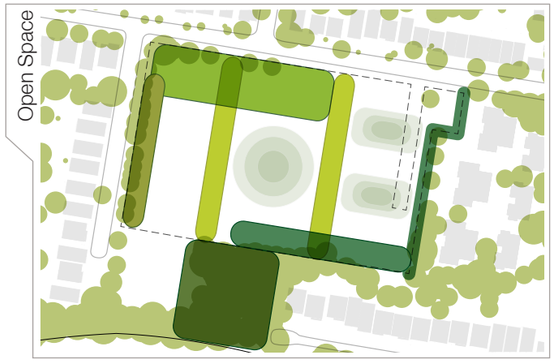
4.0 Introduction

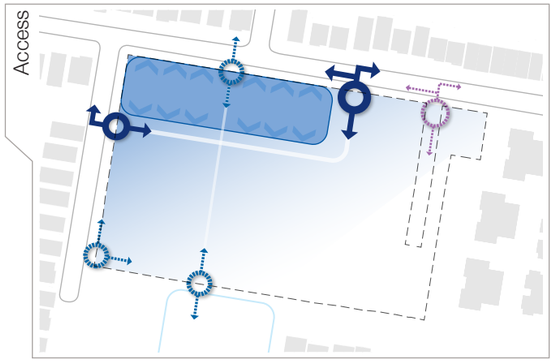
This sections consolidates the material and findings from the previous sections of the report, which has come from a number of sources including the desktop and primary research, community and council consultation and from the team's professional experience.

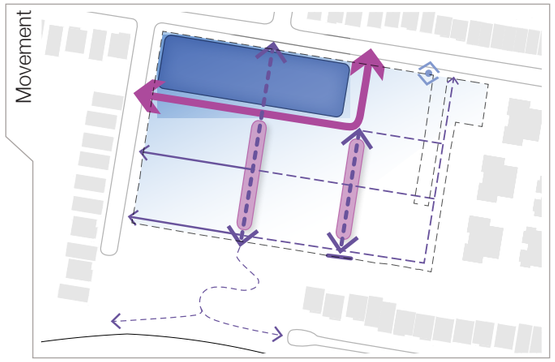
To ensure this crucial information is considered and reflected throughout the preparation, refinement, and ultimately the submission of this Environmental Assessment, we have distilled these findings into a set of design parameters.

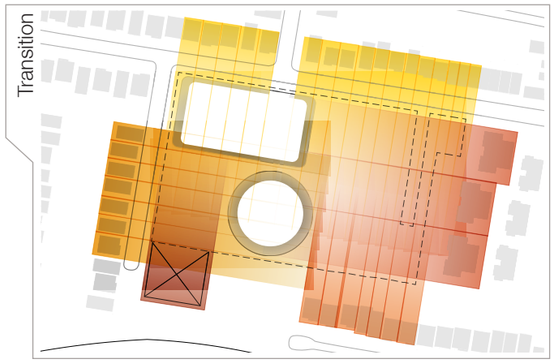
The design parameters have been established to guide the development of the options, from preliminary sketch options right through to the preferred option, and serves as a reference for the project team.

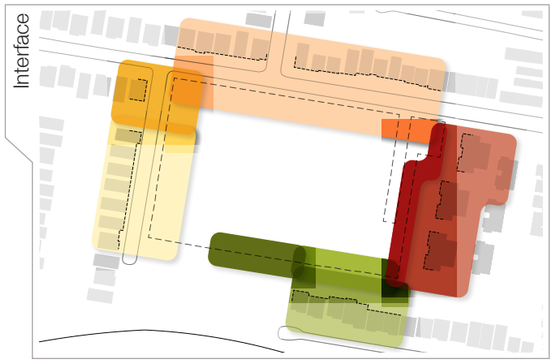
Each design parameter is established with key statements of intent, which are then supplemented by a more detailed appraisal of how the parameter will be achieved and commentary on what Council and the Community have said regrading these topics.

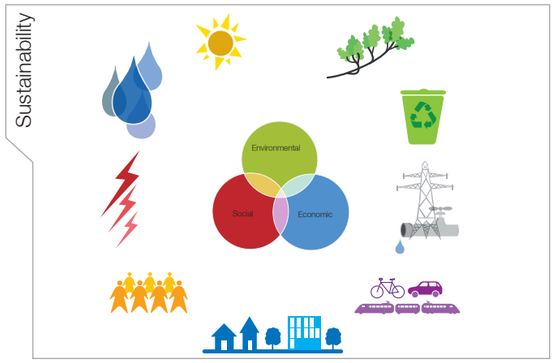


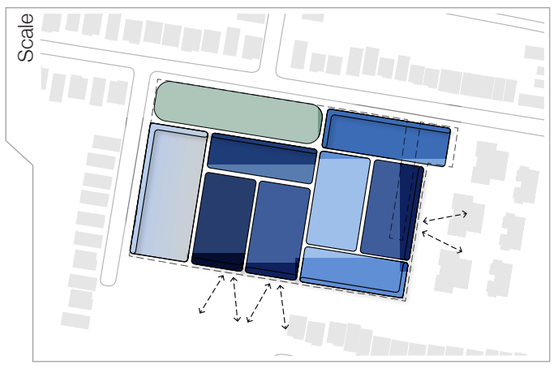


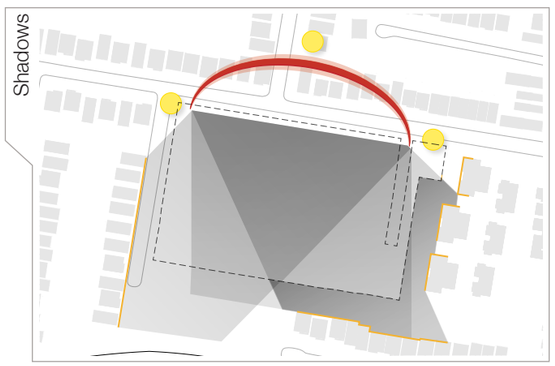










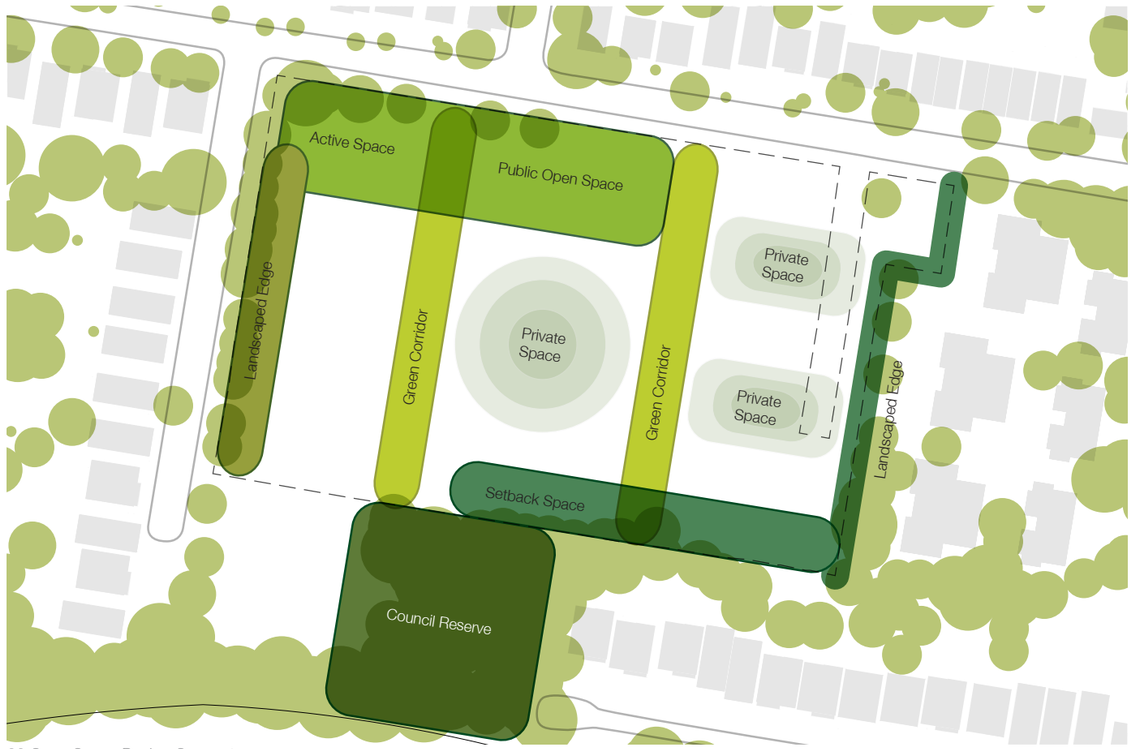


4.1 Spaces

The design will incorporate the creation of significant open spaces on site that are for the residents and the general public alike. These spaces will provide amenity through a landscape design that promotes healthy and active lifestyles, improve amenity for existing and proposed dwellings, visual privacy and the opportunity for recreational and social engagement.

What the Community said:
- Spaces must be publicly accessible and visible from Artarmon Road
- A range of activities should be provided, including both active and passive areas
- BBQ areas where the community can gather, including those with the proposal and surrounding properties
- Where possible, retain the existing trees around the site's edge and throughout the site itself

What Council said:
- Council will not adopt or maintain the spaces
- Spaces provided on site will work to complement the existing network of open spaces, including Artarmon Reserve and Flat Rock Creek
- Provide a linear park space along Artarmon Road that is publicly accessible but owned by the development.
- Spaces within the site to provide a variety of active and passive uses that cater for all age groups
- Integrate site's spaces with the surrounding spaces, particularly the Council-owned reserve abutting the south of the site
- Provide adequate deep soil to continue the densely planted tree character found within the suburb of Willoughby
- Spaces created through site should feel inviting and encourage public pedestrian movement through site



00 Open Space Design Concept


01 Linear park with low built edge


02 Built edge to public space


03 Flexible uses, active to passive


04 Catering activities to teenagers


04 Catering to young families (Sanders Park, Willoughby)


05 Defining private and public spaces

4.1 Spaces

01 Cleland Park

A review of the quality, features, scale and patronage of the open spaces located throughout Willoughby was undertaken as part of the project research. Each of these four public spaces feature characteristics common to the project site and will help inform design process.

Cleland Park features a variety of activities including formal gardens, picnic and seating, kids play and tennis facilities. This parkland was once identified as a potential location for the Council Chambers, but became redundant after Chatswood Town Hall was established in 1903. Tennis facilities have been provided on site since the 1920's and are in frequent use.

02 King Park

This pocket park is located next to Northbridge Shopping Centre. Covering an area of 556m^2 the park features garden beds, grassed areas, small deciduous trees and park benches. This open space provides residents with a passive area for quiet reflection and relaxation.

03 Mashman Park

This site is a linear park located between Victoria Avenue and a residential flat building to the south. The park is of historic significance as it was once the location of a local pottery business, as referenced by the artwork along the retaining wall. The park features a range of established trees and planters, passive spaces and open lawn, a fountain, and public art.

04 Sanders Park

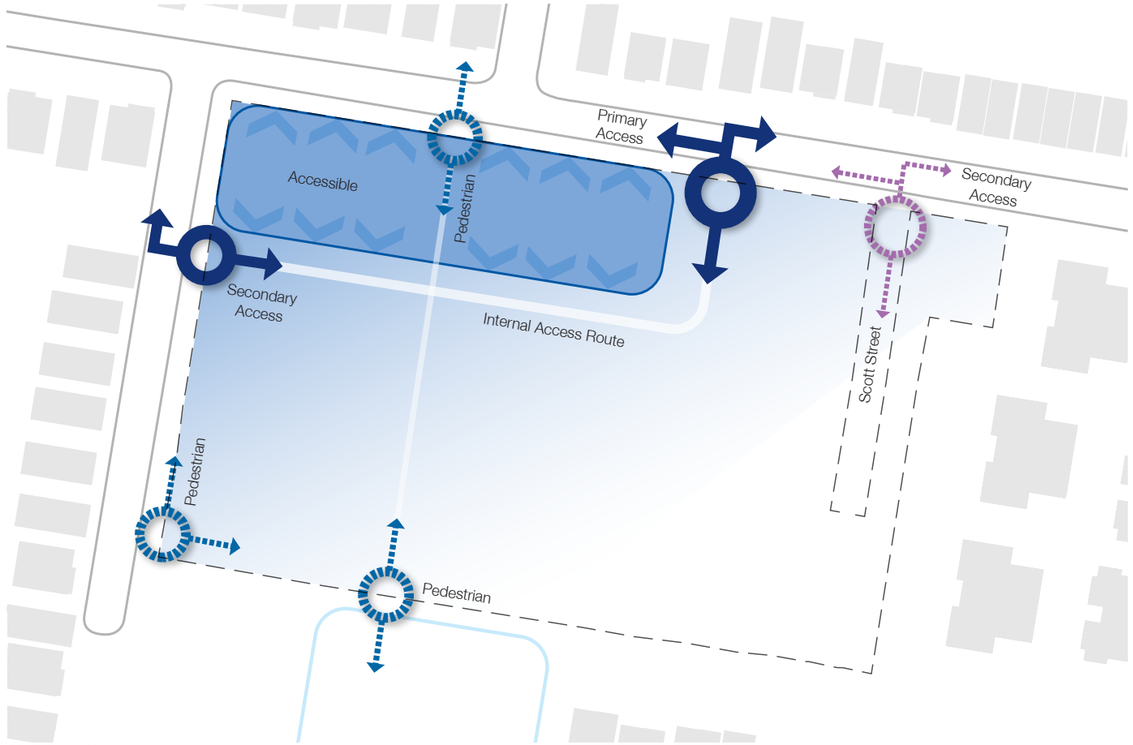
Sanders Park is 3,284m^2 in area. The park is planted with mature trees, both deciduous and evergreens, that provide shading in the summer and allow for solar access in the winter. The park is well used housing a variety of kids play activities (including climbing walls, swing sets, spinners and slides) and passive open space for ball activities. The park is traversed with a concrete path connecting Julian street, Borlaise Street and Gorman Street, providing access through and to the play spaces within.

4.2 Access

Access to the site will be gained through a number of spaces and routes, for a range of modes, and in a manner that allows safe movement patterns. The layout of the site should encourage residents and neighbours to walk and cycle, instead of relying on the private vehicle to access services or commute to work and school.

What the Community said:
- Avoid bringing traffic in and out of the site at junction of Artarmon Road and Edward Street due to existing congestion and accident hazards
- Vehicle access to Richmond Avenue should consider impact on existing properties
- Junction of Artarmon Road and Richmond Avenue best suited to handle traffic due to visibility
- Explore the future potential of connecting the site to the pedestrian routes under the Gore Hill Freeway

What Council said:
- Encourage improved access to the Council-owned nature reserve to the south of the site for pedestrians and cyclists
- Scott Street to form part of the development site, requiring purchase by NNA or a land-swap
- Provide a clear understanding of the volume, direction and timing of traffic leaving and arriving at the site, based on proposed development
- Open-up the site's edges to encourage public access to the internal routes and spaces
- All routes and access points to be owned and managed by the strata - Council don't wish to adopt
- Left-In and Left-Out only access from the site on to Artarmon Road to address concerns over safety and congestion



00 Access Concept Diagram


01 Access to basements off shared paths


02 Shared path with passive surveillance


03 Shared Path with brick paving


04 Defined building entry


05 Planted roadway with off street parking

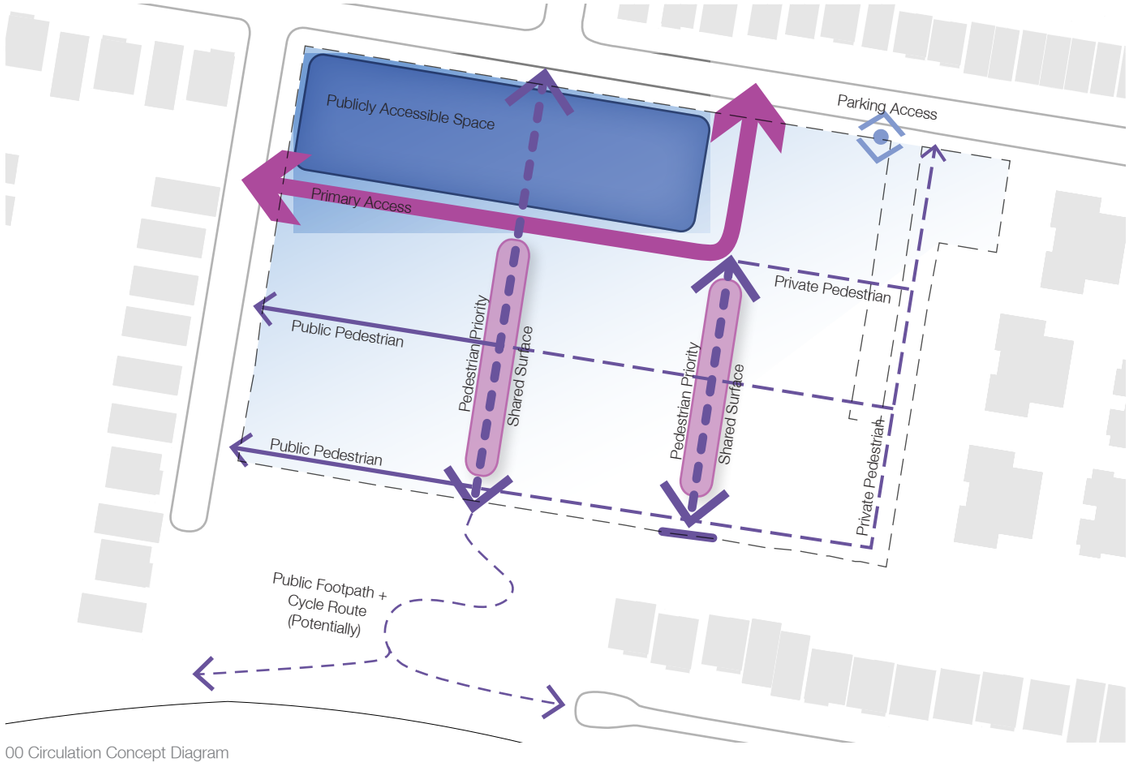
4.3 Circulation

The circulation arrangement will provide permeability through the site for both residents and the wider community, unlocking a previously contained and secure site. For ease of navigation, 'sense of place' and safety, the site will feature streets and spaces fronted by buildings. All streets and routes will be owned and managed by the strata, though they'll remain accessible to the public.

What the Community said:
- Streets and footpaths to be accessible to the public - avoid the site becoming a gated community
- Ensure on-street parking is available across the site, reducing the impact on the local streets
- Connections through the site to be created, allowing access to the Council Reserve and Walter Street

What the Council said:
- Don't wish to adopt or maintain the roads and footpaths

Key Features:
- Establish a hierarchy of movement corridors across the site that create a legible and safe environment
- Utilise a mix of pedestrian dedicated paths, shared-ways and residential streets to provide easy navigation accessible to all users and modes of transport
- Provide a clearly defined street address to each building
- Minimise impact on local traffic along Richmond Avenue and Artarmon Road through management and design
- Ensure that all routes through site are accessible to the wider community
- On-street parking will be provided along proposed roadways to prevent any impact on neighbouring streets
- Investigate connection through the site to the nature reserve south of the site



00 Circulation Concept Diagram


01 Split road with landscaped median


02 Naturalised footpath


03 Landscaped footpath


04 Shared cycle and footpath


06 Landscaped streetscape featuring native species


05 Landscape footpath & access points


07 Public footpath and landscaped setback

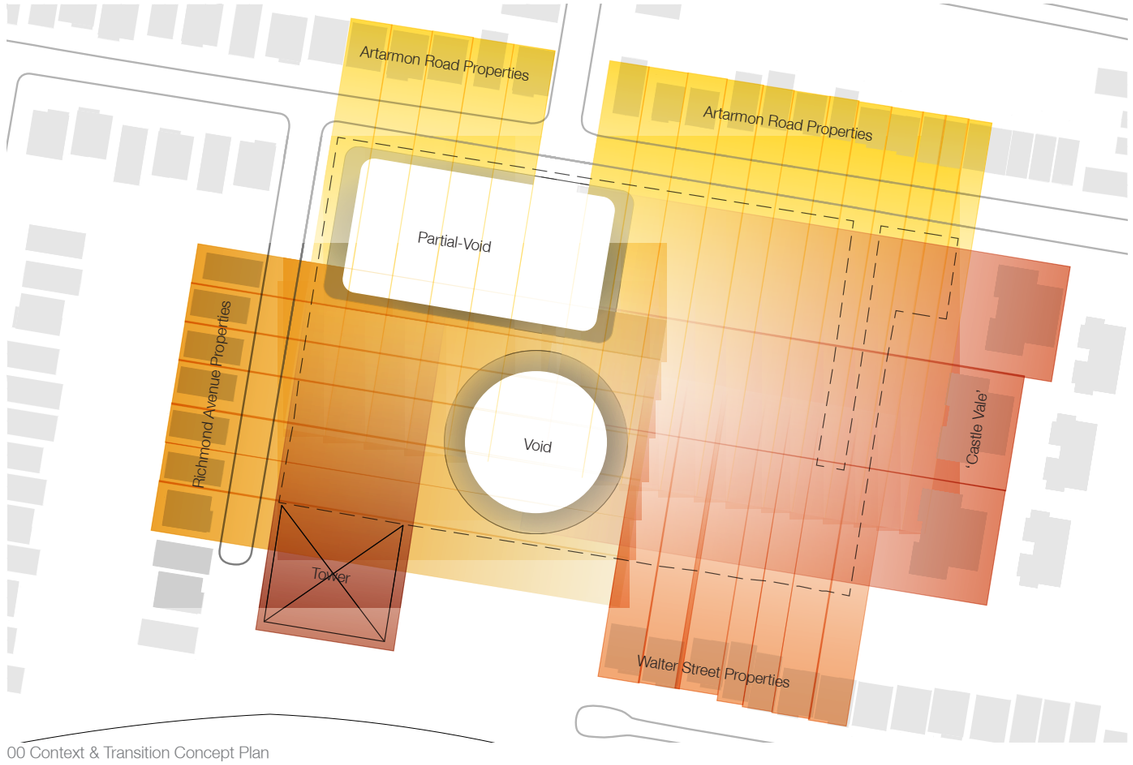
4.4 Context and Transition

The proposed development will respond to the existing character and grain of the neighbourhood, and will also relate to the future desired character that Council has proposed for the Willoughby Road Corridor. Redevelopment of the site will respond to the varying conditions by transitioning height and mass from the neighbouring properties to the internal 'void' zones deep within the site's boundaries.

What the Community said:
- Respond to the character of the local area - typically low-density residential
- Lower buildings along Richmond Avenue
- Artarmon Road is less sensitive

What the Council said:
- Locate taller buildings at the centre of the site, to reduce their visual impact

Key Features:
- Continue the existing grain of Richmond Avenue through the provision of 2-storey terraces along the street frontage
- Setbacks to allow for the retention of existing trees and significant planting, maintaining the sense of character that defines the suburb of Willoughby - 'leafy'
- Focus taller development at the internal zones of the site away from sensitive areas (overshadowing, trees)
- Deliver a high quality public space at the site's edge to help with the transition between existing and proposed
- Use the site's topography to step development, screen parking and entrances
- Reduce perceived bulk and mass of the site creating a perimeter band of development that extends the existing context and transitions from low scale density to higher density within the site



00 Context & Transition Concept Plan


01 Two-storey built form along street frontage (St. Leonards)


02 Two-storey built form along street frontage (St. Leonards)


03 Two-storey terrace frontage (Totem, Balgowlah)


04 Single aspect terraces screen service and car parking


05 Taller buildings located within the site (Totem, Balgowlah)


06 Taller buildings at the corner


07 Stepped built form and topography (Lilyfield)

4.5 Interface

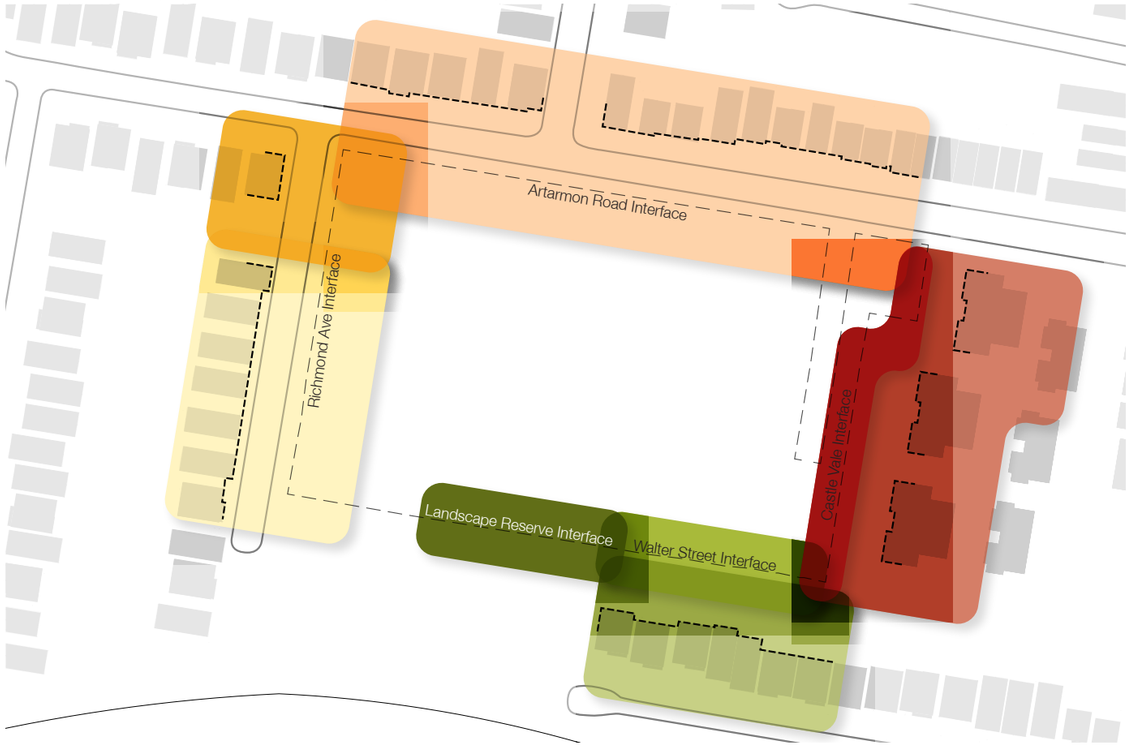
The site features four edge conditions that vary in terms of their characteristics, sensitivity and demands. Proposed development must address these edges with built frontages and landscaped setbacks that remove the gated perimeter fence, and where possible open-up the site to the neighbourhood. The form and scale of development will be compatible with the existing properties.

What the Community said:

- Retain as many exiting trees along the site's boundaries as possible
- Avoid placing tall development along Richmond Avenue so that the development responds to the existing low-scale residential character
- Less concerned with development along Artarmon Road, though 6-8 storeys is too high
- Eastern boundary to Castevale the least sensitive in terms of scale, though privacy and overlooking a concern

Key Features:

- Provide an appropriate scale of building along Richmond Avenue to continue the character of the residential street
- Setback development from Artarmon Road to allow for the creation of a linear public park along the street edge
- Orient and articulate development along the eastern and southern edges of the site to minimise the impact of development on the neighbouring properties
- Development should be compatible with the adjacent development, not mimic or copy
- The site is bound by a number of conditions that reflect a varied character. Therefore the character of the site must also be varied and responsive




01 Richmond Avenue


02 Retain trees as part of landscaped setback


03 Corner Artarmon Road & Richmond Avenue


04 Publicly accessible open space - combination of passive & active uses


05 Corner of Artarmon Road and Scott Street


06 Building in a landscaped setting - above basement parking & podium


07 Site's southern boundary


08 Appropriately scaled development setback from site boundary

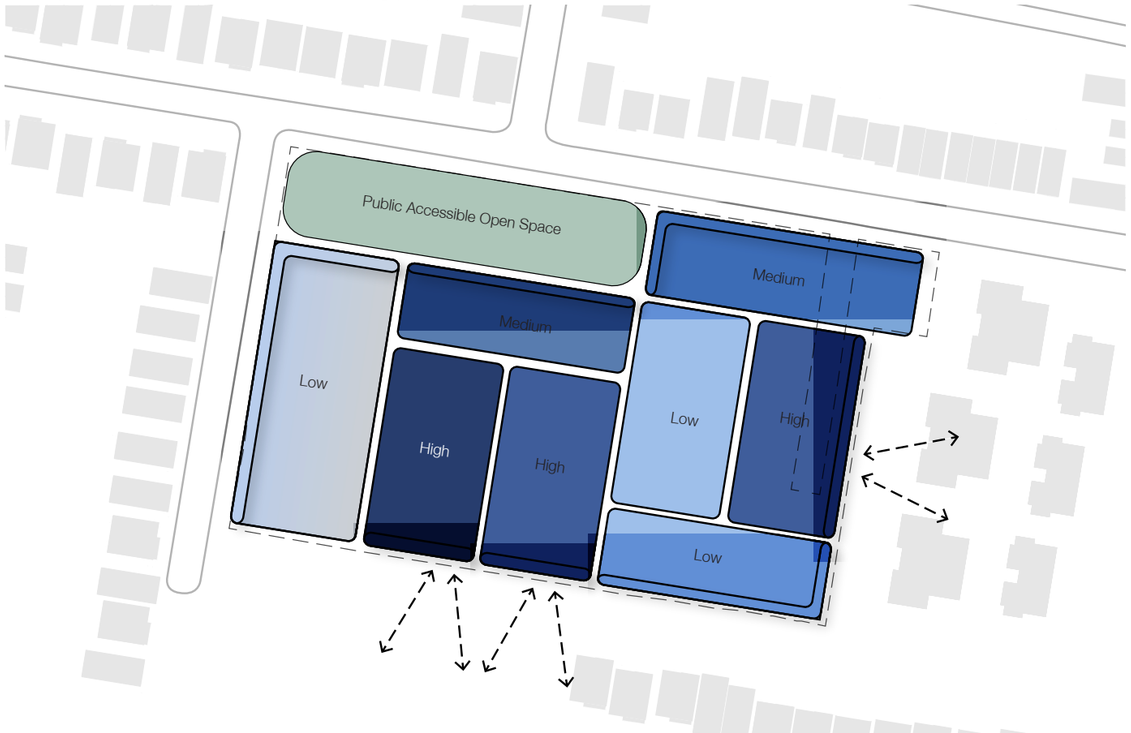
4.6 Scale

Development will be of an appropriate scale, in terms of height, location, orientation and yields. This will be achieved by balancing height of development with open space and the public realm to achieve the optimum level of density. The visibility of the site is a major consideration, one which will influence the location and orientation of buildings, particularly when viewed from the areas to the south of the site.

What the Community said:
- Sensitivity of views from Naremburn and Walter Street to the south looking up towards the site
- Consider the positioning of built form in views from Willoughby Road and the Incinerator (Small Street)
- Development should not dominate Richmond Avenue

What the Council said:
- The scale of development on the site should not result in any adverse impacts on the surrounding properties

Key Features:
- Provide buildings with a human-scale along the edges of the public domain and streets to provide a sense of security and enclosure
- Utilise podiums to screen the height of development by setting back upper levels from the street edge
- Vary articulation of the facade through form and materiality to minimise perceived mass of building
- Control the building heights to mitigate issues of privacy
- Provide a sufficient level of open space and separation between buildings to achieve a desirable level of amenity, in line with SEPP65 guidelines
- Minimise visual impact of tall developments whilst maintaining key views and vistas to surrounding areas
- The scale and quality of development will ensure a greater range of housing choice for the existing and future residents.



00 Scale Concept Plan


01 Varied built form, scale and materiality


02 Two-storey podium on a 8-storey building


03 Stepping built form


04 Two-storey podium addressing the street

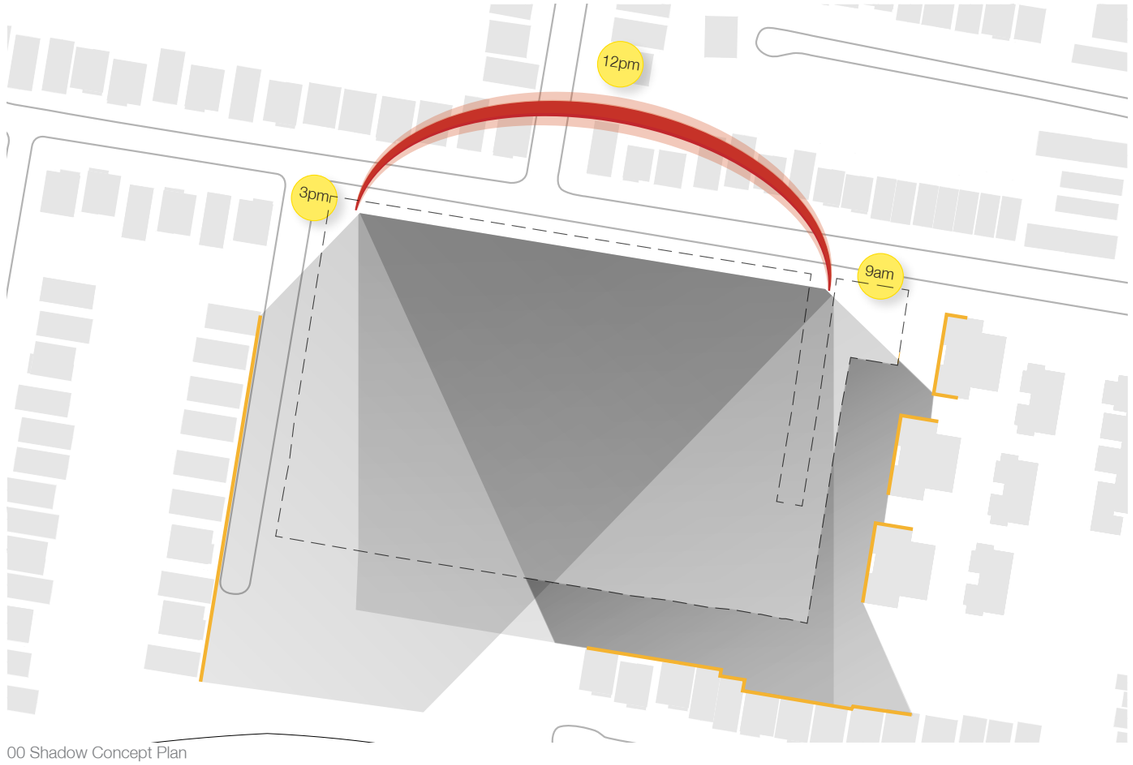
4.7 Shadows

Built form will be designed and orientated to ensure reasonable daylight access is delivered to all properties and public domain within and adjacent to the site. Setbacks, open spaces and building articulation should be used to maximise access to sunlight and mitigate any instances of over-shadowing caused by the proposal. Careful consideration should be granted to those properties located to the south-east, south and south-west of the site.

What the Community said:
- Walter Street properties are currently over-shadowed in mid-winter by the trees along the site's southern boundary
- Further impact on these properties should be avoided

What the Council said:
- Shadow analysis should consider the impact of development both with and without vegetation

Key Features:
- Building heights and orientation will be used to minimise overshadowing of properties to the south and east
- The linear park on Artarmon Road should be located at the north of the site to maximise access to sunlight
- Setbacks to the southern, eastern and western boundaries of the site will help address over-shadowing
- Development with substantial height should be located immediately to the north-east of the telecommunications tower, where there is the least impact on neighbouring properties and shadows are cast over the freeway
- All options should be modelled and tested during the Equinox and Mid-Winter (21 July) periods, between 9am and 3pm.



00 Shadow Concept Plan


01 Shadows cast along the southern edge of the site


02 Retaining wall along Artarmon Road


03 Morning sun casting a shadow along Scott Street


04 View from Walter Street towards the southern boundary


05 View from Walter Street towards the southern boundary

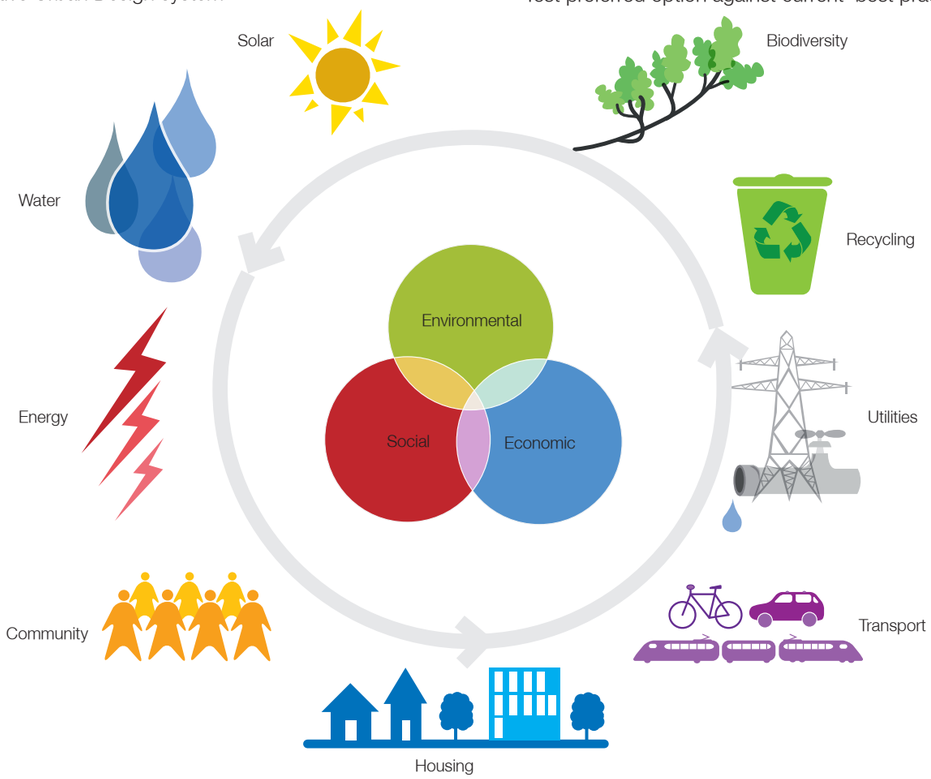
4.8 Sustainability

Sustainable design and development measures will form the basis of development on this site. At this early stage of the project nothing is precluded. Sustainability will be approached holistically looking at a triple bottom line concept that looks at Economic, Social and Environmental objectives. Measures will be undertaken to ensure the future of the community is secured over the life of this project.

What the Community said:
- Provide services that will support the existing and future residents. Ideally like to see another school, though concede this project can't deliver a facility of this scale
- Ensure the development is 'sustainable', regardless of what that involves from a technical aspect (energy, water)

What the Council said:
- Rainwater capture, recycling and re-use as part of a Water Sensitive Urban Design system
- Capture run-off on site to avoid any potential contamination of the Flat Rock Gully tributaries

Key Features:
- Preservation of significant trees
- Inclusion of chid care facilities
- Access to basic retail needs, such as a corner
- Diversity in housing choice and affordability, including the provision of key worker housing, though not appropriate for Senior's Living due to steep terrain
- Opportunities for integration of co-gen and tri-gen initiatives due to the scale of development
- Integration of grey water recycling and on-site rain water detention as part of a WSUD system
- Open space to cater for all needs, not only for recreational use, e.g. provision of community gardens as well as active and passive recreation
- Test preferred option against current 'best practice' (7.0)




01 Water Sensitive Urban Design

02 On-site energy production, Co-gen and Tri-gen


03 Community Services - Day Care


04 Community Gardens & Productive Landscapes


05 Other Uses - Cafes


06 Local Services - Corner Store

4.9 Consultation

Consultation was held throughout October and November, and included a range of stakeholder and community events between the 2nd and 9th November, the details of which are outlined in a separate report by Urban Concepts which accompanies this Environmental Assessment.

The design team prepared the material used for the presentations and workshop sessions, and facilitated discussions with the community and stakeholders. The three key elements of the consultation events and their influence on the design process are outlined below.

Site Walk-Arounds

- The community were given the opportunity to walk around the secure site and gain an understanding of the context and site features, including the topography, edge conditions, existing buildings, existing workforce and parking. SJB Director's also identified specific elements that influences the preliminary design concepts, some of which are outlined above.

Project Presentation

- Following the site walk-arounds a 40-minute presentation was prepared to explain the design approach undertaken by the project team and the formation of design parameters. The previous Part 3A scheme was presented in parallel to three preliminary options.

Workshop Sessions

- Following the presentation three workshops were facilitated by the Directors of SJB, with support by the project team. The options were discussed and the community had the opportunity to ask questions and raise their concerns about the proposal and the process. An independently prepared questionnaire was used as the basis for the workshop, to ensure the same topics were covered.

The purpose of these consultation sessions with the community and stakeholders was to explain the design process and to explain the formation of the preliminary concepts plans (x3). These sessions also gave the team an opportunity to gauge the attitudes and objections to the previous Part 3A proposal, which was prepared by another project team.

Until this point the local knowledge and understanding of the area has remained untouched and these discussions gave the team a unique opportunity to test the ideas and approaches that have shaped the options outlined in Section 5.0.

The design approach undertaken by the project team began with an analysis of the previous Part 3A scheme and studied the positive and negative outcomes that it would deliver. Design Parameters, as outlined in this section, were then establish for the site and where developed from the teams initial findings and site analysis, they were then used to inform the design of three options.

The options were a like-for-like comparison with the original Part 3A proposal in regards to density and yield, however the layouts varied between the options to investigate different design solutions. None of these options were preferred but rather investigated key aspects that were both positive and negative in order to elicit a response from the community and distil what their primary concerns were.

Physical models of the three preliminary schemes were prepared and sat in parallel to the previous Part 3A submission, they were accompanied by hand drawn sketches of the three schemes to outline the distribution of the heights across the site.

The design principles were not only developed to inform the design of the options, they were also established as a means to ensure that future proposals for the site will deliver the desired outcomes of the project. Since the event the parameters have evolved to include the concerns raised at these events.

The primary concerns raised by the community included, but not limited to the following:

- Traffic and parking
- Visibility of the proposal from Naremburn
- Overshadowing
- Stress on public transport
- Stress on local schools
- Part 3A process
- Change of identity to their community

01 SJB Director, Jonathan Knapp, facilitating the site walk-arounds

02 Previous Part 3A Concept (October 2010)

03 Preliminary Concept 01

04 Preliminary Concept 02

05 Preliminary Concept 03

4.10 SEPP 65

The State Government policy for residential flat design, SEPP65 and the accompanying Residential Flat Design Code (RFDC), provide a valuable benchmark for projects of this nature. The concept plan for the site should be able to meet the policy requirements and guidance contained in these documents, which have been summarised as part of design parameters 10 and 11.

Aims and Objectives

The Policy aims to improve design quality of residential flat developments in New South Wales. In response to the DGR's these 10 Principles will be used to assess the preferred option in Section 7.0 of this report.

In addition, a SEPP65 Compatibility Table will also be used to assess the preferred option, which covers the various development controls, rules of thumb and best design requirements outlined in the Residential Flat Design Code.

Principle 01: Context
Good design responds and contributes to its context. Context can be defined as the key natural and built features of an area.

New buildings should be contributing to the quality and identity of the area whether it be desirable current character or desired future character.

Principle 02: Scale
Good design provides an appropriate scale in terms of the bulk and height that suits the scale of the street and the surrounding building.

Scale requires a considered response to the scale of the existing development and or proposed bulk and height that achieves the scale identified for the desired future character of the area.

Principle 03: Built Form
Good design achieves an appropriate built form for a site and the building's purpose, in terms of building alignments, proportions, building type and the manipulation of building elements.

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

Principle 04: Density
Good design has a density appropriate for a site and its context, in terms of floor space yields (or number of units or residents).

Appropriate densities are sustainable and consistent with the existing density in the area, or are consistent with the desired future density. Sustainable densities respond to the regional context, availability of infrastructure, public transport, community facilities and environmental quality.

Principle 05: Resource, Energy and water efficiency
Good design makes efficient use of natural resources, energy and water throughout its full life cycle, including construction.

Sustainability is integral to the design process. Aspects include demolition of existing structures, recycling of materials, selection of appropriate and sustainable materials, adaptability and reuse of buildings, layouts and built form, passive solar design principles, efficient appliances and mechanical services, soil zones for vegetation and reuse of water.

Principle 06: Landscape
Good design recognises that together landscape and buildings operate as an integrated and sustainable system, resulting in greater aesthetic quality and amenity for both occupants and the adjoining public domain.

Landscape design builds on existing site's nature and cultural features. It enhances the natural performance of the development by co-ordinating water and soil management, solar access, micro climate, tree canopy and habitat values. it contributes positively to the streetscape and contextual character

Principle 07: Amenity
Good design provides amenity through the physical, spatial and environmental quality of a development.

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

Principle 08: Safety and Security
Good design optimises safety and security, both internal to the development and for the public domain.

This is achieved by maximising overlooking and surveillance of public and communal open space without compromising internal privacy. Avoiding dark and hidden spaces and providing clear and safe access.

Principle 09: Social Dimension and housing Affordability
Good design responds to the social context and needs of the local community in terms of lifestyles, affordability, and access to social facilities.

New developments should optimise the provision to suit the social mix and needs in the current or future desired community. Developments should address housing affordability by optimising the provision of economic housing choice and a range of housing that caters for different budgets and housing needs

Principle 10: Aesthetics
Quality aesthetics require the appropriate composition of building elements, textures, materials and colours and reflect the use, internal design and structure of the development. Aesthetics should respond to the environment and context, particularly to desirable elements of the existing streetscape or, in precincts undergoing transition, contribute to the desired future character of the area.

4.11 Residential Flat Design Code

Local Context

Building Envelope:
Should be 20-25% greater than their achievable floor space area to allow for building articulation

Building Height:
Appropriate height plane taken from the corner of the development boundary, in instances where the land is steeply sloping step extend the height limit horizontally by 10-18m from the building line

Building Depth:
Building depth should be between 10-18 meters from glazing line to glazing line to help ensure satisfactory day lighting and natural ventilation.

Building Separation:
Important to achieve high quality amenity

Buildings to 12 meters in height (4 stories)
- 12 meters between habitable rooms/balconies
- 9 meters between habitable rooms/ balconies and non-habitable rooms
- 6 meters between non-habitable rooms

Buildings to 25 meters in height (5 - 8 stories)
- 18 meters between habitable rooms/balconies
- 13 meters between habitable rooms/ balconies and non-habitable rooms
- 9 meters between non-habitable rooms

Buildings over 25 meters in height (9 stories and over)
- 24 meters between habitable rooms/balconies
- 18 meters between habitable rooms/ balconies and non-habitable rooms
- 12 meters between non-habitable rooms

Street Setbacks:
Street setbacks are determined predominantly by studying the surrounding context. In some cases a % of the building façade may project forward of this building alignment.

Side and Rear Setbacks:
These setbacks are determined by taking into account surrounding context and building relationships so as to respond to streetscape, sunlight, ventilation and privacy issues. These setbacks also help in achieving deep soil zones/site coverage rations which are usually required under councils landscaping controls

Floor Space Ratio:
This is the maximum capacity of a site measured in building area. Each council has a definition of what constitutes floor area – this should be carefully checked. Generally it includes all enclosed above ground gross building area, with an allowance to negate architectural 'elements'.

Site Design

Site analysis should include but not be limited to
- Building use
- Building height
- Circulation
- Open Space, Landform and Views
- Building Edges
- Landscape Response
- Access and Parking
- Building Performance

Deep Soil Zones
These allow for the natural penetration of storm water into the ground and the provision of substantial landscaping

Fences and Walls
To allow for the appropriate definition between public and private spaces which encourage a comfortable and humane pedestrian environment. This is particularly important from a safety and security perspective.

Landscape Design
To contribute to the overall amenity of residential developments particularly in regards to privacy, outlook and views. Landscape also greatly contributes to the ecological sustainability of our cities flora, fauna, air and water quality.

Open Space
The inclusion of appropriate communal open space in residential developments

Orientation
The optimisation of solar access to residential apartments and open space

Stormwater Management
Minimise impact of stormwater on existing infrastructure and maintains the health of natural waterways.

Safety
Minimise opportunity for crime through the design of safe ground plane entry and exits, and enabling casual surveillance, reinforcing territory, controlling access and managing spaces.

Visual Privacy
Protect residence ability to carry out private functions within all rooms and private open space without compromising views, outlook, ventilation and solar access or the function of the spaces

Building Entry
Provision of an identity and building presence on the street to orient visitors and contribute positively to the street scape

Parking
Parking provision is to be in relation to local context and dependant on the local transport facilities number could be decreased.

Pedestrian Access
Provision of safe, pleasant, high quality walking environments through a development.

Vehicle Access
Vehicle access is to be integrated with site development without compromising street character, landscape or pedestrian amenity and safety

Building Design

Apartment Sizes
Apartment sizes are generally determined via a variety of factors including geographic location and market demands. 'Rules of thumb' dimensions an internal areas, including;
- Single aspect apartments should be not greater than 8 meters in depth
- The back of a kitchen should be no more than 8 meters from a window
- The width of through apartments over 15 meters from glazing line to glazing line should be greater than 4 meters in width

Minimum apartment sizes are approximately:
- 1 bed apartment – 50 sqm
- 2 bed apartment – 70 sqm
- 3 bed apartment – 95 sqm

Apartment mix
Developments should incorporate a variety of apartment types so as to encourage cultural and social diversity. Councils often have desired mix targets.

Balconies
Balconies and private open space should be designed as 'outdoor rooms' so as to contribute usable spaces which contribute to the overall amenity of the living environment
Balconies should be a minimum of 2 meters in depth

Ceiling Heights
Minimum ceiling heights measured from Finished Floor Level (FFL) to Finished Ceiling Level (FCL) are as follows:
Mixed use buildings
Ground floor retail/commercial and for first floor residential/ retial/commercial so as to provide future flexibility 3.3 meters FFL to FCL
Residential Flat Buildings
- 3.3 meters FFL to FCL for ground level in a mixed use area
- 2.7 meters FFL to FCL for all habitable rooms
- 2.4 meters FFL to FCL for all non-habitable rooms (2.25 is permitted)

As a rule of thumb this would require at a minimum:
- 4 meter floor to floor for ground level (4.2 desirable)
- 3 meter floor to floor for upper levels at a minimum. (3.2 desirable)

Storage
Some Councils have their own minimum requirements for separate private storage areas the
RFDC suggests the following rules of thumb:
- Studio apartments – 6m3
- One-bed apartments – 6m3
- Two bed apartments – 8m3
- Three + bed apartments – 10 m3

Daylight Access
- A maximum of 10% of the apartments are to be single aspect
- 70% of apartments in a development should receive a minimum of three hours direct sunlight between 9am and 3pm in mid winter (may be varied to 2 hours in dense urban areas). As a rule this results in a maximum of 10% south facing apartments in an development.

Natural Ventilation
- Building depths should be between 10 – 18 meters
- 60% of residential units should be cross ventilated
- 25% of kitchens in a development should have access to natural ventilation

part 5 | sketch options

5.0 Options

To address the key issues raised in the DGRs the team has investigated a number of design approaches and site layouts, which have been informed by the previous Concept Plan, consultation with the community and stakeholders, and our analysis of the site and surrounding context.

Twelve sketch options have been prepared, in addition to the initial Concept Plan (2010). These options reflect a number of methods and approaches to addressing the design parameters outlined in Section 4.0.

To enable a like-for-like comparison each sketch option delivers the same quantum of developable area - 66,600m^2. A range of building typologies, layout, forms and configurations were prepared prior to the sketch options were developed and tested.

Options 02, 03 and 04 were prepared prior to the community and stakeholder consultation events, which were held over a two week program. These sketch options allowed the project team and consultees to focus the discussions on specific concerns, ideas and elements. During the consultation a number of points were raised that were considered as part of the other options (05-13), including the site access arrangements and setbacks from Artarmon Road, Richmond Avenue and Walter Street.

Preliminary analysis of each sketch option has been presented in this section to help inform the pros and cons of each layout. The analysis focuses on the key concerns raised during the consultation, which include the potential over-shadowing of neighbouring properties, and the visual impact on properties to the south and along Richmond Avenue.

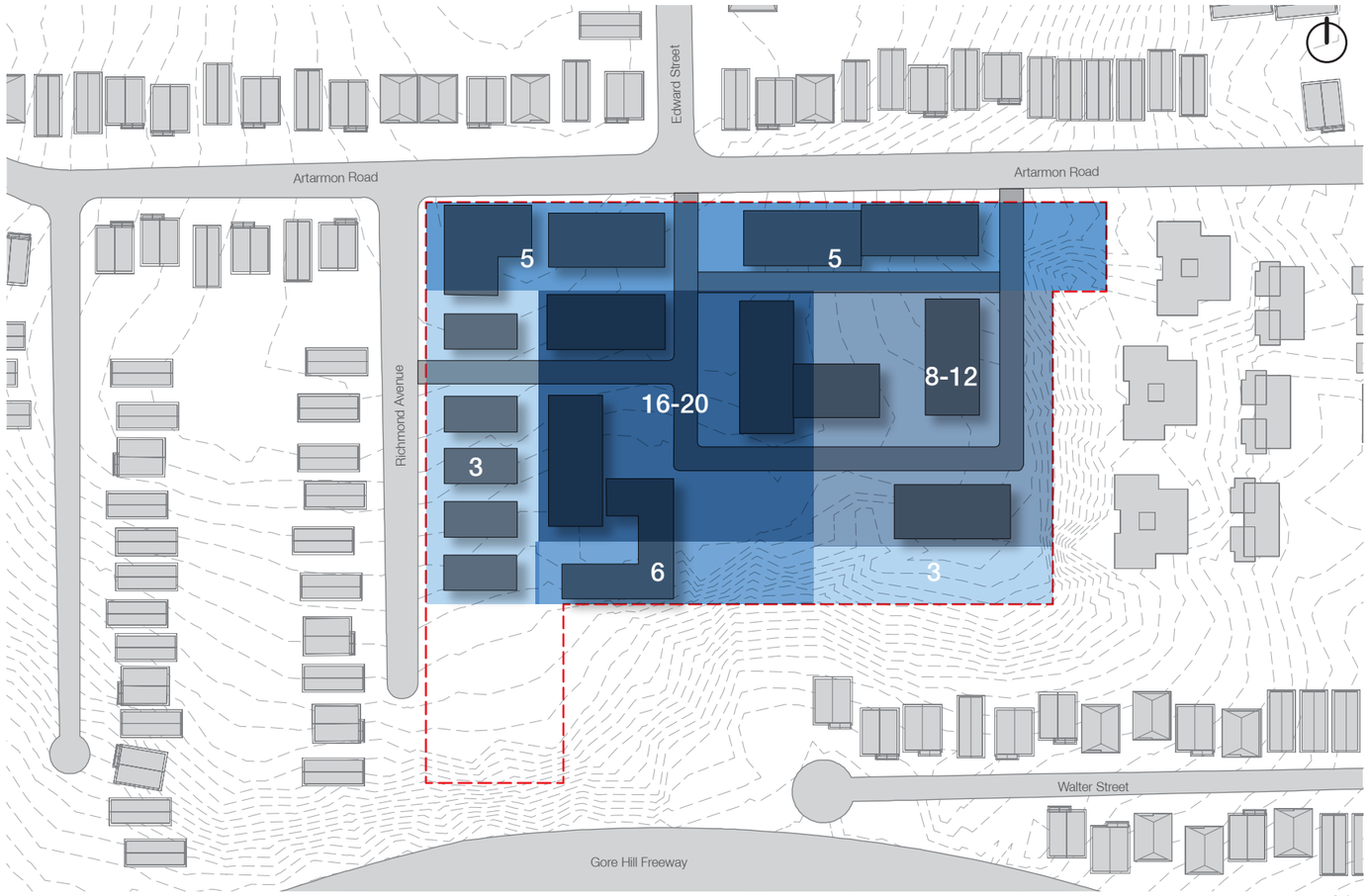
Concept Plan - Option 01

Design Intent
Prepared as part of the original Part 3A application by another project team, and now subject to revisions as part of this Environmental Assessment. Our understanding is that the location, orientation and location of the built form seeks to avoid any over-shadowing of the properties along Walter Street. The scheme also created a central plaza fronted by retail uses.

Pros
- Redevelopment of the site provided housing choice
- 50% of site accommodated communal and public open space, including an introverted retail destination similar to Cammeray Triangle
- Taller buildings were contained within the centre of the site

Cons
- Development of buildings that are 20 storeys
- Over-shadows properties along Richmond Avenue during mid-winter.
- 5-storey development built along the northern edge of the site to Artarmon Road, not in keeping with the streetscape
- Previous submission did not adequately respond to the design principles SEPP 65 Requirements

Conclusions
This option was not prepared by the project team and is therefore difficult to appreciate the design intent. We have our reservations about certain elements, similar to those expressed in the DGRs, which we are seeking to address through the evolution and testing of the options outlined below.



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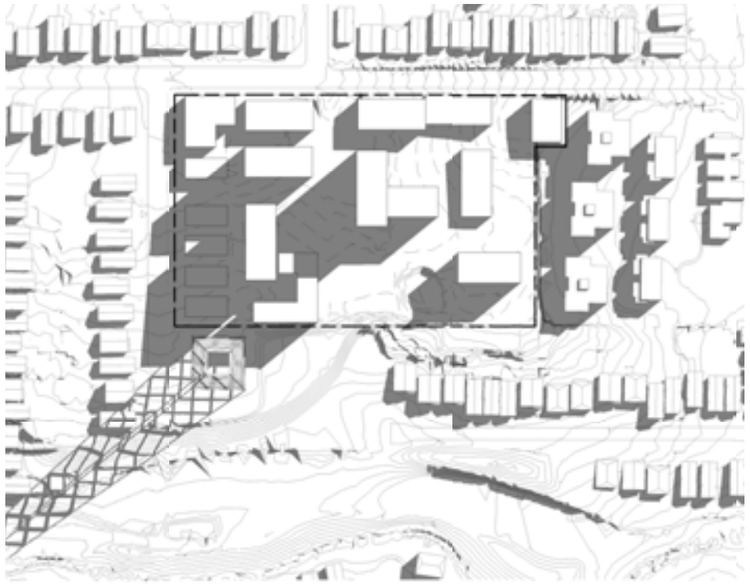
Shadow Diagrams



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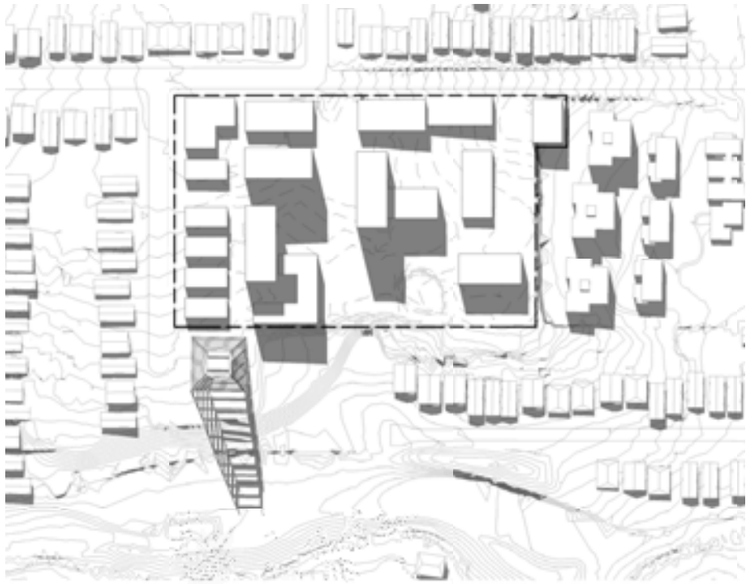
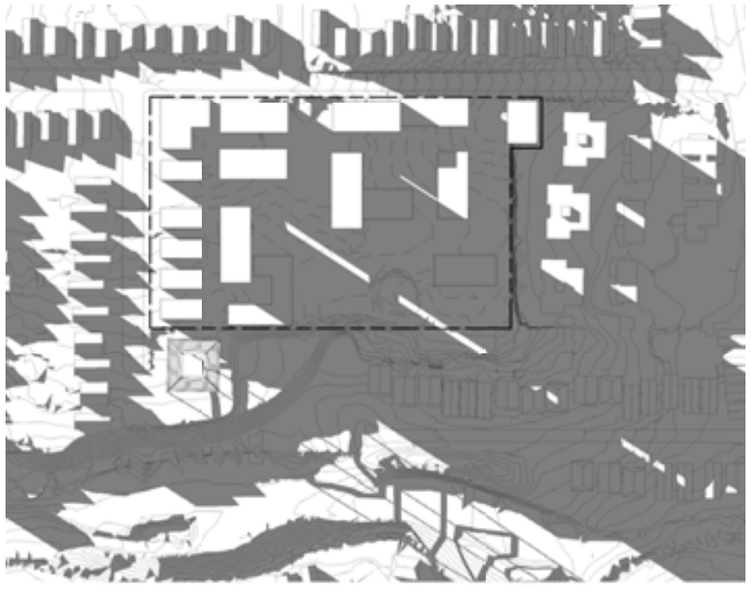


02 Equinox (22 September 2012) 12pm

03 Equinox (22 September 2012) 3pm

04 Mid-Winter (21 June 2012) 9am

05 Mid-Winter (21 June 2012) 12pm



06 Mid-Winter (21 June 2012) 3pm

View Analysis

01 View across the Gore Hill Freeway from Narremburn

02 View from the corner of Small Street and Willoughby Road

View Analysis

03 View along Richmond Avenue

04 View to the corner of Richmond Avenue & Artarmon Road

Concept Plan - Option 02

Design Intent
Prepared prior to the community and stakeholder consultation events this layout investigates the opportunities presented by the ‘L-shape’ internal road and access point at Richmond Avenue. A range of open space scales and programs were proposed, including the first iteration of the linear park along Artarmon Road.

Pros
- Creation of a number of substantial open spaces along Artarmon Road and Richmond Avenue.
- 3-storey terrace typology along Richmond Avenue to the junction with Artarmon Road, allowing the retention of existing trees
- Every building has a street frontage and ‘address’
- Built form is setback from Artarmon Road, with the short edge orientation to the north and south
- Development can step down with the falling topography
- No over-shadowing of Richmond Avenue properties in mid-winter

Cons
- Retention of The Loft admin building along Artarmon Road
- Repetition of the 12-storey built form (x3) and the spaces created between the buildings and along their edges
- Single 16-storey building orientated to the long edge addresses sensitive view sheds in the south.
- Two 6-storey buildings located to the north of the Walter Street properties

Conclusions
The layout, repetition and grouping of the 12-storey buildings isn’t successful due to the potential for over-shdowing and visual impact from within and outside the site boundary. The orientation and positioning of buildings along the southern boundary has the greatest impact on the properties to the south of the site. Concerns were also raised during the consultation in relation to the traffic access and egress along Richmond Avenue.

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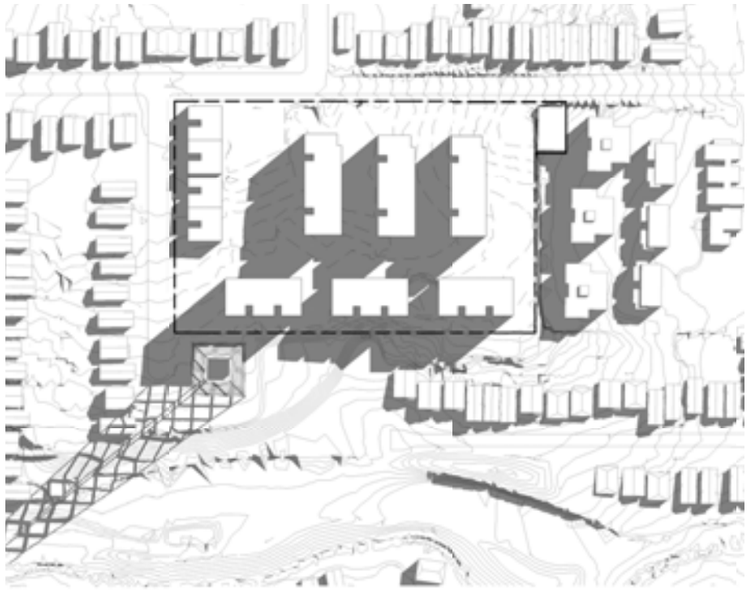
Shadow Diagrams



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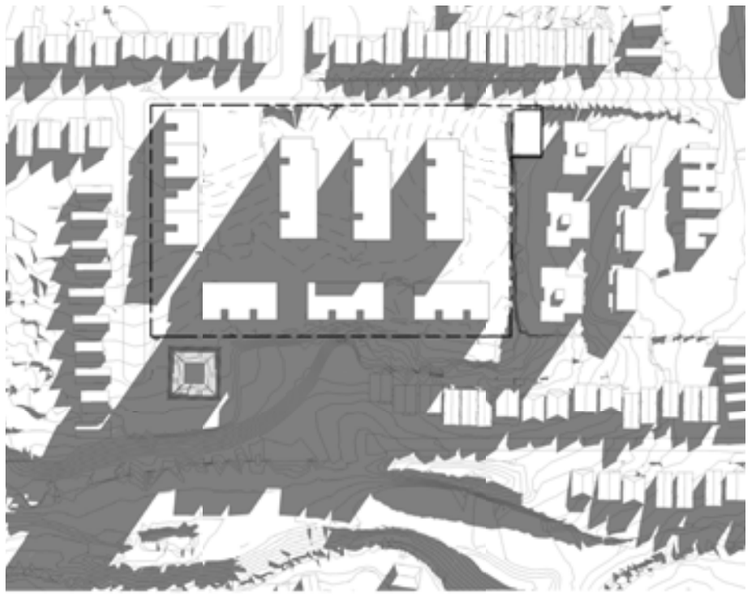

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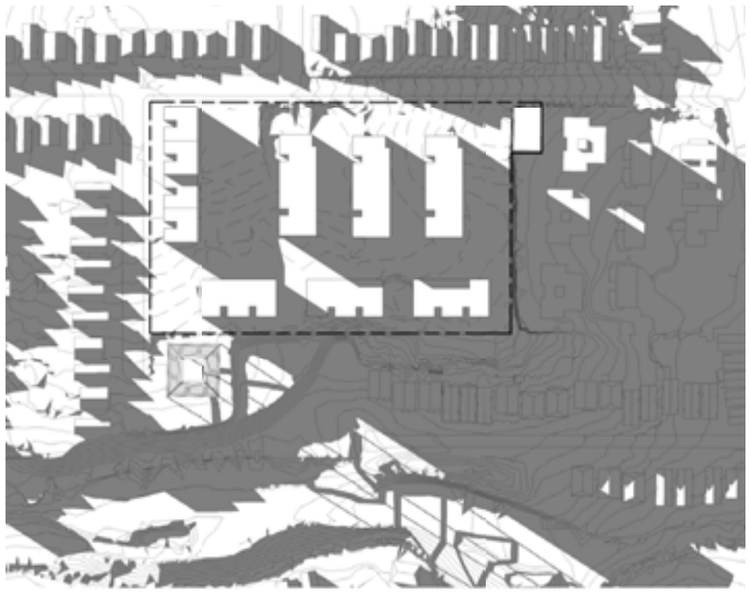
05 Mid-Winter (21 June 2012) 12pm



06 Mid-Winter (21 June 2012) 3pm

View Analysis

01 View across the Gore Hill Freeway from Narremburn

02 View from the corner of Small Street and Willoughby Road

View Analysis

03 View along Richmond Avenue

04 View to the corner of Richmond Avenue & Artarmon Road

Concept Plan - Option 03

Design Intent
The ‘u-shaped’ street configuration assumed the retention of Scott Street and avoided taking access from Richmond Avenue. Due to the length of internal road the scale and number of open spaces have been limited. A thin linear park along Artarmon Road at its steepest point is supplemented by a semi-private and several private spaces running between the buildings.

Pros
- The built form is pulled away from the Walter Street properties to the south of the site
- 16-storey building is rotated through 90 degrees to present the short edge to the south
- Richmond Avenue now features 3-storey terrace typologies along its entire length, allowing the retention of the existing trees
- Generous setbacks along the western boundary to Castle Vale, reducing any potential impact on their privacy of access to sunlight
- Buildings along Artarmon Road orientate their short edges to the street frontage, reducing their visual presence and allowing them to step down with the falling topography

Cons
- New site access and egress from Artarmon Road aligned with Edward Street at the crest of the hill, compounding an already congested junction
- 10-storey building to the north of Walter Street like to over-shadow existing properties
- Footprint of the 16-storey building needs to be reduced, effectively reducing its visibility and shadow-splay
- 6 and 8-storey buildings to Artarmon Road
- No substantial publicly accessible open spaces
- Linear park too narrow
- Over-shadows Walter Street properties during afternoon in mid-winter

Conclusions
Prepared prior to the consultation events, this options reflects a combination of approaches from a number of projects, including a recently approved project in the City of Sydney. The number and coverage of the built form, when considered with the street layout, leaves little open space areas for public activities. These approaches fail to address the edge conditions along the southern boundary.

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