



**RADICAL RE-USE:
FROM OFFICE
TO HOME**



Pioneering adaptive re-use in the heart of the Melbourne's CBD

The notion of converting B-D grade office buildings into residential spaces has long intrigued us, despite prevalent scepticism surrounding its feasibility or even possibility.

To better understand the viability of this concept we embarked on a comprehensive exploration of the potential for adaptive re-use in Melbourne's CBD in an attempt to elegantly solve a few specific challenges concurrently – the rising vacancy rates of older B, C and D grade office buildings, the resulting lack of vibrancy in some quarters of the city, the ever increasing demands of a warming climate and the housing crisis with critical levels of housing under-supply.

Through this project, we aim to uphold sustainability principles, including a reduction in upfront embodied carbon and the preservation of existing architectural assets.

By addressing the potential conversion of B-D grade office buildings into residential complexes we propose a paradigm shift in urban development.

Our approach transcends conventional wisdom and envisions a revitalised urban landscape that accommodates diverse lifestyles, while also contributing to a regenerative future.

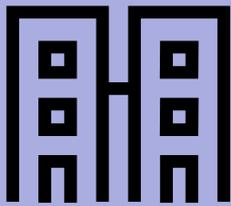
By embracing the challenge and exploring unconventional solutions, we seek to redefine urban spaces and pave the way for an innovative approach in radically re-using parts of our city to breathe new life into them.

**Which office
buildings suit
adapting
into homes?**

Unveiling the potential for thousands of new homes

Our research identified approximately 86 buildings in Melbourne's CBD that are ripe for adaptive re-use. By repurposing merely half of these structures, we could potentially introduce 10,000 to 12,000 new homes to the city's housing inventory.

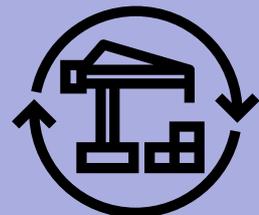
Notably, each re-purposed building would result in a significantly reduced upfront embodied carbon footprint compared to the demolition and reconstruction of entirely new structures – about half the amount than a business as usual approach.



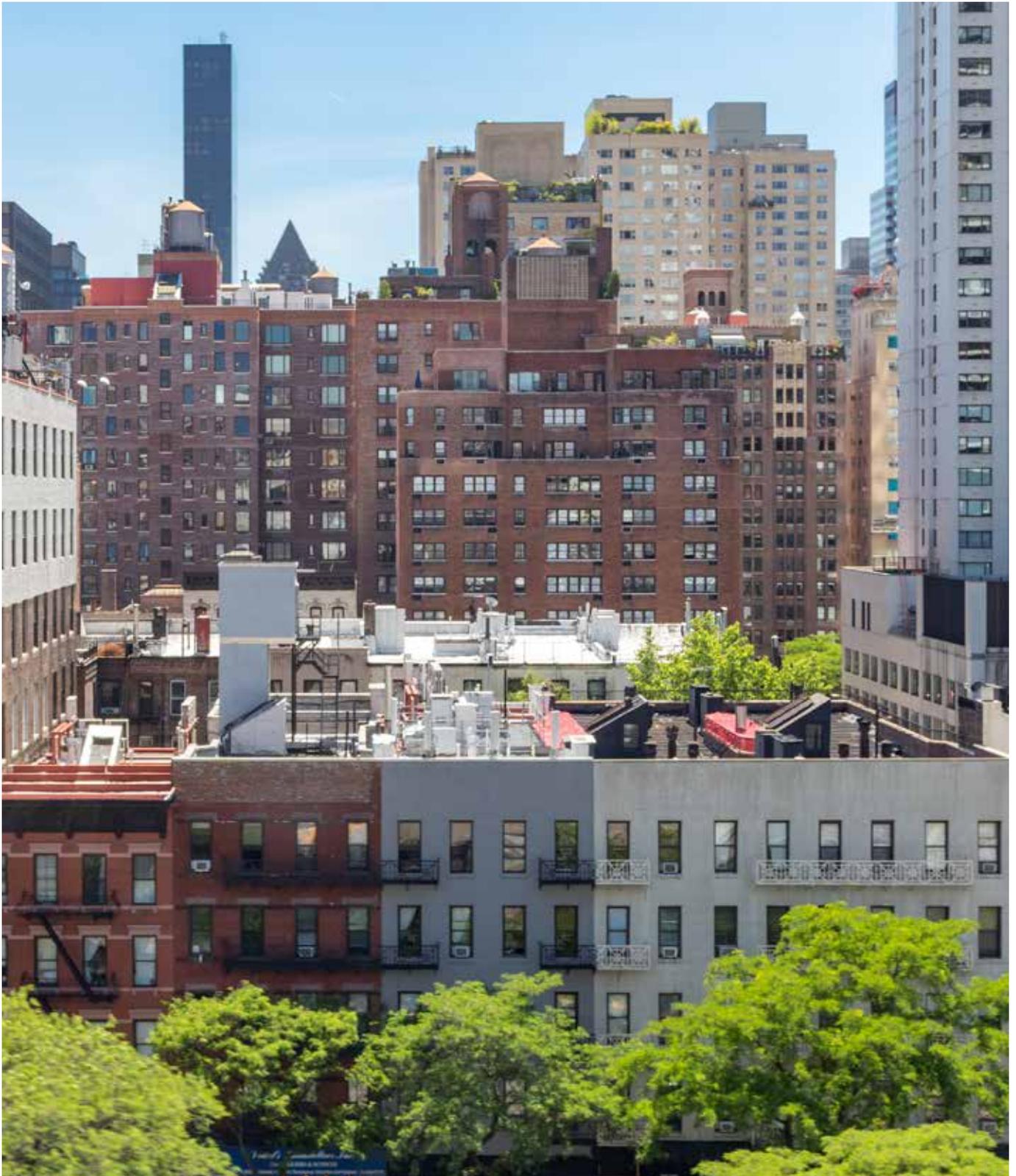
There are about 90 buildings ripe for adaptive re-use in Melbourne's CBD



If half were converted to residential this could supply up to 10-12K new homes for up to 20,000 people



Each re-purposed building uses roughly half the upfront embodied carbon



In specific global contexts, such as New York, the conversion of office buildings into residential apartments has maintained a considerable focus over many years. Australia has also witnessed numerous noteworthy instances of successful adaptive reuse projects. But what are the defining attributes for identifying suitable candidates for such transformation? We set up the following filters to narrow down our search:

1. BUILT BEFORE 1990

1,323 unoccupied and office buildings in Melbourne CBD built before 1990

Buildings constructed before 1990 offer a greater potential for adaptive reuse due to several factors. These buildings are typically not A-grade or premium quality, making them more appropriate for repurposing. They also tend to have a higher chance of being unoccupied, simplifying the reuse process. Additionally, these older buildings are well-suited in size (not overly large), often require substantial upgrades, and have untapped structural potential. Within our specified focus area, there are a total of 1,323 office buildings constructed before 1990.

Most are not A or premium grade and more likely to be under-tenanted

Most are in need of more significant upgrade, beyond mere refurbishment

More likely to be the right size proportion (not too big)

Most have latent structural capacity to take additional load

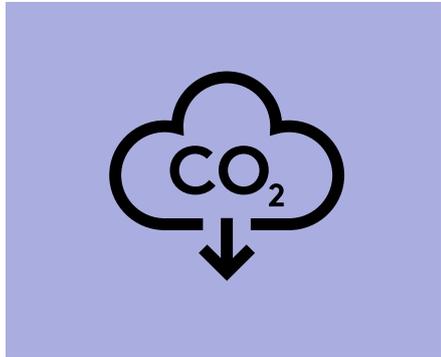


Source: CoM Census of Land Use and Employment (CLUE) Data, 2021

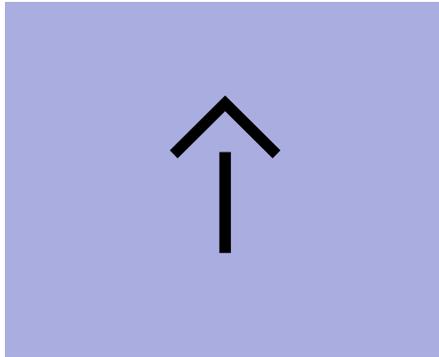
Unoccupied buildings

2. 10+ STOREYS HIGH

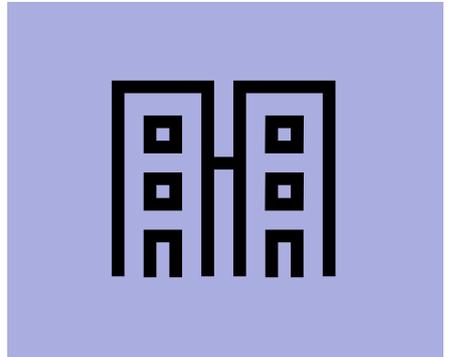
138 unoccupied office buildings in Melbourne CBD built before 1990 & 10+ storeys high



Sufficient scale to maximise potential carbon reduction benefit

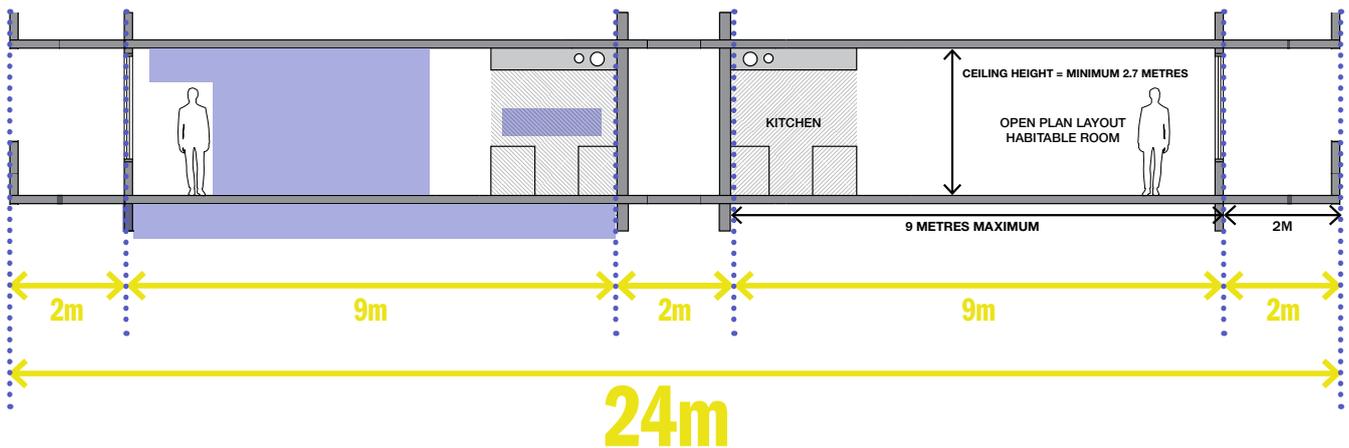


Structural capacity to add additional levels above existing



Shorter existing buildings often involve more new than adaptive re-use of existing

3. APPROXIMATELY 24M WIDTH



The width of the building is the most critical factor to ensure the apartments have good access to natural light. Buildings that are around 20-25m wide allow for two apartments either side of a corridor that do not exceed the maximum living room depth of 9m that is outlined in the Better Apartment Design Standards (BADS).

86 potential for conversion

Upon the application of these three filters, our analysis yielded 86 structures, each exhibiting the potential for successful conversion. This number represents approximately 6.5% of the entirety of office buildings constructed prior to 1990. However, it is essential to acknowledge that not all 86 structures will be viable candidates for conversion. Possible constraints include tenant occupancy, limited access to natural light due to neighbouring structures, and potential heritage or regulatory limitations. Even if we were to pursue the transformation of merely half of these identified structures, the resultant reduction in upfront embodied carbon would be substantial, while simultaneously fostering the creation of an estimated 10,000 to 12,000 residential units within the CBD.



Source: CoM Census of Land Use and Employment (CLUE) Data, 2021

Unoccupied buildings

Subject to individual feasibility studies, there are approximately 90 office buildings ripe for adaptive reuse in Melbourne's CBD

6.5% of all office buildings built before 1990

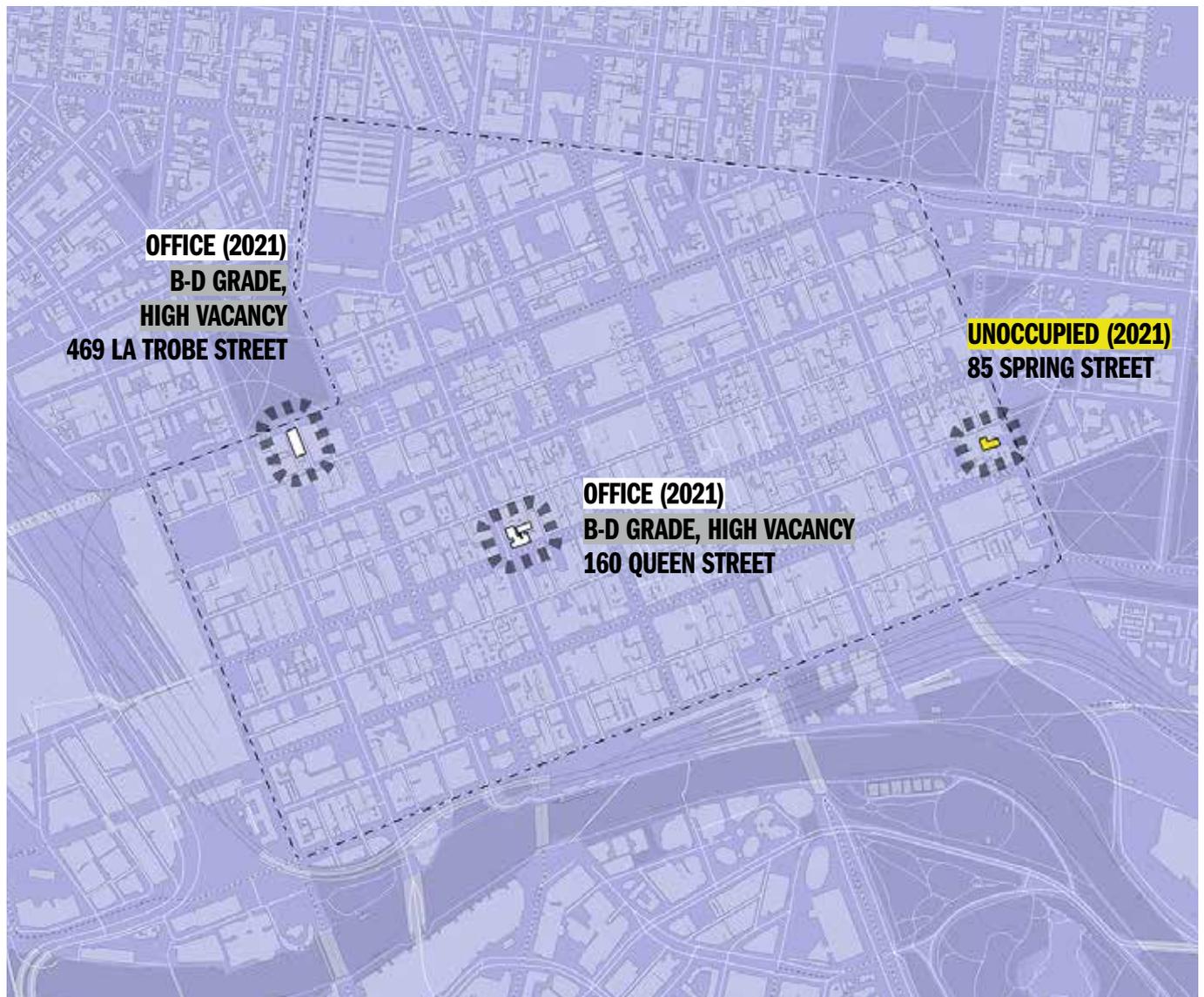
If ONLY 50% of these are repurposed, it could save up to 360M kg/CO of upfront embodied carbon AND create UPTO 10–12,000 new homes (based on analysis by Slattery).



By embracing the challenge and exploring unconventional solutions, we seek to redefine urban spaces and pave the way for an innovative approach in radically re-using parts of our city.

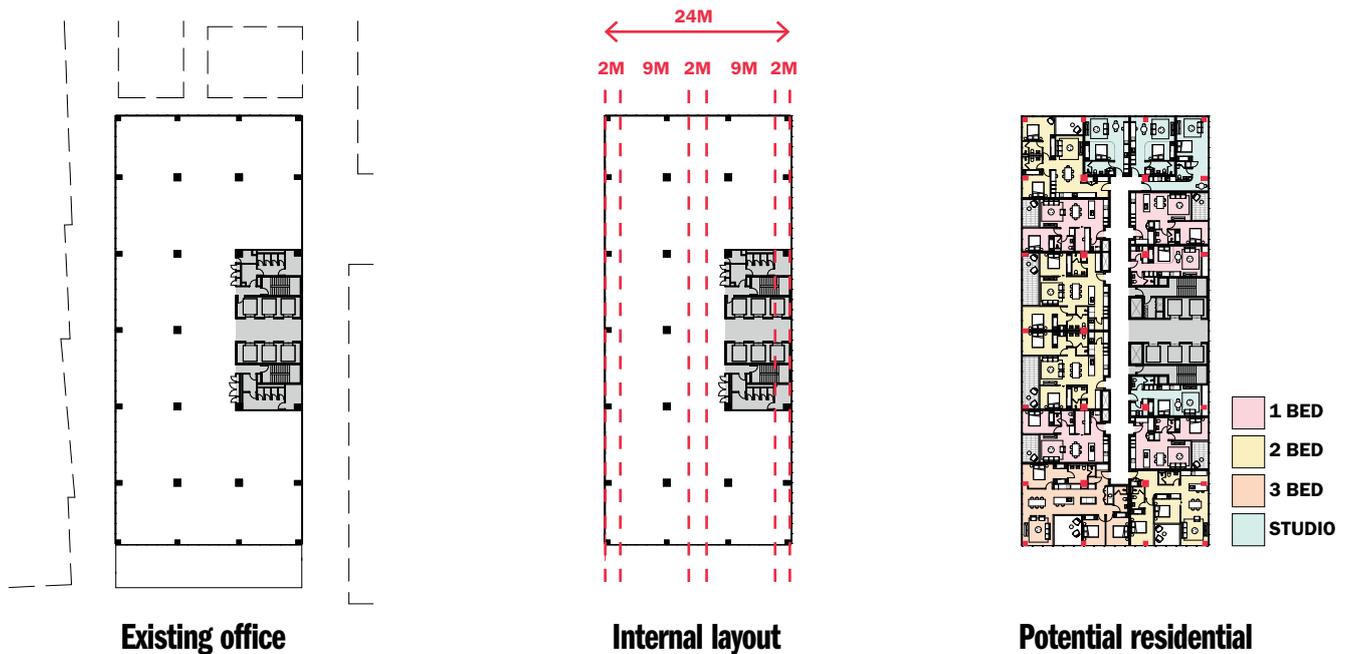
Getting office to home right

To illustrate the viability of our approach, we present three case studies representing different geographical areas within the city.



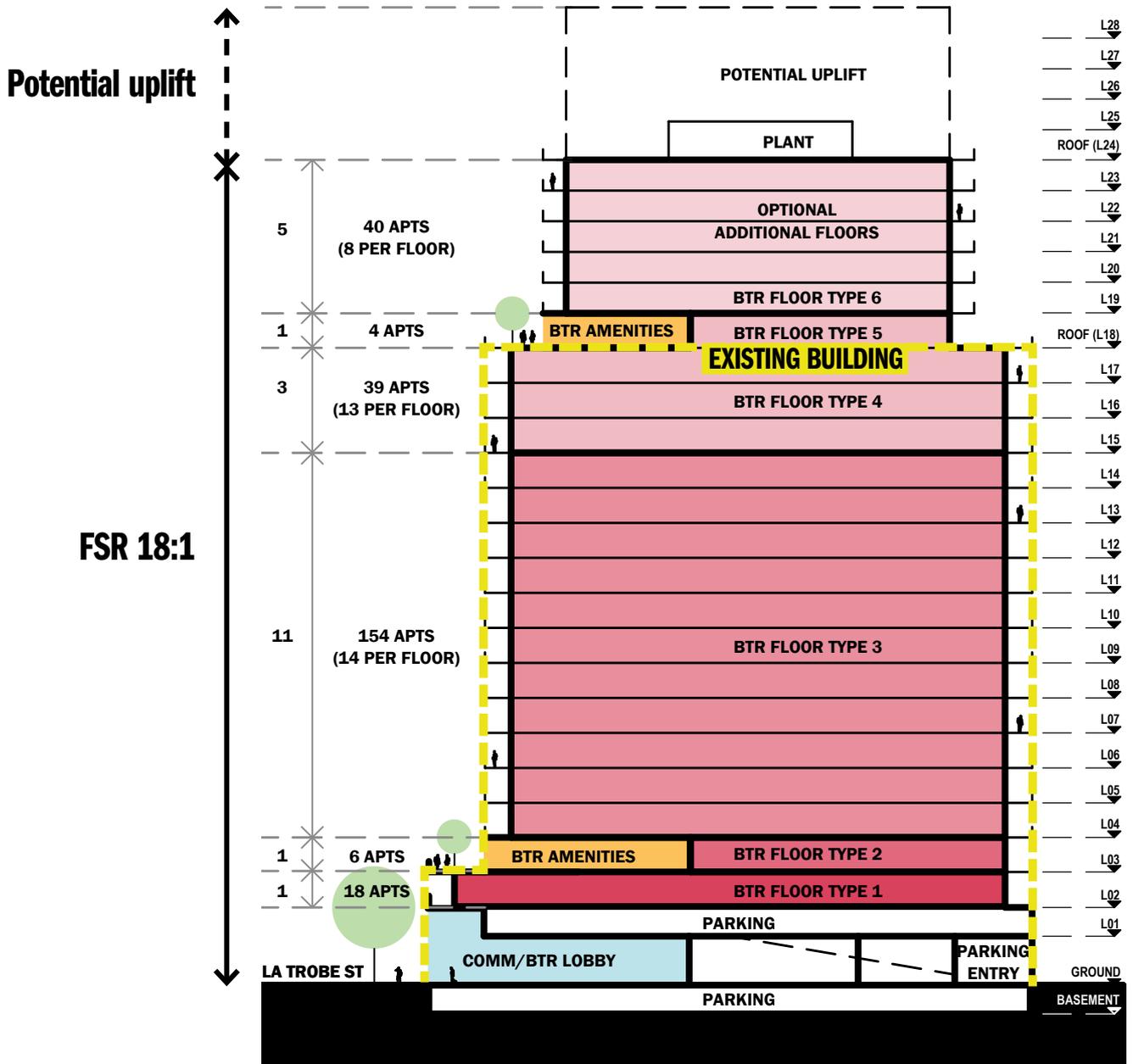
1. 469 LA TROBE STREET

This study delves into the potential transformation of an existing building with a floor space ratio (FSR) of 16:1. We explore how additional levels, supported by adaptive reuse, could yield up to 300 apartments, making efficient use of available space while adhering to design standards.



The middle diagram, above, shows the metrics that comply with the Better Apartment Design Standards. On the right, our plan shows a mix of studio, one bed, two bed and three bed apartments indicating a potential of 14 apartments on a typical floor.

In the section below, the delineation of the existing structure is demarcated by the yellow line. Considering the established floor space ratio (FSR) of 16:1, an unaltered conversion of this structure has the potential to accommodate 217 apartments. Introducing six additional floors, and elevating to the allowable FSR of 18:1, would generate an additional 44 apartments. A further augmentation to an FSR of 20:1 could potentially yield approximately 300 apartments.



FSR 18:1

Studios = 86

1 Beds = 83

2 Beds = 79

3 Beds = 15

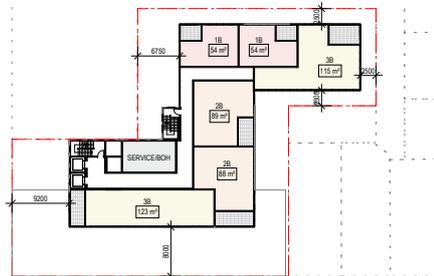
263 Apts

Apartment numbers, FSR and other information contained in this Case Study are indicative only and based on existing building information that has been publicly sourced, subject to further detailed investigation including planning review with the City of Melbourne and DTP, and relevant consultant inputs such as structural engineering, land surveying and BCA consultant advice.

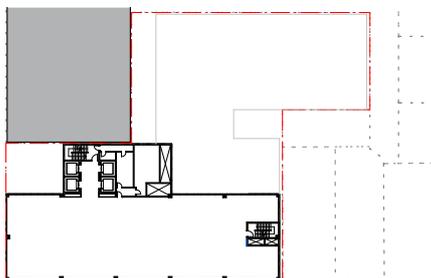
2. 160 QUEEN STREET



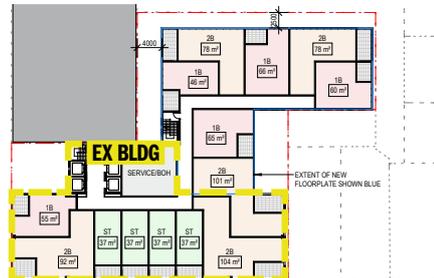
Examining a heritage building with a two-story car park, we demonstrate the possibilities of repurposing by envisioning additional floors. The outcome suggests the potential to achieve a higher floor space ratio (FSR) and introduce more residential units. This building has a heritage overlay and a two-storey carpark to the north. The existing tower is highlighted in yellow. Top right, the plan for additional levels.



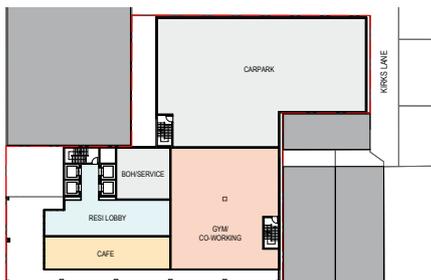
Proposed typical upper level (12+)



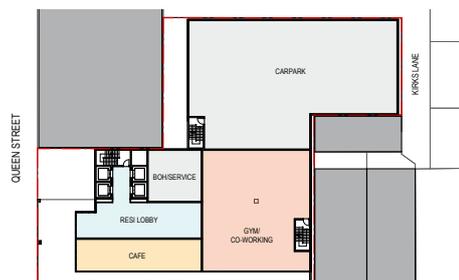
Existing typical office level (2-11)



Proposed typical lower level (2-11)

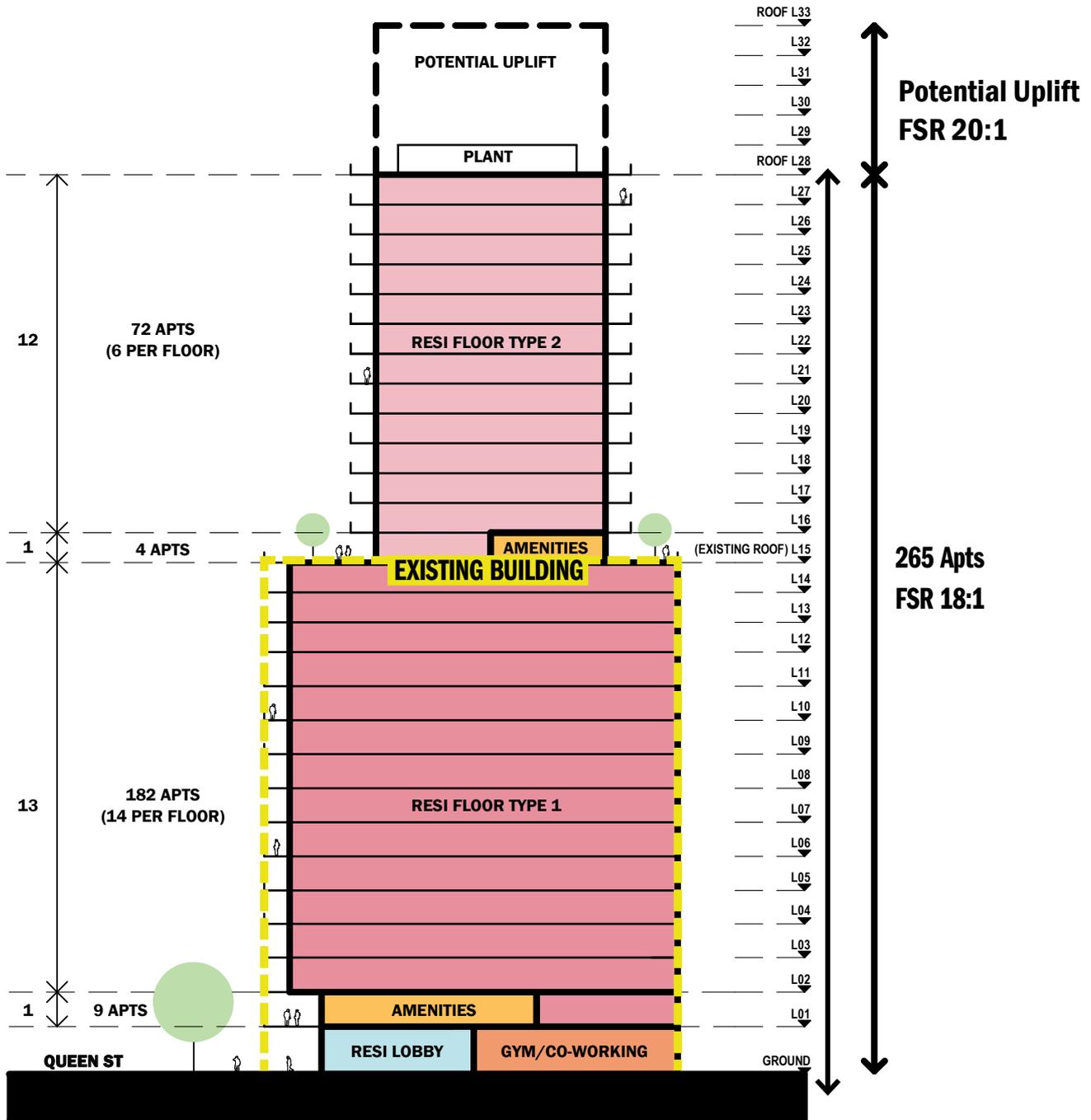


Existing ground level



Proposed ground level

The present structure maintains a notable disparity beneath the permissible 18:1 floor space ratio (FSR) limit. By implementing the addition of supplementary floors to attain the 18:1 FSR threshold, the potential capacity of the building could increase to accommodate an estimated 265 apartments. It should be noted that further potential for augmentation remains plausible, with the possibility of additional yield through potential uplift.



FSR 18:1

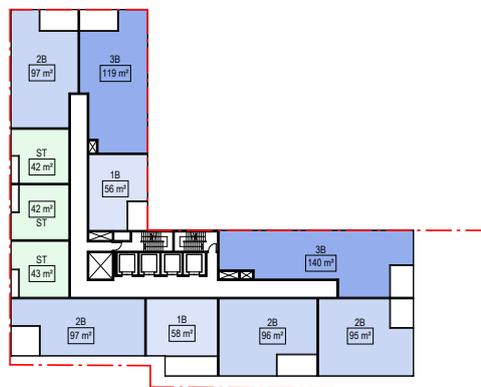
- Studios = 53
- 1 Beds = 93
- 2 Beds = 93
- 3 Beds = 26
- 265 Apts**

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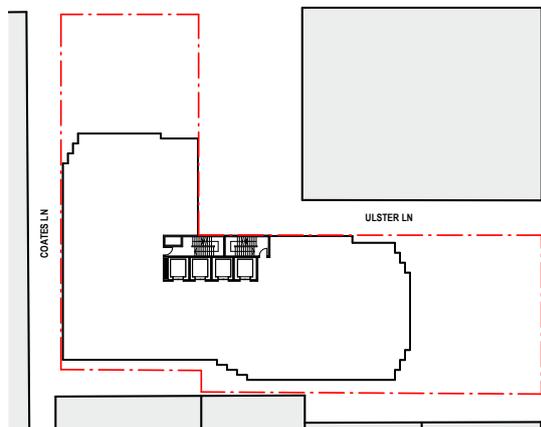
3. 85 SPRING STREET



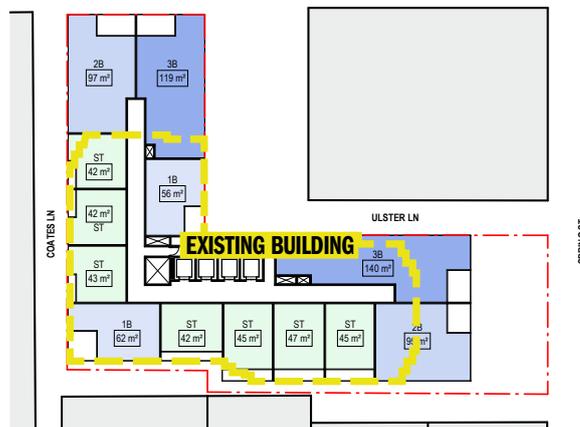
By exploring a building on Spring Street, we emphasise the value of compliant transformations that align with design standards. This case underscores the role of adaptive reuse within defined parameters.



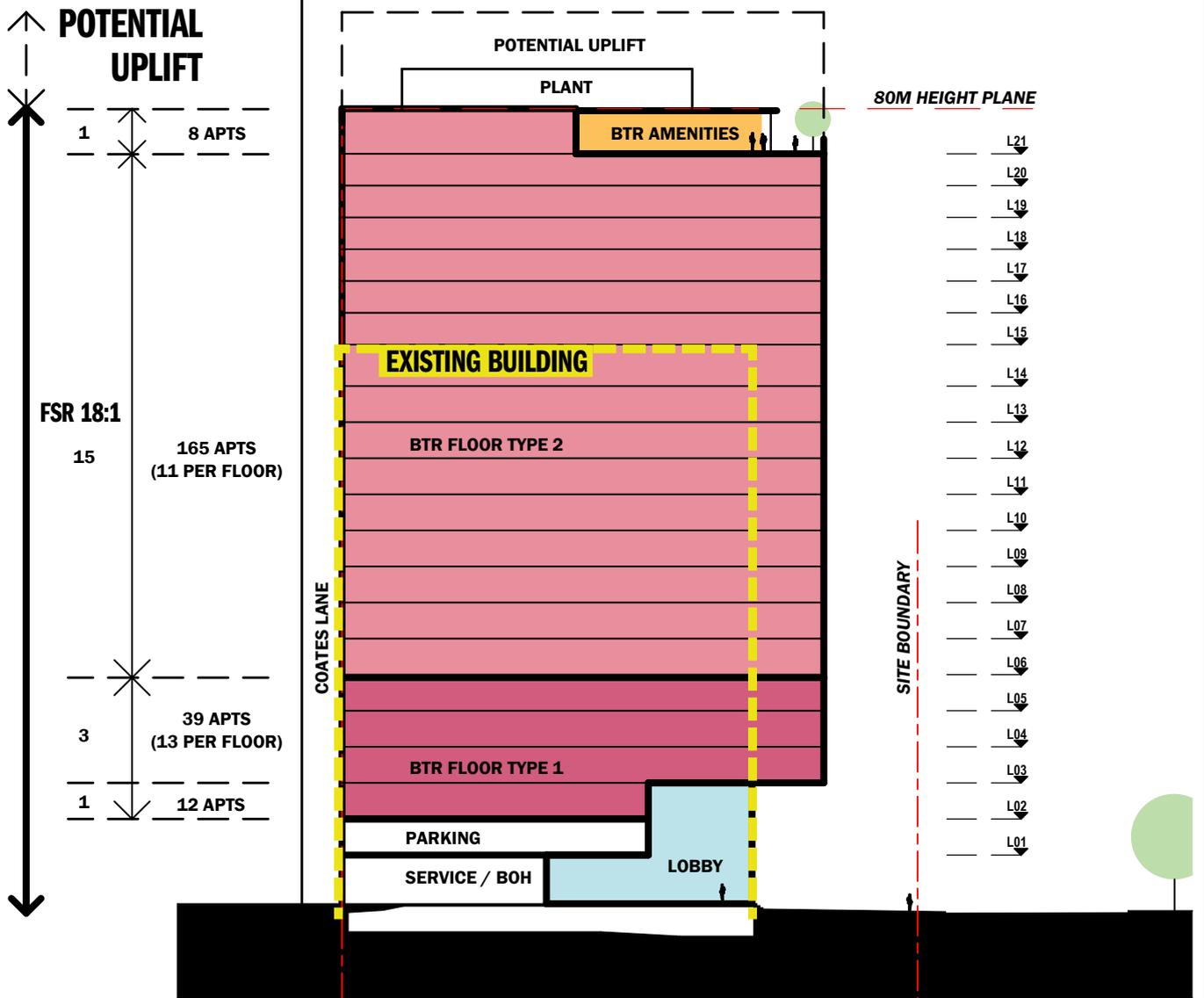
Typical tower plate mid level



Typical tower plate existing



Tower plate lower



Depicted above, the existing structure is visually outlined in yellow, accompanied by a projection of potential yield resulting from an elevation of the floor space ratio (FSR) to 18:1, indicating a potential capacity of 224 apartments. It is imperative to underscore that our intent is not to advocate for a universal adherence to the 18:1 FSR across all sites. Rather, we aim to demonstrate the potential productivity these sites could realise while adhering to the regulations stipulated in the Melbourne Planning Scheme Amendment C270.

FSR 18:1
Studios = 76
1 Beds = 41
2 Beds = 69
3 Beds = 38
224 Apts

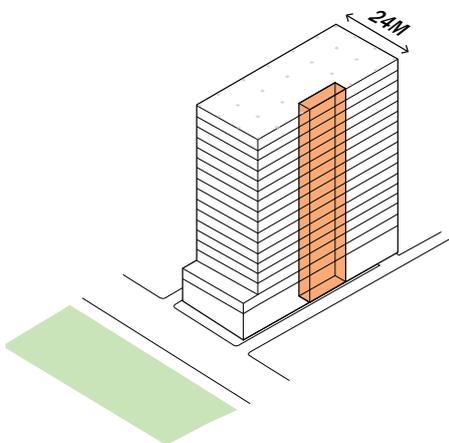
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What if we re-evaluated the prevailing regulatory framework?

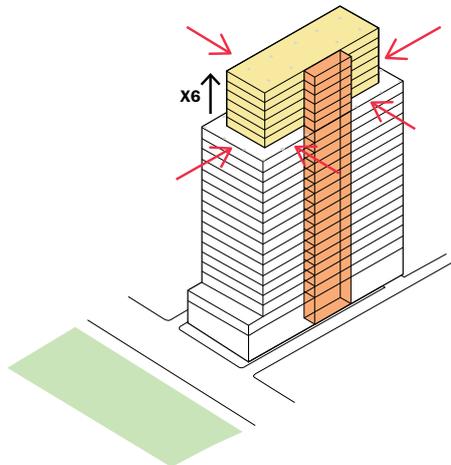
Our research has led us to consider the potential consequences of introducing a measure of discretion within the existing Melbourne Planning Scheme Amendment C270. Presently, C270 encompasses five distinct mechanisms that facilitate the enhancement of building capacity. Incorporating adaptive reuse and an allocation for affordable housing as supplementary avenues of influence could serve as catalytic factors in realising these projects, marking a promising initial step towards their actualisation.

The complaint scheme

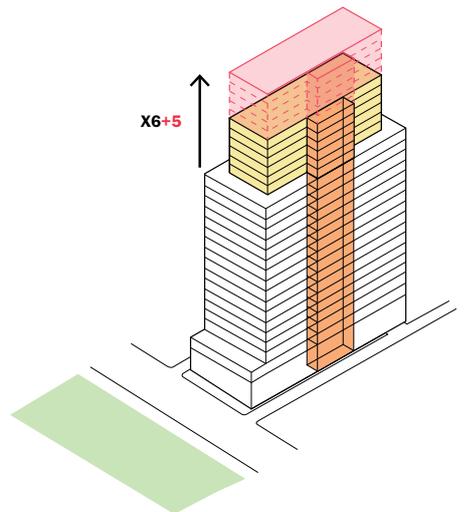
EXISTING BUILDING (16:1)



5M SETBACKS TO ADDITIONAL FLOORS ON ALL SIDES (18:1)



POTENTIAL UPLIFT (20:1)

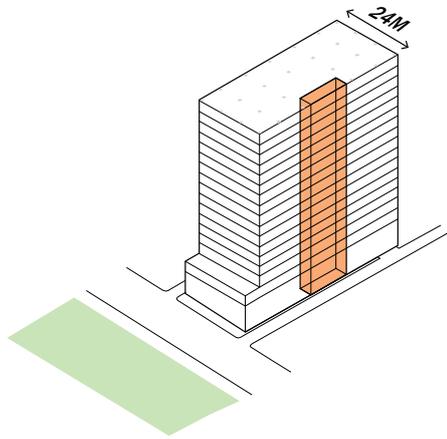


Above, using Case study 1 as an example, the existing building is 16:1 FSR. If we comply with C270 to add additional floors we would need to set back by five metres on all sides. To get to 18:1 would mean an additional six floors. To get to 20:1 would mean an additional 11 floors.

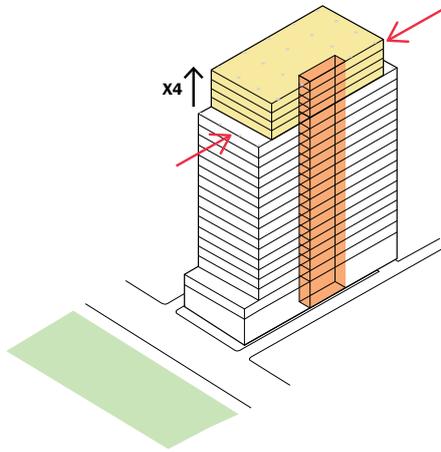
By introducing site-specific discretion, where additional floors are exclusively set back at the front and rear of the building. By adopting this approach, a mere four additional floors would be needed to achieve the 18:1 floor space ratio (FSR). For a further 20:1 FSR, a total of seven floors would suffice. This streamlined approach, pictured below, is not only more resource-efficient in terms of construction but also yields the benefit of a comparatively reduced building height.

The discretionary scheme

EXISTING BUILDING (16:1)



5M SETBACKS JUST FRONT AND REAR (18:1)

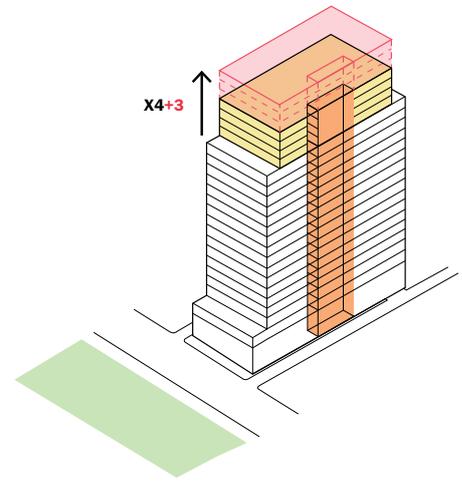


Maximum 24m width works for apartment proportions

Consideration of existing structure when extending above

Lift and stair core to side of office building works well

POTENTIAL UPLIFT (20:1)



Discretion to planning regulations to allow no side setbacks

New addition above with 5M front and rear set-backs

New addition aligned with structural columns below

Extend existing lift and stairs

The discretionary scheme



What challenges need to be overcome?



PLANNING

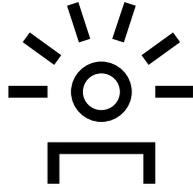
How can we promote through process?

Our research has highlighted several challenges that must be addressed to fully realise the potential of adaptive re-use:

Planning: Engaging in productive dialogues with planning authorities to redefine regulations and consider site-specific discretion for enhanced adaptability.

Design Innovation: Encouraging architects and designers to envision innovative designs that harness the full potential of repurposed spaces while ensuring compliance with design standards.

Market Perception: Shifting the market's perception to appreciate



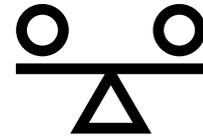
DESIGN

What design innovations can unlock the full potential?

the value and potential of adaptive reuse, fostering a demand for such developments.

Potential solutions include a review of uplift opportunities with the Melbourne Planning Scheme Amendment C270 and some site-specific discretion; support from both CoM and planning minister to streamline the approval process; and putting a value on the savings that can be made in upfront embodied carbon.

Our exploration into the conversion of B-D grade office buildings into residential units signifies a transformative approach to urban



THE MARKET

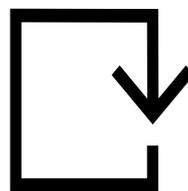
How can we re-value the 'full picture' beyond business as usual?

development. Through calculated methodologies, case studies, and the identification of challenges, we propose a comprehensive framework for unlocking the potential of adaptive re-use.

By engaging with regulatory bodies, encouraging innovative design, and altering market perceptions, we envision a regenerative future that integrates existing urban fabric with modern residential needs. This research serves as a steppingstone towards redefining urban landscapes and establishing a new era of sustainable development in Melbourne's CBD.

C270
+
BADS

Review for uplift and discretion given existing building constraints



Support from the planning minister's office to streamline



How do we 'value' the reduction of upfront embodied carbon in the planning system?

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