

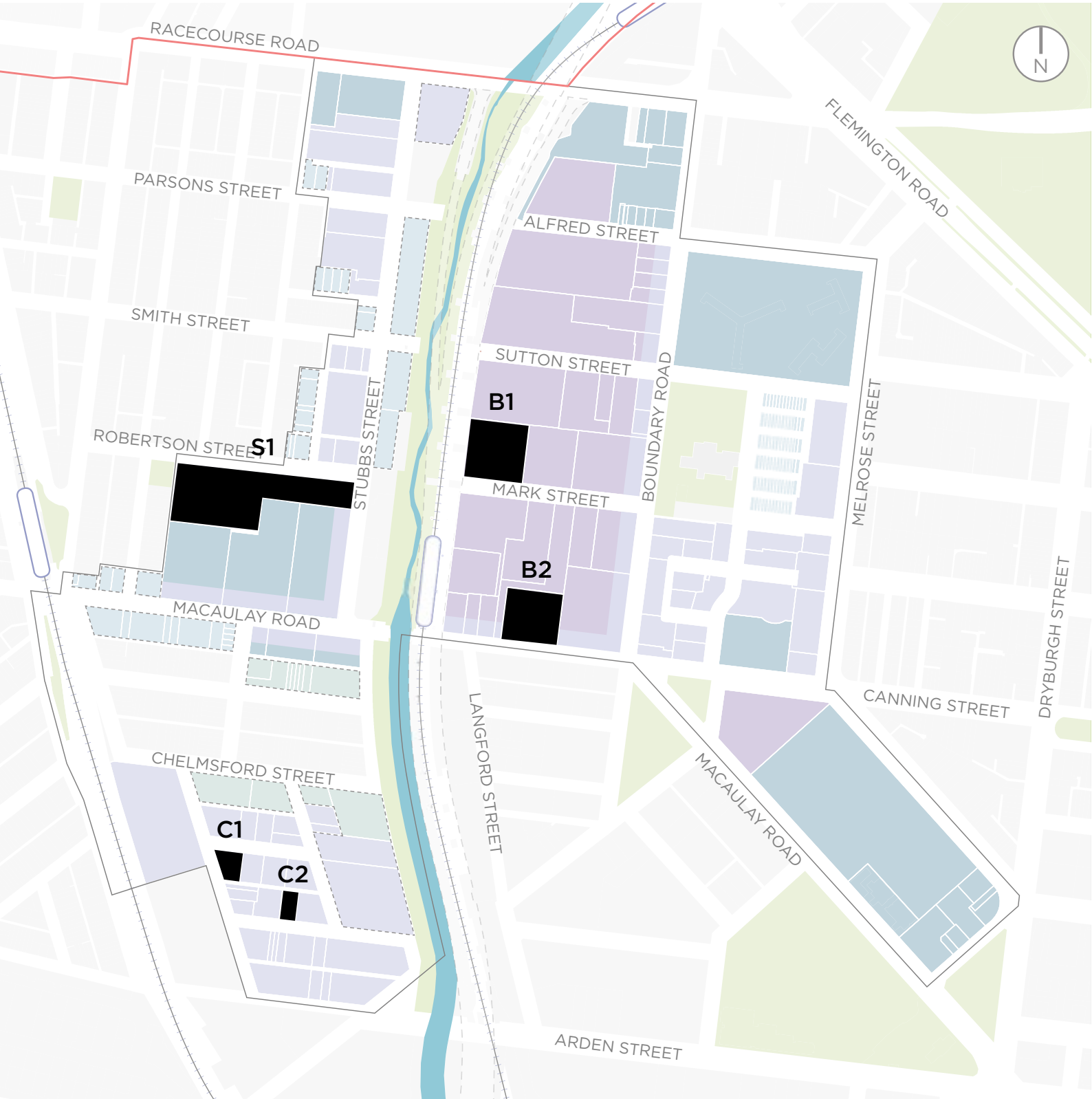
# Macaulay Built Form Control Testing

# Contents & Testing Sites

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| Site | Address                | Site Area (m²) | FAR | Max. Height<br>(Preferred)       |
|------|------------------------|----------------|-----|----------------------------------|
| C1   | 2 Fink Street          | 1110           | 4:1 | 6 storeys                        |
| C2   | 9-15 Bruce Street      | 737            | 4:1 | 6 storeys                        |
| S1   | 18-70 Robertson Street | 11830          | 4:1 | 6 storeys                        |
| B1   | 74-88 Mark Street      | 5421           | 4:1 | 12 storeys                       |
| B2   | 270 Macaulay Road      | 4523           | 4:1 | 6 to Macaulay Rd<br>12 Elsewhere |

Precinct Map from Macaulay Draft Structure Plan Refresh (2020), P27



# Introduction

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Breathe Architecture were commissioned by the City of Melbourne to test the key urban design and built form directions of the Macaulay Draft Structure Plan Refresh, and ensure there is a clear rationale underpinning the future planning controls.

This assessment examines how quality urban design outcomes can be achieved. Specifically, the purpose of this report is to:

1. Review the proposed built form controls for the precinct, prior to them being finalised in the Structure Plan and implemented through the Planning Scheme Amendment.
2. Assess how the proposed controls simultaneously operate (including the 'fit' between the proposed floor area ratio controls and the built form controls) and whether they deliver the preferred built form outcomes / objectives and typologies, with an understanding of the financial drivers behind different typologies and outcomes.

3. Assess the controls across a series of 5 sites within Macaulay, each in different locations and with different attributes. Sites were selected by analysing existing site conditions including site size, number of street frontages, site orientation, flooding conditions and interface conditions such as residential dwellings, open space and CityLink. The sites were selected to test a range of conditions across Macaulay. The sites are distributed as follows:

- Chelmsford Precinct – 2 Sites
- Stubbs Precinct – 1 Site
- Boundary Precinct – 2 Sites

No sites were selected in Melrose Precinct due to a limited number of privately owned sites that are likely to develop and the extent of land owned by the Victorian Government for public housing and the Public Record Office Victoria.

4. The assessment, conclusion and recommendations of the built form testing should give consideration to the design recommendations for Macaulay as outlined on page 23 of the Macaulay Draft Structure Plan Refresh.

The report is divided into two sections – Phase One, which tests the 5 sites with 2 design options each, and Phase Two, which provides stress testing on 3 of the initial 5 sites through an additional design option.

# Methodology

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## Phase 1 — Baseline Testing

Five sites were identified in Macaulay for built form control testing in Phase 1. Two sites in the Chelmsford Precinct, one site in the Stubbs Precinct, and one two sites in the Boundary Precinct. Each site was tested with two different schemes (Option A & Option B) in order to determine various built form outcomes.

Schemes were assessed against the Design Recommendations in the Draft Structure Plan Refresh (2020). Based on this, recommendations were made, and 3 additional testing scenarios were identified for sites that were found to have the potential to be improved with changes to the proposed controls. These form the basis of Phase 2 — Sensitivity Testing.

Testing schemes simulate realistic development proposals with consideration of development feasibility and efficiency. All schemes aim to provide the maximum Floor Area Ratio (FAR) within the preferred maximum building height, but where not possible, this height is breached and highlighted in red to demonstrate the height realistically required to achieve the FAR.

Option A schemes generally aim for larger contiguous floor plates, resulting in lower building heights. These typically utilise internal light courts/courtyards for secondary outlook, and provide primary outlook solely external to the site.

Option B schemes generally aim for smaller contiguous floor plates, resulting in taller building heights. These typically utilise optimised, double-loaded corridor plans with primary outlooks provided within the site with adequate building separation.

These approaches demonstrate a variety of built form outcomes with regard to building typology, site massing, height distribution, site permeability, internal amenity, and orientation of outlooks. In achieving the maximum FAR, the approaches may in some cases produce schemes with similar maximum heights and site coverage figures.

## Phase 2 — Sensitivity Testing

For the 3 additional testing scenarios, changes to the FAR or maximum height figures were discussed and proposed based on the phase 1 recommendations.

**ST1** — Site S1 (18-70 Robertson St) with a **3.5:1 FAR** instead of a 4:1 FAR

**ST2** — Site S1 (18-70 Robertson St) with a **3:1 FAR** instead of a 4:1 FAR

**ST3** — Site B1 (74-88 Mark St) with a **15 storey preferred maximum height** instead of a 12 storey preferred maximum height.

For each site, testing with the new figures was undertaken by adopting one of the two options in phase 1 as a comparable basis, and making adjustments such as adding or subtracting levels to parts of the site in order to achieve the new proposed FAR or maximum height. From this, minor changes to the base plan were made to better accommodate the new heights and massing.

These were then compared with their respective phase 1 tests with discussion on whether these changes encourage better outcomes, and if so, whether the proposed figures are appropriate and can be recommended as changes to the proposed controls.

## Conclusion

General findings from the two phases were discussed in principle in comparison to expected outcomes under the existing controls (Design and Development Overlay 63), and the entire testing process was summarised.

# Assumptions

## Residential Floor Plates

All residential floor plate areas are planned to ensure each apartment is compliant under the Better Apartment Design Standards (BADs). This results in floor plates with depths ranging from 14m to 22m for double-loaded buildings (see diagram 1); and total depths of 25m to 32m for light court buildings (including the light court depth), with depths of 7m to 16m measured from facade to light court (see diagram 2).

## Commercial Floor Plates

Commercial spaces are modelled with maximum total floor plate depths of 36m, with a maximum of 15m from natural light source to core or centre of plan (see diagram 3). Tolerance is allowed for provision of additional back of house (BOH) areas which often occupy the centre of deep floor plates.

## Residential Floor Heights

Residential levels above ground are modelled at 3.2m floor-to-floor. Ground floor heights vary as these are raised between 0.2m and 2m in order to account for flood levels.

## Commercial Floor Heights

Commercial levels above ground are modelled at 4m floor-to-floor. Ground floor heights vary as these are raised between 0.2m and 2m in order to account for flood levels. Where commercial and residential use occur on the same floor plate and are serviced by the same circulation core, the residential areas adopt the taller commercial floor-to-floor height (4m).

## Apartment Mix

Apartment mixes vary according to what can be optimally provided for each site depending on the typical floor plate size and constraints. Apartment mixes of 1, 2 and 3 bedroom apartments, with some studio apartments, represent typical development outcomes, with flexibility to adjust the mix without affecting total areas.

## Apartment Sizes

Apartment sizes tested are of the following average sizes:

1 Bed Studio Apartments: average 34m<sup>2</sup>

1 Bedroom Apartments: average 56m<sup>2</sup>

2 Bedroom Apartments: average 76m<sup>2</sup>

3 Bedroom Apartments: average 105m<sup>2</sup>

## Gross Floor Area

Gross Floor Area (GFA) is defined as the total building area excluding unenclosed areas such as Private Open Space (POS), rooftop areas, and landscaping. All POS, whether projecting from buildings, or inset within the building, is excluded from the GFA calculation as it is not enclosed by external walls.

## Car Parking

Car Parking is assumed to be provided in basement areas wherever possible. Allowance for a ramp to basement has been provided where possible.

Basement areas are assumed to be excluded from the FAR so have not been modelled, and are not included in the GFA calculation.

Note that access ramps to basement car parking and the extent of basements shown are indicative only. In all testing options, sufficient flexibility is ensured in the design of the ground floor plane and basement levels to locate these such that they appropriately respond to flood levels and staging of construction. For sites with multiple frontages, access ramps to basement car parking can be provided to streets or laneways where applicable.

Diagram 1. Double-Loaded Residential Floor Plates

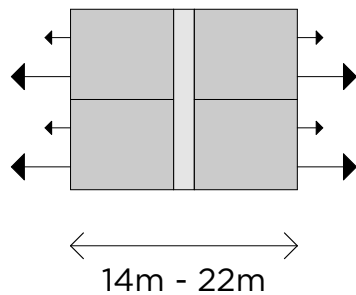


Diagram 2. Light Court Residential Floor Plates

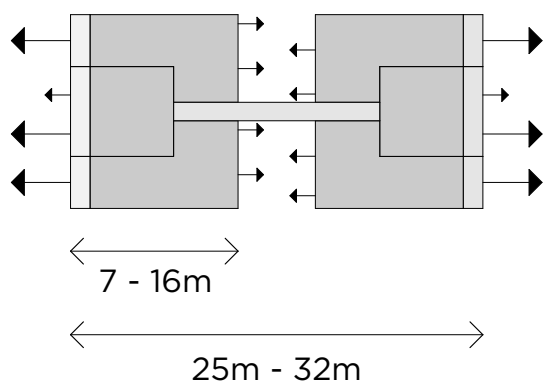
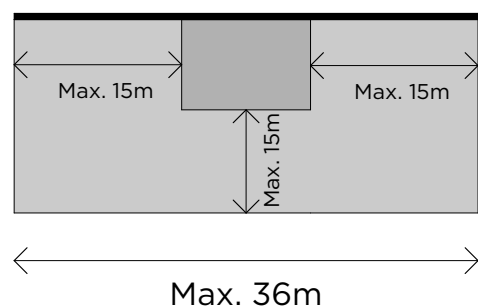


Diagram 3. Commercial Floor Plates



# Assumptions

## Building Separation

The extent of building separation required (measured from balcony edge to balcony edge) is assumed to be:

Zero, where no outlook is proposed, provided it does not affect the reasonable development opportunity of adjoining sites/buildings (see diagram 4).

A minimum of 6m where only secondary outlooks (bedroom/bathroom/non-living) are provided and facing one another (see diagram 5).

A minimum of 12m for buildings up to 8 storeys, with a mix of primary and secondary outlooks facing one another, assuming that there is flexibility to stagger outlooks (see diagram 6).

A minimum of 18m for buildings between 8 and 15 storeys, with the same assumption as above (see diagram 7).

These assumptions are based on Breathe Architecture's high level measures which refer to Moreland Apartment Design Code Table D.1.2.c as a guide, adapted through findings from built projects and simplified for testing.

Testing may vary from these guidelines where it deliberately exceeds the maximum preferred height in order to demonstrate potential problems in the controls.

Testing may also vary from these guidelines where the assessment of outlook amenity may be influenced by site-specific factors such as access to oblique views or dual primary aspect, asymmetric relationships between two buildings (e.g. interface between an 8 and 6 storey building), and conditions where the residential levels begin from above level 1, and have better access to daylight. In such cases the guideline figure may be reduced.

## Back of House

Back of house (BOH) areas allow for spaces such as plant/services, refuse rooms, bicycle parking, storage cages, and end of trip facilities. These are shown indicatively in proportion to the saleable residential and/or commercial area. Note that in some cases there is flexibility to reduce the extent of these areas or locate them in basement areas. In these cases, commercial and residential areas can be increased in size.

**Diagram 4. Zero setback  
(Plan view)**

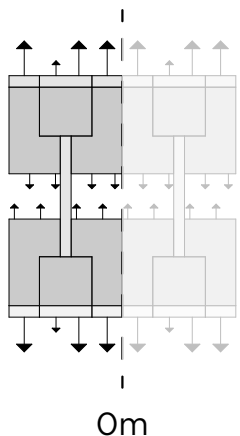


**Diagram 6. 12m setback  
(Section view)**

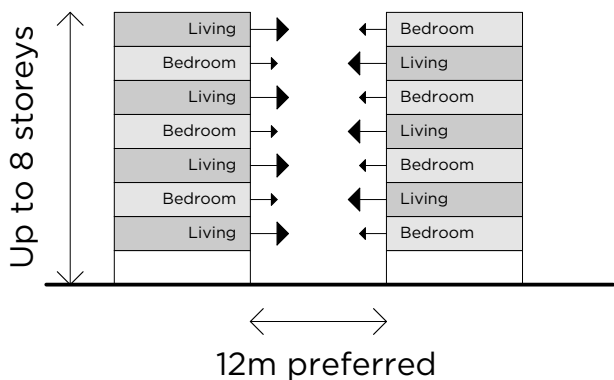


**Diagram 5. 6m setback  
(Section view)**

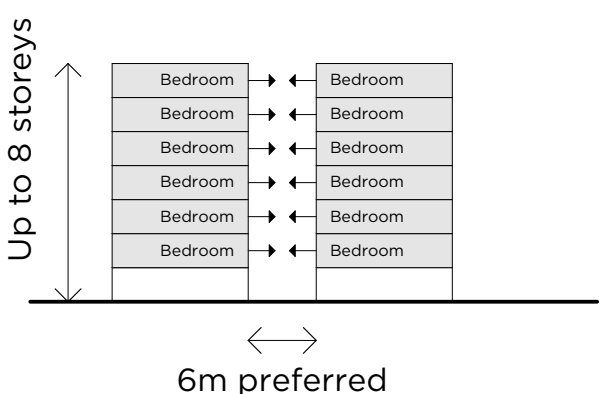
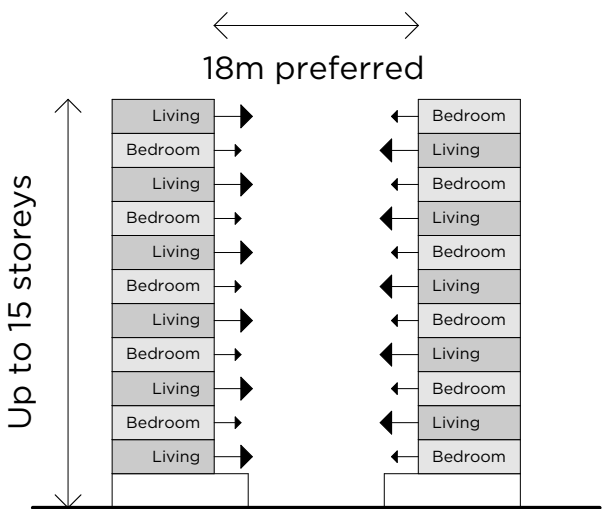


**Diagram 7. 18m setback  
(Section view)**



# Phase 1 — Baseline Testing

A

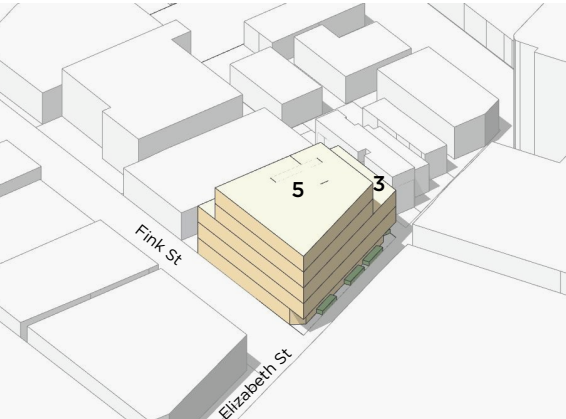
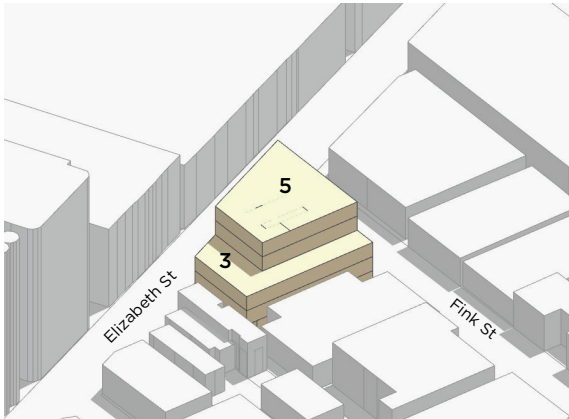
Option A explores a full site coverage building with a 3-storey interface to the lower built form to the East and South.

Ground Floor Site Coverage — 92%  
Level 1 Site Coverage — 100%  
Total Building Height — 5 storeys

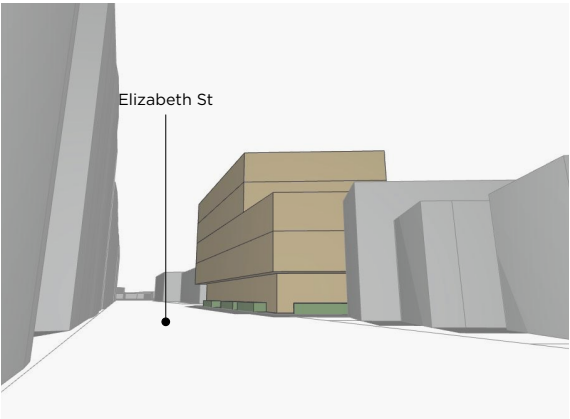
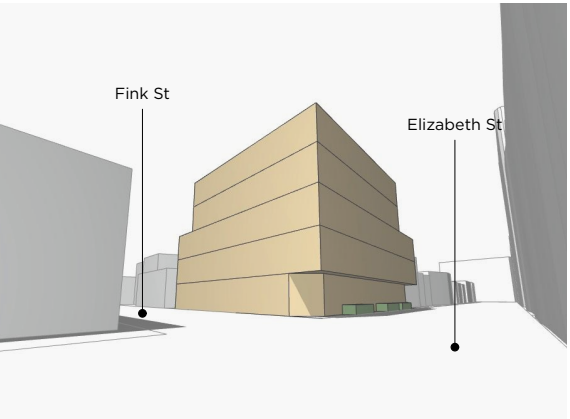
Summary of Areas

| Area Type      | Area (sq. m) | Total GFA |
|----------------|--------------|-----------|
| Circ/BOH       | 1,168        | 4,299     |
| Commercial NSA | 3,131        |           |
| Landscaping    | 62           |           |

South East and North West Axonometric Diagrams



Street View Perspectives: Elizabeth St facing South & Elizabeth St facing North



B

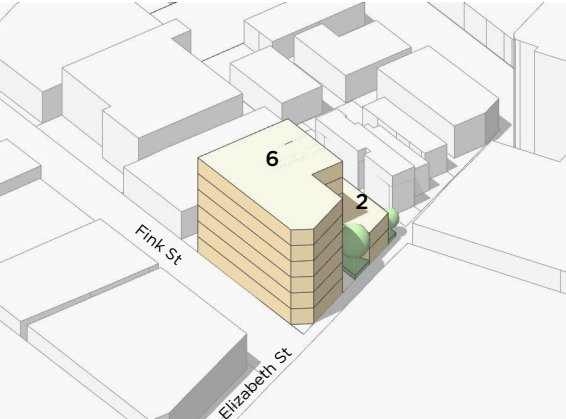
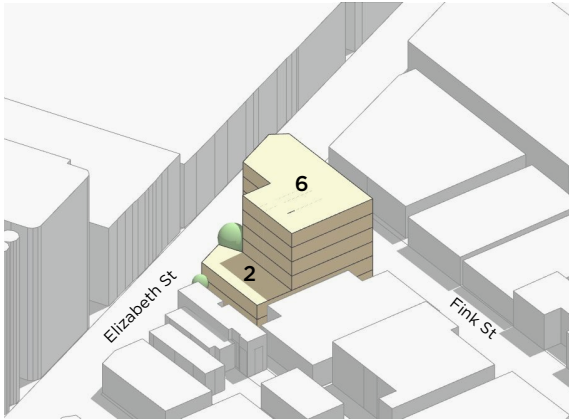
Option B utilises a central courtyard open to the street that divides the building into a 6 storey block to the north, and a 2 storey block to the south which interfaces with a laneway and low residential buildings.

Ground Floor Site Coverage — 79%  
Level 1 Site Coverage — 79%  
Total Building Height — 6 storeys

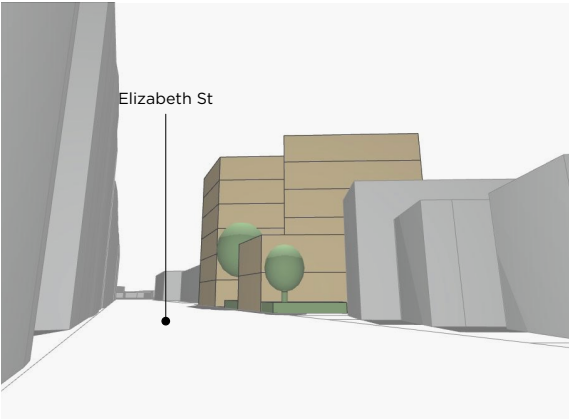
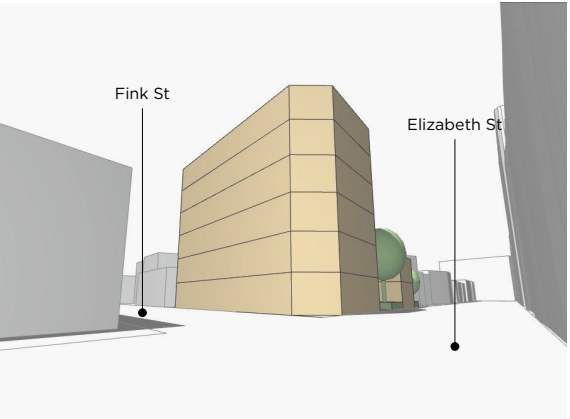
Summary of Areas

| Area Type      | Area (sq. m) | Total GFA |
|----------------|--------------|-----------|
| Circ/BOH       | 1,283        | 4,362     |
| Commercial NSA | 3,079        |           |
| Landscaping    | 68           |           |

South East and North West Axonometric Diagrams



Street View Perspectives: Elizabeth St facing South & Elizabeth St facing North



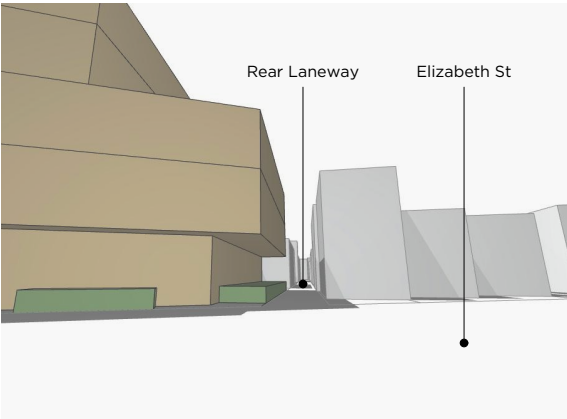
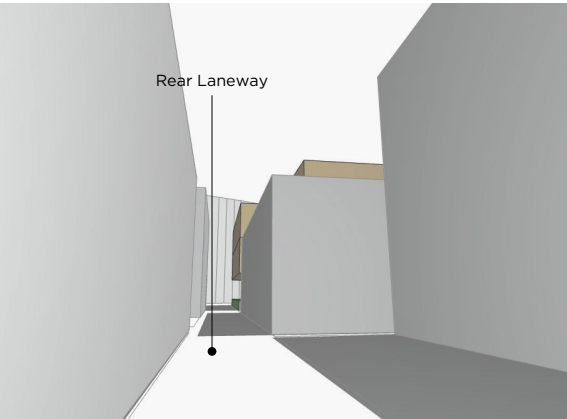
A

Schedule of  
Areas by Level

| Ground         |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 459 |
| Commercial NSA |  | 420 |
| Landscaping    |  | 68  |
| Level 1        |  |     |
| Circ/BOH       |  | 152 |
| Commercial NSA |  | 727 |
| Level 2        |  |     |
| Circ/BOH       |  | 168 |
| Commercial NSA |  | 483 |

| Level 3        |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 168 |
| Commercial NSA |  | 483 |
| Level 4        |  |     |
| Circ/BOH       |  | 168 |
| Commercial NSA |  | 483 |
| Level 5        |  |     |
| Circ/BOH       |  | 168 |
| Commercial NSA |  | 483 |

Additional  
Street View  
Perspectives:  
Rear laneway  
facing West &  
Elizabeth St  
facing East



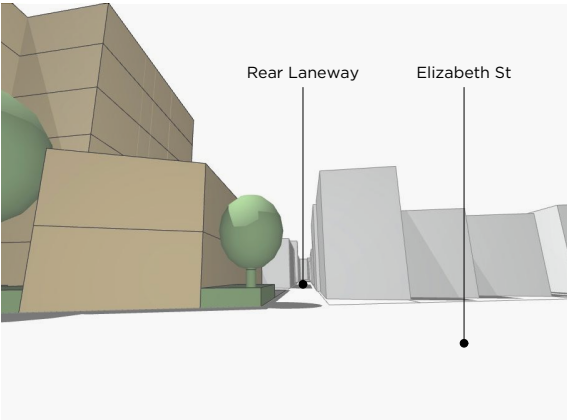
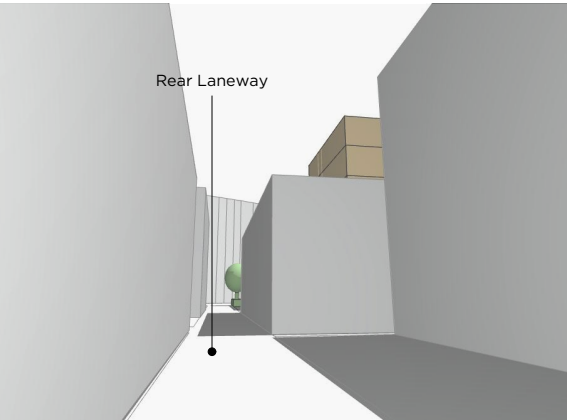
B

Schedule of  
Areas by Level

| Ground         |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 448 |
| Commercial NSA |  | 459 |
| Landscaping    |  | 62  |
| Level 1        |  |     |
| Circ/BOH       |  | 216 |
| Commercial NSA |  | 813 |
| Level 2        |  |     |
| Circ/BOH       |  | 216 |
| Commercial NSA |  | 813 |

| Level 3        |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 144 |
| Commercial NSA |  | 523 |
| Level 4        |  |     |
| Circ/BOH       |  | 144 |
| Commercial NSA |  | 523 |

Additional  
Street View  
Perspectives:  
Rear laneway  
facing West &  
Elizabeth St  
facing East



A

Plans

Scale — 1:500  
North —

Legend

Circulation / BOH Area

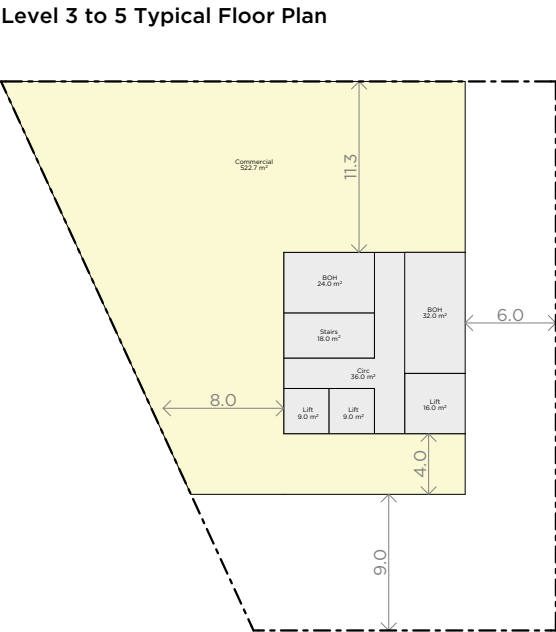
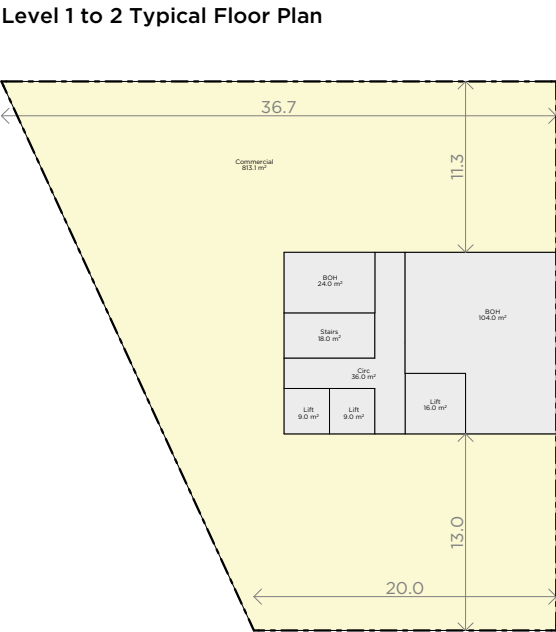
Commercial NSA

Indicative footprint of basement

Landscape / Rooftop Area

Private Open Space

Residential NSA



B

Plans

Scale — 1:500  
North —

Legend

Circulation / BOH Area

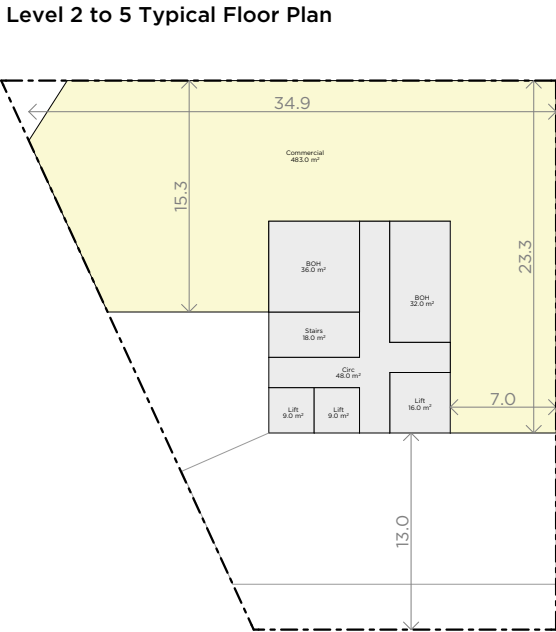
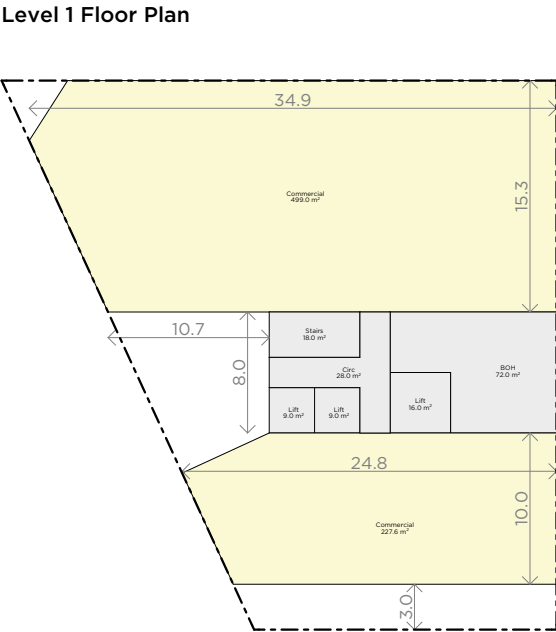
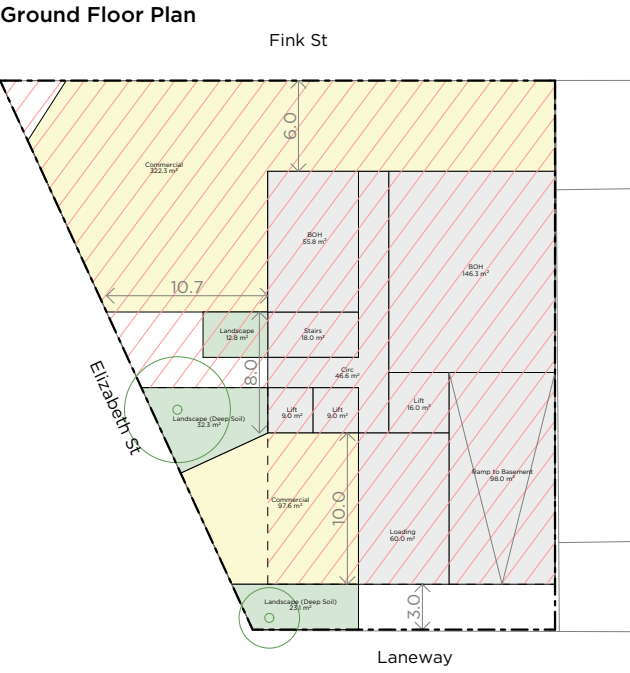
Commercial NSA

Indicative footprint of basement

Landscape / Rooftop Area

Private Open Space

Residential NSA



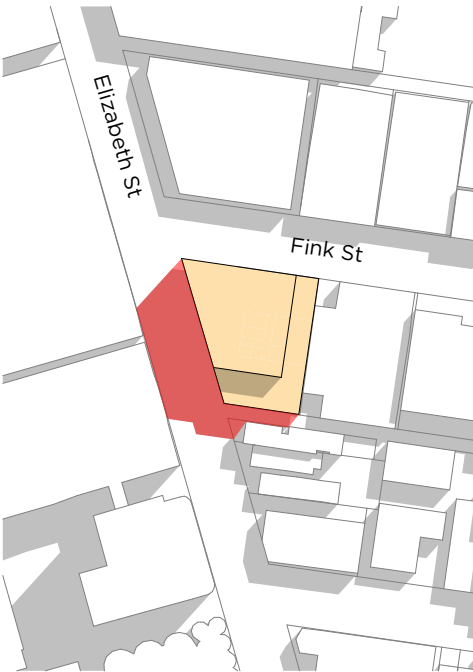
A

Shadow  
Diagrams

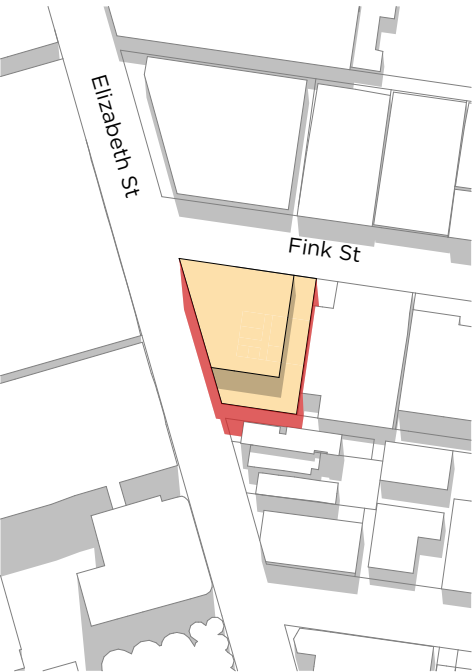
Scale — 1:2000  
North — ☺

Shadows cast by Option A on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. The design makes particular effort to setback mass from the South to avoid overshadowing residential buildings.

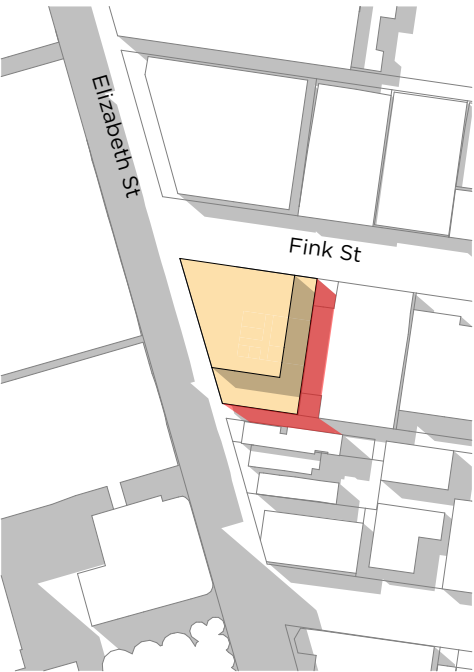
10AM September 22



12PM September 22



2PM September 22



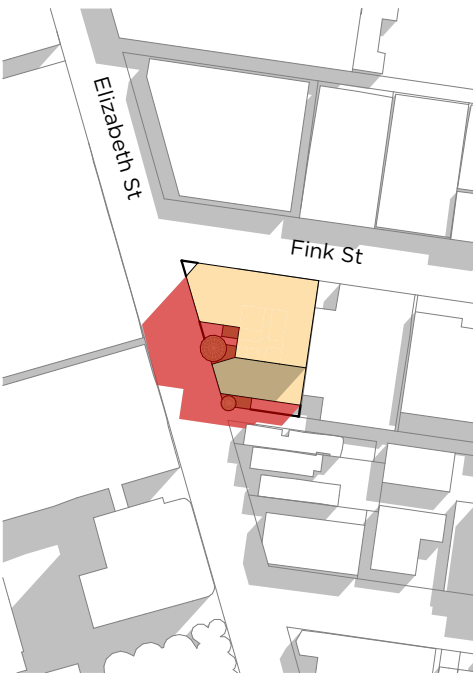
B

Shadow  
Diagrams

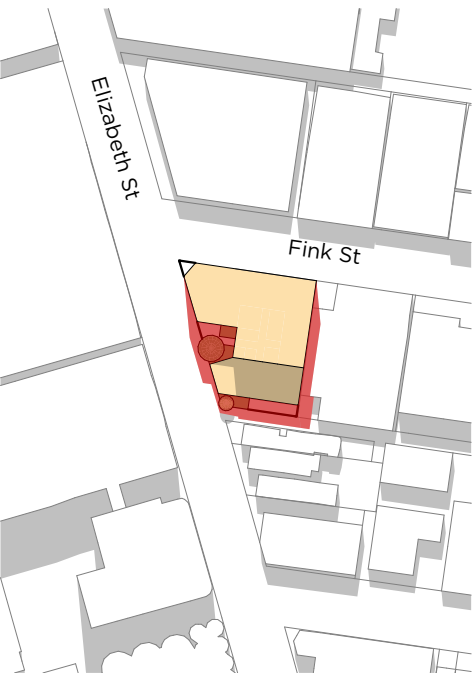
Scale — 1:2000  
North — ☺

Compared to Option A, shadows cast by Option B are greater in extent to the West over Elizabeth St in the morning, and to the East, onto the adjacent site in the afternoon. The impacts of shading to the South on the laneway and residential properties are not greater than in Option A.

10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | Option A |                                                                                                                               | Option B |                                                                                                                               |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✓        | Demonstrates response to character through massing with further capacity through detailed design.                             | ✓        | Demonstrates response to character through massing with further capacity through detailed design.                             |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✓        | Delivers human-scaled, mid rise building.                                                                                     | ✓        | Delivers human-scaled, mid rise building.                                                                                     |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A      | No existing building on site.                                                                                                 | N/A      | No existing building on site.                                                                                                 |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓        | Responds to street hierarchy through massing and height.                                                                      | ✓        | Responds to street hierarchy through massing and height.                                                                      |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ✓        | Street wall height varies from 3 to 5 storeys.                                                                                | ✓        | Street wall height varies from 2 to 6 storeys.                                                                                |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | N/A      | Site not large enough to be meaningfully split into multiple buildings.                                                       | N/A      | Site not large enough to be meaningfully split into multiple buildings.                                                       |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | N/A      | Site does not need amenity to be provided from within site or adjacent sites as it is on a corner with 3 street facing edges. | N/A      | Site does not need amenity to be provided from within site or adjacent sites as it is on a corner with 3 street facing edges. |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | N/A      | Site is located on a corner where additional pedestrian permeability would not provide significant benefit.                   | N/A      | Site is located on a corner where additional pedestrian permeability would not provide significant benefit.                   |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓        | Active commercial uses occupy majority of street interfaces with services minimised and located on laneway.                   | ✓        | Active commercial uses occupy majority of street interfaces with services minimised and located on laneway.                   |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✓        | No borrowed amenity and good access to light and ventilation.                                                                 | ✓        | No borrowed amenity and good access to light and ventilation.                                                                 |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | ⚠        | While height is reduced to South, transition may be abrupt and total height may be too tall next to 2 storey residential.     | ⚠        | While height is reduced to South, transition may be abrupt and total height may be too tall next to 2 storey residential.     |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A      | Site does not directly adjoin residential or heritage buildings.                                                              | N/A      | Site does not directly adjoin residential or heritage buildings.                                                              |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ✓        | Lower 3 storey form avoids overshadowing PV array of Residential property to South.                                           | ✓        | Lower 2 storey form avoids overshadowing PV array of Residential property to South.                                           |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A      | No existing building on site.                                                                                                 | N/A      | No existing building on site.                                                                                                 |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A      | Not in proximity to reserves to overshadow.                                                                                   | N/A      | Not in proximity to reserves to overshadow.                                                                                   |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✓        | Upper level setbacks preserve solar access to South, reduce impacts of wind and increase daylight internally on upper levels  | ✓        | Upper level setbacks preserve solar access to South, reduce impacts of wind and increase daylight internally on upper levels  |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓        | Primary outlook secured to streets on three sides.                                                                            | ✓        | Primary outlook secured to streets on three sides.                                                                            |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                                    | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                                    |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✗        | 100% site coverage on typical levels does not provide enough space for canopy trees.                                          | ✓        | Uncovered area for canopy trees provided.                                                                                     |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓        | Back of House located on laneway allowing Fink and Elizabeth interfaces to be active.                                         | ✓        | Back of House located on laneway allowing Fink and Elizabeth interfaces to be active.                                         |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓        | Massing facilitates best practice with detailed design.                                                                       | ✓        | Massing facilitates best practice with detailed design.                                                                       |

## Conclusion & Recommendations

Testing demonstrated that there was sufficient flexibility in the proposed controls to achieve nearly all Design Recommendations (P23, Draft Structure Plan Refresh, 2020), notably allowing height to be located on the Northern half of the site to reduce the impact of shading and visual bulk on the one and two storey residential properties to the South.

Despite this, the schemes produced may still present a disproportionate scale relative to the neighbouring residential buildings given their close proximity, as identified in the table of design objectives on page 11. This occurred, even when aiming to provide 100% site coverage in Option A, because the FAR may be too high for this site. It is exacerbated by the need for commercial buildings to accommodate taller floor-to-floor heights of approximately 4m. For a 6 storey building, this can result in the total height being 4 to 6 metres taller than a multi-residential building with an equal number of storeys.

The testing outcomes additionally were unable to provide deep soil planting in Option A, and provided a low amount in Option B. This occurred because the site is relatively small, and prioritising the response to the lower scale residential resulted in high site coverage.

The outcomes tested on this site are broadly appropriate for the Chelmsford precinct, but consideration should be given to reducing the FAR to a figure in the order of 3.5:1 on specific sites with sensitive residential interfaces, such as this one. This will allow for an improved transition of scale and better amenity with regard to overshadowing, daylight, and openness to the sky from neighbouring sites.

A

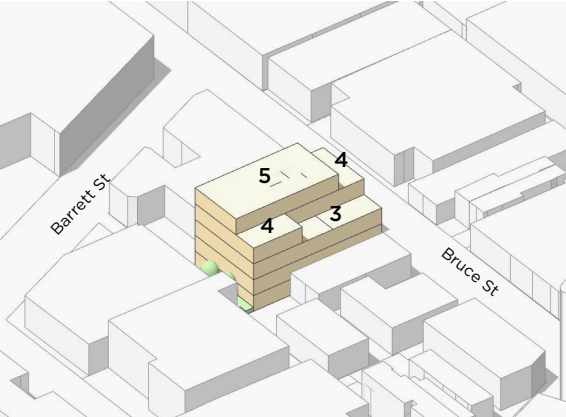
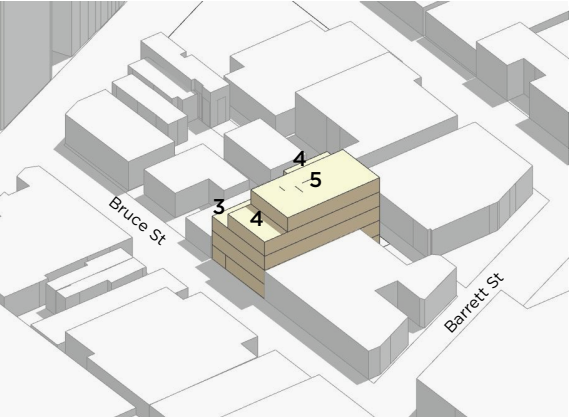
Option A tests a high site coverage option which is set back from the Northern boundary to provide daylight amenity and sufficient building separation across the laneway. The building steps down to 3 storeys to the West to interface with the lower built form.

Ground Floor Site Coverage — 91%  
Level 1 Site Coverage — 91%  
Total Building Height — 5 storeys

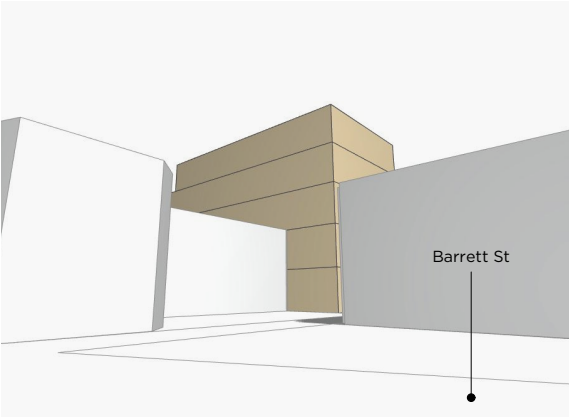
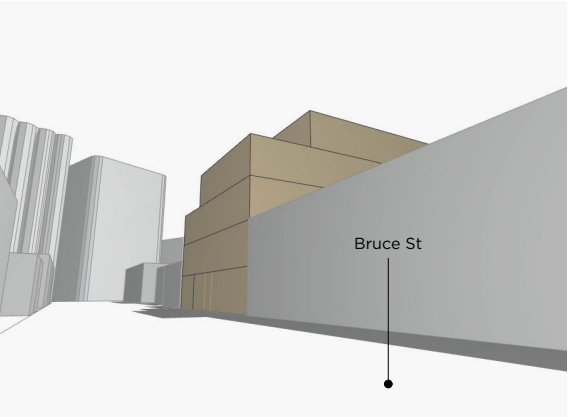
Summary of Areas

| Area Type      | Area (sq. m) | Total GFA |
|----------------|--------------|-----------|
| Circ/BOH       | 984          | 2,995     |
| Commercial NSA | 2,011        |           |
| Landscaping    | 42           |           |

South East and North West Axonometric Diagrams



Street View Perspectives:  
Bruce St facing West & Barrett St facing West



B

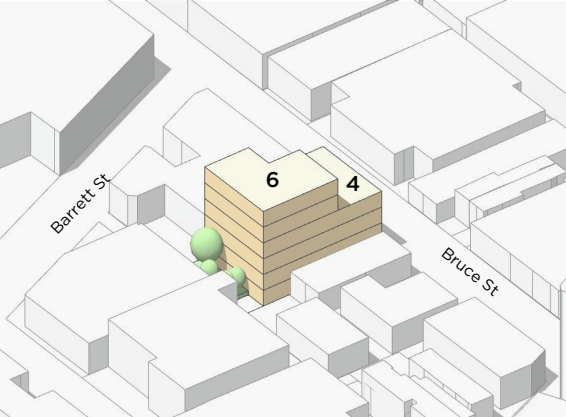
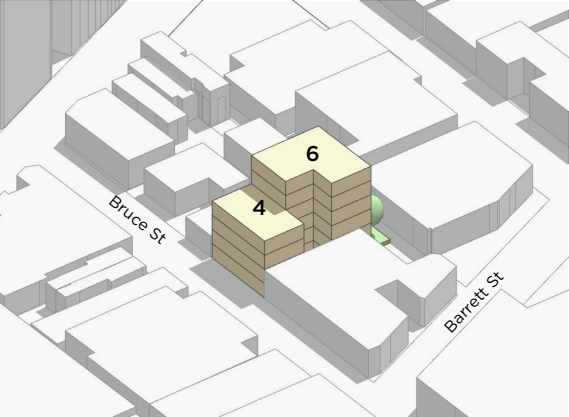
Option B utilises a central courtyard that divides the building into a 6 storey block to the north, and a 4 storey block to the south to reduce the impacts of shading on Bruce St.

Ground Floor Site Coverage — 74%  
Level 1 Site Coverage — 74%  
Total Building Height — 6 storeys

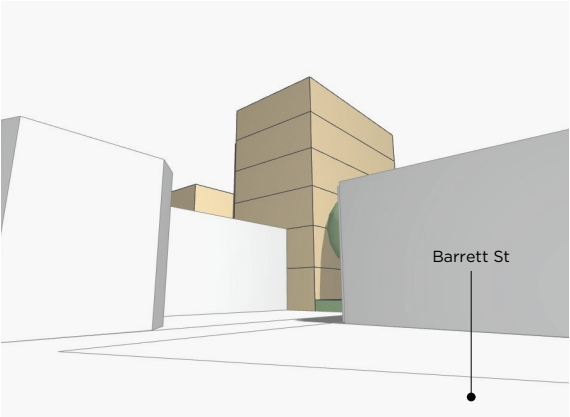
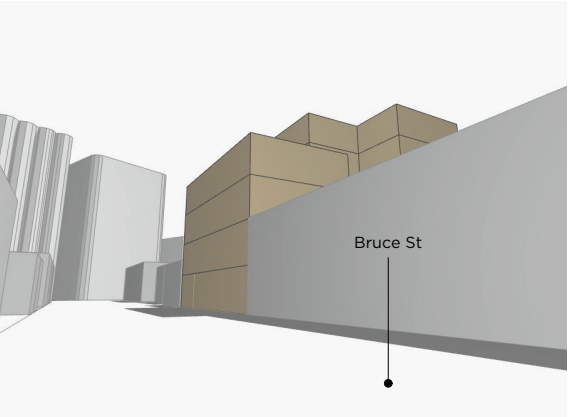
Summary of Areas

| Area Type      | Area (sq. m) | Total GFA |
|----------------|--------------|-----------|
| Circ/BOH       | 901          | 2,920     |
| Commercial NSA | 2,019        |           |
| Landscaping    | 138          |           |

South East and North West Axonometric Diagrams



Street View Perspectives:  
Bruce St facing West & Barrett St facing West



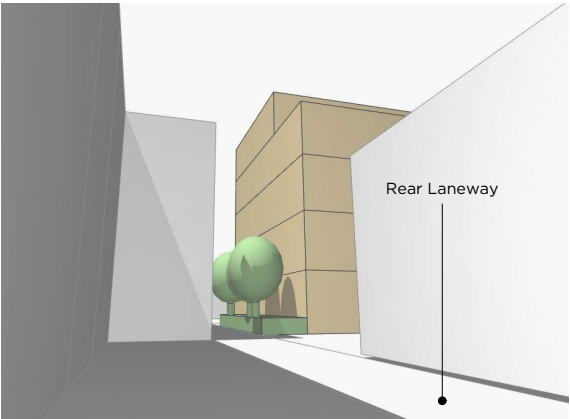
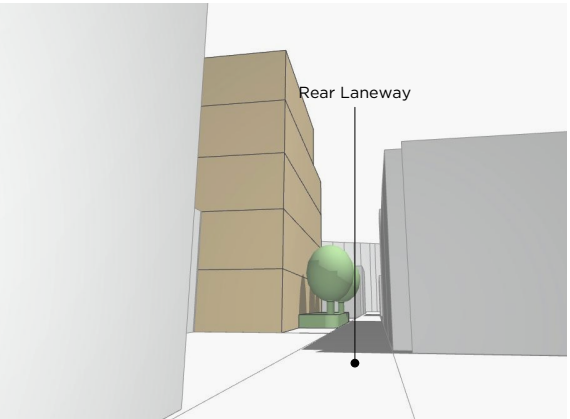
A

Schedule of  
Areas by Level

| Ground         |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 376 |
| Commercial NSA |  | 187 |
| Landscaping    |  | 138 |
| Level 1        |  |     |
| Circ/BOH       |  | 105 |
| Commercial NSA |  | 458 |
| Level 2        |  |     |
| Circ/BOH       |  | 105 |
| Commercial NSA |  | 458 |

| Level 3        |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 105 |
| Commercial NSA |  | 458 |
| Level 4        |  |     |
| Circ/BOH       |  | 105 |
| Commercial NSA |  | 229 |
| Level 5        |  |     |
| Circ/BOH       |  | 105 |
| Commercial NSA |  | 229 |

Additional  
Street View  
Perspectives:  
Rear laneway  
facing West &  
Rear laneway  
facing East



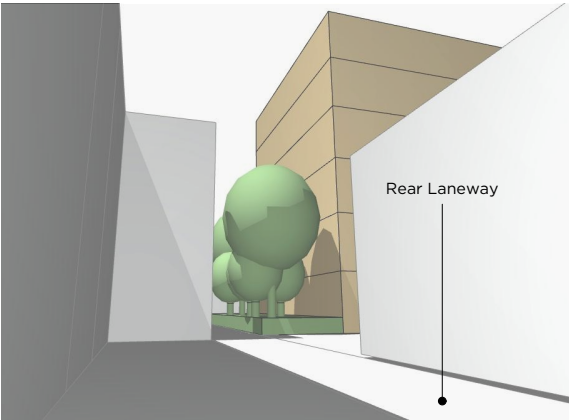
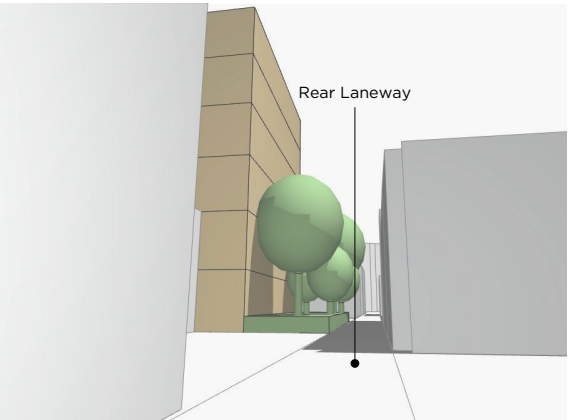
B

Schedule of  
Areas by Level

| Ground         |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 440 |
| Commercial NSA |  | 301 |
| Landscaping    |  | 42  |
| Level 1        |  |     |
| Circ/BOH       |  | 160 |
| Commercial NSA |  | 508 |
| Level 2        |  |     |
| Circ/BOH       |  | 160 |
| Commercial NSA |  | 508 |

| Level 3        |  |     |
|----------------|--|-----|
| Circ/BOH       |  | 112 |
| Commercial NSA |  | 432 |
| Level 4        |  |     |
| Circ/BOH       |  | 112 |
| Commercial NSA |  | 262 |

Additional  
Street View  
Perspectives:  
Rear laneway  
facing West &  
Rear laneway  
facing East



A

## Plans

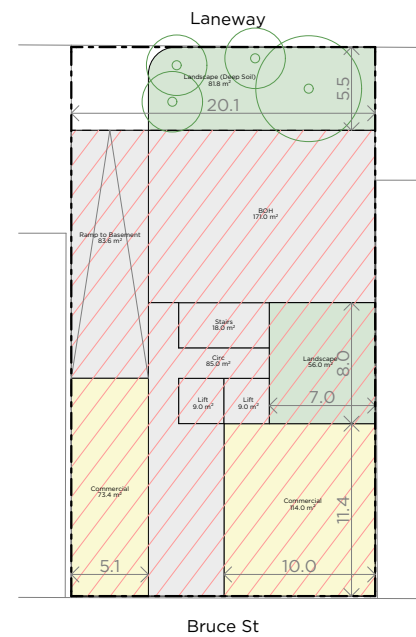
Scale — 1:500

North — 

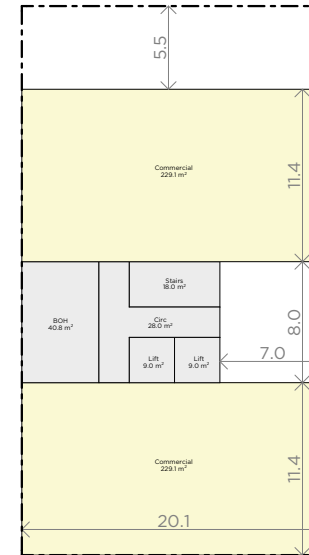
## Legend

-  Circulation / BOH Area
-  Commercial NSA
-  Indicative footprint of basement
-  Landscape / Rooftop Area
-  Private Open Space
-  Residential NSA

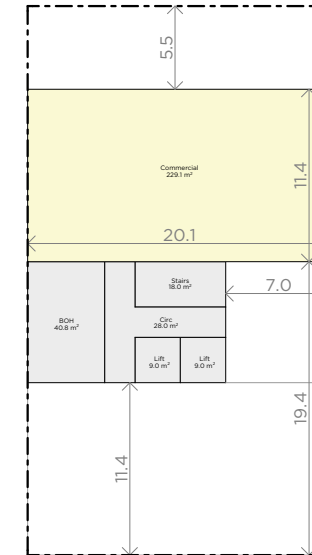
Ground Floor Plan



Level 1 to 3 Typical Floor Plan



Level 4 to 5 Typical Floor Plan



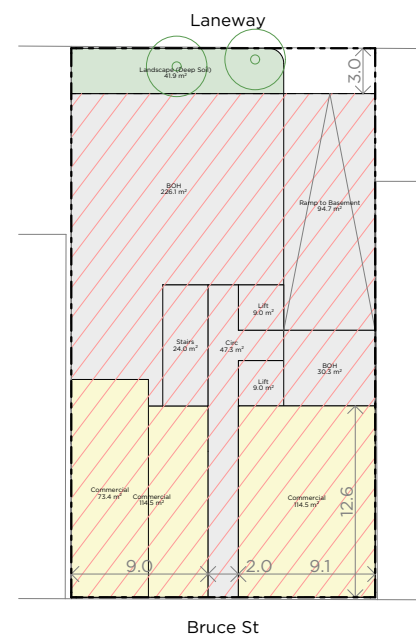
B

## Plans

Scale — 1:500

North — 

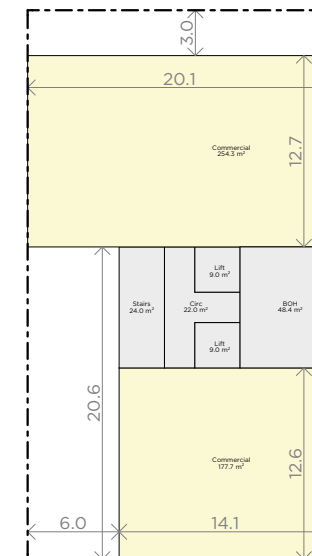
Ground Floor Plan



Level 1 to 2 Typical Floor Plan



Level 3 Floor Plan



Level 4 Floor Plan



A

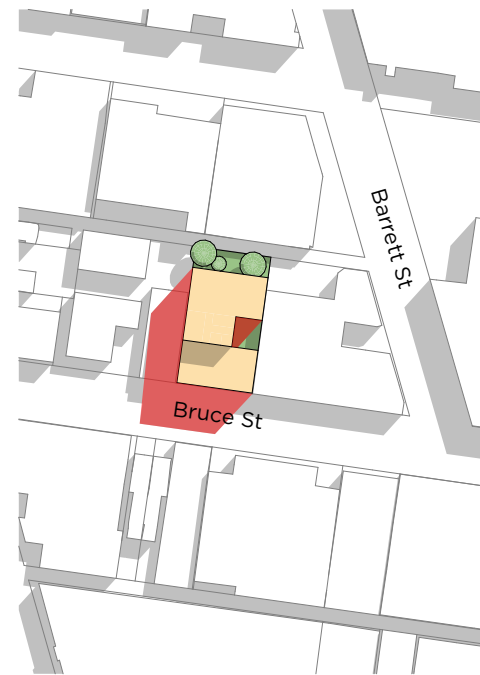
## Shadow Diagrams

Scale — 1:2000

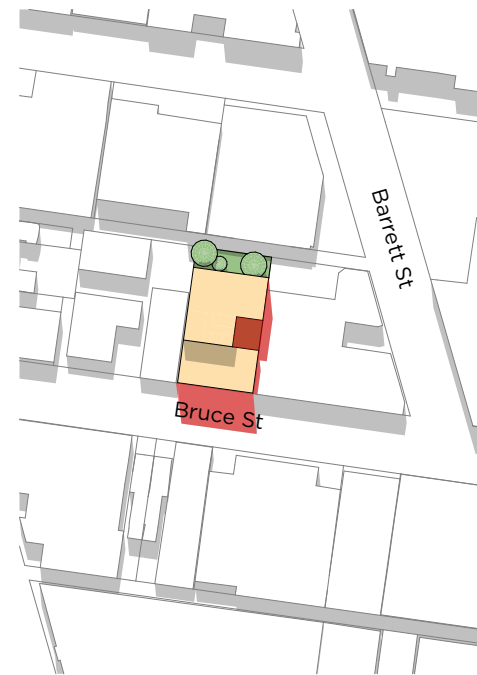
North — 

While the design is setback from the South to limit overshadowing to Bruce St, it casts more shadow over the residential properties immediately to the West, compared to Option B.

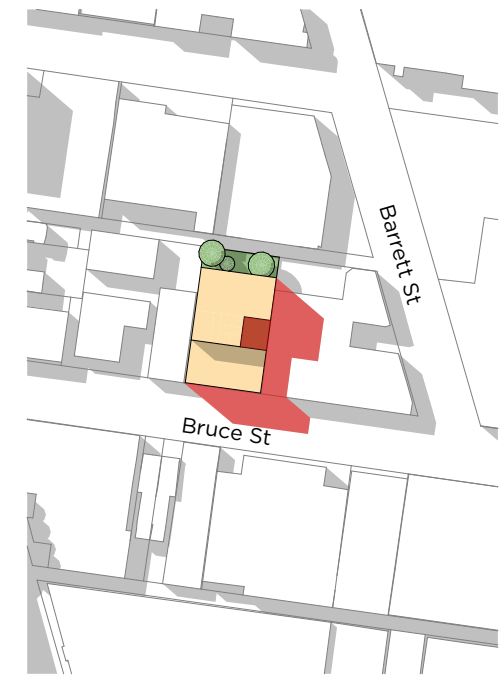
10AM September 22



12PM September 22



2PM September 22



B

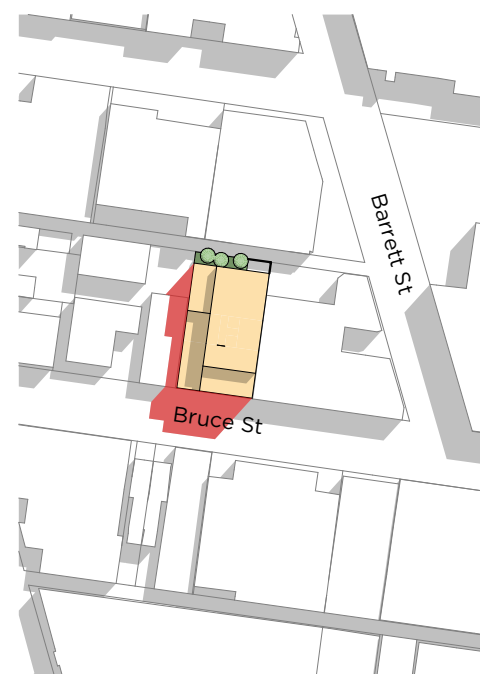
## Shadow Diagrams

Scale — 1:2000

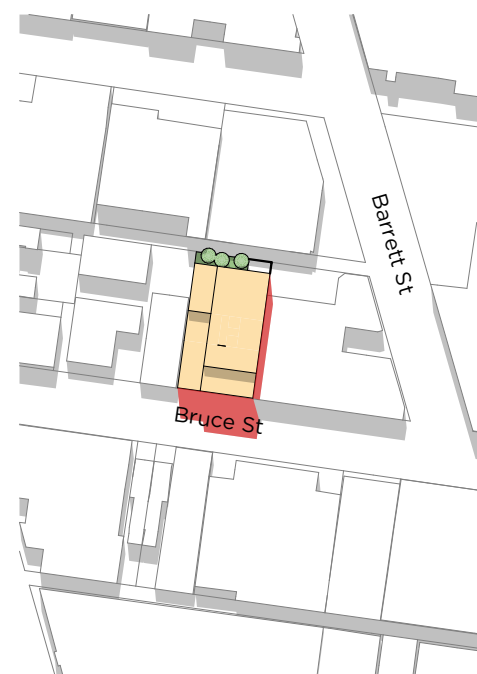
North — 

Shadows cast by Option B are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. The design is setback from the South to limit overshadowing to Bruce St, and height is reduced to the West to limit overshadowing to the adjacent residential properties.

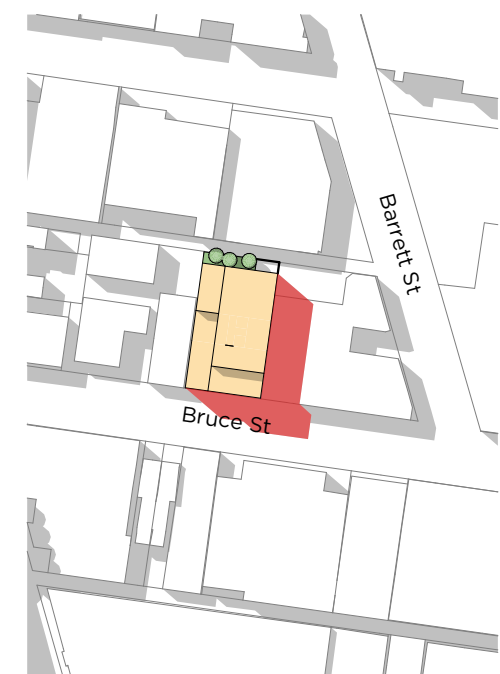
10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | Option A |                                                                                                                     | Option B |                                                                                                                               |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✓        | Demonstrates response to character through massing with further capacity through detailed design.                   | ✓        | Demonstrates response to character through massing with further capacity through detailed design.                             |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✓        | Delivers human-scaled, mid rise building.                                                                           | ✓        | Delivers human-scaled, mid rise building.                                                                                     |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A      | Existing building not of heritage or character significance.                                                        | N/A      | Existing building not of heritage or character significance.                                                                  |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓        | Responds to street hierarchy through massing and height.                                                            | ✓        | Responds to street hierarchy through massing and height.                                                                      |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ✓        | Street wall height varies from 4 to 5 storeys and building heights vary from 3 to 5 storeys in response to context. | ✓        | Building heights vary from 4 to 6 storeys in response to context.                                                             |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | N/A      | Site not large enough to be meaningfully split into multiple buildings.                                             | N/A      | Site not large enough to be meaningfully split into multiple buildings.                                                       |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | ✓        | Building setback from laneway to allow for high amenity building separation from site to North.                     | ✓        | Building setback from laneway to allow for high amenity building separation from site to North.                               |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | N/A      | Site is located close to a corner where additional pedestrian permeability would not provide significant benefit.   | N/A      | Site is located close to a corner where additional pedestrian permeability would not provide significant benefit.             |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓        | >75% of street interface activated with commercial and lobby spaces.                                                | ✓        | 100% of street interface activated with commercial and lobby spaces. Car parking entry and services located at rear.          |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✓        | No borrowed amenity and good access to light and ventilation.                                                       | ✓        | No borrowed amenity and good access to light and ventilation.                                                                 |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | ✓        | Height lowered to 3 storeys to interface with existing 1 storey converted warehouse to West.                        | ⚠        | 4-6 storey zero setback interface to West may result in visual bulk and inadequate transition of scale from 1 storey building |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | ✓        | Street wall steps down to 3 storeys adjacent to existing 1 storey converted warehouse to West.                      | ⚠        | 4-6 storey zero setback interface to West may result in visual bulk and inadequate transition of scale from 1 storey building |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ✓        | Lower built form to South avoids overshadowing potential roof of future development on South side of Bruce St       | ✓        | Lower built form to South avoids overshadowing potential roof of future development on South side of Bruce St                 |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A      | Existing building not of heritage or character significance.                                                        | N/A      | Existing building not of heritage or character significance.                                                                  |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A      | Not in proximity to reserves to overshadow.                                                                         | N/A      | Not in proximity to reserves to overshadow.                                                                                   |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✓        | Upper level setbacks preserve amenity to South.                                                                     | ✓        | Upper level setbacks preserve amenity to South.                                                                               |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓        | Primary outlook secured to South and within site to North with setback.                                             | ✓        | Primary outlook secured to South and within site to North with setback.                                                       |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                          | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                                    |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                             | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓        | Setbacks from North provide space for deep soil.                                                                    | ✓        | Setbacks from North provide space for deep soil.                                                                              |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓        | >75% of street interface activated with commercial and lobby spaces.                                                | ✓        | 100% of street interface activated with commercial and lobby spaces. Car parking entry and services located at rear.          |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓        | Massing facilitates best practice with detailed design.                                                             | ✓        | Massing facilitates best practice with detailed design.                                                                       |

## Conclusion & Recommendations

Testing demonstrated that there was sufficient flexibility in the proposed controls to achieve almost all applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020), notably ensuring 'development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development' through setbacks from the laneway and a light court in Option A, and lower built form on the North of Bruce St to better preserve solar access to the street.

As identified in the table of design objectives on page 18, in option B, the transition of scale may be inadequate between the single storey converted warehouse to the West and the 4-6 storey proposal, resulting in visual bulk and overshadowing in the morning from this interface.

The 4:1 FAR broadly appears to provide an appropriate density for the Chelmsford precinct, as a higher FAR is likely to exacerbate these issues, and the 6 storey preferred maximum height was found to successfully encourage a mid-rise, human scaled neighbourhood.

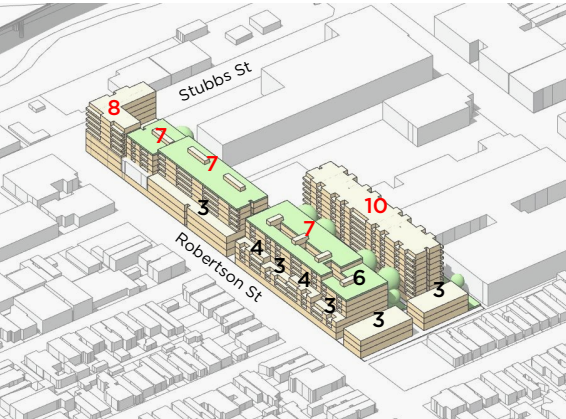
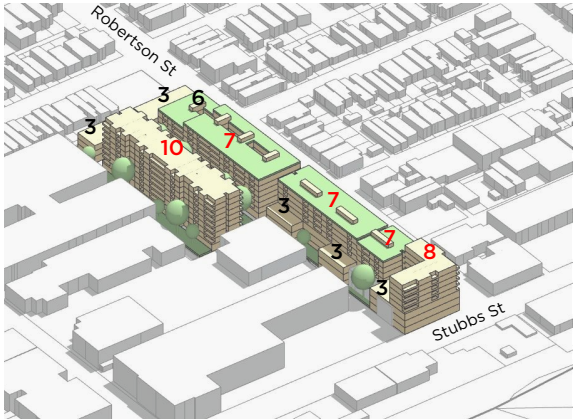
While Option A demonstrates the ability to meet all design objectives, its site coverage is relatively high and could provide even better internal amenity and deep soil amounts. Consideration may be given to reducing the FAR to a figure in the order of 3.5:1 in order to allow greater flexibility for schemes like Option B with lower site coverages to deal with interface issues.

A

Option A provides multiple building typologies to respond to the various adjacent conditions with a mix of mid-rise light-court buildings, double-loaded buildings, and three storey townhouses. Buildings are set back above a 3-4 storey street wall on Robertson St to provide a transition in scale to the low-rise residential use to the North. This test demonstrates that a 4:1 FAR cannot be met without exceeding the preferred maximum height of 6 storeys. This occurs because the site must be divided into multiple buildings with space for separation which cannot be built on.

Ground Floor Site Coverage — 67%  
Level 1 Site Coverage — 67%  
Total Building Height — **10 storeys**  
Commercial NSA / Residential NSA — 20% / 80%

South East and North West Axonometric Diagrams

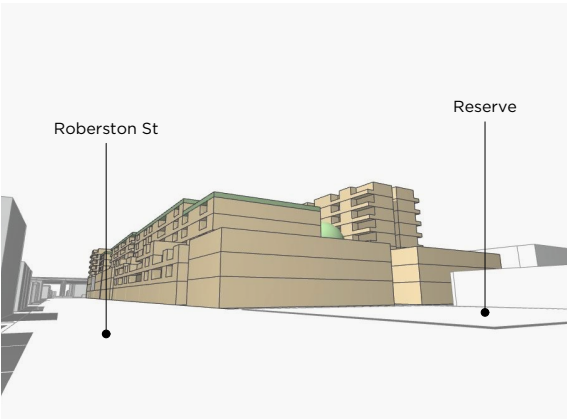
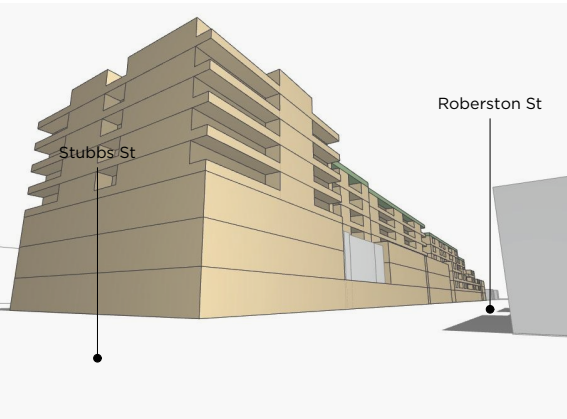


Summary of Areas

| Area Type          | Area (sq. m) |
|--------------------|--------------|
| Circ/BOH           | 9,428        |
| Commercial NSA     | 7,631        |
| Landscaping        | 2,103        |
| Private Open Space | 3,990        |
| Residential NSA    | 30,159       |
| Rooftop            | 3,244        |

| Total GFA | Apt Type | Quantity |
|-----------|----------|----------|
| 47,218    | 1B       | 195      |
|           | 2B       | 168      |
|           | 3B       | 74       |

Street View Perspectives:  
Stubbs St facing West & Robertson St facing East

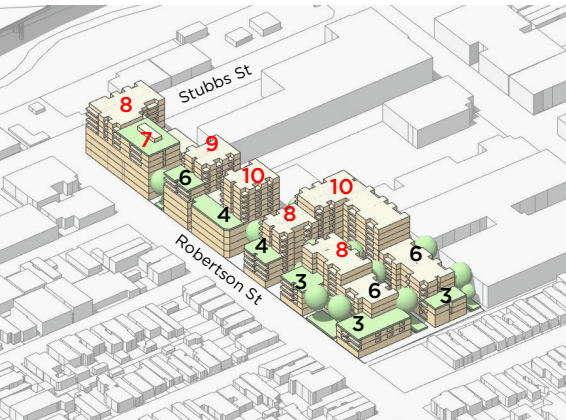
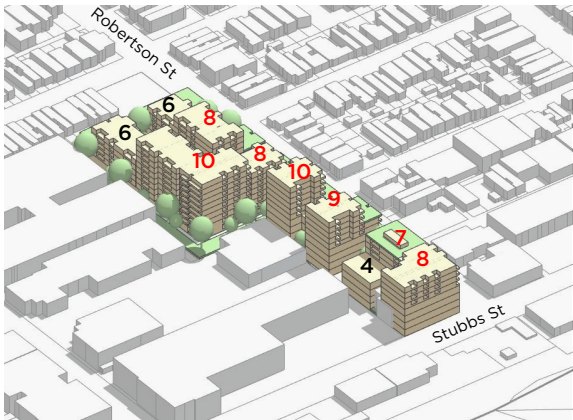


B

Option B explores a lower site coverage approach, repeating an optimised, double loaded building plan. Buildings are typically oriented East-West, with North-South oriented access ways providing building separation. This test also demonstrates that a 4:1 FAR cannot be met without exceeding the preferred maximum height of 6 storeys. This occurs because the site must be divided into multiple buildings with significant areas of the site required to be uncovered to provide building separation.

Ground Floor Site Coverage — 62%  
Level 1 Site Coverage — 62%  
Total Building Height — **10 storeys**  
Commercial NSA / Residential NSA — 28% / 72%

South East and North West Axonometric Diagrams

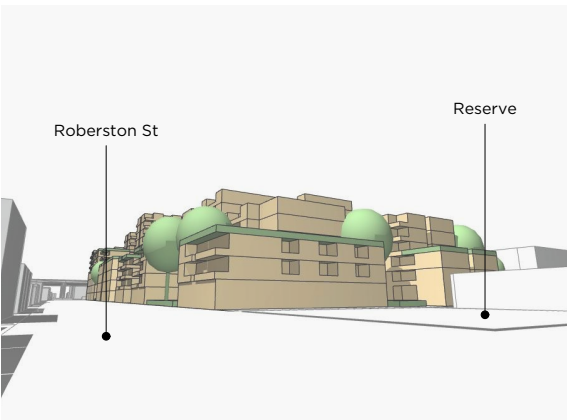
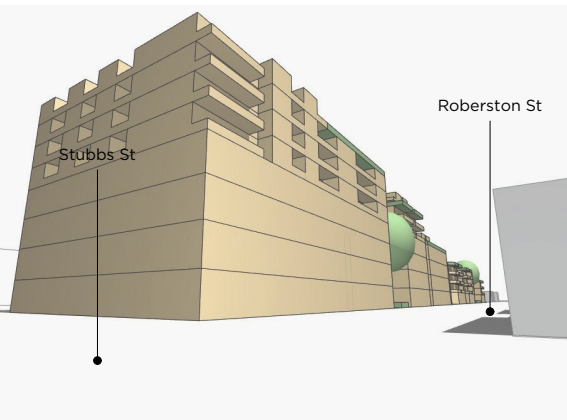


Summary of Areas

| Area Type          | Area (sq. m) |
|--------------------|--------------|
| Circ/BOH           | 11,272       |
| Commercial NSA     | 9,191        |
| Landscaping        | 2,126        |
| Private Open Space | 4,162        |
| Residential NSA    | 25,876       |
| Rooftop            | 2,016        |

| Total GFA | Apt Type | Quantity |
|-----------|----------|----------|
| 46,339    | 1B       | 411      |
|           | 2B       | 40       |
|           | 3B       | 9        |

Street View Perspectives:  
Stubbs St facing West & Robertson St facing East





Schedule of  
Areas by Level

| Ground             |  |       |
|--------------------|--|-------|
| Circ/BOH           |  | 3,887 |
| Commercial NSA     |  | 2,207 |
| Landscaping        |  | 2,103 |
| Private Open Space |  | 155   |
| Residential NSA    |  | 1,812 |
| Level 1            |  |       |
| Circ/BOH           |  | 953   |
| Commercial NSA     |  | 2,712 |
| Private Open Space |  | 477   |
| Residential NSA    |  | 4,203 |
| Level 2            |  |       |
| Circ/BOH           |  | 953   |
| Commercial NSA     |  | 2,712 |
| Private Open Space |  | 477   |
| Residential NSA    |  | 4,203 |

| Level 3            |  |       |
|--------------------|--|-------|
| Circ/BOH           |  | 741   |
| Private Open Space |  | 640   |
| Residential NSA    |  | 4,530 |
| Level 4            |  |       |
| Circ/BOH           |  | 729   |
| Private Open Space |  | 616   |
| Residential NSA    |  | 4,316 |
| Level 5            |  |       |
| Circ/BOH           |  | 729   |
| Private Open Space |  | 616   |
| Residential NSA    |  | 4,316 |
| Level 6            |  |       |
| Circ/BOH           |  | 711   |
| Private Open Space |  | 568   |
| Residential NSA    |  | 3,935 |
| Rooftop            |  | 448   |

| Level 7            |  |       |
|--------------------|--|-------|
| Circ/BOH           |  | 501   |
| Private Open Space |  | 253   |
| Residential NSA    |  | 1,644 |
| Rooftop            |  | 2,796 |
| Level 8            |  |       |
| Circ/BOH           |  | 224   |
| Private Open Space |  | 188   |
| Residential NSA    |  | 1,200 |



Schedule of  
Areas by Level

| Ground             |  |       |
|--------------------|--|-------|
| Circ/BOH           |  | 3,806 |
| Commercial NSA     |  | 1,699 |
| Landscaping        |  | 2,126 |
| Private Open Space |  | 251   |
| Residential NSA    |  | 1,579 |
| Level 1            |  |       |
| Circ/BOH           |  | 1,338 |
| Commercial NSA     |  | 2,366 |
| Private Open Space |  | 482   |
| Residential NSA    |  | 3,078 |
| Level 2            |  |       |
| Circ/BOH           |  | 1,142 |
| Commercial NSA     |  | 2,563 |

| Private Open Space |  | 482   |
|--------------------|--|-------|
| Residential NSA    |  | 3,078 |
| Level 3            |  |       |
| Circ/BOH           |  | 1,079 |
| Commercial NSA     |  | 2,563 |
| Private Open Space |  | 416   |
| Residential NSA    |  | 2,597 |
| Rooftop            |  | 617   |
| Level 4            |  |       |
| Circ/BOH           |  | 918   |
| Private Open Space |  | 624   |
| Residential NSA    |  | 3,799 |
| Rooftop            |  | 769   |
| Level 5            |  |       |
| Circ/BOH           |  | 918   |

| Private Open Space |  | 624   |
|--------------------|--|-------|
| Residential NSA    |  | 3,799 |
| Level 6            |  |       |
| Circ/BOH           |  | 731   |
| Private Open Space |  | 474   |
| Residential NSA    |  | 2,907 |
| Rooftop            |  | 201   |
| Level 7            |  |       |
| Circ/BOH           |  | 715   |
| Private Open Space |  | 415   |
| Residential NSA    |  | 2,559 |
| Rooftop            |  | 429   |
| Level 8            |  |       |
| Circ/BOH           |  | 351   |
| Private Open Space |  | 218   |
| Residential NSA    |  | 1,374 |
| Level 9            |  |       |
| Circ/BOH           |  | 274   |

## A

# Plans

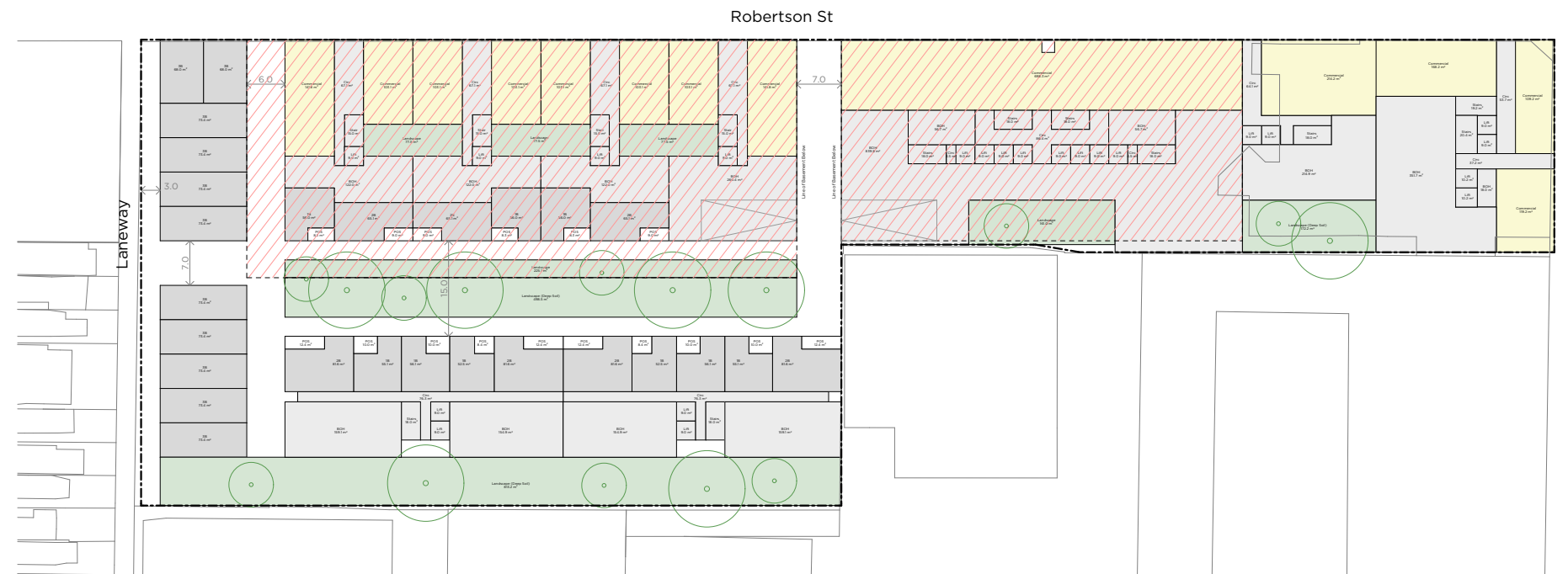
Scale — 1:1000

North — 

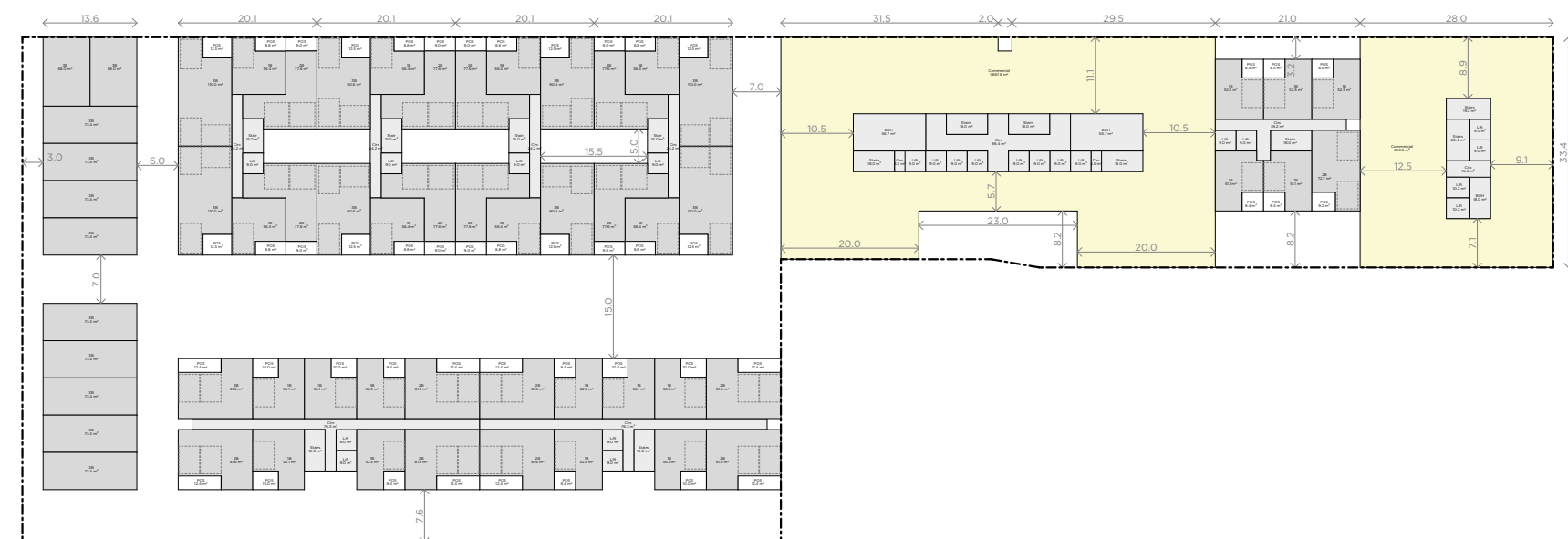
Legend

- 
- |                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

### Ground Floor Plan



### Level 1 to 2 Typical Floor Plan



**A**

# Plans

Scale — 1:1000

North — 

Legend

 Circulation / BOH Area

Commercial NSA

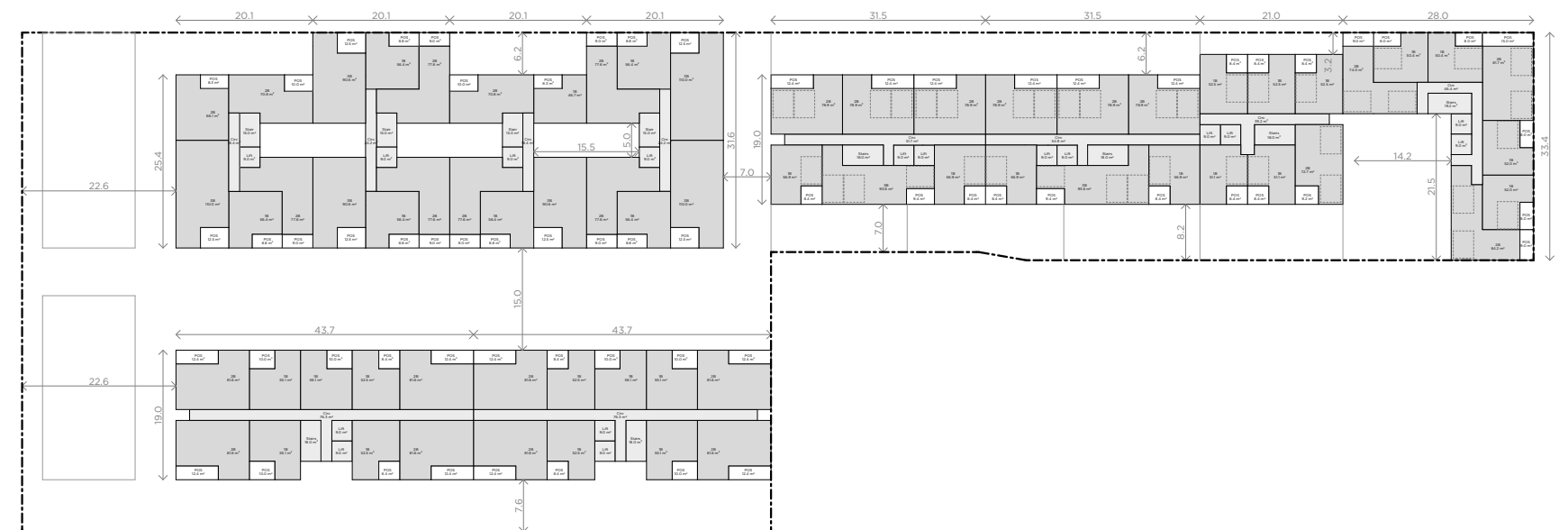
 Indicative footprint of basement

 Landscape / Rooftop Area

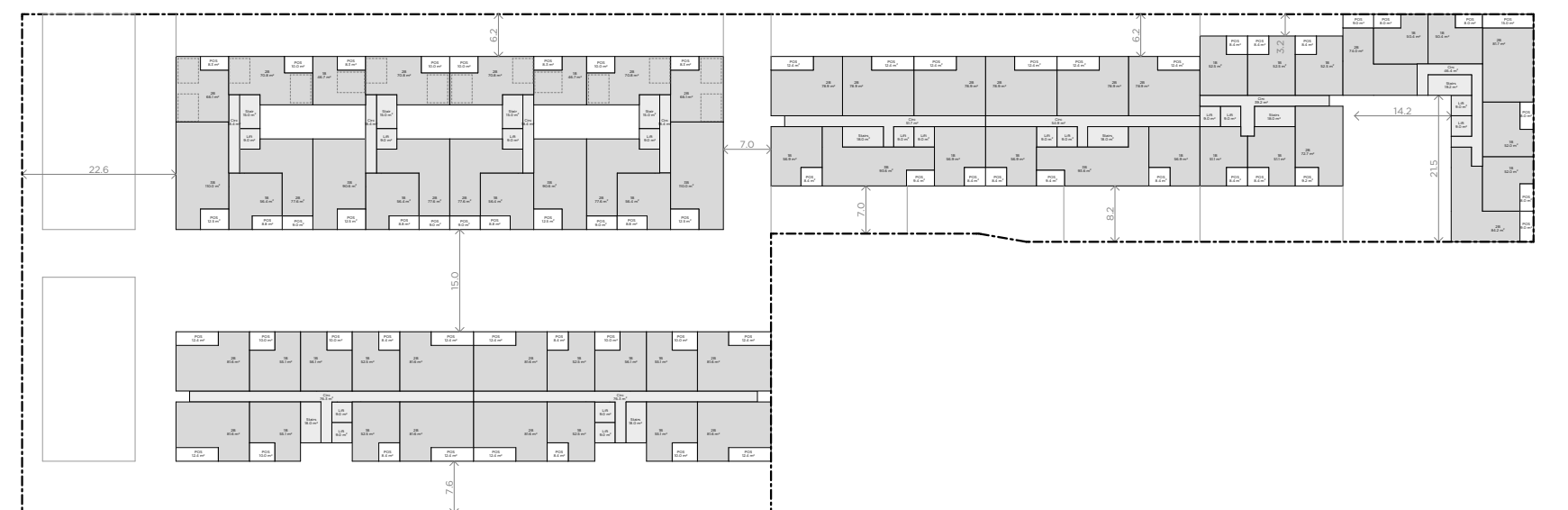
☐ Private Open Space

Residential NSA

### Level 3 Floor Plan



### Level 4 to 5 Typical Floor Plan



A

Plans

Scale — 1:1000

North — 

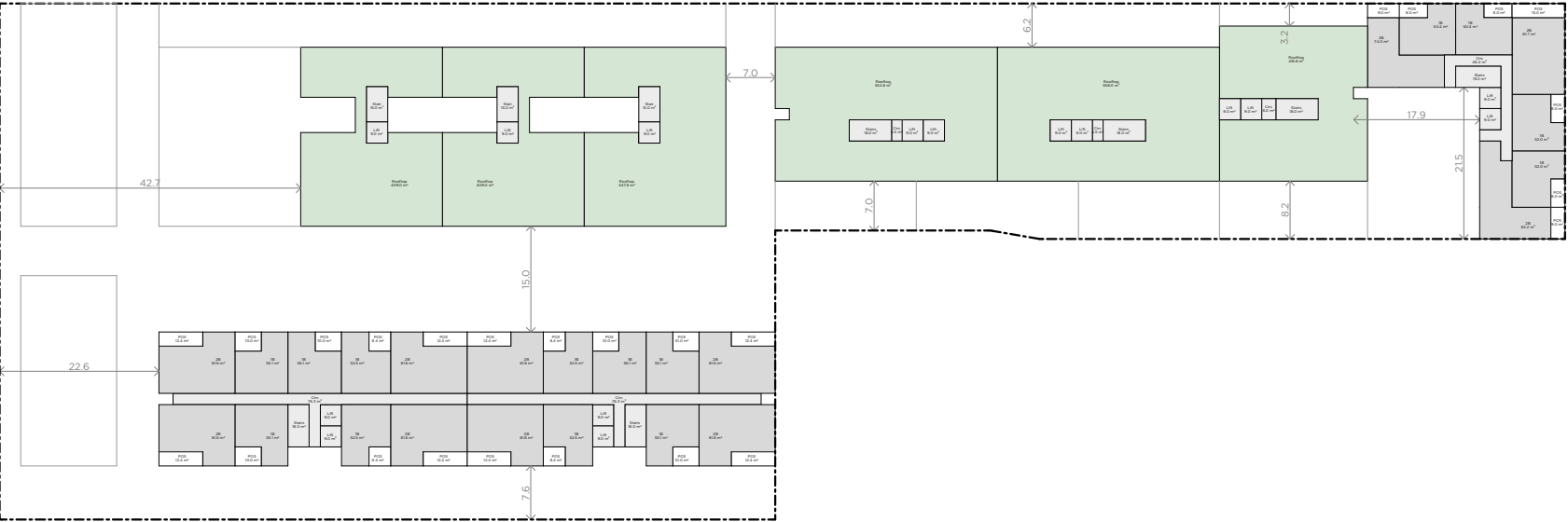
Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 6 Floor Plan



Level 7 Floor Plan



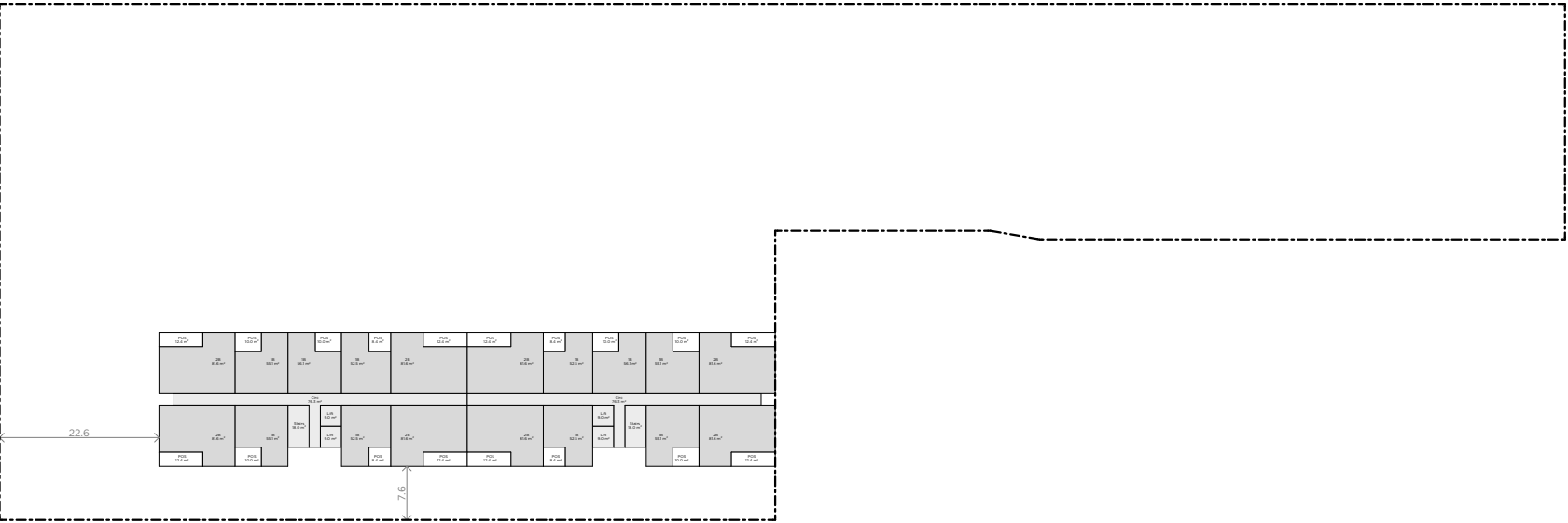
A

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA

Level 8 Floor Plan



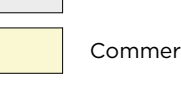
# B

# Plans

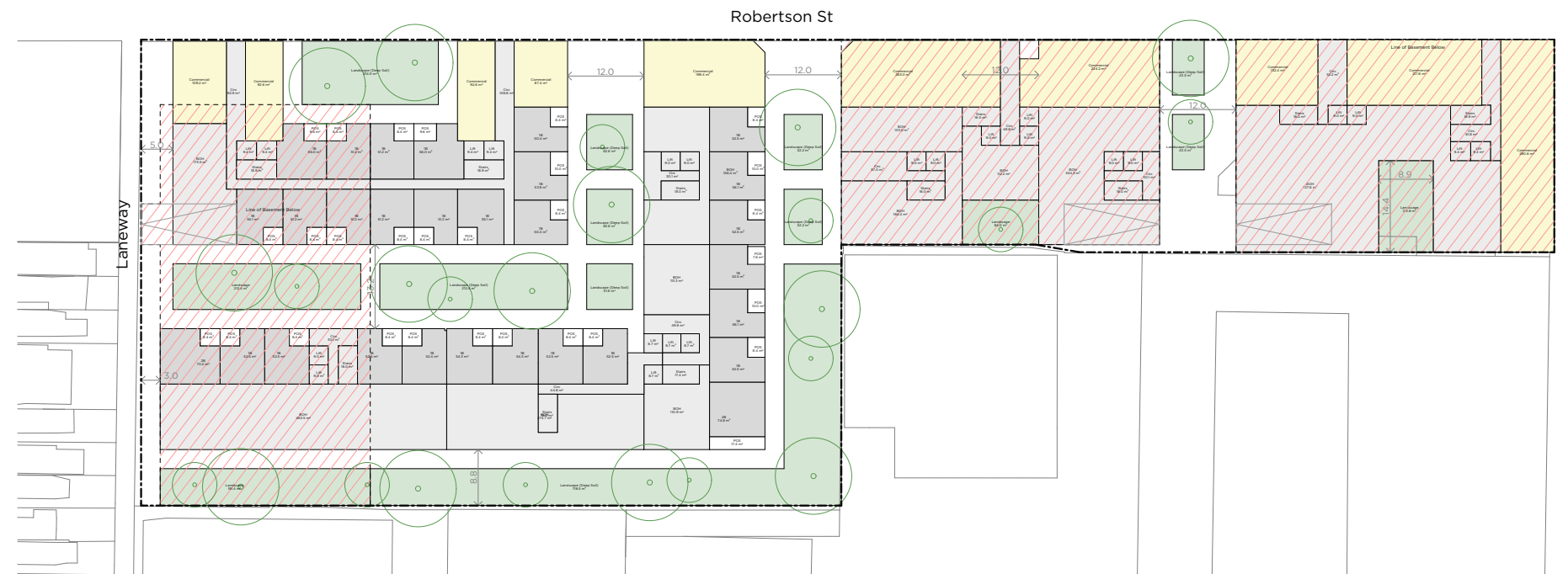
Scale — 1:1000

North — 

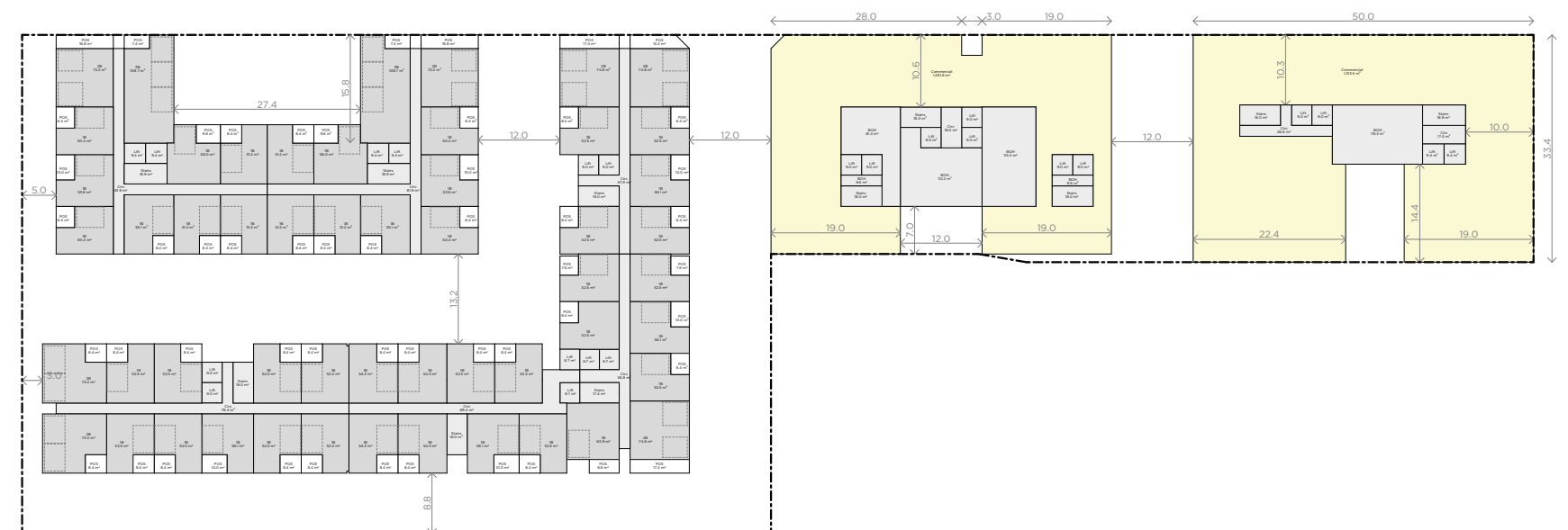
Legend

- 
- |                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

### Ground Floor Plan



### Level 1 to 2 Typical Floor Plan



B

Plans

Scale — 1:1000

North — 

Legend

Circulation / BOH Area

Commercial NSA

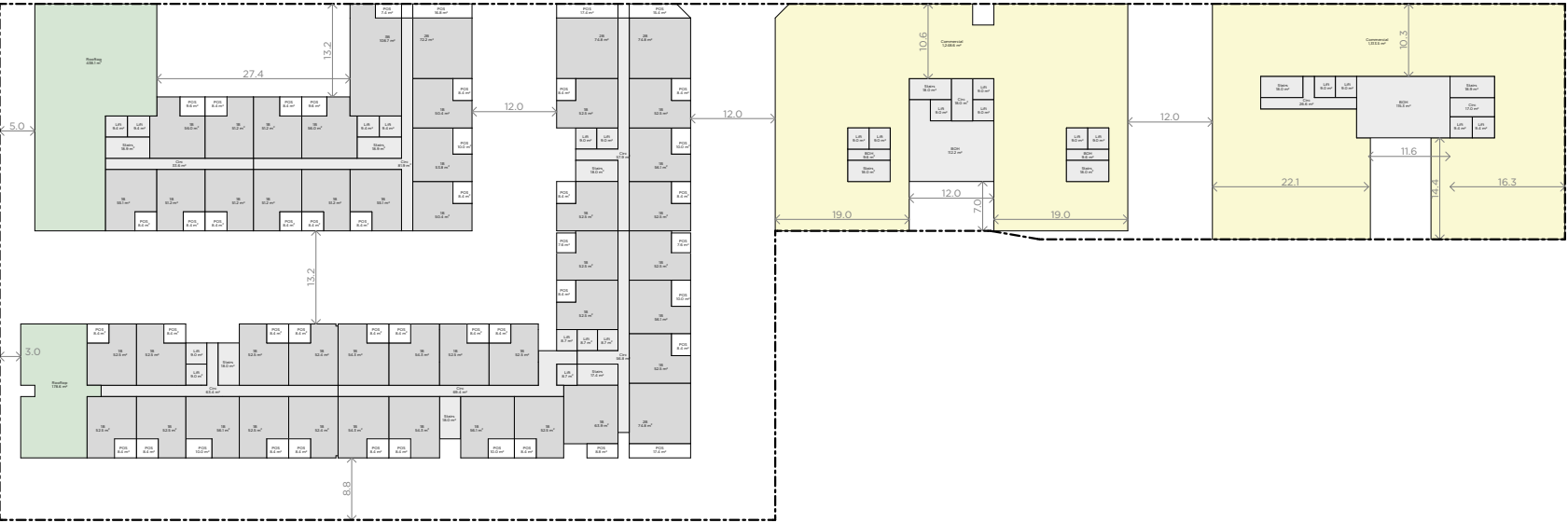
Indicative footprint of basement

Landscape / Rooftop Area

Private Open Space

Residential NSA

Level 3 Floor Plan



Level 4 Floor Plan



B

Plans

Scale — 1:1000

North — 

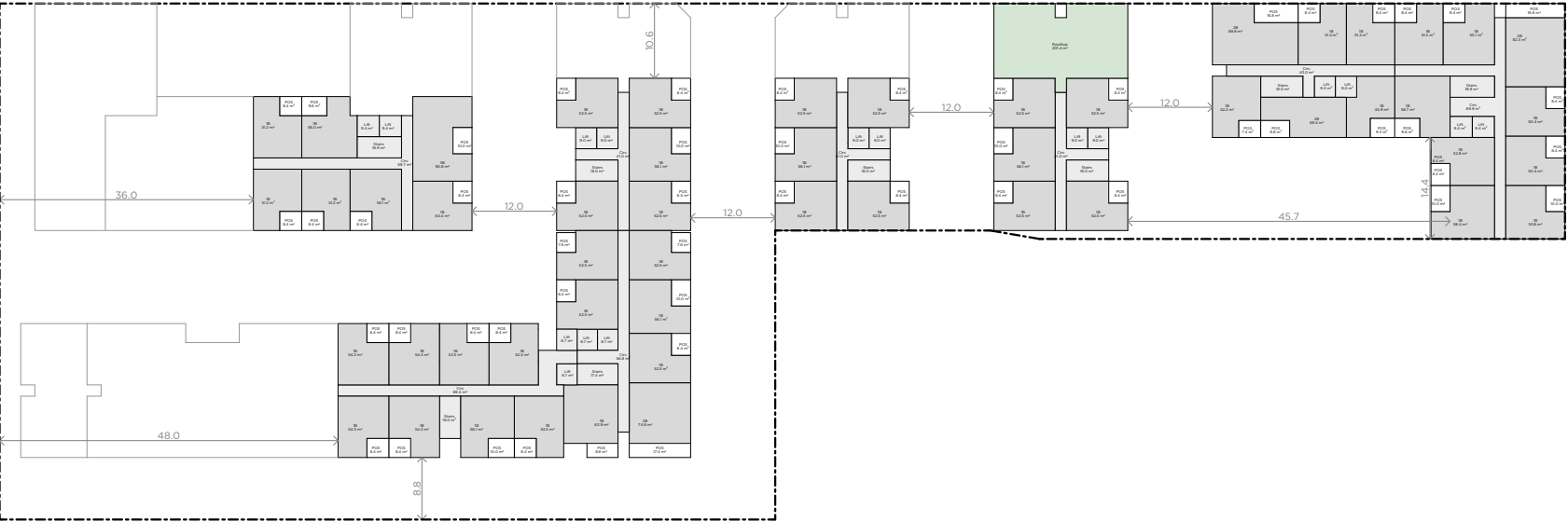
Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 5 Floor Plan



Level 6 Floor Plan



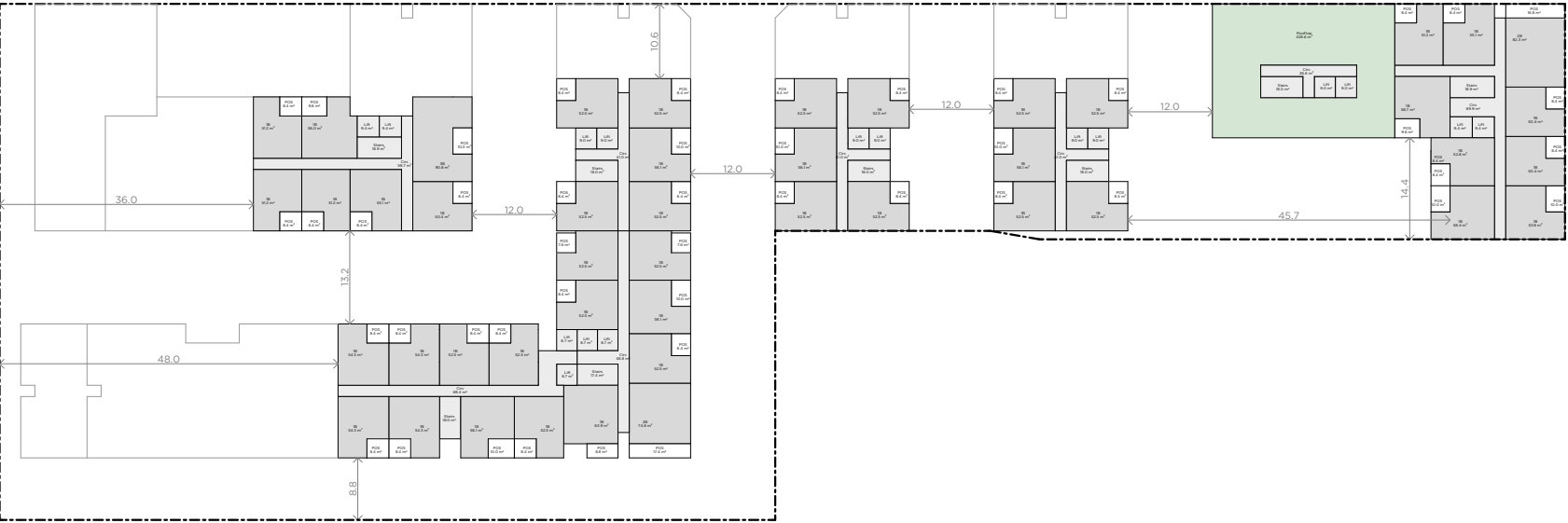
B

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA

Level 7 Floor Plan



Level 7 Floor Plan



B

Plans

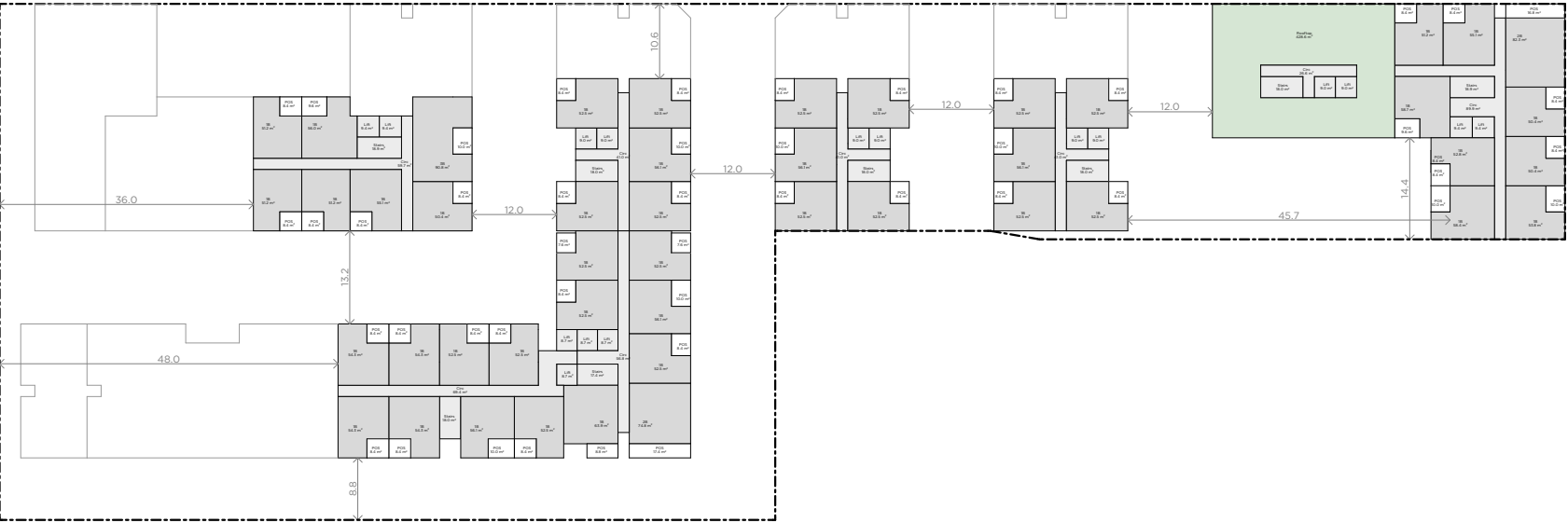
Scale — 1:1000

North — 

Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 7 Floor Plan



Level 9 Floor Plan

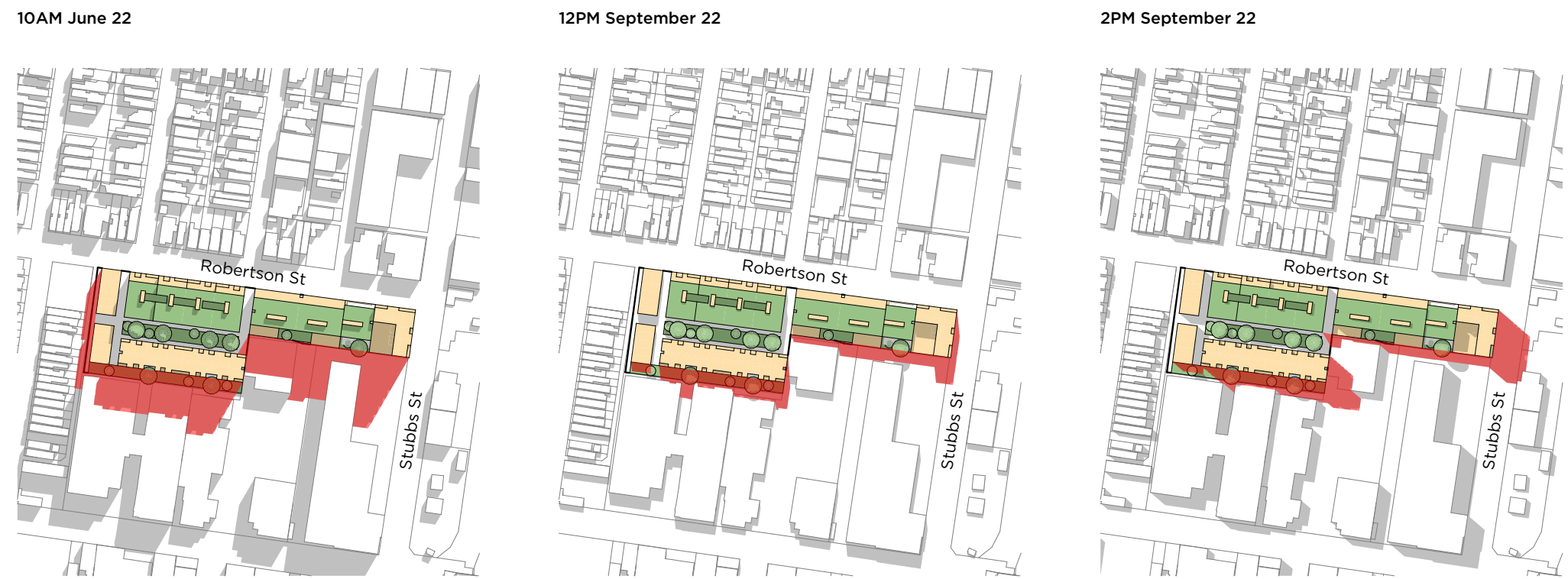


A

Shadow  
Diagrams

Scale — 1:4000  
North — 

Shadows cast by Option A reduce amenity to sites to the South. The design makes particular effort to locate lower built form adjacent to the Robertson St reserve as per the design recommendations regarding overshadowing open spaces.

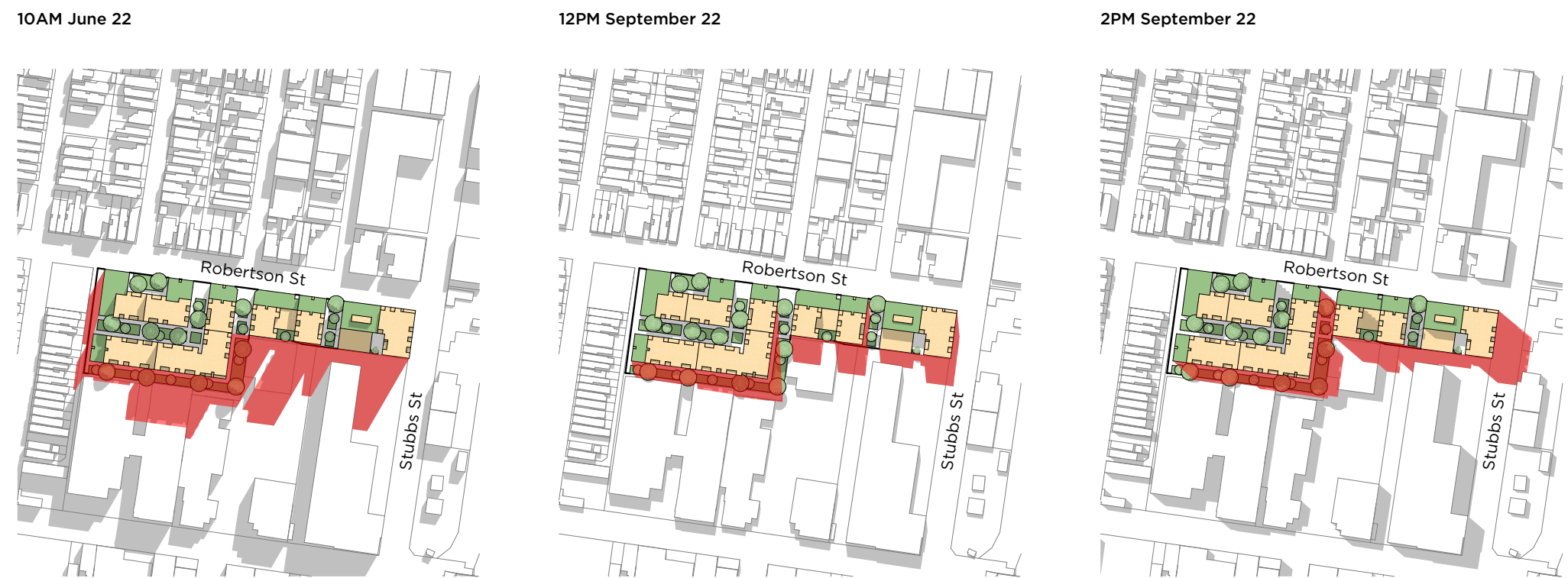


B

Shadow  
Diagrams

Scale — 1:4000  
North — 

Shadows cast by Option B are greater in extent than those in Option A, notably at 10AM from taller built form on the Southern edge of the site. The design makes particular effort to locate lower built form adjacent to the Robertson St reserve as per the design recommendations regarding overshadowing open spaces.



Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | Option A |                                                                                                                         | Option B |                                                                                                                         |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✓        | Demonstrates response to character through massing in alignment with mixed use vision for Stubbs precinct.              | ✓        | Demonstrates response to character through massing in alignment with mixed use vision for Stubbs precinct.              |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✗        | Taller built form outside of area specified in structure plan as a result of high FAR figure proportional to site size. | ✗        | Taller built form outside of area specified in structure plan as a result of high FAR figure proportional to site size. |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A      | Existing building not of heritage or character significance.                                                            | N/A      | Existing building not of heritage or character significance.                                                            |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓        | Height reduced to Western edge interfacing laneway, street walls transition scale to North stable residential.          | ✓        | Height reduced to Western edge interfacing laneway, street walls transition scale to North stable residential.          |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ✓        | Street wall height varies from 3 to 8 storeys in response to context.                                                   | ✓        | Street wall height varies from 3 to 8 storeys in response to context.                                                   |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ✓        | Area is divided into 12 buildings.                                                                                      | ✓        | Area is divided into 9 buildings.                                                                                       |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | ⚠        | Some instances of potentially compromised amenity where a 10 and 7 storey building have 15m separation (18m preferred)  | ⚠        | Some instances of potentially compromised amenity where a 10 and 8 storey building have 13m separation (18m preferred)  |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ✓        | New street network provided within site with opportunity for connection through block on adjacent sites.                | ✓        | New street network provided within site with opportunity for connection through block on adjacent sites.                |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓        | Commercial use located on Robertson St interface and residential use located adjacent to new streets.                   | ✓        | Commercial use located on Robertson St interface and residential use located adjacent to new streets.                   |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ⚠        | Some instances of potentially compromised amenity where a 10 and 7 storey building have 15m separation (18m preferred)  | ⚠        | Some instances of potentially compromised amenity where a 10 and 8 storey building have 13m separation (18m preferred)  |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | ✓        | Street wall height varies from 3 to 4 storeys in response to stable residential North of Robertson St.                  | ✓        | Street wall height varies from 3 to 4 storeys in response to stable residential North of Robertson St.                  |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A      | Site does not directly adjoin residential or heritage buildings.                                                        | N/A      | Site does not directly adjoin residential or heritage buildings.                                                        |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ⚠        | 10 storey forms to South of site may overshadow roof of potential development on site directly to south.                | ⚠        | 10 storey forms to South of site may overshadow roof of potential development on site directly to south.                |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A      | Existing buildings not of heritage or character significance.                                                           | N/A      | Existing buildings not of heritage or character significance.                                                           |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | ✓        | Height reduced to 3 storeys (below max. street wall) to limit impacts of overshadowing.                                 | ✓        | Height reduced to 3 storeys (below max. street wall) to limit impacts of overshadowing.                                 |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ⚠        | Rear setback of 7.2m may lead to compromised amenity as a result of insufficient building separation to adjacent site.  | ✓        | Rear setback of 8.8m allows for adequate building separation if mirrored on adjacent site.                              |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ⚠        | Some instances of potentially compromised amenity where a 10 and 7 storey building have 15m separation (18m preferred)  | ⚠        | Some instances of potentially compromised amenity where a 10 and 8 storey building have 13m separation (18m preferred)  |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                              | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                              |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                 | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                 |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓        | Uncovered areas required for building separation provide space for deep soil.                                           | ✓        | Uncovered areas required for building separation provide space for deep soil.                                           |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓        | Majority of frontages to Robertson St accommodate active commercial use with BOH accessed at the rear of site.          | ✓        | Majority of frontages to Robertson St accommodate active commercial use with BOH accessed at the rear of site.          |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓        | Massing facilitates best practice with detailed design.                                                                 | ✓        | Massing facilitates best practice with detailed design.                                                                 |

## Conclusion & Recommendations

Testing demonstrated that it was possible under the proposed controls to achieve most applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020), notably ensuring 'larger sites are broken up into a series of building forms that relate and contribute positively to their context'. To achieve all other recommendations, taller forms up to 10 storeys were produced to the rear of the site that may fail to provide a mid-rise, human-scaled neighbourhood, and which provide insufficient building separation at these heights.

Because sites of this scale and proportion inherently require high amounts of uncovered area for building separation (between 25% and 50%), the 4:1 FAR must be achieved with taller building heights than those expected of a smaller site, resulting in the problems identified above. Given that many of the buildings exceed the 6 storey preferred maximum height, and that this scale is deemed appropriate as an average to achieve a human-scaled neighbourhood, consideration should be given to reducing the FAR.

Given these findings, sensitivity testing is recommended to determine an appropriate FAR that ensures all Design Recommendations can be met. Two sensitivity tests are recommended — these are proposed to be under a 3.5:1 FAR and a 3:1 FAR.

A

Option A is a perimeter block setback from the West, North and East to orient all primary outlooks external to the site. The western corners are taken to 10 and 12 storeys to shield the rest of the site from the impact of the Citylink freeway. Floor plates in the Western half of the building from Ground to Level 3 are allocated to commercial use where residential use would have compromised amenity.

Ground Floor Site Coverage — 48%  
Level 1 Site Coverage — 48%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 20% / 80%

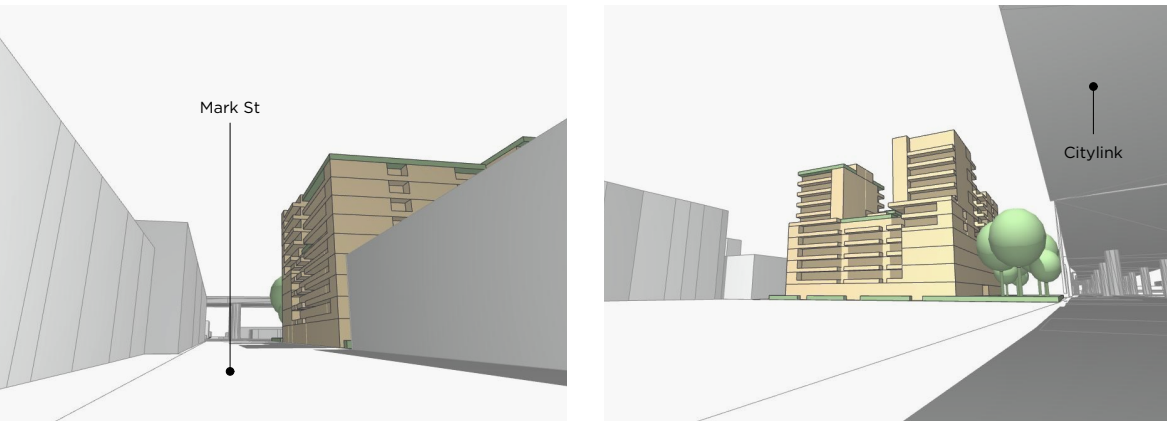
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type  | Quantity |
|--------------------|--------------|-----------|-----------|----------|
| Circ/BOH           | 4,583        | 21,534    | 1B        | 59       |
| Commercial NSA     | 3,429        |           | 1B Studio | 17       |
| Landscaping        | 1,748        |           | 2B        | 88       |
| Private Open Space | 2,023        |           | 3B        | 28       |
| Residential NSA    | 13,522       |           |           |          |
| Rooftop            | 1,039        |           |           |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Mark St facing West & from under Citylink facing South



B

Option B is a series of slender tower forms located with a 'tooth and gap' approach, with no primary outlooks facing onto the Citylink freeway, instead orienting all apartments in a North-South direction. One tower is allocated entirely to commercial use to provide separation between commercial and residential program.

Ground Floor Site Coverage — 43%  
Level 1 Site Coverage — 39%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 22% / 78%

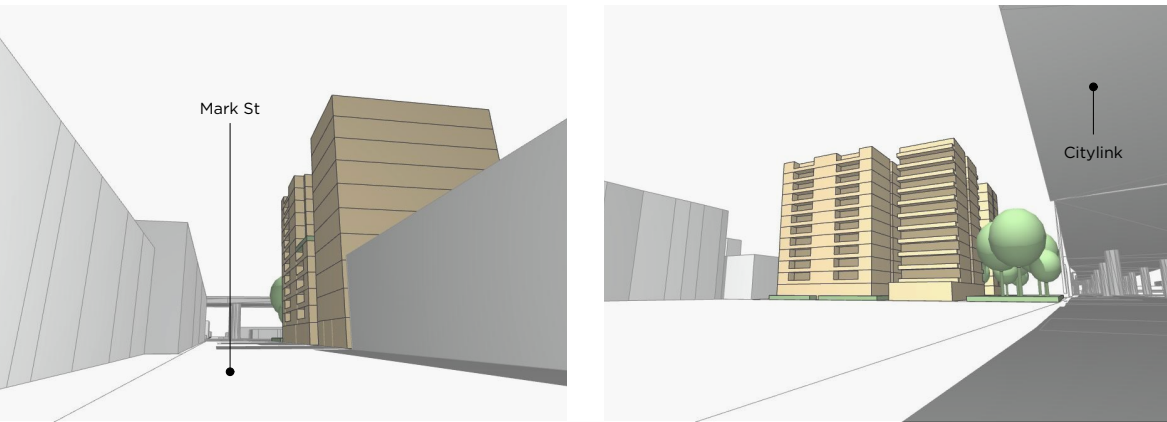
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type | Quantity |
|--------------------|--------------|-----------|----------|----------|
| Circ/BOH           | 4,704        | 21,065    | 1B       | 128      |
| Commercial NSA     | 3,724        |           | 2B       | 57       |
| Landscaping        | 1,767        |           | 3B       | 11       |
| Private Open Space | 2,050        |           |          |          |
| Residential NSA    | 12,637       |           |          |          |
| Rooftop            | 284          |           |          |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Mark St facing West & from under Citylink facing South



A

Schedule of  
Areas by Level

| Ground             |       |
|--------------------|-------|
| Circ/BOH           | 1,433 |
| Commercial NSA     | 885   |
| Landscaping        | 1,748 |
| Level 1            |       |
| Circ/BOH           | 320   |
| Commercial NSA     | 848   |
| Private Open Space | 168   |
| Residential NSA    | 1,250 |
| Level 2            |       |
| Circ/BOH           | 320   |
| Commercial NSA     | 848   |
| Private Open Space | 168   |
| Residential NSA    | 1,250 |

| Level 3            |       |
|--------------------|-------|
| Circ/BOH           | 320   |
| Commercial NSA     | 848   |
| Private Open Space | 168   |
| Residential NSA    | 1,250 |
| Level 4            |       |
| Circ/BOH           | 352   |
| Private Open Space | 266   |
| Residential NSA    | 1,964 |
| Level 5            |       |
| Circ/BOH           | 352   |
| Private Open Space | 266   |
| Residential NSA    | 1,964 |

| Level 6            |       |
|--------------------|-------|
| Circ/BOH           | 362   |
| Private Open Space | 299   |
| Residential NSA    | 1,337 |
| Rooftop            | 267   |
| Level 7            |       |
| Circ/BOH           | 272   |
| Private Open Space | 205   |
| Residential NSA    | 1,337 |
| Level 8            |       |
| Circ/BOH           | 272   |
| Private Open Space | 205   |
| Residential NSA    | 1,337 |

| Level 9            |     |
|--------------------|-----|
| Circ/BOH           | 290 |
| Private Open Space | 143 |
| Residential NSA    | 936 |
| Rooftop            | 446 |
| Level 10           |     |
| Circ/BOH           | 136 |
| Private Open Space | 90  |
| Residential NSA    | 598 |
| Level 11           |     |
| Circ/BOH           | 154 |
| Private Open Space | 45  |
| Residential NSA    | 299 |

B

Schedule of  
Areas by Level

| Ground             |       |
|--------------------|-------|
| Circ/BOH           | 1,602 |
| Commercial NSA     | 745   |
| Landscaping        | 1,767 |
| Level 1            |       |
| Circ/BOH           | 312   |
| Commercial NSA     | 331   |
| Private Open Space | 206   |
| Residential NSA    | 1,271 |
| Level 2            |       |
| Circ/BOH           | 312   |
| Commercial NSA     | 331   |
| Private Open Space | 206   |
| Residential NSA    | 1,271 |

| Level 3            |       |
|--------------------|-------|
| Circ/BOH           | 312   |
| Commercial NSA     | 331   |
| Private Open Space | 206   |
| Residential NSA    | 1,271 |
| Level 4            |       |
| Circ/BOH           | 312   |
| Commercial NSA     | 331   |
| Private Open Space | 206   |
| Residential NSA    | 1,271 |
| Level 5            |       |
| Circ/BOH           | 312   |
| Commercial NSA     | 331   |
| Private Open Space | 206   |
| Residential NSA    | 1,271 |

| Level 6            |       |
|--------------------|-------|
| Circ/BOH           | 288   |
| Commercial NSA     | 331   |
| Private Open Space | 170   |
| Residential NSA    | 1,047 |
| Rooftop            | 284   |
| Level 7            |       |
| Circ/BOH           | 288   |
| Commercial NSA     | 331   |
| Private Open Space | 170   |
| Residential NSA    | 1,047 |
| Level 8            |       |
| Circ/BOH           | 288   |
| Commercial NSA     | 331   |
| Private Open Space | 170   |
| Residential NSA    | 1,047 |

| Level 9            |       |
|--------------------|-------|
| Circ/BOH           | 288   |
| Commercial NSA     | 331   |
| Private Open Space | 170   |
| Residential NSA    | 1,047 |
| Level 10           |       |
| Circ/BOH           | 195   |
| Private Open Space | 170   |
| Residential NSA    | 1,047 |
| Level 11           |       |
| Circ/BOH           | 195   |
| Private Open Space | 170   |
| Residential NSA    | 1,047 |

A

Plans

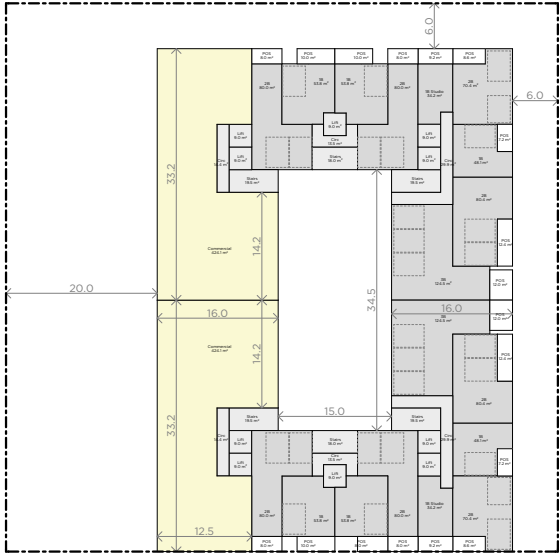
Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA

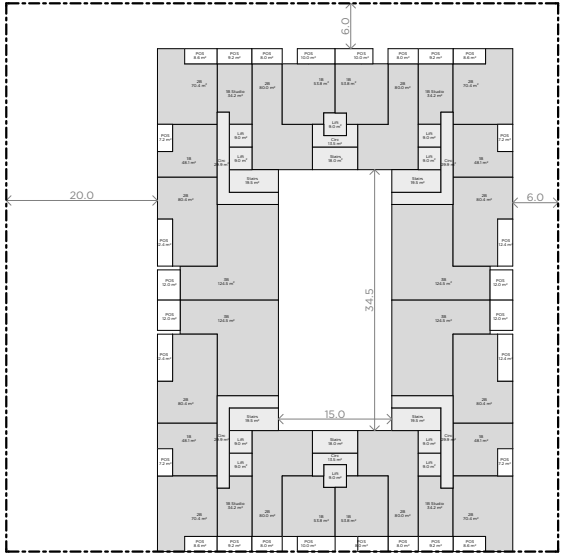
Ground Floor Plan



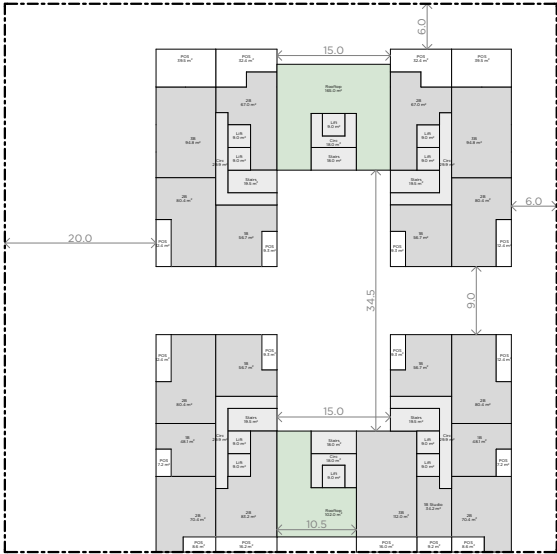
Level 1 to 3 Typical Floor Plan



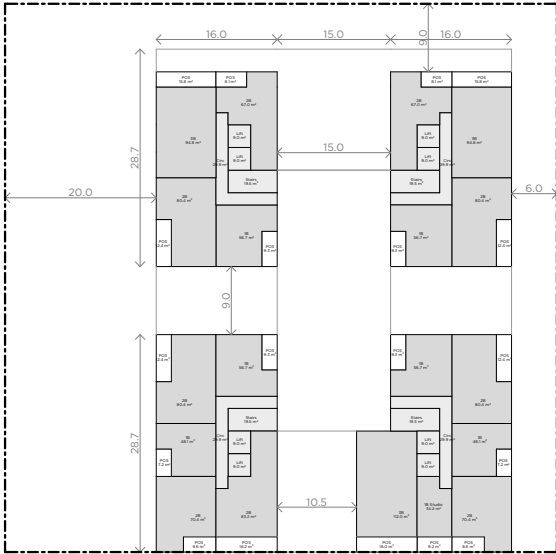
Level 4 to 5 Typical Floor Plan



Level 6 Floor Plan



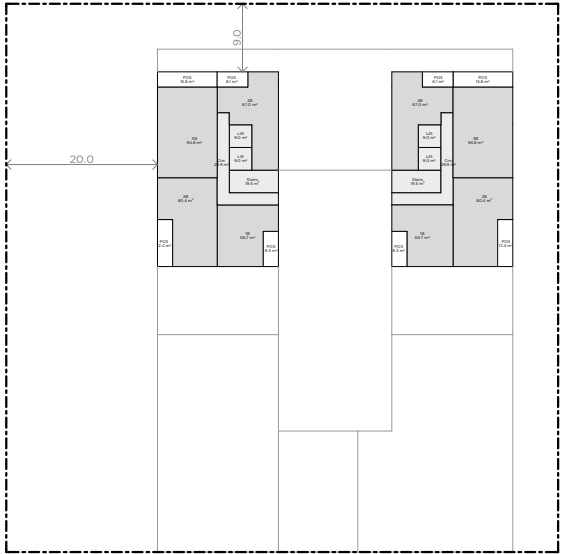
Level 7 to 8 Typical Floor Plan



Level 9 Floor Plan



Level 10 to 11 Typical Floor Plan





A

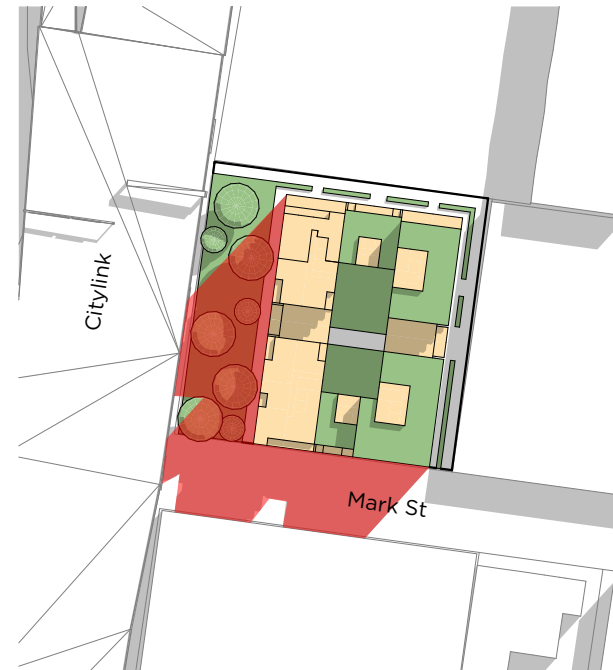
## Shadow Diagrams

Scale — 1:2000

North — 

The contiguous form, while it steps in height, results in continuous shade directly South to Mark St, particular from 12PM onwards. Nonetheless, shadows cast by Option A on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density.

10AM September 22



12PM September 22



2PM September 22



B

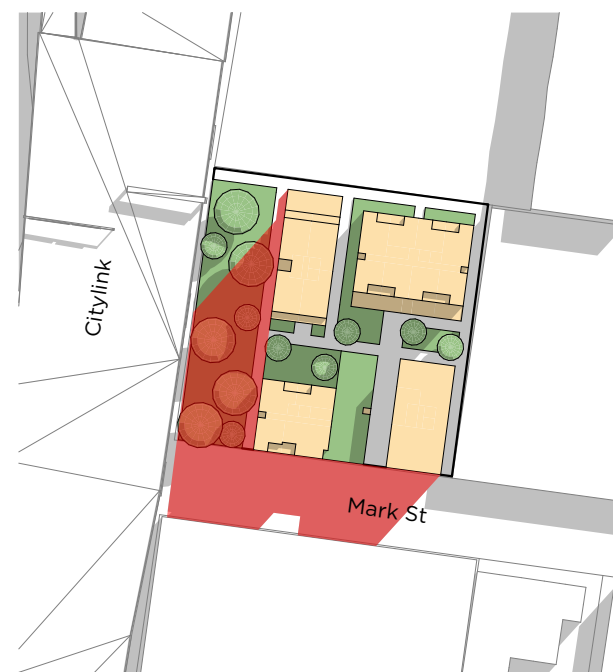
## Shadow Diagrams

Scale — 1:2000

North — 

The separation into distinct buildings allows for gaps of sunlight around 12PM, but results in longer shadows to the South-East on Mark St after 12PM, reducing the amenity to the footpath on the southern side to a greater extent than in Option A.

10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | Option A |                                                                                                                               | Option B |                                                                                                                                     |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✓        | Demonstrates response to character through massing in alignment with taller built form vision for Boundary precinct.          | ✓        | Demonstrates response to character through massing in alignment with taller built form vision for Boundary precinct.                |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✓        | Taller built form up to 12 storeys in specified area                                                                          | ✓        | Taller built form up to 12 storeys in specified area                                                                                |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A      | Existing building not of heritage or character significance.                                                                  | N/A      | Existing building not of heritage or character significance.                                                                        |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓        | Setback from Citylink, address facing Mark St, and setbacks for new street network provided.                                  | ✓        | Setback from Citylink, address facing Mark St, and setbacks for new street network provided.                                        |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ⚠        | Heights do not vary significantly (9-12 storeys) in response to Citylink and context, and could be varied more (6-12 storeys) | ⚠        | Heights do not vary significantly (10-12 storeys) in response to Citylink and context, and could be varied more (6-12 storeys)      |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ✓        | Area is divided into 4 conjoined but articulated buildings.                                                                   | ✓        | Area is divided into 4 distinct buildings with a mix of use and typology.                                                           |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | ⚠        | Potentially compromised amenity where primary outlook is 6m from North boundary (9m preferred, for 18m mirrored)              | ⚠        | Some instances of potentially compromised amenity where there is 16m separation between 12 storey buildings (18m preferred)         |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ✓        | New street network provided within site with opportunity for connection through block on adjacent sites.                      | ✓        | New street network provided within site with opportunity for connection through block on adjacent sites.                            |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓        | Commercial use located facing Mark St, Citylink setback, Northern setback, and Eastern setback to activate edges.             | ✓        | Mark St interface is entirely commercial, with commercial use also facing Citylink setback, Northern setback, and Eastern setbacks. |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✓        | Sufficient building separation provided with setbacks from Northern boundary for primary outlooks up to 12 storeys.           | ✓        | Sufficient building separation provided with setbacks from Northern boundary for primary outlooks up to 12 storeys.                 |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | N/A      | Site is not in close proximity to stable residential or heritage precincts.                                                   | N/A      | Site is not in close proximity to stable residential or heritage precincts.                                                         |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A      | Site does not directly adjoin residential or heritage buildings.                                                              | N/A      | Site does not directly adjoin residential or heritage buildings.                                                                    |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ✓        | Taller form directly on Mark St does not overshadow roof of sites immediately South in testing.                               | ✓        | Taller form directly on Mark St does not overshadow roof of sites immediately South in testing.                                     |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A      | Existing buildings not of heritage or character significance.                                                                 | N/A      | Existing buildings not of heritage or character significance.                                                                       |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A      | Not in proximity to reserves to overshadow.                                                                                   | N/A      | Not in proximity to reserves to overshadow.                                                                                         |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✓        | Adequate setbacks provided to rear to allow for primary outlook, assuming the building is mirrored to the North.              | ✓        | Adequate setbacks provided to rear to allow for primary outlook, assuming the building is mirrored to the North.                    |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓        | Adequate setbacks from side and rear boundaries where primary outlook is proposed.                                            | ✓        | Adequate setbacks from side and rear boundaries where primary outlook is proposed.                                                  |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                                    | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                                          |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                             |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓        | Uncovered areas required for building separation provide space for deep soil.                                                 | ✓        | Uncovered areas required for building separation provide space for deep soil.                                                       |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓        | Majority of frontages to Mark St accommodate active commercial use with BOH accessed within site.                             | ✓        | Majority of frontages to Mark St accommodate active commercial use with BOH accessed within site.                                   |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓        | Massing facilitates best practice with detailed design.                                                                       | ✓        | Massing facilitates best practice with detailed design.                                                                             |

## Conclusion & Recommendations

Testing demonstrated that it was possible under the proposed controls to achieve nearly all applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020), notably ensuring 'development is set back from side and rear boundaries to provide adequate daylight in streets and internal spaces' and 'encouraging deep soil planting that increases permeability and supports tree planting.' These were primarily assisted by mandatory setbacks including a 20m setback from the Citylink tollway.

The 20 metre setback was found to provide a greatly beneficial solution to the site's proximity to the Citylink tollway, particularly due to its the scale and proportion allowing it to support a contiguous and dense 'urban forest' with deep root tree planting that supports greater biodiversity, improves ground permeability, reduces Urban Heat Island Effect, and which can grow to the height of Citylink or taller to act as a buffer to the buildings on site. The setback also offers the opportunity to create new, unique public places for community gathering that activate otherwise inactive and often undesirable urban spaces.

While some variation in building heights was provided, the range was limited by the 12 storey maximum preferred height. A greater range of heights could be supported with an increased maximum preferred height which may be appropriate given the site's proximity to the Citylink tollway. This will allow the design to provide greater variation of building heights to respond more intentionally to its context through massing.

The 4:1 FAR appears to provide an appropriate density as a higher FAR is likely to result in poorer internal amenity, and poor amenity to the surrounding context with regard to overshadowing, daylight, and openness to the sky.

The tighter fit between FAR and height on this site (due to the mandatory uncovered area) resulted in many buildings falling in an 'in-between' height range of 9 to 12 storeys. Typically, at heights above 8 storeys, more onerous fire engineering requirements are enforced, which increase the cost of development without increasing the sales value of apartments, reducing financial efficiency. Where buildings are only a few levels above this height, the increased build cost may not be offset by the increase in yield. If the maximum preferred height is increased, buildings can be varied in height to either be at or below 8 storeys, or well above, in order to avoid this.

As per the assumptions on page 5, for buildings above 8 storeys with interfacing outlooks, as per this site, a separation of 18m is preferred. Where buildings face into an adjacent site, this entails a setback of 9m from the boundary (doubled when mirrored to achieve 18m). This can be provided as a single setback from ground, however an 18m wide street at the ground level may not be necessary or desirable in some cases, as streets in the order of 12m in width have sufficient capacity to accommodate pedestrian, cyclist and vehicular traffic along with significant landscaping. In Option A, the 9m setback is provided above 6 storeys, with an additional 3m on top of the 6m setback from boundary from ground to level 5. In Option B, the ground floor is setback 3m from the boundary, and the building above is setback further to achieve this separation. These were found to be appropriate strategies to achieve sufficient site coverage to provide the maximum GFA within the maximum preferred height, without resorting to multiple upper level setbacks which can convolute the articulation of form and decrease building efficiency. Shear buildings setback from ground level with 18m separation can provide exceptional amounts of area for deep soil, ground permeability, and civic-scaled public space, so may be appropriate on some sites, provided they do not reduce site coverage to the extent that buildings reach heights that have adverse affects on neighbouring sites.

Given these findings, sensitivity testing is recommended to demonstrate how an increased preferred maximum height will enable greater variation of building heights in response to context. One sensitivity test is recommended with an increased preferred maximum height of 15 storeys.

A

Option A is a perimeter block setback from the West, North and East to orient all primary outlooks external to the site. The North-West corner is taken to 12 storeys while the Macaulay Rd interface is kept to 6 storeys to reduce the impacts of shading to the South.

Ground Floor Site Coverage — 51%  
Level 1 Site Coverage — 51%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 19% / 81%

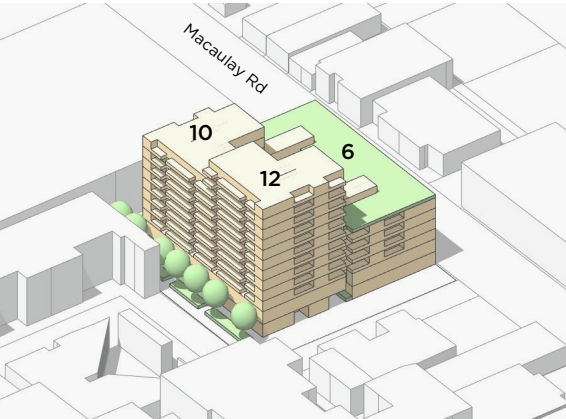
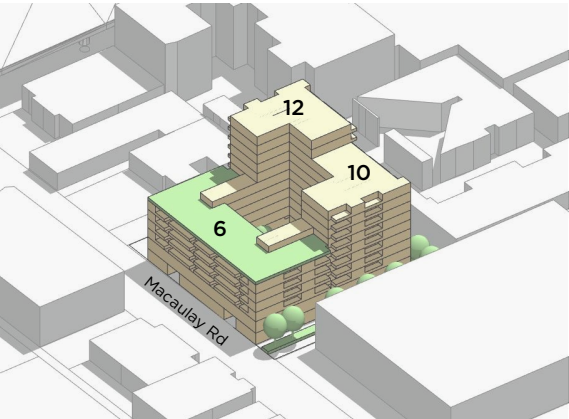
Summary of Areas

| Area Type          | Area (sq. m) |
|--------------------|--------------|
| Circ/BOH           | 3,610        |
| Commercial NSA     | 2,742        |
| Landscaping        | 743          |
| Private Open Space | 1,638        |
| Residential NSA    | 11,674       |
| Rooftop            | 994          |

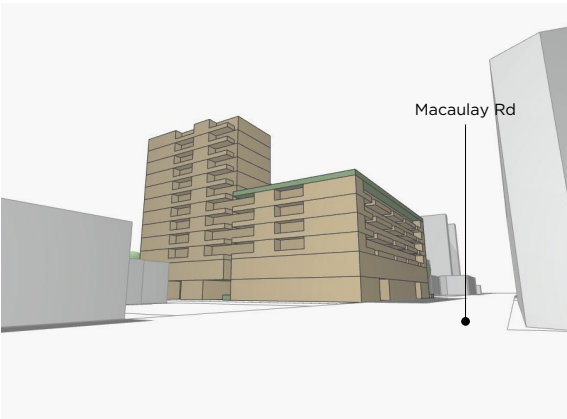
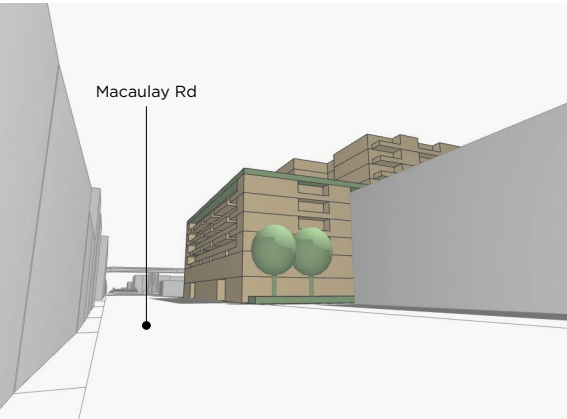
| Total GFA |
|-----------|
| 18,026    |

| Apt Type | Quantity |
|----------|----------|
| 1B       | 52       |
| 2B       | 78       |
| 3B       | 26       |

South East and North West Axonometric Diagrams



Street View Perspectives: Macaulay Rd facing West & Macaulay Rd facing East



B

Option B is a combination of taller, double-loaded tower forms, and a mid-rise perimeter block located with a 'tooth and gap' approach. Some apartments are oriented internally within the site, but with adequate building separation to provide good amenity.

Ground Floor Site Coverage — 58%  
Level 1 Site Coverage — 48%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 20% / 80%

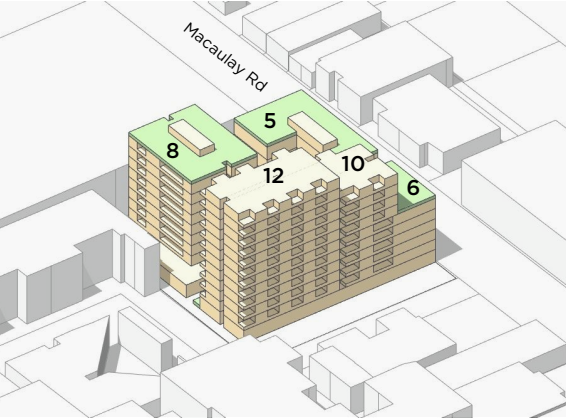
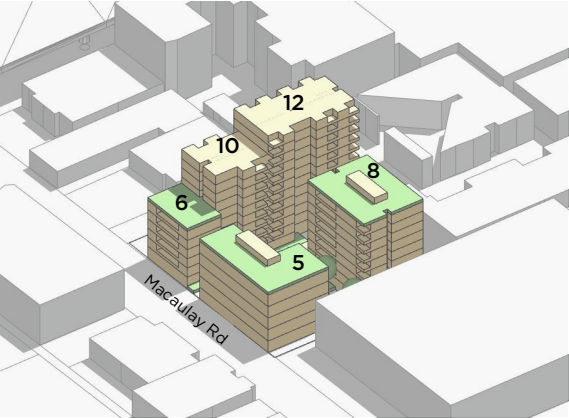
Summary of Areas

| Area Type          | Area (sq. m) |
|--------------------|--------------|
| Circ/BOH           | 4,464        |
| Commercial NSA     | 2,734        |
| Landscaping        | 523          |
| Private Open Space | 1,654        |
| Residential NSA    | 10,678       |
| Rooftop            | 1,191        |

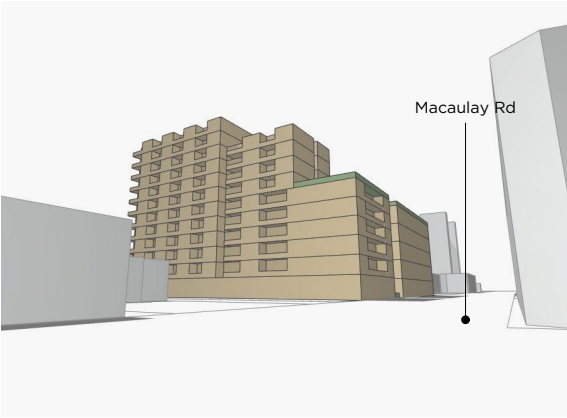
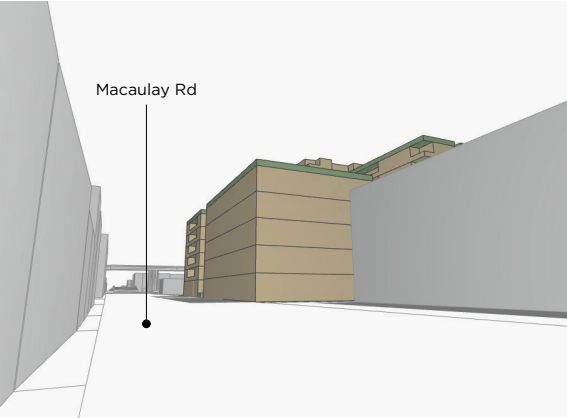
| Total GFA |
|-----------|
| 17,876    |

| Apt Type | Quantity |
|----------|----------|
| 1B       | 97       |
| 2B       | 60       |
| 3B       | 5        |

South East and North West Axonometric Diagrams



Street View Perspectives: Macaulay Rd facing West & Macaulay Rd facing East



A

Schedule of  
Areas by Level

| Ground             |       |
|--------------------|-------|
| Circ/BOH           | 1,440 |
| Commercial NSA     | 610   |
| Landscaping        | 743   |
| Level 1            |       |
| Circ/BOH           | 220   |
| Commercial NSA     | 2,132 |
| Level 2            |       |
| Circ/BOH           | 272   |
| Private Open Space | 252   |
| Residential NSA    | 1,796 |
| Level 3            |       |
| Circ/BOH           | 272   |
| Private Open Space | 252   |
| Residential NSA    | 1,796 |

| Level 4            |       |
|--------------------|-------|
| Circ/BOH           | 272   |
| Private Open Space | 252   |
| Residential NSA    | 1,796 |
| Level 5            |       |
| Circ/BOH           | 272   |
| Private Open Space | 252   |
| Residential NSA    | 1,796 |
| Level 6            |       |
| Circ/BOH           | 318   |
| Private Open Space | 126   |
| Residential NSA    | 898   |
| Rooftop            | 994   |
| Level 7            |       |
| Circ/BOH           | 136   |
| Private Open Space | 126   |
| Residential NSA    | 898   |

| Level 8            |     |
|--------------------|-----|
| Circ/BOH           | 136 |
| Private Open Space | 126 |
| Residential NSA    | 898 |
| Level 9            |     |
| Circ/BOH           | 136 |
| Private Open Space | 126 |
| Residential NSA    | 898 |
| Level 10           |     |
| Circ/BOH           | 68  |
| Private Open Space | 63  |
| Residential NSA    | 449 |
| Level 11           |     |
| Circ/BOH           | 68  |
| Private Open Space | 63  |
| Residential NSA    | 449 |

B

Schedule of  
Areas by Level

| Ground             |       |
|--------------------|-------|
| Circ/BOH           | 1,676 |
| Commercial NSA     | 950   |
| Landscaping        | 523   |
| Level 1            |       |
| Circ/BOH           | 335   |
| Commercial NSA     | 446   |
| Private Open Space | 190   |
| Residential NSA    | 1,228 |
| Level 2            |       |
| Circ/BOH           | 335   |
| Commercial NSA     | 446   |
| Private Open Space | 190   |
| Residential NSA    | 1,228 |

| Level 3            |       |
|--------------------|-------|
| Circ/BOH           | 335   |
| Commercial NSA     | 446   |
| Private Open Space | 190   |
| Residential NSA    | 1,228 |
| Level 4            |       |
| Circ/BOH           | 335   |
| Commercial NSA     | 446   |
| Private Open Space | 190   |
| Residential NSA    | 1,228 |
| Level 5            |       |
| Circ/BOH           | 321   |
| Private Open Space | 190   |
| Residential NSA    | 1,228 |
| Rooftop            | 460   |

| Level 7            |       |
|--------------------|-------|
| Circ/BOH           | 240   |
| Private Open Space | 162   |
| Residential NSA    | 1,035 |
| Level 8            |       |
| Circ/BOH           | 240   |
| Private Open Space | 162   |
| Residential NSA    | 1,035 |
| Level 9            |       |
| Circ/BOH           | 225   |
| Private Open Space | 92    |
| Residential NSA    | 621   |
| Rooftop            | 498   |

| Level 10           |     |
|--------------------|-----|
| Circ/BOH           | 91  |
| Private Open Space | 63  |
| Residential NSA    | 406 |
| Level 11           |     |
| Circ/BOH           | 91  |
| Private Open Space | 63  |
| Residential NSA    | 406 |

A

## Plans

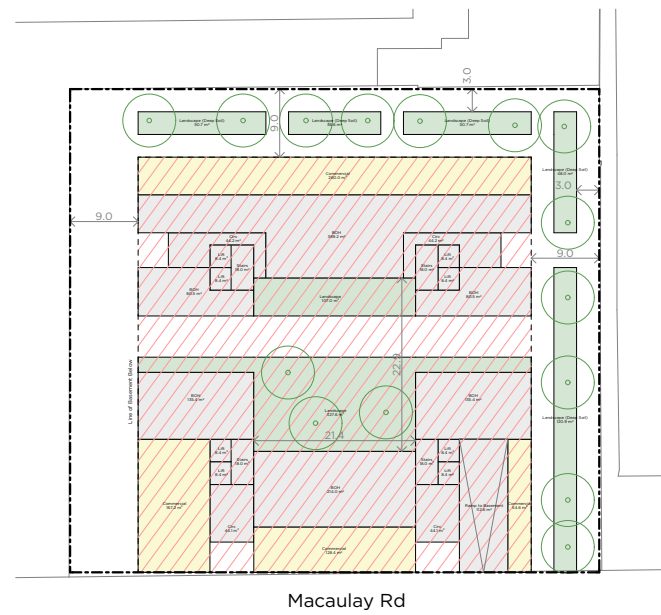
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North — 

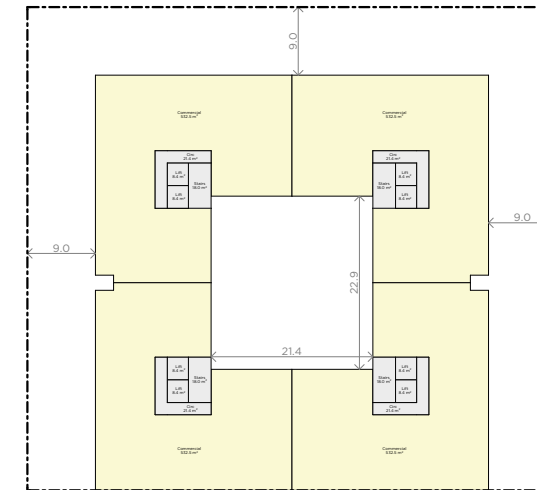
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

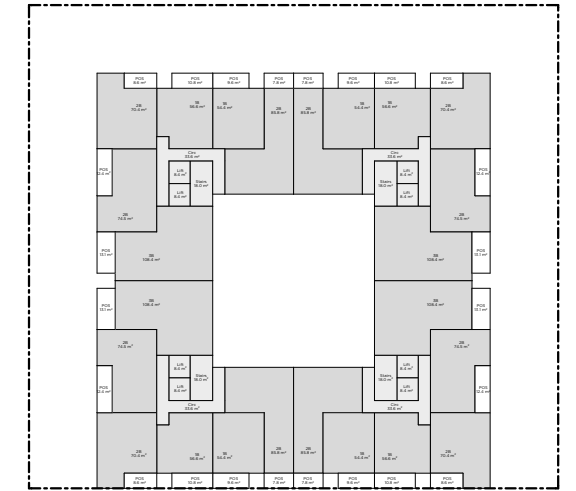
Ground Floor Plan



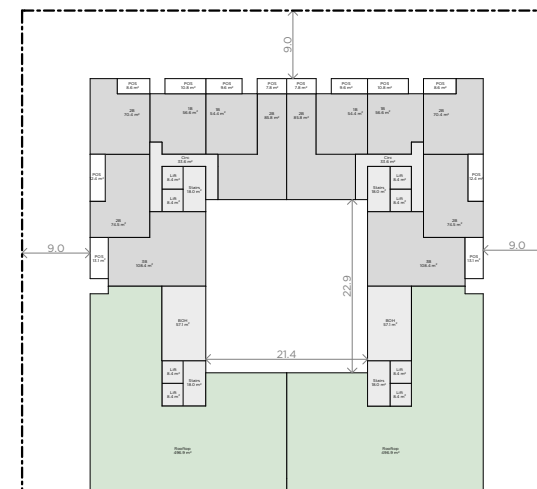
Level 1 Floor Plan



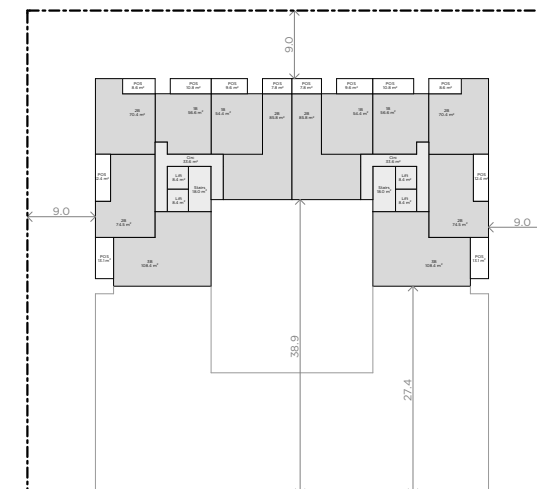
Level 2 to 5 Floor Plan



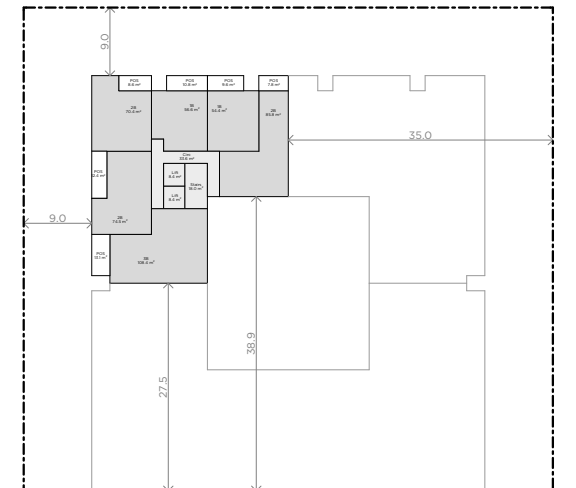
Level 6 Floor Plan



Level 7 to 9 Typical Floor Plan



Level 10 to 11 Typical Floor Plan



## B

## Plans

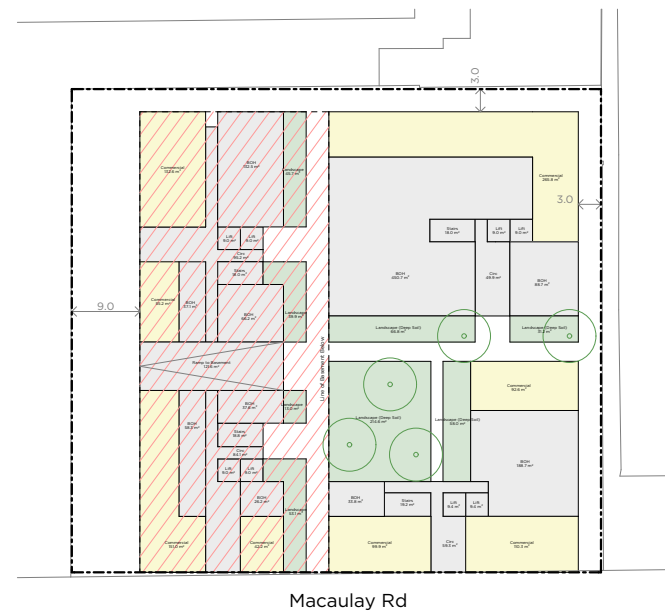
Scale — 1:1000

North — 

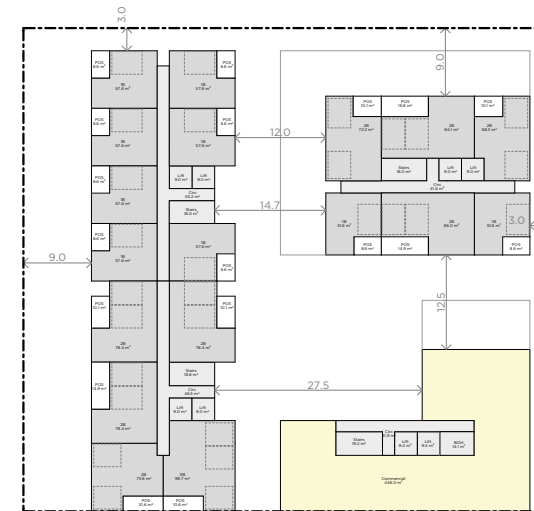
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

Ground Floor Plan



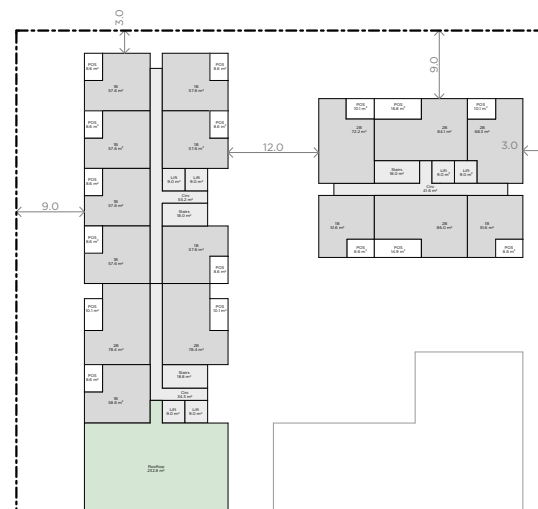
Level 1 to 4 Typical Floor Plan



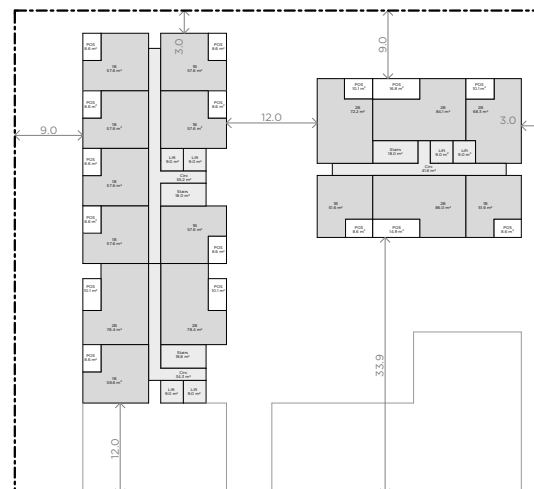
Level 5 Floor Plan



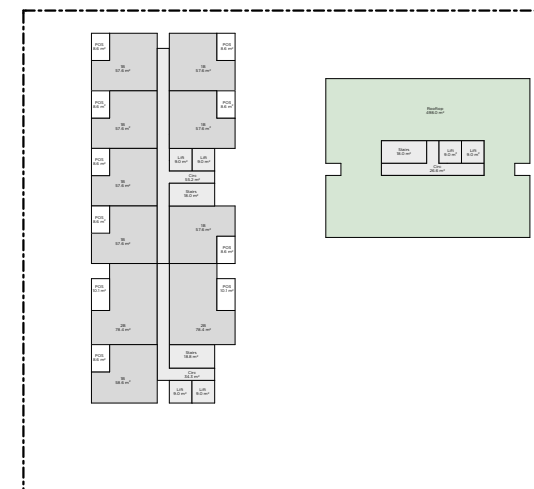
Level 6 Floor Plan



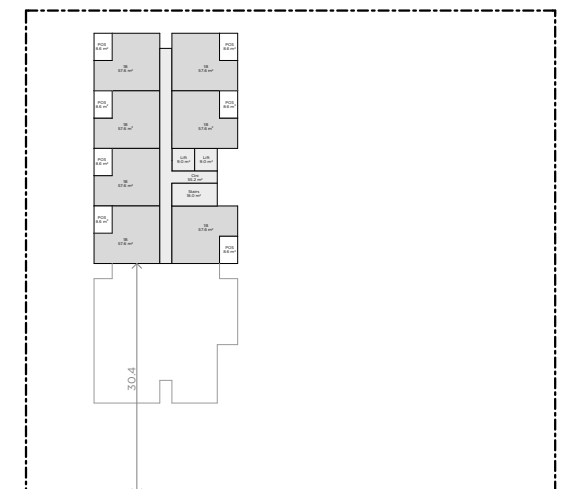
Level 7 to 8 Typical Floor Plan



Level 9 Floor Plan



Level 10 to 11 Typical Floor Plan



A

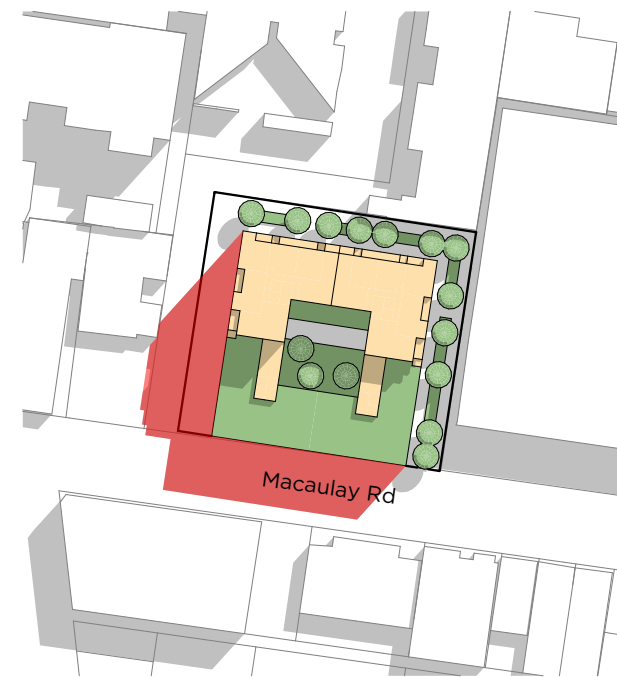
## Shadow Diagrams

Scale — 1:2000

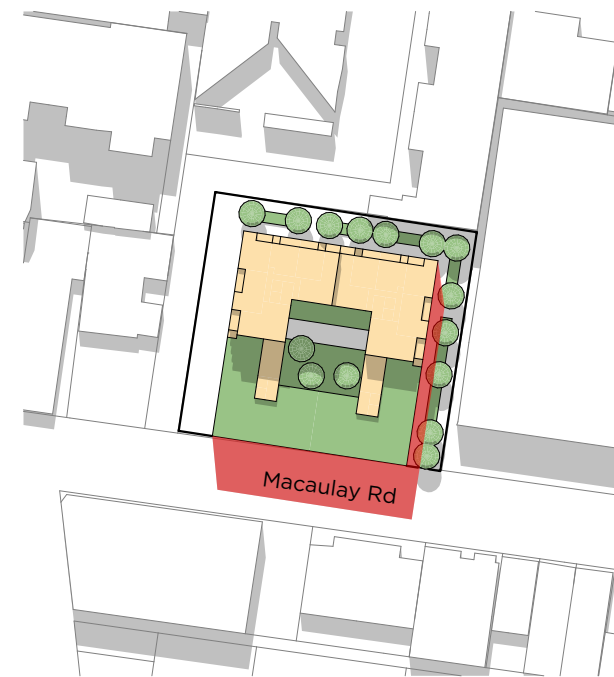
North — 

Shadows cast by Option A on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. The design makes particular effort to setback mass from the South to limit the extent of overshadowing.

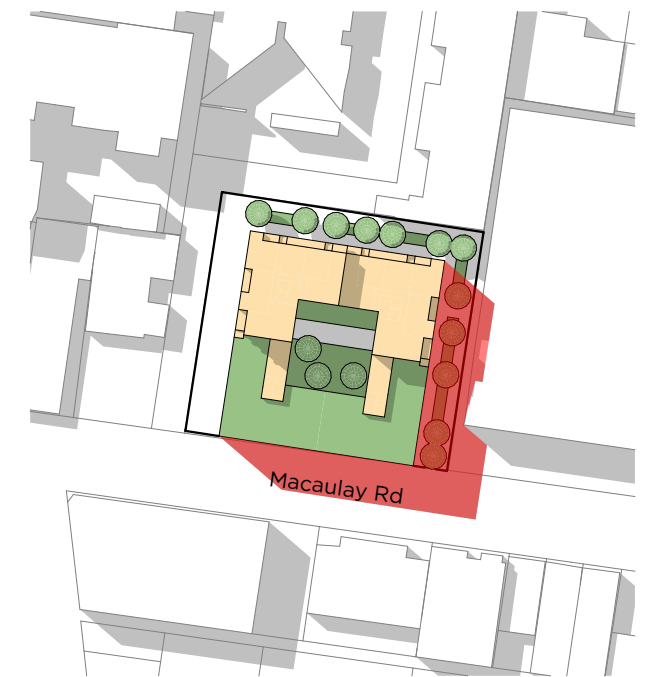
10AM September 22



12PM September 22



2PM September 22



B

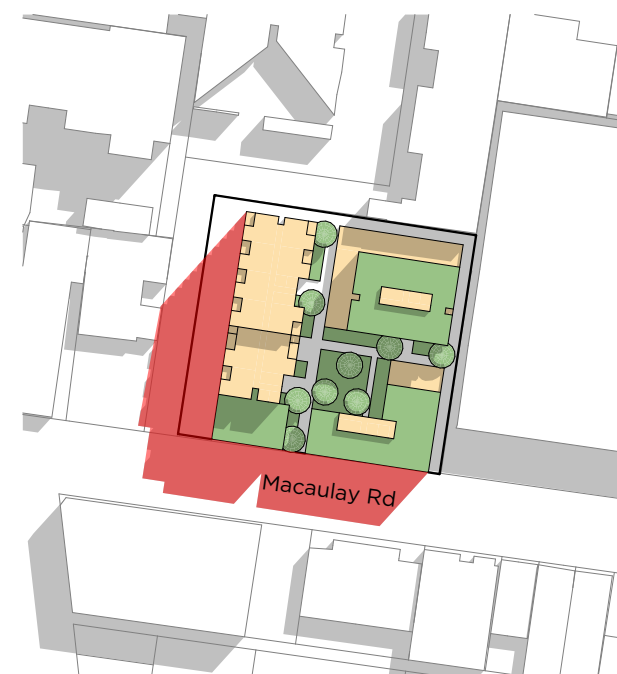
## Shadow Diagrams

Scale — 1:2000

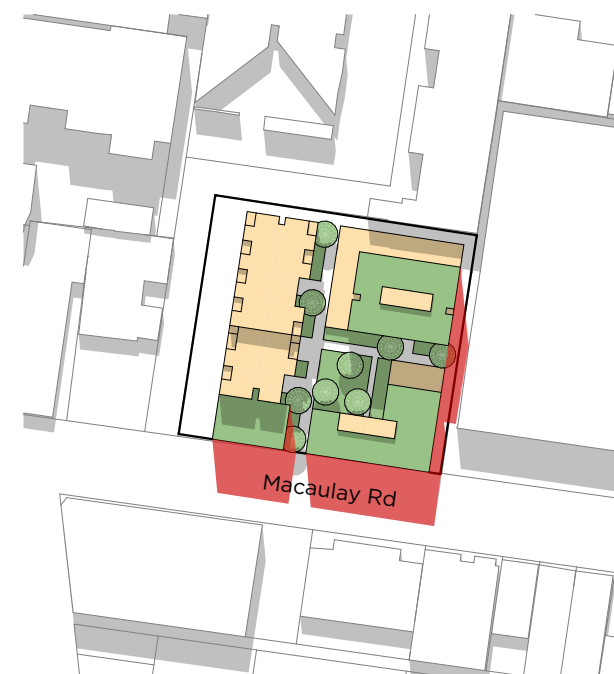
North — 

Shadows cast by Option B on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. The design makes particular effort to setback mass from the South to limit the extent of overshadowing.

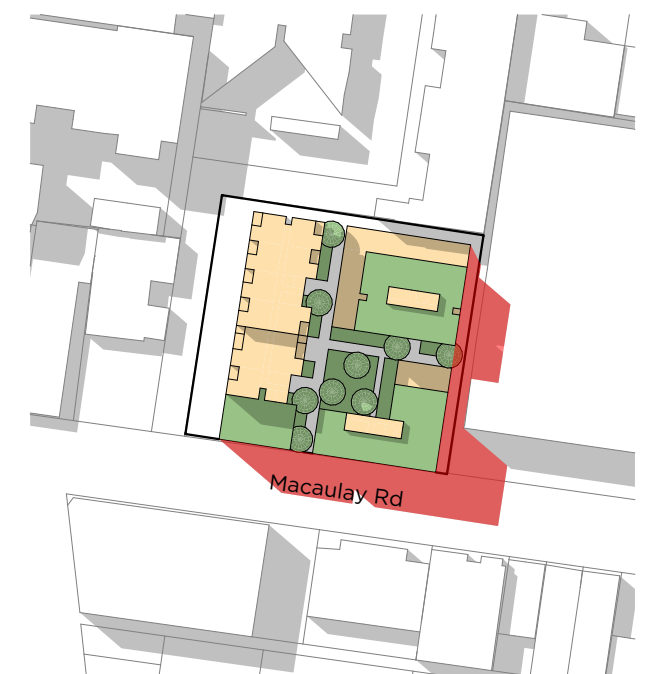
10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | Option A |                                                                                                                       | Option B |                                                                                                                       |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✓        | Demonstrates response to character through massing in alignment with taller built form vision for Boundary precinct.  | ✓        | Demonstrates response to character through massing in alignment with taller built form vision for Boundary precinct.  |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✓        | Taller built form up to 12 storeys in specified area                                                                  | ✓        | Taller built form up to 12 storeys in specified area                                                                  |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A      | Existing buildings not of heritage or character significance.                                                         | N/A      | Existing buildings not of heritage or character significance.                                                         |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓        | Primary address facing Macaulay Rd, and setbacks for new street network provided.                                     | ✓        | Primary address facing Macaulay Rd, and setbacks for new street network provided.                                     |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ✓        | Building heights vary from 6 to 12 storeys in response to context.                                                    | ✓        | Building heights vary from 5 to 12 storeys with the street wall split into one 5 and one 6 storey building.           |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ✓        | Area is divided into 4 conjoined but articulated buildings.                                                           | ✓        | Area is divided into 4 distinct buildings with a mix of use and typology.                                             |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ✓        | New street network provided within site with opportunity for connection through block on adjacent sites.              | ✓        | New street network provided within site with opportunity for connection through block on adjacent sites.              |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓        | Commercial use located on Macaulay Rd interface and adjacent to new streets.                                          | ✓        | Commercial use located on Macaulay Rd interface and adjacent to new streets.                                          |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | N/A      | Site is not in close proximity to stable residential or heritage precincts.                                           | N/A      | Site is not in close proximity to stable residential or heritage precincts.                                           |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A      | Site does not directly adjoin residential or heritage buildings.                                                      | N/A      | Site does not directly adjoin residential or heritage buildings.                                                      |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ✓        | Building heights reduced to 6 storeys on North side of Macaulay Rd to avoid overshadowing roof of Southern sites.     | ✓        | Building heights reduced to 6 storeys on North side of Macaulay Rd to avoid overshadowing roof of Southern sites.     |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A      | Existing buildings not of heritage or character significance.                                                         | N/A      | Existing buildings not of heritage or character significance.                                                         |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A      | Not in proximity to reserves to overshadow.                                                                           | N/A      | Not in proximity to reserves to overshadow.                                                                           |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. | ✓        | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys. |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                            | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                            |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                               | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                               |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓        | Uncovered areas required for building separation provide space for deep soil.                                         | ✓        | Uncovered areas required for building separation provide space for deep soil.                                         |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓        | Majority of frontages to Macaulay Rd accommodate active commercial use with BOH accessed within site.                 | ✓        | Majority of frontages to Macaulay Rd accommodate active commercial use with BOH accessed within site.                 |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓        | Massing facilitates best practice with detailed design.                                                               | ✓        | Massing facilitates best practice with detailed design.                                                               |

## Conclusion & Recommendations

Testing demonstrated that it was possible under the proposed controls to achieve all applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020), notably ensuring 'development is set back from side and rear boundaries to provide adequate daylight in streets and internal spaces'; and 'encouraging deep soil planting that increases permeability and supports tree planting.'

The 4:1 FAR appears to provide an appropriate density as a higher FAR is likely to result in inadequate transition of scale to existing buildings, poor internal amenity, and poor amenity to the surrounding context with regard to overshadowing, daylight, and openness to the sky (with a street wall to Macaulay Rd likely to be greater than 6 storeys). The 12 storey preferred maximum height was found to be appropriate here with less than a third of the built form reaching this height.

Given these findings, no changes to the controls are recommended, and this site is not recommended to be prioritised for sensitivity testing.

# Phase 2 — Sensitivity Testing

ST1

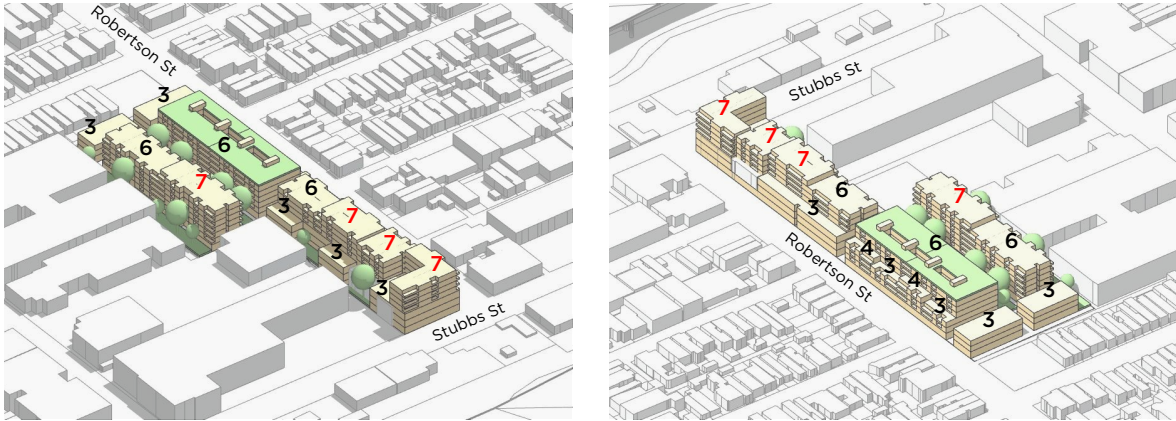
This sensitivity test explores the potential building heights under a 3.5:1 FAR adopting the same masterplanning strategy as Option A in Phase 1. Buildings on and close to the Stubbs St corner breach the preferred 6 storey limit by 1 storey, as well as one building in the deepest position on the site.

Level 1 Site Ground Floor Site Coverage — 67%  
Coverage — 67%  
Total Building Height — **7 storeys**  
Commercial NSA / Residential NSA — 23% / 77%

Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type | Quantity |
|--------------------|--------------|-----------|----------|----------|
| Circ/BOH           | 8,449        | 41,283    | 1B       | 159      |
| Commercial NSA     | 7,631        |           | 2B       | 135      |
| Landscaping        | 2,103        |           | 3B       | 70       |
| Private Open Space | 3,250        |           |          |          |
| Residential NSA    | 25,203       |           |          |          |
| Rooftop            | 1,714        |           |          |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Stubbs St facing West & Robertson St facing East



Schedule of Areas by Level

| Ground             |       | Level 3            |       |
|--------------------|-------|--------------------|-------|
| Circ/BOH           | 3,887 | Circ/BOH           | 741   |
| Commercial NSA     | 2,207 | Private Open Space | 640   |
| Landscaping        | 2,103 | Residential NSA    | 4,530 |
| Private Open Space | 155   |                    |       |
| Residential NSA    | 1,812 | Level 4            |       |
| Level 1            |       | Circ/BOH           | 729   |
| Circ/BOH           | 953   | Private Open Space | 616   |
| Commercial NSA     | 2,712 | Residential NSA    | 4,316 |
| Private Open Space | 477   |                    |       |
| Residential NSA    | 4,203 | Level 5            |       |
| Level 2            |       | Circ/BOH           | 729   |
| Circ/BOH           | 953   | Private Open Space | 616   |
| Commercial NSA     | 2,712 | Residential NSA    | 4,316 |
| Private Open Space | 477   |                    |       |
| Residential NSA    | 4,203 | Level 6            |       |
|                    |       | Circ/BOH           | 457   |
|                    |       | Private Open Space | 269   |
|                    |       | Residential NSA    | 1,823 |
|                    |       | Rooftop            | 1,714 |

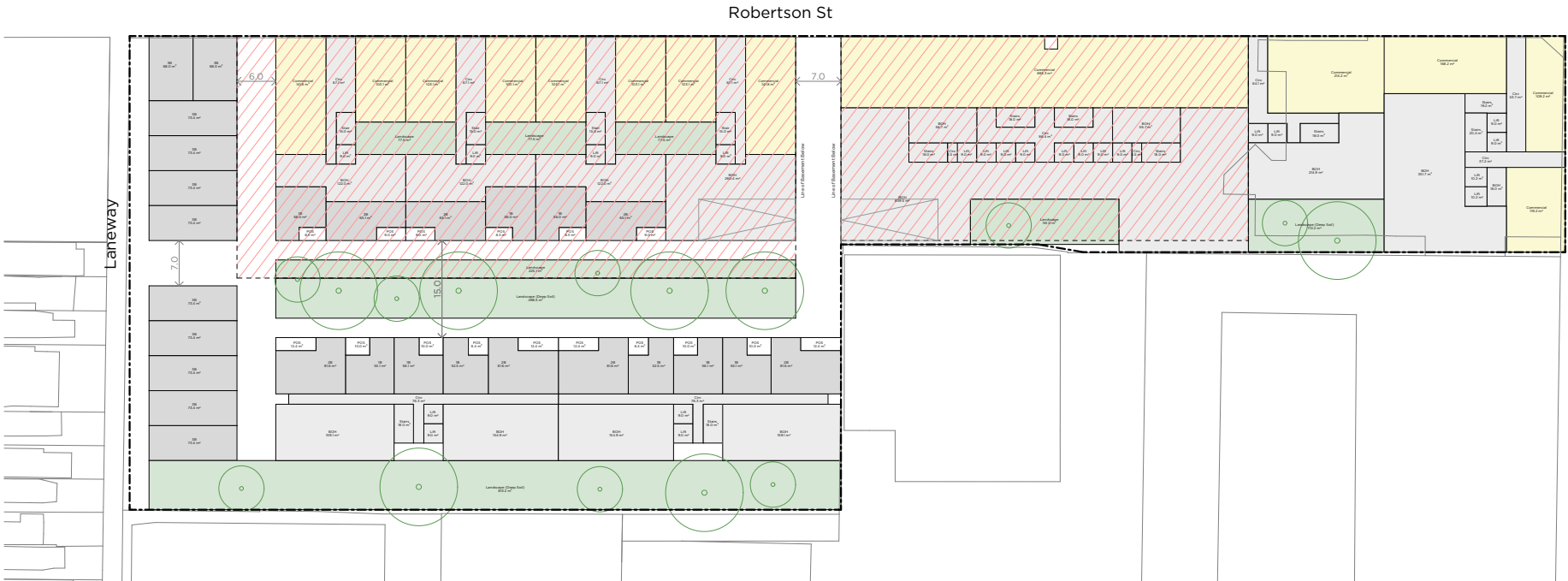
ST1

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA

Ground Floor Plan



Level 1 to 2 Typical Floor Plan



ST1

Plans

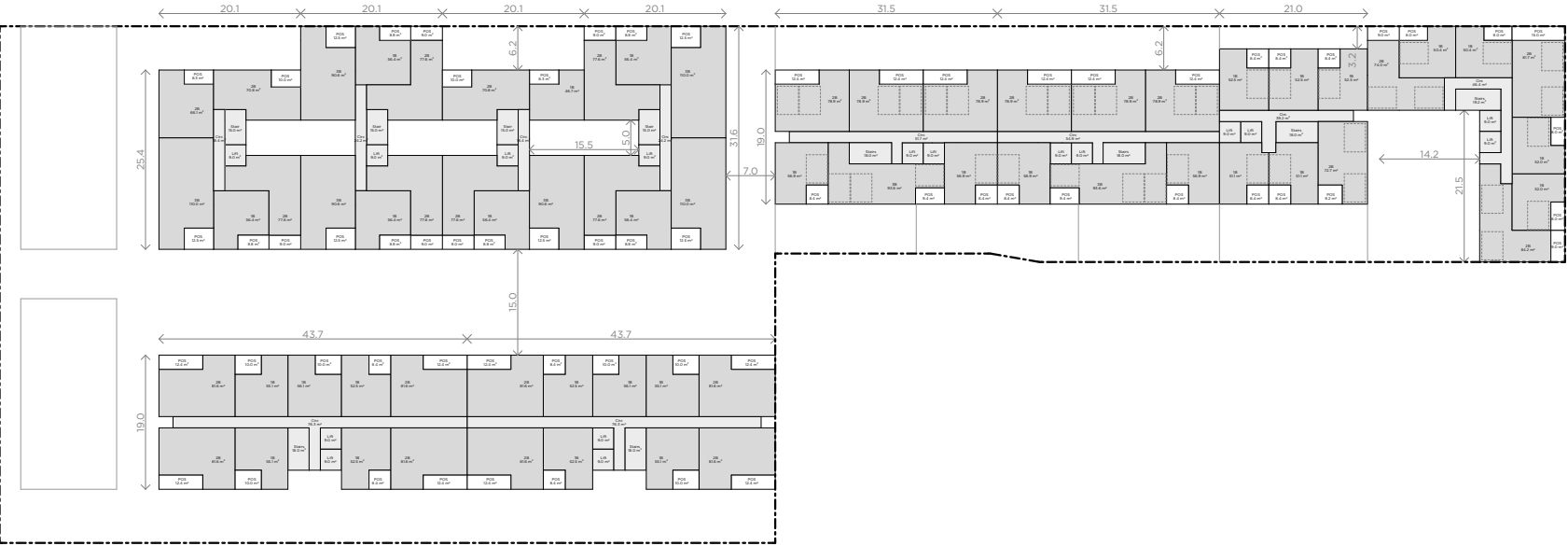
Scale — 1:1000

North —

Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 3 Floor Plan



Level 4 to 5 Typical Floor Plan



ST1

Plans

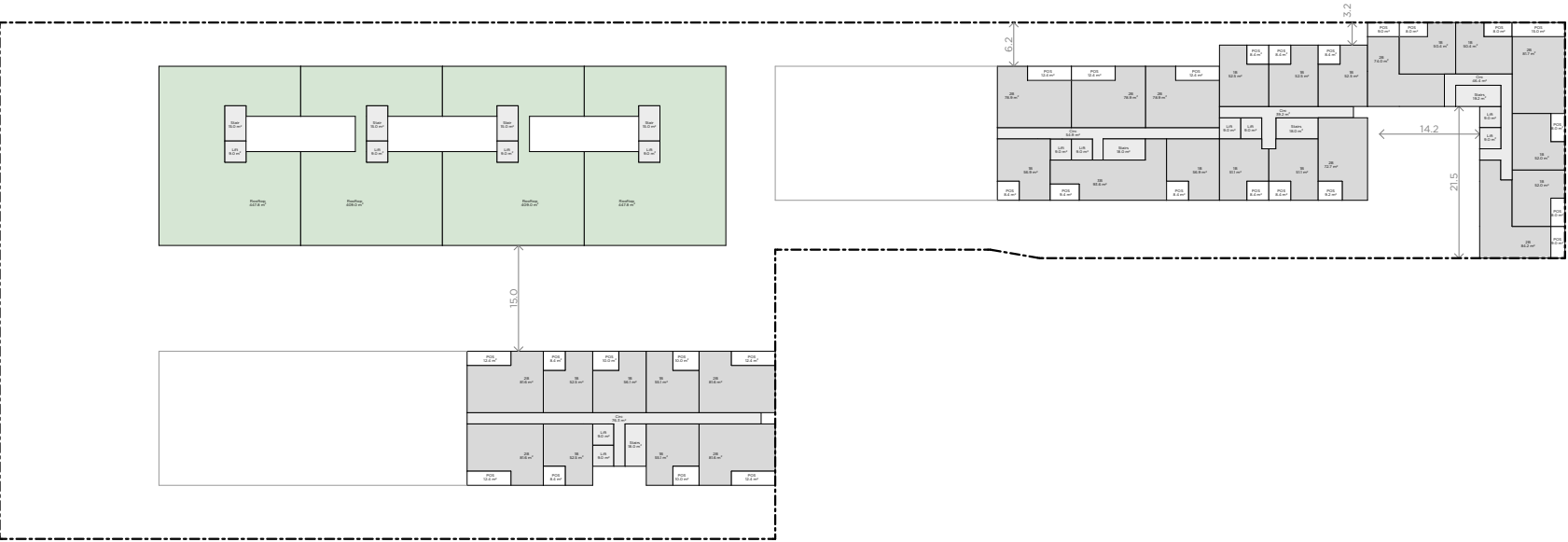
Scale — 1:1000

North —

Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 6 Floor Plan



ST1

Shadow  
Diagrams

Scale — 1:4000  
North —

The extent of shadows cast on adjoining sites to the south from the Western half of the site is markedly lower than that resulting from Phase 1 option B,

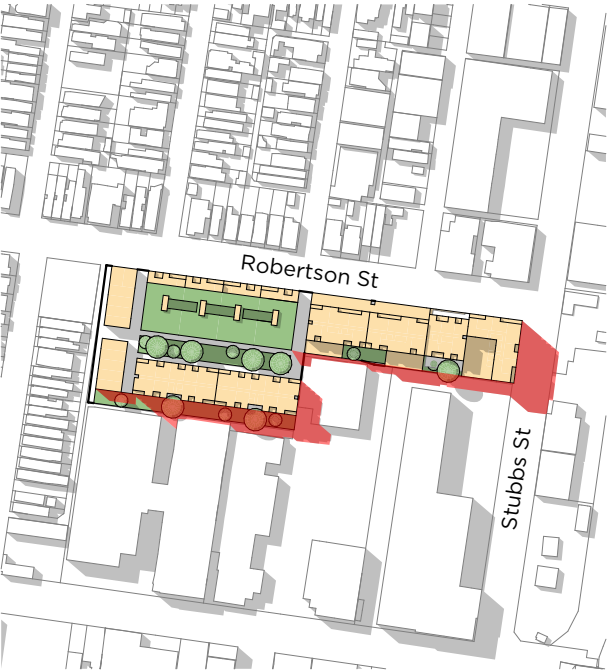
10AM June 22



12PM September 22

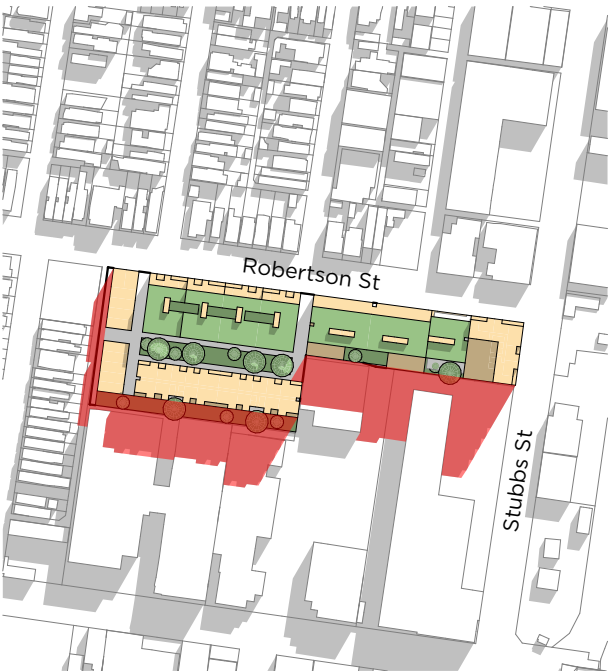


2PM September 22



Phase 1 S1 Option A  
Shadow Diagrams for  
comparison

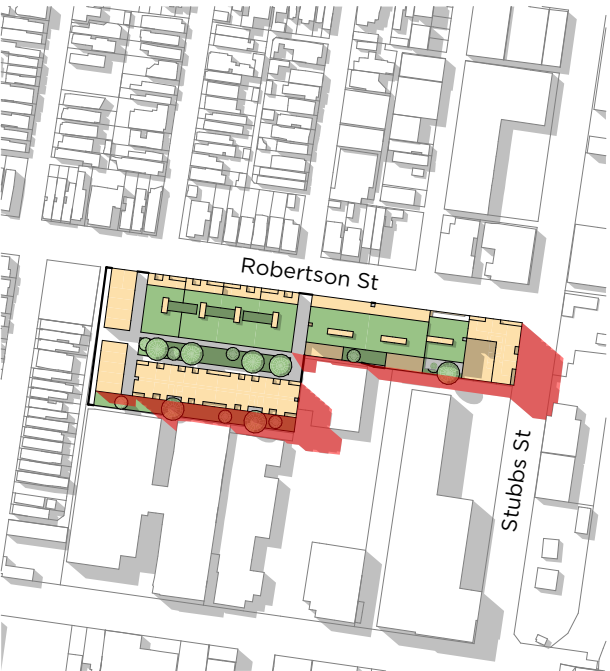
10AM June 22



12PM September 22



2PM September 22



## Conclusion & Recommendations

This sensitivity test demonstrates a better outcome compared to the Phase 1 test, with regard to providing a mid-rise, human-scaled neighbourhood with adequate building separation. Some buildings encroach on the preferred maximum building height of 6 storeys, however the majority of the site is at or below 6 storeys, and the buildings that do breach this height do so by only 1 storey. In these cases, the buildings are sited strategically to respond to the surrounding context (e.g. close to primary intersection of Stubbs and Robertson St) and limit negative impacts to the street and sensitive neighbouring sites.

This outcome was found to be able to achieve all design recommendations despite exceeding the preferred maximum height. The preferred maximum height does not need to be increased to accommodate this, as doing so may imply that 7 storeys is an appropriate height to all parts of the site. Instead, retaining a preferred maximum height of 6 storeys with some discretion for exceeding it in specific areas with clear design justification may provide a better framework for managing height.

ST2

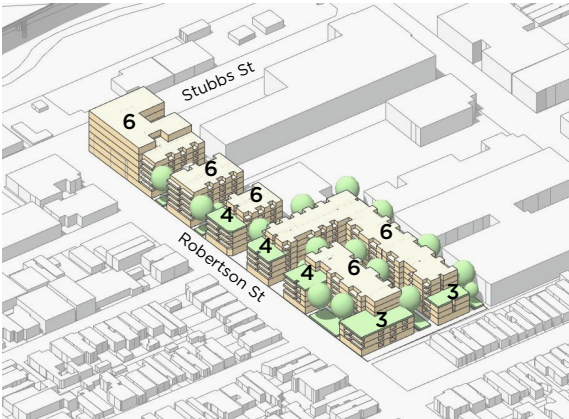
This sensitivity test explores the potential building heights under a 3:1 FAR adopting the same masterplanning strategy as Option B in Phase 1. All buildings are able to be kept to a maximum height of 6 storeys.

Ground Floor Site Coverage — 58%  
Level 1 Site Coverage — 58%  
Total Building Height — 6 storeys  
Commercial NSA / Residential NSA — 23% / 77%

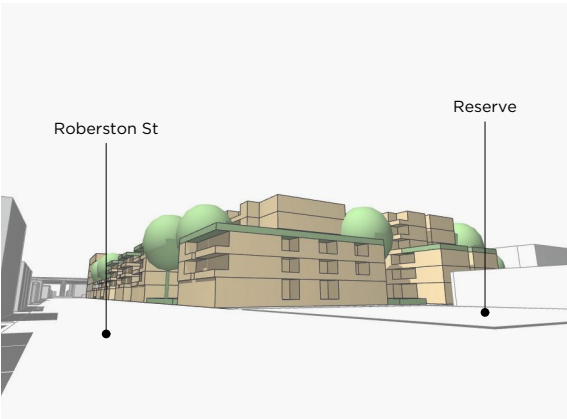
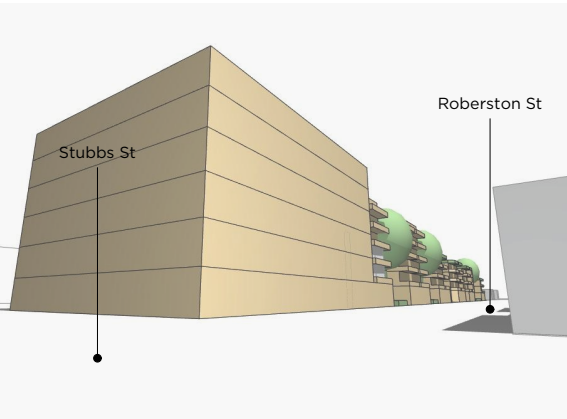
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type | Quantity |
|--------------------|--------------|-----------|----------|----------|
| Circ/BOH           | 9,631        | 35,110    | 1B       | 295      |
| Commercial NSA     | 5,877        |           | 2B       | 42       |
| Landscaping        | 2,316        |           | 3B       | 7        |
| Private Open Space | 3,182        |           |          |          |
| Residential NSA    | 19,602       |           |          |          |
| Rooftop            | 1,268        |           |          |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Stubbs St facing West & Robertson St facing East



Schedule of Areas by Level

| Ground             |       | Level 3            |       |
|--------------------|-------|--------------------|-------|
| Circ/BOH           | 3,834 | Circ/BOH           | 1,175 |
| Commercial NSA     | 1,667 | Commercial NSA     | 842   |
| Landscaping        | 2,316 | Private Open Space | 609   |
| Private Open Space | 197   | Residential NSA    | 3,669 |
| Residential NSA    | 1,283 | Rooftop            | 617   |
| Level 1            |       | Level 4            |       |
| Circ/BOH           | 1,238 | Circ/BOH           | 1,073 |
| Commercial NSA     | 842   | Commercial NSA     | 842   |
| Private Open Space | 675   | Private Open Space | 513   |
| Residential NSA    | 4,150 | Residential NSA    | 3,175 |
| Level 2            |       | Level 5            |       |
| Circ/BOH           | 1,238 | Circ/BOH           | 1,073 |
| Commercial NSA     | 842   | Commercial NSA     | 842   |
| Private Open Space | 675   | Private Open Space | 513   |
| Residential NSA    | 4,150 | Residential NSA    | 3,175 |

ST2

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA

Ground Floor Plan



Level 1 to 2 Typical Floor Plan



ST2

Plans

Scale — 1:1000  
North —

Legend

Circulation / BOH Area

Commercial NSA

Indicative footprint of basement

Landscape / Rooftop Area

Private Open Space

Residential NSA

Level 3 Floor Plan



Level 4 Floor Plan



ST2

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA

Level 5 Floor Plan



ST2

## Shadow Diagrams

Scale — 1:4000

North — 

The extent of shadows cast on adjoining sites to the south from the Western half of the site is markedly lower than that resulting from Phase 1 option B,

10AM June 22



12PM September 22



2PM September 22



### Phase 1 S1 Option B Shadow Diagrams for comparison

10AM June 22



12PM September 22



2PM September 22



## Conclusion & Recommendations

This sensitivity test demonstrates an improved outcome compared to the Phase 1 test, with regard to providing a mid-rise, human-scaled neighbourhood with adequate building separation, as well as marginally lower impacts of overshadowing and visual bulk to the rear of the site compared to ST1.

Considering that this scheme was able to achieve the maximum GFA entirely within 6 storeys with a site coverage of 58% (compared to 70% in ST1), the fit between FAR and preferred maximum height may be too loose at an FAR of 3:1.

Since ST1 (at 3.5:1) was able to achieve all design recommendations at a higher density with sufficient flexibility, the tested FAR of 3:1 by comparison was found to be unnecessarily low. Given these findings, a FAR of 3.5:1 is recommended for this site, rather than 3:1.

ST3

This sensitivity test explores a potential outcome under the same 4:1 FAR as in phase 1, but with an increased preferred maximum height of 15 storeys, adopting the same masterplanning strategy as Option A in Phase 1.

Ground Floor Site Coverage — 48%  
Level 1 Site Coverage — 48%  
Total Building Height — 15 storeys  
Commercial NSA / Residential NSA — 20% / 80%

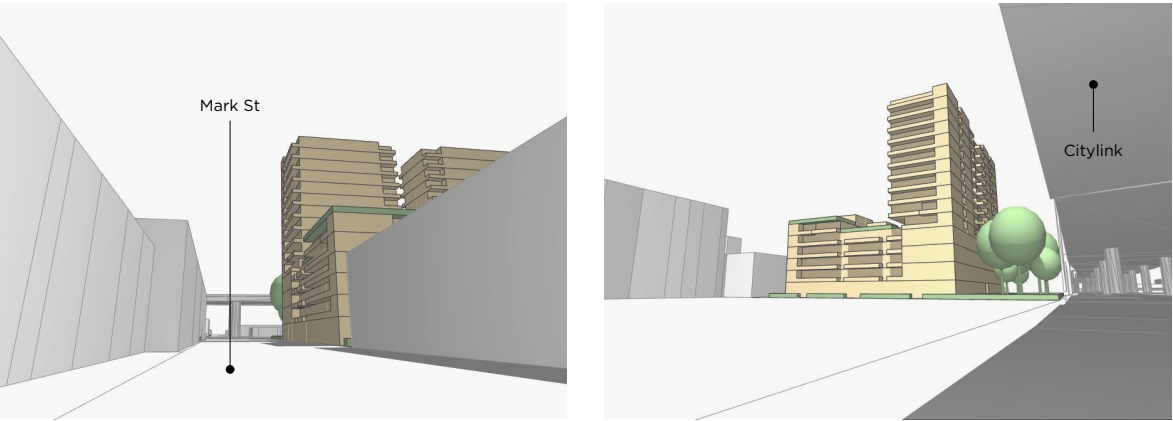
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type  | Quantity |
|--------------------|--------------|-----------|-----------|----------|
| Circ/BOH           | 4,575        | 21,425    | 1B        | 68       |
| Commercial NSA     | 3,501        |           | 1B Studio | 11       |
| Landscaping        | 1,748        |           | 2B        | 101      |
| Private Open Space | 1,951        |           | 3B        | 13       |
| Residential NSA    | 13,349       |           |           |          |
| Rooftop            | 1,087        |           |           |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Mark St facing West & from under Citylink facing South



Schedule of Areas by Level

| Ground                | Level 3               | Level 7               | Level 11              |
|-----------------------|-----------------------|-----------------------|-----------------------|
| Circ/BOH1,505         | Circ/BOH320           | Circ/BOH136           | Circ/BOH136           |
| Commercial NSA957     | Commercial NSA848     | Private Open Space106 | Private Open Space106 |
| Landscaping1,748      | Private Open Space168 | Residential NSA676    | Residential NSA676    |
| Level 1               | Level 4               | Level 8               | Level 12              |
| Circ/BOH320           | Circ/BOH352           | Circ/BOH136           | Circ/BOH136           |
| Commercial NSA848     | Private Open Space266 | Private Open Space106 | Private Open Space106 |
| Private Open Space168 | Residential NSA1,964  | Residential NSA676    | Residential NSA676    |
| Residential NSA1,250  | Level 5               | Level 9               | Level 13              |
| Level 2               | Circ/BOH362           | Circ/BOH136           | Circ/BOH136           |
| Circ/BOH320           | Private Open Space227 | Private Open Space106 | Private Open Space106 |
| Commercial NSA848     | Residential NSA1,551  | Residential NSA676    | Residential NSA676    |
| Private Open Space168 | Rooftop267            | Level 10              | Level 14              |
| Residential NSA1,250  | Level 6               | Circ/BOH136           | Circ/BOH136           |
|                       | Circ/BOH308           | Private Open Space106 | Private Open Space106 |
|                       | Private Open Space106 | Residential NSA676    | Residential NSA676    |
|                       | Residential NSA676    |                       |                       |
|                       | Rooftop820            |                       |                       |



ST3

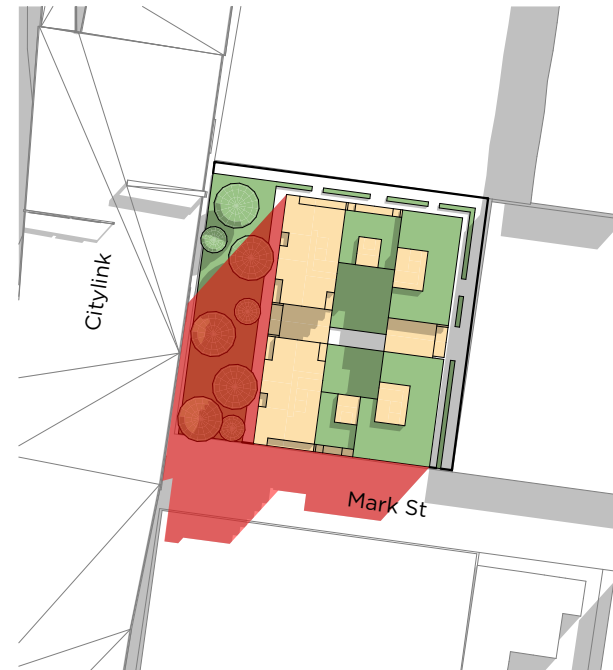
## Shadow Diagrams

Scale — 1:2000

North — 

Shadows cast on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. While there is a 15 storey tower directly on the North side of Mark St, it is slender in profile and occupies less than one third of the interface.

10AM September 22



12PM September 22

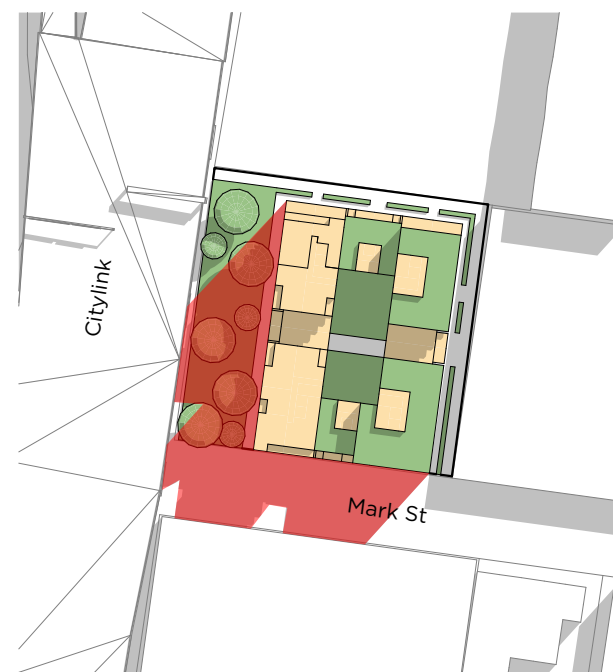


2PM September 22



### Phase 1 B1 Option A Shadow Diagrams for comparison

10AM September 22



12PM September 22



2PM September 22



## Conclusion & Recommendations

This sensitivity test demonstrates a better outcome compared to the Phase 1 test, with regard to responding appropriately to the hierarchy of main streets, and achieving variable building heights. While it locates a 15 storey building on the North side of Mark St, the building is slender, representing less than one third of the interface.

The variation in height provided in this test allows the majority of the site to be between 5 and 6 storeys, which can be constructed more cost-effectively per square metre, as compared to the 9 to 12 storey buildings discussed in phase 1.

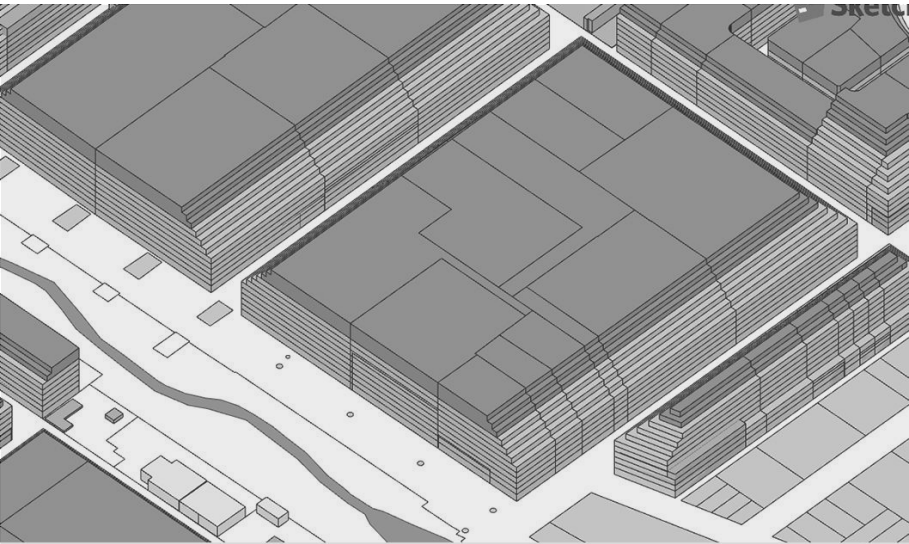
The increased preferred maximum height of 15 storeys was particularly beneficial on this site, given its requirement to leave a significant area uncovered, however the additional height may be unnecessary on other sites in the Boundary precinct that do not have this requirement, and as such can achieve higher site coverages. In these cases, the ability to build to 15 storeys may lead to adverse shading and amenity impacts such as reduced access to daylight and views to the sky, as compared to 12 storeys. In the case of sites adjacent to the Citylink tollway, the additional height was able to be located away from more sensitive interfaces, and was found to be an appropriate measure to interface with the tollway at the precinct scale.

Given these findings, an increased preferred maximum height of 15 storeys is recommended for this site in order to better encourage all of the design recommendations to be met.

A preferred maximum height of 12 storeys is recommended for other sites in the boundary precinct. Some discretion to may be given to sites with similar requirements to provide uncovered area, permitting that it does not adversely impact public spaces such as Macaulay Rd or the Buncle St Reserve.

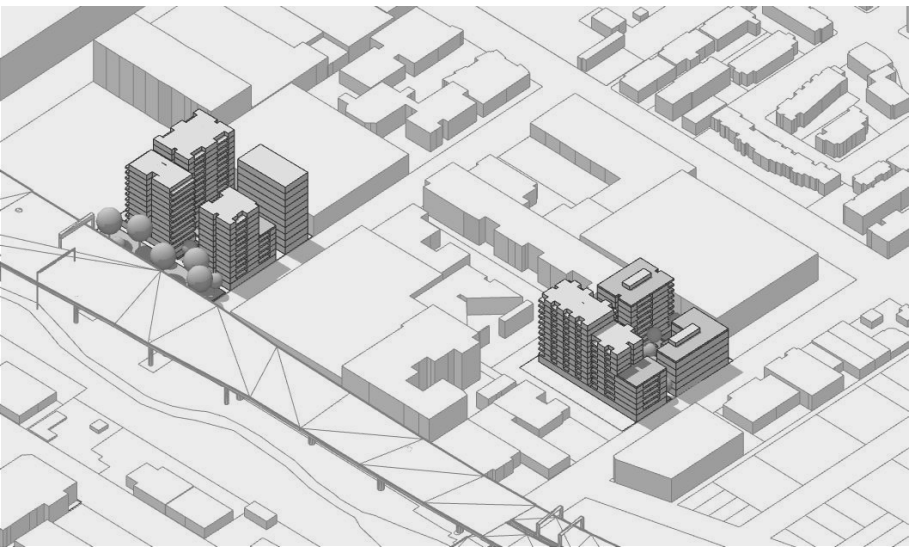
## Assessment of Proposed Controls vs. Existing DDO63

### Maximum envelope modelling — Boundary Precinct



Note this does not represent the extent of built form expected internally within blocks, but does provide an accurate notion of the street interfaces.

### Built form control testing — Boundary Precinct



The proposed controls were compared with the existing DDO63 by assessing the general findings from this testing, and the expected outcomes under DDO63, against the design recommendations in the Macaulay Draft Structure Plan Refresh. This has been represented as a table on the following page.

Expected outcomes under DDO63 were informed by maximum envelope modelling (Refer images left), which provides an indication of street interface and overall massing, along with the principle of maximising yield within this envelope (seen in redevelopment areas with similar controls to DDO63, such as Moreland and Darebin). These expected outcomes are financially incentivised to maximise floor area within the allowed envelope, often resulting in very high site coverage, compromised internal amenity, and a lack of contextual response.

Through this process, outcomes tested under the proposed controls were found to demonstrate an improvement on those expected under DDO63 for nearly all of the design recommendations. They most notably demonstrate the capacity to 1. respond to context with regard to character, overshadowing, outlook, and amenity; 2. facilitate mixed-grain, human-scaled developments; and 3. provide uncovered area for both increased street network permeability and deep soil for planting.

All of these recommendations are more difficult to achieve under DDO63 when aiming for profit/area maximisation within a fixed external envelope. Under these conditions, the design moves employed in the testing under the proposed controls (such as providing setbacks and building separation for good amenity, varying the heights of street walls in response to adjacent sites, separating built form into a number of smaller buildings, and creating through-block links) all represent lost yield, so are inherently disincentivised or only provided to a bare minimum degree.

With the certainty of mandatory maximum gross floor area, and preferred maximum heights that provide sufficient flexibility to distribute this area across the site, these design moves are no longer perceived as impediments, and may instead be incentivised as a means of improving quality and amenity. By inherently encouraging outcomes that better meet the design recommendations through the means of the FAR control, the proposed controls demonstrate an improvement on the existing DDO63.

Assessment of Proposed Controls vs. Existing DDO63

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | Proposed Controls (2020)                                                                                                                                                         | Existing DDO63 Controls                                                                                                                                                                                                  |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | FAR control allows for contextually responsive massing and design of interfaces.                                                                                                 | Likely to produce consistent, continuous street walls and massing, regardless of place.                                                                                                                                  |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | Proposed FAR figures and preferred heights control density and building scale, and promote a variety of building types.                                                          | Controls limit scale but do not have a strategy to control density or encourage diversity of building typology.                                                                                                          |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | FAR control makes volumetric heritage retention on sites with a mix of heritage and non-heritage buildings easier by allowing reallocation of floor area to other parts of site. | Heritage retention likely to reduce yield and efficiency on sites with a mix of heritage and non-heritage buildings, disincentivising significant retention beyond facade.                                               |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | FAR control allows height and address to be flexibly allocated proportional to the street network.                                                                               | Uniform heights and interfaces often produced regardless of orientation or street address in order to maximise yield.                                                                                                    |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | FAR control allows street wall height variation without penalty to yield.                                                                                                        | Building less than the maximum allowed street wall is disincentivised because it results in yield loss, and taller street walls to appropriate interfaces (e.g. North-facing corners on wide streets) are not supported. |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | FAR control allows floor area to be separated into distinct buildings without loss of yield.                                                                                     | Consolidation of floor area into large contiguous areas is incentivised under maximum envelope controls to maximise yield.                                                                                               |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | FAR control allows for high amenity building separation without loss of yield as uncovered area can be reallocated as height.                                                    | Building separation is likely to be minimised as uncovered area represents lost yield.                                                                                                                                   |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | FAR control allows for through-block links without loss of yield as uncovered area can be reallocated as height.                                                                 | Through-block links are disincentivised because they result in yield loss.                                                                                                                                               |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | Controls allow Ground floors to provide public realm safety and security, but require high quality detailed design and tenants.                                                  | Controls allow Ground floors to provide public realm safety and security, but require high quality detailed design and tenants.                                                                                          |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | FAR control encourages considered outlook orientation and separation from neighbouring sites to provide good amenity.                                                            | Yield maximisation results in uniform massing that cannot respond purposefully to neighbouring development without yield loss.                                                                                           |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | FAR control enables lower built form to parts of sites without yield loss, as area can be reallocated to less sensitive areas.                                                   | Mandatory lower street walls are required to interface with existing stable residential areas.                                                                                                                           |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | FAR control enables lower built form to sensitively adjoin heritage buildings, reallocating area as height to less sensitive parts of site.                                      | Mandatory lower street walls are required to interface with existing residential and heritage buildings.                                                                                                                 |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | FAR control enables building heights to be strategically distributed to avoid overshadowing neighbouring solar arrays where possible.                                            | Mandatory lower street walls are required to interface with existing stable residential areas to avoid overshadowing solar arrays.                                                                                       |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | FAR control makes volumetric retention of character buildings easier by allowing reallocation of floor area to other parts of site.                                              | Volumetric retention of non heritage-listed character buildings is disincentivised as it often results in loss of yield.                                                                                                 |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | FAR control allows height to be managed on sites neighbouring open spaces to avoid overshadowing.                                                                                | Maximum envelope modelling indicates some overshadowing to all open spaces.                                                                                                                                              |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | FAR control allows for high amenity building separation without loss of yield as uncovered area can be reallocated as height.                                                    | Building separation is likely to be minimised as uncovered area represents lost yield.                                                                                                                                   |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | FAR control provides flexibility to orient primary outlooks with consideration of future development.                                                                            | Primary outlook may be secured within site but with minimal setbacks from neighbouring properties.                                                                                                                       |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | Controls allow commercial spaces to be located on lower levels with fine grain, but require high quality detailed design and tenants.                                            | Controls allow commercial spaces to be located on lower levels with fine grain, but require high quality detailed design and tenants.                                                                                    |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | Primary built form controls do not inherently incentivise adaptable floor to ceiling heights.                                                                                    | Primary built form controls do not inherently incentivise adaptable floor to ceiling heights.                                                                                                                            |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | Subject to basement car parking requirements, uncovered site area can provide deep soil planting without loss of yield, as uncovered area can be reallocated as height.          | Uncovered area for deep soil planting is disincentivised because it results in yield loss.                                                                                                                               |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | Primary built form controls do not inherently incentivise concealed servicing, but can be provided through detailed design.                                                      | Primary built form controls do not inherently incentivise concealed servicing, but can be provided through detailed design.                                                                                              |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | Primary built form controls do not inherently incentivise ground floor interface curation, but can be provided through detailed design.                                          | Primary built form controls do not inherently incentivise ground floor interface curation, but can be provided through detailed design.                                                                                  |

# Conclusion

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Through the testing process, the proposed built form controls were generally found to produce high quality outcomes that were able to meet the majority of the design recommendations, with some issues on specific site types as represented by those selected for testing.

In the Chelmsford precinct, at the proposed 4:1 FAR, both testing sites were found to have some potential issues in dealing with interfaces with adjacent existing residential areas, struggling to provide an appropriate transition of scale that avoids excessive overshadowing and visual bulk in some options. Reducing the FAR to a figure in the order of 3.5:1 is recommended for these sites and sites with similar conditions in order to better manage these interfaces.

In the Stubbs precinct, the preferred maximum height of 6 storeys was found to be broadly appropriate with some discretion to be given to exceeding it by one storey in strategic locations such as on the South side of wide streets with key addresses, and in locations that are not in close proximity to existing stable residential buildings. Larger sites such as the one tested were unable to achieve the maximum FAR within the preferred maximum height due to the inherently lower site coverage required to deliver multiple, separate buildings. In order to rectify this issue, a reduced FAR figure in the order of 3.5:1 is recommended on the site tested, and on sites with similar conditions that require the development to be split into multiple buildings with significant separation.

In the boundary precinct, site B1 demonstrated that a 20m setback from the Citylink Tollway can provide good outcomes for dealing with the noise and compromised outlook at this interface, with potential for extensive deep soil planting and public space. The 12 storey preferred maximum height was found to be able to accommodate the 4:1 FAR, but with limited flexibility to respond to context through varying building heights. For this site and other sites directly adjacent to the Citylink tollway, an increased preferred maximum height of 15 storeys is recommended to introduce greater flexibility, allowing other areas to reduce in height to allow for some mid-rise buildings that are 5 to 8 storeys in height.

# Phase 3 — New Site & Additional Sensitivity Testing

# Contents & Testing Sites

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| B2 — Sensitivity Testing 2 - 4.5:1 | 30 |
| S1 — Sensitivity Testing 1 - 5:1   | 35 |
| C3 — Sensitivity Testing 1 - 5:1   | 43 |

| Site | Address                | Site Area (m²) | FAR | Max. Height<br>(Preferred)       |
|------|------------------------|----------------|-----|----------------------------------|
| C1   | 2 Fink Street          | 1110           | 4:1 | 6 storeys                        |
| C2   | 9-15 Bruce Street      | 737            | 4:1 | 6 storeys                        |
| C3   | 330-344 Arden Street   | 2354           | 4:1 | 6 storeys                        |
| S1   | 18-70 Robertson Street | 11830          | 4:1 | 6 storeys                        |
| B1   | 74-88 Mark Street      | 5421           | 4:1 | 12 storeys                       |
| B2   | 270 Macaulay Road      | 4523           | 4:1 | 6 to Macaulay Rd<br>12 Elsewhere |

Precinct Map from Macaulay Draft Structure Plan Refresh (2020), P27



# Introduction

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Breathe Architecture were commissioned by the City of Melbourne to test the key urban design and built form directions of the Macaulay Draft Structure Plan Refresh, and ensure there is a clear rationale underpinning the future planning controls.

This assessment examined how quality urban design outcomes can be achieved. Specifically, the purpose of this report is to:

1. Review the proposed built form controls for the precinct, prior to them being finalised in the Structure Plan and implemented through the Planning Scheme Amendment.
2. Assess how the proposed controls simultaneously operate (including the 'fit' between the proposed floor area ratio controls and the built form controls) and whether they deliver the preferred built form outcomes / objectives and typologies, with an understanding of the financial drivers behind different typologies and outcomes.

3. Assess the controls across a series of 5 sites within Macaulay, each in different locations and with different attributes. Sites were selected by analysing existing site conditions including site size, number of street frontages, site orientation, flooding conditions and interface conditions such as residential dwellings, open space and CityLink. The sites were selected to test a range of conditions across Macaulay. The sites are distributed as follows:

- Chelmsford Precinct – 2 Sites
- Stubbs Precinct – 1 Site
- Boundary Precinct – 2 Sites

No sites were selected in Melrose Precinct due to a limited number of privately owned sites that are likely to develop and the extent of land owned by the Victorian Government for public housing and the Public Record Office Victoria.

4. The assessment, conclusion and recommendations of the built form testing should give consideration to the design recommendations for Macaulay as outlined on page 23 of the Macaulay Draft Structure Plan Refresh.

Following the results of this testing, Breathe Architecture has been commissioned by the City of Melbourne to undertake further testing (Phase 3) on a new site in the Chelmsford Precinct and additional stress testing at higher FARs on some of the previously tested sites.

# Methodology

---

## Phase 1 — Baseline Testing

Five sites were identified in Macaulay for built form control testing in Phase 1. Two sites in the Chelmsford Precinct, one site in the Stubbs Precinct, and one two sites in the Boundary Precinct. Each site was tested with two different schemes (Option A & Option B) in order to determine various built form outcomes.

Schemes were assessed against the Design Recommendations in the Draft Structure Plan Refresh (2020). Based on this, recommendations were made, and 3 additional testing scenarios were identified for sites that were found to have the potential to be improved with changes to the proposed controls. These form the basis of Phase 2 — Sensitivity Testing.

Testing schemes simulate realistic development proposals with consideration of development feasibility and efficiency. All schemes aim to provide the maximum Floor Area Ratio (FAR) within the preferred maximum building height, but where not possible, this height is breached and highlighted in red to demonstrate the height realistically required to achieve the FAR.

Option A schemes generally aim for larger contiguous floor plates, resulting in lower building heights. These typically utilise internal light courts/courtyards for secondary outlook, and provide primary outlook solely external to the site.

Option B schemes generally aim for smaller contiguous floor plates, resulting in taller building heights. These typically utilise optimised, double-loaded corridor plans with primary outlooks provided within the site with adequate building separation.

These approaches demonstrate a variety of built form outcomes with regard to building typology, site massing, height distribution, site permeability, internal amenity, and orientation of outlooks. In achieving the maximum FAR, the approaches may in some cases produce schemes with similar maximum heights and site coverage figures.

## Phase 2 — Sensitivity Testing

For the 3 additional testing scenarios, changes to the FAR or maximum height figures were discussed and proposed based on the phase 1 recommendations.

**ST1** — Site S1 (18-70 Robertson St) with a **3.5:1 FAR** instead of a 4:1 FAR

**ST2** — Site S1 (18-70 Robertson St) with a **3:1 FAR** instead of a 4:1 FAR

**ST3** — Site B1 (74-88 Mark St) with a **15 storey preferred maximum height** instead of a 12 storey preferred maximum height.

For each site, testing with the new figures was undertaken by adopting one of the two options in phase 1 as a comparable basis, and making adjustments such as adding or subtracting levels to parts of the site in order to achieve the new proposed FAR or maximum height. From this, minor changes to the base plan were made to better accommodate the new heights and massing.

These were then compared with their respective phase 1 tests with discussion on whether these changes encourage better outcomes, and if so, whether the proposed figures are appropriate and can be recommended as changes to the proposed controls.

## Conclusion

General findings from the two phases were discussed in principle in comparison to expected outcomes under the existing controls (Design and Development Overlay 63), and the entire testing process was summarised.

# Methodology

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## Phase 3 — New Site & Additional Sensitivity Testing

For this phase, a new site in the Chelmsford Precinct (C3) is being tested with a 4:1 FAR, and additional testing is being undertaken for sites B1, B2, S1 and C1 at FARs higher than 4:1.

**ST1 — 5:1 FAR** — Sites B1 (74-88 Mark Street), B2 (270 Macaulay Road), S1 (18-70 Robertson Street) and C3 (330-344 Arden Street)

**ST2 — 6:1 FAR** — Sites B1 (74-88 Mark Street), B2 (270 Macaulay Road)

For each site, testing with the new figures was undertaken by adopting option A from phase 1 testing as a comparable basis, and making adjustments such as adding or subtracting levels to parts of the site in order to achieve the new proposed FAR or maximum height. From this, minor changes to the base plan were made to better accommodate the new heights and massing.

These were then compared with their respective phase 1 tests with discussion on whether these changes encourage better outcomes, and if so, whether the proposed figures are appropriate and can be recommended as changes to the proposed controls.

These findings are based on a sample selection of sites in this precinct. We have not tested the FAR against every site in the precinct as it is not practicable.

# Assumptions

## Residential Floor Plates

All residential floor plate areas are planned to ensure each apartment is compliant under the Better Apartment Design Standards (BADs). This results in floor plates with depths ranging from 14m to 22m for double-loaded buildings (see diagram 1); and total depths of 25m to 32m for light court buildings (including the light court depth), with depths of 7m to 16m measured from facade to light court (see diagram 2).

## Commercial Floor Plates

Commercial spaces are modelled with maximum total floor plate depths of 36m, with a maximum of 15m from natural light source to core or centre of plan (see diagram 3). Tolerance is allowed for provision of additional back of house (BOH) areas which often occupy the centre of deep floor plates.

## Residential Floor Heights

Residential levels above ground are modelled at 3.2m floor-to-floor. Ground floor heights vary as these are raised between 0.2m and 2m in order to account for flood levels.

## Commercial Floor Heights

Commercial levels above ground are modelled at 4m floor-to-floor. Ground floor heights vary as these are raised between 0.2m and 2m in order to account for flood levels. Where commercial and residential use occur on the same floor plate and are serviced by the same circulation core, the residential areas adopt the taller commercial floor-to-floor height (4m).

## Apartment Mix

Apartment mixes vary according to what can be optimally provided for each site depending on the typical floor plate size and constraints. Apartment mixes of 1, 2 and 3 bedroom apartments, with some studio apartments, represent typical development outcomes, with flexibility to adjust the mix without affecting total areas.

## Apartment Sizes

Apartment sizes tested are of the following average sizes:

1 Bed Studio Apartments: average 34m<sup>2</sup>

1 Bedroom Apartments: average 56m<sup>2</sup>

2 Bedroom Apartments: average 76m<sup>2</sup>

3 Bedroom Apartments: average 105m<sup>2</sup>

## Gross Floor Area

Gross Floor Area (GFA) is defined as the total building area excluding unenclosed areas such as Private Open Space (POS), rooftop areas, and landscaping. All POS, whether projecting from buildings, or inset within the building, is excluded from the GFA calculation as it is not enclosed by external walls.

## Car Parking

Car Parking is assumed to be provided in basement areas wherever possible. Allowance for a ramp to basement has been provided where possible.

Basement areas are assumed to be excluded from the FAR so have not been modelled, and are not included in the GFA calculation.

Note that access ramps to basement car parking and the extent of basements shown are indicative only. In all testing options, sufficient flexibility is ensured in the design of the ground floor plane and basement levels to locate these such that they appropriately respond to flood levels and staging of construction. For sites with multiple frontages, access ramps to basement car parking can be provided to streets or laneways where applicable.

Diagram 1. Double-Loaded Residential Floor Plates

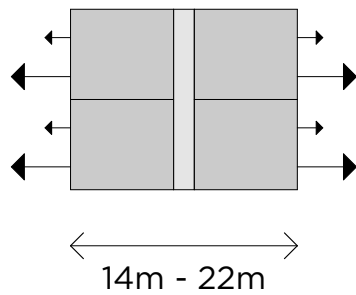


Diagram 2. Light Court Residential Floor Plates

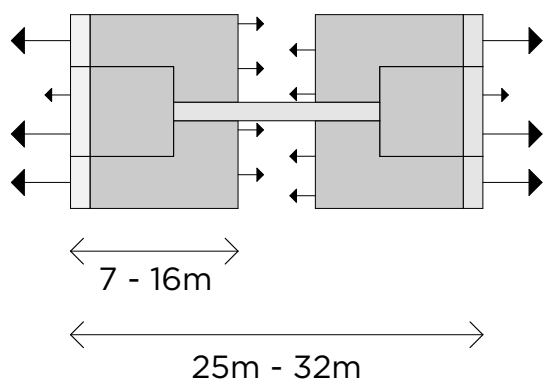
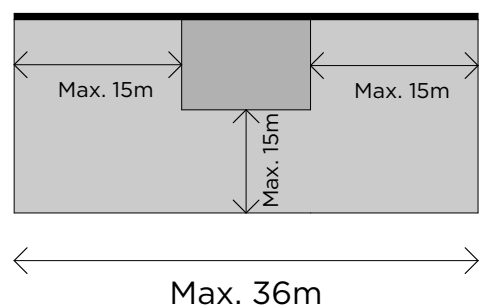


Diagram 3. Commercial Floor Plates



# Assumptions

## Building Separation

The extent of building separation required (measured from balcony edge to balcony edge) is assumed to be:

Zero, where no outlook is proposed, provided it does not affect the reasonable development opportunity of adjoining sites/buildings (see diagram 4).

A minimum of 6m where only secondary outlooks (bedroom/bathroom/non-living) are provided and facing one another (see diagram 5).

A minimum of 12m for buildings up to 8 storeys, with a mix of primary and secondary outlooks facing one another, assuming that there is flexibility to stagger outlooks (see diagram 6).

A minimum of 18m for buildings between 8 and 15 storeys, with the same assumption as above (see diagram 7).

These assumptions are based on Breathe Architecture's high level measures which refer to Moreland Apartment Design Code Table D.1.2.c as a guide, adapted through findings from built projects and simplified for testing.

Testing may vary from these guidelines where it deliberately exceeds the maximum preferred height in order to demonstrate potential problems in the controls.

Testing may also vary from these guidelines where the assessment of outlook amenity may be influenced by site-specific factors such as access to oblique views or dual primary aspect, asymmetric relationships between two buildings (e.g. interface between an 8 and 6 storey building), and conditions where the residential levels begin from above level 1, and have better access to daylight. In such cases the guideline figure may be reduced.

## Back of House

Back of house (BOH) areas allow for spaces such as plant/services, refuse rooms, bicycle parking, storage cages, and end of trip facilities. These are shown indicatively in proportion to the saleable residential and/or commercial area. Note that in some cases there is flexibility to reduce the extent of these areas or locate them in basement areas. In these cases, commercial and residential areas can be increased in size.

**Diagram 4. Zero setback (Plan view)**

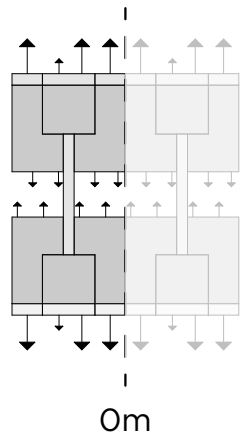


**Diagram 6. 12m setback (Section view)**

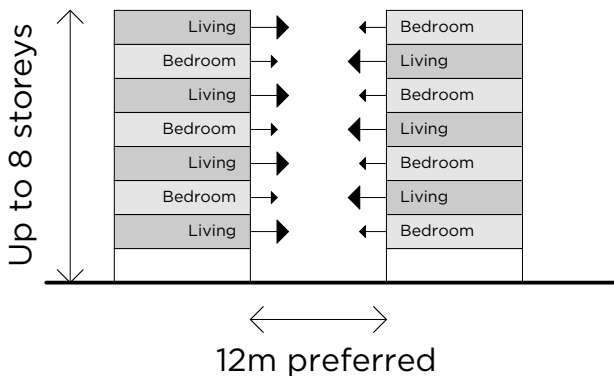


**Diagram 5. 6m setback (Section view)**

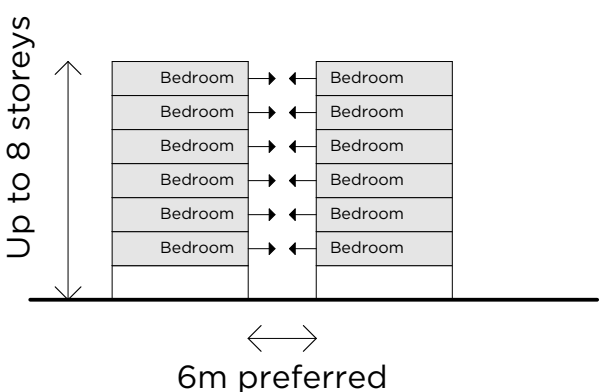
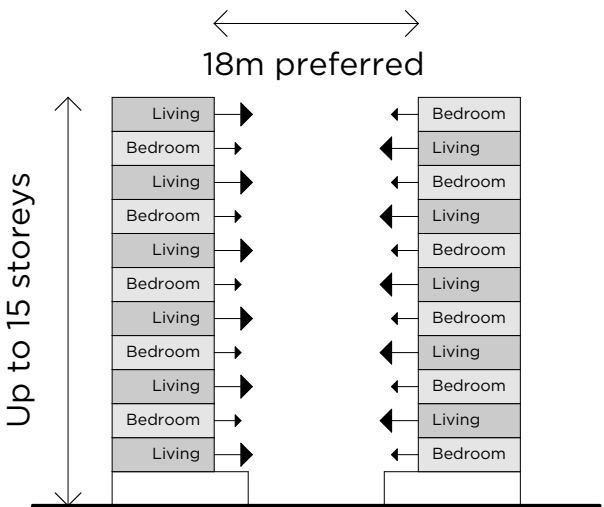


**Diagram 7. 18m setback (Section view)**



A

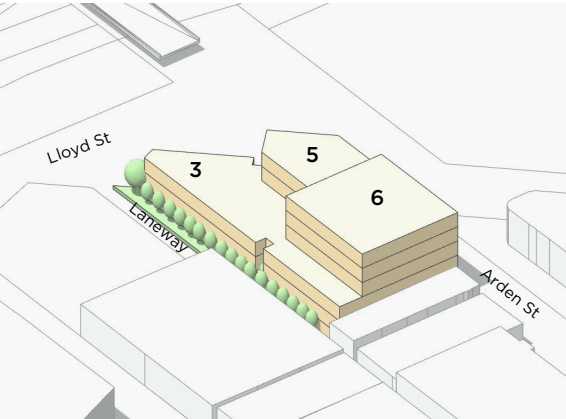
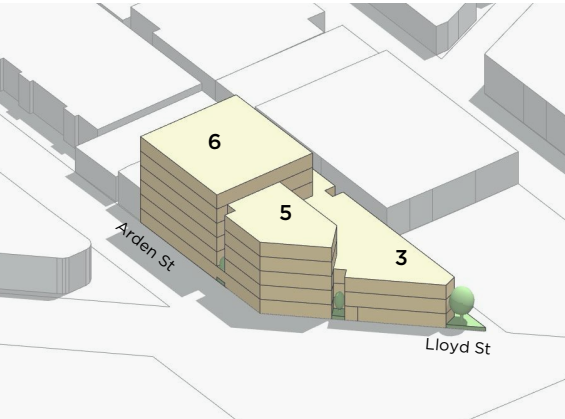
Option A explores a full site coverage building with a 3-storey interface to the lower built form to the East and the North.

Ground Floor Site Coverage — 88%  
Level 1 Site Coverage — 88%  
Total Building Height — 6 storeys

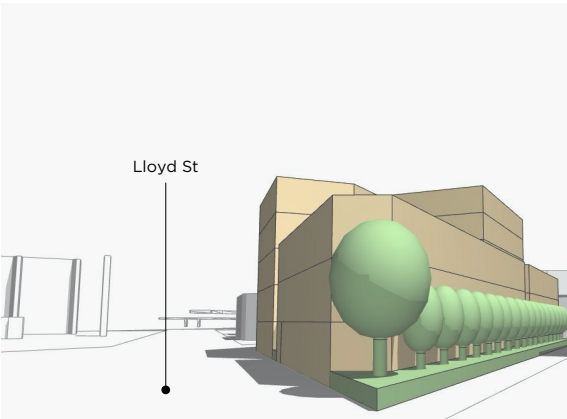
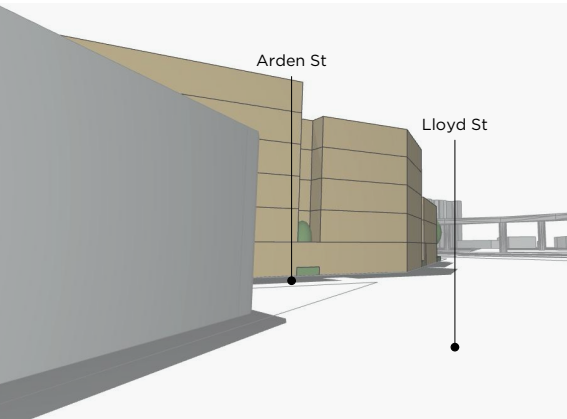
Summary of Areas

| Area Type      | Area (sq. m) | Total GFA |
|----------------|--------------|-----------|
| Circ/BOH       | 2,192        | 9,430     |
| Commercial NSA | 7,238        |           |
| Landscaping    | 300          |           |

South East and North West Axonometric Diagrams



Street View Perspectives: Lloyd St facing North & Lloyd St facing South



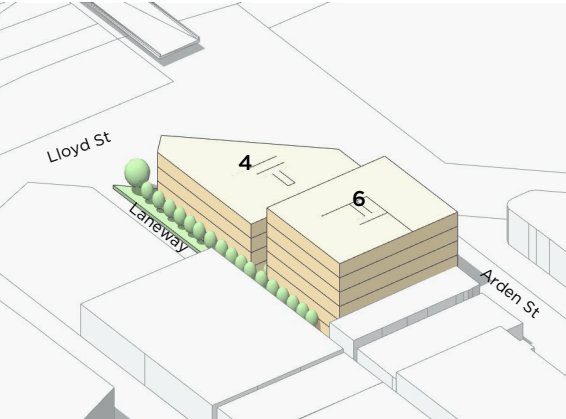
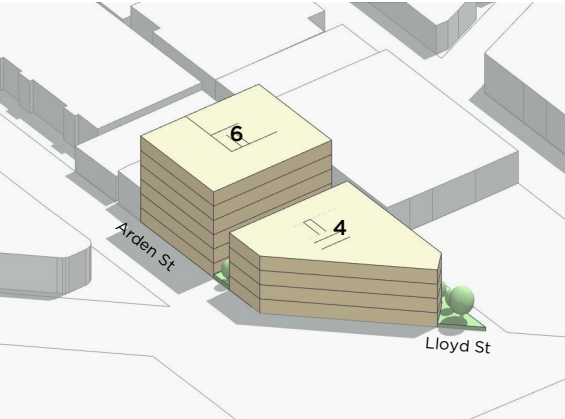
B

Option A explores a lower site coverage building with a through site link and 4-storey interface to the lower built form to the East.

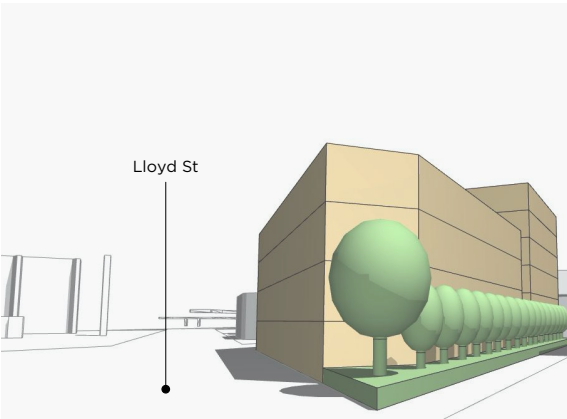
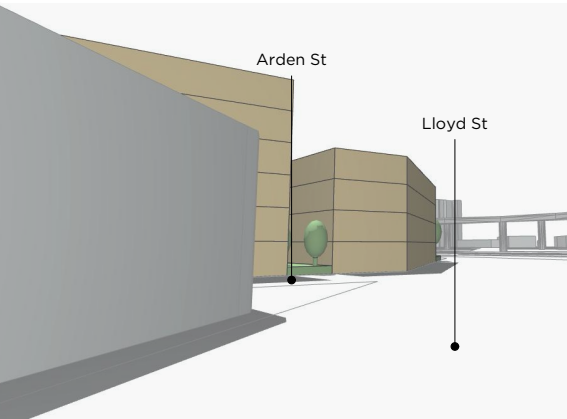
Ground Floor Site Coverage — 79%  
Level 1 Site Coverage — 79%  
Total Building Height — 6 storeys

| Area Type      | Area (sq. m) | Total GFA |
|----------------|--------------|-----------|
| Circ/BOH       | 2,484        | 9,428     |
| Commercial NSA | 6,944        |           |
| Landscaping    | 455          |           |

South East and North West Axonometric Diagrams



Street View Perspectives: Lloyd St facing North & Lloyd St facing South



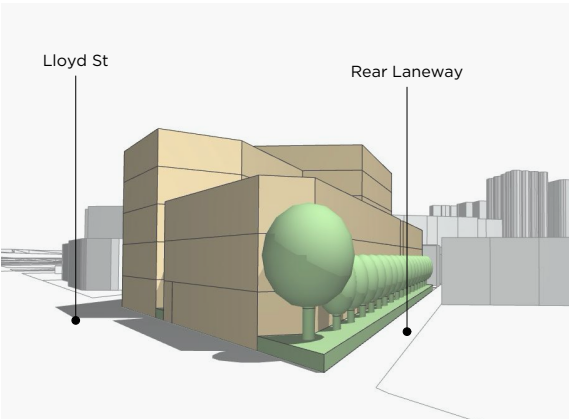
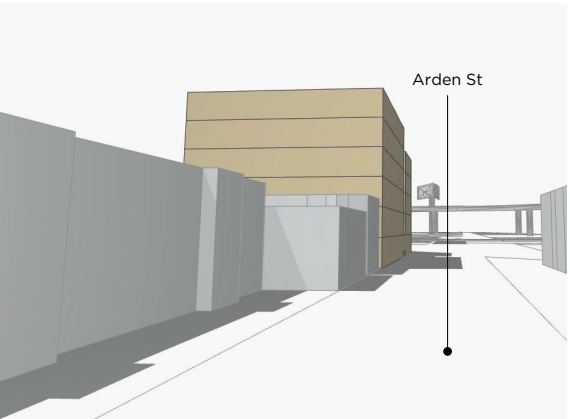
A

Schedule of  
Areas by Level

| Ground         |       |  |
|----------------|-------|--|
| Circ/BOH       | 973   |  |
| Commercial NSA | 1,127 |  |
| Landscaping    | 256   |  |
| Level 1        |       |  |
| Circ/BOH       | 336   |  |
| Commercial NSA | 1,702 |  |
| Landscaping    | 44    |  |
| Level 2        |       |  |
| Circ/BOH       | 328   |  |
| Commercial NSA | 1,754 |  |

| Level 3        |       |  |
|----------------|-------|--|
| Circ/BOH       | 205   |  |
| Commercial NSA | 1,001 |  |
| Level 4        |       |  |
| Circ/BOH       | 205   |  |
| Commercial NSA | 1,001 |  |
| Level 5        |       |  |
| Circ/BOH       | 145   |  |
| Commercial NSA | 653   |  |

Additional  
Street View  
Perspectives:  
Arden St facing  
West & Rear  
Laneway facing  
East



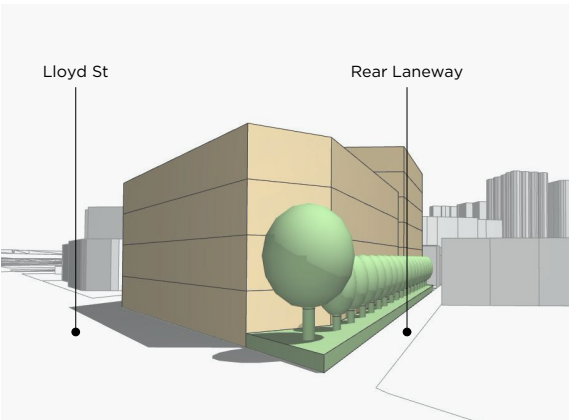
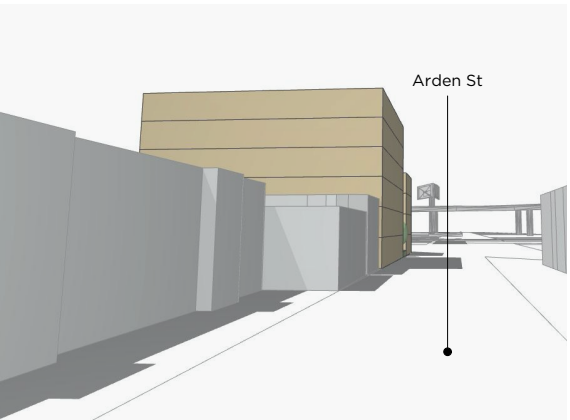
B

Schedule of  
Areas by Level

| Ground         |       |  |
|----------------|-------|--|
| Circ/BOH       | 973   |  |
| Commercial NSA | 1,127 |  |
| Landscaping    | 256   |  |
| Level 1        |       |  |
| Circ/BOH       | 336   |  |
| Commercial NSA | 1,702 |  |
| Landscaping    | 44    |  |
| Level 2        |       |  |
| Circ/BOH       | 328   |  |
| Commercial NSA | 1,754 |  |

| Level 3        |       |  |
|----------------|-------|--|
| Circ/BOH       | 205   |  |
| Commercial NSA | 1,001 |  |
| Level 4        |       |  |
| Circ/BOH       | 205   |  |
| Commercial NSA | 1,001 |  |
| Level 5        |       |  |
| Circ/BOH       | 145   |  |
| Commercial NSA | 653   |  |

Additional  
Street View  
Perspectives:  
Arden St facing  
West & Rear  
Laneway facing  
East



## A

## Plans

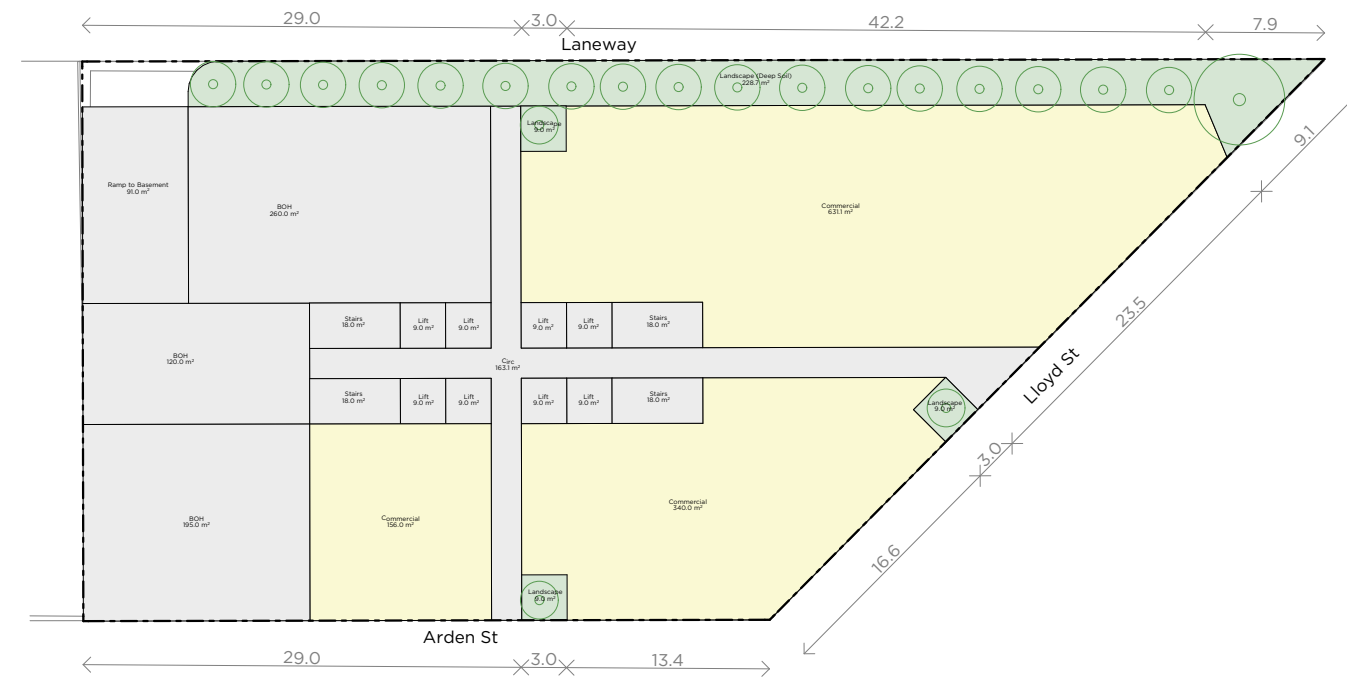
Scale — 1:500

North — 

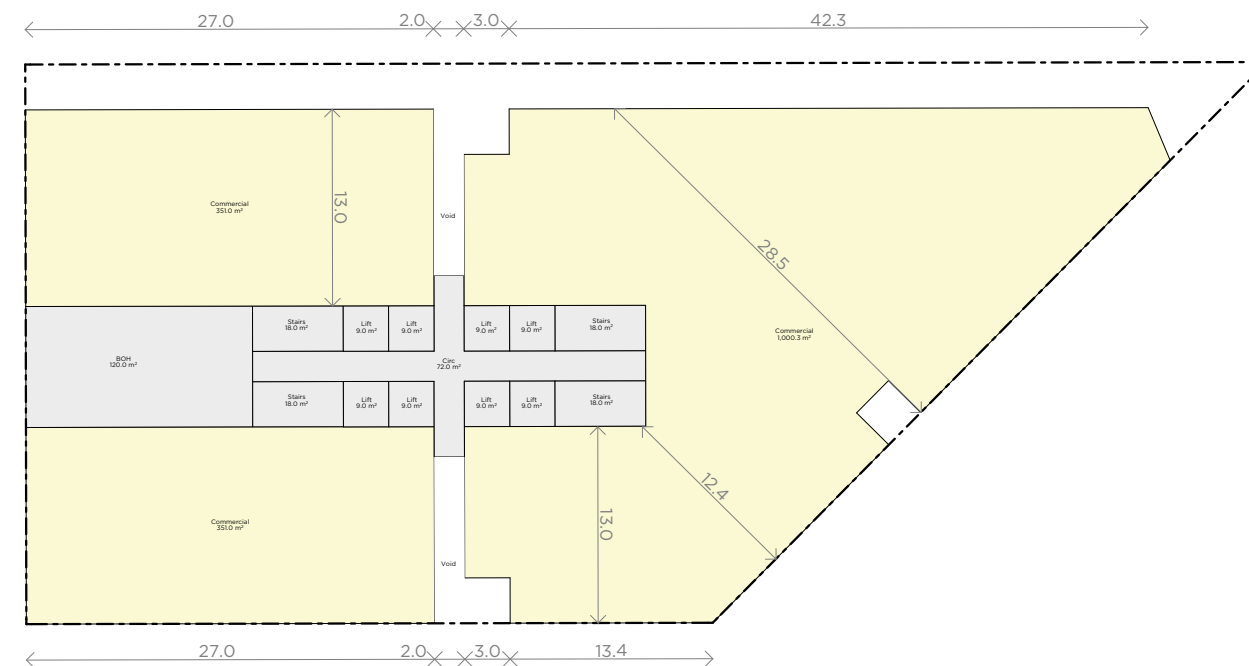
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

Ground Floor Plan



Level 1 Floor Plan



**A**

# Plans

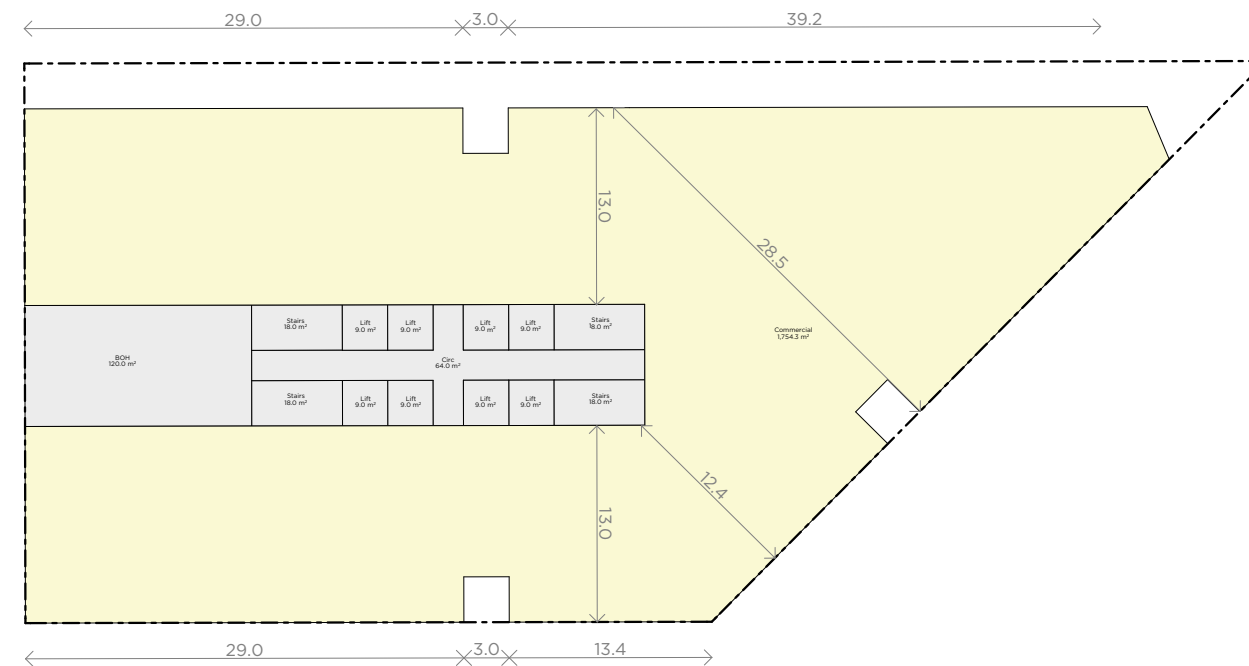
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North — 

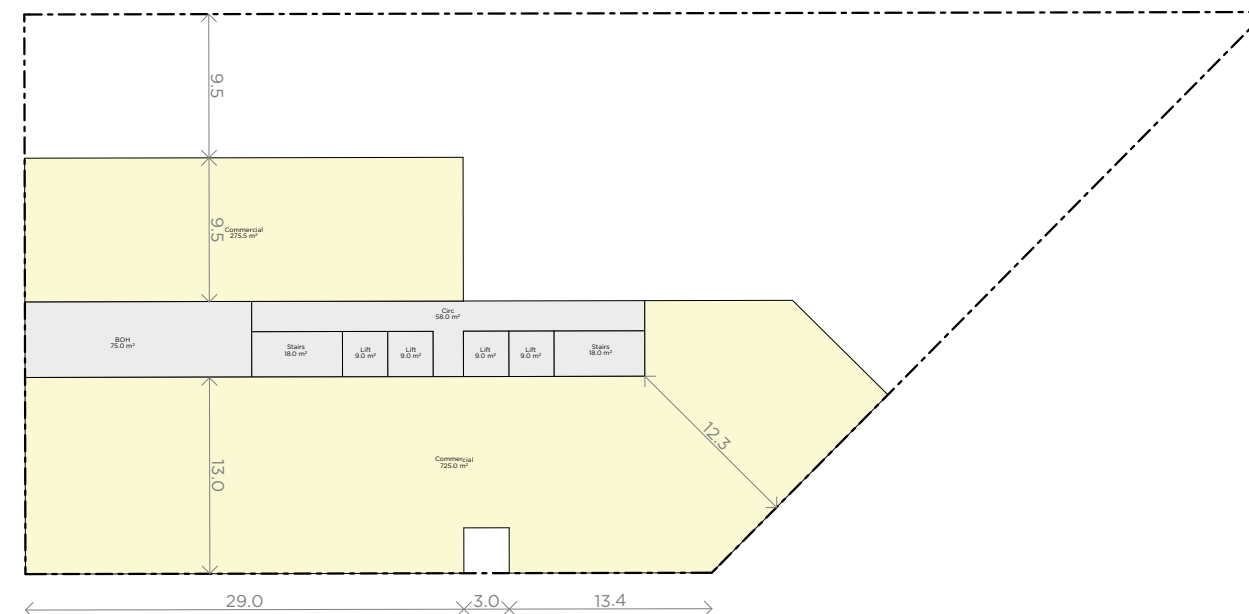
Legend

- 
- |                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

### Level 2 Floor Plan



### Level 3 to 4 Typical Floor Plan



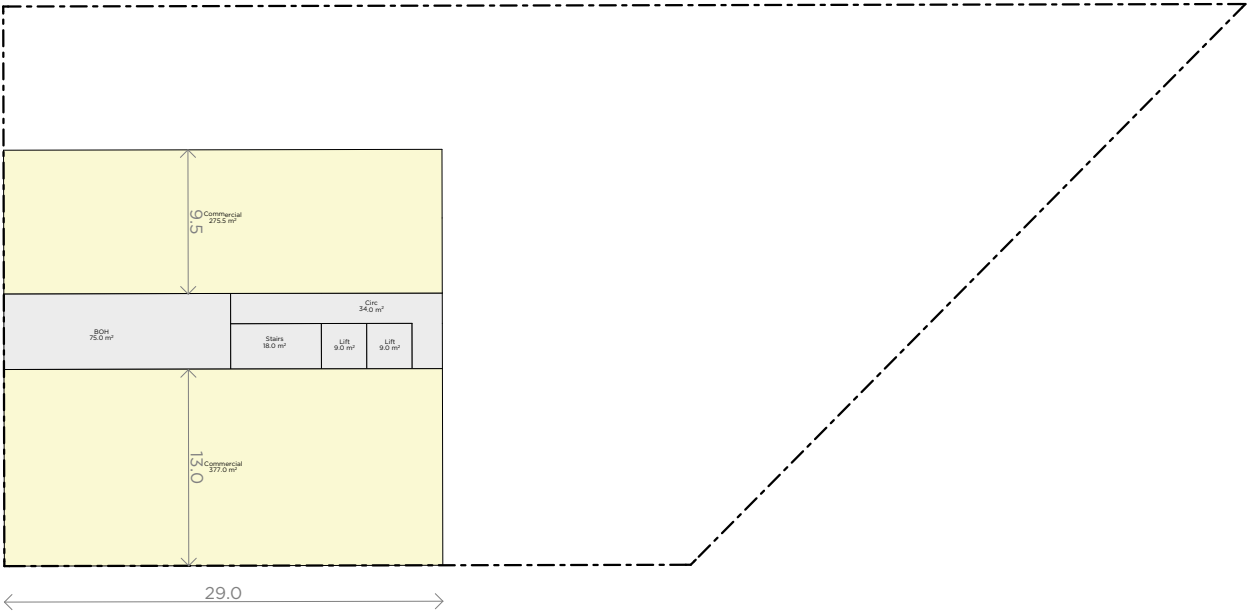
A

Plans

Scale — 1:500  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA

Level 5 Floor Plan



## B

## Plans

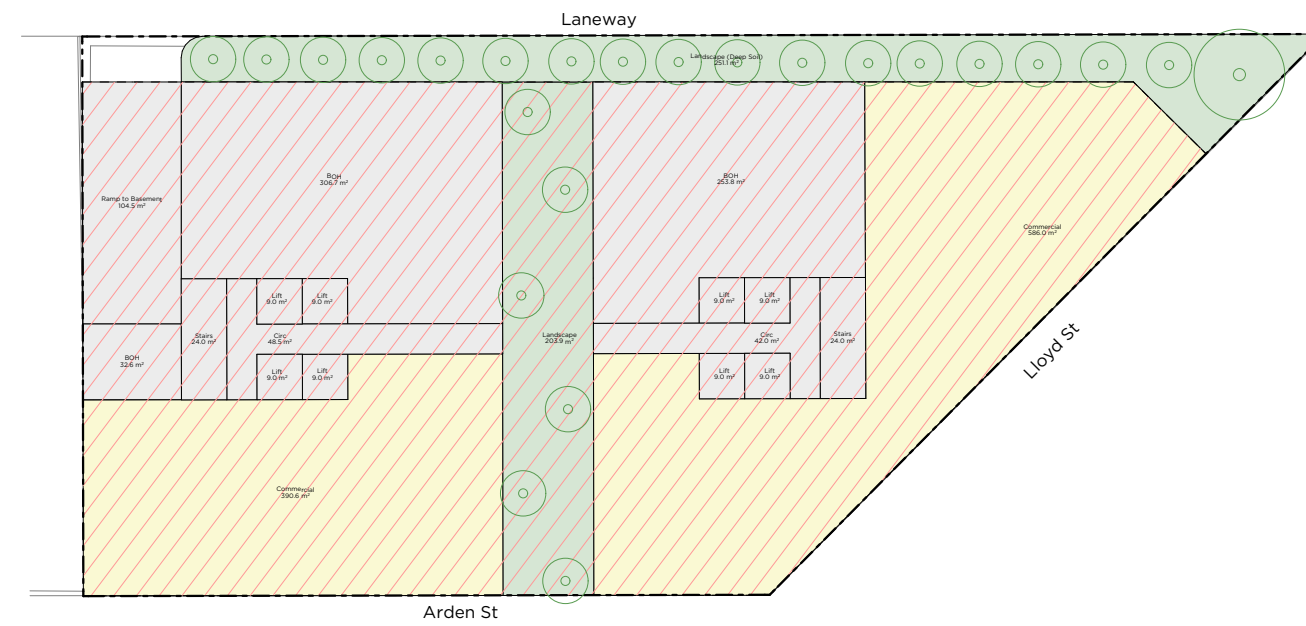
Scale — 1:500

North — 

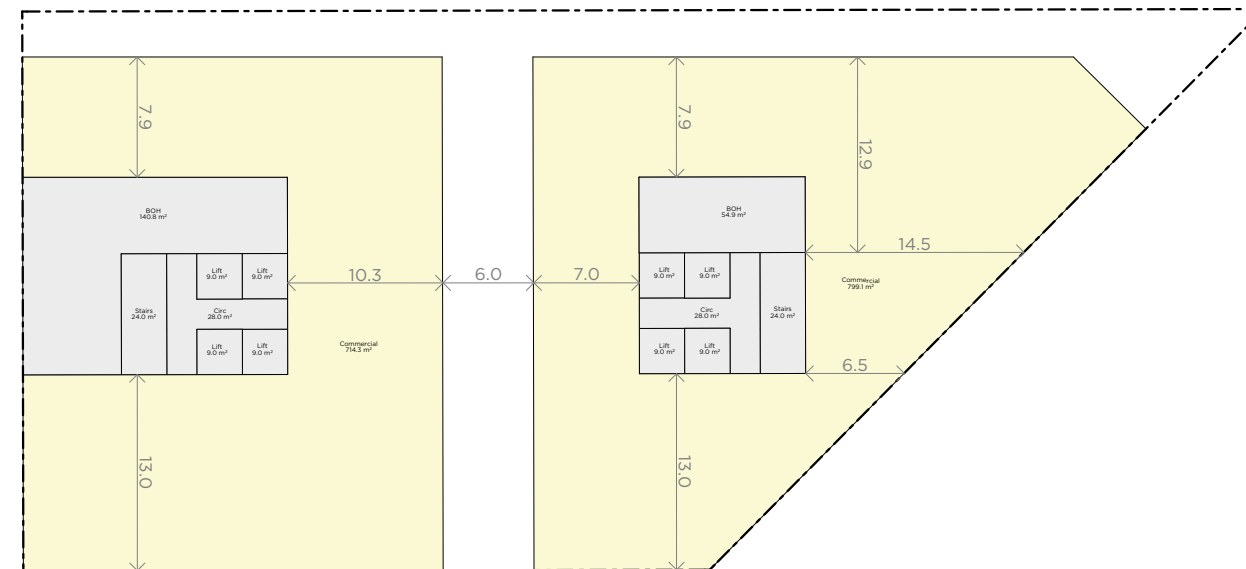
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

Ground Floor Plan



Level 1 - 3 Typical Floor Plan



B

Plans

Scale — 1:500

North — 

- Legend
- 

Circulation / BOH Area
- 

Commercial NSA
- 

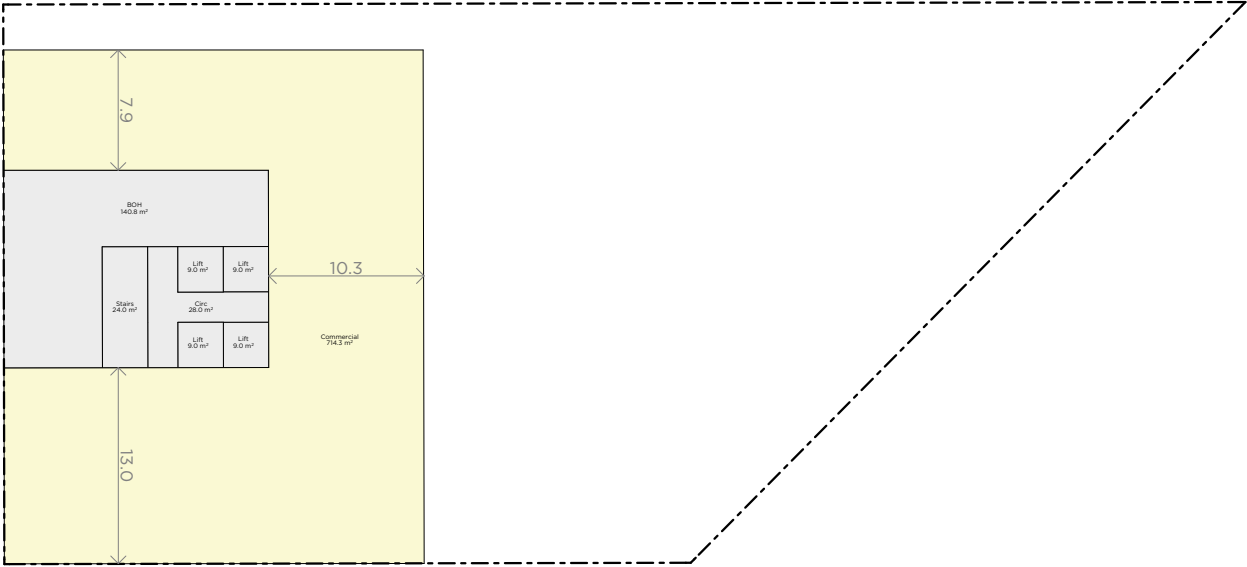
Indicative footprint of basement
- 

Landscape / Rooftop Area
- 

Private Open Space
- 

Residential NSA

Level 4-5 Typical Floor Plan



A

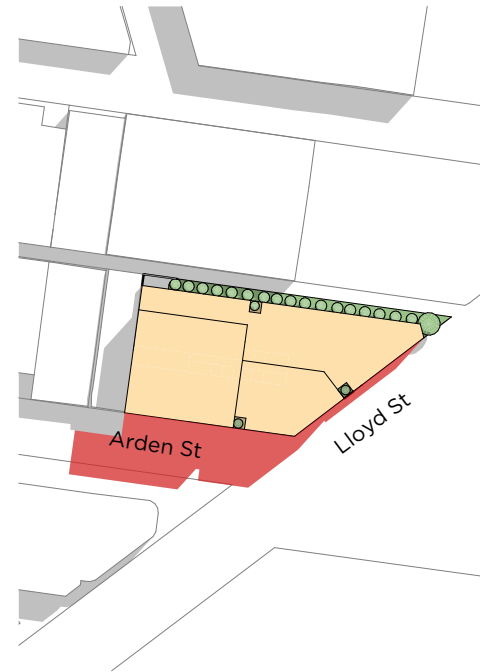
## Shadow Diagrams

Scale — 1:2000

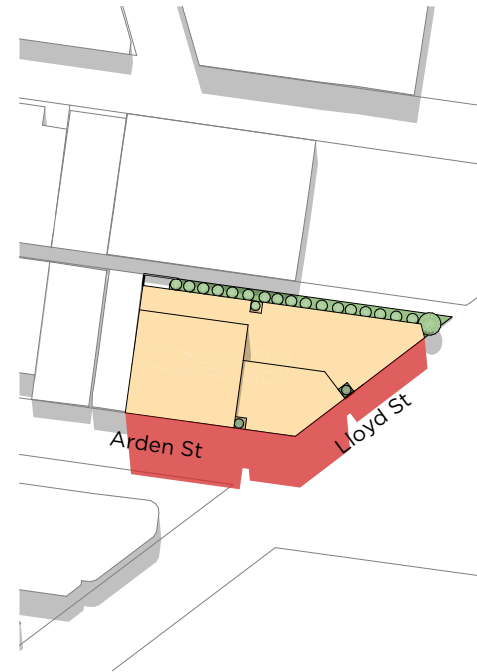
North — 

Shadows cast by Option A on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. The design makes particular effort to setback mass from the East to avoid overshadowing open space adjoining the creek.

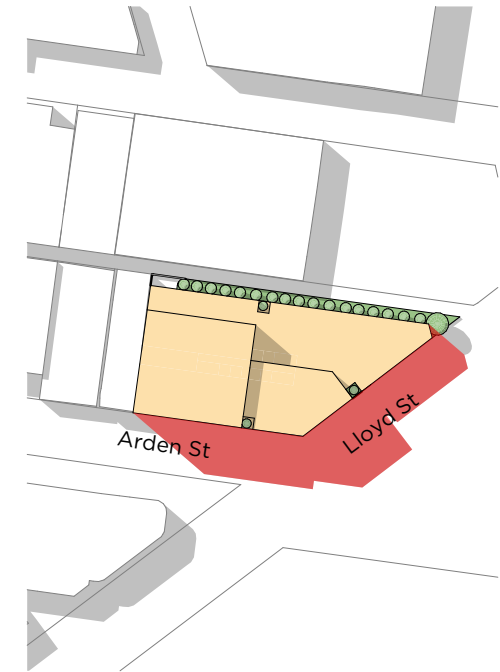
10AM September 22



12PM September 22



2PM September 22



B

## Shadow Diagrams

Scale — 1:2000

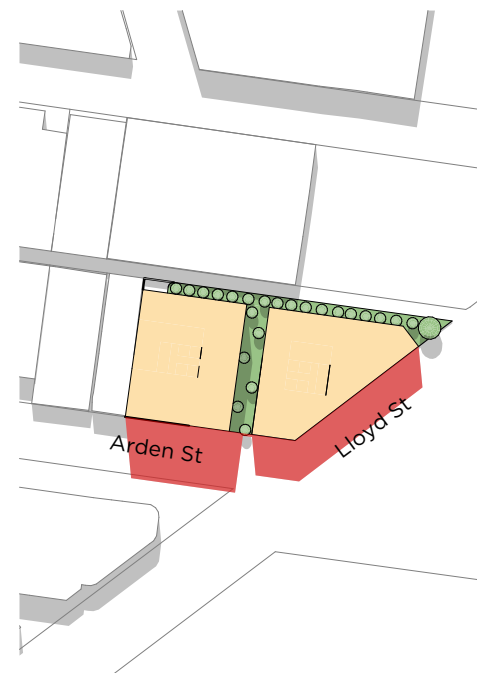
North — 

Shadows cast by Option B on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. The design makes particular effort to setback mass from the East to avoid overshadowing open space adjoining the creek.

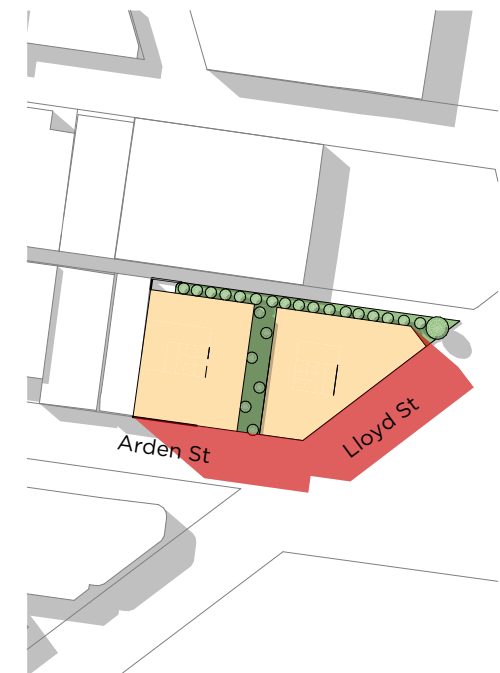
10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | Option A |                                                                                                                               | Option B |                                                                                                                               |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✓        | Demonstrates response to character through massing with further capacity through detailed design.                             | ✓        | Demonstrates response to character through massing with further capacity through detailed design.                             |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✓        | Delivers human-scaled, mid rise building.                                                                                     | ✓        | Delivers human-scaled, mid rise building.                                                                                     |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | ✗        | This massing exercise does not address the character building on the site. This would be addressed in detail design.          | ✗        | This massing exercise does not address the character building on the site. This would be addressed in detail design.          |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓        | Responds to street hierarchy through massing and height.                                                                      | ✓        | Responds to street hierarchy through massing and height.                                                                      |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ✓        | Street wall height varies from 3 to 6 storeys.                                                                                | ✓        | Street wall height varies from 4 to 6 storeys.                                                                                |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ✓        | Street articulation and building massing is broken up into a series of forms.                                                 | ✓        | Street articulation and building massing is broken up into two forms with a through site link.                                |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | N/A      | Site does not need amenity to be provided from within site or adjacent sites as it is on a corner with 3 street facing edges. | N/A      | Site does not need amenity to be provided from within site or adjacent sites as it is on a corner with 3 street facing edges. |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ⚠        | Double height through site link provided on ground to increase site permeability, however not open to the sky.                | ✓        | 6m wide through site link that is open to the sky is provided to increase site permeability.                                  |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓        | Commercial use located facing Arden Street, Lloyd Street and Northern Laneway to activate edges.                              | ✓        | Commercial use located facing Arden Street, Lloyd Street and Northern Laneway to activate edges.                              |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✓        | No borrowed amenity and good access to light and ventilation.                                                                 | ✓        | No borrowed amenity and good access to light and ventilation.                                                                 |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | N/A      | Site does not directly adjoin residential or heritage buildings.                                                              | N/A      | Site does not directly adjoin residential or heritage buildings.                                                              |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A      | Site does not directly adjoin residential or heritage buildings.                                                              | N/A      | Site does not directly adjoin residential or heritage buildings.                                                              |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | N/A      | Not in proximity to overshadow adjacent solar panels.                                                                         | N/A      | Not in proximity to overshadow adjacent solar panels.                                                                         |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | ✗        | This massing exercise does not address the character building on the site. This would be addressed in detail design.          | ✗        | This massing exercise does not address the character building on the site. This would be addressed in detail design..         |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A      | Not in proximity to reserves to overshadow.                                                                                   | N/A      | Not in proximity to reserves to overshadow.                                                                                   |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✓        | Upper level setbacks to rear laneway to preserve views to the sky and increase daylight internally on upper levels.           | ✓        | Upper level setbacks to rear laneway to preserve views to the sky and increase daylight internally on upper levels.           |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓        | Primary outlook secured to streets on two sides. Upper levels setback to rear laneway to improve internal amenity.            | ✓        | Primary outlook secured to streets on two sides. Upper levels setback to rear laneway to improve internal amenity.            |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                                    | ✓        | Commercial areas on ground flexible to division into fine grain tenancies.                                                    |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       | ✓        | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓        | 3m setback to laneway provides opportunity for deep root planting to support trees.                                           | ✓        | 3m setback to laneway provides opportunity for deep root planting to support trees.                                           |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓        | Back of House located on laneway allowing Arden and Lloyd Street interfaces to be active.                                     | ✓        | Back of House located on laneway allowing Arden and Lloyd Street interfaces to be active.                                     |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓        | Massing facilitates best practice with detailed design.                                                                       | ✓        | Massing facilitates best practice with detailed design.                                                                       |

## Conclusion & Recommendations

Testing demonstrated that there was sufficient flexibility in the proposed controls to achieve nearly all Design Recommendations (P23, Draft Structure Plan Refresh, 2020), notably ensuring 'larger sites are broken up into a series of building forms that relate and contribute positively to their context' and achieving 'variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.'

As this is a large commercial site with 3 street frontages it is possible to have large, highly efficient floor plates. This is demonstrated in Option A, resulting in a high density, low rise outcome. Option B explores an outcome with two smaller building footprints, resulting in lower site coverage and taller buildings to increase site porosity and reduce density.

The 4:1 FAR broadly appears to provide an appropriate density for the Chelmsford precinct, as a higher FAR is likely to exacerbate these issues, and the 6 storey preferred maximum height was found to successfully encourage a mid-rise, human scaled neighbourhood.

ST1

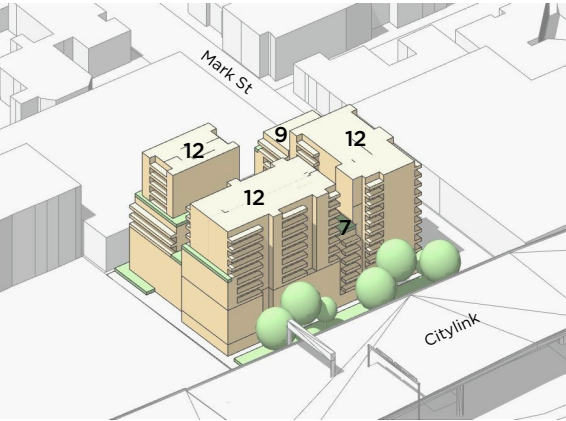
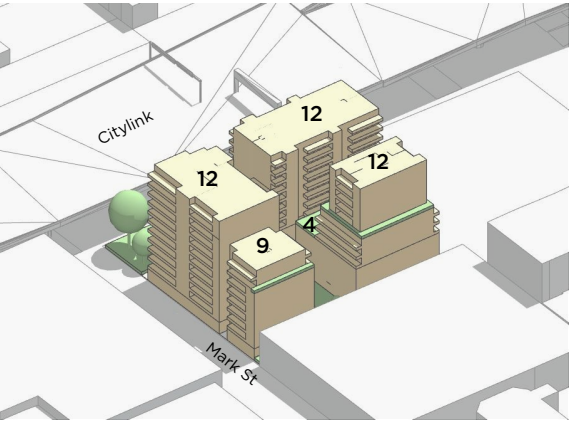
Stress Test 1 is an L-shaped perimeter block to the West and South with an additional building orientated North-South to the North-East corner of the site. Three of the buildings are taken to 12 storeys, with the western block shielding the rest of the site from the impact of the Citylink freeway. The massing steps down towards the eastern boundary. Floor plates in the Northern half of the building from Ground to Level 3 are allocated to commercial use.

Ground Floor Site Coverage — 54%  
Level 1 Site Coverage — 54%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 26% / 74%

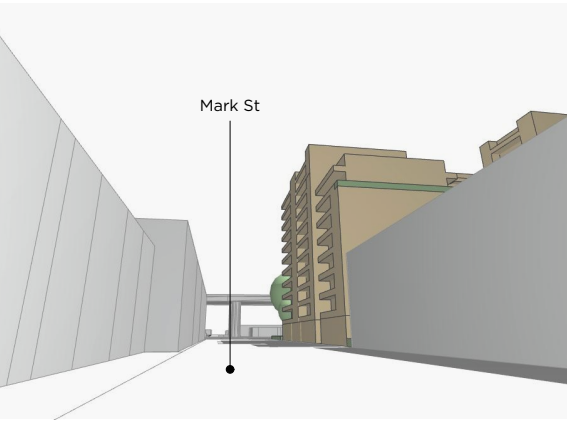
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type | Quantity |
|--------------------|--------------|-----------|----------|----------|
| Circ/BOH           | 4,855        | 27,057    | 1B       | 108      |
| Commercial NSA     | 5,704        |           | 2B       | 122      |
| Landscaping        | 1,870        |           | 3B       | 11       |
| Private Open Space | 2,420        |           |          |          |
| Residential NSA    | 16,498       |           |          |          |
| Rooftop            | 561          |           |          |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Mark St facing West & from under Citylink facing South



Schedule of Areas by Level

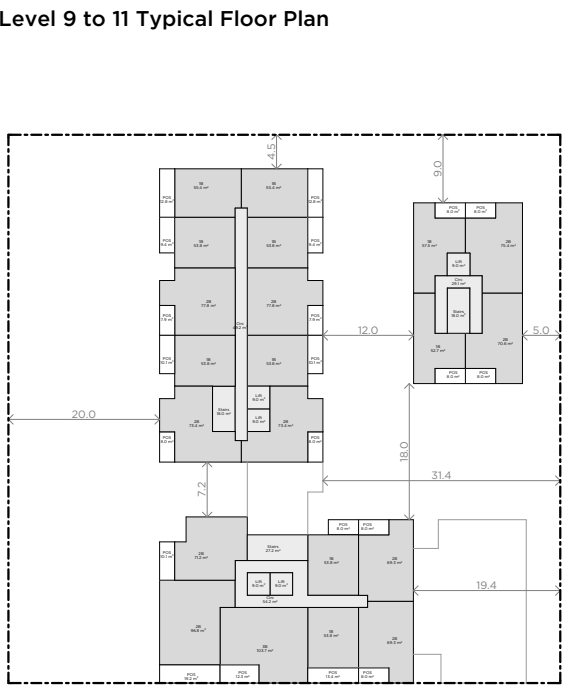
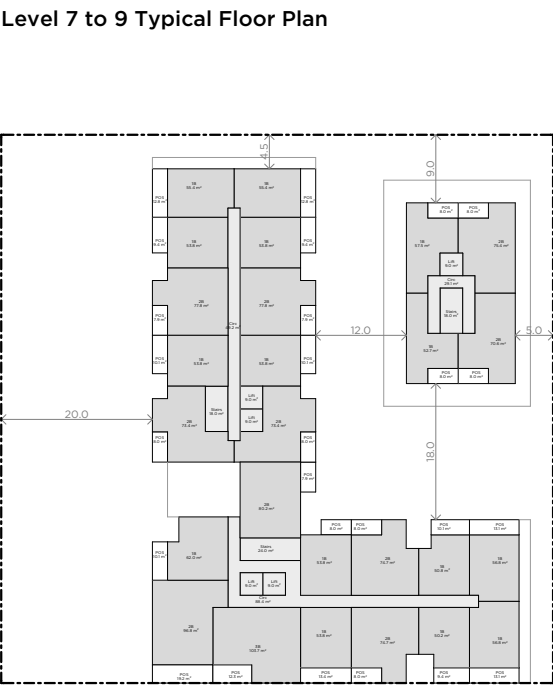
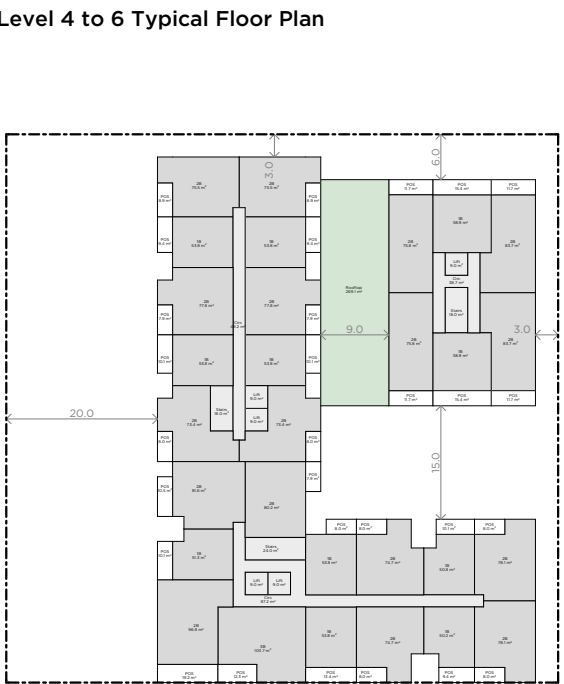
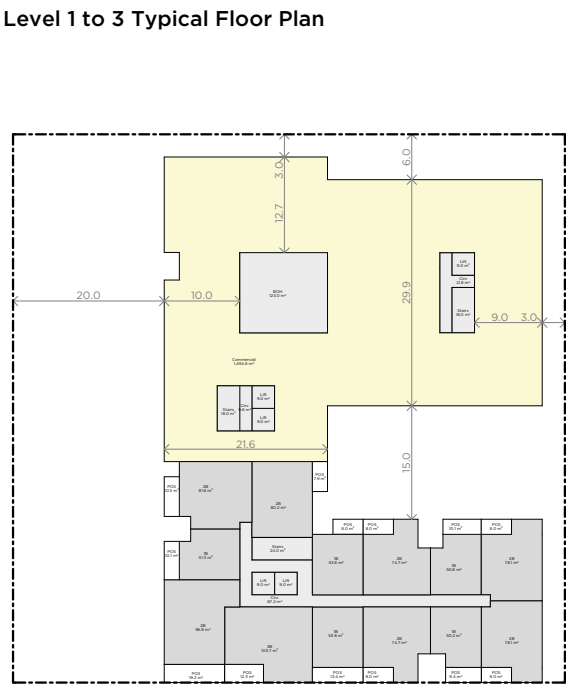
|                    |       |                    |       |                    |       |                    |       |
|--------------------|-------|--------------------|-------|--------------------|-------|--------------------|-------|
| Ground             |       | Level 3            |       | Level 6            |       | Level 9            |       |
| Circ/BOH           | 1,712 | Circ/BOH           | 347   | Circ/BOH           | 280   | Circ/BOH           | 240   |
| Commercial NSA     | 1,219 | Commercial NSA     | 1,495 | Private Open Space | 297   | Private Open Space | 206   |
| Landscaping        | 1,870 | Private Open Space | 131   | Residential NSA    | 2,035 | Residential NSA    | 1,402 |
| Level 1            |       | Residential NSA    | 929   | Level 7            |       | Level 10           |       |
| Circ/BOH           | 347   | Level 4            |       | Circ/BOH           | 271   | Circ/BOH           | 240   |
| Commercial NSA     | 1,495 | Circ/BOH           | 280   | Private Open Space | 259   | Private Open Space | 206   |
| Private Open Space | 131   | Private Open Space | 297   | Residential NSA    | 1,700 | Residential NSA    | 1,402 |
| Residential NSA    | 929   | Residential NSA    | 2,035 | Rooftop            | 292   | Level 11           |       |
| Level 2            |       | Rooftop            | 269   | Level 8            |       | Circ/BOH           | 240   |
| Circ/BOH           | 347   | Level 5            |       | Circ/BOH           | 271   | Private Open Space | 206   |
| Commercial NSA     | 1,495 | Circ/BOH           | 280   | Private Open Space | 259   | Residential NSA    | 1,402 |
| Private Open Space | 131   | Private Open Space | 297   | Residential NSA    | 1,700 |                    |       |
| Residential NSA    | 929   | Residential NSA    | 2,035 |                    |       |                    |       |

ST1

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA



ST1

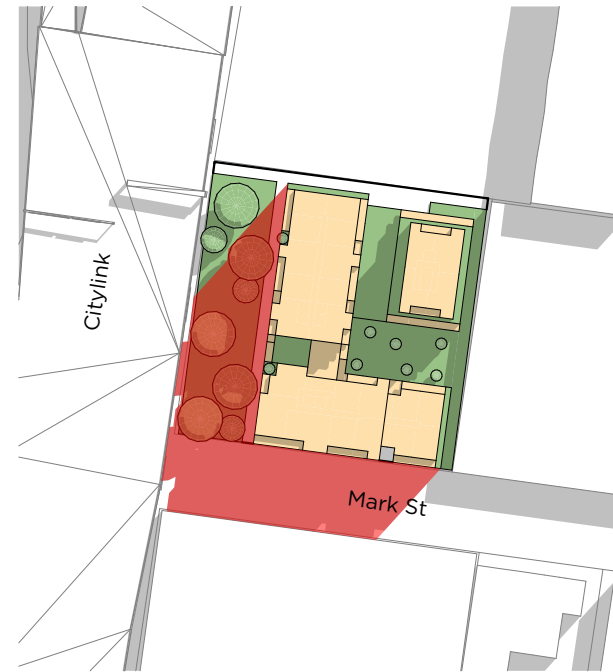
## Shadow Diagrams

Scale — 1:2000

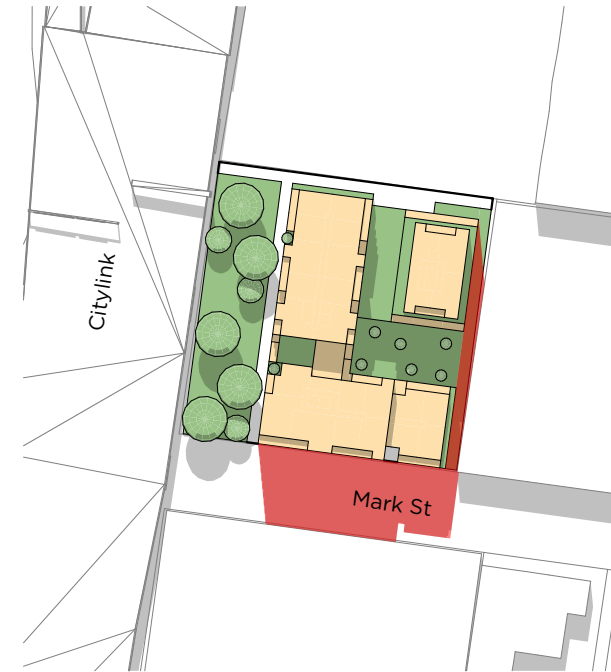
North — 

The contiguous form of Stress Test 1 (5:1) and predominantly 12 storey building height to achieve the higher FAR results in continuous shade directly South to Mark St.

10AM September 22



12PM September 22

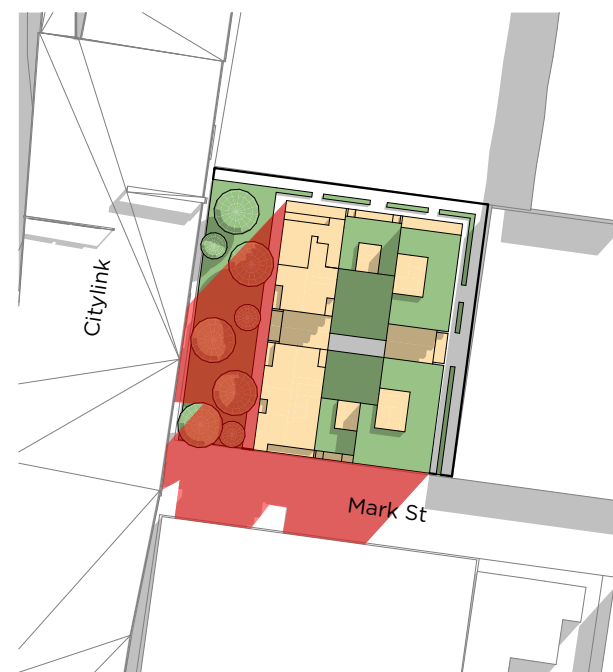


2PM September 22



### Phase 1 B1 Option A Shadow Diagrams for comparison

10AM September 22



12PM September 22



2PM September 22



ST2

Stress Test 2 is an L-shaped perimeter block to the West and South with an additional building orientated North-South to the North-East corner of the site. Two of the buildings are taken to 12 storeys, with the western block shielding the rest of the site from the impact of the Citylink freeway. The massing steps down towards the eastern boundary. Floor plates in the Northern half of the building from Ground to Level 3 are allocated to commercial use.

Ground Floor Site Coverage — 50%  
Level 1 Site Coverage — 50%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 27% / 73%

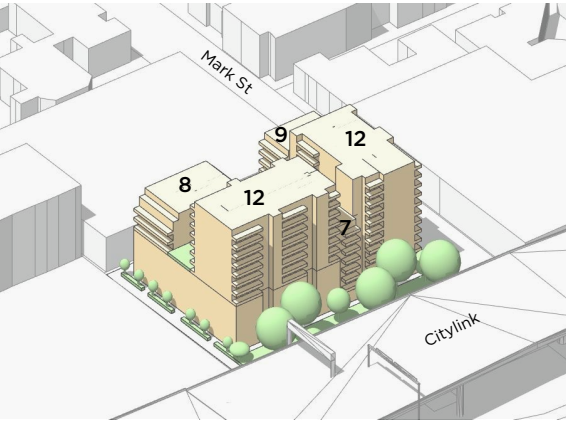
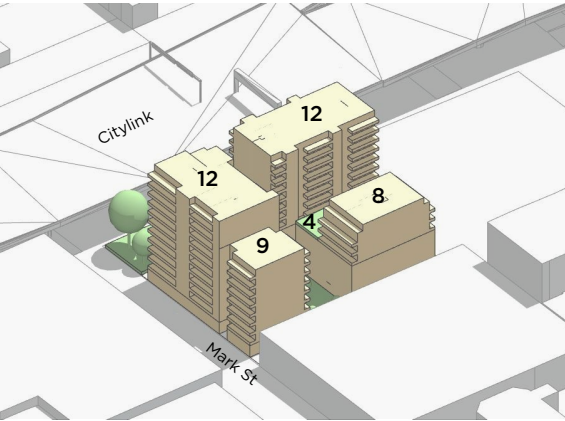
Summary of Areas

| Area Type          | Area (sq. m) |
|--------------------|--------------|
| Circ/BOH           | 4,210        |
| Commercial NSA     | 5,482        |
| Landscaping        | 1,654        |
| Private Open Space | 2,302        |
| Residential NSA    | 14,633       |
| Rooftop            | 314          |

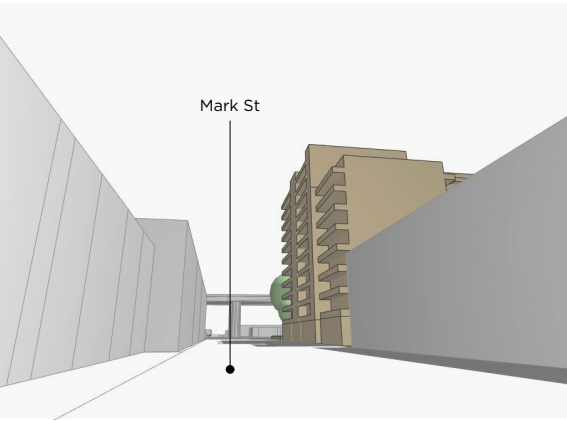
| Total GFA |
|-----------|
| 24,325    |

| Apt Type | Quantity |
|----------|----------|
| 1B       | 84       |
| 2B       | 122      |
| 3B       | 11       |

South East and North West Axonometric Diagrams



Street View Perspectives: Mark St facing West & from under Citylink facing South



Schedule of Areas by Level

| Ground             |       |
|--------------------|-------|
| Circ/BOH           | 1,489 |
| Commercial NSA     | 1,267 |
| Landscaping        | 1,654 |
| Level 1            |       |
| Circ/BOH           | 305   |
| Commercial NSA     | 1,405 |
| Private Open Space | 139   |
| Residential NSA    | 877   |
| Level 2            |       |
| Circ/BOH           | 305   |
| Commercial NSA     | 1,405 |
| Private Open Space | 139   |
| Residential NSA    | 877   |

| Level 3            |       |
|--------------------|-------|
| Circ/BOH           | 305   |
| Commercial NSA     | 1,405 |
| Private Open Space | 139   |
| Residential NSA    | 877   |
| Level 4            |       |
| Circ/BOH           | 265   |
| Private Open Space | 293   |
| Residential NSA    | 1,839 |
| Rooftop            | 314   |
| Level 5            |       |
| Circ/BOH           | 265   |
| Private Open Space | 293   |
| Residential NSA    | 1,839 |

| Level 6            |       |
|--------------------|-------|
| Circ/BOH           | 265   |
| Private Open Space | 293   |
| Residential NSA    | 1,839 |
| Level 7            |       |
| Circ/BOH           | 252   |
| Private Open Space | 291   |
| Residential NSA    | 1,789 |
| Level 8            |       |
| Circ/BOH           | 213   |
| Private Open Space | 211   |
| Residential NSA    | 1,330 |

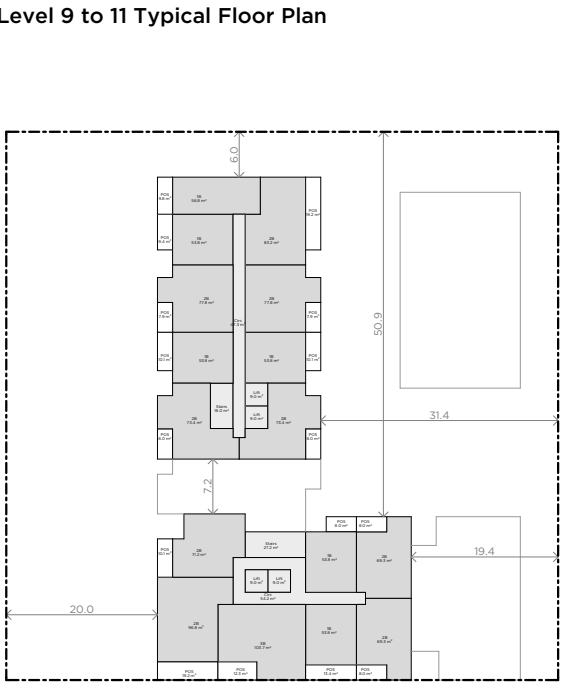
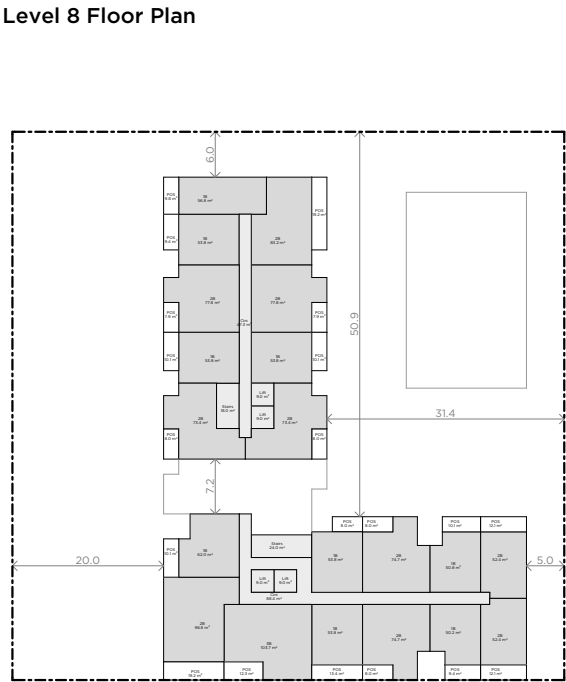
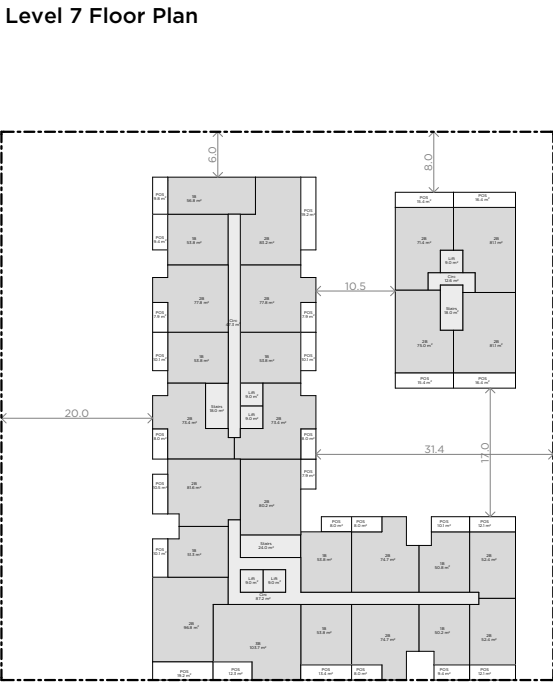
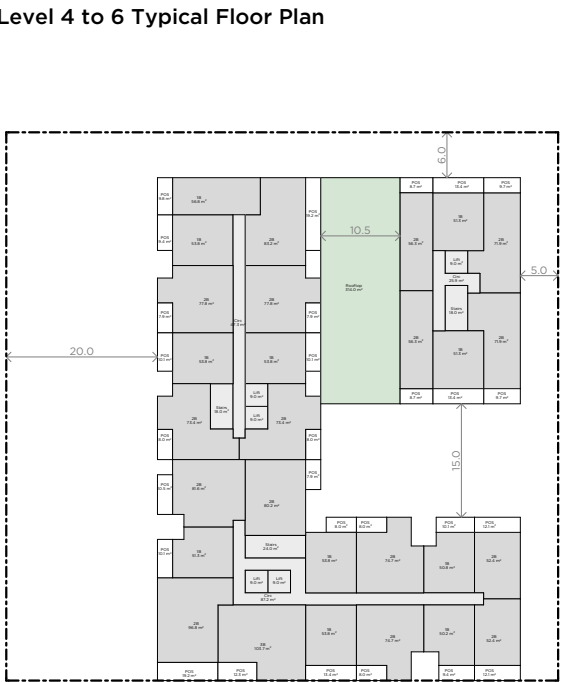
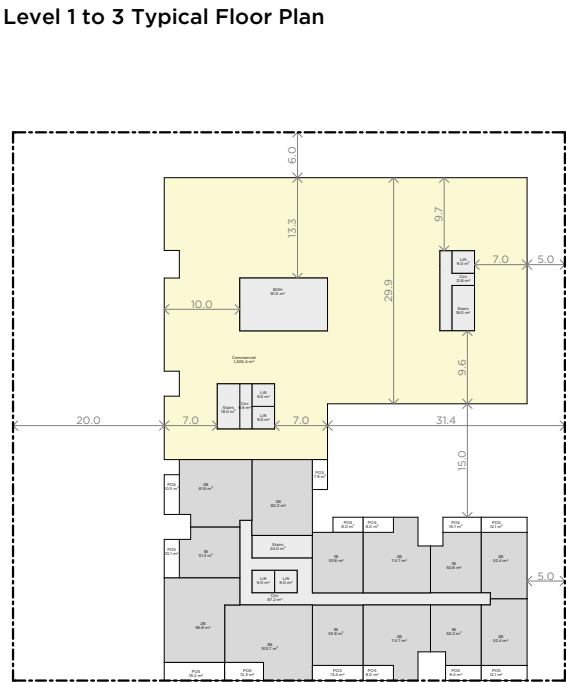
| Level 9            |       |
|--------------------|-------|
| Circ/BOH           | 182   |
| Private Open Space | 168   |
| Residential NSA    | 1,122 |
| Level 10           |       |
| Circ/BOH           | 182   |
| Private Open Space | 168   |
| Residential NSA    | 1,122 |
| Level 11           |       |
| Circ/BOH           | 182   |
| Private Open Space | 168   |
| Residential NSA    | 1,122 |

ST2

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA



ST2

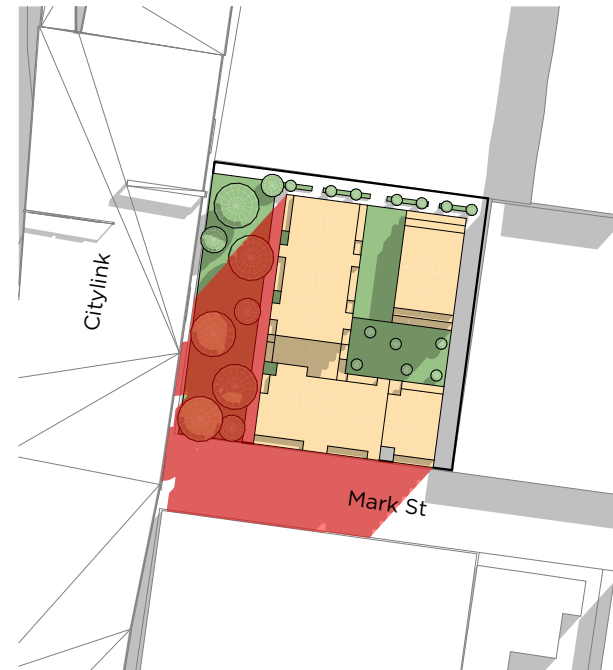
## Shadow Diagrams

Scale — 1:2000

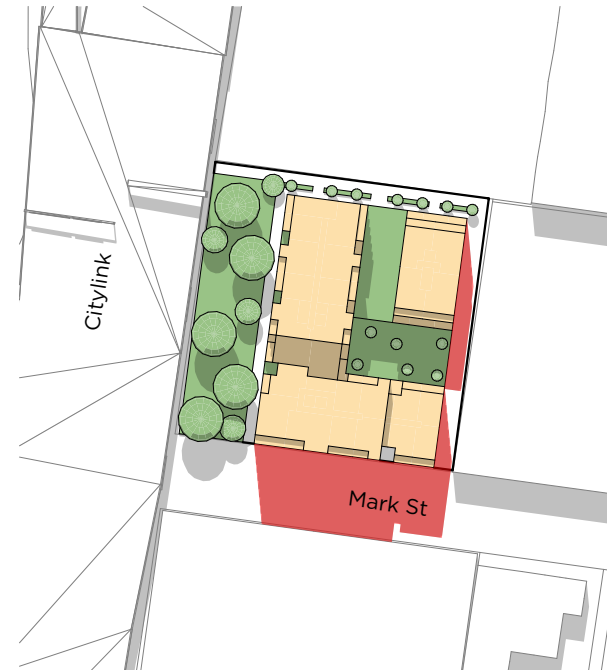
North — 

The contiguous form, while it steps in height, results in continuous shade directly South to Mark St, particular from 12PM onwards. Nonetheless, shadows cast by Stress Test 2 on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density.

10AM September 22



12PM September 22



2PM September 22



### Phase 1 B1 Option A Shadow Diagrams for comparison

10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | ST1 5:1 |                                                                                                                               | ST2 4.5:1 |                                                                                                                               |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✗       | Does not positively contribute to the vision of the precinct due to the density and height of the proposed outcome.           | ✓         | Demonstrates response to character through massing in alignment with taller built form vision for Boundary precinct.          |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ⚠       | Taller built form predominantly at 12 storeys, resulting in a high density development to meet height controls.               | ✓         | Taller built form up to 12 storeys in specified area.                                                                         |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A     | Existing building not of heritage or character significance.                                                                  | N/A       | Existing building not of heritage or character significance.                                                                  |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓       | Setback from Citylink, address facing Mark St, and setbacks for new street network provided.                                  | ✓         | Setback from Citylink, address facing Mark St, and setbacks for new street network provided.                                  |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ⚠       | Heights do no vary significantly (9-12 storeys) in response to Citylink and context, and could be varied more (6-12 storeys). | ⚠         | Heights do no vary significantly (8-12 storeys) in response to Citylink and context, and could be varied more (6-12 storeys). |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ✓       | Area is divided into 4 conjoined but articulated buildings.                                                                   | ✓         | Area is divided into 4 conjoined but articulated buildings.                                                                   |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | ✗       | Compromised internal amenity with primary outlook building separation at 9m (12m preferred)                                   | ✗         | Compromised internal amenity with primary outlook building separation at 10.5m (12m preferred)                                |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ✗       | 3m eastern and northern setbacks on lower levels reduces site permeability and opportunities for new streets.                 | ✓         | New street network provided within site with opportunity for connection through block on adjacent sites.                      |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✗       | BOH reliant on primary access from Mark Street due to 3m side and rear setbacks reducing opportunity for activation.          | ✓         | Commercial use located facing Mark St, Citylink setback, Northern setback, and Eastern setback to activate edges.             |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✗       | 3m Northern and Eastern setbacks do not provide high standard of internal amenity or equitable development.                   | ⚠         | Potentially compromised amenity where primary outlook is 8m from North boundary (9m preferred, for 18m mirrored).             |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | N/A     | Site is not in close proximity to stable residential or heritage precincts.                                                   | N/A       | Site is not in close proximity to stable residential or heritage precincts.                                                   |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A     | Site does not directly adjoin residential or heritage buildings.                                                              | N/A       | Site does not directly adjoin residential or heritage buildings.                                                              |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ✓       | Taller form directly on Mark St does not overshadow roof of sites immediately South in testing.                               | ✓         | Taller form directly on Mark St does not overshadow roof of sites immediately South in testing.                               |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A     | Existing buildings not of heritage or character significance.                                                                 | N/A       | Existing buildings not of heritage or character significance.                                                                 |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A     | Not in proximity to reserves to overshadow.                                                                                   | N/A       | Not in proximity to reserves to overshadow.                                                                                   |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✗       | Insufficient setbacks to the North and East with 12 storey buildings reduces amenity in public and private realm.             | ⚠         | Sufficient setbacks to the north and west, however sheer, 8-12 storey buildings may reduce public realm amenity.              |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓       | Adequate setbacks from side and rear boundaries where primary outlook is proposed.                                            | ✓         | Adequate setbacks from side and rear boundaries where primary outlook is proposed.                                            |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓       | Commercial areas on ground flexible to division into fine grain tenancies.                                                    | ✓         | Commercial areas on ground flexible to division into fine grain tenancies.                                                    |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓       | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       | ✓         | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓       | Uncovered areas required for building separation provide space for deep soil.                                                 | ✓         | Uncovered areas required for building separation provide space for deep soil.                                                 |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✗       | BOH reliant on primary access from Mark Street due to 3m side and rear setbacks reducing opportunity for activation.          | ✓         | Majority of frontages to Mark St accommodate active commercial use with BOH accessed within site.                             |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓       | Massing facilitates best practice with detailed design.                                                                       | ✓         | Massing facilitates best practice with detailed design.                                                                       |

## ST1 (5:1) Conclusion & Recommendations

This sensitivity testing demonstrates both increased building heights and reduced opportunities for streetscape articulation in applying a 5:1 FAR to this site compared to Phase 1 testing.

At 5:1, some of the applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020) can be met, but most of them can't be met. Notably, providing 'a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky' and ensuring 'development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development' cannot be met. This occurs because the site must be divided into multiple buildings for building separation and outlook and as a result of the 20m Citylink setback. As a result, the side and rear setbacks from neighbouring properties are insufficient to provide site permeability or high standards of internal amenity.

At 4:1, all of the Design Recommendations can be met. The 5:1 FAR results in a massing outcome that is of high density and has substantial built form at 12 storeys. While some variation in building heights was achieved, the range is limited at this FAR due to the 20m setback required on this site. This outcome provides less opportunity for street articulation and is likely to result in poor amenity to the surrounding context with regard to overshadowing, daylight, wind impacts and openness to the sky. This is not a desirable outcome for this precinct.

## ST2 (4.5:1) Conclusion & Recommendations

This sensitivity testing demonstrates both increased built form resulting in density and increased building heights in applying a 4.5:1 FAR to this site compared to Phase 1 testing.

At 4.5:1, some of the applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020) can be met, but most of them can't be met to a satisfactory level. Notably, ensuring 'sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overshadowing' cannot be met. Testing demonstrated that high quality internal amenity would likely be compromised as a result of increased built form resulting in insufficient building separation and outlook.

At 4:1, all of the Design Recommendations can be met. The 4.5:1 FAR results in a massing outcome that is of high density and has substantial built form at 12 storeys. While some variation in building heights was achieved, the range is limited at this FAR due to the 20m setback required on this site. The testing outcome demonstrates that the higher FAR results in inadequate transition of scale to existing buildings, poor internal amenity, and poor amenity to the surrounding context with regard to overshadowing, daylight, and openness to the sky. This is not a desirable outcome for this precinct.

ST1

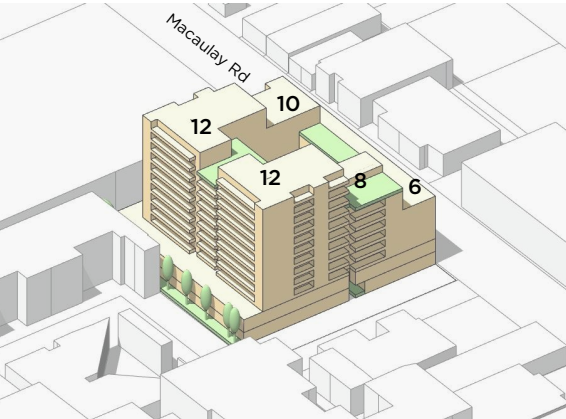
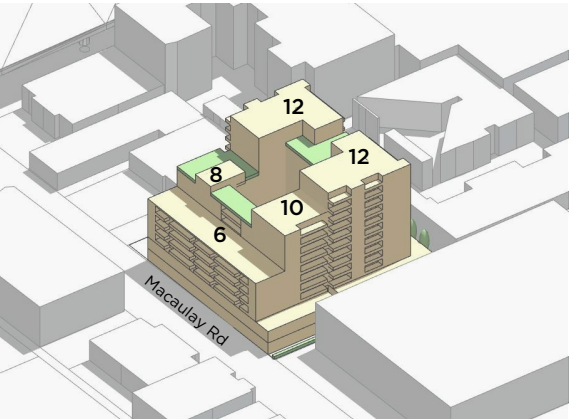
Stress Test 1 is a perimeter block setback from the West, North and East to orient all primary outlooks external to the site. The North-West and North-East corners are taken to 12 storeys and the massing steps down to 6 storeys at the Macaulay Rd interface to reduce the impacts of shading to the South.

Ground Floor Site Coverage — 63%  
Level 1 Site Coverage — 69%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 22% / 78%

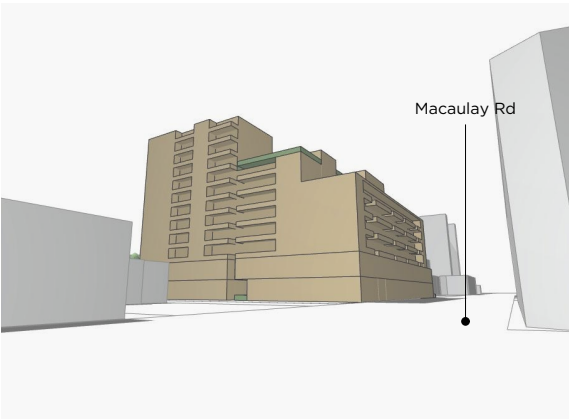
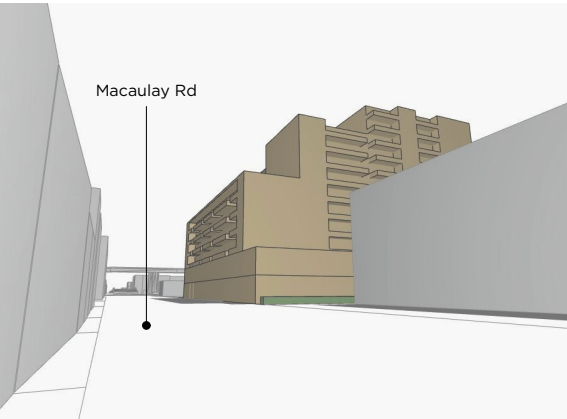
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type | Quantity |
|--------------------|--------------|-----------|----------|----------|
| Circ/BOH           | 4,506        | 22,623    | 1B       | 60       |
| Commercial NSA     | 4,025        |           | 2B       | 86       |
| Landscaping        | 703          |           | 3B       | 34       |
| Private Open Space | 1,998        |           |          |          |
| Residential NSA    | 14,092       |           |          |          |
| Rooftop            | 515          |           |          |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Macaulay Rd facing West & Macaulay Rd facing East



Schedule of Areas by Level

| Ground                | Level 4               | Level 8               |
|-----------------------|-----------------------|-----------------------|
| Circ/BOH1,787         | Circ/BOH278           | Circ/BOH296           |
| Commercial NSA1,178   | Private Open Space258 | Private Open Space161 |
| Landscaping703        | Residential NSA1,880  | Residential NSA1,122  |
| Level 1               | Level 5               | Rooftop311            |
| Circ/BOH268           | Circ/BOH278           | Level 9               |
| Commercial NSA2,847   | Private Open Space258 | Circ/BOH207           |
| Level 2               | Residential NSA1,880  | Private Open Space161 |
| Circ/BOH278           | Level 6               | Residential NSA1,122  |
| Private Open Space258 | Circ/BOH274           | Level 10              |
| Residential NSA1,880  | Private Open Space202 | Circ/BOH144           |
| Level 3               | Residential NSA1,412  | Private Open Space120 |
| Circ/BOH278           | Level 7               | Residential NSA752    |
| Private Open Space258 | Circ/BOH274           | Rooftop204            |
| Residential NSA1,880  | Private Open Space202 | Level 11              |
|                       | Residential NSA1,412  | Circ/BOH144           |
|                       |                       | Private Open Space120 |
|                       |                       | Residential NSA752    |

ST1

## Plans

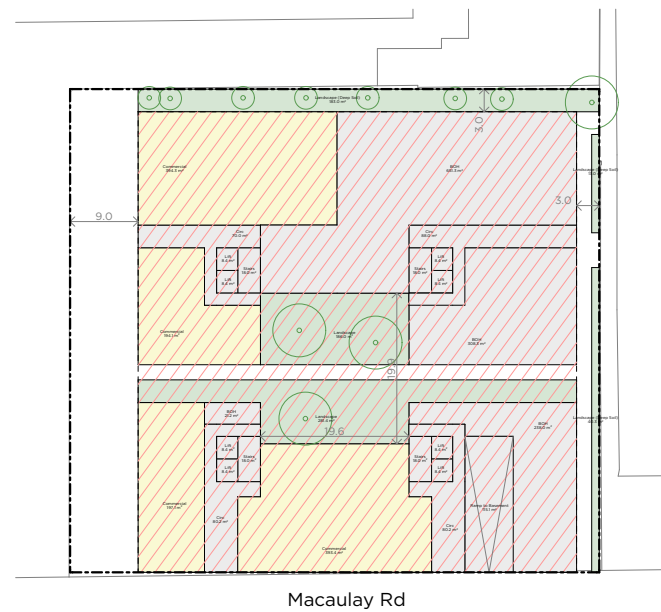
Scale — 1:1000

North — 

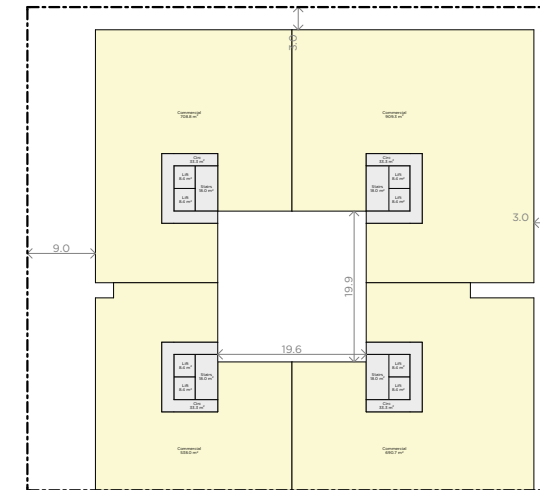
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

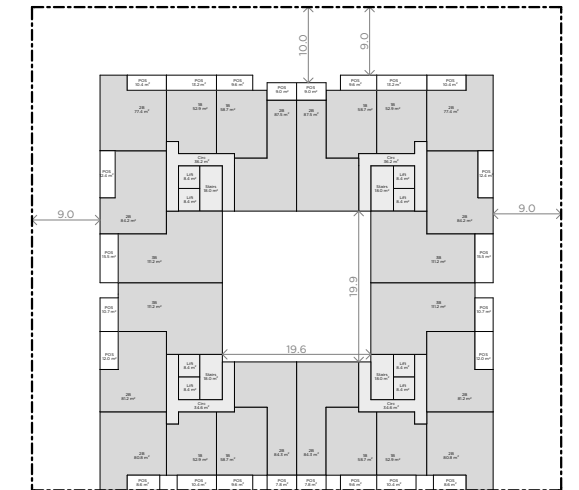
Ground Floor Plan



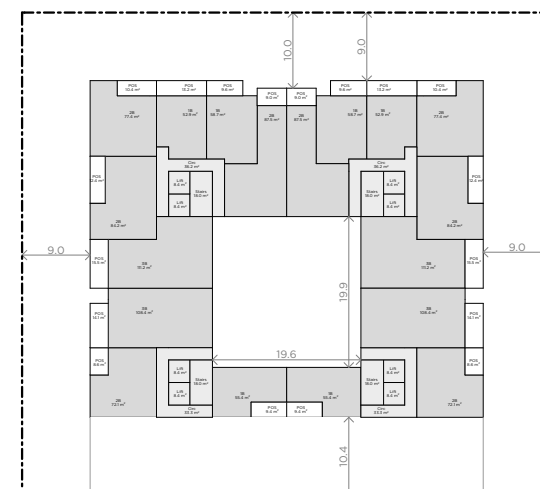
Level 1 Floor Plan



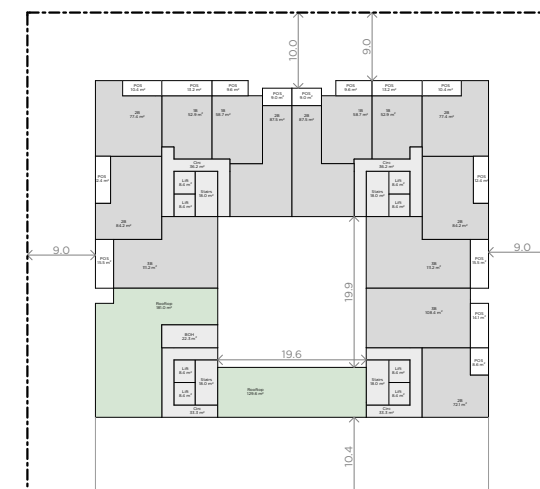
Level 2 to 5 Floor Plan



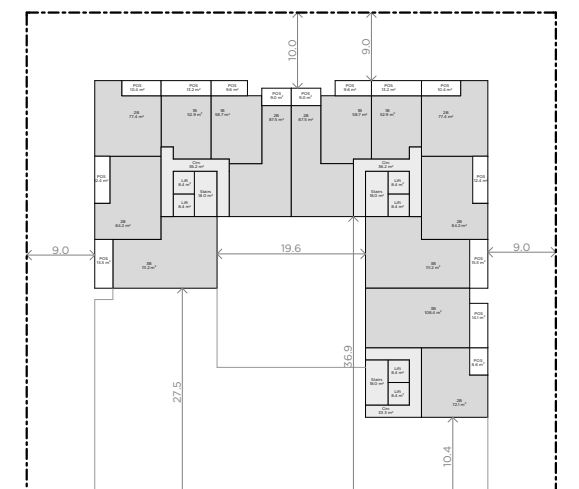
Level 6 to 7 Typical Floor Plan



Level 8 Floor Plan



Level 9 Floor Plan



ST1

## Plans

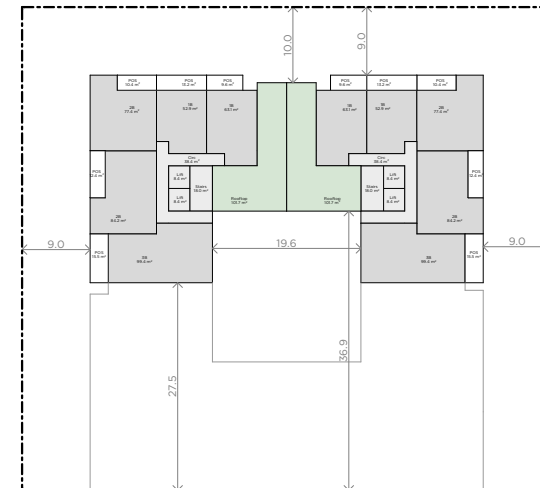
Scale — 1:1000

North — 

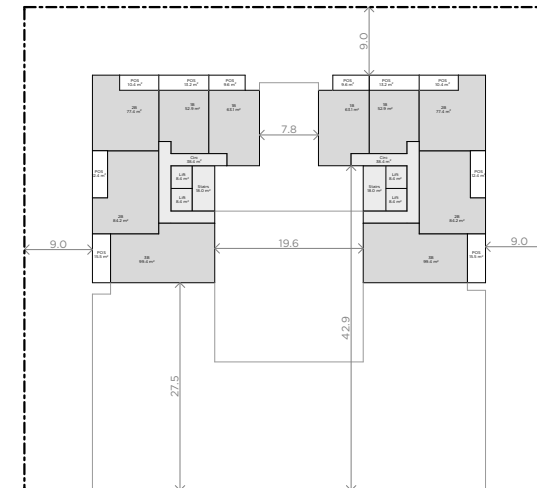
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

Level 10 Floor Plan



Level 11 Floor Plan



ST1

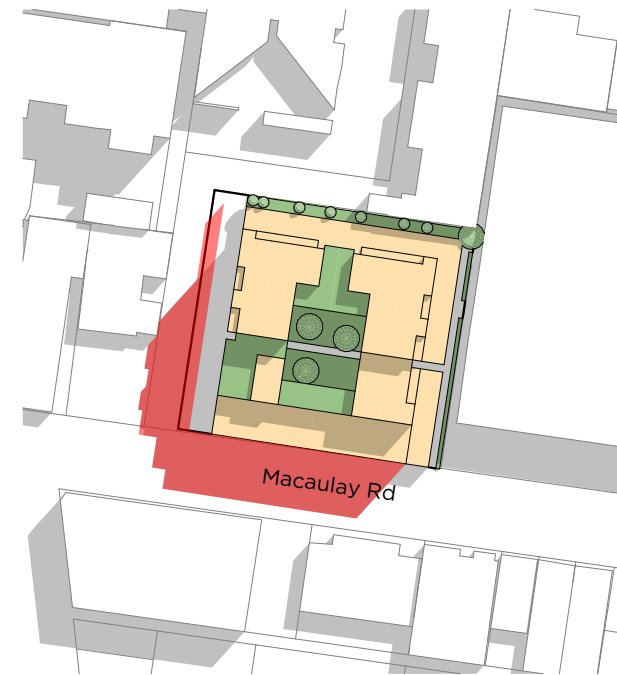
## Shadow Diagrams

Scale — 1:2000

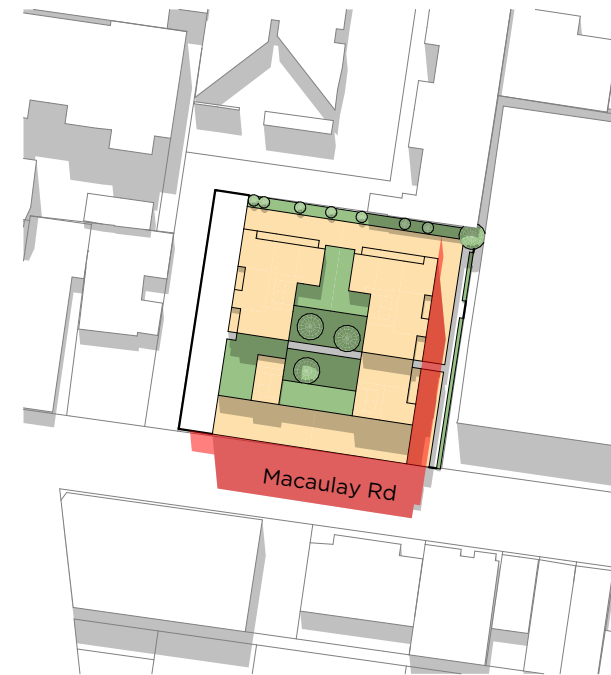
North — 

Shadows cast by Stress Test 1 (5:1 FAR) on adjoining streets and sites are considered acceptable as the design makes particular effort to setback mass from the South to limit the extent of overshadowing. However, in reducing impact of overshadowing to the street, internal amenity to the light court is compromised due to the building mass to the rear of the site.

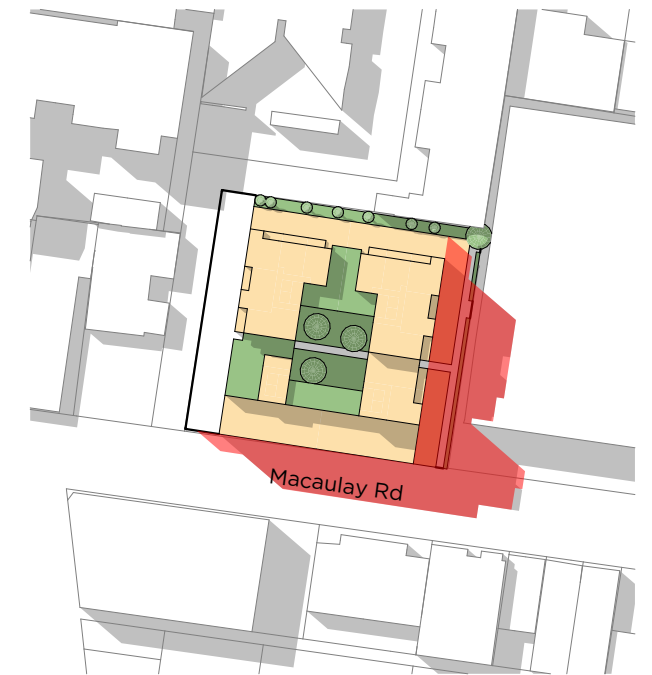
10AM September 22



12PM September 22

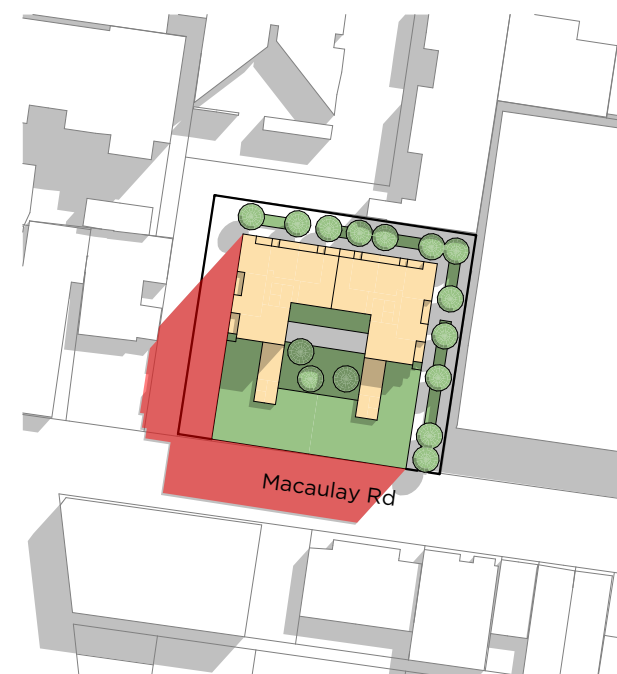


2PM September 22

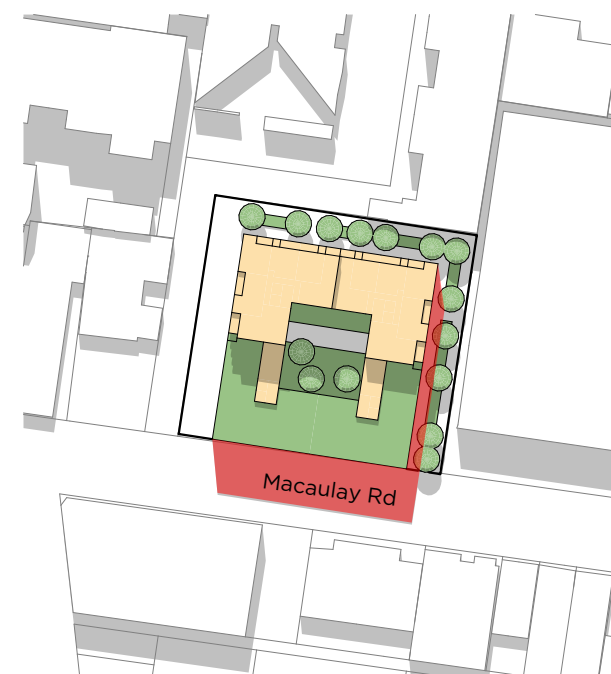


### B2 Option A Shadow Diagrams for comparison

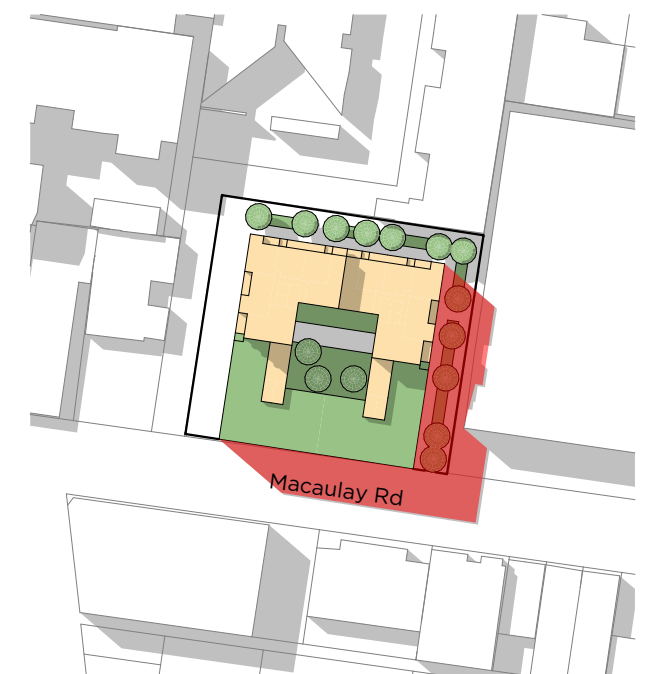
10AM September 22



12PM September 22



2PM September 22



ST2

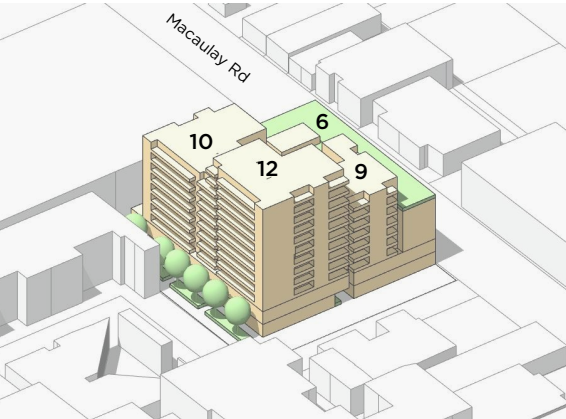
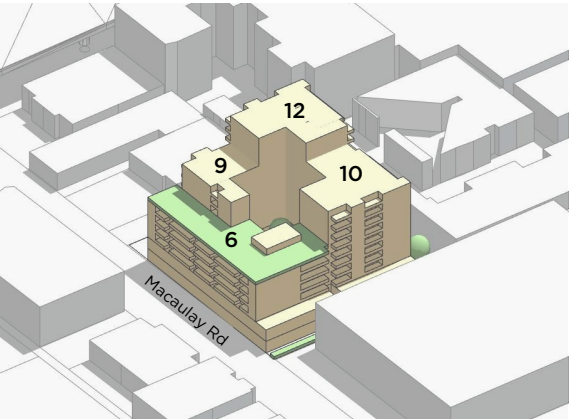
Stress Test 2 is a perimeter block setback from the West, North and East to orient all primary outlooks external to the site. The North-West and North-East corners are taken to 12 storeys and the massing steps down to 6 storeys at the Macaulay Rd interface to reduce the impacts of shading to the South.

Ground Floor Site Coverage — 56%  
Level 1 Site Coverage — 61%  
Total Building Height — 12 storeys  
Commercial NSA / Residential NSA — 21% / 79%

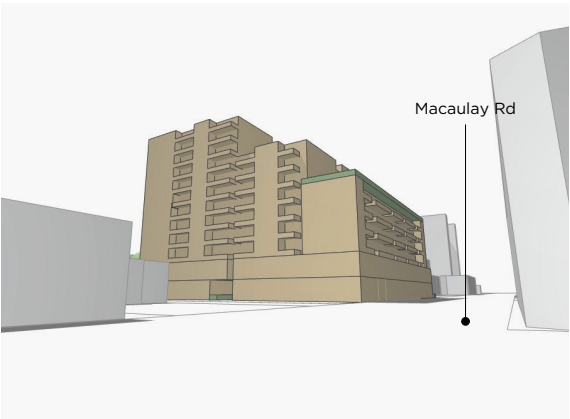
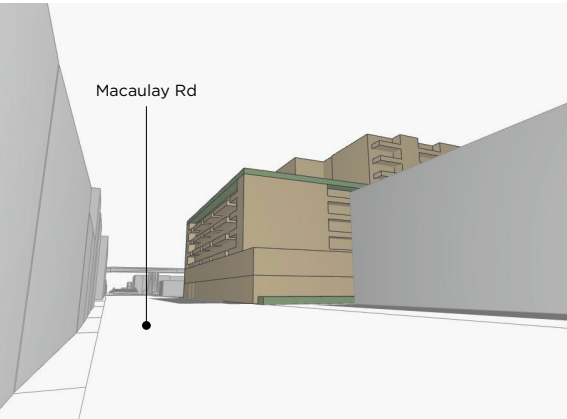
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type | Quantity |
|--------------------|--------------|-----------|----------|----------|
| Circ/BOH           | 3,847        | 20,269    | 1B       | 55       |
| Commercial NSA     | 3,477        |           | 2B       | 81       |
| Landscaping        | 655          |           | 3B       | 29       |
| Private Open Space | 1,782        |           |          |          |
| Residential NSA    | 12,945       |           |          |          |
| Rooftop            | 787          |           |          |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Macaulay Rd facing West & Macaulay Rd facing East



Schedule of Areas by Level

| Ground                | Level 4               | Level 8               |
|-----------------------|-----------------------|-----------------------|
| Circ/BOH1,477         | Circ/BOH278           | Circ/BOH207           |
| Commercial NSA1,034   | Private Open Space254 | Private Open Space164 |
| Landscaping655        | Residential NSA1,880  | Residential NSA1,179  |
| Level 1               | Level 5               | Level 9               |
| Circ/BOH268           | Circ/BOH278           | Circ/BOH140           |
| Commercial NSA2,443   | Private Open Space254 | Private Open Space136 |
| Level 2               | Level 6               | Level 10              |
| Circ/BOH278           | Circ/BOH296           | Circ/BOH70            |
| Private Open Space254 | Private Open Space164 | Private Open Space69  |
| Residential NSA1,880  | Residential NSA1,183  | Residential NSA471    |
| Level 3               | Level 7               | Level 11              |
| Circ/BOH278           | Circ/BOH207           | Circ/BOH70            |
| Private Open Space254 | Private Open Space164 | Private Open Space69  |
| Residential NSA1,880  | Residential NSA1,179  | Residential NSA471    |

ST2

## Plans

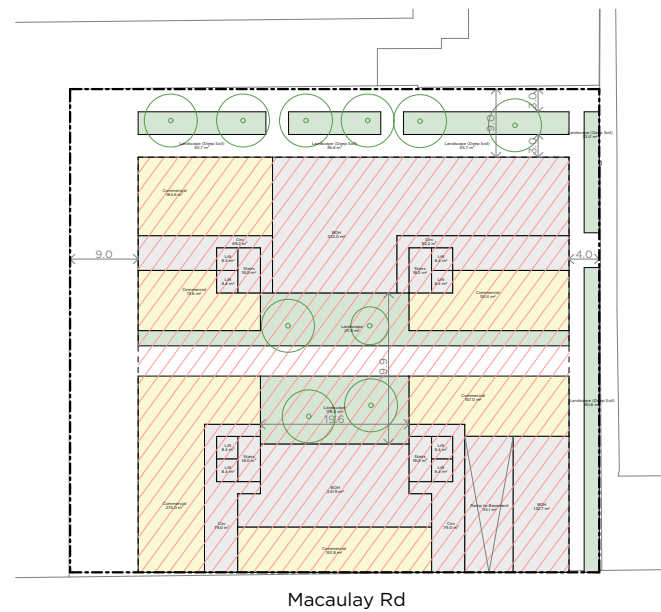
Scale — 1:1000

North — 

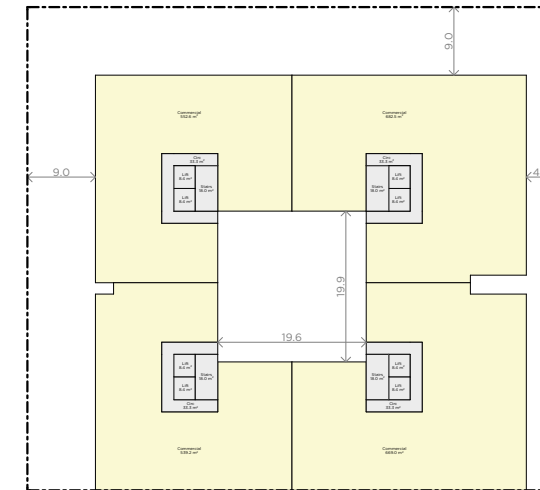
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

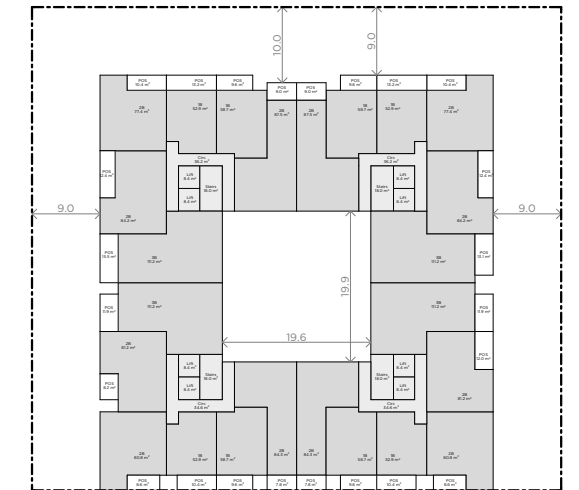
Ground Floor Plan



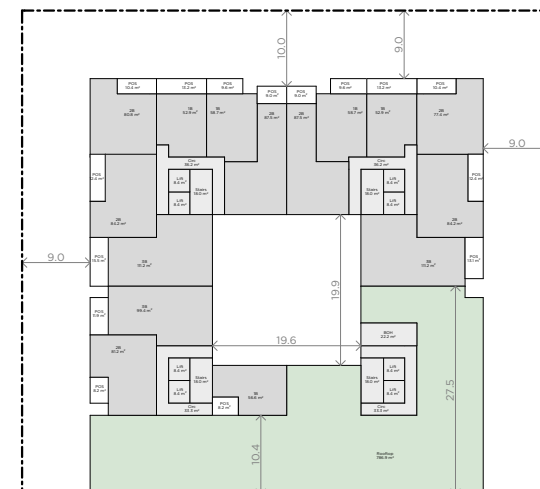
Level 1 Floor Plan



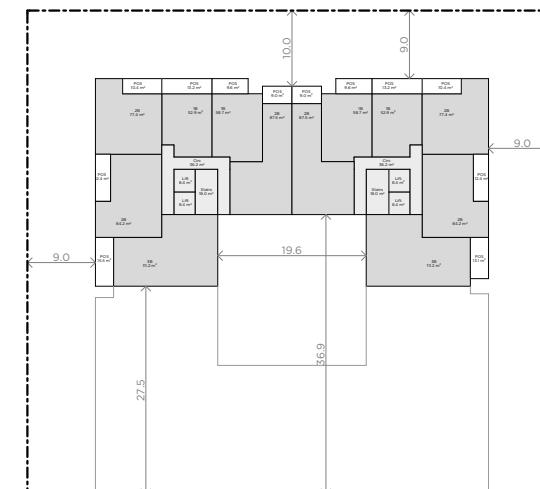
Level 2 to 5 Floor Plan



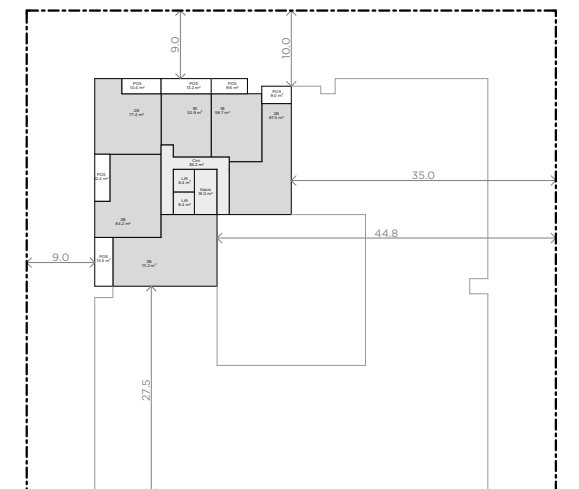
Level 6 to 8 Typical Floor Plan



Level 8 to 9 Typical Floor Plan



Level 10 to 11 Typical Floor Plan



ST2

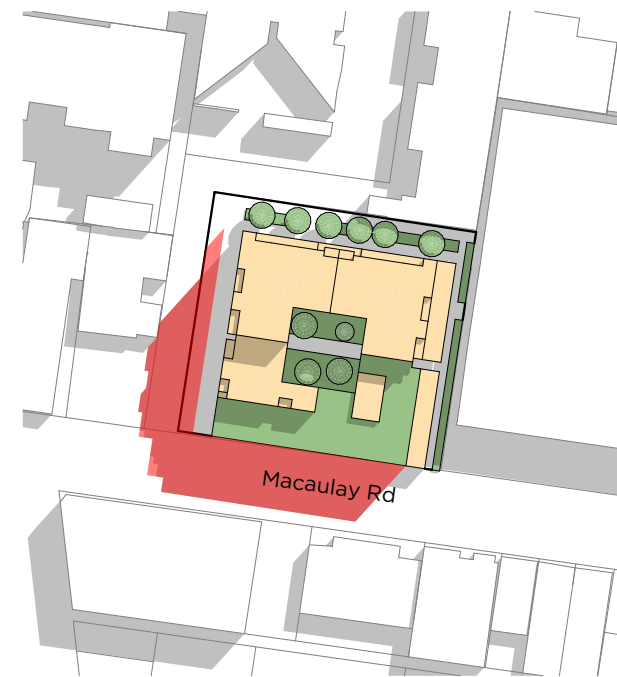
## Shadow Diagrams

Scale — 1:2000

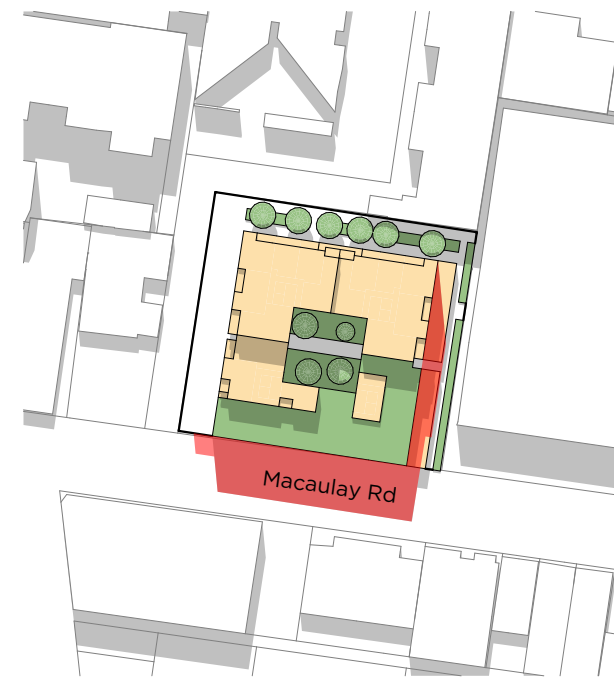
North — 

Shadows cast by Stress Test 2 (4.5:1 FAR) on adjoining streets and sites are considered acceptable as the design makes particular effort to setback mass from the South to limit the extent of overshadowing. However, in reducing impact of overshadowing to the street, internal amenity to the light court is compromised due to the building mass to the north of the courtyard.

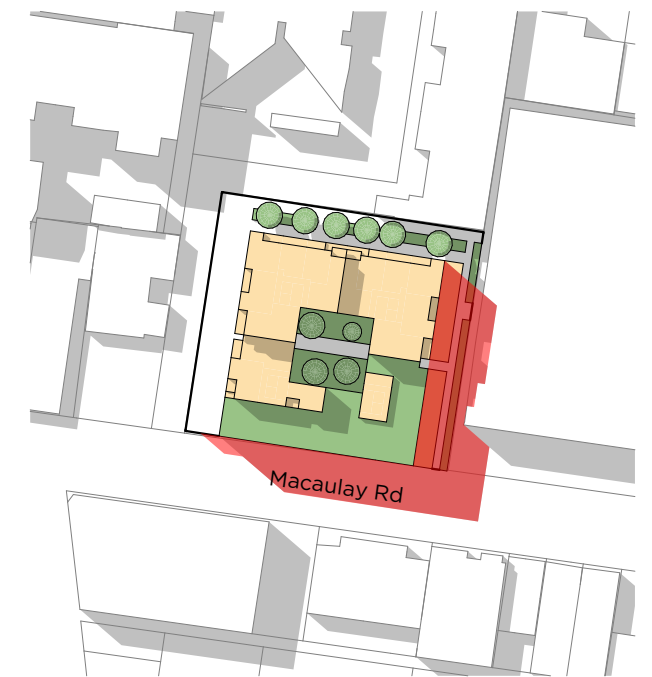
10AM September 22



12PM September 22

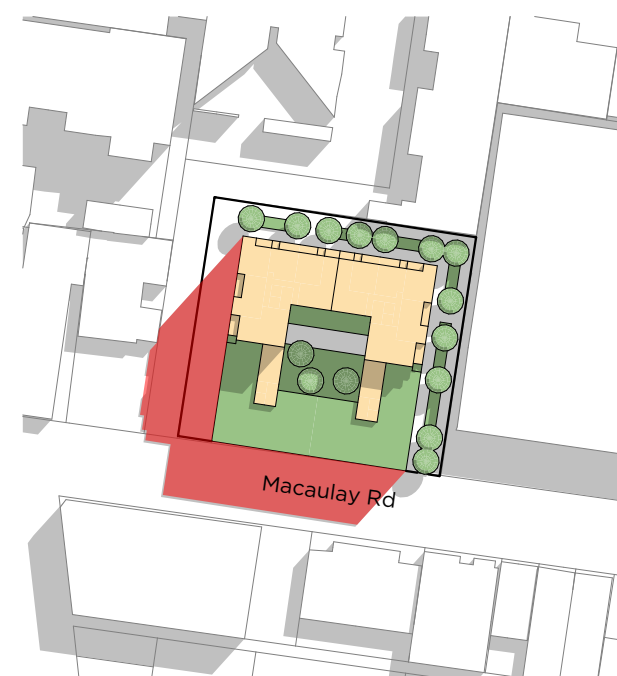


2PM September 22

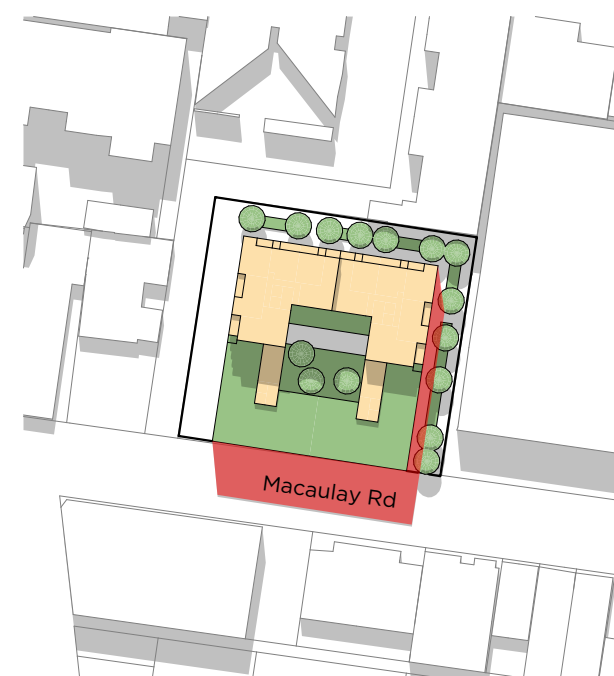


### B2 Option A Shadow Diagrams for comparison

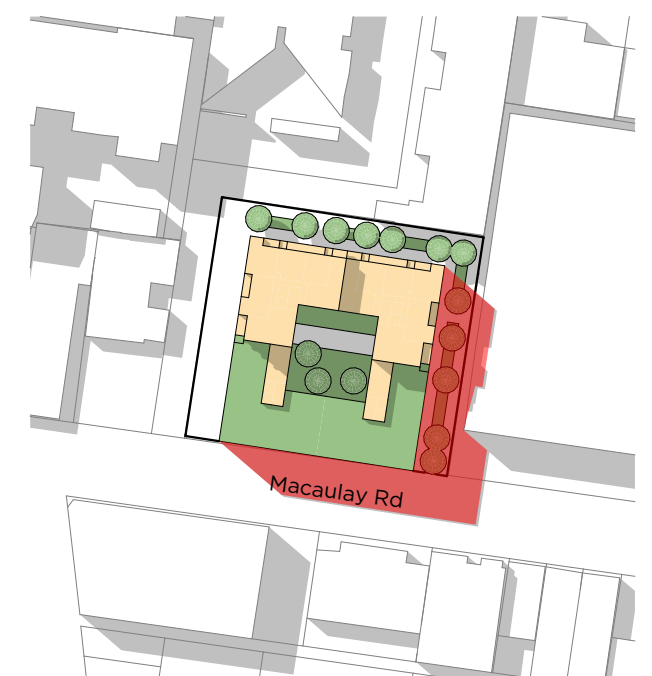
10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | ST1 - 5:1 |                                                                                                                         | ST2 - 4.5:1 |                                                                                                                         |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✗         | Does not positively contribute to the vision of the precinct due to the density and height of the proposed outcome.     | ✓           | Demonstrates response to character through massing in alignment with taller built form vision for Boundary precinct.    |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ⚠         | Taller built form up to 12 storeys in specified area, resulting in a high density development to meet height controls.  | ✓           | Taller built form up to 12 storeys in specified area.                                                                   |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A       | Existing buildings not of heritage or character significance.                                                           | N/A         | Existing buildings not of heritage or character significance.                                                           |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓         | Primary address facing Macaulay Rd, and setbacks for new street network provided.                                       | ✓           | Primary address facing Macaulay Rd, and setbacks for new street network provided.                                       |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ⚠         | Building heights vary from 6 to 12 storeys in response to context but limited opportunity for articulation.             | ✓           | Building heights vary from 6 to 12 storeys in response to context.                                                      |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ⚠         | Articulation of distinct building forms compromised by density to achieve 5:1 FAR within preferred height.              | ✓           | Area is divided into 5 conjoined but articulated buildings.                                                             |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | ✓         | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys.   | ✓           | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys.   |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ✗         | Insufficient western and northern setbacks on lower levels reduces site permeability and opportunities for new streets. | ✗           | Insufficient western and northern setbacks on lower levels reduces site permeability and opportunities for new streets. |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓         | Commercial use located on Macaulay Rd interface and adjacent to new streets.                                            | ✓           | Commercial use located on Macaulay Rd interface and adjacent to new streets.                                            |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✗         | Tall, dense building surrounding courtyard likely to result in reduced internal amenity to courtyard.                   | ⚠           | Tall built form to north of courtyard could result in reduced internal amenity.                                         |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | N/A       | Site is not in close proximity to stable residential or heritage precincts.                                             | N/A         | Site is not in close proximity to stable residential or heritage precincts.                                             |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A       | Site does not directly adjoin residential or heritage buildings.                                                        | N/A         | Site does not directly adjoin residential or heritage buildings.                                                        |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ✓         | Building heights reduced to 6 storeys on North side of Macaulay Rd to avoid overshadowing roof of Southern sites.       | ✓           | Building heights reduced to 6 storeys on North side of Macaulay Rd to avoid overshadowing roof of Southern sites.       |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A       | Existing buildings not of heritage or character significance.                                                           | N/A         | Existing buildings not of heritage or character significance.                                                           |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A       | Not in proximity to reserves to overshadow.                                                                             | N/A         | Not in proximity to reserves to overshadow.                                                                             |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✗         | Setbacks result in sheer buildings at 10-12 storeys reducing amenity in public realm and the development.               | ✓           | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys.   |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓         | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys.   | ✓           | Sufficient building separation provided with 9m setback from Northern boundary for primary outlooks up to 12 storeys.   |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓         | Commercial areas on ground flexible to division into fine grain tenancies.                                              | ✓           | Commercial areas on ground flexible to division into fine grain tenancies.                                              |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓         | Allowance for 2.8m floor-to-ceiling height in basement.                                                                 | ✓           | Allowance for 2.8m floor-to-ceiling height in basement.                                                                 |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓         | Uncovered areas required for building separation provide space for deep soil.                                           | ✓           | Uncovered areas required for building separation provide space for deep soil.                                           |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓         | Majority of frontages to Macaulay Rd accommodate active commercial use with BOH accessed within site.                   | ✓           | Majority of frontages to Macaulay Rd accommodate active commercial use with BOH accessed within site.                   |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓         | Massing facilitates best practice with detailed design.                                                                 | ✓           | Massing facilitates best practice with detailed design.                                                                 |

## ST1 (5:1) Conclusion & Recommendations

This sensitivity testing demonstrates both increased building heights and reduced opportunities for streetscape articulation in applying a 5:1 FAR to this site compared to Phase 1 testing.

At 5:1, some of the applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020) can be met, but some of them can't. Notably, providing 'a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky' and ensuring 'development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development' cannot be met. As a result of taller built form to the north of the site in order to reduce the impacts of overshadowing to Macaulay Road, internal amenity to the central courtyard is compromised.

At 4:1, all of the Design Recommendations can be met. Applying a 5:1 FAR to this site results increased height and density, particularly to the northern side of the site in seeking to protect streetscape amenity. As a result, internal amenity, is compromised. Additionally, the increased built form of this outcome to achieve the higher FAR provides less opportunity to break the large site up into a series of buildings with considered articulation and is likely to a result in poor amenity to the surrounding context with regard to daylight, wind impacts and openness to the sky. This is not a desirable outcome for this precinct.

## ST2 (4.5:1) Conclusion & Recommendations

This sensitivity testing demonstrates both increased built form resulting in density and increased building heights in applying a 4.5:1 FAR to this site compared to Phase 1 testing.

At 4.5:1, some of the applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020) can be met, but most of them can't be met to a satisfactory level. Notably, providing 'a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky' cannot be met. Seeking to improve internal amenity by reducing overshadowing to the internal courtyard resulting from the outcomes of Stress Test 1, this testing still demonstrated insufficient setbacks from adjacent properties to facilitate new streets and laneways identified in the Structure Plan (P47, Draft Structure Plan Refresh, 2020).

At 4:1, all of the Design Recommendations can be met. The 4.5:1 FAR results in a massing outcome with increased built form and reduced public realm and internal amenity. The increased built form of this outcome reduces site permeability and opportunity for new streets and laneways and is likely to result in poor amenity to the surrounding context with regard to wind impacts and openness to the sky. This is not a desirable outcome for this precinct.

ST1

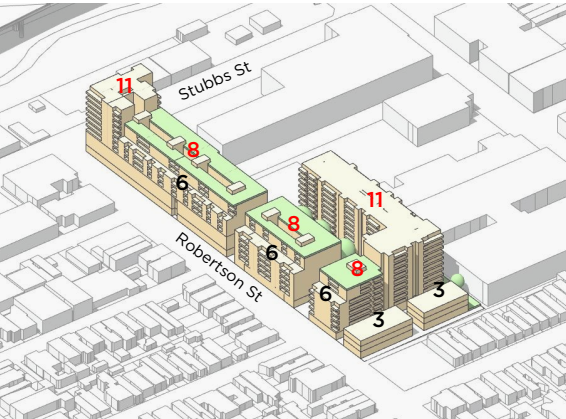
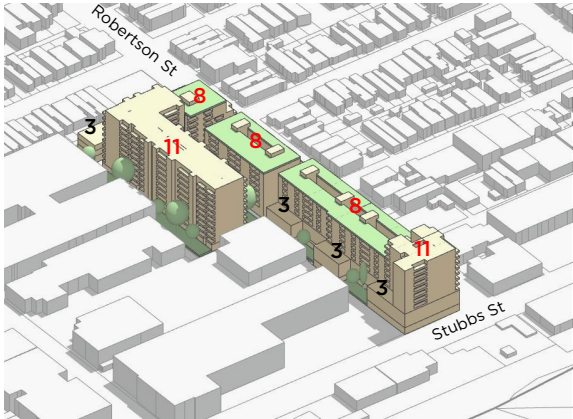
Stress Test 1 provides multiple building typologies to respond to the various adjacent conditions with a mix of mid-rise light-court buildings, double-loaded buildings, and three storey townhouses. Buildings are set back above a 6 storey street wall on Robertson St in seeking to provide a transition in scale to the low-rise residential use to the North.

Ground Floor Site Coverage — 70%  
Level 1 Site Coverage — 70%  
Total Building Height — 11 storeys  
Commercial NSA / Residential NSA — 17% / 83%

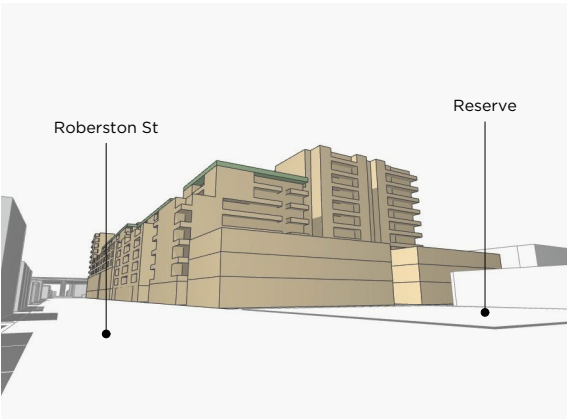
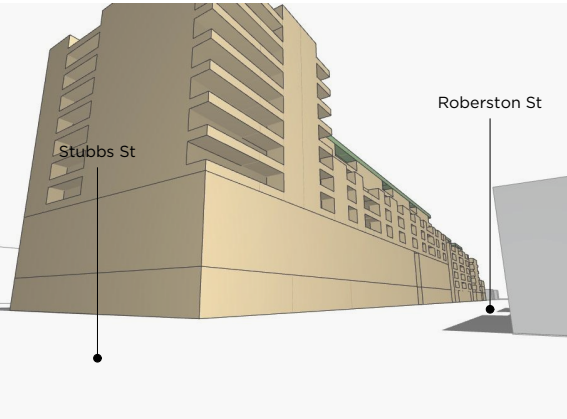
Summary of Areas

| Area Type          | Area (sq. m) | Total GFA | Apt Type | Quantity |
|--------------------|--------------|-----------|----------|----------|
| Circ/BOH           | 9,344        | 59,086    | 1B       | 197      |
| Commercial NSA     | 8,250        |           | 2B       | 284      |
| Landscaping        | 2,015        |           | 3B       | 93       |
| Private Open Space | 4,996        |           |          |          |
| Residential NSA    | 41,492       |           |          |          |
| Rooftop            | 2,751        |           |          |          |

South East and North West Axonometric Diagrams



Street View Perspectives: Stubbs St facing West & Robertson St facing East



Schedule of Areas by Level

| Ground             |       | Level 3            |       | Residential NSA    |       |
|--------------------|-------|--------------------|-------|--------------------|-------|
| Circ/BOH           | 3,389 | Circ/BOH           | 645   | Level 7            | 4,544 |
| Commercial NSA     | 2,366 | Landscaping        | 384   | Circ/BOH           | 609   |
| Landscaping        | 1,518 | Private Open Space | 666   | Private Open Space | 586   |
| Private Open Space | 180   | Residential NSA    | 5,214 | Residential NSA    | 4,544 |
| Residential NSA    | 2,342 | Level 4            |       | Level 8            |       |
| Level 1            |       | Circ/BOH           | 645   | Circ/BOH           | 560   |
| Circ/BOH           | 829   | Private Open Space | 666   | Private Open Space | 278   |
| Commercial NSA     | 2,942 | Residential NSA    | 5,214 | Residential NSA    | 2,172 |
| Landscaping        | 113   | Level 5            |       | Rooftop            | 2,751 |
| Private Open Space | 406   | Circ/BOH           | 645   | Level 9            |       |
| Residential NSA    | 3,952 | Private Open Space | 666   | Circ/BOH           | 292   |
| Level 2            |       | Residential NSA    | 5,214 | Private Open Space | 278   |
| Circ/BOH           | 829   | Level 6            |       | Residential NSA    | 2,172 |
| Commercial NSA     | 2,942 | Circ/BOH           | 609   | Level 10           |       |
| Private Open Space | 406   | Private Open Space | 586   | Circ/BOH           | 292   |
| Residential NSA    | 3,952 |                    |       | Private Open Space | 278   |

ST1

Plans

Scale — 1:1000  
North —

- Legend
- Circulation / BOH Area
  - Commercial NSA
  - Indicative footprint of basement
  - Landscape / Rooftop Area
  - Private Open Space
  - Residential NSA



ST1

Plans

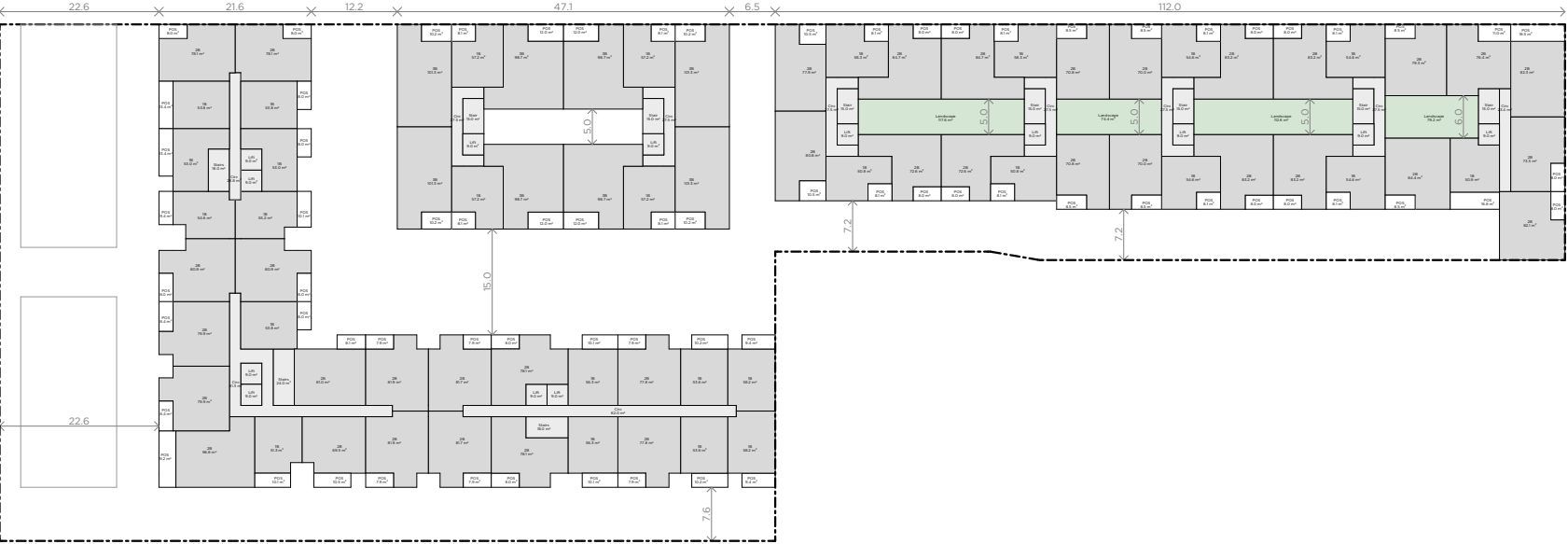
Scale — 1:1000

North —

Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 3 to 4 Typical Floor Plan



Level 5 Floor Plan



ST1

Plans

Scale — 1:1000

North —

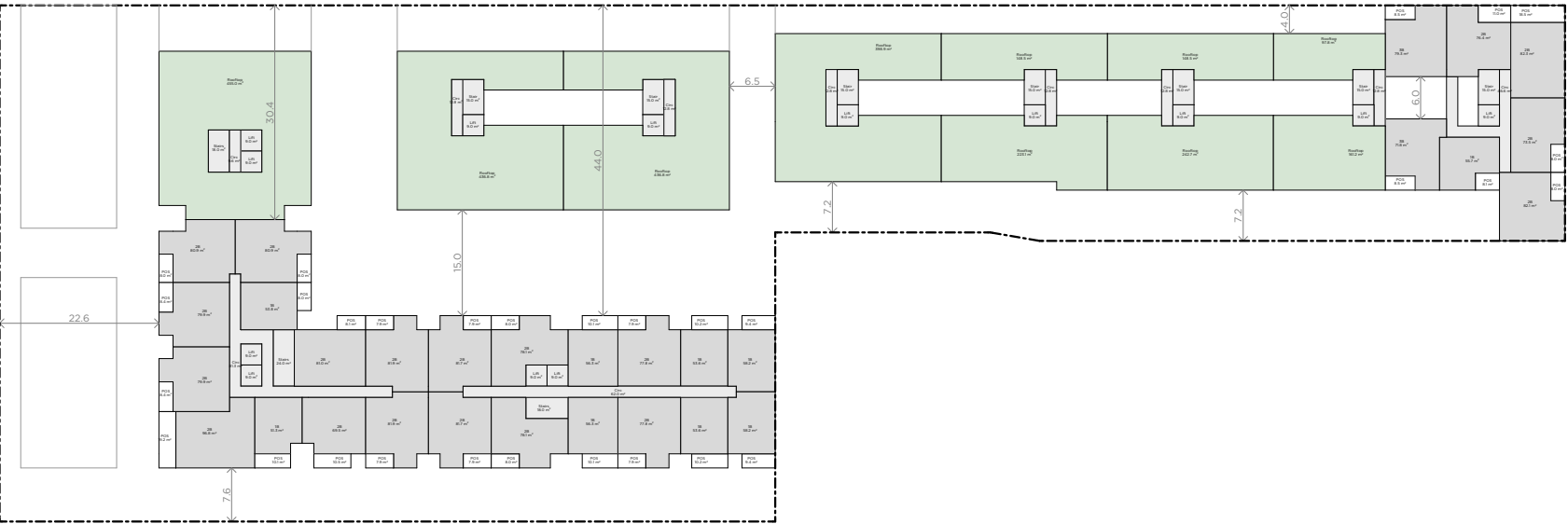
Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 6 to 7 Typical Floor Plan



Level 8 to 9 Typical Floor Plan



ST1

Plans

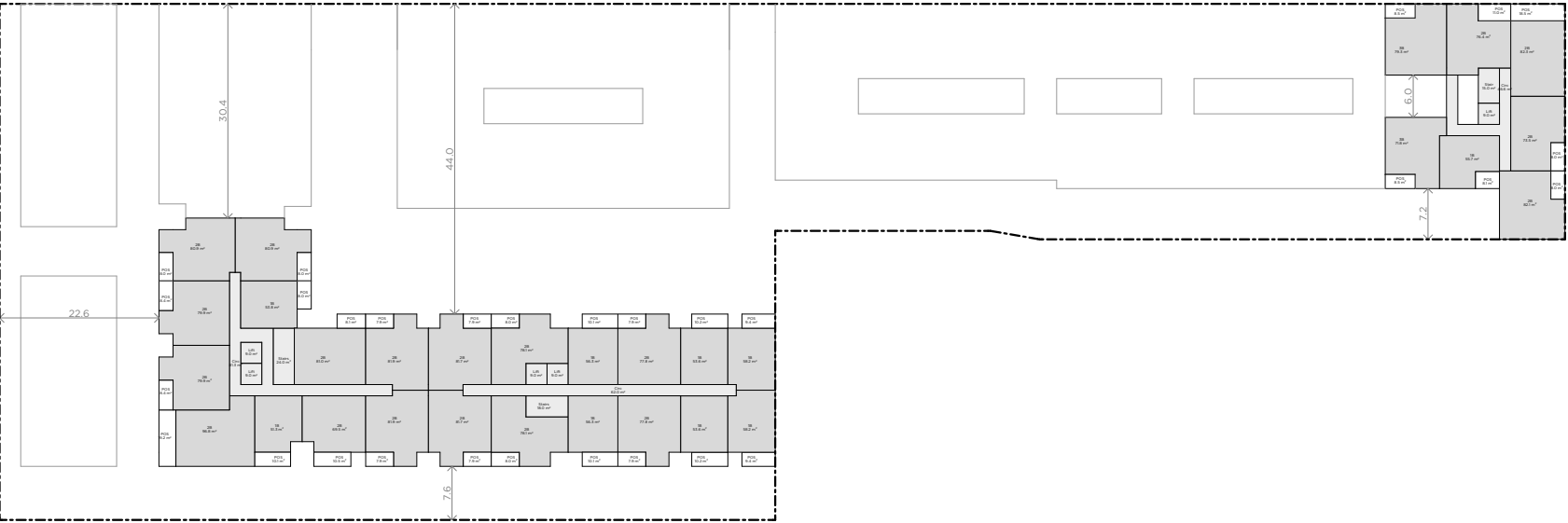
Scale — 1:1000

North —

Legend

- Circulation / BOH Area
- Commercial NSA
- Indicative footprint of basement
- Landscape / Rooftop Area
- Private Open Space
- Residential NSA

Level 10 Floor Plan



ST1

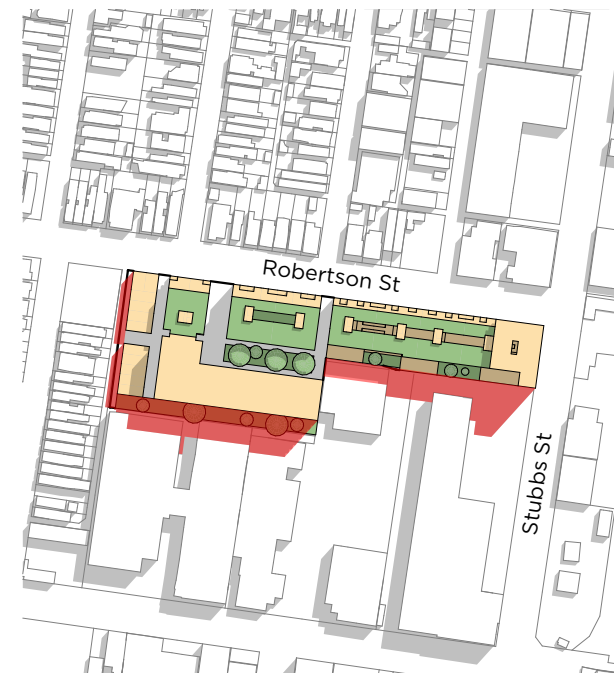
## Shadow Diagrams

Scale — 1:4000

North — 

Shadows cast by Stress Test 1 reduce amenity to sites to the South. The design makes particular effort to locate lower built form adjacent to the Robertson St reserve as per the design recommendations regarding overshadowing open spaces.

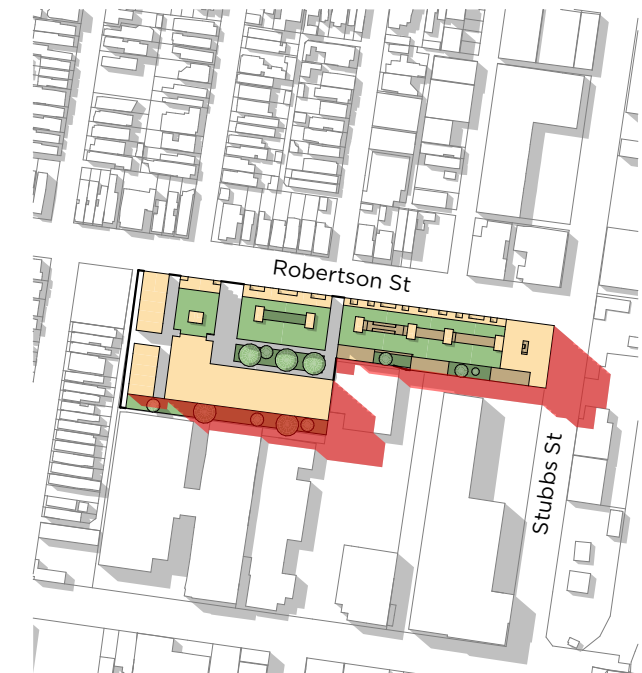
10AM September 22



12PM September 22

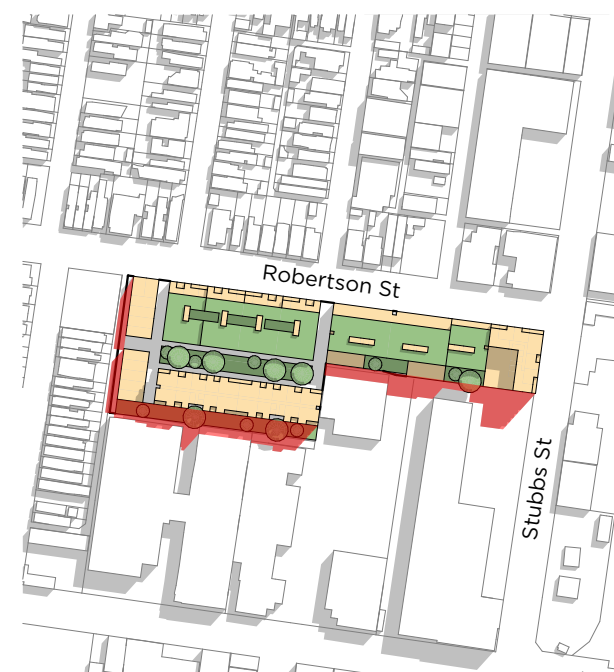


2PM September 22



### S1 Option A Shadow Diagrams for comparison

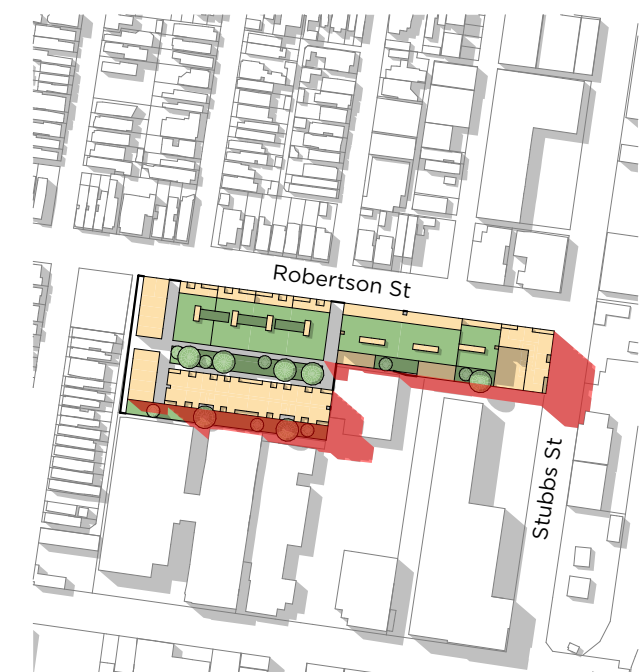
10AM September 22



12PM September 22



2PM September 22



Assessment of Proposed Controls against Design Recommendations

Design Recommendations

ST1 - 5:1

|    |                                                                                                                                                                                                                                                                                                                                                                                |     |                                                                                                                           |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------|
| 01 | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ✗   | Does not positively contribute to the vision of the precinct due to the density and height of the proposed outcome.       |
| 02 | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✗   | Taller built form outside of area specified in structure plan as a result of high FAR figure proportional to site size.   |
| 03 | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | N/A | Existing building not of heritage or character significance.                                                              |
| 04 | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✗   | Taller built form outside of area specified in structure plan as a result of high FAR figure proportional to site size.   |
| 05 | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ⚠   | Street wall height varies from 3 to 10 storeys in response to context but is predominantly at 6 storeys.                  |
| 06 | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ✓   | Area is divided into 6 buildings.                                                                                         |
| 07 | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | ✗   | Compromised amenity - 15m separation internally (18m preferred) and setback to neighbouring property 6.2m (9m preferred). |
| 08 | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ✓   | New street network provided within site with opportunity for connection through block on adjacent sites.                  |
| 09 | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓   | Commercial use located on Robertson St interface and residential use located adjacent to new streets.                     |
| 10 | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✗   | Compromised amenity - 15m separation internally (18m preferred) and 7.2m setback to neighbouring property (9m preferred). |
| 11 | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | ⚠   | Street wall height varying from 5 to 6 storeys does not adequately respond to stable residential North of Robertson St.   |
| 12 | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A | Site does not directly adjoin residential or heritage buildings.                                                          |
| 13 | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | ⚠   | 11 storey forms to South of site may overshadow roof of potential development on site directly to south.                  |
| 14 | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | N/A | Existing buildings not of heritage or character significance.                                                             |
| 15 | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | ✓   | Height reduced to 3 storeys (below max. street wall) to limit impacts of overshadowing.                                   |
| 16 | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ⚠   | Potentially compromised amenity where primary outlook is 7.2m from South boundary (9m preferred, for 18m mirrored).       |
| 17 | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✗   | Compromised due to 15m separation internally (18m preferred) and 7.2m setback to neighbouring property (9m preferred).    |
| 18 | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓   | Commercial areas on ground flexible to division into fine grain tenancies.                                                |
| 19 | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓   | Allowance for 2.8m floor-to-ceiling height in basement.                                                                   |
| 20 | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓   | Uncovered areas required for building separation provide space for deep soil.                                             |
| 21 | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓   | Majority of frontages to Robertson St accommodate active commercial use with BOH accessed at the rear of site.            |
| 22 | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓   | Massing facilitates best practice with detailed design.                                                                   |

## ST1 (5:1) Conclusion & Recommendations

This sensitivity testing demonstrates both increased built form resulting in density and increased building heights in applying a 5:1 FAR to this site compared to Phase 1 testing.

At 5:1, most of the applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020) cannot be met, notably to 'ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development'. This test demonstrates that a 5:1 FAR cannot be met without exceeding the maximum preferred height of 6 storeys. This occurs because the site must be divided into multiple buildings with space for building separation and outlook which cannot be built on.

At 3.5:1, most of the applicable Design Recommendations are able to be met. Applying a 5:1 FAR to this site results in a massing that far exceeds the 6 storey preferred height, with massing up to 11 storeys. Simultaneously, the high density massing at this FAR is likely to result in poor internal amenity due to insufficient building separation and poor amenity to the surrounding context with regard to overshadowing, daylight, wind impacts and openness to the sky. This is not a desirable outcome for this precinct.

ST1

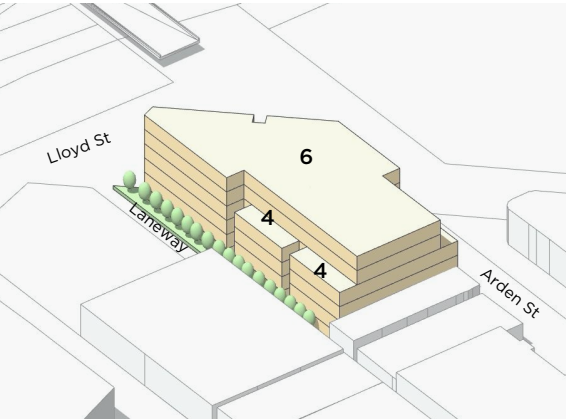
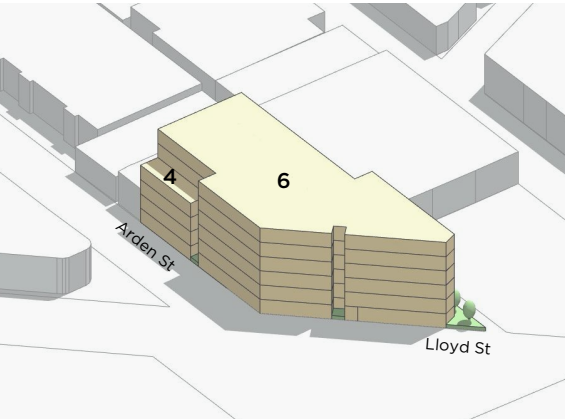
Option A explores a full site coverage building with a 4-storey interface to the lower built form to the West and the North.

Ground Floor Site Coverage — 88%  
Level 1 Site Coverage — 88%  
Total Building Height — 6 storeys

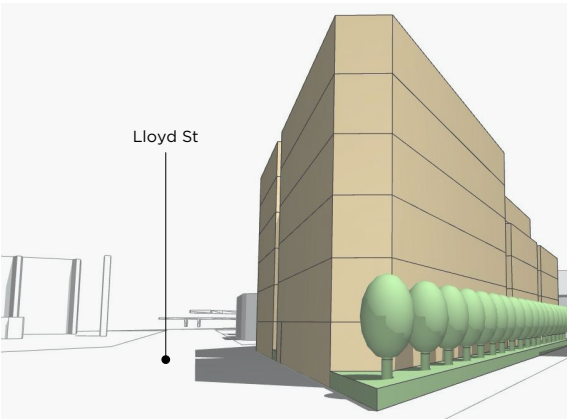
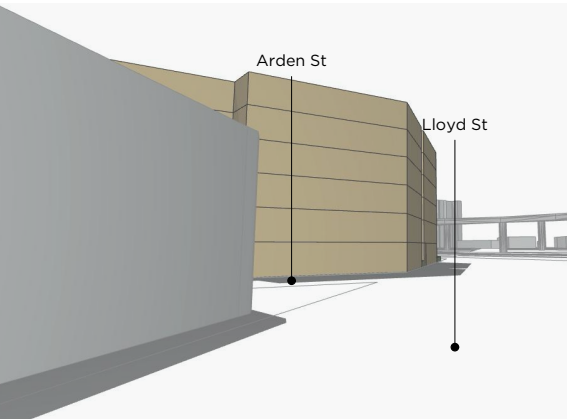
Summary of Areas

| Area Type      | Area (sq. m) | Total GFA |
|----------------|--------------|-----------|
| Circ/BOH       | 2,561        | 11,770    |
| Commercial NSA | 9,209        |           |
| Landscaping    | 283          |           |

South East and North West Axonometric Diagrams



Street View Perspectives: Lloyd St facing North & Lloyd St facing South

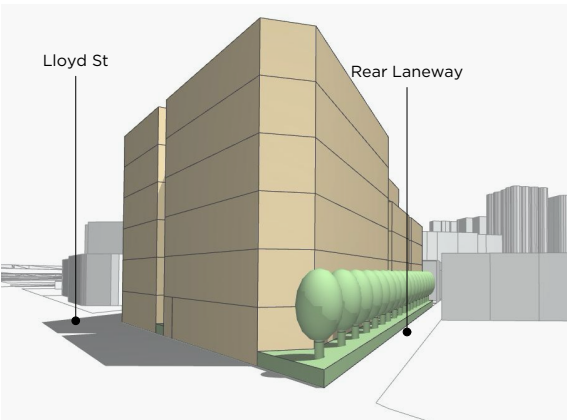
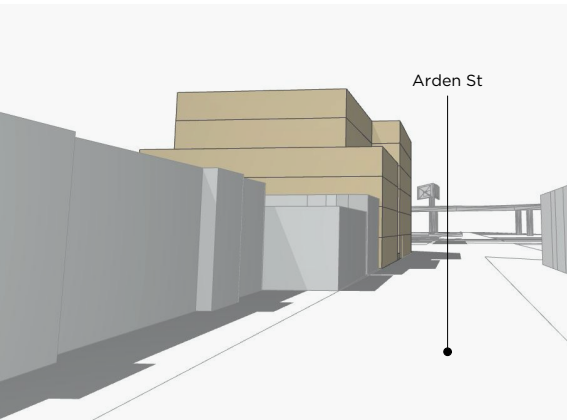


Schedule of Areas by Level

| Ground         |       |
|----------------|-------|
| Circ/BOH       | 921   |
| Commercial NSA | 1,134 |
| Landscaping    | 283   |
| Level 1        |       |
| Circ/BOH       | 328   |
| Commercial NSA | 1,727 |
| Level 2        |       |
| Circ/BOH       | 328   |
| Commercial NSA | 1,727 |

| Level 3        |       |
|----------------|-------|
| Circ/BOH       | 328   |
| Commercial NSA | 1,727 |
| Level 4        |       |
| Circ/BOH       | 328   |
| Commercial NSA | 1,447 |
| Level 5        |       |
| Circ/BOH       | 328   |
| Commercial NSA | 1,447 |

Additional Street View Perspectives: Arden St facing West & Rear Laneway facing East



ST1

## Plans

Scale — 1:500

North — 

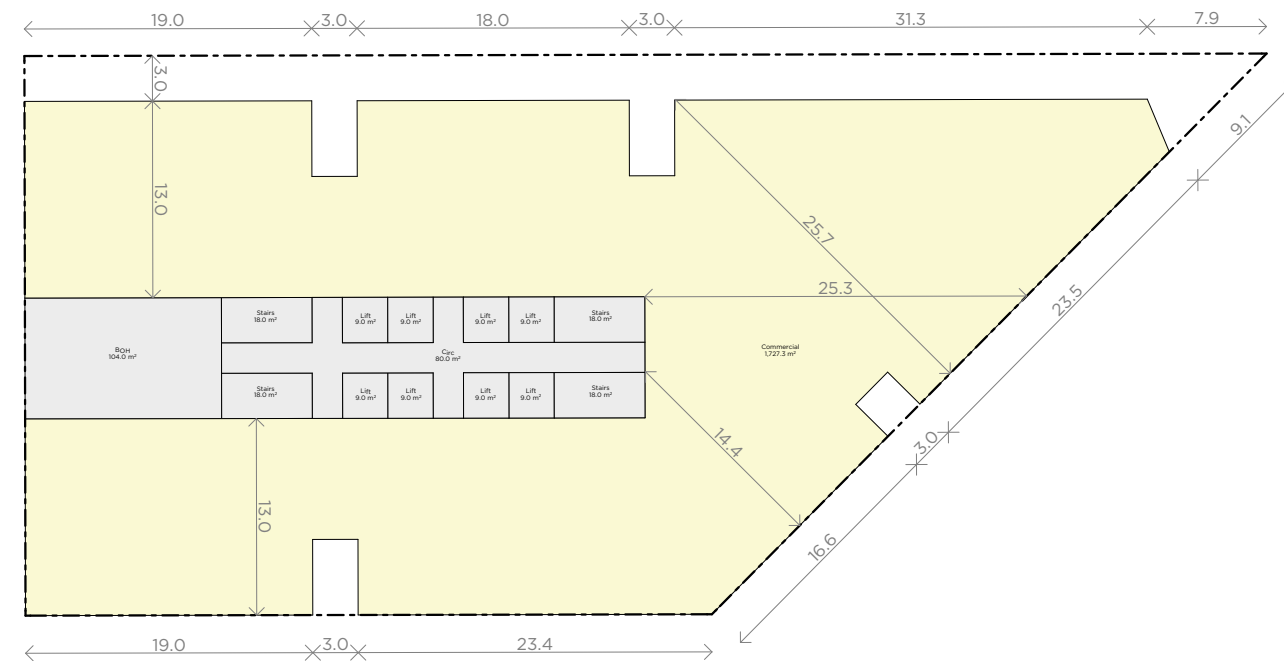
## Legend

|                                                                                   |                                  |
|-----------------------------------------------------------------------------------|----------------------------------|
|  | Circulation / BOH Area           |
|  | Commercial NSA                   |
|  | Indicative footprint of basement |
|  | Landscape / Rooftop Area         |
|  | Private Open Space               |
|  | Residential NSA                  |

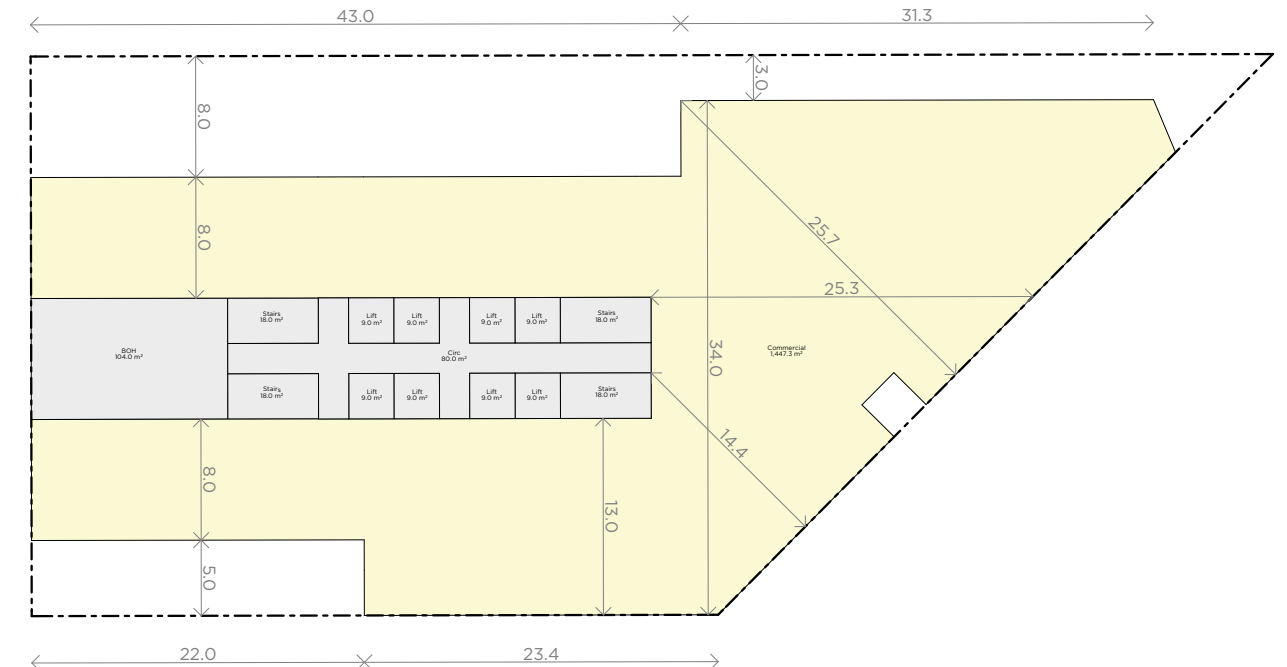
Ground Floor Plan



Level 1 to 3 Typical Floor Plan



Level 4 to 5 Typical Floor Plan



ST1

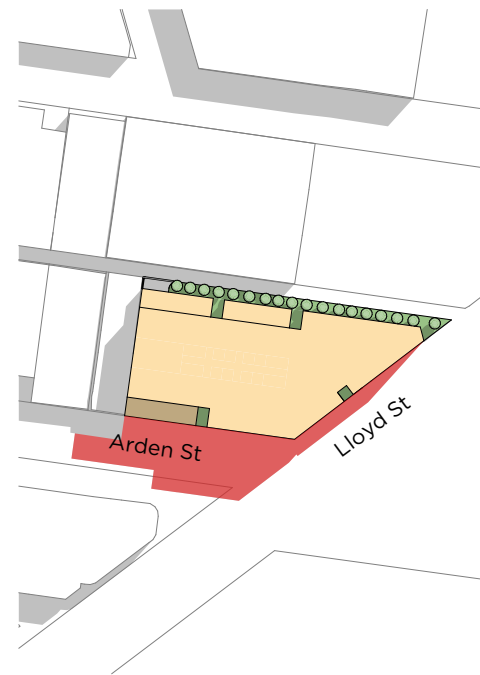
## Shadow Diagrams

Scale — 1:2000

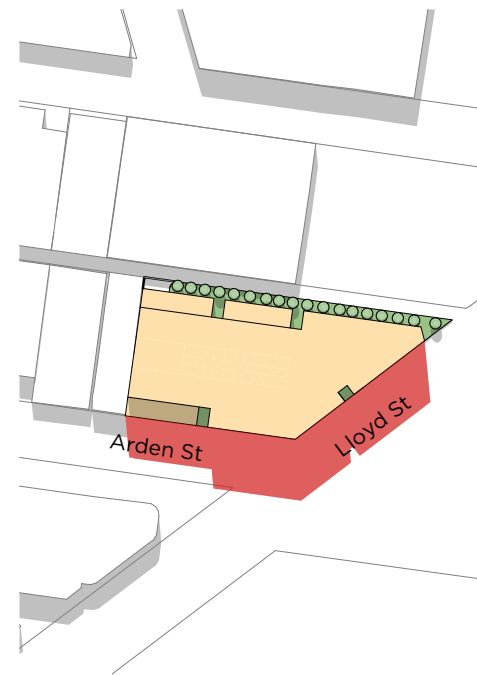
North — 

Shadows cast by Stress Test 1 on adjoining streets and sites are considered acceptable as they do not reduce amenity beyond what is reasonably expected in this context at this density. The design makes particular effort to setback mass from the South West to avoid overshadowing the south side of Arden Street.

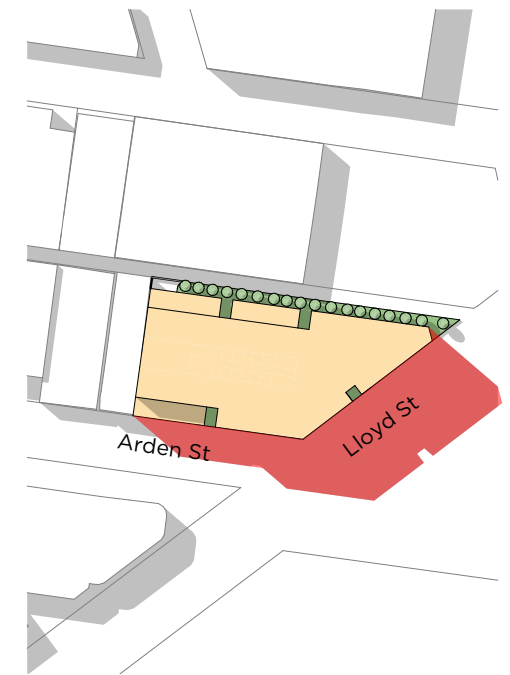
10AM September 22



12PM September 22

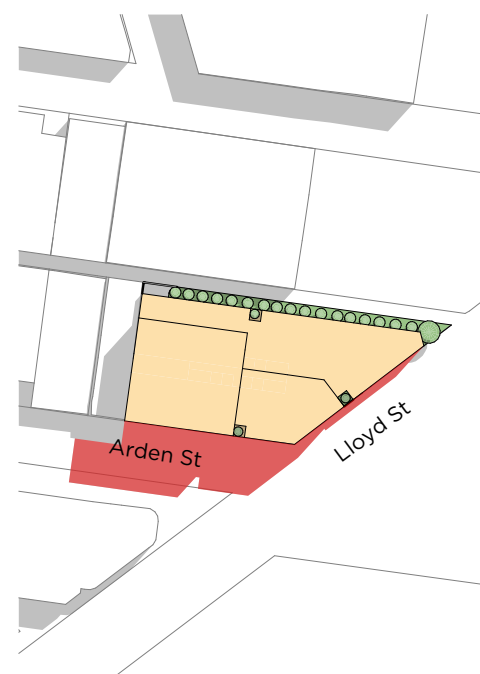


2PM September 22

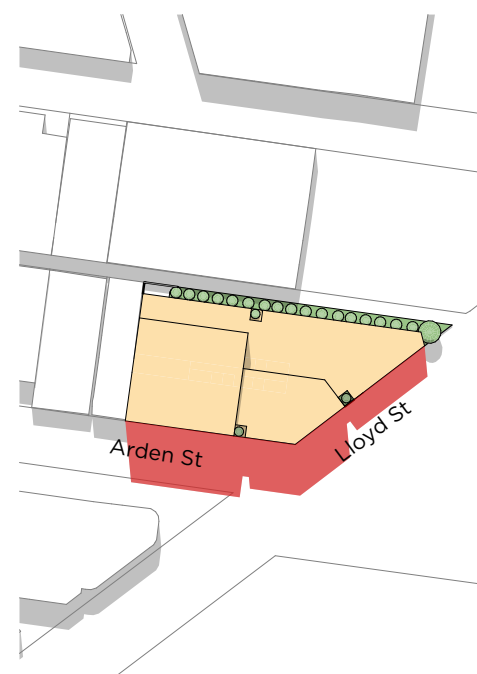


### C3 Option A Shadow Diagrams for comparison

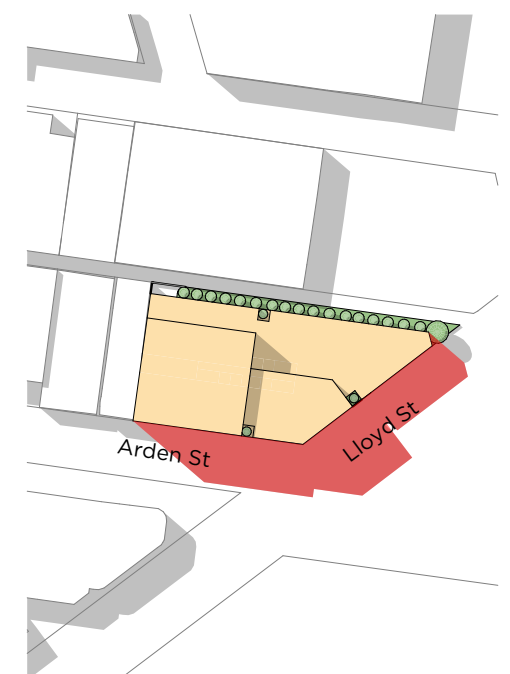
10AM September 22



12PM September 22



2PM September 22



# Assessment of Proposed Controls against Design Recommendations

| Design Recommendations |                                                                                                                                                                                                                                                                                                                                                                                | ST1 5:1 |                                                                                                                               |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------------------------------------------------|
| 01                     | To ensure development responds to the valued attributes of Macaulay and contributes positively to the existing and future vision and character of each of the four identified places within Macaulay - Boundary, Melrose, Chelmsford and Stubbs.                                                                                                                               | ⚠       | Does not demonstrates good response to character through massing, however further capacity through detailed design.           |
| 02                     | To provide for a medium density, mid-rise, human-scaled neighbourhood with a diverse range of building types and some higher built form in specified areas.                                                                                                                                                                                                                    | ✓       | Delivers human-scaled, mid rise building.                                                                                     |
| 03                     | To maintain and enhance the valued built and social heritage characteristics of Macaulay and to ensure buildings retain their three dimensional form as viewed from the public realm to avoid 'facadism'.                                                                                                                                                                      | ✗       | This massing exercise does not address the character building on the site. This would be addressed in detail design.          |
| 04                     | To ensure development responds appropriately to the hierarchy of main streets (Racecourse Road, Boundary Road, Macaulay Road), local streets and laneways in its address, activation and management of services.                                                                                                                                                               | ✓       | Responds to street hierarchy through address, activation and management of services.                                          |
| 05                     | To achieve variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context.                                                                                                                                                                                                            | ✗       | Street wall height predominantly at 6 storeys with some sections lowered to 4 storeys.                                        |
| 06                     | To ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.                                                                                                                                                                                                                                                   | ✗       | Built form resulting from density lacks opportunities to break large site into a series of articulated building forms.        |
| 07                     | To ensure sufficient building separation between sites and within a site to deliver high quality amenity within buildings having regard to outlook, daylight and overlooking.                                                                                                                                                                                                  | N/A     | Site does not need amenity to be provided from within site or adjacent sites as it is on a corner with 3 street facing edges. |
| 08                     | To provide a highly walkable neighbourhood by increasing permeability with new streets and laneways that are open to the sky.                                                                                                                                                                                                                                                  | ✗       | No new streets or laneways open to the sky provided.                                                                          |
| 09                     | To ensure that new development delivers a safe and secure public realm through activation of ground floors and open spaces.                                                                                                                                                                                                                                                    | ✓       | Commercial use located facing Arden Street, Lloyd Street and Northern Laneway to activate edges.                              |
| 10                     | To ensure development appropriately considers the amenity impacts on neighbouring development and achieves a high standard of internal amenity within the development.                                                                                                                                                                                                         | ✓       | No borrowed amenity and good access to light and ventilation.                                                                 |
| 11                     | To ensure that new development at the interface with stable residential and heritage precincts respects the scale, height and setbacks of the precinct.                                                                                                                                                                                                                        | N/A     | Site does not directly adjoin residential or heritage buildings.                                                              |
| 12                     | To ensure that new development respects the scale of adjoining residential and heritage buildings and does not overwhelm the existing building.                                                                                                                                                                                                                                | N/A     | Site does not directly adjoin residential or heritage buildings.                                                              |
| 13                     | To ensure the consideration to minimise the impact of development on solar access to adjacent solar panels.                                                                                                                                                                                                                                                                    | N/A     | Not in proximity to overshadow adjacent solar panels.                                                                         |
| 14                     | To encourage the retention of existing buildings of character (including non-heritage) and the reuse of existing materials in new developments.                                                                                                                                                                                                                                | ✗       | This massing exercise does not address the character building on the site. This would be addressed in detail design.          |
| 15                     | To ensure that new development does not cast any additional shadow over Buncle Street Reserve, Canning Street and Macaulay Road Reserve, North Melbourne Recreation Reserve, Gardiner Reserve and Robertson Street Reserve from 10:00am to 3:00pm on 21 June, from buildings built to the maximum street wall height, as per the Sunlight Access to Public Parks requirements. | N/A     | Not in proximity to reserves to overshadow.                                                                                   |
| 16                     | To ensure developments are set back from side and rear boundaries to provide adequate daylight in streets and internal spaces, comfortable wind conditions in the public and private realm, views to the sky and privacy.                                                                                                                                                      | ✓       | Upper level setbacks to rear laneway to preserve views to the sky and increase daylight internally on upper levels.           |
| 17                     | To support equitable development by ensuring primary outlook is secured to the street or within development sites.                                                                                                                                                                                                                                                             | ✓       | Primary outlook secured to streets on two sides. Upper levels setback to rear laneway to improve internal amenity.            |
| 18                     | To provide for fine grain adaptable tenancies within the lower levels of buildings.                                                                                                                                                                                                                                                                                            | ✓       | Commercial areas on ground flexible to division into fine grain tenancies.                                                    |
| 19                     | To ensure development is adaptable to changes in future land use by requiring adequate floor to ceiling heights (above and below ground).                                                                                                                                                                                                                                      | ✓       | Allowance for 2.8m floor-to-ceiling height in basement.                                                                       |
| 20                     | To encourage deep soil planting that increases permeability and supports tree planting in the private realm.                                                                                                                                                                                                                                                                   | ✓       | 3m setback to laneway provides opportunity for deep root planting to support trees.                                           |
| 21                     | To ensure the design of new development conceals servicing from the street frontage to minimise the loss of active frontage                                                                                                                                                                                                                                                    | ✓       | Back of House located on laneway allowing Arden and Lloyd Street interfaces to be active.                                     |
| 22                     | To ensure that the design of services, loading and parking areas adopt best practice approaches                                                                                                                                                                                                                                                                                | ✓       | Massing facilitates best practice with detailed design.                                                                       |

## ST1 (5:1) Conclusion & Recommendations

This sensitivity testing demonstrates both increased building heights and reduced opportunities for streetscape articulation in applying a 5:1 FAR to this site compared to Phase 1 testing.

At 5:1, some of the applicable Design Recommendations (P23, Draft Structure Plan Refresh, 2020), can be met, however some cannot. Notably, the outcome does not achieve 'variable building heights, including street wall heights, that contribute positively to the specific character of each site and the surrounding context' or 'ensure larger sites are broken up into a series of building forms that relate and contribute positively to their context.' This is the result of the large, efficient floor plates that can be achieved on a large commercial site with 3 street frontages. Subsequently, higher FARs are able to be achieved without excessively tall built outcomes, but with high site coverage and dense built form outcomes.

At 4:1, all of the Design Recommendations can be met. Applying a 5:1 FAR to this site results increased bulk and density. The density of this outcome provides less opportunity for variance in building heights and street articulation and is likely to result in poor amenity to the surrounding context with regard to overshadowing, daylight, wind impacts and openness to the sky. This is not a desirable outcome for this precinct.