IVANHOE MASTERPLAN

MASTERPLAN SSDA DESIGN REPORT
DOCUMENT NO. S12067-R001
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BATESSMART™ + HASSELL

CLIENT

Aspire Consortium
Frasers Property Australia and Mission Australia Housing

PROJECT NUMBER

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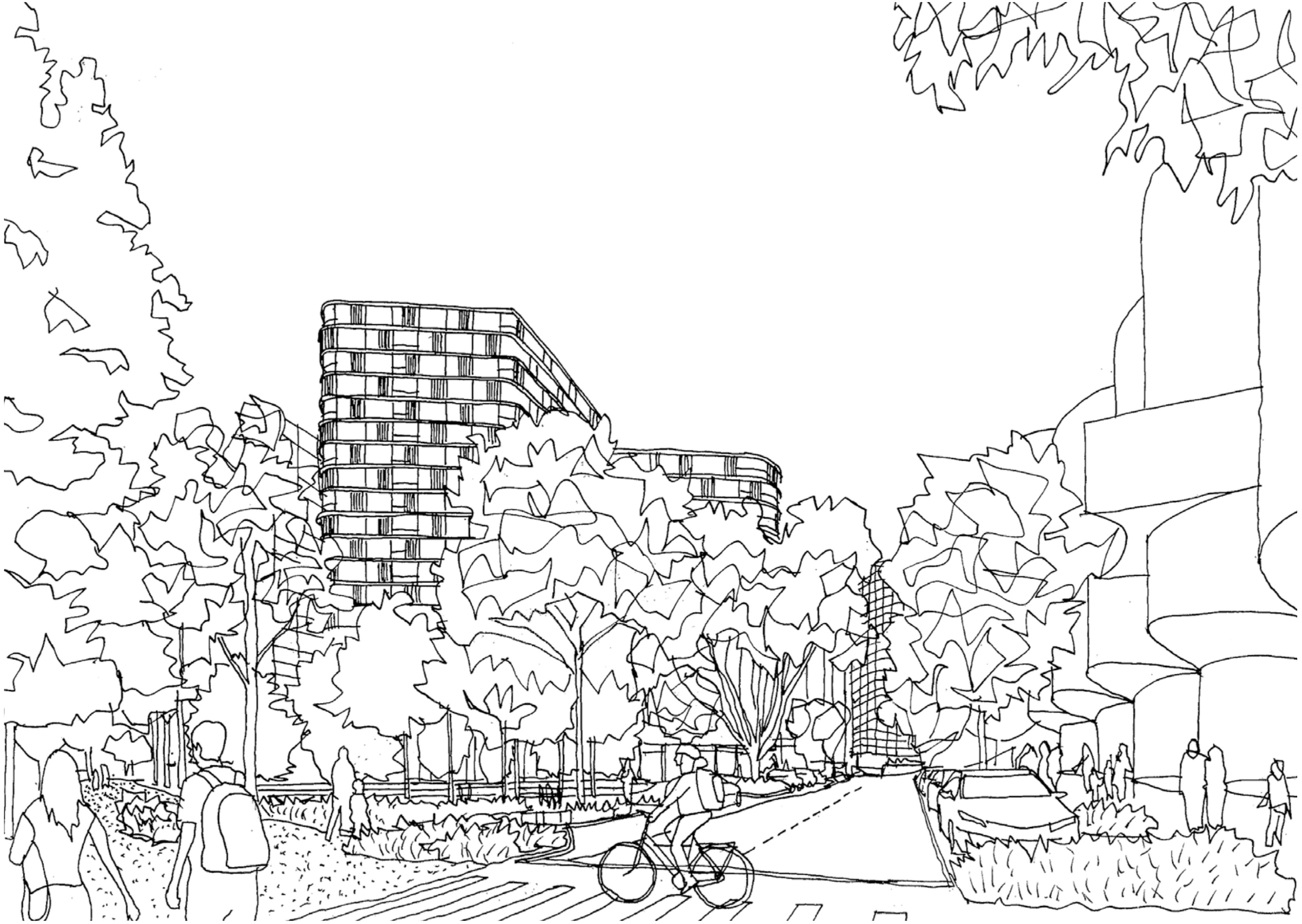
1.0 INTRODUCTION

Our vision is for a vibrant mixed use neighbourhood with buildings arranged to maximise residential amenity outcomes and a diverse open space network creating an inclusive, community oriented public domain.

We propose an urban design framework which enhances the existing character of the site, linking the established bushland corridor with a series of high quality public open spaces. A new main street is activated by community and retail uses, alongside a soft-landscaped village green and a green-roofed community recreation centre.

The residential buildings will create a benchmark for mixed-tenure development with high quality architecture to be delivered by award-winning architects. Apartment buildings propose built-in features to support aging in place and sustainability initiatives that focus on efficient use of energy and water to reduce ongoing costs. Tenures are evenly distributed within a simple staging framework ensuring a development which is truly tenure blind.



1.1 BACKGROUND

PROJECT OBJECTIVE 1

Provide a seamlessly integrated community of Private Housing Units, Affordable Housing Units and Social Housing Units where:

/ World class urban and architectural design creates a high quality place;
/ Private Housing Units, Affordable Housing Units and Social Housing Units are indistinguishable and evenly distributed;
/ Building design innovation assists management of mixed tenures;
/ Urban design creates inclusive, high amenity places to optimise community interaction; and
/ Social Housing Units meet the needs of the tenants with built-in flexibility.

PROJECT OBJECTIVE 2

Provide sustainable outcomes for tenants of Social Housing Units, and sustainable management of Social Housing Units by:

/ conducting programs supporting Social Housing Unit tenants to engage in the community and local education, training and employment opportunities;
/ creating opportunities and programs to improve social outcomes;
/ providing industry leading water and energy efficiency;
/ promoting Affordable Housing Units as a stepping stone for tenants from Social Housing Units; and
/ Deliver at least 128 affordable housing dwellings

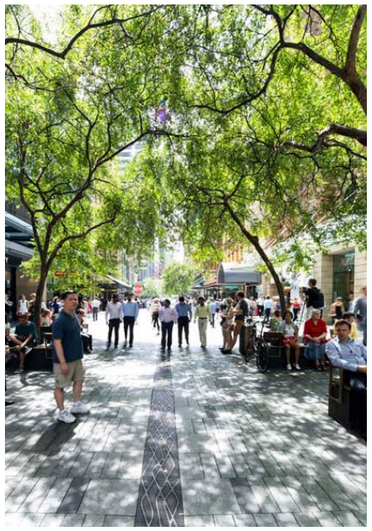
PROJECT OBJECTIVE 3

Optimise the value for money return to the New South Wales Government by:

/ optimising land value by delivering Social Housing Units to the NSW Government whilst ensuring that the total number of Social Housing Units does not exceed 30% of the total number of Units constructed within the Project;
/ delivering no less than 128 Affordable Housing Units; and
/ engaging the Developer as a high performing delivery partner

This report supports a Concept Development Application for the Ivanhoe Estate Masterplan, a State Significant Development (SSD) submitted to the Department of Planning and Environment (DPE) pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act). It has been prepared by Bates Smart and HASSELL for Aspire Consortium on behalf of NSW Land and Housing Corporation and has been prepared in accordance with the SEARS dated 25 September 2017.





PROJECT BACKGROUND

In September 2015 the Ivanhoe Estate was rezoned by the Department of Planning and Environment as part of the Macquarie University Station (Herring Road) Priority Precinct, to transform the area into a vibrant centre that benefits from the available transport infrastructure and the precinct's proximity to jobs, retail and education opportunities within the Macquarie Park corridor.

The Ivanhoe Estate is currently owned by NSW Land and Housing Corporation and comprises 259 social housing dwellings. The redevelopment of the Ivanhoe Estate is part of the NSW Government Communities Plus program, which seeks to deliver new communities where social housing blends with private and affordable housing, with good access to transport, employment, improved community facilities and open space.

The Communities Plus program seeks to leverage the expertise and capacity of the private and non-government sectors. As part of this program, Aspire Consortium, comprising Frasers Property Australia, Citta Property Group and Mission Australia Housing, was selected as the successful proponent to develop the site in August 2017.

The Masterplan DA is the first step of the planned redevelopment of the Ivanhoe Estate and will create an integrated neighbourhood including social housing mixed with affordable and private housing, as well as seniors housing, a new school, child care centres, community facilities and retail development.

PLANNING CONTEXT

The Ivanhoe Estate is classified as State Significant Development and is identified in the State Environmental Planning Policy (State and Regional Development) 2011 under Schedule 2, Clause (10)2.

It sits within the Epping and Macquarie Park Urban Renewal Area - an identified priority precinct. In a move to increase development capacity within this precinct, amendments to the allowable maximum building heights, land zoning, and FSR have now been adopted in the Ryde Local Environmental Plan (LEP) (2014).

Within the Ivanhoe Estate, the site is zoned B4, Mixed Use. Adjacent zoning north of Epping Road consist of B4 Mixed Use to the west, and B7 Business Park to the east of Shrimptons Creek. To the south of Epping Road, land is still zoned R2 Low Density Residential.

The site is restricted by three maximum height restrictions: 45m, 65m and 75m (with the taller building height allowance located along the southern half of the site fronting Epping Road to minimise the overshadowing and visual impact to neighbours). To the north of the site, the maximum allowable building height is 45m while to the west the maximum height allowance ranges from 45 to 75m.

The site is noted as having a floor space ratio of 2.90:1, while surrounding sites range from 2.90:1 to 4.50:1 to the north and west of the site.

The proposed development complies with all zoning and height controls.

1.2 THE PROPOSAL

SITE DESCRIPTION

The Ivanhoe Estate site is located in Macquarie Park near the corner of Epping Road and Herring Road within the Ryde Local Government Area (LGA). The site is approximately 8.2 hectares and currently accommodates 259 social housing dwellings, comprising a mix of townhouse and four storey apartment buildings set around a cul-de-sac street layout. An aerial photo of the site is provided adjacent.

Immediately to the north of the site are a series of four storey residential apartment buildings. On the north-western boundary, the site fronts Herring Road and a lot which is currently occupied by four former student accommodation buildings and is likely to be subject to redevelopment. Epping Road runs along the south-western boundary of the site and Shrimptons Creek, an area of public open space, runs along the south-eastern boundary. Vehicle access to the site is via Herring Road.

The site is comprised of 17 individual lots and a part lot and are owned and managed by Land and Housing Corporation. The Masterplan site also incorporates adjoining land, being a portion of Shrimptons Creek and part of the commercial site at 2-4 Lyonpark Road. This land is included to facilitate a bridge crossing and road connection to Lyonpark Road.

OVERVIEW OF THE PROPOSED DEVELOPMENT

The proposed Masterplan is a Concept DA (in accordance with Section 83B of the EP&A Act), which sets out the concept proposal for the development of the site. The concept contained in the Masterplan DA establishes the planning and development framework, which will form the basis for the detailed design of the future buildings and against which the future detailed DAs will be assessed.

The Masterplan DA seeks approval for the maximum building envelopes for future stages of development, the maximum gross floor area (GFA) and land uses for the development.

Specifically:

/ A mixed use development involving a maximum of GFA of 268,000m^2, including:
  - residential flat buildings comprising private, social and affordable housing
  - seniors housing comprising residential aged care facilities and self-contained dwellings
  - a new vertical school
  - child care centres
  - minor retail development
  - community uses
  - office space for the community housing provider
/ maximum building heights and GFA for each development block;
/ public domain landscape concept, including parks, streets and pedestrian connections;
/ provision of the Ivanhoe Estate Design Guidelines to guide the detailed design of the future buildings; and
/ vehicular and intersection upgrades.

Ivanhoe Estate site

The site
To facilitate road extension to Lyonpark Road

1.3
RESPONSE TO SUBMISSIONS

This document summarises the third design submission for the Ivanhoe Estate in Macquarie Park.
The original EIS was submitted to the Department of planning in April 2018, illustrating a scheme of 283,500m^2 GFA and a village green of 3,100m^2 with all building heights compliant with the LEP height limits.
Following feedback from both the department and Ryde Council, a revised scheme was submitted in September 2018 incorporating changes to increase the amount of open space, retain additional trees and provide increased building separation to neighbouring landholders. The village green was increased to 6000m^2 and the total GFA reduced to 278,000m^2.
This document illustrates further changes to the design, primarily a result of additional tree retention in the Epping Road EEC Corridor. The village green remains 6000sm^2 and the total GFA further reduced to 268,000m^2.

ORIGINAL SSDA : BUILDING HEIGHTS CONSISTENT WITH LEP HEIGHT PLANES

Building heights step in accordance with the LEP height plane, generally increasing in height towards the intersection of Epping and Herring Roads.

/ Village Green ≈ 3,100m2
/ 283,500m2 GFA
/ LEP Height compliant
/ 19.6% Deep Soil Area

RTS1: VARIED BUILDING HEIGHTS

Building heights step in a strategic manner to minimise building overshadowing, improve separation, particularly COLI, and ultimately provide a greater area of public open space.

/ Village Green ≈ 6,000m2
/ 278,000m2 GFA
/ Height non-compliances - B3, C4.1, D2 & D4.2
/ Maximum 24 storeys
/ 22.2% Deep Soil Area

CURRENT PROPOSAL (RTS2): INCREASED SETBACKS TO EEC CORRIDOR

Building massing is refined to retain additional trees in the EEC corridor, stepping in a strategic manner to minimise building overshadowing, improve building separation and provide a greater area of public open space. Delete left in from Epping Road.

/ Village Green ≈ 6,000m2
/ 268,000m^2 GFA
/ Height non-compliances B3, C3, C4.1, C4.2, D2 & D4.2
/ Maximum 24 storeys
/ 26.7% Deep Soil Area

1.4 THIS DOCUMENT

DOCUMENT PURPOSE

/ Outline the design process leading to the proposal and justify the suitability of the site for the proposal
/ Provide an urban design analysis that considers the proposed building forms, typologies, height, bulk and scale in the context of the immediate locality, the wider Macquarie Park/ Marsfield area and the desired future character of the area
/ Detail the proposed site layout, vehicular access, building entries, and the proposed use of buildings
/ Demonstrate how the proposal will achieve an optimal design and amenity outcome with specific consideration of the site's character, layout, setbacks, amenity, views and vistas, open spaces and public domain, connectivity and street activation
/ Demonstrate how the proposal encourages a range of housing types, sizes and affordability
/ Address the height, bulk, scale and setbacks of the proposed development within the context of the locality and ensure it does not create unacceptable environmental impacts
/ Outline potential design considerations aimed at mitigating any impacts identified
/ Identify proposed streetscape, open space, public domain and key vehicular, bicycle and pedestrian linkages with and between other public domain
/ Detail and outline the interface between the proposed uses and the public domain, particularly the Shrimptons Creek open space corridor
/ Detail proposed rehabilitation proposals for Shrimptons Creek
/ Identify linkages between the proposed school and joint school-community use facilities
/ Identify public art locations within the development.

DOCUMENT STRUCTURE

This document is divided into 5 sections in accordance with increasing levels of detail required to address items 4, 5 and 6 of the SEARs as follows:

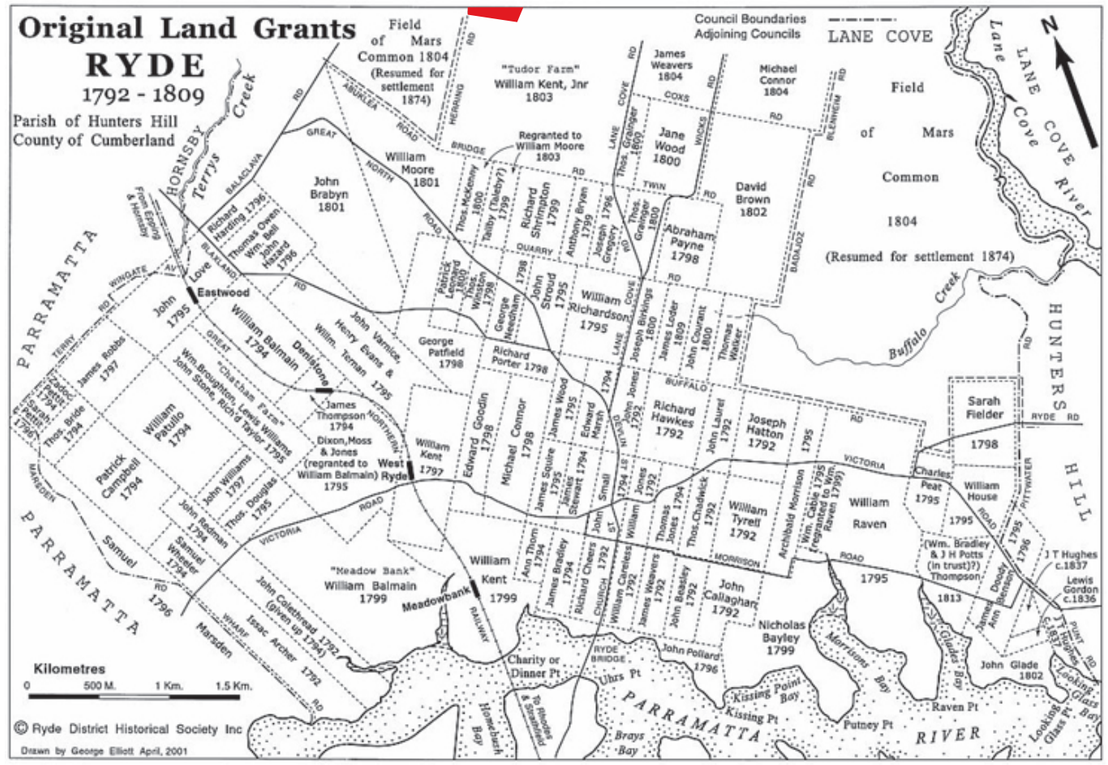
1. Introduction
2. Site and Context Analysis
3. Masterplan Framework
4. Public Domain
5. Built Form

Documents demonstrating specific compliance with various statutory codes and guidelines are contained within the appendices as follows:

A. Approval drawings
B. Ivanhoe Design guidelines
C. Indicative design scheme drawings
D. Solar access and shadow analysis
E. SEPP 65 Compliance Analysis

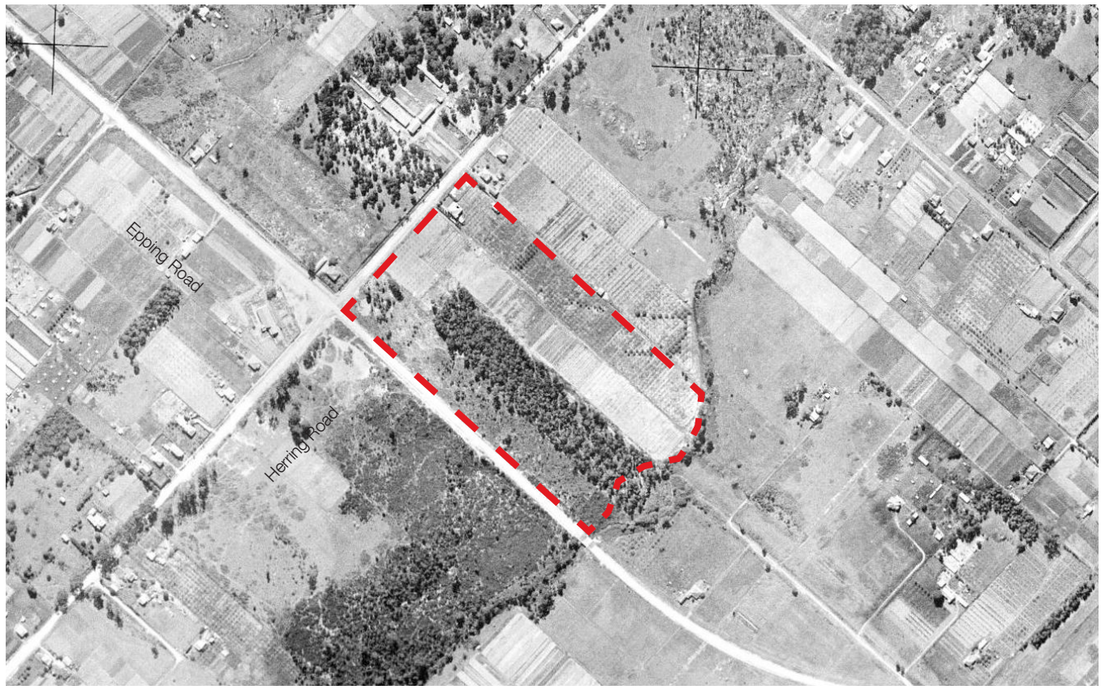
Approximate Site Location

Source: www.rydehistory.org



Approximate Site Boundary

Source: 1943 Aerial Image - Six Viewer



1.5 HISTORY OF IVANHOE

'a rich environment of river flats, creeks and mangrove swamps, fishing with pronged spears and handlines, feasting on shellfish, hunting birds and small game, and collecting a variety of edible bushfood plants.'

INDIGENOUS SETTLEMENT

For thousands of years Aboriginal people lived in what we call today the City of Ryde. The traditional owners of the area were the Wallumedegal (a name that is likely to have derived from 'wallumai' the snapper fish, and combined with matta, a word usually used to describe a water place). That name was told to Captain Arthur Phillip, the first governor of the convict colony of New South Wales, by Woollarawarre Bennelong who came from the clan called the Wangal on the south side of the river.

The territory of Wallumedegal followed the north bank of the Parramatta River from Turrumburra (Lane Cove River) in the east to Burramatta at the head of the river to the west. For generations the Wallumedegal lived in a rich environment of river flats, creeks and mangrove swamps, fishing with pronged spears and handlines, feasting on shellfish, hunting birds and small game, and collecting a variety of edible bushfood plants. They spoke the same language as the Port Jackson and coastal clans, from Botany Bay to Broken Bay. The dialect of the sea coast, wrote Marine Captain Watkin Tench, was spoken at Rose Hill (Parramatta). The dialect of the same language west of Parramatta is now called Darug.

The first encounters between the foreigners in boats and the river people in February 1788 were friendly, with laughter and mimicry on both sides. Their lives changed forever the following November when armed marines built an earthwork fort at Parramatta. This event displaced the family of the Burramattagal elder Maugoran and his wife Gooroobera, who were forced to move down the river to The Flats, near Meadowbank. In April 1789 came the smallpox epidemic, which killed half the Indigenous population. Smallpox might account for the fact that no Wallumedegal are identified in history.

According to an archaeological assessment prepared by Eco Logical Australia, it is unlikely the study area contains any Aboriginal archaeological sites.

EUROPEAN SETTLEMENT

The Ryde area was named by Governor Phillip as the 'Field of Mars' with land granted to eight marines, emancipists and new settlers between 1792-1795. However, most of the land grants were small making farming and grazing uses difficult. As a result, in 1804 it was decided to create a 'traditional English common' for public use. Known as the 'Field of Mars Common', this included all the land between Lane Cove, Herring, Bridge and Waterloo Roads (of which the land comprising the Ivanhoe Estate sat within).

By 1874, the Common was subdivided into allotments of one to four acres (0.4 to 1.6 hectares) with the money used to finance the building of the Iron Cove and Gladesville Bridges. The land was filled with market gardens and poultry farms amongst vast tracts of bushland. Before houses were constructed on the Ivanhoe Estate by the Department of Housing between 1980 and 1990, much of the land to the north and adjacent to Shrimptons Creek was used for market gardens and orchards, while the southern part fronting Epping Road characterised partially cleared, uninhabited scrub.

Like the Upper North shore, the Ryde area has timber and orchards in its past, and suburban development in its present. Locals remember the apple-growing past every year at the Granny Smith festival, commemorating Maria Ann Smith and her hybrid green apples, bred in Eastwood.

Today the City of Ryde contains many suburbs. As well as East, West and North Ryde, the area encompasses Macquarie Park, Marsfield, Denistone and Denistone East, Putney and Meadowbank on the Parramatta River, and Eastwood, among others. Macquarie Park was part of the suburb of North Ryde until it was gazetted as a suburb in its own right on 5 February 1999.

Sources:

http://www.ryde.nsw.gov.au/Library/Local-and-Family-History/Historic-Ryde/Aboriginal-History

http://home.dictionaryofsydney.org/city-of-villages-ii/

http://www.rydehistory.org/html/the_original_land_grants.HTM

Native Vegetation along Shrimptons Creek (circa 1915)

View from corner of Epping and Herring Roads looking west along Epping Road 1938

Logging and land clearing (circa 1911)

Up until the 1960's much of North Ryde and the surrounding areas were comprised of small market gardens, hobby farms and fruit orchards. Home to many Italian and European migrants

Fertile soil in the area was ideal for agriculture and nurseries (circa 1920)

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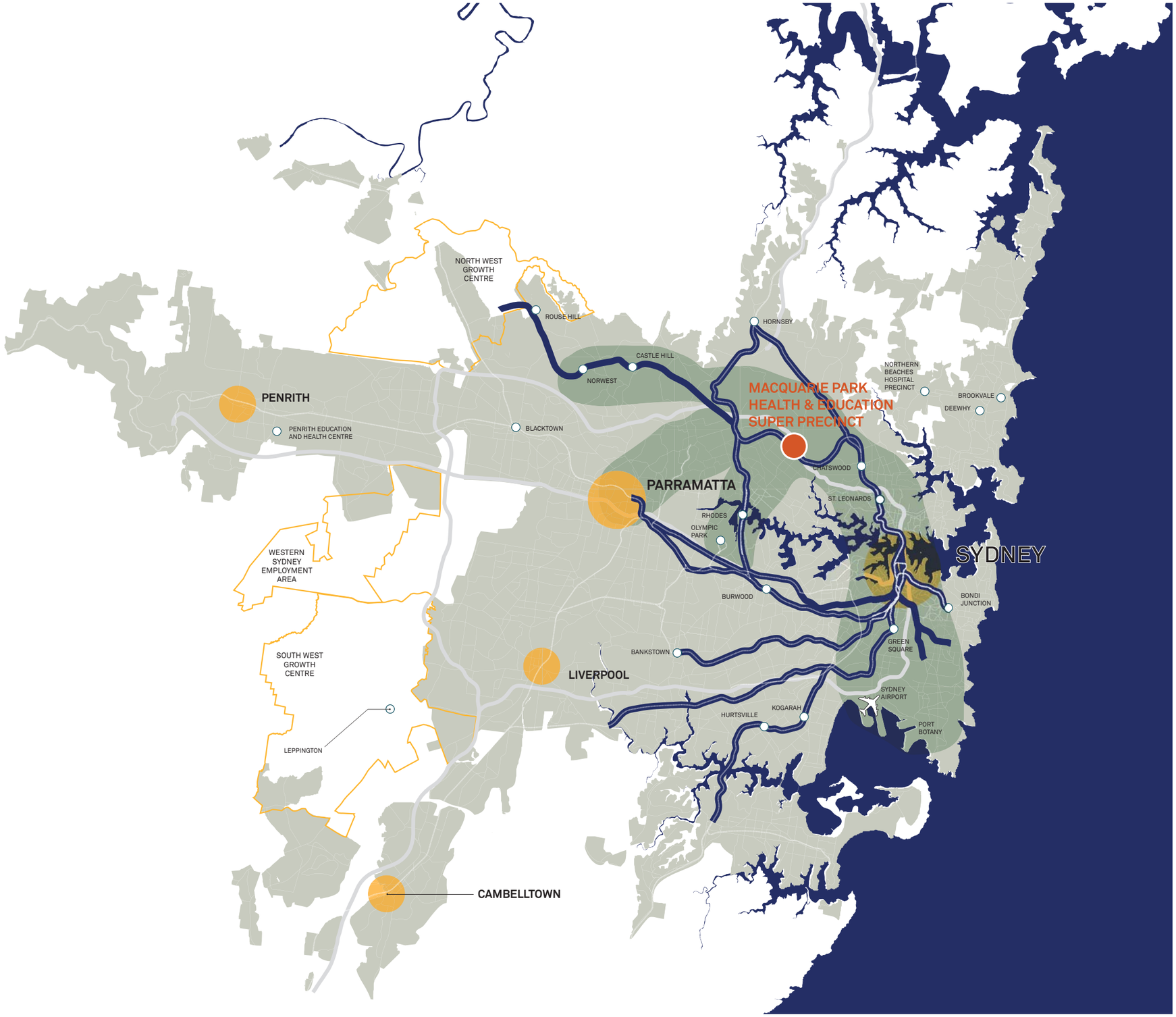
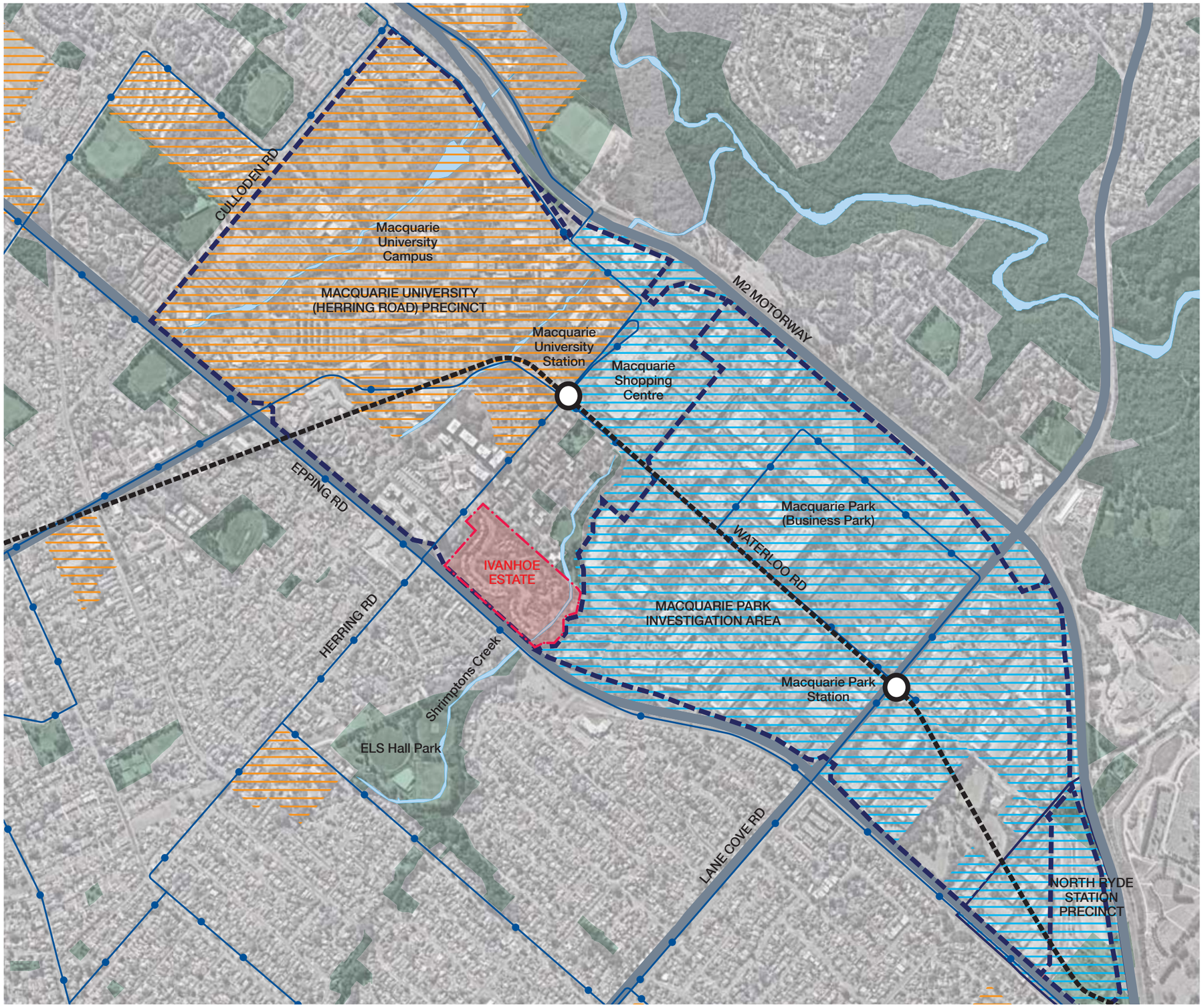
2.0
SITE & CONTEXT
ANALYSIS



METROPOLITAN CONTEXT

The Ivanhoe Estate is located in the suburb of Macquarie Park within the City of Ryde council in Sydney's north-western suburbs, about 10 kilometres from the Sydney CBD.

Macquarie Park is identified as a Strategic Centre along the Global Economic Corridor under "A Plan for Growing Sydney' and as a Priority Precinct within the Epping and Macquarie Park Urban Renewal Area. It is an area of significant government investment in transport, infrastructure and education facilities.



REGIONAL CONTEXT

Ivanhoe Estate is located within close proximity to Macquarie University Train Station (500 metre walk), Macquarie University, Macquarie Shopping Centre, and Macquarie Park business park. This strategic position creates an appropriate location for which to maximise the number of people living within close proximity to this great mix of attractors and mass transit.

Due to this strategic location, it has been identified as a priority precinct known as the Macquarie University (Herring Road) Precinct, of which Ivanhoe Estate sits within. This precinct is proposed to deliver up to 5,800 dwellings by 2031 as part of a transformation into a vibrant centre that makes the most of the available transport infrastructure and proximity to existing jobs, retail and education opportunities.

LOCAL CONTEXT

The existing use within Ivanhoe Estate is a social housing estate containing 259 dwellings comprising townhouse and walk-up style apartment typologies. It has been an integral asset to the NSW social housing system since its establishment in 1990, providing a safe refuge to a significant number of people. The surrounding urban fabric is currently a mixture of large dispersed commercial buildings, warehouse lots, the sprawling University campus, big box shopping centre, medium to high density residential apartments, and single lot dwelling houses typical of the suburbs of Sydney.

The Ivanhoe Estate sits within a changing context planned to experience significant growth to meet the strategic targets set for the precinct. While the land to the south of Epping Road is planned to remain R2 Low Density Residential for now, to the north the land is zoned B4 Mixed Use to the west of Shrimptons Creek and B7 Business Park to the east of Shrimptons Creek. Located within an identified Priority Precinct, the land to the north was subject to an increase in the allowable building heights and floor space ratio controls, now adopted within the Ryde Local Environment Plan 2014.

This diverse and changing context can inform the proposed future uses within the Ivanhoe Estate, and strengthens the need for Ivanhoe benefit from and stitch into this surrouding fabric.

SEPP 65 Principle 1:
Context and neighbourhood character
Good design responds and contributes to its context. Context is the key natural and built features of an area, their relationship and the character they create when combined. It also includes social, economic, health and environmental conditions.
Responding to context involves identifying the desirable elements of an area's existing or future character. Well designed buildings respond to and enhance the qualities and identity of the area including the adjacent sites, streetscape and neighbourhood.
Consideration of local context is important for all sites, including sites in established areas, those undergoing change or identified for change.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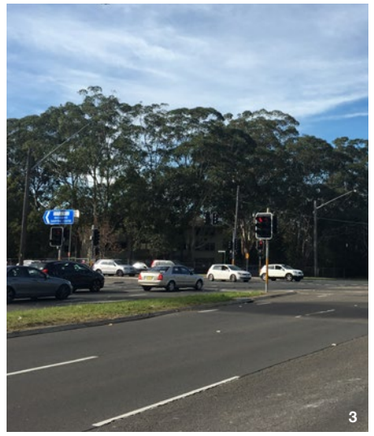
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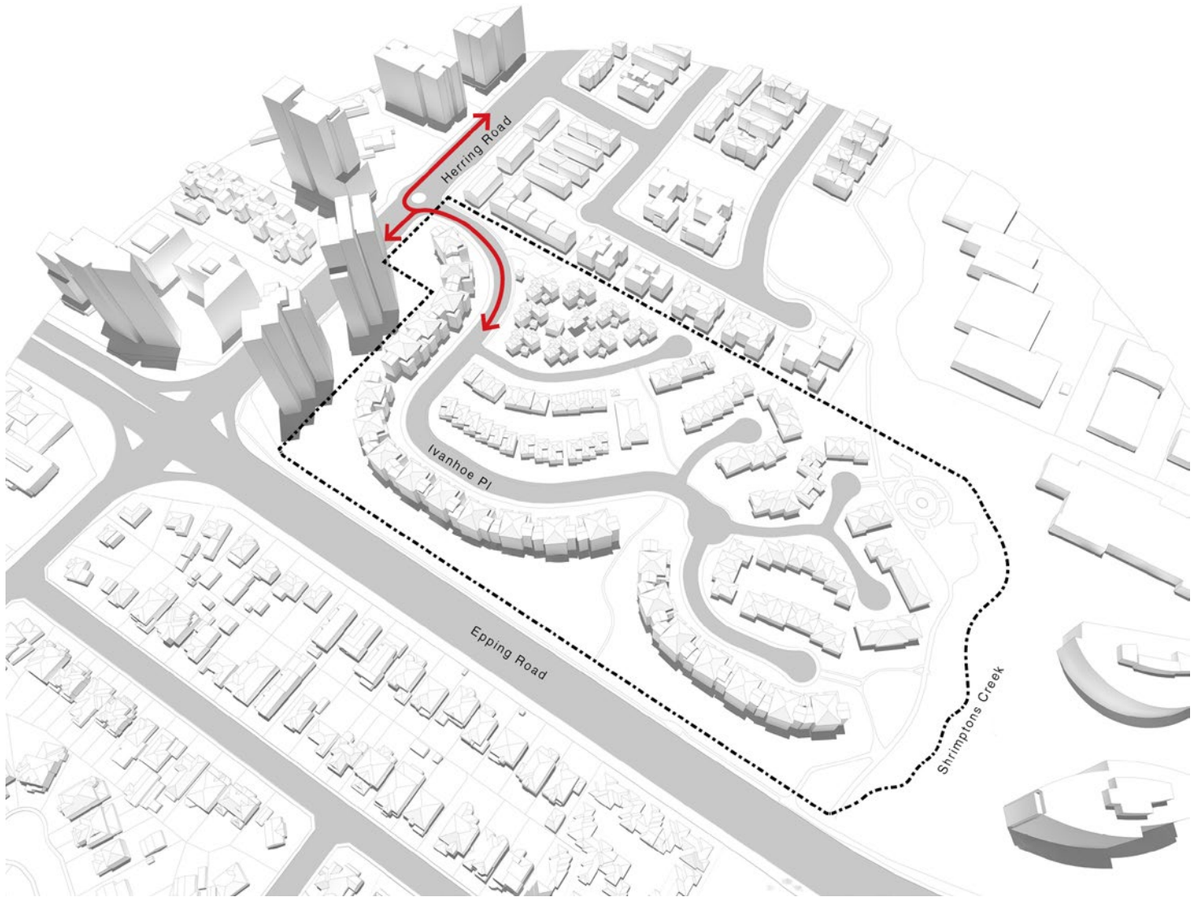
THE SITE

The site is approximately 8.2 hectares and currently accommodates 259 social housing dwellings, comprising a mix of townhouse and four storey apartment buildings set around a cul-de-sac street layout.

Immediately to the north of the site are a series of four storey residential apartment buildings. On the north-western boundary, the site fronts Herring Road and a lot which has recent approval for two high-rise apartment buildings.

OPEN SPACE

Ivanhoe is home to Sydney Turpentine Ironbark Forest as well as a riparian corridor along Shrimptons Creek. The retention and preservation of these natural ecosystems along the perimeter is one of the overarching objectives for the masterplan.



VEHICULAR ACCESS

Ivanhoe is bound by major arterial roads: Herring Road towards the west and Epping Road towards the south. These highly trafficked roads limit pedestrian and vehicular access into the site as well as generating noise pollution.

Currently the only vehicular access into the site is located on Herring Road via Ivanhoe Place.

PEDESTRIAN AND CYCLE ACCESS

In addition to the vehicle access from Ivanhoe Place, there is an alternative pedestrian access via the Shrimptons Creek shared path on the eastern site boundary.

The shared path presents a great opportunity for cycle and pedestrian links through the corridor to Macquarie Shopping Centre to the north, and the Ryde Community Sports Centre in ELS Hall Park to the south.

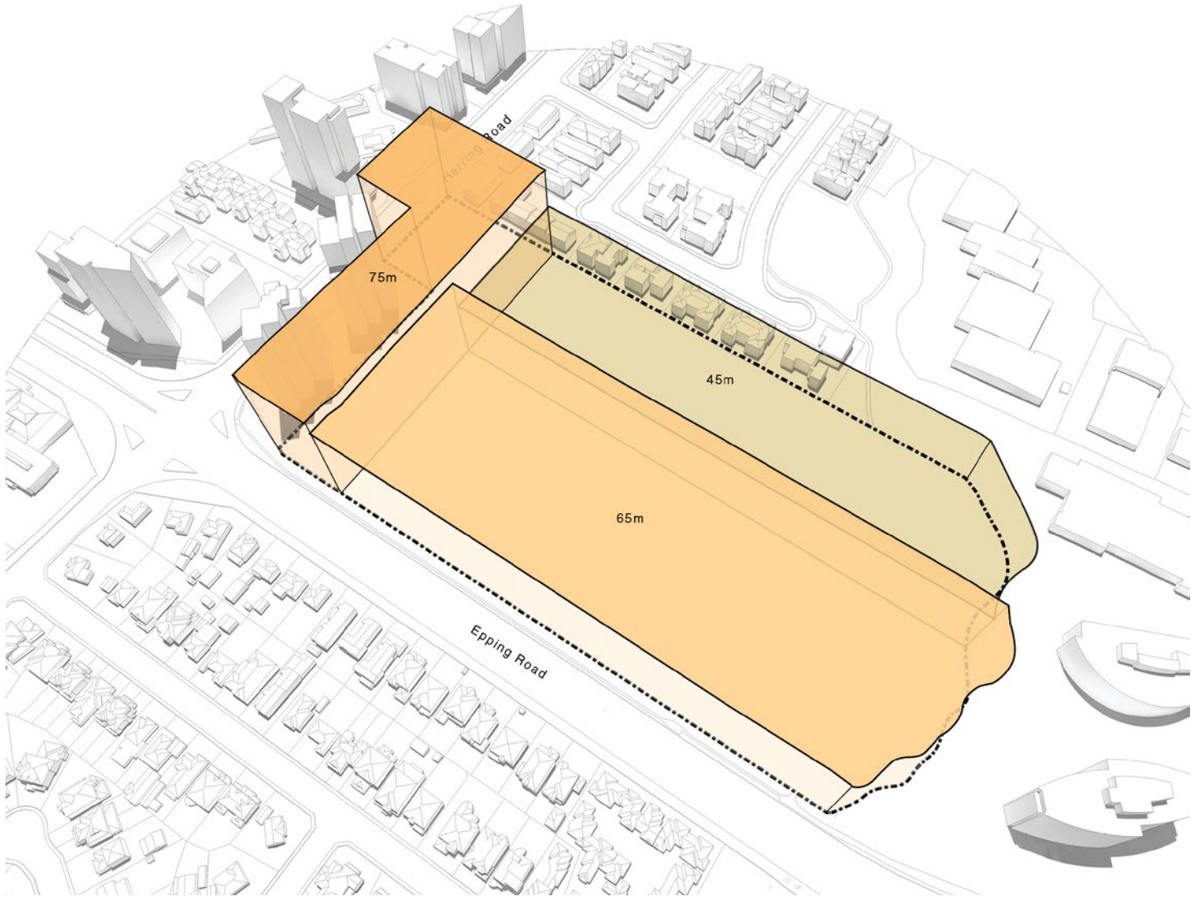
LEVELS

The site falls nearly 30m from west to east, presenting a challenge for accessibility across the site.

Due to the site's location adjacent to Shrimptons Creek, much of the low-lying land is prone to flooding which will affect ground floor levels and access points to the eastern buildings.

SOLAR ACCESS

The site is roughly rectangular in shape, with the long sides oriented approximately northwest/southeast. Buildings aligned with this orientation will receive two hours winter sunlight to their northwest and northeast facing facades.



LEP HEIGHT PLANES

Ryde LEP 2014 sets out the maximum building heights applicable to the site. On the northwestern edge of the site closest to Herring Road, buildings heights of up to 75m (24 storeys) are permitted. Alongside Epping Road, buildings heights of up to 65m (20 storeys) are permitted. Along the northeast boundary of the site, buildings of up to 45m (14 storeys) are permitted.

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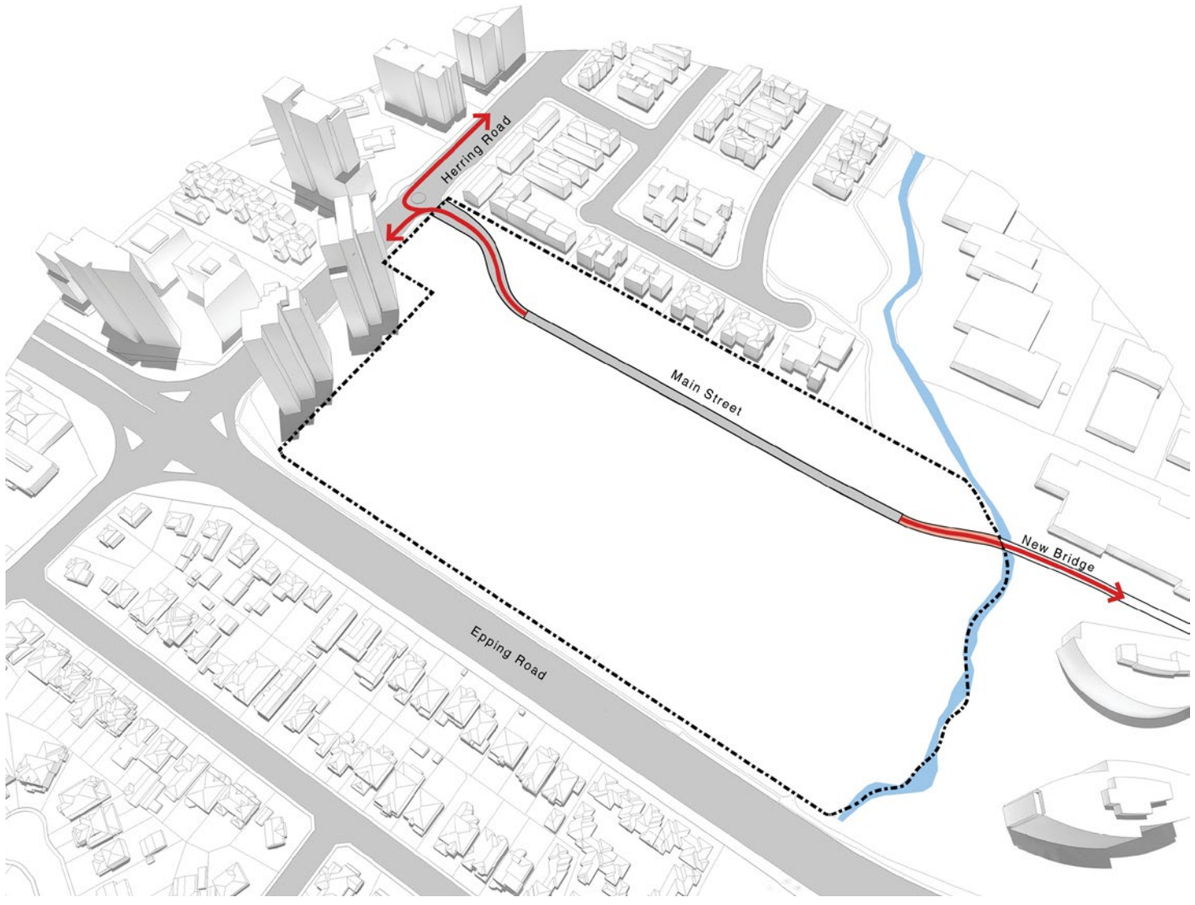
3.0
MASTERPLAN FRAMEWORK

Our vision is for a vibrant high-density mixed-use neighbourhood with buildings arranged to maximise residential amenity outcomes and a diverse open space network creating an inclusive community oriented public domain.

3.1 PUBLIC DOMAIN FRAMEWORK

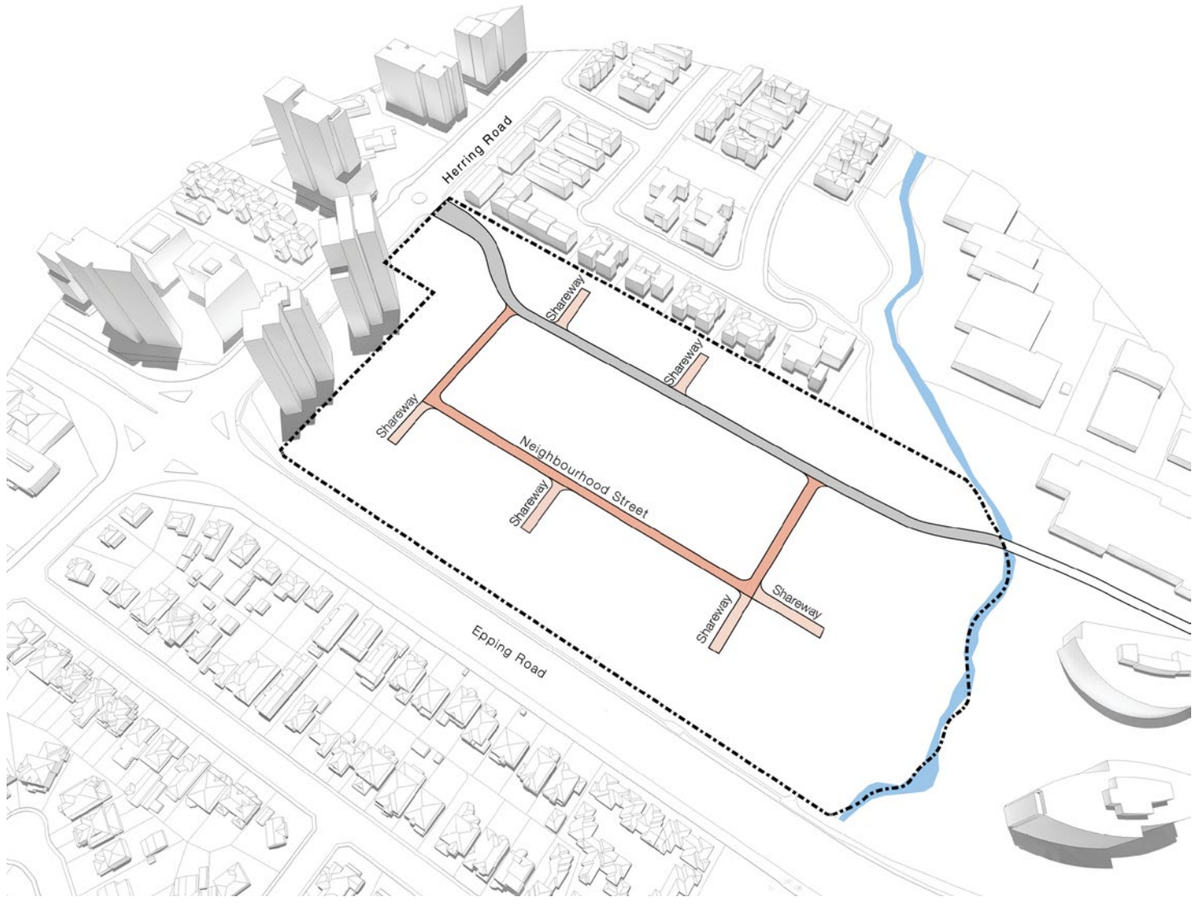
We propose an urban design framework which enhances the existing character of the site, linking the established bushland corridor with a series of high quality public open spaces.
A new main street is activated by community and retail uses, alongside a soft-landscaped village green and a green-roofed community recreation centre.

MAIN STREET
A new main street defines the primary circulation route from Herring Road to Shrimptons Creek.



EXTERNAL CONNECTIONS

A new bridge over Shrimptons Creek will provide vehicular and pedestrian connection to Lyonpark Road and the Employment Precinct to the east.



NEIGHBOURHOOD STREETS

A regular grid of neighbourhood streets provides a clear network of circulation routes and access points.

SEPP65 Principle 5: Landscape

Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in attractive developments with good amenity. A positive image and contextual fit of well designed developments is achieved by contributing to the landscape character of the streetscape and neighbourhood.

Good landscape design enhances the development's environmental performance by retaining positive natural features which contribute to the local context, co-ordinating water and soil management, solar access, micro-climate, tree canopy, habitat values and preserving green networks.

GREEN LINK

A diagonal link from the existing Turpentine Iron Bark forest to Shrimptons Creek connects the principal open spaces throughout the site, including the Village Green, Forest Play area, School Garden and Playgrounds.

URBAN HEART

Alongside the Village Green, the Community Centre, Town Plaza and main street act as the urban heart of the masterplan, combining a mix of uses with active programming and place making.

FOREST THRESHOLDS

Where the shared neighbourhood streets meet the perimeter bushland, forested urban gardens will formalise these transitions.

RIPARIAN CORRIDOR

A riparian protection zone along Shrimptons Creek accommodates a shared path in a bushland setting. The masterplan proposes to regenerate the corridor and add passive recreational uses.

3.2 BUILT FORM FRAMEWORK

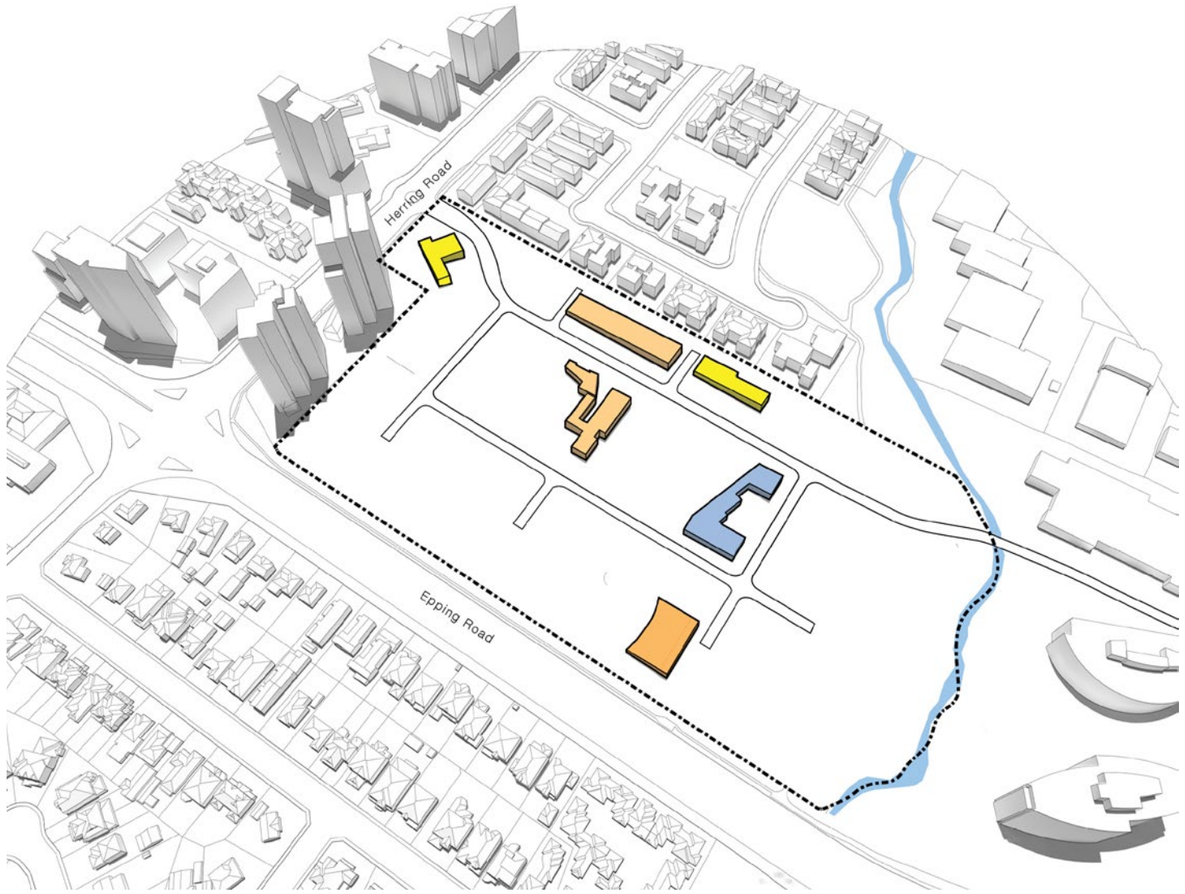
The residential buildings will create a benchmark for mixed-tenure development with high quality architecture to be delivered by award-winning architects. Apartment buildings propose built in features to support ageing in place and sustainability initiatives that focus on efficient use of energy and water to reduce ongoing costs. Tenures are evenly distributed within a simple staging framework ensuring a development which is truly tenure blind.

DEFINED DEVELOPMENT LOTS

The public domain approach sets up a framework of development lots in four precincts. Precinct A accommodates three building lots on the northwest edge of the site. Precinct B accommodates four building lots along the northeast edge of the site. Precincts C and D accommodate four building lots each, with two 'superlots' within each group. Precinct C runs though the centre of the site, while precinct D fronts Epping Road

LEGEND

- Precinct A
- Precinct B
- Precinct C
- Precinct D



PERIMETER SETBACKS

Along Epping Road, buildings are set back between 12m and 35m to maximise tree retention in the critically endangered Sydney Turpentine Ironbark forest corridor.

On the northwest boundary, buildings A2 and A3 are set back 14.7m and 12m respectively, and basements are set back a minimum of 6m to ensure existing trees on the boundary can be retained.

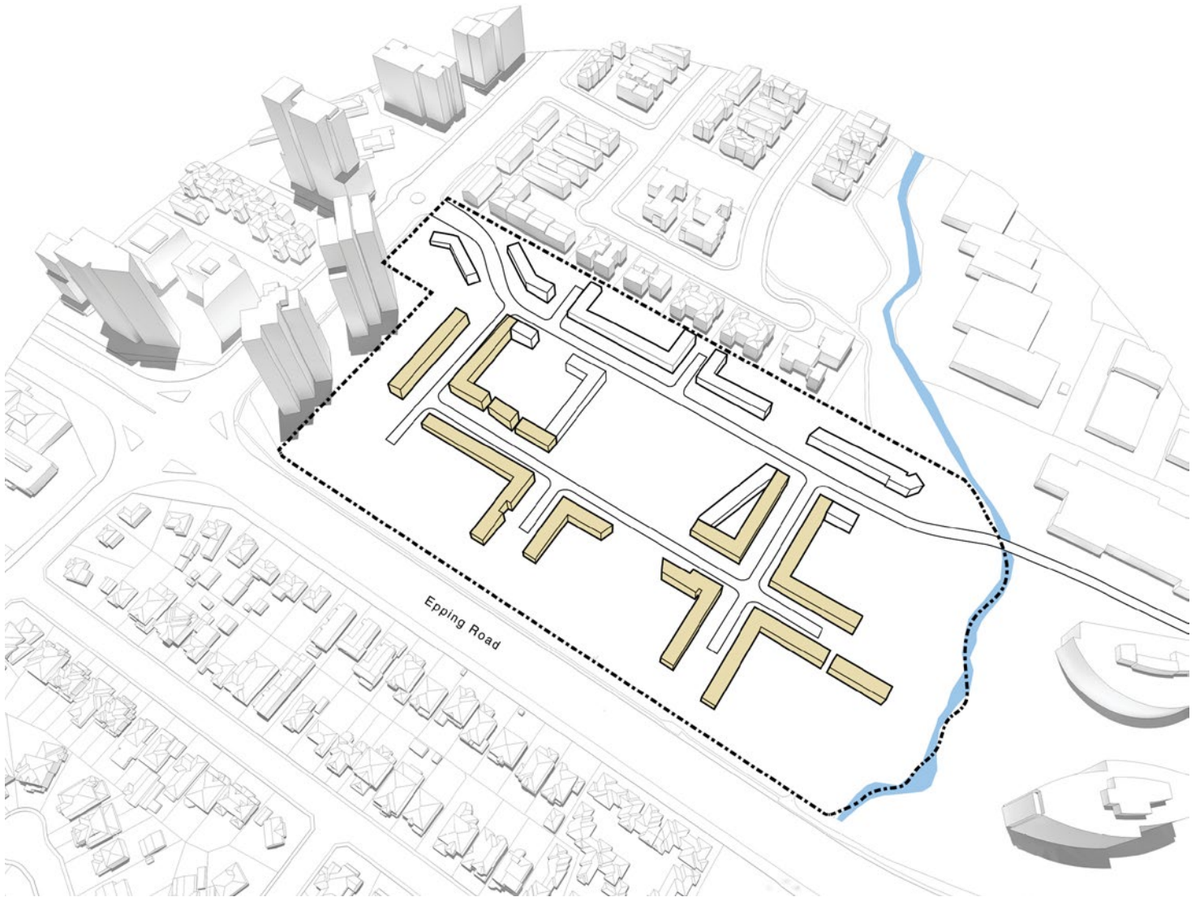
On the northeastern boundary, buildings are generally set back a minimum of 10m in accordance with the DCP. In some cases, lower levels (up to four storeys) extend to 6m from the side boundary. Residential building also set back on upper levels to comply with ADG requirements.

- Boundary Setback
- DCP Street Setback
- Park Setback
- EEC Setback
- Vegetation Setback

PUBLIC AND COMMUNITY USES WITHIN THE URBAN HEART

A new community centre is proposed in the location of building C2, built into the landscaped hillside. Buildings located around the urban heart propose a range of public uses including: retail, school, residential aged care facility, multi-purpose hall, swimming pool and childcare facilities.

- Childcare
- Community
- Mission Australia
- Retail



HUMAN SCALE TO NEIGHBOURHOOD STREETS

On residential streets, buildings propose a 2-3 storey scale using townhouse typologies to provide an active streetscape which responds to the scale of the pedestrian.

ORIENT APARTMENT BUILDINGS FOR SOLAR ACCESS

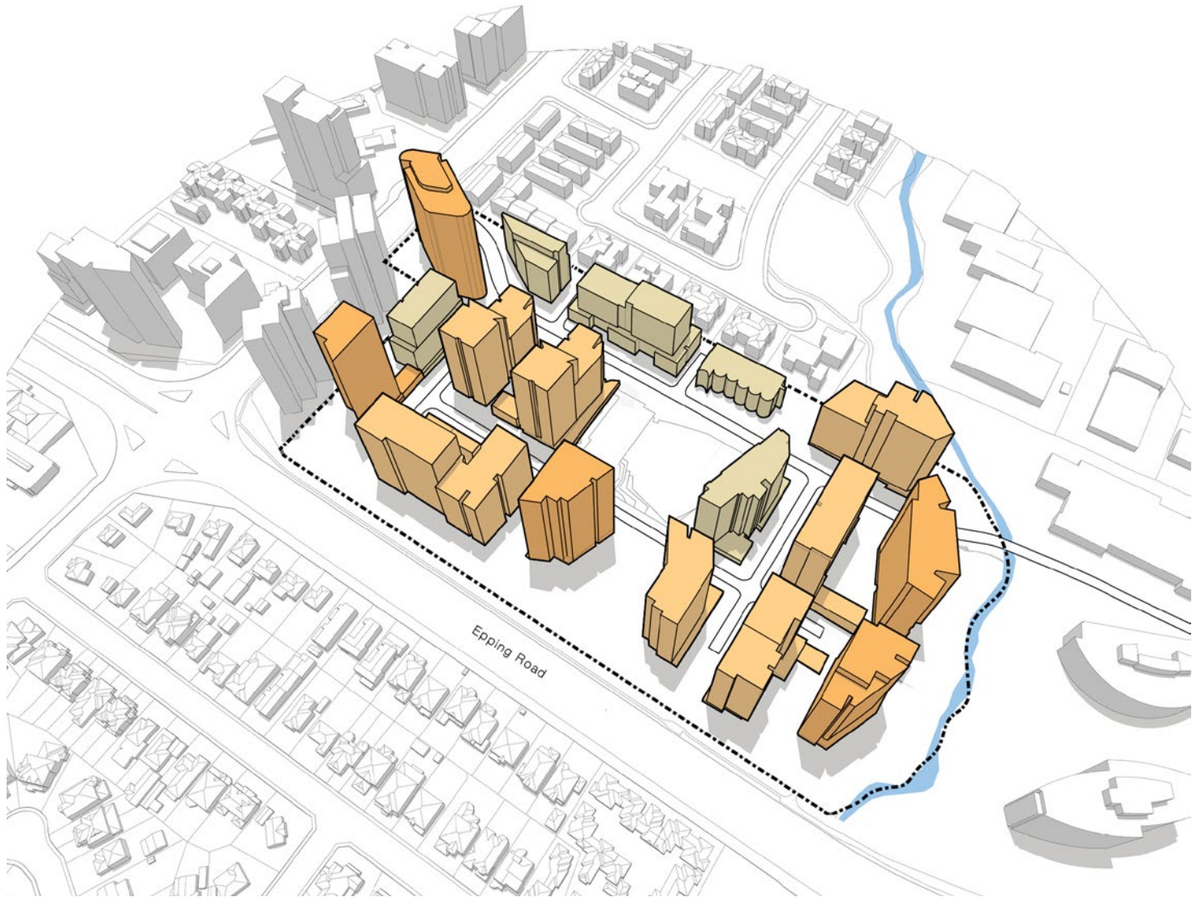
Above the ground plan, apartment buildings are oriented to maximise solar access to building facades and open space

SEPP65 Principle 2: Built form and scale

Good design achieves a scale, bulk and height appropriate to the existing or desired future character of the street and surrounding buildings. Good design also achieves an appropriate built form for a site and the building's purpose in terms of building alignments, proportions, building type, articulation and the manipulation of building elements. Appropriate built form defines the public domain, contributes to the character of streetscapes and parks, including their views and vistas, and provides internal amenity and outlook.

FRAGMENT FORM ALONG SHRIMPTONS CREEK

Along the edge of Shrimptons Creek, building forms are broken down to provide a sense of smaller floorplates with a less formal arrangement than the urban grid, responding to the alignment of the riparian corridor.



BUILDING HEIGHTS VARY MAXIMISING SOLAR ACCESS

Building heights are generally in accordance with the LEP height plane, generally increasing in height towards the intersection of Epping and Herring Roads, and alongside Shrimptons Creek.

The extent of massing alongside the EEC corridor has been reduced, with additional building height in locations which create no shadowing beyond the LEP height planes. Buildings A1, A3, C4.1, D2 and D4.2 rise to a maximum of 24 storeys, with other minor height compliances for buildings B3 (part 20 storeys) along with C3 and C4.1 (both 16/17 storeys in a 14/20 storey height zone).

3.3 ILLUSTRATIVE MASTERPLAN

The illustrative masterplan proposes a vibrant mixed-use neighbourhood featuring a diverse open space network, and an unprecedented range of places and programs, creating an inclusive, community oriented public domain. It enhances the existing character of the site, linking the established bushland corridor with a series of high quality public open spaces.

ANNOTATED PLAN

A. Main Street fronted by a mix of active retail and community uses, and the Village Green, with shared paths providing safe and equitable pedestrian and cycle access
B. New retail centre at ground level - supermarket, shops, and cafes to ensure an active, safe and convenient retail hub
C. Village Green - a healthy, communal and playful neighbourhood environment that is the focus for casual gatherings with a large open lawn for informal sports, and fronted by active retail and community uses
D. The community centre will be a busy, active space that caters for a range of activities from swimming, casual dining to public meetings and entertainment. It will have a green roof to maximise the extent of landscape when viewed from above.
E. The Green Link - an active pedestrian and cycle link connecting a mix of multi-functional public areas of open space, playgrounds and other recreational uses from Epping Road, through Village Green to Wilga Reserve
F. Potential pedestrian and cycle connection to Peach Tree Road
G. Mix of residential tenure from market through to social and affordable
H. Vertical school located at core of community uses opposite Village Green
I. Multi-use sport court including foursquare, half netball / basketball, cricket, badminton and small running track. Ideally positioned adjacent to the multi-purpose hall of the future vertical school
J. Regeneration and upgrade of the Shrimptons Creek Reserve into a place to get in-touch with nature, for passive recreation and quiet reflection. It runs along the existing riparian corridor and is connected to nearby sports ovals via a shared path.
K. Existing stand of Sydney Turpentine Ironbark Forest retained and celebrate where possible, with new species being complementary to the character of the place
L. New shared path connects to the planned City of Ryde shared path network
M. Community Housing Provider Office located close to key recreational and community amenities. The Community Hub will facilitate regular meetings of community and social groups, who may also utilise the playground to build connections and social inclusion.
N. Aged care facility located along Main Street in close proximity to (and along an accessible path of travel) the central community and retail services
O. New vehicular and pedestrian bridge linking to Lyonpark Road and neighbouring communities
P. Signalisation of the Herring Road and Ivanhoe Place intersection
Q. Permeable and porous ground surfaces with direct pedestrian connections to existing and potential future surroundings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Key
Childcare
Retail
Community
Mission Aus office
1-bed dwelling
2-bed dwelling
3-bed dwelling
Core/BOH
1:1,250 @ A3

4.0
PUBLIC DOMAIN

Our vision for Ivanhoe is to create a place of inclusion and opportunity. It will be open, integrated and diverse. Ivanhoe will be a place to make friends, to live in close proximity to employment, to walk your kids to school, to connect with nature or to create a life-long connection with place.

4.1 DESIGN APPROACH

4.1.1 LANDSCAPE CONTEXT - HISTORICAL ACCOUNTS

'The land is undulating, with rich and deep subsoil; and from all parts of the property the most magnificent views of diversified scenery are to be seen. Standing on a slight knoll and looking north, Red Hill comes into ken, with its sloping uplands laid out in fruit and crops. The sun, pouring his fervid rays with fleecy clouds of steel and gray, now and again casts into shadows and lights acres upon acres of cultivated and bush land, which forms a picture which may be equalled but not surpassed"

JULIE DAWSON
1902, NORTH RYDE FARM
THE NORTH RYDE RECORDER

SYDNEY TURPENTINE-IRONBARK FOREST

The North Ryde region of Sydney pre 1788 was a forested environment with the vegetation thought to have been largely composed of the Sydney Turpentine–Ironbark Forest. This vegetation community was generally found in medium rainfall areas on Wianamatta Shale soils. Sydney Turpentine-Ironbark Forest was probably the most common native bushland type in Ryde before European settlement. The natural distribution of Sydney Turpentine–Ironbark Forest is limited to the Sydney Region, where it naturally occurred on undulating clay soils overlaying Hawkesbury Sandstone on the Hornsby Plateau and in Sydney's inner-west where rainfall is between 900 and 1,000mm. This landscape type is classified as "Glenoirie soil landscape".

It is a medium height open forest up to approximately 30 metres. The most common trees were Turpentine (Syncarpia glomulifera), White Stringybark (Eucalyptus globoidea), Red Mahogany (Eucalyptus resinfera) and Grey Ironbark (Eucalyptus paniculata). The understorey was quite dense except where burnt by the indigenous Australians, a land management and food production task performed on a regular basis. Understorey typically consisted of flowering shrubs and native grasses. Various Acacias, Dodoneas and a range of grasses and herbs are the common understorey species.

As these soils where the Sydney Turpentine–Ironbark Forest occurred were very fertile, the forests were cut down for their timber and to allow agricultural development. Very few remnants of Turpentine-Ironbark Forest remain in the Sydney region. The most substantial remnant in Ryde remains is in Wallumatta Reserve in East Ryde. It is owned and managed by the National Park and Wildlife Service. Smaller and unfortunately more degraded remnants can be found locally in Stewart Park, Macquarie University and Meadowbank Park. The only other significant remnant is the Newington Forest on the Olympic site in Homebush.

SHALE/SANDSTONE TRANSITON FOREST

Shale/Sandstone Transition Forest is a native plant community, which occurs in the narrow band where the gently undulating Cumberland Plain meets steep slopes of the Sandstone Country. It often occurs in a linear shape between Turpentine Ironbark Forest and Sandstone Gully Forest and can be found in stands as narrow as 20 meters in width.

This plant community has evolved in the specific conditions characteristic of the transitional areas between the clay soils derived from Wianamatta Shales and the sandy soils and cliffs of the Hawkesbury Sandstone. Its natural distribution is limited to the margins of the Cumberland Plain in the Sydney Region.

The coming together of two distinct landscape types means that the species associated with each of the adjacent ecosystems intermingle to form an individual distinct unit. Characteristics are high diversity and unusual species composition. The structure of the community is forest or woodland with an understorey of shrubs and native grasses and herbs. Typical trees are Grey Gum, White Stringybark, Red Mahogany, Grey Ironbark, Broad-leaved Ironbark, and Narrow-leaved Ironbark.

Small stands of this naturally rare community remain, of which a small number can be found in the northern area of the Ryde LGA along Epping Road and near Macquarie University.

Shale/Sandstone Transition Forest is listed as a critically endangered ecological community under the Threatened Species Conservation Act 1995. In view of the small size of existing remnants and the threat of further clearing and other threatening processes, the community is likely to become extinct unless threatening activities cease.

AGRICULTURAL DEVELOPMENT

Throughout the nineteenth century the area was farmed, largely by orchardists and poultry farmers until at least the 1940s when much of the Macquarie Park area was subdivided for suburban development in the period immediately after the Second World War. The Ivanhoe site on Epping and Herring Roads was used for market gardens and poultry farms before it was developed into a social housing estate by the Department of Housing in the 1960s - 80s.

Julie Dawson illustrates the agricultural landscape in 'The North Ryde Recorder' (1902), "behind the front vineyard are the loquats and patches of mandarins and oranges, the St Vincent predominating in the former and the St Michael in the latter. The Seville is fairly represented. So far as the Mandarins are concerned, the pride of place is given the Emperor."

The development of farms and later housing, commercial and university land uses did not eradicate the native landscape altogether with remnant areas of vegetation surviving along creek lines and adjacent to the Lane Cove River.

Dawson captures the qualities of the forest landscape "...and the russet and purple hues of maturing crops, with white and pink blooms of budding and flowering trees...with the towering Ironbark, Spotted Gum, White Gum, Blackbutt and Woolybutt...and the dim outline of mountain ranges blue and hazy in the distance..."

REFERENCES
1/ Sydney Turpentine Ironbark Forest
2/ Shale/ Sandstone Transition Forest
3/ Eastwood Orchards 1900-1927, State Library of NSW

4.1.2 LANDSCAPE CONTEXT - CURRENT

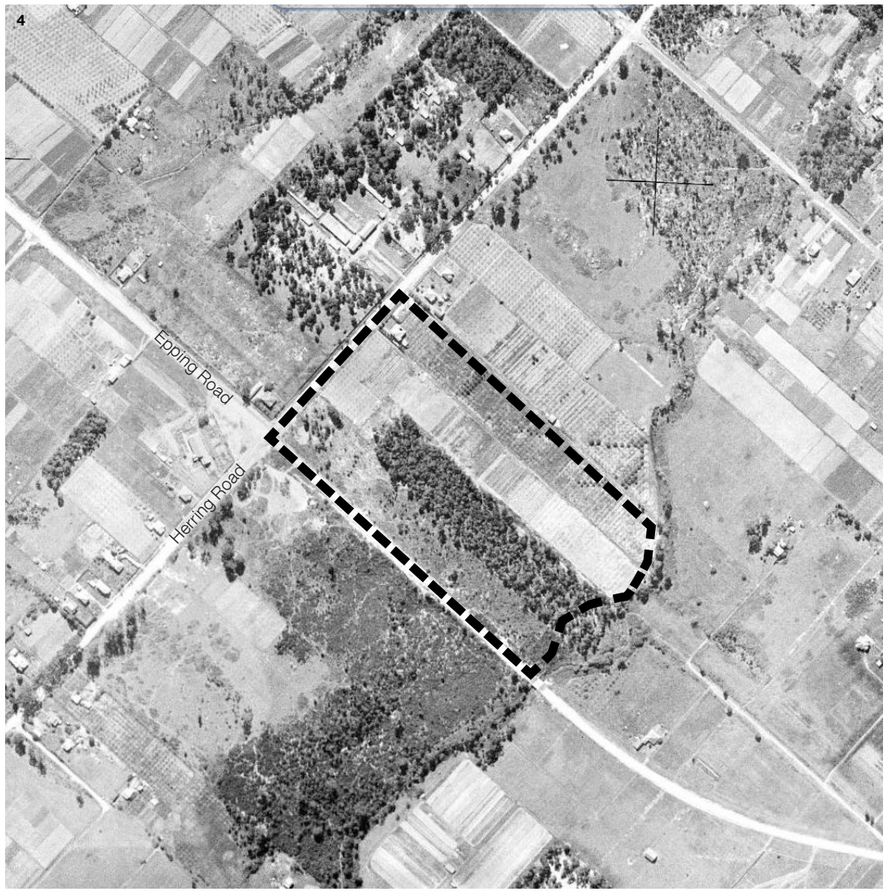
The landscape of the Herring Road precinct of Macquarie Park features generally undulating terrain with distinct ridges and valleys. The Ivanhoe Estate site runs from the Herring Road ridge line down bushland along the low lying Shrimptons Creek.

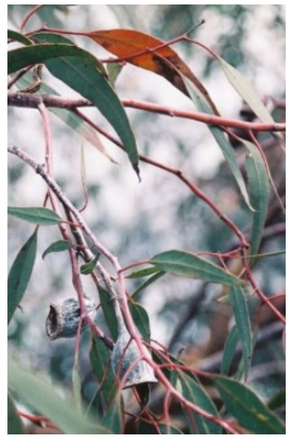
East of the creek lies the Macquarie Business Park which extends to Lane Cove Road. Generous building setbacks in the business park are also planted with large native trees. The heavily treed creek corridor provides a connection to Waterloo Road and the Macquarie Centre to the northeast and to the string of parks known collectively as Shrimptons Creek Parklands to the southwest. Much of the creek corridor in this direction has a forested character, with stands of Sydney Turpentine/Ironbark vegetation, some of which is extant remnant vegetation. In particular, large specimens of Sydney Blue Gum (Eucalyptus saligna) are distinctive features along the creek's shared path. The understorey of the corridor is, however, heavily weed infested.

Adjacent sites on the north side of Herring Road are currently being redeveloped as part of a new, high-density residential area. Low-rise residential areas such as the Ivanhoe Estate and the area immediately to its northeast are also slated for higher density development.

The arterial and main roads bordering the precinct are typically marked by large stands of native trees, generally Eucalypts. The existing estate has a comprehensive tree canopy, including a belt of protected vegetation that acts as a buffer along the Epping Road boundary. Surrounding streets typically feature a mixture of native evergreen and exotic deciduous street trees. There is no remnant vegetation from the period of market gardens within the study area.

The majority of the vegetation along Shrimptons Creek and the adjacent parks have been highly disturbed with weed species. The City of Ryde are undertaking extensive rehabilitation works to the riparian corridor of Shrimptons Creek, between Ivanhoe Estate and Waterloo Road. Master Plan improvement works to Wilga Reserve, Cottonwood Park and the creek shared path system, adjacent to Ivanhoe, are due to commence in 2018.

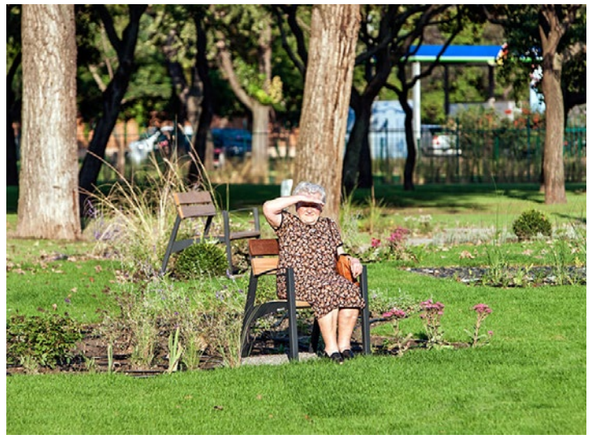




Source -

1/ State Library of NSW
2/ State Library of NSW
3/ State Library of NSW
4/ Six Maps

4.1.3 PUBLIC DOMAIN PRINCIPLES

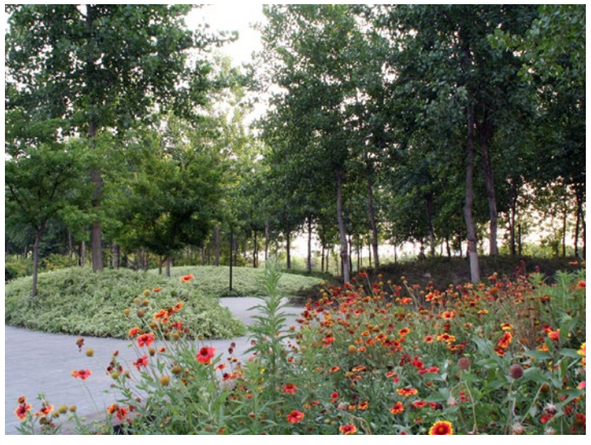


1. THE HEART AND SOUL FOR THE SITE

/ Ensure that people are at the heart of the project and that the public domain will provide engaging public spaces that aid the development of a sense of community

/ Create opportunities for local business and social enterprise

/ Deliver places in which people will want to gather and where they will feel both safe and welcome



2. AN ACCESSIBLE AND ATTRACTIVE PRECINCT

/ Beautiful streets that provide comfortable and legible connections across the site

/ A focus on walkability and a convenient network of paths and trails both on-street and through public open space

/ Well defined, legible arrival and meeting points

3. GREAT COMMUNITY PLACES

/ Gathering spaces for social and recreational activities such as the Village Green which is planned as the primary community space

/ A variety of spaces, facilities and activities

/ Connections to the surrounding community and the Shrimpton's Creek corridor

/ A flexible public realm that allows for the evolution of uses and character over time

/ Creative playspaces catering to the anticipated demographic character of the Ivanhoe community

4. HEALTHY ACTIVE COMMUNITIES

/ The Ivanhoe master plan will be integrated with the wider Macquarie Park open space and recreation network

/ Cycling and walking routes will provide recreational loops across the open spaces network of the master plan

5. A FOCUS ON DELIVERY

/ Design that exploits the unique qualities of the site

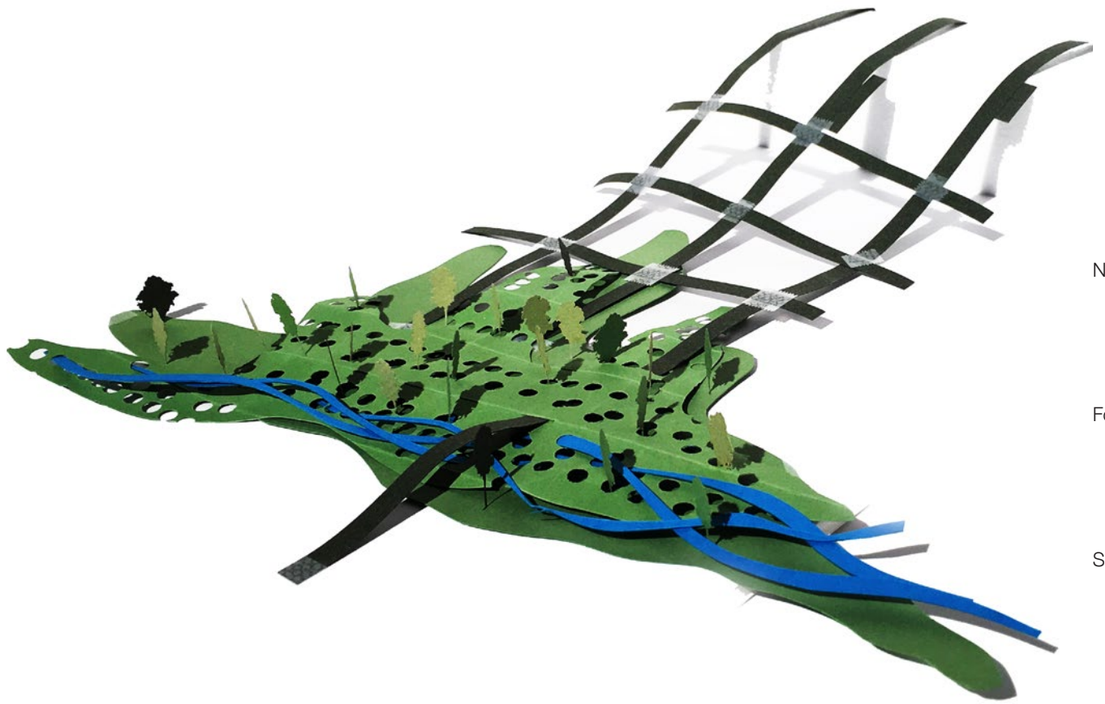
/ Public art as an integral element in the parks and public domain

/ Quality architecture and landscape design

/ Robust yet elegant finishes and materials that contribute to a sense of place

/ Considered arrangement of street furniture and amenities

FOREST TO NEIGHBOURHOOD



Neighbourhood streets flow down to meet the forest

Forest charcter permeates the streets and spaces

Shrimptons Creek

FOREST TO NEIGHBOURHOOD

FOREST

The Ivanhoe site is bordered on two sides by stands of largely native bushland: a protected area of regrowth forest along the Epping Road edge and the vegetation of the riparian corridor of Shrimptons Creek.

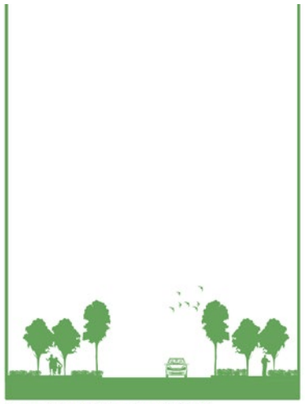
NEIGHBOURHOOD

A new neighbourhood is being created at Ivanhoe, a neighbourhood of active and engaging streets and spaces.

The site offers the opportunity to celebrate both of these characters, here is where Forest meets Neighbourhood. This will inform the character and materiality of each street and open space.

The site's informal forested edges and topography will infiltrate the urban grid, given particular expression at entry points to the site and across the proposed Green Link, the link that will connect the Epping Road protected vegetation to the creek corridor.

Beyond the Green LInk, the streets will take on a neighbourhood character where a more orderly arrangement of street trees and furniture will provide a high level of urban amenity.



Neighbourhood Streets and Spaces -
_human scale
_ordered planting
_low canopy trees

Forest Streets and Spaces -
_an ordered chaos to placement of trees
_mixed tree planting
_extensive understorey planting

FOREST TO NEIGHBOURHOOD

1/ Forested Entries and thresholds to the site speaking to the existing landscape character and creating a distinctive arrival experience with textured planting informally located.

2/ Clearings creating moments of celebratory sunlight. Located at moments of decision.

3/ Neighbourhood Gardens

Special intimate gardens along the streets

Lower tree canopy Seasonal qualities

Finely detailed

4/ Street Planting Structure

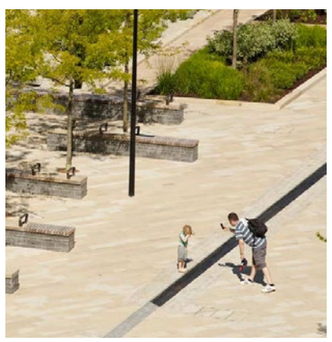
A coherent urban framework

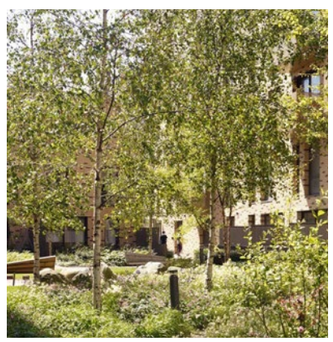
Consistent and calm

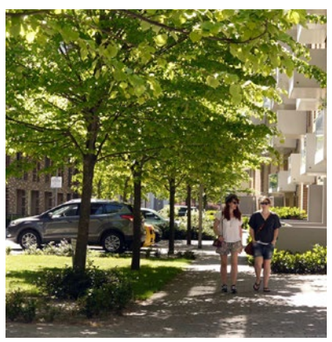
Human scale

Regular grid

Tall canopy

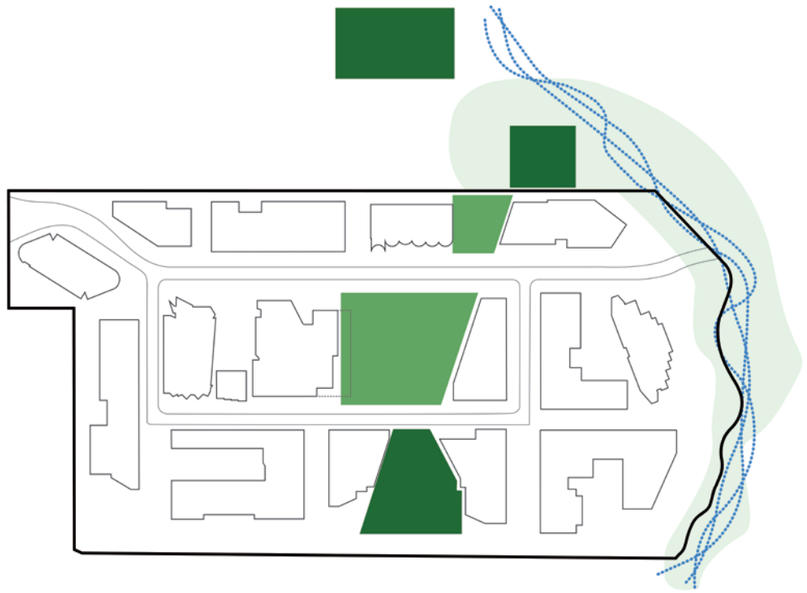






PRIMARY OPEN SPACES

The range of larger public spaces at Ivanhoe will have different functions and each a distinct landscape feeling reflecting its neighbourhood or forest character. The busy space of the community centre forecourt leads to the terraced edge of the village green. The terraces overlook the community oval, a playspace and the green link. The tall trees lining the green link visually connect the forest playground at the southwestern end of the site back to the village green and to the multi-function play area adjacent to the school and then to Shrimptons Creek.



LEGEND

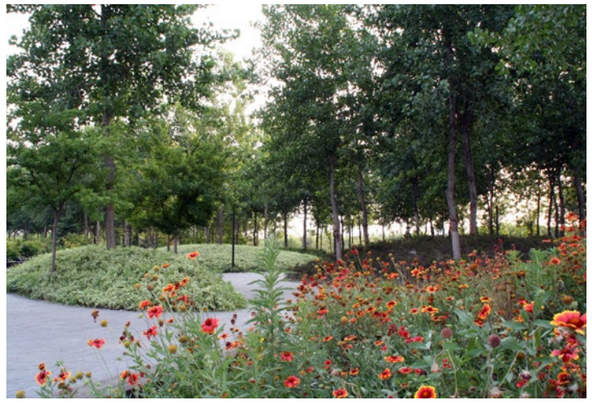
- Neighbourhood spaces
- Forest spaces

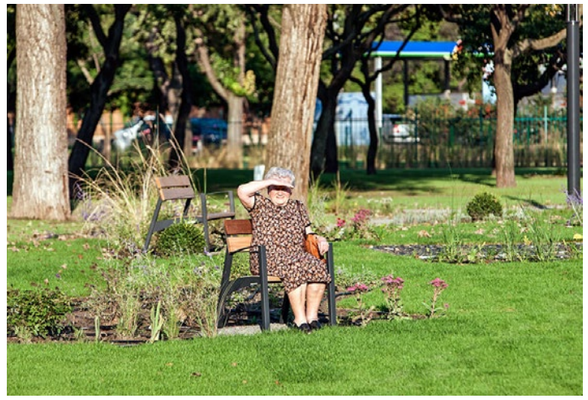
NEIGHBOURHOOD

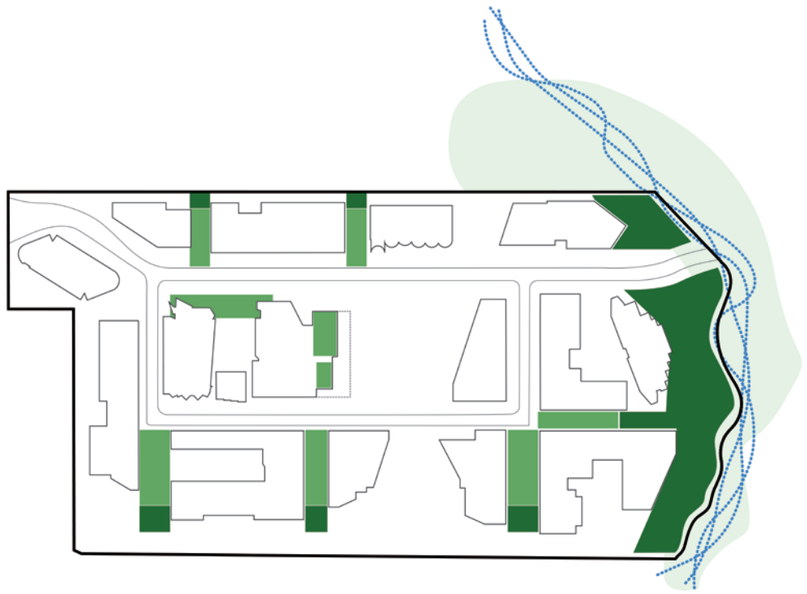
FOREST

SECONDARY OPEN SPACES

A series of smaller public spaces in turn will also respond to the forest and neighbourhood landscape themes. On street neighbourhood gardens will create smaller, more detailed and richly planted areas - quieter urban settings. At the edges of the development where the shared local streets meet the perimeter bushland, forested urban gardens will formalise these transitions.

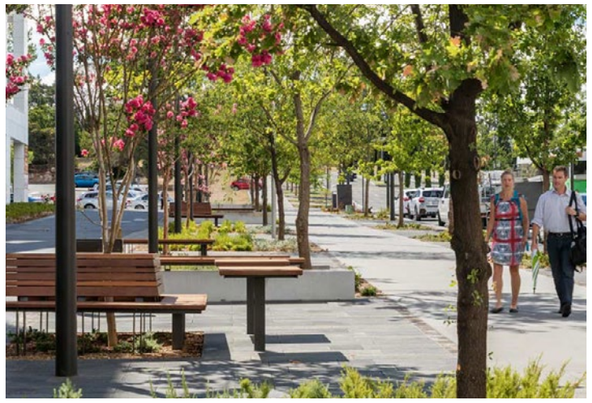






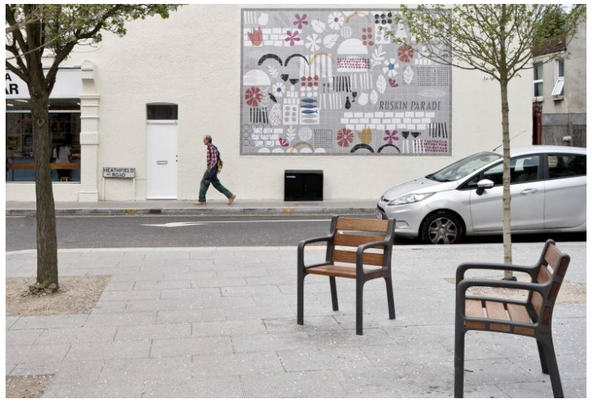
LEGEND

- Neighbourhood spaces
- Forest spaces



INCIDENTAL SPACES

The streets and open spaces of Ivanhoe and along Shrimptons Creek will be furnished with small areas for sitting, meeting and reflecting. Strategically arranged seating and planting will create these quieter small moments in the public landscape.



LEGEND

- Neighbourhood spaces
- Forest spaces

4.2 PUBLIC DOMAIN FRAMEWORK

STREET NETWORK AND HIERARCHY

A LEGIBLE & COMFORTABLE STREET NETWORK

Main Street connects Ivanhoe to the wider precinct, via a signalised intersection at Herring Road and across a new bridge and road extension to Lyonpark Road in the Macquarie Business Park area to the south east.

Main Street is the primary public street; lined by residential apartment buildings, school, aged care accommodation, community centre and village green.

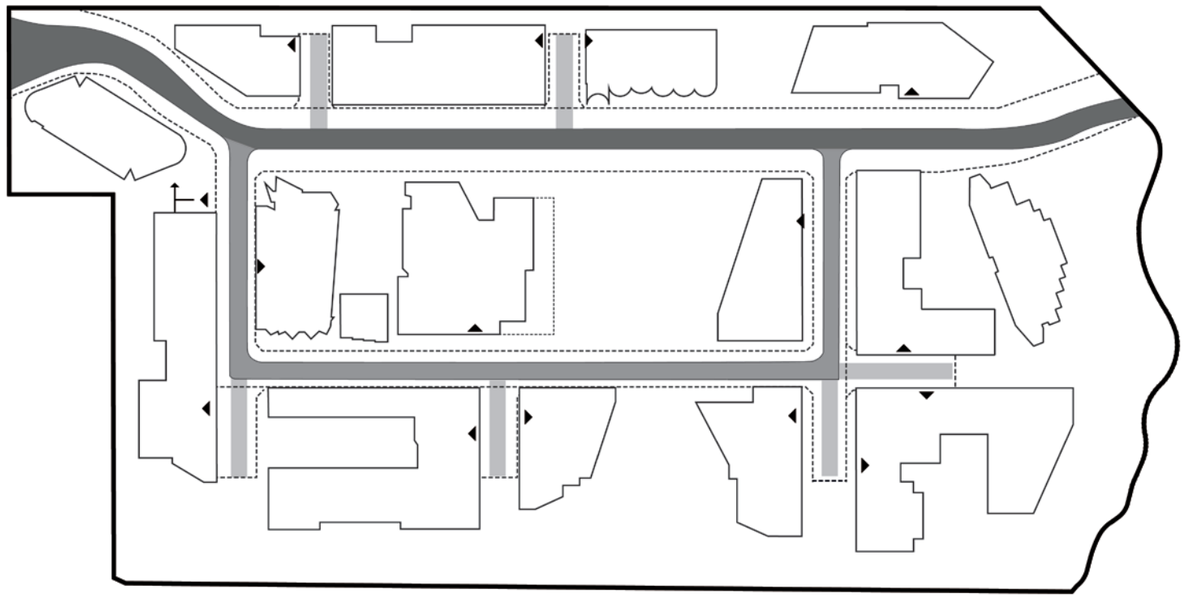
In contrast the Neighbourhood Streets are predominantly residential in nature, and as such are defined by a pedestrian, intimate scale.

The Neighbourhood Mews are paved and landscaped spaces providing vehicle access to basement car parks, while also creating spaces for informal activation associated with adjacent dwellings.

It is anticipated that the whole site will be a designated low speed (40 km/h) environment.

LEGEND

- 23.4m Main Street (varies along length)
- 14.5m Neighbourhood Street
- Neighbourhood Mews / Driveways
- Driveway Entries



PEDESTRIAN CONNECTIVITY

A HIGHLY WALKABLE, SAFE STREET NETWORK

The primary pedestrian paths on streets have been designed to comfortably allow for passing wheelchairs and prams, as well as generous streetscape planting and seating areas.

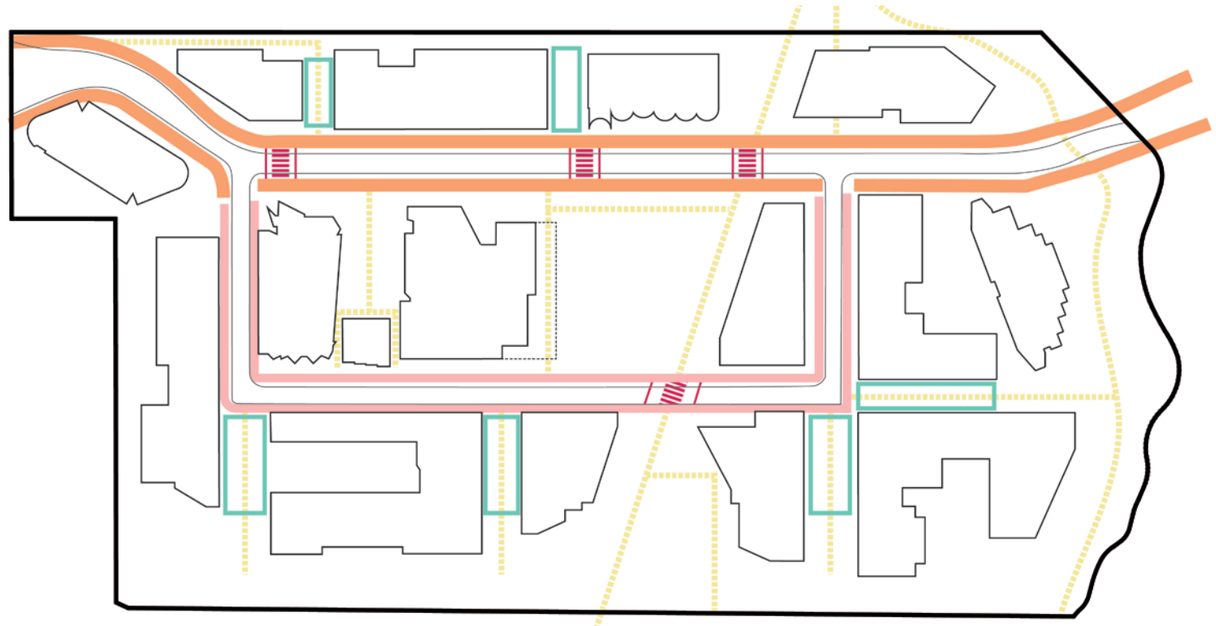
The circulation zones on both sides of Main Street is 4 metres, in the form of a footpath on its southern side and a shared path to the north. Neighbourhood streets are either 1.8 or 2.4 metres wide. The Neighbourhood Mews/Driveway zones are proposed as shared spaces.

A range of pedestrian crossings will provide safe movement across roads at intersections and adjacent to primary public spaces and buildings.

Off-street connections of various widths run through the network of public open space.

LEGEND

- 4.0m footpath & shared paths
- Open space links
- 1.8 - 2.4m footpath
- Neighbourhood Mews
- Raised pedestrian crossing

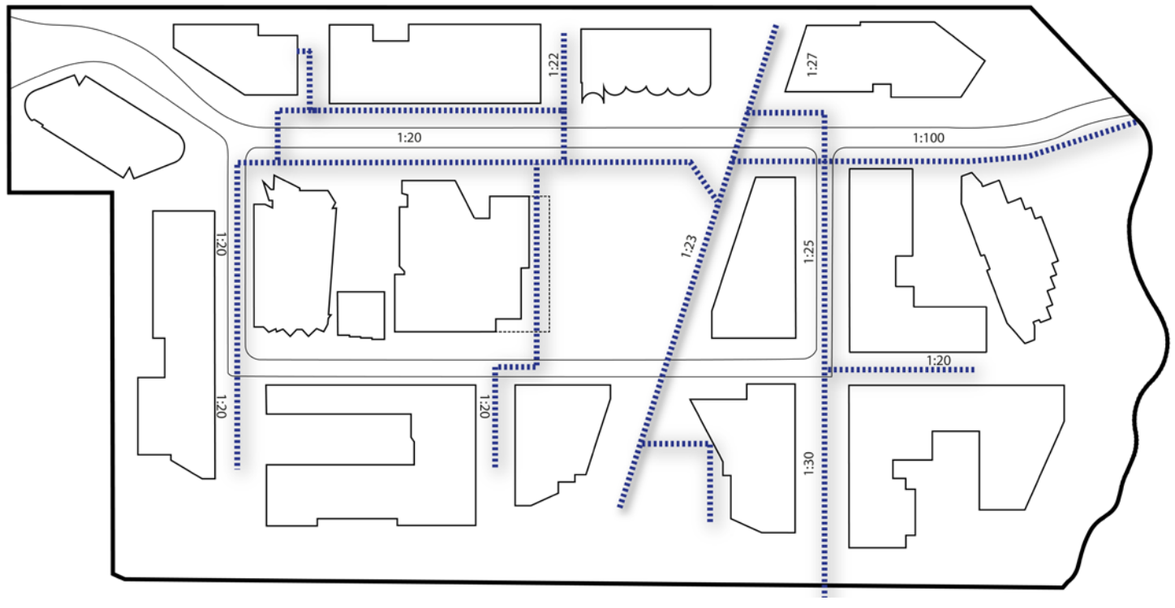


PEDESTRIAN ACCESSIBILITY

An accessible path of travel is available through the development, using a mix of on-street and open space connections. This path will connect all the public spaces and facilities on the site.

LEGEND

Accessible paths



CYCLE CONNECTIVITY

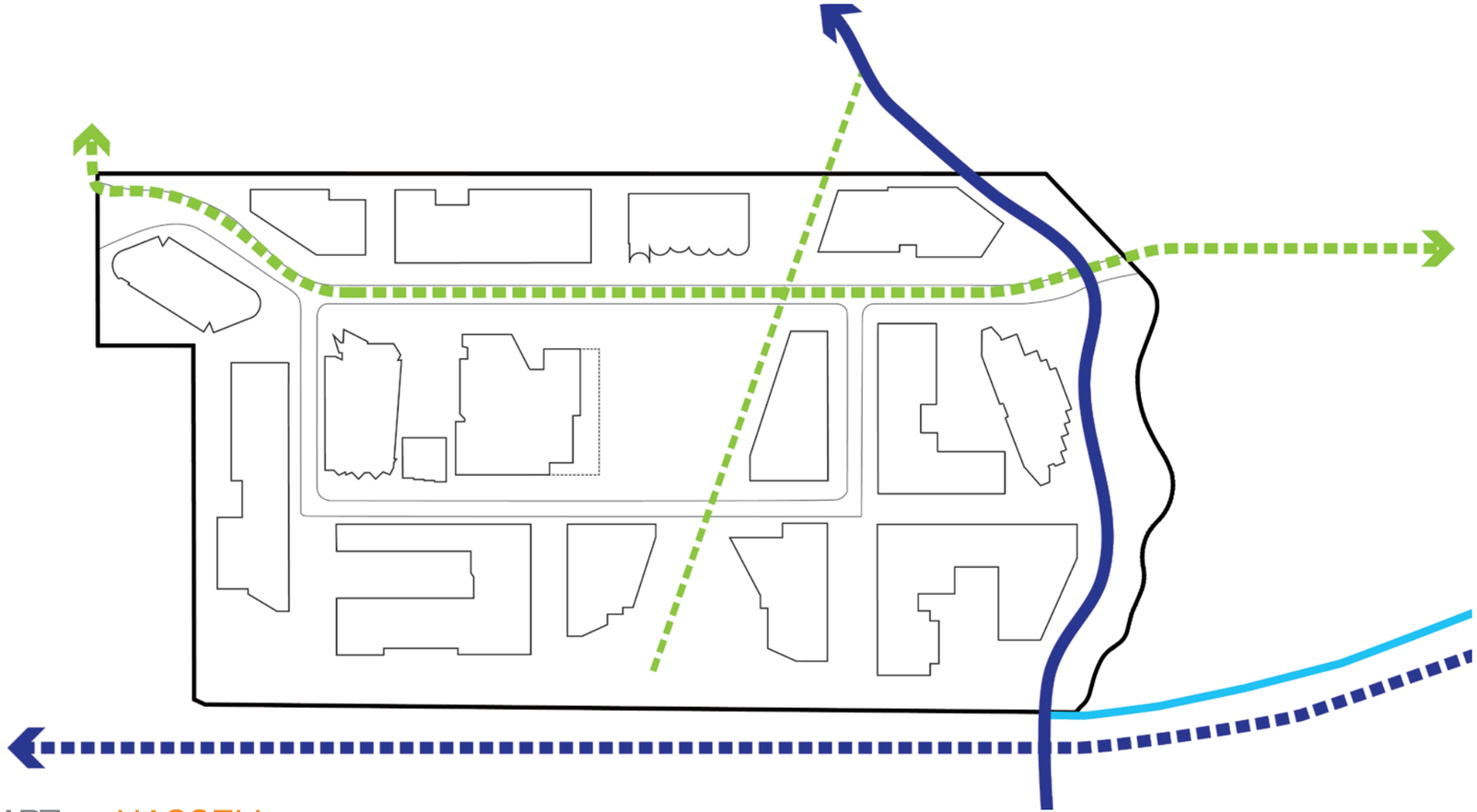
CONNECTED, SAFE CYCLE NETWORK

A shared path along the Main Street is proposed as a Local Cycle Link between Herring Road and both the Shrimptons Creek shared path and the existing cycle route on Lyonpark Road.

A secondary shared path is also planned along the Green Link. This will largely serve as a children's route between and around the open spaces within the site.

LEGEND

- Existing regional cycle route. To the north connects to Waterloo Road, Macquarie Centre & Macquarie University. To the south, ELS Fields.
- Proposed regional cycle route. Regional route 7. Visually separated 4m offroad bi-directional cycleway.
- Existing local cycle link including, Lyonpark Rd off-road shared path (Local Link 10)
- Proposed Shared paths



OPEN SPACE

The Village Green, Forest Playground and the School Garden, along with Shrimptons Creek corridor, are the largest open space and recreation areas. These will cater for a range of active and passive recreation activities.

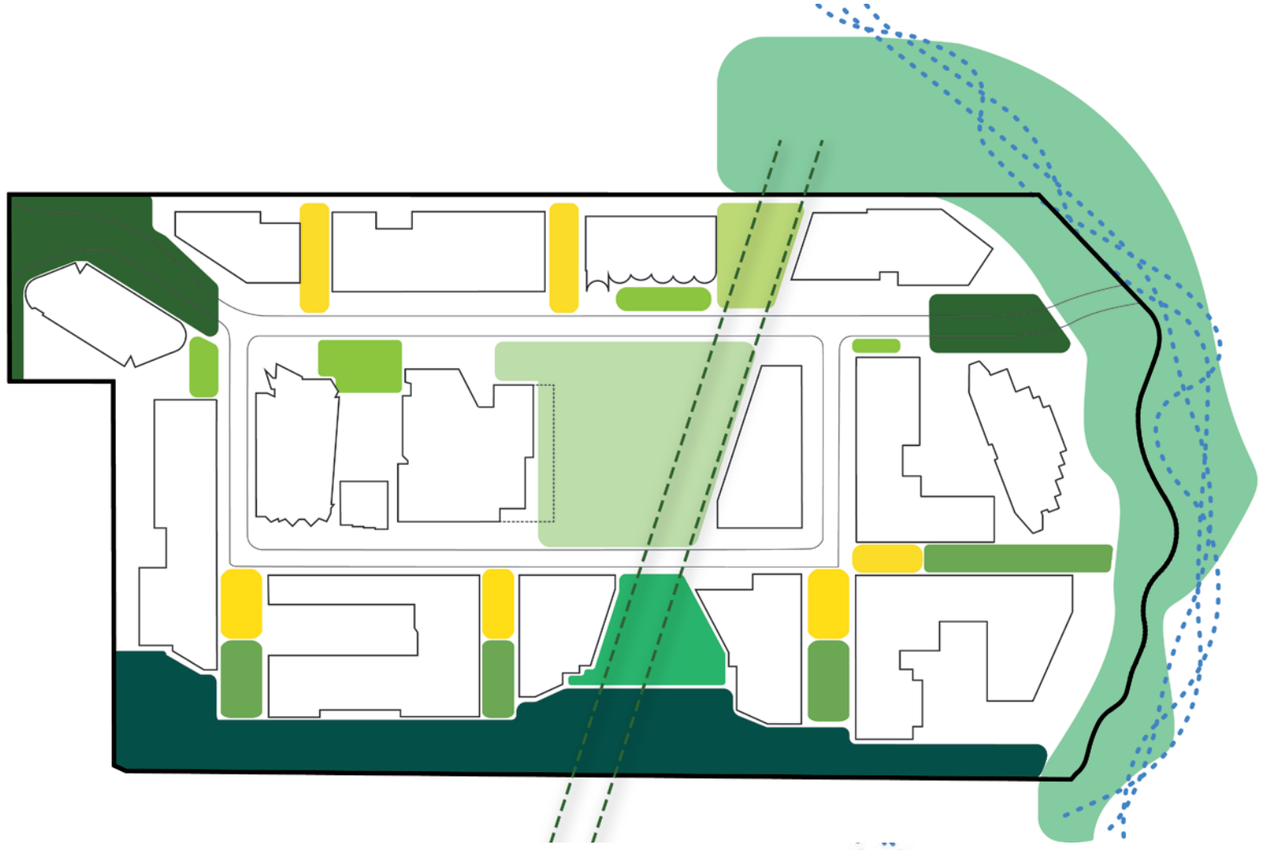
The community centre forecourt and landscape terraces to the Village Green are lined with trees, outdoor dining and recreation.

The Neighbourhood Mews as paved shared zones are local - the thresholds between residential buildings, and between the urban area and the forested edge.

The Neighbourhood Gardens are more intimate areas, richer in detail and planting texture. Quieter moments to sit and pause. Similarly the Incidental street zones will allow for seating and additional planting.

LEGEND

- Shrimptons Creek Riparian Corridor (existing vegetation)
- Forest Entry
- Forest Thresholds
- Forest Playground
- Neighbourhood Gardens
- School Gardens
- Village Green
- Town Plaza
- Neighbourhood Mews
- Green Link
- Existing vegetation corridor retained and protected (Sydney Turpentine Ironbark Forest/ Smooth-barked Apple Turpentine)



LANDSCAPE CHARACTER

A COLLECTION OF NEIGHBOURHOOD GARDENS, FORESTS AND SUNNY CLEARINGS.

The logic of ‘forest’, ‘neighbourhood’ and ‘clearings’ within the forest is applied to both streets and public spaces. The dense, looser arrangement of trees at entry points to the precinct speaks to the forested edges of the site. The more orderly layout of street trees on Main Street and the neighbourhood streets expresses the new urban grid, while clearings on these streets occur in sunny locations and at principal pedestrian crossing points.

In turn, clearings in public open space are framed by groupings of various trees. The large trees of the ‘forest’ snake across the green link, from the Epping Road forested edge to the bushland of the creekline. The Forest Playground maintains a bushland character while the Village Green and School Playground blend active, usable spaces with a generally informal planting arrangement.

LEGEND

- Existing vegetation corridor retained and protected
- Forest Planting
- Neighbourhood Planting
- Main Street Planting
- Neighbourhood Street Planting
- Clearings

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A PLAYABLE FOREST NEIGHBOURHOOD

Ivanhoe will be an open, inclusive and inviting neighbourhood to live in, but it will also be fun, active and healthy.

Play for all ages is proposed from toddler to adult, from formal to informal, from interactive to passive.

The opportunities for play are concentrated along the proposed Green Link. The Village Green playground will be aimed at 6 months - 5yrs, taking advantage of the adjacent Community Hub and excellent visibility across the open space. The forest playground is aimed at 6 yrs + taking advantage of the treed and sloped setting, and creating a nature based forest playground. The grounds associated with and adjacent to the school will be aimed at 12+, with a focus on exercise

In addition to the formal playgrounds, the intent is that the site is peppered with interactive, playable,and whimsical elements.

LEGEND

- 6months - 2yrs
- 2yrs - 5yrs
- 5yrs - 12 yrs
- 12+yrs
- Play for all

6 months to 2 yrs
Crawl
Touch
Walk
Stand

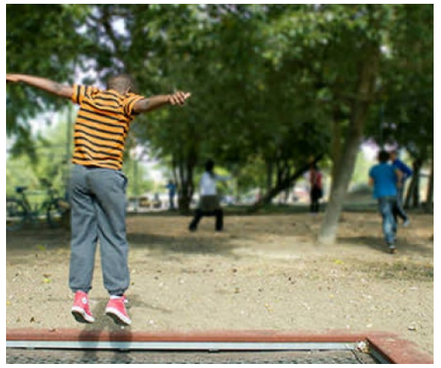



2 yrs to 5 yrs
Step
Crawl
Grasp
Get wet
Ride
Spring
Explore
Learn




5 yrs to 12 yrs
Climb
Swing
Get lost
Collaborate
Chat
Balance
Run
Learn
Dance
Escape






12+ yrs
Play
Run
Join in
Learn
Hang out
Exercise
Plug in
Read
Safe environment




Play for All and Incidental Play
Puzzle
Delight
Surprise
Gather
Perform
Interact
Artistic
Thoughtful







PUBLIC ART
PEOPLE, PLACE AND POETRY

The master plan identifies a series of opportunities and approaches to providing public art ranging from community based art works along the through site green link to iconic major art project in the village centre.

The creative art works will add meaning and vibrancy to the experience of living in, working in this new community.

The artwork should reference both the environmental and the cultural background of the site, and be a combination of integrated art and stand alone pieces.

LEGEND

Major art project at town plaza

Series of smaller art works around the community

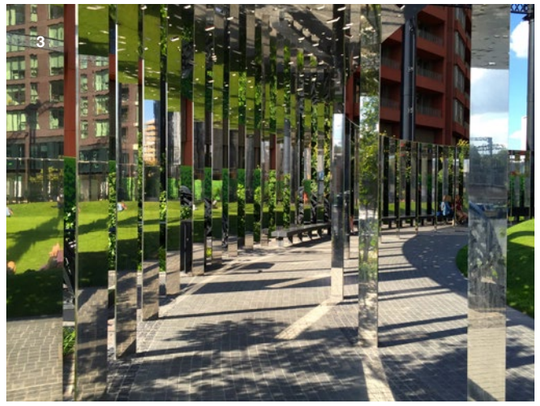
Potential artworks along creek corridor

PUBLIC ART
PEOPLE, PLACE AND POETRY

1/ Furniture as playable art pieces
2/ Historical references - literal
3/ Place making pieces
4/ Interactive and fun pieces
5/ Historical references - embedded


1


2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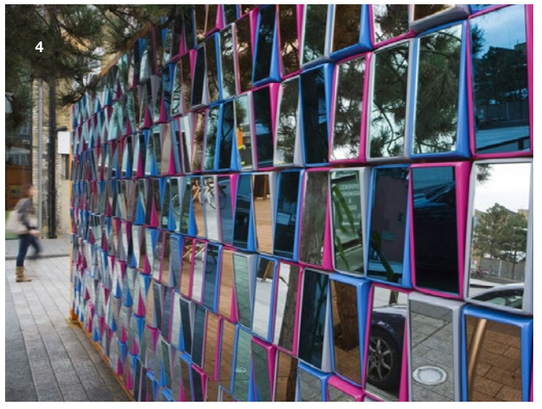
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5

PUBLIC DOMAIN MASTER PLAN

LEGEND

1/ New vehicular and pedestrian link to Herring Road, providing immediate links to Macquarie University, Macquarie Centre and station. The entry is a forest of Melaleuca in paving creating a dynamic entrance to the site.

2/ A new mixed-use Main Street is created through the site as the primary movement spine and the focus for public functions.

3/ The community centre will be a busy, active space that caters for a range of activities from swimming, casual dining to public meetings and entertainment.

4/ The School Garden provides active and passive public spaces adjacent to the school.

5/ The Green Link is a circulation and landscape spine from creekline through the open spaces of the development to the Epping Road bushland buffer.

6/ The Village Green is a place to celebrate the outdoor lifestyle, a large, flexible and recreation reserve for organised events or casual gatherings such as informal sports, picnics and play.

7/ Vehicle and pedestrian bridge across Shrimptons Creek and connection to Lyonpark Road and Macquarie Business Park.

8/ A neighbourhood loop road provides connections around the site.

9/ Shrimptons Creek is an important landscape and recreational spine, connecting Ivanhoe to the Macquarie Centre and to the creek parklands. Rehabilitation of the riparian corridor and duplication of the path system, coupled with improvements to the Epping Road underpass and inclusion of new amenities will dramatically upgrade the creek environs

10/ Mission Australia courtyard and playground.

11/ Neighbourhood Mews provide driveway access to buildings while sensitively interfacing with adjacent bushland and providing open areas for small gatherings.

12/ Communal courtyards provide private sanctuary for residents.

13/ Neighbourhood Gardens provide a series of intimate, informal public spaces.

14/ Forest thresholds form the boundary between the development and its context. Stepped terraces take up the slope and create areas for gathering and individual activities.

15/ Forest playground is a place that celebrates the natural history of the site through play.

16/ Entry clearing celebrates your arrival into the community. Taking advantage of the abundant sunlight in this location, it connects the adjacent plaza, neighbourhood garden, Main Street and Neighbourhood Street.

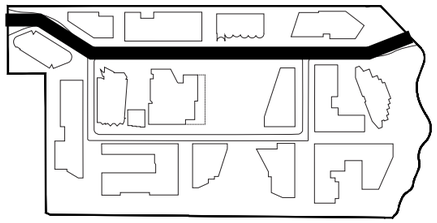
4.3
STREET CHARACTER

—

The streets of the Ivanhoe development are where the daily life of the residents of Ivanhoe will play out. The streets have been designed to allow easy access through and around the neighbourhood while providing generous tree and understorey planting, but also to allow incidental moments to occur. Street furniture will be carefully curated to take advantage of views, adjacent building uses and to allow for conversation, gathering and also individual use.

Main Street will be the heart of the site, a vibrant wide boulevard with generous tree planting, bordered by school, aged care facilities, community centre and the Village Green.

The Neighbourhood Streets are smaller in scale with smaller tree planting and pockets of street furniture.



MAIN STREET

VISION

Main Street is the main connecting road, to both the north and south, to the wider Macquarie Park area. It will also be the high street of Ivanhoe, where the retail, community and public open space are concentrated. Accordingly, Main Street will have a civic character: broad footpaths, large canopy trees, public seating and formalised pedestrian crossings. The quality of paving and furnishings will reflect this civic and social function.

The landscape character of the street will change at the site entries, at Herring Road and at the bridge crossing at Shrimptons Creek. Street tree planting will no longer be the single species of the civic avenue but a mixture of trees, looser in their arrangement, as a point of reference to the public landscape of Macquarie Park and where forest meets neighbourhood. Broad pathways through the forest planting at Herring Road will bring the pedestrian to an opening in the canopy at the top of Main Street. Here, a well detailed pavement and rich understorey planting will foreground the Main Street avenue.

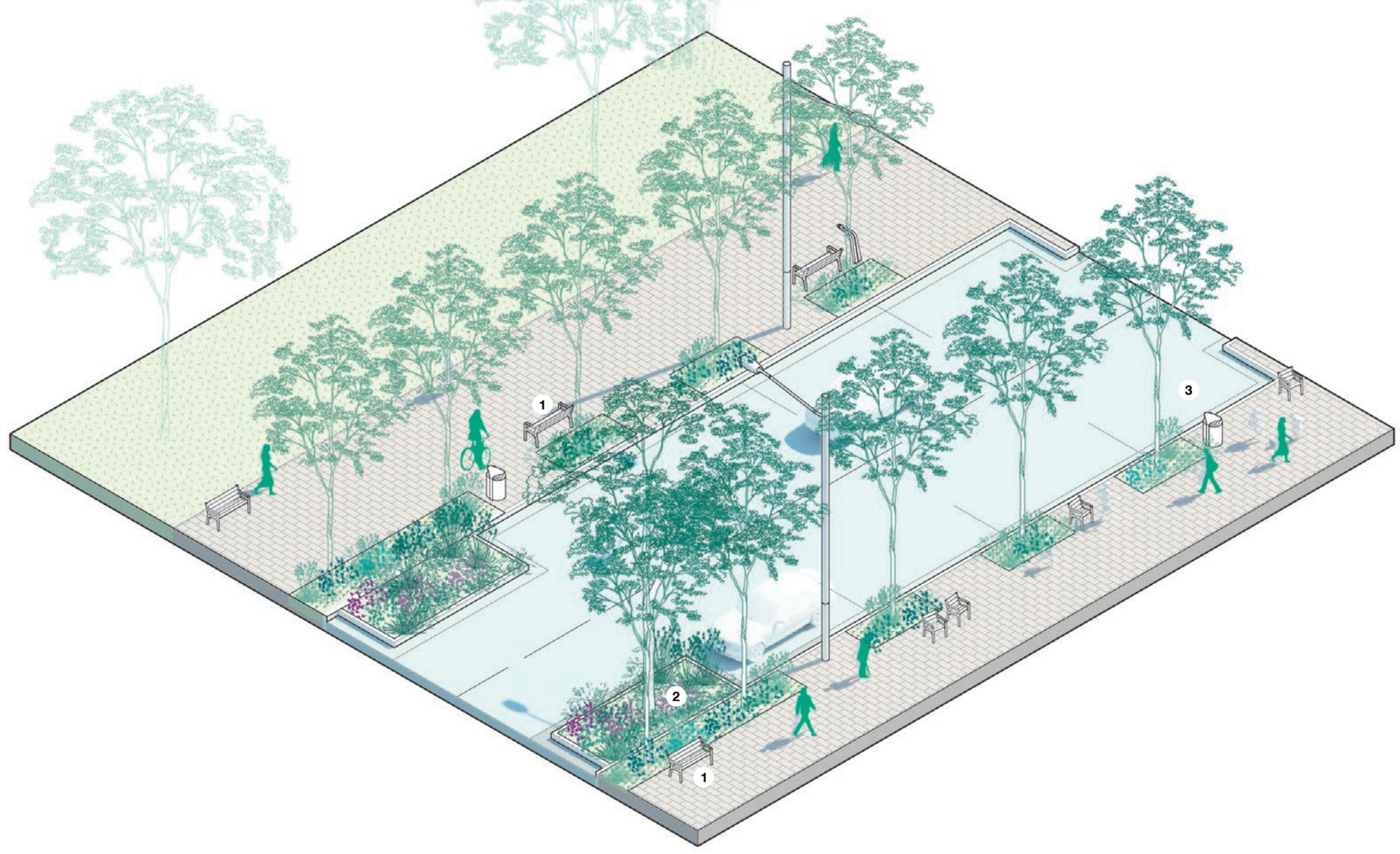
At the bottom of Main Street the ‘forested’ landscape of Shrimptons Creek will migrate on to the street, as the urban order meeting the bush as the new bridge connects Main Street to the business zone to the south east.

Function + Program:

The principal circulation spine of the development, serving residential buildings, aged care facilities, the school, the community centre and the Village Green.

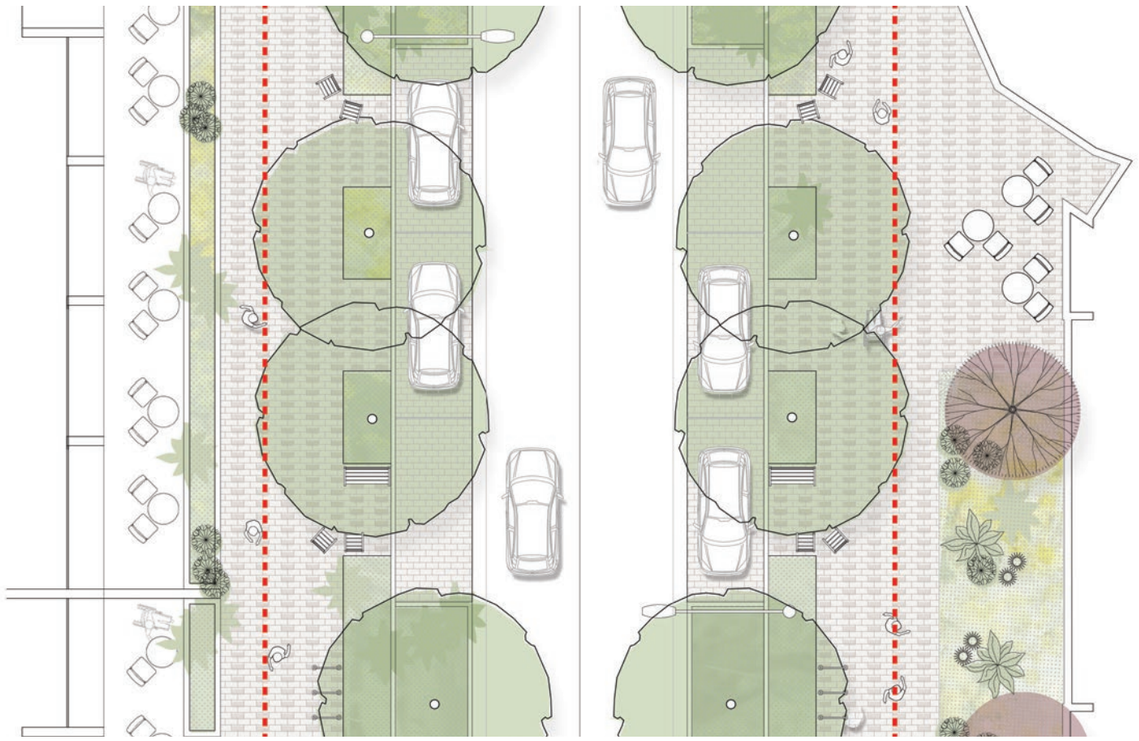
A shared path is proposed along the Main Street to provide a cycling link through the development.

Street landscaping and a series of Neighbourhood Gardens will add to the amenity and variety of what will be a busy circulation and social space.



MAIN STREET
1/ Street furniture including seats, lighting, bicycle parking
2/ Generous planting frame the street and break up parking bays
3/ Disabled parking located with unobstructed access to the footpath

TYPICAL SECTIONS & PLAN

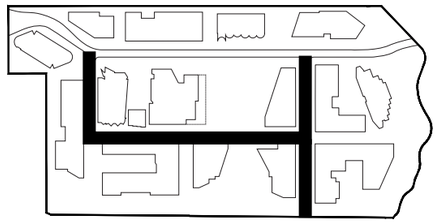


CHARACTER, MATERIALITY & PLANT PALETTE

BENCHMARK IMAGES
1/ Croydon South End, London. HASSELL
2/ Carter Lane Gardens, London
3/ Tree lined boulevard, Paris

PLANT PALETTE
1/ Betula nigra
2/ Elaeocarpus reticulatus
3/ Eucalyptus saligna
4/ Ficus hillii
5/ Ficus microcarpa
6/ Melaleuca quinquenervia

MATERIALITY
1/ Paving
2/ Paving
3/ Stairs
4/ Furniture
5/ Furniture
6/ Furniture



NEIGHBOURHOOD STREET

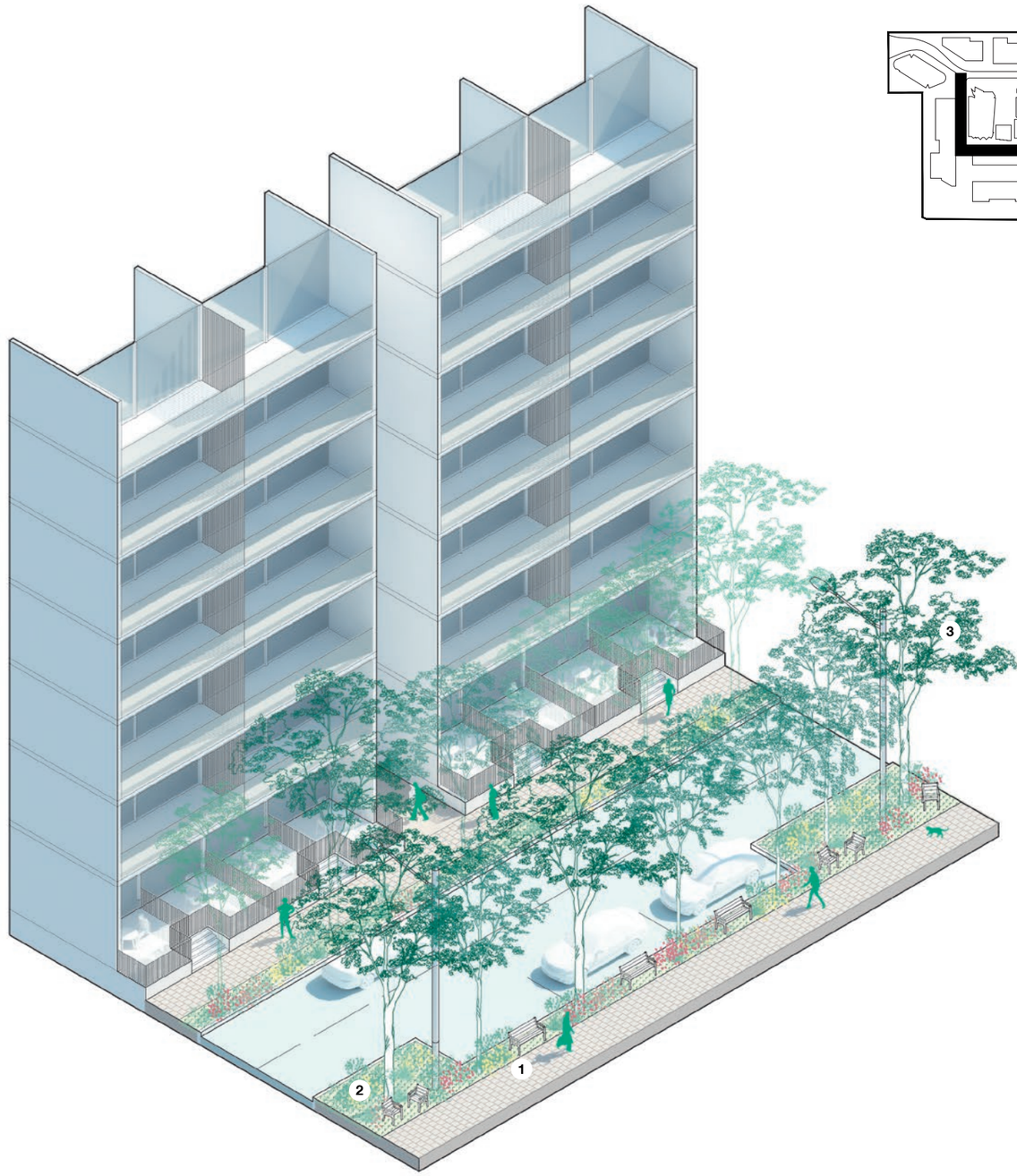
VISION

The neighbourhood streets are smaller in scale than main street, tieing the development together. They are residential in character with extensive understorey planting and a variety of tree sizes and species.

As the streets meet the forest thresholds, the tree planting will become less regular and reflect the neighbourhood meeting forest theme.

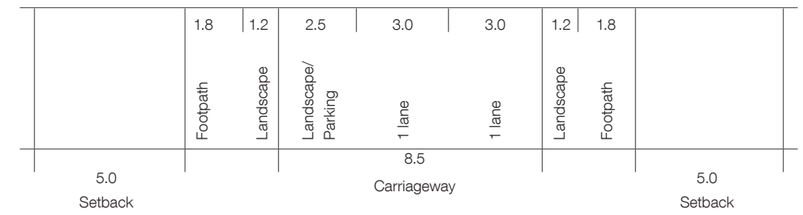
Function + Program:

The streets form an internal loop in the development and links from Epping Road, Shrimptons Creek and the Green Link. Street furniture is located to encourage lingering on the street, meeting friends and gathering.

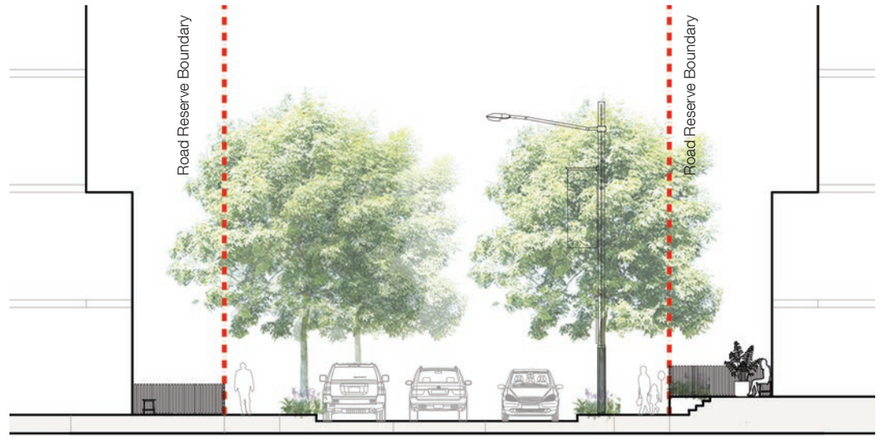


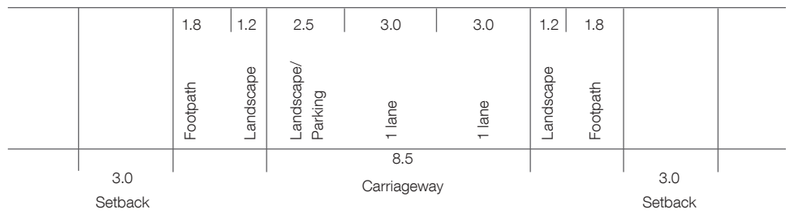
NEIGHBOURHOOD STREET
1/ Street furniture enveloped by planting
2/ Generous planting frame the street and break up parking bays
3/ Mix of tree heights and forms

TYPICAL SECTIONS & PLAN

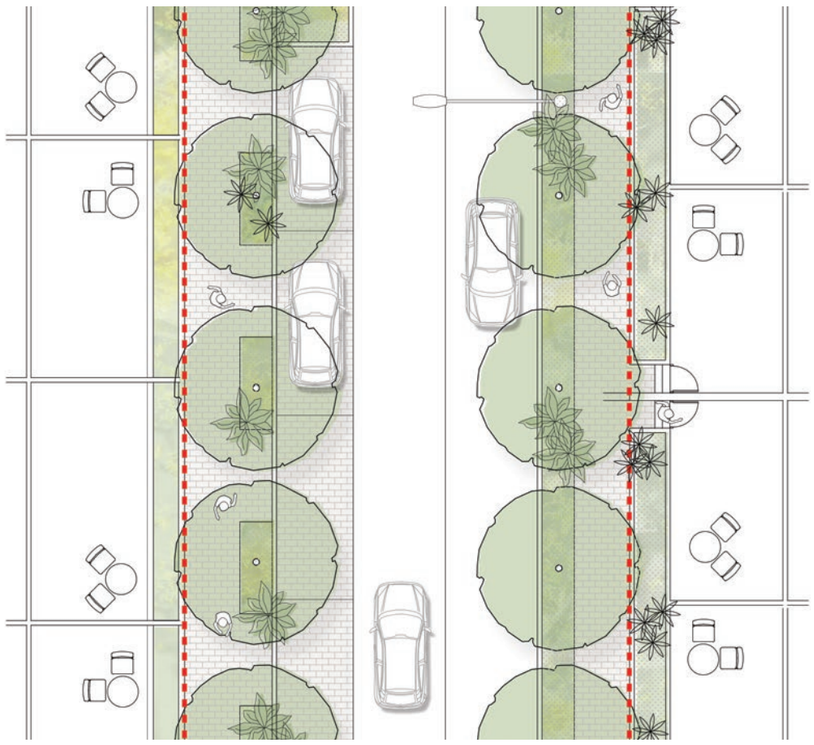


14.5m
Road Reserve
(May vary along the length of the street)





14.5m
Road Reserve
(May vary along the length of the street)

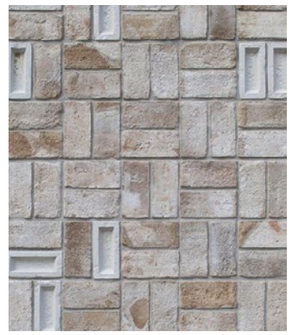


* TEXT & SECTION TO BE ADDED

CHARACTER, MATERIALITY & PLANT PALETTE

BENCHMARK IMAGES
1/ St Andrews, Bromley by Bow Townshend Landscape Architects
2/ St Andrews, Bromley by Bow Townshend Landscape Architects
3/ Brooklyn Brownstones, New York

PLANT PALETTE
1/ Elaeocarpus reticulatus
2/ Elaeocarpus reticulatus flower
3/ Pittosporum undulatum
4/ Pittosporum undulatum flower
5/ Waterhousia floribunda
6/ Waterhousia floribunda flower



MATERIALITY
1/ Paving
2/ Paving
3/ Facade
4/ Paving
5/ Furniture
6/ Furniture

NEIGHBOURHOOD MEWS

VISION

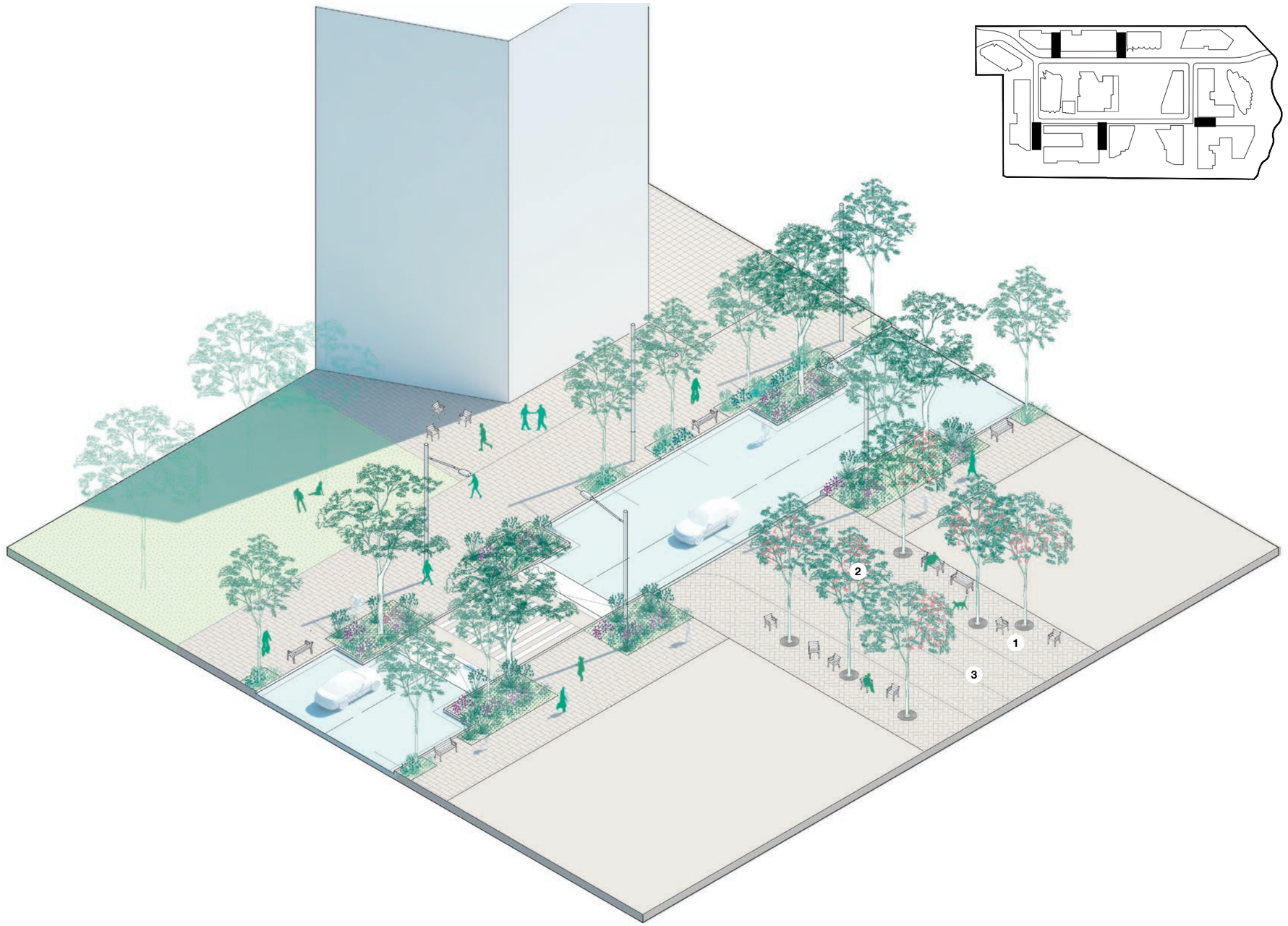
The Neighbourhood Mews are small scale plaza's located between buildings, with extensive tree planting, creating a human scaled, pedestrian environment. Tree planting and street furniture will be informally located to give precedence to pedestrian use over vehicular.

These are the spaces for back street kick about and small neighbourhood gatherings and events.

Function + Program:

The Neighbourhood Mews are located off both Main Street and the Neighbourhood Streets and form the space between a number of the buildings across the site. They are located as driveway access to parking basements, however are designed as shared use spaces, small plazas with pedestrian priority.

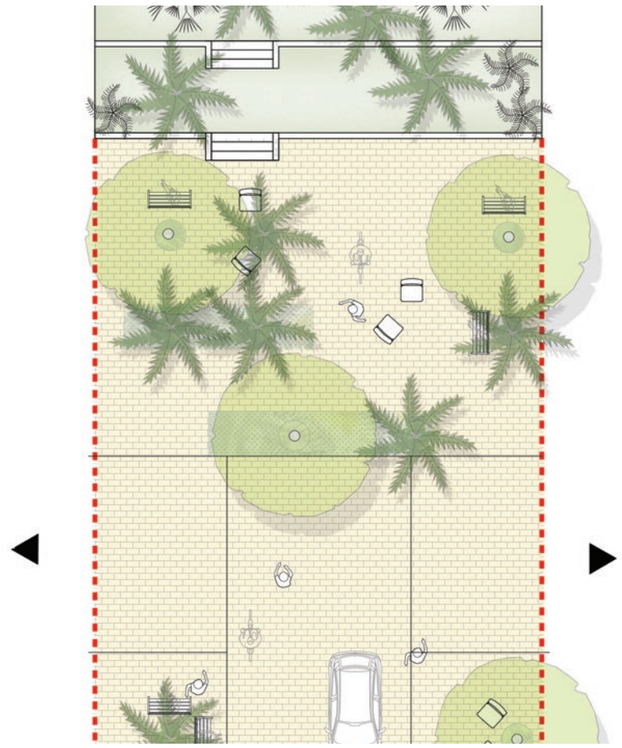
Each mews is a flush paved surface, with tree planting and street furniture located to define and vehicular paths of travel.



Neighbourhood Mews
1/ Street furniture defining edge of vehicular road
2/ Generous tree planting frame the street and break up parkign bays
3/ Flush paved road

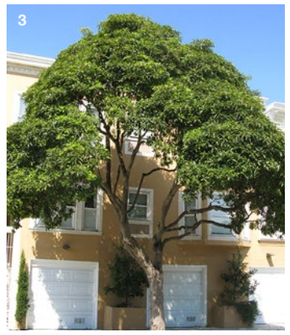
14.5m
Road Reserve
(May vary along the length of the street)

TYPICAL SECTIONS & PLAN

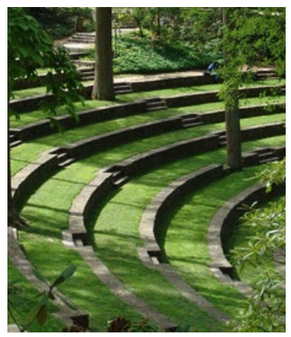


CHARACTER, MATERIALITY & PLANT PALETTE

BENCHMARK IMAGES
1/ Kensington Street, Chippendale
2/ New Road, Brighton, UK



PLANT PALETTE
1/ Howea forsteriana
2/ Livistona australis
3/ Pittosporum undulatum
4/ Pittosporum undulatum flower
5/ Tristaniopsis laurina
6/ Tristaniopsis laurina flower



MATERIALITY
1/ Paving
2/ Paving
3/ Facade
4/ Bleachers
5/ Paving
6/ Furniture

4.4
PUBLIC OPEN SPACE

The Ivanhoe development includes a range of public spaces designed to cater to the diverse needs of the anticipated residents. This includes a wide spectrum of ages and income groupings, household and family type.

The largest contiguous open space is the Shrimptons Creek corridor and parklands adjacent to the site. This zone will be significantly upgraded in works that will complement the City of Ryde's proposed creek master plan works. These works extend from Ivanhoe to Waterloo Road.

The Green Link that extends from the creek corridor across the Ivanhoe site to the Epping Road buffer connects three major open space areas: The School Garden, Village Green and Forest Playground.

A series of smaller, more intimate Neighbourhood Gardens will add to the range of local open spaces, as will the Forest Thresholds which provide landscaped connections at the end of the Neighbourhood Mews/Driveway zones between residential buildings.

The community centre forecourt adds a well detailed green urban space to the public domain. This zone extends to a series of landscapes terraces stepping down to the Village Green.

VILLAGE GREEN

VISION

A recreational space where connections are made; the Village Green is sited between Main Street and the parallel neighbourhood street. It is surrounded by active uses with the community centre and swimming pool on its northwestern edge and the retail zone on the Green Link, on the southeastern side. A vibrant, activate and sunny central space with a diverse landscape, terraced edges, a play space and open green field.

Character:

At the centre of the green is a large open lawn with a raised edges covered in trees. Planting and topography enclose the space. Informal tree planting creates outdoor rooms and sheltered spaces for relaxation and play.

Function + Program:

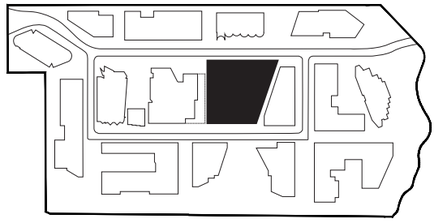
A place where people come to dine or picnic along the edges, recline on the green bank or people watch under the summer sun. The Village Green is a simple space for casual gathering or programmed events. Landscaped terraces and grouped trees encircle the central lawn and the playspace. Pathways weave through the landscape providing access to the lawn, the playground and across to the Green Link. The terrace and bleacher steps provide broad sitting areas overlooking the green where outdoor dining or picnics might take place.

Topography

Levels work to provide a stepped / terraced enclosure to the space and amphitheatre

Size + Scale

Approximately 3800m^2 plus approximately 900m^2 of accessible and green areas of future community centre



VILLAGE GREEN

LEGEND

1/ Village Green, a flat circular lawn for small events, gatherings and kicking a ball
2/Seasonal tree planting surrounding the Village Green
3/Accessible path
4/Village Green level entry to Swimming Pool
5/Active landscape terraces, including seating and games (ping pong, chess)
6/Bleacher steps into Village Green
7/Outdoor dining seating on edge of green
8/Playground

BATESSMART. + HASSELL

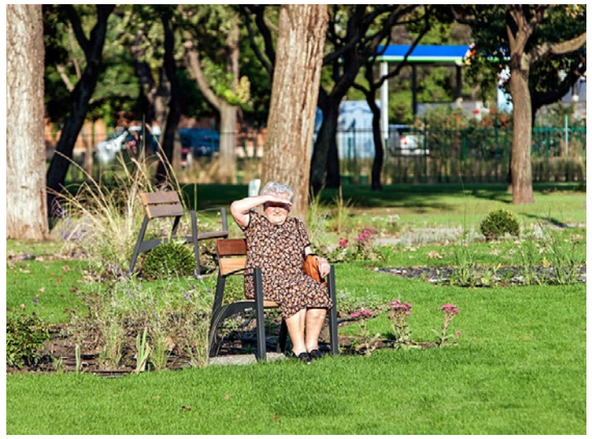
N NTS

AA/ NORTH SOUTH SECTION

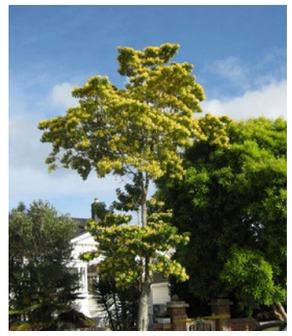
BB/ EAST WEST SECTION

CC/ EAST WEST SECTION

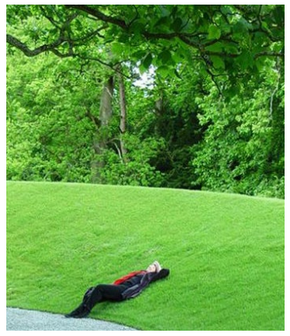
CHARACTER, MATERIALITY & PLANT PALETTE

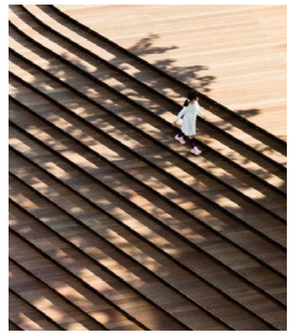


BENCHMARK IMAGES
1/ Teleki Square, Budapest
2/ Darling Harbour, Sydney
3/ Granary Square, Kings Cross, London



PLANT PALETTE
1/ Waterhousia floribunda
2/ Brachychiton discolour
3/ Eucalyptus salignus
4/ Hymenosporum flavum
5/ Livistona australis
6/ Stenocarpus sinuatus





MATERIALITY
1/ Lawn
2/ Bleachers
3/ Furniture
4/ Stairs
5/ Paving
6/ Paving

FOREST PLAYGROUND

VISION

A nature based playground aimed at 5yrs old and upwards, embedded into the natural history of the site. It will be a focus for the children of Ivanhoe, a place to be proud of and once that will be known throughout Ryde as the playground to come to for excitement, as well as the chance to hang out with friends.

Character:

The playground will be nature based, with timber materials, using a mixture of reclaimed materials and new pieces. The playground is set amongst existing trees and celebrates the steep topology of the site.

Function + Program:

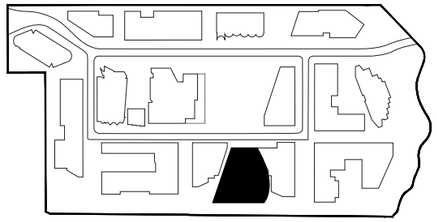
A Playground for 5yrs and upwards.

Topography

The playground is accessible from the neighbourhood street. It will be designed to work with the proposed levels of surrounding buildings and celebrate changes in level through playable items, sloping lawns and ramped footpaths. The playground slops steeply to Epping Road and this will be achieved through gentle amphitheatre steps that wind through the existing trees.

Size + Scale

Approximately 3900m^2



FOREST PLAYGROUND

LEGEND

1/The Forest playground 5-12 years play space
2/Elements of natural play, “spilling” into surrounding landscape, creating opportunities for exploration and discovery suitable for 12+ years
3/ Elevated sky-net play sensitively integrated with existing ECC corridor
4/ Vertical play elements such as rock-climbing wall and handball wall
5/ Connection from playground to Mission Australia
6/ Mission Australia garden and playground

N
NTS

AA/ NORTH-SOUTH ELEVATION

BB/ EAST-WEST SECTION

CHARACTER, MATERIALITY & PLANT PALETTE



BENCHMARK IMAGES
1/ Adelaide Zoo Nature Play Space, Wax Design
2/ Adelaide Zoo Nature Play Space, Wax Design
3/ Cranbourne Gardens, Victoria. Taylor Culity Lethealan



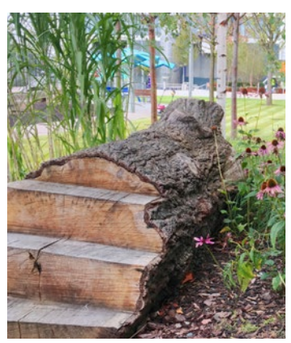



PLANT PALETTE
1/ Eucalyptus salignus
2/ Melaleuca leucadendra
3/ Pincushion Protea

4/ Acacia pycnantha
5/ Blechnum nudum
6/ Xanthorrhoea glauca





MATERIALITY
1/ Furniture
2/ Gabion
3/ Bleachers

4/ Play equipment
5/ Play equipment
6/ Furniture

SCHOOL GARDEN AND PLAYGROUND

VISION

A vibrant active play and gathering area associate with the proposed school and child care centre. The area will offer the opportunities for organised sport, individual play, gathering areas and quieter garden moments associated with the child care centre.

Character:

Vibrant, colourful and educational. The space is intersected by the green link, tying the space into the wider public space network, both on site and beyond.

Function + Program:

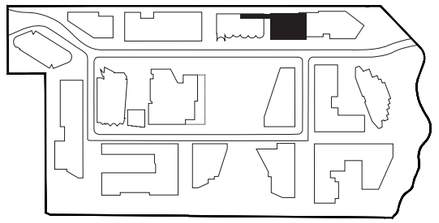
An active play zone for exercise, team sports and school gatherings

Topography

The playground will be relatively flat, with a steps down into the school play zone from the Green Link.

Size + Scale

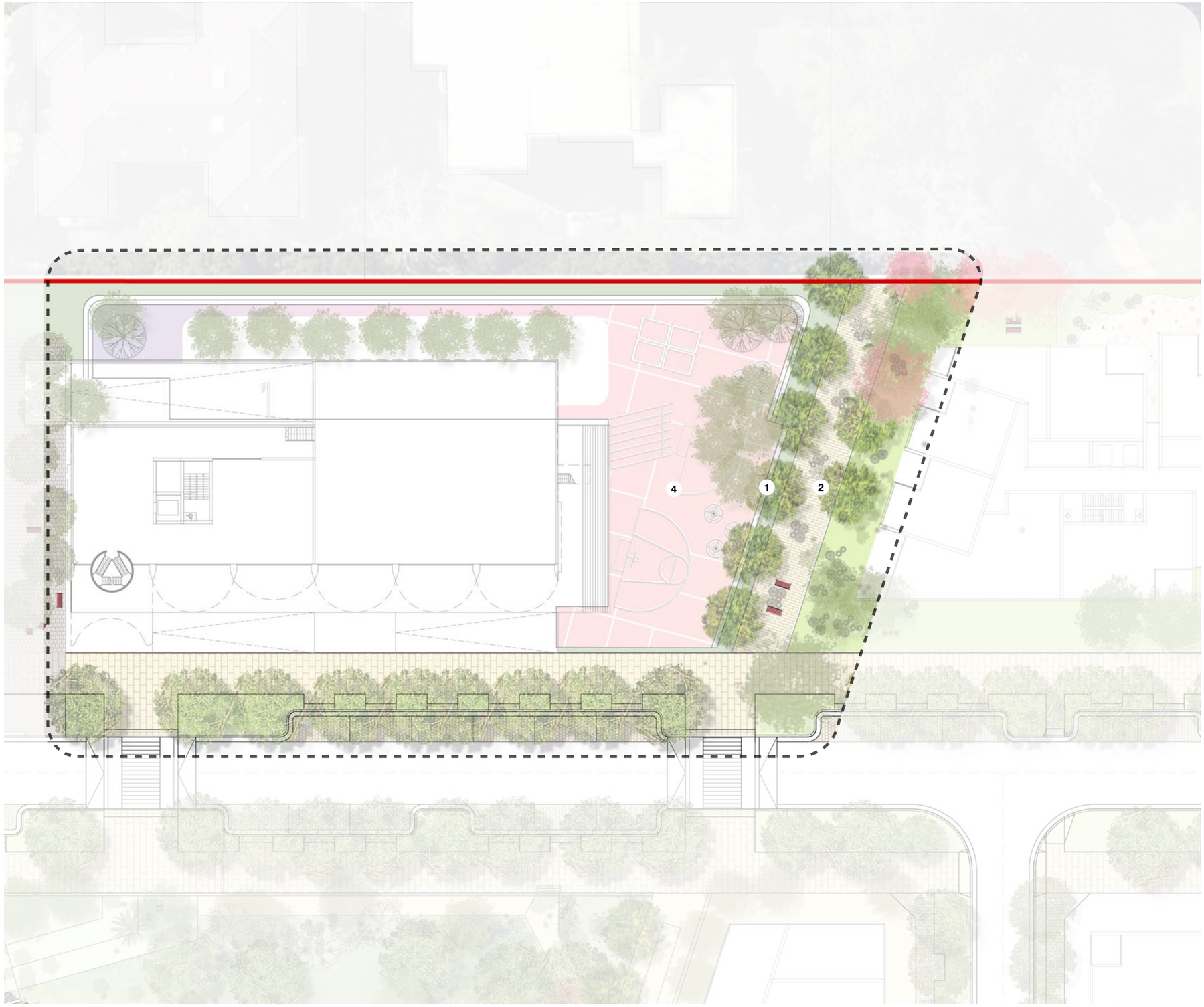
Approximately 1800m^2



SCHOOL GARDEN

LEGEND

1/School garden area
2/Green Link
4/Active play area



NTS
N

CHARACTER, MATERIALITY & PLANT PALETTE



BENCHMARK IMAGES
1/ Lemvig Skatepark
2/ Kathleen Grimm School, New York
3/ Monash University, Taylor Culity Lethlean






PLANT PALETTE
1/ Utmus parvifolia ‘Todd’
2/ Eucalyptus salignus
3/ Acer platanoides ‘Crimson King’
4/ Philodendron ‘Xanadu’
5/ Rhaphiolepis ‘Oriental Pearl’
6/ Iris sibirica






MATERIALITY
1/ Basketball court pattern
2/ Paving
3/ Bleachers
4/ Paving
5/ Lawn
6/ Furniture

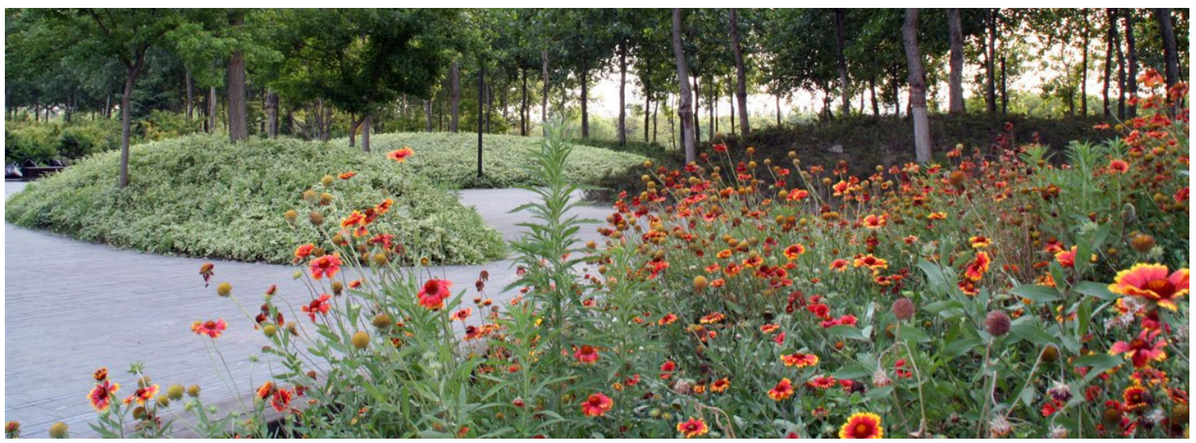
NEIGHBOURHOOD GARDENS

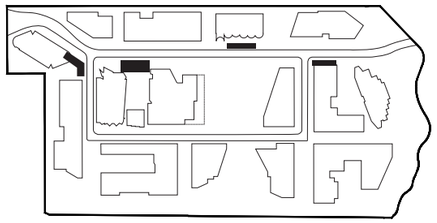
VISION

The Neighbourhood Gardens are located adjacent to the streets, and offer the opportunity to leave the street and sit under the shade of a tree, reading a book amongst intricate and colourful planting.

Character:

Relaxing, colourful and seasonal. Spaces and furniture created to allow individuals to sit quietly, or small groups to gather and chat





INDICATIVE PLAN

LEGEND

1/Paved area with fixed furniture seating
2/Informal playable elements
3/Lawn with extensive tree planting

N
NTS

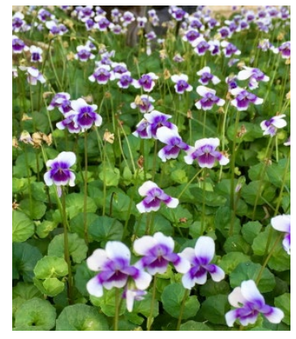
CHARACTER, MATERIALITY & PLANT PALETTE



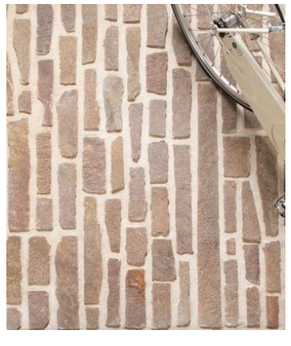
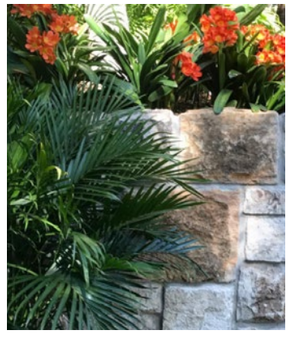
BENCHMARK IMAGES
1/ Sorrento Garden, Fiona Brokhoff
2/ The Navy Yard Central Green, Philadelphia
3/ Birchbone Garden, Scotland

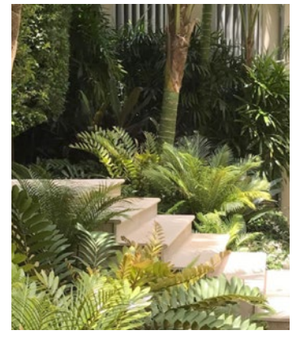




PLANT PALETTE
1/ Glesitsia tricanthos var intermis
2/ Cercis canadensis
3/ Ficus pumila ‘Minima’
4/ Rhaphiolepis ‘Oriental Pearl’
5/ Plectranthus argentatus silver shield
6/ Viola hederacea




MATERIALITY
1/ Paving
2/ Paving
3/ Retaining wall
4/ Paving
5/ Stairs
6/ Furniture

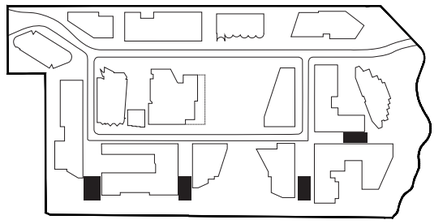
FOREST THRESHOLDS

VISION

Located where the Neighbourhood meets forest, the forest thresholds also need to account for large changes in topography and this is celebrated through large stepped bleachers and amphitheatre steps.

Character:

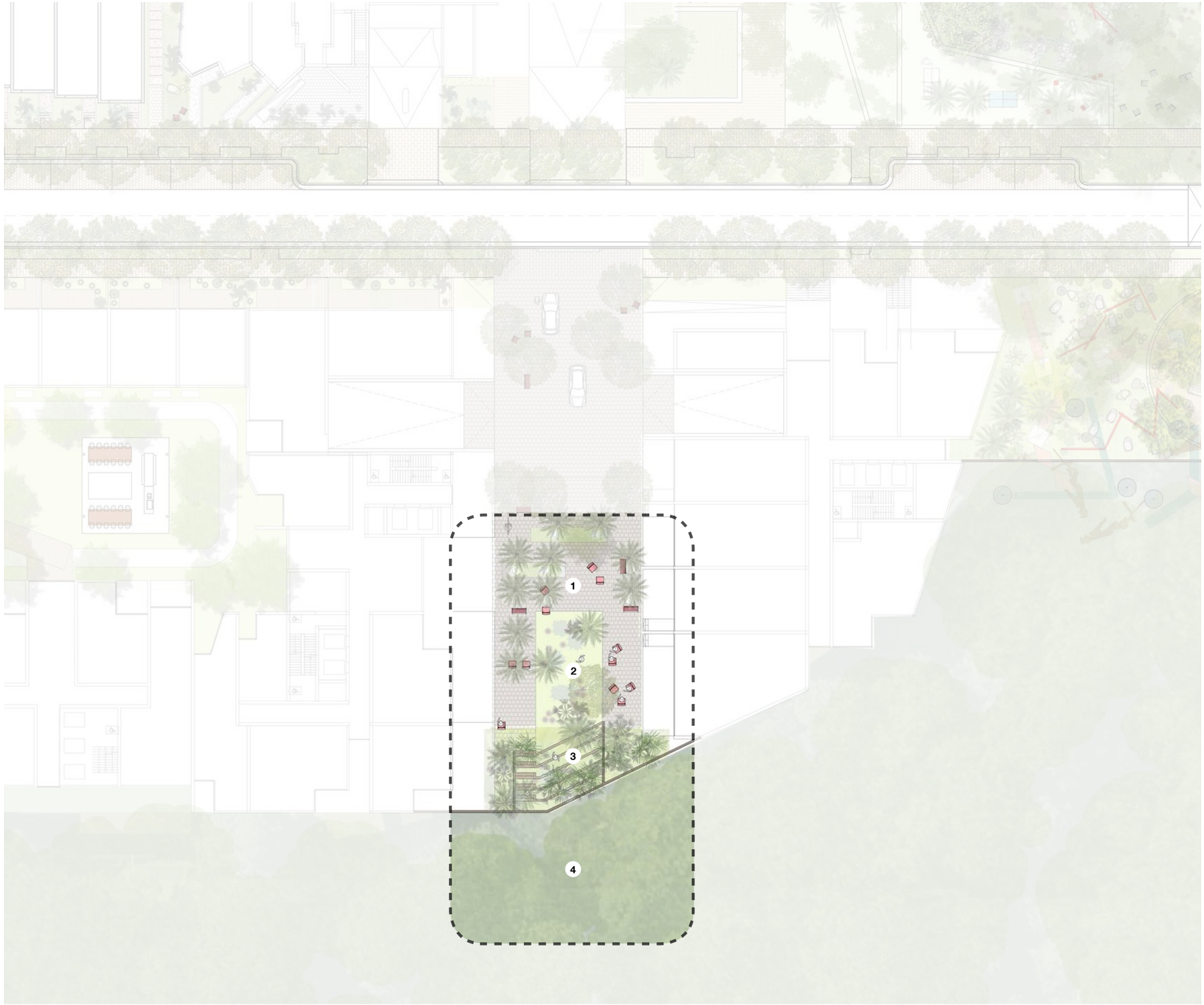
Forested spaces, forming amphitheatres at the end of streets as a terminus to a vista. Informal seating is located under tree planting



INDICATIVE PLAN

LEGEND

1/Paved area with fixed furniture seating
2/ Community lawn
3/Step lawn steps and amphitheatre
4/Retaining walls located to protect and retain existing vegetation



N
NTS

CHARACTER, MATERIALITY & PLANT PALETTE



BENCHMARK IMAGES
1/ Gustave & Leonard Hentsch Park, Geneva
2/ Musk Cottage, Flinders New Zealand
3/ Victoria Park, Sydney

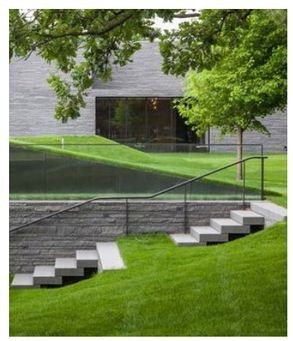




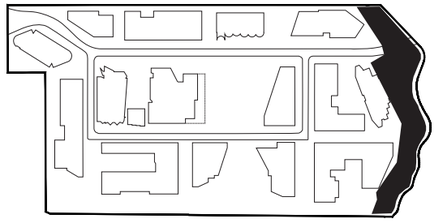

PLANT PALETTE
1/ Pittosporum undulatum
2/ Allocasuarina torulosa
3/ Macrozamia communis
4/ Livistonia australis
5/ Eucalyptus salignus
6/ Tristaniopsis laurina








MATERIALITY
1/ Bleachers
2/ Pavings
3/ Furniture
4/ Furniture
5/ Stairs
6/ Lawn



SHRIMPTONS CREEK

VISION

The Shrimpton Creek landscape acts as the threshold between the development's built form and existing riparian zone. Multiple access points facilitate the filtering of people from the development down to the linear creek edge. A primary, linear path provides an edge to a series of raingardens that are intended to not only treat surface runoff from the development before entering creek but also provide a physical barrier between private and public space without the use of a fence. This path is juxtaposed against a secondary meandering boardwalk that weaves through the landscape in response to trees, slope, and experience of the water's edge.

Character:

River-flat eucalypt forest and riparian zone. The juxtaposition of strong circulation forms. Meandering landscape with Informal seating and social spaces along Shrimptons Creek. Unique and animated use of redundant space from the bridge construction. Restrained material palette.

INDICATIVE PLAN

LEGEND

1/ Boardwalk structure running in the middle of the existing concrete culvert
2/ Concrete linear path. Potential separation between private and public landscape
3/ The wetland will collect the site water and clean it before discharging into Shrimptons Creek. It will also act as a buffer between the buildings and the public opens space.
4/Sinuous deck along riparian corridor with lookout and picnic areas
5/Access staircase from The Neighbourhood Mews
6/Neighbourhood Mews as shared zone paved and landscaped providing vehicle access to basement car parks and adjacent dwellings.
7/Existing major trees to be retained
8/Raingarden deck and multifunctional space
9/Skate Park utilising the space under the bridge
10/Accessible shared access ramp to Shrimptons Creek
11/Lookout
12/Sinuous pedestrian bridge under road bridge
13/All ages ability exercise stations

NTS
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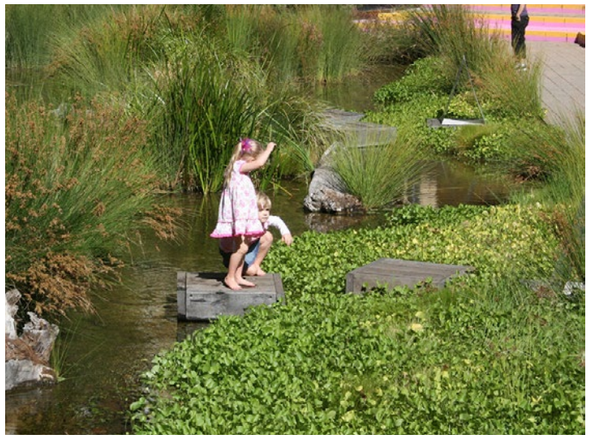
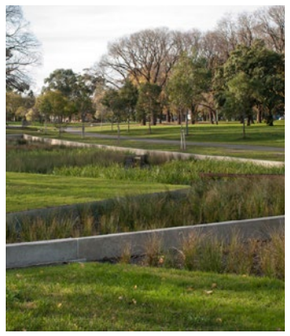
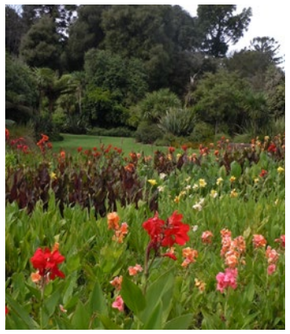
TYPICAL SECTION & PLAN

CHARACTER, MATERIALITY & PLANT PALETTE



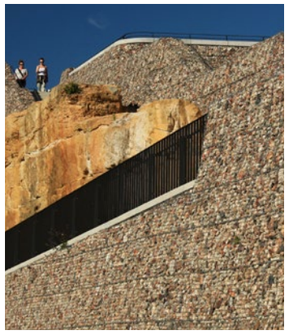
BENCHMARK IMAGES
1/ Perth Cultural Centre, Josh Byrne & Associates
2/Velenje City Center Pedestrian Zone Promenada, Enota
3/Ballast Point Park, McGregor Coxall

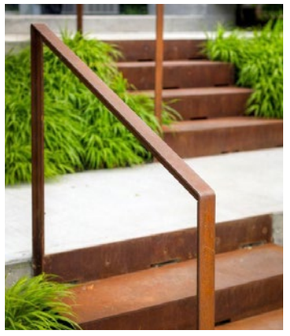





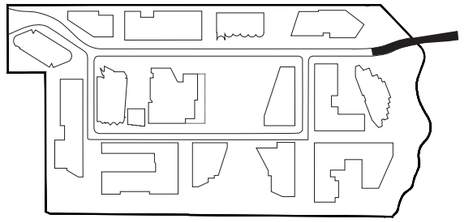
PLANT PALETTE
1/2/3/ Native wetland planting
4/5/6/ Flowering wetland planting





MATERIALITY
1/ Paving
2/ Walls
3/ Walls
4/ Boardwalks
5/ Parapets
6/ Stairs

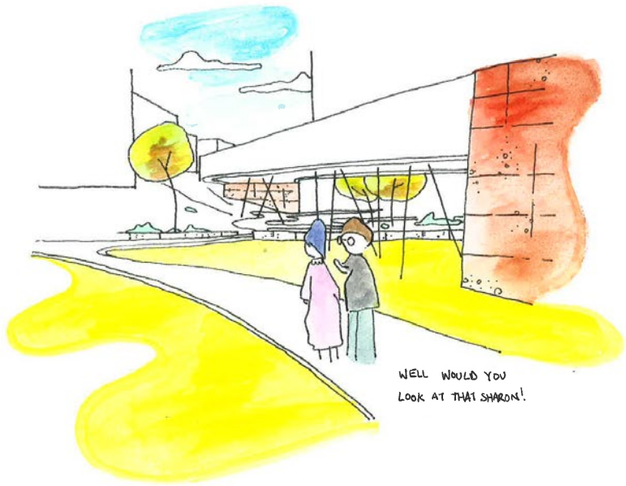


SHRIMPTONS CREEK BRIDGE

VISION

Using a restrained material palette of corten steel and gabion walls, the bridge will provide passage across Shrimptons Creek for pedestrians and cyclists, both at road level and via boardwalk below the bridge, allowing diverse experiences of transition. Underneath the bridge will be activated by a new skate park that is integrated into the bridge abutment and circulation network.

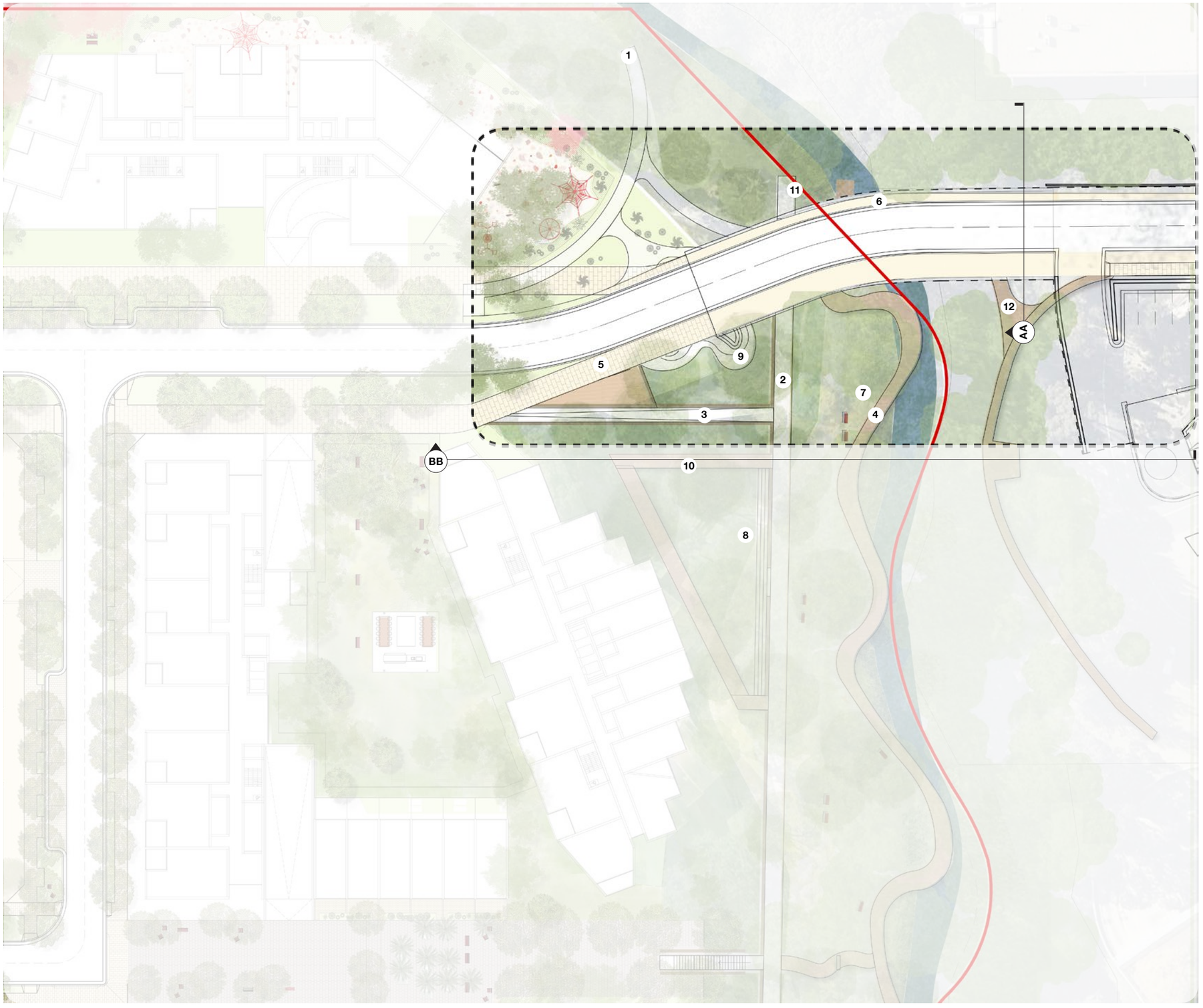
INSPIRATIONAL SKETCHES FOR SHRIMPTONS CREEK BRIDGE



INDICATIVE PLAN

LEGEND

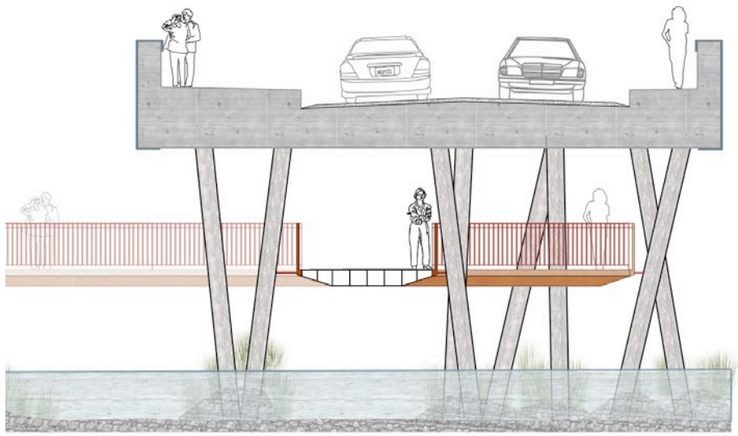
1/ Access to Shrimptons Creek parklands
2/ Concrete linear path. Potential separation between private and public landscape
3/Shared path access to Shrimptons Creek parklands
4/Sinuous deck along riparian corridor with lookout and picnic areas
5/Shared path along Road Bridge
6/Footpath along Road Bridge
7/Existing major trees to be retained
8/Raingarden deck and multifunctional space
9/Skate Park utilising the space under the bridge
10/Deck
11/Lookout
12/Sinuous pedestrian bridge under road bridge



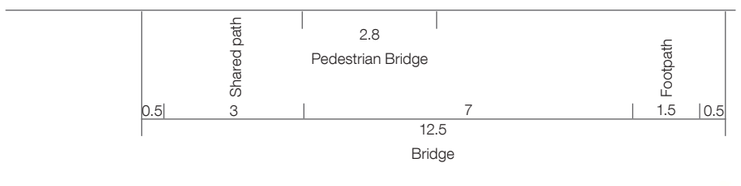
BATESSMART. + HASSELL

N NTS

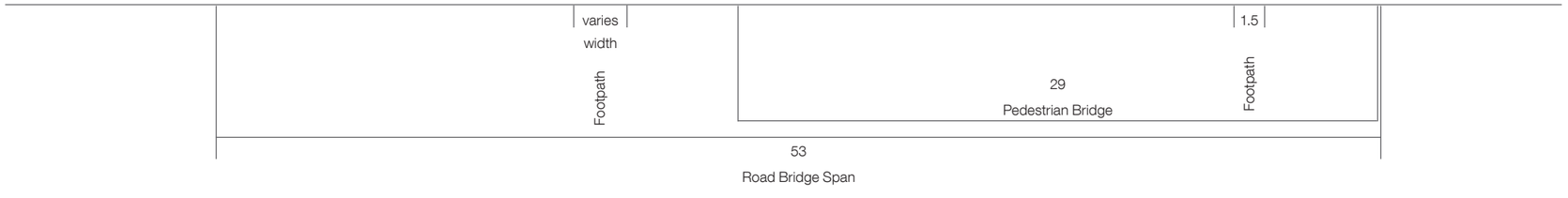
TYPICAL SECTION & PLAN



AA/ CROSS BRIDGE SECTION

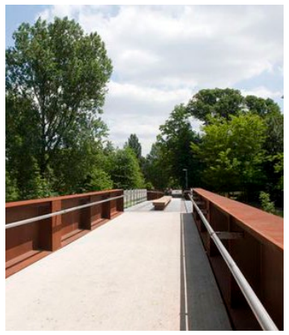


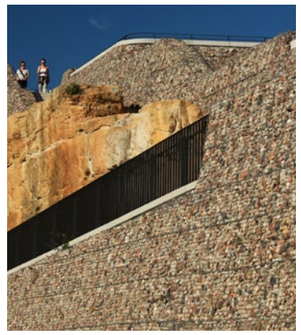
BB/ ELEVATION BRIDGE SECTION



BRIDGE ROAD
CHARACTER & MATERIALITY

BENCHMARK IMAGES
1/ Les Corts Skate Park,Barcelona
2/Mona Vale Skate Park, Sydney
3/Underpass Park, Toronto





MATERIALITY
1/Corten Balustardes
2/Gabion walls

All computer generated images / artists impressions have been provided for illustrative purpose only, and are subject to authority approval

5.0
BUILT FORM

—

Ivanhoe will set a new Australian benchmark for a socially diverse, mixed tenure, master planned community. The Master Plan achieves density with a mix of housing and architectural typologies. These include town houses, mews terraces, studios, dual keys and independent living units, maisonette, ground floor terraces, as well as typical apartment typologies.

—

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5.1 MASTERPLAN

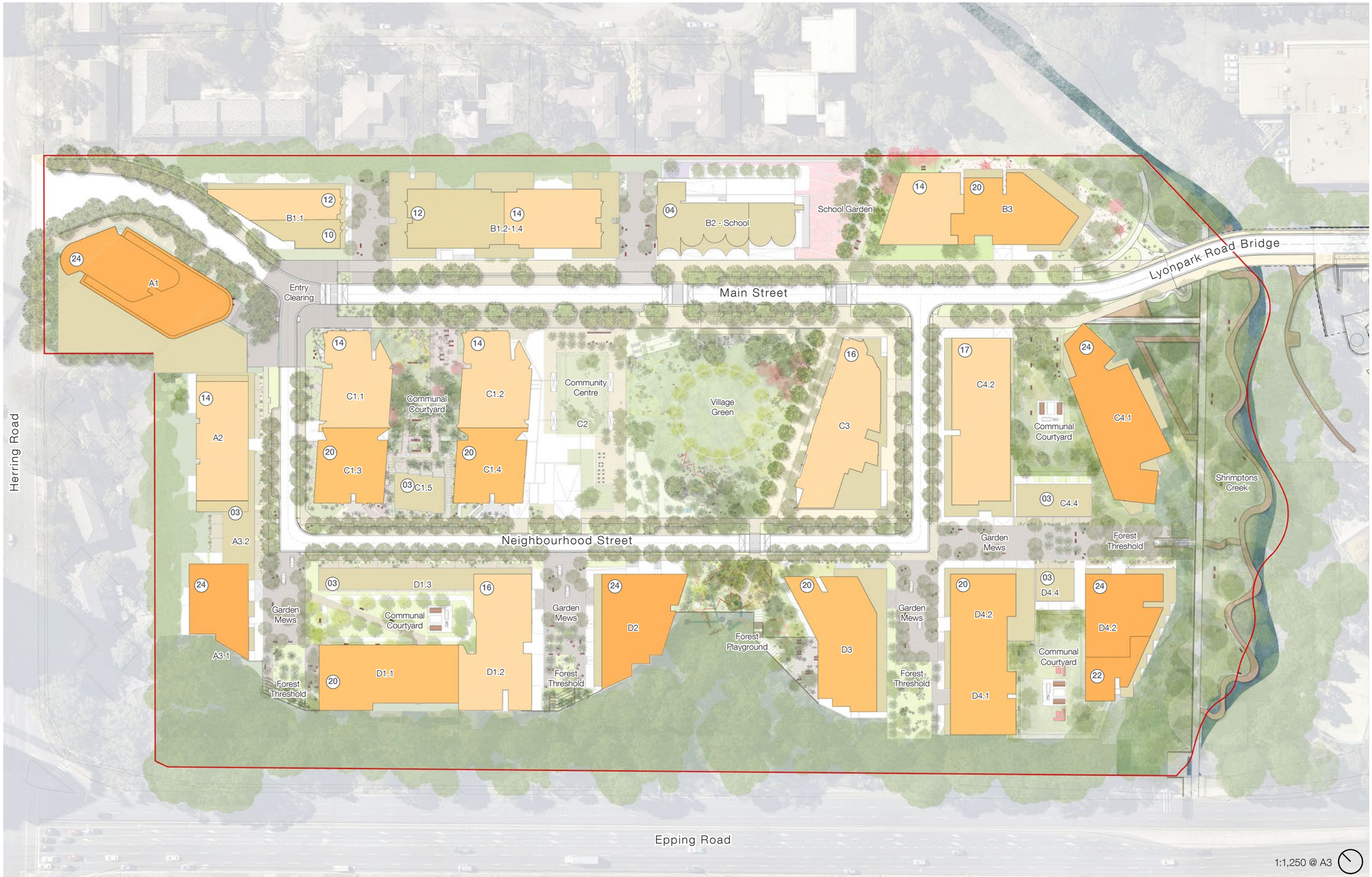
The masterplan is designed to celebrate the site's existing landscape features with a diagonal sequence of public open spaces connecting the turpentine forest along Epping Road with the public open space on Shrimptons Creek.

A regular grid of residential buildings step down the steep hillside. Buildings are generally rectangular, with angled building forms fronting the key public open spaces.

At the top of Main Street, building A1 provides a gateway form to reinforce the primary entrance to the site.

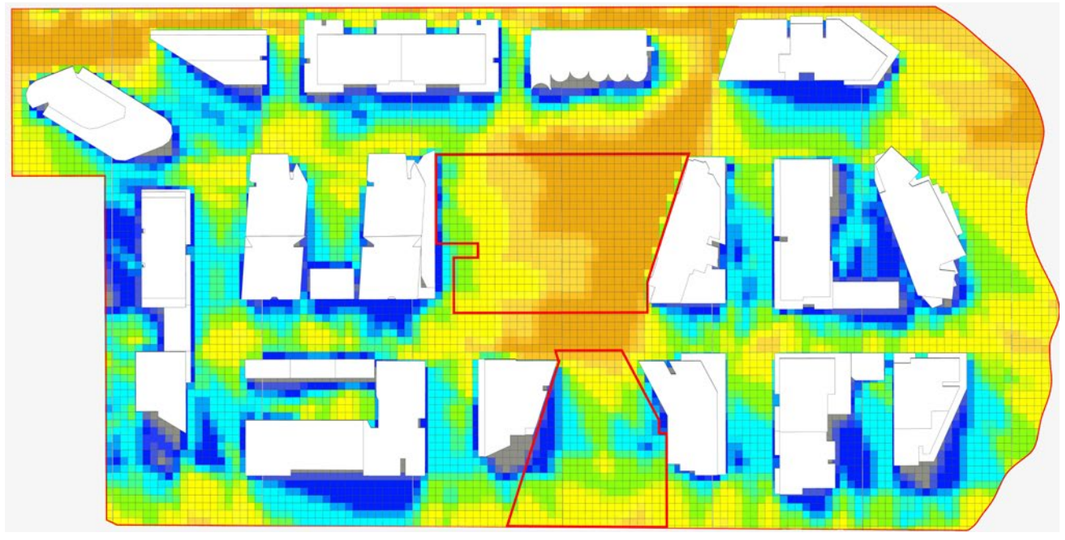
At the bottom of the hill, buildings along the winding edge of Shrimptons Creek are proposed in fragmented forms, breaking down the formality of the street grid at the interface with the open space corridor.

Building heights are generally in accordance with the LEP height planes, with all height exceedances located to avoid an additional overshadowing on surrounding residential properies..


Herring Road
Main Street
Lyonpark Road Bridge
Neighbourhood Street
Epping Road
Entry Clearing
B1.1
B1.2-1.4
B2 - School
School Garden
B3
A1
A2
A3.1
A3.2
C1.1
C1.2
C1.3
C1.4
C1.5
C2
C3
C4.1
C4.2
C4.4
D1.1
D1.2
D1.3
D2
D3
D4.1
D4.2
D4.4
Community Centre
Village Green
Communal Courtyard
Garden Mews
Forest Threshold
Forest Playground
Shrimptons Creek
1:1,250 @ A3

SEPP65 Principle 3: Density

Good design achieves a high level of amenity for residents and each apartment, resulting in a density appropriate to the site and its context. Appropriate densities are consistent with the area's existing or projected population. Appropriate densities can be sustained by existing or proposed infrastructure, public transport, access to jobs, community facilities and the environment.



BUILDING SEPARATION

All proposed building separation distances comply with the requirements set out in the SEPP65 Apartment Design Guide. Four storey buildings are separated by a minimum of 12m, buildings up to eight storeys are separated by a minimum of 18m, and buildings nine storeys or higher are separated by a minimum of 24m.

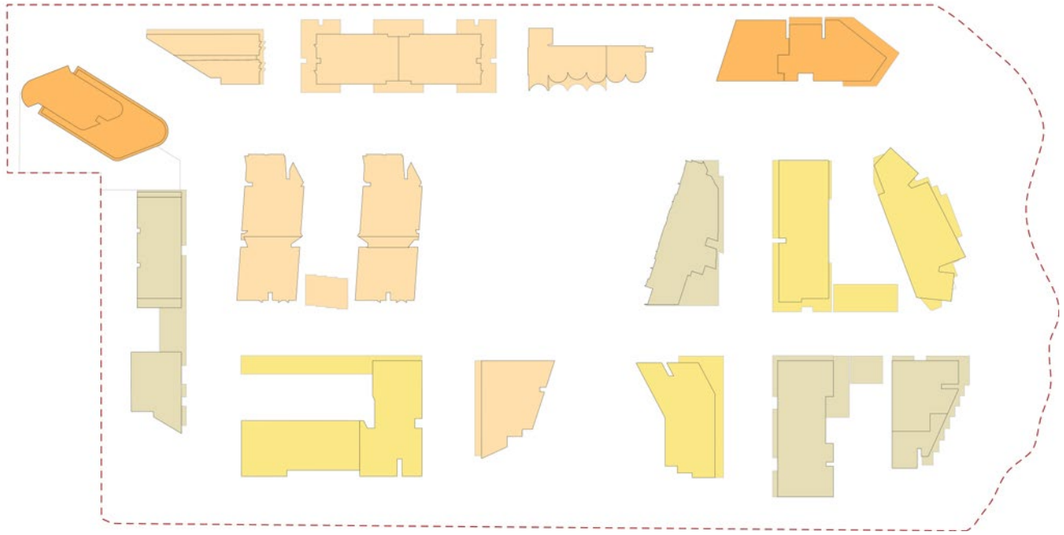
- 21-24 Storeys
- 17-20 Storeys
- 14-16 Storeys
- Below 14 Storeys

SOLAR ACCESS

The indicative design scheme has arranged building massing to maximise solar access to communal open space and public domain. Each principal open space will receive direct sunlight on the winter solstice, with increasing levels of sunlight available throughout the year.

- No direct sunlight
- 0 -1 hour
- 1- 2 hours
- 3 - 4 hours
- 5 - 6 hours
- 6+ hours

SEPP65 Principle 9: Aesthetics
Good design achieves a built form that has good proportions and a balanced composition of elements, reflecting the internal layout and structure. Good design uses a variety of materials, colours and textures.
The visual appearance of a well designed apartment development responds to the existing or future local context, particularly desirable elements and repetitions of the streetscape.



COMMUNAL AND PUBLIC OPEN SPACE
The indicative design scheme proposes a mix of public and communal open space totalling a minimum of 25% of the site area. Refer to Design Guideline 02.

Public Open Space
Communal Open Space at Ground Level
Rooftop Communal Open Space

ARCHITECTURAL DIVERSITY
While this masterplan has been prepared by Bates Smart and HASSELL, design work on the indicative design scheme has included contributions from Candalepas Associates, COX Architecture and Turner. The intent is for a variety of architects to prepare Stage 2 DAs as the project progresses. Refer to Design Guideline 12

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5.2 GROUND LEVEL INTERFACE

The masterplan proposes a range of non-residential uses at ground level, focused around Main Street and the new public open spaces. They comprise:

/ Buildings A1 and B2 propose childcare centres
/ Building B1 proposes a residential aged care facility
/ Building B2 is a school with a chilcare centre at ground level.
/ Buildings C1 and C2 propose a community hub fronting the village green
/ Building C3 proposes retail space fronting the village green.
/ Building D3 proposes Community Housing Provider offices connecting to a dedicated garden.

Residential buildings are arranged to provide a more civic character to Main Street and a more intimate residential character to the neighbourhood streets.

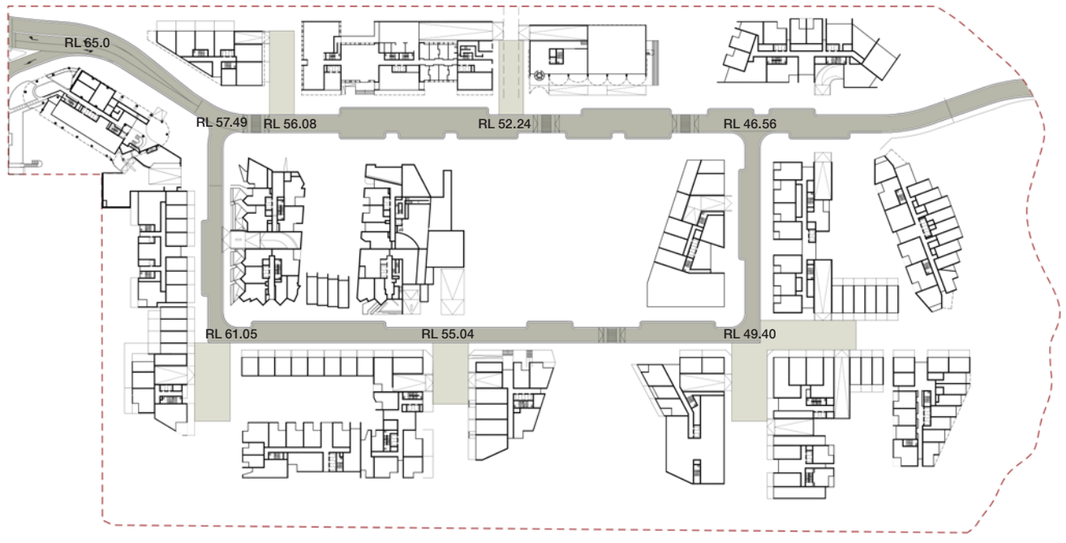
The civic character of main street is reinforced by the taller 14 storey buildings coming to ground, with communal courtyards spatially ‘open’ to main street.

On residential streets, a two-three storey scale is expressed at the base of the buildings, to assist in defining a human scale to the streetscapes.


Childcare
RACF
Childcare & School
School Garden
Entry Clearing
Main Street
Lyonpark Road Bridge
Herring Road
Communal Courtyard/ Community Garden
Community Centre
Village Green
Communal Courtyard/ Community Garden
Shrimptons Creek
Garden Mews
Forest Threshold
Garden Mews
Communal Courtyard/ Community Garden
Garden Mews
Forest Threshold
Forest Playground
MA Offices
Garden Mews
Forest Threshold
Communal Courtyard/ Community Garden
Epping Road
Key
Childcare
Retail
Community
Mission Aus office
1-bed dwelling
2-bed dwelling
3-bed dwelling
Core/BOH
1:1,250 @ A3

SEPP65 Principle 7: Safety

Good design optimises safety and security within the development and the public domain. It provides for quality public and private spaces that are clearly defined and fit for the intended purpose. Opportunities to maximise passive surveillance of public and communal areas promote safety.
A positive relationship between public and private spaces is achieved through clearly defined secure access points and well lit and visible areas that are easily maintained and appropriate to the location and purpose.



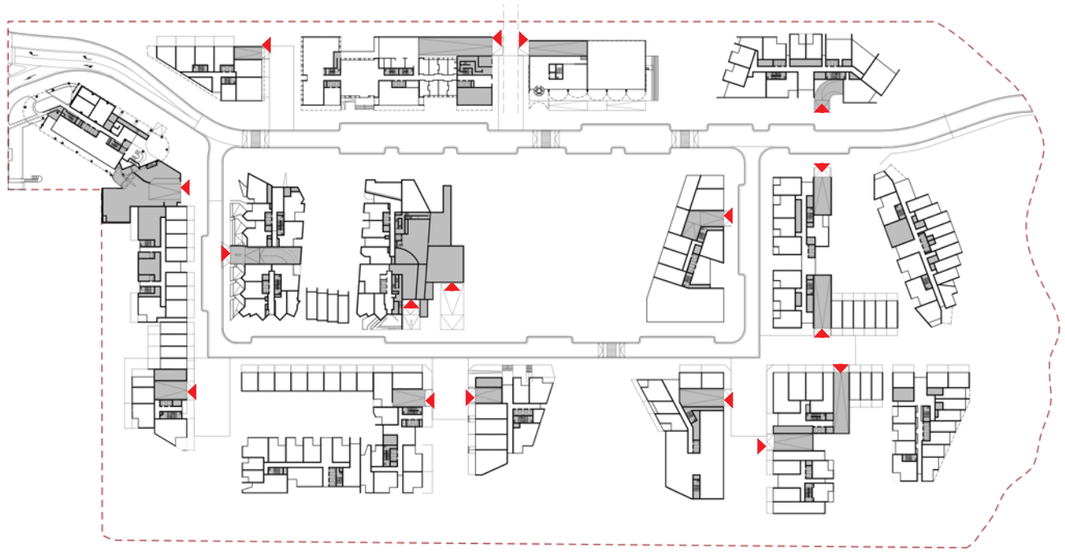
STREET ACTIVATION

The Indicative design scheme has been developed to maximise ground level activation with public and community uses fronting Main Street and the Village Green. Superlots have been designed with multiple cores and with several small entries per building. Apartment buildings have been designed with duplex typologies at ground level which, along with the townhouses, provide regular front doors with front gardens overlooking the street. Refer to Design Guideline 05

SITE LEVELS

The masterplan proposes a new road network with levels set to provide an accessible route throughout the site. Alongside the Shrimptons Creek corridor, building floor levels have been determined to comply with flooding levels.

Both of these constraints have been used to determine the number of levels which can be accommodated within the proposed building envelopes.



LOADING AND SERVICING

Garbage and waste collection is generally proposed within basement loading areas to minimise impact on the building frontages. The number of basement car park entries have been minimised and located to minimise pedestrian conflicts. Refer to Design Guideline 06.

TYPICAL NEIGHBOURHOOD STREET

5.3
TYPICAL LEVEL

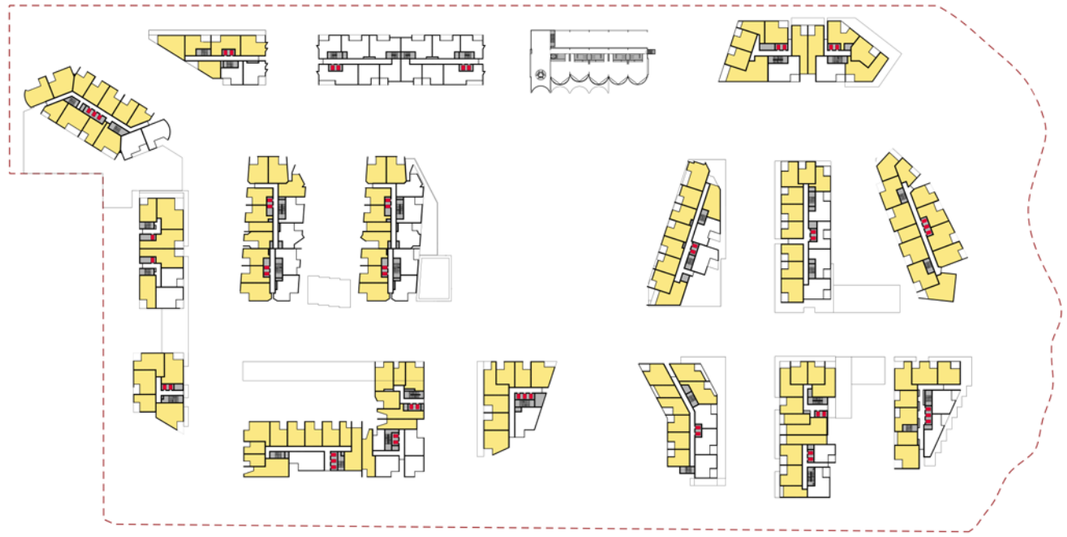
The indicative design scheme proposes the majority of residential buildings are arranged in efficient floorplates oriented in a southwest/ northeast direction to maximise solar access to both apartments and ground level open space. The exceptions to this rule are buildings B1, B3 and D1 which are oriented in the other direction and propose multiple cores to maximise solar access. Buildings C2 and C4 have angled facades fronting public open space, which are rotated so that the east facade also receives solar access.

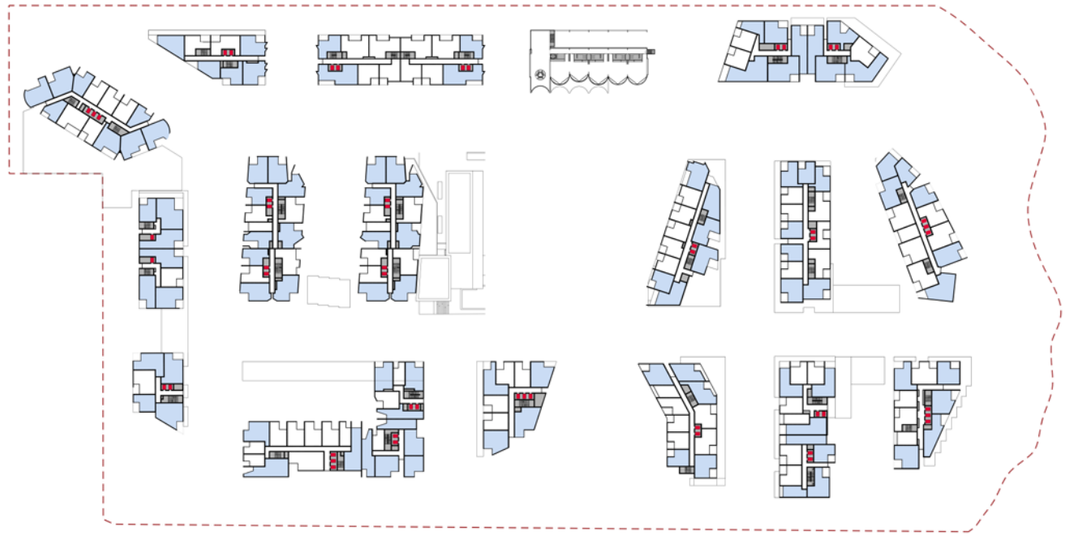
The proposed masterplan proposes nearly 30% social housing in addition to 128 affordable housing dwellings. The masterplan is underpinned by the principle of tenure blindness, with no external indicators of tenure type in the design and layout of the community. Social and market housing are evenly distributed throughout the delivery stages, with a diverse architectural character for all tenure types, equitable frontage to the public domain and communal open space, and ready access to all communal facilities for all residents.


B1.1
B1.2
B2 - School
B3
A1
A2
A3
C1
C2
C3
C4
D1
D2
D3
D4
1:1,250 @ A3

SEPP65 Principle 6: Amenity

Good design positively influences internal and external amenity for residents and neighbours. Achieving good amenity contributes to positive living environments and resident well being. Good amenity combines appropriate room dimensions and shapes, access to sunlight, natural ventilation, outlook, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas and ease of access for all age groups and degrees of mobility.





SOLAR ACCESS

Buildings have been arranged to maximise opportunities for solar access. As evidenced in the solar access and shadow analysis provided in Appendix D, the Masterplan can achieve 70% of apartments with 2 hours solar access at midwinter on a site wide basis. Based on the layouts prepared in the indicative design scheme, fewer than 15% of apartments will receive no direct sunlight between 9am and 3pm on the winter solstice.

NATURAL VENTILATION

The indicative design scheme proposes lift lobbies which receive natural light and ventilation. All buildings within the indicative scheme have been arranged to ensure that 60% of dwellings within the first nine storeys of the building have dual or corner aspects and will be naturally cross ventilated.

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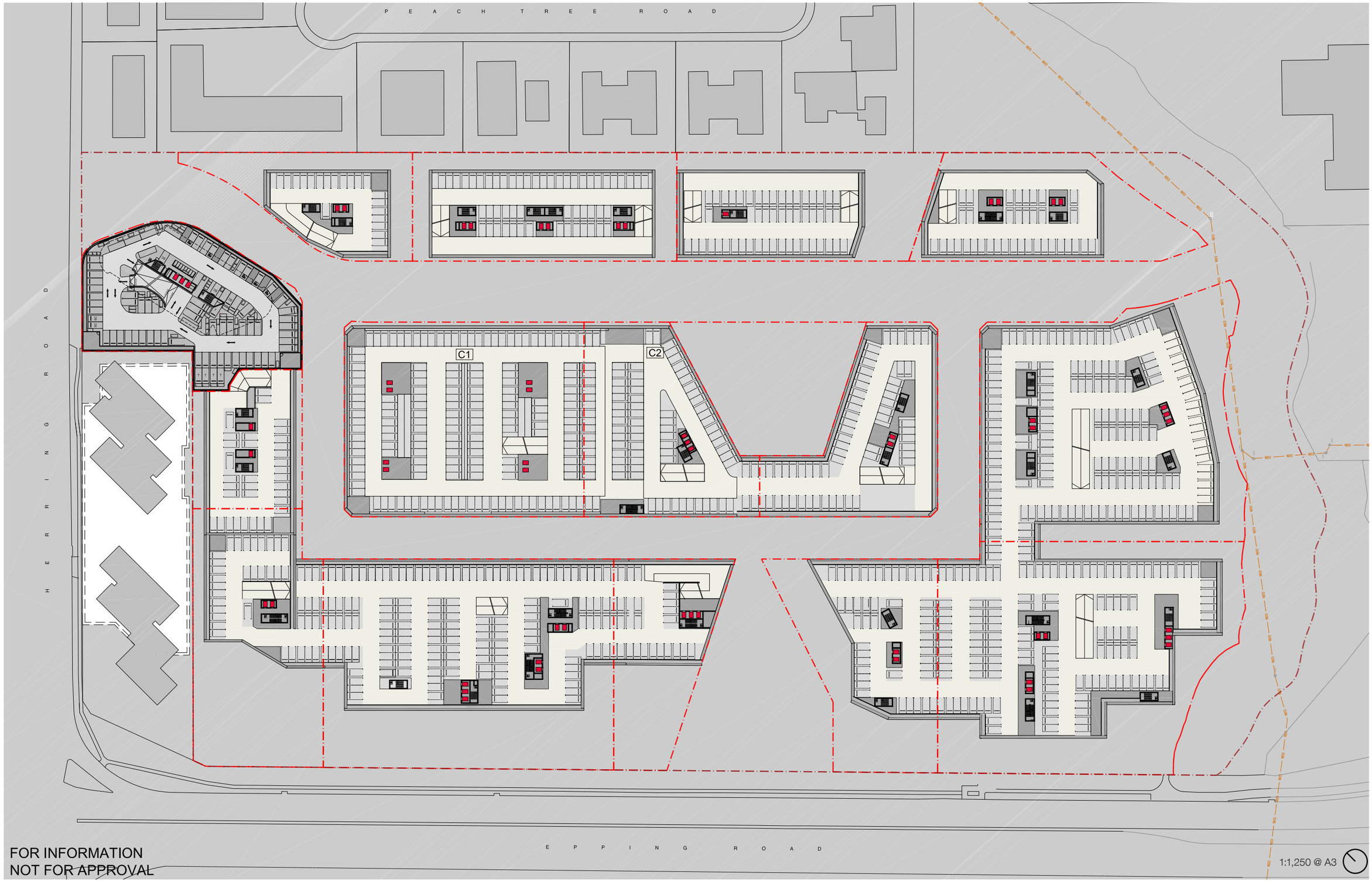

P E A C H T R E E R O A D
H E R R I N G R O A D
E P P I N G R O A D
C1
C2
FOR INFORMATION
NOT FOR APPROVAL
1:1,250 @ A3

5.4 BASEMENT

BASEMENT

The indicative design scheme proposes all parking and the majority of service vehicle loading areas are located in basements. Basement areas have been carefully balanced with deep soil zones to maximise retention of and opportunities for significant trees, as well as to provide efficient layouts which will minimise excavation.

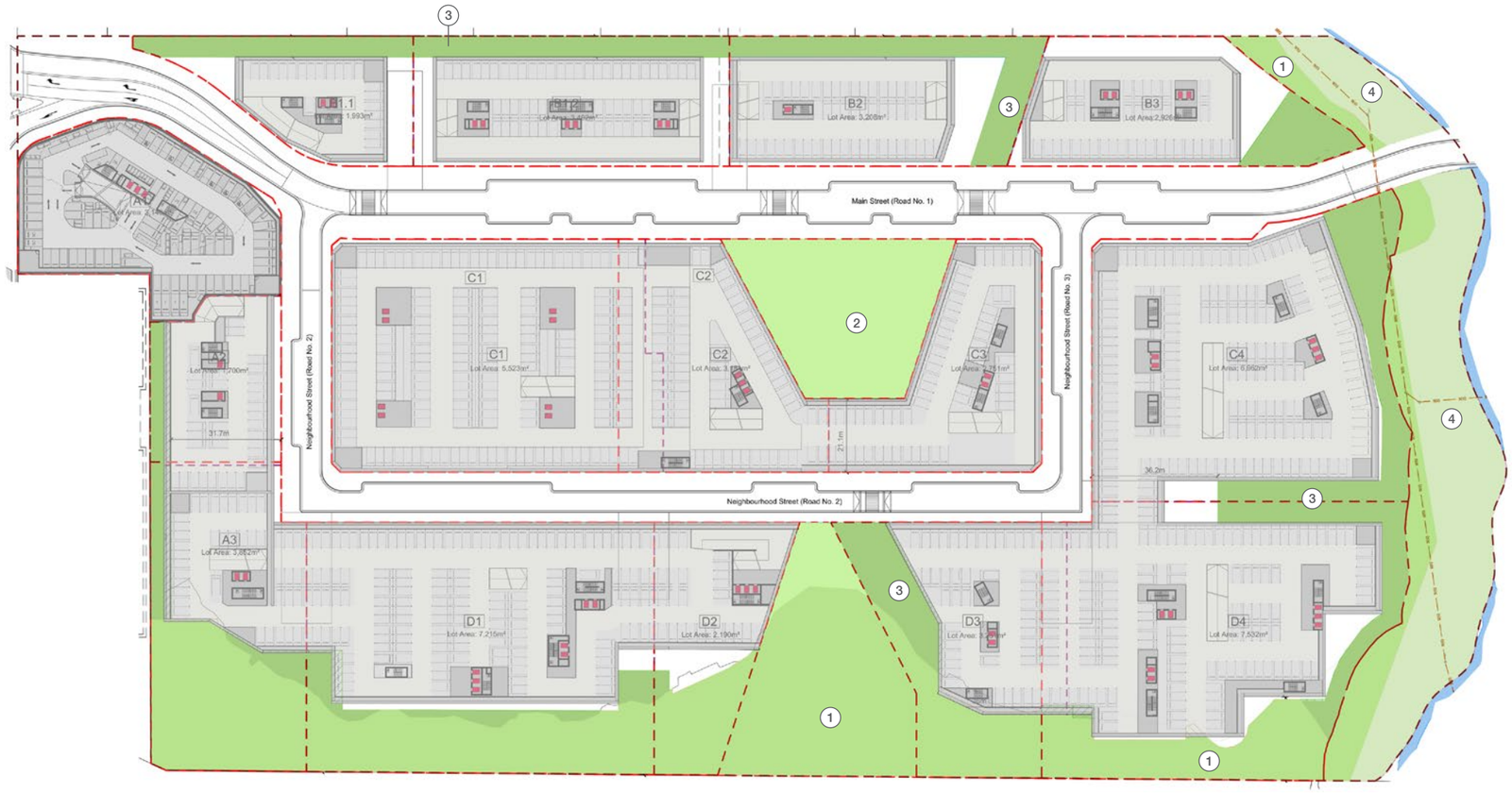
Basements are connected to minimize the number of required service vehicle ramps. The proposed basement layouts ensure that there are no basement areas under land which is be dedicated to council.

DEEP SOIL ZONES

To maximise opportunities to retain existing trees, the masterplan proposes large areas of deep soil along the Epping Road frontage of remnant bushland and adjacent to Shrimptons Creek.

Within the masterplan site, Deep soil is proposed in the areas of new public domain and along the northeastern boundary to allow future growth of significant trees.

The masterplan proposes several development lots which contain no deep soil, however the site as a whole will achieve over 22% deep soil area. (refer to drawing DA01.MP.200)



1 - Deep Soil within Ecological Corridor (9,760m²)
2 - Deep Soil within Village Green (2,221m²)
3 - Additional Deep Soil within Site Area (6,357m²)
4 - Deep Soil within RE1 Zone (3,800m²)
Total Deep soil = 22,138m²


PEACH TREE ROAD
Main Street (Road No. 1)
Neighbourhood Street (Road No. 2)
Neighbourhood Street (Road No. 3)
Mixed-use
A1
75m
A2
45m
Residential
A3
75m
B1.1
45m
Residential
B1.2
45m
Residential
B2
45m
Non-residential
B3
Mixed-use
45m
65m
C1
Mixed-use
C2
Non-residential
3 Storeys
12m
C3
Mixed-use
55m
C4
Residential
55m
75m
D1
Residential
65m
D2
Residential
75m
65m
D3
Mixed-use
65m
D4
Residential
65m
75m
70m
Indicative Lot Division Line
Potential Future Pedestrian and Bicycle Connection to Creek / Peach Tree Road
Potential Future Vehicular Connection to Creek / Peach Tree Road
45m Maximum Building Height
65m Maximum Building Height
75m Maximum Building Height
Riparian Corridor Edge
Zone RE1 Edge
1:1,250 @ A3

5.5 ENVELOPES + DESIGN GUIDELINES

While the indicative design scheme describes the likely size and arrangement of proposed buildings, in order to provide some future flexibility, this Concept Development Application seeks approval for more general building envelopes.

These general envelopes are accompanied by a set of design guidelines which ensure any future development applications are consistent the with principles illustrated in the indicative design scheme.

The design guidelines, included at Appendix B, cover a range of criteria which each set out objectives and provisions for compliance. The criteria and their respective objectives are summarised as following.

CRITERION 1
NORTH EAST DEVELOPMENT LOTS (B1 - B2)

/ To allow for a future pedestrian and cycle connection from Main Street to Peach Tree Avenue
/ To provide opportunities for solar access to Main Street
/ To balance privacy and visual amenity to neighbouring sites

CRITERION 2
PUBLIC AND COMMUNAL OPEN SPACE

/ To retain and enhance the existing publicly accessible open space along Shrimptons Creek corridor
/ To connect new public spaces to the existing open space network
/ To provide an adequate area of communal open space to enhance residential amenity and to provide opportunities for landscaping

CRITERION 3
DEEP SOIL ZONES

/ To retain existing mature trees and to support healthy tree growth
/ To provide passive recreation opportunities
/ To promote management of water and air quality

CRITERION 4
PUBLIC DOMAIN INTERFACE

/ To transition between private and public domain without compromising safety and security
/ To retain and enhance the amenity of the Shrimptons Creek corridor
/ To maximise the amenity of new streets and public open spaces

CRITERION 5
ACTIVE FRONTAGES

/ To provide active frontages with a distinctive civic character to Main Street
/ To ensure that public spaces and streets are activated along their edges
/ To maximise street frontage activity where ground floor apartments are located
/ To deliver amenity and safety for residents when designing ground floor apartments

CRITERION 6
PEDESTRIAN AND VEHICULAR ENTRY LOCATIONS

/ To provide building entries and pedestrian access that connects to and addresses the public domain
/ To provide accessible and easily identifiable building entries and pathways
/ To minimise conflicts between vehicles and pedestrians
/ To create high quality streetscapes

CRITERION 7
STREET WALL HEIGHT

/ To provide buildings that positively contribute to the physical definition of the public domain
/ To reduce the scale of buildings as perceived from the public domain

CRITERION 8
GROUND LEVEL STREET SETBACKS

/ To provide buildings that positively contribute to the physical definition of the public domain
/ To transition between private and public domain without compromising safety and security
/ To provide a landscape design which contributes to the streetscape and residential amenity

CRITERION 9
UPPER LEVEL SETBACKS

/ To reduce the scale of buildings as perceived from the public domain
/ To minimise the adverse wind impact of down drafts from tall buildings

CRITERION 10
SETBACK TO SHRIMPTONS CREEK

/ To provide buildings that positively contribute to the physical definition of the public domain.
/ To reduce the scale of buildings as perceived from the public domain.
/ To minimise the adverse wind impact of down drafts from tall buildings

CRITERION 11
ROOFTOPS

/ To maximise opportunities to use roof space for residential accommodation and open space
/ To incorporate sustainability features into the roof design
/ To minimise the visual impact of roof plant

CRITERION 12
FAÇADE EXPRESSION AND MATERIALS

/ To define and reinforce a distinctive character within the masterplan precinct
/ To express building functions
/ To create buildings which will improve with age

CRITERION 13
DESIGN EXCELLENCE

/ To ensure architectural diversity is achieved
/ To achieve a high standard of architectural and urban design, materials and detailing appropriate to the building type and location
/ To ensure the form and external appearance of the buildings improve the quality and amenity of the public domain
/ To ensure buildings meet sustainable design principles in terms of sunlight, natural ventilation, wind, reflectivity, visual and acoustic privacy, safety and security and resource, energy and water efficiency

CRITERION 14
UNIVERSAL DESIGN

/ Universal design features are included in apartment design to promote flexible housing for all community members
/ A variety of apartments with adaptable designs are provided

5.6 STREET SETBACKS

The building envelopes and design guidelines have been reviewed to ensure street setbacks are designed to provide the optimal urban design outcome.

Building setbacks must be selected appropriately to be suitable for the a given density. In a CBD location one would expect to find high rise buildings with zero setback, while in a suburban location one find low rise buildings with a large landscaped setback.

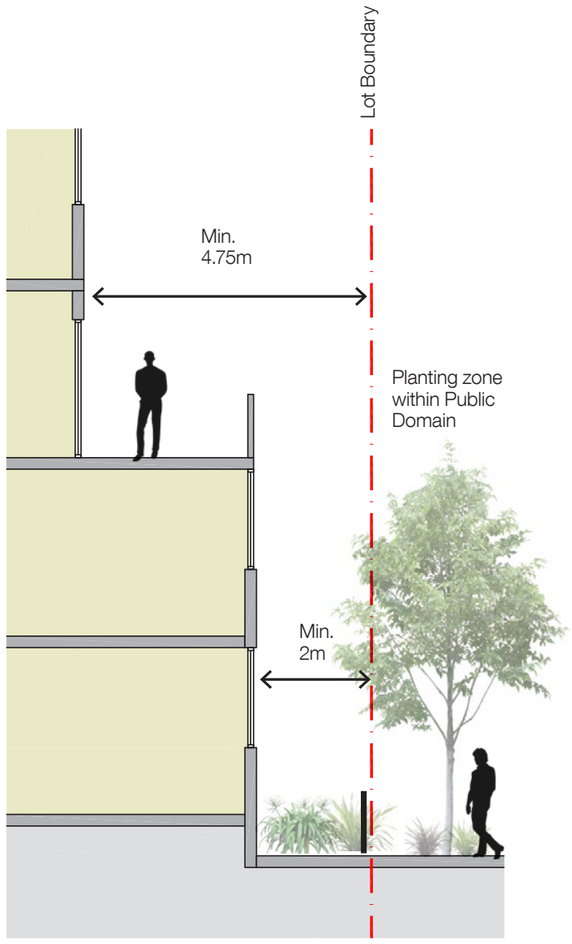
We have researched a range of different planning controls to assess how height, denisty and setbacks are related. The City of Sydney is particularly helpful as it sets out a range of different urban densities, each with associated FSR range, typical maximum building height and Landscaped street setback. These range from one extreme – Sydney CBD – which proposed no street setback and buildings 15-50 storeys, to the much lower density Ashmore Precinct – which proposes 3m landscaped setbacks for buildings 5-9 storeys.

We have tabulated three different examples from the Sydney DCP, to compare with the proposed Ivanhoe controls.

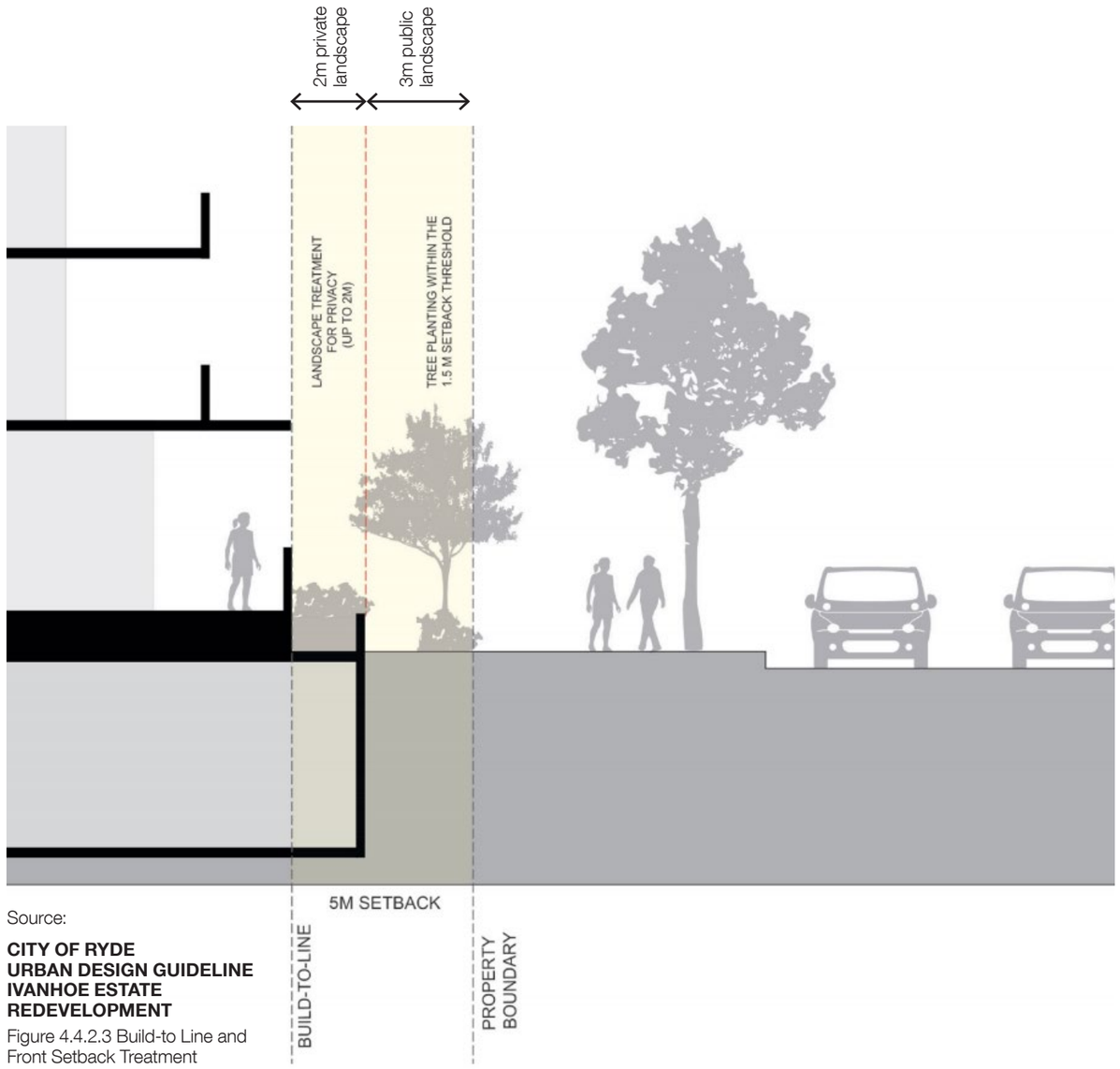
Location	Sydney CBD Green Square Town Centre	Epsom Park Green Square	Ashmore precinct	Ivanhoe proposal
Landscaped setback	0m	1.5-2m	3m	2m
Urban condition	Urban	High density residential	Medium density residential	High density residential
Typical FSR	6+	1.5 - 2.5	1-1.75	2.7
Typical max building ht	15-50 storeys	6-20 storeys	5-9 storeys	14-24 storeys

The design guidelines propose a landscaped street setback of 2m from the property boundary, with tower forms set back a further 2.75m above a 2-4 storey podium.

This aligns closely with the recommendations of 'City of Ryde Urban Design Guidelines Ivanhoe Estate Redevelopment', which proposes a 2m landscape treatment for privacy beyond which is a 3m landscaped edge to the street. The only difference from Ryde's diagram is that the 3m landscaped edge is proposed within the public domain (in a wider footpath) rather than within the private domain.



IVANHOE NEIGHBOURHOOD STREET



Source:

CITY OF RYDE
URBAN DESIGN GUIDELINE
IVANHOE ESTATE
REDEVELOPMENT

Figure 4.4.2.3 Build-to Line and Front Setback Treatment

5.7 STAGING

The proposed staging plan is arranged to maximise the amount of public domain delivered in the first two stages of development.

Stages are sequenced to maintain a consistent tenure split between social and market dwellings and to ensure that the necessary infrastructure comes online to service the relevant stages.

SEPP65 Principle 8:
Housing diversity and social interaction
Good design achieves a mix of apartment sizes, providing housing choice for different demographics, living needs and household budgets.
Well designed apartment developments respond to social context by providing housing and facilities to suit the existing and future social mix.
Good design involves practical and flexible features, including different types of communal spaces for a broad range of people and providing opportunities for social interaction among residents.

5.8
MASSING CHANGES SINCE SSDA LODGEMENT

ORIGINAL SSDA : BUILDING HEIGHTS CONSISTENT WITH LEP HEIGHT PLANES

Building heights step in accordance with the LEP height plane, generally increasing in height towards the intersection of Epping and Herring Roads.

/ Village Green ≈ 3,100m2
/ 283,500m2 GFA
/ LEP Height compliant
/ 19.6% Deep Soil Area

RTS1: VARIED BUILDING HEIGHTS

Building heights step in a strategic manner to minimise building overshadowing, improve separation, particularly COLI, and ultimately provide a greater area of public open space.

/ Village Green ≈ 6,000m2
/ 278,000m2 GFA
/ Height non-compliances - B3, C4.1, D2 & D4.2
/ Maximum 24 storeys
/ 22.2% Deep Soil Area

>24 Storeys
20 Storeys
4 - 16 Storeys
1 - 4 Storeys

>24 Storeys
20 Storeys
4 - 16 Storeys
1 - 4 Storeys

CURRENT PROPOSAL (RTS2): INCREASED SETBACKS TO EEC CORRIDOR

Building massing is refined to retain additional trees in the EEC corridor, stepping in a strategic manner to minimise building overshadowing, improve building separation and provide a greater area of public open space. Delete left in from Epping Road.

/ Village Green ≈ 6,000m2
/ 268,000m² GFA
/ Height non-compliances B3, C3, C4.1, C4.2, D2 & D4.2
/ Maximum 24 storeys
/ 26.7% Deep Soil Area

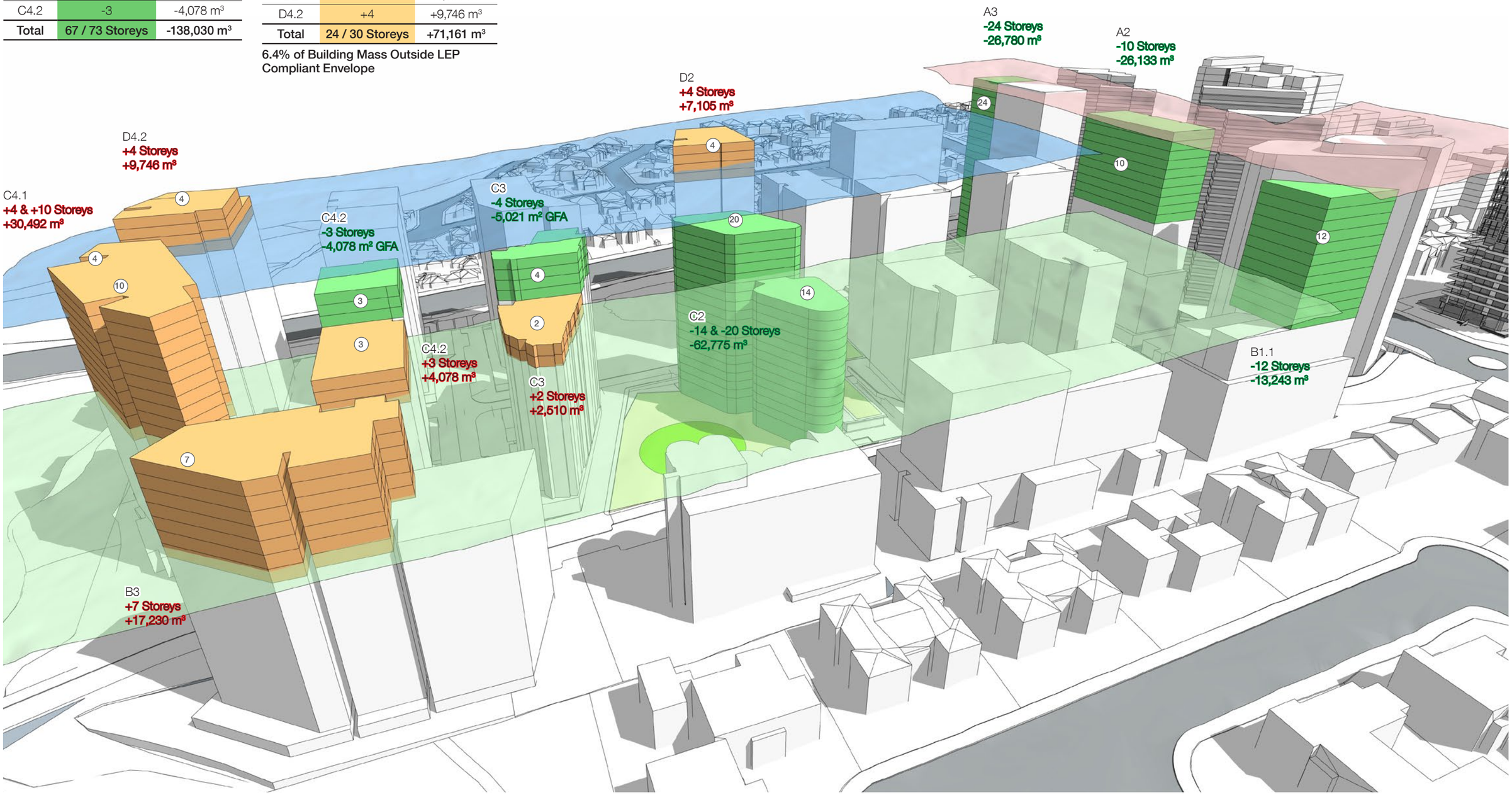
BUILDING MASSING REMOVED FROM LEP COMPLIANT ENVELOPES

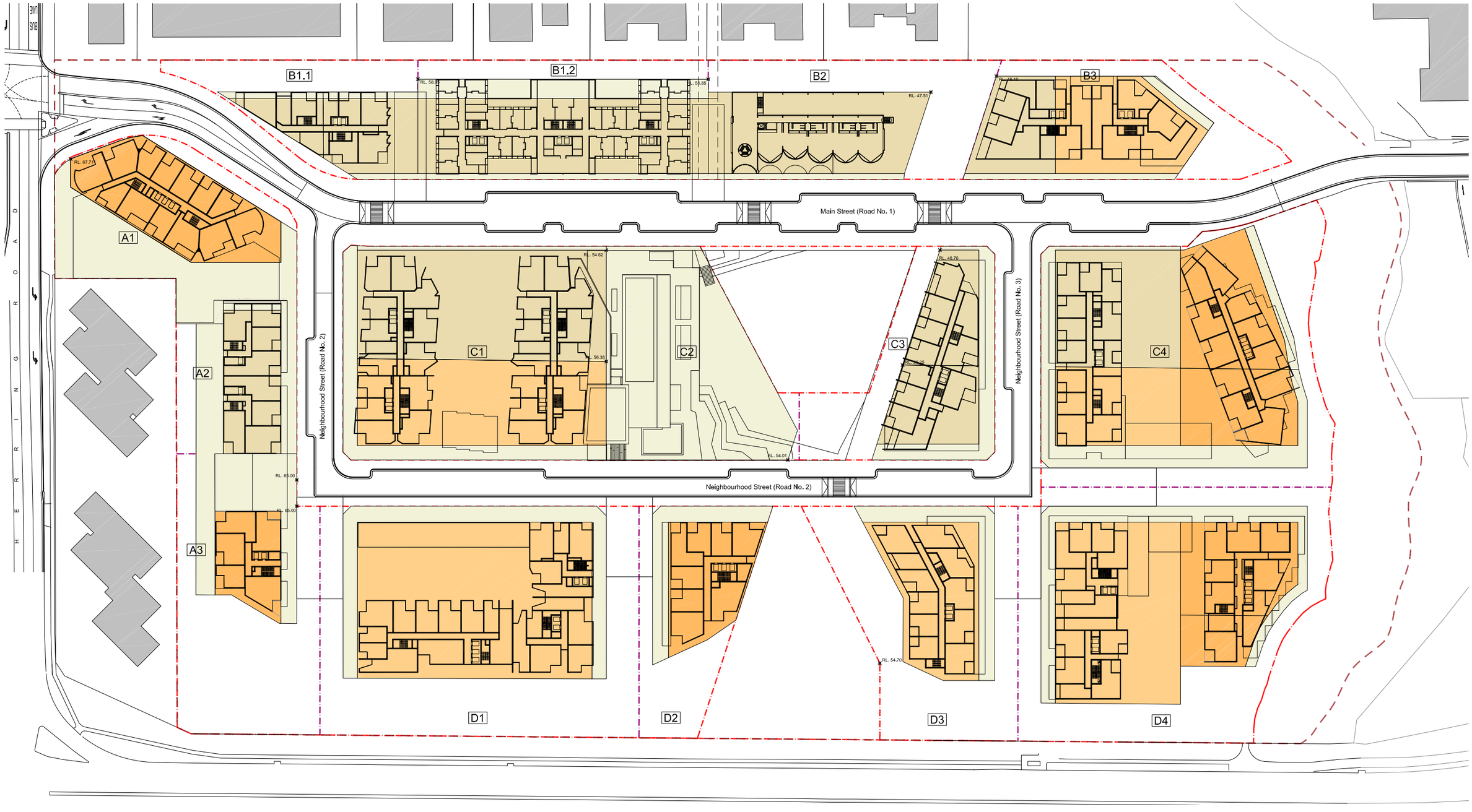
Bldg	Variance	Volume
A2	-10	-26,133 m³
A3	-24	-26,780 m³
B1.1	-12	-13,243 m³
C2	-14 / -20	-62,775 m³
C3	-4	-5,021 m³
C4.2	-3	-4,078 m³
Total	**67 / 73 Storeys**	**-138,030 m³**

BUILDING MASSING OUTSIDE LEP COMPLIANT ENVELOPES

Bldg	Variance	Volume
B3	+7	+17,230 m³
C3	+2	+2,510 m³
C4.1	+4 / +10	+30,492 m³
C4.2	+3	+4,078 m³
D2	+4	+7,105 m³
D4.2	+4	+9,746 m³
Total	**24 / 30 Storeys**	**+71,161 m³**

6.4% of Building Mass Outside LEP Compliant Envelope





REVISED PROPOSAL
INDICATIVE DESIGN SCHEME OVERLAY

This drawing superimposes the proposed envelopes and the indicative design scheme to demonstrate how the proposed floorspace could be accommodated.

1:1,250 @ A3

5.9 SUSTAINABILITY

SEPP65 Principle 4: Sustainability
Good design combines positive environmental, social and economic outcomes. Good sustainable design includes use of natural cross ventilation and sunlight for the amenity and liveability of residents and passive thermal design for ventilation, heating and cooling reducing reliance on technology and operation costs. Other elements include recycling and reuse of materials and waste, use of sustainable materials and deep soil zones for groundwater recharge and vegetation.

The Ivanhoe Masterplan will achieve 6 Star Green Star using the Green Building Council of Australia's current rating tool "Green Star – Communities v1.1" and subsequent releases as appropriate. The project aims to set new benchmarks in Sustainability under the following categories:

GOVERNANCE

Ivanhoe Estate will look to demonstrate leadership within the industry by establishing and maintaining strong governance practices. This will occur through engagement, transparency, as well as community and industry capacity building. We will look to ensure that the Ivanhoe Estate development is resilient to a changing climate. Some of the initiatives being explored include:

/ Transparency via design reviews with independent sustainability experts
/ Inclusive and comprehensive stakeholder engagement process
/ Site Specific Climate Resilience Strategies

LIVEABILITY

We aim to deliver a safe, accessible and culturally rich community at Ivanhoe Estate. Accordingly we will focus on the development of healthy and active lifestyles, and look to create a community with a high level of amenity, activity, and inclusiveness. Areas of investigation currently include:

/ Health and Fitness classes for all residents
/ A safe, walkable and accessible community
/ Dedicated Community Development Managers

ECONOMIC PROSPERITY

Ivanhoe Estate will look to promote prosperity and productivity through the creation of equitable living and housing, through investment in education and skills development, and through community capacity building. Current initiatives being explored include:

/ Provision of digital infrastructure
/ On site energy generation
/ Community infrastructure investment

ENVIRONMENT

Reducing the impact of urban development on the local ecosystem is an important objective for Ivanhoe Estate. Resource management and efficiency will be carefully considered through promoting infrastructure, transport, and buildings that have reduced ecological footprints. Accordingly, we will seek to reduce the impacts of this project on the local land and aquatic environments. Ideas currently under consideration include:

/ Ensuring WSUD (Water Sensitive Urban Design) principles are applied throughout the precinct
/ Urban Heat Island reduction and mitigation strategies
/ Waste management strategies
/ Life Cycle impacts analyses of materials used on site
/ Maximising the ecological value of site to be close to or exceeding existing

INNOVATION

Implementation of innovative practices, processes and strategies that promote sustainability in the built environment will occur throughout the lifetime of the development ensuring that Ivanhoe Estate is recognised as one of the most progressive projects in the country. A number of innovative concepts are being currently explored on this project including;

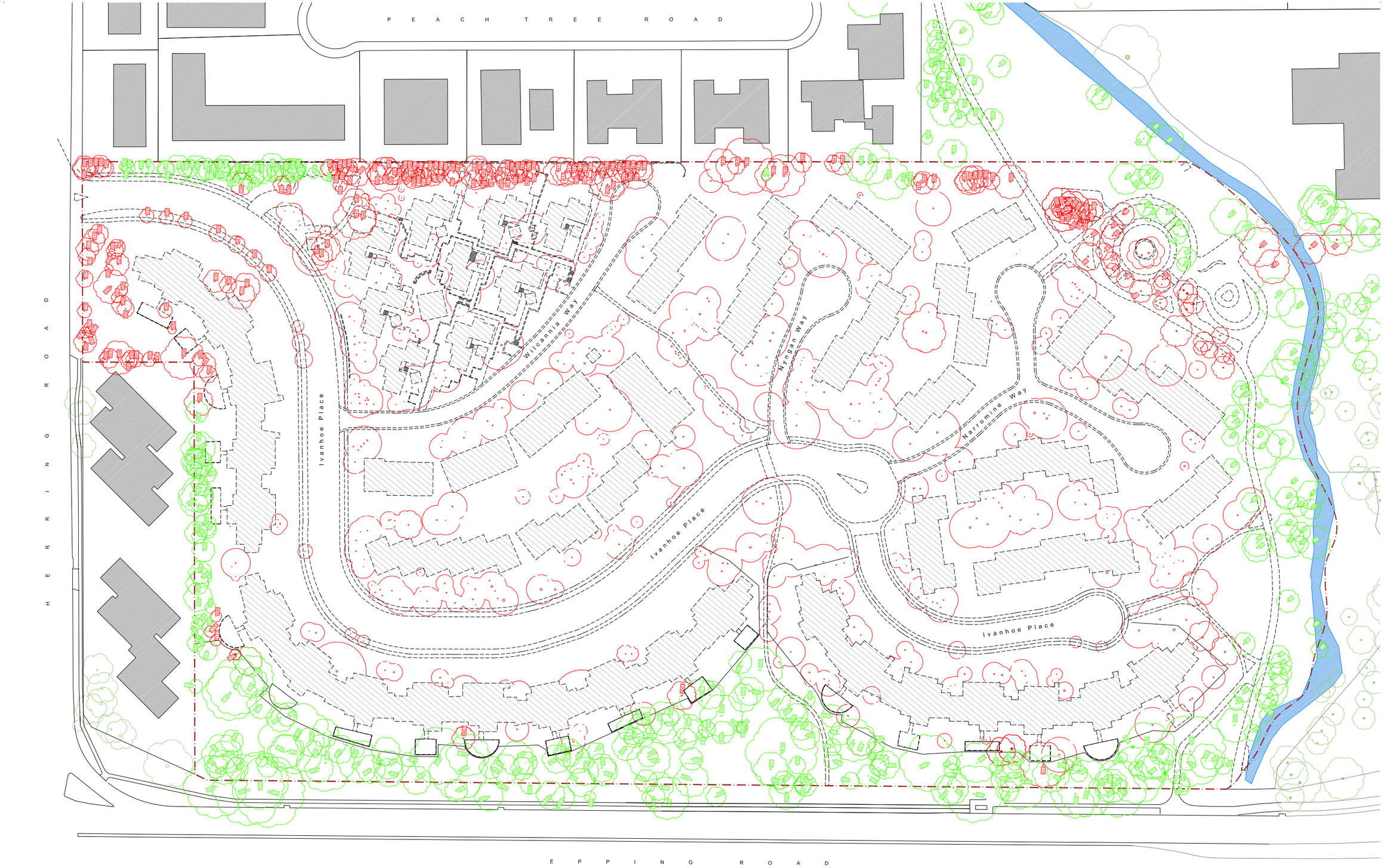
/ Transparent financial reporting on sustainability initiatives
/ Contractor education on sustainability
/ Innovative use of technology through an integrated infrastructure solution (Real Utilities)

6 STAR COMMUNITIES RATING TARGETS

Sustainable Site	Maximise the ecological value of site to be close to or exceeding existing (biodiversity, permeable surfaces, urban greening): 1. Protect the existing Turpentine Ironbark Forest 2. Maintain its functional connection to Shrimptons Creek riparian habitat through the site and with fauna crossings at road intersections. 3. Mitigating the urban heat island effect with extensive landscaped public domain, green roofs, low-SRI roofs and solar PV.
	Mitigating the urban heat island effect with extensive landscaped public domain, light coloured roofs, green roofs and solar PV.
	Employ Water Sensitive Urban Design Manage stormwater. Manage urban stormwater with water sensitive urban design including swales and permeable detention basins
Transport & Connectivity	A connected and permeable site to encourage active transport and use of public transport
	At least one bicycle parking space to be provided for each dwelling and at least 200 provided for visitors
	Provision of 50 GoGet spaces
	Electric vehicle ready
	End of trip facilities for non-residential buildings
Community Health & Happiness	To fully quantify and track tangible health and well-being metrics through programs and partnerships including Live Life Get Active and Mission Australia's Strengthening Communities amongst others.
	Public domain that encourages social interaction, has activated street frontages, is adaptable and comfortable, and is pedestrian-oriented
	A minimum 200 volunteer hours on various community activities specifically for Ivanhoe Estate.
Living Costs	Development reduces average living costs for households, and average operating costs for businesses, compared with business as usual
	Whole of life affordability strategy considering: Housing, Utilities, Food and Transit
	The CCAP Precinct report indicates in excess of a 40% reduction in living costs.
Local Economy	Integrate commercial opportunities within precinct, including spaces suitable for small business or home business operations and / or work from- home 1. Community Hub – fitted out with offices and session rooms for the delivery of MA's tenant support programs and also drop-in offices for the delivery of community services 2. Social Enterprise Space – opportunities for social enterprise development in conjunction with the community.
	The Strengthening Communities program will deliver opportunities that MA and MAH can create through the operation of the residential community such as: 1) Landscaping, 2)Common area maintenance, 3) Administration of the Community Hub, and 4) Live Work Dwellings are incorporated in buildings along the main street which will be suitable for small business or home business

APPENDIX A

DRAWINGS FOR APPROVAL



FOR APPROVAL

Keys:
- Site Boundary
- Creek line (approximate) with Top of Bank (approximate)
- Existing Buildings (to be demolished by others under separate application)
- Existing Trees
- Roads on site to be removed
- Trees Intended for retention
- Trees Intended for removal

Revision	Date	Description	Initial	Checked
6	09.10.19	Concrete pad demolition revised	JS	MA
5	11.09.19	Response to Submissions 2	JS	MA
4	24.08.18	Respond to Submissions	YL	MA
3	14.12.17	Proposed adjoining site information omitted	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission: DRAFT	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Masterplan

Existing Site & Demolitions Plan

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM Checked MA
Project No.	S12067
Status	For Information
Plot Date	9/10/2019 7:09 PM
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Drawing No.	[Revision]

DA01.MP.001[6]

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Bates Smart Architects Pty Ltd ABN 68 094 740 986

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FOR APPROVAL

Key:

- Site Boundary
- Zone RE1 Public Recreation (interpreted from LEP Map PDF)
- Zone E2 Environmental Conservation (interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Riparian Corridor (Based upon ADWJ drawing Q2180-PSK-011-013-A)
- Existing Vegetation Community - Turpentine - Grey Ironbark Open Forest (Endangered / Critically Endangered) (approximate outline)
- Existing Vegetation Community - Turpentine - Smooth-barked Apple Moist Shrubby Forest (approximate outline)
- Existing Buildings
- Vehicular & Cycle Access Point
- Pedestrian Access Point

Revision	Date	Description	Initial	Checked

Revision	Date	Description	Initial	Checked
6	09.10.19	Minor graphic update	JS	MA
5	11.09.19	Response to Submissions 2	JS	MA
4	24.08.18	Respond to Submissions	YL	MA
3	14.12.17	Proposed adjoining site information omitted, wind rose updated	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission: DRAFT	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW

Masterplan

Site Analysis Plan

0 2.5 5 10 15 25 m

Check all dimensions and site conditions prior to commencement of any work, the purchase or ordering of any materials, fittings, plant, services or equipment and the preparation of shop drawings and/or the fabrication of any components.
All drawings to be read in conjunction with all architectural documents and all other consultants documents.
Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the architect for clarification.
All drawings may not be reproduced or distributed without prior permission from the architect.

Scale	1:1,000@B1, 1:2,000@B3
Drawn	WM Checked MA
Project No.	S12067
Status	For Information
Plot Date	9/10/2019 6:53 PM
Plot File	S:\12000-12099\s12067_frasers_ivanhoe\70_Cad\Plots\DA\DA0:... ··· 1.MP.003[6].dwg
Drawing No.	[Revision]

DA01.MP.003[6]

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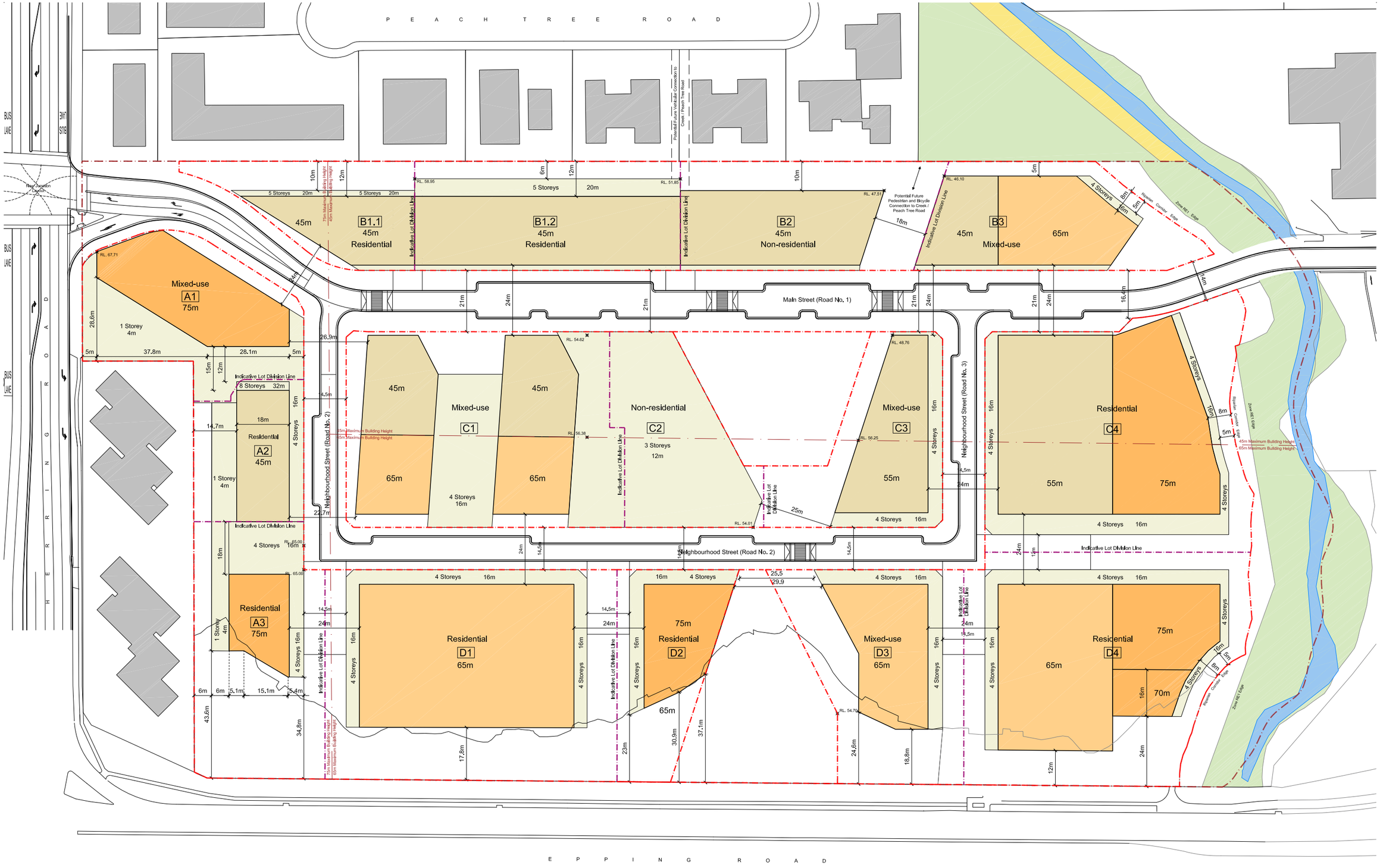

FOR APPROVAL

Key:
- Site Boundary
- Lot Boundary
- Indicative Lot Division Line
- LEP Maximum Building Height Plane (interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Riparian Corridor edge (Based upon ADWJ drawing Q2180-PSK-011-013-A)
- Zone RE1 Public Recreation (interpreted from LEP Map PDF)
- Zone E2 Environmental Conservation (interpreted from LEP Map PDF)
- Buildable Area below 75m Maximum Building Height
- Buildable Area below 65m Maximum Building Height
- Buildable Area below 45m Maximum Building Height
- 4 Storey buildable area above proposed ground level
- Existing Buildings

Revision	Date	Description	Initial	Checked
8	11.09.19	Response to Submissions 2	JS	MA
7	24.08.18	Respond to Submissions	YL	MA
6	17.08.18	Respond to Submissions - DRAFT	YL	MA
5	23.07.18	Response to Submissions - DRAFT	YL	MA
4	10.06.18	DRAFT - amended to suit DOP comments	WM	MA
3	14.12.17	Proposed adjoining site Information omitted	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission: DRAFT	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW

Masterplan

Envelope Control Plan

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM Checked MA
Project No.	S12067
Status	For Approval
Plot Date	11/9/2019 8:47 AM
Plot File	S:\12000-12099\s12067_frasers_Ivanhoe\70_Cad\Plots\DA\DA01-...-1.MP.100[8].dwg
Drawing No.	DA01.MP.100[8] [Revision]

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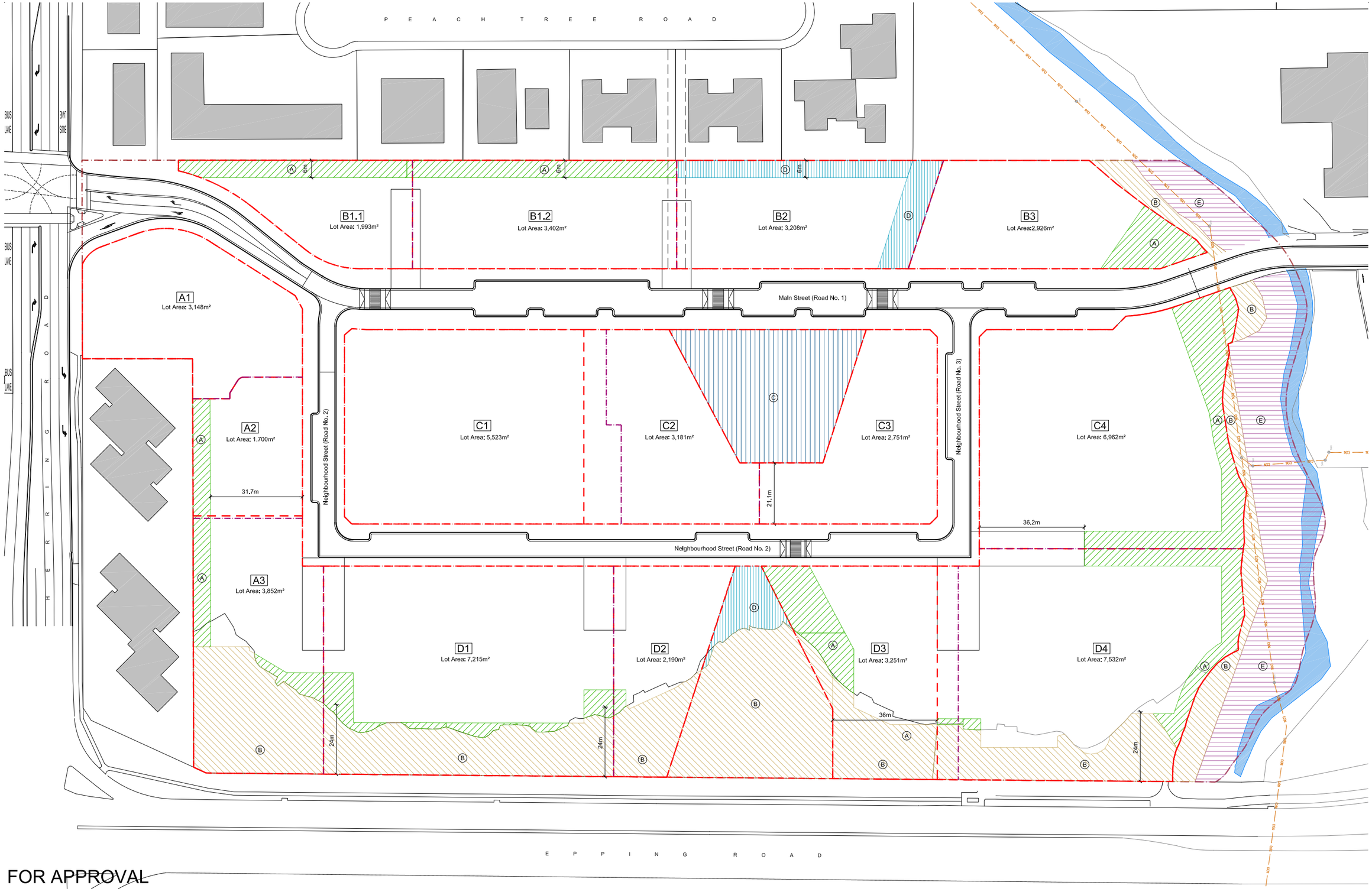

FOR APPROVAL

	Site Area	**82,789m²**
A	Potential Deep Soil	5,058m²
	% of Site Area	6.1%
B	Potential for additional Deep Soil within Ecological Corridor	9,760m²
	% of A + B of Site Area	17.9%
C	Potential for Deep Soil within Village Green	2,221m²
D	Other Potential for other Deep Soil	1,299m²

	% of A + B + C + D of Site Area	22.2%
E	Potential Deep Soil within RE1 Zone	3,800m²
	% of A + B + C + D + E of Site Area	26.7%
F	Potential Deep Soil under minimum dimensions (excluded from calculations)	0m²

Existing Sewer - ADWJ drawing 300001-SSK-001_A

Revision	Date	Description	Initial	Checked
6	11.09.19	Response to Submissions 2	JS	MA
5	24.08.18	Respond to Submissions	YL	MA
4	08.03.18	A1 & B1.1 Lot boundaries amended	WM	MA
3	14.12.17	Proposed adjoining site Information omitted	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission: DRAFT	WM	MA

0 2.5 5 10 15 25 m

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Masterplan

Deep Soil Areas

Scale	1:500@B1, 1:1,000@B3
Drawn	WM
Checked	MA
Project No.	S12067
Status	For Information
Plot Date	11/9/2019 8:47 AM
Plot File	S:\12000-12099\s12067_frasers_ivanhoe\70_Cad\Plots\DA\DA01.MP.200[6].dwg
Drawing No.	DA01.MP.200[6] [Revision]

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BATESSMART

APPENDIX B

DEVELOPMENT DESIGN GUIDELINES

IVANHOE MASTERPLAN

DEVELOPMENT DESIGN GUIDELINES
DOCUMENT NO. S12067-002
ISSUE L

SEPTEMBER 2019

CONTENTS

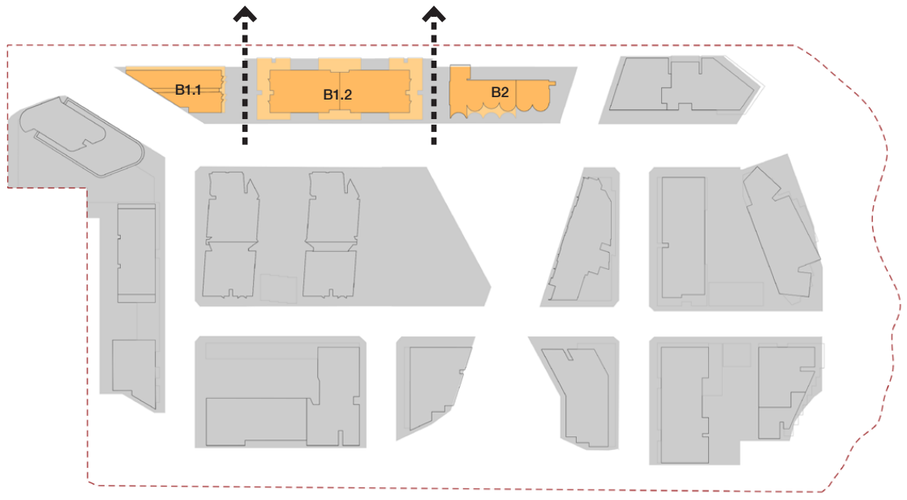
01. NORTH EAST DEVELOPMENT LOTS (B1-B2)

OBJECTIVES

A. To allow for a future pedestrian and cycle connection from Main Street to Peach Tree Avenue
B. To provide opportunities for solar access to Main Street
C. To balance privacy and visual amenity to neighbouring sites

PROVISIONS

1. Lot B1/B2 should be separated into three discrete buildings
2. Building separation should be of sufficient width to provide a pedestrian and cycle connection to Peach Tree Avenue
3. Avoid blank walls facing neighbouring sites
4. Where windows are proposed within 7m of the boundary, provide screening to mitigate overlooking of neighbouring sites



02. PUBLIC AND COMMUNAL OPEN SPACE

OBJECTIVES

A. To retain and enhance the existing publicly accessible open space along Shrimptons Creek corridor.
B. To connect new public spaces to the existing open space network.
C. To provide an adequate area of communal open space to enhance residential amenity and to provide opportunities for landscaping.

PROVISIONS

1. The Shrimptons Creek Corridor is to be embellished and dedicated to Council as public open space.
2. A Village Green should be provided between C1 and C3. A minimum of 3,300 sqm should be usable area. The remainder should be landscaped roof to building C2.
3. A Forest Playground of 3,900 sqm usable area should be provided between Lots D2 and D3.
4. Publicly accessible open spaces should connect Shrimptons Creek, the Village Green, Town Square, and Epping Road landscape corridor.
5. Each lot should provide a mix of public and communal open space with a combined minimum area equal to 25% of the lot area, except Lot A1 which is not required to provide public or communal open space if it provides a childcare facility at ground level.

03. DEEP SOIL ZONES

OBJECTIVES

A. To retain existing mature trees and to support healthy tree growth.
B. To provide passive recreation opportunities.
C. To promote management of water and air quality.

PROVISIONS

1. The area of deep soil within site, excluding RE1 zoned land, should be no less than 20% of the site area
2. Deep soil zones should have a minimum dimension of 6m.

Deep Soil
Deep Soil in RE1 Zone

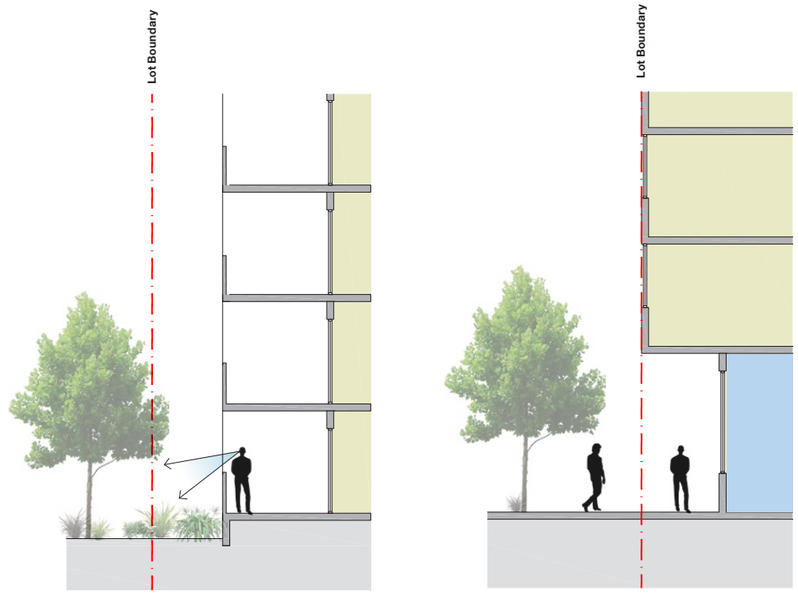
04. PUBLIC DOMAIN INTERFACE

OBJECTIVES

A. To transition between private and public domain without compromising safety and security.
B. To retain and enhance the amenity of the Shrimptons creek corridor.
C. To maximise the amenity of new streets and public open spaces.

PROVISIONS

1. Apartments, balconies and courtyards fronting Public Open Space such as Shrimptons Creek landscape corridor, Epping Road landscape corridor, Village Green and Forest playground should be provided with a landscaped buffer to separately define public and private space but maintain passive surveillance.
2. Community and retail uses should provide an active frontage to the Village Green.
3. Communal open space should be clearly defined and separate from the public domain.



Residential

Retail/
Community

05. ACTIVE FRONTAGES

OBJECTIVES

A. To provide active frontages with a distinctive civic character to Main Street.
B. To ensure that public spaces and streets are activated along their edges.
C. To maximise street frontage activity where ground floor apartments are located.
D. To deliver amenity and safety for residents when designing ground floor apartments.

PROVISIONS

1. Buildings A1 and B2 should accommodate a childcare centre at ground level
2. Buildings B1.2, C1, C2, C3 should accommodate retail and / or communal uses at ground level fronting Main Street and the Village Green
3. Building D3 should provide ground level office space for the community housing provider.
4. Direct street access should be provided to ground floor apartments
5. 2-4 storey residential typologies should be considered on street frontages of apartment buildings fronting neighbourhood streets.
6. Basement carparks are not be visible above ground level.

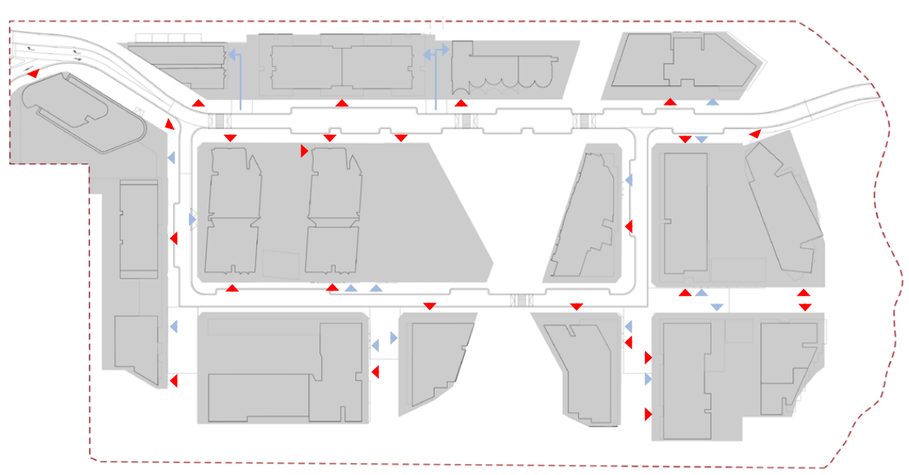
06. PEDESTRIAN AND VEHICULAR ENTRY LOCATIONS

OBJECTIVES

A. To provide building entries and pedestrian access that connects to and addresses the public domain.
B. To provide accessible and easily identifiable building entries and pathways.
C. To minimise conflicts between vehicles and pedestrians
D. To create high quality streetscapes

PROVISIONS

1. Primary building entries should address the street.
2. Vehicle entries should avoid Main St where possible.
3. Internal loading docks will be shared wherever possible to limit the amount of driveways to improve public amenity and streetscapes.
4. Ensure loading docks are capable of accommodating vehicles for both garbage collection and move ins / move outs.
5. Where internal dedicated loading docks are not possible, on-street loading zones will be discretely located near building entries.



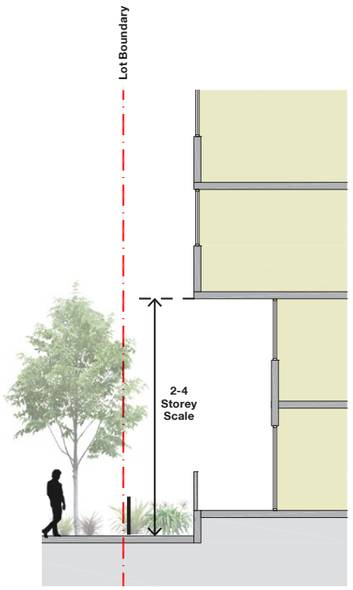
07. STREET WALL HEIGHT

OBJECTIVES

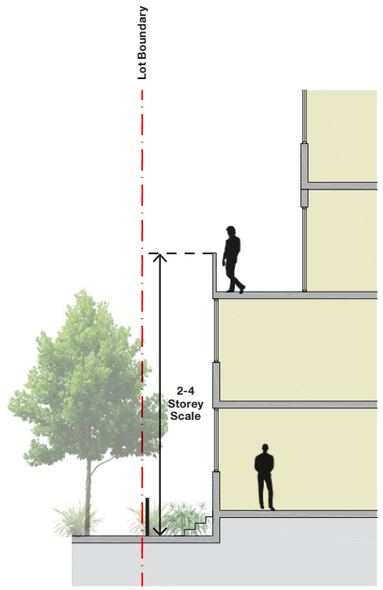
A. To provide buildings that positively contribute to the physical definition of the public domain.
B. To reduce the scale of buildings as perceived from the public domain.

PROVISIONS

1. On neighbourhood streets, buildings should express a 2-4 storey scale on the lowest levels of the building.



Neighbourhood Street



Neighbourhood Street

BATESSMART.

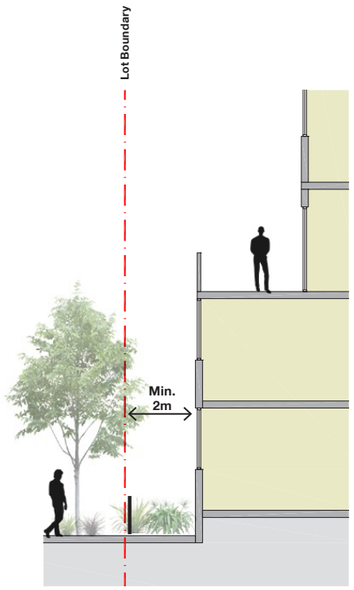
08. GROUND LEVEL STREET SETBACKS

OBJECTIVES

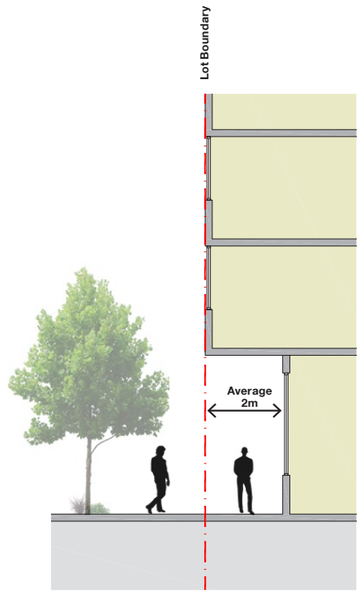
A. To provide buildings that positively contribute to the physical definition of the public domain
B. To transition between private and public domain without compromising safety and security
C. To provide a landscape design which contributes to the streetscape and residential amenity

PROVISIONS

1. On neighbourhood streets, the lower levels of buildings should be set back a minimum of 2m from the lot boundary.
2. On main street, the lower levels of buildings should have an average set back of 2m from the lot boundary.
3. On neighbourhood streets, setback zones should be landscaped to balance street activation and residential amenity.
4. Basement carparks are not be visible above ground level.



Neighbourhood Street



Main Street

BATESSMART.

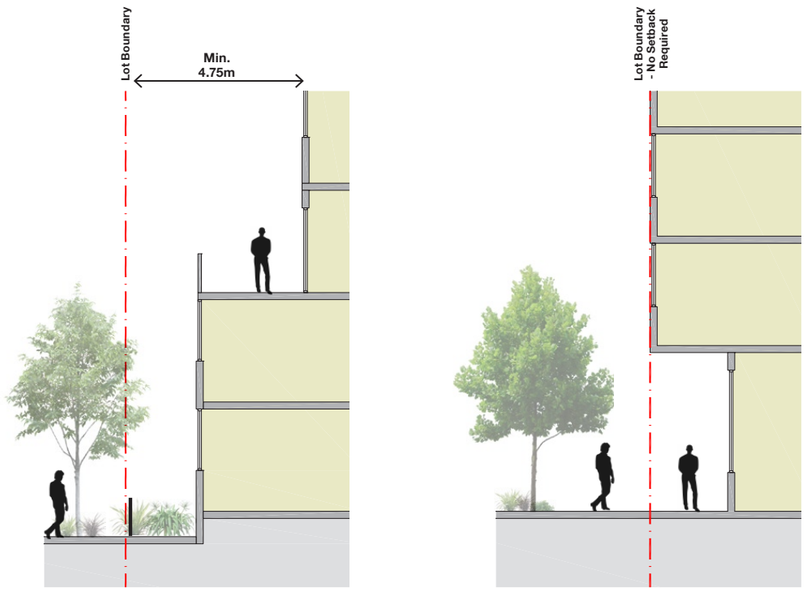
9. UPPER LEVEL SETBACKS

OBJECTIVES

A. To reduce the scale of buildings as perceived from the public domain.
B. To minimise the adverse wind impact of down drafts from tall buildings

PROVISIONS

1. On neighbourhood streets, upper floors of buildings should be set back a minimum of 4.75m from the lot boundary.
2. On Main Street, upper levels of buildings can be built to the lot boundary, subject to building separation requirements of SEPP65.



Neighbourhood Street

Main Street

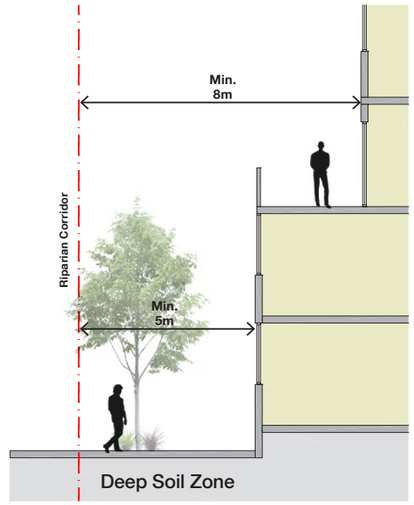
10. SETBACK TO SHRIMPTONS CREEK

OBJECTIVES

A. To provide buildings that positively contribute to the physical definition of the public domain.
B. To reduce the scale of buildings as perceived from the public domain.
C. To minimise the adverse wind impact of down drafts from tall buildings

PROVISIONS

1. Buildings fronting Shrimptons Creek should be set back a minimum of 5m from the edge of the Riparian Corridor.
2. Buildings fronting Shrimptons Creek should express a 2-4 storey scale on the lowest levels of the building.
3. Fronting Shrimptons Creek, upper levels of buildings should be set back a minimum of 8m from the edge of the Riparian Corridor.
4. Buildings fronting Shrimptons Creek should be articulated into multiple parts so that unbroken facades are no longer than 30m.
5. Refer to design guideline 4 regarding the interface of public and private space.



11. ROOFTOPS

OBJECTIVES

A. To maximise opportunities to use roof space for residential accommodation and open space.
B. To incorporate sustainability features into the roof design.
C. To minimise the visual impact of roof plant.

PROVISIONS

1. Private and communal roof terraces should be provided where possible.
2. Roofs that are overlooked by other buildings should provide either communal open space or landscape planting.
3. Plant areas should be screened from view.
4. Upper level roofs should accommodate solar panels.
5. Roof levels are to provide interesting silhouettes with no residential accommodation allowed above the maximum approved height.

12. FAÇADE EXPRESSION AND MATERIALS

OBJECTIVES

A. To define and reinforce a distinctive character within the masterplan precinct.
B. To express building functions.
C. To create buildings which will improve with age.

PROVISIONS

1. The lower levels of residential buildings should use masonry as the predominant facade material.
2. Render should be avoided as the primary facade material.
3. Façade materials should be self-finished, durable and low maintenance.
4. Use of colour in building façades should focus on warm, naturally occurring hues.

13. DESIGN EXCELLENCE

OBJECTIVES

A. To ensure architectural diversity is achieved.
B. To achieve a high standard of architectural and urban design, materials and detailing appropriate to the building type and location.
C. To ensure the form and external appearance of the buildings improve the quality and amenity of the public domain.
D. To ensure buildings meet sustainable design principles in terms of sunlight, natural ventilation, wind, reflectivity, visual and acoustic privacy, safety and security and resource, energy and water efficiency.

PROVISIONS

1. Buildings should be designed in accordance with the Ivanhoe Masterplan design excellence strategy prepared by Ethos Urban.

14. UNIVERSAL DESIGN

OBJECTIVES

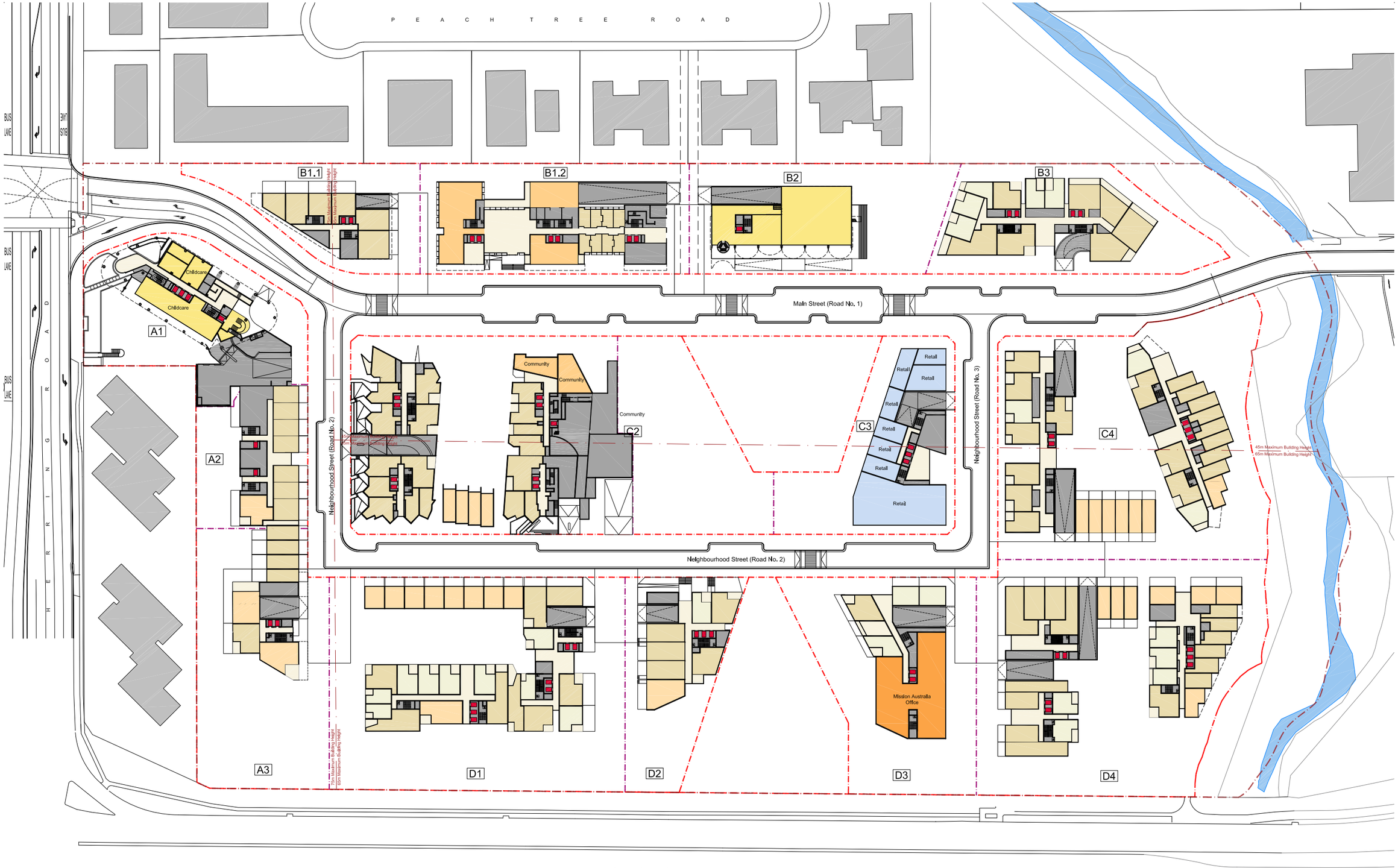
A. Universal design features are included in apartment design to promote flexible housing for all community members.
B. A variety of apartments with adaptable designs are provided.

PROVISIONS

1. 100% of social dwellings should incorporate the Liveable Housing Guideline's silver level universal design features
2. 5% of market and affordable dwellings should be wheelchair adaptable to meet the requirements of AS4299 Class C.

APPENDIX C

DRAWINGS FOR INFORMATION



FOR INFORMATION
NOT FOR APPROVAL

Keys
- Site Boundary
- Lot Boundary
- LEP 'Maximum Building Height' Plane (Interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Existing Buildings
- Building Above

Colour Keys
- Balconies, Lobbies & Circulation Spaces
- Back of House / Substations
- Residential
- Retail
- Childcare
- Community
- Office

Revision	Date	Description	Initial	Checked
12	11.09.19	Response to Submissions 2	JS	MA
11	24.08.18	Respond to Submissions	YL	MA
10	17.08.18	Respond to Submission + DRAFT	YL	MA
9	08.08.18	Update to Landscape	YL	MA
8	31.07.18	Respond to Submission- DRAFT	YL	MA
7	27.07.18	Road Layout Update- DRAFT	YL	MA
6	26.07.18	Response to Submissions - DRAFT	YL	MA
5	23.07.18	Response to Submissions - DRAFT	YL	MA
4	XX.XX.18	Post SSDA lodgement amendments	WM	MA
3	14.12.17	Proposed adjoining site Information omitted	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Revision Date Description Initial Checked

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme

Ground Floor Plan

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM Checked MA
Project No.	S12067
Status	For Information
Plot Date	11/9/2019 11:15 AM
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Drawing No.	DA02.MP.000[12] [Revision]

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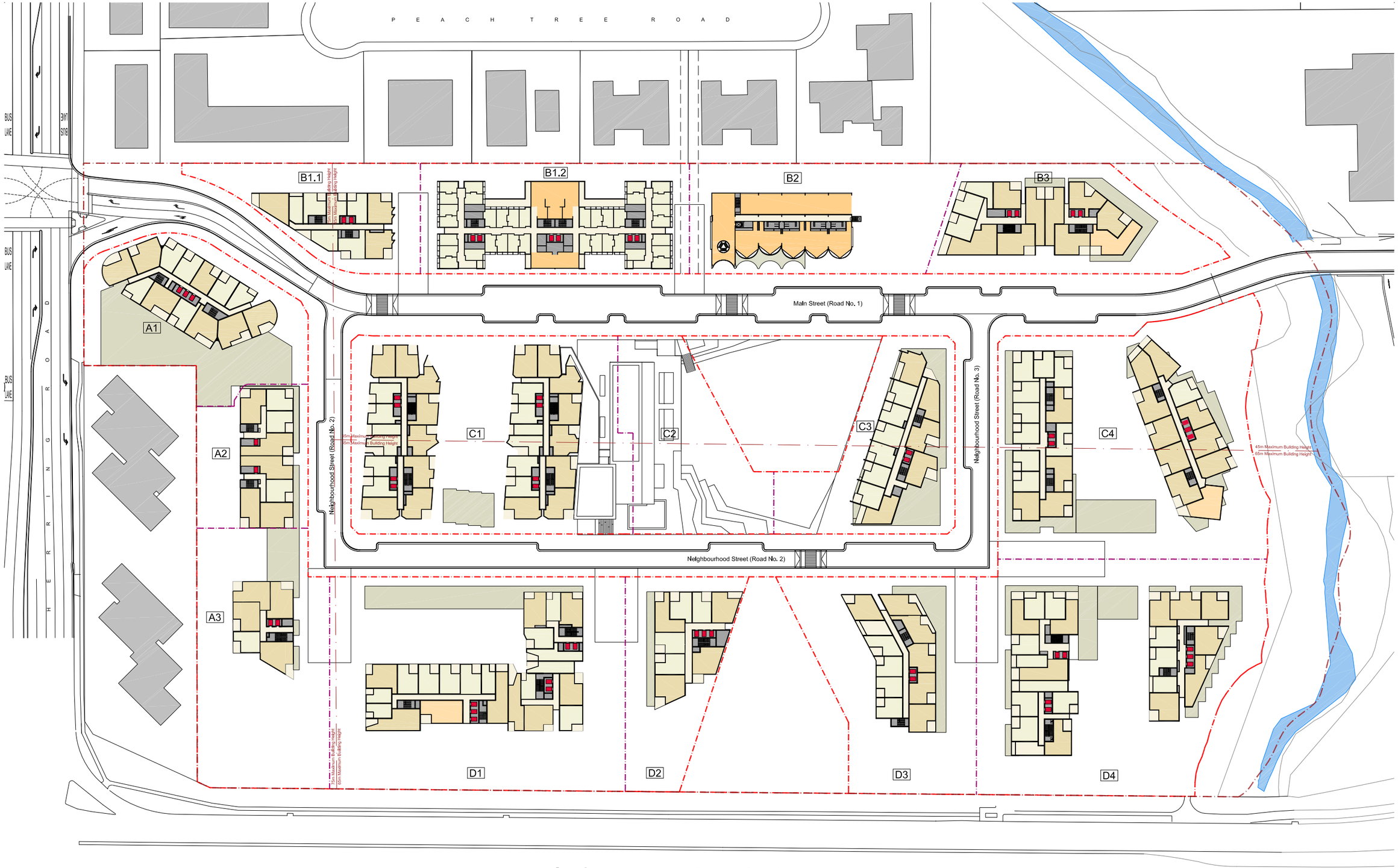

FOR INFORMATION
NOT FOR APPROVAL

Key:
- Site Boundary
- Lot Boundary
- LEP 'Maximum Building Height' Plane (interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Existing Buildings
- Building Above
- Building Below

Colour Key:
- Balconies, Lobbies & Circulation Spaces
- Back of House / Substations
- Studio / 1 Bed Dwellings
- 2 Bed Dwellings
- 3 Bed Dwellings
- Community

Revision	Date	Description	Initial	Checked
11	11.09.19	Response to Submissions 2	JS	MA
10	24.08.18	Respond to Submissions	YL	MA
9	17.08.18	Respond to Submission – DRAFT	YL	MA
8	31.07.18	Respond to Submission– DRAFT	YL	MA
7	27.07.18	Road Layout Update– DRAFT	YL	MA
6	26.07.18	Response to Submissions – DRAFT	YL	MA
5	23.07.18	Response to Submissions – DRAFT	YL	MA
4	XX.XX.18	Post SSDA lodgement amendments	WM	MA
3	14.12.17	Proposed adjoining site information omitted	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme

Typical Floor Plan (Lower)

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM
Checked	MA
Project No.	S12067
Status	For Information
Plot Date	11/9/2019 11:15 AM
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Drawing No.	DA02.MP.002[11] [Revision]

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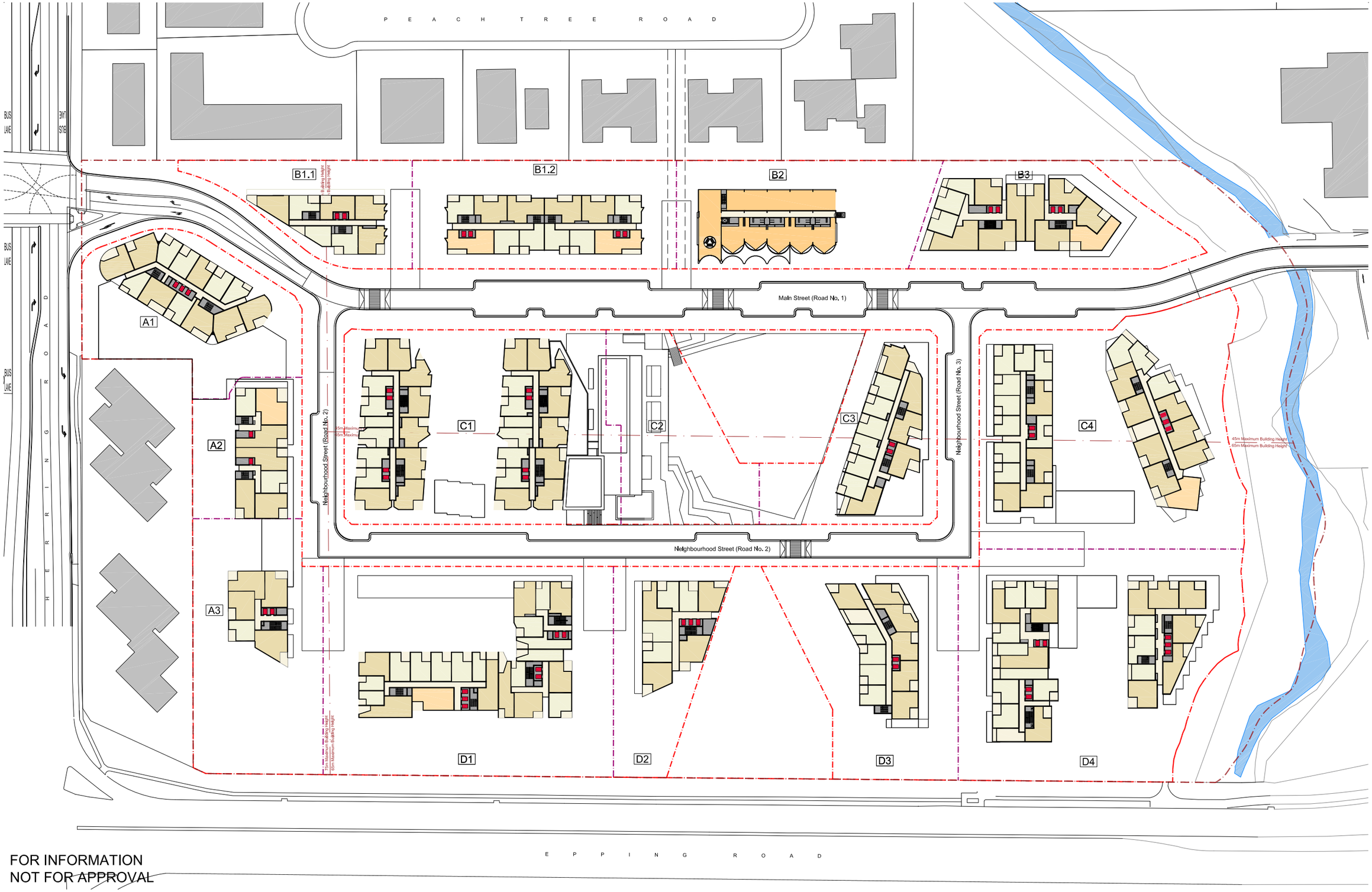

FOR INFORMATION
NOT FOR APPROVAL

Keyz

- Site Boundary
- Lot Boundary
- LEP 'Maximum Building Height' Plane (Interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Existing Buildings
- Building Above
- Building Below

Colour Keyz

- Balconies, Lobbies & Circulation Spaces
- Back of House / Substations
- Studio / 1 Bed Dwellings
- 2 Bed Dwellings
- 3 Bed Dwellings
- Community

Revision	Date	Description	Initial	Checked
7	11.09.19	Response to Submissions 2	JS	MA
6	24.06.18	Respond to Submissions	YL	MA
5	17.06.18	Respond to Submission - DRAFT	YL	MA
4	31.07.18	Respond to Submission- DRAFT	YL	MA
3	27.07.18	Road Layout Update- DRAFT	YL	MA
2	26.07.18	Response to Submissions - DRAFT	YL	MA
1	23.07.18	Response to Submissions - DRAFT	YL	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme
Typical Floor Plan (Mid)

0 2.5 5 10 15 25 m

Check all dimensions and site conditions prior to commencement of any work, the purchase or ordering of any materials, fittings, plant, services or equipment and the preparation of shop drawings and/or the fabrication of any components.
All drawings to be read in conjunction with all architectural documents and all other consultants documents.
Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the architect for clarification.
All drawings may not be reproduced or distributed without prior permission from the architect.

Scale	1:500@B1, 1:1,000@B3
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Checked	MA
Project No.	S12067
Status	For Information
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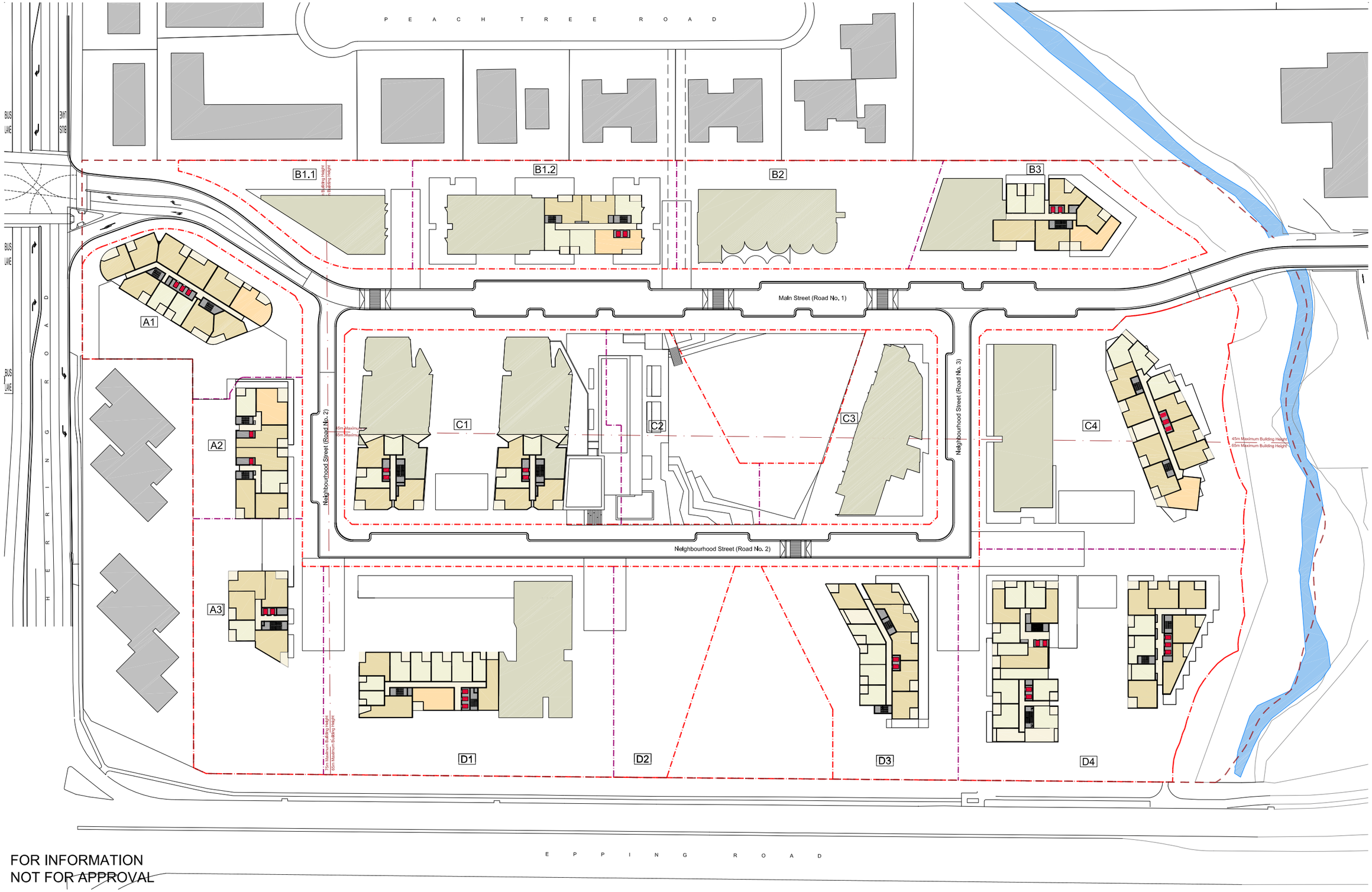

FOR INFORMATION
NOT FOR APPROVAL

Key:
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- Lot Boundary
- LEP 'Maximum Building Height' Plane (interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Existing Buildings
- Building Above
- Building Below

Colour Key:
- Balconies, Lobbies & Circulation Spaces
- Back of House / Substations
- Studio / 1 Bed Dwellings
- 2 Bed Dwellings
- 3 Bed Dwellings
- Community

Revision	Date	Description	Initial	Checked
11	11.09.19	Response to Submissions 2	JS	MA
10	24.08.18	Respond to Submissions	YL	MA
9	17.08.18	Respond to Submission - DRAFT	YL	MA
8	31.07.18	Respond to Submission- DRAFT	YL	MA
7	27.07.18	Road Layout Update- DRAFT	YL	MA
6	26.07.18	Response to Submissions - DRAFT	YL	MA
5	23.07.18	Response to Submissions - DRAFT	YL	MA
4	XX.XX.18	Post SSDA lodgement amendments	WM	MA
3	14.12.17	Proposed adjoining site information omitted	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme

Typical Floor Plan (Upper)

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM
Checked	MA
Project No.	S12067
Status	For Information
Plot Date	11/9/2019 11:15 AM
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[Revision]	

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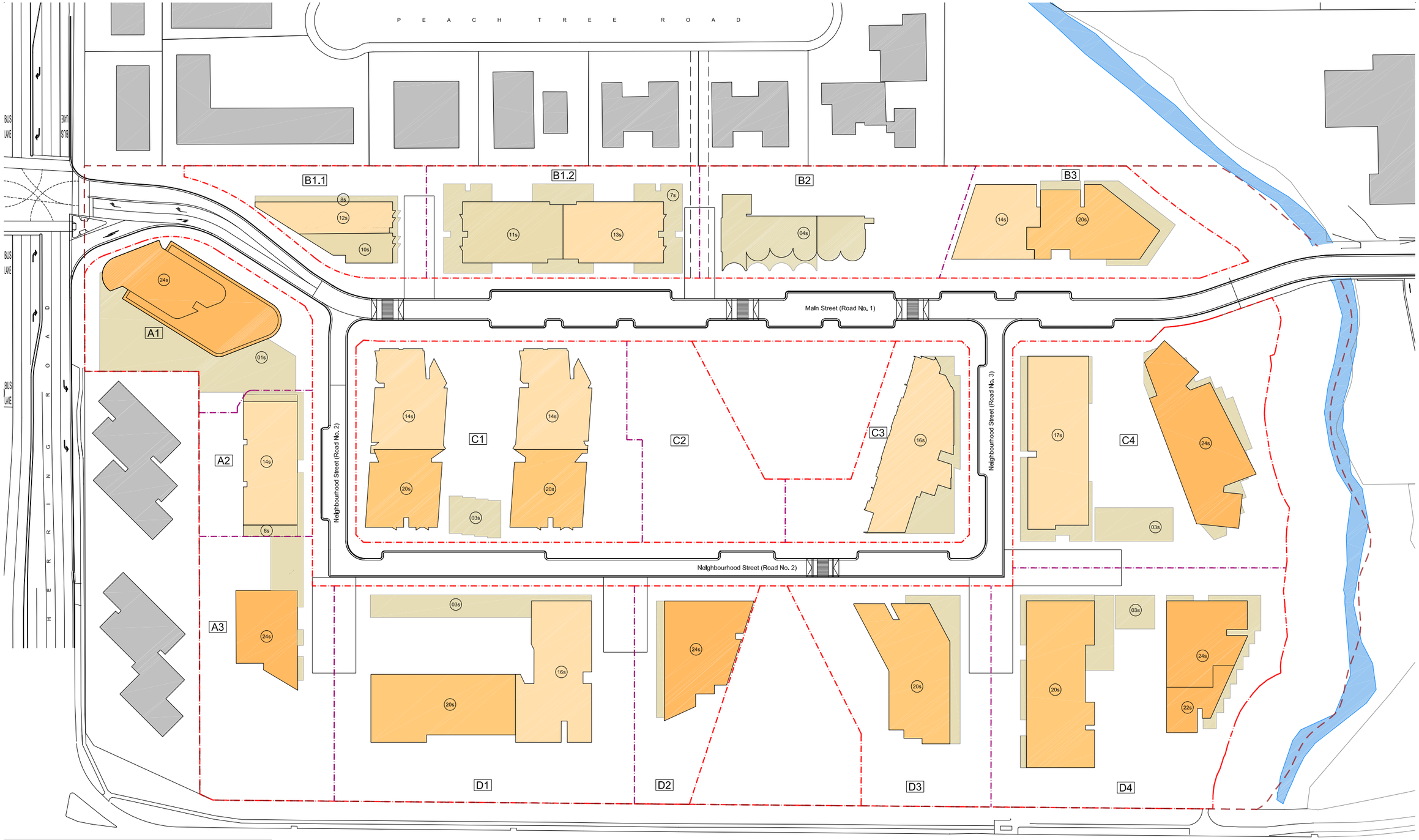

Block	For Approval Min GFA Range (m^2)	Indicative Scheme GFA (m^2)	For Approval Max GFA Range (m^2)
A1	19,000	21,580	24,000
A2	8,000	8,914	10,000
A3	9,000	10,625	12,000
B1.1	5,000	6,369	8,000
B1.2	13,000	14,964	17,000
B2	2,000	3,497	5,000
B3	17,000	18,932	21,000
C1	30,000	33,579	37,000
C2	1,000	1,926	3,000
C3	11,000	13,183	15,000
C4	34,000	38,562	43,000
D1	26,000	29,774	33,000
D2	14,000	15,655	18,000
D3	14,000	15,756	18,000
D4	31,000	34,684	39,000
Total		268,000	

FOR INFORMATION
NOT FOR APPROVAL

Key:
- Site Boundary
- Lot Boundary
- LEP 'Maximum Building Height' Plane (Interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Existing Buildings
- Building Above

Colour Keys:
- Generally 24 Storeys Building Height
- Generally 20 Storeys Building Height
- Generally 14 Storeys Building Height
- Generally below 14 Storeys Building Height

Revision	Date	Description	Initial	Checked
6	11.09.19	Response to Submissions 2	JS	MA
5	24.08.18	Respond to Submissions	YL	MA
4	17.08.18	Respond to Submission - DRAFT	YL	MA
3	14.12.17	Proposed adjoining site Information omitted	WM	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme
Roof Plan

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM Checked MA
Project No.	S12067
Status	For Information
Plot Date	11/9/2019 11:15 AM
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Drawing No.	DA02.MP.030[6] [Revision]

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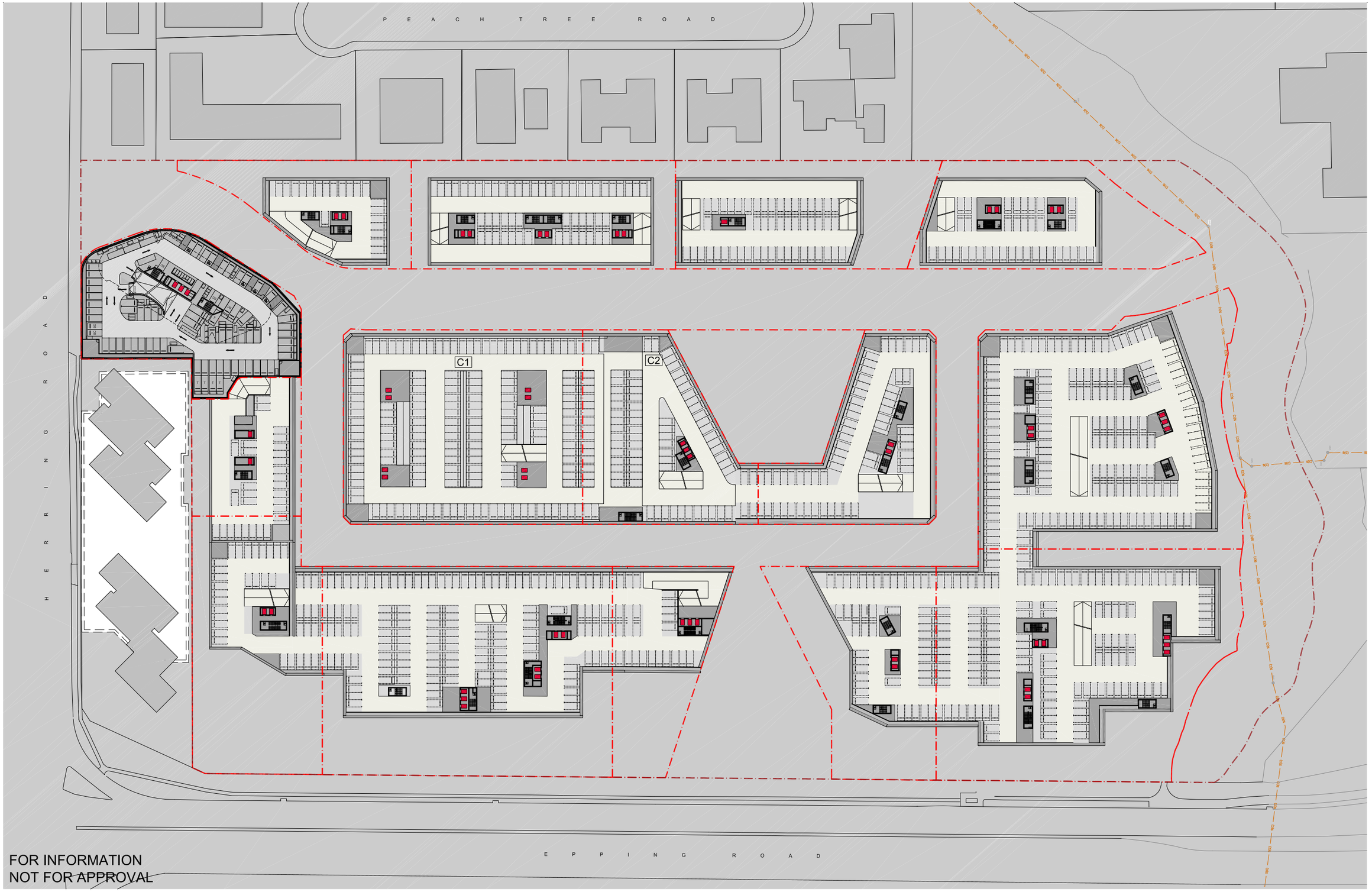

Revision	Date	Description	Initial	Checked
6	11.09.19	Response to Submissions 2	STJ	MA
5	24.08.18	Respond to Submissions	YL	MA
4	14.12.17	Proposed adjoining site information omitted	WM	MA
3	27.11.17	Submission for LAHC Assessment	YL	MA
2	27.11.17	Submission for LAHC Assessment	WM	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme

Typical Lower Basement Plan

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM
Checked	MA
Project No.	S12067
Status	For Information
Plot Date	11/9/2019 11:26 AM
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Drawing No.	DA02.MP.B02[6] [Revision]

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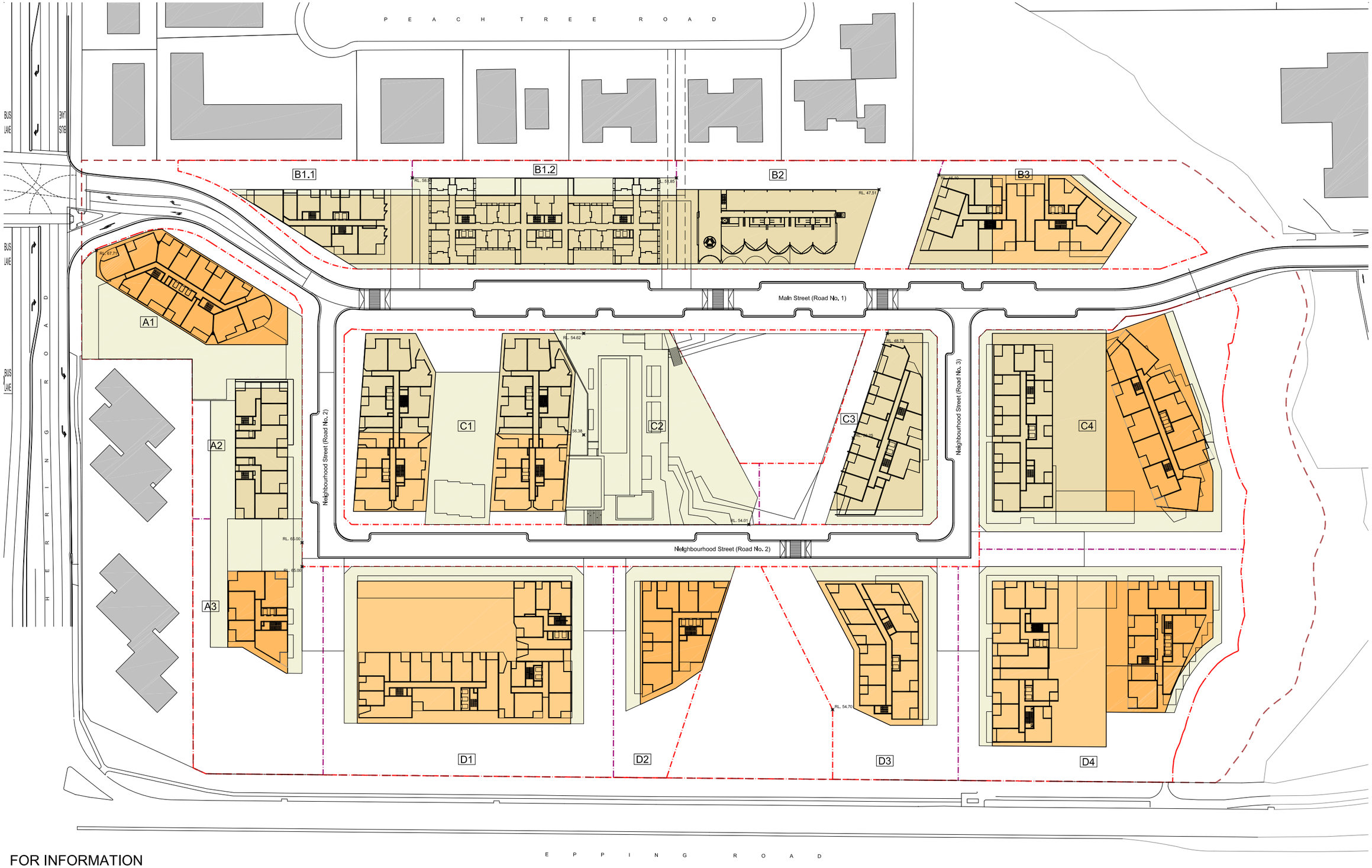

FOR INFORMATION
NOT FOR APPROVAL

Keyz
- Site Boundary
- Lot Boundary
- LEP Maximum Building Height Plane (Interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Existing Buildings
- Building Above

Revision	Date	Description	Initial	Checked
3	11.09.19	Response to Submissions 2	JS	MA
2	24.08.18	Respond to Submissions	YL	MA
1	17.08.18	Respond to Submission - Draft	YL	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme
IDS Overlay on Envelope

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM
Checked	MA
Project No.	S12067
Status	For Information
Plot Date	11/9/2019 11:36 AM
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Drawing No.	DA02.MP.040[3] [Revision]

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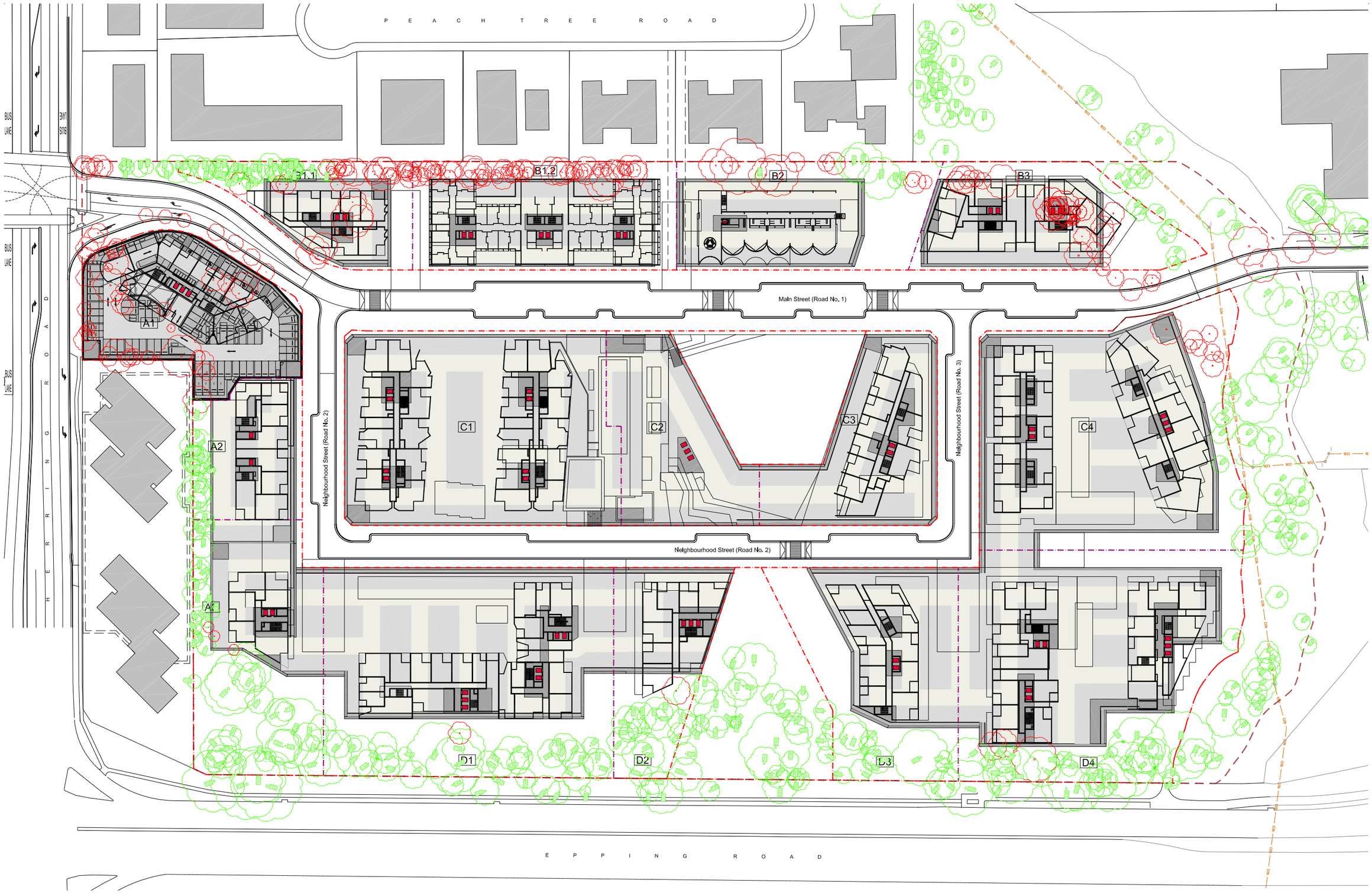

Key:
- Site Boundary
- Lot Boundary
- LEP 'Maximum Building Height' Plane (Interpreted from LEP Map PDF)
- Creek line (approximate) with Top of Bank (approximate)
- Proposed Basement extent
- Building Above
- Trees intended for retention
- Trees intended for removal

Revision	Date	Description	Initial	Checked
1	11.09.19	Response to Submissions 2	JS	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme

IDS Typical overlaid on basement

0 2.5 5 10 15 25 m

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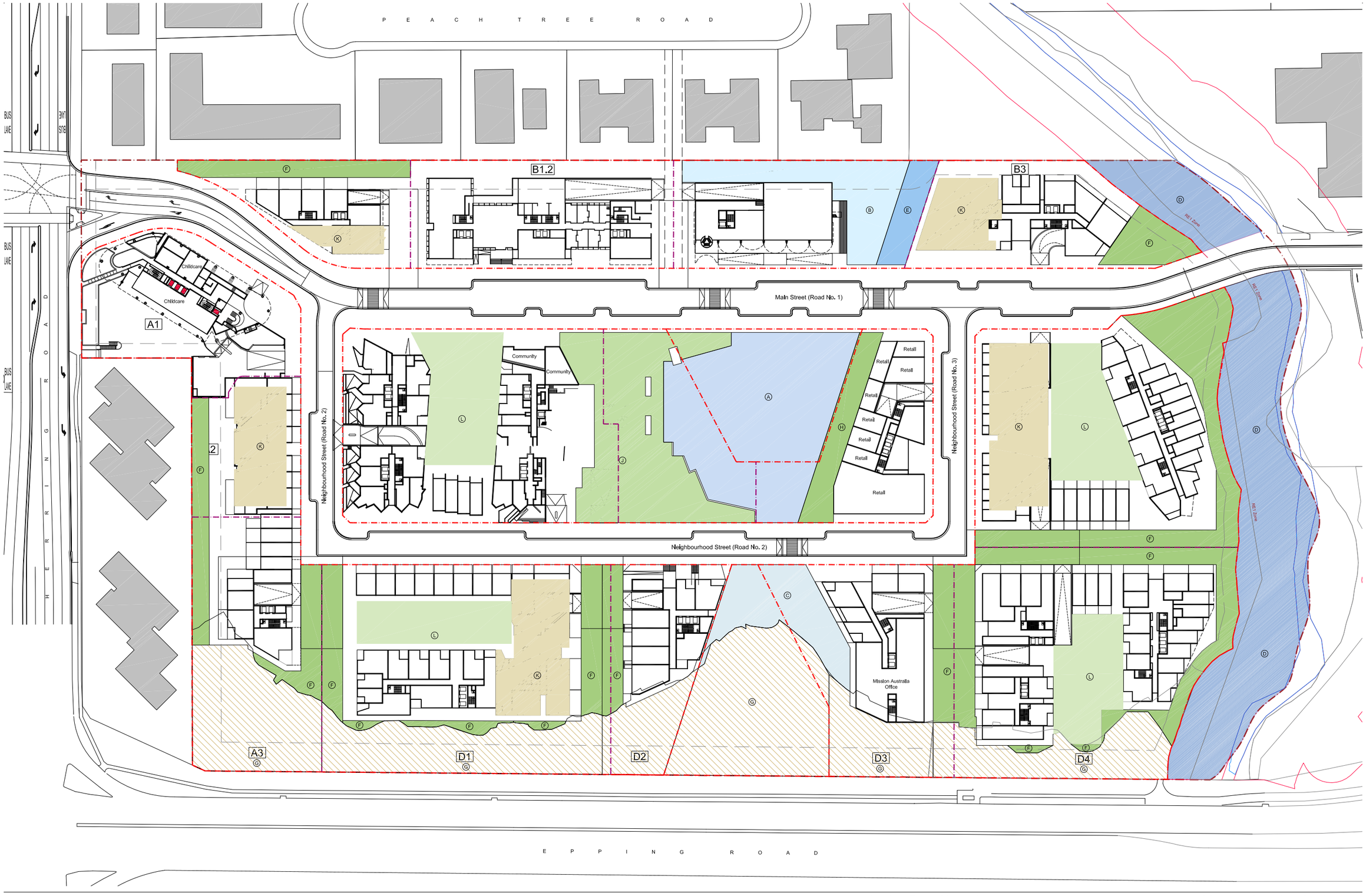

Area Schedule of Active and Passive Open Spaces

Key	Location	Measured Area	% of Site Area
Site		82,794m²	
Active Public Open Space			
A	Village Green recreational oval and playground	3,158m²	3.8%
B	School Playground	1,044m²	1.3%
C	Forest Playground	1,009m²	1.2%
	Total	5,212m²	6.3%

Passive Public Open Space			
D	Shrimptons Creek ripasian corridor	5,111m²	6.2%
E	School Garden	365m²	0.4%
F	Forest Thresholds	6,507m²	7.9%
G	Ecological corridor	8,376m²	10.1%
	Total	20,360m²	24.6%
Public Domain			
H	Town Square	566m²	0.7%
J	Village Green formal and informal gathering spaces (subject to final design from Ryde Council)	2,393m²	2.9%
	Total	2,959m²	3.6%

Communal Open Space			
K	Communal Rooftops	3,734m²	4.5%
L	Communal Gardens (at ground)	3,928m²	4.7%
Total Public Open Space			
	Existing	18,725m²	22.6%
	Proposed	36,192m²	43.7%

Revision	Date	Description	Initial	Checked

Revision	Date	Description	Initial	Checked
B	20.09.19	Response to submissions 2	JS	MA
A	14.08.18	Initial Issue	WM	MA
-	14.08.18	Initial Issue	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme

Active and Passive Open Spaces

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	WM
Checked	MA
Project No.	S12067
Status	For Information
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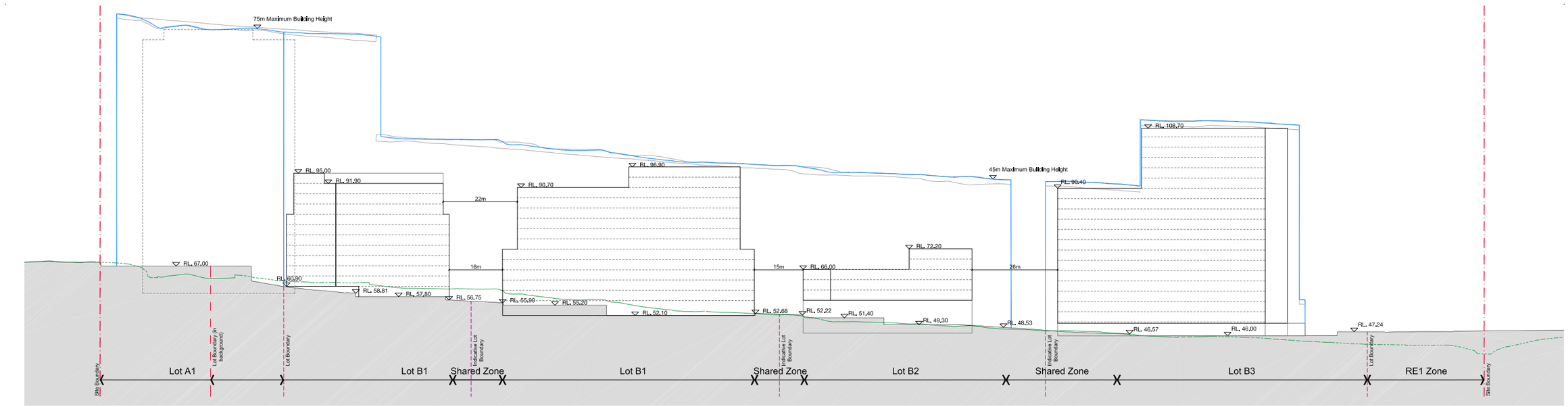

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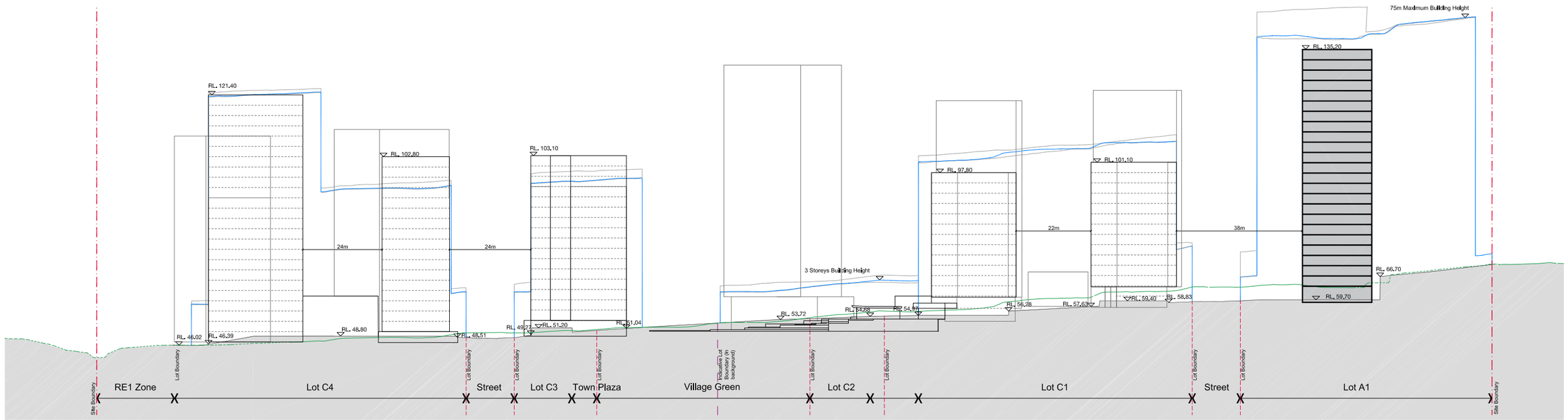
1:500 @ B1



02 Elevation 02
1:500 @ B1

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NOT FOR APPROVAL

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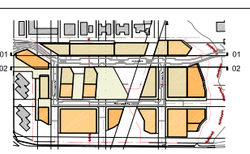
- Existing Ground Level



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5	25.09.19	Revised Masterplan Massing	JM	MA
4	24.08.18	Respond to Submissions	YL	MA
3	17.08.18	Respond to Submission + DRAFT	FL	MA
2	27.11.17	Submission for LAHC Assessment	YL	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

0 2.5 5 10 15 25 m

Check all dimensions and site conditions prior to commencement of any work, the purchase or ordering of any materials, fittings, plant, services or equipment and the preparation of shop drawings and/or the fabrication of any components.
All drawings to be read in conjunction with all architectural documents and all other consultants documents.
Do not scale drawings - refer to figured dimensions only. Any discrepancies shall immediately be referred to the architect for clarification.

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme

Street Elevations 01 & 02

Scale	1:500@B1, 1:1,000@B3
Drawn	YL
Checked	MA
Project No.	S12067
Status	For Information
Plot Date	25/9/2019 4:09 PM
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Drawing No.	DA09.MP.100[5]
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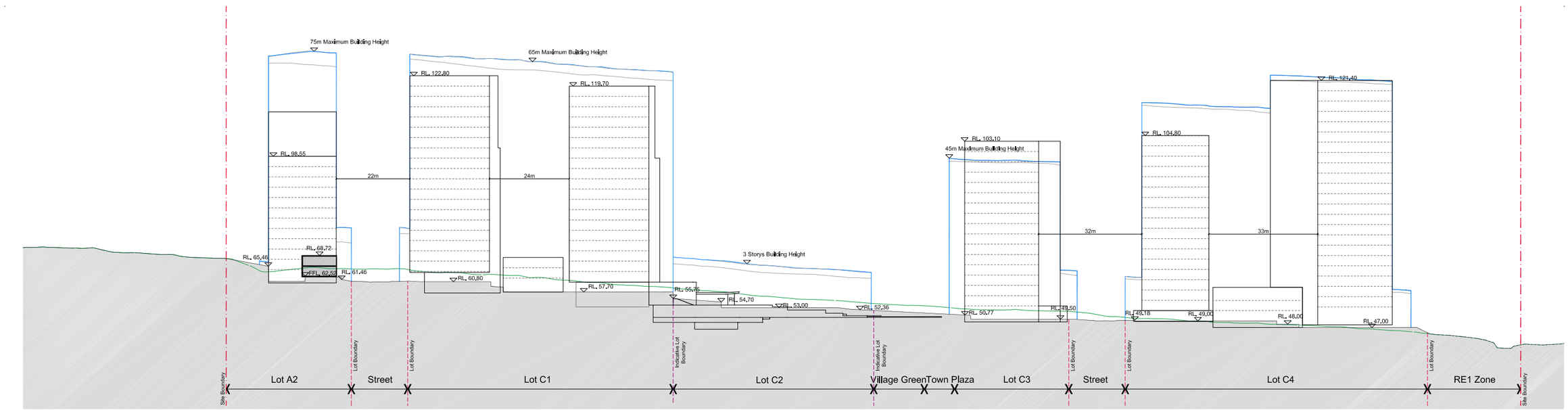

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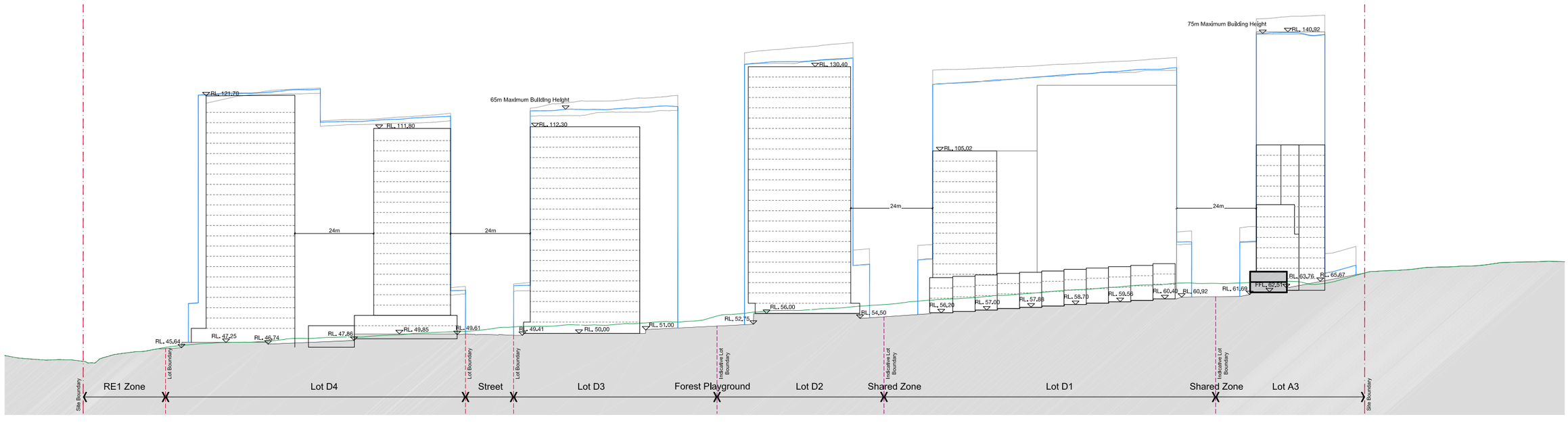

02 Elevation 04
1:500 @ B1

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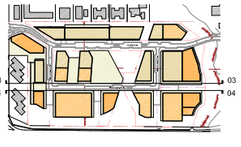
- Existing Ground Level



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Revision	Date	Description	Initial	Checked
5	25.09.19	Revised Masterplan Massing	JM	MA
4	24.08.18	Respond to Submissions	YL	MA
3	17.08.18	Respond to Submission - DRAFT	FL	MA
2	27.11.17	Submission for LAHC Assessment	YL	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme
Street Elevations 03 & 04

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	YL
Checked	MA
Project No.	S12067
Status	For Information
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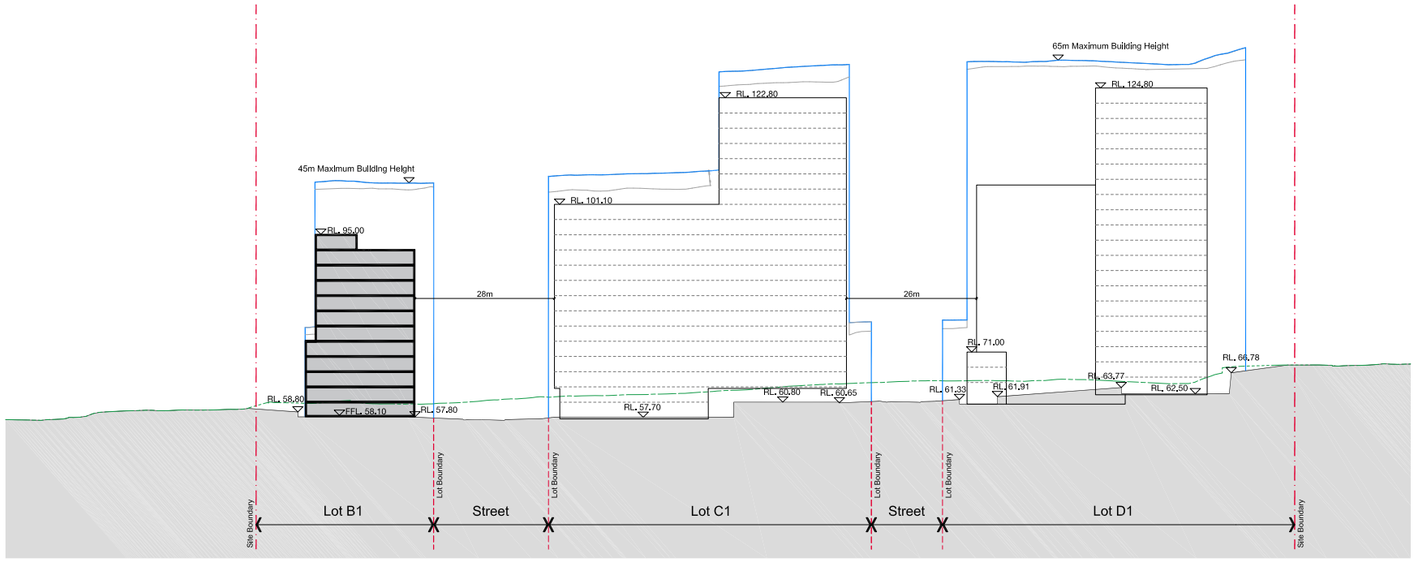
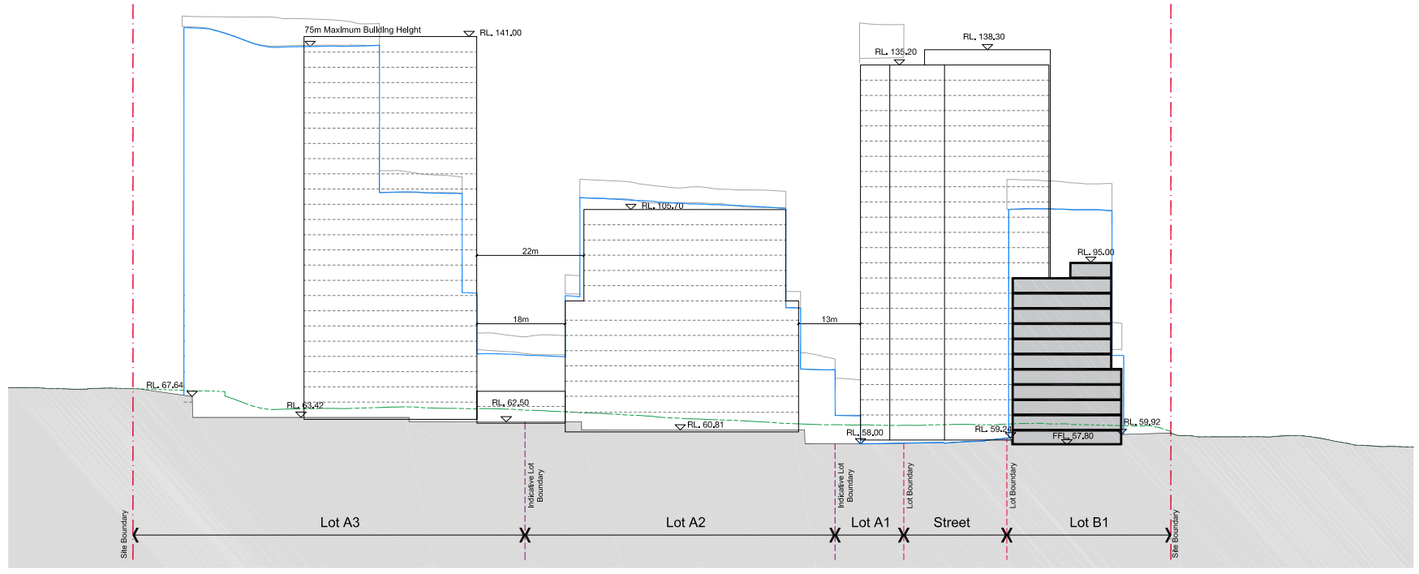


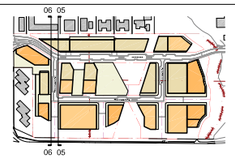
01 Elevation 05
1:500 @ B1



02 Elevation 08
1:500 @ B1

FOR INFORMATION
NOT FOR APPROVAL

Key:
- Site Boundary
- Lot Boundary
- Indicative Lot Division Line
- LEP Maximum Buildable Envelope, (interpreted from LEP Map PDF, Note: height varies in accordance with undulating existing topography. Proposed buildings sit below MBH planes)
- Existing Ground Level



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Revision	Date	Description	Initial	Checked
5	25.09.19	Revised Masterplan Massing	JM	MA
4	24.08.18	Respond to Submissions	YL	MA
3	17.08.18	Respond to Submission + DRAFT	FL	MA
2	27.11.17	Submission for LAHC Assessment	YL	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme
Street Elevations 05 & 06

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	YL Checked MA
Project No.	S12067
Status	For Information
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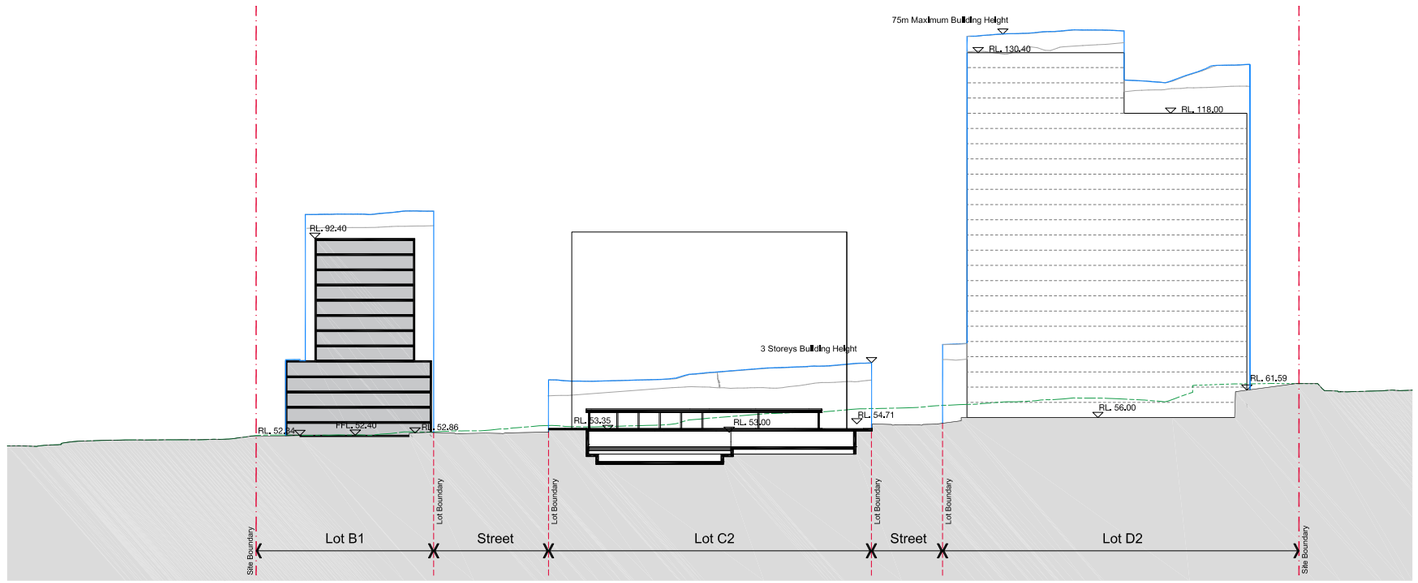
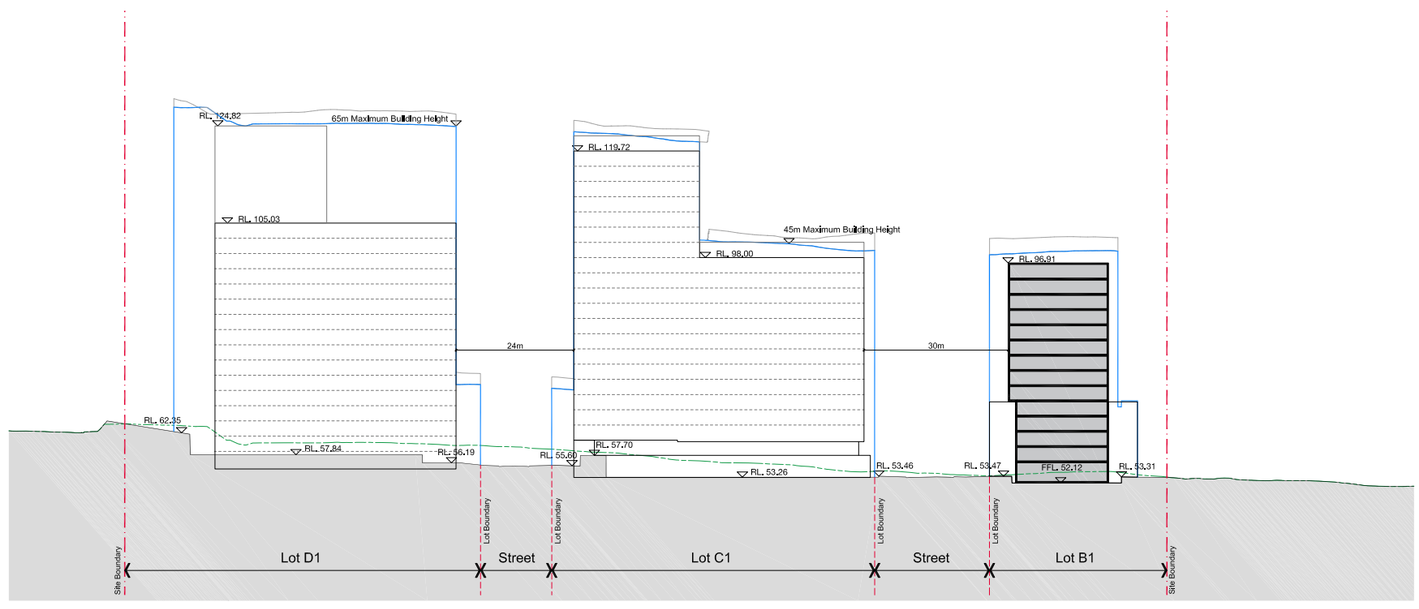


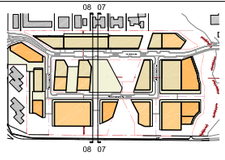
01 Elevation 07
1:500 @ B1



02 Elevation 08
1:500 @ B1

FOR INFORMATION
NOT FOR APPROVAL

Keys
- Site Boundary
- Lot Boundary
- Indicative Lot Division Line
- LEP Maximum Buildable Envelope, (interpreted from LEP Map PDF. Note: height varies in accordance with undulating existing topography. Proposed buildings sit below MBH planes)
- Existing Ground Level



Revision	Date	Description	Initial	Checked

Revision	Date	Description	Initial	Checked
5	25.09.19	Revised Masterplan Massing	JM	MA
4	24.08.18	Respond to Submissions	YL	MA
3	17.08.18	Respond to Submission - DRAFT	FL	MA
2	27.11.17	Submission for LAHC Assessment	YL	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme
Street Elevations 07 & 08

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	YL
Checked	MA
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Status	For Information
Plot Date	25/9/2019 4:09 PM
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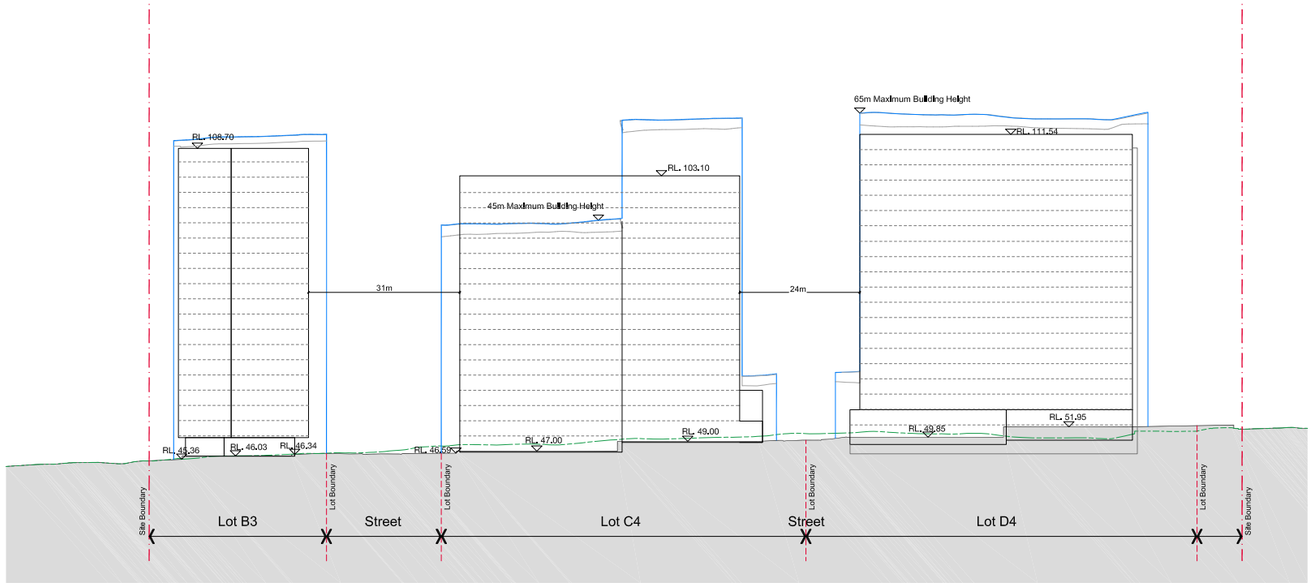

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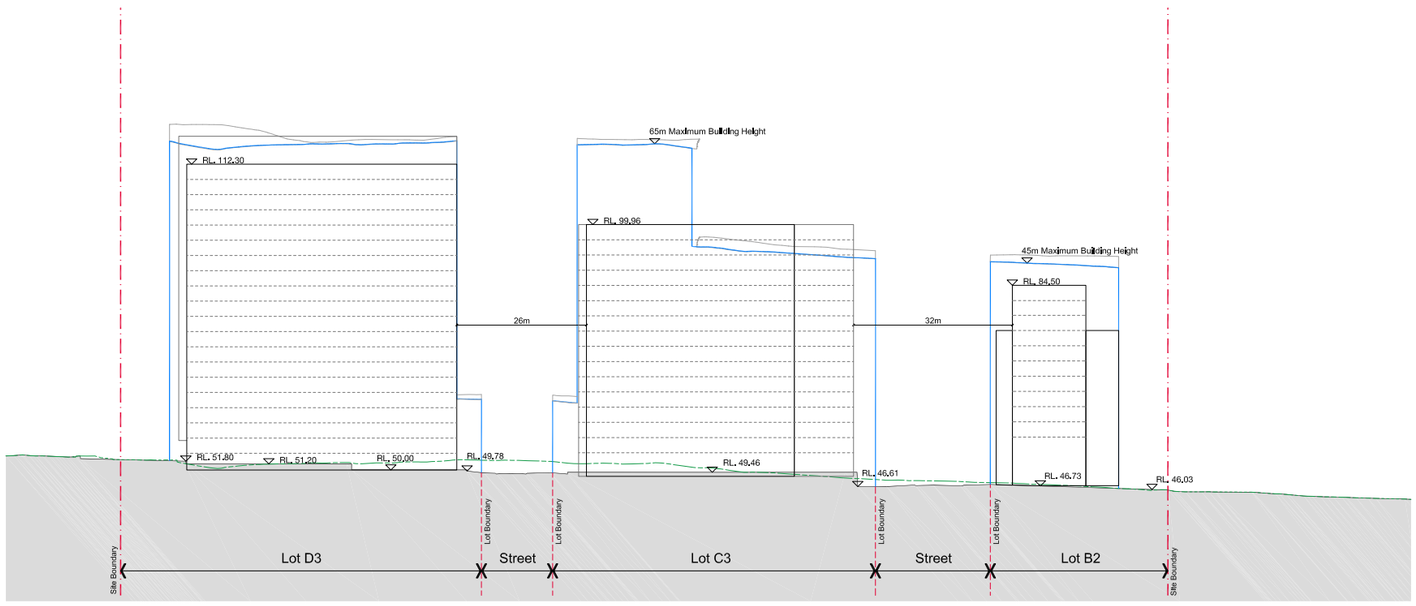

02 Elevation 10
1:500 @ B1

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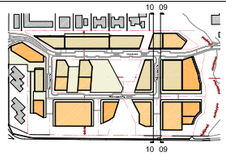
- Existing Ground Level



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Revision	Date	Description	Initial	Checked
5	25.09.19	Revised Masterplan Massing	JM	MA
4	24.08.18	Respond to Submissions	YL	MA
3	17.08.18	Respond to Submission + DRAFT	FL	MA
2	27.11.17	Submission for LAHC Assessment	YL	MA
1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Reference Scheme
Street Elevations 09 & 10

0 2.5 5 10 15 25 m

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Drawn	YL
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Project No.	S12067
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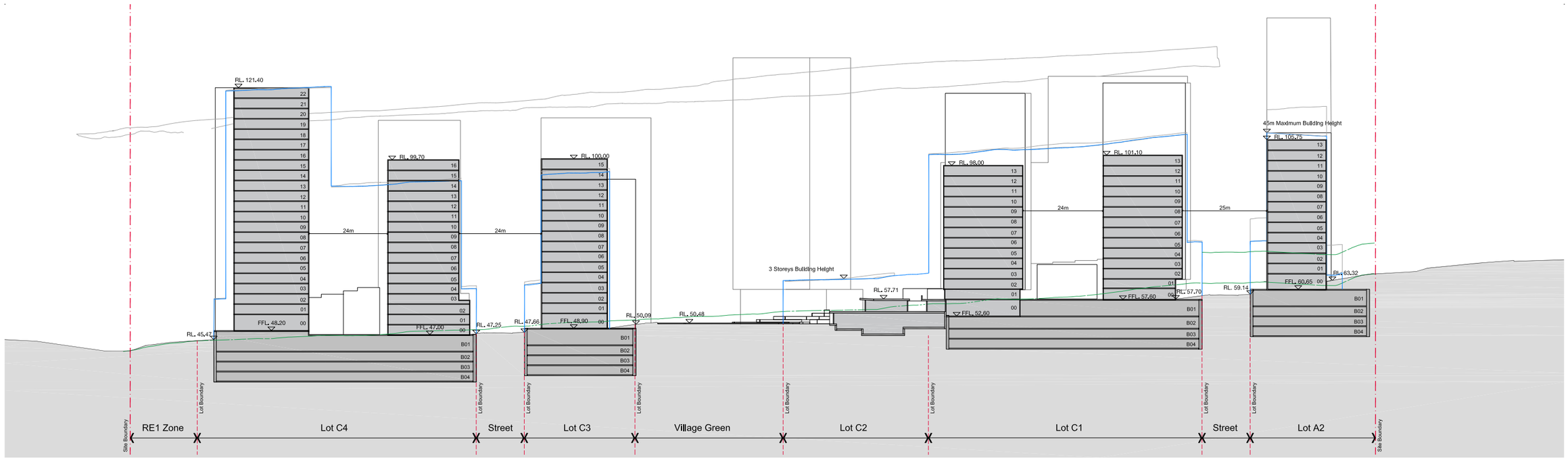

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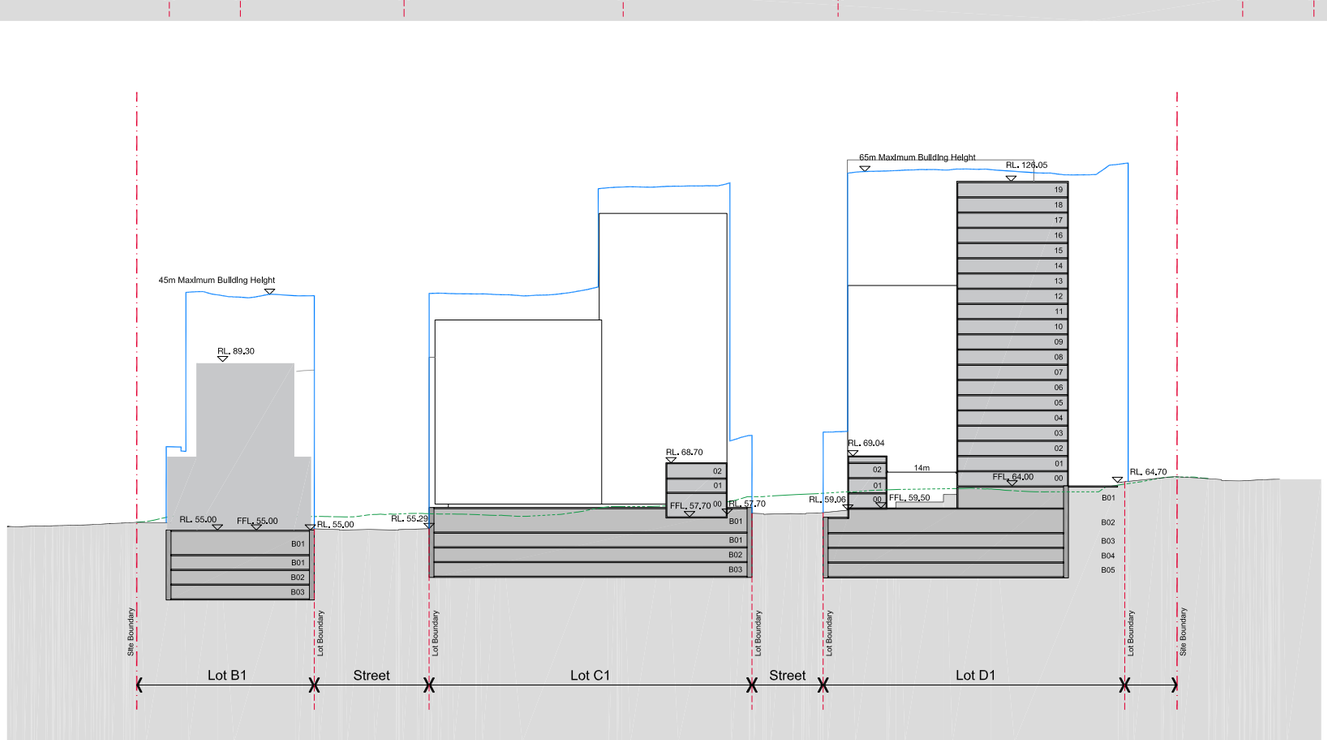

02 Section B
1:500 @ B1

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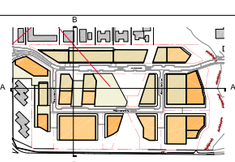

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Revision	Date	Description	Initial	Checked
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1	20.11.17	Stage 1 DA Submission	WM	MA

Ivanhoe Estate Masterplan
Macquarie Park, NSW
Indicative Design Scheme
Sections A & B

0 2.5 5 10 15 25 m

Scale	1:500@B1, 1:1,000@B3
Drawn	YL
Checked	MA
Project No.	S12067
Status	For Information
Plot Date	25/9/2019 4:09 PM
Plot File	S:\12000-12099\s12067_frasers_ivanhoe\70_Cad\Plots\DA\DA Tr...\DAMP.00005.dwg
Drawing No.	DA10.MP.000[5]
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APPENDIX D

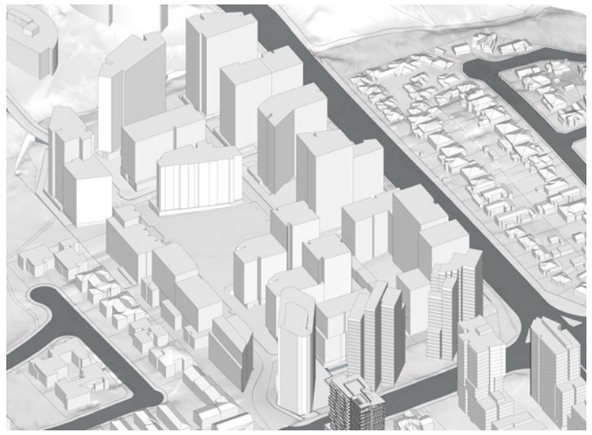
SOLAR ACCESS AND SHADOW ANALYSIS

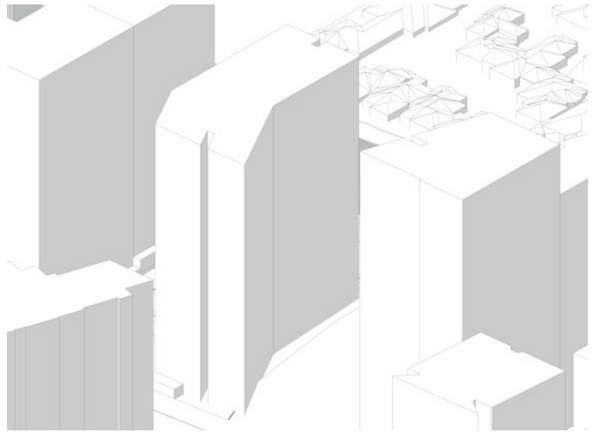
METHOD STATEMENT

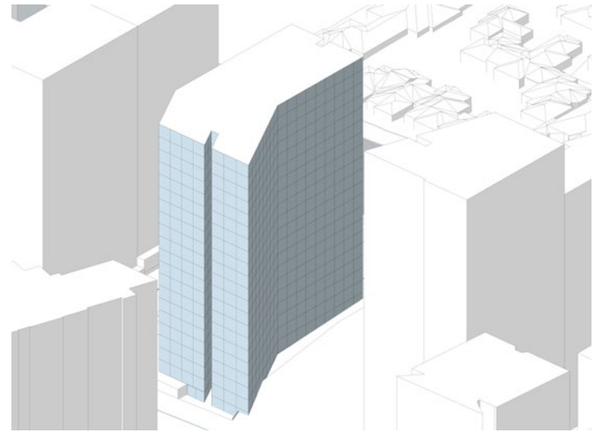
OVERVIEW

We have adopted a highly accurate parametric process to assess the solar access performance of the indicative reference scheme. The process has formed a vital tool in developing the masterplan design by allowing us to test the solar performance of numerous building configurations quickly while achieving highly accurate results which are able to be presented and understood in a very straightforward visual format.

The process involves the use of a propriety plug-in for Sketchup 2017 which calculates the number of hours a particular horizontal or vertical surface will receive solar access during a specified time window on a particular date and at a prescribed location. The results are then displayed both graphically and numerically.







METHODOLOGY:

The adjacent images illustrate the steps undertaken to assess whether 70% of apartments within the indicative reference scheme achieve a minimum of 2 hours of solar access to their living room and private open spaces between 9am and 3pm on 21st June in accordance with ADG requirements.

3D MODEL & CONTEXT:

A 3D aerial survey of the site and context area was purchased from the AAM group with a stated accuracy of 15 centimetres and was inserted into the context model using the inbuilt Geolocate function within Sketchup and cross referenced against 2D survey data to confirm the orientation of True North.

Our 3D model of the indicative reference scheme was then inserted.

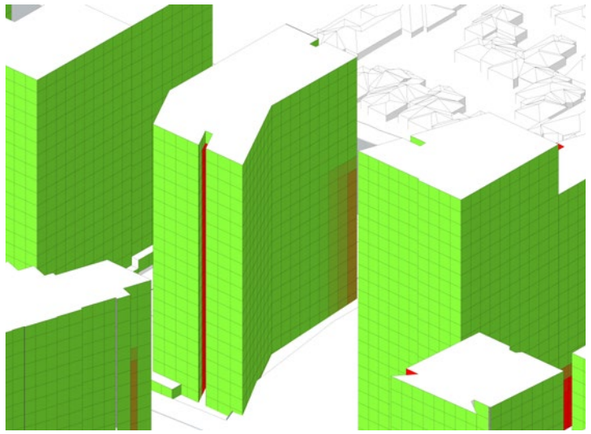
Settings for Sydney on 21st June are applied within the parametric tool to simulate solar access on the winter solstice during the hours of 9am and 3pm, the window specified within the ADG during which compliance is to be assessed.

BLOCK MASSING

The above image represents an example building, D3, as seen within the 3D site model prior to the test being undertaken. Building D4 is visble behind, and building D2 visible in the foreground.

GRID APPLIED

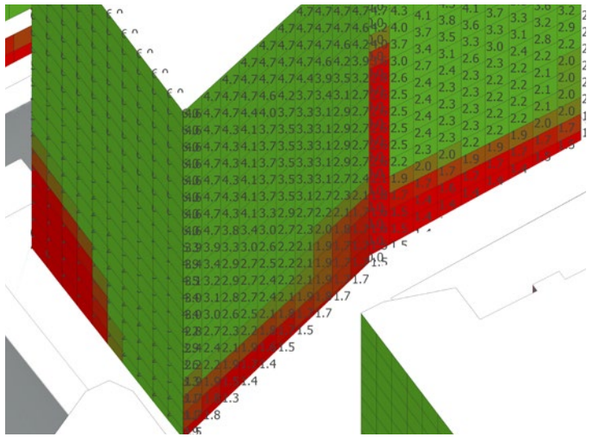
A 2 dimensional grid consisting of 3.1m x 3.1m squares is then applied to each building envelope to accurately reflect each storey height of 3.1m and a notional approximate room width of 3.1 metres.



VISUAL RESULTS

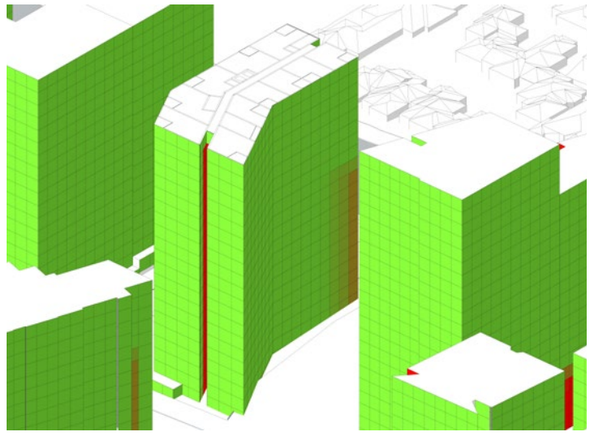
The parametric tool is then activated and solar access is simulated at 5 minute intervals between 9am and 3pm on 21st June, with a total of 72 measurements being undertaken on each square during the prescribed 6 hour window.

The results are shown in the above simple 2 dimensional graphic output. Squares which are coloured green are receiving in excess of 2 hours of solar access. Squares coloured red are receiving some solar access, but less than 2 hours. Squares shown as a mild red / green are achieving between 1.9 and 2.1 hours of solar access and require further investigation. Squares shown in grey are receiving no solar access on 21st June (not visible in the above view).



NUMERICAL RESULTS

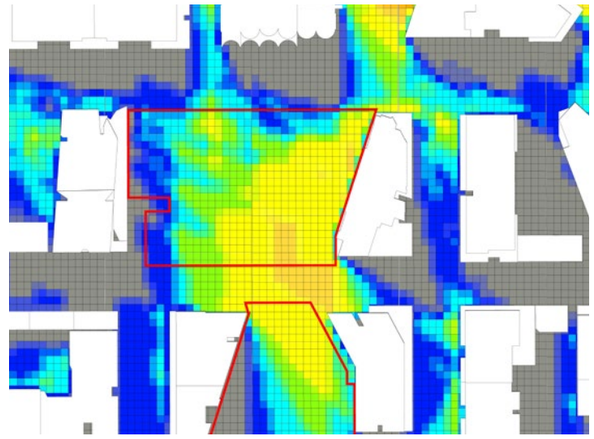
The graphical output is then supplemented by numerical output which indicates the actual number of sun hours being received by each square. This enables us to clearly distinguish between squares achieving 1.9, 2.0 or 2.1 hours and assess accordingly in the next step.



OVERLAY OF BUILDING PLAN

The 2D building plan of the indicative reference scheme is then applied onto the 3D model, identifying the location of each living room and private open space as visible in the above image. A manual count is then done to determine how many apartments per floor are receiving a minimum of 2 hours of solar access to both their living rooms and private open spaces, assessed by the colour of the facade interfacing with each plan and tabulated within a spreadsheet.

The output of our 3D parametric analysis for each building face is contained on the following pages.

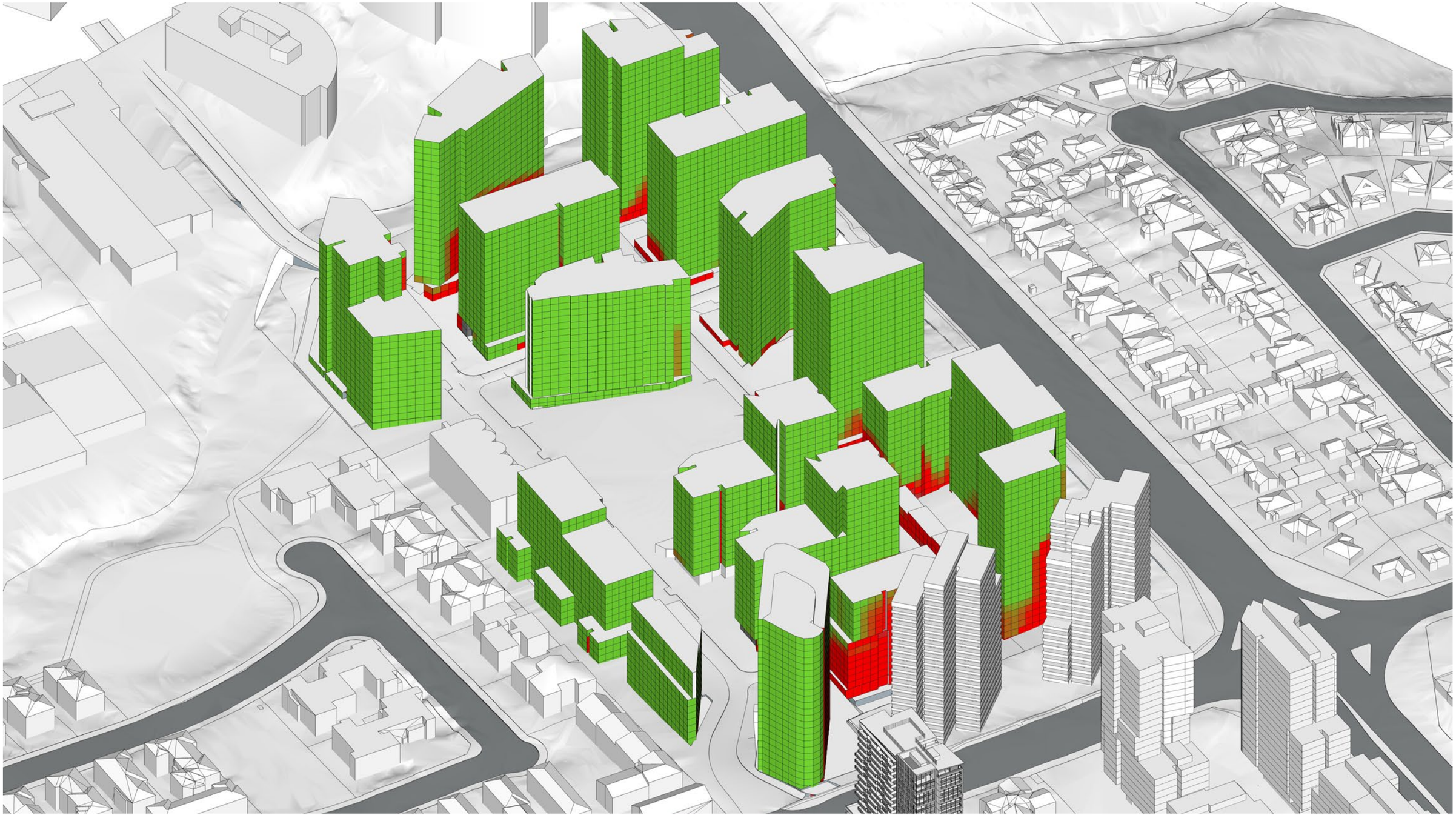


MEASUREMENT OF SOLAR ACCESS ON GROUNDPLANE

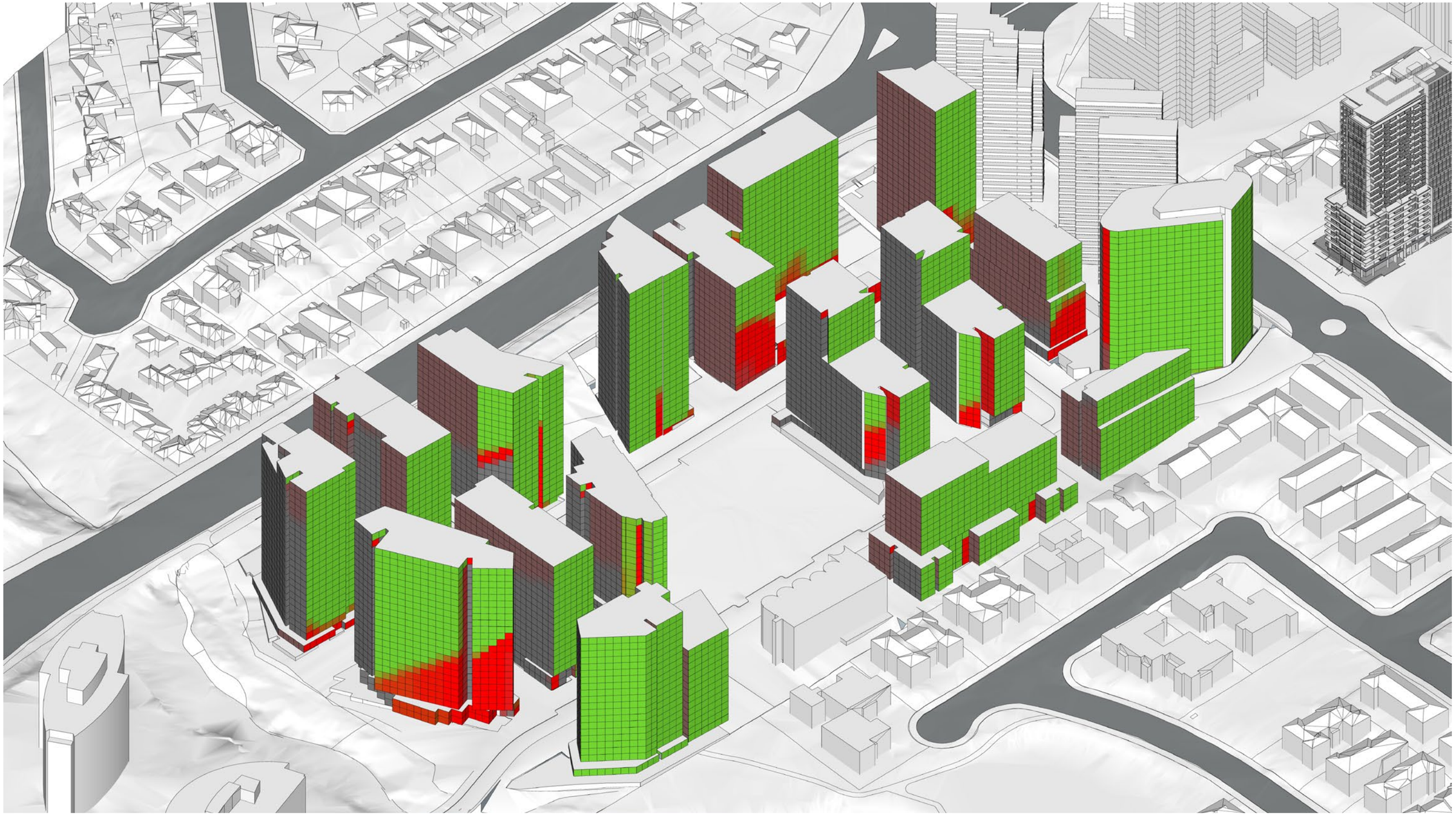
The same process has been adopted to determine the level of solar access received on the groundplane within the public domain. The 3.1 x 3.1m squares are mapped onto the groundplane and the parametric tool rerun. The output is displayed graphically, with colours identified in the key below reflecting the amount of sunlight received in each location. between 0 and 6 hours.

Studies for the entire masterplan are contained on the following pages and have been taken on 3 dates throughout the year, i) 21st June, the winter solstice, ii) 21st december, the summer solstice, and iii) 21st March / 21st September, the equinoxes which represent the average annual condition between the two solstices.

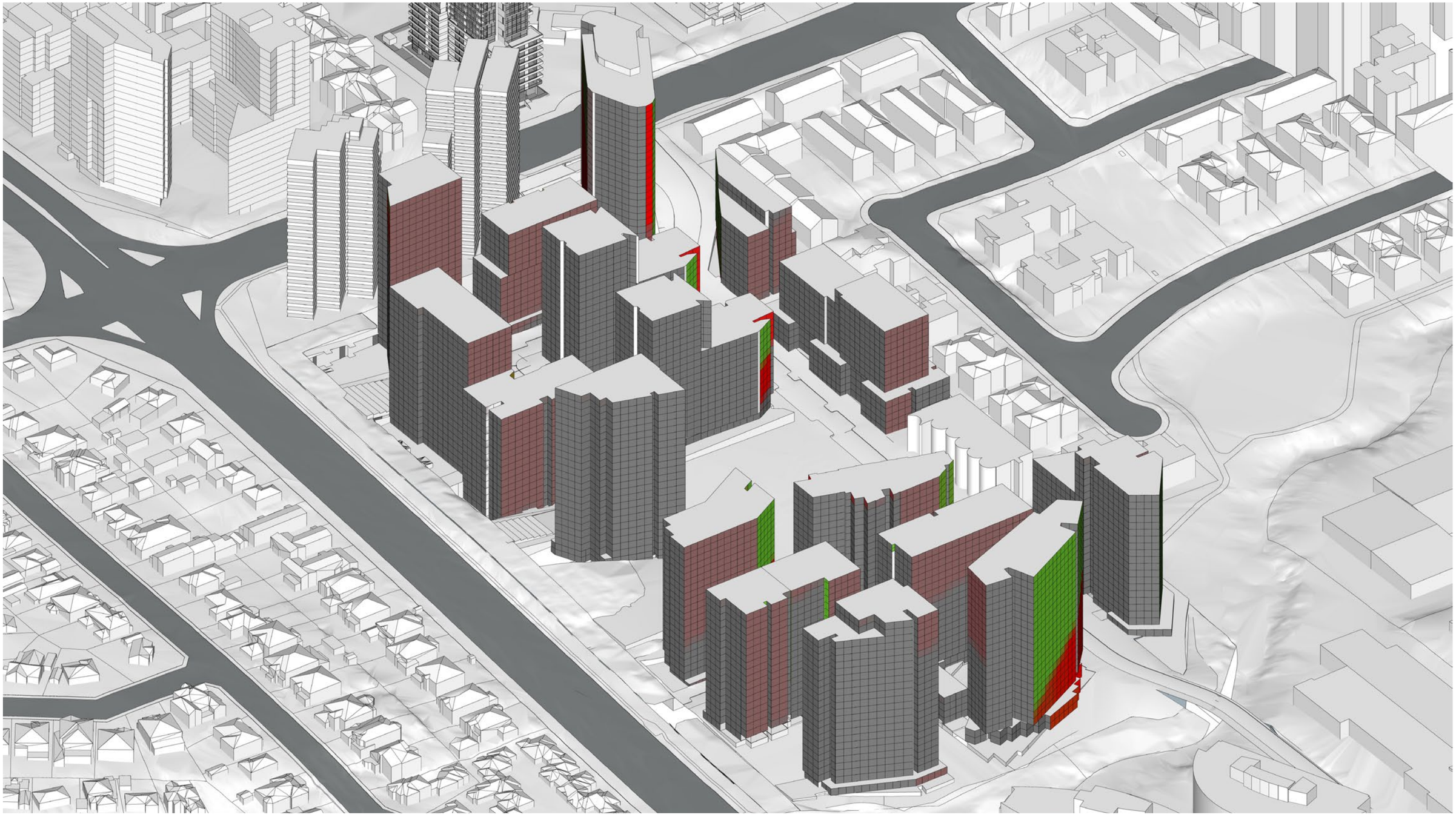
No direct sunlight
0 -1 hour
1- 2 hours
3 - 4 hours
5 - 6 hours
6+ hours



FACADE SOLAR ACCESS ANALYSIS: 21ST JUNE
VIEW FROM NORTH



FACADE SOLAR ACCESS ANALYSIS: 21ST JUNE
VIEW FROM EAST

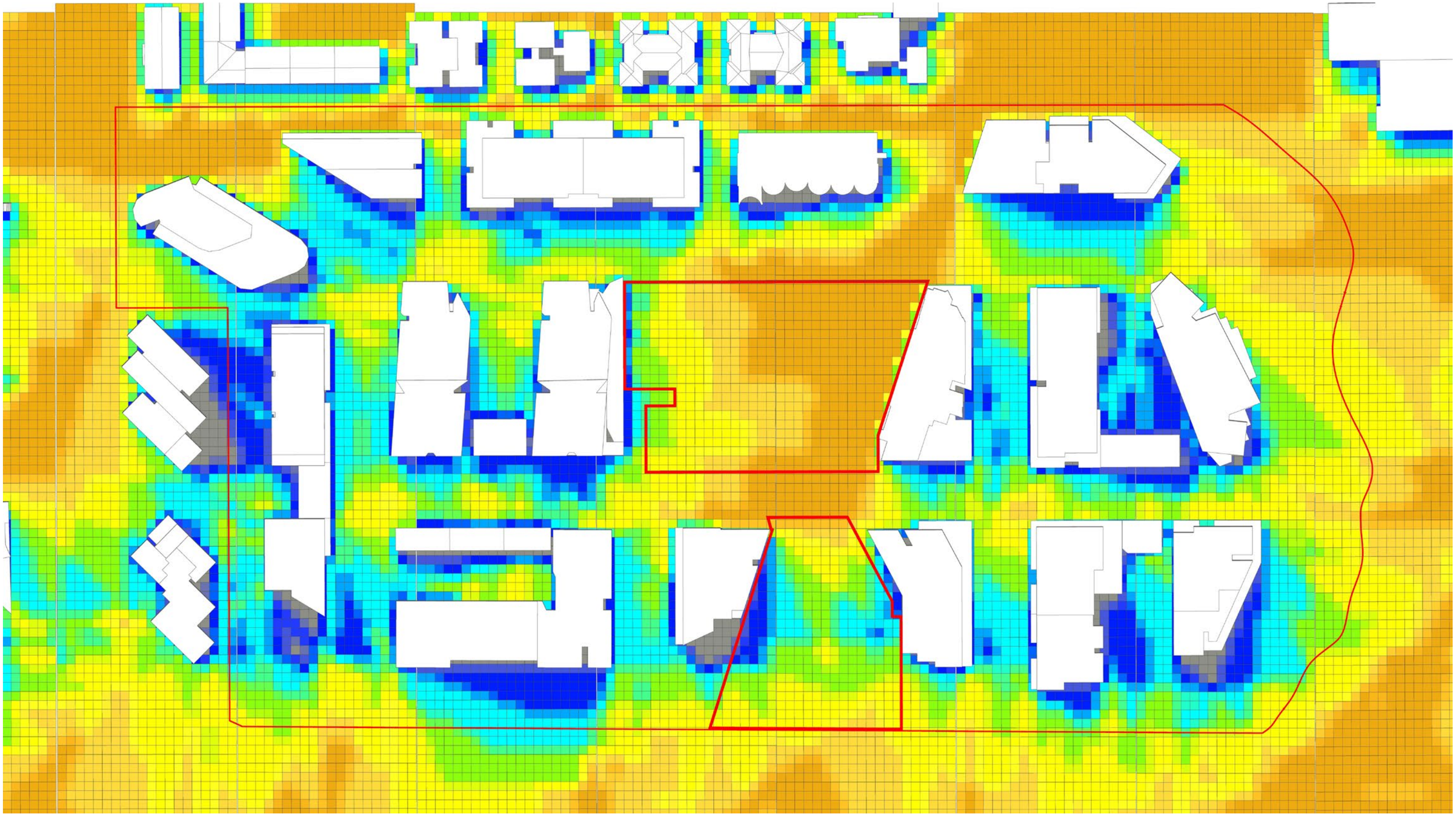


FACADE SOLAR ACCESS ANALYSIS: 21ST JUNE
VIEW FROM SOUTH

No direct sunlight
2 hours
6 hours

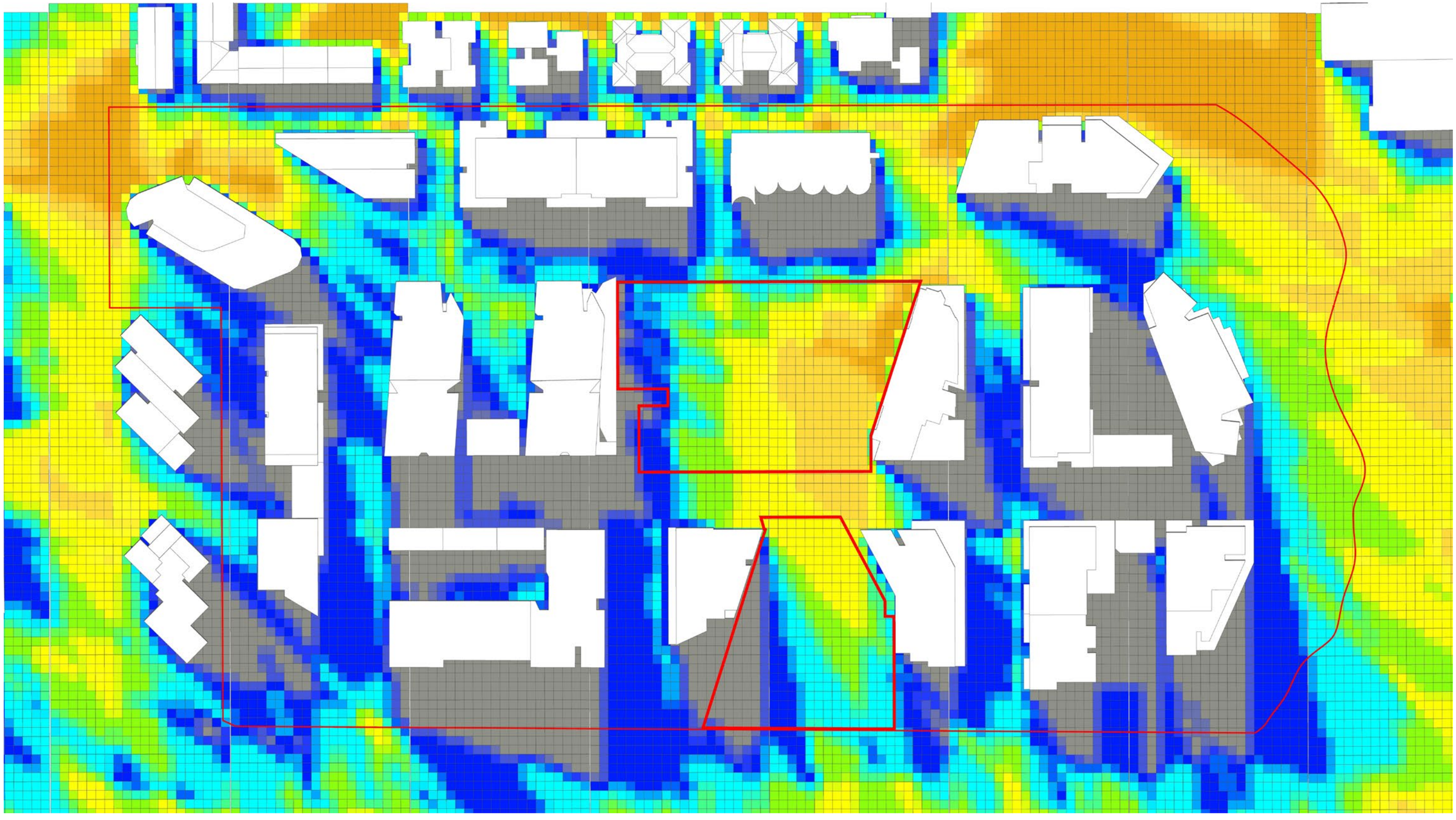
FACADE SOLAR ACCESS ANALYSIS: 21ST JUNE
VIEW FROM WEST

No direct sunlight
2 hours
6 hours



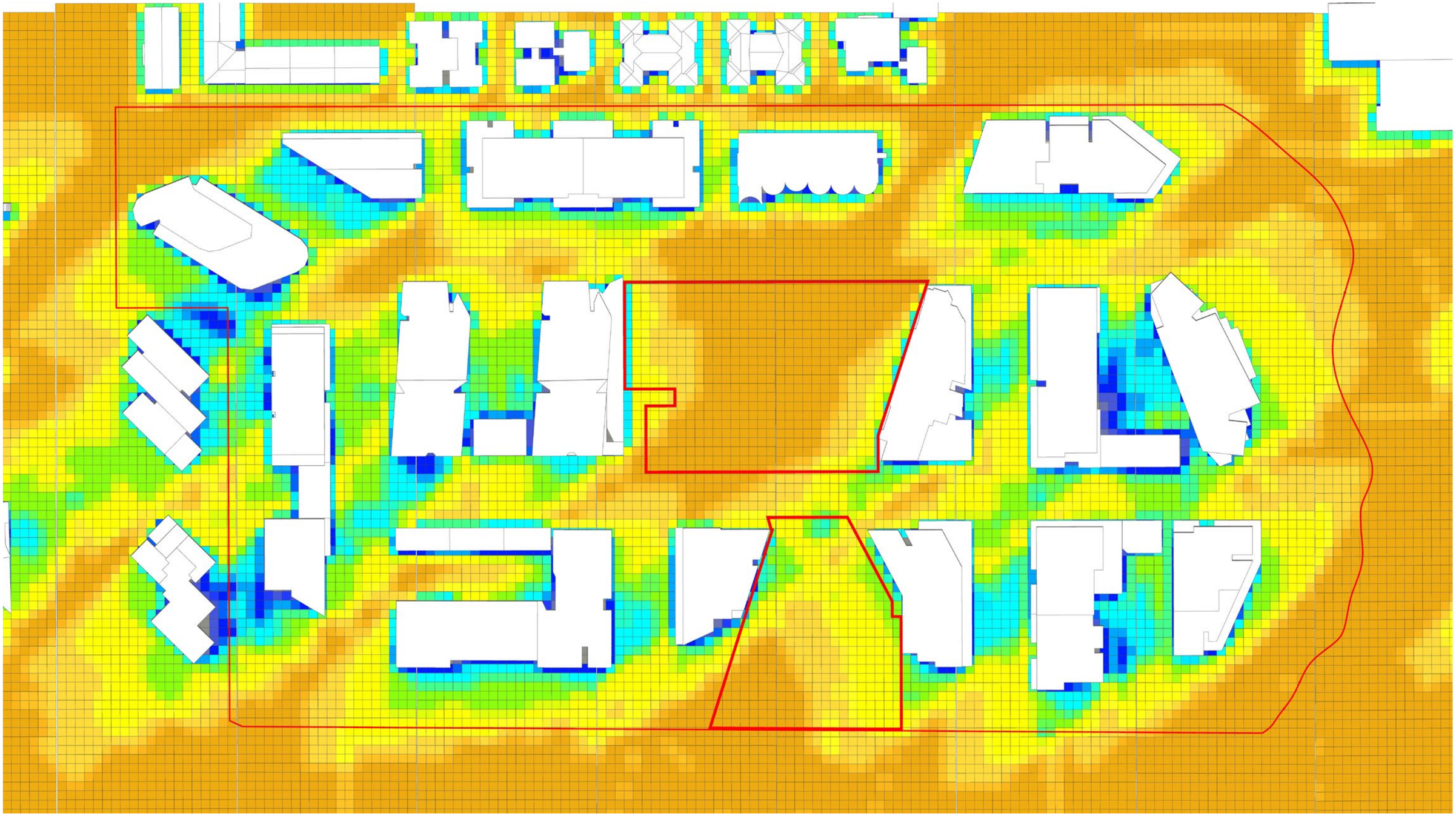
GROUND PLANE SOLAR ACCESS STUDY
21 MARCH / SEPTEMBER

No direct sunlight
0 -1 hour
1- 2 hours
3 - 4 hours
5 - 6 hours
6+ hours



GROUND PLANE SOLAR ACCESS STUDY
21 JUNE
84.5% of the Village Green recieves 2 hours solar access
65.7% of the Forest Playground recieves 2 hours solar access

No direct sunlight
0 -1 hour
1- 2 hours
3 - 4 hours
5 - 6 hours
6+ hours



GROUND PLANE SOLAR ACCESS STUDY
21 DECEMBER

No direct sunlight
0 -1 hour
1- 2 hours
3 - 4 hours
5 - 6 hours
6+ hours

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EPPING ROAD OVERSHADOWING STUDY METHOD STATEMENT

OVERVIEW

The purpose of this study is to analyse the extent of overshadowing to existing dwellings on the south side of Epping Road. It sets out to compare four scenarios:

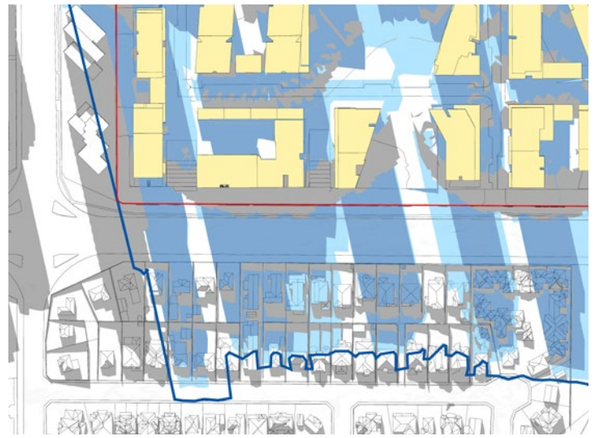
/ Existing situoation
/ Shadows cast be the LEP envelopes
/ Shadows cast by the proposed Indicative design scheme
/ Shadows cast by the proposed building envelopes.

METHODOLOGY

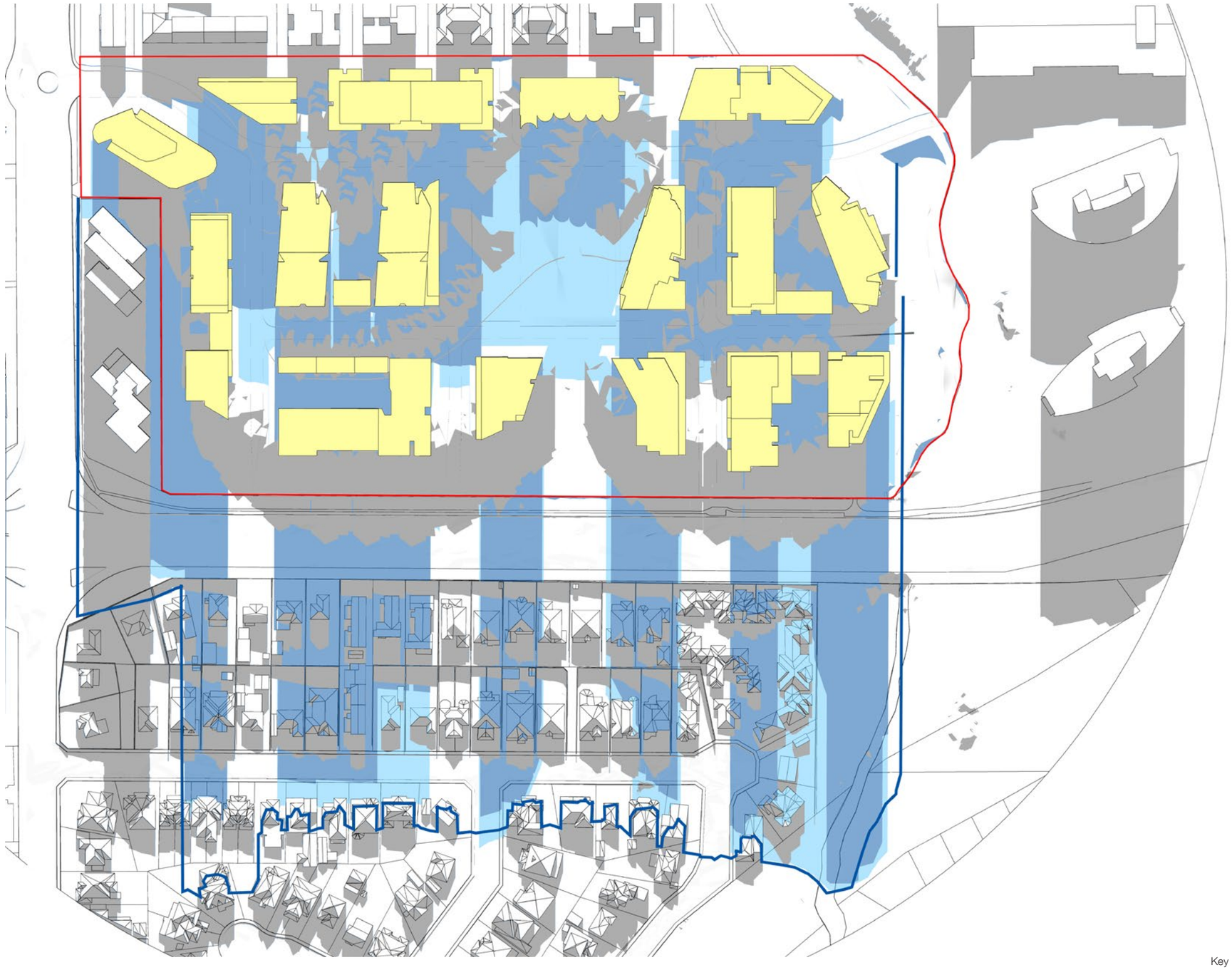
1. A 3D aerial survey of the site and context area was purchased from the AAM group with a stated accuracy of 15 centimetres and was inserted into the context model using the inbuilt Geolocate function within Sketchup and cross referenced against 2D survey data to confirm the orientation of True North.
2. To model the LEP envelopes, the existing ground profile was copied up 45m, 65m and 75m in the relevant areas, thent trimmed back 10m from the Epping Road frontage and side boundaries, and 5m from the 20m Riparian corridor offset.
3. A 3d model of the proposed envelopes was then inserted.
4. A 3d model of the indicative design scheme was then inserted
5. Shadow plans at each nominated date and time were then exported for each scenario.
6. The four shadow studies for each time were then imported into photoshop and superimposed to isolate the additional shadow cast by each scenario.
7. External images were then exported for inclusion in this appendix

3D MODEL & CONTEXT IN SKETCHUP

SHADOW PLAN EXPORTED FROM SKETCHUP



COMPOSITE PLAN EXPORTED FROM PHOTOSHOP

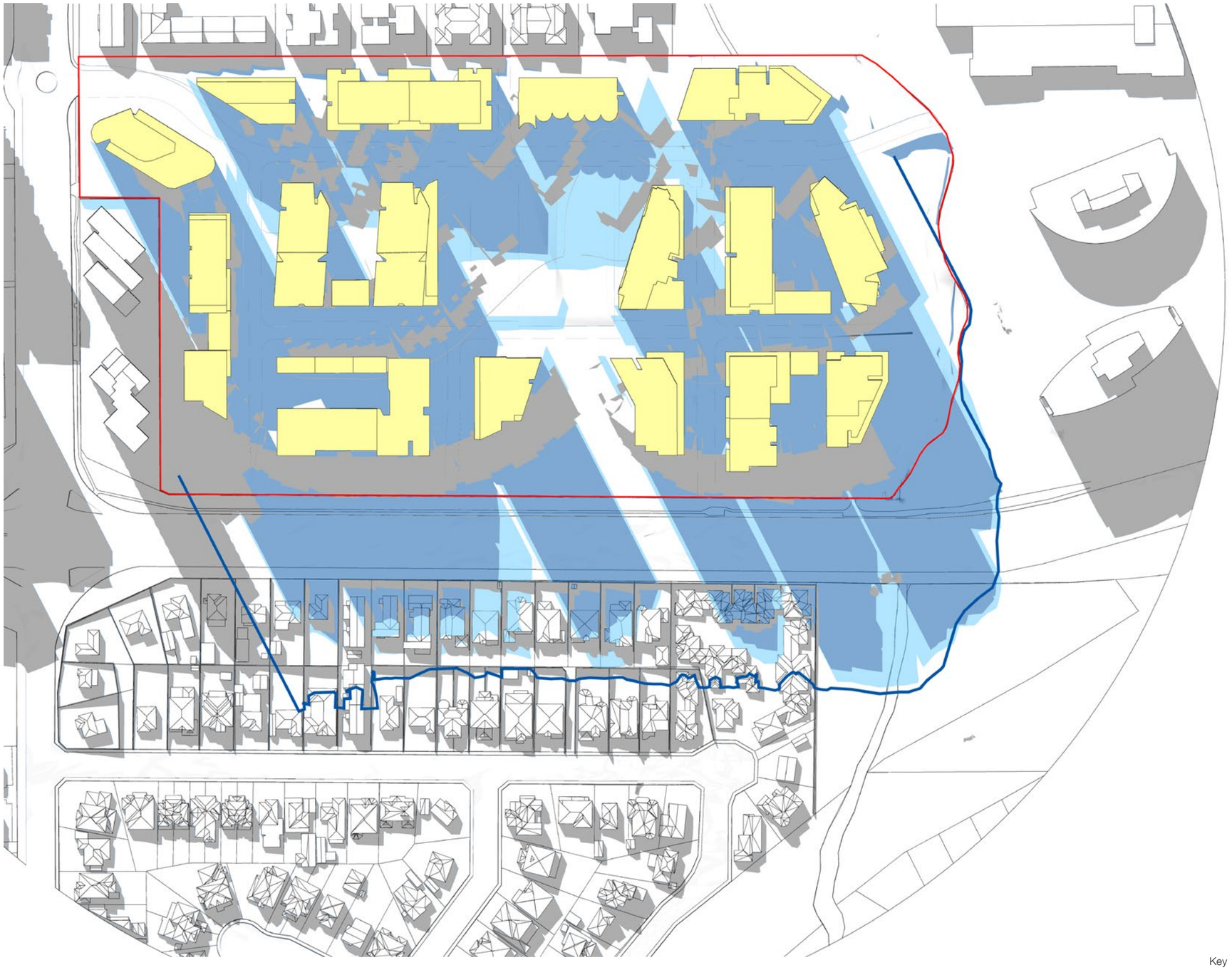


EPPING ROAD SOLAR ACCESS STUDY
21 JUNE 9AM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

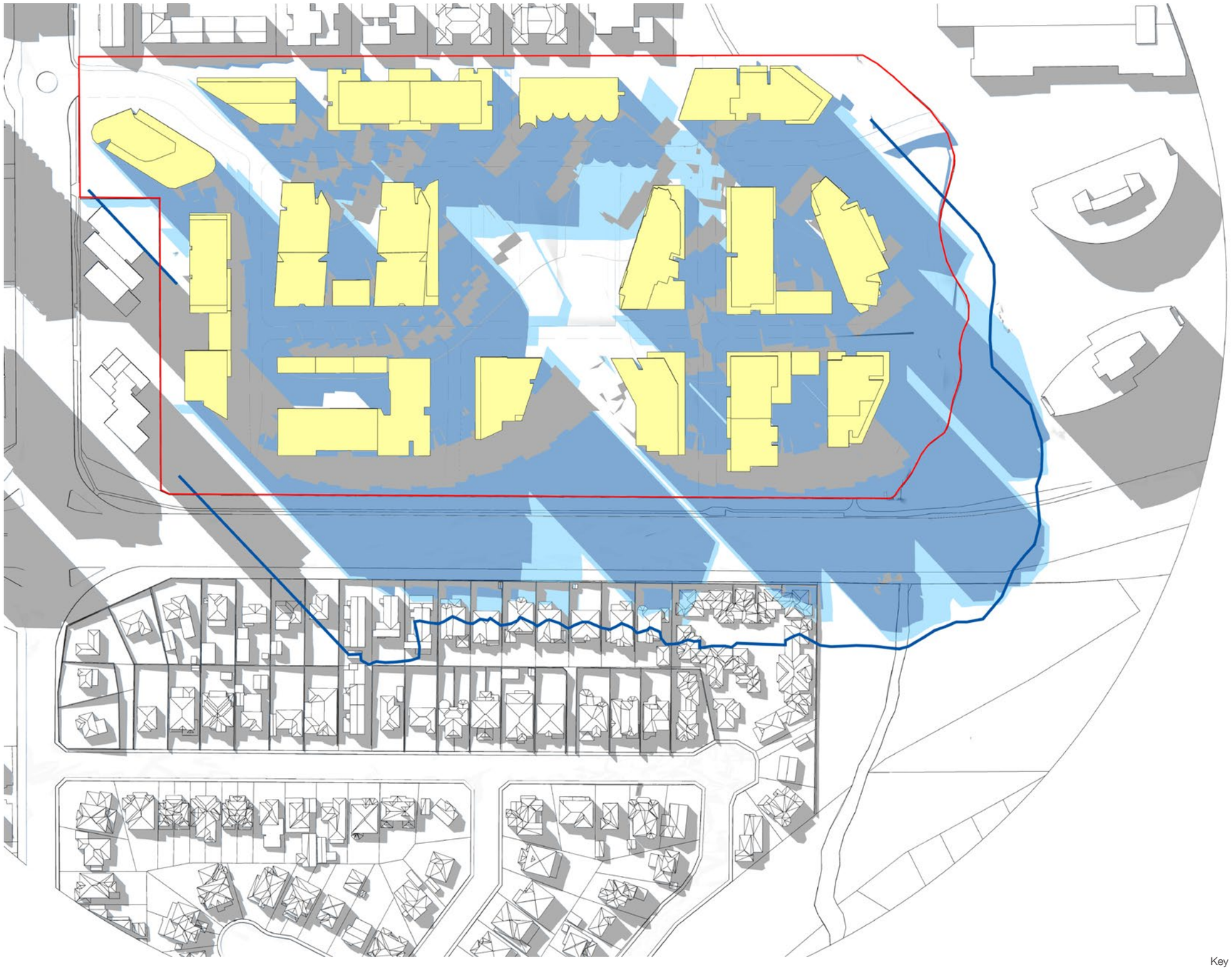
EPPING ROAD SOLAR ACCESS STUDY
21 JUNE 10AM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing



EPPING ROAD SOLAR ACCESS STUDY
21 JUNE 11AM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing



Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

EPPING ROAD SOLAR ACCESS STUDY
21 JUNE 12PM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

EPPING ROAD SOLAR ACCESS STUDY
21 JUNE 1PM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

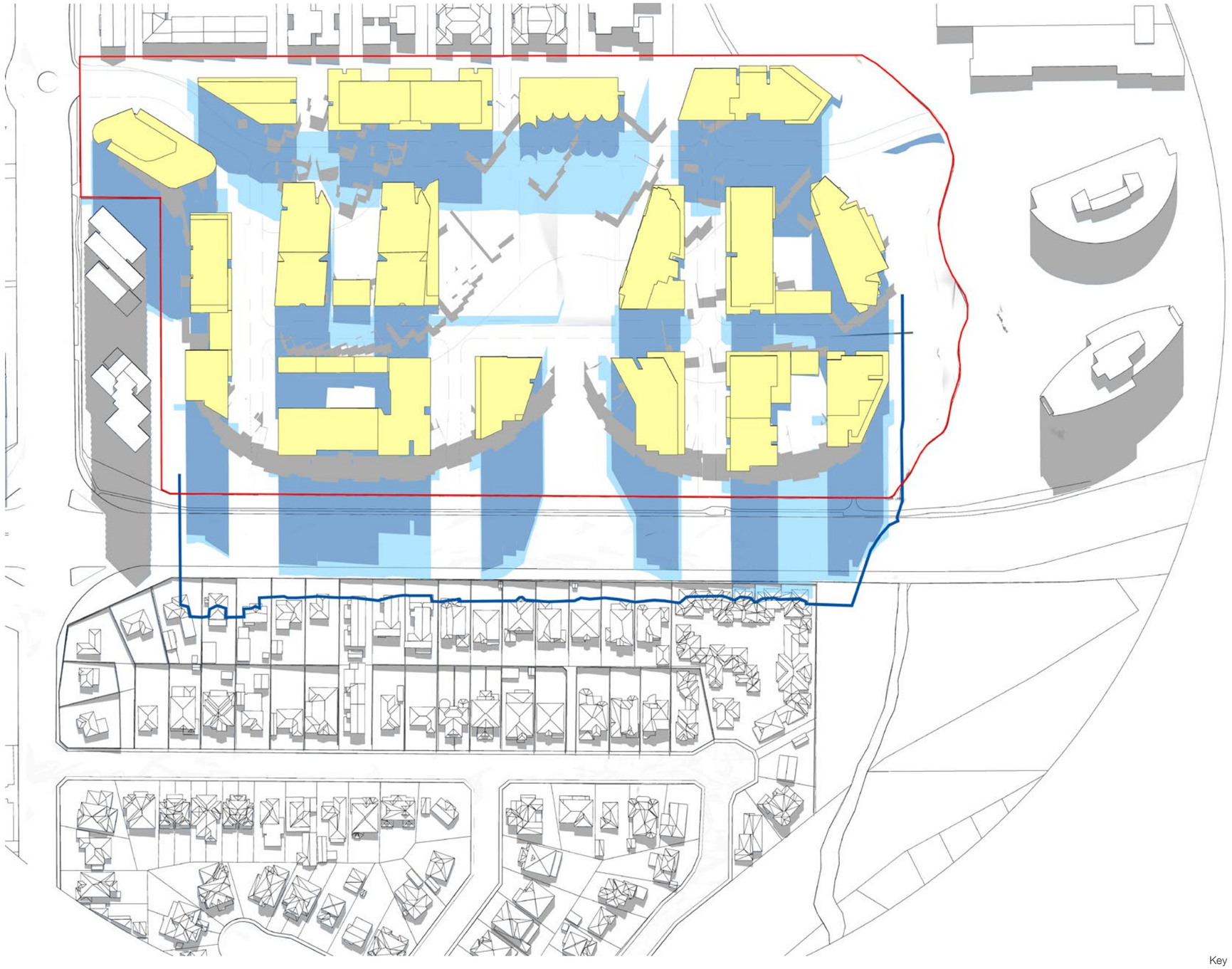
EPPING ROAD SOLAR ACCESS STUDY
21 JUNE 2PM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

EPPING ROAD SOLAR ACCESS STUDY
21 JUNE 3PM

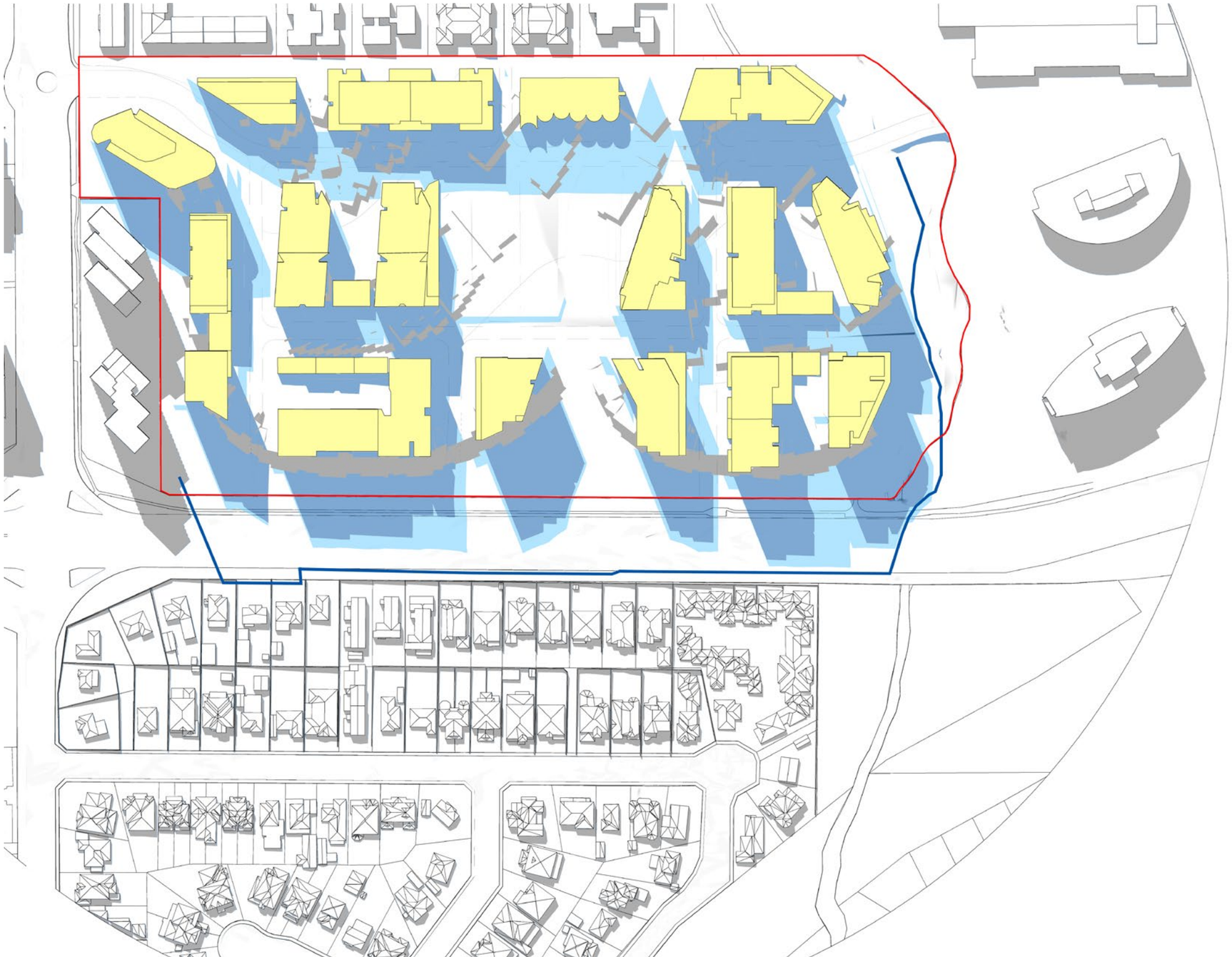
Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

EPPING ROAD SOLAR ACCESS STUDY
21 MARCH/SEPTEMBER 9AM



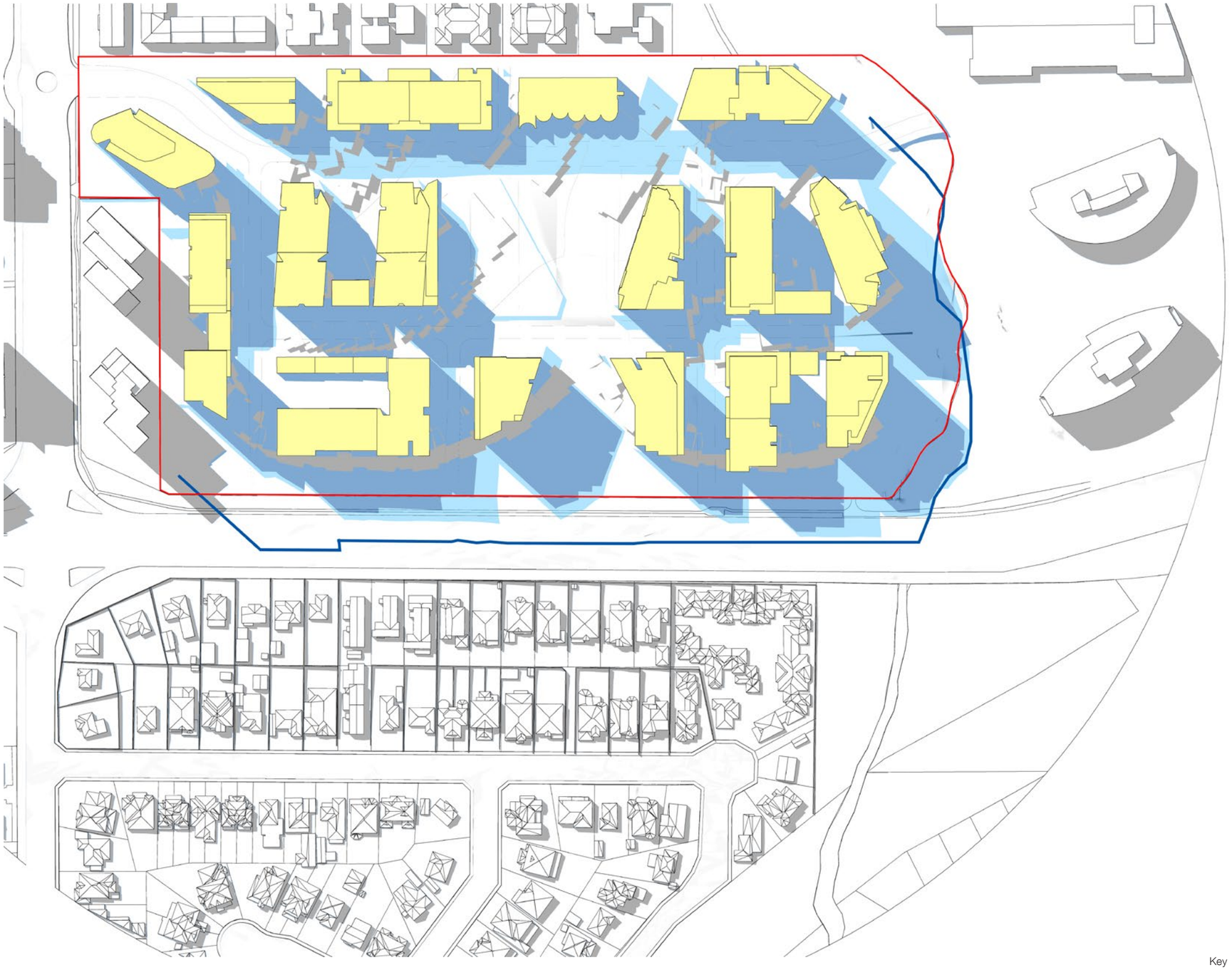
EPPING ROAD SOLAR ACCESS STUDY
21 MARCH/SEPTEMBER 10AM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing



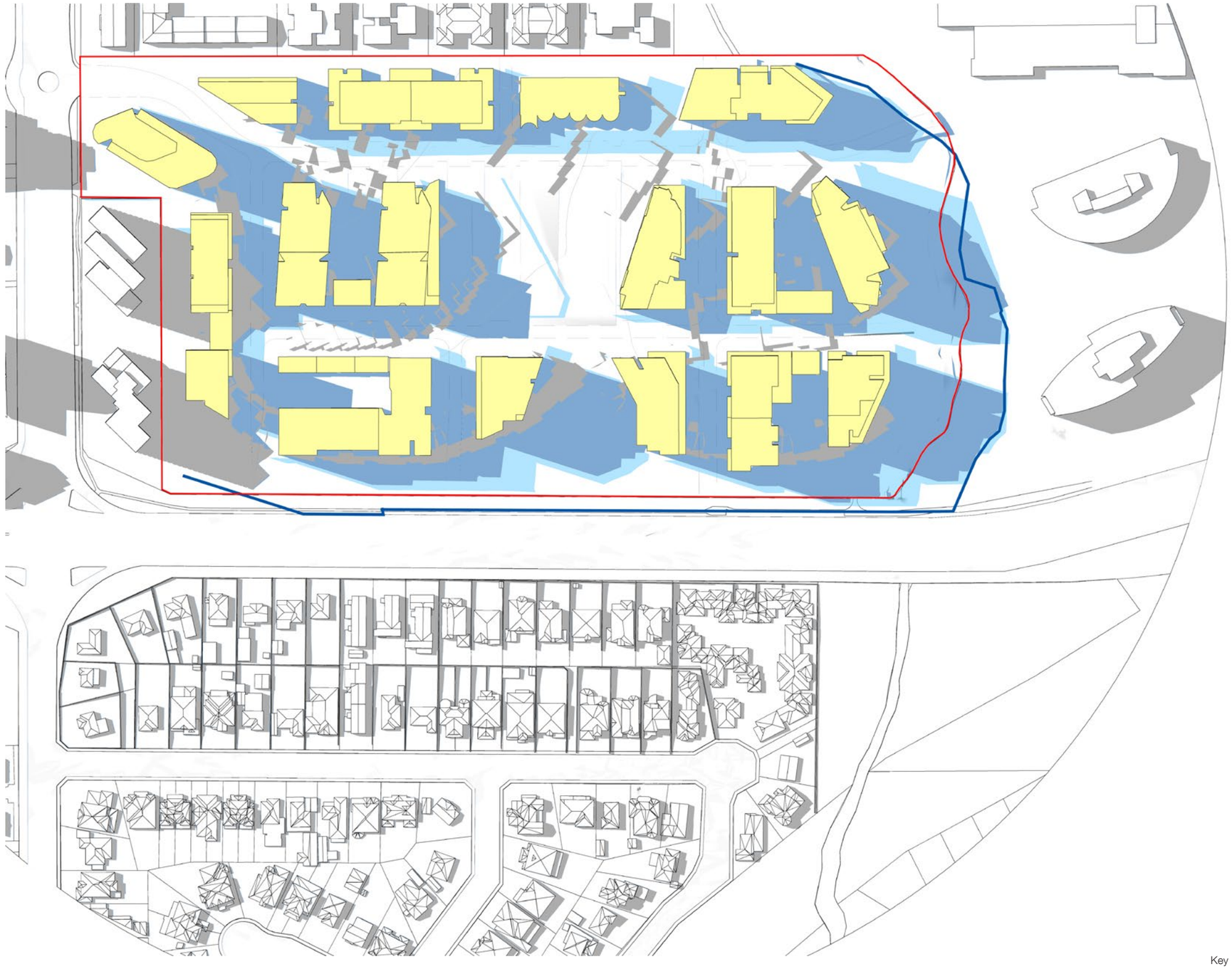
Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

EPPING ROAD SOLAR ACCESS STUDY
21 MARCH/SEPTEMBER 11AM



EPPING ROAD SOLAR ACCESS STUDY
21 MARCH/SEPTEMBER 12PM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing



EPPING ROAD SOLAR ACCESS STUDY
21 MARCH/SEPTEMBER 1PM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

EPPING ROAD SOLAR ACCESS STUDY
21 MARCH/SEPTEMBER 2PM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

EPPING ROAD SOLAR ACCESS STUDY
21 MARCH/SEPTEMBER 3PM

Key
- Shadow Cast by LEP Height Plane
- Shadow Cast by Existing Building
- Additional Shadow Cast by Indicative Design Scheme
- Shadow Cast by Proposed Envelope
- Indicative Design Scheme Building Massing

APPENDIX E

ADG COMPLIANCE ANALYSIS

ADG Ref.	Item Description	Notes	Compliance	
PART3	**SITING THE DEVELOPMENT**			
3A	**SITE ANALYSIS**			
3A-1 p47	**Objective:** Site Analysis illustrates that design decisions have been based on opportunities & constraints of the site conditions & their relationship to the surrounding context.			✓
3B	**ORIENTATION**			
3B-1 p49	**Objective:** Building types & layouts respond to the streetscape & site while optimising solar access within the development			✓
3B-2 p49	**Objective:** Overshadowing of neighbouring properties is minimised during mid winter.			✓
3C	**PUBLIC DOMAIN INTERFACE**			
3C-1 p51	**Objective:** Transition between private & public domain is achieved without compromising safety & security.			✓
3C-2 p53	**Objective:** Amenity of the public domain is retained & enhanced.			✓
	COMMUNAL & PUBLIC OPEN SPACE			
3D-1 p55	**Objective:** An adequate area of communal open space is provided to enhance residential amenity & to provide opportunities for landscaping.			✓
	Design Criteria			
1	Communal open space has a minimum area equal to 25% of the site	Communal open space is to be assessed on a lot by lot basis as part of the stage 2 development applications. The indicative design scheme proposes a mix of public and communal open space totalling a minimum of 25% of the overall site area.	**NO**	✓
2	Developments achieve a minimum of 50% direct sunlight to the principal usable part of the communal open space for a minimum of 2 hours between 9 am and 3 pm on 21 June (mid winter)	Capable of complying.		✓
3D-2 p57	**Objective:** Communal open space is designed to allow for a range of activities, respond to site conditions & be attractive and inviting			✓
3D-3 p57	**Objective:** Communal open space is designed to maximise safety.			✓
3D-4 p59	**Objective:** Public open space, where provided, responds to the existing pattern & uses of the neighbourhood.			✓
3E	**DEEP SOIL ZONES**			
3E-1 p61	**Objective:** Deep soil zones are suitable for healthy plant & tree growth, improve residential amenity and promote management of water and air quality.			✓
	Design Criteria			
1	Deep soil zones are to meet the following minimum requirements:	Deep soil planting is provided on a site-wide basis and achieves 17% of total site area, in excess of the minimum 7% requirement.		✓

Site Area (sqm)	Minimum Dim. (m)	Deep Soil Zone (% of site area)
less than 650	-	7
650-1500	3	
greater than 1500	6	
greater than 1500 with significant existing tree cover	6	

ADG Ref.	Item Description	Notes	Compliance	
3F	**VISUAL PRIVACY**			
3F-1 p63	**Objective:** Adequate building separation distances are shared equitably between neighbouring sites, to achieve reasonable levels of external & internal visual privacy.			✓
	Design Criteria			
1	Separation between windows & balconies is provided to ensure visual privacy is achieved. Minimum required separation distances from buildings to the side & rear boundaries are as follows:	Indicative reference design demonstrates scheme is capable of complying.		✓

Building Height (m)	Habitable Rooms & Balconies. (m)	Non-Habitable Rooms (m)
up to 12 4 storeys)	6	3
up to 25 (5-8 storeys)	9	4.5
over 25 (9+ storeys)	12	6

Note: Separation distances between buildings on the same site should combine required building separations depending on the type of room.

Gallery access circulation should be treated as habitable space when measuring privacy separation distances between neighbouring properties.

3F-2 p65	**Objective:** Site & building design elements increase privacy without compromising access to light & air and balance outlook & views from habitable rooms & private open space.			✓
3G	**PEDESTRIAN ACCESS & ENTRIES**			
3G-1 p67	**Objective:** Building entries & pedestrian access connects to and addresses the public domain.			✓
3G-2 p67	**Objective:** Access, entries & pathways are accessible & easy to identify.			✓
3G-3 p67	**Objective:** Large sites provide pedestrian links for access to streets & connection to destinations.			✓
3H	**VEHICLE ACCESS**			
3H-1 p69	**Objective:** Vehicle access points are designed & located to achieve safety, minimise conflicts between pedestrians & vehicles and create high quality streetscapes.			✓
3J	**BICYCLE & CAR PARKING**			
3J-1 p71	**Objective:** Car parking is provided based on proximity to public transport in metropolitan Sydney & centres in regional areas.			✓
	Design Criteria			
1	For development in the following locations: · on sites that are within 800m of a railway station or light rail stop in the Sydney Metropolitan Area; or · on land zoned, and sites within 400m of land zoned, B3 Commercial Core, B4 Mixed Use or equivalent in a nominated regional centre the minimum car parking requirement for residents & visitors is set out in the Guide to Traffic Generating Developments, or the car parking requirement prescribed by the relevant council, whichever is less. The car parking needs for a development must be provided off street.	Parking is provided in accordance with Ryde DCP		✓
3J-2 p71	**Objective:** Parking & facilities are provided for other modes of transport.			✓
3J-3 p73	**Objective:** Car park design & access is safe and secure.			✓
3J-4 p73	**Objective:** Visual & environmental impacts of underground car parking are minimised.			✓
3J-5 p75	**Objective:** Visual & environmental impacts of on-grade car parking are minimised.			✓
3J-6 p75	**Objective:** Visual & environmental impacts of above ground enclosed car parking are minimised.		**N/A**	

ADG Ref.	Item Description	Notes	Compliance	
PART4	**DESIGNING THE BUILDING**			
4A	**SOLAR & DAYLIGHT ACCESS**			
4A-1 p79	**Objective:** To optimise number of apartments receiving sunlight to habitable rooms, primary windows & private open space.			✓
	Design Criteria			
1	Living rooms & private open spaces of at least 70% of apartments in a building receive a minimum of 2 hrs direct sunlight between 9am - 3pm at mid winter in Sydney Metropolitan Area and in Newcastle and Wollongong local government areas	When assessed on a site-wide basis, the masterplan will achieve this requirement. If assessing individual buildings, A2 and A3 will be less than 70%.	**YES**	✓
2	In all other areas, living rooms & private open spaces of at least 70% of apartments in a building receive a minimum of 3 hrs direct sunlight between 9 am - 3 pm at mid winter		**N/A**	
3	A maximum of 15% of apartments in a building receive no direct sunlight between 9 am - 3 pm at mid winter	Indicative reference design demonstrates scheme is capable of complying.	**YES**	✓
4A-2 p81	**Objective:** Daylight access is maximised where sunlight is limited.			✓
4A-3 p81	**Objective:** Design incorporates shading & glare control, particularly for warmer months.			✓
4B	**NATURAL VENTILATION**			
4B-1 p83	**Objective:** All habitable rooms are naturally ventilated.			✓
4B-2 p83	**Objective:** The layout & design of single aspect apartments maximises natural ventilation.			✓
4B-3 p85	**Objective:** Number of apartments with natural cross vent is maximised to create comfortable indoor environments for residents.			✓
	Design Criteria			
1	At least 60% of apartments are naturally cross ventilated in the first nine storeys of the building. Apartments at ten storeys or greater are deemed to be cross ventilated only if any enclosure of the balconies at these levels allows adequate natural ventilation and cannot be fully enclosed	Indicative reference design demonstrates scheme is capable of complying.		✓
2	Overall depth of a cross-over or cross-through apartment does not exceed 18m, measured glass line to glass line	Capable of complying.		✓
4C	**CEILING HEIGHTS**			
4C-1 p87	**Objective:** Ceiling height achieves sufficient natural ventilation & daylight access.	Capable of complying.		✓
	Design Criteria		Considered	
1	Measured from finished floor level to finished ceiling level, minimum ceiling heights are: Minimum Ceiling Height for apt and mixed-used buildings (m) Habitable rooms: 2.7 Non-habitable rooms: 2.4 For 2 storey apts: 2.7 for main living area floor; 2.4 for second floor, where its area does not exceed 50% of the apt area Attic spaces: 1.8 at edge of room with 30deg minimum ceiling slope If located in mixed-used areas: 3.3 for ground and first floor to promote future flexibility of use These minimums do not preclude higher ceilings if desired	Capable of complying.		✓
4C-2 p87	**Objective:** Ceiling height increases the sense of space in apartments & provides for well proportioned rooms.			✓
4C-3 p87	**Objective:** Ceiling heights contribute to the flexibility of building use over the life of the building.			✓
4D	**APARTMENT SIZE & LAYOUT**			
4D-1 p89	**Objective:** The layout of rooms within apartment is functional, well organised & provides a high standard of amenity.			✓
	Design Criteria			
1	Apartments have the following minimum internal areas: Studio: 35 1 Bedroom: 50 2 Bedroom: 70 3 Bedroom: 90 The minimum internal areas include only one bathroom. Additional bathrooms increase the minimum internal area by 5sqm each. A fourth bedroom & further additional bedrooms increase the minimum internal area by 12sqm each	Capable of complying.	**YES**	✓
2	Every habitable room has a window in an external wall with a total minimum glass area of not less than 10% of the floor area of the room. Daylight & air is not borrowed from other rooms	Capable of complying.	**YES**	✓
4D-2 p89	**Objective:** Environmental performance of the apartment is maximised.			✓
	Design Criteria			
1	Habitable room depths are limited to a maximum of 2.5 x the ceiling height	Capable of complying.		✓
2	In open plan layouts (living, dining & kitchen are combined) maximum habitable room depth is 8m from a window	Capable of complying.		✓
4D-3 p91	**Objective:** Apartment layouts are designed to accommodate a variety of household activities & needs.			✓
	Design Criteria			
1	Master bedrooms have a minimum area of 10sqm & other bedrooms 9sqm (excluding wardrobe space)	Capable of complying.		✓
2	Bedrooms have a minimum dimension of 3m (excluding wardrobe space)	Capable of complying.		✓
3	Living rooms or combined living/dining rooms have a minimum width of: · 3.6m for studio & 1 bedroom apartments · 4m for 2 & 3 bedroom apartments	Capable of complying.		✓
4	The width of cross-over or cross-through apartments are at least 4m internally to avoid deep narrow apartment layouts	Capable of complying.		✓

ADG Ref.	Item Description	Notes		Compliance
4E	**PRIVATE OPEN SPACE & BALCONIES**			
4E-1 p93	**Objective:** Apartments provide appropriately sized private open space & balconies to enhance residential amenity.	Capable of complying.		✓
	Design Criteria			Considered
1	All apartments are required to have primary balconies as follows: Apartment Type / Minimum Area (sqm) / Minimum Depth (m) Studio 4 - 1 Bedroom 8 2 2 Bedroom 10 2 3+ Bedroom 12 2.4 The minimum balcony depth to be counted as contributing to the balcony area is 1m	Capable of complying.		✓
2	For apartments at ground level or on podium or similar, a private open space is provided instead of a balcony. It must have minimum area of 15sqm & minimum depth of 3m	Capable of complying.		✓
4E-2 p93	**Objective:** Primary private open space & balconies are appropriately located to enhance liveability for residents			✓
4E-3 p95	**Objective:** Private open space & balcony design is integrated into & contributes to the overall architectural form & detail of the building			✓
4E-4 p95	**Objective:** Private open space & balcony design maximises safety			✓
4F	**COMMON CIRCULATION & SPACES**			
4F-1 p97	**Objective:** Common circulation spaces achieve good amenity & properly service the number of apartments	Capable of complying.		✓
	Design Criteria			
1	The maximum number of apartments off a circulation core on a single level is eight	On high rise levels some buildings provide up to 12 apartments per circulation core.	NO	
2	For buildings of 10 storeys & over, the maximum number of apartments sharing a single lift is 40	Capable of complying.		✓
4F-2 p99	**Objective:** Common circulation spaces promote safety & provide for social interaction between residents			✓
4G	**STORAGE**			
4G-1 p101	**Objective:** Adequate, well designed storage is provided in each apartment	Capable of complying.		✓
	Design Criteria			
1	In addition to storage in kitchens, bathrooms and bedrooms, the following storage is provided: Apartment Type / Storage Size Volume (cubic m) Studio 4 1 Bedroom 6 2 Bedroom 8 3+ Bedroom 10 At least 50% of the required storage is to be located within the apartment	Capable of complying.		✓
4G-2 p101	**Objective:** Additional storage is conveniently located, accessible & nominated for individual apartments			✓

ADG Ref.	Item Description	Notes	Compliance
4H	**ACOUSTIC PRIVACY**		
4H-1 p103	**Objective:** Noise transfer is minimised through the siting of buildings & building layout		✓
4H-2 p103	**Objective:** Noise impacts are mitigated within apartments through layout & acoustic treatments		✓
4J	**NOISE & POLLUTION**		
4J-1 p105	**Objective:** In noisy or hostile environments impacts of external noise & pollution are minimised through careful siting & layout		✓
4J-2 p105	**Objective:** Appropriate noise shielding or attenuation techniques for building design, construction & choice of materials are used to mitigate noise transmission		✓
4K	**APARTMENT MIX**		
4K-1 p107	**Objective:** A range of apartment types & sizes is provided to cater for different household types now & into the future		✓
4K-2 p107	**Objective:** The apartment mix is distributed to suitable locations within the building		✓
4L	**GROUND FLOOR APARTMENTS**		
4L-1 p109	**Objective:** Street frontage activity is maximised where ground floor apartments are located		✓
4L-2 p109	**Objective:** Design of ground floor apartments delivers amenity & safety for residents		✓
4M	**FACADES**		
4M-1 p111	**Objective:** Building facades provide visual interest along the street while respecting the character of the local area		✓
4M-2 p111	**Objective:** Building functions are expressed by the facade		✓
4N	**ROOF DESIGN**		
4N-1 p113	**Objective:** Roof treatments are integrated into the building design & positively respond to the street		✓
4N-2 p113	**Objective:** Opportunities to use roof space for residential accommodation & open space are maximised		✓
4N-3 p113	**Objective:** Roof design incorporates sustainability features		✓
4O	**LANDSCAPE DESIGN**		
4O-1 p115	**Objective:** Landscape design is viable & sustainable		✓
4O-2 p115	**Objective:** Landscape design contributes to streetscape & amenity		✓
4P	**PLANTING ON STRUCTURES**		
4P-1 p117	**Objective:** Appropriate soil profiles are provided		✓
4P-2 p117	**Objective:** Plant growth is optimised with appropriate selection & maintenance		✓
4P-3 p117	**Objective:** Planting on structures contributes to the quality & amenity of communal & public open spaces		✓
4Q	**UNIVERSAL DESIGN**		
4Q-1 p119	**Objective:** Universal design features are included in apartment design to promote flexible housing for all community members		✓
4Q-2 p119	**Objective:** A variety of apartments with adaptable designs are provided		✓
4Q-3 p119	**Objective:** Apartment layouts are flexible & accommodate a range of lifestyle needs		✓

ADG Ref.	Item Description	Notes	Compliance
4R	**ADAPTIVE REUSE**		
4R-1 p121	**Objective:** New additions to existing buildings are contemporary, complementary & enhance area's identity & sense of place		✓
4R-2 p121	**Objective:** Adapted buildings provide residential amenity but does not precluding future adaptive reuse		✓
4S	**MIXED USE**		
4S-1 p123	**Objective:** Mixed use developments are provided in appropriate locations & provide active street frontages that encourage pedestrian movement.		✓
4S-2 p123	**Objective:** Residential levels of the building are integrated within the development. Safety & amenity is maximised.		✓
4T	**AWNING & SIGNAGE**		
4T-1 p125	**Objective:** Awnings are well located and complement & integrate with the building design.		✓
4T-2 p125	**Objective:** Signage responds to context & desired streetscape character.		✓
4U	**ENERGY EFFICIENCY**		
4U-1 p127	**Objective:** Development incorporates passive environmental design.		✓
4U-2 p127	**Objective:** Passive solar design is incorporated to optimise heat storage in winter & reduce heat transfer in summer.		✓
4U-3 p127	**Objective:** Adequate natural ventilation to minimise the need for mechanical ventilation.		✓
4V	**WATER MANAGEMENT & CONSERVATION**		
4V-1 p129	**Objective:** Potable water use is minimised.		✓
4V-2 p129	**Objective:** Urban stormwater is treated on site before being discharged to receiving waters.		✓
4V-3 p129	**Objective:** Flood management systems are integrated into site.		✓
4W	**WASTE MANAGEMENT**		
4W-1 p131	**Objective:** Waste storage facilities are designed to minimise impacts on streetscape, building entry & amenity of residents.		✓
4W-2 p131	**Objective:** Domestic waste is minimised by providing safe & convenient source separation & recycling.		✓
4X	**BUILDING MAINTENANCE**		
4X-1 p133	**Objective:** Building design detail provides protection from weathering.		✓
4X-2 p133	**Objective:** Systems & access enable ease of maintenance.		✓
4X-3 p133	**Objective:** Material selection reduces ongoing maintenance costs.		✓

ADG Ref.	Item Description	Notes	Compliance
3A-1	**Design Guidance**		**Considered**
	Each element in the Site Analysis Checklist is addressed.		YES
3B-1	**Design Guidance**		**Considered**
	Buildings along the street frontage define the street by facing it & incorporating direct access from the street		YES
	Where the street frontage is to the east or west, rear buildings are orientated to the north		N/A
	Where the street frontage is to the north or south, over-shadowing to the south is minimised & buildings behind the street frontage are orientated to the east & west		N/A
3B-2	**Design Guidance**		**Considered**
	Living areas, private open space & communal open space receive solar access in accordance with section 3D Communal & Public Open Space and section 4A Solar & Daylight Access		YES
	Solar access to living rooms, balconies & private open spaces of neighbours are considered		YES
	Where an adjoining property does not currently receive the required hours of solar access, the proposed building ensures solar access to neighbouring properties is not reduced by more than 20%		N/A
	If the proposal will reduce the solar access of neighbours, building separation is increased beyond minimums contained in 3F Visual Privacy		N/A
	Overshadowing is minimised to the south or downhill by increased upper level setbacks		NO
	Buildings are orientated at 90 deg to the boundary with neighbouring properties to minimise overshadowing & privacy impacts, particularly where minimum setbacks are used & where buildings are higher than the adjoining development		N/A
	A minimum of 4 hours of solar access is retained to solar collectors on neighbouring buildings		YES
3C-1	**Design Guidance**		**Considered**
	Terraces, balconies and courtyard apartments have direct street entry, where appropriate		YES
	Changes in level between private terraces, front gardens & dwelling entries above the street level provide surveillance & improve visual privacy for ground level dwellings		YES
	Upper level balconies & windows overlook the public domain		YES
	Front fences & walls along street frontages use visually permeable materials & treatments. Height of solid fences or walls is limited to 1m	Capable of complying.	YES
	Length of solid walls is limited along street frontages	Capable of complying.	YES
	Opportunities for casual interaction between residents & the public domain is provided for. Design solutions may include seating at building entries, near letter boxes & in private courtyards adjacent to streets	Capable of complying.	YES
	In developments with multiple buildings and/or entries, pedestrian entries & spaces associated with individual buildings/entries are differentiated to improve legibility for residents, using the following design solutions: · Architectural detailing · Changes in materials · Plant Species · Colours · Opportunities for people to be concealed are minimised	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
3C-2	**Design Guidance**		**Considered**
	Planting is used to soften the edges of any raised terraces to the street, for example above sub-basement car parking	Capable of complying.	YES
	Mail boxes are located in lobbies, perpendicular to the street alignment or integrated into front fences where individual street entries are provided	Capable of complying.	YES
	The visual prominence of underground car park vents is minimised & located at a low level where possible	Capable of complying.	YES
	Substations, pump rooms, garbage storage areas & other service requirements are located in basement car parks or out of view	Capable of complying.	YES
	Ramping for accessibility is minimised by building entry location & setting ground floor levels in relation to footpath levels	Capable of complying.	YES
	Durable, graffiti resistant & easily cleanable materials are used	Capable of complying.	YES
	Where development adjoins public parks, open space or bushland, the design positively addresses this interface & uses the following design solutions: · Street access, pedestrian paths & building entries are clearly defined · Paths, low fences & planting are clearly delineate between communal/private open space & the adjoining public open space · Minimal use of blank walls, fences & ground level parking	Capable of complying.	YES
	On sloping sites protrusion of car parking above ground level is minimised by using split levels to step underground car parking	Capable of complying.	YES
3D-1	**Design Guidance**		**Considered**
	Communal open space is consolidated into a well designed, easily identified & usable area	Capable of complying.	YES
	Communal open space have a minimum dimension of 3m. Larger developments should consider greater dimensions	Capable of complying.	YES
	Communal open space are co-located with deep soil areas	Public open space is co-located with deep soil areas.	NO
	Direct, equitable access are provided to communal open space areas from common circulation areas, entries & lobbies	Capable of complying.	YES
	Where communal open space cannot be provided at ground level, it is provided on a podium or roof	Capable of complying.	YES
	Where developments are unable to achieve the design criteria, such as on small lots, sites within business zones, or in a dense urban area, they need to: · Provide communal spaces elsewhere such as a landscaped roof top terrace or a common room · Provide larger balconies or increased private open space for apartments · Demonstrate good proximity to public open space & facilities and/or provide contributions to public open space		YES
3D-2	**Design Guidance**		**Considered**
	Facilities are provided within communal open spaces & common spaces for a range of age groups (see 4F Common Circulation & Spaces), incorporating the following: · Seating for individuals or groups · Barbeque areas · Play equipment or play areas · Swimming pools, gyms, tennis courts or common rooms	Capable of complying.	YES
	Location of facilities responds to microclimate & site conditions with access to sun in winter, shade in summer & shelter from strong winds & down drafts	Capable of complying.	YES
	Visual impacts of services are minimised, including location of ventilation duct outlets from basement car parks, electrical substations & detention tanks	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
3D-3	**Design Guidance**		**Considered**
	Communal open space & public domain should be readily visible from habitable rooms & private open space areas while maintaining visual privacy. Design solutions include: · Bay windows · Corner windows · Balconies	Capable of complying.	YES
	Communal open space is well lit	Capable of complying.	YES
	Communal open space/facilities that are provided for children & young people are safe and contained	Capable of complying.	YES
3D-4	**Design Guidance**		**Considered**
	Public open space is well connected with public streets along at least one edge		YES
	POS is connected with nearby parks & other landscape elements		YES
	POS is linked through view lines, pedestrian desire paths, termination points & the wider street grid		YES
	Solar access is provided year round along with protection from strong winds		YES
	Opportunities for a range of recreational activities is provided for people of all ages		YES
	Positive street address & active street frontages are provided adjacent to POS		YES
	Boundaries are clearly defined between POS & private areas		YES
3E-1	**Design Guidance**		**Considered**
	On some sites it may be possible to provide larger deep soil zones, depending on the site area & context: · 10% of the site as deep soil on sites with an area of 650sqm - 1,500sqm · 15% of the site as deep soil on sites greater than 1,500sqm	17% provided	YES
	Deep soil zones are located to retain existing significant trees & to allow for the development of healthy root systems, providing anchorage & stability for mature trees. Design solutions may include: · Basement & sub-basement car park design that is consolidated beneath building footprints · Use of increased front & side setbacks · Adequate clearance around trees to ensure long term health · Co-location with other deep soil areas on adjacent sites to create larger contiguous areas of deep soil		YES
	Achieving the design criteria may not be possible on some sites including where: · location & building typology have limited or no space for deep soil at ground level (e.g. central business district, constrained sites, high density areas, or in centres) · there is 100% site coverage or non-residential uses at ground floor level Where a proposal does not achieve deep soil requirements, acceptable stormwater management is achieved & alterna-tive forms of planting provided		N/A

ADG Ref.	Item Description	Notes	Compliance
3F-1	**Design Guidance**		**Considered**
	Generally as the height increases, one step in the built form is desirable due to building separations. Any additional steps do not cause a 'ziggurat' appearance		N/A
	For residential buildings next to commercial buildings, separation distances are measured as follows: · Retail, office spaces & commercial balconies use the habitable room distances · Service & plant areas use the non-habitable room distances		N/A
	New development are located & oriented to maximise visual privacy between buildings on site & for neighbouring buildings. Design solutions include: · site layout & building are orientated to minimise privacy impacts (see 3B Orientation) · on sloping sites, apartments on different levels have appropriate visual separation distances (see pg 63 figure 3F.4)	Capable of complying.	YES
	Apartment buildings have an increased separation distance of 3m (in addition to 3F-1 Design Criteria) when adjacent to a different zone that permits lower density residential development, to provide for a transition in scale & increased landscaping (pg 63 figure 3F.5)		N/A
	Direct lines of sight are avoided for windows & balconies across corners	Capable of complying.	YES
	No separation is required between blank walls		N/A
3F-2	**Design Guidance**		**Considered**
	Communal open space, common areas & access paths are separated from private open space & windows to apartments, particularly habitable room windows. Design solutions include: · setbacks · solid or partially solid balustrades on balconies at lower levels · fencing and/or trees and vegetation to separate spaces · screening devices · bay windows or pop out windows to provide privacy in one direction & outlook in another · raising apartments or private open space above the public domain or communal open space · planter boxes incorporated into walls & balustrades to increase visual separation · pergolas or shading devices to limit overlooking of lower apartments or private open space · on constrained sites where it can be demonstrated that building layout opportunities are limited, fixed louvres or screen panels on windows and/or balconies	Capable of complying.	YES
	Bedrooms, living spaces & other habitable rooms are separated from gallery access & other open circulation space by the apartment's service areas	Capable of complying.	YES
	Balconies & private terraces are located in front of living rooms to increase internal privacy	Capable of complying.	YES
	Windows are offset from the windows of adjacent buildings	Capable of complying.	YES
	Recessed balconies and/or vertical fins are used between adjacent balconies	Capable of complying.	YES
3G-1	**Design Guidance**		**Considered**
	Multiple entries (including communal building entries & individual ground floor entries) activate the street edge	Capable of complying.	YES
	Entry locations relate to the street & subdivision pattern, and the existing pedestrian network	Capable of complying.	YES
	Building entries are clearly identifiable. Communal entries are clearly distinguishable from private entries	Capable of complying.	YES
	Where street frontage is limited, a primary street address should be provided with clear sight lines and pathways to secondary building entries	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
3G-2	**Design Guidance**		**Considered**
	Building access areas including lift lobbies, stairwells & hallways are clearly visible from the public domain & communal spaces	Capable of complying.	YES
	The design of ground floors & underground car parks minimise level changes along pathways & entries	Capable of complying.	YES
	Steps & ramps are integrated into the overall building & landscape design	Capable of complying.	YES
	For large developments 'way finding' maps are provided to assist visitors & residents	Capable of complying.	YES
	For large developments electronic access & audio/video intercom are provided to manage access	Capable of complying.	YES
3G-3	**Design Guidance**		**Considered**
	Pedestrian links through sites facilitate direct connections to open space, main streets, centres & public transport		YES
	Pedestrian links are direct, have clear sight lines, are overlooked by habitable rooms or private open spaces of dwellings, are well lit & contain active uses, where appropriate		YES
3H-1	**Design Guidance**		**Considered**
	Car park access is integrated with the building's overall facade. Design solutions include: · materials & colour palette minimise visibility from street · security doors/gates minimise voids in the facade · where doors are not provided, visible interiors reflect facade design, and building services, pipes & ducts are concealed	Capable of complying.	YES
	Car park entries are located behind the building line	Capable of complying.	YES
	Vehicle entries are located at the lowest point of the site, minimising ramp lengths, excavation & impacts on the building form and layout	Capable of complying.	YES
	Car park entry & access are located on secondary streets or lanes where available		N/A
	Vehicle standing areas that increase driveway width & encroach into setbacks are avoided	Capable of complying.	YES
	Access point is located to avoid headlight glare to habitable rooms	Capable of complying.	YES
	Adequate separation distances are provided between vehicle entries & street intersections	Capable of complying.	YES
	The width & number of vehicle access points are limited to the minimum	Capable of complying.	YES
	Visual impact of long driveways is minimised through changing alignments & screen planting	Capable of complying.	YES
	The need for large vehicles to enter or turn around within the site is avoided	The majority of blocks are proposed to be serviced from below ground loading areas hence large vehicle turning areas are required within basements.	NO
	Garbage collection, loading & servicing areas are screened	Capable of complying.	YES
	Clear sight lines are provided at pedestrian & vehicle crossings	Capable of complying.	YES
	Traffic calming devices, such as changes in paving material or textures, are used where appropriate	Capable of complying.	YES
	Pedestrian & vehicle access are separated & distinguishable. Design solutions include: · Changes in surface materials · Level changes · Landscaping for separation	Capable of complying.	YES
3J-1	**Design Guidance**		**Considered**
	Where a car share scheme operates locally, car share parking spaces are provided within the development.		YES
	Where less car parking is provided in a development, council do not provide on street resident parking permits		N/A

ADG Ref.	Item Description	Notes	Compliance
3J-2	**Design Guidance**		**Considered**
	Conveniently located & sufficient numbers of parking spaces are provided for motorbikes & scooters	Capable of complying.	YES
	Secure undercover bicycle parking is provided & easily accessible from both public domain & common areas	Capable of complying.	YES
	Conveniently located charging stations are provided for electric vehicles, where desirable	Capable of complying.	YES
3J-3	**Design Guidance**		**Considered**
	Supporting facilities within car parks, including garbage, plant & switch rooms, storage areas & car wash bays can be accessed without crossing car parking spaces	Capable of complying.	YES
	Direct, clearly visible & well lit access is provided into common circulation areas	Capable of complying.	YES
	Clearly defined & visible lobby or waiting area is provided to lifts & stairs	Capable of complying.	YES
	For larger car parks, safe pedestrian access is clearly defined & circulation areas have good lighting, colour, line marking and/or bollards	Capable of complying.	YES
3J-4	**Design Guidance**		**Considered**
	Excavation minimised through efficient car park layouts & ramp design	Capable of complying.	YES
	Car parking layout is well organised, using a logical, efficient structural grid & double loaded aisles	Capable of complying.	YES
	Protrusion of car parks do not exceed 1m above ground level. Solution include stepping car park levels or using split levels on sloping sites	Carparks will be fully below ground	N/A
	Natural ventilation is provided to basement & sub-basement car parking		NO
	Ventilation grills or screening devices for car parking openings are integrated into the facade & landscape design	Carparks will be fully below ground	N/A
3J-5	**Design Guidance**		**Considered**
	On-grade car parking is avoided		YES
	Where on-grade car parking is unavoidable, the following design solutions are used: · Parking is located on the side or rear of the lot away from the primary street frontage · Cars are screened from view of streets, buildings, communal & private open space areas · Safe & direct access to building entry points is provided · Parking is incorporated into the landscape design, by extending planting & materials into the car park space · Stormwater run-off is managed appropriately from car parking surfaces · Bio-swales, rain gardens or on site detention tanks are provided, where appropriate · Light coloured paving materials or permeable paving systems are used. Shade trees are planted between every 4-5 parking spaces to reduce increased surface temperatures to large areas of paving		N/A
3J-6	**Design Guidance**		**Considered**
	Exposed parking is not located along primary street frontages		N/A
	Screening, landscaping & other design elements including public art are used to integrate the above ground car parking with the facade. Design solutions include: · Car parking that is concealed behind facade, with windows integrated into the overall facade design (limited to developments where larger floor plate podium is suitable at lower levels) · Car parking that is 'wrapped' with other uses, such as retail, commercial or two storey Small Office/Home Office (SOHO) units along the street frontage		N/A
	Positive street address & active frontages are provided at ground level		N/A

ADG Ref.	Item Description	Notes	Compliance
4A-1	**Design Guidance**		**Considered**
	The design maximises north aspect. The number of single aspect south facing apartments is minimised		YES
	Single aspect, single storey apartments have a northerly or easterly aspect	Some apartments are oriented south east.	NO
	Living areas are located to the north and service areas to the south & west of apartments		N/A
	To optimise direct sunlight to habitable rooms & balconies a number of the following design features are used: · Dual aspect apartments · Shallow apartment layouts · Two storey &mezzanine level apartments · Bay windows	Indicative reference design demonstrates scheme is capable of complying.	YES
	To maximise the benefit to residents of direct sunlight within living rooms & private open spaces, a minimum of 1sqm of direct sunlight, measured at 1m above floor level, is achieved for at least 15 minutes	Capable of complying.	YES
	Achieving the design criteria may not be possible where: · greater residential amenity can be achieved along a busy road or rail line by orientating the living rooms away from the noise source · on south facing sloping sites · significant views are oriented away from the desired aspect for direct sunlight Design drawings need to demonstrate how site constraints & orientation preclude meeting Design Criteria & how the development meets the objective.		N/A
4A-2	**Design Guidance**		**Considered**
	Courtyards, skylights & high level windows (with sills of 1,500mm or greater) are used only as a secondary light source in habitable rooms		N/A
	Where courtyards are used: · Use is restricted to kitchens, bathrooms & service areas · Building services are concealed with appropriate detailing & materials to visible walls · Courtyards are fully open to the sky · Access is provided to the light well from communal area for cleaning & maintenance · Acoustic privacy, fire safety & minimum privacy separation distances (see 3F Visual Privacy) are achieved		N/A
	Opportunities for reflected light into apartments are optimised through: · Reflective exterior surfaces on buildings opposite south facing windows · Positioning windows to face other buildings or surfaces (on neighbouring sites or within site) that will reflect light · Integrating light shelves into the design · Light coloured internal finishes	Capable of complying.	YES
4A-3	**Design Guidance**		**Considered**
	A number of the following design features are used: · Balconies or sun shading that extend far enough to shade summer sun, but allow winter sun to penetrate living areas · Shading devices such as eaves, awnings, balconies, pergolas, external louvres & planting · Horizontal shading to north facing windows · Vertical shading to east & particularly west facing windows · Operable shading to allow adjustment & choice · High performance glass that minimises external glare off windows, with consideration given to reduce tint glass or glass with a reflectance level below 20% (reflective films are avoided)	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4B-1	**Design Guidance**		**Considered**
	The building's orientation maximises capture & use of prevailing breezes for natural ventilation in habitable rooms	Capable of complying.	YES
	Depths of habitable rooms support natural ventilation	Capable of complying.	YES
	The area of unobstructed window openings should be equal to at least 5% of the floor area served	Capable of complying.	YES
	Light wells are not the primary air source for habitable rooms	Capable of complying.	YES
	Doors & openable windows maximise natural ventilation opportunities by using the following design solutions: · Adjustable windows with large effective openable areas · Variety of window types that provide safety & flexibility such as awnings & louvres · Windows that occupants can reconfigure to funnel breezes into apartment, such as vertical louvres, casement windows & externally opening doors	Capable of complying.	YES
4B-2	**Design Guidance**		**Considered**
	Apartment depths limited to maximise ventilation & airflow	Capable of complying.	YES
	Natural ventilation to single aspect apartments is achieved with the following design solutions: · Primary windows are augmented with plenums and light wells (generally not suitable for cross ventilation) · Stack effect ventilation, solar chimneys or similar used to naturally ventilate internal building areas or rooms such as bathrooms & laundries · Courtyards or building indentations have a width to depth ratio of 2:1 or 3:1 to ensure effective air circulation & avoid trapped smells	Capable of complying.	YES
4B-3	**Design Guidance**		**Considered**
	The building includes dual aspect apartments, cross through apartments & corner apartments, and limited apartment depths	Capable of complying.	YES
	In cross-through apartments, external window & door opening sizes/ areas on one side of an apartment (inlet side) are approximately equal to the external window & door opening sizes/areas on the other side of the apartment (outlet side)	Capable of complying.	YES
	Apartments are designed to minimise the number of corners, doors & rooms that might obstruct airflow	Capable of complying.	YES
	Apartment depths, combined with appropriate ceiling heights, maximise cross ventilation & airflow	Capable of complying.	YES
4C-1	**Design Guidance**		**Considered**
	Ceiling height accommodates use of ceiling fans for cooling & heat distribution	Capable of complying.	YES
4C-2	**Design Guidance**		**Considered**
	A number of the following design solutions are used: · Hierarchy of rooms in apartment is defined using changes in ceiling heights & alternatives such as raked or curved ceilings, or double height spaces · Well proportioned rooms are provided, for example, smaller rooms feel larger & more spacious with higher ceilings · Ceiling heights are maximised in habitable rooms by ensuring that bulkheads do not intrude. The stacking of service rooms from floor to floor & coordination of bulkhead location above non-habitable areas, such as robes or storage, can assist	Capable of complying.	YES
4C-3	**Design Guidance**		**Considered**
	Ceiling heights of lower level apartments should be greater than the minimum required by Design Criteria allowing flexibility & conversion to non-residential uses		NO

ADG Ref.	Item Description	Notes	Compliance
4D-1	**Design Guidance**		**Considered**
	Kitchens is not located as part of the main circulation space in larger apartments (such as hallway or entry space)	Capable of complying.	YES
	A window is visible from any point in a habitable room	Capable of complying.	YES
	Where minimum areas or room dimensions are not met, apartments demonstrate that they are well designed and demonstrate the usability & functionality of the space with realistically scaled furniture layouts & circulation areas.		N/A
4D-2	**Design Guidance**		**Considered**
	Greater than minimum ceiling heights allow for proportional increases in room depth up to the permitted max depths		N/A
	All living areas & bedrooms are located on the external face of building	Capable of complying.	YES
	Where possible: · bathrooms & laundries have external openable window · main living spaces are oriented toward the primary outlook & aspect and away from noise sources	Capable of complying.	YES
4D-3	**Design Guidance**		**Considered**
	Access to bedrooms, bathrooms & laundries is separated from living areas minimising direct openings between living & service areas	Capable of complying.	YES
	All bedrooms allow a minimum length of 1.5m for robes	Capable of complying.	YES
	Main bedroom of apartment or studio apartment is provided with a wardrobe of minimum 1.8m L x 0.6m D x 2.1m H	Capable of complying.	YES
	Apartment layouts allow flexibility over time, design solutions include: · Dimensions that facilitate a variety of furniture arrangements & removal · Spaces for a range of activities & privacy levels between different spaces within the apartment · Dual master apartments · Dual key apartments Note: dual key apartments which are separate but on the same title are regarded as two sole occupancy units for the purposes of the BCA & for calculating mix of apartments · Room sizes & proportions or open plans (rectangular spaces 2:3 are more easily furnished than square spaces 1:1) · Efficient planning of circulation by stairs, corridors & through rooms to maximise the amount of usable floor space in rooms	Capable of complying.	YES
4E-1	**Design Guidance**		**Considered**
	Increased communal open space are provided where the number or size of balconies are reduced		N/A
	Storage areas on balconies is additional to the minimum balcony size	Capable of complying.	YES
	Balcony use may be limited in some proposals where: · consistently high wind speeds at 10 storeys & above · close proximity to road, rail or other noise sources · exposure to significant levels of aircraft noise · heritage & adaptive reuse of existing buildings In these situations, · juliet balconies, · operable walls, · enclosed wintergardens · bay windows are appropriate. Other amenity benefits for occupants are provided in the apartments or in the development or both. Natural ventilation is also demonstrated	Capable of complying.	YES
4E-2	**Design Guidance**		**Considered**
	Primary open space & balconies are located adjacent to the living room, dining room or kitchen to extend the living space	Capable of complying.	YES
	POS & balconies predominantly face north, east or west	Capable of complying.	YES
	POS & balconies are orientated with the longer side facing outwards or be open to the sky to optimise daylight access into adjacent rooms	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4E-3	**Design Guidance**		**Considered**
	Solid, partially solid or transparent fences & balustrades are selected to respond to the location. They are designed to allow views & passive surveillance of the street while maintaining visual privacy & allowing for a range of uses on the balcony. Solid & partially solid balustrades are preferred	Capable of complying.	YES
	Full width full height glass balustrades alone are generally not desirable	Capable of complying.	YES
	Projecting balconies are integrated into the building design. The design of soffits are considered	Capable of complying.	YES
	Operable screens, shutters, hoods & pergolas are used to control sunlight & wind	Capable of complying.	YES
	Balustrades are set back from the building or balcony edge where overlooking or where safety is an issue	Capable of complying.	YES
	Downpipes & balcony drainage are integrated with the overall facade & building design	Capable of complying.	YES
	Air-conditioning units are located on roofs, in basements, or fully integrated into the building design	Capable of complying.	YES
	Where clothes drying, storage or air conditioning units are located on balconies, they are screened & integrated in the building design	Capable of complying.	YES
	Ceilings of apartments below terraces are insulated to avoid heat loss	Capable of complying.	YES
	Water & gas outlets are provided for primary balconies & private open space	Capable of complying.	YES
4E-4	**Design Guidance**		**Considered**
	Changes in ground levels or landscaping are minimised	Capable of complying.	YES
	Balcony design & detailing avoids opportunities for climbing & falling	Capable of complying.	YES
4F-1	**Design Guidance**		**Considered**
	Greater than minimum requirements for corridor widths and/or ceiling heights allow comfortable movement & access particularly in entry lobbies, outside lifts & at apartment entry doors	Capable of complying.	YES
	Daylight & natural ventilation are provided to all common circulation spaces that are above ground	Capable of complying.	YES
	Windows are provided in common circulation spaces & are adjacent to the stair or lift core or at the ends of corridors	Capable of complying.	YES
	Longer corridors greater than 12m in length from the lift core are articulated. Design solutions include: · Series of foyer areas with windows & spaces for seating · Wider areas at apartment entry doors & varied ceiling heights	Capable of complying.	YES
	Common circulation spaces maximise opportunities for dual aspect apartments, including multiple core apartment buildings & cross over apartments	Capable of complying.	YES
	Achieving Design Criteria for the number of apartments off a circulation core may not be possible. Where development is unable to achieve this, a high level of amenity for common lobbies, corridors & apartments is demonstrated, including: · Sunlight & natural cross ventilation in apartments · Access to ample daylight & natural ventilation in common circulation spaces · Common areas for seating & gathering · Generous corridors with greater than minimum ceiling heights · Other innovative design solutions that provide high levels of amenity	Capable of complying. The indicative reference scheme shows that multiple sources of daylight, natural ventilation, and amenity through views out can be achieved in floorplates with up to 12 apartments per floor.	YES
	Where Design Criteria 1 is not achieved, no more than 12 apartments should be provided off a circulation core on a single level	Capable of complying.	YES
	Primary living room or bedroom windows do not open directly onto common circulation spaces, open or enclosed. Visual & acoustic privacy from common circulation spaces to any other rooms are carefully controlled	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4F-2	**Design Guidance**		**Considered**
	Direct & legible access are provided between vertical circulation points & apartment entries by minimising corridor or gallery length to give short, straight, clear sight lines	Capable of complying.	YES
	Tight corners & spaces are avoided	Capable of complying.	YES
	Circulation spaces are well lit at night	Capable of complying.	YES
	Legible signage are provided for apartment numbers, common areas & general wayfinding	Capable of complying.	YES
	Incidental spaces, eg space for seating in a corridor, at a stair landing, or near a window are provided	Capable of complying.	YES
	In larger developments, community rooms for activities such as owners corporation meetings or resident use, are provided & are co-located with communal open space	Capable of complying.	YES
	Where external galleries are provided, they are more open than closed above the balustrade along their length	Capable of complying.	YES
4G-1	**Design Guidance**		**Considered**
	Storage is accessible from either circulation or living areas	Capable of complying.	YES
	Storage provided on balconies (in addition to the minimum balcony size) is integrated into the balcony design, weather proofed & screened from view from the street	Capable of complying.	YES
	Left over space such as under stairs is used for storage	Capable of complying.	YES
4G-2	**Design Guidance**		**Considered**
	Storage not located in apartments is secure and clearly allocated to specific apartments	Capable of complying.	YES
	Storage is provided for larger & less frequently accessed items	Capable of complying.	YES
	Storage space in internal or basement car parks is provided at the rear or side of car spaces or in cages, such that allocated car parking remains accessible	Capable of complying.	YES
	If communal storage rooms are provided they are accessible from common circulation areas of the building	Capable of complying.	YES
	Storage not located in apartment is integrated into the overall building design & not visible from public domain	Capable of complying.	YES
4H-1	**Design Guidance**		**Considered**
	Adequate building separation is provided within the development & from neighbouring buildings/adjacent uses (see 2F Building Separation & 3F Visual Privacy)	Indicative reference design demonstrates scheme is capable of complying.	YES
	Window & door openings are orientated away from noise sources	Capable of complying.	YES
	Noisy areas within buildings including building entries & corridors are located next to or above each other while quieter areas are located next to or above quieter areas	Capable of complying.	YES
	Storage, circulation areas & non-habitable rooms are located to buffer noise from external sources	Capable of complying.	YES
	The number of party walls (shared with other apartments) are limited & are appropriately insulated	Capable of complying.	YES
	Noise sources such as garage doors, driveways, service areas, plant rooms, building services, mechanical equipment, active communal open spaces & circulation areas should be located at least 3m away from bedrooms	Capable of complying.	YES
4H-2	**Design Guidance**		**Considered**
	Internal apartment layout separates noisy spaces from quiet spaces, using a number of the following design solutions: · Rooms with similar noise requirements are grouped together · Doors separate different use zones · Wardrobes in bedrooms are co-located to act as sound buffers	Capable of complying.	YES
	Where physical separation cannot be achieved, noise conflicts are resolved using the following design solutions: · Double or acoustic glazing · Acoustic seals · Use of materials with low noise penetration properties · Continuous walls to ground level courtyards where they do not conflict with streetscape or other amenity requirements	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4J-1	**Design Guidance**		**Considered**
	To minimise impacts the following design solutions are used: · Physical separation between buildings & the noise or pollution source · Residential uses are located perpendicular to the noise source & where possible buffered by other uses · Non-residential buildings are sited to be parallel with the noise source to provide a continuous building that shields residential uses & communal open spaces · Non-residential uses are located at lower levels vertically separating residential component from noise or pollution source. Setbacks to the underside of residential floor levels are increased, relative to traffic volumes & other noise sources · Buildings respond to both solar access & noise. Where solar access is away from noise source, non-habitable rooms will provide a buffer · Where solar access is in the same direction as the noise source, dual aspect apartments with shallow building depths are preferred · Landscape design reduces the perception of noise & acts as a filter for air pollution generated by traffic & industry	Capable of complying.	YES
	Where developments are unable to achieve Design Criteria, alternatives are considered in the following areas: · Solar & daylight access · Private open space & balconies · Natural cross ventilation		N/A
4J-2	**Design Guidance**		**Considered**
	Design solutions to mitigate noise include: · Limiting the number & size of openings facing noise sources · Providing seals to prevent noise transfer through gaps · Using double or acoustic glazing, acoustic louvres or enclosed balconies (wintergardens) · Using materials with mass and/or sound insulation or absorption properties eg solid balcony balustrades, external screens & soffits	Capable of complying.	YES
4K-1	**Design Guidance**		**Considered**
	A variety of apartment types is provided	Capable of complying.	YES
	The apartment mix is appropriate, taking into consideration: · Distance to public transport, employment & education centres · Current market demands & projected future demographic trends · Demand for social & affordable housing · Different cultural & socioeconomic groups	Capable of complying.	YES
	Flexible apartment configurations are provided to support diverse household types & stages of life including single person households, families, multi-generational families & group households	Capable of complying.	YES
4K-2	**Design Guidance**		**Considered**
	Different apartment types are located to achieve successful facade composition & to optimise solar access	Capable of complying.	YES
	Larger apartment types are located on ground or roof level where there is potential for more open space, and on corners where more building frontage is available	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4L-1	**Design Guidance**		**Considered**
	Direct street access are provided to ground floor apartments	Capable of complying.	YES
	Activity is achieved through front gardens, terraces & the facade of the building. Design solutions include: · Both street, foyer & other common internal circulation entrances to ground floor apartments · Private open space is next to the street · Doors & windows face the street	Capable of complying.	YES
	Retail or home office spaces are located along street frontages	Ground floor street frontages are generally residential dwellings activated by direct street access and presenting a two storey scale expression. Retail activation has been located on pedestrian and public realm frontages in lieu of vehicular street frontages to maximise activation of the pedestrian realm.	NO
	Ground floor apartment layouts support SOHO use & provide opportunities for future conversion into commercial or retail areas. In these cases higher floor to ceiling heights & easy conversion to ground floor amenities are provided.		NO
4L-2	**Design Guidance**		**Considered**
	Privacy & safety are provided without obstructing casual surveillance. Design solutions include: · Elevating private gardens & terraces above the street level by 1-1.5m (see pg 109 Figure 4L.4) · Landscaping & private courtyards · Window sill heights minimise sight lines into apartments · Integrating balustrades, safety bars or screens with exterior design	Capable of complying.	YES
	Solar access is maximised through: · High ceilings & tall windows · Trees & shrubs allow solar access in winter & shade in summer	Capable of complying.	YES
4M-1	**Design Guidance**		**Considered**
	Design solutions for front building facades include: · Composition of varied building elements · Defined base, middle & top of buildings · Revealing & concealing certain elements	Capable of complying.	YES
	Building services are integrated within the overall facade	Capable of complying.	YES
	Building facades are well resolved with appropriate scale & proportion to streetscape & with consideration of human scale. Solutions include: · Well composed horizontal & vertical elements · Variation in floor heights to enhance the human scale · Elements that are proportional & arranged in patterns · Public artwork or treatments to exterior blank walls · Grouping of floors or elements such as balconies & windows on taller buildings	Capable of complying.	YES
	Building facades relate to key datum lines of adjacent buildings through upper level setbacks, parapets, cornices, awnings or colonnade heights	Capable of complying.	YES
	Shadow is created on the facade throughout the day with building articulation, balconies & deeper window reveals		YES
4M-2	**Design Guidance**		**Considered**
	Building entries are clearly defined	Capable of complying.	YES
	Important corners are given visual prominence through change in articulation, materials or colour, roof expression or changes in height	Capable of complying.	YES
	Apartment layout is expressed externally through facade features such as party walls & floor slabs	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4N-1	**Design Guidance**		**Considered**
	Roof design relates to the street. Design solutions include: · Special roof features & strong corners · Use of skillion or very low pitch hipped roofs · Breaking down the massing of the roof by using smaller elements to avoid bulk · Using materials or pitched form complementary to adjacent buildings	Capable of complying.	YES
	Roof treatments are integrated with the building design. Design solutions include: · Roof design is in proportion to the overall building size, scale & form · Roof materials compliment the building · Service elements are integrated	Capable of complying.	YES
4N-2	**Design Guidance**		**Considered**
	Habitable roof space are provided with good levels of amenity. Design solutions include: · Penthouse apartments · Dormer or clerestory windows · Openable skylights	Capable of complying.	YES
	Open space is provided on roof tops subject to acceptable visual & acoustic privacy, comfort levels, safety & security considerations	Landscaped roof terraces are provided on some blocks where required to achieve communal open space requirements.	YES
4N-3	**Design Guidance**		**Considered**
	Roof design maximises solar access to apartments during winter & provides shade during summer. Design solutions include: · Roof lifts to the north · Eaves & overhangs shade walls & windows from summer sun	Capable of complying.	YES
	Skylights & ventilation systems are integrated into the roof design	Capable of complying.	YES
4O-1	**Design Guidance**		**Considered**
	Landscape design is environmentally sustainable & can enhance environmental performance by incorporating: · Diverse & appropriate planting · Bio-filtration gardens · Appropriately planted shading trees · Areas for residents to plant vegetables & herbs · Composting · Green roofs or walls	Capable of complying.	YES
	Ongoing maintenance plans are prepared	Capable of complying.	YES
	Microclimate is enhanced by: · Appropriately scaled trees near the eastern & western elevations for shade · Balance of evergreen & deciduous trees to provide shading in summer & sunlight access in winter · Shade structures such as pergolas for balconies & courtyards	Capable of complying.	YES
	Tree & shrub selection considers size at maturity & the potential for roots to compete.	Capable of complying.	YES
4O-2	**Design Guidance**		**Considered**
	Landscape design responds to the existing site conditions including: · Changes of levels · Views · Significant landscape features including trees & rock outcrops	Capable of complying. Refer to indicative reference landscape design.	YES
	Significant landscape features are protected by: · Tree protection zones · Appropriate signage & fencing during construction	Refer to accompanying Biodiversity report undertaken by Eco Logical.	YES
	Plants selected are endemic to region & reflect local ecology	Capable of complying. Refer to indicative reference landscape design.	YES

ADG Ref.	Item Description	Notes	Compliance
4P-1	**Design Guidance**		**Considered**
	Structures are reinforced for additional saturated soil weight	Capable of complying.	YES
	Soil volume is appropriate for plant growth, including: · Modifying depths & widths according to planting mix & irrigation frequency · Free draining & long soil life span · Tree anchorage	Capable of complying.	YES
	Minimum soil standards for plant sizes should be provided in accordance with: Site Area (sqm) / Recommended Tree Planting Up to 850 / 1 medium tree per 50sqm of deep soil zone 850 - 1,500 / 1 large tree or 2 medium trees per 90sqm of deep soil zone Greater than 1,500 / 1 large tree or 2 medium trees per 80sqm of deep soil zone	Capable of complying.	YES
4P-2	**Design Guidance**		**Considered**
	Plants are suited to site conditions, considerations include: · Drought & wind tolerance · Seasonal changes in solar access · Modified substrate depths for a diverse range of plants · Plant longevity	Capable of complying.	YES
	A landscape maintenance plan is prepared	Capable of complying.	YES
	Irrigation & drainage systems respond to: · Changing site conditions · Soil profile & planting regime · Whether rainwater, stormwater or recycled grey water is used	Capable of complying.	YES
4P-3	**Design Guidance**		**Considered**
	Building design incorporates opportunities for planting on structures. Design solutions include: · Green walls with specialised lighting for indoor green walls · Wall design that incorporates planting · Green roofs, particularly where roofs are visible from the public domain · Planter boxes Note: structures designed to accommodate green walls should be integrated into the building facade & consider the ability of the facade to change over time	Capable of complying.	YES
4Q-1	**Design Guidance**		**Considered**
	Developments achieve a benchmark of 20% of the total apartments incorporating the Livable Housing Guideline's silver level universal design features	30% of apartments will achieve Silver level.	YES
4Q-2	**Design Guidance**		**Considered**
	Adaptable housing should be provided in accordance with the relevant council policy	Capable of complying. Refer to design guidelines	YES
	Design solutions for adaptable apartments include: · Convenient access to communal & public areas · High level of solar access · Minimal structural change & residential amenity loss when adapted · Larger car parking spaces for accessibility · Parking titled separately from apartments or shared car parking arrangements	Capable of complying.	YES
4Q-3	**Design Guidance**		**Considered**
	Flexible design solutions include: · Rooms with multiple functions · Dual master bedroom apartments with separate bathrooms · Larger apartments with various living space options · Open plan 'loft' style apartments with only a fixed kitchen, laundry & bathroom	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4R-1	**Design Guidance**		**Considered**
	Design solutions include: · New elements align with the existing building · Additions complement the existing character, siting, scale, proportion, pattern, form & detailing · Contemporary & complementary materials, finishes, textures & colours		N/A
	Additions to heritage items are clearly identifiable from the original building		NAA
	New additions allow for interpretation & future evolution of the building		N/A
4R-2	**Design Guidance**		**Considered**
	Design features are incorporated sensitively to make up for any physical limitations, to ensure residential amenity. Design solutions include: · Generously sized voids in deeper buildings · Alternative apartment types when orientation is poor · Additions to expand the existing building envelope		N/A
	Where developments are unable to achieve Design Criteria, alternatives are considered in the following areas: · Where there are existing higher ceilings, depths of habitable rooms can increase subject to demonstrating access to natural ventilation, cross ventilation (when applicable) and solar & daylight access (see 4A & 4B) · Alternatives to providing deep soil where less than the minimum requirement is currently available on the site · Building & visual separation subject to demonstrating alternative design approaches to achieving privacy · Common circulation · Car parking · Alternative approaches to private open space & balconies		N/A
4S-1	**Design Guidance**		**Considered**
	Mixed use development are concentrated around public transport & centres	Non residential uses are located in buildings A1, B1.2, B2, C1, C2, C3 and D3 with active frontages facing both the village green and Main Street to create a vibrant and legible town centre.	YES
	Mixed use developments positively contribute to the public domain. Design solutions include: · Development addresses the street · Active frontages provided · Diverse activities & uses · Avoiding blank walls at the ground level · Live/work apartments on the ground floor level, rather than commercial		YES
4S-21	**Design Guidance**		**Considered**
	Residential circulation areas are clearly defined. Solutions include: · Residential entries separated from commercial entries & directly accessible from the street · Commercial service areas separated from residential components · Residential car parking & communal facilities separated or secured · Security at entries & safe pedestrian routes are provided · Concealment opportunities are avoided	Capable of complying.	YES
	Landscaped communal open space are provided at podium or roof		YES

ADG Ref.	Item Description	Notes	Compliance
4T-1	**Design Guidance**		**Considered**
	Awnings are located along streets with high pedestrian activity & active frontages	Capable of complying.	YES
	A number of the following design solutions are used: · Continuous awnings are maintained & provided in areas with an existing pattern · Height, depth, material & form complements existing street character · Protection from sun & rain is provided · Awnings are wrapped around secondary frontages of corner sites · Awnings are retractable in areas without an established pattern	Capable of complying.	YES
	Awnings are located over building entries for building address & public domain amenity	Capable of complying.	YES
	Awnings relate to residential windows, balconies, street tree planting, power poles & street infrastructure	Capable of complying.	YES
	Gutters & down pipes are integrated and concealed	Capable of complying.	YES
	Lighting under awnings is provided for pedestrian safety	Capable of complying.	YES
4T-2	**Design Guidance**		**Considered**
	Signage is integrated into building design & respond to scale, proportion & detailing of the development	Capable of complying.	YES
	Legible & discrete way finding is provided for larger developments	Capable of complying.	YES
	Signage is limited to being on & below awnings, and single facade sign on primary street frontages	Capable of complying.	YES
4U-1	**Design Guidance**		**Considered**
	Adequate natural light is provided to habitable rooms (see 4A Solar & Daylight Access)	Capable of complying.	YES
	Well located, screened outdoor areas are provided for clothes drying	Capable of complying.	YES
4U-2	**Design Guidance**		**Considered**
	A number of the following design solutions are used: · Use of smart glass or other on north & west elevations · Thermal mass maximised in floors & walls of north facing rooms · Polished concrete floors, tiles or timber rather than carpet · Insulated roofs, walls & floors. Seals on window & door openings · Overhangs & shading devices such as awnings, blinds & screens	Capable of complying.	YES
	Provision of consolidated heating & cooling infrastructure is located in a centralised location (eg basement)	Capable of complying.	YES
4U-3	**Design Guidance**		**Considered**
	A number of the following design solutions are used: · Rooms with similar usage are grouped together · Natural cross ventilation for apartments is optimised · Natural ventilation is provided to all habitable rooms & as many non-habitable rooms, common areas & circulation spaces as possible	Capable of complying.	YES
4V-1	**Design Guidance**		**Considered**
	Water efficient fittings, appliances & wastewater reuse are incorporated	Capable of complying.	YES
	Apartments are individually metered	Capable of complying.	YES
	Rainwater is collected, stored & reused on site	Capable of complying.	YES
	Drought tolerant, low water use plants are used within landscaped areas	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4V-2	**Design Guidance**		**Considered**
	Water sensitive urban design systems are designed by a suitably qualified professional	Capable of complying.	YES
	A number of the following design solutions are used: · Runoff is collected from roofs & balconies in water tanks and plumbed into toilets, laundry & irrigation · Porous & open paving materials is maximised · On site stormwater & infiltration, including bio-retention systems such as rain gardens or street tree pits	Capable of complying.	YES
4V-3	**Design Guidance**		**Considered**
	Detention tanks are located under paved areas, driveways or in basement car parks	Capable of complying.	YES
	On large sites, parks or open spaces are designed to provide temporary on site detention basins	Capable of complying.	YES
4W-1	**Design Guidance**		**Considered**
	Adequately sized storage areas for rubbish bins are located discreetly away from the front of the development or in basement car park	Capable of complying.	YES
	Waste & recycling storage areas are well ventilated	Capable of complying.	YES
	Circulation design allows bins to be easily manoeuvred between storage & collection points	Capable of complying.	YES
	Temporary storage are provided for large bulk items such as mattresses	Capable of complying.	YES
	Waste management plan is prepared	Capable of complying.	YES
4W-2	**Design Guidance**		**Considered**
	All dwellings have a waste & recycling cupboard or temporary storage area of sufficient size to hold two days worth of waste & recycling	Capable of complying.	YES
	Communal waste & recycling rooms are in convenient & accessible locations related to each vertical core	Capable of complying.	YES
	For mixed use developments, residential waste & recycling storage areas & access is separate & secure from other uses	Capable of complying.	YES
	Alternative waste disposal methods such as composting is provided	Capable of complying.	YES
4X-1	**Design Guidance**		**Considered**
	A number of the following design solutions are used: · Roof overhangs to protect walls · Hoods over windows & doors to protect openings · Detailing horizontal edges with drip lines to avoid staining surfaces · Methods to eliminate or reduce planter box leaching · Appropriate design & material selection for hostile locations	Capable of complying.	YES
4X-2	**Design Guidance**		**Considered**
	Window design enables cleaning from the inside of the building	Capable of complying.	YES
	Building maintenance systems are incorporated & integrated into the design of the building form, roof & facade	Capable of complying.	YES
	Design does not require external scaffolding for maintenance access	Capable of complying.	YES
	Manually operated systems such as blinds, sunshades & curtains are used in preference to mechanical systems	Capable of complying.	YES
	Centralised maintenance, services & storage are provided for communal open space areas within the building	Capable of complying.	YES

ADG Ref.	Item Description	Notes	Compliance
4X-3	**Design Guidance**		**Considered**
	A number of the following design solutions are used: · Sensors to control artificial lighting in common circulation & spaces · Natural materials that weather well & improve with time, such as face brickwork · Easily cleaned surfaces that are graffiti resistant · Robust & durable materials & finishes in locations which receive heavy wear & tear such as common circulation areas & lift interiors	Capable of complying.	YES