St Leonards South Masterplan Draft

by:

Annand Associates Urban Design (AAUD)

Level 9, 50 Carrington St, Sydney, NSW 2000

for:

Lane Cove Council (LCC)

48 Longueville Rd, Lane Cove, NSW 2066

December 2014

Executive Summary

This Masterplan Study has been prepared by Annand Associates Urban Design Pty Ltd on behalf of Lane Cove Council. It relates to the St Leonards South Precinct bounded by the Pacific Highway, Greenwich Road, River Road and the railway line. The objective of the study is to recommend on a development strategy for this significant Precinct within immediate proximity of St Leonards Station.

Chapter 1 sets out the Background to the Precinct including brief, study purpose, planning context, planning principles for sustainability and Transit Oriented Development.

It also describes the "Enquiry by Design" process used to facilitate community engagement.

Chapter 2 investigates Precinct Constraints and Opportunities.

The major constraints are the steep south facing slopes and stable existing community representing difficult and expensive site amalgamations.

The major opportunities are related to proximity to the St Leonards railway station (and Pacific Highway buses) and the St Leonards commercial hub. Significant opportunity exists for the facilitation of Transit Oriented Development.

Chapter 3 examines "Best Practice". It begins by discussion on the Vision for the Precinct.

It goes on to discuss the significance of such terms as Sustainable Urbanism and Transit -Oriented Development (and their essential principles) and establishes (with stakeholders) a set of Planning Principles and Standards appropriate for the Precinct.
This chapter then looks at a number of comparable case studies from around the world and notes comparable development heights and densities.

This section concludes by suggesting that density development is desirable in this Precinct generally in the range of 8-10 storeys and with an FSR in the range of 2.75:1- 4:1.
The case studies indicate that an attractive urban environment can be achieved in this manner.

Chapter 4 examines (using the Enquiry by Design Workshop process) a number of possible growth scenarios for high, medium and low growth objectives.
The options examine location and density for high development density, high density concentrated, medium density options, high-way frontage and no development.

The consultants conclude (with significant community support) that the preferred option should be the high density concentrated option which proposes the up-zoning of the area between the railway line and Berry Road and the reconsideration of the highway frontage for mixed-use.

This leaves the bulk of the Precinct with no change to the existing housing.

Chapter 5 looks at Public Domain Strategies. A number of options were discussed during the EBD Workshops for the creation of and location of increased open space and an east-west pedestrian/shareway connection.

Although there was considerable support for a concentrated area of open space the consultants felt that this option was both too expensive and too difficult to achieve (would require substantial residential acquisition) and thus preferred a succession of pocket parks interconnected in an east-west direction and also accommodating community facilities.

It was felt that this strategy could be incremental and implemented in partnership with private sector developers.
It is recommended that Council (once rezoning is underway) undertake a detailed Public Domain Strategy with particular emphasis on cost and mechanism for delivery.
This section then sets out delivery options for consideration.
Chapter 6 examines appropriate building forms and typologies. It first looks at relevant

typologies as set out in the new "Apartment Design Guide" by NSW Planning and Environment, looks at building typology options in context and recommends a mix of perimeter block and hybrid buildings which relate to the north-south street system and strive to maintain strong north-south deep soil zones mid block.

This section also discusses streetscape, urban design issues and potential development control and regulations.

Chapter 6 reports on extensive 3-D modelling carried out to test building types, heights and layouts in the context of solar access and overshadowing.
This work shows that the Precinct is already extensively overshadowed by existing and approved buildings (exaggerated by south facing slope), that solar access issues become difficult above 8 storeys, that up to 8 storeys appropriate solar access criteria can generally be accommodated (above 8 storeys very careful design will be required) and demonstrates how the Precinct will sit within the evolving urban form for St Leonards.

Chapter 7 looks at a financial analysis of potential development within the Precinct. It examines development feasibility and suggests that viability can be achieved with an FSR of 2.5:1.

Chapter 8 looks briefly at the evolving demographics of recently released new high density Transit-Oriented development in Rhodes, Wolli Creek and Zetland (and St Leonards) in order to develop a feel for the type of public infrastructure which might be required and how it may be delivered.

Further this chapter discusses some of the issues associated with development staging and transitions between development areas and non (or future) development areas.

Chapter 9 summarises the results of community engagement to this stage. Although community feedback is unsurprisingly varied, there is support for rezoning (high density), preference for a consolidated open space option, little absolute preference for building form and a very strong desire for "action" to determine a result.

Chapter 10 investigates development potential and development implications for a number of potential development sites.

In general it seems that development to about 8 storeys and to a density of 2.75:1 to 3:1 could be readily achieved throughout the Precinct. Note also that these explorations indicate that it is possible to facilitate east-west connections, community facilities and other public benefits (open space and/or pedestrian links) with floor space and/or building height bonuses. These need further detailed analysis before being translated into development controls/bonuses.

Chapter 11 provides a brief summary of the report and an extensive list of general and specific recommendations required in order to facilitate the delivery of the Masterplan.

Contents

1.0 Background

1.1 The Brief

Lane Cove Council has appointed consultants (AAUD) to prepare a planning Masterplan for a 20 hectare precinct at St Leonards.

The area is bounded by the rail line south of St Leonards Station, Pacific Highway, Greenwich Rd and River Rd.

Urban planning, traffic and economic consultants have worked together with Council as the project coordinator.

The precinct is within walking distance of St Leonards rail-bus hub, and Council foresees a need to prepare for future growth pressures and work within its community to ensure any future development has regard to infrastructure capacity, the need for controlled growth (timing, zoning, heights) and improved amenity for both existing and new residents.

Closer urban living enables better access to the CBD and other shopping centres, jobs, education, health facilities and recreational activities.

At the same time there is increased demand for parklands, child care centres, schools and other infrastructure that provide services and amenity in response to population growth. These opportunities, challenges and expectations will be investigated and considered.

The study's aim is to produce options for developing infrastructure and future land use for this precinct that Council can consider and take to the community for their views.

Retail and business areas along the Highway will also be considered as part of this study.

FIG 1.1
The Study Area

1.2 Purpose of the study

The purpose of this study is to make recommendations on:

- The precinct's future residential densities– areas that may be appropriate for change, including in response to requirements for new dwelling targets under the anticipated review of the Metropolitan Strategy for Sydney – to give certainty to residents and other property owners regarding the zoning (low, medium or high density) and scale (height and floor space ratio) to be permissible for their individual properties.

- The implications of growth, both positive and negative, in terms of:

    - Opportunities - including enhancing the precinct's amenity, such as with additional parks, childcare and pedestrian networks
    - Challenges - how the amenity for existing residents can be protected, in terms of minimizing the effects of change, such as traffic movements and construction impacts
    - Property values – how to minimise the "winners and losers" effect between areas changing and those not changing, and balance change with provision of new facilities
    - Infrastructure to serve an increasing population.

- The relationship of the commercial area along Pacific Highway with the St Leonards centre as a whole.

Particular focus is to be given to the sub-precinct between the rail line and Berry Road (on both sides), as it is within the closest walking distance to St Leonards Station and so residents from across the precinct may access the centre though this area.

This Masterplan report is intended to make recommendations regarding both the potential for future growth and the enhancement of amenity for the existing residential areas in the short to long term, such as improving open space opportunities, housing choice, public domain, pedestrian and cycle linkages, traffic controls and other provisions.

1.3 Background

St Leonards is the sixth largest employment concentration in Sydney. Its importance is reinforced by its location in Sydney's "global arc"– the corridor of globally significant economic activity stretching from Sydney Airport to Macquarie Park – and the presence of the RNS Hospital and TAFE.

1.4 Metropolitan Strategy

The "Metropolitan Strategy for Sydney 2036" (to manage growth over the next 25 years) seeks to concentrate jobs (and residential growth) in areas that are easily accessible by public transport. St Leonards is one of the centres nominated for growth (seeks about 8,000 jobs and 2,000 to 5,000 new residences) by 2031, over the three Council areas of Lane Cove, North Sydney and Willoughby.
It is anticipated that these figures maybe increased in the forthcoming revision of the Metropolitan Strategy and its supporting subregional Strategy.

1.5 Sustainability

Urban planning is moving towards sustainability as a basic tenet. Sustainability has environmental, economic and social aspects.
A major aspect is the reduction of greenhouse gas emissions and this relates directly to reduced auto-dependence and the need for increased use of public transport and the restructuring of our cities to support public transport usage (see Transit- Oriented Development section).

1.6 Enhance Liveability

Sustainable communities are liveable. They are diverse, affordable, inclusive and healthy.
They enhance social interaction and ownership, are safe and caring and have the aims of:

- Providing diverse and affordable living opportunities
- Creating healthy, safe and secure communities
- Fostering inclusiveness and cohesiveness
- Building community strength and adaptability

1.7 Urban Activation Areas

The State Government is committed to substantially increasing the supply of housing and employment and to improve housing choice and affordability. To achieve these objectives it is essential that housing is well located with good access to infrastructure, particularly transport.
St Leonards is appropriate for such growth.

1.8 Conclusion

It is undeniable that the St Leonards South Precinct will over time be required to support increased density particularly in close proximity to the railway station.

1.9 The Process (EBD Program)

This document is derived from an "Enquiry by Design (EBD) Workshop" held at Council on 16th, 17th and 18th of September and attended by consultants, Council officers and representatives of the Community Liason Committee and a subsequent public information day and a public workshop attended by a significant number of local residents (see Community Engagement Report and Outcomes Report by "Cred Community Planning").

In the EBD workshop a number of groups prepared concepts for either:

- A low density development plan (capable of yielding a minimum of 1,000 new dwellings)
- A medium density development plan (capable of yielding approximately 2,000 additional dwellings)
- A high density development plan (capable of yielding in the order of 3,000 additional dwellings)

The intent was to indicate where low (<3 Stories), medium (4-10 Stories) and /or high rise (<10 Stories) might be located at appropriate Floor Space Ratios (say <2:1/ 2-3:1/3-5:1).

It is desirable that all development be economically viable. From a conceptual density plan, each group investigated desirable building forms and typologies including heights, envelopes, setbacks etc and explored possible impacts. Each group also investigated appropriate provision of open space, parks, streetscape improvements, community buildings etc in terms of possible size and location.

The overall intent was to explore a range of options and gain a clear understanding of the costs and benefits of each option including environmental implications.

FIG 1.2 Program for EBD workshop

EBD PROGRAM

16,17 AND 18 SEPTEMBER 2014

DAY 1	
9-11am	Presentations/Constraints and Opportunities
11am-1pm	Density gradient: High 3-5:1/10-20 storeys; Medium 2-3:1/4-10 storeys; Low <2:1/3-4 storeys plus No Development
1-2pm	Lunch and discussion
2-5pm	Density gradient/structure options as above and refined
5-7pm	Presentations/discussions
DAY 2	
9-1pm	Building typologies (heights/envelopes/setbacks/open spaces)
1-2pm	Lunch and discussion
2-5pm	Place-making, public domain, OS, community facilities
5-7pm	Presentations/discussions
DAY 3	
9-12 noon	Review densities/envelopes, prepare drawings, develop preferred options
1-2pm	Lunch and discussion
2-5pm	Preparation drawings
5-7pm	Presentations/discussions

2.0 Precinct Investigations

2.1 Constraints

This page sets out constraints derived from a "Scoping Workshop" with Council officers and representatives of the Community Liaison Committee.

Major constraints include:

- Steep south facing slopes
- Poor E-W connections
- Topography (shadowing)
- Existing traffic patterns (Highway-River Rd)
- Need for infrastructure upgrades

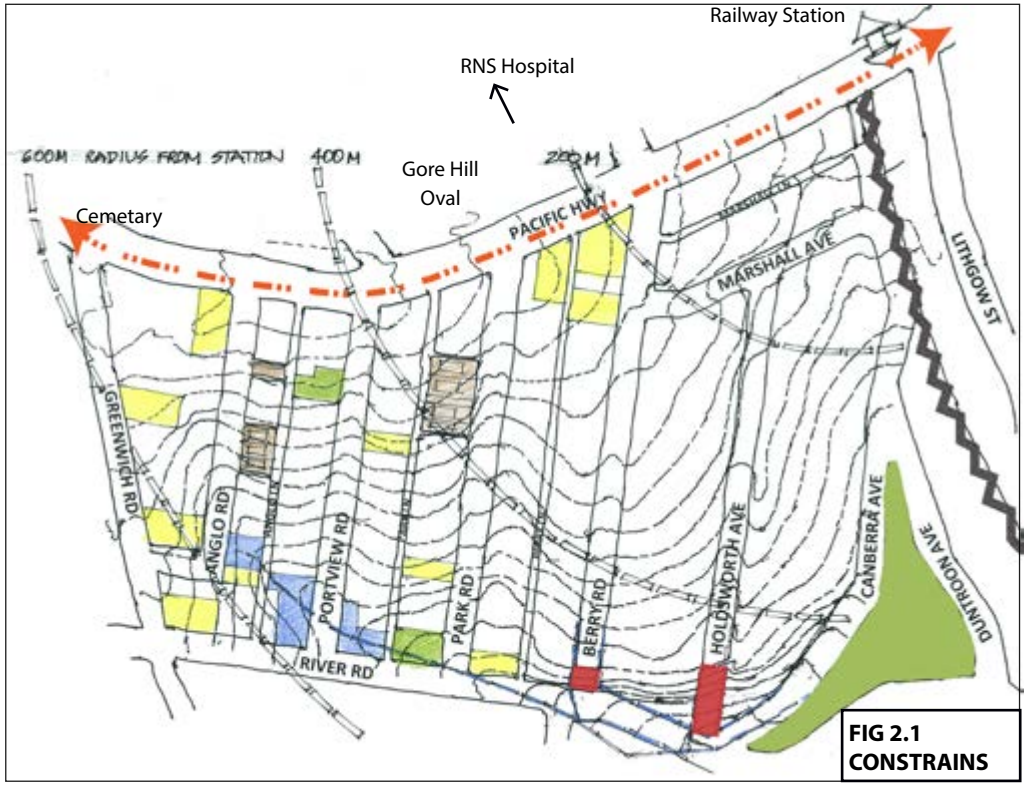


FIG 2.1 CONSTRAINS

Community/ Council Staff	CONSTRAINTS
ENVIRONMENTAL/ PHYSICAL (SITE QUALITIES)	• Southerly slope affecting building form • Overshadowing/solar access to south • Lack of open space/corridors • Stormwater runoff/water quality • Heritage buildings
AMENITY	• Overshadowing/solar access/wind • Highway noise • Street parking (management) • Tall building impacts (e.g.: Marshall Avenue) • Connectivity to natural environment • View-sharing • Safety and security for pedestrians
INFRASTRUCTURE	• Traffic access and circulation • Highway capacity and intersection issues • Street parking (management) • Increased infrastructure demand • (Sewer main (Canberra Avenue) • Gas main (Berry Road) • New plaza and integration with • New rail tunnel and arrival point • Legibility and wayfinding • Improve access for pedestrians and cyclists • Pedestrian crossing of highway and River Road • Rail-line impacts
ECONOMICS	• Existing low densities • Existing high residential land values • Lot sizes and required amalgamations • Timeframe of redevelopment • Need for development incentives • Access to infrastructure funding • Push/pull on some strategic existing uses (e.g. medical) • Balance business opportunities • Affordability • Value increase push on poorer residents
SOCIAL	• Public response and acceptance • Desire to keep low density/single dwelling character • Social isolation from rest of Lane Cove • Lack of precinct identity • Potential fragmentation • Need for strong activation (weekends) • Community facilities (childcare/education) need • Demand for improved retail • Community building need • Need for co-operation between Councils • Affordability

2.2 Opportunities

These opportunities were collected from a "Scoping Workshop" attended by Council Officers and members of the Community Liason Committee.

Major Opportunities include:

- E-W pedestrian(&vehicular) green link
- Redevelopment of obsolete retail
- Redevelopment of highway commercial as mixed-Use
- Creation of Transit Orientated Development

FIG 2.2 OPPORTUNITIES

Community/ Council Staff	OPPORTUNITIES
ENVIRONMENTAL/ PHYSICAL (SITE QUALITIES)	• Create and maximise green zones • Maintain and enhance treescape • Setback buildings for green / deep soil • Bushland connectivity • Retain and enhance environmental amenity
AMENITY	• New rail link will improve connectivity with City and beyond • Improve retail including supermarket • State-of-the-art built form • Large setbacks to fit with existing • Linkage/connection RNSH open space • Relationship between land uses (community/mixed/residential) • Optimise view-sharing
INFRASTRUCTURE	• TOD creation : Public Transport access/use • New rail link will improve connectivity with City and beyond • Improve walkability • Improve pedestrian/cycle connection to station, St Leonards, highway, hospital • Improve placemaking (spaces, place, parks – large and small) • Road restructure (E-W connections) • Re-use and integrate lanes as potential access • Gateways and boulevards • Linkage/connection RNSH open space • River Road underpass
ECONOMICS	• Facilitate regulation (of development) • Facilitate delivery strategies • Create overall integrated plan for whole precinct • VPA funds to community place and facilities • Income producing assets (Growth must fund improvements) • Access to appropriate funding streams • Accommodation to support RNSH • Provide incentives (land use and FSR) to facilitate redeveloping of existing shops • Incubation office spaces
SOCIAL	• Facilitate regulation (of development) • Facilitate delivery strategies on overall integrated plan for whole precinct • Ensure plaza development is widely beneficial • Control building form (and create green!!) • Create a 3-D language to create/control development • Improve retail including supermarket • Create community heart (open space/ facility/place) • Create landmark and meeting place(s) • Integrate local history and stories • Enhance a sense of belonging • Envelopes to support character • Universal design throughout

3.0 Best Practice

3.1 Vision

St Leonards will continue to develop as one of the major employment centres for knowledge-based industries within the Sydney metropolitan region, by capitalising on its location within Sydney's "global arc" and building on opportunities arising from its excellent accessibility and co-location with regional scaled health and educational facilities.

New and diverse housing opportunities will emerge in **St Leonards South** and be supported by convenience shopping, cafes, bars, entertainment venues and community facilities in a high quality environment served by excellent public transport and high levels of walking and cycling accessibility, thus creating a desirable place for cosmopolitan urban living.
New development and public domain improvements will create a more consistent and high quality image, leading to an identifiable 'sense of place'.
The envisaged increase in employment and housing is consistent with the Metropolitan Strategy and the Inner North Sub-Regional Strategy.

The envisaged increase in the number of people working and living in St Leonards will generate increased patronage for local shops, businesses and public transport.
This will result in an increase in small scale specialty shops serving local needs and convenience shops such as a larger supermarket.
A balance of residential and employment uses will facilitate an efficient public transport system by generating trips in both directions at peak times.
Improvements in the amenity and identity of the centre are critical to its attraction as a place to live and work. However, the underlying fundamentals of excellent public transport accessibility and a diverse business district are already present.
The realisation of this vision would ensure a place that is sustainable in the long-term:

- Environmentally, through its focus on public transport, walking and cycling, and its contribution to the minimisation of urban sprawl
- Socially, by contributing to the accessibility of jobs and amenities, and the creation of a vibrant public domain
- Economically, through its support for globally-oriented business and creation of residences within easy access of employment opportunities.

3.2 Sustainable Urbanism

Research both in Australia and overseas suggests that "Transit-Oriented Development" delivers major sustainability benefits principally due to reduced motor vehicle usage and associated conservation of scarce resources and reduced greenhouse emissions.

Research also suggests that the creation of a memorable and enduring community through strong urban design and placemaking also contributes to sustainability in economic, social and environmental terms.

Using the *"Green Star Communities National Framework"* the St Leonards South Masterplan can:

Enhance liveability by:

- Improving and enhancing open space provision
- Facilitating provision of community facilities
- Attracting additional employment
- Broadening the retail base
- Enhancing street landscaping
- Increasing housing diversity for a wider section of the market
- Facilitating the integration of the 3 local government areas into one place (St Leonards)

Create Economic Prosperity by:

- Bringing further employment opportunities
  - medical and education
  - home business etc
- Strengthening:
  - local economy (St Leonards)
  - regional economy (Sydney global arc)
- Bringing more residents into TOD format with excellent public transit connections throughout Sydney Metro

Foster Environmental Responsibility by:

- Reducing carbon footprint (TOD)
- Creating strong precinct landscape through street avenues and linear deep soil planting opportunities
- Creating wildlife corridor opportunities
- Creating accessible, walkable open space networks

Embrace Design Excellence by:

- Incorporating and exceeding SEPP No 65 Guidelines
- Establishing a "Design Review Panel" or similar

Demonstrate Leadership and Governance by:

- Establishing strong development controls
- Working with adjacent Councils to create a memorable and enduring single place known as St Leonards
- Work with State Government to facilitate TOD development and seek infrastructure funding

3.2.1 Principles of Urbanism

Sustainable Urbanism covers a wide variety of ideas and concepts but is possibly best defined as based around bringing everything closer together, using higher quality goods, being more efficient, and having everything within walking distance.

Principles
The principles of urbanism can be applied to projects at the full range of scales from a single building to an entire community.

1. Walkability
- Most things should be within a 10-minute walk of home and work
- Pedestrian friendly street design (buildings close to street; porches/ verandahs, windows & doors; tree - lined streets; on - street parking; hidden parking lots; garages in rear lanes; narrow, slow speed streets)

2. Connectivity
- Interconnected street grid network disperses traffic & encourages walking
- A hierarchy of boulevards, narrow streets, and lanes is created
- High quality pedestrian network and public realm makes walking pleasurable

3. Mixed-Use & Diversity
- A mix of shops, offices, apartments, and homes. Mixed-use within neighborhoods, within blocks, and within buildings
- Diversity of people - of ages, income levels, cultures, and ethnicity

4. Mixed Housing
- A range of types, sizes and prices in closer proximity

5. Quality Architecture & Urban Design
- Emphasis on beauty, aesthetics, human comfort , and creating a sense of place; Special placement of civic uses and sites within community.
  Human scale architecture & beautiful surroundings nourish the human spirit

6. Traditional Neighborhood Structure
- Discernable centre and edges
- Accessible public space at centre
- Importance of quality public realm; public open space designed as civic place
- Contains a range of uses and densities within 10-minute walk
- Transect planning: Highest densities at town centre; progressively less dense towards the edge.

7. Increased Density
- More buildings, residences, shops, and services are located closer together for ease of walking, to enable a more efficient use of services and resources, and to create a more convenient, enjoyable place to live.
- Urbanist design principles are applied at the full range of densities from small towns, to large cities

8. Green Transportation
- A network of high-quality public transport connecting cities, towns, and neighborhoods
- Pedestrian-friendly design that encourages a greater use of bicycles and walking as daily transportation

9. Sustainability
- Minimal environmental impact of development and its operations
- Eco - friendly technologies, respect for ecology and value of natural systems
- Energy efficiency
- Less use of finite fuels
- More local production
- More walking, less driving (reduced vkms travelled)

10. Quality of Life
- Taken together these add up to a high quality of life well worth living, and create places that enrich, uplift, and inspire the human spirit.

3.3 Transit-Oriented Development

3.3.1 What is Transit-Oriented Development?

Transit oriented development is a planning concept that promotes the creation of a network of well-designed human-scale urban communities focused around transit stations.

While there are various definitions in use around the world, there is common agreement that transit oriented development is characterised by:

- A rapid and frequent transit service
- High accessibility to the transit station
- A mix of residential, retail, commercial and community uses around the transit
- High quality public spaces and streets, which are pedestrian and cyclist friendly
- Medium- to high-density development within 800 metres of the transit station (i.e. the TOD precinct)
- Reduced rates of private car-parking

TOD precincts generally include the neighbourhood within a comfortable 10 - minute walk of the transit station (a radius of about 800 metres).

The concept of TOD is in some ways a return to the traditional neighbourhoods and village communities of the pre-war years. Unlike dormitory suburbs and car-dominated developments, TOD provides a mix of different land uses and community services and facilities so people can live, work, shop and socialise within a short walk, cycle or transit trip of their homes.

3.3.2 Why is Transit-Oriented Development important

TOD has been a primary land-use planning strategy of regional plans, including the Sydney Metro Strategy and the more recent Urban Activation Precincts.
It supports the state government's aspirations and assists in the delivery of congestion management and climate change initiatives.

TOD supports the use of more sustainable modes of transport, including public transport, walking and cycling, and reduces the distances people must travel to access goods, services and employment opportunities, it will help address traffic congestion and auto-usage.

By reducing car dependence and transport-related greenhouse gas emissions, TOD plays an important role in energy conservation, mitigation of climate change and air-quality improvement. TOD can also contribute to better use of cities' investments in rail and bus systems by promoting higher-density, mixed-use development, thereby increasing patronage.

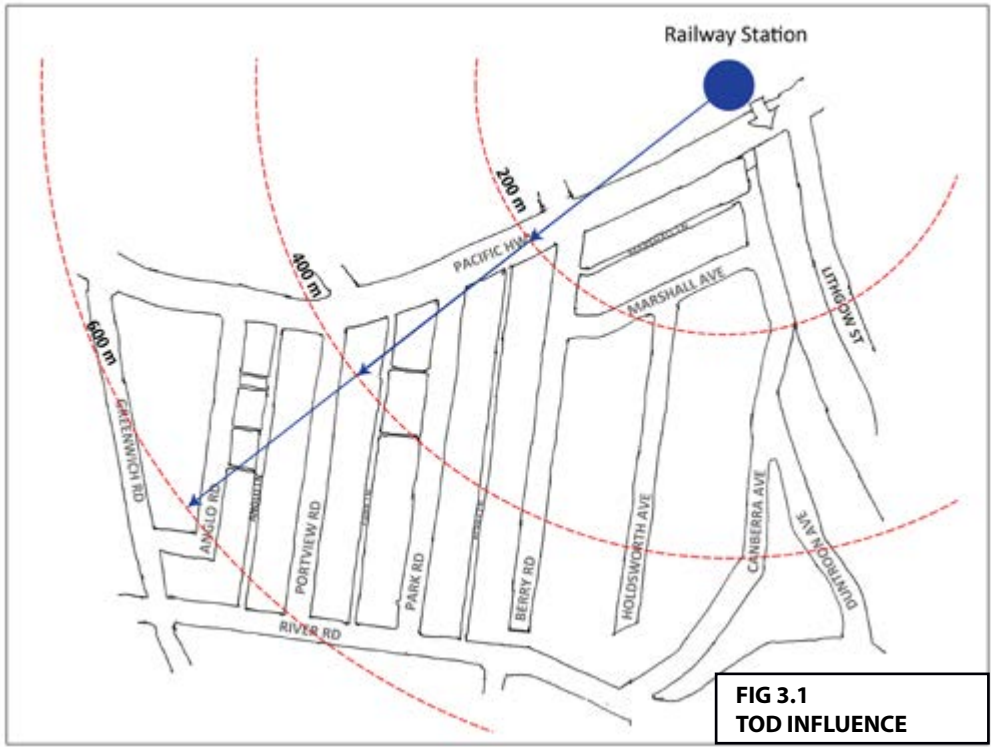


FIG 3.1
TOD INFLUENCE

3.3.3 Transit - Oriented Development - Principles

Location	
Infrastructure and service levels	• Locate development around nodes or corridors where infrastructure capacity exists, or can be created • Prioritise locations with high levels of transit service frequency
Development levels	• Ensure TOD occurs at a scale that is appropriate for the location
New development	• Apply TOD principles in communities where transit nodes exist, or are proposed

Sustainability	
TOD creation Automobile Usage	• A TOD is generator of sustainable design • Seek reduced Auto-Dependence
Green Star	• Incorporate Green Star Community Guidelines - Liveability - Economic prosperity - Design excellence - Leadership/governance
Walkability Self-containedness	• Optimize walkability • Optimize self-contained community

Process	
Co-ordination	• Ensure a co-ordinated planning effort involving all stakeholders, including state agencies, local government, the local community and the development industry
Community engagement	• Engage early and throughout planning and development processes with the community likely to experience change to promote a sense of ownership and involvement
Time frames delivery	• Consider that TOD outcomes take time to deliver and precincts mature over time • Improve public knowledge, branding and marketing of TOD • Work towards state government partnerships

Economics	
Feasibility Infrastructure costs	• Optimise economic feasibility • Ensure equitable distribution of benefits • Ensure costs can be collected and fairly distributed • Seek state government financing for infrastructure

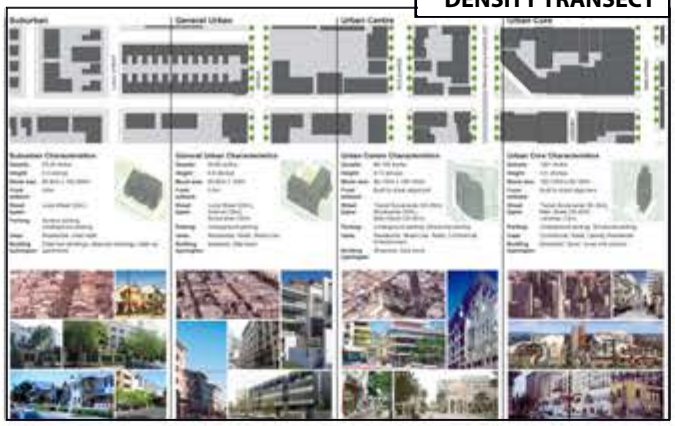
Design	
Adaptability	• Ensure development delivers a built form that is robust and flexible, allowing development to be adapted or re-developed over time to vary uses, increase densities or increase employment intensity
Built form	• Ensure development features high-quality design that maximises amenity, street activity and pedestrian connectivity • Focus on "Placemaking"
Public realm	• Provide for a high-quality public realm to meet the needs of the surrounding community • Deliver design that promotes social interaction and inclusion, physical activity and the development of a sense of place and identity • Create pedestrian-orientated design focussed on safe, attractive, climatically comfortable, walkable public realm • Create arrival place at transit node and people places throughout public domain
Integration	• Ensure design seamlessly integrates transit nodes and the community
Safety and accessibility	• Ensure development promotes a high sense of personal and community safety and equitable access to all public areas
Parking	• Locate, design, provide and manage car parking in TOD precincts to support walking, cycling and public transport accessibility (and to support proposed new development)
Transport	• Create an increased mode-share for walking, cycling and public transport by providing high levels of accessibility and public amenity connecting to stations and surrounding areas for cyclist and pedestrians, with priority for pedestrians • Manage bus, cycle pedestrian and vehicular interchange • Integrate bus access/interchange
Transport efficiency	• Facilitate a high level of inter-modal connection • Improve connectivity of local streets particularly to transit • Reduce demand for auto usage and vehicle kilometers travelled

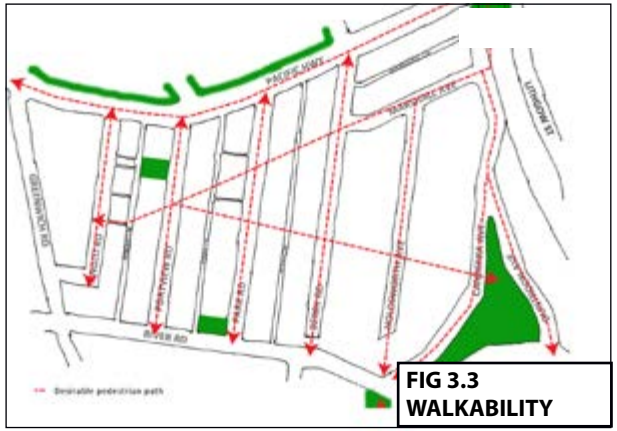
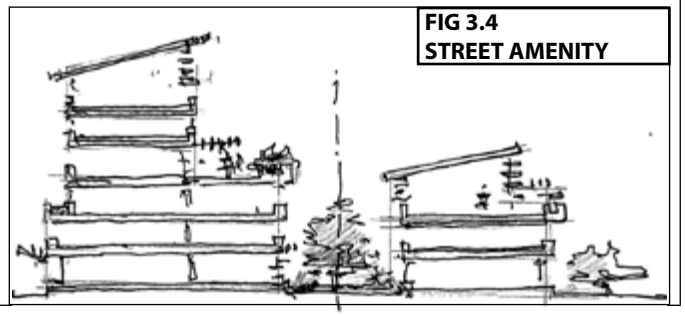
Social	
Social diversity and inclusion	• Ensure development creates an environment that supports social inclusion and diversity, including different age, cultural, employment and income groups • Provide a mix of housing types, tenures and affordability to support social diversity • Promote physical and social connections between new and existing community • Ensure community development initiatives are carried out as an integral part of community building

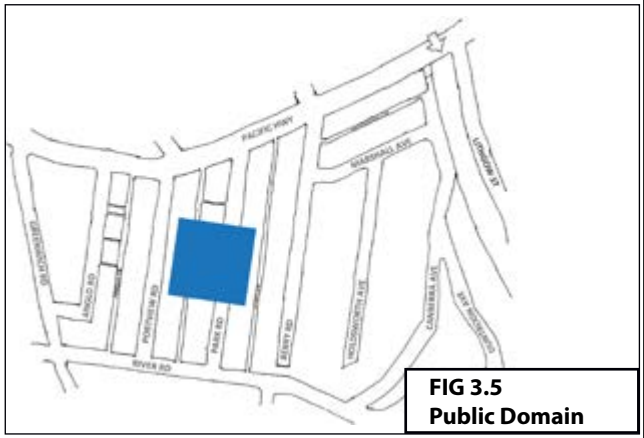
Land Use	
Type	• Ensure TOD precincts are dominated by land uses that support transit • Create integrated transport/ land-use strategies
Extent	• Focus on the area within 5 to 10 minutes walk from transit
Density	• Incorporate higher density residential uses in TOD precinct to increase vitality and provide more convenient access to services and transport
Intensity	• Incorporate high employment intensities and a mix of employment opportunities
Mix	• Provide and integrate a mix of uses to create a greater variety of services catering for the diverse needs of a vibrant community • Provide timely and convenient access to services and facilities to support people's daily needs, including an appropriate mix of commercial and retail services, jobs, community infrastructure and open space relevant to the contest of the surrounding area
Continuity	• Encourage continuous activity to provide a sense of vitality and safety

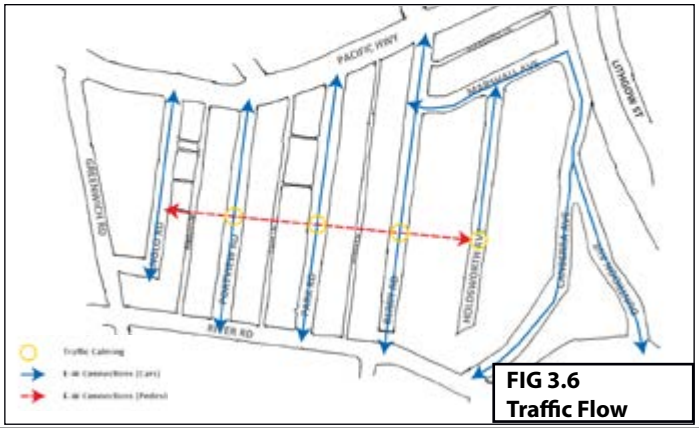
3.4 St Leonards South Precinct Planning Principles/Standards

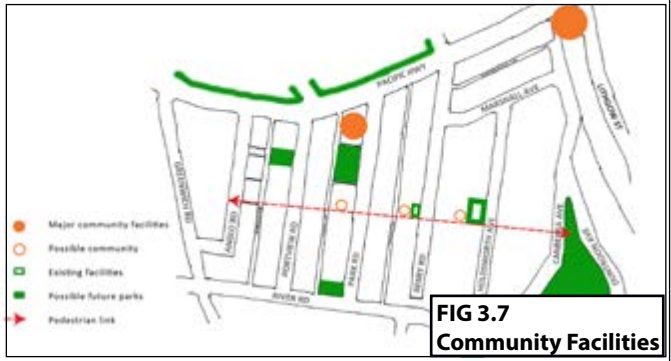
	Principles	Standards/goals
1	Liveability	• Attractive locale, meeting places and services • A range of amenities within close proximity to where people live and work • Accessible buildings and spaces that are capable of cost-effective adaptation • Places designed to reflect the context and character of the locale

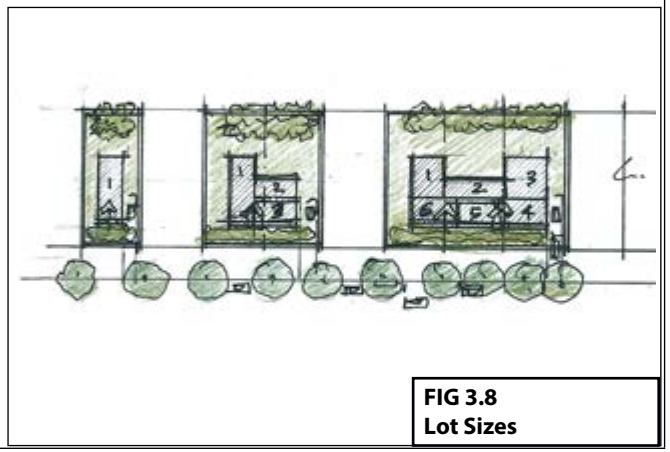
2	Housing for all stages of life
	• Diversity
	
	• A range of apartment sizes & densities
	
	• Affordability - Ownership
		• Houses, units, seniors living, key worker housing, universal (adaptable) design
		•
		• Mix of floor space ratios and heights (average only):-
		  • 0:5 - 1-2 Storeys
		  • 2:1 - 4 to 6 storeys
		  • 2.5:1 - 6 to 8 storeys
		  • 3:1 - 8 to 10 storeys
		  • 5:1 - 12 to 15 storeys
		FIG 3.2 DENSITY TRANSECT
		 
		• Current minimum apartment sizes (under SEPP65)
		  • Studio = no minimum size
		  • 1 bedroom = 50 m2
		  • 2 bedroom = 70 m2
		  • 3 bedroom = 95 m2
		• Proposed draft Apartment Design Guide minimum apartment sizes
		  • Studio = 35 m2
		  • 1 bedroom = 50 m2
		  • 2 bedroom = 70 m2
		  • 3 bedroom = 95 m2
		
		• Developments dedicate 4% of units for key workers?

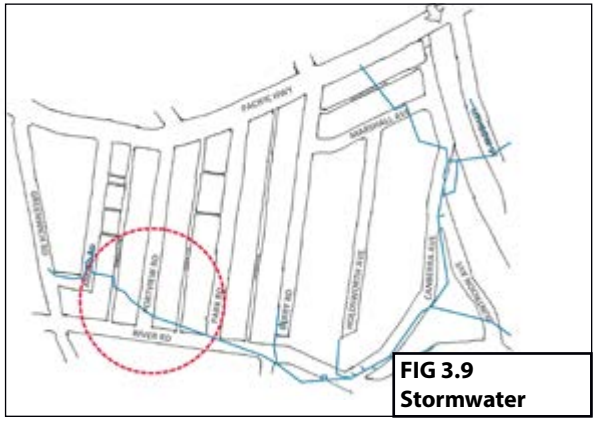
	Principles	Standards/goals
3	Maximise walkability/ cycling/access	• Less than 800 m walk to train • Less than 400m walk to bus (200m distance between bus stops) • Less than 400m walk to park (5 minutes) • Gradient less than or equal to 12:1 or 14:1 (wheelchair accessible) where possible • Explore connections north to RNSH and south to bushland  **FIG 3.3 WALKABILITY**
4	Amenity • Built form • Streetscape	• Minimum performance standards for: • Sunlight/ Wind/ Privacy/ Noise impact amelioration • New developments allow for a minimum of 2 hours (urban) and 3 hours (suburban) sunlight access to habitable rooms & private open space of existing residential properties • Any new apartment buildings should minimise impacts with separation distance when adjacent to a low density residential zone • Existing Street Trees enhanced; setbacks to support deep soil planting • Visual transition between different densities • Topography followed, tapering towards south **FIG 3.4 STREET AMENITY** 

	Principles	Standards/goals
5	Public domain, Open space and Streetscape	• Use 1.86 hectares per 1,000 residents (existing LGA) as a guide • 1.19 hectares per 1,000 residents (existing precinct) • New parks for general recreation, balancing use of Willoughby oval? • Visual, tree-lined links • Follow contours, where possible, and desire lines • Promote wildlife corridors  **FIG 3.5 Public Domain**

6	Efficient traffic flow	• On-street parking is minimised
		• Identify opportunities for east-west links:-
		  • Pedestrian/ cycle paths
		  • Shared links with cars as well
		  • Balance ease of access with "rat-runs" reduction
		• N-S "Rat-run" discouraged between River Road and Pacific Hwy
		 
		FIG 3.6 Traffic Flow

	Principles	Standards/goals
7	Community facilities	• Cater for: • Multi-purpose and for all age groups • Indoor, multi-level sports buildings? • Others? • Explore income producing assets (growth to fund improvements) • Create landmark place(s) and meeting place(s)  **FIG 3.7 Community Facilities**

8	Appropriate lot sizes for amalgamation	• 3 lots minimum per flats development (or possibly 2 if FSR 2:1)
		• Under current provisions for flats:
		  • 1,500 m2 min site area;
		  • 18m is maximum building depth (exclusive of balconies);
		  • 40m max building width fronting street;
		  • 7.5m min front setback (if no prevailing setback);
		  • Side & rear setbacks are 6m (up to 4 storeys), 9m (5-8 storeys) and 12m for (9 storeys+).
		• Avoid isolating sites from development potential
		 
		FIG 3.8 Lot Sizes

	Principles	Standards/goals
9	Appropriate infrastructure & controlled storm-water	• Follow contours • Overland flow –lines followed where possible • Act on advise of Department of Education regarding schools  **FIG 3.9 Stormwater**
10	Financial viability & Options for in-creased growth	• Determine minimum floor space ratio necessary to make re-devel-opment viable. • Section 94 – undertake study?

These principles were derived from a Scoping Workshop held with Council Officers and members of the Community Liason Committee.

3.5 Case Studies

Case study 1 – The Pearl District, Portland, Oregon, USA

The Pearl District - comprising 90 city blocks located north of the Portland CBD - is a successful Transit Oriented Precinct with 2700 housing units and 93, 000 square metres of commercial floor space. A major catalyst for the transformation of the Pearl District was the construction of the Portland Light-Rail system.

Investment in the streetcar has provided support for housing and transport initiatives with streetcar construction explicitly linked to high density development.

Proposed housing densities were significantly higher than anything that was built previously in the area.

An innovative development agreement allowed increased in densities, if certain public improvements were made.

Building Heights vary from 4-22 storeys with FSR up to 4:1.

Case study 2 – Canary Wharf, Docklands, London, England

Canary Wharf is a large business and shopping development served by the Docklands Light Railway and a London Underground station. There are more than one million square metres of office and retail space and 90 000 employees in the precinct.

A key feature of Canary Wharf and the Docklands precinct is the inter-mixing of former wharf buildings with a variety of new building forms.
Design at ground level relates to the pedestrian, reinforced by active uses, particularly along main pedestrian routes and plazas.

Building Heights vary from 4-25 storeys with FSR up to 4:1.

Case study 3 – South Bank, Brisbane, Queensland, Australia

The South Bank area in Brisbane has two rail stations and a busway station. TOD principles have been applied, enhancing transit use and creating a vibrant community.

Recent development around Grey and Little Stanley Streets features high-density residential and commercial premises with retail, entertainment and restaurants providing continuous activity at ground level.

This approach has helped increase the mix of uses and provide an active pedestrian link between the stations and other facilities. Evening uses such as restaurants and cafes are positioned to maximise passive surveillance and activity.

Careful arrangement of different uses and the creation of quality pedestrian links have supported 18 hour operations, enhancing the area's vitality.

Building Heights vary from 6- 22 storeys with FSR up to 3.5:1.

Case study 4 – Subiaco Station, Perth, Western Australia

Subiaco is located approximately three kilometers west of the Perth CBD. The focal point of the Subiaco central urban renewal area is the redeveloped railway station precinct.
The Subiaco Redevelopment Authority rebuilt the Subiaco Railway Station and lowered the Fremantle–Perth Railway Line into a cutting and tunnel for an 800-metre section near the station.

This created space for a shared precinct adjoining the station and enabled connections to be built the existing town centre and the residential and redevelopment areas on the northern side of the line.

Building Heights vary from 3-8 storeys with FSR up to 3:1.

Case study 5– Kogarah Town Centre, New South Wales, Australia

In 1997 Kogarah Council started planning to revitalise Kogarah Town Centre and establish it as an effective TOD precinct.
A major symbolic decision was to redevelop a council car park into a new town square. This redevelopment has provided opportunities for employment and public facilities and has given the community a new heart and sense of place.

Changes in street hierarchy, streetscape improvements, new public spaces, traffic calming and widening of the existing laneways within the town centre have provided a more accessible environment for pedestrians through continuous paths of travel to all public areas.

Changes in land use have also improved the public experience by allowing activity at street level and increasing the village feel of the precinct.

Kogarah Council has developed a model of sustainability that establishes a new benchmark for sustainable design principles.

The Kogarah Town Square development also boasts Australia's largest building integrated photovoltaics installation in a medium density development, incorporating a range of complementary energy-efficiency features.

Building Heights vary from 6-15 storeys with FSR of 3.5:1. Plus,

Case study 6 – Kevin Grove Urban Village, Brisbane,Queensland, Australia

Kelvin Grove Urban Village is a 16 - hectare masterplanned community, demonstrating best practice in sustainable, mixed-use development.

The village integrates with Queensland University of Technology's Campus and is within walking distance of the Inner Northern Bus-way.
Kelvin Grove has integrated small blocks of affordable housing units around the village, achieving a mix of tenures within individual buildings and developments.
Kelvin Grove Urban Village currently contains 125 units of affordable housing, accommodating 180 people. When the development is complete, there will be a good mix of affordable housing and market housing.

Building Heights vary from 4-12 storeys with FSR up to 3:1.

Case study 7 – Fitzgibbon Urban Development Area, Brisbane, Queensland, Australia

Fitzgibbon, located 12 kilometers north of the Brisbane CBD that enables planning for a large tract of government land to be coordinated with future transport planning.

One of the last remaining greenfield sites in the Brisbane local government area, the Fitzgibbon Urban Development Area is uniquely positioned for transformation into a TOD precinct.

The residential development at Fitzgibbon, including the residential components of mixed-use developments, will provide a range of housing choices to cater for the diverse needs of the northern Brisbane community through a mix of densities, types, designs, price points and home ownership and rental options.

A minimum of two-thirds of dwellings will be available for purchase at or below the median house price in Brisbane, and one-fifth of dwellings will be available for purchase or rent by low- to moderate-income households.

Building Heights vary from 2-6 storeys with FSR up to 2.5:1.

Case study 8 – Fruitvale Village, Bay Area Rapid Transit (BART), Oakland, California, USA

Fruitvale Village is a 23 900-square-metre transit village with 47 mixed-income housing units, 10,600 square metres of community service and office space and 3,700 square metres of retail.
The project was designed by and for the neighbourhood surrounding the BART station. As a result, there are several social service facilities including a health clinic, library, senior centre and child development centre.

Ten of the 47 rental units in the village are designated affordable.
In addition, a 68 - unit senior housing project adjoins the village development.

Building Heights vary from 4-10 storeys with FSR up to 3:1.

Case study 9 – North Ryde Station, Sydney, NSW, Australia

The North Ryde Station precinct is within the Ryde local government area and is located south of Macquarie Park.

A vibrant new community is one step closer with 12.5 hectares of land rezoned by the NSW Government. This will provide for thousands of new homes and jobs within a 10-minute walk of existing and enhanced public transport, employment opportunities and local services.

Community benefits will include:

- More than 2.4 hectares of parks and open space – 20 percent of the entire precinct
- 3,000 homes and 1,500 jobs jobs within a 10 minute walk of North Ryde Station
- More than $17 million in transport upgrades
- Precinct Support Scheme funding towards public domain and community infrastructure works
- Public plazas and a multi-purpose community facility
- Building heights that optimise solar access and minimise overshadowing.

Building Heights vary from 8-33 storeys with FSR up to 5:1.

Case study 10 – Epping Town Center Precinct, Sydney, NSW, Australia

The Epping Town Centre Urban Activation Precinct is located within the Hornsby and Parramatta local government areas. The precinct is generally situated within an 800m radius of Epping Railway Station.

Epping railway station already provides good access to many employment and education destinations across Sydney and this will be further improved when the North West Rail Link is completed.
Epping Town Centre has been planned to accommodate new homes and jobs, and improved public spaces, close to transport. Growth in the precinct is financially viable with strong demand for residential development and expected increased demand for retail development.

The revitalised precinct, with capacity for around 3,750 new homes, is within a 10-minute walk of existing public transport, employment opportunities and local services. The proposal aligns with the $550 million Hills M2 upgrade, and $8.3 billion North West Rail Link.

The rezoned precinct provides for a mix of residential, commercial and retail uses, including cafes and restaurants with outdoor dining. Building controls will encourage designs that will maximise sunlight and minimise over shadowing.

Key benefits
The precinct will deliver a range of benefits for the community including:

- Precinct Support Scheme funding of approximately $5 million towards public domain and community infrastructure works such as streetscape and park upgrades
- More homes within a 10-minute walk of the Epping Town Centre
- Intersection and road upgrades funded by the NSW Government (expected to be completed by the end of 2015) including:
  - Essex Street/Epping Road intersection, with an additional right turn lane from Essex Street into Epping Road
  - Widening Epping Road between Essex Street and Blaxland Road, including intersection works and removal of the right turn from Langston Place
  - Carlingford Road / Beecroft Road intersection, provide additional right turn lanes from Beecroft Road into Carlingford Road
- Controls on building heights and design that maximise sunlight and minimise overshadowing.

The proposed will generate a number of new buildings of 4-35 storeys in Height and FSR up to 4:1.

Case study 11 – Wentworth Point, Sydney, NSW, Australia

The Wentworth Point Urban Activation Precinct is located at the northern end of Wentworth Point in Sydney's inner west. The 18 ha precinct will deliver thousands of new homes with easy access to public transport, shops, services and jobs and the many facilities and parklands of Sydney Olympic Park.

Key features of the rezoning

- A 3.9 hectare peninsula park will provide a range of recreational spaces and protect native vegetation and existing mature fig and palm trees. Three pocket parks of at least 2,000 square metres each, will also be created
- Two residential neighbourhoods, with a total of about 2,300 apartments in buildings up to seven storeys and six buildings of up to 25 storeys, as well as a new primary school with 18 classrooms, will benefit from a waterfront lifestyle.
- A new landscaped foreshore will include pedestrian and cycle paths linking to Sydney Olympic Park and its parklands and Homebush Bay promenade will be continued to include a new maritime plaza with shops and cafes.
- Marine facilities would be possible under the new zoning

Benefits for the community

- Unrestricted public access to Parramatta River and Homebush Bay foreshores, including a pedestrian and cycling path connecting to the parklands around Sydney Olympic Park
- An area that could provide for marine facilities adjoining Homebush Bay, for greater public access and enjoyment of Sydney's waterways. This could include boat storage and repair, a marina, and rowing and kayak launching facilities
- A 3.9ha peninsula park that will provide a range of recreational opportunities for the broader Wentworth Point community
- Development of a new primary school including 18 classrooms

Building Heights vary from 4-25 storeys with FSR up to 3:1.

Case study 12 – Discovery Point at Wolli Creek, Sydney, NSW, Australia

The project has a maximum floor space of 132,000m2 with at least 9,000m2 non-residential floor space, including a 'village square' retail area around a newly created neighbourhood park, and significant open space areas including continuous public access to the Cooks River foreshore and a new entrance to the Wolli Creek Railway Station. Residential apartments are being developed within 13 buildings, and a commercial office building is to be developed on the site adjoining Wolli Creek Railway Station.

Building Heights vary from 6-22 storeys and mixed FSR up to 5:1 based on Masterplanning of obsolete industrial area.

Case study 13 – Rhodes West, Sydney, NSW, Australia

Rhodes West is a Specialised Centre in the Canada Bay Local Government Area located on the eastern shore of Homebush Bay, Sydney Harbour's western- most bay.
Canada Bay comprises well-established suburbs characterised by undulating topography, well laid-out streets and generous parklands. It has an existing appealing character that is warmly-valued by its residents.

Rhodes West has progressively developed under a planning framework established in 1999 under the Sydney Regional Environmental Plan 29: Rhodes Peninsula (SREP 29) (Now repealed) and the Renewing Rhodes Development Control Plan 2000 (RRDCP 2000).

The vision for Rhodes West is to:

- Create a diverse and visually-interesting commercial centre supported by a high density residential community
- Integrate the new community of Rhodes West with the existing community east of the Northern Railway line through pedestrian and cycle connections and the provision of new community facilities, which are accessible to all
- Engender a meaningful sense of place and community with a network of activity areas that combine neighbourhood shops, recreation opportunities, and public open space with residential dwellings;
- Create a range of high quality public open spaces and community facilities;
- Ensure high quality architectural design that contributes positively to the role of Rhodes as a Specialised Centre in Sydney; and
- Demonstrate leadership in ESD initiatives.

Building Heights vary from 6-22 storeys and mixed FSR up to 5:1 based on Masterplanned precinct.

Case study 14 – Victoria Park, Zetland, Sydney, NSW, Australia

Victoria Park in Zetland is a Masterplanned high density community facilities and developed by State Government.
Its final population is expected to be in excess of 10,000 persons in 2015.

Building Heights vary from 4-25 storeys with variable FSR around 3:1.

4.0 Options for Growth

4.1 EBD Workshop

The EBD Workshop examined a number of options for growth in general terms.

These are included below.

- Low Growth
- Medium Growth
- High Growth

4.2 Growth Scenarios

In the Enquiry by Design Workshop held on 16-18 September (with Council officers and Community Representatives) a range of development options were investigated. These are illustrated with strengths and weaknesses noted.

These included:

1. High Density (Dispersed)
   Reducing through medium to low density with increasing distance from the rail station/town centre. (Figure 13)

2. High Density (Concentrated)
   Concentrated near the station with no development through the western half of the precinct. (Figure 14)

3. Medium Density
   With high density within close proximity of station and then reducing to medium/low density through the remainder of the precinct. (Figure 15)

4. Medium/ High Density
   Similar to previous but with smaller area of high and medium density redevelopment. (Figure 16)

5. Highway Frontage
   With focus on redevelopment of highway frontage for Mixed-Use development. This may be amalgamated with any of the above options in two possible formats: (Figure 17).
   (i) Canberra Ave to Berry RD only; or
   (ii) Canberra Ave to Greenwich Road

6. No Development
   Which retains existing zoning through-out the precinct but permits development (mixed-use) along the highway frontage and medium density in existing medium density areas along Greenwich Road. (Figure 18)

The general controls considered for these densities were:

- High Density FSR 2.75:1 – 3:1
  height 8 floors plus
- Medium Density FSR 2:1 – 3:1
  height 4-8 floors
- Low Density FSR < 2:1
  height < 4 floors

4.2.1 High Density (Dispersed)

- High density development generally within 400m of railway station
- Medium density development beyond 400m to Precinct boundaries
- Medium/high density along Pacific Highway (and Greenwich Road)

FIG 4.1
High Density

Highway frontage potential redevelopment

High Density development as approved

Medium density development

Low density development

Remain as existing

Open space

Heritage items

High Density (Dispersed)

Strengths
- Density for TOD
- E-W connections possible
- Economically viable
- Reduced Auto-use

Weaknesses
- Context sensitivity poor
- Overshadowing issues
- Community infrastructure required

4.2.2 High density (Concentrated)

- High density development between Canberra Avenue and Berry Road
- (or indeed the rear lane of Berry Road west side)
- No development west of this line i.e. Berry Road or Berry Lane

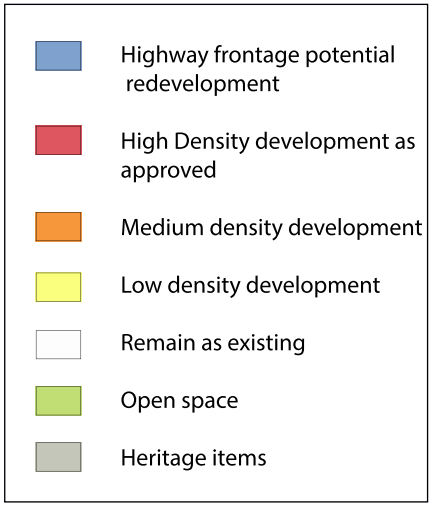


FIG 4.2
High Density Concentrated

High Density (Concentrated)

Strengths
- High density close to station
- Highway redevelops
- Central area remains the same
- Can revisit in 20 years

Weaknesses
- Need to define area of density
- Less potential for change to the west
- More difficult to fund E-W connections
- Transition between higher densities and houses

4.2.3 Medium Density

- High density development within 200m radius of station
- Medium density from 200 - 400m from station
- Low density development (or no development) beyond 400m from station

FIG 4.3
Medium Density

Medium Density

Strengths
- Density in proximity to transit & centre
- TOD strengthening
- Reduce auto-dominance
- Enhance public domain
- Improve E-W links

Weaknesses
- Overshadowing with slope
- Limited vehicle access
- Need to augment community infrastructure

4.2.4 Medium /High Density

- High density development within 200m radius of station- more variety of densities
- Medium density from 200 - 400m from station
- Low or No development beyond 400m from station

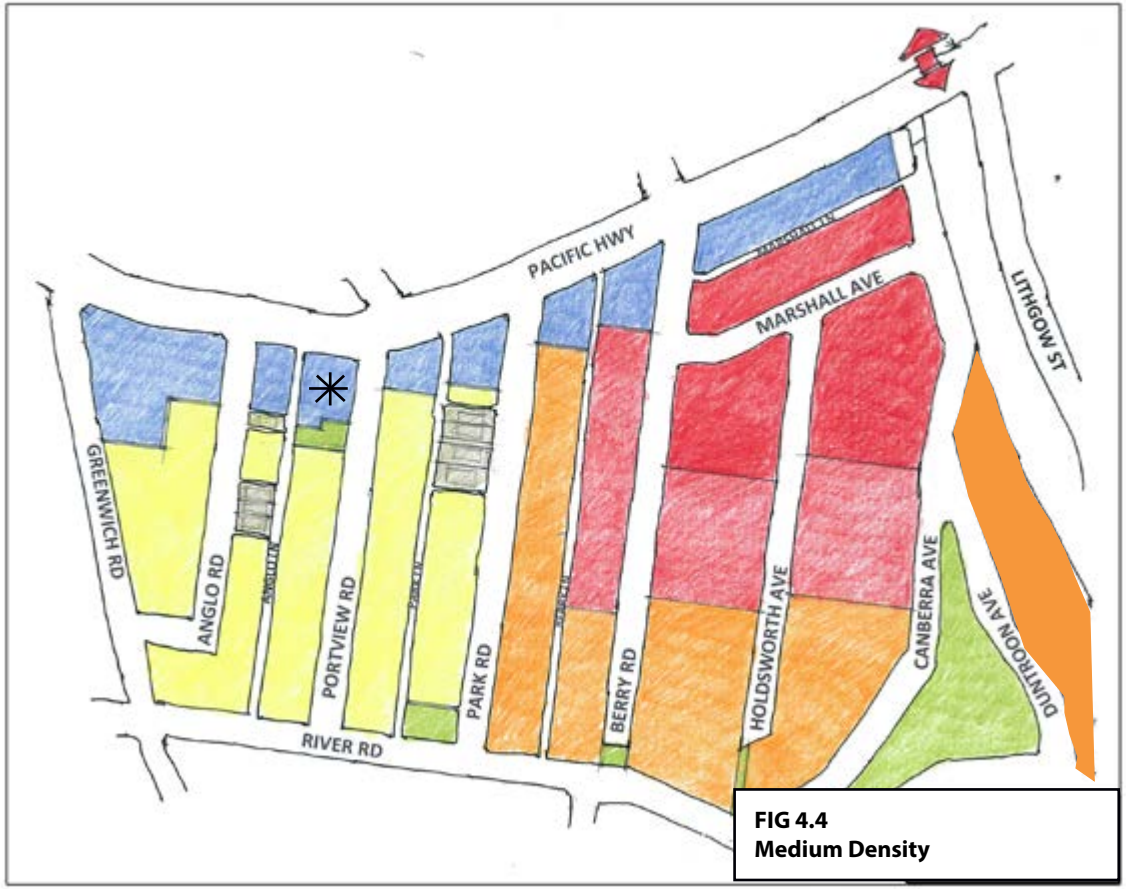


FIG 4.4
Medium Density

Medium/High Density

Strengths
- Graded density from station
- Strong E-W links
- New school possible
- Mix of densities
- TOD strengthening

Weaknesses
- Viability of western sector
- Connection to station
- Transitions

4.2.5 Highway Frontage (Mixed-Use)

- Redevelop Highway frontage as Mixed-use i.e. 3-4 storeys commercial podium with residential towers above. Two possible formats:
  (i) Canberra Ave to Berry Rd only;or
  (ii) Canberra Ave to Greenwich Road

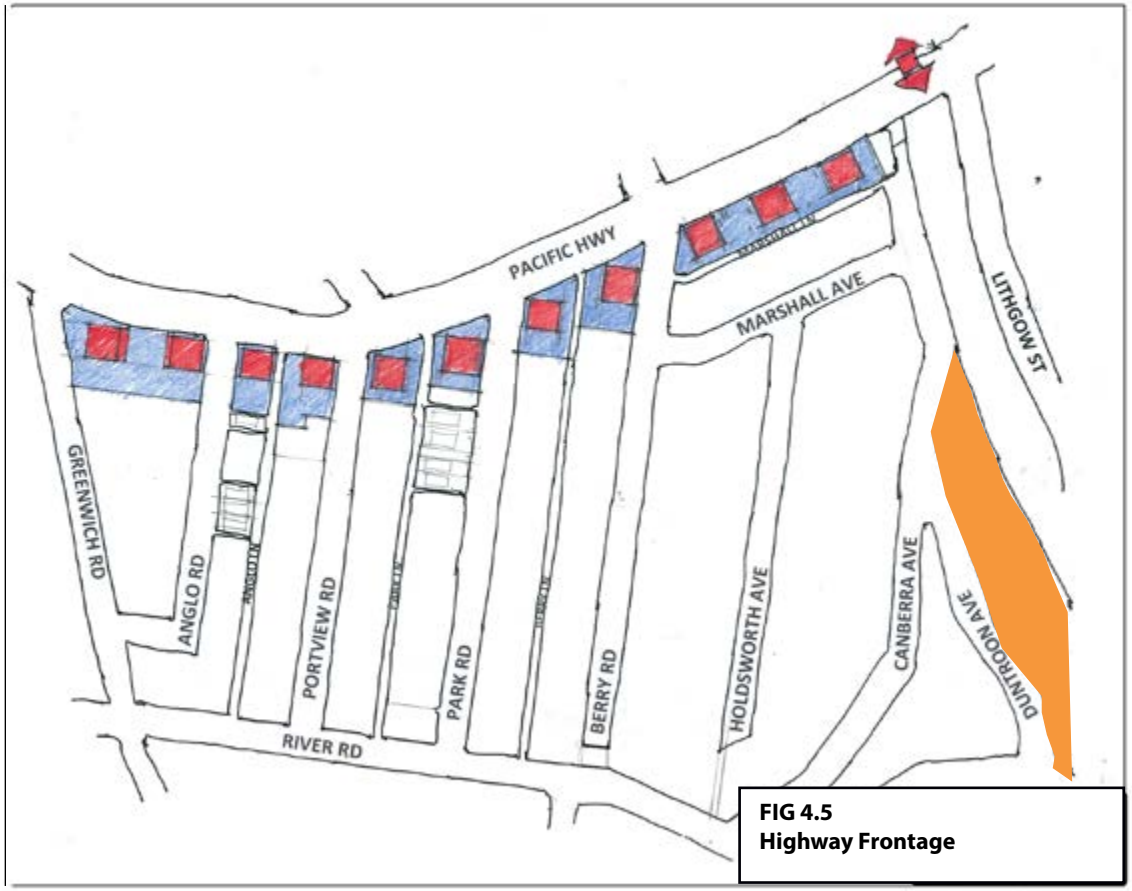


FIG 4.5
Highway Frontage

Highway frontage

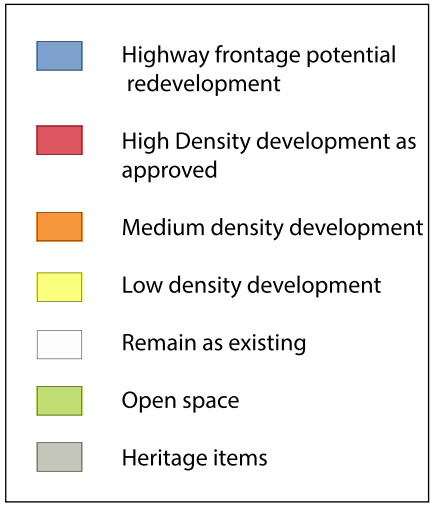
Strengths
- Movement corridor
- Employment (medical, educational, commercial
- Proximity to station
- Possible mixed-use

Weaknesses
- Location of towers to minimise shadows
- Access and Parking
- Existing zoning

4.2.6 No New Development

No new development beyond the existing development areas (non single family dwelling) i.e.

- Pacific Highway frontage
- Greenwich Road frontage
- Existing developed or developing areas



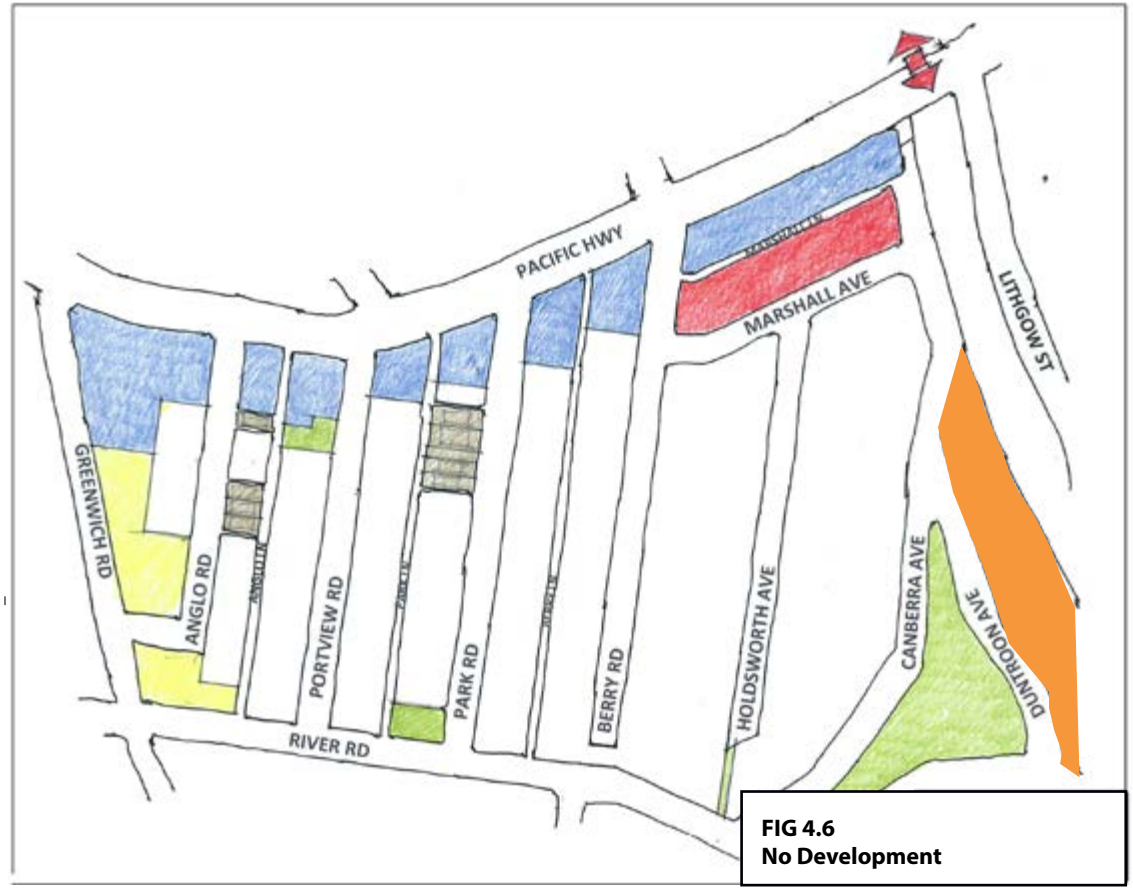


FIG 4.6
No Development

No New Development

Strengths
Leave residential cottage area alone

Weaknesses
- No TOD
- Little contribution to sustainability
- No funds for change
- Traffic and parking not addressed
- No new open space

4.3 Preferred Location and Density of Residential Growth

Density redevelopment should be concentrated within walking distance of the station and along the Pacific Highway.

Generally, the following factors have been tested and refined:

Zoning

- Mixed-use along highway frontage
- High and medium density residential zones close to transport
- Medium to low density further to the west

Heights

Existing maximum heights according to Council's DCP and LEP are around the highway/station nexus and permit development from 6 to 21 floors (this has been increased with V.P.A up to 29 floors).

Floor Space Ratio

The maximum FSR permissible under LEP 2009 is 5.1:1 From Pacific Highway down to Marshall Avenue.

Elsewhere permissible FSRs are relatively low as follows:

- Highway frontage 3:1
- Greenwich Road frontage 0.8:1
- Low density residential areas 0.5-0.6:1

For the purposes of testing possible development scenarios we have tested the following:

- High Density 3-5:1
- Medium Density 2-3:1
- Low Density < 2:1 (or stay the same)

(Note: These terms are not relate to the legal LEP terms.)

Preliminary Feasibility testing indicates that redevelopment would/could occur in the high and medium density categories but would be marginal in the low density area.

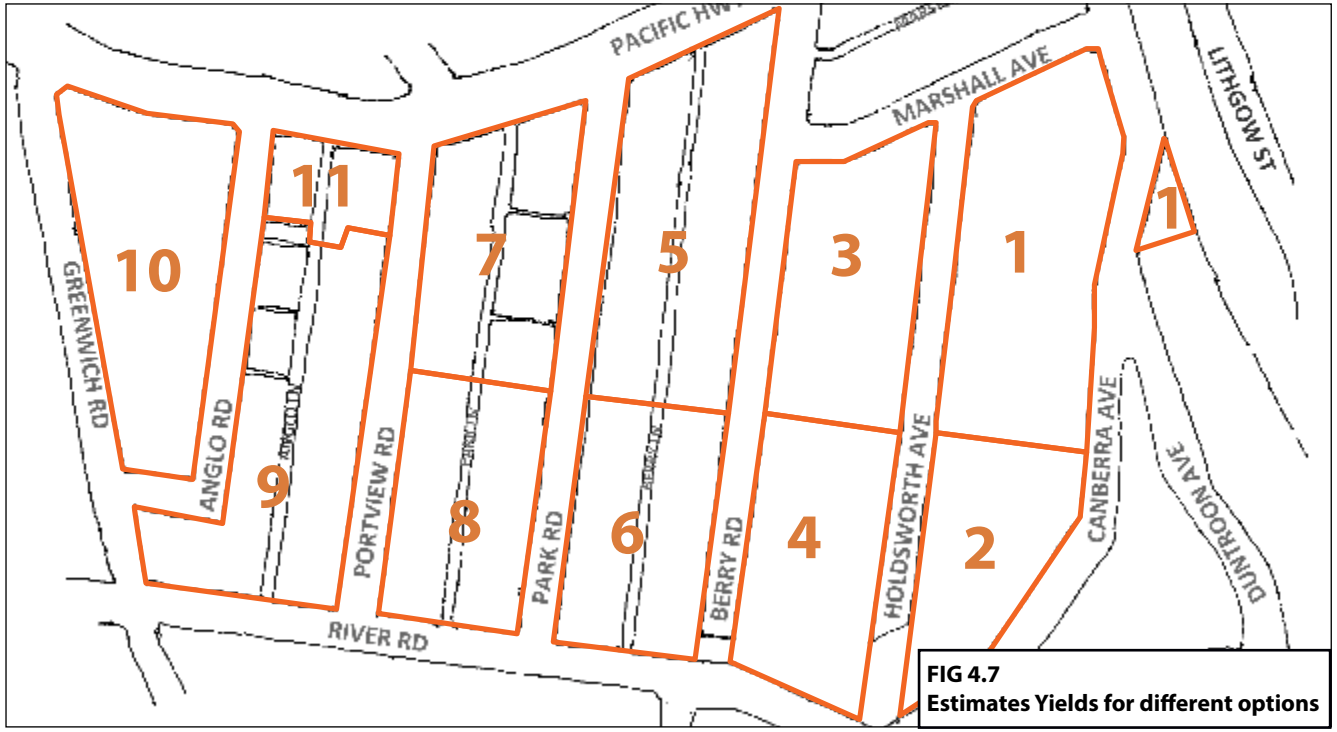


FIG 4.7
Estimates Yields for different options

4.4 Dwelling Capacities

Table 4.1 - Possible Dwelling Yield/Site Capacity

Block	High Density	Medium Density	Low Density
1	660	400	260
2	280	170	110
3	420	250	170
4	420	250	170
5	330	200	130
6	330	200	130
7	140	85	65
8	330	200	130
9	330	200	130
10	330	200	130
11	100	100	-
Total	3670	2255	1425

Table above indicates notional dwelling yields for the precinct at High (5:1 FSR) Medium (3:1 FSR) and Low (2:1 FSR) development densities. These of course are very high figures assuming full development.

More realistic figures assuming 80% development for High Density, 50% development for Medium Density and 30% development for Low Density might be:

High Density
3670 x 80% = 2936 say 3000 dwellings

Medium Density
2255 x 50% = 1127.5 dwellings

Low Density
1425 x 30% = 427.5 say 425 dwellings

These figures maybe useful for examining infrastructure needs.

The existing number of dwellings in the precinct is in the order of 400 (mostly single family dwellings).
Dwelling capacities are variable according to proposed densities of development.

- A very low development scenario could deliver up to 500 new dwellings
- A medium development scenario could yield 1,000-2,000 dwellings
- A very high development scenario could yield up to 3,000 dwellings

Note: Areas 1-4 plus highway frontage which comprise the proposed development sub-precinct can yield up to 2000 plus dwellings, plus significant commercial floorspace fronting the highway.

4.5 Preferred Option
High density (Concentrated)

High density concentrated is the preferred option for the following reasons:

- It provides significant high density development in close proximity to the station(could deliver up to 2000 dwellings at full development)
- It leaves the rest of the precinct alone. this can be visited in 10-20 years
- The limited access paths (Berry Road North & Canberra /Duntroon Avenue South) protect the rest of the precinct from construction traffic

- High density development between Canberra Avenue and Berry Road (or indeed the rear lane of Berry Road west side)
- No development west of this line i.e. Berry Road or Berry Lane

Highway frontage potential redevelopment

High Density development as approved

Medium density development

Low density development

Remain as existing

Open space

Heritage items

Note that the boundary is recommended as Berry Road rather than Berry Lane because it was felt that the Street with its strong landscape planning provided a better transition from 8 storeys to front yard than Berry Lane which would have 8 storeys looking into the rear yards of Park Road dwellings.
Note also that at some stage after construction if would be desirable to connect a low speed shareway between Park Road and Berry Road in order to provide more access options in and out of the precinct and also improving pedestrian connectivity to the station precinct.
Note also that mixed -use development along the Highway could be accommodated over time with slim residential towers over a 3-4 storey commercial podium.

FIG 4.8
Preferred Option

High / Concentrated Development

Strengths

- High density close to station
- Highway redevel-ops
- Central area re-mains the same
- Can revisit in 20 years

Weaknesses

- Need to define area of density
- Less potential for change to the west
- More difficult to fund E-W connec-tions
- Transition between higher densities and houses

5.0 Public Domain

5.1 Location and distribution of Open Spaces

With increased development (and population) there will be an increased demand for open space in terms of amount, distribution and quality and for improved connectivity within the Precinct (particularly E-W and to the station).

Existing open space in the Precinct consists of:

- Newland Park (1.01ha) in the southwest
- Two small parks (0.18ha) in Park and Portview Streets

Note that major open space exists to the north across the highway (but poorly connected due to traffic). This includes playing fields, facilities and also the cemetery.

The EBD Workshop has explored a number of Public Domain and Placemaking opportunities providing a range of parks and spaces connected by multi-modal "green streets" and pathways to Newland Reserve and to the St Leonards Railway Station.

The size, shape and location of these spaces can be further detailed in the context of available funds for acquisition and enhancement.

Based on the assumption that open space will be paid for by developer contributions, more development will finance more acquisition and embellishment. It is estimated that the E-W public domain could cost in the order of $20 Million in acquisition and a further $5 Million in construction / enhancement.

At an open space contribution rate of $12,500/ dwelling this would require in the order of 2000 dwellings to fund the E-W green linkages.
Note however that there may be other mechanisms for financing some of these works such as works in lieu / development incentives or perhaps even State Government funding.

The attached E-W Public Domain Plan is likely to be able to be financed generally by approximately 2000 dwellings and could be expanded if development incentives could be offered i.e. developers constructed and dedicated much of it and if the State Government contributed as well.

Public open space, streets and paths

The public domain includes public open space such as parks and streets with their associated street trees. These are important natural features of the area.

There are two areas of public open space within the Study Area that have children's play facilities, including Propsting Reserve and Newlands Park. There is also an area of open space located along Portview Road. There are a number of other areas of public open space within easy walking distance of the Study Area. These include Gore Hill Park which incorporates a full-size oval and pavilion and Smoothey Park Reserve which extends from Newlands Park to the south of the Study Area providing a natural open space corridor consisting of natural bushland.

Examples of public open space within or surrounding the Study Area including Gore Hill Reserve and Newlands Park

5.1.1 Existing Open Space

St Leonards Rail Plaza (Proposed)

This project is expected to cost around $40 million, which will come from section 94 developer contributions as well as voluntary Planning Agreements with major development companies in the area, accounting to a council plan.

A draft sketch below shows Christie Lane would become a covers pedestrian walkway and access to Lightgow St and Canberra Ave closed to cars.

FIG 5.1
Proposed St Leonards Rail Plaza

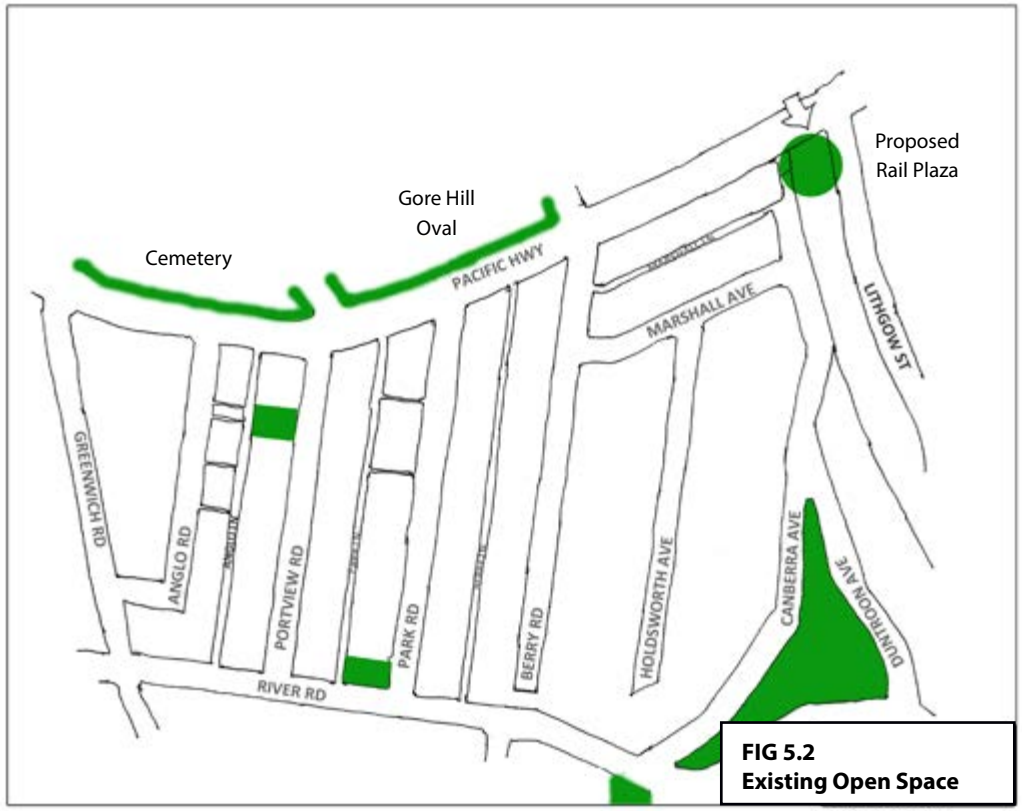


FIG 5.2
Existing Open Space

Placemaking

Strengths
- Existing parks (Newlands Park + 2x small)
- Proposed transit square

Weaknesses
- Small parks
- Poorly distributed

5.1.2 Design Principles

In order to improve the Public Domain of the precinct the following principles should be persued:

- Enhance street planning throughout including Pacific Highway and River Road
- Supper proposed for Railway Plaza and seek to improve access and connection to it
- Create new precinct (or a single larger park)
- Create East-West connections for pedestrians (& vehicles)
- Improve connections to Gore Hill Oval and South access River Road to Bushland

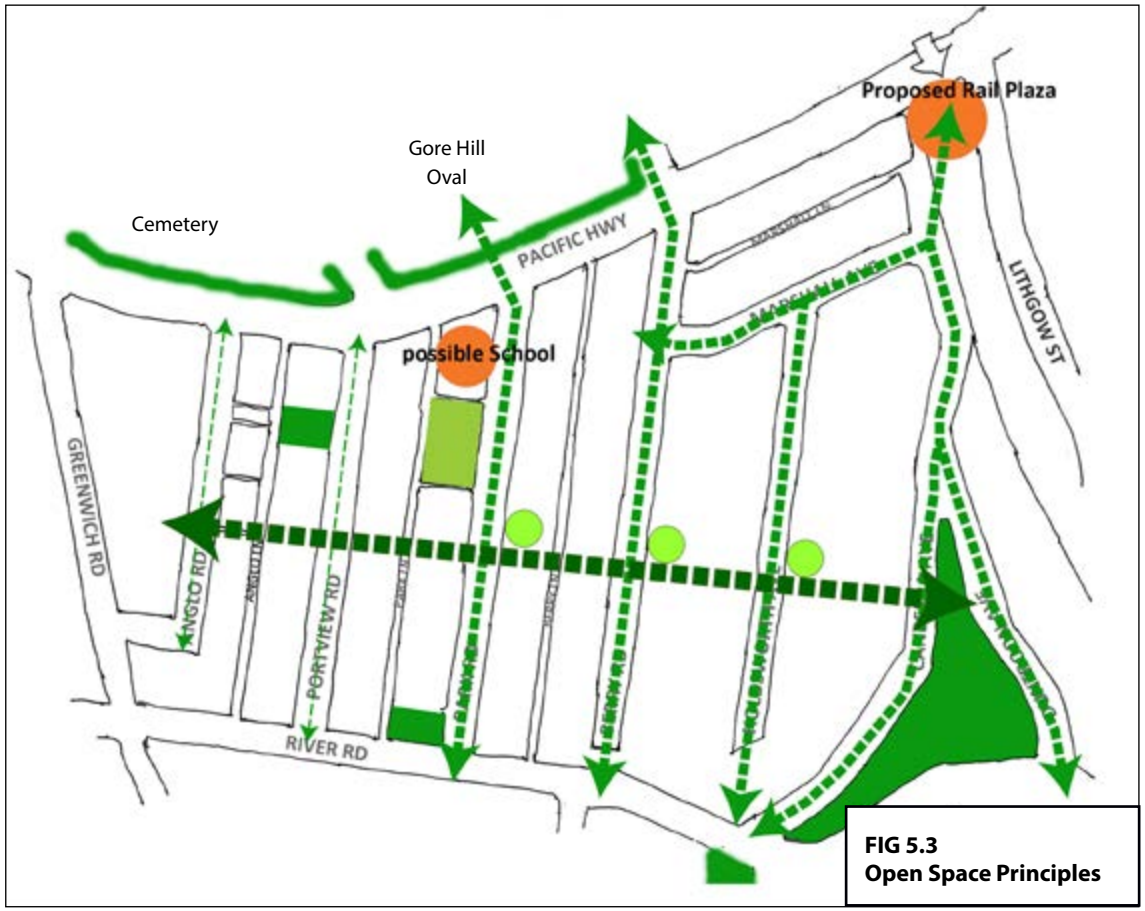


FIG 5.3
Open Space Principles

Design Principles

Strengths
- Create new parks
- Connect E-W
- Enhance streets
- Improve connections access Highway and River road
- Connect to Rail Plaza/Station

5.2 Public Domain, Open Space, Activities & Linkages /Workshop Options

5.2.1 Concepts

The Precinct is approximately 20ha in area, contains about 435 houses and a population of approximately 1,000 persons.

Currently Open Space consists of:

- Newlands Park
- Rail Plaza (proposed) over railway line and major community focus
- Gore Hill Oval (across the highway in Willoughby LGA
- Gore Hill Cemetery as above and passive space only
- Two small parks on Park and Portview Streets

It is evident that the creation of further large parks will be difficult to fund and require acquisition over time of many houses. This potential approach maybe achievable through long term Section 94 measures.

It may be easier however to create a number of small parks in association with redevelopment opportunities (see Figures 5.7 & 5.8 over).

There is potential for the creation of a number of small parks, distributed through the Precinct in association with density redevelopment.

East - West Connections options

FIG 5.4
Staggered Shareways

Staggered Shareways

Strengths
- Good distribution
- Good facilities
- Highly legible
- Developer funded
- Excellent pedestrian cycle connections

Weaknesses
- Funding
- Distribution

FIG 5.5
Wider Greenway

Wider Greenway

Strengths
- More open space
- More formal legibility
- Strong E-W connection
- Allows for new school within precinct

Weaknesses
- Open space provision + distribution
- Acquisition Cost

FIG 5.6
Consolidated Open Space

Consolidated open space

Strengths
- Larger open space
- Excellent E-W connections
- Traffic calming

Weaknesses
- Major park on significant slope
- Large land acquisition therefore expensive
- Slope makes a flat area to play in an unlikely outcome

5.2.2 Public Domain Review

While there was considerable support for a large consolidated park within the Precinct, this is very difficult to realise because:

- A large park will be very expensive to acquire ($50 Million)
- It will take a considerable time to acquire due to cost, slow income from development contribution and difficulty of acquisition of a significant number of dwellings

It is thus recommended that Figure 5.4, "Staggered Shareway" option, be pursued principally because:

- It can be integrated with development sites and financed incrementally by redevelopment
- Community facilities can be integrated with development parcels (and financed by them)
- This option is able to be directly financed by development and can be delivered in association with development
- It can over time and in association with development provide a strong and attractive E-W link across the Precinct and towards Newlands Reserve and the railway station

The estimated capacity of the proposed rezoning area is in the order of 2,000 dwellings or about 5,000 persons.

From the above this would indicate the need for:

Open space – additional open space approximately 2.5ha. This is impossible to achieve given the small scale subdivision and high property values (this could cost in excess of 50 lots x $2.5 Million = $125 Million).
A more realistic approach is to create more small parks (within an easy walk of all residents) which are designed ad enhanced to a very high quality.

Childcare – 2-5 child care centres are desirable. These can be provided by the private sector and integrated with density residential development.
Community rooms, halls etc – desirably a major hall of 200m^2 plus would be created plus a variety of meeting rooms etc. These can be provided in association with redevelopment schemes and E-W links.

Fitness Circuit – a fitness circuit could be devised that winds through the Precinct using developing E-W links and N-S streets to connect Rail Plaza, Newlands Reserve, Gore Hill oval, etc. the pocket parks along the way can each be host to a particular exercise regime.
This can be financed from developer contributions.

Corner store/coffee shop – whilst it is unlikely that a corner store/coffee shop could be viable internally within the Precinct (due to lack of passing trade), opportunities should be explored with development, community facilities and pocket parks to facilitate such. A coffee shop/store may be feasible on Canberra Avenue opposite Newlands Reserve as part of the pedestrian E-W link and built into the lower level of new development.

Performance space/library – these are major facilities and more likely to be centrally located in the Rail Plaza.

Community shed(s) – community sheds, workshops, studios and the like could be distributed through the Precinct as part of the community facilities/public places associated with E- links.

Community gardens – community gardens are often popular community building facilities. However they require:

- space
- good soil
- community commitment

Successful gardens usually derive from community initiatives. Council should be supportive of any such initiative.

5.3 Potential Option at Workshops

Figure 5.7 indicates one way that improved and enhanced E-W public domain could be achieved across the Precinct.

Figure 5.8 indicates in concept how a small park can act as a setting for a density apartment block which might contain a range of community facilities and services at ground level and engage with the park.

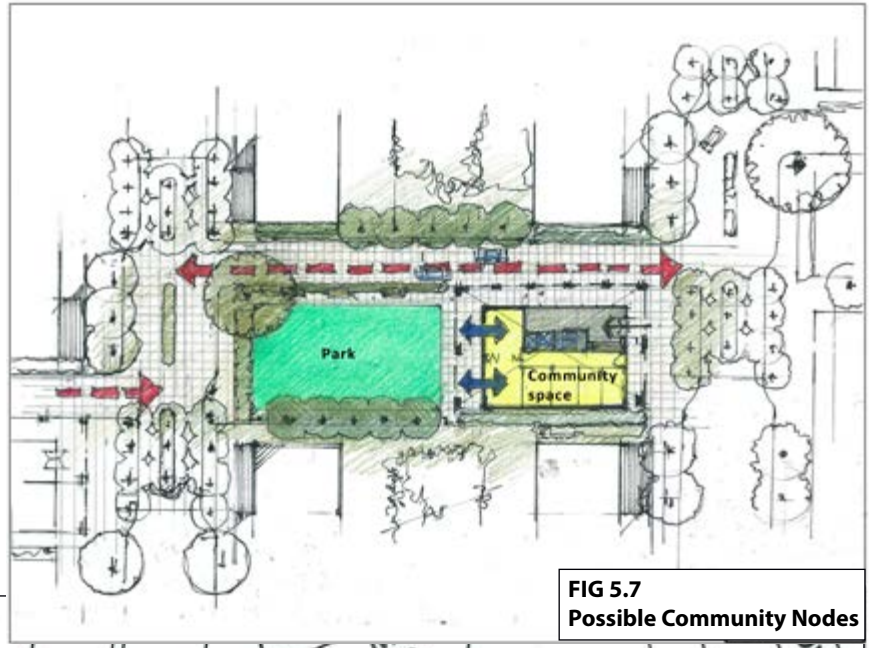


FIG 5.7
Possible Community Nodes

FIG 5.8
E-W Linkages

Shareway/ Local park

- 4 sites acquired
- Shared way (cars and pedestrians)
- 8-12 storey provided with ground floor community space
- Child friendly play zone
- 2 classroom size community rooms

Strengths

- Possible early implementation
- Flexible use of space
- Human scale
- Community identity fostered

Weaknesses

- Small scale
- Possible overshadowing
- Fragmentation of public open space

E-W Linkages

- Creation of an E-W movement system
- implementation by integration with adjacent development
- Community space on Berry and Park Road
- Possible education site in Portview Road at Pacific Highway
- Possible community facility on eastern side of Portview Road

Strengths

- Early implementation possible
- Incremental implementation possible
- Minimal cash flow problems for Council
- Variety of available spaces
- Public realm distributed through precinct

Weaknesses

- No major open space as a community focus
- Problematic Holdsworth Ave, Canberra Ave (connection give a level change of 9m)
- Dependence on other uses for implementation of westerly link

5.4 Green Streets & Paths

Existing streets often contain excellent, mature street trees (species) In some cases these need augmenting to create strengthened avenues. The previous study (St Leonards Strategy Stage one Precinct Report by David Lock Associates) has plotted major trees and planting as shown opposite.

It is recommended that:

- existing street planting be augmented
- new east-west streets, shareways and paths be strongly planted

A generous and attractive public domain is proposed based on existing 20m wide streets (4 metre footpath/verges and 12m carriage-way i.e. 2 x parking lanes and 2 x moving lanes). There are a variety of well-developed and attractive trees planted in verge/footpaths and these can be further enhanced and augmented.

The balance of the Study Area has a clearly defined 'leafy' and tree lined character which is defined by the existing significant street trees and nature strips. Local roads connecting River Road to the Pacific Highway incorporate significant trees within the public domain and a range of nature strips between approximately 1.5m to 3m wide.

Pedestrian footpaths within the Study Area vary in quality. The quality of the footpath paving along the Pacific Highway is poor.
Along other key pedestrian desire lines such as River Road and Canberra Avenue the footpaths are moderate in quality in that they are well paved and wide. However, they can be uneven in some locations. There is limited existing street tree planting along the major roads particularly along the southern side of the Pacific Highway.

The 'leafy' character is illustrated below.

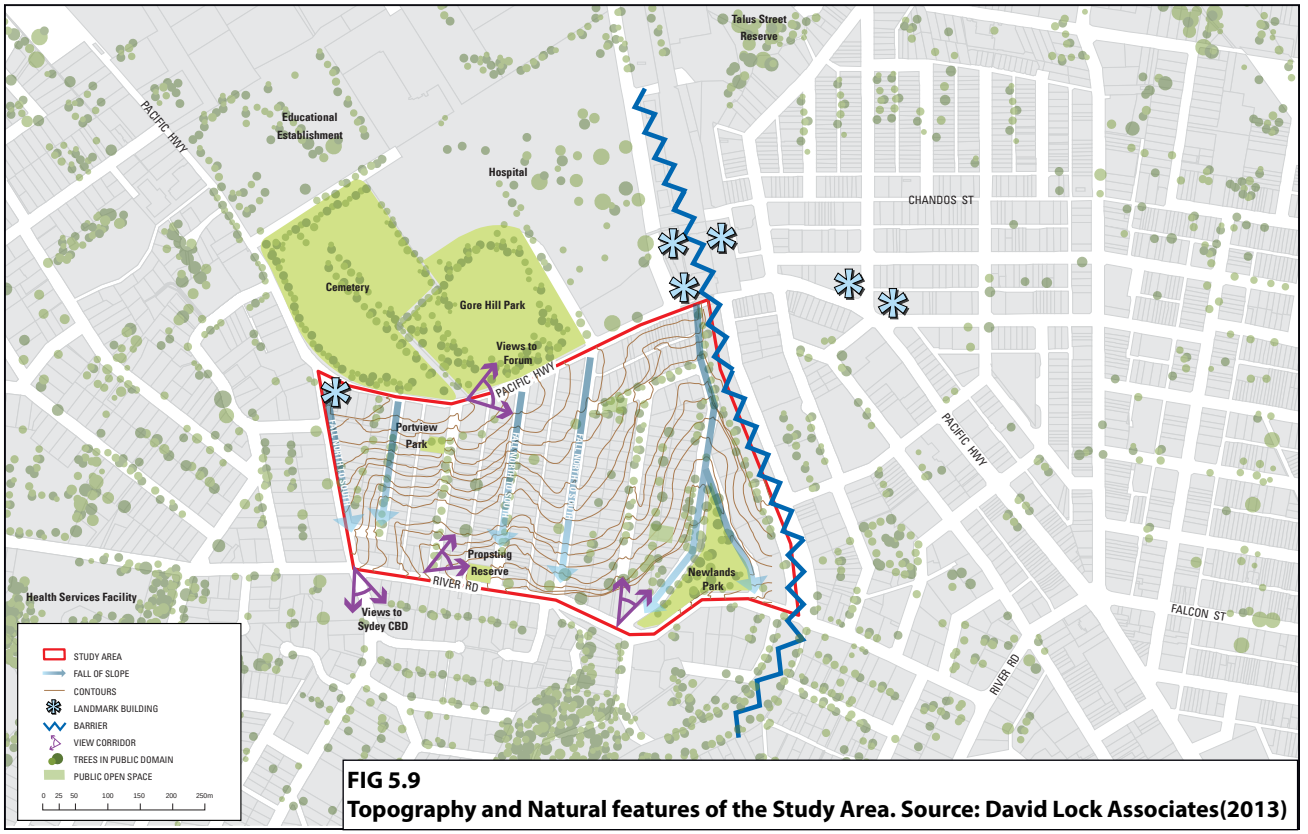


FIG 5.9
Topography and Natural features of the Study Area. Source: David Lock Associates(2013)

Figure 5.10 illustrates how a pedestrian link could be established connecting Holdsworth Avenue to Newland Park. Note that this pathway would be very steep but could be most attractive (see attached photos).

Figure 5.11 & 5.12 illustrate how the north-south streets can be traffic calmed to reduce rat running in association with E-W linkages.

Figure 5.11 illustrates a pavement change and planted central median strip.

Figure 5.12 illustrates an extra two rows of trees planted in the parking lanes (say every 2 or 3 spaces).

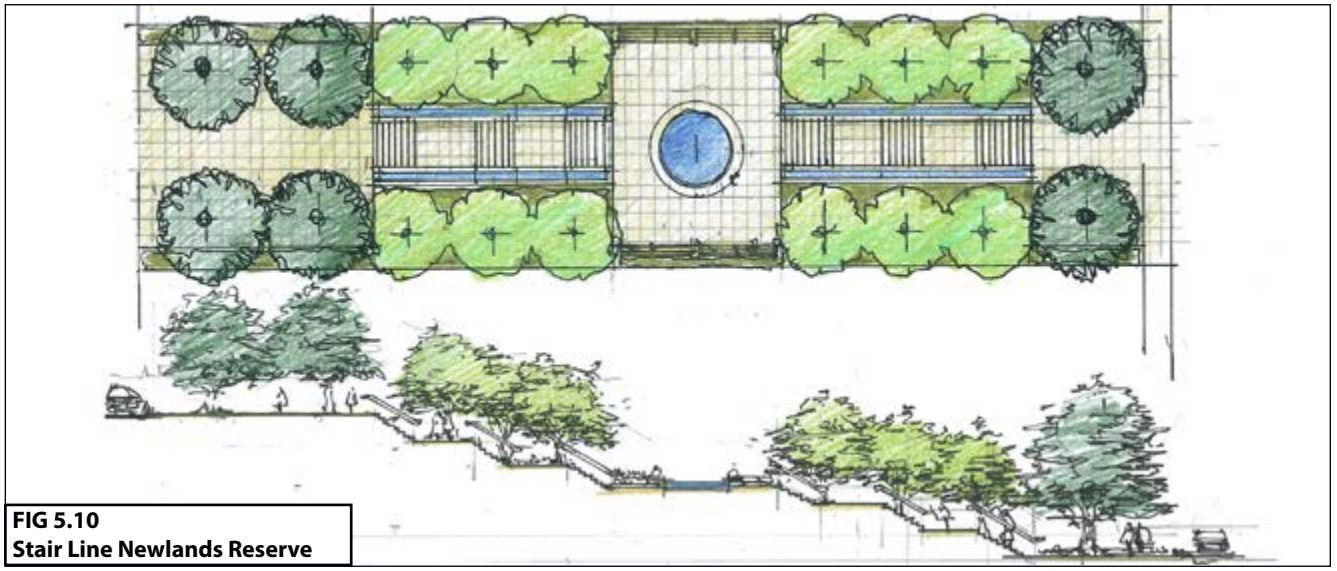
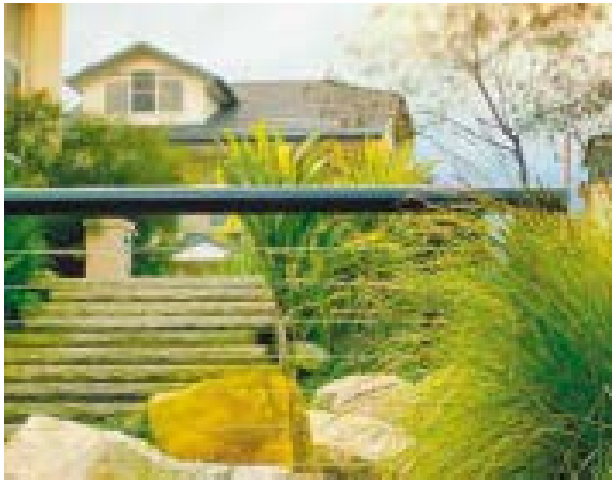


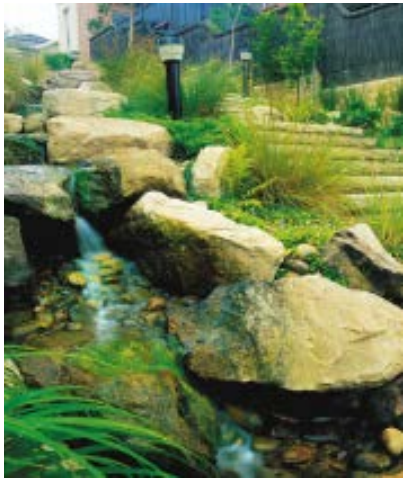
FIG 5.10
Stair Line Newlands Reserve

Newlands Park Stairs

Strengths
- Improved E-W access
- Excellent landscape treatment
- Possible water feature

Weaknesses
- Very steep(10m)
- Must have stairs





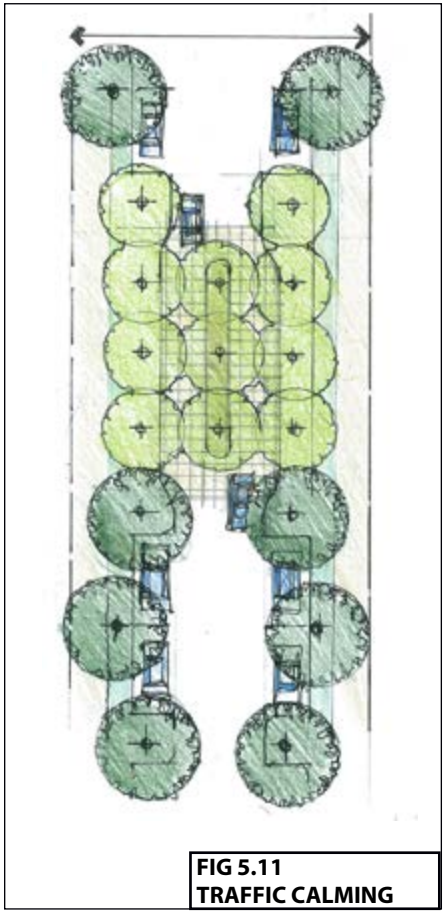


FIG 5.11
TRAFFIC CALMING

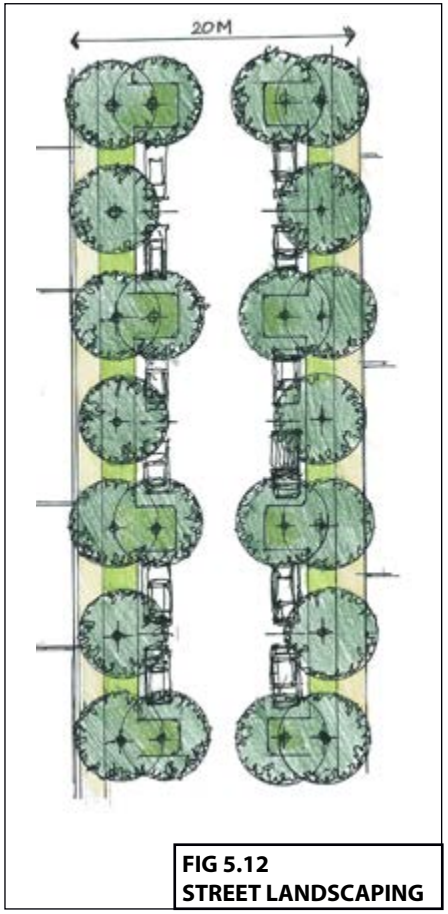


FIG 5.12
STREET LANDSCAPING

Traffic Calming

Strengths
- Slows traffic
- Reduce "rat-runs"
- Strengthens Avenues
- Connects with E-W links

Weaknesses
- Removes some parking

Street Landscaping

Strengths
- Improves Avenue planting
- Calms traffic
- Improves climatic comfort
- Readily implemented

Weaknesses
- Appears to reduce parking

Desirable Avenue Planting

Desirable Avenue Planting

5.5 Community Needs

The following is an estimate of desirable Community facilities which way be applicable for this precinct (from Council Officers) and Stakeholders

- Parks - 1 ha/1,000 population
- Childcare - 1/1,000 population
- Community halls - 200m^2
- Fitness circuit
- Corner store/ Coffee shop
- Performance space
- Community shed - 100m^2 / 500 population
- Community gardens (investigate)

5.6 Public Domain Implementation

There are options as to how Council could implement a Public Domain Strategy.
These include:

1. Council
Council collects S.94 Contributions from developers and uses these funds to purchase sites, demolish houses and design and construct (and maintain) open spaces.
In this context it should be noted that acquisition would cost in the order of $50-60 Million per hectare plus demolition, design and construction costs, say $75 Million all up.
This would require a S94 Contribution of between $37,500 (2,000 dwellings) and $25,000 (3,000 dwellings). Both of these figures are above the current S.94 ceilings and this is only dealing with Open Space provision.

Strengths/Weaknesses
The major strength of this option is that Council is in complete control and can implement the strategy in totality.

The major weaknesses include:
- Delivery delayed until funds are collected from development. Can take considerable time to implement
- Must acquire lands for open space. This too can take time, can be difficult to amalgamate substantial areas and can cause issues with resident/owners of properties to be acquired

2. State
Council seeks funds from State Government under Urban Activation Precinct Program.
Funds are available for such works however they are currently being thinly spread over an increasing number of Urban Activation Areas.

Strengths/Weaknesses
The major strength is that funds may be procured from the State for early acquisition and construction.

Major weaknesses include:
- Likely spread of funds may make it difficult to access State funds in early years
- Acquisition problems as above

3. Public/Private Partnership
Council can prepare an Open Space/Public Domain Strategy and seek ways of working with the private sector to facilitate the strategy. For example, developers may be able to create small pocket parks and plazas in lieu of common open space and in lieu of S.94 Contributions.
There may also be opportunity to facilitate implementation by provision of development bonuses, voluntary planning agreements and the like.
These need to be well defined and costed to ensure value for money.

Strengths/Weaknesses
The major strength of this option is the capacity to work with the private sector to develop public domain in conjunction with private redevelopment.

The major weaknesses include:
- Need to identify and coordinate public domain policy with development
- Capacity to generate bonuses which are adequate to fund delivery yet which don't overstretch development capacity and impacts (heights, bulk, overshadowing, etc)
- Capacity to implement works outside development areas

Facilitation
Council, upon agreeing on a general development strategy for the Precinct should commission a comprehensive Public Domain Strategy which will include:

- **Open Space** – Quanta, location and design
- **Street works** – including landscape avenue planting, verge planting, traffic calming measures
- **East-West Link** – roads, paths and shareways connecting across the Precinct fulfilling movement, open space and traffic calming functions
- **Community facilities** – a clear indication of desirable community facilities, distribution, size etc

All of the above need to be designed, costed and included in an appropriate procurement strategy

6.0 Built Form

6.1 Background

The major constraint to development is the overshadowing issue which relates to south facing slopes. Any major east-west buildings will throw long shadows to the south. In fact existing development already causes significant shadowing across the Precinct.

"The Draft Apartment Design Guide (2014)" sets out a variety of apartment types which may be appropriate to the precinct.

Apartment Building Types

Apartment development occurs in a variety of arrangements, configurations and types.
Apartments can occupy different sized lots from large redevelopment areas to small in-fill sites, can consist of a mix of building types or uses and be situated in suburban, transitional or urban locations.

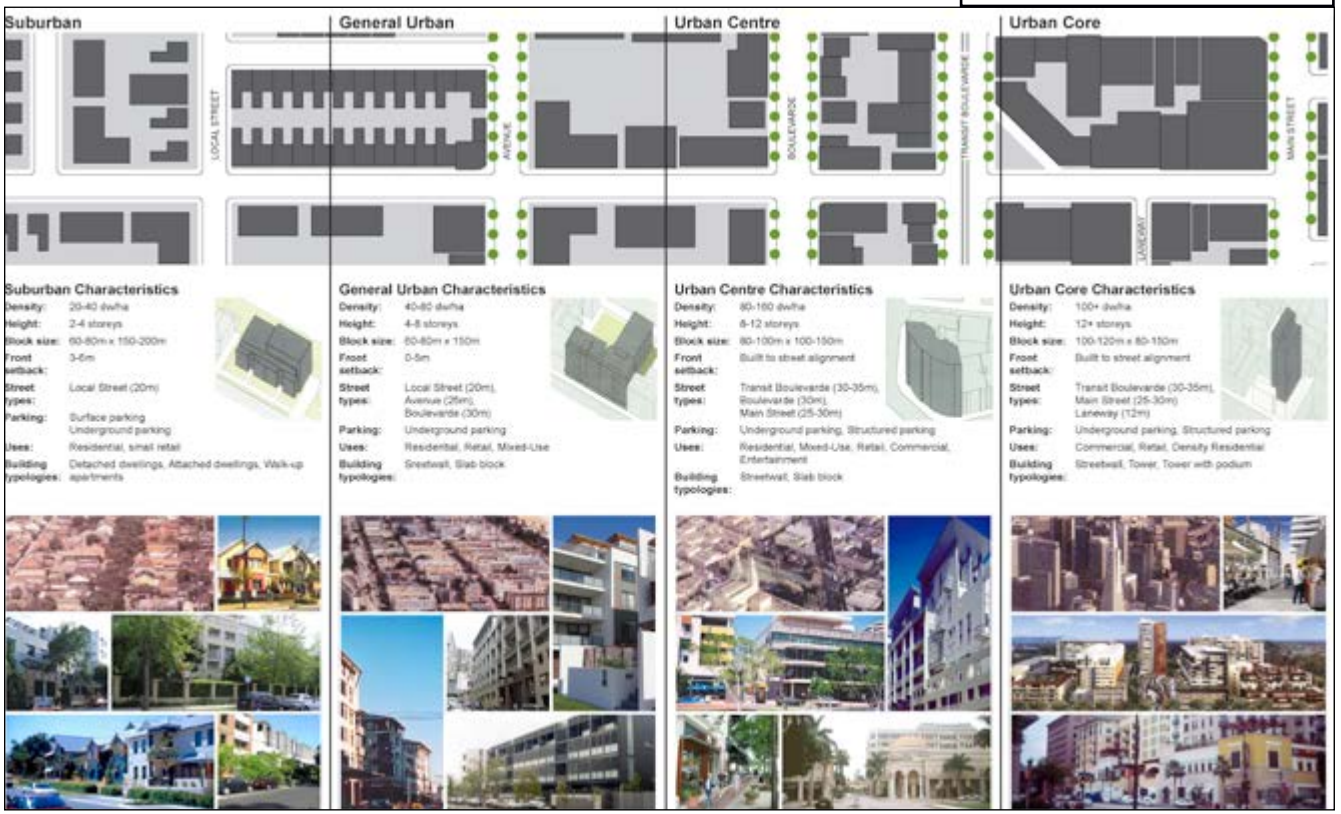
Building types can be adapted to fit specific urban contexts. A particular site configuration may be suited to accommodate a mix of types or uses. In larger developments multiple building types may apply and provide more housing choice and design variety.

The apartment building types in described "The Apartment Design Guide" include:

- Narrow infill apartments
- Row apartments
- Shop top apartments
- Courtyard apartments
- Perimeter block apartments
- Tower apartments, and
- Hybrid developments

These are described in the following pages and their relevance noted.

FIG 6.1
Density Transect



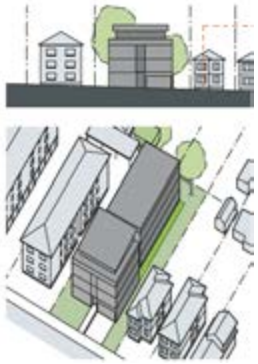
6.1.1 Narrow infill apartments

Narrow infill apartments are typically two to three storey walk-up apartments (stairs only) or buildings with three to five levels and a lift. They are a response to the dimension of traditional residential lot sizes in suburban areas which are narrow and deep, and are often surrounded by a combination of detached houses and flat buildings.

Privacy impacts along side and rear boundaries to neighbouring properties need to be carefully managed as achieving minimum building separation can be a challenge. This building type is best used when:

- a narrow lot width or frontage results in a building envelope oriented perpendicular to the street frontage
- amalgamation opportunities of properties in the area are constrained

This typology may have some relevance in the precinct particularly on lots which cannot be amalgamated.



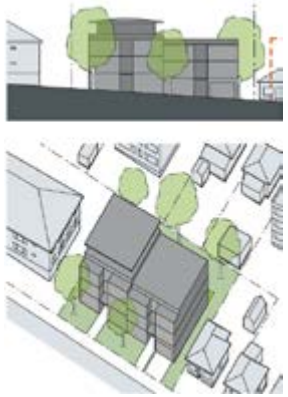
Narrow infill apartment types are suited to narrow, deep lots. Design needs to consider privacy impacts on neighbours

6.1.2 Row Apartments

Row apartments are generally well suited to both urban and suburban contexts. They are characterised by a limited number of units arranged around an access core and can be single buildings or a series of building modules. This building type is best used when:

- smaller building footprints are desirable
- live work apartments or commercial/ retail uses are encouraged at the ground floor level
- continuation of the street edge is desirable
- a vertical rhythm reinforcing existing subdivision or building patterns is desirable
- rear landscape areas are desired including keeping existing significant trees
- built form needs to step down the street to respond to a slope

This typology although appropriate in some ways would represent an underdevelopment of this precinct and would not be economically viable



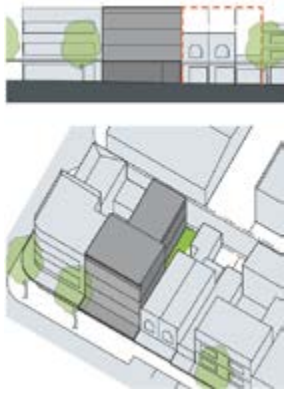
Row apartments are a modular building type, highly adaptable and able to respond well to sloping sites

6.1.3 Shop Top Apartments

Shop top apartments are mixed use residential buildings often located in established centres, along main streets or close to public transport hubs. They can be small infill or larger developments where the ground floor is occupied by retail or commercial uses. Shop top apartments typically range between two and six storeys and are best used when:

- increased residential uses are desired in established retail and commercial areas
- the context is a traditional main street
- zero setbacks to side boundary walls are possible or desired
- active frontages such as retail tenancies are desired at street level
- pedestrian activity on the street is desired
- rear lane access is available

This typology may have relevance along the Highway frontage only



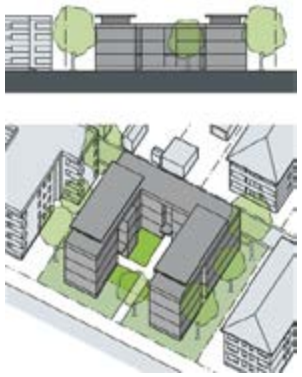
Shop top apartments are best suited to main streets and centres that require active retail or commercial frontages

6.1.4 Courtyard Apartments

Courtyard apartments provide a centralised open space area, generally range between three and six storeys in height and are suitable in both urban and suburban settings.
Their configuration depends on the context and site orientation. Courtyard apartments are a highly adaptable building type and best used when:

- located on corner sites or sites with two or more public frontages
- located on sloping sites
- a landscaped street character is desired by orienting the courtyard to the street)
- an urban character to the street is desired (by creating a street wall edge and orienting the courtyard to the rear) there is a predominant aspect or outlook

This typology has been tested and found to be inappropriate due to shadow impacts of East-West building form related to south facing slope



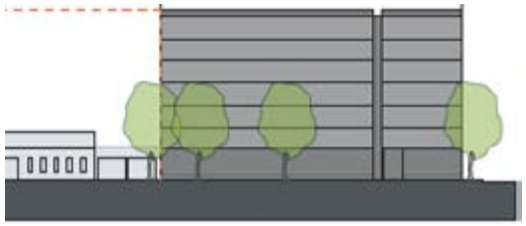
Courtyard apartments are able to fit and respond to a wide range of lot sizes, slopes, orientations and contexts

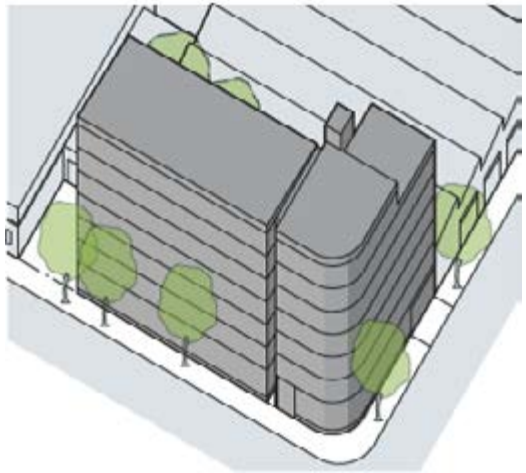
6.1.5 Perimeter Block Apartments

Perimeter block apartments are suited to urban areas and are often integrated into street blocks. This building type is a key component of most European cities and its compact form achieves comparably high urban densities.
Typically, perimeter block apartments have elongated plans and apartments are generally arranged along a corridor, with a single or multiple cores depending on the building length.
They range from four to nine storeys and are best used when:

- an increase in residential density is desired
- a clear definition and continuous street wall edge is desired
- active frontages with commercial and/or retail uses are encouraged at lower levels (see shop top apartment building type)
- towers and tall buildings are not desired

This typology is most appropriate facing the North-South streets





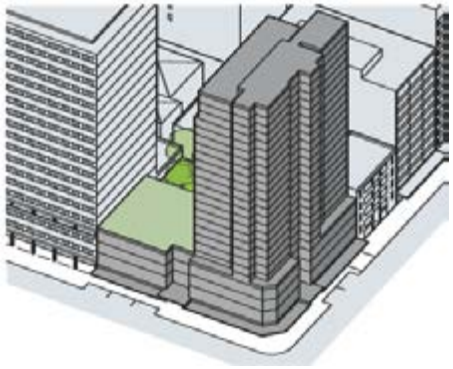
Perimeter block apartments define the street edge and achieve comparably high urban densities

6.1.6 Tower Apartments

Towers are suited to central business districts, major centres and urban renewal areas. This building type is widely used in North American cities and can be freestanding or combined with block developments(podiums). The location and siting needs to reflect environmental considerations such as wind, overshadowing and visual impacts on surrounding properties and the public domain. Tower apartments are typically more than nine storeys and best used when:

- Located in dense urban areas
- Other towers exist in the surrounding context
- An area requires greater density than can be delivered by perimeter block buildings
- A strong vertical form or landmark is desired

This typology is particularly relevant (on podium) along the Highway. There may be limited opportunities elsewhere (immediately adjacent to the Railway node & southern edge of the precinct), but only after careful consideration of shadow impacts.



In commercial centres, tower apartment types are often combined with a podium of four to eight storeys

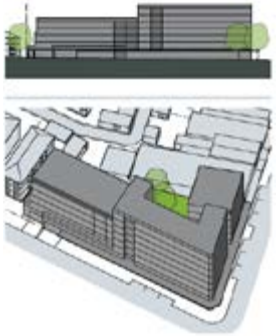
6.1.7 Hybrid Developments

Hybrid developments combine different uses or building types in one development. They can incorporate community facilities and larger commercial or retail components, such as offices or a supermarket.

Hybrid developments are particularly relevant for larger sites that need to respond to a change in building form and scale within the adjacent context. This approach is best used when:

- Located on large and/or irregular shaped sites
- A combination of uses is desired to support active urban areas or centres
- Greater diversity of apartment types is desired
- A development needs to address two or more streets with different scales and/or characters

This typology has some limited relevance to the precinct particularly on the Highway on large corner sites and on sites which are providing community facilities and East-West links.



Hybrid development types can respond to varying site conditions and achieve interface and future character outcomes

6.2 Building Typology

6.2.1 Townhouses

Townhouses (Figure 6.2). These could be of narrow frontage (<7.5m) where accessed by rear lane or 7.5m+ (i.e. 2 per 15m allotment) with single garage to the front (working with slope). This building form is unlikely to be economically viable given existing property values.

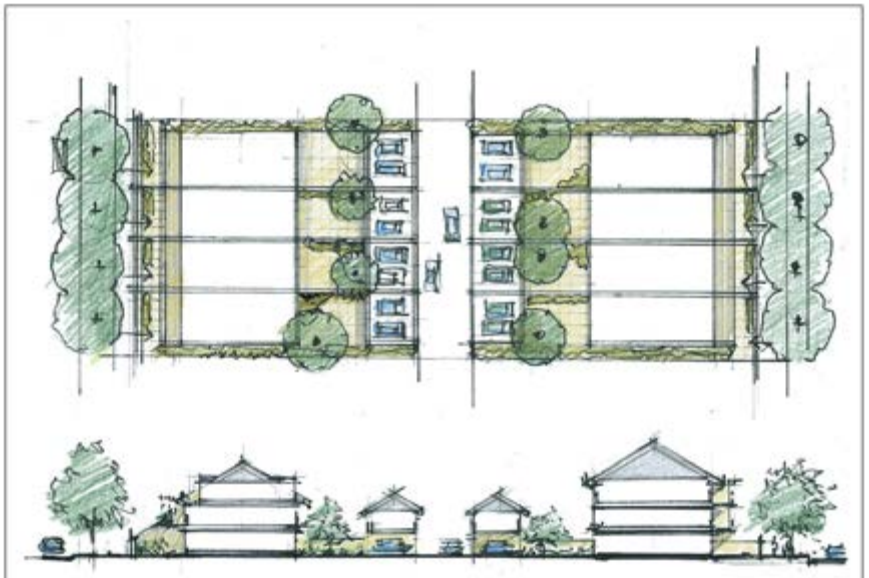


FIG 6.2
Townhouses

Townhouses

- 6 m wide frontage
- 6-7.5 m options – with or without green space & studio over rear lane garage

Positives

- Not very dissimilar to current forms of building
- Can work for 2 - 3 block consolidation
- Solar access good

Weaknesses

- Unlikely viability
- Too low density for genuine TOD
- Requires rear lane for parking access
- Parking arrangements from street are problematic

6.2.2 Towers

Tower Blocks in Landscape (Figure 6.3).
This development form is difficult to implement (requires major amalgamation and is likely to have extensive parking basements).

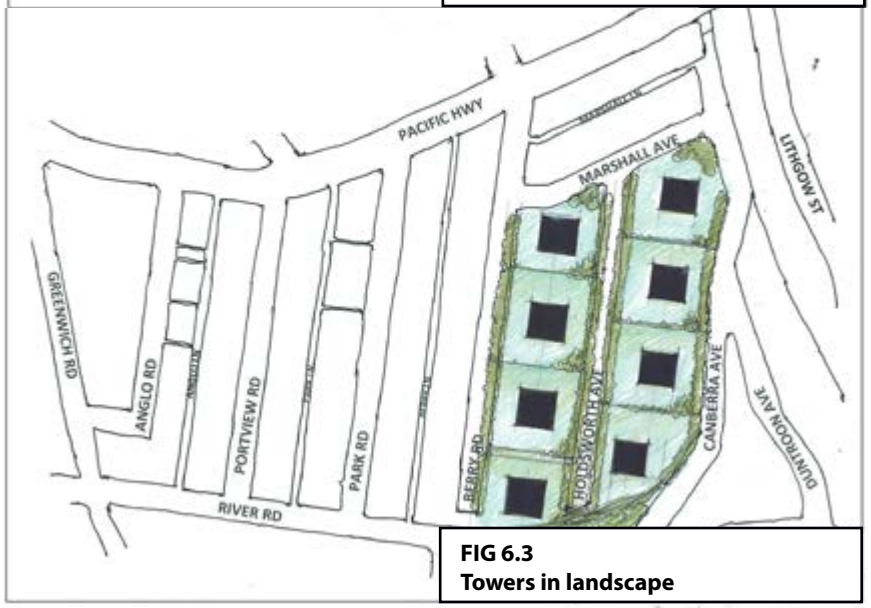


FIG 6.3
Towers in landscape

Residential Towers in landscape

Positives

- Can create buildings in landscape effect
- Separate building for solar access

Weaknesses

- Require significant amalgamations
- Difficult staging and transition
- Long shadows

6.2.3 Perimeter Buildings

Perimeter Blocks/Slabs (Figures 6.4 & 6.5).
This building form can operate at low, medium and high densities and heights and can generate a cohesive street form with excellent deep soil landscaping in front of site and centre block.

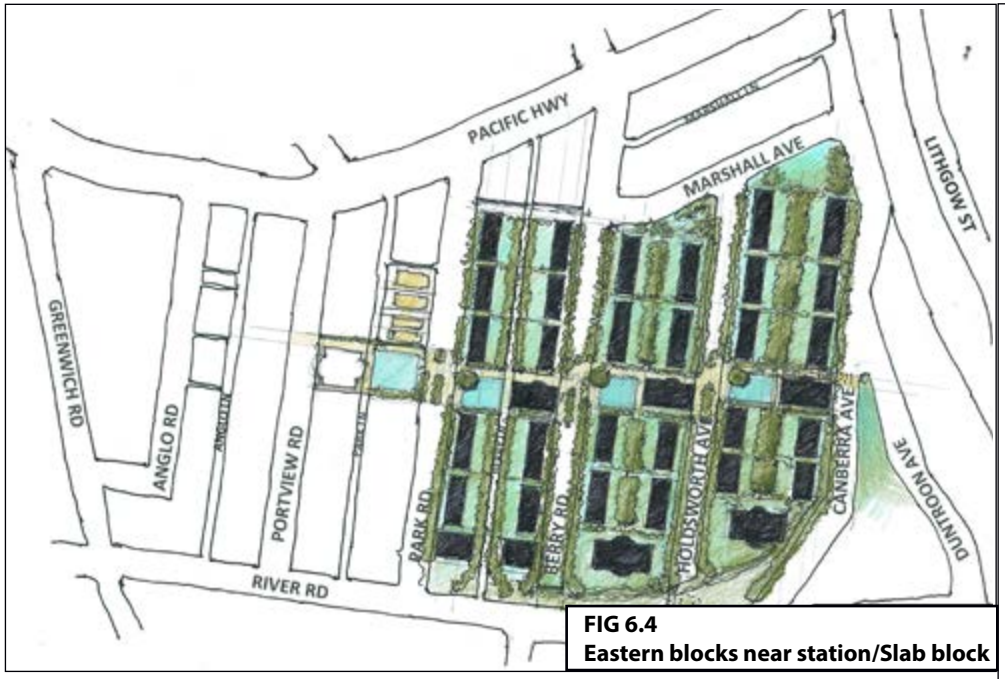


FIG 6.4
Eastern blocks near station/Slab block

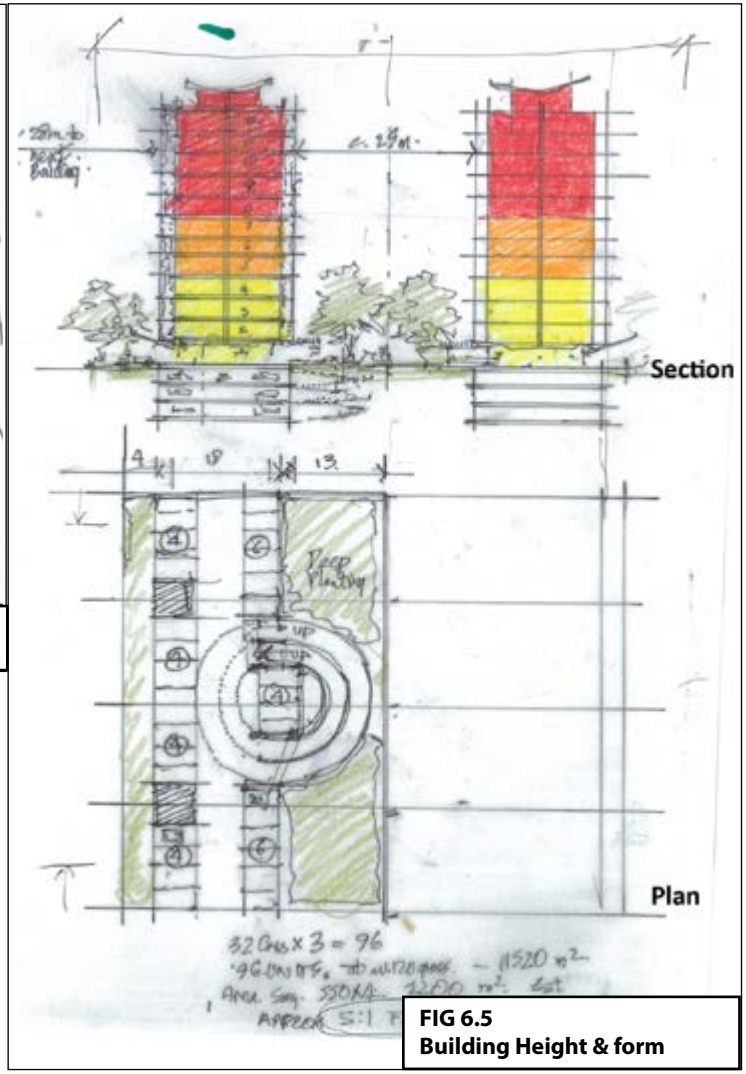


FIG 6.5
Building Height & form

Building Typologies / Eastern Blocks

Strengths
- Facilities highest density in proximity to station
- Street orientation
- E-W solar access to buildings
- Delivers E-W link
- Good deep soil

Weaknesses
- Risk of over shadowing
- Poor fit with cottages
- Requires amalgamations

Building Height & Form

Strengths
- Variable height and density
- Economic densities
- Excellent open space
- Community park+ community hall
- Economically viable
- Possible stepping of basement
- Good deep soil planting

Weaknesses
- Height + potential shadowing
- Amenity impact
- Will not fit well with existing cottages
- Requires amalgamations

6.2.4 Courtyard Housing

Courtyard Development (Figures 6.6 & 6.7). This building form is most appropriate for low/ medium density.
It can integrate with existing development and occur over time.

However E-W building forms can cause shadow impacts to the south (emphasised by the slope).

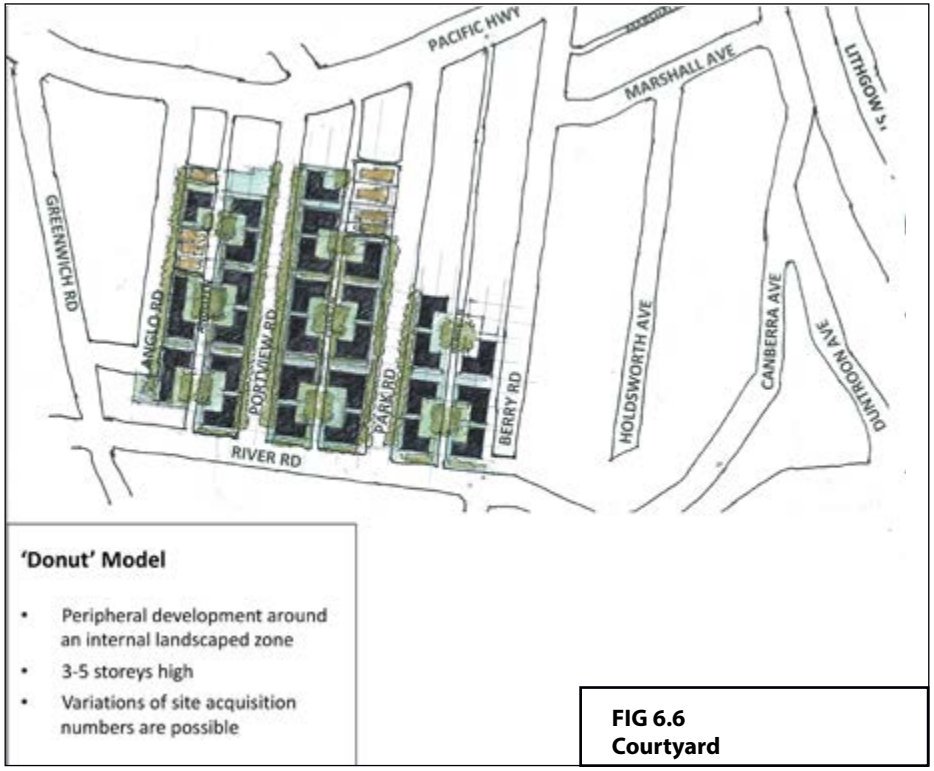


FIG 6.6
Courtyard

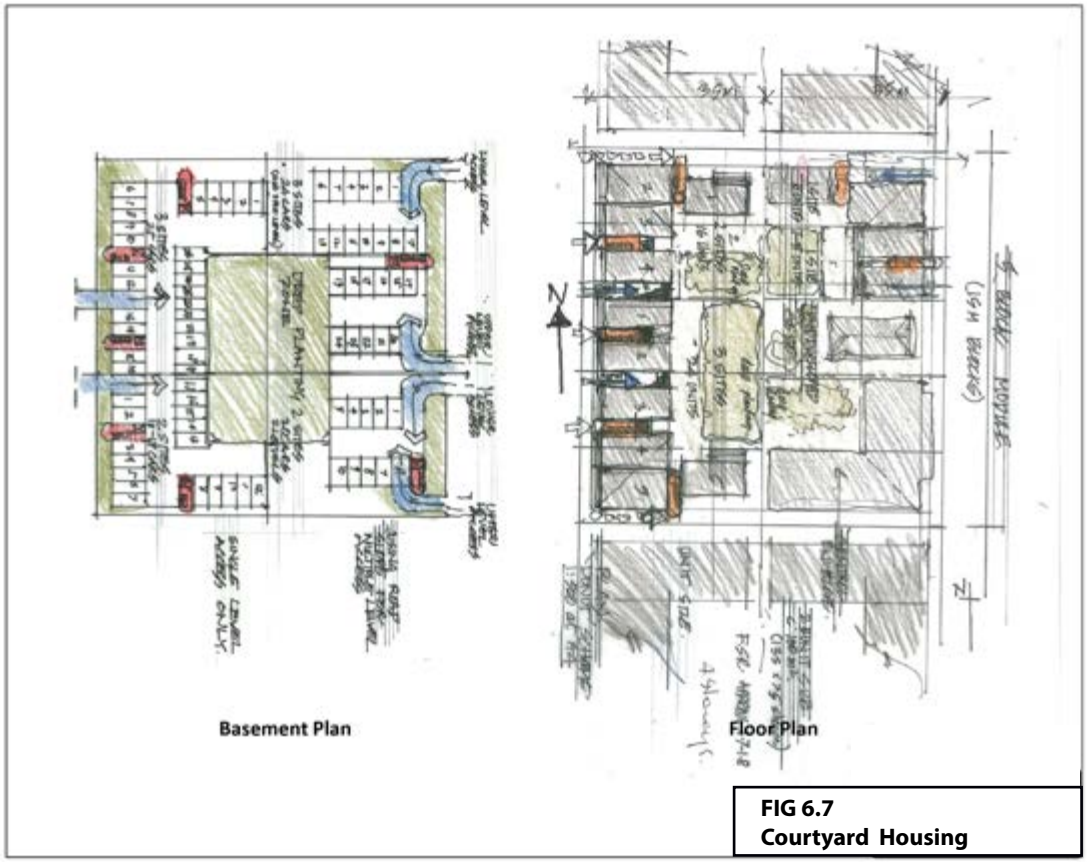


FIG 6.7
Courtyard Housing

Building Typologies / Western Blocks

Strengths
- Lower density + height
- E-W links
- More compatible with existing
- Good deep soil
- Good common open space
- Variety of site amalgamation
- Smaller scale

Weaknesses
- E-W development may over shadow (reduce height)
- Potential shadows (to be modelled)
- Impacts on neighbours
- Amalgamation required

6.2.5 Conclusion

Thus it is proposed that buildings should run in a N-S direction in a relatively narrow band (12-18 m) parallel with streets, setback 4-5 m to provide deep soil frontages and with basements principally under buildings to preserve as much deep soil as possible at the rear.
It may be that some intrusion into these deep soil zones is possible. (eg: for basement ramps)

Note the benefits of this north - south arrangement include:

- Excellent deep soil conservation
- Good solar access to east and west facades and to streets and private/ communal open space
- Use of slope to access basement parking and reduce ramps
- Use of slope to access buildings for pedestrians directly and without significant level changes

6.2.6 Edge Treatment & Building street interface

The relatively steeply sloping streets will require special treatment at the interface with the private domain (or semi-public) particularly to soften the horizontally of the buildings.

Attached are a range of images of existing treatments which demonstrate how this interface can be designed and managed in a manner which will enhance the public domain and activate the street.
This should inform Council's Development Control Plans.

6.2.7 Streetscape

There are issues involved with site amalgamations and building side setbacks.
Note that under Council DCP (and SEPP No 65) the following side setbacks apply:

1-4 storeys	2 m
4-6	6 m
6-8	6 m
8-12	12 m
12-15	12 m
>15	12 m

This has major implications for small amalgamations, significantly reducing the development footprint.

It is likely that amalgamations will be in the order of 3-5 lots + i.e. 45m – 75m. At the lower end (45 m) 12 m setbacks would be a constraint.

If however buildings are primarily oriented to the street and rear common open space then these setbacks could be reduced or indeed buildings could abut each other in certain cases.

Note, however, that deep articulation zones would be desirable (say 5 m which would include balcony areas) in order to break up long horizontal facades.

6.2.8 Deep Soil Planting

It is recommended that a centre block strip of 18m - 25m be generally retained for deep soil planting to reinforce the large tree planting in streets and share ways. (see built form)
It is also recommended that a 4-5 m deep soil zone be retained in the front setback to allow augmentation of street landscaping. (see figure 6.8)

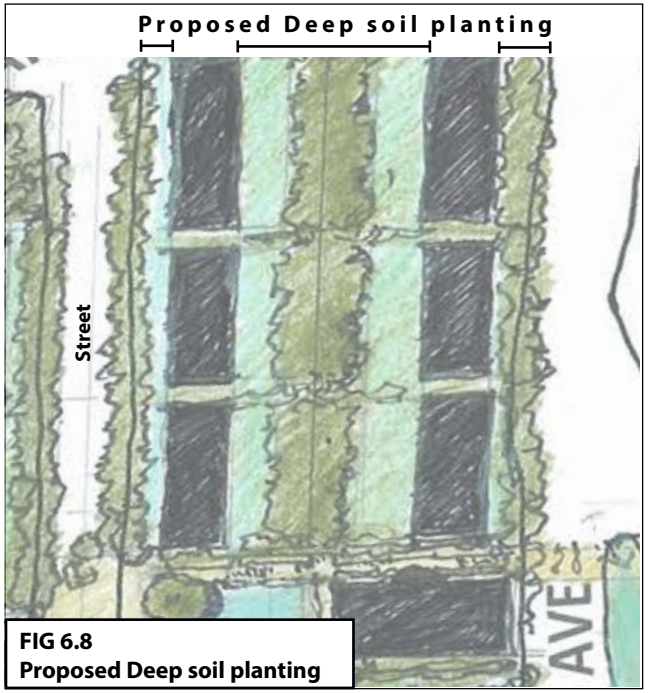


FIG 6.8
Proposed Deep soil planting

These adjacent photos in the same street illustrate the significance of quality street planting in reducing the impact of tall buildings

6.3 Design Controls

The Design of the final product can be regulated by a Council Development Control Plan and/or by State Government SEPP No. 65 Apartment Design Guide.

The following issues are set out in the "Apartment Design Guide" and should be central to the design of new apartments in this precinct.

6.3.1 Context

The existing context is primarily one of single family cottages. It is likely that, for at least a major part of the study area, these will be replaced with medium-high rise apartment buildings. Thus the context will be one of transition. It is important in this case that the "Desired Future Character" be clearly stated and transition treatments be considered at the interface between redevelopment areas and areas which may remain unchanged.

6.3.2 Built Form and Scale

The recommended built form and scale is addressed in Section 6.2 Perimeter type buildings are recommended running parallel with the street in a narrow band in order to:

- Permit solar access to east and west faces of buildings
- Limit overshadowing of building facades and on-site open spaces
- Conserve substantial 'deep soil' zones for major tree planting

It is suggested that the scale of buildings might be generally 8 storeys but up to 12-15 storeys within 200m of the station and then reduce to 8-10 storeys within 400m of the station.
Buildings will be setback 4-5m from the street boundary and then a further 3m at Level 6 and a further 2m at Level 10. This will assist in reducing the scale to the street.

It is also desirable that the ground level units are accessed directly from the street wherever possible.

Street landscaping and strong tree planting in the front setback will assist in reducing the scale of the buildings when viewed from the street.

6.3.3 Density

Conceptual planning indicates that the precinct can achieve the following densities within the height and setback frameworks set out previously.

200m radius	4:1	12-15	floors
200-400m	3:1	8 -12	floors
400-800m	2.75:1	8	floors

The combination of density and height and footprint must work together to deliver the appropriate product.

Note that highest density will only apply to the highway frontage which includes a commercial podium component.

6.3.4 Sustainability

The delivery of Transit-Oriented Development is a major step towards sustainable development.

As well as this, principles contained in Sections 3.2, 3.3, 3.4 should be followed and every effort made to meet BASIX and SEPP No 65 requirements.

6.3.5 Landscape

The Public Domain Section 5.0 sets out the general requirements for public domain enhancement and the Built Form Section 6.0 includes the desirable location of deep soil zones, general landscape principles and the important public/private interface areas.

The generous deep soil areas provide opportunity for major tree planting on-site to support existing strong street landscaping.

6.3.6 Amenity

SEPP No 65 and The Apartment Guidelines generally provide appropriate guidance in terms of apartment planning, solar access, ventilation, storage, indoor/outdoor space etc.

Section 6.3 provides further examples of mechanisms for facilitating excellent public/ private interface, passive surveillance and street activation.

6.3.7 Safety

SEPP No 65 generally recommends appropriate mechanisms for the optimisation of safety and security.
The public/private interface is very important in this regard as are clear, concise and visible entity/access points.

6.3.8 Aesthetics/Architectural Expression

Buildings should be restricted in length to say 48m in length and spaces between buildings encouraged (SEPP No 65 Separation).

The buildings will be setback 4-5m from the street at base and a further 3-5m at higher levels. Balconies should not protrude into this space lest they restrict the planting opportunity in the front deep soil zone.
A variety of articulation devices are desirable (see photos).
A variety of materials may be promoted however, it is desirable that all exposed ground floor, basement and retaining levels be faced in sandstone or similar stone in order to facilitate a sense of place.

Housing Diversity and Social Interaction

SEPP No 65 and Council's DCP recommend a mix of apartment types and sizes to service different markets.

Desired Future Character

The Desired Future Character for this Precinct includes:

- A mixed-use employment base with residential tower above commercial (strategically located along the Highway)
- A medium-high density residential apartment precinct with exceptional public domain and private landscaping well connected to existing major open spaces and with a network of green corridors/ share-ways connecting pocket parks and intimate public spaces

6.3.9 The Mixed-use Highway Frontage

Mixed-use development could be considered on the Highway frontages:

- Between railway line and Berry Road and
- From Berry Road to Greenwich Road

In the railway to Berry Road section it is recommended to include retail to the street frontage on ground level

- Commercial for 2-3 floors above carefully set back from the rear lane to assist solar access to Marshall Avenue development
- Careful location of towers to optimise solar access conditions generally

In the Berry Road to Greenwich Road section it is recommended that:

- 3-4 storey podia of commercial front the street (with a 3-5m setback) and staggered setbacks to rear to protect solar access to residential to south
- Make residential towers slim and locate to minimise shadow impacts.

6.4 Possible Regulatory Controls

6.4.1 Primary Controls

- Identification of any trees to be conserved on private land
- Nomination of front, side and rear setbacks
- Nomination of deep soil zones
- Nomination of building separation and depth
- Orientation for best performance
- Creation of appropriate envelope

6.4.2 Building Envelope

- Front setback 4-5m
- Building depth 18-22m
- Side setback minimum 3m (except for small sites built to boundary)
- Building height (expressed as envelope stepped down the slope)

6.4.3 Building Height

12-15 storeys = 36-45m
10-12 storeys = 30-36m
8-10 storeys = 24-30m
6-8 storeys = 18-24m
4-6 storeys = 12-18m
< 4 storeys = <12m

6.4.4 Floor Space Ratio

Within 200m station and including commercial podium for highway frontage = 5:1
200m – 400m station = 2.75:1
400m – 600m station = 2.75:1

6.4.5 Building Depth

Proposed 15-18m except where central corridor is employed where 22m may be permissible.
Note: Central corridor apartments will require careful design to ensure adequate ventilation.

6.4.6 Building Separation

SEPP No 65 and Council's DCP contain quite rigid controls on building separation. These can cause problems where small amalgamations only are possible. In these cases orientation of habitable rooms to street and rear common space (with perhaps some careful/non habitable windows) can allow either attached buildings or a minimum 3m side setback.

6.4.7 Street Setbacks

These are proposed at 4-5m to permit deep soil planting to the street.
No balconies or major projections are permitted which may restrict tree growth in this area.

6.4.8 Rear Setbacks

The proposed envelopes will ensure significant rear setbacks and separation between buildings.

6.4.9 Siting the Development

Ensure adequate and appropriate site analysis BEFORE designing the building. Building locations are set to minimise shadow impacts.

6.4.10 Orientation

This will be largely set by the envelopes aligned with the street structure.

6.4.11 Public Domain Interface

These have been previously discussed and are important (and problematic) with steep slopes. Ensure that controls work with the slope.
There will be some situations where it is desirable to facilitate public access through a development or indeed to create public space from private dedication (see shareways, walkways, community facilities and pocket parks).

6.4.12 Communal & Public Open Space

All developments will be required to provide communal and/or public open space for use by residents and/or the general public. This is generally proposed as a 4-5m front garden setback and a 12-15m rear communal space with deep soil.
Small pocket parks are proposed in a number of locations to facilitate East-West movement and to create local recreation spaces available within each street block.
It may be desirable in some locations to provide some communal open space on rooftops (where no other opportunity exists).

6.4.13 Deep Soil Zones

Deep soil zones are proposed as a 4-5m strip along the street frontage and as a substantial (about 10-15m) centre block strip at the rear of each site.
This will amount > 50% of site area and will be able to sustain large trees front and rear.

SEPP No 65, Apartment Design Guide can provide a variable tool towards *"Design Excellence"* however a site specific DCP may also be desired.

6.4.14 Visual Privacy

Visual privacy is to be accommodated within SEPP No 65 (see Separation).

6.4.15 Pedestrian Access and Entries

See SEPP No 65 including direct access to ground floor units.

6.4.16 Vehicle Access

Vehicle access can use the steep slope to access basements. There may be some definitional problems associated with stepping basements, basement wall heights etc. These will need to be resolved. Generally, SEPP No 65 should cover most issues.

6.4.17 Bicycle and Car-parking

See SEPP No 65.
Note that parking requirements may be reduced in proximity to the railway station.

6.5 3D Modelling

6.5.1 Background

This section examines the sub-precinct via the process of 3-D modelling.
The Consultant team has used 3-D modelling throughout the Masterplanning process to facilitate best practice in terms of solar access in a most problematic south facing, steeply sloping context.
This modelling can be accessed via Council website,it illustrates the following:

- Existing shadow impacts
- Building Height modelling for solar access and shadow impacts for 6, 8, 10 and 12 storey perimeter development in order to assist in determining approximate building heights
- 3-D Modelling of the Preferred Masterplan to assess and explain solar access and shadow impacts

This interactive process has assisted in the design of a Masterplan which fits with the site context and provides good solar access and good amelioration of shadow impacts within a difficult redevelopment context.

Draft Sub-Precinct Plan

The draft Sub-Precinct Plan (figure 6.9) has been modelled to assess shadow/solar impacts. These plans indicate that major open space areas and public domain have reasonable access to sunshine between 10.30am and 12.30pm.

FIG 6.9
Preferred Master Plan

6.5.2 Shadow Impacts

Existing Context

Much of the Precinct is already impacted by shadows (due to south facing slope and existing or approved tall buildings).

Varied Building Heights

A variety of building heights of perimeter/street facing buildings have been modelled (4, 6, 8, 10, 12 storeys). These indicated that above 10 storeys solar access is severely reduced to open space, public domain areas and to building facades (habitable rooms).

Aerial elevations indicate the level of solar access to facades in morning and afternoon.
These indicate that most buildings will meet minimum solar access requirements and suggest some amendments to improve the situation.

6.5.3 Heights and Envelopes

Heights and envelopes have been proposed based on preliminary assessments and modelled.

The 3-D model includes all major existing buildings in St Leonards Centre (and those approved by Council at the date of modelling November 2014).

It demonstrates how the proposed redevelopment of the Precinct will fit with the massing of the St Leonards Centre.

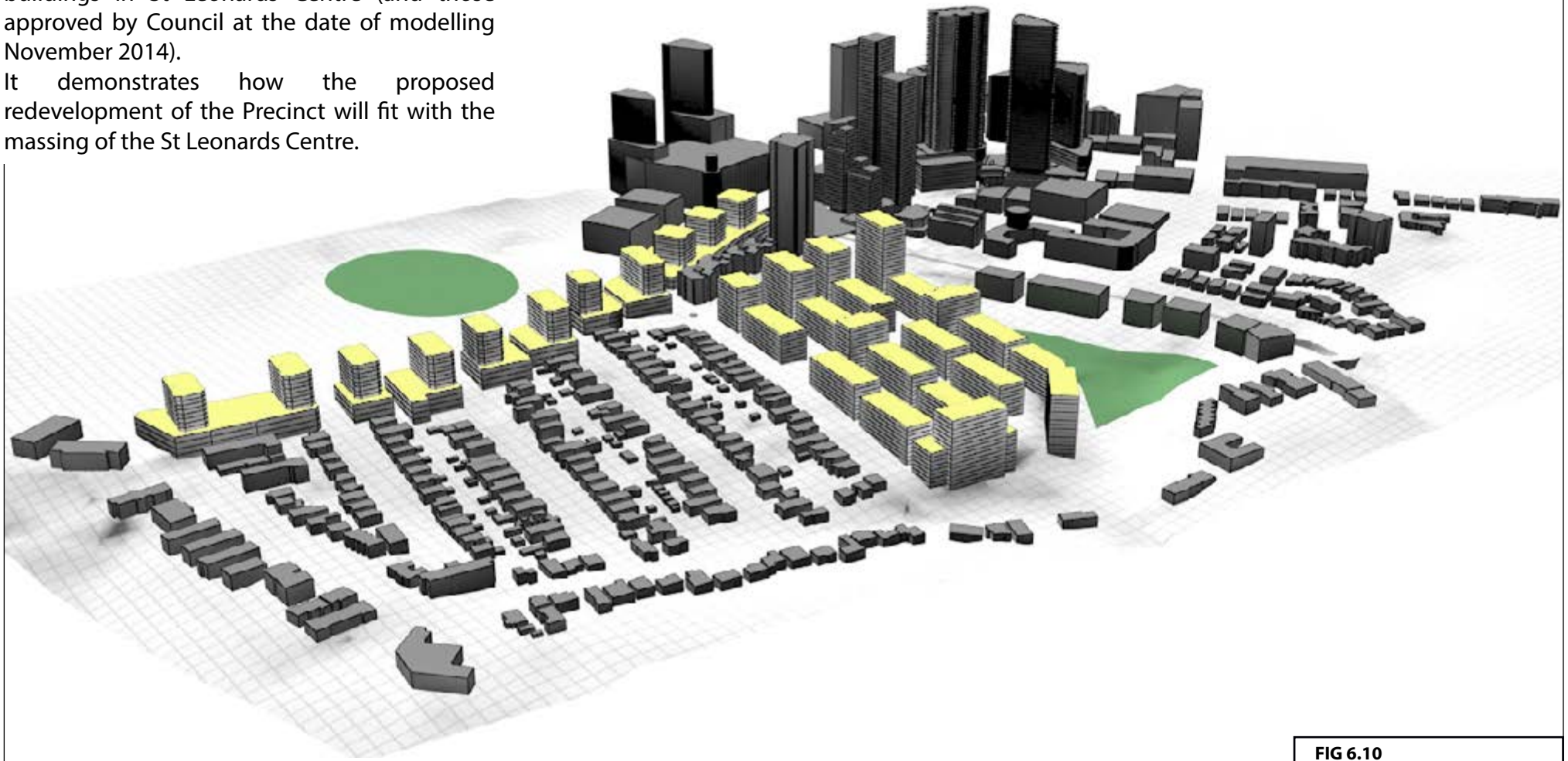


FIG 6.10
Site Area 3D Model

7.0 Financial Review

7.1 Background

Whilst preparing the various planning options within the St Leonards South precinct, the project team has at all times given a high level of consideration to the financial aspects and outcomes of any proposed redevelopment across the precinct. With this in mind, and possibly the most difficult part of determining an effective strategy, we have also attempted to consider appropriate mechanisms that may provide financial balance for all current owners across the precinct.

In this respect, when formulating the various residential density options against accepted TOD planning principles, an outcome that financially "rewards" all existing owners to the same extent is unachievable, however other outcomes from a properly formulated Masterplan, such as increased local amenity in the form of additional and improved open and community spaces, a more permeable precinct and greater access to the St Leonards station create an opportunity for all residents to benefit equally.

In formulating the financial aspects of the St Leonards South strategy, a broad-brush feasibility analysis has been applied across the Precinct and the methodology and results of this analysis is outlined in section 7.2.

Existing permissible residential densities in the vicinity of the railway station/St Leonards Core are as
follows:

LANE COVE

- Marshall Avenue block 2:5-5.1:1
- Highway west of Berry Road 3:1
- East of railway N/A
- Greenwich Road 0.8:1
- Heights 2- 29 Storeys

WILLOUGHBY

- Highway – West of Railway 3:1
- Railway Station / Forum 5.5:1
- Heights 10-15 Storeys

NORTH SYDNEY

- No shared FSR
- St Leonards up to 5 & 6:1
- Heights 11-16 Storeys plus

Thus the maximum FSR could reasonably be in the order of 5:1 in immediate proximity with the railway station town core (with potential for some
variation).

7.2 Viability and Financial Modelling

The St Leonards South precinct is characterised by a mix of dwelling types that include commercial building, older style residential flat buildings, traditional cottages from the early 20th century and larger more recently constructed homes across a variety of lot sizes ranging up to 930m^2.

An RP Data report for the suburb of St. Leonards provides an insight to the current state of the property market in St Leonards in comparison to the LGA of Willoughby.

Accordingly and having regard to recent sales evidence an analysis of the underlying property values within the precinct was undertaken.

To determine the prevailing value of existing properties within the Precinct a combination of the lot size and quality of the improvements was utilised to derive an indicative square metre rate for land value.

Accordingly it could be reasonably expected that given the current market the "as is" values for properties in the precinct would be in line with the following;

- Existing homes on lots greater than 600m^2 would currently be expected to achieve a sale price ranging from $1.8M to $2.4M dependant on the age and the quality of the improvements thereon.
- Existing homes on lots from 400 - 600m^2 would currently be expected to achieve a sale price ranging from $1.4M - $2.2M depending upon the age and quality of the improvements thereon, and.
- Existing homes on lots less than 400m^2 would currently be expected to achieve a sale price ranging from $1.2M - $1.8M depending upon the age and quality of the improvements thereon.

Table 7.1

Market Information	
Median HOUSE Sale Prices (RP Data, August 2014)	
St Leonards	**Willoughby LGA**
$2,350,000	$1,862,500
Capital growth in median house price from 2013 (RP Data, 2013)	
30.2 per cent	11.1 per cent
Median UNIT Sale Prices (RP Data, August 2014)	
St Leonards	**Willoughby LGA**
$705,650	$788,500
Capital growth in median unit price (RP Data, 2013)	
10.5 per cent	13.0 per cent

Accordingly, and for the purpose of analysing the financial viability any potential rezoning may have for both current owners and developers, an average property value of $2.0m for a typical 500m^2 allotment has been adopted.

Whilst there are many varying factors that influence the financial feasibility of high density residential development, a number of general assumptions have been adopted in order to effectively measure the viability or otherwise across varying development densities.

The following table summarises the assumptions used in the feasibility modelling undertaken.

Table 7.2

Item	Assumption
Stamp Duty	NSW Rates (note - premium duty applies to purchases greater than $3m)
Design and Engineering Consultant and Development Management Costs	12.5% of Construction Costs
Demolition Costs	$50,000 per existing dwelling
Building Efficiency	90%
Multi Dwelling Construction Cost	Current market rates ($3.250 sqm)
Total Development Period including planning approval	25 months
Construction Period	15 months
Project Contingency	5% of Project Costs
Selling Costs	3% of Gross Revenue
Marketing Costs	2% of Gross Revenues
Local Government Contributions	$50,000 per dwelling
Development Funding	Market Rates
Apartment Mix	1 bed 40%, 2 bed 40%, 3 bed 20%
Target Project Return on Cost	Not less than 17%
Target Project IRR	Not less than 20%

By then applying the above assumptions within a fully funded (equity and debt) feasibility model where any "land component" is acquired prior to Development Consent the impact of density on the residual land value (RLV) of a property can be determined, the table 7.5 summarises that analysis.

It should be noted that the assumed apartment yield in each of the scenarios below have been calculated on the mathematical formula relating to permissible FSR and have not taken into account other DCP type controls such as setbacks, building heights or basement car parking configuration, etc.

Table 7.3

Floor Space Ratio = 1.6:1					
No. of Existing Properties to be consolidated	**Assumed Site Area (m2)**	**Permissible Floor Space (m2)**	**Total Yield of Apartments**	**Total Residual Land Value ($M)**	**Residual Land Value for each Property ($M)**
1	500	800	10	1.560	1.560
2	1000	1600	20	3.834	1.917
3	1500	2400	30	5.731	1.910
4	2000	3200	40	7.628	1.750
6	3000	4800	60	11.422	1.903

From the tabulated results shown a number of 'high level' conclusions can be made:

- On the basis that the current average market price for properties on lots of approximately 500 m within the Precinct is approaching $2M, it is highly unlikely that the application of an FSR control of 1.6:1 or less would facilitate any significant development in the short term. For example at an assumed FSR of 1.6:1 the RLV for each property ranges from 5% – 22% below current market value.
- As the RLV's for properties where a FSR of 2:1 or greater is applied show an estimated premium over the current market ranging from 15% to 70%, and this may create an increased opportunity of providing the impetus for current owners to realise a sufficient uplift in value and to facilitate development.

Further, and with regard to determining a sufficient level of value uplift that existing owners and residents would need to facilitate a sale of their property, and therefore promoting orderly redevelopment of the Precinct is to take into consideration the cost or otherwise of relocating to a similar residence in the neigbouring area.

In fact, during several Community Workshops convened for the purpose of consulting with local residents, many residents suggested that this would be a primary consideration in taking a decision to sell their properties.

Table 7.4

Floor Space Ratio = 2:1					
No. of Existing Properties to be consolidated	**Assumed Site Area (m2)**	**Permissible Floor Space (m2)**	**Number of apartments**	**Total Residual Land Value ($M)**	**Residual Land Value for each Property ($M)**
1	500	1000	13	2.310	2.310
2	1000	2000	25	4.820	2.410
3	1500	3000	38	7.416	2.472
4	2000	4000	50	9.599	2.400
6	3000	6000	75	14.793	2.466

Table 7.5

Floor Space Ratio = 2.5:1					
No. of Existing Properties to be consolidated	**Assumed Site Area (m2)**	**Permissible Floor Space (m2)**	**Number of apartments**	**Total Residual Land Value ($M)**	**Residual Land Value for each Property ($M)**
1	500	1250	16	3.397	3.397
2	1000	2500	32	6.362	3.181
3	1500	3750	48	9.523	3.174
4	2000	5000	64	12.684	3.171
6	3000	7500	96	19.498	3.249

As previously mentioned, RP Data reports that the Median House Sale Price in St Leonards as at August 2014 was $2,350,000. The neighbouring suburbs of Greenwich and Wollstonecraft are listed below.

Accordingly, and when considering factors such as Stamp Duty, legal and removal expenses, an owner currently residing within the Precinct, and depending upon the size and quality of their existing property, would require at a minimum $2,500,000 in order to relocate to a similar property in a neighbouring suburb.

With this in mind and when further considering the outputs of the financial modelling undertaken the resultant uplift from the application of an FSR of 2:1 may not be sufficient enough to cause the consolidation and redevelopment of a range of properties within the Precinct. Thus it would appear that redevelopment is unlikely to occur at an FSR less that 2:1 and therefore a ""low growth" option (as opposed to the no development option) should commence at an FSR of 2:1.

This density, however, is likely to be too low to promote redevelopment in a reasonable timeframe. In economic terms, a minimum of FSR 2.5:1 is recommended. This would, furthermore, be subject to other urban planning factors when determining appropriate FSR for a revised LEP.

Table 7.6

Market Information	
Median HOUSE Sale Prices (RP Data, August 2014)	
Greenwich	**Wollstonecraft**
$2,295,000	$2,400,000

7.2.2 Fragmentation

The fragmentation of ownership across the Precinct is also a significant hurdle to overcome in order to consolidate a sufficient number of properties to facilitate the orderly redevelopment of the Precinct and achieve the most appropriate outcomes from a planning perspective. In certain circumstances, and as has been proven over the last 10 years within Sydney's Growth Centres, meeting the various expectations of individual owners not only presents a significant challenge it acts as an inhibitor to best practice development and the provision of necessary community infrastructure.

7.2.3 Sensitivity Analysis

In addition to the above feasibility analysis a sensitivity analysis has been undertaken in order to determine the most likely impacts of general market fluctuations in construction costs and sales revenues would have on individual property values within the Precinct.

The matrix provided in the table below, provides the resultant impact on the Residual Land Value (RLV) of the average 500m2 lot.

Table 7.7

Sensitivity Analysis					
Movement in RLV for average 500m2 Property ($M)	Sales Revenues -5%	Sales Revenues -3%	Sales Revenues Base Case	Sales Revenues +3%	Sales Revenues +5%
Construction Costs -10%	(0.026)	0.129	0.384	0.594	0.749
Construction Costs -5%	(0.230)	(0.075)	0.180	0.391	0.545
Construction Costs Base Case	(0.411)	(0.255)	0	0.209	0.365
Construction Costs +5%	(0.637)	(0.482)	(0.227)	0.017	0.138
Construction Costs +10%	(0.841)	(0.686)	(0.430)	(0.221)	(0.065)

8.0 Demographics

8.1 Summary

The demographics of new apartments is likely to be markedly different to that of existing single family dwellings.
A brief demographic analysis based on existing dwellings in the St Leonards Precinct and compared with three predominantly new apartment areas of similar density in Rhodes, Wolli Creek and Zetland.

A review of demographic details from a number of areas experiencing major apartment growth indicates the following:

8.1.1 Age

Residents are predominantly adults (25-54 years) at around 60%. Children generally represent about 10% of the population; older adults generally represent 7-9% of the population. This compares with St Leonards and Sydney.

8.1.2 Ethnicity

The population of the areas analysed consistently have very high proportions of non-Australian born comprising more than half in Wolli Creek and Rhodes. Chinese born are the predominant (and most rapidly growing) ethnicity, 30-35% in Wolli Creek and Rhodes, 18% in Zetland and 11% in St Leonards.

Other ethnic groups represented include Korean, Indonesian, Indian,Japanese English, New Zealand and Hong Kong, namely more than 10% of the local population.

8.1.3 Dwellings

Apartments represent more than 50% of dwellings in all areas investigated with 2 bedroom being the most common at about 60% of apartments Average persons per hhouse-hold is 2.1-2.3 pph.

8.1.4 Car Ownership is generally low at 1.1-1.2 cars/dwelling and less than in St Leonards (0.9)

8.1.5 Conclusion

In summary for 1000 dwellings or about 2,500 persons the following could be expected:

(a) Age
Thus we would expect demand for the following:

- Child care/day care x 3-4 (private)
- Primary school - 6-7 classes
- Secondary school – 5 classes
- Employment for 3000+ adults
- Seniors programs/housing for 250
- Civic and civil facilities (meeting rooms, halls, library etc)

(b) Ethnicity

It should be anticipated that 50% or more of new residents may be overseas born with a very high proportion of Chinese born.

(c) Car ownership is likely to be just around 1 car/dwelling (based on the presumption of 60% 2 bedroom apartments).

Table 8.1

Age	%	/1000 dus	@ 2000 dus
0-4	5	125	250
5-14	5	125	250
15-24	20	500	1000
25-54	60	1500	3000
55-64	5	125	250
65+	5	125	250
		2500	5000

8.2 Rhodes

8.2.1 Age

In Rhodes the predominant age group are adults (25-54 years – 64%) with an increase of 10% over the census period. Young adults (15 -24 years) comprise 22% of the population (up from 16%). Children (0-14 years) have dropped marginally from 13% to 11%. Older adults (>55 years) have dropped from 17% to 7%.

8.2.2 Ethnicity

The proportion of overseas born to Australian born has exploded from 46% to 66% in the period 2006-2011.
Major concentrations include:
Chinese 54% of non-Australian born: 36.5% of population
Korean 25% of non-Australian born down significantly as a proportion of non-Australian born (from 44%)
English steady at 5% of the non-Australian born: 3% of population
Indian 8% of non-Australian born, a sharp increase: 6% of population
Hong Kong a small reduction from 10% to 8% of non-Australian born: a steady 2-3% of population

8.2.3 Dwellings

Apartments have increased dramatically as a percentage of total dwellings from 60% to 86% (a growth of 216%),(c.f. Sydney average of 21%).
Separate houses have dropped from 25% to 10% of total number of dwellings. (c.f. Sydney average of 59%).
Apartments are predominantly 2 bedroom (65%) and mostly rented (60%)

8.2.4 Cars

Car ownership is low at 1.2 cars/dwelling (Note: 2 bedroom dwellings comprise 60% of dwellings).

8.3 Wolli Creek

8.3.1 Age

The predominant age group in Wolli Creek are adults (25-54 years) at 68% of the population (up from 58% in the inter census period.
Children (0-14 years) have declined somewhat from 12 to 9.5%.
Young adults (15-25 years) have declined from 23% to 17%. Older adults (54 years+) remains steady at 7-8%,

8.3.2 Ethnicity

The proportion of overseas born to Australian born has increased significantly from 40% in 2006 to 52% in the period 2011.
Major concentrations include:
Chinese 56% of non-Australian born, up from 49% to comprise 27% Of total population
Indonesian stable at 13% of non-Australian born and 6% of population
Indian 11% of non-Australian born, not present at previous census yet only 6% of population
New Zealand steady at 10-12% of non-Australian born and about 6% of total population
Hong Kong steady at 9-11% of non-Australian born: 5% of population

8.3.3 Dwellings

Apartments have increased from 86% to 93% of total dwellings whilst separate dwellings have reduced from 12% to 5% of total dwellings. (c.f. Sydney 21% apartments and 59% separate dwellings)
Apartment numbers are inexplicably steady given the major development at Wolli Creek.

Apartments are predominantly 2 bedroom (73%) and mostly rented (60%)

8.3.4 Cars

Car ownership is a low 1.1/dwelling. Most dwellings (66%) are 2 bedroom.

8.4 Zetland

8.4.1 Age

The predominant age group in Zetland are adults (25-54 years) at 64%, a marginal increase over the census period.
Young adults (15-24 years) are stable at 16-18%.
Children (0-14 years) are stable at 10%. Older adults (54 years plus) have increased slightly from 7-9%.

8.4.2 Ethnicity

The proportion of overseas born remains fairly steady at 32-35%.
The proportion of overseas born to Australian born has exploded from 46% to 93% in the period 2006-2011.
Major concentrations include:
Chinese 53% up from 36% of non-Australian born: 18% of population (up from 11%)
English down from 20% to 13% of non-Australian born: only 5% of the overall population
Indonesian are down marginally from 15% to 12% and just under 5% of the population
New Zealanders are stable at 11% of non-Australian born and about 5% of the population
Koreans are up to 35% of non-Australian born down but only 3% of the population

8.4.3 Dwellings

Apartments are far and away the most common dwelling form (80% up from 76.6%, c.f. Sydney 21%)
The number of dwellings has increased sharply by 35%. Two bedroom dwellings are the most common at 60% (1 bedroom = 21% and 3 bedroom 16%) and 51% are rented.

8.4.4 Cars

Car ownership is low at 1.2 cars/dwellings (60% of dwellings are 2 bedroom).

8.5 St Leonards

8.5.1 Age

In St Leonards the predominant age group are adults (25-54 years - 66%) , children(0-14 years) young adults(15-24 years) and seniors (55 years plus are evenly distributed at 10-12%.

8.5.2 Ethnicity

The proportion of Australian born is quite high at 67% (but has dropped significantly from 72% in the intercensus period)
Chinese born make up 34% of the non-Australian born and 11% of total population (up from 4.5%).
Other ethnic groups include English, Hong Kong, India and Japan.

8.5.3 Dwellings

Apartments have grown dramatically as a proportion of total dwellings from 13% in 2006 to 51% in 2011

One and two bedroom apartments are most common at about 40% each
Average persons/household is 2.3
40% of dwellings are owned or being purchased whilst 60% of dwellings are rented
Separate houses have dropped from 82% to 46%

8.5.4 Cars

Car ownership is low at 0.9 cars/dwellings.

8.6 Infrastructure and Works

Table 8.2 sets out a range of standards which might apply to this Precinct for future dwelling and population yields.
Note that some of these are rather generous, particularly in the context of significant existing property values.
At current values open space would cost in the order of $40-50 Million/hectare and E-W link roads and pathways could cost up to $20 Million.
The following works should be evaluated, at the subsequent Section 94 Plan Stage:

- Traffic works (new roads, intersection improvements, paths, etc)
- Community infrastructure (child care, community
  facilities and services)
- Utilities (sewer, water, drainage, electricity, telecommunication)
- Government Services (schools etc), in discussions with the Dept of Education, interest was expresses
- Parking Reductions (provision, car-share, travel plans, accessibility, stacked and shared parking)

8.6.1 Physical Infrastructure

A high level assessment of the existing physical infrastructure was undertaken to understand existing services and future service capacity.

Electricity
Electricity is supplied from above ground cables throughout the Study Area. There are also a number of underground cables within the Study Area. These are located along the Pacific Highway, Greenwich Road, River Road, Marshall Avenue and Portview Road. It would be desirable to underground cables in association with redevelopment

Gas
The Study Area is serviced by natural gas comprising mains pipes between 32mm and 50mm in diameter.

Sewer
The Study Area is serviced by a gravity sewer ranging between 225 to 375mm in diameter that runs through the rear of properties and laneways or along the front of properties including those fronting Canberra Avenue and Holdsworth Avenue.

Water
The Study Area is serviced by a 100mm diameter cast iron cement lined water main. These run off of larger mains along Pacific Highway, Greenwich Road and River Road.

The Growth Servicing Plan for 2012 to 2017 sets out Sydney Water's updated plans to provide water, wastewater and recycled water infrastructure to service urban growth for the next five years. 'Urban Growth' includes new housing, industrial and commercial development.
Developers must still fund and construct reticulation services for their developments.
Service availability assumptions have been made for all in-fill development sites over the next five years across the Metropolitan Development Program sub-regions and major employment areas across Sydney Water's areas of operations. The Metropolitan Development Program 2010/11 estimated a total potential of 303 dwellings in the St Leonards area to 2020.

The Sydney Water Growth Plan indicated that initial development (in the short term) can be serviced by connection to existing infrastructure. Sydney Water would need to deliver augmented trunk works in the local area to service development.
Sydney Water may need to upgrade works to its system to cater for the cumulative effect of development in the medium term. No work has been specified and no work is anticipated to start before June 2017.

Service Capacity
The Study Area is well serviced by physical infrastructure. The overall capacity of the existing services is unknown.
Detailed investigations with service providers including Ausgrid and Sydney Water will be required to determine whether capacity augmentation is required to accommodate potential future increases in residential density.

The provision of physical infrastructure is not considered to be a constraint on the future redevelopment potential of the Study Area. However, due consideration should be given to the timely delivery of any service upgrades to ensure the level of activity proposed is congruent with the infrastructure capacity of the area.

Roads and Intersections:
To be confirmed after exhibition in response to final preferred option and yield is confirmed.

8.6.2 Infrastructure Costs

The following table sets out possible cost estimates for infrastructure provision. Further analysis relate to high, medium and low development estimates and to potential yields / capacities.

From this table Local infrastructure augmentations could reasonably be equated to be in the order of $50 - $75 million and possibly higher depending upon desired outcomes which would suggest a minimum of 1000 dwellings required at a contribution rate of $50,000/ dwelling or 2000 dwellings at a rate of $25,000/ dwelling.

These indicative costs have been calculated for the area of the Precinct from Canberra to Berry Road and suggest that a minimum of 1,500 new dwellings across this area would be required to fund the required local infrastructure at a rate of $50,000 per dwelling.

It should be noted that this level of Contribution falls above the current "cap" the State Government has applied to Section 94 contributions, therefore if the cap were to be maintained a considerable amount of additional dwellings would be required to meet the potential local infrastructure costs.

A measure that may mitigate to any potential shortfall in funding of local infrastructure would be to apply "bonus densities" for applicants willing to provide certain works and land dedication. This would also ensure that priority local infrastructure is delivered at the same pace that new development occurs.

Table 8.2

Indicative Local Infrastructure Costs			
Item	**Assumed Area required (m2)**	**Rate for Land Acquisition / Construction ($/m2)**	**Indicative Cost ($M)**
East/West Lanes Land	3,000	4,000	12.00
East/West Lane Const.	1,260	750	0.95
Open Space Land	5,000	4,000	20.00
Open Space Embellishment	6,740	500	3.37
Existing Open Space Upgrade	10,673	300	3.20
Community Centre Land	1500	4,000	6.00
Community Centre Const.	750	3,500	2.62
Local Road Upgrades	Various	Allow	5.00
Local Traffic Control	Various	Allow	2.55
Other Community facilities	Various	Allow	15.00
TOTAL			70.69

8.6.3 Infrastructure Funding

Funding for the required infrastructure is likely to be sourced from a variety of areas and these include:

State Government Revenue

Funding for most levels of major "State infrastructure" is generally the responsibility of the State Government and their respective Agencies / Departments include:

- Water
- Sewer
- Electricity
- Gas
- Telecommunications
- Schools
- Public transport
- Health facilities
- Major roads and road upgrades

The NSW Government would be expected to finance infrastructure upgrades accordingly.

Local Government Revenue

There are a number of items of local infrastructure which may require augmentation and which may require financing by Council. These may include:

- Open space
- Community facilities
  - library services
  - meeting rooms
  - halls
  - Indoor sporting facilities
- Local Roads and road upgrades
- Path and cycle ways

These items can be estimated and financed from:

- General revenue
- Developer contributions (Section 94)
- Voluntary Planting Agreements as an offset to contributions
- Special purpose funding and grants

Note also that special funding may be available for infrastructure upgrades from the NSW Government via a number of sources including Urban Activation Precinct (UAP) funding or special purpose "one-off" grants.

8.7 Staging and Transition Management

Project Delivery

In a Precinct of this size and potentially with differing development potential radiating out from the railway station there is, quite reasonably, concern amongst residents about the distribution and duration of redevelopment activity.
There are few mechanisms which enable regulation over timing of development.
It is recommended that rezoning could apply to only one area (for example east of Berry Road) and the remaining area remains as is. This would contain development activity to Berry Road and east.

Staging

Once an area is zoned there are very limited mechanisms to regulate redevelopment.
Sales of sites will take place at different rates. Amalgamation will proceed at different and variable rates.
Infrastructure (utilities) are generally available.

Transition

Concern has also been expressed at how to manage the transition between redevelopment areas of different density and height and between redevelopment areas and non-redevelopment areas.

There are conflicting approaches to these transitions. These are:

- Transition at street. This uses the street width as the transition (20m). however, this results in one side of the street being redeveloped to say 6 or 8 or 10 levels or whatever is permitted whilst the other side of the street remains at one or two storeys. Note that with strong street planting this impact can be significantly ameliorated. Nevertheless, future community opinion in years to come may result in redevelopment of that further side.
- Transition at rear property boundary. This enables streets to be of similar character on both sides, however, there are potential issues of transition at rear boundaries with 8 plus storeys overlooking private rear yards and overshadowing (which might be ameliorated somewhat with significant deep soil planting)

Public feedback seems to favour the street as the point of transition.
Other transitions between different levels of high/medium density and heights are able to be accommodated within a diverse streetscape of varying heights. An area-specific DCP could address these issues.

9.0 Consultations

9.1 Summary of Community Engagement Report

The project was exhibited for initial public comment across two public sessions:

- Saturday 11 October Where Council Staff & Consultants were available to talk with residents and Stakeholders about their concerns interests.
- An evening Workshop was held on 16 October where residents were encouraged to think about and discuss issues and prospects. A survey form was provided for residents/Stakeholders feedback by "Cred Community Consultants".

Their report is available under separate cover and the feedback results summarised below:

9.1.1 Zoning and density

- The majority of survey respondents supported the rezoning in principle to support the future of the St Leonards South Precinct. Only a small number did not support the rezoning;
- Of those who supported rezoning majority of survey respondents favoured the time-frame that they thought the rezoning should occur was 0 to 5 years;
- Option 1 (high density) was favoured overall, whilst a couple of groups preferred no high density;
- There were some respondents who preferred the "no rezoning" option. Many respondents just wanted a decision made. Many respondents supported high density near and around the train stations;
- Importance of liaison with other councils;
- High density development needs to be supported by infrastructure and shops – mixed use on the ground level of some high density should be considered;
- Do not stage rezoning – this will result in inequitable sale prices for residents, either do it all at once or don't do it;
- Duntroon Avenue is an example of a good development, and Loftex development was unpopular;
- Who pays (homeowners, developers or Council) should be considered;
- Redevelopment should take into account the precincts' typography;
- Rezoning needs to be economically viable;
- High density development should have minimal effects on overshadowing and wind tunnels; and
- There needs to be a strong rezoning Plan that cannot later be influenced by developers.

9.1.2 Public domain and open space and community facilities

- For an east-west connection, the 'consolidated open space' option (figure 5.6) was preferred overall.
- However, there was some concern with the 'consolidated open space' option over the safety of narrow linkages between streets, so lighting and good design should focus on safety;
- A strong north-south connection to both (St Leonards and Wollstonecraft) train stations is also very important;
- Better connection to both train stations, Wollstonecraft and St Leonards, is important;
- Amenities, such as coffee shop or community centre, should be located within a central park; and
- Connections should also be made to Gore Hill.
- A range of social infrastructure requirements were suggested.

9.1.3 Built form

- Discussion of built form at this point is pre-emptive and dependent on density;
- There should be an opportunity for more creative opportunities to be presented – built form is something developers could be given the chance to provide creative options for; and
- Determining built form should involve planners, developers, and architects etcetera.

9.1.4 General comments

- "Don't let the process drag on. Our community needs some certainty regarding the future" and "Make this and urgent matter" and "Get on with it"
- "We are not against development but need a time-frame to plan our future decisions"
- Some residents "are pushing options that give them the highest possible rezoning… a well organised lobby group doesn't mean they are correct"
- "I don't think it's very imaginative"
- "Control where high density residential pockets should concentrate. Do not let the developers dictate development"

9.1.5 Conclusion

This community feedback has been carefully analysed and used to review and develop the preferred option for development.

10.0 Site Specific Explorations

The section sets out to investigate development potential for a number of key sites (typical and atypical).
The intent is to test the conjunction of height and FSR that might be most appropriate for this preferred development area.

These are examples only. There are many other possible combinations of site amalgamations.

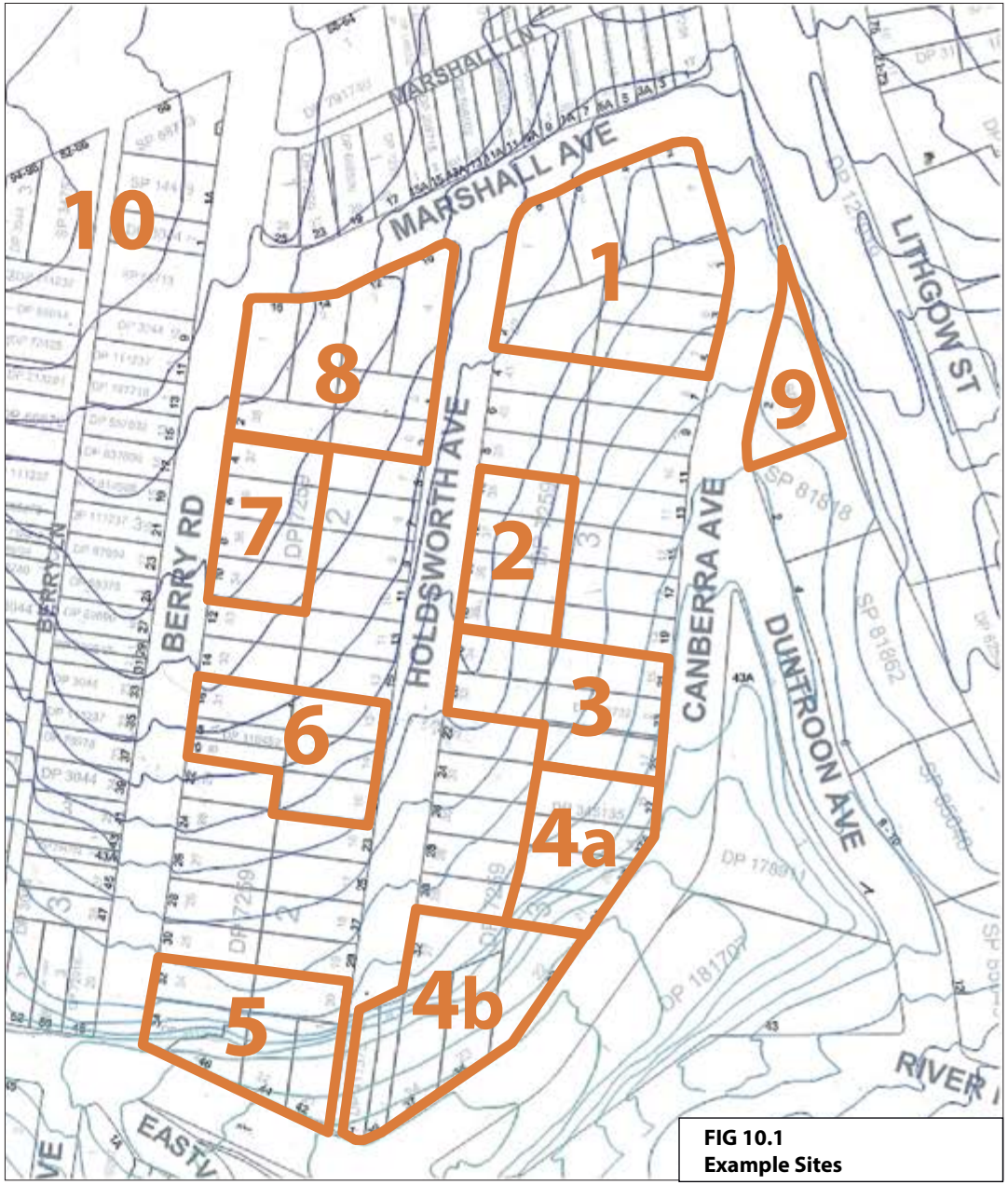


FIG 10.1
Example Sites

10.1 Site No 1

Context/Location

Site No 1 is located on Marshall Avenue between Canberra and Holdsworth Streets.

Issues include:

- Transitional scale from towers to North
- Relationship tall buildings approved (views, shadows)
- Placemaking around station/Rail Plaza and entry to precinct
- Potential overshadowing to south
- Desirability of deep soil for landscaping
- South facing slope

Actions/Approach

- Consider tall buildings up to 15-20 storeys
- Consider FSR of up to 4:1
- Create place/public park/square
- Align buildings with street fronting buildings to south
- Consider bonus for public park
- Window separation from Loftex tower
- Park complements existing street trees
- Provides place to pause in journey to station
- Close proximity to transport node
- Park makes use of irregular site

FIG 10.2
Site No 1

Site 1A:

- Area 2800 m²
- Storeys 19
- FSR 4:1

- Possible public open space on North
- 4 m Side setbacks, front setbacks and street setback
- 5 m Deep planting zone
- 21 m Building Zone Tower front
- public space 3 m above internal space
- 3 m further drop facilities car park entry

Site 1B:

- Area 2000 m²
- Storeys 15
- FSR 3.5:1

- Contributes to public space on North
- Setbacks and Building Zone as 1A
- Sunlight access
- View corridors from northern plats
- Create urban streetscape, not suburban

FIG 10.3
Site No 1

10.2 Site No 2

Context/Location

This is the generic model typology. Assumed over 3-4 amalgamated lots, the building fronts the street and has a very specific footprint to minimise overshadowing effects to the south and to optimise deep soil planting opportunities (particularly central block).

Issues include:

- Potential overshadowing
- South facing slope
- Deep soil opportunity
- Access to parking basements
- Definitions of height and FSR relating to semi-basements

Actions/Approach

- Building footprints are located in Street fronting band setback 4m from street and maximum 20m deep
- Basements are predominantly under building (to optimise deep soil)
- Basement ramps may intrude into deep soil zone
- Buildings generally 8-9 storeys out of ground
- FSR is 2.75:1
- Wide central communal landscape zone associated with deep soil

FIG 10.4
Site No 2

Site 2:

- Area 2250 m^2
- Storeys(residential) 8
- FSR 2.75:1
- GFA .Nc. Lobbies 6400 m^2 -6600 m^2
- 4 m Front setbacks
- Side setbacks to RDFC
- Rear Zone min 13 m

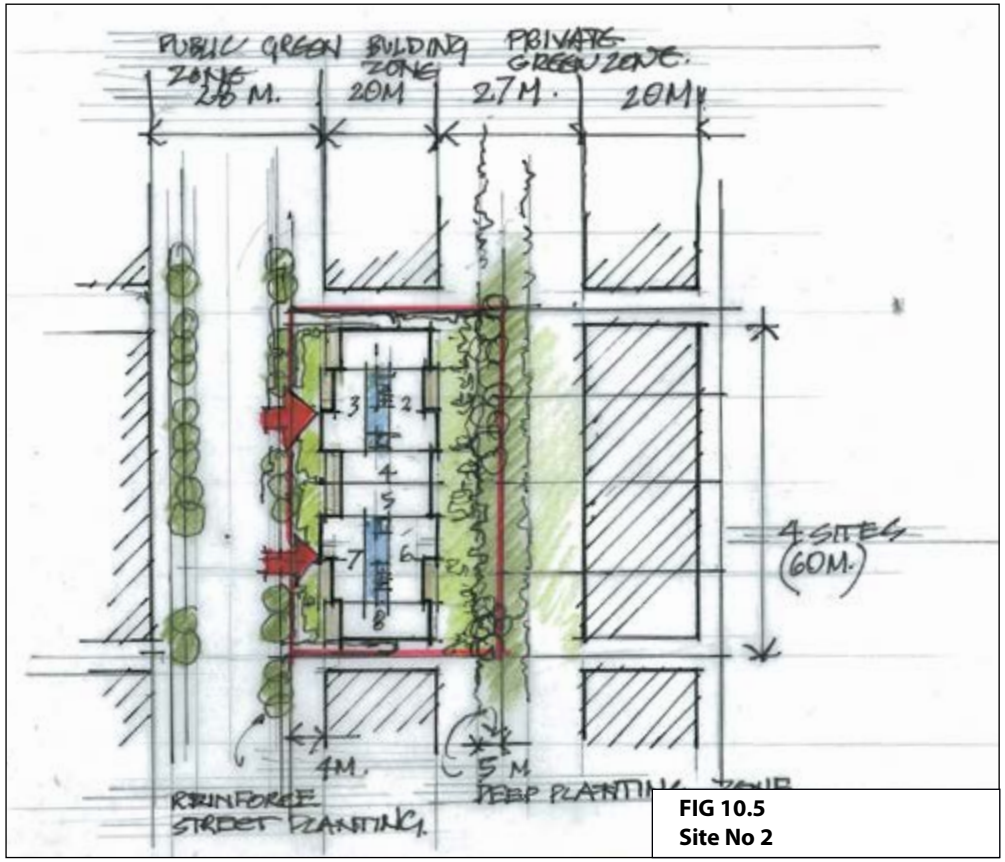


FIG 10.5
Site No 2

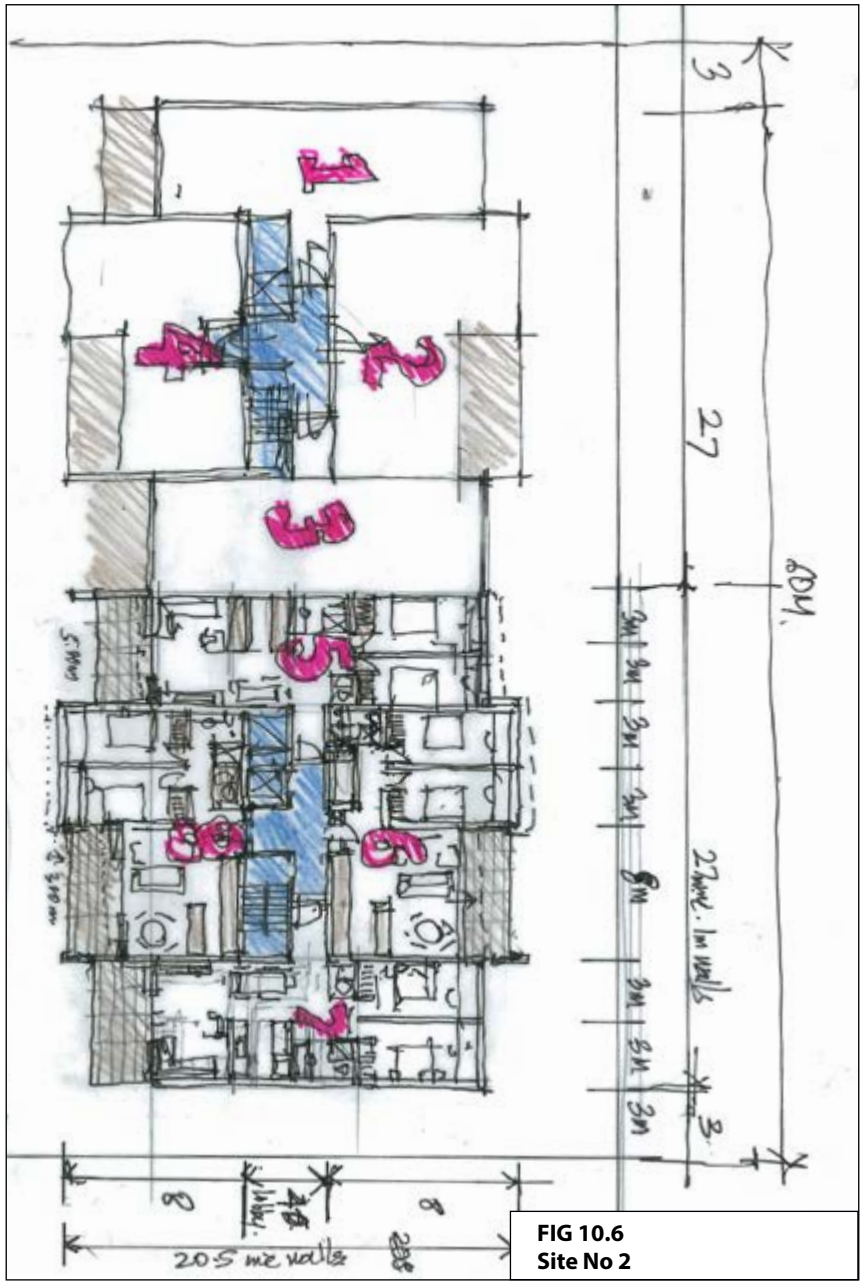


FIG 10.6
Site No 2

10.3 Site No 3

Context/Location

Indicative location only.
These sites are located to facilitate east-west links and community facilities and pocket parks.

Issues include:

- Slope E-W across block
- South facing slopes
- Deep soil opportunity
- Public park potential
- E-W linkage (pedestrian and/or vehicle)
- Community facility potential
- Ownership / management of community facilities

Actions/Approach

- Detailed design of E-W link, park and community facilities
- Separate access to community facilities and access to apartments
- Provide full FSR plus bonus to facilitate community facilities and park
- Height up to 10-12 storeys
- FSR up to 3.5:1 (with bonus)
- Park and facilities provided by private developer

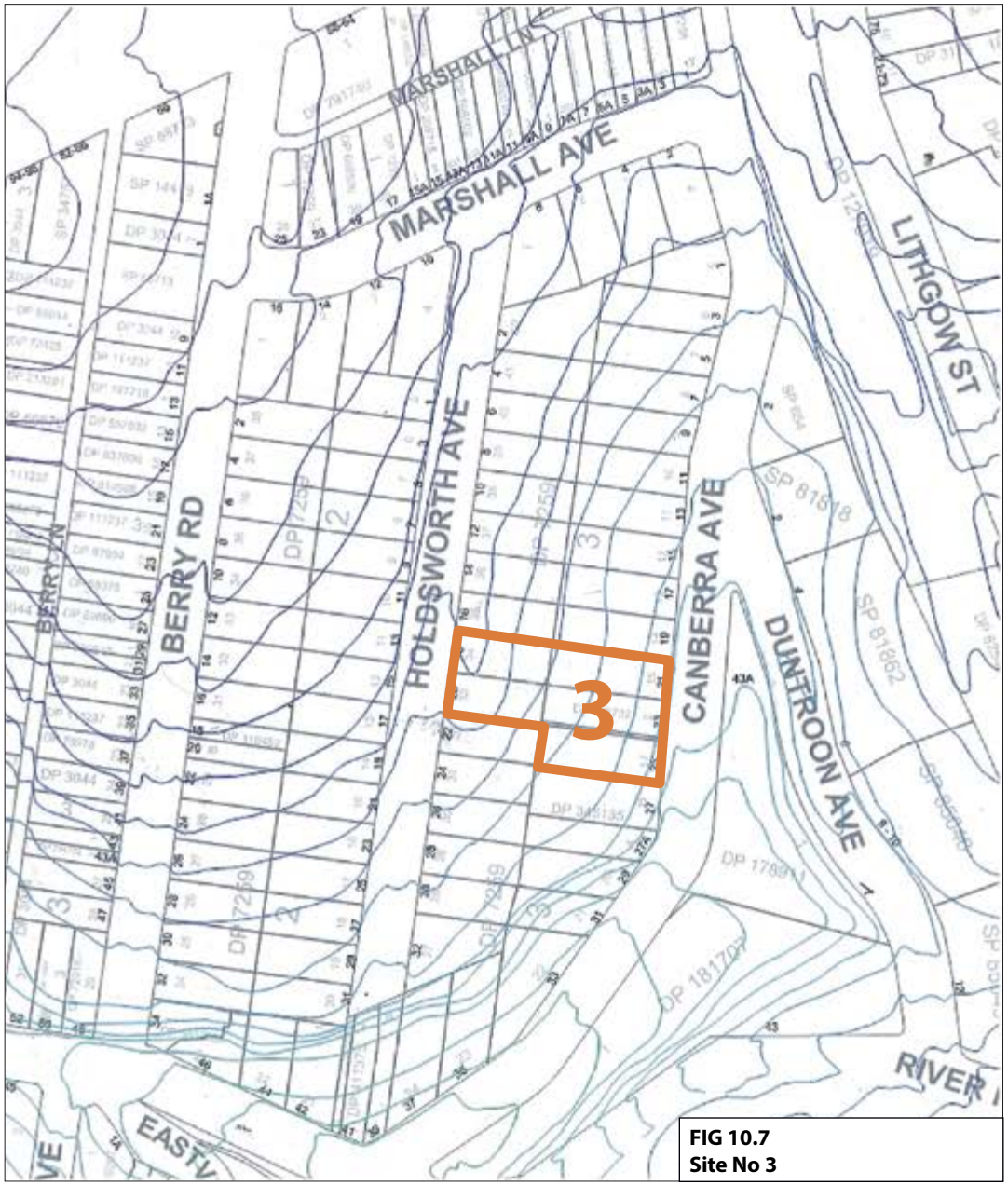
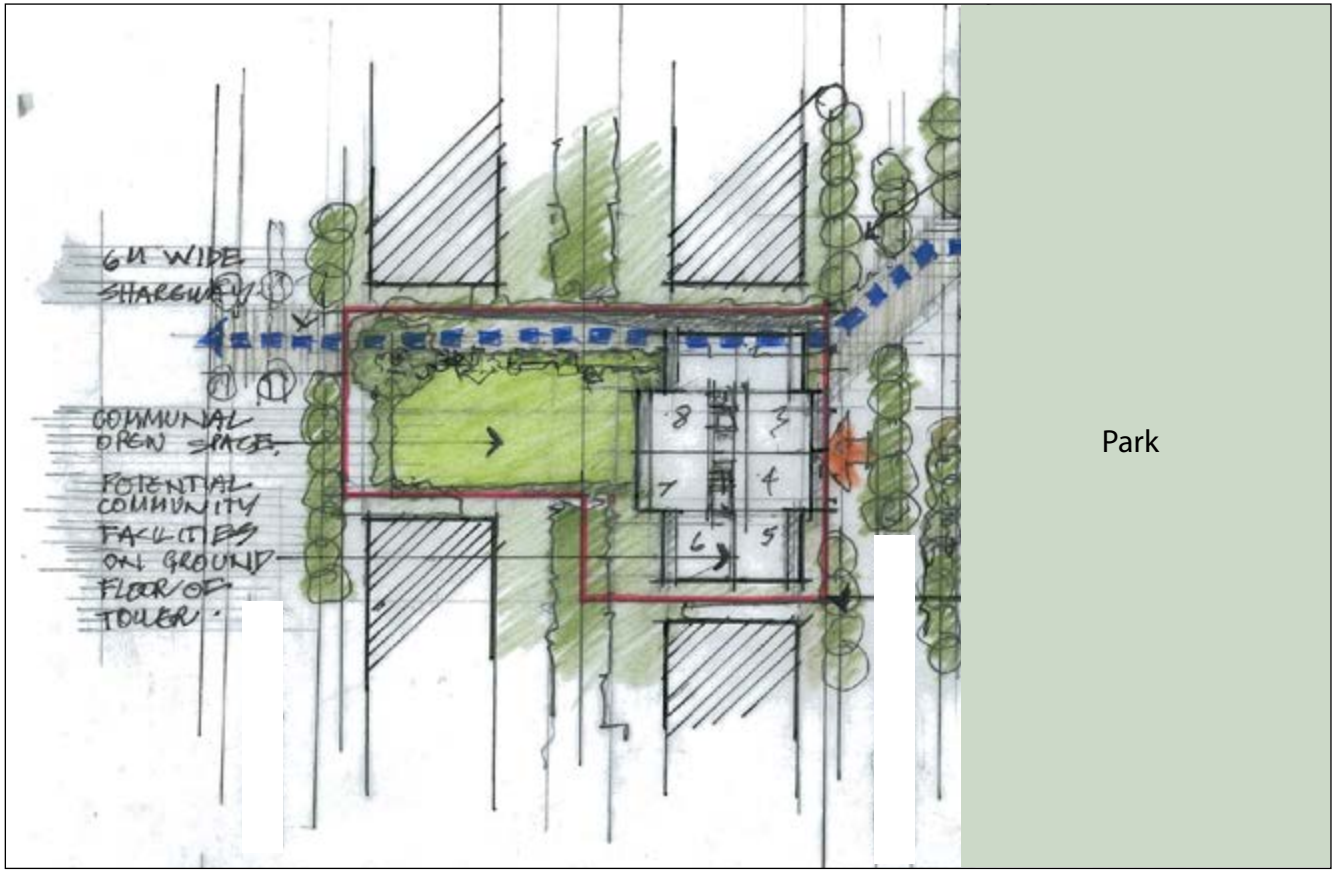


FIG 10.7
Site No 3

Site 3:

- Area 2800 m^2
- Storeys 10
- FSR 3.5:1
- Possible public open space on North
- 4 m Side setbacks, front setbacks and street setback
- 5 m Deep soil planting zone
- 21 m Building Zone
- Bonus for E-W link, open space and community facilities



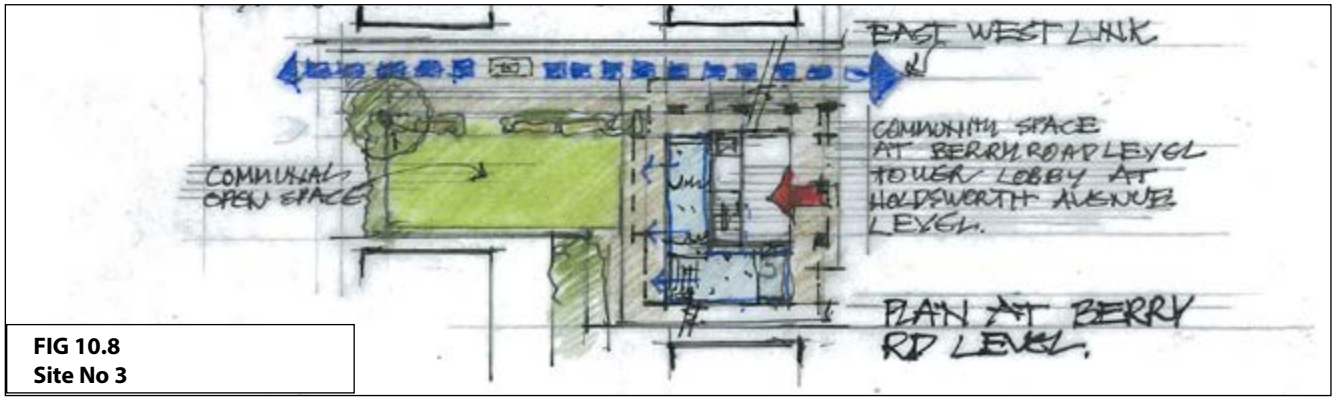


FIG 10.8
Site No 3

10.4 Site No 4

Context/Location

This site is a difficult steeply sloping triangular site fronting Canberra Avenue and with views over Newland Reserve. Vehicular access could be either from Holdsworth or Canberra Avenue.

Issues include:

- Steep slopes to Canberra Avenue
- Triangular site
- Potential overshadowing of park and/or residences south of River Road

Actions/Approach

- Height should be measured from top of slope
- Height 8-10 storeys
- FSR 3:1
- Care taken to absorb slope into design
- Vehicular access desirably from lower Canberra Avenue
- Seek deep soil opportunities on boundary and sloping areas and connect with central deep soil band if possible

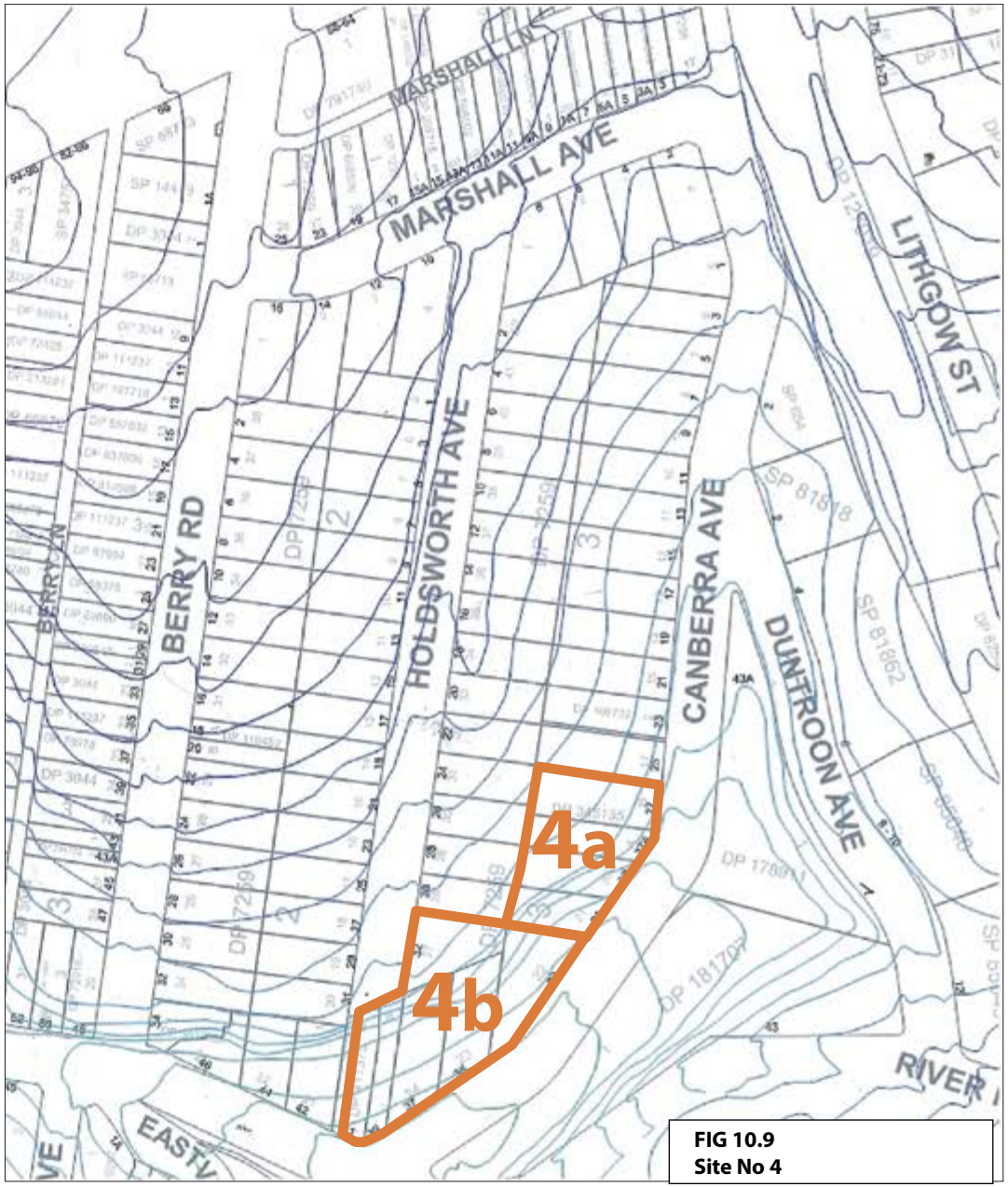


FIG 10.9
Site No 4

Site 4A:

- Area 1600 m²
- Storeys 8
- FSR 3:1
- GFA. Nc. Lobbies 4800 m²
- Continue design philosophies of type 2 sites

Site 4B:

- Area 3700 m²
- Storeys 10
- FSR 3.2:1
- GFA. Nc. Lobbies 12,000 m²
- Bonus FSR for through site connection to park
- Takes advantage of views to park
- Parking access takes advantage of cliff

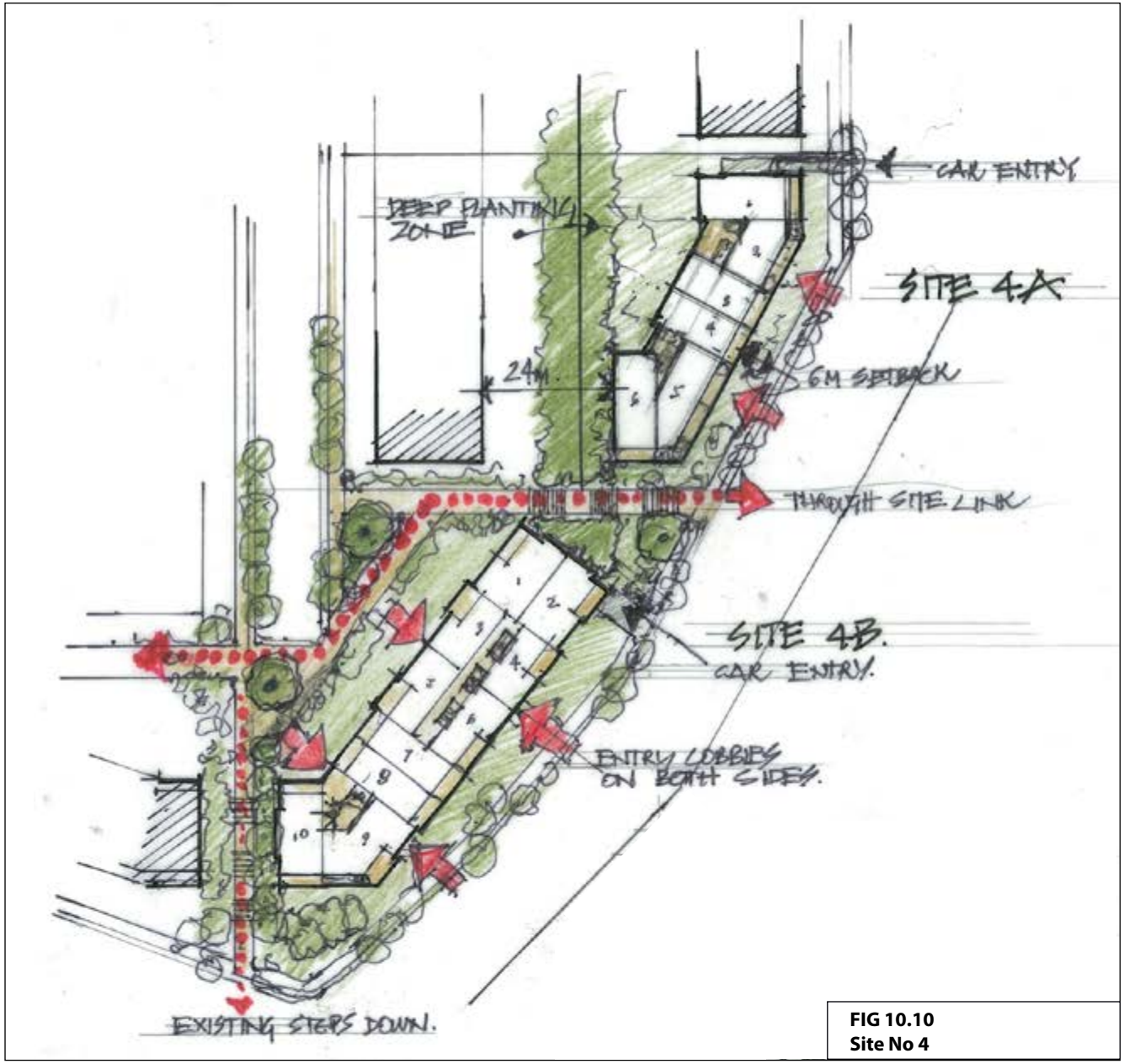


FIG 10.10
Site No 4

10.5 Site No 5

Context/Location

Fronting River Road with steep slope down to River Road. Will terminate central deep soil common.

Issues include:

- Steep slope down to River Road
- Difficult access from River Road
- Elevated views to south

Actions/Approach

- Orient building to face over River Road (elevated)
- Review deep soil opportunities
- Height measured from top of site
- Height 8-12 storeys
- FSR 3:1

FIG 10.11
Site No 5

Site 5:

- Area 3000 m^2
- Storeys (centre units) 10
- Storeys (end units) 8
- FSR 3.2:1
- GFA 9600 m^2
- Open space at bottom of cliff
- Possible views to south
- Parking edges cuts away cliff
- Bonus FSR for providing through site link

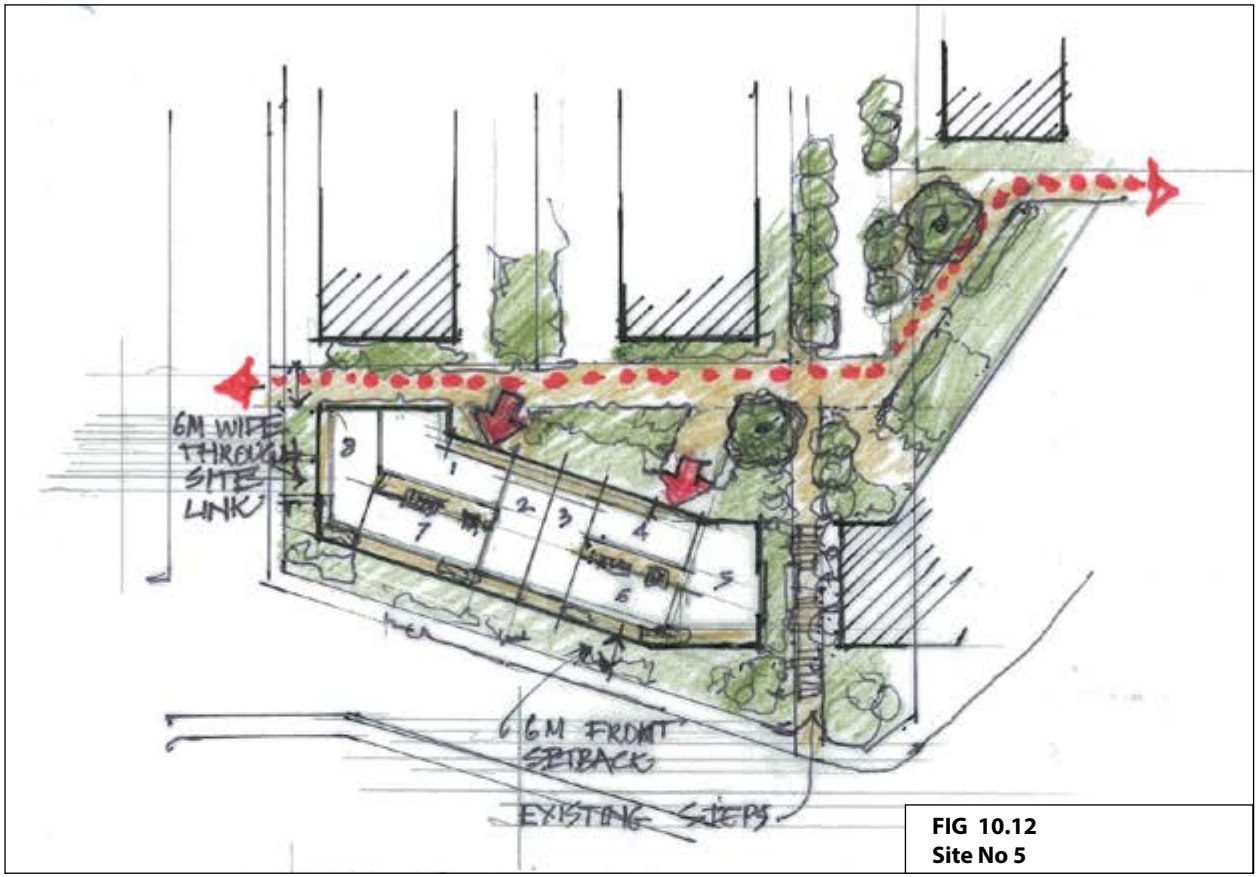


FIG 10.12
Site No 5

10.6 Site No 6

Context/Location

As for Site 3, except a more even slope which can permit east-west pedestrian/shareway connection

Issues include:

- Slope across block
- Deep soil opportunity
- Desirable vehicular connection
- Pedestrian link
- Desirable local park and community facilities
- Ownership/management facilities
- Desirable incentive

Actions/Approach

- Detailed design of E-W link, park and facilities
- Development incentives for creation
- Create pedestrian/vehicle shareway
- Height to 10 floors
- FSR 3.5:1 with bonus

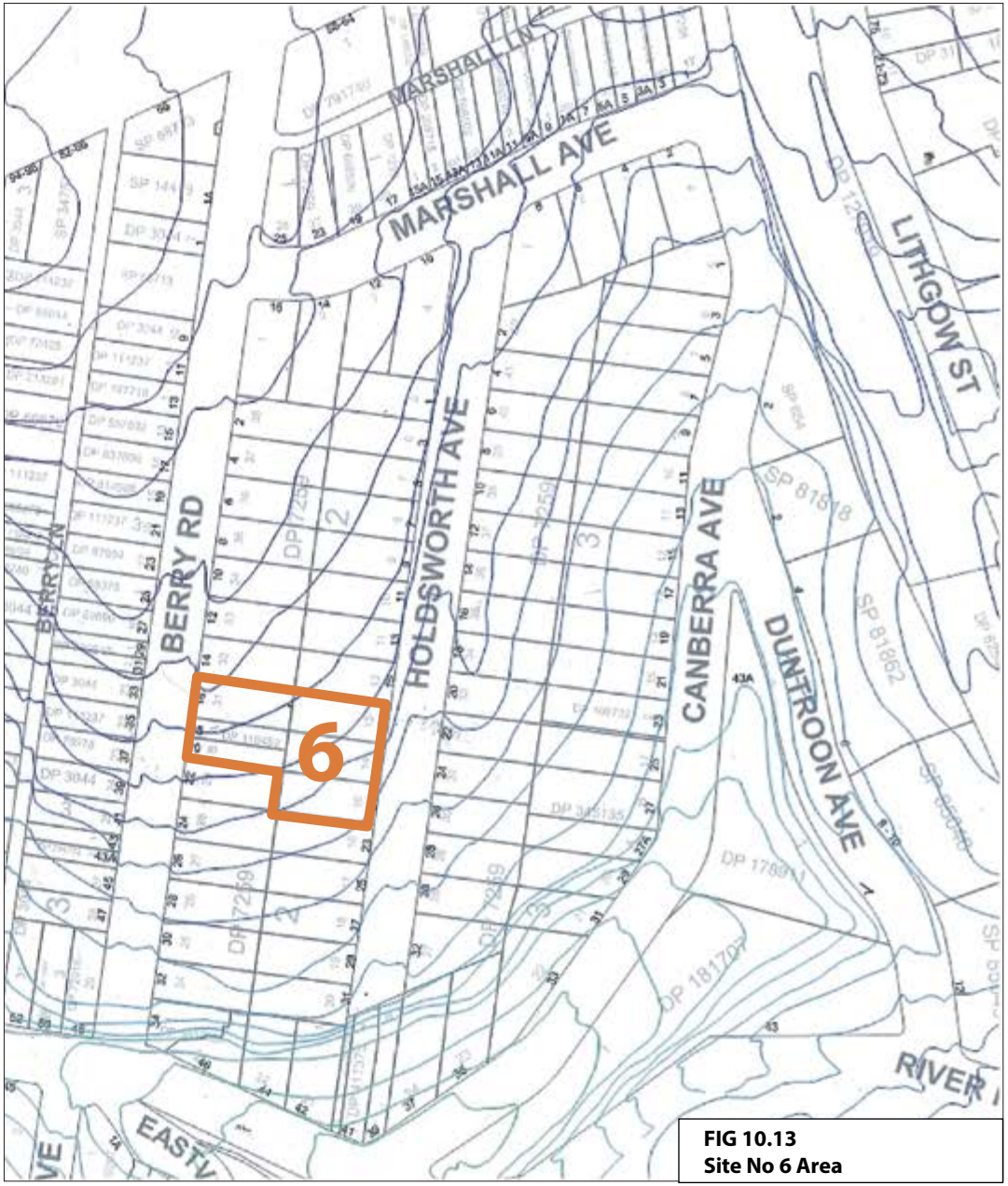


FIG 10.13
Site No 6 Area

Site 6:

- Area 2800 m²
- Storeys 10
- FSR 3.5:1

- Possible public open space on North
- 4 m Side setbacks, front setbacks and street setback
- 5 m Deep planting zone
- 21 m Building Zone
- Bonus for through site link and community facilities

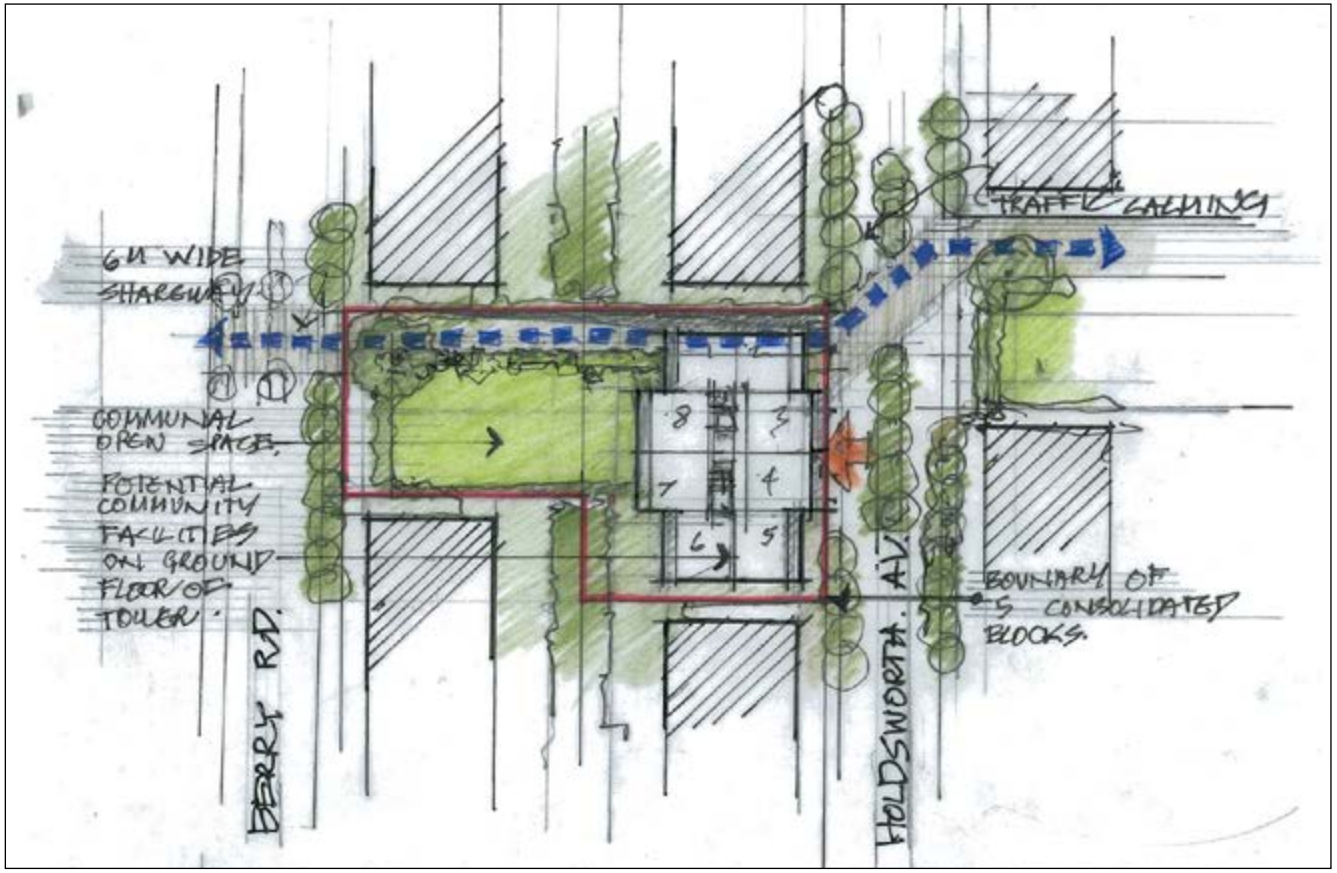


FIG 10.14
Site No 6

10.7 Site No 7

Context/Location

This is the generic model typology. Assumed over 3-4 amalgamated lots, the building fronts the street and has a very specific footprint to minimise overshadowing effects to the south and to optimise deep soil planting opportunities (particularly central block).

Issues include:

- Potential overshadowing
- South facing slope
- Deep soil opportunity
- Access to parking basements
- Definitions of height and FSR relating to semi-basements

Actions/Approach

- Building footprints are located in Street fronting band setback 4m from street and maximum 20m deep
- Basements are predominantly under building (to optimise deep soil)
- Basement ramps may intrude into deep soil zone
- Buildings generally 8-9 storeys out of ground
- FSR is 3:1
- Wide central communal landscape zone associated with deep soil

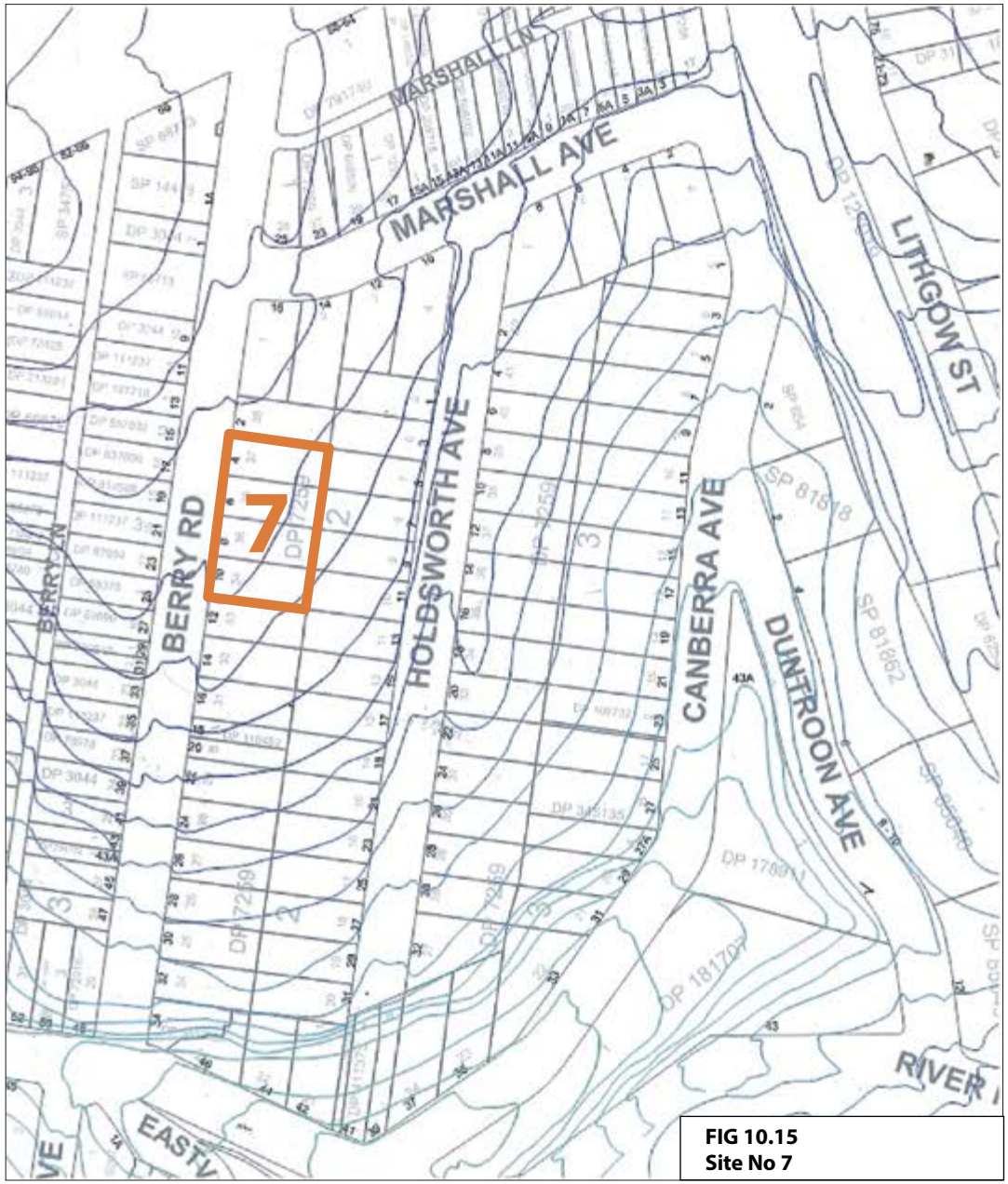


FIG 10.15
Site No 7

Site 7:

- Area 2250 m^2
- Storeys(residential) 8
- FSR 2.75:1
- GFA .Nc. Lobbies 6400 m^2 -6600 m^2

- 4 m Front setbacks
- Rear Zone min 13 m

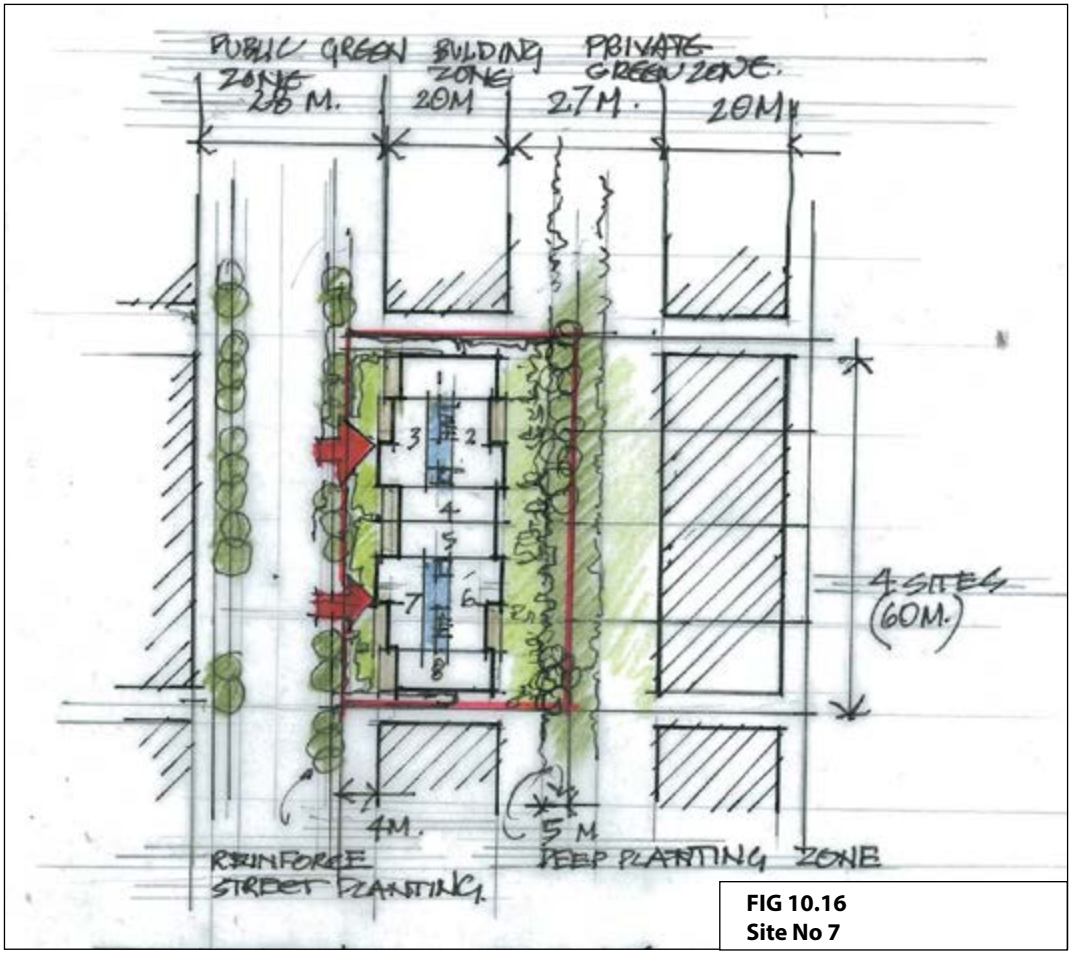


FIG 10.16
Site No 7

10.8 Site No 8

Context/Location

This site fronts Marshal Avenue between Holdsworth and Berry Avenues. A major 6-7 storey building is under construction across the street.

Issues include:

- South-east facing slope
- Traffic access/egress via Berry Avenue
- Major buildings to north across the road
- Irregular shaped site

Actions/Approach

- Establish footprint to minimise overshadowing to south
- Optimise deep soil planting
- Desirably amalgamate all sites

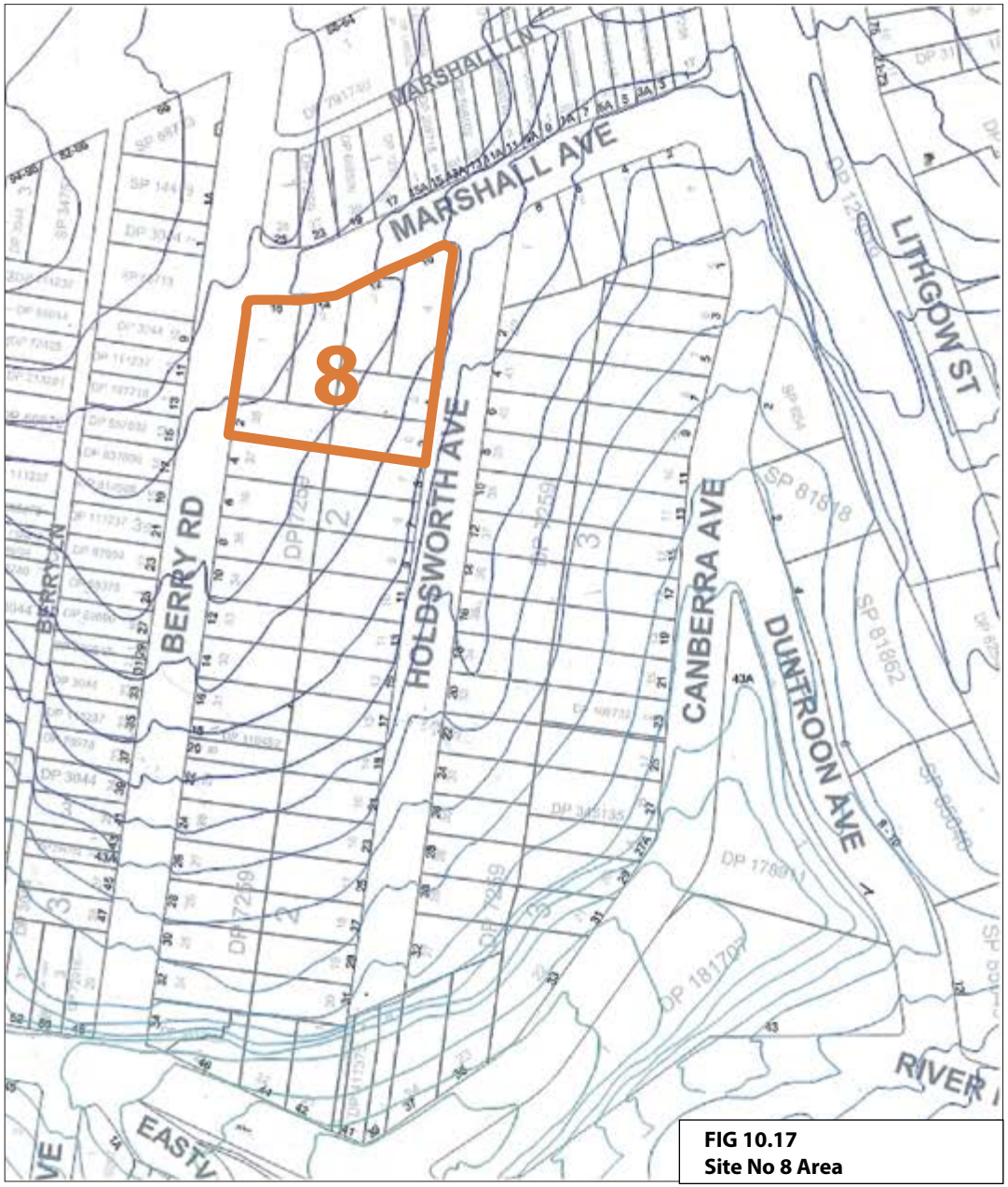


FIG 10.17
Site No 8 Area

Site 8A:

- Area 2550 m²
- Storeys(residential) 12
- FSR (with bonus) 3.5:1
- GFA .Nc. Lobbies 9600 m²

Site 8B:

- Area 2050m²
- Storeys(residential) 8
- FSR 2.75:1
- GFA .Nc. Lobbies 6300 m²

- Keep deep planting corridor
- Some useful footpath widening small park on northern boundary

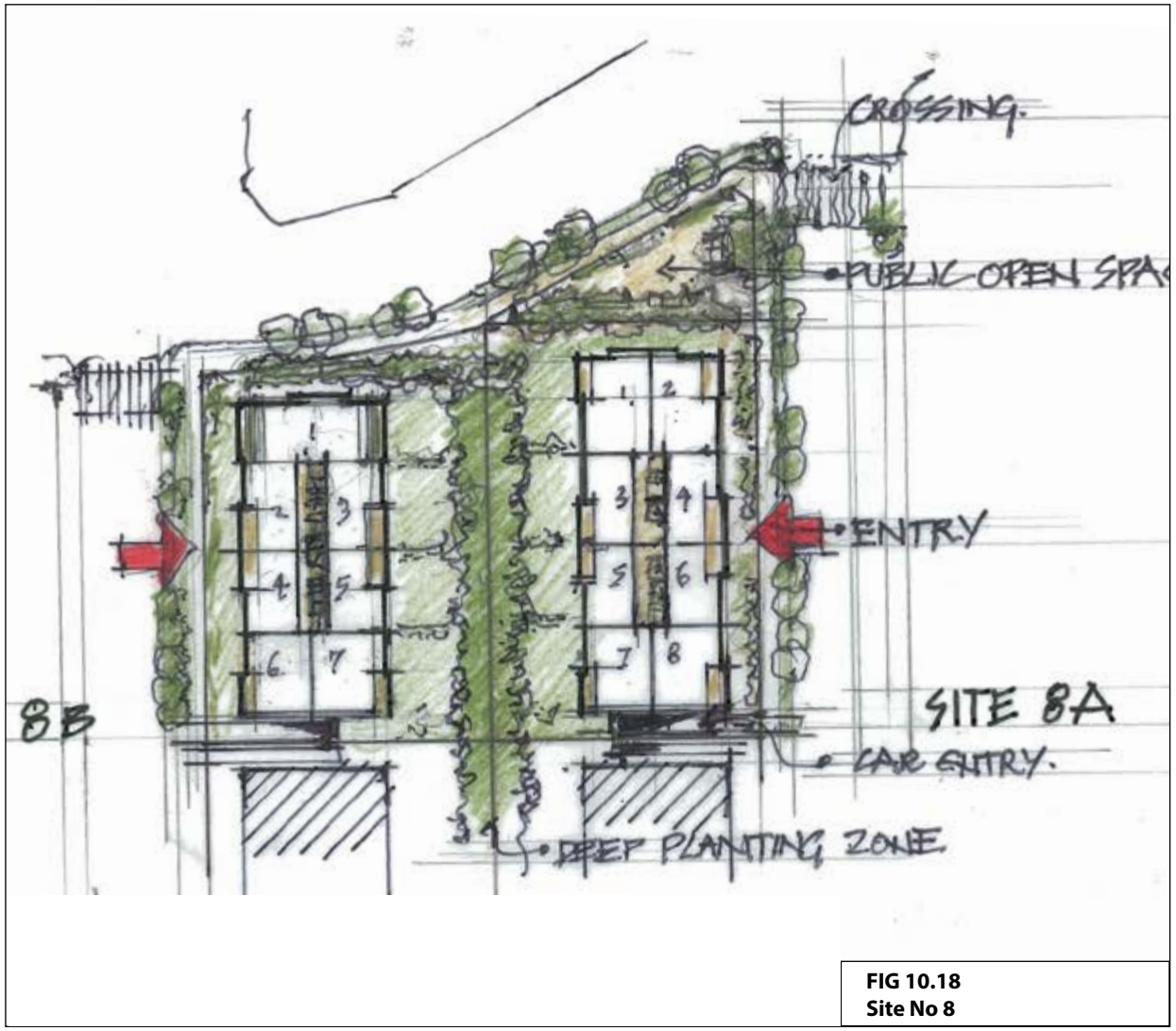


FIG 10.18
Site No 8

10.9 Site No 9

Context/Location

A difficult triangular site left over from the Duntroon Avenue redevelopment (strata building). The site is located close to railway station, adjacent to railway line and contains some exceptional trees.

Issues include:

- Triangular site
- Rail noise
- Tree conservation
- Adjacent Duntroon Avenue 5-7 storey development

Actions/Approach

- Retain trees wherever possible
- Orient habitable rooms away from railway or consider acoustic treatment
- Separate from existing development
- Height 8 storeys
- FSR 3:1

FIG 10.19
Site No 9 Area

Site 9:

- Area 1350 m^2
- Storeys 8
- FSR is 2.75:1
- GFA .Nc. Lobbies 4000 m^2

- 2 m rear and side setbacks against existing trees
- Site cover = 750m^2 (50 %)

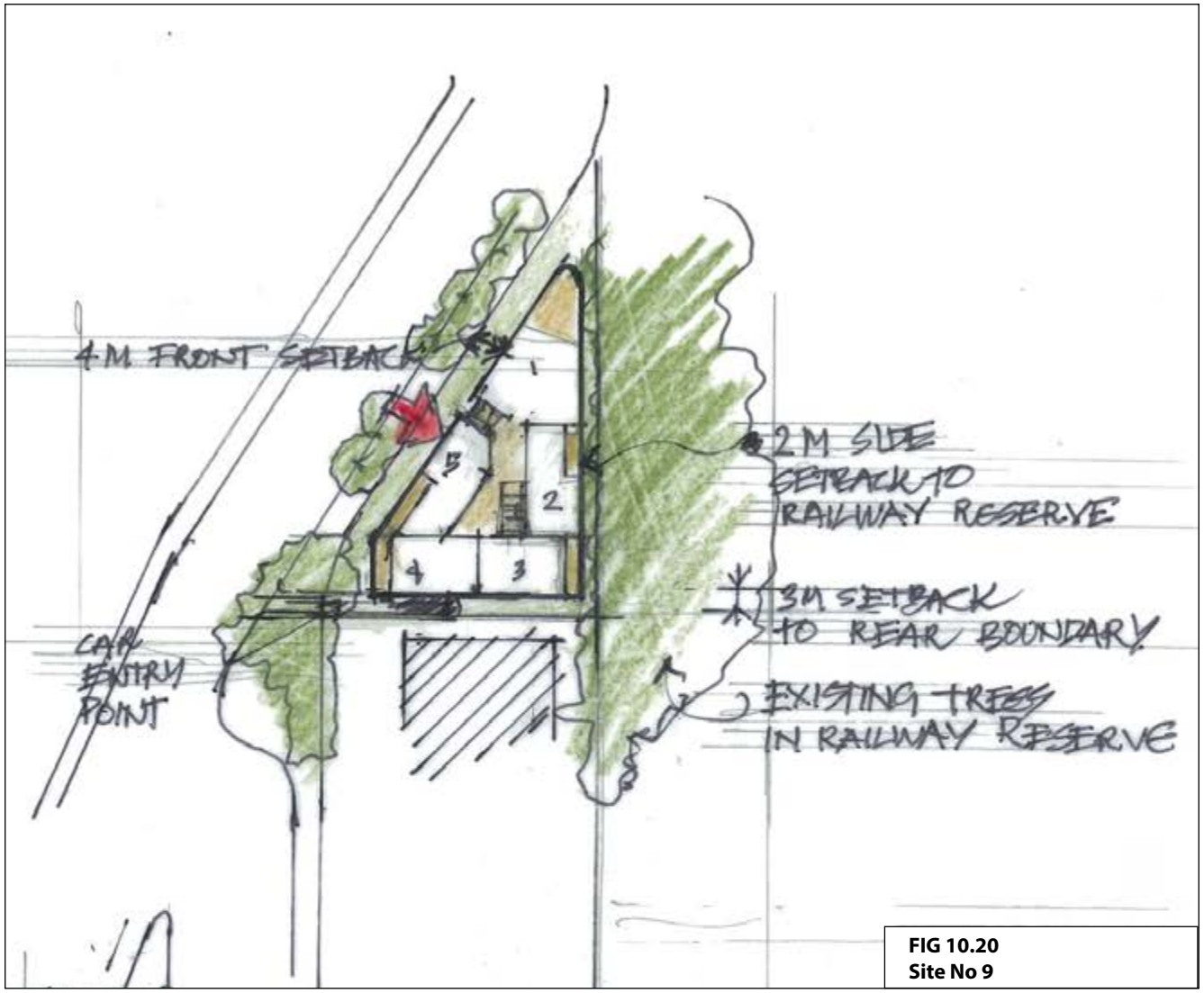


FIG 10.20
Site No 9

10.10 Site No 10

Context/Location

This Pacific Highway frontage is currently occupied by a variety of commercial buildings of 4-9 storeys high. Some are strata titled. All are within a relatively easy and level walk to the railway station.

Issues include:

- No highway vehicle access
- Highway traffic noise
- Potential overshadowing to South
- Disability of maintaining employment (particularly medical and education)
- Strata titled ownership

Actions/Approach

- Maintain 3-4 Storey commercial podium (sloped at rear to minimise shadow effects)
- Permit thin residential towers atop podia carefully located to minimise shadow effects
- Height 12 storeys on 4 Storeys podium
- FSR 4:1- 5:1

Note that similar principles will apply to all sites along the Highway (Berry Road-Greenwich Road) but adjusted to particular circumstances.

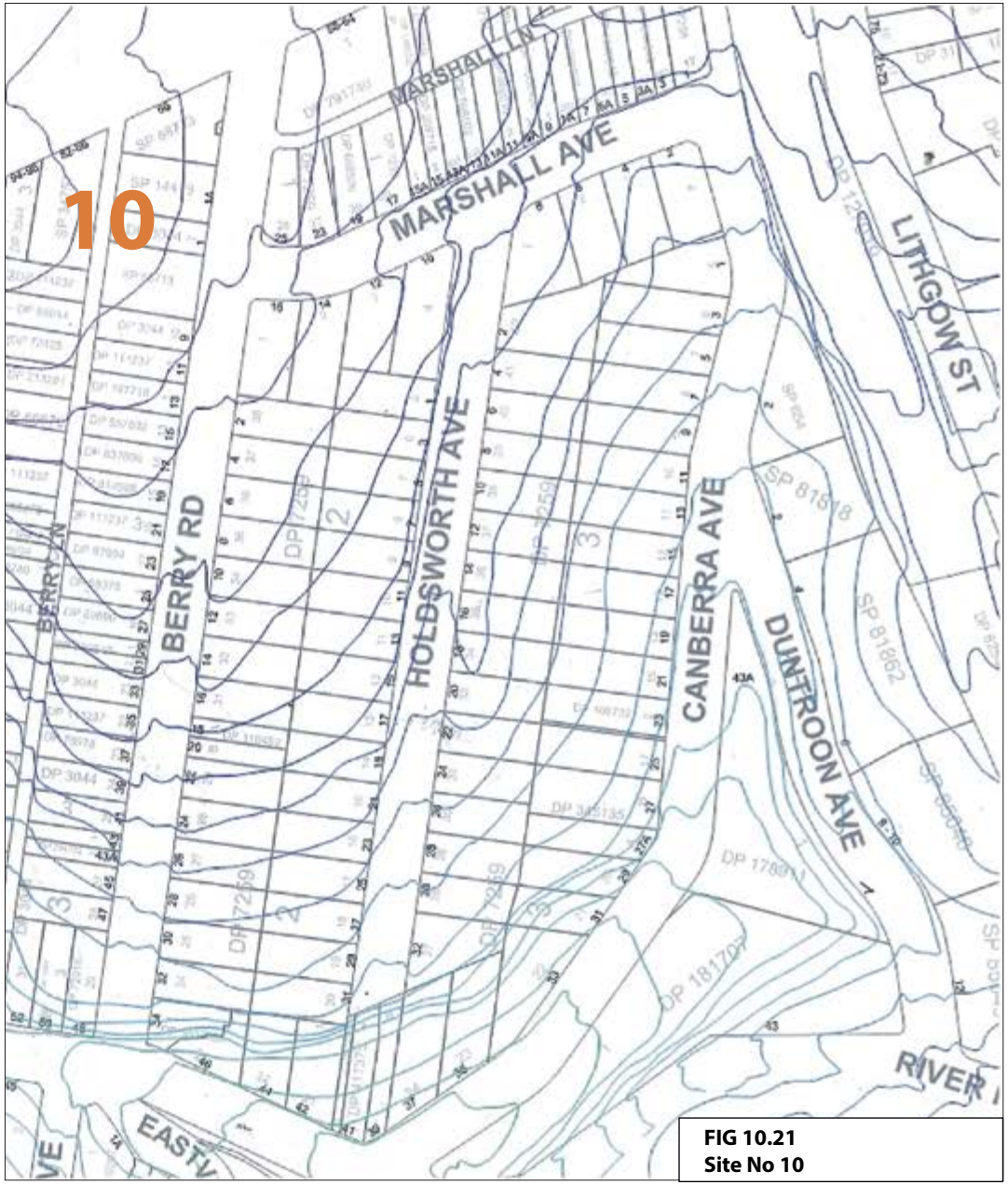


FIG 10.21
Site No 10

Site 10 - Typical Highway Frontage (indicative example only) :

- Area 2250 m²
- Storeys 16
- FSR 4:1-5:1
- Ground floor 1750 m²
- Level 2 1750 m²
- Level 3 1600 m²
- Level 4 1500 m²
- Total Commercial 6600 m²
  12 x 400 m²
- Total 4800 m²
  11400 m²

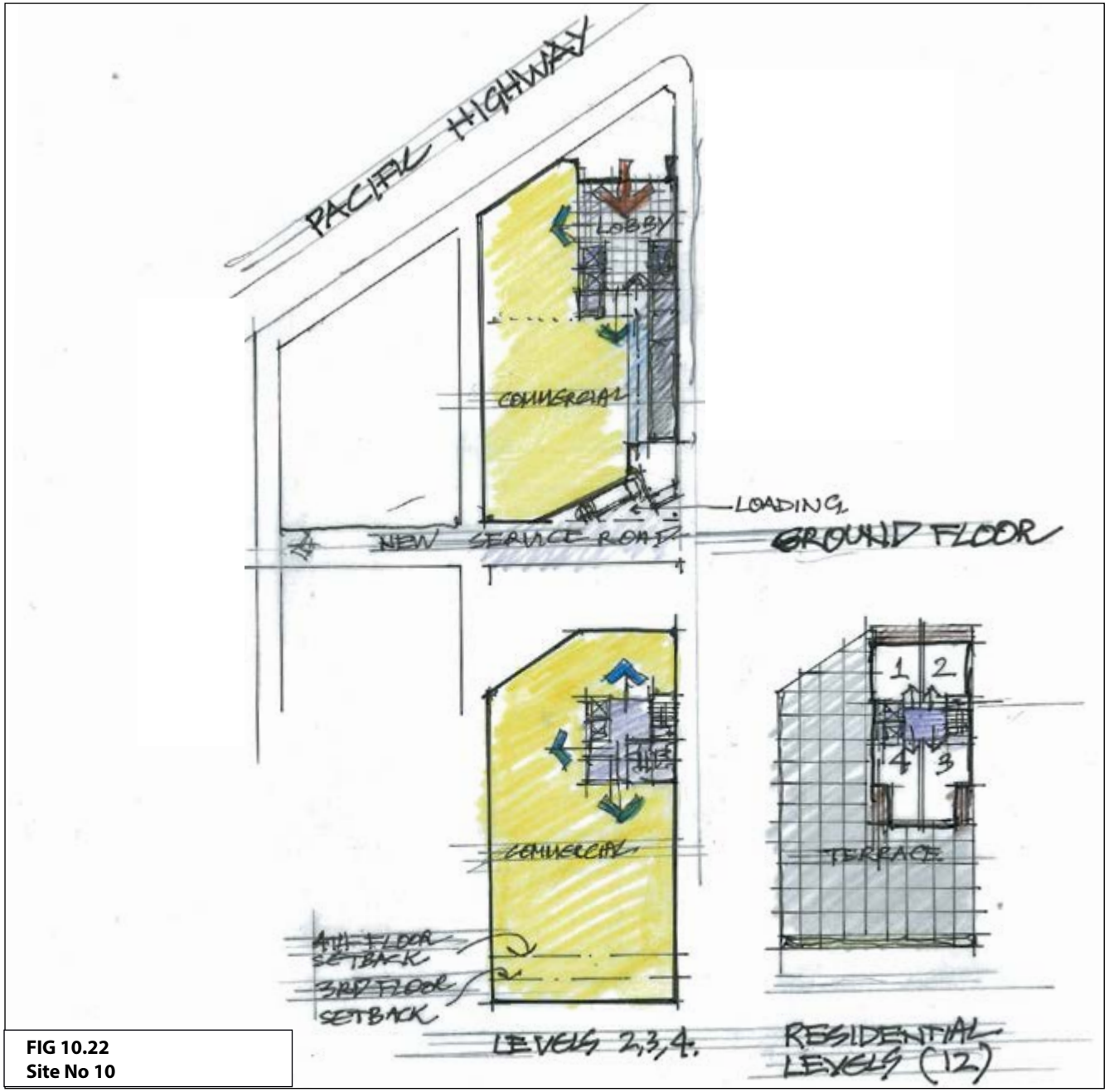


FIG 10.22
Site No 10

11.0 Recommendations

11.1 Recommendations

General

- That Council continue to engage with the community and stakeholders by exhibiting this Draft Masterplan widely for public comment.
- That Council endorse the contents of this Draft Masterplan and work with stakeholders towards implementation.
- That Council accepts the Vision as stated in Section 3.1.
- That Council endorse the principles of Sustainable Urbanism, Transit-Oriented Development and St Leonards South Precinct Planning Principles and Standards towards the sustainable development of this Transit-Oriented Precinct.
- That Council consider the benefits which accrue locally, regionally and on a metropolitan level of Transit-Oriented Case Studies.
- That Council consider the options developed and discussed in the EBD Workshop (Section 4) and support the Option for High Density Concentrated Development (page 40) which delivers density development around the railway station and holds the balance of the Precinct in reserve for future assessment and development if required.
- That development be concentrated in the area between the railway line and Berry Road and along the highway and that the balance of the Precinct be held in reserve for say 10-15 years.
- That this sub-precinct be permitted to yield in the order of 2,000 dwellings (including highway frontages) which at 2 persons per dwelling could deliver up to 4,000 persons for the Precinct at complete development (unlikely).

Public Domain

- That an incremental approach to public domain be implemented which will provide strong east-west connection and distribution of small but useful and interesting public spaces (associated with community facilities) throughout the developing Precinct.
- That Council support the creation of Rail Plaza and facilitate strong connection with the St Leonards South Precinct (physically, socially and economically).
- That Council negotiate with the Department of Education towards the prospect of the creation of an "Urban Primary School" along the highway to serve the Precinct.
- That the east-west link comprise pedestrian and vehicular connections (where appropriate) to facilitate pedestrian movement across the Precinct towards the railway station and Newlands Park.
- That improved pedestrian crossings be investigated across the highway (to Gore Hill Oval) and River Road (to bushland reserves).
- That Council creates development incentives to encourage the private sector to create these east-west links, pocket parks and community facilities.
- That Council facilitate the pedestrian connection between Holdsworth Avenue and Newlands Reserve with park at Holdsworth Avenue, steps down to Canberra Avenue (perhaps with water cascade), and with community facilities.
  Explore potential for coffee shop/store fronting Newland Reserve.
- That Council facilitate enhanced street planting and traffic calming to facilitate multi-modal use of streets.
- That Council investigate demand for and facilitate provision of appropriate levels of the following for the sub-precinct east of Berry Road:
  - parks (as indicated)
  - childcare (approximately 1/1000 population)
  - community hall (200m^2)
  - fitness circuit
  - corner store/coffee shop
  - performance space and library (probably in Railway Square)
  - community shed(s) and meeting rooms (approximately 500m^{2}spread throughout the sub-precinct)

- That Council investigate opportunities for implementation by Council, by State Government, by private sector or a mix of all of the above.
- That Council create and implement a Public Domain Strategy to provide detailed design and implementation strategies for the above. Note that this needs to be considered in the context of future expansion to the west.

Building Form

- That a mix of perimeter block and hybrid building typologies be implemented in the Berry Road - Canberra Avenue sub-Precinct as set out in Section 6.
- That these buildings be generally located in a narrow band of 12-20m setback 4-5m from front boundary and thus providing a central block open space in the order of 15-25m (between buildings) allowing for significant deep soil planting and quite good solar access to east and west facing facades.
- That buildings should provide clear differentiation between public space (streets/parks) and private/common space by the use of low fences, decorative retaining walls, ground cover, hedges, etc.
- The deep soil planting zones be optimised within front setback (4-5m) and rear areas (18-25m).

Design Controls

- That apartments be generally regulated by the SEPP No 65 Apartment Design Guide 2014.
- That Council seek to create a supportive "Site Specific Development Control Plan" to ensure design excellence. This DCP should regulate:
  - Building height 8 storeys with some bonuses up to 12 and 15 storeys plus for particular sites;
  - Building setbacks as follows:
    - front 4-5m (deep soil)
    - rear about 10-12m
  - Minimum lot sizes of 1500m2 for full height and FSR qualification.
  - A general density throughout the Precinct of 2.75:1 FSR. Note that bonuses up to 4:1 may be available for provision of major public benefits.
  - A further 3-5m front setback above Level 6 and a further 2-5m front set back above Level 10.
  - Building depth of 18-22m.

Project Delivery

- That Council consider the likely dwelling yield, resulting population and associated demand for community facilities and prepare S94 Plans and public infrastructure strategies accordingly. This public infrastructure might include:
  - child care/day care x 3-5 (private)
  - primary school (likely off-site)
  - secondary school (off site)
  - employment (see St Leonards Commercial Strategy)
  - seniors programs and housing
  - civic and civil facilities (meeting rooms, halls, workshops, sheds, studios, library etc)
- That car parking be at a maximum of 1/ dwelling (Note no car parking is required by SEPP No 65 in Transit-Oriented Development).
- That Council collaborate with utility authorities to ensure augmentation of services where necessary.
- That Council collaborate with electrical authorities to underground power cables in association with new development.
- That Council collaborate with Department of Roads and Maritime Services to improve access and egress to and from the Precinct and particularly to improve pedestrian access across the Pacific Highway (at Park Road and Canberra Avenue).

- That Council use data contained in Section 5.0 and elsewhere in this report to establish and fund a Public Infrastructure Strategy to be used in project delivery (and in negotiation with State Government and the private sector).
- That Council negotiate with government, stakeholders and the development sector to establish adequate and transparent infrastructure funding arrangements for project delivery.
- That Council review the delivery process in 5 years to ascertain if further redevelopment and rezoning is necessary.
- That the line of transition be Berry Road rather than Berry lane.
- That Council should continue (and escalate) liaison with North Sydney and Willoughby Councils in order to make St Leonards into a memorable and enduring place.

Development Examples

- That Council consider the key site plan (page 89) and seek to encourage appropriate amalgamations which will facilitate project delivery as indicated in Section 10 of this report.

  Note that these plans are conceptual only but demonstrate sets of amalgamations which could deliver a quality result.