DESIGN REPORT

142 - 146 DUDLEY ROAD & 2 - 4 KOPA STREET WHITEBRIDGE
15-AUGUST-2014

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TITLE	**DESIGN REPORT**
PROJECT	**142 - 146 DUDLEY ROAD & 2-4 KOPA STREET WHITEBRIDGE**
PROJECT No,	**14_026**
CLIENT	**SNL CONSTRUCTIONS**
PRINCIPAL AUTHOR	**Peter Smith** [Reg. No 7024] psmith@s-tz.com.au
REVISION & DATE	REV A 15-08-2014
STATUS	FOR DEVELOPMENT APPLICATION

CONTENTS

Working with and responding to the particular characteristics of the site, the Fernleigh track corridor and the local context have informed a specific and elegant design for a new and exciting series of spaces in Whitebridge.

The new spaces have as their central focus - public domain and public space comprising streets, pedestrian lanes and parklands - opening up to and bringing into the site - the Fernleigh track corridor.

The new community provides a wide range of housing choices, from large family park side homes, to small adaptable apartments.

The approach to the public domain is to provide an engaging new laneway that provides a link at a human scale between Dudley Road and the heart of the residential precinct.

The staggered forms provide visual interest and views from the apartments and dwellings to the bushland and the views to Newcastle and coast to the south.

DESIGN VERIFICATION

This project is in part deemed to be a residential flat building to which State Environmental Planning Policy No.65 applies. This design verification statement is provided to satisfy cl. 50 (1A) of Environmental Planning Regulation 2000.

I, Peter Smith, being a registered architect in accordance with the Architects Act 2003, registration no. 7024:

a. directed the design of the residential flat development at Dudley Road Whitebridge,
b. ensure that the design quality principles set out in Part 2 of the State Environmental Planning Policy No. 65 - Design Quality of Residential Flat Development are achieved for the proposed development.

c.

PETER SMITH
Director
Smith & Tzannes

An urban design approach which takes as its starting point a broad range of site constraints and opportunities, resulting in a rich and diverse scheme. The proposal intelligently thinks about the site issues from first principles bringing the context into the development and creating a new fine grain for Whitebridge.

SITE ANALYSIS

LOCAL CONTEXT

The site is located between the Whitebridge local shopping precinct and the recreational and bushland corridor known as the Fernleigh Track. To the west of the site Riawena Park, Whitebridge Cemetery, playing fields and basketball courts at Kahibah Sportsground

The surrounding residential development currently consists of single dwelling houses on large residential blocks. Town houses and villa development of varying ages also exist to the west of the site off Bulla Street and to the south along Bulls Garden Road.

Council and the communities vision for the site is illustrated in the land use strategy publication Lifestyle 2020 Strategy and the subsequent review Lifestyle 2030 which sought for development intensities to increase around existing centres to reinforce the centre in the City's commercial hierarchy and contribute to the growth of Whitebridge as a compact and distinct community that has a variety of housing types to suit different needs.

The land around the site has the same zoning as the subject site and it is anticipated that this is the first of a series of development that will have a similar form and character.

The existing built form in the retail strip consists of one and two storey structures with retail uses on the ground floor. A parking slip lane on the north side of the street provides additional parking adjacent the chemist, supermarket and bottleshop.

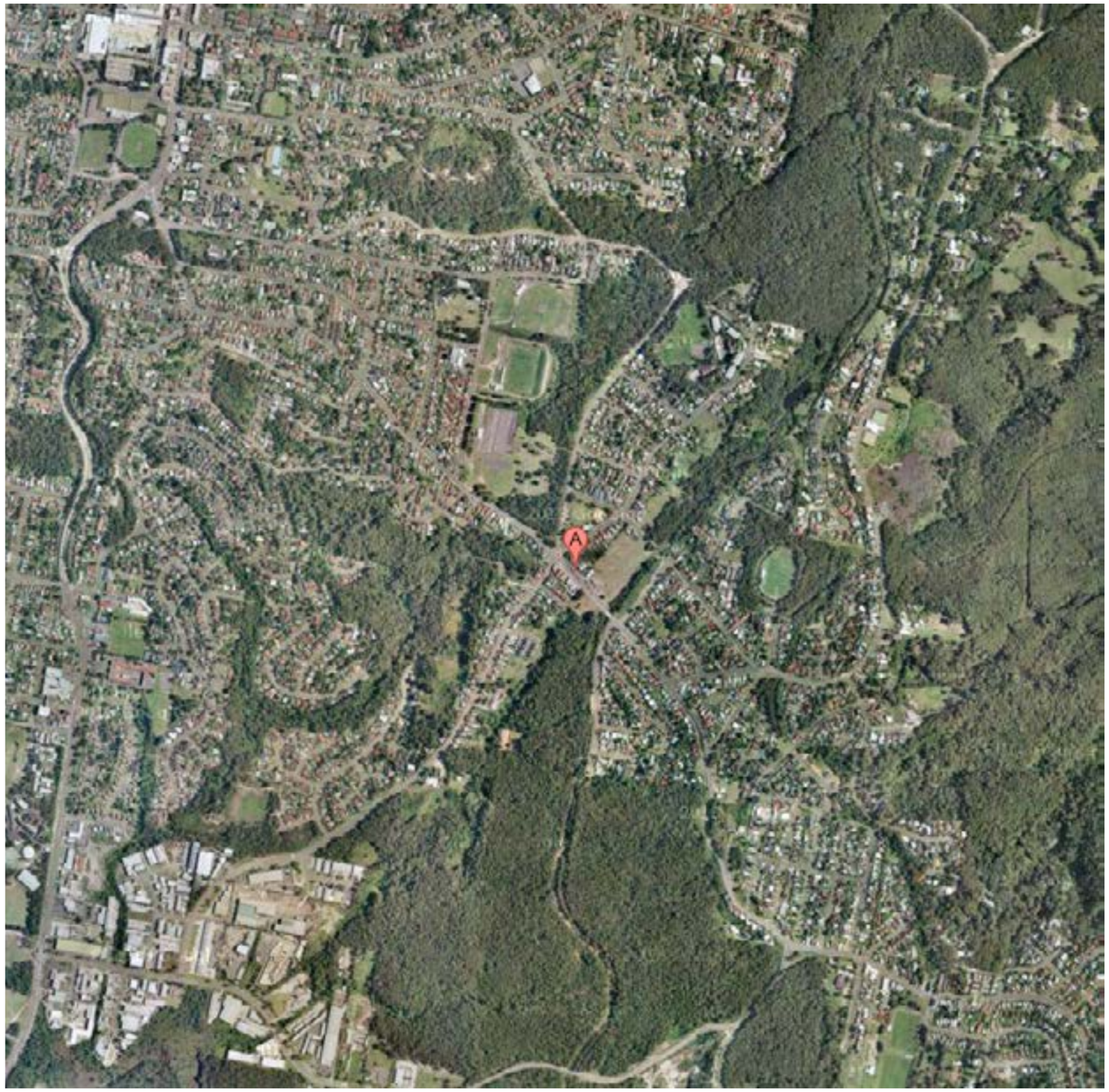
The site provides an important ecological corridor link between Glenrock State Recreation Area to the north and Awabakal Nature Reserve. The corridor adjacent the site consists only of a few remnant trees adjacent the cycle way and former railway corridor.

Where Dudley Road crosses the Fernleigh track adjacent the site there are remnants of the old timber road bridge being brick piers with timber nailing plates. It is this bridge that was painted white that is said to be genesis of the suburb's name.

SITE HISTORY

The site has been vacant for a number of decades as it was previously dedicated for a future freeway corridor that was known as the East Charlestown Bypass.

During this period the site has been used for car parking by the adjoining businesses and traversed by cyclists and pedestrians entering and leaving the Fernleigh track.



LOCATION PLAN
WHITEBRIDGE NEIGHBOURHOOD CENTRE

SITE

SITE AREAS

The site currently consists of 9 lots and has an area of 24,390m². The site has three land use zones:

- Residential (Urban Living)
- Urban Centre
- Conservation (Secondary).

SITE PLAN AND
LAND USE ZONES

EXISTING DUDLEY ROAD
FRONTAGE (LEFT)

KOPA STREET FRONTAGE
(RIGHT)

SITE ANALYSIS

The site runs parallel to the Fernleigh track which runs from north east to north west orientation, with the main street frontages to the south west on Dudley Road. The Kopa Street frontage is orientated to the north-east.

FLORA AND FAUNA

The site currently has no significant vegetation and is generally covered with grass. There are no known fauna species of significance inhabiting the site.

DRAINAGE & FLOODING

Natural drainage for the site falls from west to east. Natural drainage from the site falls to the Fernleigh track and towards Lisle Carr Oval in the east.

TOPOGRAPHY

This part of whitebridge has a commanding location along a ridge line. The site has a fall of about 11m from west to east. The boundary with the adjoining residential properties is almost level and the lowest part of the site is at the entrance to the Fernleigh Track.

NOISE

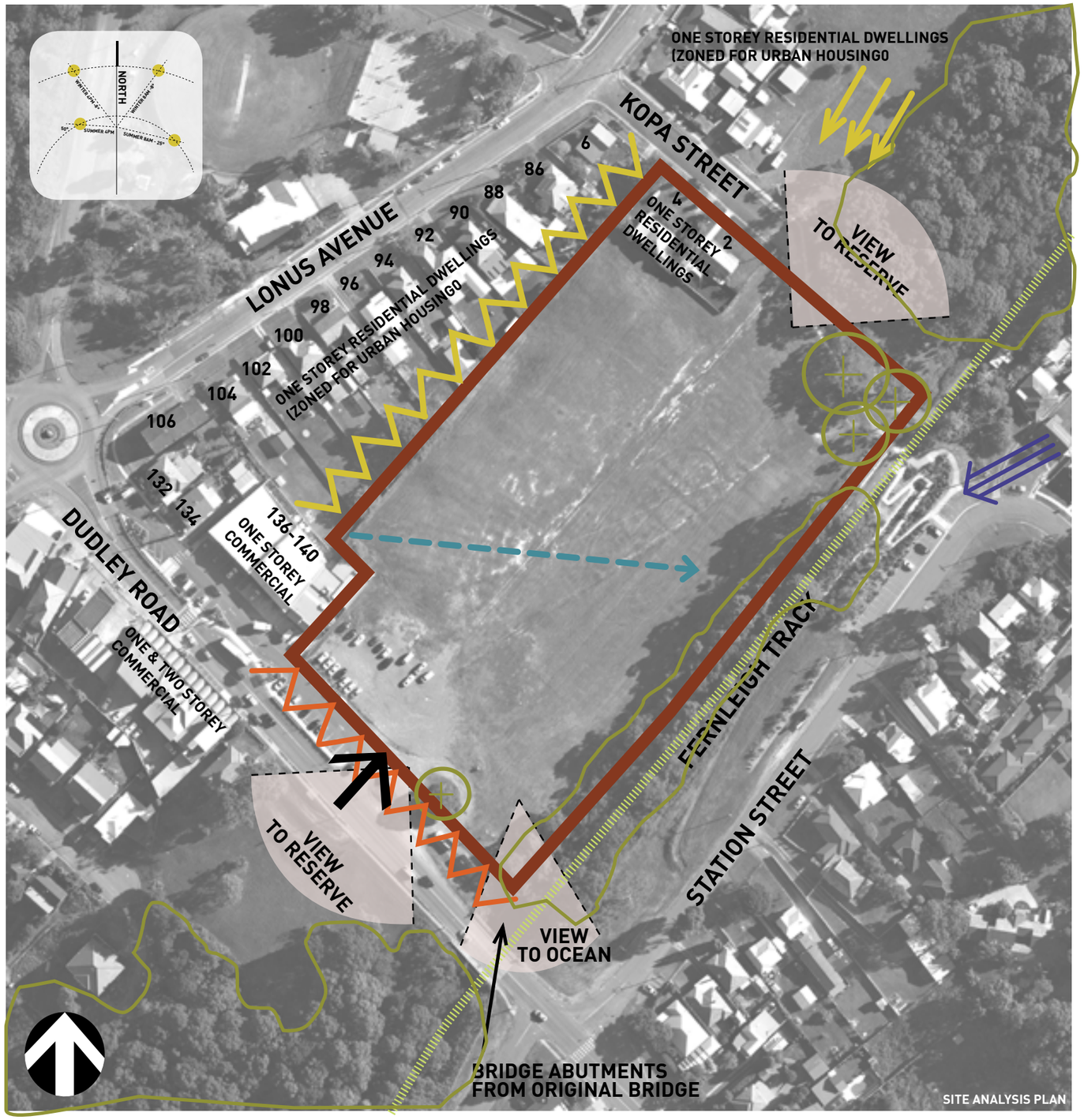
The most significant noise source is traffic and the retail uses on Dudley Road.

VIEWS

Significant views are available from the site to the south and north east.

SOLAR ACCESS

Good solar access is provided to the site. It is unlikely that any development on the site will have shading impacts on any adjoining property.



MAINTAIN SOLAR ACCESS

EXISTING STRUCTURES

BREEZES

TREES AND VEGETATION

DRAINAGE

SITE ENTRY

NOISE SOURCES

PRIVACY CONCERNS

VIEW CORRIDOR (REFER NOTES)

SOLAR

DESIGN STRATEGY

DESIGN PRINCIPLES

The following design principles relate to the response to the site conditions, and how amenity has been achieved for the proposal:

a. Integrate the landscape and open space into the centre of the development
b. Provide wide, public streets to provide a sense of space and integrate the new development into the existing and future urban fabric
c. Provide a diverse range of housing opportunities
d. Provide public access through the site to provide connections from the Fernleigh Track to the shopping street.
e. Maximise public frontage to open space
f. Provide internal living environments that are well ventilated and have good access to daylight and sunlight
g. Work with the existing topography, step building forms to avoid cut and fill and provide a development that respects the context and has a high level of articulation.

URBAN RESPONSE

The proposed development provides for an extension of the Whitebridge shops along Dudley Road and transitions into an residential precicnt that offers a high level of amenity and variety in dwelling typology.

By integrating the open space into the heart of the subdivision it enhances the quality of the public domain and also the outlook from all the dwellings that surround it.

Revegetation along the conservation zone will strengthen the Fernleigh track corridor as an ecological as well as a recreation zone.

The streets and open spaces are publicly accessible and provide an asset for the whole community.

The loop road provides an active street frontage, provides the open space with an accessible public edge and good accessibility.

PLAN DEVELOPMENT & TYPOLOGY

The development proposes a mix of apartment buildings, strata titled townhouses, and semi-detached and attached torrens titled small lot housing.

Different dwelling types cater for different social needs and provide opportunity for a diverse community. The different typologies including townhouses over basement car parking also remove private parking from visible areas and provide greater opportunity for public and private open space.

VIEW - DUDLEY ROAD

ACCESS AND PARKING

Access and parking is provided from both Dudley Road and Kopa Street. Access to the commercial component of the mixed use building can be gained from Dudley Road without the need to rely on access over the residential zoned land.

PEDESTRIAN ACCESS

Pedestrian access is provided from both Kopa Street, Dudley Road and the Fernleigh track. Access through the site is provided by a 2.5m wide cycleway / pedestrian path that runs through the environmental zone and the network of lanes and streets in the centre of the site. Pedestrian access to the apartment building is from three lobbies that are directly accessible and visible from Dudley Road.

PARKING AND VEHICLE ACCESS

Parking and vehicle access is provided from Kopa Street.

Parking for the apartments on Dudley road is located in a basement and is accessible from the internal road network. Visitor spaces are located in the basement car park or as on-street parking within the internal streets.

Parking provided for residents exceeds the requirements under the DCP

Parking for the retail component is provided wholly on the Urban Centre zoned land.

An SRV loading space is provided on a 'shared zone' at the front of the site. An onstreet loading zone is available for use by larger vehicles.

LANDSCAPE AND OPEN SPACE

23% of the site is provided as open space of that 85% is publicly accessible.

The landscape is an integral part of the site masterplan. The central open space provides a place for passive and active communal activity to serve both new and existing residents. This space has a visual and physical connection to the Fernleigh Track corridor.

Consistent with the wider strategy for the area, the Fernleigh Track corridor is to be widened. The landscape will consist of a mix of turfed open space and indigenous plantings that reinforce the ecological corridor.

The landscape and public domain treatment in Dudley Road will reinforce the precinct as a neighbourhood retail hub providing a high level of amenity for shoppers and residents, building on the work Council has undertaken as part of the Charlestown Public Domain master plan.

PUBLIC ART

As part of the new square on Dudley Road, interpretative insets in the paving are proposed to provide a connection with the historical aspects of the site and the Fernleigh Track.

STORMWATER MANAGEMENT

Stormwater management on the site will be collected and treated in a two stages. The strata titled development sites will have individual OSD and rainwater reuse tanks located on their respective lots. Overflow from these systems will be connected to the piped drainage system.

Stormwater flows from the torrens title lots and the public domain will be treated as part of a soft stormwater solution passing through rain gardens and grassed swales. High flows will be retained on site and discharged to the piped system. A tank in the central park will retain water for reuse for irrigation.

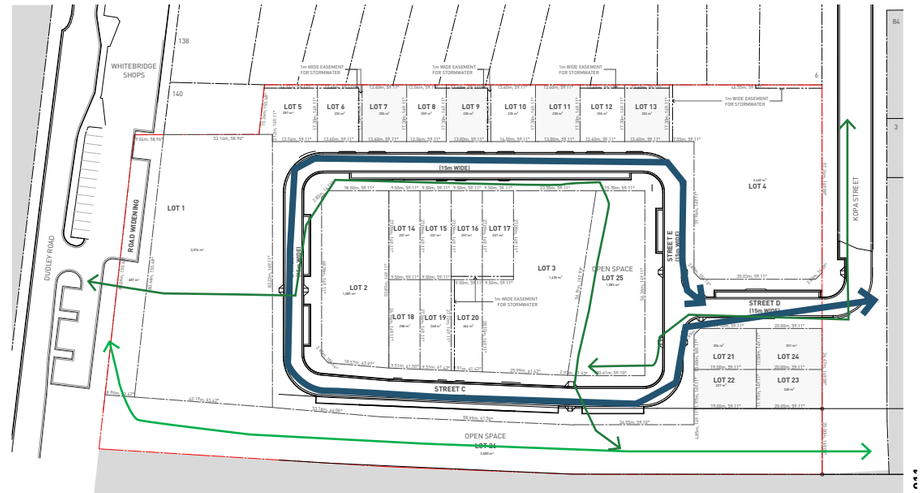
ACCESS FOR PERSONS WITH A DISABILITY

ACCESSIBLE PATH OF TRAVEL

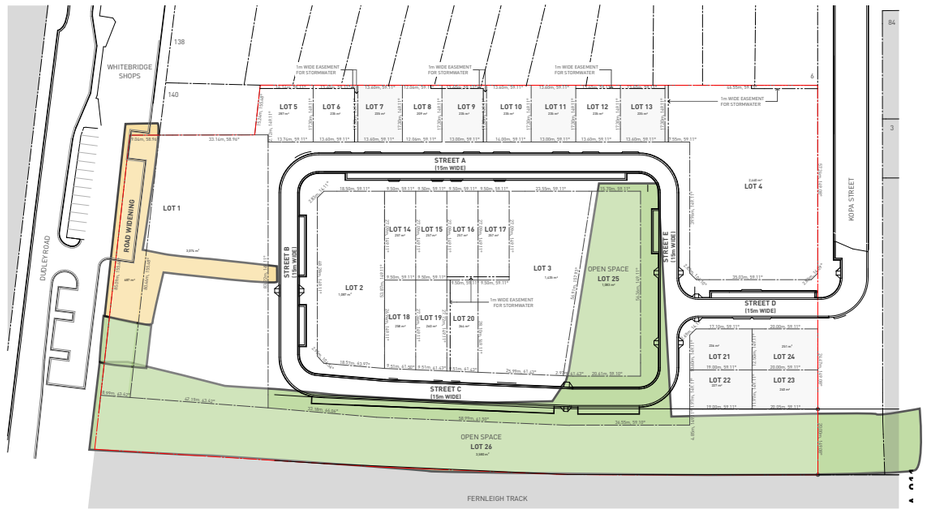
The development has been designed with consideration for access for persons with a disability. Although as public streets an accessible path of travel is not required an accessible path of travel is available from Dudley Road to Kopa Street via Street A, the park and Street D. This path of travel has a gradient that does not exceed 1:20 and can comply with AS1428.1

ADAPTABLE APARTMENTS

10% of dwellings have been provided as adaptable. The adaptable dwellings have been located in the Dudley Road apartment building and are a mix of 1 bed, 2bed and 3 bed. This provides a close relationship to the shopping area and lift access to basement car parking. Details of the adaptable layouts are provided in the drawings. The adaptable apartments satisfy the requirements of AS4299.



CIRCULATION AND ACCESS



OPEN SPACE

GROUND FLOOR AND PUBLIC DOMAIN

DUDLEY ROAD

The ground level to Dudley Road is predominantly retail. Large windows are 'punched' into the masonry facade. The divisions respect the smaller scale retail spaces typically found in a neighbourhood centre. A 3m wide awning is provided for protection from the rain to the new footpath.

The alignment of the shops follows the same alignment as other shops on Dudley Road.

RESIDENTIAL ENTRIES

Three residential lobbies are provided - this reduces the length of internal corridors and maximizes opportunities for daylight access and cross ventilation.

DUDLEY ROAD APARTMENT DESIGN & AMENITY

AFFORDABILITY & DESIGN

An economical floor area is a key factor to ensure housing affordability. Providing layouts that are efficient in their layout ensures apartment sizes can remain compact and amenity can be maximised. The apartment plans have been designed to minimise circulation spaces, but still retain separation between living spaces, bedrooms and bathrooms.

The development provides a mix of one, two and three bedroom apartments and includes nine adaptable apartments.

The layouts have been designed to maximise daylight, cross ventilation and views.

CEILING HEIGHTS

The residential floors have ceiling heights at a minimum of 2.7m for habitable rooms and 2.4m for non-habitable rooms.

PRIVATE OPEN SPACE

Each apartment is provided with private open space. The edges of the balconies have been splayed to maximise the sunlight into the balconies and living spaces. Many apartments have a dual aspect - taking advantage of the views to the south.

Communal open space is provided between the buildings. This is considered to be more a passive space and will be landscaped with 'lush' modern gardens.

STORAGE

The apartments achieve the required storage capacity with the majority providing 50% of the required space within the apartment. The remaining required storage is located in the basement car parking or in designated storage zones.

Compliant with the RFDC, the required storage is:

- Studio 6m3
- 1 Bedroom 6m3
- 2 Bedroom 8m3
- 3 Bedroom 10m3

A detailed schedule will be provided with the development application documents.

SOLAR ACCESS AND CROSS VENTILATION

All of the apartments are well cross ventilated either with opposite aspect or corner dual aspect.

3hrs of solar access is provided to both the living rooms and private open space of 77% of all apartments.

KOPA STREET DESIGN AND AMENITY

DIVERSITY AND DESIGN

A wide range of dwelling typologies are provided across the site, from 3 bedroom single level dwellings, 3 and 4 bedroom split level, 2 and 3 bedroom townhouses and park-side dwellings with roof terraces.

The dwelling design looks to maximise daylight and a feeling of spaciousness with large living areas that flow out to the front and rear gardens.

CROSS VENTILATION AND SOLAR ACCESS

Living spaces that run from the front to be rear provide dual orientation improving solar access and superior cross ventilation

WASTE AND RECYCLING

DUDLEY ROAD APARTMENTS & COMMERCIAL

The waste collection strategy includes two garbage rooms , one with a frontage to Dudley Road that services the retail, the second located in the basement that services the residential.

KOPA STREET DWELLINGS

The dwelling houses will have a kerb-side collection. Space is provided within the garage to store the bins.

The townhouses are provided with a common waste collection area in the basement with direct access to the street.

AERIAL VIEW FROM EAST

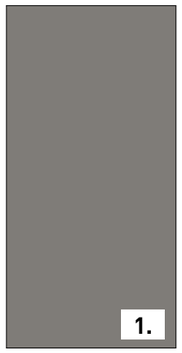
AERIAL VIEW FROM SOUTH

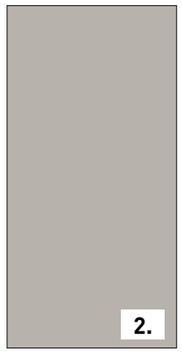
VIEW DOWN DUDLEY ROAD

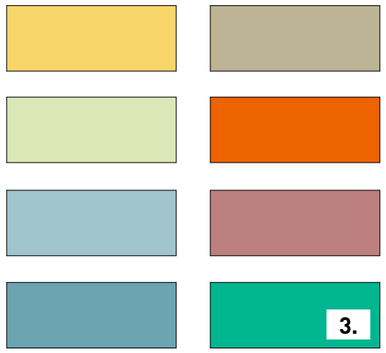
VIEW FROM FERNLEIGH TRACK
TO PARK

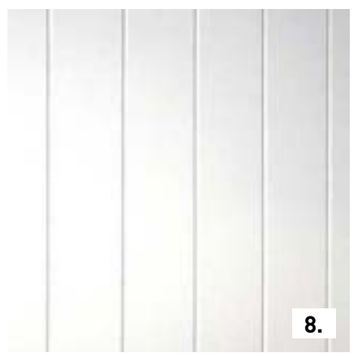
1. Face brick facade with dark lightweight upper level, projecting rendered balconies
2. Grooved panelling to upper lightweight level
3. Rendered accent balconies with pallisade balustrading
4. Rendered awnings against face brick facade
5. Austral bricks - 'Brampton'
6. Austral bricks - 'Orpheus'
7. Painted fibre cement - To match Colorbond 'Wallaby'
8. Metal roofing - Colorbond 'Wallaby'
9. Painted feature panels - Dulux 'Sweet Florence'
10. Accent features / balconies - White render Dulux 'Natural White'

1. Colorbond metal roofing - 'Wallaby'
2. Colorbond metal roofing - 'Dune'
3. Various Dulux bright colours for accents - doors, inset panels etc.
4. Dulux white render - 'Natural White'
5. Austral bricks - 'Brampton'
6. Austral bricks - 'Orpheus'
7. Austral bricks - 'Freedom'
8. Grooved fibre cement panels to feature soffit linings
9. Metal Pallisade fencing
10. Dark coloured fibre cement grooved panelling to lightweight construction
11. Bold geometric facades to terrace ends, rhythm in materials for terraces
12. Tri-level terracing, rhythm of terrace forms, geometric protrusions
13. Light coloured fibre cement grooved panelling to lightweight construction
14. Contrasting materials (heavy face brick versus lightweight fibre cement)
15. Low height plantings to soften entry fences
16. Paired/mirrored semi detached dwellings, crisp white canopies with lined soffits









MATERIALS
KOPA STREET DWELLINGS

DESIGN QUALITY PRINCIPLES

PRINCIPLE 1 - CONTEXT

Good design responds and contributes to its context. Context can be defined as the key natural and built features of an area.

Responding to context involves identifying the desirable elements of a location's current character or, in the case of precincts undergoing a transition, the desired future character as stated in planning and design policies.

New buildings will thereby contribute to the quality and identity of the area.

The site is located in an area that is intended to undergo redevelopment.

The proposed development will contribute to the context of the proposed maasterplan, in that it reinforces the street walls and the public spaces and provides an active street frontage that contributes to the desired future character for the neighbourhood centre.

The land around the site has the same zoning as the subject site and it is anticipated that this is the first of a series of developments that will have a similar form and character.

The existing built form in the retail strip consists of one and two storey structures with retail uses on the ground floor. A parking slip lane on the north side of the street provides additional parking adjacent the chemist, supermarket and bottleshop.

The site provides an important ecological corridor link between Glenrock State Recreation Area to the north and Awabakal Nature Reserve. The corridor adjacent the site consists only of a few remnant trees adjacent the cycle way and former railway corridor. The proposal enhances the ecological significance of the corridor

PRINCIPLE 2 - SCALE

Good design provides an appropriate scale in terms of the bulk and height that suits the scale of the street and the surrounding buildings.

Establishing an appropriate scale requires a considered response to the scale of existing development. In precincts undergoing a transition, proposed bulk and height needs to achieve the scale identified for the desired future character of the area.

The scale of the proposed development has been carefully considered through massing and facade articulation.

The visual scale of the proposed development is broken down both vertically and horizontally with the finer grain relating to both the separate buildings on the site and future development on adjoining sites.

Along Dudley Street the two storey street wall links to the existing parapet heights of adjoining development. The upper levels are recessive, dark in colour and setback.

The remainder of the site presents a variety of fine grain residential dwellings of one, two and three storeys. Development along the edge of the ecological corridor steps down to single storey with roof terraces and large courtyards..

PRINCIPLE 3 - BUILT FORM

Good design achieves an appropriate built form for a site and the building's purpose, in terms of building alignments, proportions, building type and the manipulation of building elements.

Appropriate built form defines the public domain, contributes to the character of streets capes and parks, including their views and vistas, and provides internal amenity and outlook.

The built form directly defines the public domain. The urban edge to Dudley Street defines the retail edge of Whitebridge. Projecting bay windows add to the 3 dimensional nature of the facade provide views down the street and passive surveillance. Balconies along this facade open to living spaces and activate the facade.

Internally the public - private domain boundary is reinforced through the use of palisade style fences with small landscaped front gardens. The built form is articulated through stepping in plan and pitched roof forms that alternate and provide a patterned skyline.

PRINCIPLE 4 - DENSITY

Good design has a density appropriate for a site and its context, in terms of floor space yields (or number of units or residents). Appropriate densities are sustainable and consistent with the existing density in an area or, in precincts undergoing a transition, are consistent with the stated desired future density.

Sustainable densities respond to the regional context, availability of infrastructure, public transport, community facilities and environmental quality.

The development has a density of 38 dwellings per hectare. This is consistent with anticipated development densities for the area and is appropriate for the site. 23% of the site is provided as open space. The site is located in close proximity to shops, schools and services and is regularly serviced by public transport. Internally dwellings are provided with good amenity with excellent access to daylight and ventilation.

PRINCIPLE 5 - RESOURCE, ENERGY AND WATER EFFICIENCY

Good design makes efficient use of natural resources, energy and water throughout its full life cycle, including construction. Sustainability is integral to the design process. Aspects include demolition of existing structures, recycling of materials, selection of appropriate and sustainable materials, adaptability and reuse of buildings, layouts and built form, passive solar design principles, efficient appliances and mechanical services, soil zones for vegetation and reuse of water.

This project aims to deliver a sustainable residential building with low operation energy and reduced potable water consumption. The floorplates provide good access to daylight and ventilation, this is supplemented with sun shade devices that restrict low level summer morning and evening sunlight reducing heat loads on the internal spaces of the building. The development as proposed is BASIX compliant.

Cross ventilation is available to more than 100% of dwellings

3hrs solar access is available to the living spaces and part of the private open space for 77% of dwellings at the winter solstice.

PRINCIPLE 6 - LANDSCAPE

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in greater aesthetic quality and amenity for both occupants and the adjoining public domain. Landscape design builds on the existing site's natural and cultural features in responsible and creative ways. It enhances the development's natural environmental performance by co-ordinating water and soil management, solar access, micro-climate, tree canopy and habitat values. It contributes to the positive image and contextual fit of development through respect for streetscape and neighbourhood character, or desired future character. Landscape design should optimise usability, privacy and social opportunity, equitable access and respect for neighbours' amenity, and provide for practical establishment and long term management.

The landscape is an integral part of the design of the new subdivision. The open

The landscape design and stormwater design are tightly linked

PRINCIPLE 7 - AMENITY

Good design provides amenity through the physical, spatial and environmental quality of a development.

Optimising amenity requires appropriate room dimensions and shapes, access to sunlight, natural ventilation, visual and acoustic privacy, storage indoor and outdoor space, efficient layouts and service areas, outlook and ease of access for all age groups and degrees of mobility.

The proposal demonstrates good design and high amenity. This is achieved by:

- Apartments receiving good natural daylight to living and bedroom areas
- Room sizes that are of a good size with a good outlook
- Layouts are efficiently planned - minimising long corridors
- Daylight and ventilation is provided to all lobbies of the apartment building with a visual connection to the exterior
- 77% of the dwellings get more than 3 hours sunlight to living spaces and part of the external spaces
- 100% of the dwellings are cross ventilated
- 10% of apartments are 'adaptable' for persons with a mobility dis-ability
- Community open space is provided in the centre of the development
- Each dwelling is provided with generous outdoor open space relative to the size of the dwelling.

PRINCIPLE 8 - SAFETY AND SECURITY

Good design optimises safety and security, both internal to the development and for the public domain. This is achieved by maximising overlooking of public and communal spaces while maintaining internal privacy, avoiding dark and non-visible areas, maximising activity on streets, providing clear, safe access points, providing quality public spaces that cater for desired recreational uses, providing lighting appropriate to the location and desired activities, and clear definition between public and private spaces.

Ground level courtyards and living spaces will facilitate passive surveillance enhanced by the provision of palisade-style fencing.

The development ensures casual surveillance of the public and communal space while maintaining internal privacy, avoiding dark and non-visual areas and maximising activity of the street fronting spaces.

The main residential entries are visible from the street. Areas where persons could be obscured from view have been limited. Lighting design enhances security while providing visual interest to external areas.

PRINCIPLE 9 - SOCIAL DIMENSIONS

Good design responds to the social context and needs of the local community in terms of lifestyles, affordability, and access to social facilities. New developments should optimise the provision of housing to suit the social mix and needs in the neighbourhood or, in the case of precincts undergoing transition, provide for the desired future community.

The site is located adjacent the Whitebridge neighbourbood precinct. The mix of retail along the ground level fronting Dudley Road and the wide range of diversity in apartments and dwellings providing a range of accommodation options for different size families and people in different financial circumstances

The central open space is publicly accessible to the wider community and provide a new social space.

The widening of the footpath at the end of the retail strip could provide opportunities for small markets or other community activities

9 adaptable apartments have been provided within the development to comply with AS4299. Parking and storage in the basement is also provided to comply with AS1428.6 and AS2890.6.

Apart from ground floor apartments, the remainder of apartments are single level and accessible by a lift providing access for persons of all ages and those with mobility impairments.

The secondary dwellings will allow additional rental affordability. The development creates opportunities for a strong local community to develop.

PRINCIPLE 10 - AESTHETICS

Quality aesthetics require the appropriate composition of building elements, textures, materials and colours and reflect the use, internal design and structure of the development.

Aesthetics should respond to the environment and context, particularly to desirable elements of the existing streets cape or, in precincts undergoing transition, contribute to the desired future character of the area.

Although a wide variety of dwelling types and scales are provided there is a common aesthetic that is provided across the development.

- Use of face brick to 'ground' the buildings,
- light coloured - off white balcony, and
- Dark coloured textured wall panels
- Splashes of bright colours at entries and for project
- Openings carved out of wedge shaped forms at the upper levels and
- Projecting sunscreens to protect windows from summer sun

SEPP 65 + RFDC

CL.	STANDARD / CONTROL	COMPLY	COMMENT
	Unit Sizes Minimum apartment sizes: 37.5sqm for Studios 50sqm for One bedroom 70sqm for Two bedroom 95sqm for Three bedroom	Y	
	Open Space Open space to be provided at 25-30% of the site area.	Y	Communal open space is provided in the central open space
	Minimum area of ground level private open space 25sqm and minimum dimension of 4 metres.	Y	
	Balconies to have a minimum depth of 2 metres.	Y	
	Building Depth Building depth maximum of 18 metres.	Y	Building depth varies from 14m - 16m.
	Building Separation 5-8 storeys: 12m Habitable / Habitable, 9m Habitable / Non-Habitable, 6m Non-Habitable / Non-Habitable,	N	Building separation between the Dudley road apartments is less than required however privacy is maintained by careful location of windows and uses within the rooms so that direct views between apartments is not possible. Because of the change in level, the building fronting Street B presents as a 5m wall to the courtyard resulting in good daylight to the space between the buildings.
	Internal Circulation In a double loaded corridor, no more than eight units are to be served from a single lift.	Y	Maximum of 4units per lobby
	Apartment Layout Single aspect apartment maximum depth 8 metres from window.	Y	The maximum distance from a window to anywhere in a apartment is 6m.
	Back of kitchen maximum 8 metres from window.	N	The furthest point from the back of any kitchen to a window is 9.2m. (2 apartments only) A number of kitchens are located at the facade.
	Ground floor apartments maximised with separate (street) entries.	Y	All ground floor apartments have separate street entries.
	Daylight Access 70% of apartments receive 2 hours sunlight between 9am and 3pm at mid-winter.	Y	86% recieve more than 3hrs of sunlight at the winter solstice
	Maximum of 10% of units to be single aspect and south-facing.	Y	There are no single-aspect south facing units. All southern orientated units have dual orientation.
	Cross Ventilation Minimum of 60% of units to be cross-ventilated.	Y	100%
	Minimum of 25% of kitchens should have access to natural ventilation.	Y	43% of kitchens are located at or near an external wall with a window.
	Storage To be provided at the following rates: 6m³ per One bedroom, 8m³ per Two bedroom, 10m³ per Three bedroom.	Y	Storage is provided within the units and or within basement storage rooms and cages (refer to storage schedule at end of this document)

DESIGN ANALYSIS

DEVELOPMENT STATISTICS

RETAIL AREA

Level	Area
LEVEL 0	325m²

PARKING

TYPE	PROVIDED
RESIDENTIAL	134
VISITOR	34
COMMERCIAL	11
ADDITIONA PARKING (DUDLEY RD)	9
TOTAL CAR SPACES	**188**
MOTORCYCLE SPACES	**1**
SERVICE	**2**

DWELLING MIX

TOTAL 1 BED + STUDY	2	2%
TOTAL 2 BED	30	33%
TOTAL 3 BED	53	58%
TOTAL 4 BED	6	7%
TOTAL UNITS	**91**	

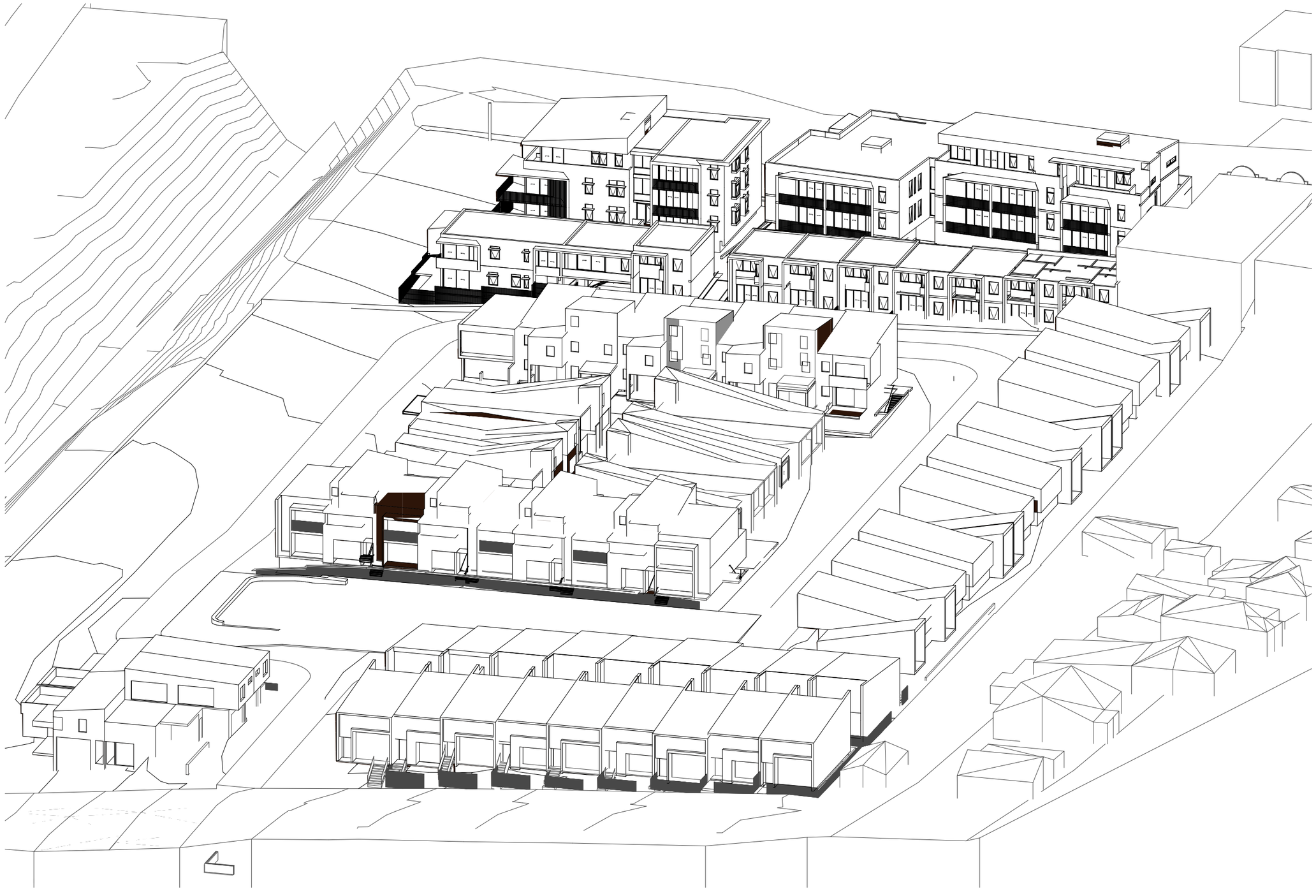
3+ HRS SOLAR ACCESS	70	77%
CROSS VENTILATION	91	100%
ADAPTABLE DWELLINGS	9	

SOLAR ANALYSIS

The following solar analysis demonstrate the extent of sun available to open space and adjoining properties.

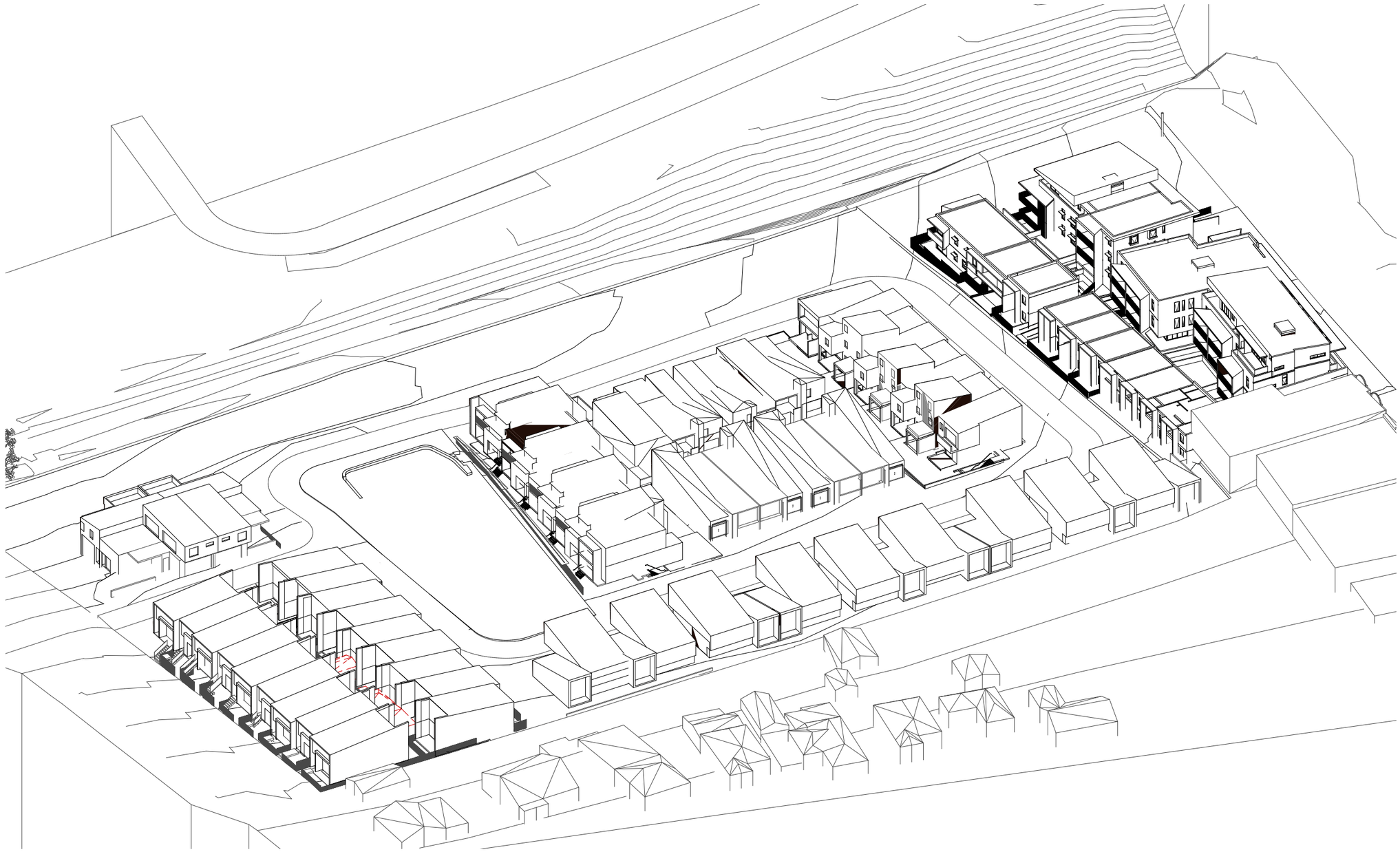
SOLAR ACCESS "VIEW FROM SUN"

9AM 21 JUNE



SOLAR ACCESS "VIEW FROM SUN"

12PM 21 JUNE



SMITH & TZANNES

SOLAR ACCESS "VIEW FROM SUN"

3PM 21 JUNE