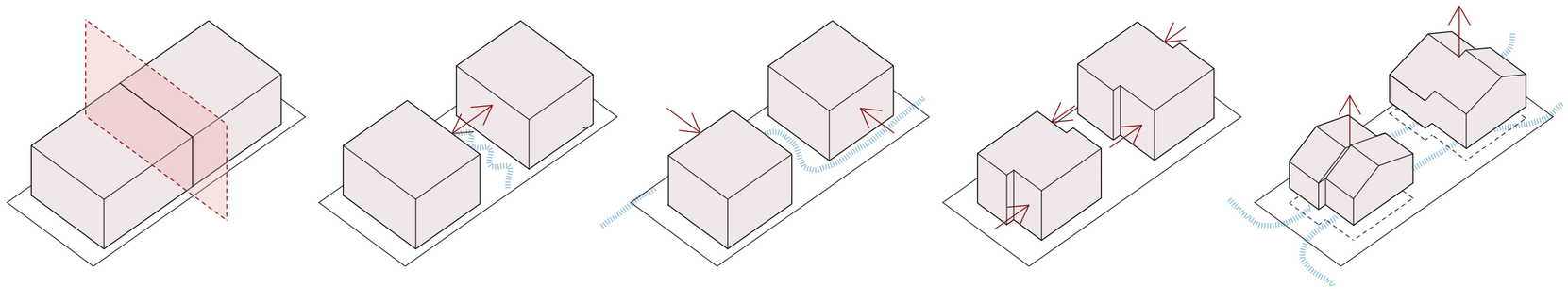
Category 1 : Second Storey Dwellings

HIGHER GROUND



SPLIT BASIC MASSING | SEPARATE > COURTYARD | PUSH > ACCESS PATHS | OFFSET > PRIVACY | LIFT > PERMEABILITY

Overview

As the need for more housing options grows in the District of Squamish, so does the public appetite for community-oriented living.

Higher Ground is a new medium-density housing typology which aims to integrate into existing neighbourhoods, while extending responsiveness and resiliency of the built environment in the face of climate change.

The project takes a practical approach towards creating usable outdoor and amenity spaces through nuanced considerations of setbacks and massing. Permeability and flow drive the project's siting and organization, emphasizing sight lines and physical connections between the ground plane of the site, the adjacent street, and dramatic landscape beyond.

Higher Ground is meant to feel like an extension of the public street, broadening the diversity of multi-family housing while respectfully acknowledging the form and character of existing building stock.

HYPOTHETICAL CONTEXT

Innovation & Creativity

Higher Ground aims to strike a balance between nature and development, as Squamish continues to experience rapid growth. The project's design flows from the street towards an interior courtyard, to encourage sociability and connection while still respecting the privacy of residents and neighbours.

Opportunities for community-building are embedded across the site, where the open outdoor plan allows for multiple programmatic needs to be met at once. By keeping the programming of common spaces flexible, the project avoids wasting space on large and seldom-used generic "amenity rooms", instead placing focus on human-scaled gathering places with communal features, such as a large outdoor dining area and fire pit.

Aesthetics

Higher Ground is forward-thinking and progressive, like Squamish itself, and champions the "quirky and eclectic" vibrancy of the district. It allows these values to be represented in the built environment while acknowledging and embracing its place in the existing landscape.

This ethos is expressed in the simplified forms, local materials, and attention to craft that has come to define pacific northwest regional modernism. However, the greatest aesthetic contribution of this design approach is that it fully embraces elevated living spaces as separate from the ground plane, allowing a free flowing landscape to be inhabited and utilized by human and non-human residents alike.

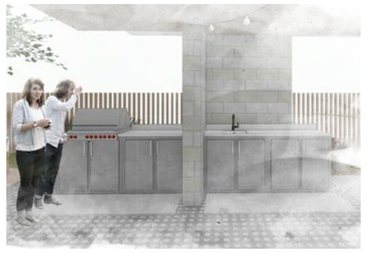
From the street and lane, pitched roofs with expressed eaves and wood rafter extensions minimize the building's mass and acknowledge neighbourhood form and character, lowering the perceived roof line to fit in with the scale of existing character buildings.

Clearly identifiable units each have distinct massing, private, ground-oriented entries, and unique colour palettes, balancing the dignity of individual residents with the cohesion of the whole.

Legend

1. Parking
2. Mechanical Room
3. Bike Parking
4. Garbage Room
5. Courtyard
10. Mailboxes
11. Rain Garden

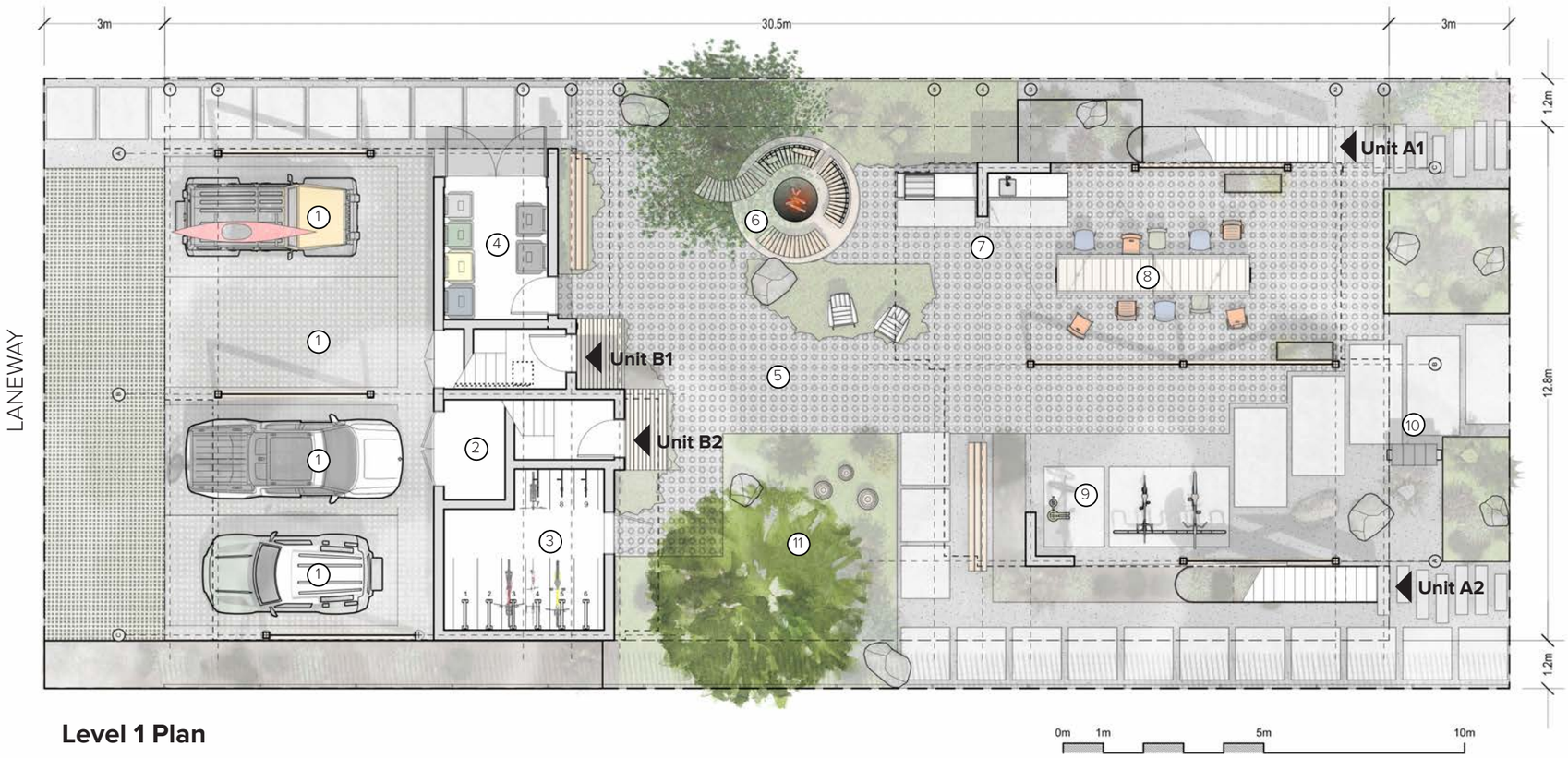
6 Common Fire Pit



7 Outdoor Kitchen

8 Long Table

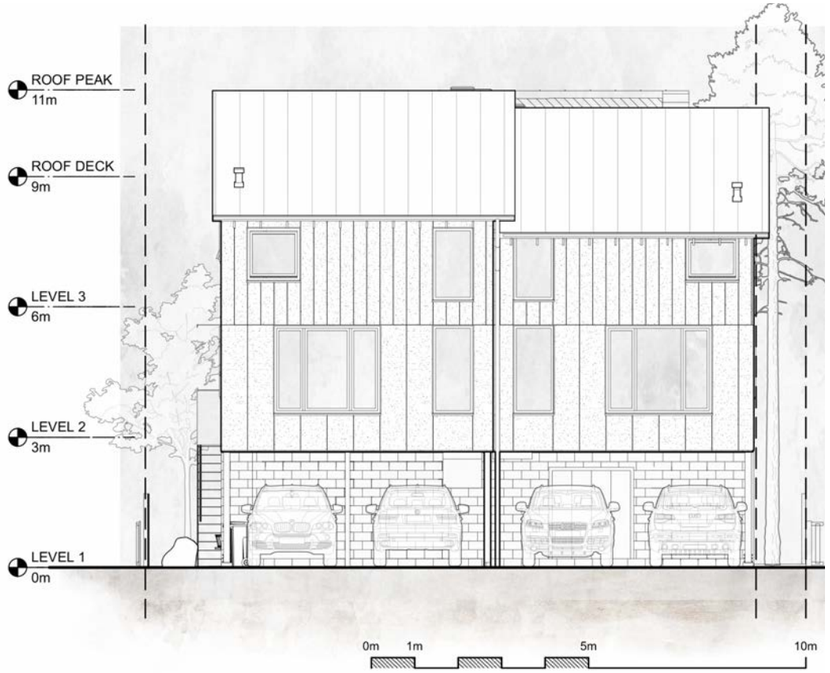
9 Bike Wash/Repair Station



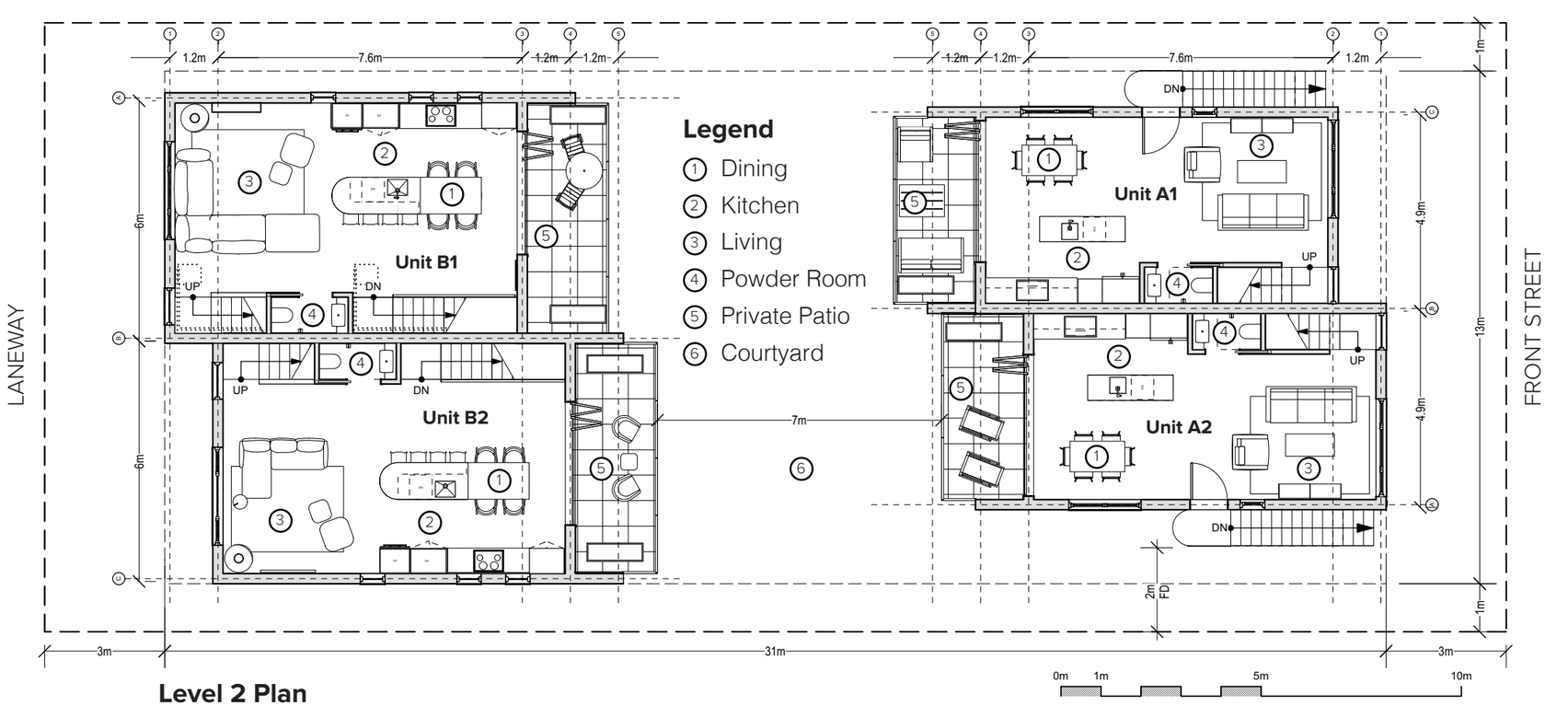
Level 1 Plan

Street Elevation

Side Elevation



Laneway Elevation



Level 2 Plan

Project Data

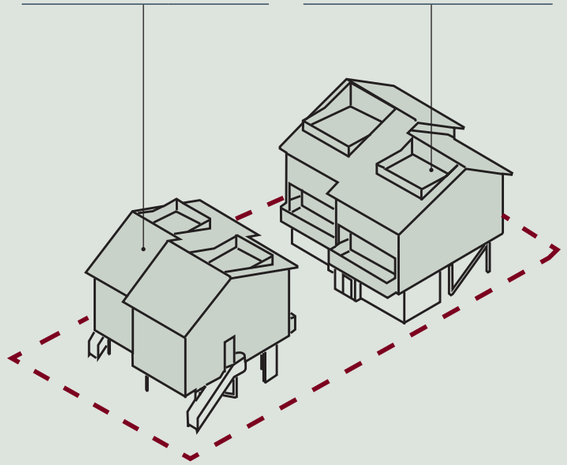
Site Area	555 sm
Dwelling Units	4
Gross Floor Area	476 sm
Floor Area Ratio	0.86
Flood Construction Level	3.0m
Site Coverage (Main level)	44%
Permeable Area	510sm (92%)
Vehicle Parking Spaces	4
Accessible Parking Spaces	1
Bike Parking Spaces	9 Class A + 6 Class B
Maximum Building Height	11.0m
Front Yard Setback	3.0m
Rear Yard Setback	3.0m
Side Yard Setback	1.2m

Unit Type A

Area	100 sm
Bedrooms	2
Baths	2.5
Parking Stalls	1
Bike Stalls	2 private

Unit Type B

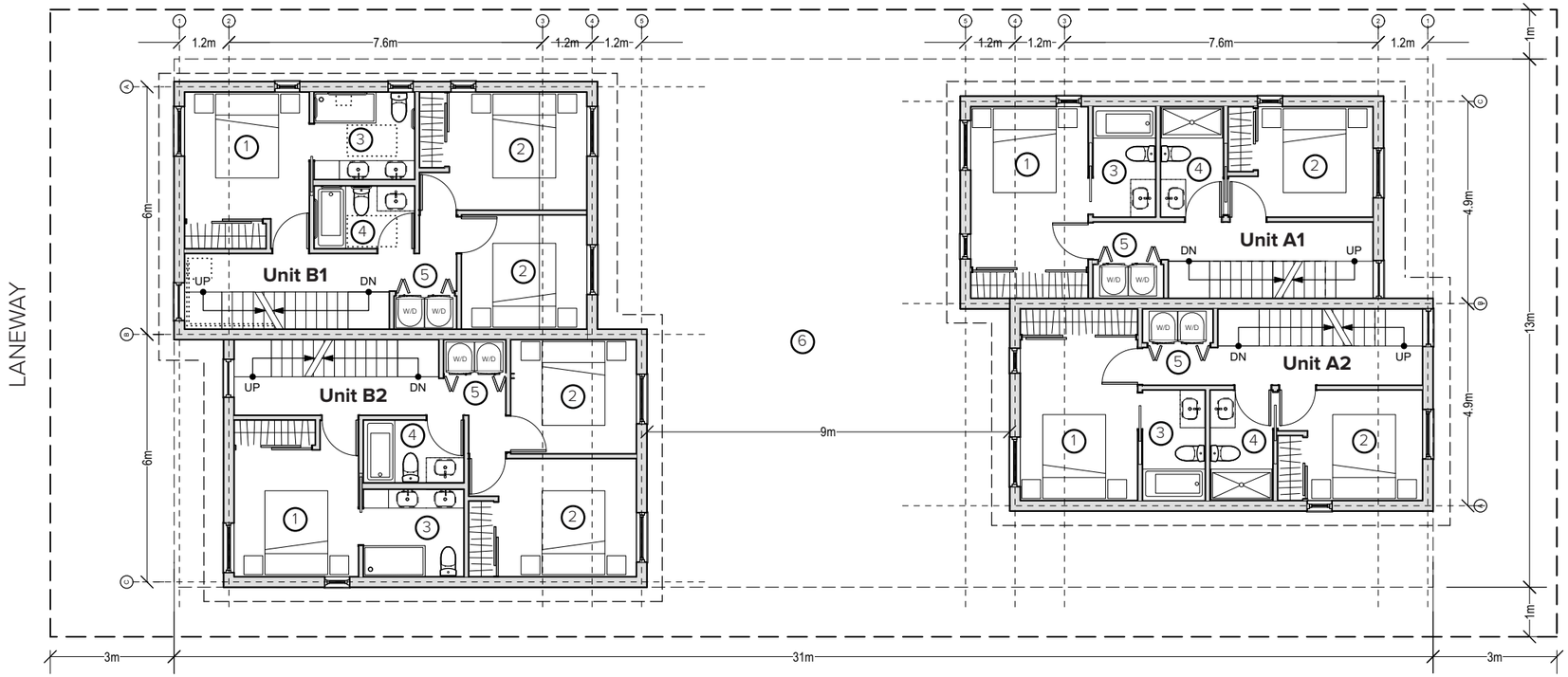
Area	125 sm
Bedrooms	3
Baths	2.5
Parking Stalls	1
Bike Stalls	2 private



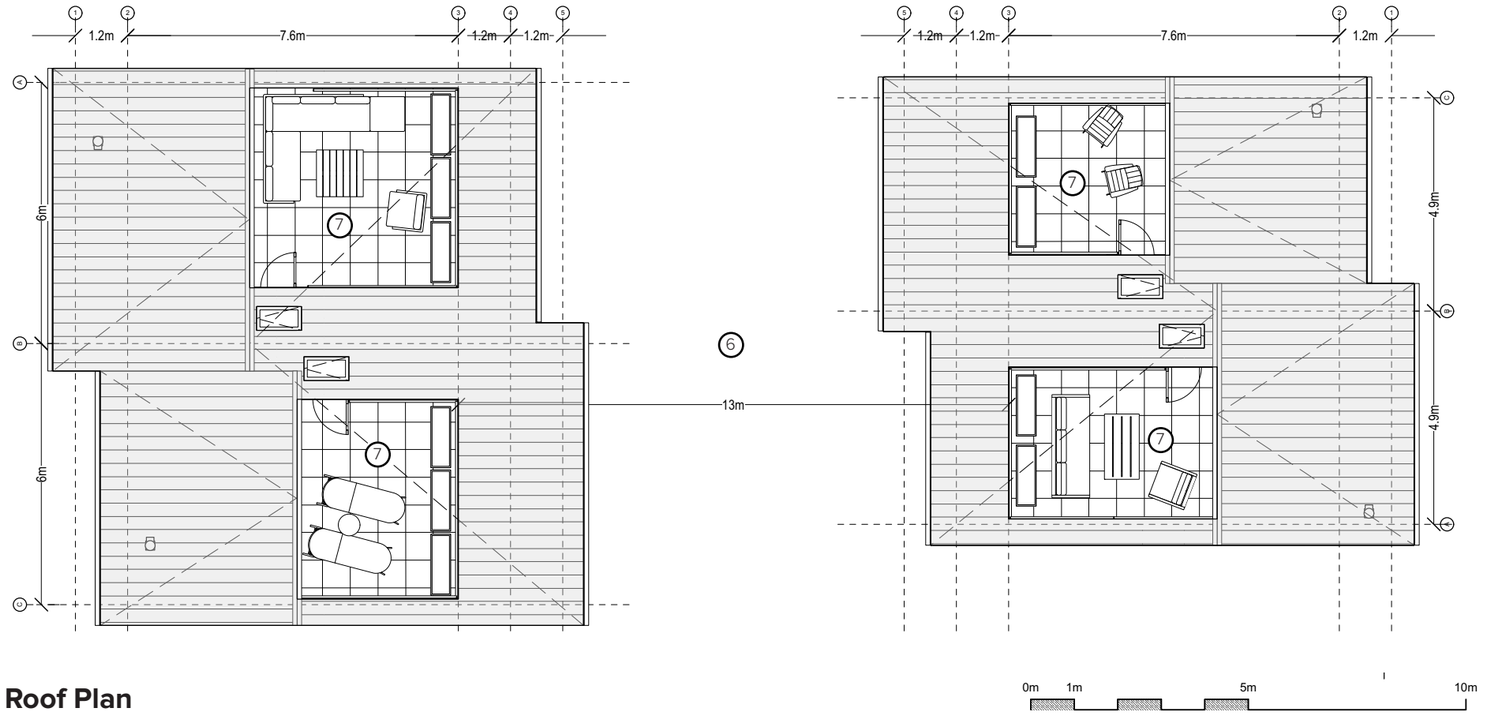
Legend

1. Master Bedroom
2. Bedroom
3. Ensuite
4. Bathroom
5. Laundry
6. Courtyard
7. Rooftop Patio

Level 3 Plan



Roof Plan



Sustainability & Resilience

The dual crises of housing unaffordability and climate change offer an opportunity to rethink housing in a way that centers on strong communities. Resiliency thrives in a built environment that supports and fosters healthy social networks - celebrating each others' highs and helping each other through lows.

Resilient communities, in turn, empower informed and engaged citizens who are better equipped to maintain and improve upon building stock, increasing longevity and reducing waste.

While a strong community is the key to resiliency, there are a number of design features that prepare residents for the challenges that this community is most likely to face in the next 100 years, particularly flooding and wild fires.

Key Features

1. High site permeability due to open ground floor and extensive landscaping allows for more efficient on-site rainwater management.
2. Storm water is captured by or directed to planted infiltration zones or rainwater harvesting cisterns for storage and reuse.
3. A mix of pervious and permeable paving and engineered substrates contribute to rainwater retention and management.
4. Courtyard dimensions are optimized to modulate solar gain according to season.
5. No basement or underground parking greatly reduces carbon-heavy concrete, costly excavation, and soils displacement.
6. Elevated living spaces and rooftop areas of refuge protect against extreme flooding events.
7. Non-combustible cladding, controlled openings, and air filtration reduces wildfire risks.

Sustainability & Energy Performance

Higher Ground aims to redefine conventional living by bringing a holistic approach to home and the environment, building a self-sustaining community where residents feel as connected to each other as they are to their shared resources.

Higher Ground targets the highest performance standards for heat loss, energy use, and greenhouse gas emissions, drawing on industry best practices to create more efficient, healthy, and comfortable housing.

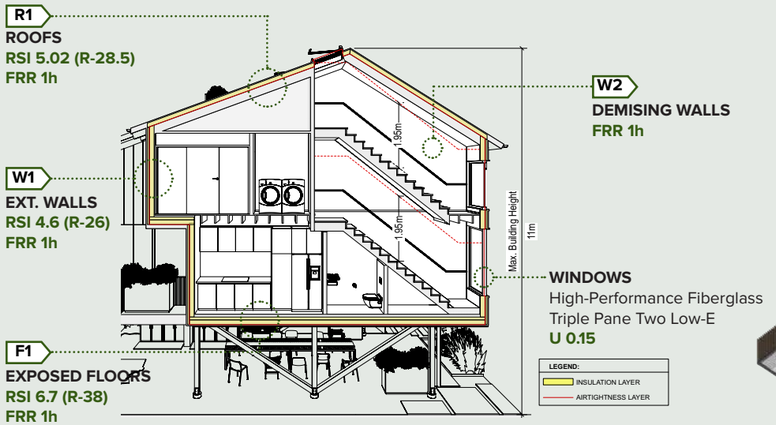
The primary strategies for achieving these goals include:

1. Massing
The bifurcation of the massing into separate street and laneway buildings allows natural light to penetrate the site and interior spaces, leading to more comfortable and energy efficient dwelling units. Each building approaches a compact cube-like geometry to maximize heating efficiency, resulting in lower Heat Loss Form Factor.

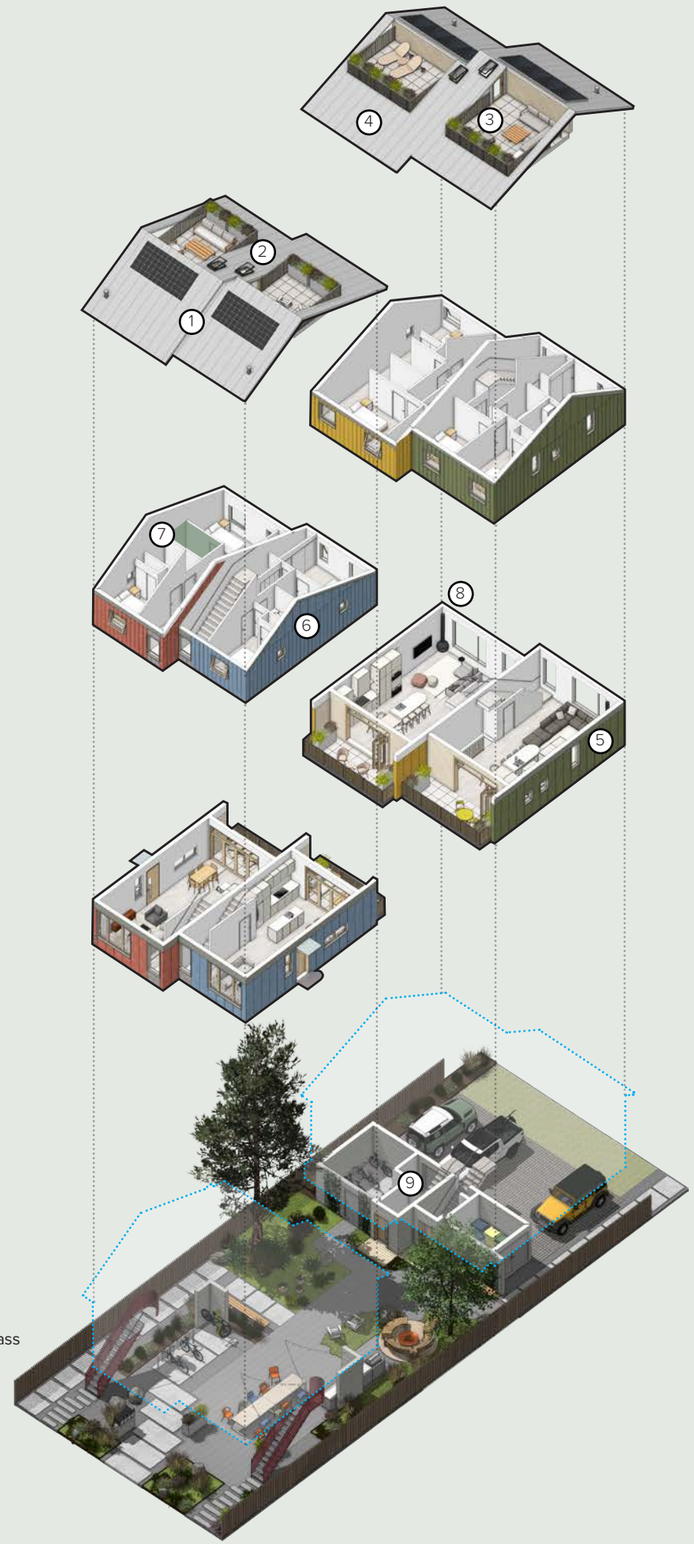
2. Building Envelope
Reducing the wall to floor area ratio and combining small punched openings with high performance assemblies reduces heat loss while providing controlled access to light, air, and views.

3. Materials
A primarily wood frame structure and carefully chosen, low carbon materials and methods, coupled with zero emissions systems, paves the way for Net Zero neighbourhoods.

4. Systems
Reducing our carbon footprint starts with reducing our energy requirements. With more dwelling units on a small site, this can be challenging, but responsible fixtures, systems, and lighting will help reduce loads. Systems will move away from fossil fuels to high efficiency electric systems such as air source heat pumps or radiant heat with smart thermostats to avoid overheating.



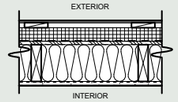
Typical Building Section



Key Features

1. Solar panel ready roof w/ room for enhanced metering and protected battery storage.
2. Operable skylights above stairwells allow for passive cooling through natural ‘chimney effect.’
3. Roof patios incorporate blue roof technology for enhanced storm water retention / collection.
4. Gable roofs designed to support snow shedding and reduce snow loads while a 30 degree roof pitch optimizes solar collection.
5. An enhanced thermal envelope, with increased insulation and airtightness and reduced thermal bridging, is geared to Step Code 5 targets. Layouts allow room for additional wall thickness for adaptability to higher performance and variations in cladding.
6. Smaller punched openings help control heat loss, and can be enhanced with high performance windows, localized solar shading, and window treatments according to specific project orientation.
7. A dedicated ERV for each dwelling unit, combined with tighter envelope, maintains high indoor air quality with reduced heating loads.
8. A Passive House certified, direct combustion wood stove can serve as backup heat in the event of power outage.
9. The proposal is designed to accommodate an economical sprinkler system to comply with **NFPA 13D**, and includes space for a dedicated water meter / pump room.

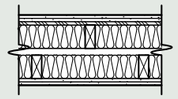
W1 EXTERIOR WALLS



RSI 4.6
FRR 1h

- 5/16” Fiber Cement Siding
- 3 1/2”x3/4” Wood strapping @ 16” o.c.
- 2” R8 Mineral Wool Rigid Insulation
- Self-Adhered vapour permeable air barrier
- 1/2” Borate preservative treated Plywood sheathing
- 2x6 Wood studs @ 16” o.c. with R22 Batt Insulation
- 1/4” Polyethylene vapour barrier
- 5/8” Type X Gypsum wallboard

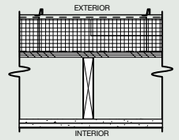
W2 DEMISING WALLS



FRR 1h

- 2 Layers 1/2” Type X Gypsum wallboard
- 1/2” Plywood sheathing
- 3 1/2”x3/4” Wood strapping @ 16” o.c.
- 2x4 Wood studs @ 16” o.c. with Acoustic Batt Insulation
- 1” Air Gap
- 2x4 Wood studs @ 16” o.c. with Acoustic Batt Insulation
- 2 Layers 1/2” Type X Gypsum wallboard

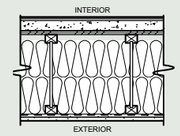
R1 ROOFS



RSI 5.02
FRR 1h

- 24 ga. Pre-formed locking metal roof system
- 5” R28.5 Polyisocyanurate Insulation (R5.7/inch)
- HT self-adhered membrane
- 5/8” Plywood sheathing
- 2x10 Rafters @ 24” o.c.
- 2 Layers 5/8” Type X Gypsum wallboard

F1 EXPOSED FLOORS



RSI 6.7
FRR 1h

- 1/4” Finish Floor
- 1/4” Acoustic Underlay
- 1 1/2” Concrete topping
- 5/8” Plywood sheathing
- 11 7/8” I-Joists, spacing per structural
- 2 Layers 5 1/2” R24 Mineral Wool Insulation
- Self-Adhered vapour permeable air barrier
- 2 Layers 5/8” Type X Gypsum wallboard

Accessibility & Universal Design

Higher Ground offers two unit types, both of which have been designed to be easily adaptable for increased accessibility standards.

- Stairs are carefully designed to allow for future installation of a stair lift.
- Bathroom layouts are adaptable to BCBC 2025 standards, including pocket doors and grab bars.
- Integrated dining table is demountable to allow for additional clearances in the kitchen.
- The common ground plane can be accessed all on one level (no steps or significant grade changes).
- On the ground plane, permeable surfaces, including stabilized gravel, are suitable for wheelchairs, and can be substituted for more continuous hard surfaces to increase accessibility.
- Accessible parking stalls can be accommodated.

Unit Type B Kitchen & Dining

Unit Type B Living Room

Affordability & Cost Effectiveness

Higher Ground takes a holistic approach to affordability, focusing on investment in strong communities, which provide long-term value through shared resources, increased physical and mental health, and a more stable and equitable society. Other strategies include:

- High number of units that are comfortably livable but modest in scale
- Repetition and stacking of design features, along with modular dimensions and components throughout lower material and labour costs
- Standardized design allows for site built or integrated off site and prefabricated approaches
- Locally sourced building materials and techniques lower risk, increase uptake, and support regional economy

Construction Cost Estimate

Gross Floor Area (sm)	476
Construction Materials + Labour	$1,537,480
Utility connections (varies with site)	$25,000
Total Construction Hard Cost	$1,562,480
Soft Costs	$312,496
Development Cost Charges	$42,988
Total Development Cost	$3,480,444
Cost per Square Metre	$7,312
Cost per Unit	$870,111
Land Purchase Cost	$1,358,584
Total Development Cost Including Land	$4,839,028
Cost per Square Metre Including Land	$10,166
Cost per Unit Including Land	$1,209,757

Assumptions

1. Hard cost per/sm are based on Altus Group 2024 Canadian Cost Guide, Private Sector, Wood Framed Residential, 3 Storey Stacked Townhouse, Vancouver, medium-high level of finish, $300/sf ($3230/sm)
2. Soft costs are estimated at 20% of hard cost, based on BC Ministry of Housing's SSMUH and TOA Scenarios in British Columbia report and includes pre-development costs, consultant fees, permit application fees, topographical surveying, environmental reports, legal fees, engineering fees, and notification signage.
3. Development Cost Charges are calculated per District Of Squamish Bylaw No. 2911, 2022.
4. Land Purchase Cost is based on current (as of October 2024) properties for sale that are of a comparable size and in the specified neighbourhoods, with high development potential.
5. Strata tenure and conventional For-Profit redevelopment financing.

Laneway Streetscape