
DESIGN WA
STAGE ONE
DRAFT APARTMENT
DESIGN POLICY
TESTING REPORT

General Notes and Definitions		
No.units Number of dwelling units of each type and total unit yield.	Resi bays Carbays allocated to dwelling units.	NSA: GFA Ratio of Net Saleable Area (NSA) to Gross Floor Area (GFA). Higher number is most efficient.
% mix Percentage of each type of dwelling unit. ADP scenarios sought to closely match Base case.	Resi visitors Carbays allocated to visitors.	Façade: GFA Efficiency ratio of external façade to Gross Floor Area (GFA). Lower number is most efficient.
Avg unit m² Apartment area averaged for each unit-type. Compare to minimum areas in ADP shown at top of column (ADP min m ²).	Total resi bays Total of Residents and Resident visitor bays. Excludes mixed use.	Avg unit cost Average construction cost of dwelling units.
Resi NSA Aggregated Net Saleable Area for the residential components of the development.	Bikes Dedicated bicycle parking bays provided for residents and resident visitors.	Avg unit diff % Percentage difference between base case and ADP Scenario build cost.
Resi GFA Aggregated Gross Floor Area for the residential components of the development.	Communal Main communal facilities noted for comparison.	Total resi build Total construction costs relating to the residential elements of development (ie. excluding mixed-use elements).
NOTE All rates and costs exclude GST, contingency, professional fees, headworks, site services, demolitions, works outside site boundary, cost escalation, out of sequence construction activities, future proofing provisions, Client direct costs (such as financing / land / taxes / interest / authority fees / marketing / maintenance).		

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Economic Testing

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Design Testing Outcomes

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NOTE

This design testing process was based on the advertised draft Apartment Design Policy of October 2016. The design and economic findings of this report should be understood to relate to the draft policy, and certain policy settings have changed in the final gazetted policy.

The final gazetted policy incorporates modifications informed by the public submissions and extensive analysis and testing. The final policy was also reviewed for alignment with the Independent Planning Review Green Paper 'Modernising Western Australia's Planning System' (May 2018).

The costings and economic commentary in this report are sourced from independent economic analysis undertaken in 2018 on behalf of the Western Australian Planning Commission and Department of Planning, Lands and Heritage.

Introduction

DESIGN TESTING

Alongside analysis of public submissions, a design testing exercise applying the draft Apartment Design policy was undertaken, providing detailed feedback from the user-perspective, and an indication of effects of the policy on design outcomes. The process involved commissioning six designers with a range of experience and expertise, to undertake designs for a selection of six sites. Sites were chosen that had previously lodged development applications or built projects, which were used as a general reference for development feasibility; such as development yield, apartment type mix and marketability factors. Designers worked to comparable standards, or provided commentary on variables that might have feasibility implications.

The designs were produced according to draft Apartment Design settings, in some cases with assumptions for local variations as envisaged by the policy. The architects presented to an expert panel to explain and comment on any issues found during the design process. The presentation format was based on a Design Review Panel session to provide a 'real-world' scenario where flexibility can be accommodated in order to allow teams to achieve their proposed development yield and design outcomes.

In summary, the exercise demonstrated that the proposed performance based system with Principles, Objectives, Design Criteria, and Design Guidance is very successful in facilitating the production of good quality design outcomes for a range of site types and sizes. It also demonstrated that the Policy will likely not inhibit yield outcomes for developers, although the application of discretion through Design Review Panels (as per the performance review framework being proposed under Design WA) will be important in enabling this. The architectural design teams all created quality design outcomes, seeking realistic trade-offs to meet Design Criteria to site specific requirements to achieve similar yield to the comparison sites.

There were a range of detailed issues raised by the designers' proposals, observations, and panel discussions that have informed the ongoing finalisation of the draft policy.

The selected sites included:

- **Site L1** (Small) – *Outer-metropolitan site of ~4200sqm within a predominantly single-storey neighbourhood, with a reference yield of 42 units. Design testing focused on the detached-type D1 primary controls, responding to suburban context and affordability factors.*
- **Site L2** (Small) – *Inner-metropolitan narrow-lot site of ~1000sqm on a growth corridor, with a reference yield of 8 units. Design testing focused on the detached-type D2 primary controls, responding to established neighbourhood context.*
- **Site L3** (small) – *Outer-metropolitan site of ~800qm, with a reference yield of 7 units. Design testing focused on detached-type D1 primary controls, responding to suburban context and affordability factors.*
- **Site M1** (Medium) – *Inner-metropolitan activity corridor site of ~2500sqm, with a reference yield of 69 units. Design testing focused on attached-type A2 primary controls, responding to mixed-use issues, and achieving new standards on a constrained site.*
- **Site M2** (Medium) – *Outer-metropolitan activity centre site of ~1100sqm, with a reference yield of 31 units. Design testing focused on attached-type A2 primary controls, responding to affordability factors on a highly-constrained site.*
- **Site H1** (Large) – *Activity centre mixed-use site of ~2000sqm, with a reference yield of 71 units. Design testing focused on attached-type A3 primary controls, responding to heritage context and achieving new standards on a constrained site.*
- **Site H2** (Large) – *Activity centre mixed-use site of ~2700sqm, with a reference yield of 102 units. Adopted R-AC0 controls as per reference project, but utilised other controls from Apartment Design. Testing focused on considerations for high-rise, major developments.*

ECONOMIC TESTING

A comprehensive economic review process followed design testing, to ensure the draft Apartment Design Policy could balance higher design standards, construction costs/savings, and wider costs/benefits to society and government. This process demonstrated the draft policy would deliver a net improvement in wellbeing to Western Australians (benefit–cost ratio of 2.8:1).

The cost comparison of the design testing scenarios against the reference designs indicates that better design outcomes do not necessarily cost more. As detailed in this report, costings of the seven case studies demonstrated cost increases from 0% to 4%, while yielding substantial benefits to streetscape and improved living standards for residents. Feasibility analysis demonstrated positive effect on residual land value in 3 out of 4 cases, but indicated a negative impact of 9% in an outer metro infill site, where the development feasibility is typically marginal.

Benchmarking against similar economic impact analysis carried out for planning reforms in NSW and Victoria indicated comparatively modest cost impacts for WA. This is due to absence of state codes for apartments in those states before introduction of similar reforms.

The testing process has informed changes to the draft Apartment Design Policy (see: *Design WA Stage One Submissions and Changes Report*).

Key changes to the final policy would improve on economic impacts cited in this report, bringing instances of estimated cost increases closer to parity.

The methodology included:

- Review of submissions relating to economics – *Prioritising matters where stakeholders identified potential impact on construction cost, affordability and feasibility of settings in the draft Apartment Design Policy.*
- Design testing of seven sites of varying scale, lot size and market – *Importing design testing results into the economic review by working with designers to calibrate apartment and car parking yields to align with base cases within a reasonable tolerance levels.*
- Analysis of expected build costs using a Quantity Surveyor – *Costing scenarios formulated using a functional area methodology, sufficient for a comparison between a base case and draft Apartment Design policy. Some measures, like ESD provisions, were estimated based on average cost impacts in other States where local costs could not be easily obtained.*
- Feasibility testing of a selection of sites using an independent Property Valuation firm – *Analysis of four sites across ‘low’, ‘medium’ and ‘high’ scales to compare feasible market land values for base case and draft Apartment Design policy scenarios. Consultants used a Static Hypothetical Development Approach, sufficient for a high level policy comparison.*
- Cost-benefit analysis of the reform against wider social and economic benefits – *Comprehensive analysis of design and economic outputs to test the overall economic efficiency of the draft Apartment Design Policy. Wider social and economic benefits of design improvements expected in local neighbourhoods are compared against any estimated costs (including changes to process and/or construction costs). Commentary on expected market behaviour with the introduction of similar reforms in NSW and Victoria is also included.*
- Feedback from the Design WA Advisory Group (local government and developer inputs) - *Opportunities to test the methodology and results with representatives of impacted industries to inform refinement of settings.*

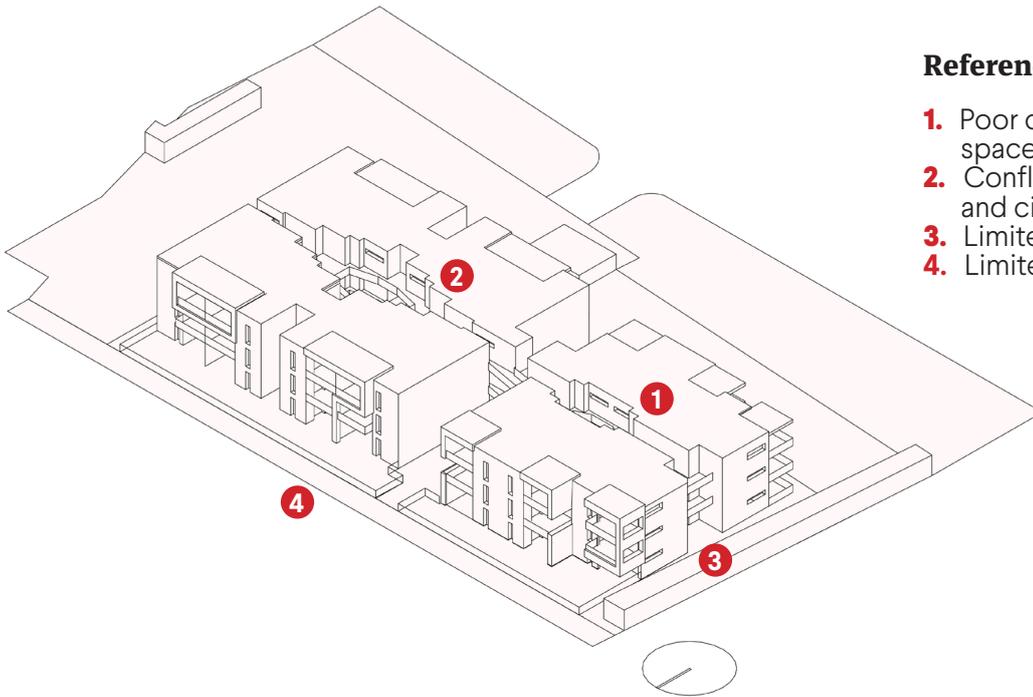
Site L1

OUTER METRO REDEVELOPMENT SITE

Site Area: 4211 m²

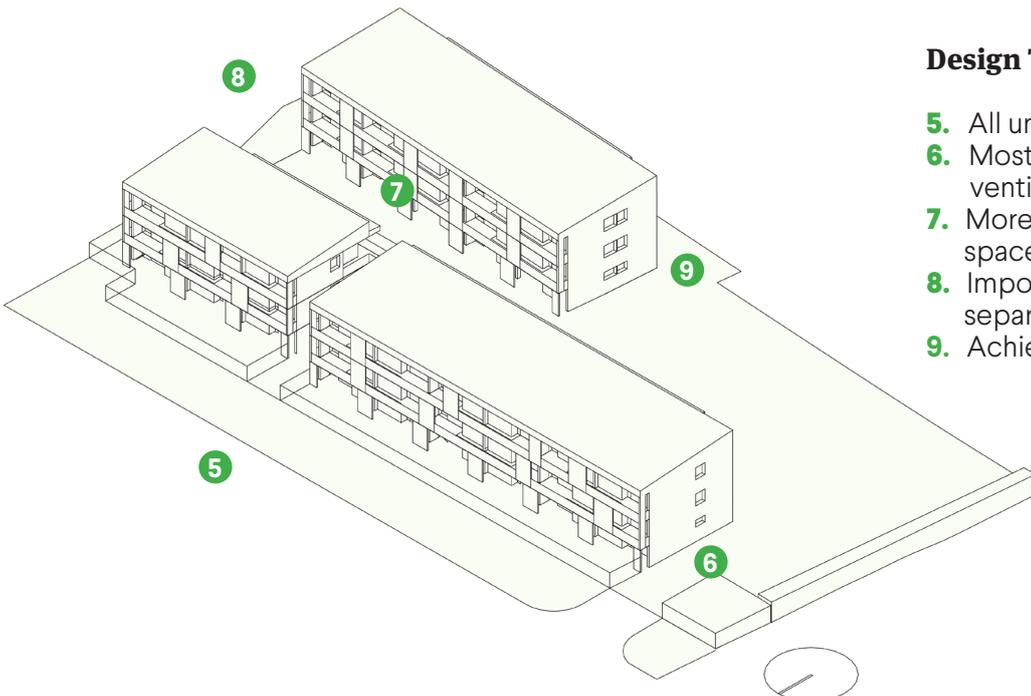
Parking Loc B

Dev Cat: LOW



Reference Design

1. Poor communal open space
2. Conflict between bedrooms and circulation
3. Limited cross-ventilation
4. Limited Northern aspect (50%)



Design Testing Alternative

5. All units have Northern aspect
6. Most achieve cross-ventilation
7. More useable communal open space
8. Improved setbacks, building separation
9. Achieves deep soil criteria



NUMBER OF UNITS

42

REFERENCE DESIGN



AVG UNIT COST DIFFERENCE

+\$5.4k

COST INCREASE



DEEP SOIL AREA

1.3%

REFERENCE DESIGN

42

DESIGN TESTING ALT.

+3%

PERCENTAGE CHANGE

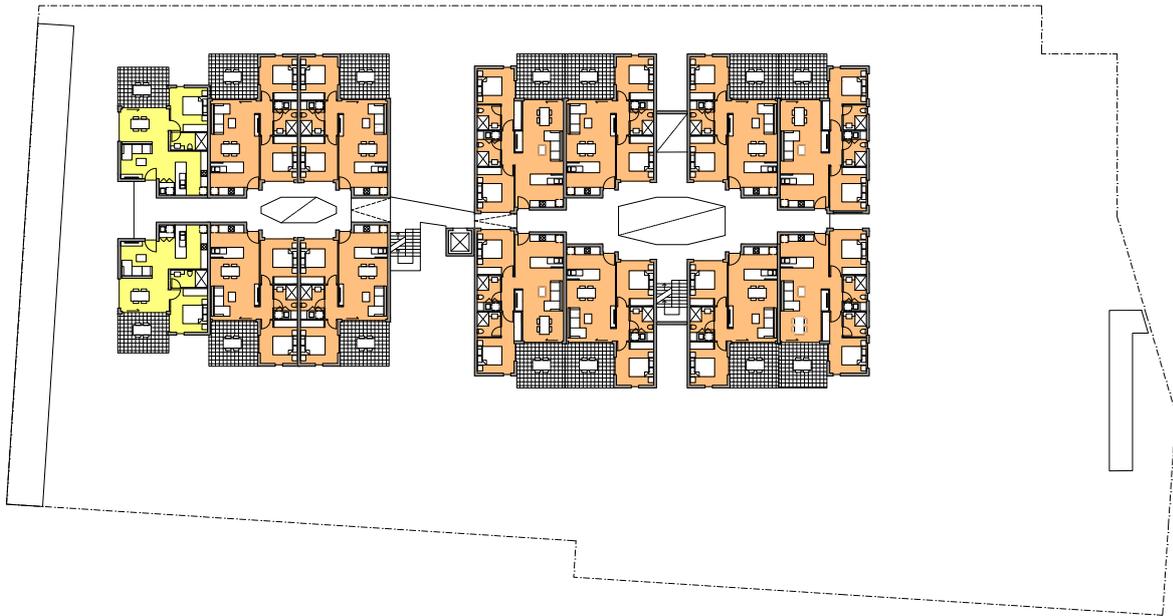
13%

DESIGN TESTING ALT.

Yield								
Site L1		Studio	1 Bed	2 Bed x 1	2 Bed x 2	3 Bed	Total	Change
ADP min m ²		37	47	67	72	90-100		
Reference Design	No. Units	-	6	24	12	-	42	-
	% Mix	-	14%	57%	29%	-	-	
	Avg unit m ²	-	52	61	71	-	62.7	
	Resi NSA	-	-	-	-	-	2,635	
	Resi GFA	-	-	-	-	-	4,153	
Design Testing Alternative	No. Units	-	6	24	12	-	42	Equal no. units
	% Mix	-	14%	57%	29%	-	-	Same mix
	Avg unit m ²	-	50	65	74	-	65.4	2.7
	Resi NSA	-	-	-	-	-	2,747	4%
	Resi GFA	-	-	-	-	-	4,057	-2%

Parking and Communal			
Site L1		Provided	Required by R-Codes / ADP
Reference Design	Resi bays	52 (8 Tandem)	53
	Resi visitors	7	11
	Total resi bays	59	63
	Bikes	~12	19
	Communal	Patio / Full lift access	
Design Testing Alternative	Resi bays	51 (9 Tandem)	51
	Resi visitors	7	7
	Total resi bays	58	58
	Bikes	26	26
	Communal	Patio / Part lift access	

Cost & Efficiency		
Site L1	Outcome	Change
NSA:GFA	66%	-
Façade:GFA	96%	
Avg unit cost	\$175,207	
Total resi build	\$7,358,700	
NSA:GFA	69%	3%
Façade:GFA	80%	-16%
Avg unit cost	\$180,614	\$5,407
Avg unit diff %	-	3%
Total resi build	\$7,585,800	\$227,100



Reference Design

First floor - 1:500



Reference Design

Ground floor - 1:500

LEGEND

■ Retail
 ■ Commercial
 ■ Store
 ■ 1 Bedroom Apt
 ■ 2 Bedroom Apt
 ■ 3 Bedroom Apt



Design Testing Alternative

First floor - 1:500



Design Testing Alternative

Ground floor - 1:500



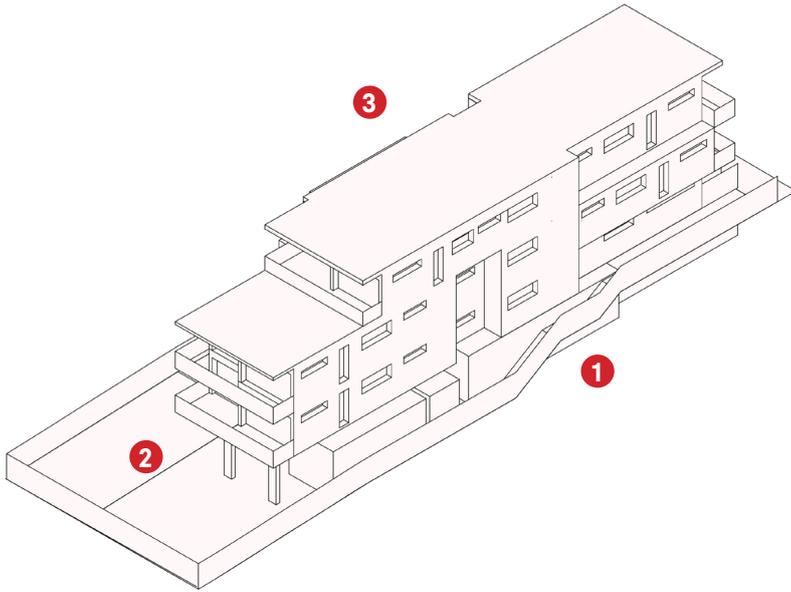
Site L2

INNER METRO TRANSIT CORRIDOR

Site Area: 748 m²

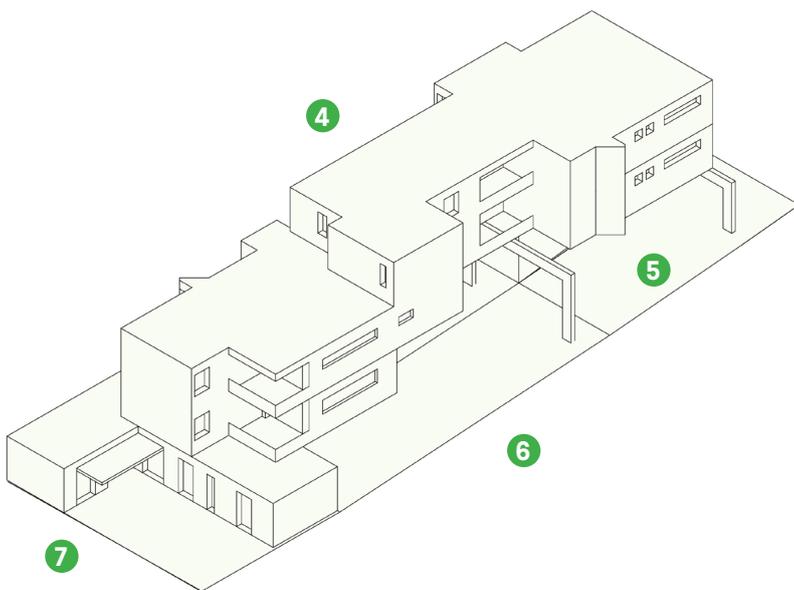
Parking Loc A

Dev Cat: LOW



Reference Design

1. Limited side setbacks
2. Some balcony screening
3. Limited Northern aspect



Design Testing Alternative

4. Optimises Northern Aspect
5. Meets setback and visual privacy standards
6. Achieves deep soil + open space
7. Greater housing diversity



NUMBER OF UNITS

8

REFERENCE DESIGN

8

DESIGN TESTING ALT.



AVG UNIT COST DIFFERENCE

-7.6k

COST INCREASE

-3%

PERCENTAGE CHANGE



DEEP SOIL AREA

2.1%*

REFERENCE DESIGN

16%

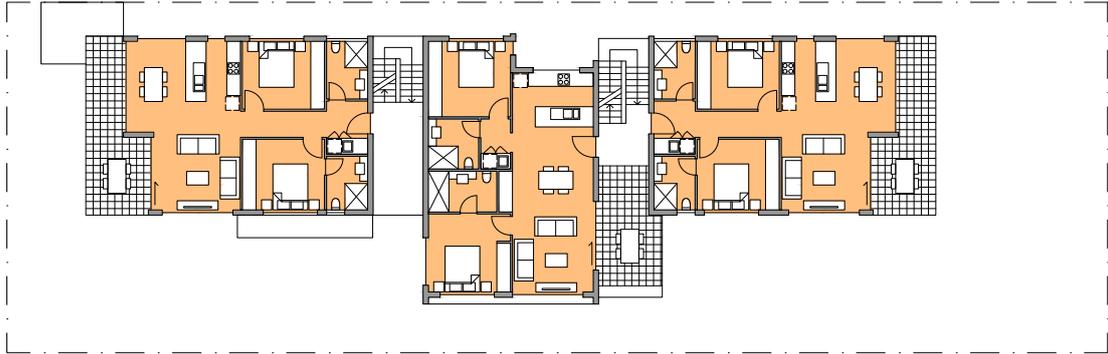
DESIGN TESTING ALT.

* Approximate DSA meeting the design criteria

Yield								
Site L2		Studio	1 Bed	2 Bed x 1	2 Bed x 2	3 Bed	Total	Change
ADP min m ²		37	47	67	72	90-100		
Reference Design	No. Units	-	-	-	8	-	8	-
	% Mix	-	-	-	100%	-	-	
	Avg unit m ²	-	-	-	77	-	77.3	
	Resi NSA	-	-	-	-	-	618	
	Resi GFA	-	-	-	-	-	1,186	
Design Testing Alternative	No. Units	-	1	-	6	1	8	Equal no. units
	% Mix	-	13%	-	75%	13%	-	Equivalent mix
	Avg unit m ²	-	47	-	78	95	76.8	-0.5
	Resi NSA	-	-	-	-	-	614	-1%
	Resi GFA	-	-	-	-	-	1,116	-6%

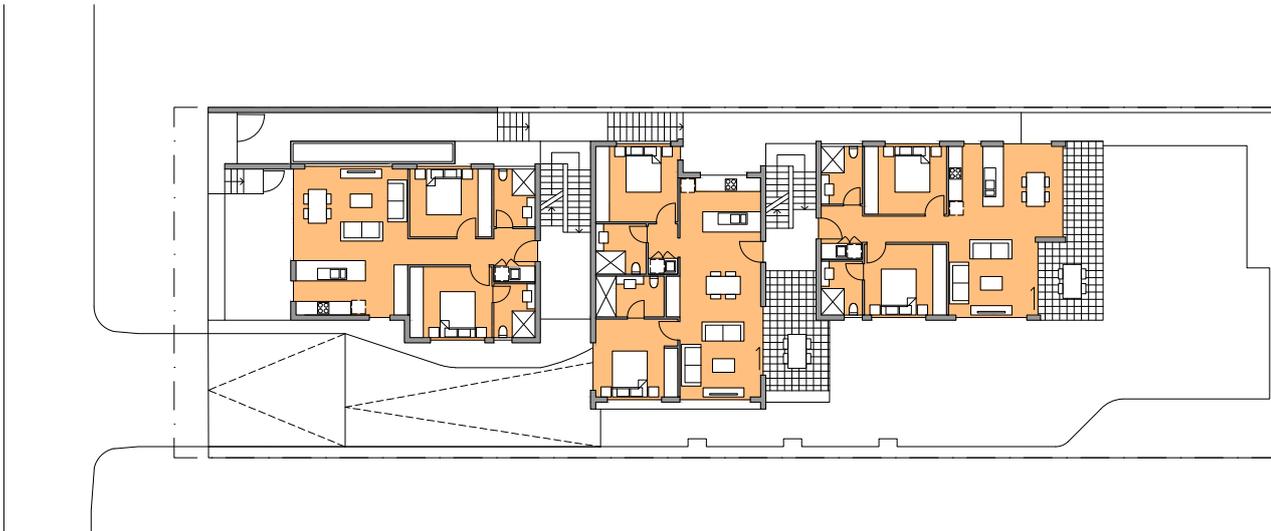
Parking and Communal			
Site L2		Provided	Required by R-Codes / ADP
Reference Design	Resi bays	8	8
	Resi visitors	2	2
	Total resi bays	10	10
	Bikes	-	4
	Communal	None	
Design Testing Alternative	Resi bays	8	8
	Resi visitors	2	2
	Total resi bays	10	10
	Bikes	5	5
	Communal	None	

Cost & Efficiency		
Site L2	Outcome	Change
NSA:GFA	67%	-
Façade:GFA	106%	
Avg unit cost	\$267,541	
Total resi build	\$2,140,325	
NSA:GFA	68%	1%
Façade:GFA	110%	4%
Avg unit cost	\$259,950	-\$7,591
Avg unit diff %	-	-3%
Total resi build	\$2,079,600	-\$60,725



Reference Design

First floor - 1:750

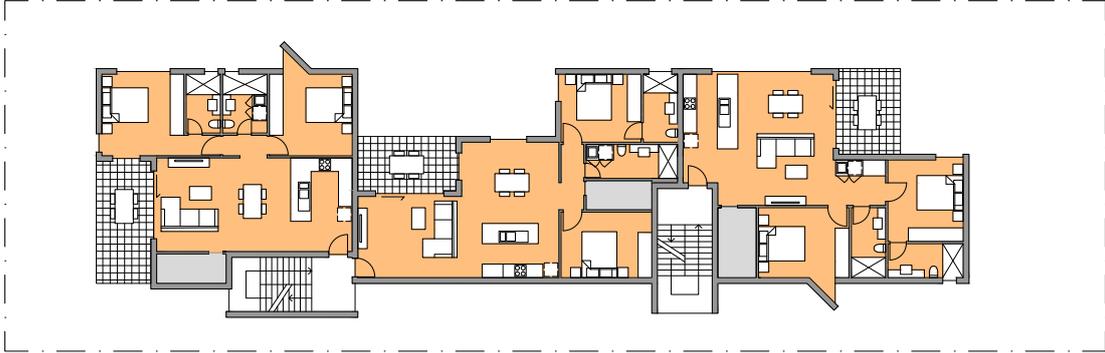


Reference Design

Ground floor - 1:750

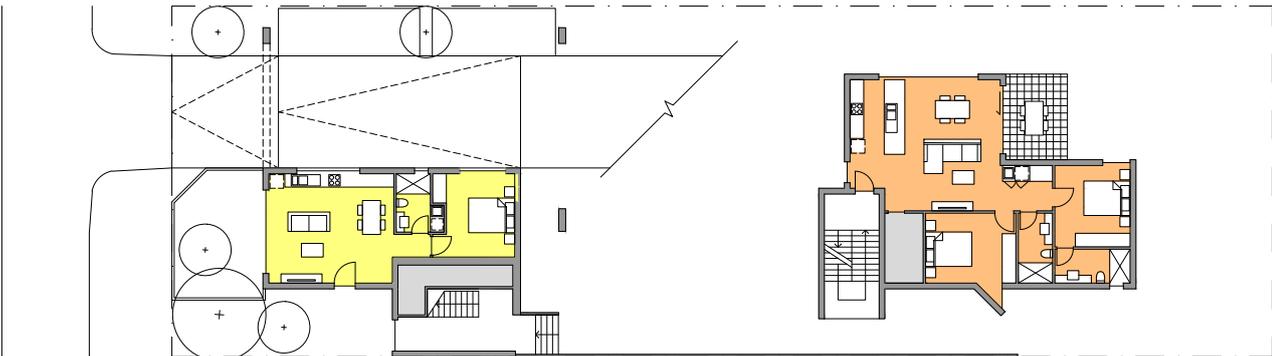
LEGEND

■ Retail
 ■ Commercial
 ■ Store
 ■ 1 Bedroom Apt
 ■ 2 Bedroom Apt
 ■ 3 Bedroom Apt



Design Testing Alternative

First floor - 1:750



Design Testing Alternative

Ground floor - 1:750



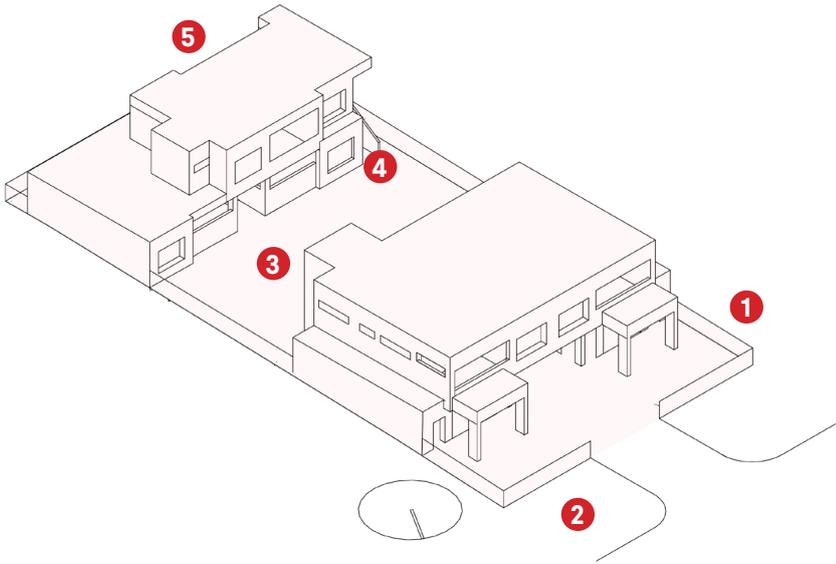
Site L3

INNER METRO INFILL LOT

Site Area: 810 m²

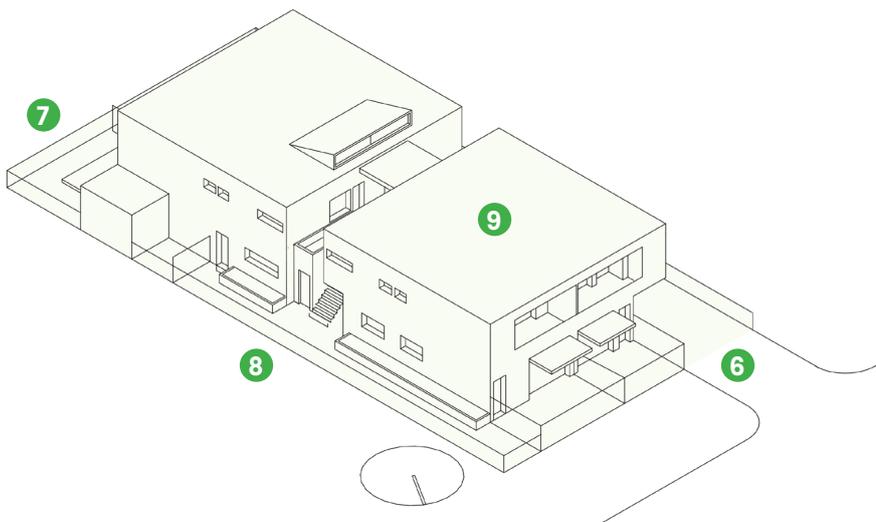
Parking Loc B

Dev Cat: LOW



Reference Design

1. High site coverage with limited setbacks
2. No deep soil or landscaping
3. Layout dominated by driveway and parking
4. Conflict between bedrooms and circulation
5. Screening for visual privacy



Design Testing Alternative

6. Meets SPP7.3 setbacks and visual privacy
7. Achieves deep soil criteria
8. Separate pedestrian and vehicle access
9. Some room size criteria not met



NUMBER OF UNITS

7

REFERENCE DESIGN

7

DESIGN TESTING ALT.



AVG UNIT COST DIFFERENCE

+\$7.3k

COST INCREASE

+4%

PERCENTAGE CHANGE



DEEP SOIL AREA

0%

REFERENCE DESIGN

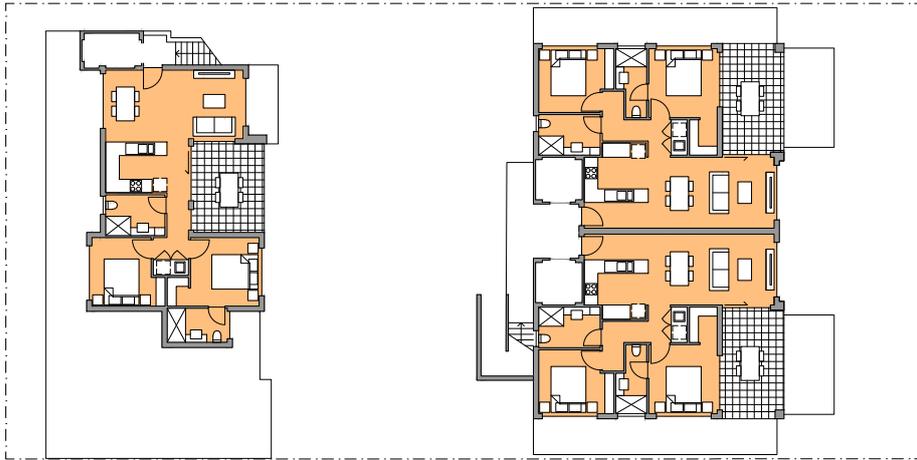
20%

DESIGN TESTING ALT.

Yield								
Site L3		Studio	1 Bed	2 Bed x 1	2 Bed x 2	3 Bed	Total	Change
ADP min m ²		37	47	67	72	90-100		
Reference Design	No. Units	-	-	-	7	-	7	-
	% Mix	-	-	-	100%	-	-	-
	Avg unit m ²	-	-	-	62	-	61.8	-
	Resi NSA	-	-	-	-	-	433	-
	Resi GFA	-	-	-	-	-	727	-
Design Testing Alternative	No. Units	-	1	-	6	-	7	Equal no. units
	% Mix	-	14%	-	86%	-	-	Similar mix
	Avg unit m ²	-	47	-	72	-	68.7	6.9
	Resi NSA	-	-	-	-	-	481	11%
	Resi GFA	-	-	-	-	-	830	14%

Parking and Communal			
Site L3		Provided	Required by R-Codes / ADP
Reference Design	Resi bays	7	9
	Resi visitors	2	2
	Total resi bays	9	11
	Bikes	-	4
	Communal	None	
Design Testing Alternative	Resi bays	7	9
	Resi visitors	2	2
	Total resi bays	9	11
	Bikes	5	5
	Communal	None	

Cost & Efficiency		
Site L3	Outcome	Change
NSA:GFA	67%	-
Façade:GFA	83%	
Avg unit cost	\$182,757	
Total resi build	\$1,279,300	
NSA:GFA	73%	
Façade:GFA	80%	-3%
Avg unit cost	\$190,050	\$7,293
Avg unit diff %	-	4%
Total resi build	\$1,330,350	\$51,050



Reference Design

First floor - 1:750



Reference Design

Ground floor - 1:750

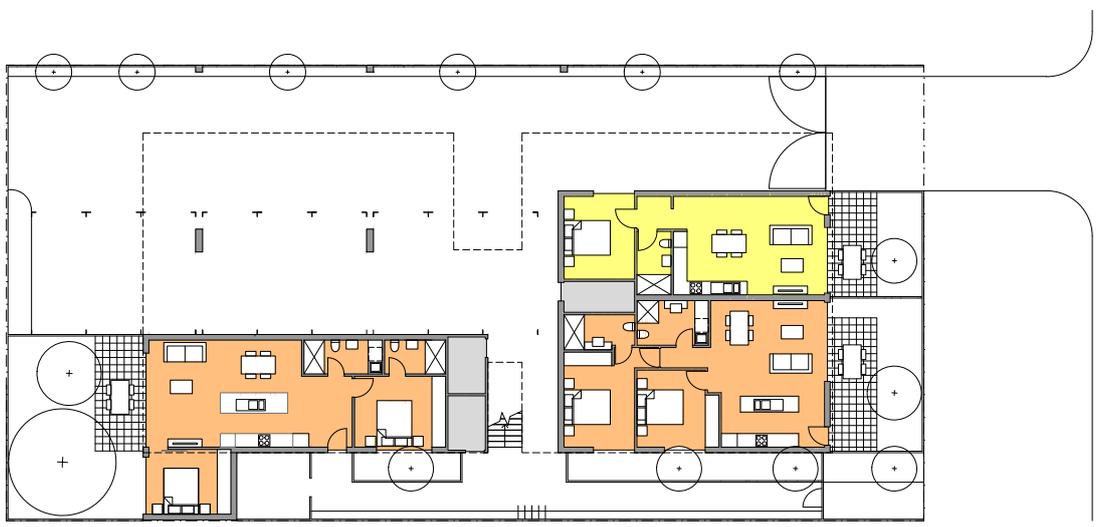
LEGEND

-
 Retail
 -
 Commercial
 -
 Store
 -
 1 Bedroom Apt
 -
 2 Bedroom Apt
 -
 3 Bedroom Apt



Design Testing Alternative

First floor - 1:750



Design Testing Alternative

Ground floor - 1:750



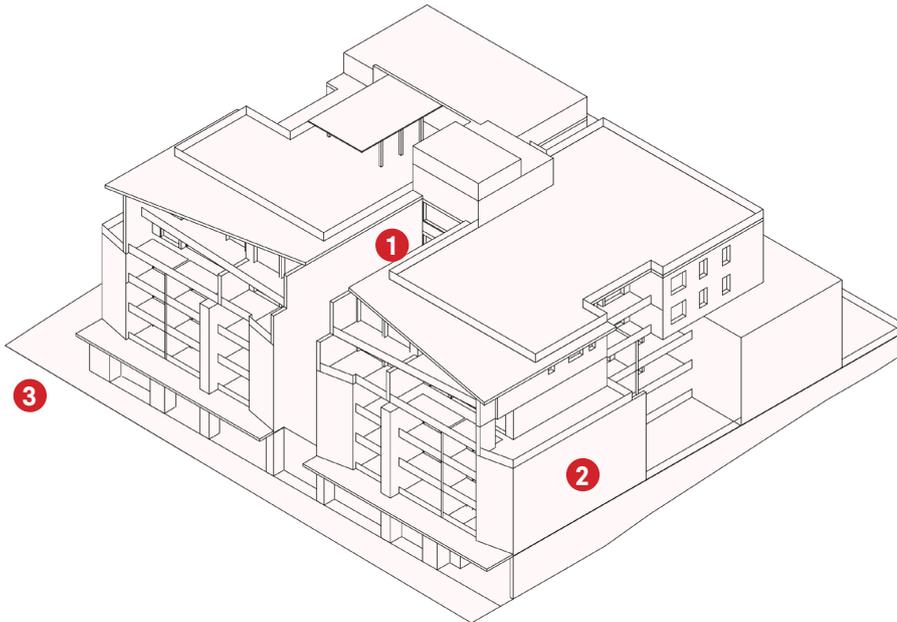
Site M1

INNER METRO ACTIVITY CORRIDOR

Site Area: 2438 m²

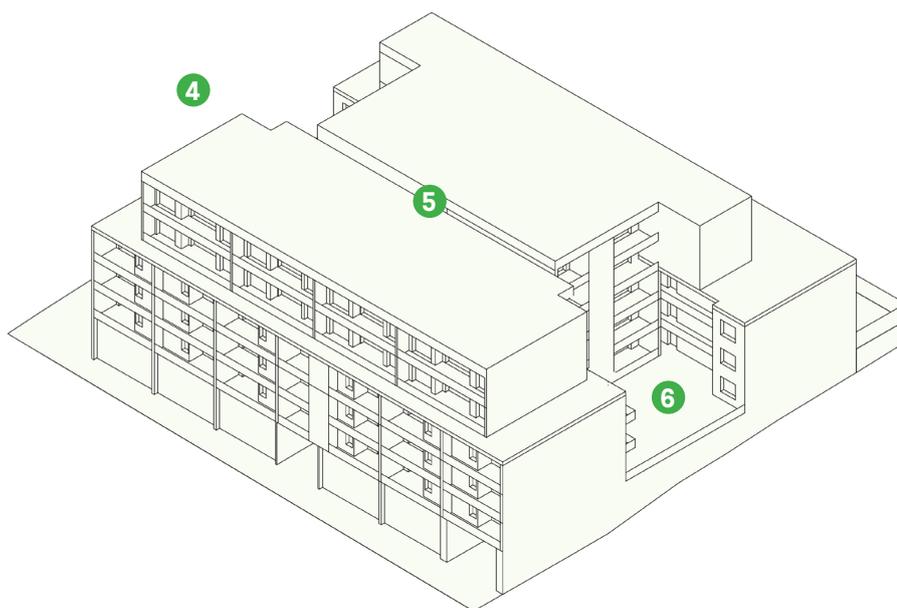
Parking Loc A

Dev Cat: MEDIUM



Reference Design

1. Internal corridors with limited day light
2. Limited cross-ventilation
3. No deep soil zones



Design Testing Alternative

4. Improves Northern aspect and cross-ventilation
5. Improved circulation space
6. Has deep soil areas and useable open space



NUMBER OF UNITS

69

REFERENCE DESIGN

69

DESIGN TESTING ALT.



AVG UNIT COST DIFFERENCE

-\$6.2k

COST INCREASE

-2%

PERCENTAGE CHANGE



DEEP SOIL AREA

0%

REFERENCE DESIGN

12%

DESIGN TESTING ALT.

Yield								
Site M1		Studio	1 Bed	2 Bed x 1	2 Bed x 2	3 Bed	Total	Change
ADP min m ²		37	47	67	72	90-100		
Reference Design	No. Units	9	20	6	30	4	69	-
	% Mix	13%	29%	9%	43%	6%	-	
	Avg unit m ²	45	56	72	79	105	68.7	
	Resi NSA	-	-	-	-	-	4,741	
	Resi GFA	-	-	-	-	-	13,944	
Design Testing Alternative	No. Units	13	14	9	27	6	69	Equal no. units
	% Mix	19%	20%	13%	39%	9%	-	Similar mix
	Avg unit m ²	49	57	69	75	95	67.5	-1.2
	Resi NSA	-	-	-	-	-	4,658	-2%
	Resi GFA	-	-	-	-	-	12,311	-12%

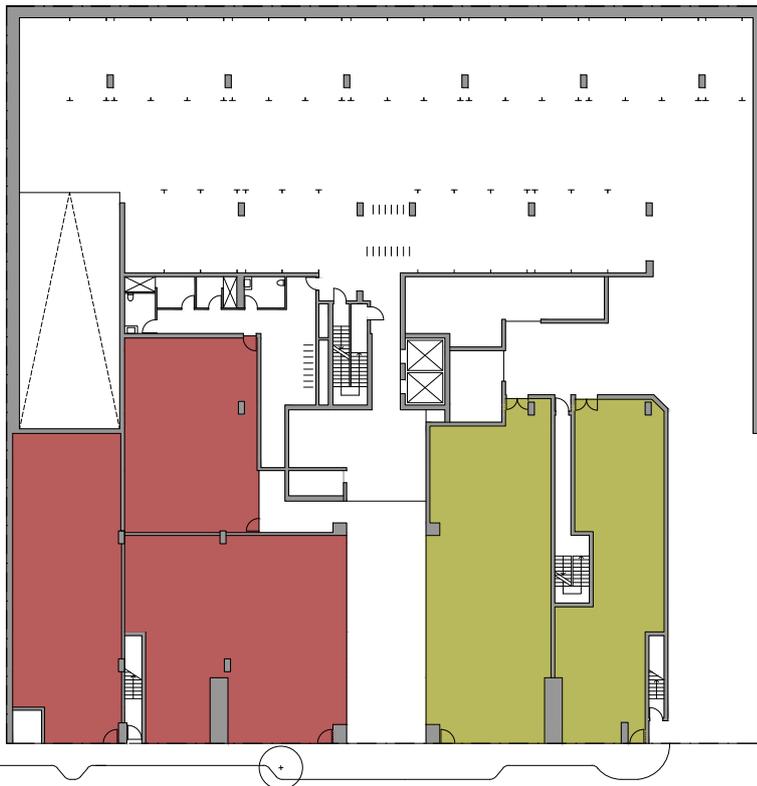
Parking and Communal			
Site M1		Provided	Required by R-Codes / ADP
Reference Design	Resi bays	97	69
	Resi visitors	18	18
	Total resi bays	115	87
	Bikes	33	30
	Communal	Same (roof terrace omitted)	
Design Testing Alternative	Resi bays	97	62
	Resi visitors	10 †	10
	Total resi bays	107	72
	Bikes	42	42
	Communal	Same	

Cost & Efficiency		
Site M1	Outcome	Change
NSA:GFA	59%	-
Façade:GFA	54%	
Avg unit cost	\$319,392	
Total resi build	\$22,038,043	
NSA:GFA	60%	1%
Façade:GFA	66%	12%
Avg unit cost	\$313,238	-\$6,154
Avg unit diff %	-	-2%
Total resi build	\$21,613,450	-\$424,593



Reference Design

First floor - 1:500



Reference Design

Ground floor - 1:500

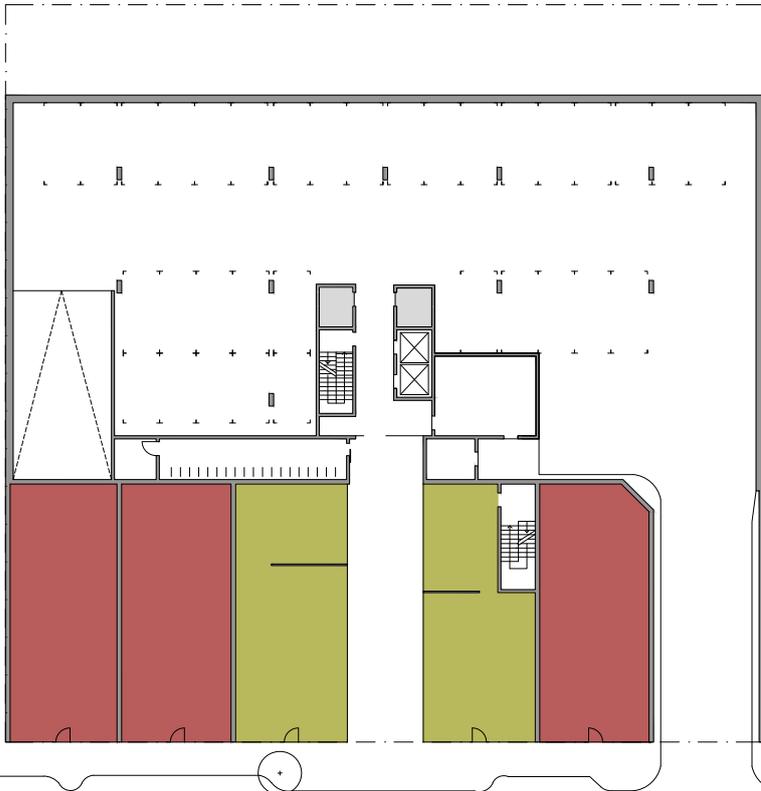
LEGEND

- Retail
- Commercial
- Store
- 1 Bedroom Apt
- 2 Bedroom Apt
- 3 Bedroom Apt



Design Testing Alternative

First floor - 1:500



Design Testing Alternative

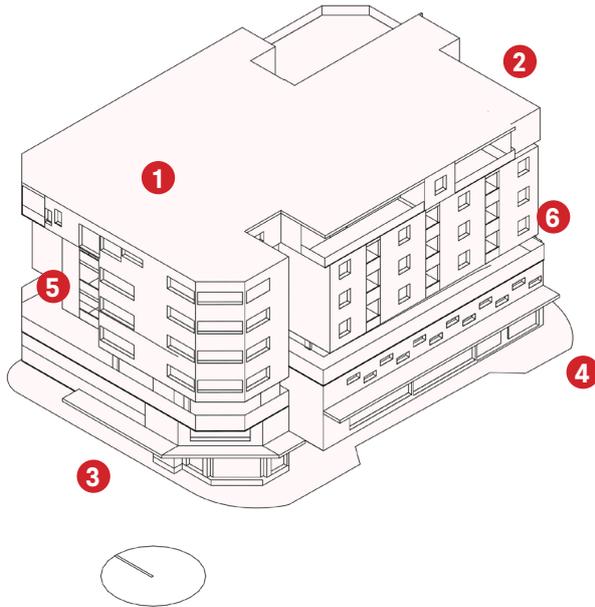
Ground floor - 1:500



Site M2

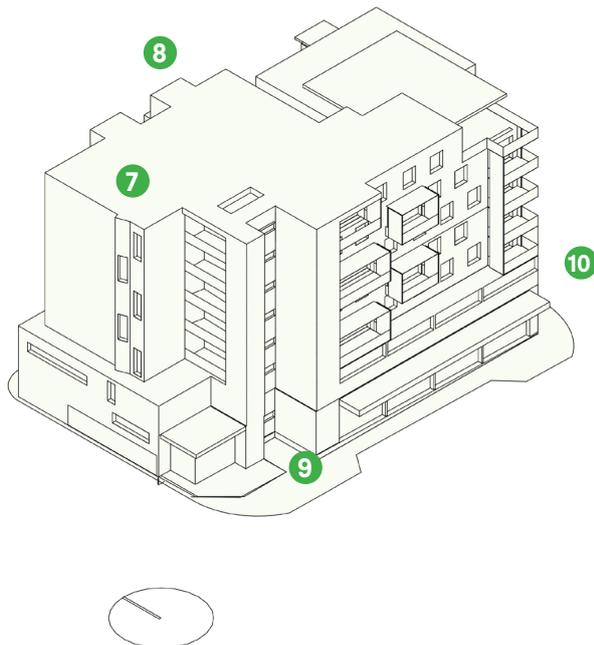
OUTER METRO ACTIVITY CENTRE

Site Area: 1099m²
Parking Loc A
Dev Cat: MEDIUM



Reference Design

1. Windowless bedrooms, limited light and air
2. Poor cross-ventilation
3. Poor public domain interface
4. Limited landscaping
5. Air conditioning units on balconies
6. Poor facade articulation



Design Testing Alternative

7. No windowless bedrooms
8. Optimised Northern aspect and cross-ventilation
9. Improved circulation spaces
10. Deep soil areas and useable open space



NUMBER OF UNITS

31

REFERENCE DESIGN



AVG UNIT COST DIFFERENCE

-\$10.8k

COST INCREASE



DEEP SOIL AREA

0%

REFERENCE DESIGN

31

DESIGN TESTING ALT.

-3%

PERCENTAGE CHANGE

13.6%

DESIGN TESTING ALT.

Yield								
Site M2		Studio	1 Bed	2 Bed x 1	2 Bed x 2	3 Bed	Total	Change
ADP min m ²		37	47	67	72	90-100		
Reference Design	No. Units	-	3	-	24	4	31	-
	% Mix	-	10%	-	77%	13%	-	
	Avg unit m ²	-	34	-	61	122	74.7	
	Resi NSA	-	-	-	-	-	2,315	
	Resi GFA	-	-	-	-	-	5,687	
Design Testing Alternative	No. Units	-	4	-	23	5	32	+1 unit
	% Mix	-	13%	-	72%	16%	-	Similar mix
	Avg unit m ²	-	48	-	75	102	76.4	1.7
	Resi NSA	-	-	-	-	-	2,444	6%
	Resi GFA	-	-	-	-	-	5,429	-5%

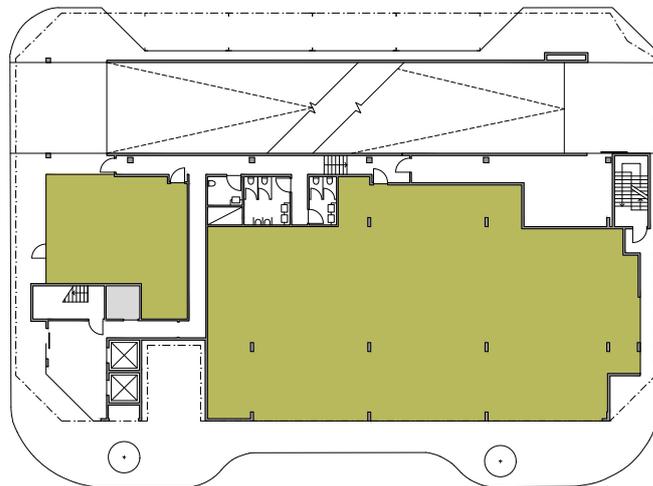
Parking and Communal			
Site M2		Provided	Required by R-Codes / ADP
Reference Design	Resi bays	31	31
	Resi visitors	8	8
	Total resi bays	39	39
	Bikes	0	14
	Communal	Roof terrace	
Design Testing Alternative	Resi bays	32 †	31
	Resi visitors	5 (+2 on-street)	6
	Total resi bays	37	37
	Bikes	0	19
	Communal	Roof terrace	

Cost & Efficiency		
Site M2	Outcome	Change
NSA:GFA	58%	-
Façade:GFA	68%	
Avg unit cost	\$310,108	
Total resi build	\$9,613,350	
NSA:GFA	67%	9%
Façade:GFA	77%	9%
Avg unit cost	\$299,281	-\$10,827
Avg unit diff %	-	-3%
Total resi build	\$9,577,000	-\$36,350



Reference Design

First floor - 1:500



Reference Design

Ground floor - 1:500

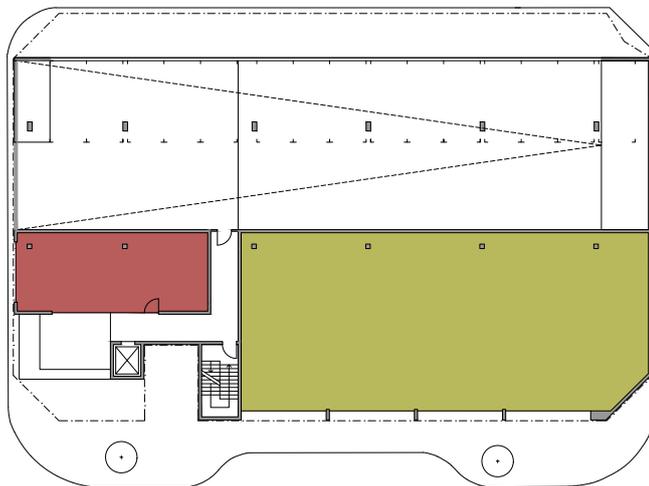
LEGEND

- Retail
- Commercial
- Store
- 1 Bedroom Apt
- 2 Bedroom Apt
- 3 Bedroom Apt



Design Testing Alternative

First floor - 1:500



Design Testing Alternative

Ground floor - 1:500



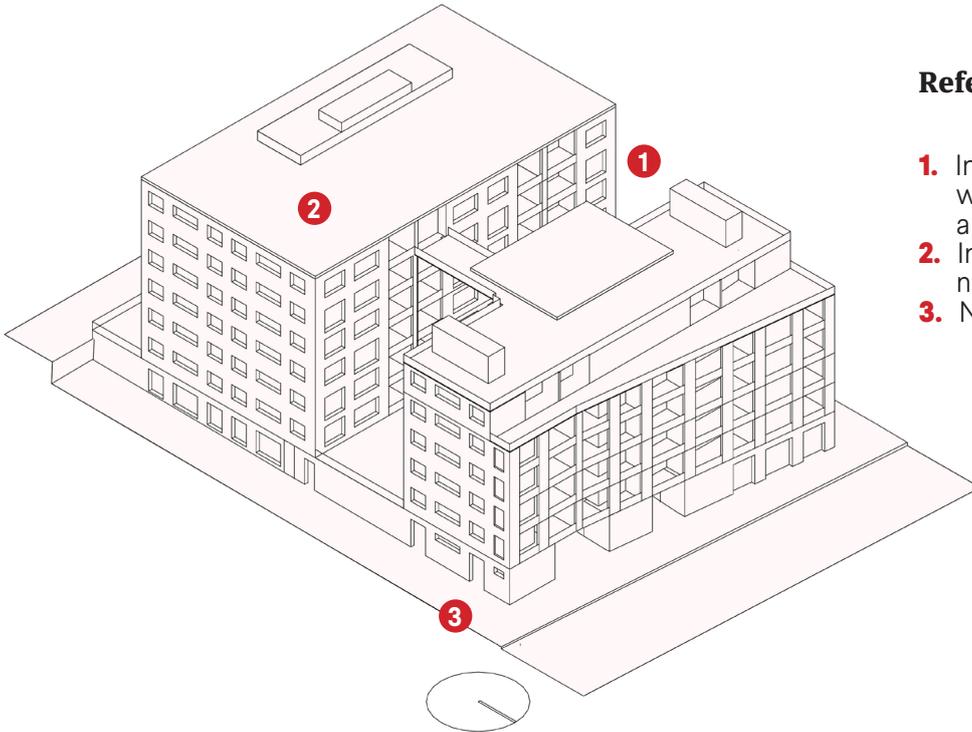
Site H1

INNER METRO CHARACTER AREA

Site Area: 2010m²

Parking Loc A

Dev Cat: HIGH



Reference Design

1. Inadequate building separation with poor outlook from apartments
2. Internalised corridors with no natural light
3. No deep soil areas



Design Testing Alternative

4. Improved building orientation with a better outlook for apartments
5. Improved circulation spaces
6. Combination of deep soil and planting on structure
7. More useable communal open space



NUMBER OF UNITS

71

REFERENCE DESIGN



AVG UNIT COST DIFFERENCE

+\$6.7k

COST INCREASE



DEEP SOIL AREA

0%

REFERENCE DESIGN

72

DESIGN TESTING ALT.

+2%

PERCENTAGE CHANGE

3.6%*

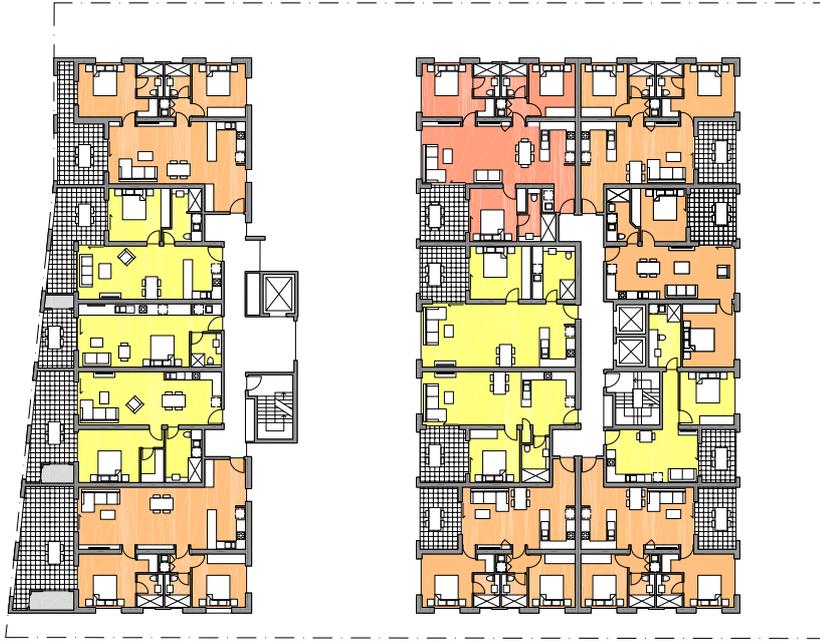
DESIGN TESTING ALT.

**Additional 16% planting on structure meets ADP criteria*

Yield								
Site H1		Studio	1 Bed	2 Bed x 1	2 Bed x 2	3 Bed	Total	Change
ADP min m ²		37	47	67	72	90-100		
Reference Design	No. Units	-	29	-	36	6	71	-
	% Mix	-	41%	-	51%	8%	-	
	Avg unit m ²	-	55	-	75	105	69.6	
	Resi NSA	-	-	-	-	-	4,942	
	Resi GFA	-	-	-	-	-	9,599	
Design Testing Alternative	No. Units	-	28	4	36	4	72	+1 unit
	% Mix	-	39%	6%	50%	6%	-	Similar mix
	Avg unit m ²	-	54	65	76	115	68	-1.6
	Resi NSA	-	-	-	-	-	4,901	-1%
	Resi GFA	-	-	-	-	-	10,045	5%

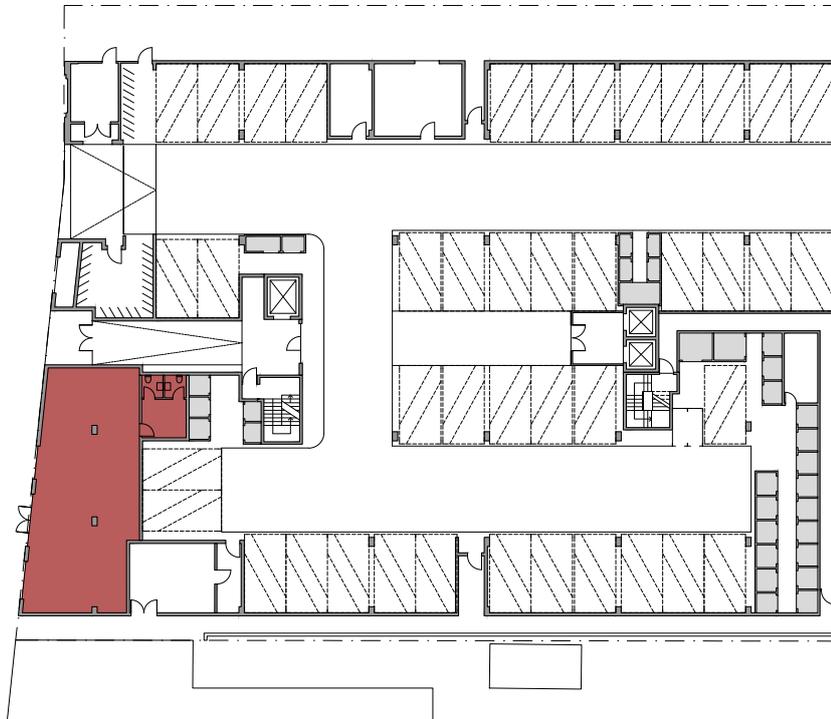
Parking and Communal			
Site H1		Provided	Required by R-Codes / ADP
Reference Design	Resi bays	71	71
	Resi visitors	13	18
	Total resi bays	84	89
	Bikes	32	32
	Communal	Podium Garden / Roof terrace	
Design Testing Alternative	Resi bays	72	65
	Resi visitors	11 †	11
	Total resi bays	72	76
	Bikes	43	43
	Communal	Podium Garden / Roof terrace	

Cost & Efficiency		
Site H1	Outcome	Change
NSA:GFA	64%	-
Façade:GFA	64%	
Avg unit cost	\$269,969	
Total resi build	\$19,167,800	
NSA:GFA	59%	-5%
Façade:GFA	84%	20%
Avg unit cost	\$276,662	\$6,693
Avg unit diff %	-	2%
Total resi build	\$19,919,700	\$751,900



Reference Design

First floor - 1:500



Reference Design

Ground floor - 1:500

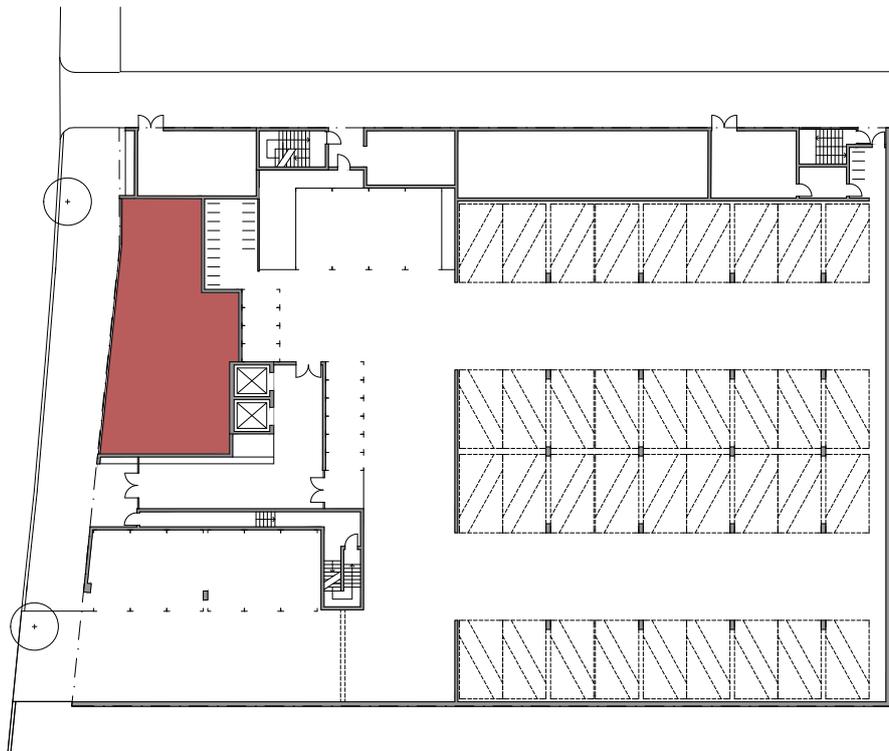
LEGEND

- Retail
- Commercial
- Store
- 1 Bedroom Apt
- 2 Bedroom Apt
- 3 Bedroom Apt



Design Testing Alternative

First floor - 1:500



Design Testing Alternative

Ground floor - 1:500



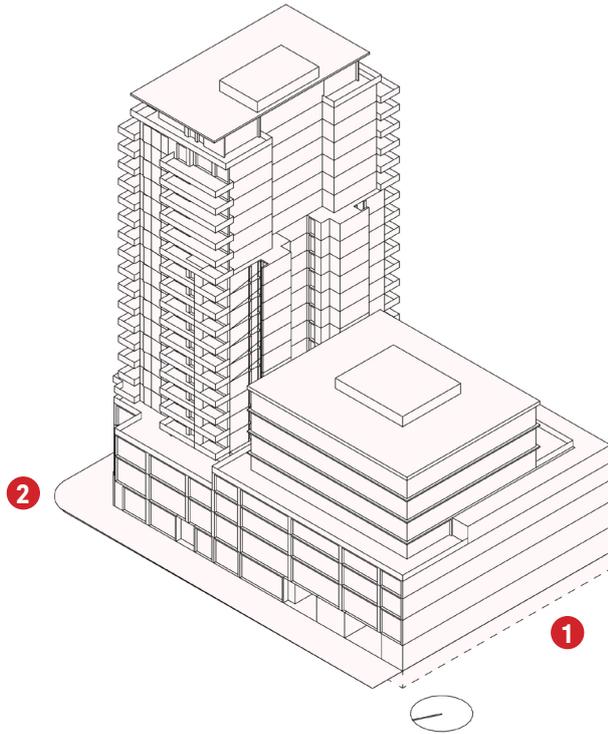
Site H2

INNER METRO PREMIUM SITE

Site Area: 2711m²

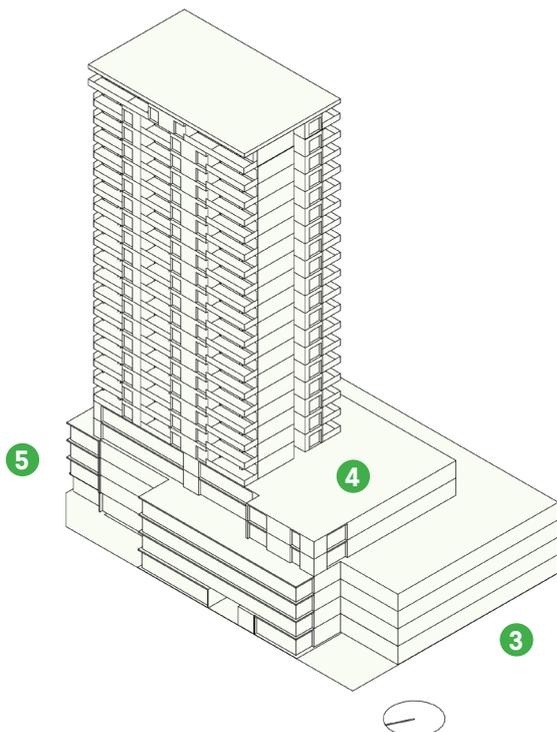
Parking Loc A

Dev Cat: HIGH



Reference Design

1. Internalised corridors with no natural light
2. No deep soil areas



Design Testing Alternative

3. Day lighting to corridors
4. Deep soil (8% of site) plus planting on structure (8% of site)
5. *Basement and podium carparking reconfigured



NUMBER OF UNITS

102

REFERENCE DESIGN

102

DESIGN TESTING ALT.



AVG UNIT COST DIFFERENCE

+\$4.2k

COST INCREASE

+1%

PERCENTAGE CHANGE



DEEP SOIL AREA

0%

REFERENCE DESIGN

8%*

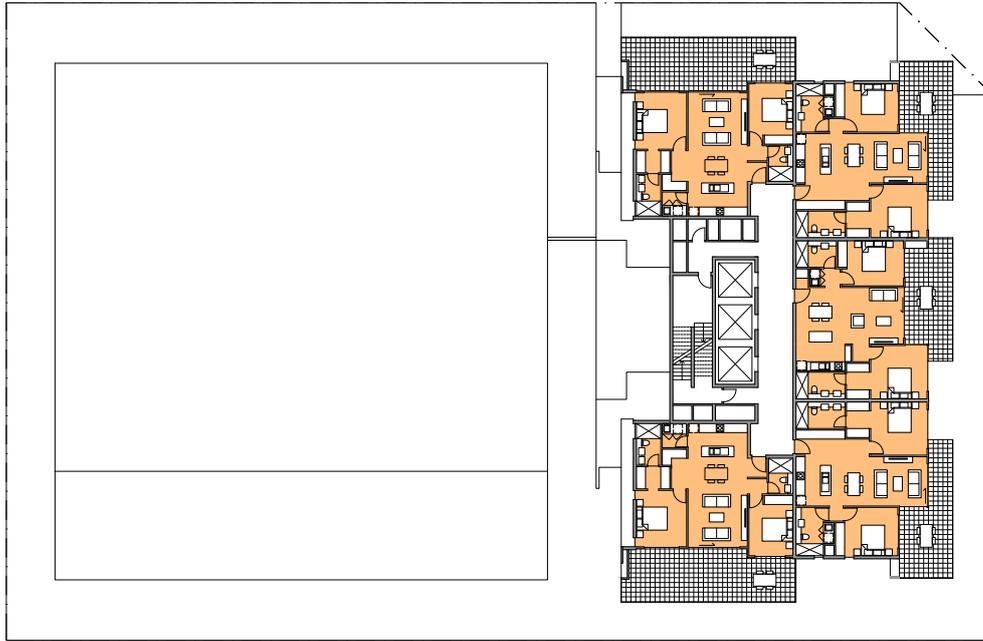
DESIGN TESTING ALT.

**Additional 8% planting on structure meets ADP criteria*

Yield								
Site H2		Studio	1 Bed	2 Bed x 1	2 Bed x 2	3 Bed	Total	Change
ADP min m ²		37	47	67	72	90-100		
Reference Design	No. Units	-	40	-	60	2	102	-
	% Mix	-	39%	-	59%	2%	-	
	Avg unit m ²	-	52	-	79	131	70.1	
	Resi NSA	-	-	-	-	-	7,152	
	Resi GFA	-	-	-	-	-	19,639	
Design Testing Alternative	No. Units	-	40	-	60	2	102	Equal no. units
	% Mix	-	39%	-	59%	2%	-	Similar mix
	Avg unit m ²	-	52	-	84	105	75.1	5.0
	Resi NSA	-	-	-	-	-	7,664	7%
	Resi GFA	-	-	-	-	-	18,931	-4%

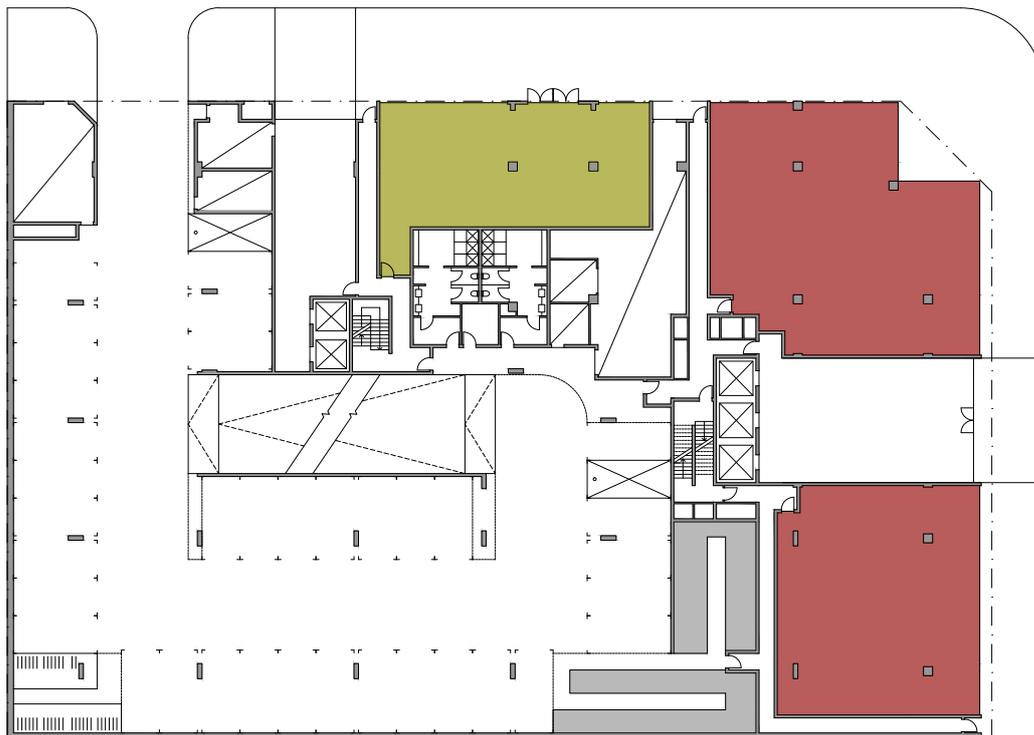
Parking and Communal			
Site H2		Provided	Required by R-Codes / ADP
Reference Design	Resi bays	148	102
	Resi visitors	17	26
	Total resi bays	165	128
	Bikes	35	45
	Communal	Ind pool / Terrace / Gym	
Design Testing Alternative	Resi bays	148	92
	Resi visitors	14 †	14
	Total resi bays	162	106
	Bikes	59	61
	Communal	Out pool / Terrace / Gym	

Cost & Efficiency		
Site H2	Outcome	Change
NSA:GFA	57%	-
Façade:GFA	65%	
Avg unit cost	\$372,620	
Total resi build	\$38,007,200	
NSA:GFA	59%	2%
Façade:GFA	68%	3%
Avg unit cost	\$376,808	\$4,188
Avg unit diff %	-	1%
Total resi build	\$38,434,400	\$427,200



Reference Design

First floor - 1:500



Reference Design

Ground floor - 1:500

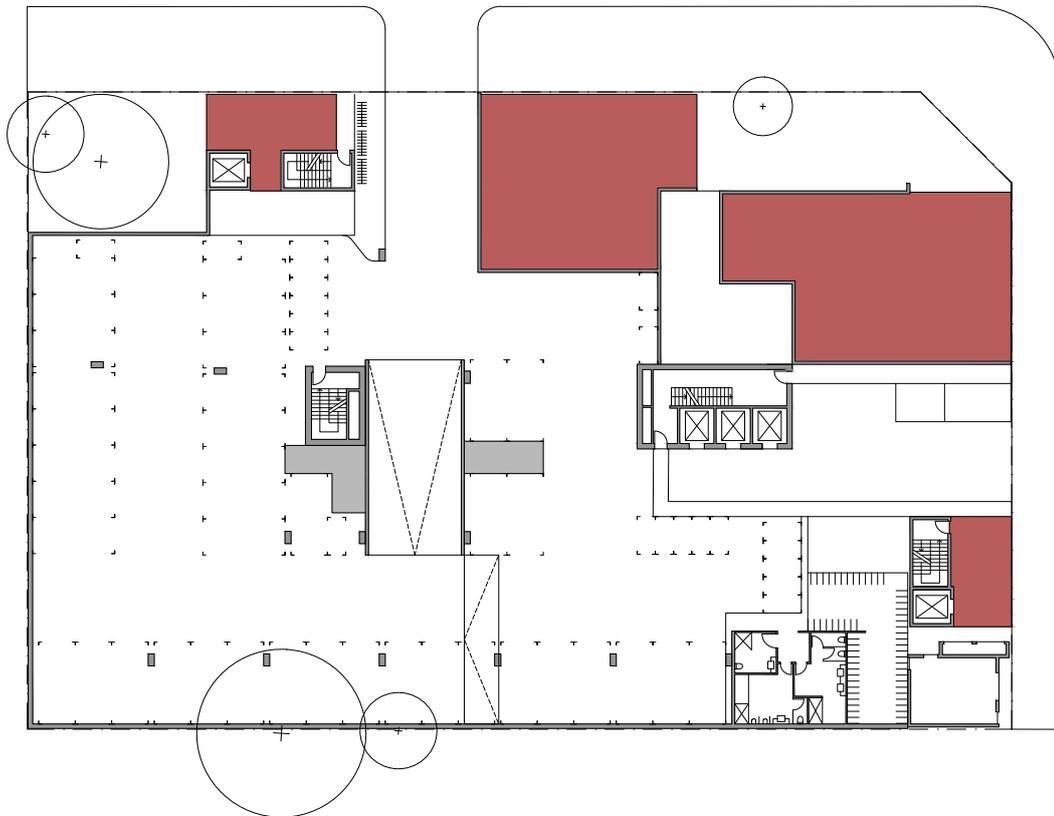
LEGEND

- Retail
- Commercial
- Store
- 1 Bedroom Apt
- 2 Bedroom Apt
- 3 Bedroom Apt



Design Testing Alternative

First floor - 1:500



Design Testing Alternative

Ground floor - 1:500



Design Testing Outcomes

The draft Apartment Design Policy (the Policy) was advertised for public comment in October 2016. As part of the analysis and response to public and industry submissions, the Department of Planning Lands and Heritage (DPLH) commenced an exercise of Design Testing to provide insights into the application of the Policy. From an invited shortlist of ten architects and building designers, six design teams and a facilitator were engaged in June 2017:

- Gresley Abas – Philip Gresley (testing facilitator)
- Harris Architects – Jono Harris
- Maine Architecture – Kris Mainstone
- Cameron Chisholm Nicol – Dominic Snellgrove
- Klopper and Davis Architects – Sam Klopper
- MJA Studio – James Thompson
- Hillam Architects – David Hillam

The designers used the Policy to develop a schematic design response for their respective sites addressing all policy Objectives by either meeting Design Criteria or, where appropriate, developing alternative solutions in accordance with guidance provided. The designers presented at two design review sessions, to a selected design review panel, with sufficient time between each to allow for modifications to design proposals in response to feedback received. The presentation was facilitated to emulate aspects of a Design Review Panel format (as outlined in the WAPC draft Design Review Guide) whereby alternative solutions to meeting Policy Objectives could be assessed in a holistic and site-specific manner.

In summary, the exercise demonstrated that the proposed performance-based system with Objectives, Design Criteria, and Design Guidance was generally easy to understand and work with, and can successfully facilitate good quality design outcomes for a range of site types and sizes, without significantly impacting on yield. All proposals developed were considered to have better overall quality (as defined by the Policy Objectives) than the reference designs provided, while achieving a similar yield and dwelling mix. What was brought to light quite clearly was the important role of Design Review for providing the flexibility needed to help ensure that: improved qualitative outcomes were delivered; and the dwelling yield and mix remained achievable.

There were, however, a number of issues raised by the designers and Panel members during the Design Review session that warrant further investigation in finalising the policy. This report seeks to capture these issues and summarise recommendations accordingly.

It should be noted that the response from all participants was generally highly supportive of both the Policy and Design Review process. This account of outcomes focuses on the issues exposed by the testing exercise rather than recording the successful components of the Policy. Where Design Criteria are not referred to in this report it can be assumed that they were supported, or not discussed (and therefore not considered problematic).

The following commentary was compiled by the testing facilitator as a summary of observations and recommendations from the design teams and panel members. These recommendations were considered alongside other public and industry submissions to inform the final Apartment Design policy.

2.1 PRIMARY CONTROLS TABLES

General comments

The most important observation on the shift from current R-Codes to implementing the proposed Policy is the need to support qualitative, performance-based assessment through Design Review. This enables complete, holistic assessments that support decision makers and are able to factor in all aspects of a proposal and its context in order to arrive at an informed judgement. A number of schemes made minor encroachments on prescribed setbacks and heights to achieve better design outcomes, which were duly discussed and agreed by the panel. Participants recommended that Design WA needs to ensure that the Design Review process includes performance assessment of the aspects covered in Section 2.1 Primary Controls, as well as the other Design Criteria contained in the policy as each site is different.

During the Design Testing process, there was acknowledgement of the role played by standardised controls and streetscape character types, however caution was noted with regard to the need to facilitate local precinct planning that encourages good quality, contextual design responses to streetscapes and neighbourhoods.

Table 1 – Primary Controls

There was some confusion about the availability and definition of zero lot street setbacks for commercial use only being applicable to the ground level.

Considerations: Under Table 1, Notes, Replace "Nil Setback applicable for commercial use at ground floor" with "Nil setback applicable if commercial use at ground floor".

Table 2 – Building separation

As a general note, the ability to apply flexibility with regard to building separation controls was raised a number of times in the testing. Design WA should ensure that design reviewers are empowered to make holistic, performance-based assessments that take into account site-specific factors and alternative means of compliance to achieve better quality design outcomes. Design WA needs to ensure that Design Review has the scope to support alternative means of compliance (and that this assessment is given appropriate weight by decision makers) where this enables improved outcomes to be delivered. This applies to the Primary Control settings in Section 2.1 as well as all other Design Criteria noted within the Policy. There was significant discussion as to the relationship between Building Separation and Visual Privacy. Building Separation is included in the Policy to assist with providing access to light and air while also defining streetscape character. Visual Privacy, although strongly linked, is not the only factor in defining building separation. For more discussion on this issue refer to 3.6 Visual Privacy

It was noted by one designer (Site H1) that the difference in separation between 8-9 storeys is large and as 9 storeys is nominated as a maximum height in Table 1 for D3 and A3 sites this issue will potentially crop up frequently.

Considerations: To reduce confusion, consideration should be given to changing the threshold for increased building separation in Table 2 from ≥ 9 storeys to ≥ 10 storeys.

2.5 PLOT RATIO

General comments

Most of the designers involved in the testing process supported the Policy using plot ratio as a useable and effective tool for controlling building bulk and scale.

There was, however, panel and group discussion on the potential for removal of plot ratio entirely from the Policy (where the site was in an area where significant Precinct / Detailed Area planning has been undertaken, such as Port Coogee Marina or Cockburn Central). The idea that removal of plot ratio can be more justified as site specific characteristics have been assessed and controlled. It was understood that a state-wide Policy cannot provide this level of detail for individual sites and plot ratio is required to ensure management of bulk and scale on generic sites.

If envelope controls (setback and height) were the only form of control under 2.1 Primary Control Tables, especially in Detached Streetscape Character Types, developers would be at risk of basing their initial feasibility analyses on the assumption that they could completely fill the maximum envelope with building mass. This would present significant challenges as the design progresses with regard to meeting policy Objectives around access to daylight and natural ventilation. Retaining plot ratio assists in communicating up-front that filling the maximum envelope is not permitted, and facilitates the ability of a proposal to meet policy Objectives without significant pressure on assumed yield.

Discussion was also held around the relationship between the plot ratio controls and envelope controls, which suggested that further refining of plot ratio values should be considered, based on ensuring that it is able to be delivered within the allowable envelope.

Considerations: Plot ratio controls should be retained in the Policy. Consideration to be given to the relationship between plot ratio and envelope controls to ensure workability.

Plot Ratio and above-ground carparking

There was discussion by one designer (Site M1) regarding the potential for including above-ground carparking within the definition of plot ratio, to assist in minimising bulk.

Removing above-ground carparking from plot ratio calculations would encourage developers to provide parking above ground (rather than below), which can compromise the ability to deliver good quality streetscape interfaces at ground level. It was also noted that it might lead to developers seeking additional height.

Considerations: The inclusion of above-ground carparking in plot ratio should be considered and tested.

Plot Ratio Area and Strata Area definition alignment

There was considerable discussion regarding the definition of plot ratio and its possible future alignment with strata area calculations to provide simplicity in calculations and measurements to both designers and assessors. However it was acknowledged that both figures have quite different roles within the development process.

Considerations: This should be considered further by the DPLH.

Noted both of these measurements are defined externally, it is beyond the scope of Design WA to make changes to established definitions used by industry.

2.6 BUILDING HEIGHTS

General comments

There was general acceptance of height provisions, although one attendee considered that the height controls noted in 2.1 Primary Control Tables for A2 and A3 types were too low.

Higher buildings are allowable under (current and future) Local Government LPS / precinct planning. The height limit noted in Table 2.1 is considered acceptable for generic sites.

Publication of these general provisions could enable private developers to develop and submit proposed structure plans for large areas. Local governments will need particular skills to assess these - this needs to be carefully considered in upcoming Precinct Design policy development.

2.7 BUILDING DEPTH

General comments

Some designers raised the concern about 18m building depth limit as potentially restricting the ability to achieve good quality design outcomes on some sites. The 18m depth shown in Table 3 was generally considered suitable to achieve good outcomes in most situations, but not all.

Considerations: Consider change to current building depth setting in Table 3. Larger building depths should be assessed on a site by site basis at Design Review, with proponents demonstrating the benefits of this design approach and how the relevant policy Objectives are able to be achieved.

2.9-10 SETBACKS

General comments

Generally setback requirements were met by designers. However, building separation was in some cases more difficult to achieve (see especially Site H1). In all cases, some flexibility regarding separation distances was requested and the Panel agreed that the design responses were able to achieve better outcomes on the whole if a degree of flexibility was applied to that particular criterion.

The Site L2 design proposed a reduced setback to a small portion of the north-western area that was deemed acceptable by the Panel on the basis that the extent of projection into the setback zone was minor, and the overall narrowness of the lot warrants a degree of flexibility regarding side setbacks in order to facilitate designs that provide better internal apartment amenity, provided that these do not create significant negative impacts to adjoining properties.

Considerations: Design Review will be essential to ensure that a degree of flexibility is offered in situations where it enables a better overall outcome. DPLH should also consider whether more sophisticated metrics (eg % length of boundary vs height) are worth adopting in the first 2-3 levels, especially for Attached Character Types.

Site setbacks and orientation

A suggestion was made that it might be appropriate to relate setbacks with orientation, to facilitate natural light ingress and support passive solar design measures.

The application of setback controls based on orientation is not achievable in a guide providing generic controls that can apply across the whole state. Design Review will need to make an assessment regarding particular sites where significant benefit can be achieved through an adjustment of setback controls.

Considerations: The future Precinct Planning policy should address this – i.e. ensure that consideration of orientation (along with many other locally relevant factors) takes place when setting setback controls.

Ground level setbacks

Site L2 designers described the application of ground level setbacks confusing.

Considerations: Make minor revisions to this section of the document to improve clarity.

3.3 TREE RETENTION

General comments

Consideration should be given to how retained trees can be either replaced or relocated to more appropriate locations in conjunction with deep root zones or similar (such as planting on structure).

The option of providing an offset cost for 4 new trees for every 1 mature tree removed should consider the trunk diameter of the new trees as well.

The reduction of Deep Soil Areas requirements due to tree retention doesn't specify no. of trees to be retained.

If the 5 year tree rule is applied then it is very difficult to apply the Design Criteria to trees that have been removed for several years.

Does the replacement planting have to be as part of the deep soil zone? Can this not occur elsewhere on the development (green walls, roofs etc.)?

Considered an onerous design criteria for sites with many existing trees. The replacement of four additional trees in close proximity to the site may be problematic in urban areas.

Considerations: Provide clarity via text amendments.

3.4 DEEP SOIL AREAS

General comments

Deep Soil Areas were generally supported in principle and were achievable on most sites. Queries focused on definitions, tree sizes and the ability to provide deep root zones in denser, urban areas while maintaining required carparking provision.

Considerations: Consider additional text that helps communicate that Deep Soil Areas are preferred over planting-on-structure. Carry out further work to refine Design Criteria and Design Guidance, along with associated metrics. Include guidance on permeable paving systems and their suitability to Deep Soil Areas – particularly with the intent to combine Communal Open Space and Deep Soil Areas.

3.5 COMMUNAL OPEN SPACE

General comments

All schemes included Communal Open Space (COS), often incorporating Deep Soil Areas successfully.

One site (which included 10 units and therefore had no requirement for COS) provided excellent communal open space to obtain bonus plot ratio under Section 2.11 Incentive Based Development Standards.

There was support amongst the design teams for the provision of COS, as this would contribute to the quality and amenity provided by an apartment development. There was a general perception that communal open space might lead to increased cost, however this was not borne out in the final designs and feasibility assessments.

The need for appropriate maintenance regimes (which have associated costs) was noted.

It was considered that local green spaces in close proximity should be taken into account when assessing the provision of COS.

Consideration should be given to allowing undercroft spaces to count as COS.

It was noted that smaller development sites might find it difficult to meet DC2 of Objective 3.5.1 (requirement for a percentage of COS to receive direct sunlight during winter).

Affordable development will generally include smaller apartment layouts which could be said to add to the need for good quality COS / public use areas. The market will find innovative solutions to provide communal spaces more affordably. Recommend DPLH consider this in more detail and provide clarification and add text to Design Guidance.

It was suggested that the 3m minimum dimension for COS is too small – it was recommended that it be increased to 4-5m.

Notwithstanding the above commentary, all schemes successfully included COS and found solutions that met the Design Criteria for the Element.

Considerations: There is support for inclusion of Communal Open Space in the Policy, but consideration should be given to refining Design Criteria and Guidance (and associated definitions and metrics) in accordance with comments above.

3.6 VISUAL PRIVACY

General comments

Visual privacy Objectives 3.6.1 and 3.6.2 were achieved on all development sites in this exercise. Some proposals met the Design Criteria, while others proposed alternative solutions that slightly adjusted these to respond to site conditions, with design review assessing these as satisfactorily met the Objective, based on Design Review.

There was much debate about how the Design Criteria compared with those in the current R-Codes (considered to be less onerous) and discussion around how these might be able to be reduced, and how design solutions such as angling of windows can provide effective privacy where view cone metrics are difficult to achieve. It is important to note that under the Intent section of 3.6 Visual Privacy that “alternative solutions may be justified by demonstration of how they achieve desired privacy outcomes. It is reasonable that expectations for visual privacy adapt to different urban contexts. Where apartment development is proposed in established neighbourhoods the design should give careful consideration to visual privacy. In intensely urban contexts it may be appropriate to reduce expectations to some degree, as long as clearly negative conditions are avoided.” This flexibility, delivered via Design Review assessment, will be essential to ensure that outcomes are appropriate to their context.

It was noted that the Building Separation distances outlined in Section 2.1 will play a role in delivering good levels of visual privacy, as well as natural light and ventilation. All of these aspects should be considered when assessing visual privacy during design review.

It was demonstrated on Site L2 that the combination of southern boundary setbacks with the visual privacy Design Criteria led to the use of a number of high level windows along the southern elevation. It was noted that this meant that the proposal couldn't fully maximise views towards the city, however it was also mentioned that the adjacent block to the south would be likely to be developed as well, blocking these views. Consider providing Objectives and how flexibility regarding alternative solutions should be applied. This might be part of a handbook for Design Review members that will help ensure consistency and robustness of advice.

***Considerations:** Consider 3.6 Visual Privacy in more detail and determine if adjustment of Design Criteria is warranted.*

3.10 CAR AND BIKE PARKING

General comments

The general discussion around car parking focused on required numbers. Carparking requirements are one of the most critical factors in determining both yield outcomes and saleability and are therefore very important to the development industry.

Maximum carparking numbers

Concern was raised regarding the ability to sell 3 bedroom apartments with less than two bays, particularly in areas where development caters to a typically older demographic of 'down-sizers'

Considerations: Review carparking requirements for 3 bed apartments.

Visitor parking

Design Criteria for visitor carparking considered to be too onerous by some, however it was acknowledged that sufficient numbers were required in order to reduce the risk of creating a problem for local government.

Future adaptability

Future usage of carparking spaces was discussed at length, given that car ownership levels are likely to decrease over time (due to improved public transport, the rise of ride-sharing and improvements in driverless vehicle technology), guidance should be provided regarding the need to ensure future adaptability of these spaces.

Considerations: Design Guidance to include references to how future adaptability of car bays can be provided.

DPLH parking analysis

It was reported at the testing presentation day that DPLH are carrying out research to assist in understanding actual usage patterns for carparking, which sounded very useful. It would also be useful to investigate the feasibility of introducing carparking into the street setback or even road reserve.

Considerations: Use carparking research results to inform refinements to carparking numbers noted in Design Criteria. Investigations to be carried out regarding providing car bays within street setback / road reserve areas.

Car park roofs

Consideration should be given to providing additional text / guidance to directly deal with roof design quality for covered bays.

Considerations: Design Guidance to include references to carpark roof design and ensuring the future adaptability of car bays.

4.1 SOLAR AND DAYLIGHT ACCESS

General comments

The provision of Objectives for ensuring solar and daylight access was generally supported.

Assessment

It was agreed that greater clarity should be provided regarding how this element is assessed, as some found it confusing.

Considerations: Provide greater clarification regarding how the Design Criteria for solar and daylight access are assessed.

Balcony Depth

The relationship between balcony depth and light access was discussed.

Considerations: Consider providing a maximum depth to balconies, especially on south side apartments, or additional Guidance text regarding location of balconies affecting light access.

Adjacent buildings

There were queries regarding how existing buildings that overshadowed the site (or planned future development) could be factored into assessment. It was noted that developments that meet Design Criteria will not meet criteria once adjacent buildings (of similar scale) are completed.

Considerations: Consider how existing and planned future development should be considered in assessing this Element, adding additional Guidance as needed.

'Snorkel' windows

'Snorkel' window arrangements were considered to not be adequately prevented by the current Design Guidance under 4.1.2.

Considerations: Provide additional Design Guidance to prevent 'snorkel' arrangements.

Roof lights

A clear definition of roof light was considered necessary, along with investigation into the adequacy of daylight levels provided.

Considerations: Provide a clear roof light definition and assess appropriateness with regard to daylight levels.

Considerations: Consider the implications of future development.

4.2 NATURAL VENTILATION

General comments

Natural ventilation Objectives were supported and the associated Design Criteria were successfully met on all proposals.

Open accessways

It was noted that open accessways can provide excellent access for apartments to natural ventilation. However consideration needed to be given to ensuring appropriate levels of weather protection.

Considerations: Add Design Guidance regarding weather-protected open corridors.

Open window area

The requirement under 4.2.3 DC1 for 7% of floor area requirement will be difficult to achieve with a conventional awning or sliding window, as the NCC stipulates that the maximum opening for bedrooms is 125mm (unless there are child safety screens or a sill level of 1.7m).

Considerations: Review 4.2.3 DC1 and provide clarification regarding opening requirement or additional Design Guidance as needed.

Trickle vent systems

On closed internal corridors, providing trickle vent systems could assist with meeting ventilation requirements. Ventilation can be provided from corridors to apartments through ceiling voids.

Considerations: Consider adding Guidance regarding trickle-vent technology.

4.3 CEILING HEIGHTS

Kitchens

It was considered that the 4.3.1 DC1 (ceiling heights) could be reduced for kitchens without significant impact on internal amenity.

Adaptability for mixed-use

Additional ground floor ceiling height to enable future conversion to mixed-use might not be appropriate in allocations, and represents significant cost. Flexibility is needed to permit slightly reduced ceiling heights (i.e. 2.6m) where site levels and coursing heights make DC1 difficult to achieve.

Considerations: Consider allowing 2.4m ceilings to kitchens that are part of a combined kitchen / dining area. Add further Guidance regarding the application of the Criteria for higher ground floor ceiling requirement for future commercial uses. Element 4.4 Apartment Size and Layout

4.4 APARTMENT SIZE AND LAYOUT

Apartment layouts

It was noted that some of the apartment layouts provided in the Policy didn't include suggested storage. Also the inclusion of a 2 bed x 1 bath apartment layout was requested.

Considerations: Revise layout diagrams to include storage provisions if required. Provide additional diagram for a 2 bed x 1 bath configuration.

Apartment and room sizes

Discussion was held regarding whether Design Criteria for apartment sizes and room sizes are necessary, and whether required areas and dimensions may be too small, or too excessive in the draft Policy. Design Review was considered necessary to ensure the appropriate degree of flexibility for these settings.

Considerations: Retain existing overall size controls but consider adding Guidance to help clarify how flexibility should be applied. Review living room and dining room width settings.

Area measurement

The Policy requires the area to be calculated according to plot ratio area.

Considerations: Consider using strata area calculations. Confirm method of handling of store room areas in calculations. Refer also commentary on 2.5 Plot Ratio and method of calculation.

4.5 PRIVATE OPEN SPACE AND BALCONIES

Ground level and podium apartments

4.5.1 Design Guidance for ground and podium level apartments recommends providing private open space at a size larger than the balcony requirements elsewhere, and does not distinguish between various apartment sizes. This is considered to be onerous.

Considerations: Review ground and podium terrace settings. For south-facing balconies, consider a maximum balcony depth or guidance to location of balconies to optimise light ingress to apartments.

4.6 CIRCULATION AND COMMON SPACES

Lift numbers and performance

It was noted that lift manufacturers have their own guidance regarding the appropriate numbers of lifts relative to apartment numbers. Also, double-speed lifts are available that are better suited to high rise, which may reduce the numbers needed. Requiring more lifts means longer waiting times, as the cost of providing all of these as high-speed would be onerous.

Considerations: Carry out additional analysis and refine Design Criteria and Design Guidance under 4.6.1. The speed and distance of lift travel should be factored into the number of lifts required

4.7 STORAGE

General comments

Storage was generally handled well by the designers and successful outcomes were typically seen across all designs.

Internal vs external storage

There was general support for having both external and internal store rooms, although some concern about usability of internal store rooms for certain items (such as bikes) that would be better stored outside. There was also discussion regarding possible loopholes regarding internal store dimensions / sizes. This might translate into a lack of usability and subsequent poor outcomes (e.g. storage of items on balconies). It was also queried as to whether the inclusion of a maximum size for a store room would be beneficial - to prevent large 'storerooms' being provided with the intention to convert to a small, windowless bedroom later on. There was also some concern about no external storage being provided in some developments.

Considerations: Design Review will be important for ensuring an appropriate level of flexibility regarding the Design Criteria for this Element. Consider refining Criteria / Guidance.

Internal store room configuration and location

There was discussion regarding the various location and configuration options for internal store rooms within apartments. One proposal had storeroom doors opening onto accessways, adjacent to main doors, which could cause confusion for visitors. There was concern that privacy controls will bring store rooms onto the edge of buildings in order to facilitate reduced setbacks.

Considerations: Carry out additional analysis and refine Criteria and Guidance to include diagrams showing good examples of internal storage, including those that integrate well with the building elevation design.

OTHER ELEMENTS

Air conditioner units – visibility, functionality and effect on user amenity

There was discussion about the location of AC condenser units on balconies and poorly designed / ineffective screening. This issue is not specifically covered in the Policy other than as Guidance in Element 4.7 Storage, which is vague and does not provide detail on how to achieve a good outcome. This should be improved, noting issues such as AC units expelling hot air directly onto usable areas, visual impact through poor screening design and poor external appearance from the street. AC condenser units should always be considered at the earliest Design Review Panel meeting.

Considerations: Consider additions to Storage and Building Services sections to ensure that the location and screening of AC condensers is considered in detail.

Empowering Design Review through Design WA

The design teams and panel members strongly reinforced the importance of Design Review to obtaining successful design outcomes under a performance-based policy. All of the schemes produced similar yields to the comparison schemes and met the Element Objectives. The flexibility provided by the Design Review process allowed significant improvements in overall quality, via a holistic design approach that considered specific site conditions.

As such, it was agreed that an important aspect of Design WA was ensuring that the advice of Design Review Panels is given sufficient weight to meaningfully impact on the decision-making process of approval bodies. It was suggested by the panel that Design Review Panel member inclusion (or briefing) on JDAP should be considered as required on a project by project basis.

Other Design Review Panel comments were as follows:

- Need to be careful to not over-prescribe requirements, there always needs to be the opportunity to achieve a holistic balance across all aspects.
- Good design = faster DA processing times – key message for developers
- Design Review Panels very much needed
- Smaller scale designs should have a scaled review process (e.g. with one design reviewer). Issues regarding setbacks are more pertinent to smaller sites, hence review would still be needed in order to accommodate reasonable site specific approaches.
- Design Review is best carried out pre-DA, when changes are less onerous to make.
- Planning would benefit from receiving design training

These issues reflect much of the commentary heard throughout the larger consultation process and should be adequately addressed by the Department of Planning, Lands and Heritage to bolster the potential of the final Design Review Process for Design WA.