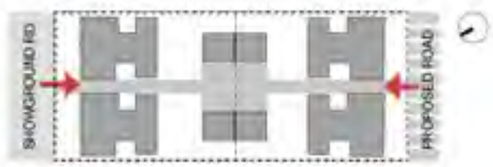
69. 50% of the primary private open space should be covered to provide shade and protection from rain

RESPONSE

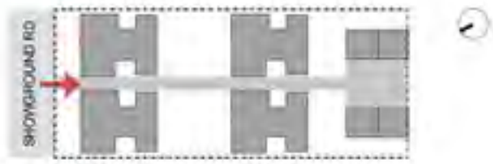
The size of primary private open space is highly dependent on lot size, where a larger lot size dwelling is proposed, 50% of the primary open space could be substantial; in such case, shading or rain cover structures could potentially have visual impact on the overall development and compromise solar access to indoor living spaces.

It is recommended to change this criterion to "*The covered area within primary private open space should be 50% or 25m² whichever is smaller.*"





SCENARIO 1.
The proposed new road to the south allows the site to be divided into two, each facing its own street for a better urban outcome



SCENARIO 2
If the proposed road would fail to materialise, the garages would be located to the rear and a second row of terrace houses in the middle,

CONSTRAINTS
- Any cars entering Showground Road from a site should do so in a forward direction to minimise disruption
- The front of the site is north facing demanding living spaces at the front
- Showground Road potential noise source
- 75m long site

CONTEXT

SHOWGROUND PRECINCT

The chosen site is located in the Showground Station Precinct area in Castle Hill. Showground will be home to a new train station on Sydney Metro North West which is planned to open late 2019. The entire area is in the process of being rezoned to increase density around the new train station. It is estimated that the precinct will generate an additional 5000 dwellings by 2030.

Showground is also identified as a priority precinct in 'A Plan to Growing Sydney'. As such, the precinct will soon be transformed and, as such, was considered a suitable location for medium density in a typical suburban context.

The site is currently zoned R3 and is proposed to stay R3 in the Showground Station Precinct Proposal. For the purpose of any new development in the area, the exhibited plans and the desired character should be given priority over prevailing built form, setbacks etc. The current zoning permits multi dwelling housing.

Close to the station the zoning allows for up to 12 storey residential flat buildings, stepping down to six storeys. This means that there will be a large supply of apartments in addition to existing single detached homes. In order to provide an alternative form of housing in close proximity to the station, terrace houses were deemed suitable on the proposed site.

The select site is located just outside 800m from the new station along one of the major roads connecting to Castle Hill. The site is 75m in length, and has a 33.5m street frontage. In the new precinct plan a new road is proposed to the south of the site. This gives the possibility of dividing the site into two lots, one facing each street. We have focused on the site facing Showground Rd in this submission. However, the design has also been considered to work if the proposed road would fail to be realised.

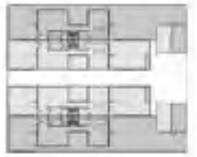
Given the potential for larger concurrent development in the precinct, our submission was treated as a scheme that would work on its own as infill development, but also as a model that could be replicated across a street or a block.

CONCEPT DESIGN 01

RECLAIMED FRONT YARD

RECLAIMING STREET FRONTAGE

COMMON AREA



PRIVATE AREA

ACTIVE STREET FRONT

CENTRAL SERVICES

3 OUTDOOR AREAS

GREEN ROOF AREA

TIMBER SCREENS FOR NOISE/SUN CONTROL

Australian suburbs have typically been developed around the family car/s, with garages dominating the streetscape. The front yard has subsequently been degraded to hard surface or a driveway, lacking any human activity along the street edge. The typology of narrow lots does not leave much room for any habitable space facing the street on the ground floor, and more often than not living spaces are oriented towards the rear. Our main concept was to try and remove the garages from the street front and thus reclaim the front yard for recreational purposes in additional to multiple other outdoor areas. This concept provides for an articulated and activated streetscape. It reintroduces the opportunity for passive surveillance and neighbourhood interaction.

A central common driveway that leads to the rear garages is flanked by two mirrored terrace houses on either side, one three bedroom + study house and one four bedroom house, leaving the front of each reserved for habitable rooms.

This was particularly important for the select site as its front facade is facing north. However, noise and privacy issues make it desirable to provide an alternative outdoor space to the rear, with benefit also accessed from the living spaces. This generates a floor plan with living spaces flowing from the front yard all the way to the rear, providing different types of outdoor areas. The dual aspect of the living areas make the design applicable to a range of different sites and can thus be applied to different areas and multiplied.

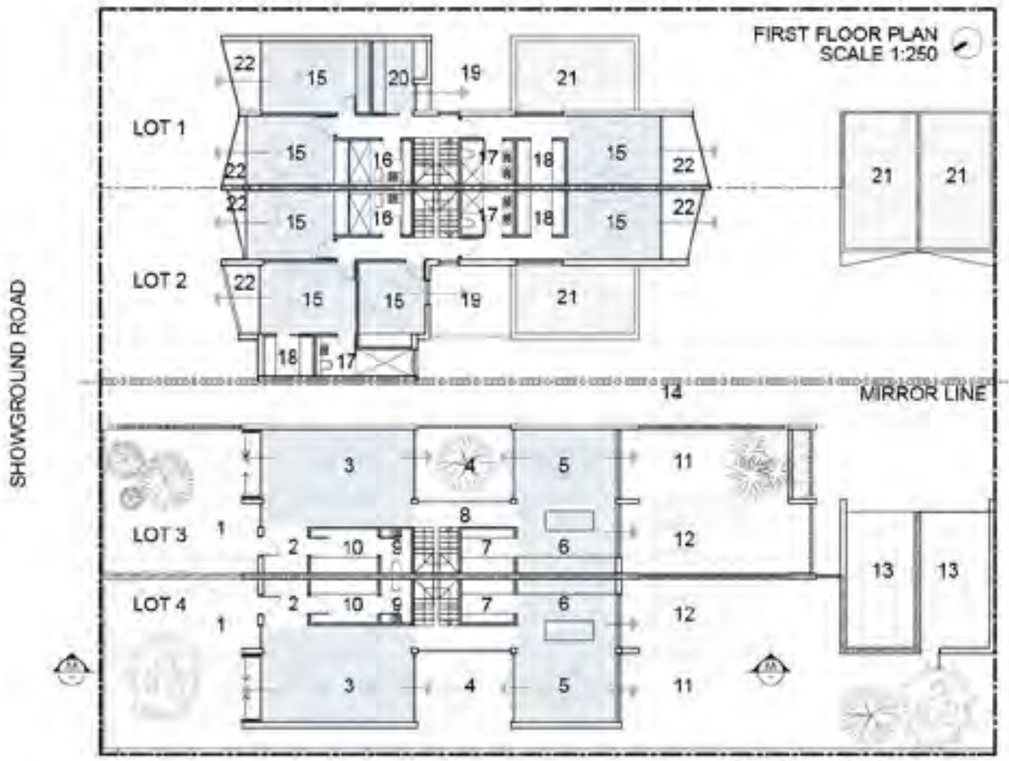
CURRENT SITUATION - GARAGE IN FRONT

GARAGE TO THE REAR

ONE DRIVEWAY PER TWO HOUSES

ONE DRIVEWAY PER FOUR HOUSES

PROPOSED DESIGN - FOUR HOUSES



LEGEND

1.	Front yard	12.	Covered terrace
2.	Entry	13.	Garage
3.	Living	14.	Common driveway
4.	Courtyard	15	Bedroom
5.	Dining	16.	Bathroom
6.	Kichen	17.	Ensuite
7.	Pantry	18.	Walk in robe
8.	Gallery	19.	Void
9.	Powder room	20.	Study
10.	Laundry	21.	Green Roof
11.	Rear Garden	22.	Balcony

Orientation — Habitable room

CONCEPT DESIGN 02

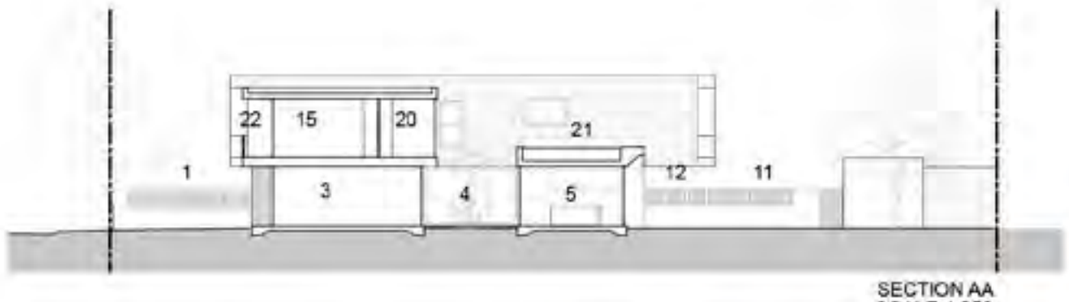
In addition to the front and rear yard, a central courtyard was introduced to provide natural sun and ventilation to the otherwise long and narrow plan. Accordingly, the house feels open and spacious as opposed to a standard terrace house with small rooms and long corridors.

To avoid the courtyard feeling like a chimney, it is open to one side and flanked by a one storey component to the rear to ensure ample light. The courtyard would be planted with small deciduous trees providing shade in the summer and allowing light penetration in winter.

All habitable rooms have been oriented to the front or the rear of the site to provide unrestricted outlook and to avoid overlooking of neighbouring properties. Windows to non-habitable rooms face east and west but maintain a minimum of 4m to the boundary.

To mitigate any potential noise and to improve privacy, movable timber screens have been integrated in the design to the street facade. When desired, they can screen the living spaces whilst maintaining filtered light.

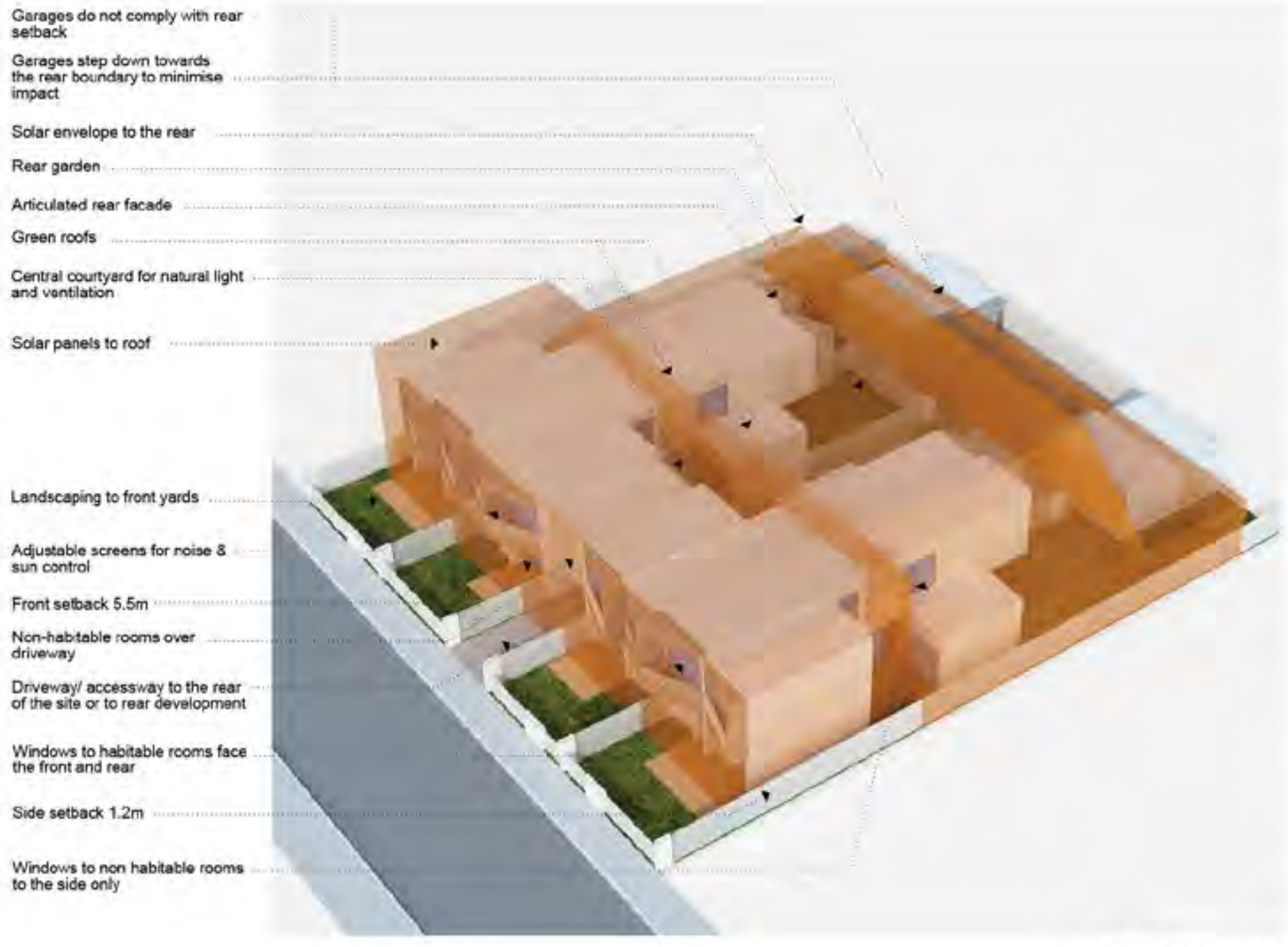
Services are located centrally for efficiency and for increased ceiling heights to the living areas below. Non-habitable rooms are also extended over the driveway.




REAR ELEVATION N.T.S.


FRONT ELEVATION N.T.S.

TESTING THE DESIGN GUIDE



COMPLIANT ENVELOPE
The garages are non-compliant

SETBACK
The rear set back control in the design guide says 3-6m. In this case we consider the setback unnessesary and should be restricted to 2 storey elements. Shed structures and/or garages should be permissable provided sufficient landscaping is provided. In this case the proposed garages are located within the footprint of existing buildings, so no significant landscaping or trees are removed, and no further overshadowing caused.

The proposed garages also have a green roof thus softening the appearance and provide additional landscaping. The bulk of the garages also steps down towards the rear boundary, further mitigating any impact.

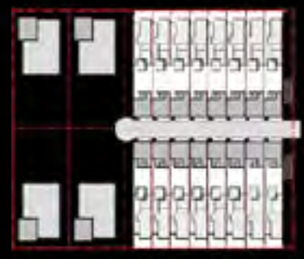
SOLAR ACCESS
The solar access requirement of maintaining a minimum of 2 hours in mid winter might pose unneccessary restrictions on new developments in a transitional area. As seen on the context page, the property two doors to the west of the select site on Showground Road has an excessive front setback which is non compliant with the desired future setback. This buidling is likely to be developed in the future and therefore solar access requirements etc could only be applicable to compliant neighbouring buildings for the purposes of complying development.

THE DESIGN GUIDE
The proposed controls for individual building types are extensive and somewhat confusing. We believe there is an opportunity to provide a set of standard controls that can relate to the missing middle in general with fewer variables and sub-controls. Perhaps leaving the DCP to determine the more specific site and type controls.

INCONSISTENT SETBACK IN STREETSCAPE
Creating difficulties to comply with solar access

These terraces provide everything found in big detached houses, and more, but on one third the area. Designed for a multi-generational family, they have 4 separate 'flex' spaces that all share a living area on the middle level. Intended for a series of sites about 18-20 m wide (2-3 terraces each) and 40+ metres deep (allowing for a shared rear lane).

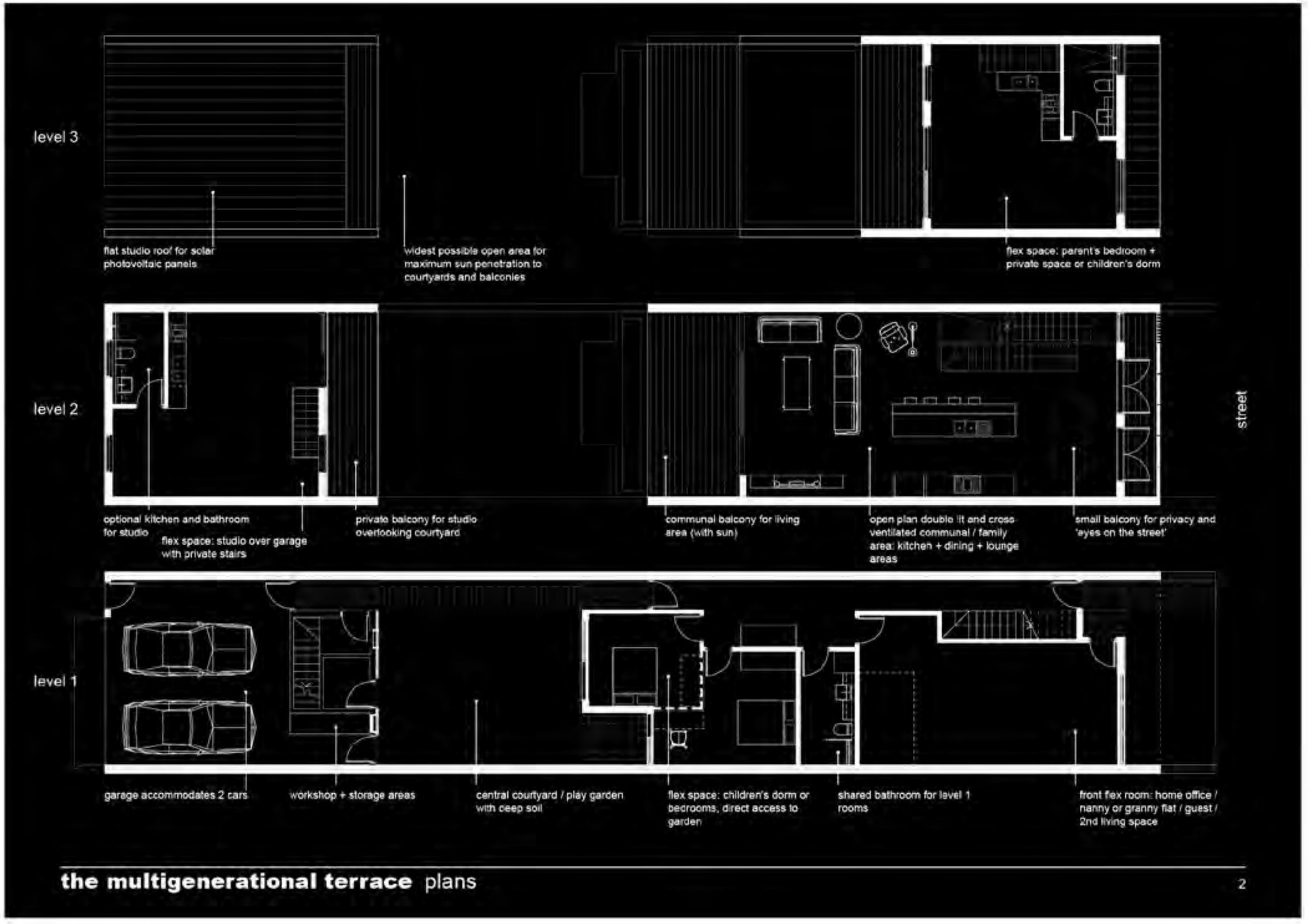
Typical pattern of c.1920's subdivision of 750sqm blocks, with large houses.



Reconfigured subdivision with new rear lane and 7 terraces to two streets. Setbacks at either end ensure a transition to the street (with special terrace) and to the non-converted terraces.

the multigenerational terrace context

1



the multigenerational terrace plans

2

flex space: studio over garage with private stairs

setback in studio allows deep sun access to the stepped balcony areas

widest possible open area for maximum sun penetration to courtyards and balconies

The stepped form allows for sun access into the private open spaces (on 3 levels) irrespective of the orientation of the sites.

sun + light from both ends of the family communal area

flat studio roof for solar photovoltaic panels

private balcony for studio overlooking courtyard

communal balcony for living area - retractable shade

flex space: parent's bedroom + private space or children's dorm

workshop + storage areas

flex space with direct access to garden

front flex room with direct access to the street (home office /nanny or granny flat / guest / 2nd living space

balcony for privacy and 'eyes on the street'

The 'private' rear street is for car circulation to garages, street play and games, and access to the studios over the garages.

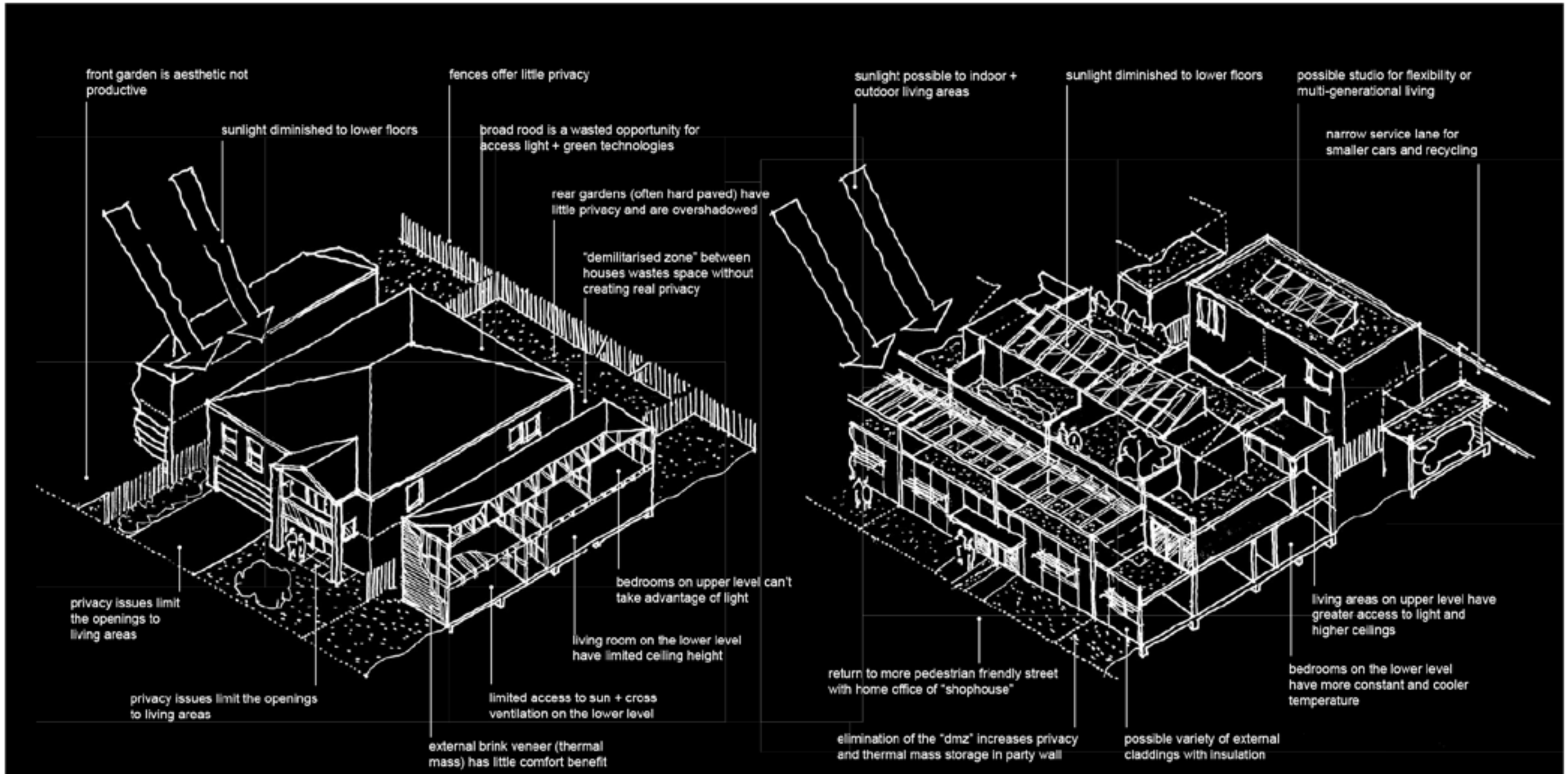
central courtyard / play garden with deep soil

cross ventilated family communal area (kitchen + dining + lounge)

The 'public' main street has wider footpaths and is more urban with the possibility of home occupations at the front. The existing street trees are retained and increased with the current driveways decommissioned.

the multigenerational terrace section

3



This proposal for a multi-generational terrace houses substitutes 3 terraces for a large house, and along the way cures many of the ills of those clunky McMansion-style behemoths. It does this by being 'Upside Down' + 'Inside Out' + 'Back to Front'.

Upside Down:
it turns a normal house on its head by putting the living areas on the upper floors for bettor access to light, sun and fresh air in cross ventilation, and the private sleeping areas on the darker. and quieter. lower level.

Inside Out:
it takes all the bricks from the exterior, where they are a sponge-like veneer, and puts them internally to provide acoustic and fire separation, and greatly increased thermal massThe exterior is insulated panels. greatly increasing sustainability.

Back to Front:
it takes the cars from being a huge intrusion in the front facade and outs them in the rear. The area of laneway is little more than the combined area of lost driveways, but provides a safe and more secure area for children's play.

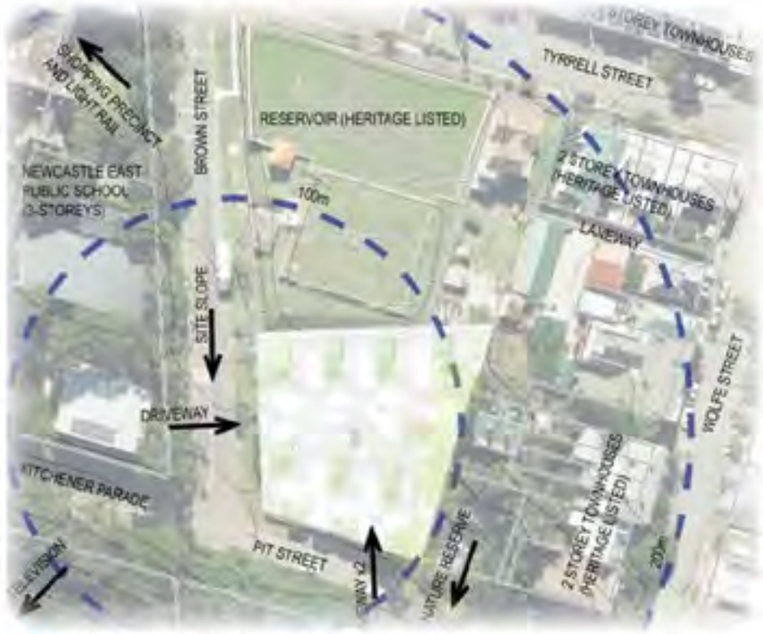
Change the code 1:
dispense with the FSR an inhibitor of density and a crude measure of volume control. Instead strengthen 2 other controls: a clear envelope to prevent overshadowing (e.g. end setbacks) and internal access to sun.

Change the code 2:
raise the height limit of terraces to 9.5m to allow 3 storeys with good F2F heights and PV and gardens on the roof. Density through terraces should not preclude large, flexible, houses. gained through taller heights on smaller plots.

the multigenerational terrace testing the code 4

Site Selection, Context & Neighbourhood Character

LOCATION PLAN - APPROX. 1:2000



BLOCK PLAN - APPROX. 1:1000

The city of Newcastle has a history of terrace houses reaching back to the 1890s. The Hill where the site is located is an area of some historic importance. It was the original centre of the city, first designated and planned as such in the 1820s. The Hill now forms part of Newcastle's larger city centre located approximately 500m from the beach, central business and retail areas.

These surrounds have recently been flagged by the city in their imminent urban renewal plans which will see a stronger connection established between the city centre and the waterfront. A flagship project is the reclamation of old now defunct railway tracks providing an unprecedented level of public space amenity right at the doorstep of The Hill.

Majority of The Hill lies within 'The Hill Conservation Area' which encompasses a range of 1, 2 and 3 storey houses and terraces including several heritage listed buildings. These range from the Victorian to the contemporary, most prevalent of which are several late 19th century buildings which give the area its picturesque street quality. Street and neighbourhood character are among the Conservation objectives, while our specific site does not contain heritage listed buildings.

The selected site is an amalgamation of four blocks zoned as R3 "medium density residential". The Newcastle Local Environment Plan permits multi-dwelling housing including terraces within R3 with the stated objective of providing a variety of housing types in a medium density residential environment. Apartments are the fastest growing typology in The Hill, however semi-detached terraces have overtaken single / detached dwellings (ABS 2011). In terms of housing tenure, there are many more renters than property owners.

The chosen site is both elevated and steep, it slopes toward the south and is partially overshadowed by the adjacent heritage listed reservoir located immediately to the North. Views to the sea can be seen above the level of the reservoir while to the South there are views into a native planted reserve complete with walking track. There several protected trees along the eastern boundary off the site.

The Hill has, on average, 2 householders per dwelling, and 41% of dwellings feature 2 bedrooms. The median householder age is 31 with over 50% educated to a tertiary level. Sixty percent of The Hill populous work full-time and further thirty percent work part-time. Almost one third of employed Australians regularly work from home, seeking a concentrative space "to catch up on work" and or alternatively as a means of reducing business overheads (ABS 2016). Of those travelling to work, private car usage dominates and on average, there are 1.5 vehicles per household in The Hill.

The terraces offer social, retreat and utility spaces on multiple levels. They typically have two front doors, at Understorey and Canopy level. Both terraces feature "social" or living spaces at mid level with sleeping or storage loft above and flexible studio space at the lowest level. Key to the flexibility of the scheme is the incorporation of elevated external space, having both private and communal possibilities, located on the roof of lower level dwellings. With equality of access, these raised outdoor spaces create an engaging and exciting integration of inside and out. As a result residents can be as private as they like, or open and communal if they wish; the scheme allows for these possibilities. The terraces of varying size are reconfigurable and explore the key usability question of changing household profile and use over time. Vertically organised flexible terraces offer a variety of possibilities; a single terrace; terrace with ancillary spaces; terrace with office studio; two separate terraces.

Undercroft carports exploit the falls of the site, and act as a multi-purpose space and an extension of amenity to the studio space. Free from cars, the result is an upper level ground plane which can be freely acquired by residents through its offering of a mix of private and communal, biodiverse landscaped space. Site lines from this upper level enable residents on the upper level to freely view the comings and goings on the lower level.

The Hill represents a neighbourhood with proximity to increasing amenity, a young population of rental tenure householders which is already undergoing medium density transformation. The site offers an opportunity to demonstrate design strategies for medium density compact houses with integrated landscape on a steep south facing site in a Conservation Area where nearby historic terraces feature.

Understorey TERRACE

UnderstoreyTerrace is an accessible single level living courtyard house facing north, with loft over. Entry is via a flexible study or home office space at lower level or via the main entry spine at upper ground. A communal lift and upper level landscaped walkways support accessibility. It shares party walls on two sides and has openable windows at various heights for cross ventilation and to frame views of fernencs. It's footprint can expand into the 2ndary residence studio at lower level or this can remain as a separate tenant / studio , carers flat, workshop space or place of business.

roof garden

upper ground

1. RETREAT SPACE 1
2. SOCIAL SPACE 1
3. RETREAT SPACE 2
4. BATH
5. FLEXIBLE INDOOR SPACE
6. KITCHEN
7. FLEXI OUTDOOR SPACE
8. PRIVATE OUTDOOR SPACE
9. RETREAT SPACE 3

lower ground

1:200

section

Canopy TERRACE

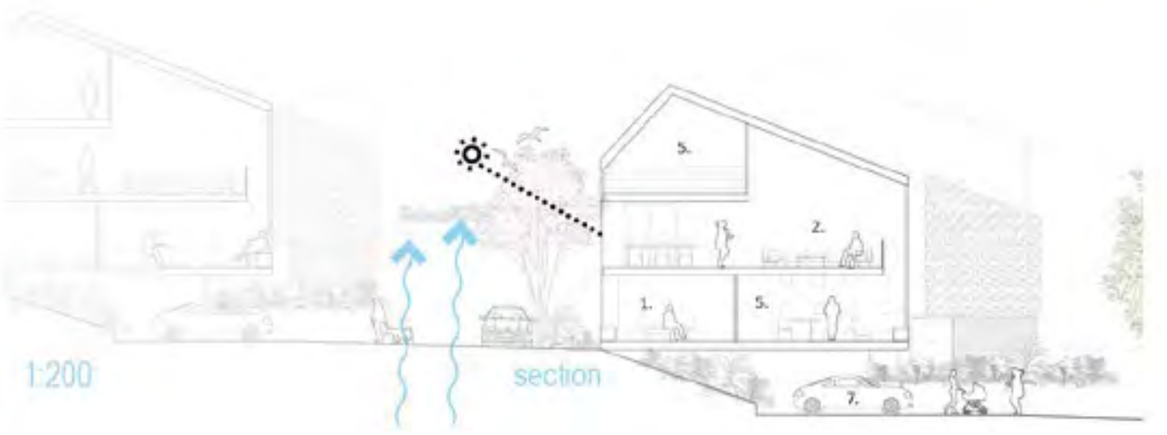
Canopy Terrace features upper level north facing living, with bedroom loft above and north facing roof garden. A communal lift services an upper level walkway as an alternate to stair use if required. The house has 2 front doors - upper and lower - with floor layouts flexible for single level living on each, or office studio lower with living above. Car spaces are interchangeable with other outdoor uses. The flexible studio and bedroom at mid level can be utilised as part of the main dwelling or offer separate tenant space, home office studio and so on.

1. RETREAT SPACE 1
2. SOCIAL SPACE 1
3. RETREAT SPACE 2
4. BATH
5. FLEXIBLE INDOOR SPACE
6. KITCHEN
7. FLEXI OUTDOOR SPACE
8. PRIVATE OUTDOOR SPACE

roof garden

upper ground

lower ground



1:200 section

Testing the DESIGN GUIDE

1. Attic space should be full height for 75% of room
Proposed lofts include full height and low raked sections, the latter being suitable for storage and sleeping nooks

2. One on street parking space in front of each dwelling
On street parking in front terraces achieved, with exception of street intersection corners, where we have instead provided additional visitor parking on site

3. Building separation in the form of 2-3m walls with no windows or between windows into non-habitable rooms 9m between windows of habitable rooms
East to west our terraces are semi-detached and the plans feature a non-habitable space "spine" which is subordinate the habitable spaces (the so called social and retreat spaces). We use this spine as an organising element and as a buffer between each terrace as it allows us to constrict windows for example. From north to south the 9m terrace is achieved. More broadly the terraces are "slipped" thereby offering privacy to indoor and outdoor spaces and lush courtyard spaces are provided. Careful placement of windows, window size, sunshades, solid balconies, screen planting, ferns and the slope of the site supports dwelling privacy

4. Private open space min dimensions: Private open space min clear dimension 3m
Balcony size typically 20% of dwelling size
Canopy terrace exceeds in the form of a roof garden and a separate utility space (for bins and washing line. Understorey 2ndary residence exceeds in the form of the fern garden within the courtyard, while above the Understorey dwelling proper features a balcony 1.5m deep but with corner sliding doors to "borrow" internal space

5. Minimum lot widths of 7.5m
We have tested a 4.5m and 7m terrace and lot and found these widths to provide good design outcomes including post-adaptability to Adapt Class C.

6. Change in level 0.5 - 1.2m between private terraces /the street/ communal spaces
A steep site with elevated views to the south of the coast and to the north of the reservior, our design proposal is an interplay of level changes in order to subordinate the cars, to offer pedestrian surveillance from roof gardens and air bridges, and to create up to 2 front doors to allow each terrace multiple modes of use over time as we find with an extension table (upper level
living, lower level business, family expansions
space). A communal lift and stairs further support access

7. One 8m high tree per dwelling (PPOS)
This is achieved within OR adjacent each terrace PPOS. The site also retains several protected trees to the eats of the site that form a setting for communal space. Key to our scheme is the eucalypt and fern courtyards which provide visual interest, visual privacy and are a source of coolth offering Heat Mitigating Urban Design (HMUD) indoor and outdoor spaces within the site.

8. Contextual Built Form, Scale and Visual Appearance
Forms of which have been informed by the prevailing Victorian style dwellings within The Hills heritage precinct. This terrace type sits comfortably within the typical streetscape advantaged by the looser / single level podium forms derived from the Understorey Courtyard Terrace including its street address. This offers a highly contextual approach responsive to neighbourhood context and the conservation zone.

Lightweight insulated wall materials predominate, interspersed with small areas of stone. Upper level decks and walkways are also lightweight and where applicable are separated from the metal deck roof of the dwelling below. Many walls are shared and single level brick "podium" forms help the houses interleave as infill within the Newcastle neighbourhood context. Articulation is of slender roof and offset terrace forms; these offer screening between dwellings and their respective outdoor spaces, while the roof forms limit overshadowing, and offer a location for solar panels.

9. Sustainability and Landscape
Newcastle's climate as with many areas is experiencing a period of warming the result has been a shift towards a more tropical climatic cycle. An obvious consequence of which is the emergence of dense and thriving tropical vegetation. Our site exploits HMUD principles. The scheme seeks to refine the Newcastle terrace mix and types with a site-specific design response. Compact semi-detached terrace forms face north south with minimal or no windows to the east and west.

Terraces are organised around interconnected, communal landscape and courtyard spaces at upper (Canopy level) and lower ground (Understorey level). Derived from rainforest terms, paired terrace types are offered – the Canopy Terrace and Understorey Terrace. The result is a Terrace precinct which allows for privacy and communal possibilities with landscape weaved throughout.

Small is beautiful. Thousands of terraces in Sydney's inner city attest to that. You don't need 6m wide to do a good terrace. How about 4.5m for a beautiful terrace?

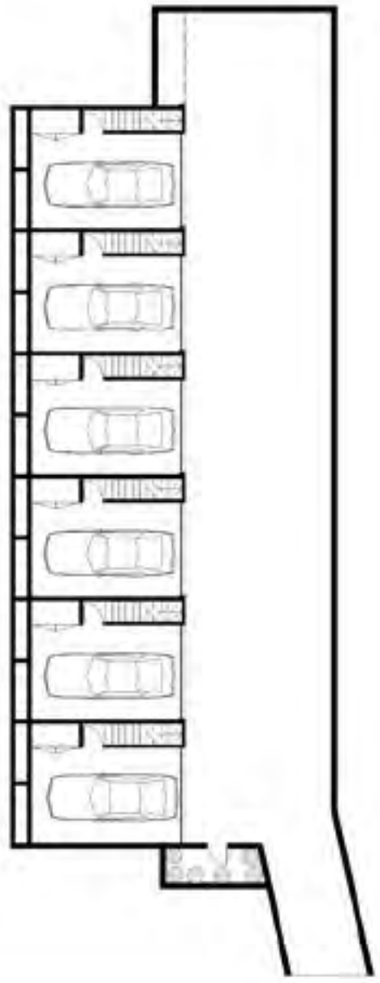
An efficient terrace house site needs 3 things at the start: a site that is regularly divisible, entry from the street to the south and the rear courtyards to the north

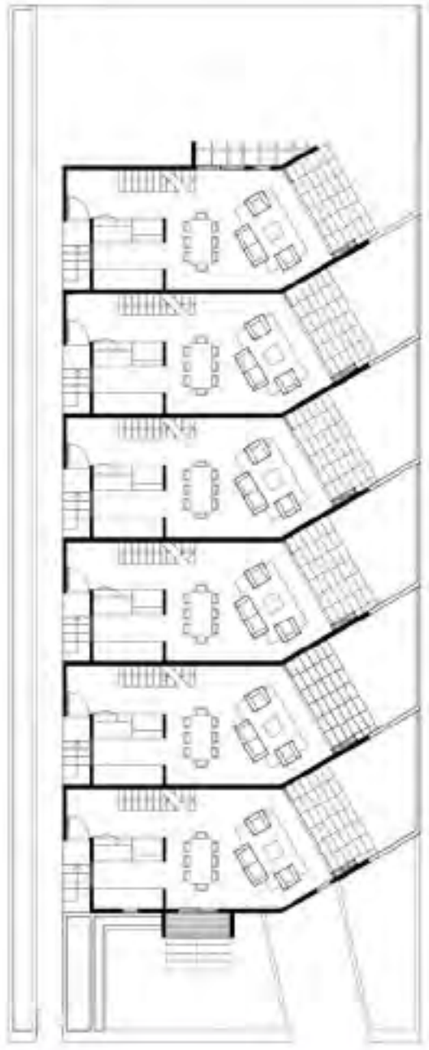
This proposal is for a group of 6 or so terraces, 4.5 m wide, that will fit comfortably on a site of about 750 sqm, with a 'cranked' plan, for optimum orientation

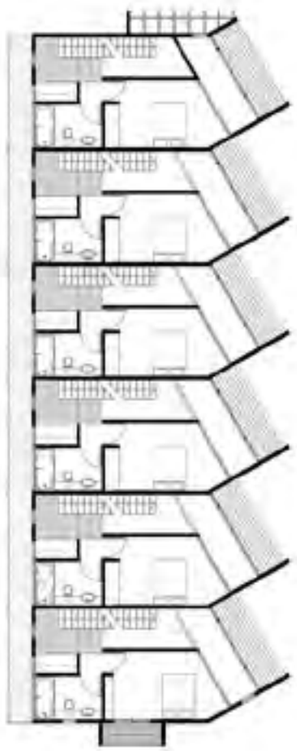
The smaller a terrace house gets, the more you need north sun. Real. North. Sun. The cranked plan ensures that the full width glazing to the living area gets sun

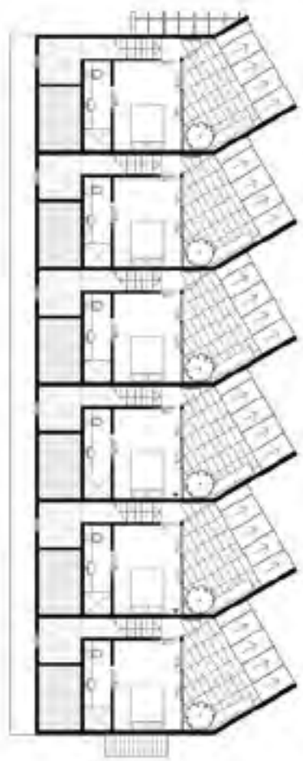
The structure follows the boundaries, with the entry opposite the cranked end; the terrace being an economical rectangle until it turns to face the sun

cranky terraces context









b

Every terrace has an underground garage space with work area and and an internal stair to the house. A necessary evil, even in Sydney's future, at least the cars are hidden.

1

The living level - the entry comes from a path or street, into a long space with sun at the end. Different light levels create different space within the open plan.

street

2

Up the connecting stair to a study on the landing. Cross ventilation and stack ventilation in the one space. Bedroom and bathroom with a balcony looking north.

3

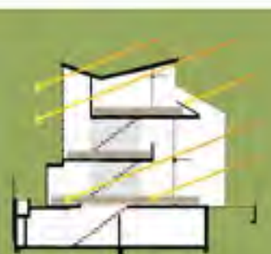
Top level, another bedroom and bathroom under the north pitched roof. The 2 bed rooms offer flexibility in use for two individuals or couples or a 1 child family.

cranky terraces context

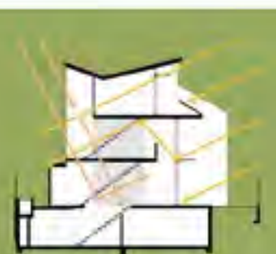
2

thermal comfort

passive summer cooling



passive winter heating



natural light

water cyle waste and recycling

cranky terraces sections

3

On this site the terraces are entered from the street, to clearly differentiated entries, the cars enter from a side street, and the cranked private terraces face north (and away from their neighbours).

On this site the terraces are entered from a walkway off the side street, with each entry door clearly visible along the stepped form. The private courtyards face the main street, with a gate for secondary access.

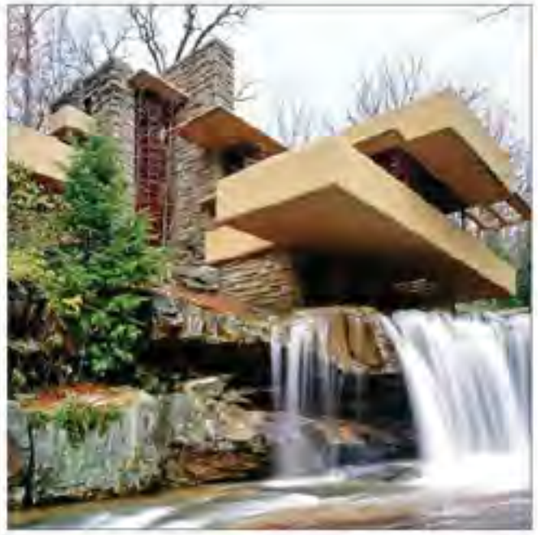
On this site the terraces are entered from a walkway off the street on the SW side, with each entry door clearly visible. The private courtyards face the side boundary with setbacks for scale.

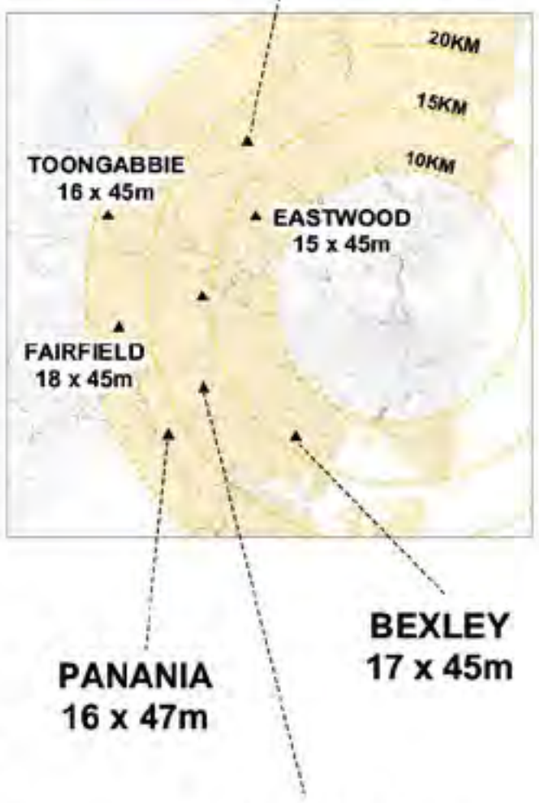
The Code envisages site specific schemes, which is as it should be. But the competition offers the opportunity to look at prototypes which could address issues that arise on a large number of sites. Wherever there are streets at 45 degrees to north (and that is about 25-30% of Sydney streets, then this prototype can work. But it relies on a relaxation of several code rules: accepting that narrower terraces can have good amenity, allowing a higher FSR if the form allows good solar access and limited overshadowing, and allowing for small side paths that lead to front doors off the street (but not doors on the street)

cranky terraces testing the code

4

CONTEXT





0.1%

HOUSES ON
UNIQUE SITES

6%

SITES THAT COULD
AFFORD TERRACE HOUSES

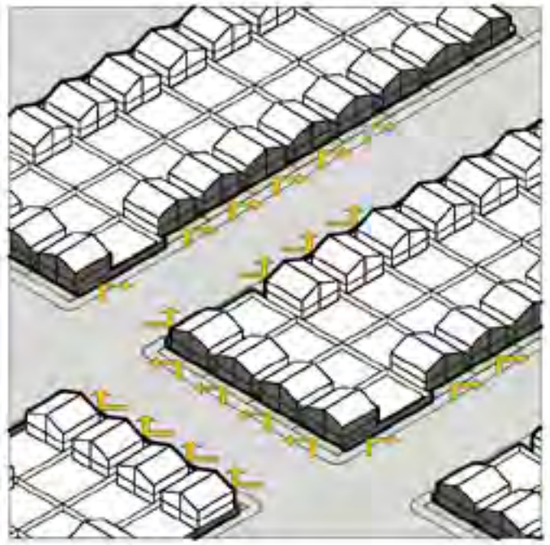
80%

FLAT SITES WITH 1:3
FRONTAGE / DEPTH RATIO

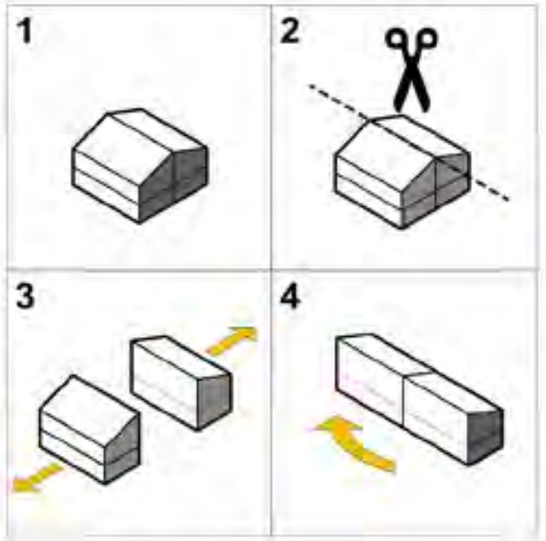
TYPICAL SIZES OF LAND
IN MIDDLE RING SUBURBS

THE CONSEQUENCE OF "FRONTAGE"

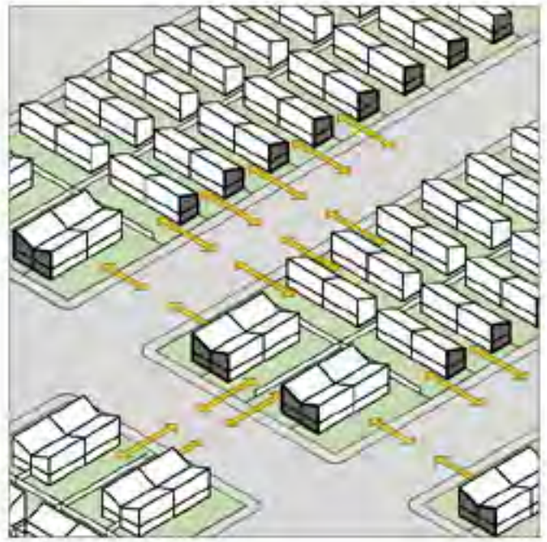
THE COMPLYING DEVELOPMENT PATHWAY IS ONLY AVAILABLE TO DESIGNS THAT MAXIMISES STREET FRONTAGE



THIS HIGHLY INCENTIVISES DWELLINGS TO MINIMISE SIDE SETBACKS AND CREATE A "STREET WALL" TO ENCLOSE HIGHLY PRIVATISED BACKYARDS

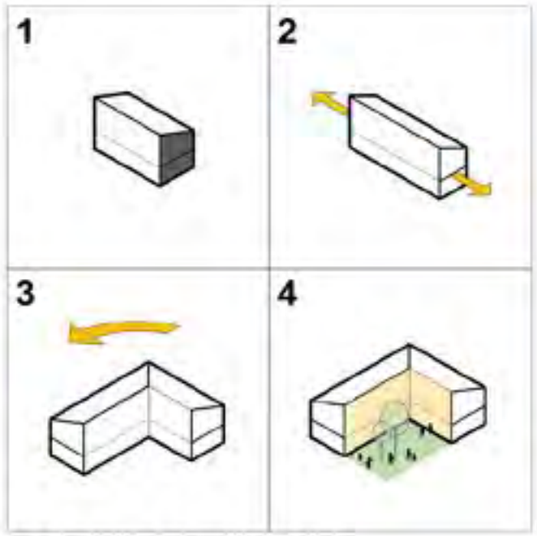


WE PROPOSE TO CUT, SPLIT AND ROTATE THE TYPICAL ATTACHED DWELLING TO CREATE A LONGER, SLENDER BUILT FORM

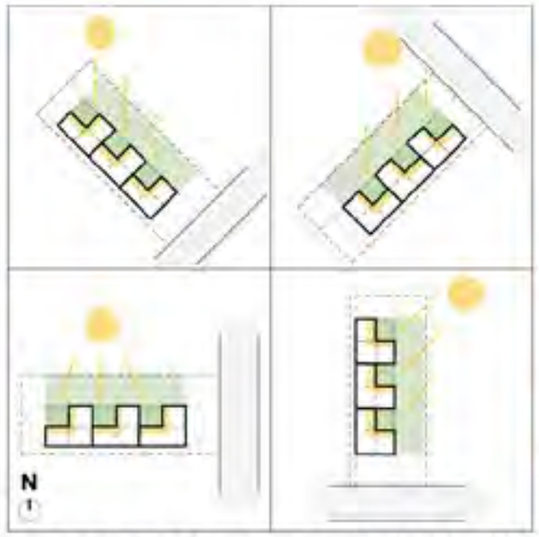


WHEN MULTIPLIED ACROSS THE WHOLE SUBURB, A PERMEABLE VILLAGE THAT ENCOURAGES COMMUNITY INTERACTION IS CREATED

THE "ROTATED" TERRACE

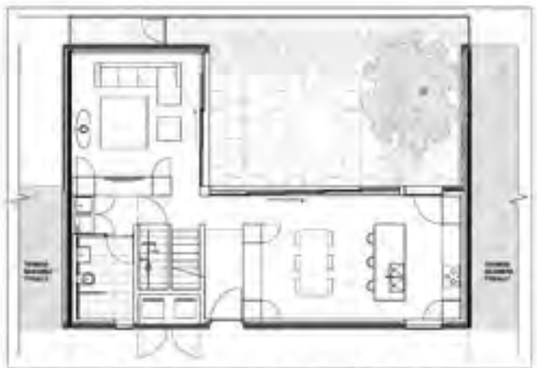


CREATING COURTYARDS



FLEXIBILITY FOR SOLAR ACCESS FOR ALL SITE ORIENTATIONS

SECTIONAL PERSPECTIVE



POSSIBLE GROUND FLOOR PLAN

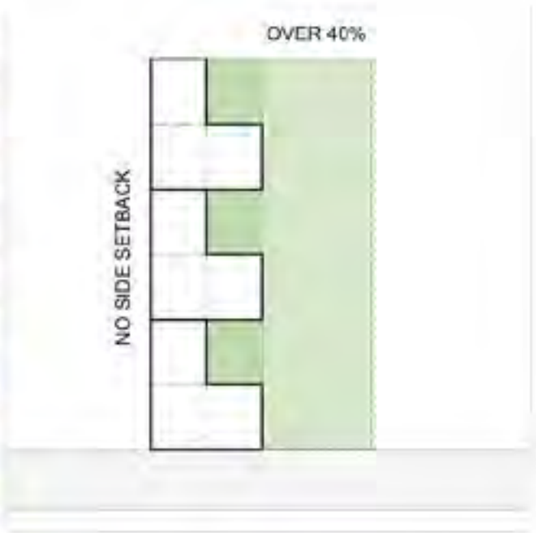
POSSIBLE UPPER FLOOR PLAN

THE PROPOSAL RESPONDS TO THE LIMITATIONS OF THE CURRENT PROPOSED DESIGN GUIDE, WHICH IN OUR OPINION, WILL ENCOURAGE A HIGHLY PRIVATISED CHAIN OF HOUSES THAT PROHIBITS ANY COMMUNITY INTERACTION.

THE DIAGRAMMATIC SOLUTION PROPOSED HERE CHALLENGES THE RIGIDITY OF THE DESIGN GUIDE WITH A FLEXIBLE, MODULAR SYSTEM THAT CAN ACHIEVE HIGH AMENITY ON THE MAJORITY OF THE SITES IN NSW.

TESTING THE DESIGN GUIDE

CDC PATHWAY SHOULD NOT BE RESTRICTED TO PROPOSALS THAT FACE THE STREET



CONSIDER ALLOWING A ZERO SETBACK TO ONE SIDE, PROVIDING 40% OF THE SITE'S WIDTH OPEN ON THE OTHER SIDE. THIS ELIMINATES THE NEED FOR FENCES AND MAXIMISES THE WIDTH OF LANDSCAPING

CONSIDER ALLOWING HEAD/REAR IN CARPARKING WITHIN THE FRONT SETBACK OF THE SITE. THIS ELIMINATES THE NEED OF A DRIVEWAY DEEP INTO THE SITE

CONSIDER RELAXING HEIGHT LIMITS TO PROMOTE VARIED ARCHITECTURAL FORM AND VISUAL APPEARANCE. CAPPED FLOOR SPACE RATIO WILL RESTRICT OVERDEVELOPMENT

Missing Middle
Context

TERRACE CATEGORY

The site selected to demonstrate the use of the Medium Density Design Guide, is located in Oran Park, NSW. The Terrace House is the proposed typology.

Oran Park is a new masterplanned suburb in Sydney, 35km South West of Sydney Harbour bridge in the Camden Council Area. This region has a 'Missing Middle' and typifies the urban spread on the periphery of Sydney. The chosen site is a green field site South of South Circuit and East of Oran Park Drive.

Oran Park was originally home to the Muringong, southernmost of the Darug people. In 1805 John Macarthur established his property at Camden where he raised merino sheep. The town replaced Oran Park Raceway, which stood from 1962 - 2010. The circuit hosted the Australian Grand Prix (non-F1) and rounds of the V8 Supercars.

The suburb is expected to eventually be home to over 25 000 residents. The website (http://www.oranparktown.com.au) states: *"At Oran Park Town you will have the opportunity to build your ideal home in a modern new town setting.*

Future residents at Oran Park Town will enjoy a community like no other in the south west of Sydney. Four schools, a major retail precinct, civic amenities and commercial services all combine to make Oran Park Town a secure, smart choice for you family into the future.

Land as well as house and land packages are available, and with a 43 home display village onsite there is no shortage of inspiration for your dream home."

The time line from the website shows the fast and rapid development program that has happened since 2011.

The residential fabric and the suburban streets which have been developed as a house and land package with a selected Project Home builder present as attractive pleasant places to live however the streets have a rigorous monotony and consistency of character.

The display village format is aligned with the Oran Park Guidelines and expectations, however the regularity of the lots sizes and the pattern of the residential built form allows for little variance and textural richness.

Oran Park has little to no housing diversity, primarily consisting of large individual dwellings. These Sites are typically 500-600 sqm. With approximately 30 house sites per block and a density of approximately 11 dwellings per hectare, including public land.

Our project gives 30 terrace dwellings per hectare including public areas and roads and in addition to this returns 1/3 of site area as communal garden and recreational spaces.

The selection of a site in Oran Park for the purpose of this competition, was to study firstly; how a different density and urban pattern could increase the yield on 18 blocks of newly released land sites and secondly, how such a development could introduce a new built form and character to the suburb.

This study aims to challenge the convertional prototype for new suburban housing.

Concept Design

The primary framework adopted for the design of each terrace houses is that they should have the capacity to be;

- Affordable
- Accessible
- Sustainable
- Modular
- Prefabricated
- Adaptable

Multigenerational housing that meets the needs for access, quality and affordability are essential criteria that are regularly overlooked unless they are legislated into t planning instruments.

The terrace house for this submission proposes the following;

1. Modular composition:

- One fully accessible bathroom on each level.
- Bathroom can be built off site and delivered as a complete room.
- The 2m width of the bathroom determines the modular grid for other prefabricated components such as the stair and potential future passenger lift.

2. Prefabricated construction:

- Prefabricated facades and floor cassettes can be built off site for fast and efficient assembly on site. Proposed as timber construction with lightweight cladding.
- The base build will be a conventional in situ ground slab with concrete block party walls.
- Prefabricated elements will complete the house assembly

3. Sustainable design:

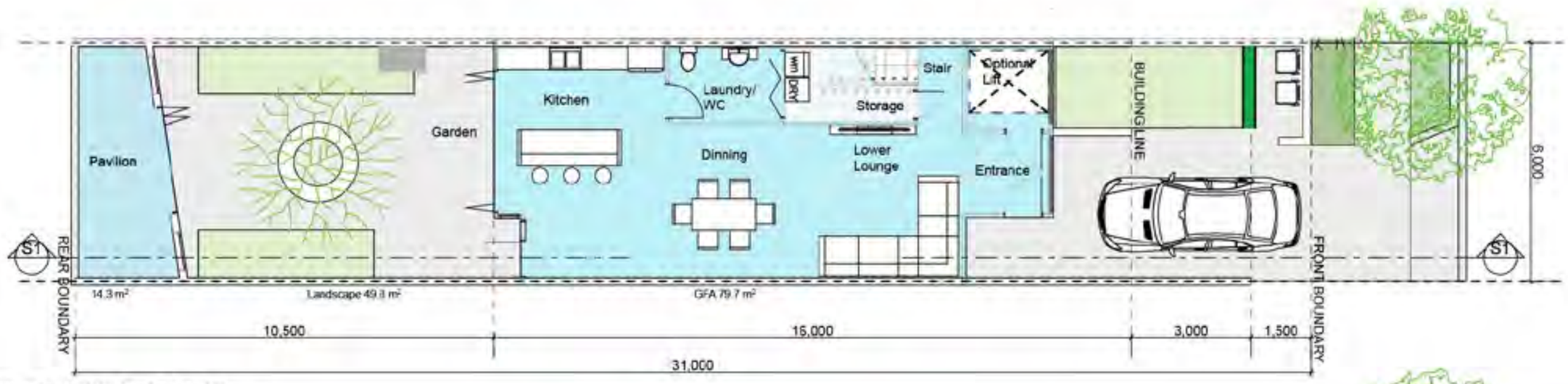
- The roof is designed to capture rainwater which can be stored in underground tanks below the house. A central wide box gutter projects beyond the ends of the terrace with a single large capacity downpipes as a feature element.
- The terrace 'breathes' with excellent opportunity for cross ventilation and passive cooling.
- The configuration of the roof is such that party walls can be easily flashed and waterproofed unlike traditional terraces that are separated by full exposed gable walls.
- Double glazing and superior insulation in roof, walls and floor.
- No air-conditioning included.
- Deep eaves and overhangs for shading in summer.
- Concrete ground floor slab exposed for thermal mass and heat absorption in winter.

4. Adaptable

Whilst the bathroom is accessible and the external doors and master bedroom are disabled compliant, the short upstairs corridor can be adjusted to widen if required.

Overall Character:

Modern engaged style with monolithic forms, blade walls and cantilevered balconies. Structure includes Light metal roof, Concrete, Concrete Block and Weatherboard walls, Louvre's over balcony and privacy louvre's to some windows.



GROUND FLOOR PLAN - 1:100

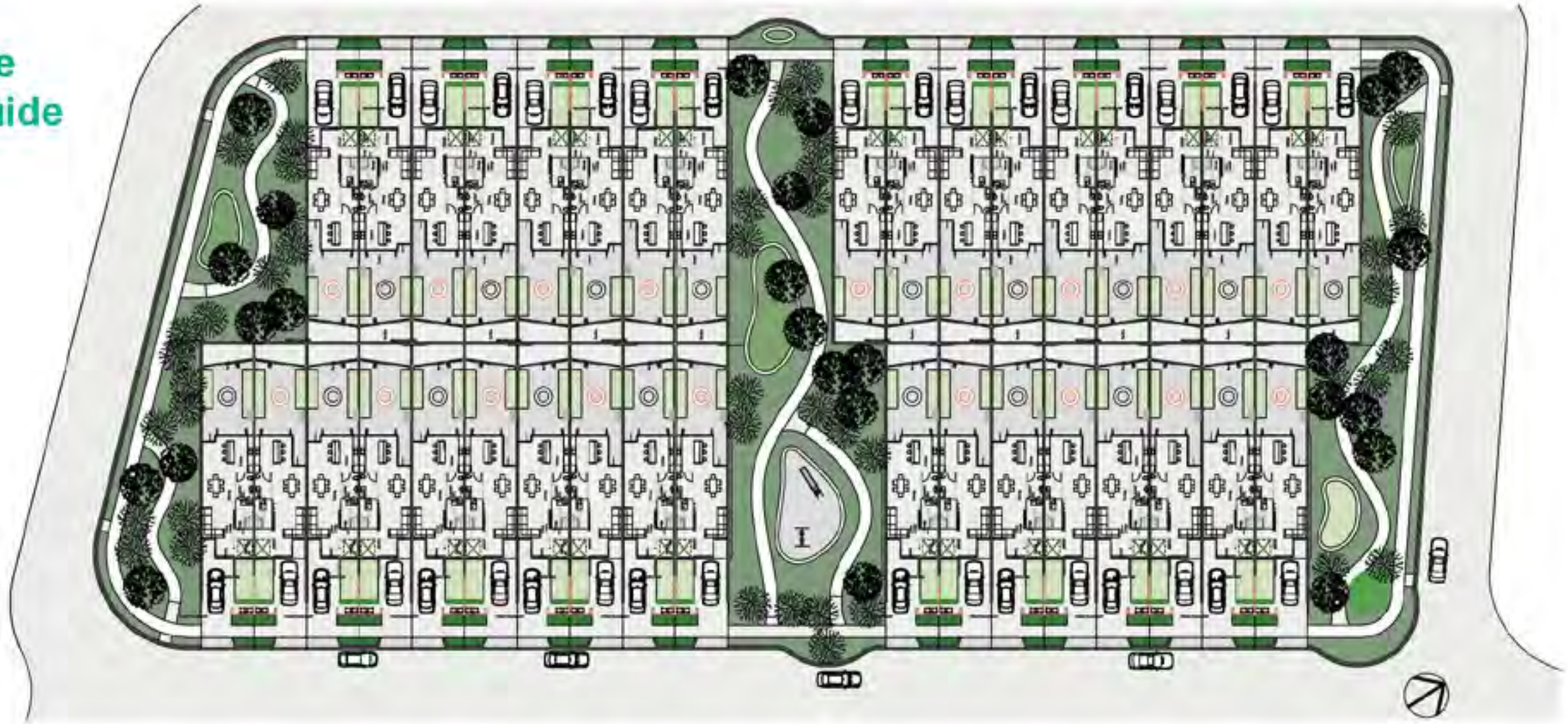
FIRST FLOOR PLAN – 1:100

Concept Design

AFFORDABLE
ACCESSIBLE
SUSTAINABLE
MODULAR
PREFABRICATED
ADAPTABLE

SECTION 1 – 1:100

Testing the Design Guide



SITE PLAN – 1:500

Generally our proposed development complies with the requirements of the Draft Medium Density Design Guide however our Principal Development Standards vary in the following ways:

1. Our proposed lot size is less than 200sqm. We propose a lot size of 186sqm, which we believe is sufficient and gives a 7% land saving.
2. We propose no Rear Setback where the height of the building is less than 4.5m. Our concept is to have multipurpose detached pavilion at the rear of the property and to create an internal private and closed courtyard between glazed walls.
3. Requirement of floor Space Ration to be less than 0.8:1. We propose a FSR of 1:1, which propose, can be achieved without jeopardizing Landscape Area.
4. Requirement for front fences to be permeable. We propose solid front fences/walls to conceal wheelie bin storage areas and to integrate with the overall design of the development.