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VESTLIA TRONDHEIM EXTENSION

WAUGH THISTLETON ARCHITECTS

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EXISTING

THE SITE

Construction :1972-75

Total buildings: 16

Levels/floors: 3

Total living units: 324

Units x building: 20



THE BUILDING



SW view



NW view

MATERIALS - TEXTURES

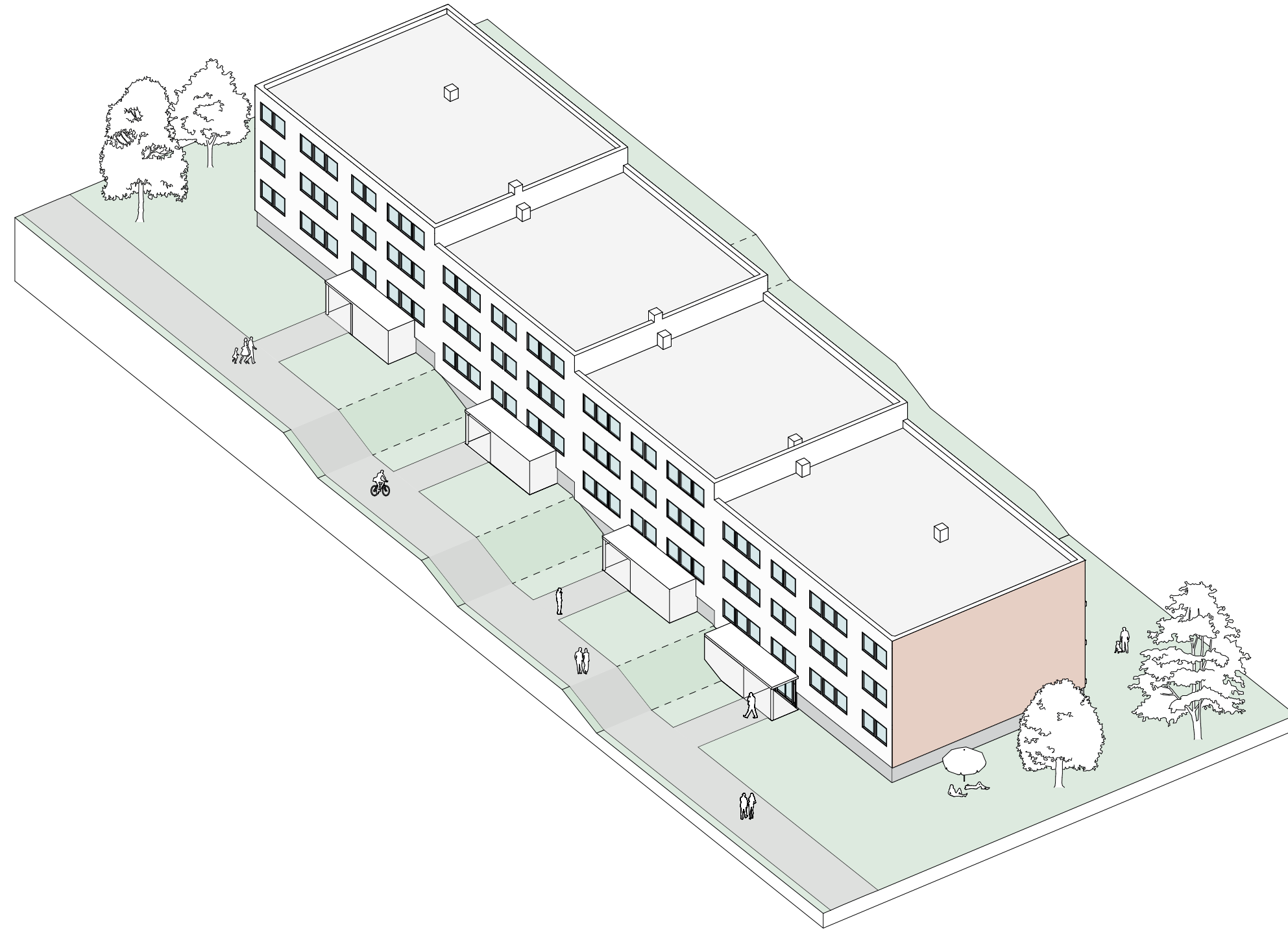


South elevation

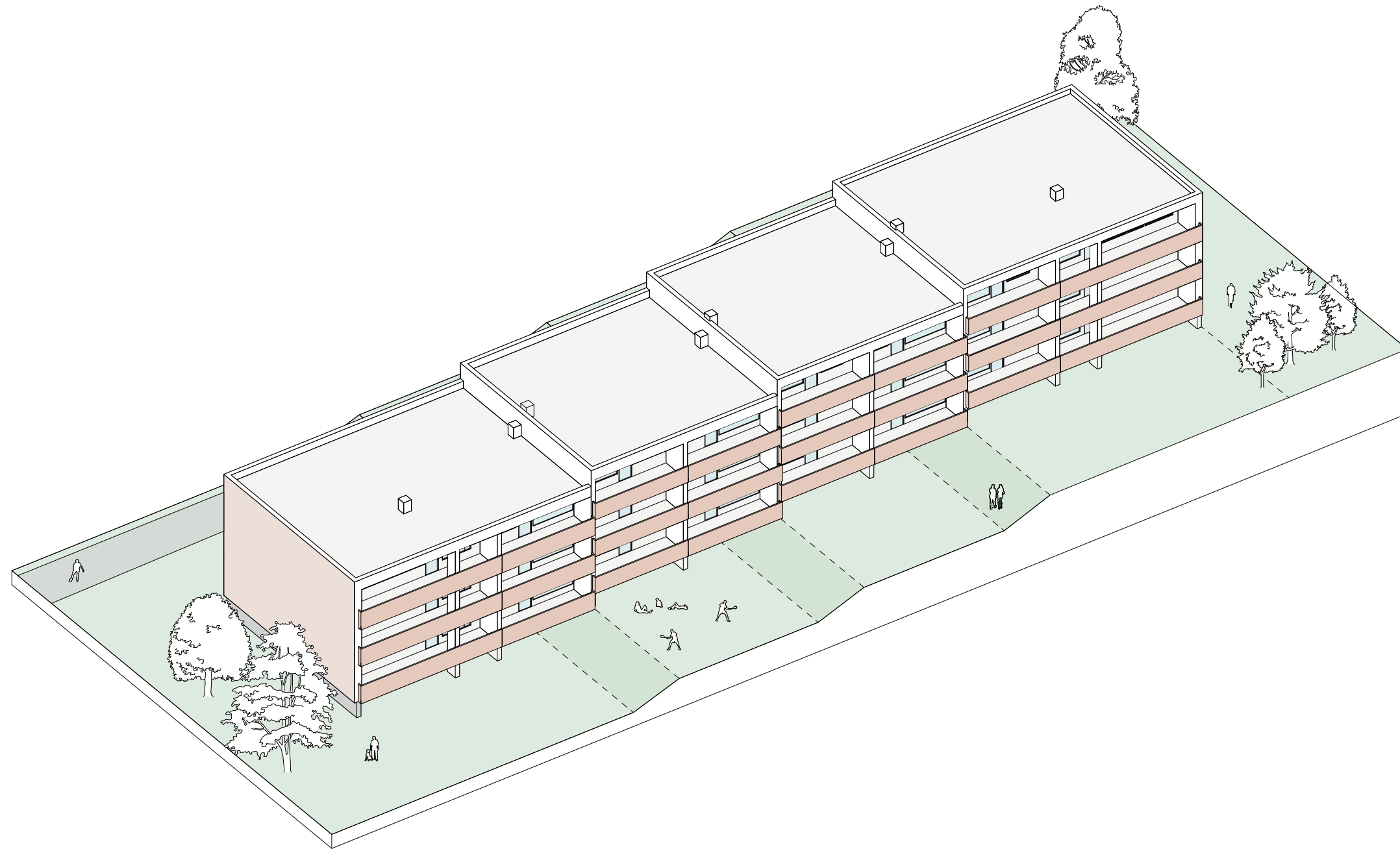


North elevation

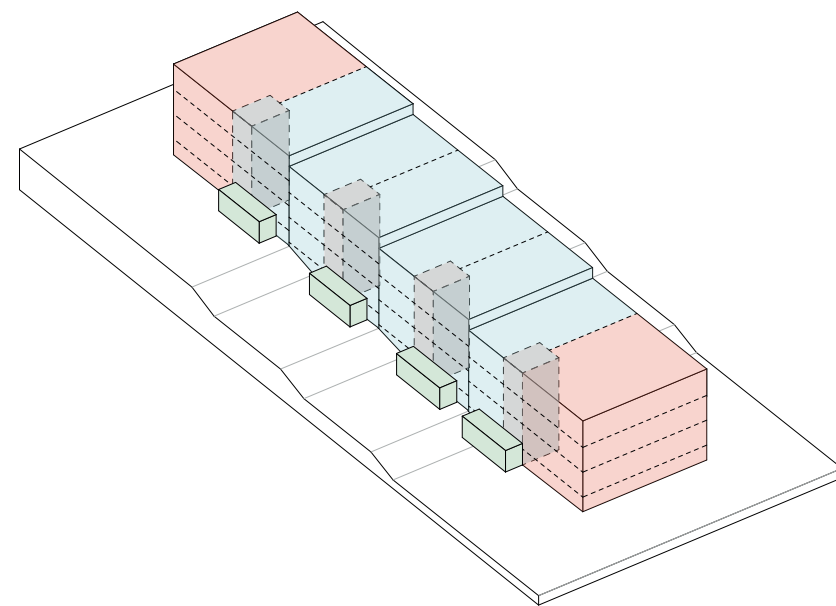
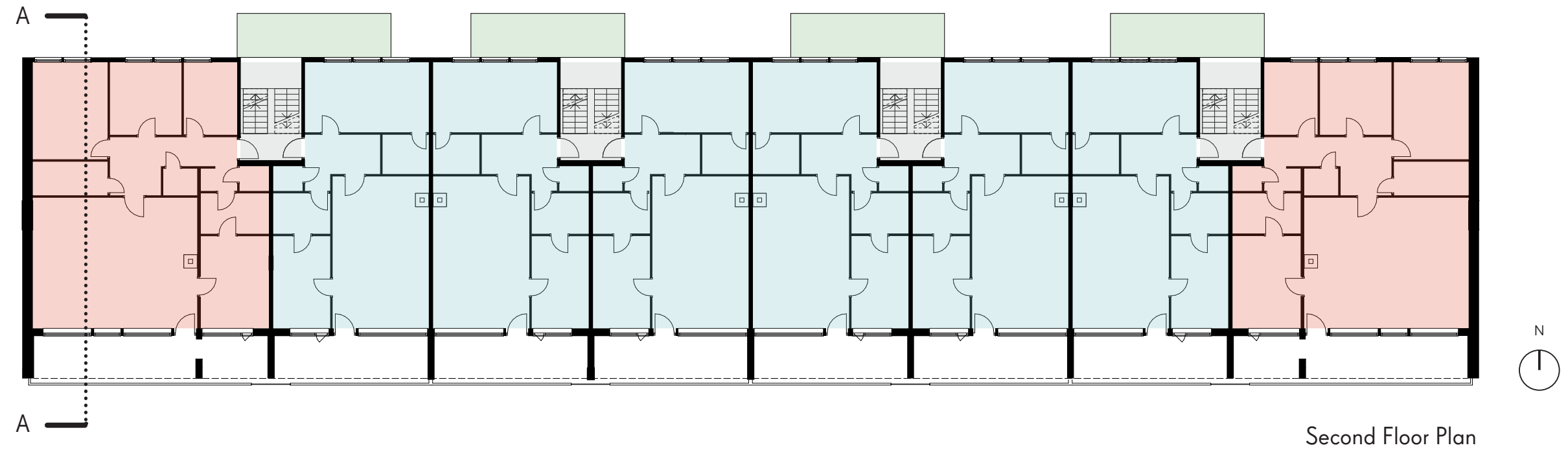
NORTH-WEST VIEW



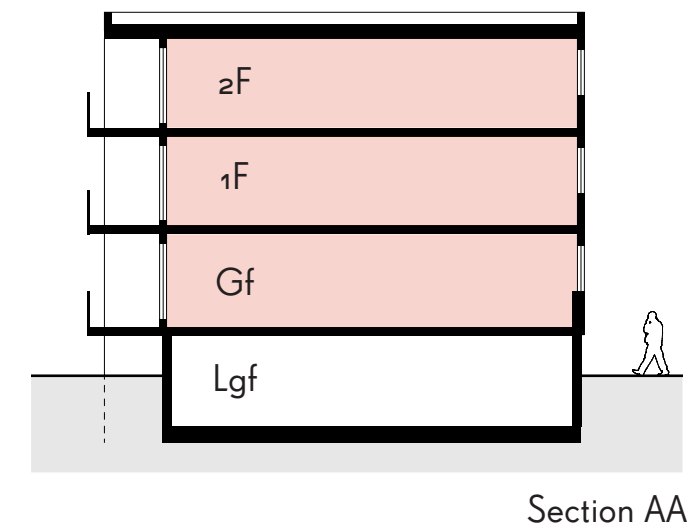
SOUTH WEST VIEW



TYPICAL PLAN - SECTION



- Building height (m): 9.8 / 3
- Floor to floor height (m): 2.65
- GIA (m²): 2580
- Façade area (m²): 1200
- 3B/5P apartments (no.): 8
- 1B/2P apartments (no.): 16
- Stars (no.): 4
- Entrances (no.): 4



P R O P O S E D

THE CONCEPT

"TODAY'S RESIDENTS"



THE ANDERSSON FAMILY

The Andersson family consists of Kristin and her two children. They all enjoy Vestlia and the housing association and are looking forward to many more years in their beloved home in Trondheim. However, the building's age is showing. The sizable bills from power consumption, the old balconies, the lagging maintenance, as well as the old technical solutions are becoming more and more noticeable.

The Andersson family would like better indoor air quality and for the balconies to be renovated. Installing elevators in or onto the building would also be greatly appreciated. Kristin and the family's financial situation is not strong, but the housing association has saved up some means to accommodate change.



JANNE

Janne is a retired widow living in Vestlia. She has always loved walking and hiking but as of late she is feeling her age. Looking to the future, Janne would like to stay in her home for as long as possible. However, the apartment block is missing elevators. Such an upgrade could prolong her independence, mobility and general living quality.

Janne's financial situation is stable and comfortable, but she is not eager to spend a large amount of money on the apartment. Nonetheless, the installation of an elevator would be much to Janne's liking. The housing association has a tight budget, with little saved means to facilitate the initiative.



KAMILLA, RASHIID OG LOTTE

Kamilla, Rashiid and Lotte moved into their apartment last year. They inhabit a small three-room apartment and are very happy with their home in Vestlia. They do, however, miss more outdoor areas with great sun conditions. For the future they would also like to improve the housing associations financial situatio. Specifically so that the facade can be repainted, and the balconies renewed or refurbished.

Their dream is to get a large rooftop terrace with lots of sun and a nice view of Trondheim. On the rooftop they envision lots of greenery and seating arrangements, as well as small places for gardening and opportunities to cultivate food.

VESTLIA | 0 VESTLIA 2021



Vestlia housing association. Photos by Jørgen By, Trondheim Kommune

Address: Edgar B. Schieldrops veg
Site: 7030 Trondheim
Construction: 1972-1975
Total living units: 324 units
Apartment blocks: 16
Levels/ floors: 3
Property manager: TOBB

CONCEPT | 1 FULL UPGRADE AND SUSTAINABLE LONGEVITY



Two completely new apartment floors added on the rooftop, along with appropriate elevator-installations and a new climate shell for the entire building. All private balconies are refurbished.

✓ Amount, new levels house top: **+2 floors**

- Full facade rehabilitation
- Increased energy performance
- Improved indoor air quality
- Reduced power consumption
- Elevator installation
- Renewal or refurbishment of balconies
- Added shared roof terrace
- Added outdoor social areas on ground floor

CONCEPT | 2 ELEVATOR AND INCREASED LIVING QUALITY



Two completely new apartment floors added on the rooftop, along with appropriate elevator-installations and a new climate system for better indoor air.

✓ Amount, new levels house top: **+2 floors**

- Full facade rehabilitation
- Increased energy performance
- Improved indoor air quality
- Reduced power consumption
- Elevator installation
- Renewal or refurbishment of balconies
- Added shared roof terrace
- Added outdoor social areas on ground floor

CONCEPT | 3 ROOFTOP TERRACE AND NEW SOCIAL AREAS



Two completely new apartment floors added on the rooftop, along with appropriate elevator-installations.

A new rooftop terrace is installed over the new apartments, along with minor new social installations on ground level.

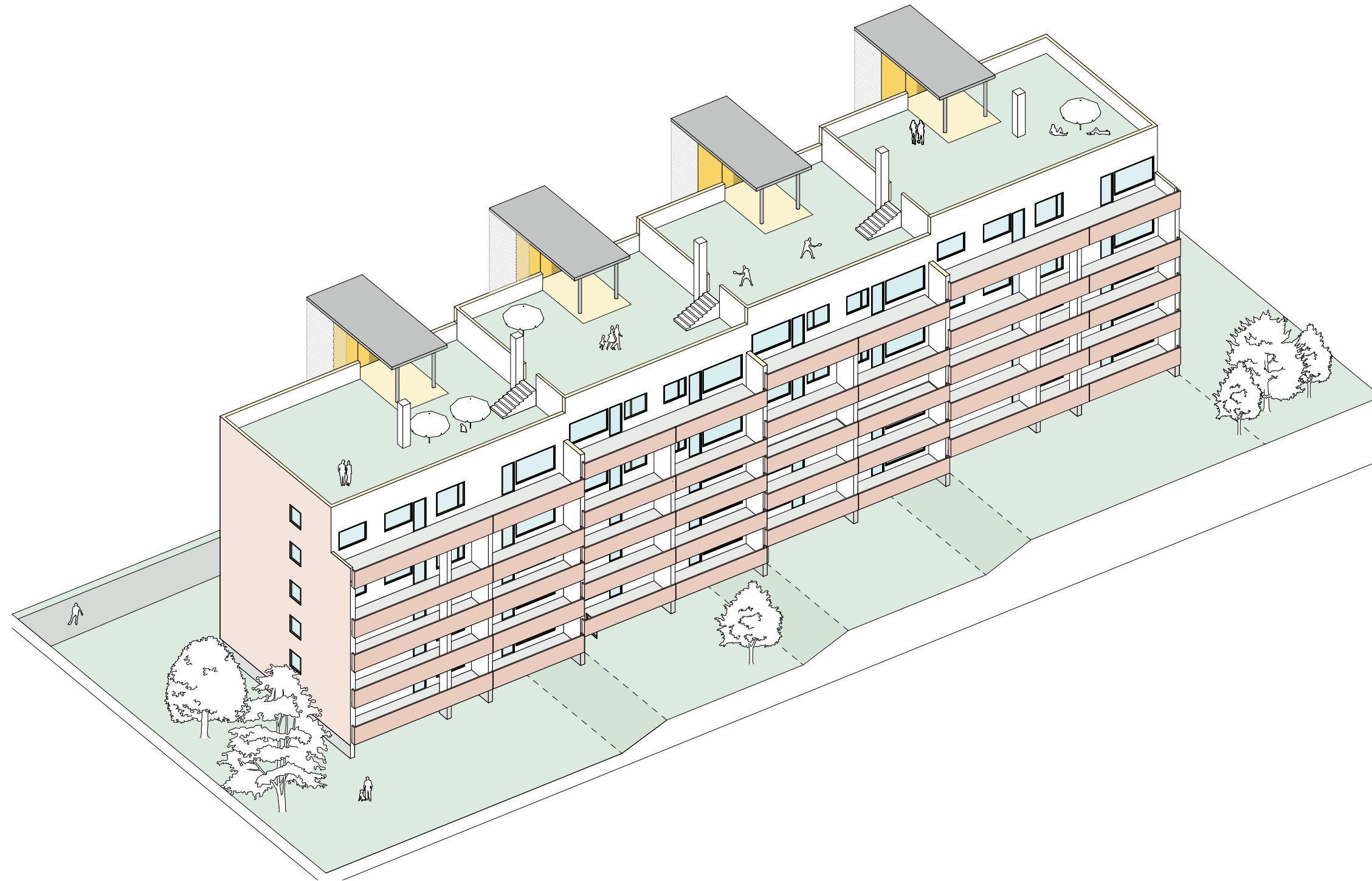
✓ Amount, new levels house top: **+2 floors**

- Full facade rehabilitation
- Increased energy performance
- Improved indoor air quality
- Reduced power consumption
- Elevator installation
- Renewal or refurbishment of balconies
- Added shared roof terrace
- Added outdoor social areas on ground floor

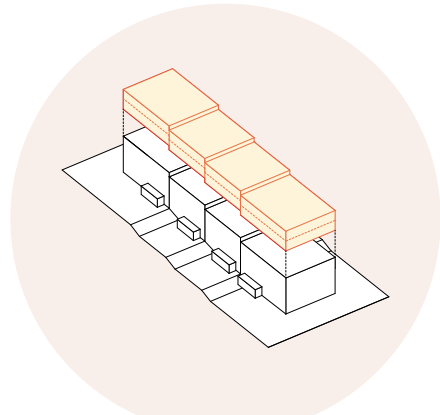
NORTH-WEST VIEW



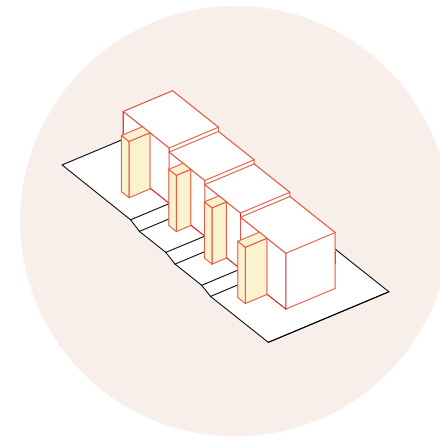
SOUTH-WEST VIEW



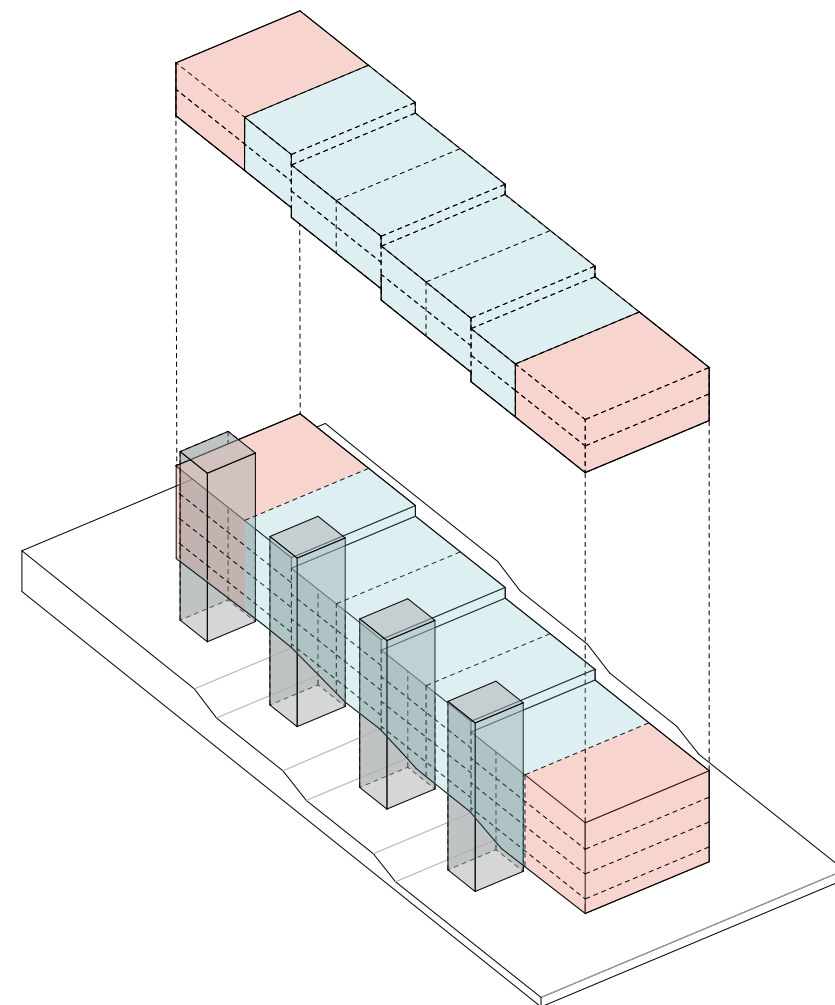
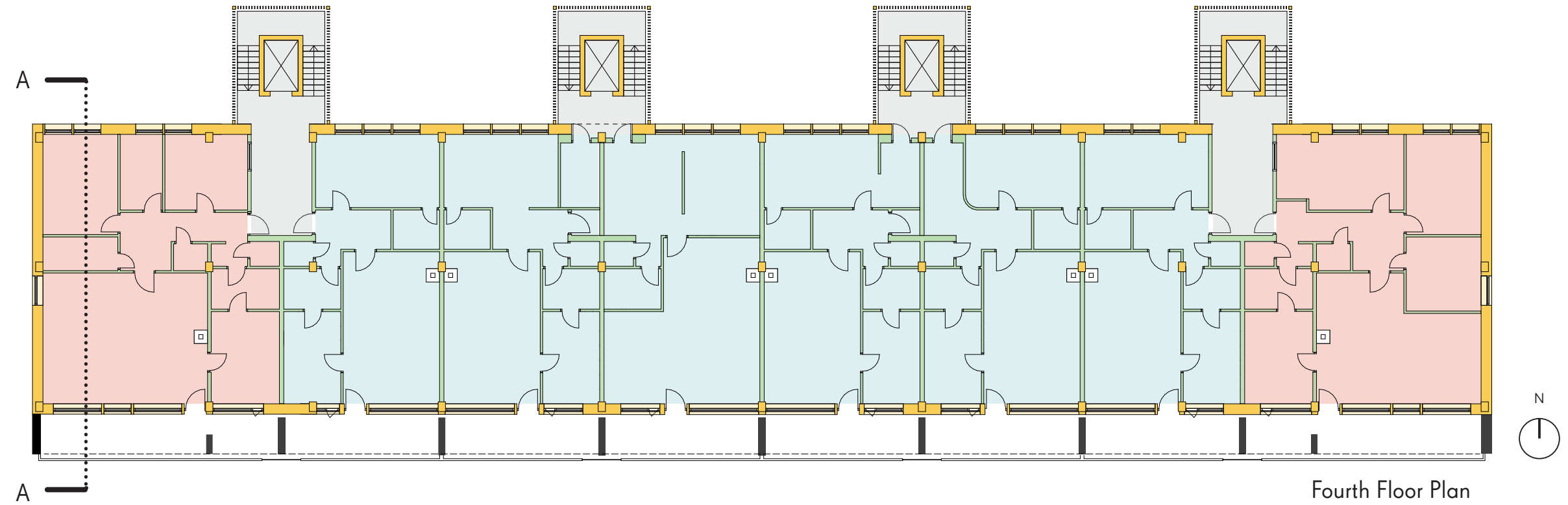
EXTENDED, INCLUSIVE



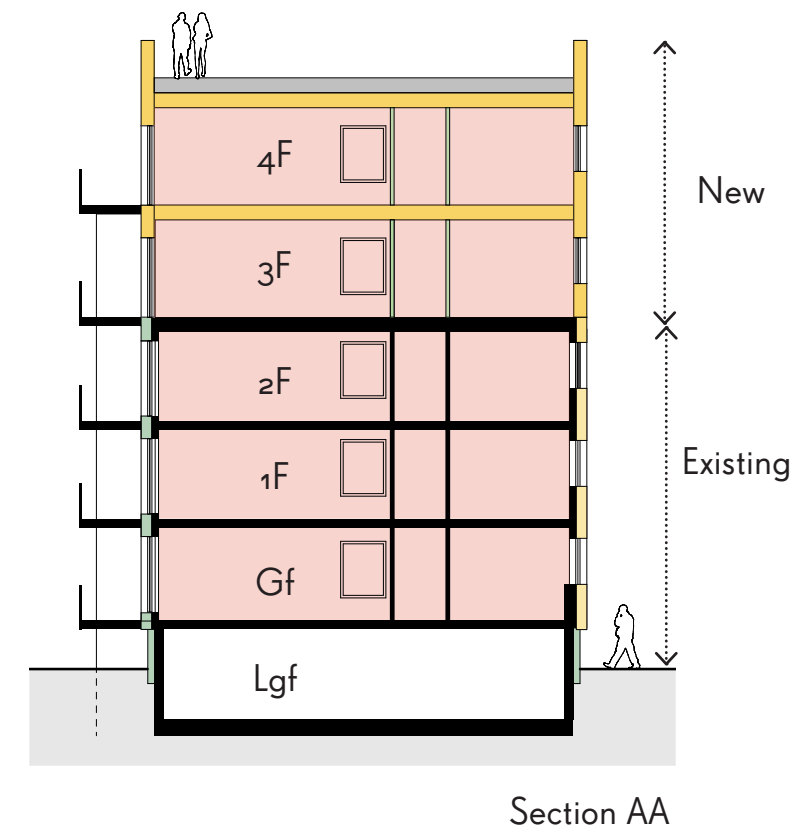
16 new flats
Flexible layouts
Shared roof terraces



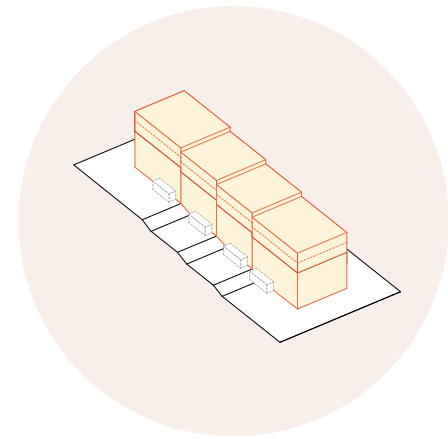
New elevators and stair towers



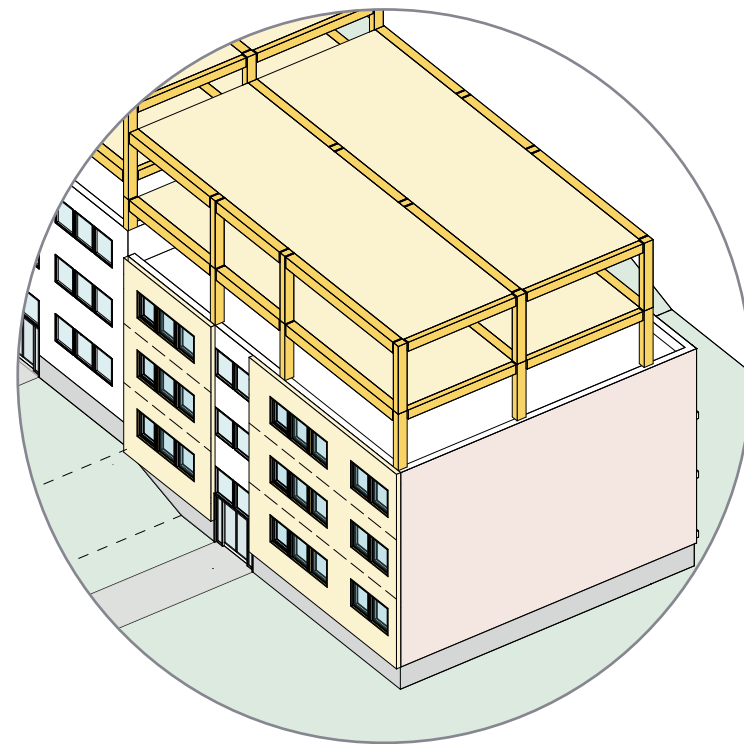
- Building height (m): 16 / 5 storey
- Floor to floor height new (m): 3
- GIA (m²): 4300
- Façade area (m²): 2440
- 3B/5P apartments (no.): 12
- 1B/2P apartments (no.): 28
- Stars (no.): 4
- Entrances (no.): 4



ENHANCED

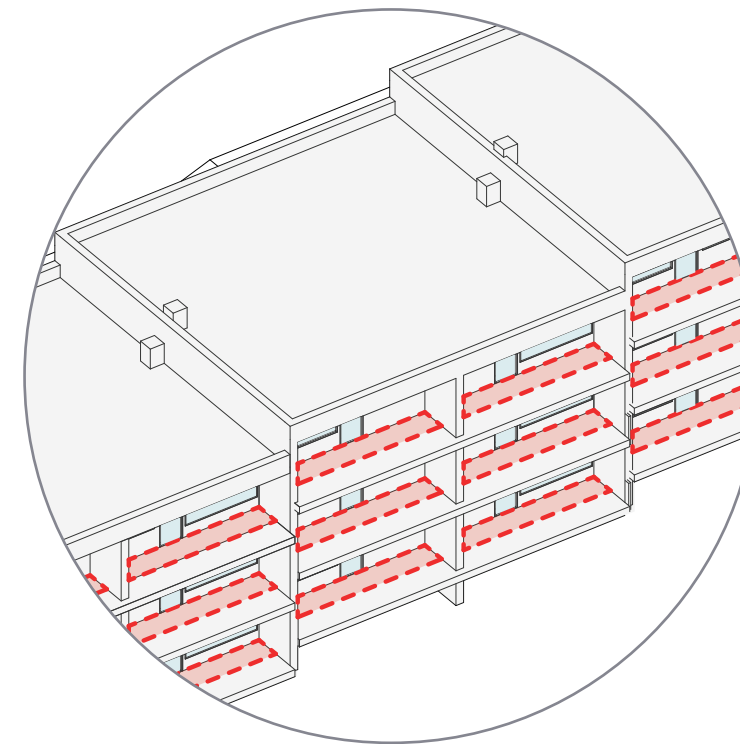


Enhanced envelope thermal performance
South facing balconies refurbished



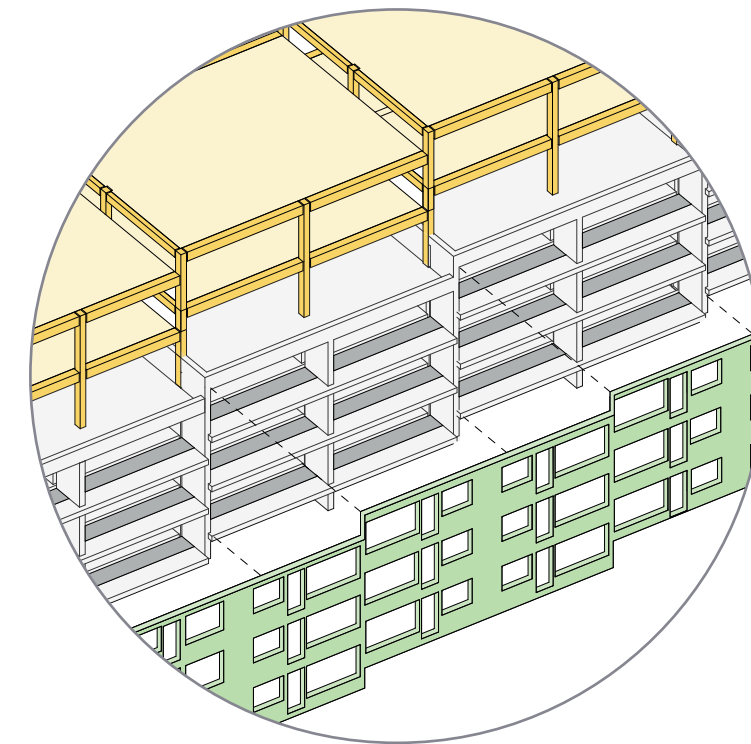
N-E-W ELEVATIONS

Enhanced thermal performance through addition of facade panels (type B). Potential for window replacement (depending on thermal performance)



S ELEVATION

Eliminate cold bridging in terrace area through partial demolition of concrete slab and insertion of thermal break.



S ELEVATION

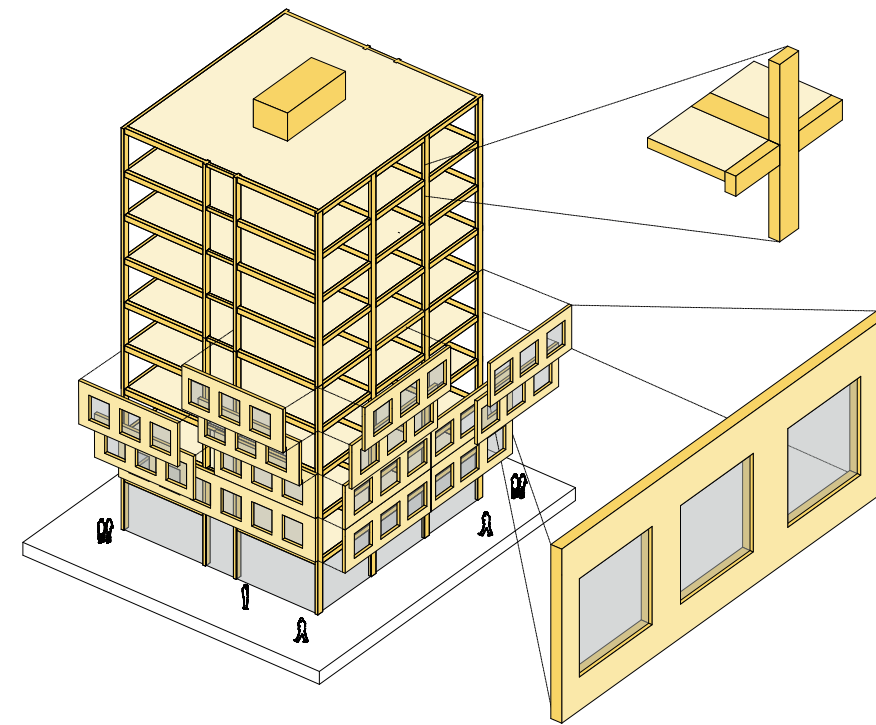
External Thermal Insulation Composite System (ETICS) used in areas that are difficult to reach.

BUILD-IN-WOOD FOR VESTLIA

BUILD-IN-WOOD INTEGRATED SYSTEM

- MULTI-STOREY BUILDINGS BETWEEN 4 & 10 STOREYS
- DIFFERENT USES (OFFICE, RESIDENTIAL, HOTEL ETC.)
- DIFFERENT EUROPEAN CLIMATIC REQUIREMENTS
- DIFFERENT EUROPEAN REGULATORY REQUIREMENTS
- DIFFERENT EUROPEAN MARKET REQUIREMENTS
- RETROFITTING TO EXISTING BUILDINGS (FACADE ELEMENT ONLY)

ADAPTABLE TO

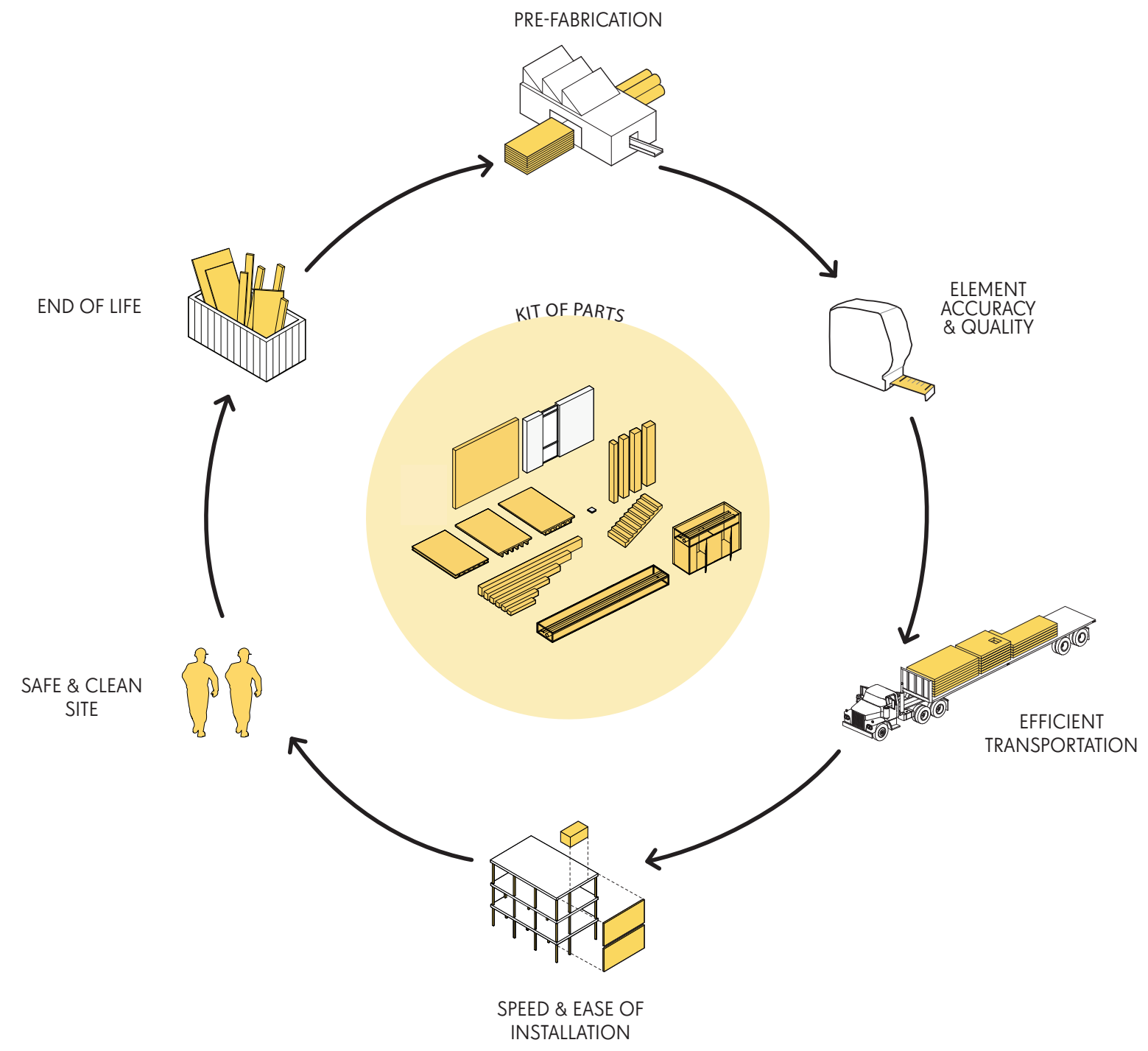


OPTIMISED FOR

- MAXIMUM USE OF TIMBER & NATURAL MATERIAL PRODUCTS
- RE-USE, DIS-ASSEMBLY & RECYCLING
- RESOURCE EFFICIENCY
- USE OF COMPONENTS WHICH ARE AVAILABLE FROM MULTIPLE SOURCES

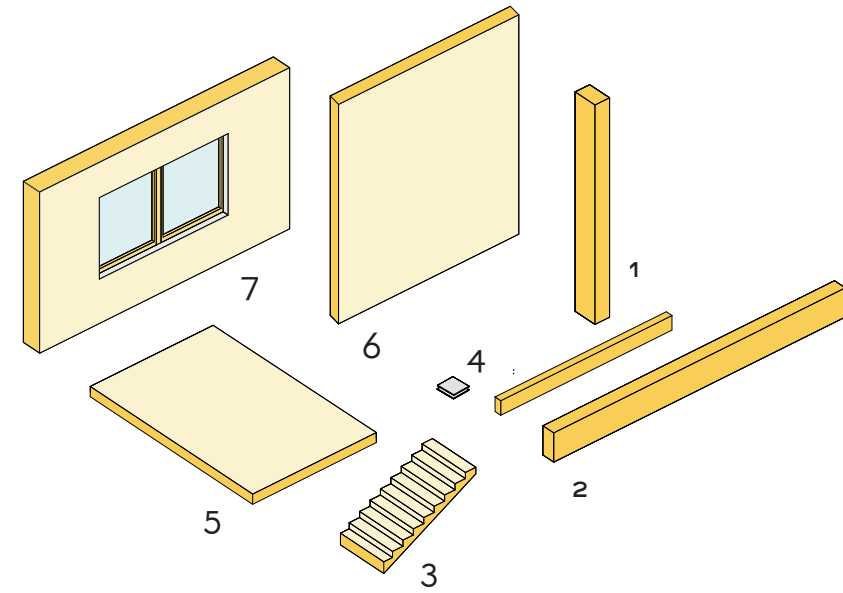
Structural and façade systems are designed to work in harmony in new developments but can also be used for extensions or energetic refurbishment of existing buildings.

BUILD-IN-WOOD: A KIT OF PARTS



The Build-in-Wood systems have been developed as a kit of parts for DFMA (Design for Manufacturing, Assembly and Disassembly) construction taking into account factors such as efficient transportation, ease of installation and demountability.

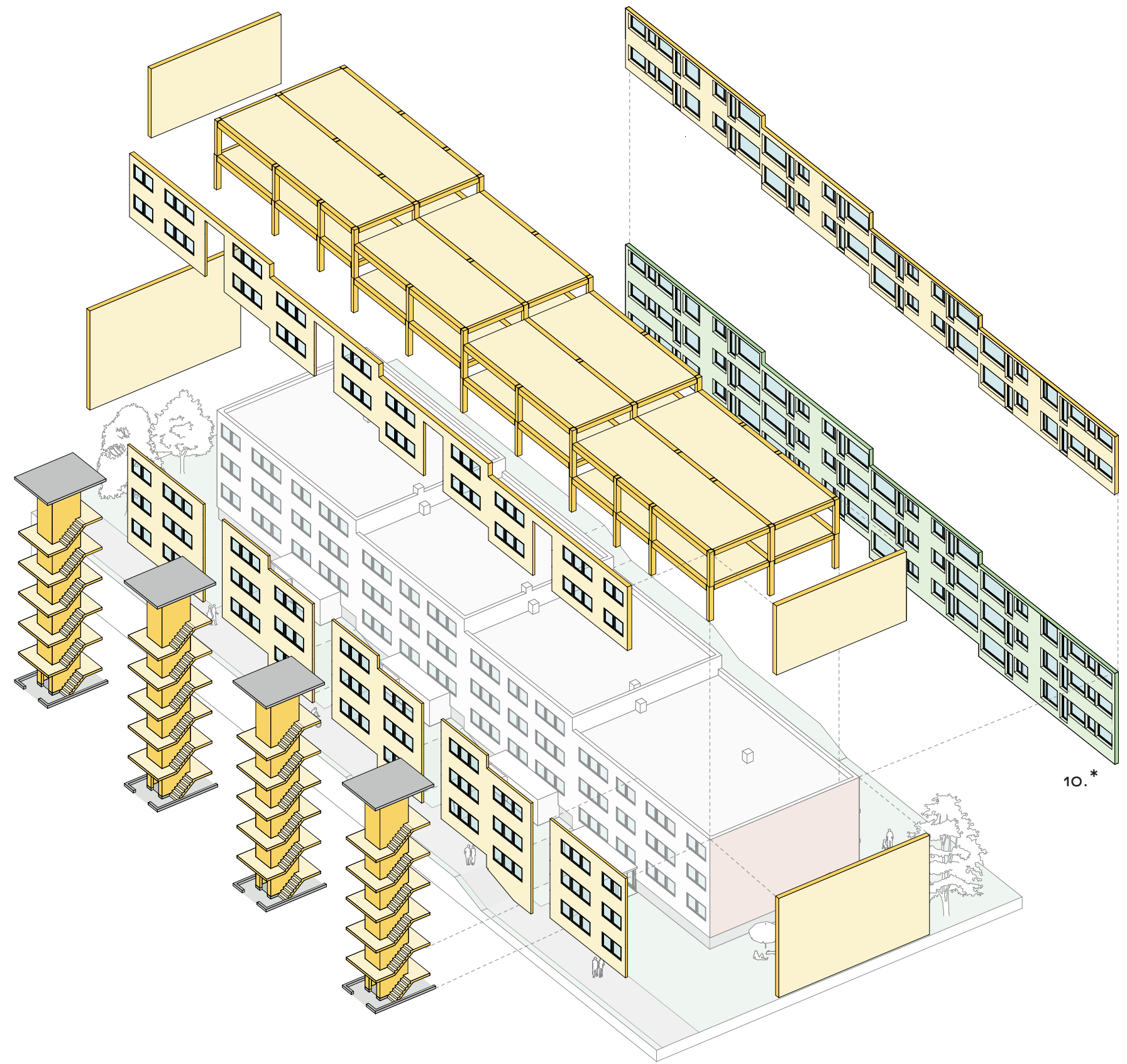
KIT OF PARTS FOR VESTLIA



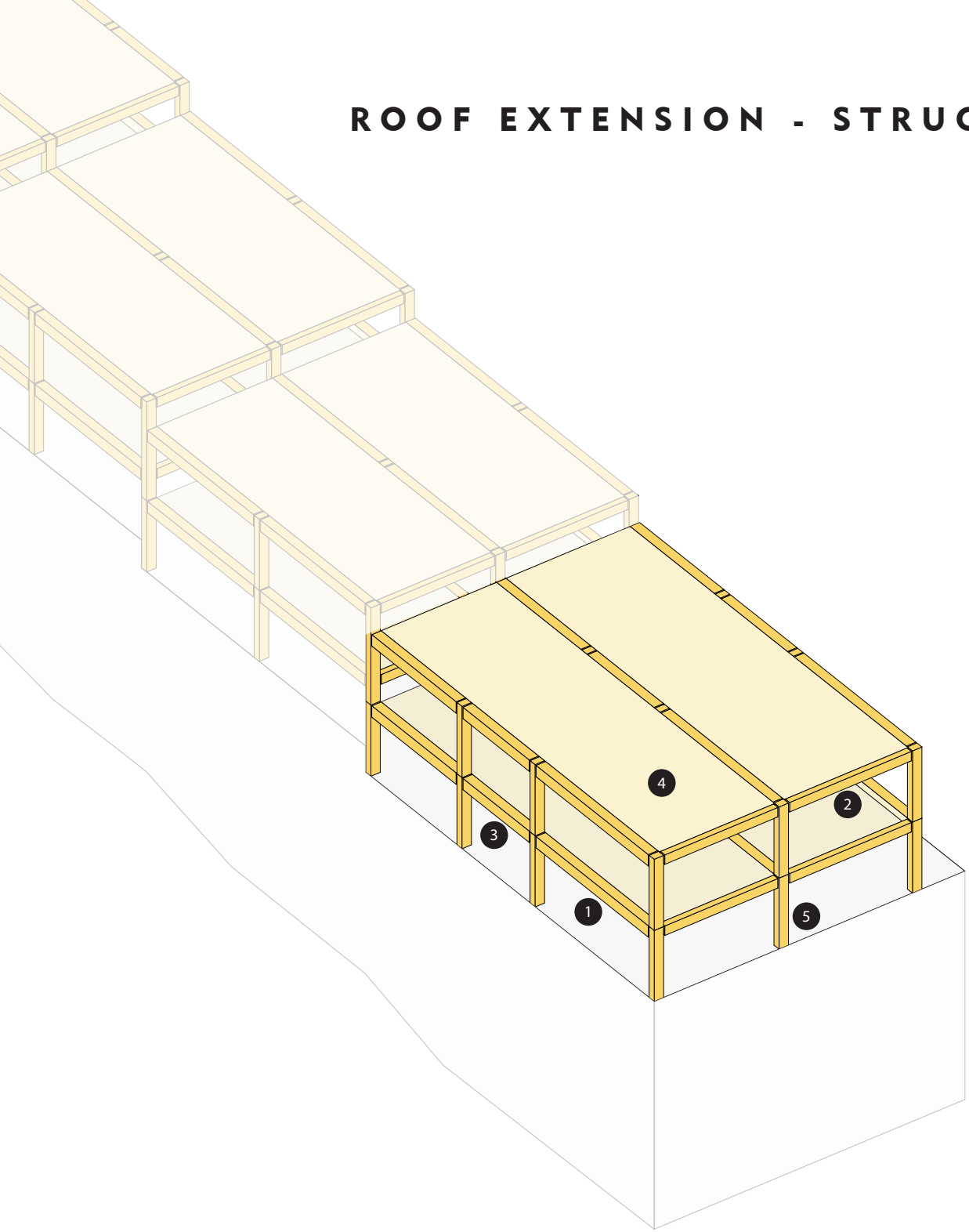
BUILD IN WOOD KIT

- 1. Structural timber columns
- 2. Structural timber beams
- 3. Cross laminated timber stairs
- 4. Steel connections
- 5. Cross laminated timber slabs
- 6. Cross laminated timber walls
- 7. Facade panels (type A and B)

10.* ETICS (External Thermal Insulation Composite System) - Not part of BiW system










ROOF EXTENSION - STRUCTURE

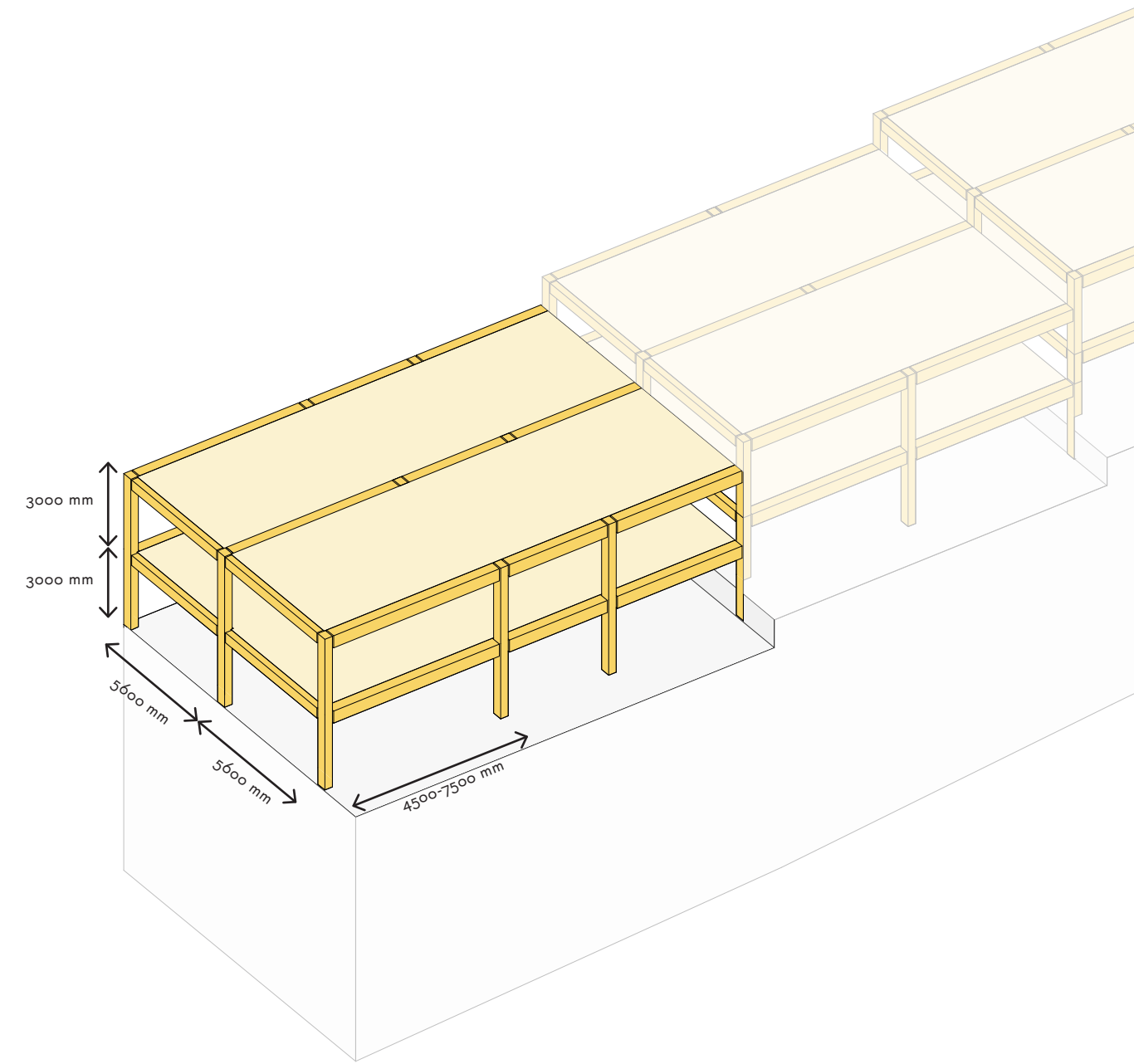


STRUCT. BAY COMPONENTS

- 1. Primary beam
- 2. Façade beam
- 3. Service beam
- 4. CLT Slab
- 5. Perimeter column

- 
Structural system
 Engineered timber post and beam
- 
Construction
 Safe, clean, almost noiseless construction site
- 
Sustainability
 Use of low embodied carbon materials
 Carbon sequestration
- 
Financial aspect
 Fast construction time
- 
Financial/Material use
 Light structure and facade panels
- 
Prefabrication
 DfMA optimised, fully demountable solutions
- 
Kit of parts
 Simple design, repeating base components

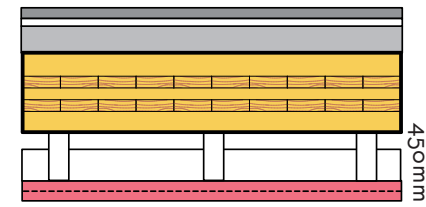
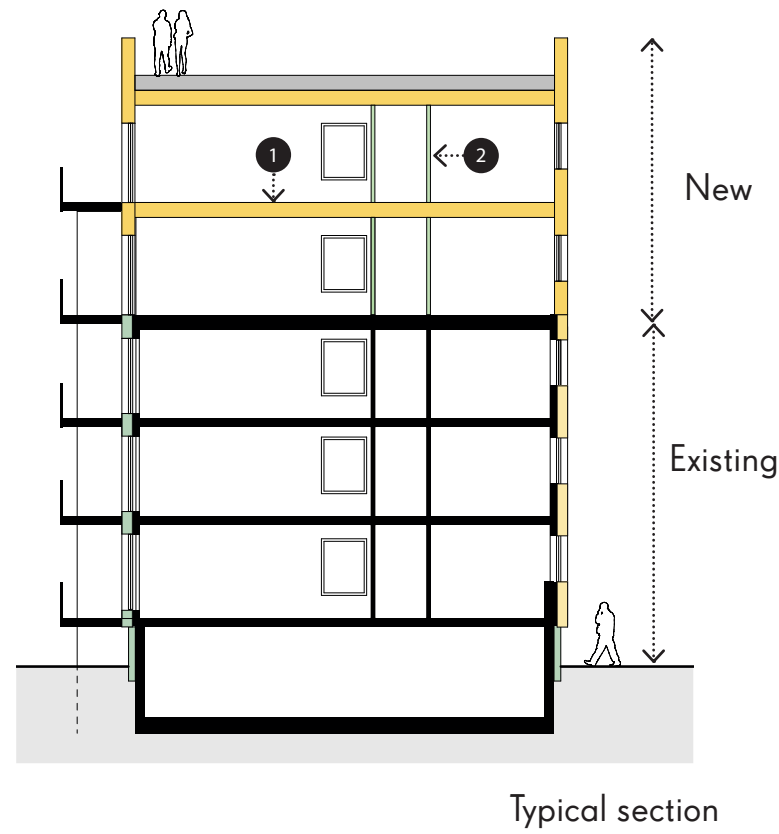
KEY ASPECTS



STRUCT. BAY SIZES

Structural bays have been designed to be flexible in size, adapting to the size of each building.

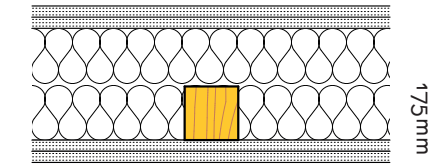
ROOF EXTENSION - FURTHER COMPONENTS



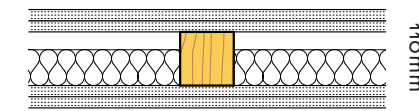
- 2kN/m² - 6m span
- 55 dB impact / 52 dB airborne
- F₉₀

1 OUTLINE FLOOR BUILDUP_EXTENSION

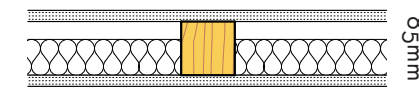
The solutions Build-in-Wood developed achieve high fire and acoustic performance without resorting to the typical approach of heavy wet screeds; the goal is to use prefabricated, clean and dry materials, simple to demount and reuse.



- 59-66 dB airborne
- F₉₀



- 41 dB airborne
- F₆₀

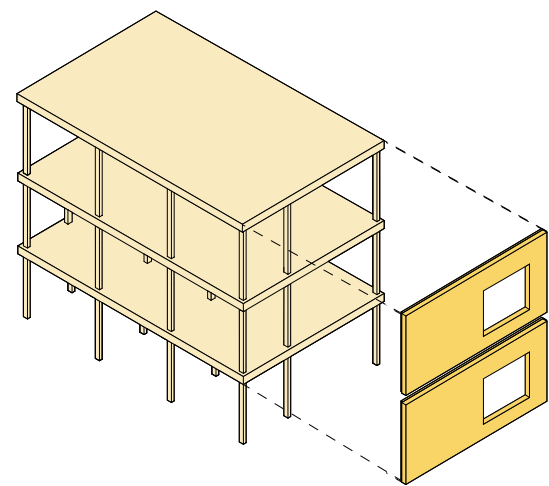


- 37 dB airborne
- F₃₀

2 INTERNAL WALLS_EXTENSION

Internal partitions are predominantly non-loadbearing - aside from the stability/shear walls - meaning that they can be positioned anywhere on the floor plate. Any non-structural walls can be used in combination with the Build-in-Wood system.

FACADE SYSTEM: TWO TYPES OF PANELS



Refurbishment
No refurbishment - new building



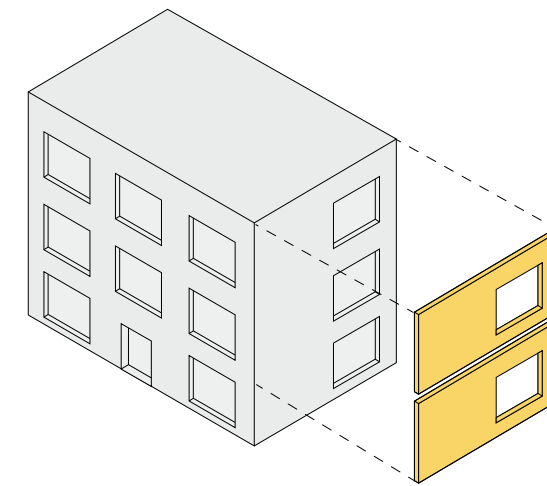
Structural system
Engineered timber post and beam



Impact on users
No existing users



Build-in-Wood façade system applicability
100%



Refurbishment
External façade performance enhancement only



Structural system
Existing concrete frame



Impact on users
Building can remain occupied during works



Internal layer omitted (see drawing to the right)
Performance criteria must be individually verified in combination with existing wall.

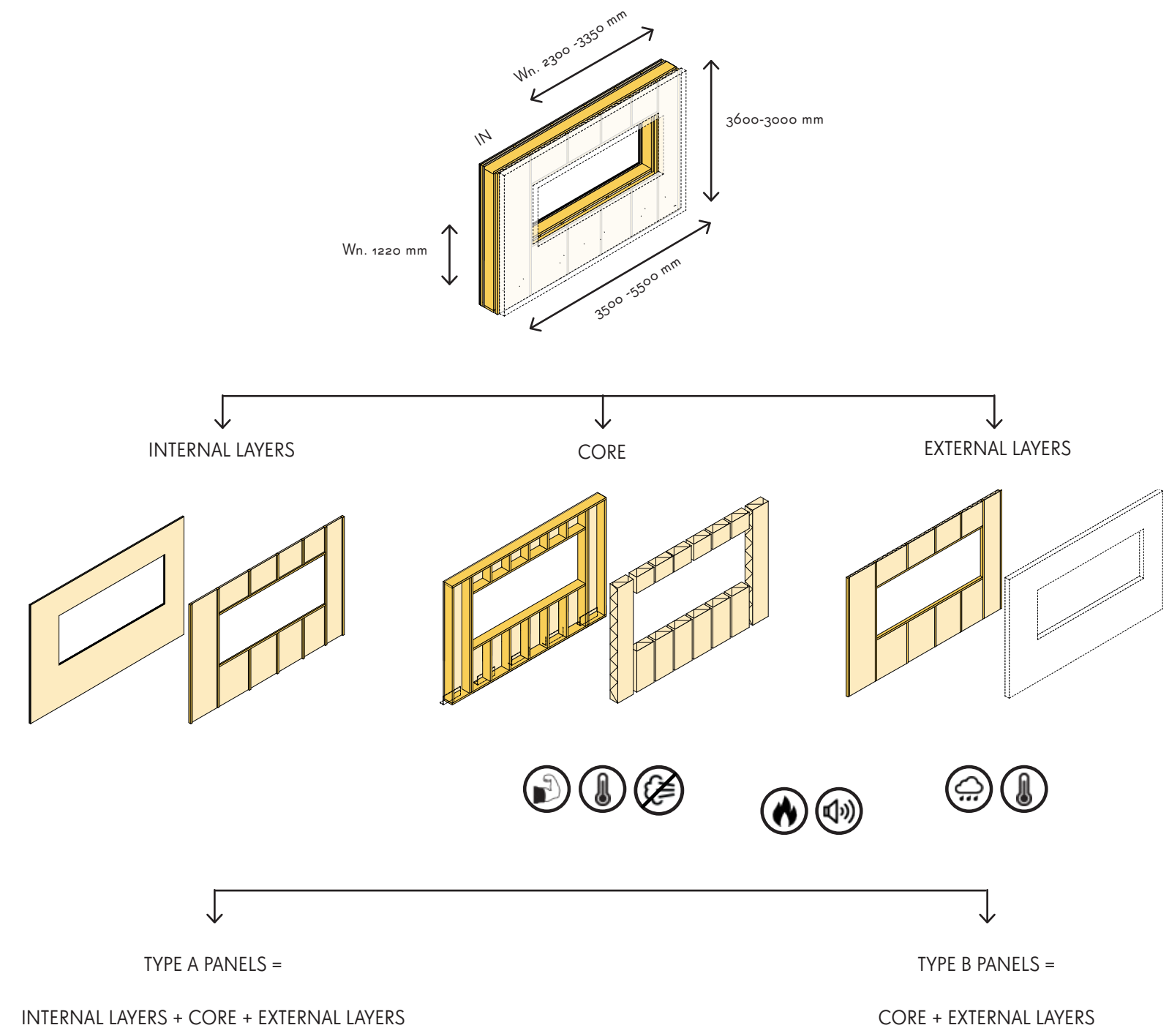
PANELS TYPE A-ROOF EXTENSION

Application to a newly design and constructed timber structure
(Build-in-Wood structural system).

PANELS TYPE B -ENERGETIC REFURBISHMENT

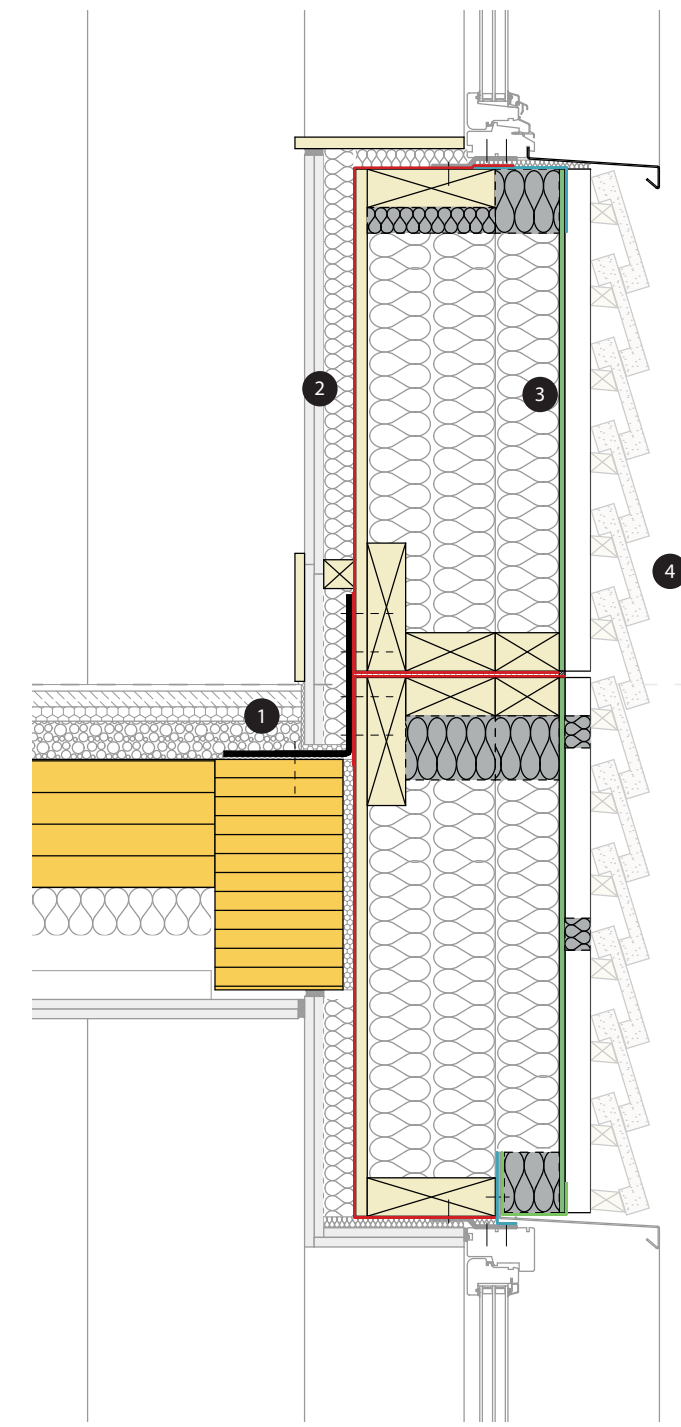
Application to an existing building undergoing minimal refurbishment works,
including minimal replacement of the external facade.

FACADE PANELS: SIZES AND COMPONENTS



FAÇADE PANEL TYPES

The panels are composed of three layers, each dealing with a different aspect of the overall performance: structural, acoustic, thermal and fire. The structural core has a fixed depth whilst the thickness of the other layers are variable.



TYPICAL TYPE A PANEL DETAIL

1. Angle bracket (connect. to facade beam)
2. Vapour control layer
3. Cement board
4. Cladding - indicative only

WAUGH THISTLETON ARCHITECTS

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