

SWITCH | Shared Density

Urbanarium | Decoding Density | Site D

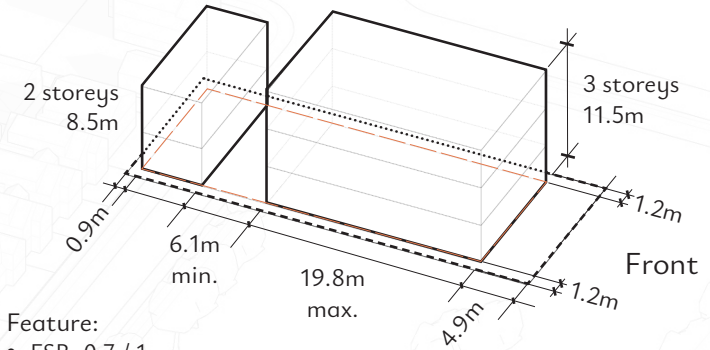
The project seeks affordability, flexibility and versatility through simplicity. Simplicity of means and techniques to allow and create an environment that promotes social connections and interactions, a sense of belonging and quality of life. The project should represent a simple, efficient and yet powerful way of living.



Current zoning rules

R1-1 (small scale residential)

Site dimensions and area: 15.23 m x 36.6 m | 557.5 m²

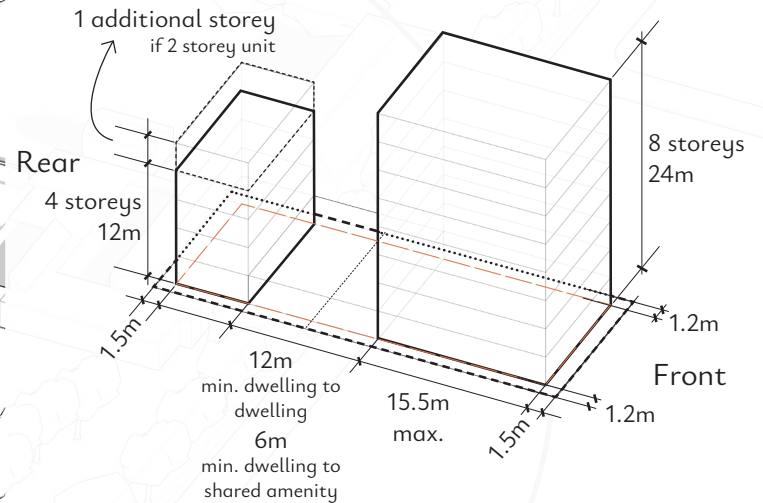


Feature:

- FSR: 0.7 / 1
- Up to 8 bedrooms development.

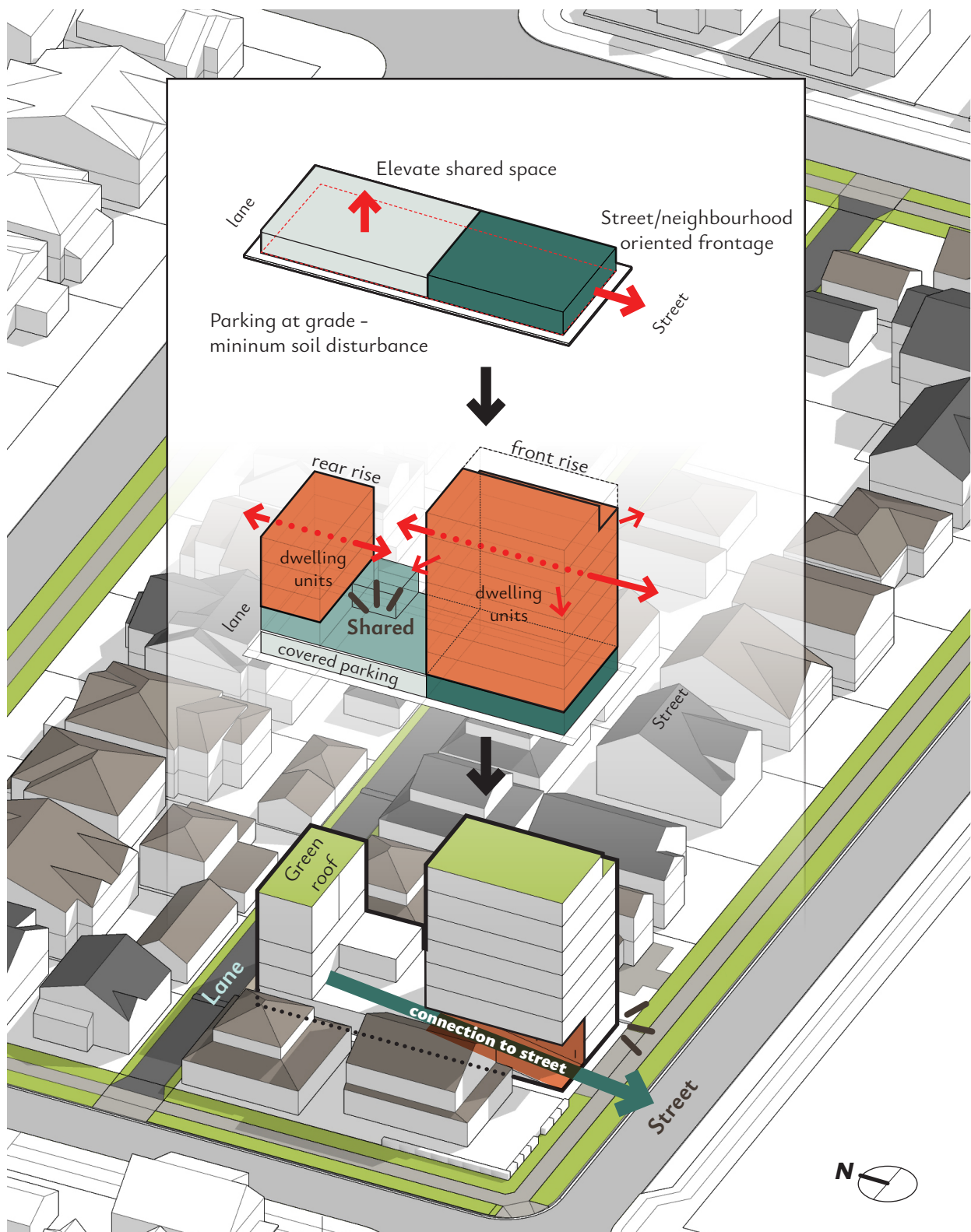
Revised zoning rules

R+ (mid scale residential)



Key updates:

- FSR: 3
- Increased maximum rear and front height to improve density.
- Improved inner courtyard dimensions.
- Reduced front building depth to promote crossing units.
- Up to 44 bedrooms distributed amongst various unit types.



Design Rationale

The project strives to make affordability a reality while focusing on providing quality of life, flexible enough to accommodate all sorts of living scenario.

SITE

- Designed to work on a single 50'x120' lot to avoid land assembly premium. Allowing the project to evolve by simple phases, one lot at a time. Creating opportunities for a broad range of development scenario: Owner-developer, Small developer, small Co-op, small Community Land Trust.
- No digging of underground parking to avoid costly site work.

BUILDING

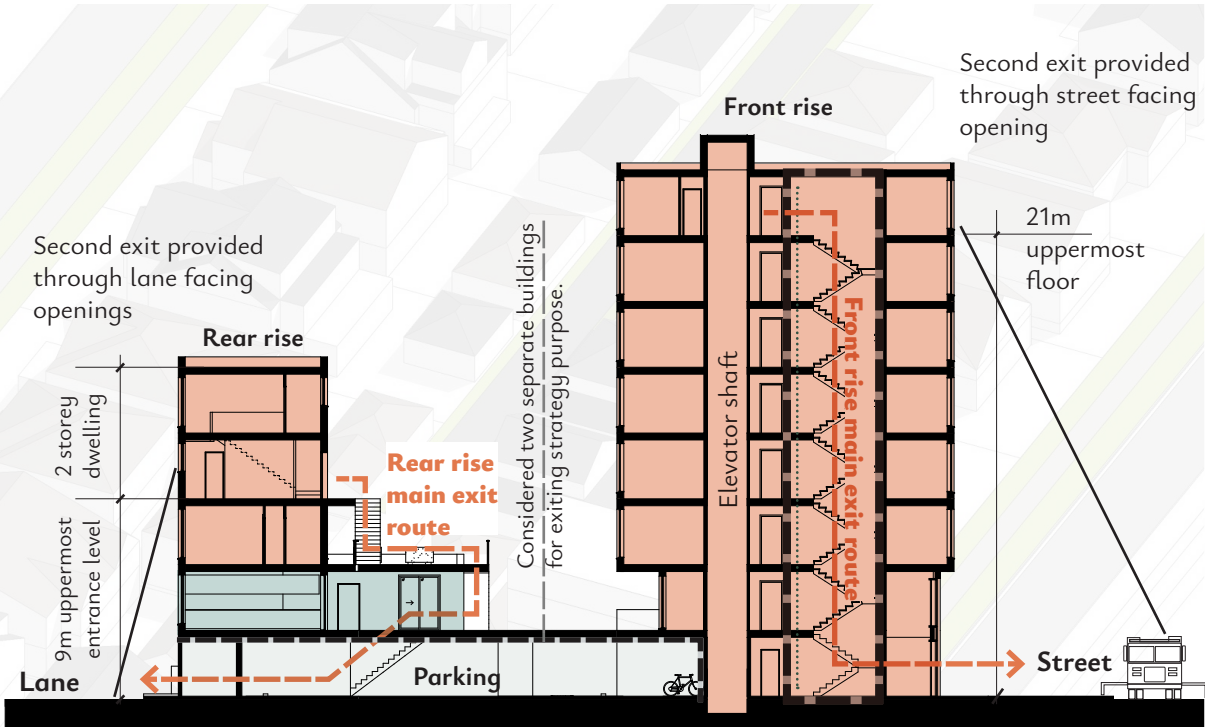
- Extrusion of a 8 level 'front-rise' and a 4 level 'rear-rise' sharing an exterior courtyard that provides main access to the dwelling units.
- Modular construction (boxes or panels or any efficient kind) to allow off-site construction in order to reduce waste, work in a controlled weather environment and improve the life and safety of a construction site. Pushing standardization to reduce costs.
- One internal staircase to maximize floor area efficiency and provide better quality of living by providing crossing units.
- Simple floor plate and common shaft to allow for flexibility in floor planning and ability to change programme over time. Can accommodate all sorts of lifestyle, from open space loft to 3 + bedrooms.
- Creation of a strong connection between the inner courtyard and the street.

SOCIAL

- Interior and exterior shared spaces are proposed to enhance livability. Common workshop, kitchen, exterior area are provided to promote exchange and foster a sense of community and belonging among residents. These social interactions contributing to a vibrant and supportive living environment.
- Ground level street frontage that permits interaction, where and when required, with neighbourhood. Small coffeehouse, work live studio, bike repair shop, you name it.
- The access to the courtyard from the street seeks to activate social interaction and visual connection.

ENVIRONMENTAL

- Compact and simple form factor for improved energy efficiency. Aiming for step code 4 and beyond.
- Green Roof to manage water retention and let small wild life flourish.
- The front-rise roof top can host renewable energy production system.
- Efficient insulation factor and solar gain/protection to maximize low consumption and avoid overheating during warmer season.



Second exit provided through street facing opening

Second exit provided through lane facing openings

21m uppermost floor

Considered two separate buildings for exiting strategy purpose.

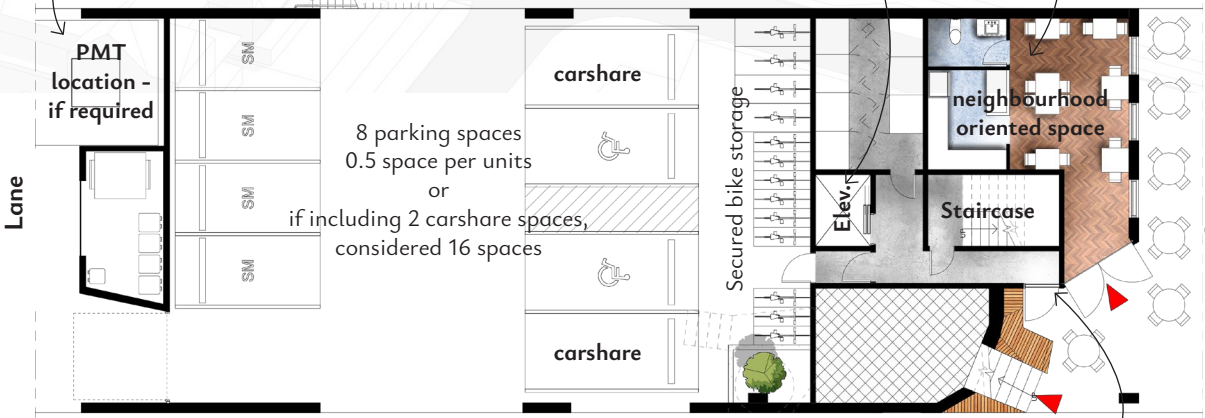
- Parking covered under concrete slab or other 2hr (min.) fire resistant assembly
- Standpipe in pressurized and fire rated staircase
- Fire dept. connection on street side
- Very low occupant load per floor

The PMT could be shared between several developments

Side setbacks allow fire fighter access from street and possible openings in the units, as allowed by limiting distances calculations

Elevator can fit a stretcher

Multi-use street oriented space



Ground Level

Front rise exit at street level

Cracking the code

• Building Code Reference: BC Building Code 2024:

Based on a typical code analysis, the current prototype would fall under 3.2.2.48. Group C, up to 12 Storeys, Sprinklered. Requiring a fire resistance rating of floor assemblies and load bearing elements of 2 hours. Because of its height it would also require 2 exit staircases.

But, considering its reduced floor area, it could be looked as follows: Proposed alternative code article

3.2.2.54.b: 'Group C, up to 8 storeys - 21m, Small Footprint', Not more than 8 storeys - 21m uppermost level - in building height, and building area not more than the value in the following table.

No. of Storeys	Maximum Area, m ²		
	Facing 1 Street	Facing 2 Streets	Facing 3 Streets
1	1,800	2,250	2,700
2	900	1,125	1,350
3	600	750	900
4	450	562.5	675
5	360	450	540
6	300	375	450
7	255	320	385
8	225	280	337.5

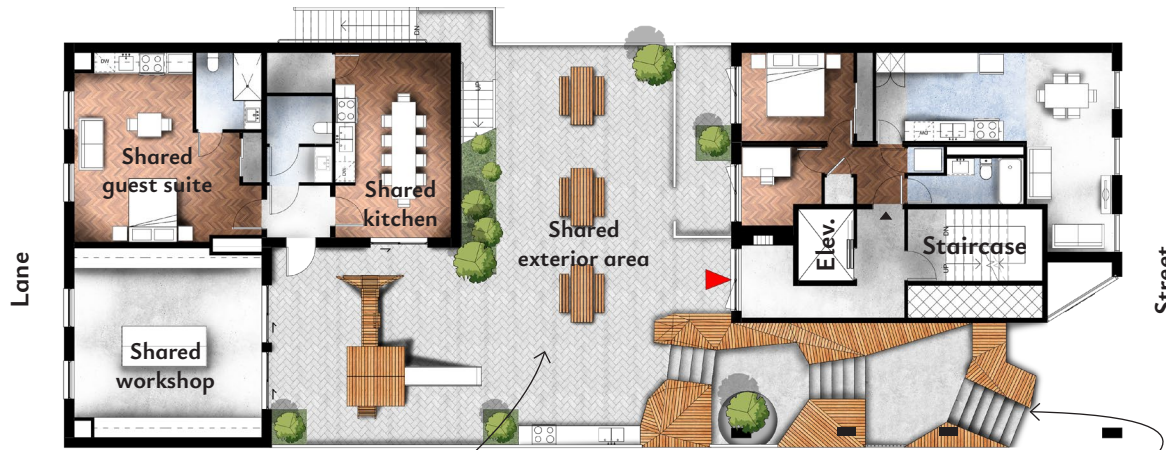
Added lines

Combustible construction or noncombustible construction used singly or in combination, where all load-bearing elements as well as floor assemblies are fire separations with a fire-resistance rating not less than 45 min,

Other requirements such as standpipes and fire alarm system remain as applicable.

3.4.2: Number and Location of Exits from Floor Area
As for the exit strategy, the 'front rise' aligns to building regulation abroad, well documented (i.e. <https://secondegree.ca/Jurisdictions>), where only one exit stair is permitted up to 8 storeys, provided that openings on the street side are accessible to an aerial ladder truck. The 'rear rise', due to its lower nature, has an exterior exit stair, and openings on the lane side accessible with an 10.6m extension ladder.

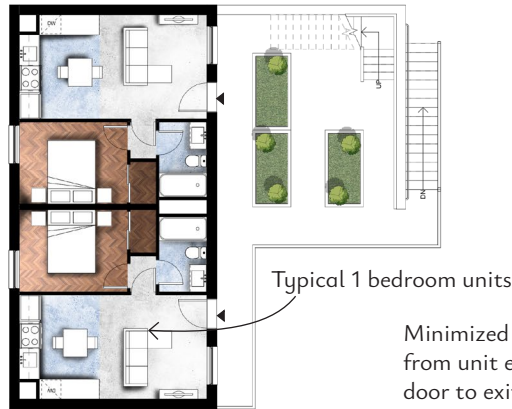
These measures aim to keep a satisfactory level of life a safety, meeting the Objectives and Functional Statement as outlined in the Building code.



Level 2

Shared courtyard as the **beating heart** of the development

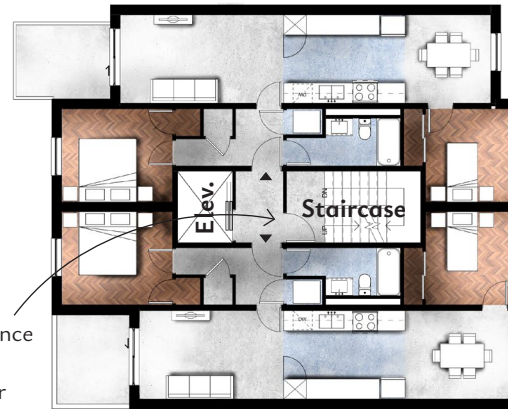
Access walkway offers strong connection of the courtyard and rear rise with the street



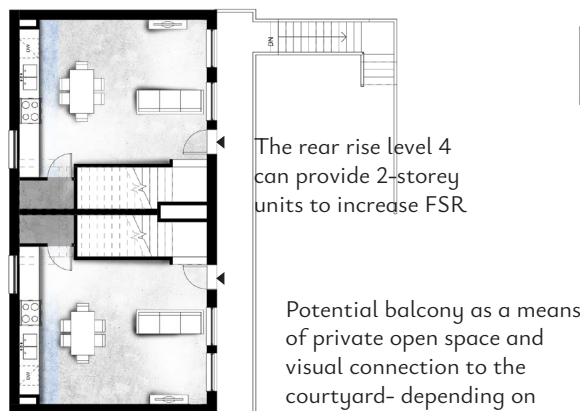
Level 3

Typical 1 bedroom units

Minimized distance from unit egress door to exit door



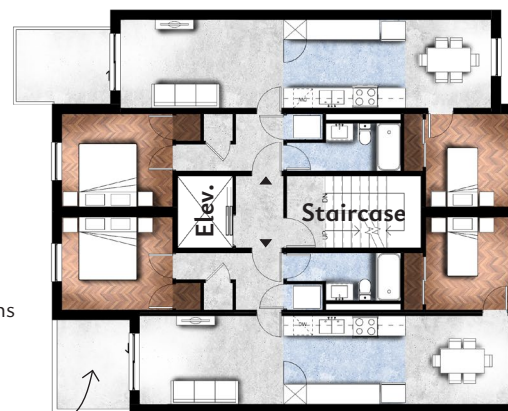
Typical 2 bedroom units



Level 4

The rear rise level 4 can provide 2-storey units to increase FSR

Potential balcony as a means of private open space and visual connection to the courtyard- depending on development programming



Economic Rationale / Proforma

The project has been tested to see if it is viable under two scenarios - a market condo building and a purpose-built rental building.

The market condo option demonstrates that the project can make sufficient returns for the landowner/investors to secure standard construction financing. However, this is only possible when the sale values are close to or at current prices for condominiums in urban area such as Vancouver (i.e. approximately \$1,400 per sqft). This test demonstrates and confirm that providing affordable home ownership would require the construction cost to be reduced through measures such as prefabrication off-site and efficiencies gained through repetition and standardization.

Summary Proforma - Market Condo	
REVENUE	
Sales Revenue	\$ 16,873,532
COSTS	
Land	\$ 4,410,000
Soft costs	\$ 2,574,430
Hard costs	\$ 5,776,852
Financing costs	\$ 550,576
Project cost	\$ 13,311,858
Net Revenue	\$ 3,561,674
Return on Capital	26.76%

Summary Proforma - Purpose-Built Rental	
MARKET VALUE	\$ 12,747,867
COSTS	
Land	\$ 4,410,000
Soft costs	\$ 1,207,500
Hard costs	\$ 5,672,294
Financing costs	\$ 612,433
Project cost	\$ 11,902,227
Supportable loan	\$ 9,958,256
Equity required	\$ 1,943,971

The costs incurred for the land will cover the equity requirement

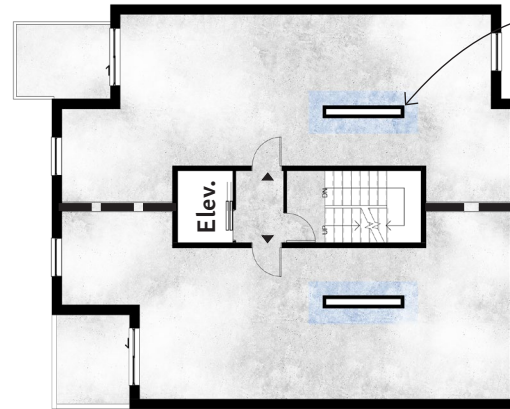
The purpose-built rental option offers more room for inserting greater levels of affordability into the project. The proforma provides a test at current market rates for new rental construction in Vancouver. Based on these assumptions (i.e. approximately \$4.00 per sqft) and using the CMHC MLI Select programme for cheaper construction financing, there is the potential to use just the land purchase as the equity. In fact, the analysis shows that only half of the current land value would be required as equity (roughly \$2m out of the \$4m value) to access a construction loan. **If the land was mortgage free then there is considerable scope to reduce the rents significantly and still meet the equity test for getting the project into construction.**



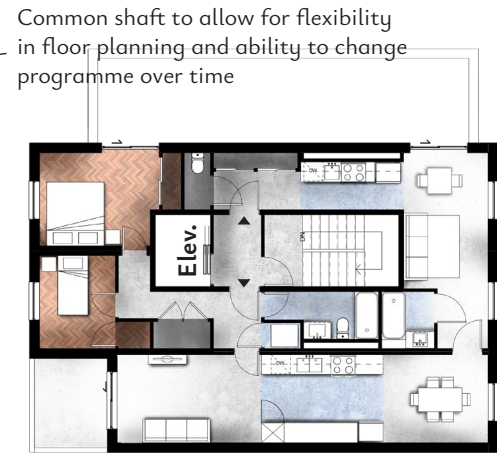
Level 5
Upper level of 2-storey unit



Flexibility @ Level 5 & 6
Example of possible 4 bedroom and 1 bedroom unit layout



Flexibility @ Level 7
Floor plate as shell space, reducing the developer construction cost. Helping first time buyer to get into the market and adapt the layout to their needs over time.



Flexibility @ Level 8
Upper most level, 2 bedroom associated with a small studio. Can offer access to a shared rooftop patio.

Common shaft to allow for flexibility in floor planning and ability to change programme over time



Now that the rules are set and no land assemblies are required, the prototype can evolve, easily adapting to social and economic context and need. Creating a vibrant new streetscape.

Over time, as new developments appear, the courtyards could be connected.

One way lane with speed bump

Neighbourhood bike repair shop

Convenience store

Work-live unit

Neighbourhood coffeehouse

Architecture office

Development area summary:

Site: 557.6 sq.m
Parking: 270.7sq.m

Rear Rise residential units	sq.m		sq.m
1 bedroom	42	x2	84
2 Bedroom (2 storey unit)	84	x2	168
Front Rise residential units			
1 bed + den @ level 2	68.7	x1	68.7
Typical 2 Bedroom layout	77.3	x10	773
2 bed + studio @ level 8	117.3	x1	117.3
Other			
Interior Amenities	118	x1	118
CRU	42.5	x1	42.5
Bike storage	25.3	x1	25.3
Lockers	18	x1	18
Lobby (total)	22.1	x1	22.1
Vertical circulation	19.2	x8	153.6
TOTAL Gross Floor Area			1,590.6



Conceptual Section/Elevation



Shared courtyard (during a birthday party)



Street Elevation and relation to adjacent buildings



Street frontage / activation of neighbourhood

Over the years a new streetscape takes shape.

