

This is home, surely?

Retrofitting Singaporean Public Housing
for Domestic and Climatic Collectivity

Vol. 1

Positions

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Introduction

ProblematISING Singaporean Public Housing

The Southeast Asian city-state of Singapore is well known for its extensive public housing programme. Following Singapore's attainment of self-government from Britain in 1959, the newly elected social democratic government established the Housing and Development Board (HDB) as the national public housing agency. The HDB's mandate was to improve the living conditions of the working masses, who under *laissez faire* colonial rule had been consigned to informal squatter settlements and overcrowded urban tenements. Through interrelated processes of land acquisition, reclamation, forced resettlement, and large-scale new construction, Singaporeans were transplanted en masse into modernist high-rise flats in centrally planned new towns.¹ By 1985, just 25 years after the HDB's establishment, the agency had rehoused upwards of 80% of the Singaporean population in over 500,000 flats, making up 90% of the country's total housing stock – a process through which Singapore was rebuilt into the modernist city par excellence.²

The HDB's success in providing high-quality, affordable housing for the vast majority of the country's resident population has meant that accounts of Singaporean public housing have invariably been stories of unabated progress and success. Singapore's positive public housing experience appears all the more exceptional when compared to other contexts in the Global North, where the credibility of modernist mass housing has been undermined by critiques of top-down imposition and homogenising character, while direct state housing provision has been eroded by neoliberal economic shifts toward market provision and housing commodification.

While recognising the enduring value of Singapore's public housing programme, this project problematises these simplistic accounts of continued success, by suggesting that Singaporean mass housing is, in fact, the site of multiple intersecting crises: that of obsolescence, or the impending and assumed large-scale demolition of ageing existing mass housing stock; domesticity, or the ways in which mass housing types both reflect and have contributed to increasing privatisation and atomisation of the home; and thermal comfort, or the ways in which housing types have evolved to support increasingly privatised and energy-intensive forms of climate control, such as air-conditioning.

In the face of these crises, this project imagines progressive, alternative futures for Singaporean public housing based on interrelated principles of reuse, collective living, and bioclimatic design, through the development of both a general approach for retrofitting mass housing stock and its specific implementation at an existing, ageing public housing development, Selegie House.

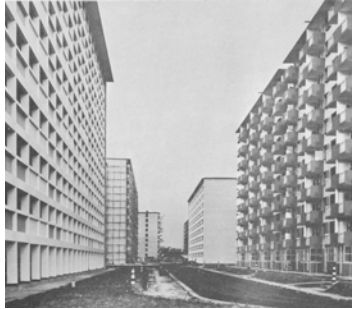
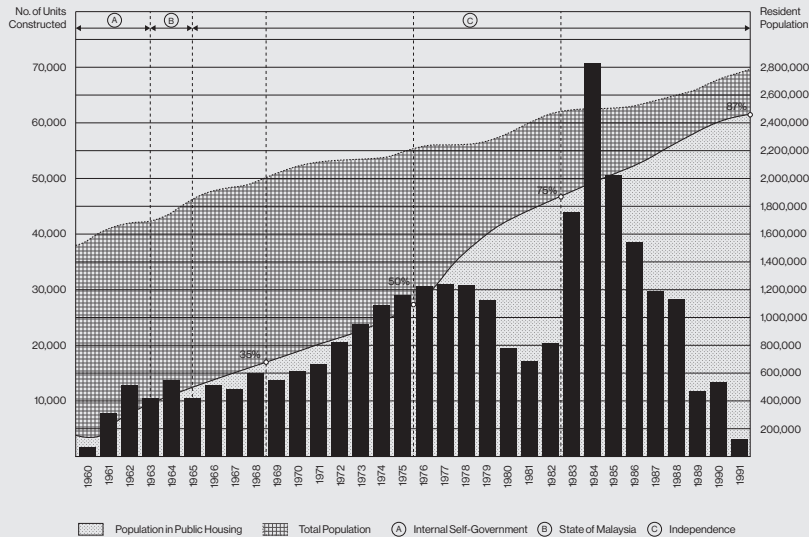


Fig. 1
Toa Payoh New Town
under construction, c.1967.
Source: National Archives
of Singapore (NAS)

Fig. 2
Housing & Development
Board (HDB) estate, c.1967.
Source: HDB Annual
Report 1967.

Fig. 3
Blair Plain Housing Estate,
c.1968. Source: HDB
Annual Report 1968.

Fig. 4
Graph of public housing
construction; proportion
of population housed in
public housing. Source:
data.gov.sg / Author.



Scope

THE GENERIC FRAMEWORK

The project proposes a framework three sequential stages of inquiry which correspond to scales of increasing specificity:

- Positions: setting out the large-scale conditions affecting existing housing stock (obsolescence, domesticity, and thermal comfort) and development of a guiding disposition in relation to them.
- Principles: the translation of this disposition into architectural strategies through close engagement with a specific site and its context,
- Propositions: the development of a resolved design proposal informed by both the broad positions and specific architectural strategies.

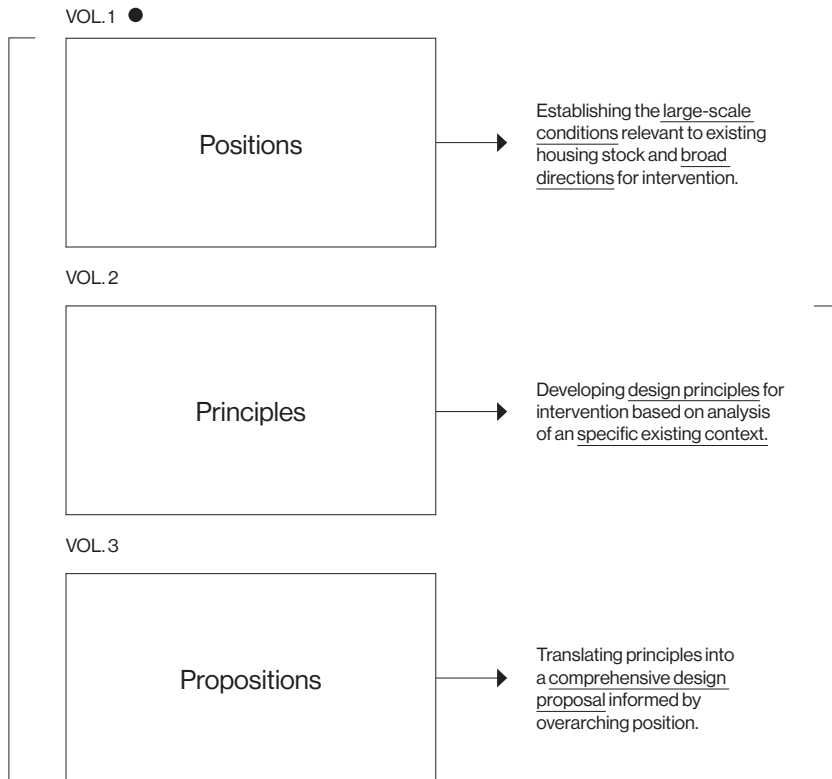
In developing a generic framework, it is envisaged that the approach taken by this project can be replicated beyond the scale of the specific site or project. This is significant, given the scale of Singapore's existing mass housing stock, and the variety of situations large-scale refurbishment would necessarily need to confront.

THE SPECIFIC SITE

To demonstrate the feasibility of the general framework, a specific case study site has been selected for the development of the 'principles' and 'propositions' stages of the project. Selegie House was selected as a case study site for several reasons:

- Risk of demolition: Selegie House is one of the earliest public housing projects still standing in Singapore, completed in 1963, and thus one of the most at-risk of demolition. This risk is exacerbated by its high-value urban location and proximity to new developments.
- Challenging conditions: Selegie House is a rare example of an urban public housing estate, which presents more challenging conditions than more highly standardised new town estates. Demonstrating the feasibility of retrofit in an 'extreme' case would suggest that retrofit would likely be feasible in the vast majority of 'normal' cases.
- Historical significance: Selegie House is historically significant as the first urban public housing development constructed by the HDB. It is thus fitting to return to the site where housing in Singapore was radically reinvented in the 1960s, to imagine new futures for housing today.

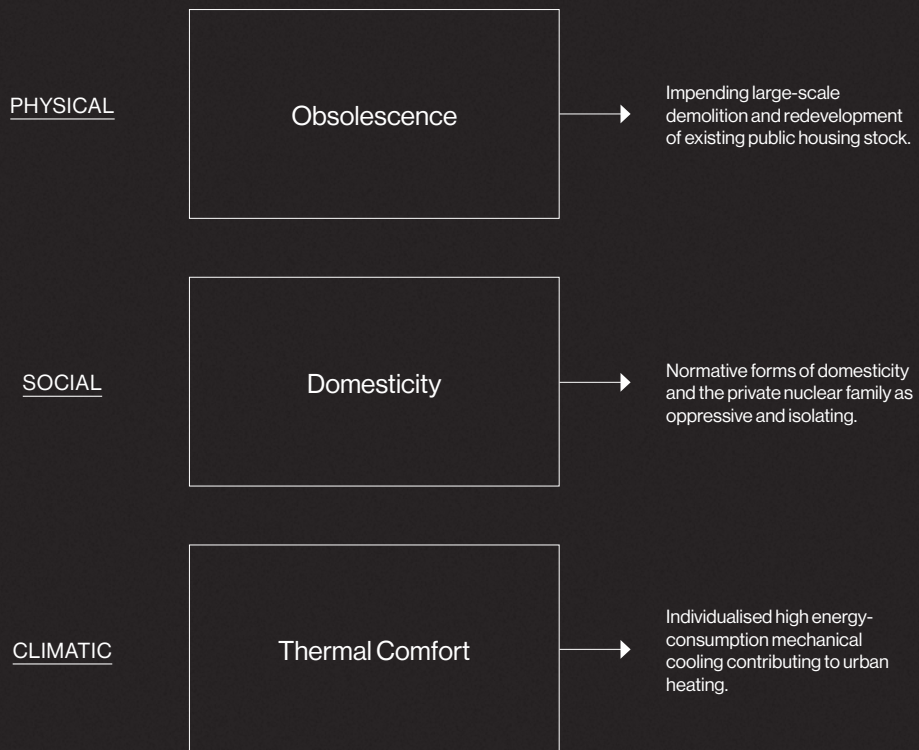
THE GENERIC FRAMEWORK



SITE SPECIFIC

Problem Statement

The Intersecting Crises of
Singaporean Public Housing



The project responds to three distinct, yet interrelated categories of problems related to existing mass housing stock – obsolescence, domesticity, and thermal comfort. These problems correspond to the physical, social, and climatic character of existing housing respectively, and when considered together, constitute a condition of ‘intersecting crises’. In considering multiple problems concurrently, this project recognises mass housing as a multifaceted site that is both the *product of*, and *active agent in shaping* conditions beyond normative categories of ‘supply’ and ‘quality’.

Problem Statement

1. Obsolescence

The crisis of obsolescence in Singapore's public housing stock is not one of physical decay. Rather, it is a distinct form of economic obsolescence, produced by two contradictory forces – namely, leasehold land tenures and the systemic treatment of housing as an appreciating retirement asset.

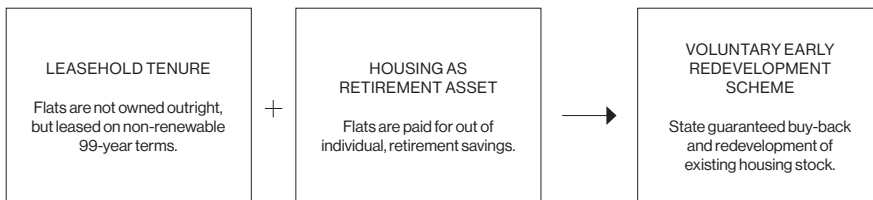
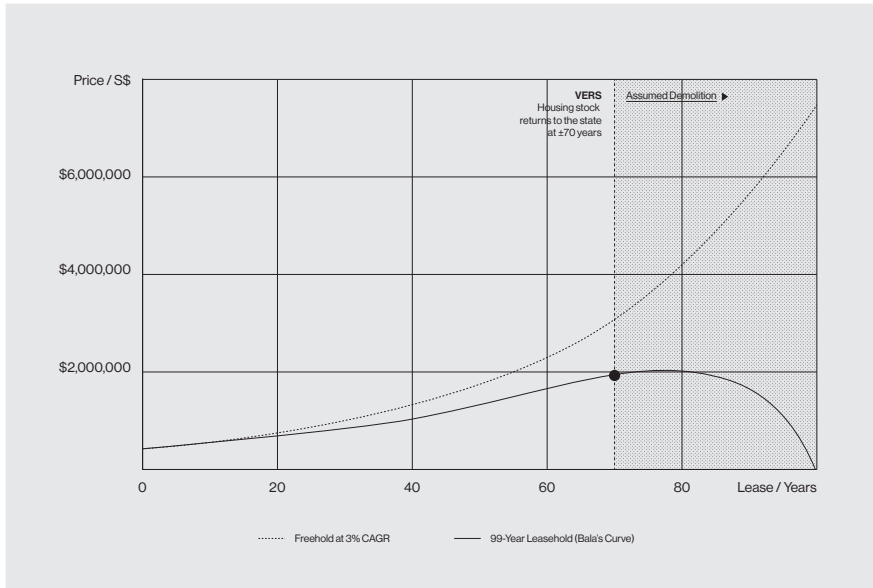
1. LEASEHOLD TENURE

Following Singapore's independence, land was effectively nationalised through large-scale state acquisition. Land 'ownership' was only granted on leasehold terms of a maximum of 99-years, following which land would return to the state, guaranteed through a policy of refusal to grant long-term lease renewals. As a result, property values naturally decline toward zero through a process of 'lease decay', conceptually articulated by a formula known as "Bala's Curve".³

2. HOUSING AS AN APPRECIATING RETIREMENT ASSET

Similarly, public housing in Singapore is not rented, but 'owned' on 99-year leasehold terms. This policy was instituted from the mid-1960s to create "nation of homeowners", with the state's belief in that a "property-owning democracy" cultivated both societal stability and individual responsibility. Singaporeans pay their public housing mortgages out of state-mandated individualised retirement savings, known as the Central Provident Fund (CPF). Consequently, public housing forms the backbone of an "asset-based retirement system", with many reliant on capital gains from home value increases to fund their retirement.⁴

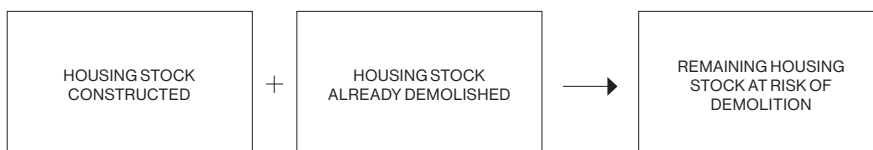
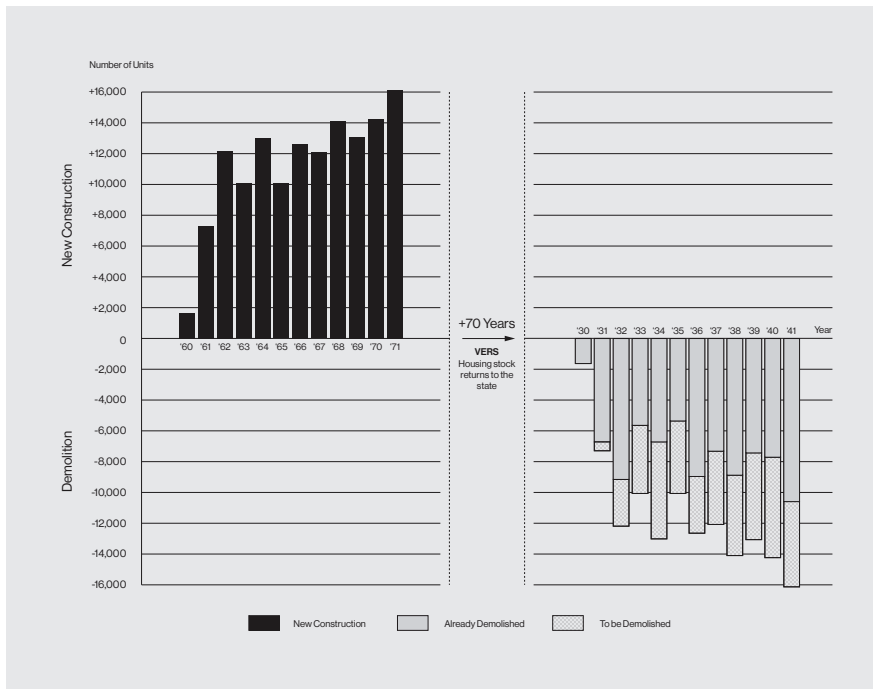
These principles – the tendency of property values to decline toward zero on one hand, and the assumption that home prices will perpetually increase to fund Singaporeans' retirements on the other – stand in direct contradiction to one another. To hold these forces in balance, the government has devised a strategy called the Voluntary Early Redevelopment Scheme (VERS), committing to buy back public housing stock from sitting residents before their home values reach zero.⁵ Under VERS, estates above 70 years old are eligible for state buy-back, following which existing buildings would be demolished and redeveloped. VERS thus creates an assumed cycle of perpetual demolition and new construction, with approximately 50,000 housing units eligible for demolition in the decade between 2030, the year VERS is likely to come into force, and 2040. This project rejects this assumed future, by suggesting instead that housing stock re-acquired by the state under VERS can be refurbished and reconfigured, rather than redeveloped, to meet evolving housing demands.



CONTRADICTIONARY CONDITIONS

Singapore's system of leasehold public housing ownership and asset-based retirement savings has created an impending condition of cyclical demolition and new construction.

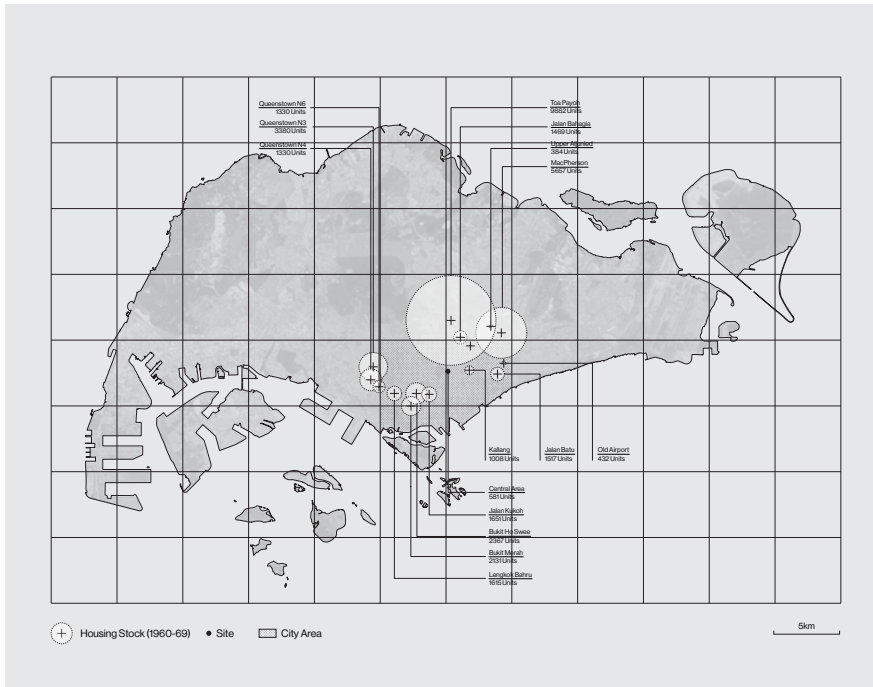
Fig. 5
'Bala's Curve'; graph of 99-year leasehold and freehold values; demolition risk following VERS at 70-year mark. Source: InvestmentMoats / Author.



CYCLICAL DEMOLITION

Approximately 49,826 housing units are at risk of cyclical demolition under VERS between 2030 and 2040.

Fig. 6
Graph of anticipated cyclical demolition of public housing stock between 2030-40. Source: data.gov.sg / Author.



DISTRIBUTION OF AT-RISK HOUSING

Singapore's most at-risk public housing stock is concentrated in the central area and its immediate periphery.

Fig. 7
Map of at-risk public housing stock in Singapore, likely demolished between 2030-40. Source: data.gov.sg / Author.

Fig. 8
Toa Payoh Neighbourhood IV, c.1969. Source: HDB Annual Report 1969.

Fig. 9
Fort Road Estate, c.1964. Source: HDB Annual Report 1964.

Problem Statement

2. Domesticity

The Singaporean state's effective monopoly in housing provision has enabled the use of public housing as a social engineering tool. Informed by the state's espoused Confucian and Communitarian values, the heteronormative extended nuclear family has been constructed to form the essential unit of morality and mutual care, avoiding over-dependence on centrally provided social welfare while encouraging reproduction amidst falling birthrates. This is embodied in both the architectural forms of standardised public housing flat types – which contain a normative assortment of bedrooms, living rooms, kitchens, and bathrooms – as well as the myriad policies determine access to the public housing system and overtly privilege the (extended) nuclear family form.

1. CONVENTIONAL DOMESTICITY IS OPPRESSIVE

As numerous Marxist, Feminist, and architectural scholars have noted, the (extended) nuclear family home is not innocent nor natural, but a politically and economically contingent phenomena designed to assimilate the working classes within the bourgeois and capitalist values of private property, separation between the home and space of waged work, and hygiene.⁶ Consequently, the private nuclear family home has become the site of unpaid (often feminised and migrant) reproductive labour, political and economic atomisation, and general social isolation.

2. CHANGING DEMOGRAPHICS AND SOCIAL CONDITIONS

In parallel to the continued imposition of conventional forms of domesticity by the state and market, shifting demographic, cultural and economic trends are leading to the imperative for new forms of living and conceptualisations of the home. Singapore – like most developed economies – has seen falling birth rates and rapid ageing; decreasing household sizes; a growing proportion of non-nuclear family households; a technologically-mediated spatial decentralisation of waged work, care, and socialising; and an alarming growth in loneliness.

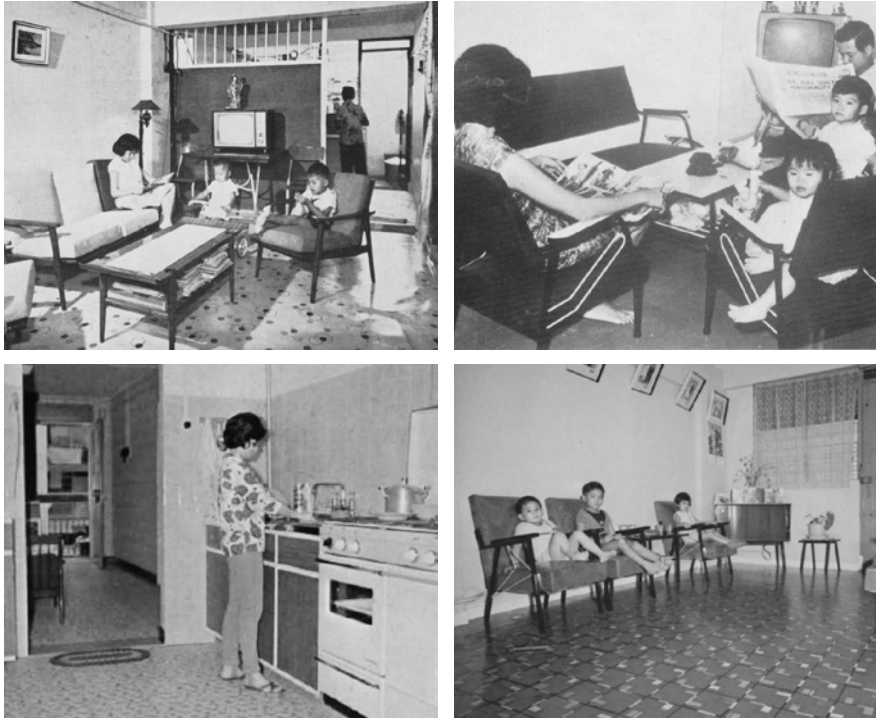
In response to the above imperatives, this project rejects the normative, privatised, (extended) nuclear family home. Instead, it suggests that we must find ways of living that are more collective, allowing reproductive work to be shared and equitably provided; plural, accommodating diverse forms of 'home' that cater to varied social, emotional, and cultural needs and desires; and convivial, disrupting a trend toward growing social isolation to create greater space for physical interaction and solidarity-building.



NORMATIVE DOMESTIC FORMS

Singaporean public housing is based on normative forms of the private (extended) nuclear family, which are atomising, exclusive, and poorly accommodating of evolving demographics and lifestyles.

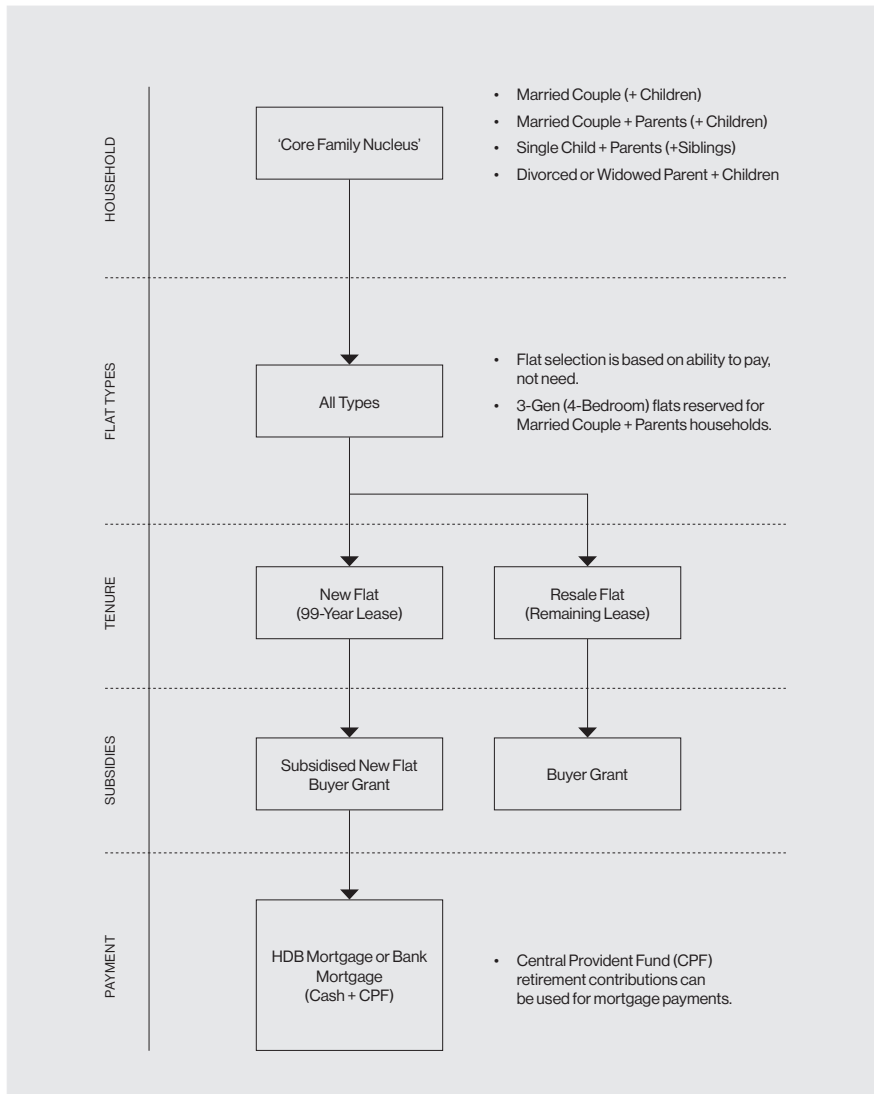
Fig. 10
Typical public housing flat types, c.1965 - 2025. Source: HDB Annual Report 1965 / HDB BTO Brochure 2025 / Author.



PUBLIC HOUSING AS SOCIAL ENGINEERING TOOL

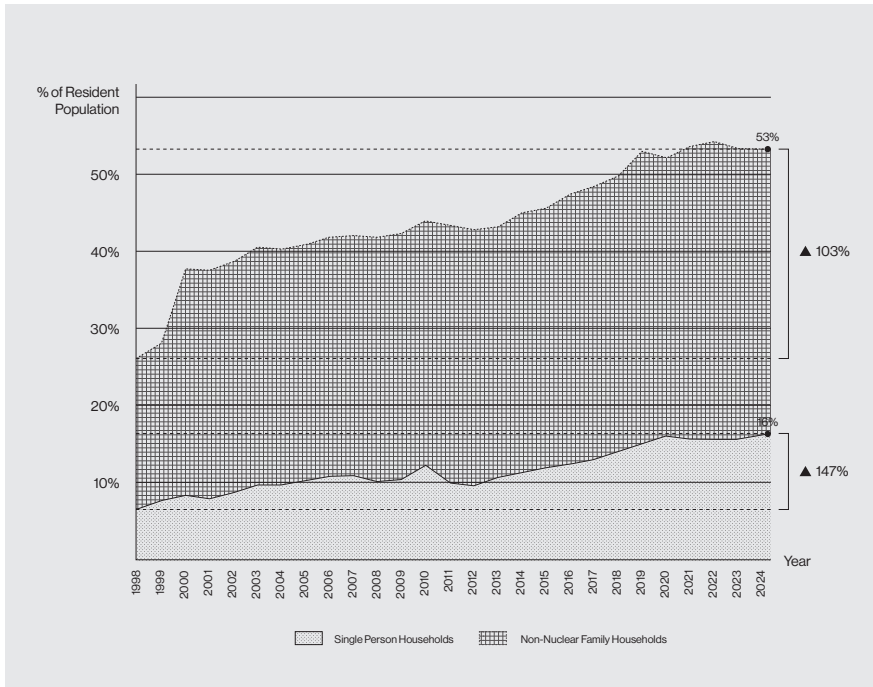
Access to the Singaporean public housing system systematically privileges the heteronormative, (extended) nuclear family, while discriminating against non-nuclear households.

Fig. 11-14
Typical HDB interiors, c.1960s. Source: Re-
membering HDB Estates Blog / HDB Annual
Report 1963 / HDB: The First Decade



PATHWAYS FOR HOUSING ACCESS

Singles	Unwed Parents	Unrelated Cohabitants	LGBTQIA+ Households	Low-Income Groups
Only eligible to purchase public housing once 35 years old.	Eligibility for public housing not guaranteed; provided on case-by-case basis.	Only eligible to purchase public housing once all members are 35 years old.	Only eligible to purchase public housing once all members are 35 years old.	Eligibility for rental based on income and need (i.e. absence of ability to rent on open market or seek family support).



LIVING ALONE AND LESS CONVENTIONALLY

Singaporeans are living less in nuclear family households and increasingly alone.

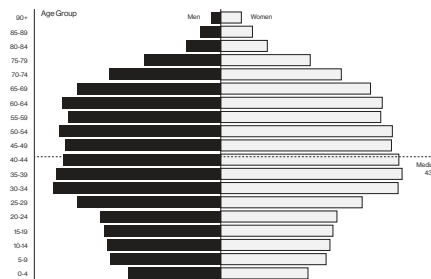
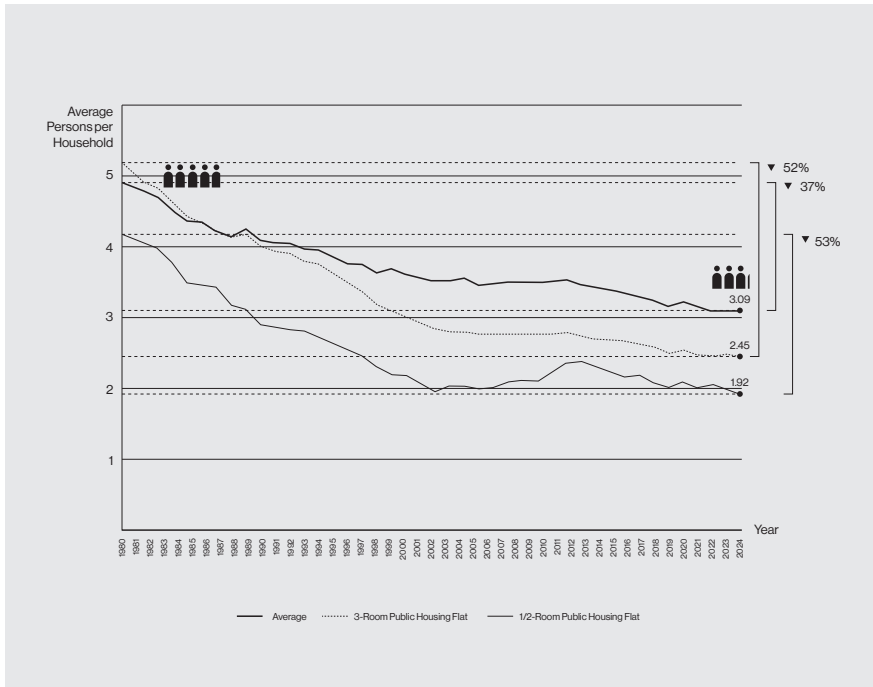


Fig. 15
Graph illustrating proportion of single person households and non-nuclear family households (1998-2024). Source: data.gov.

Fig. 16
Chart showing Singaporean population according to age groups, 2024. Source: data.gov.sg / Author.



SHRINKING HOUSEHOLDS BUT LARGE HOMES

Singaporean households are rapidly decreasing in size, while home sizes remain large.

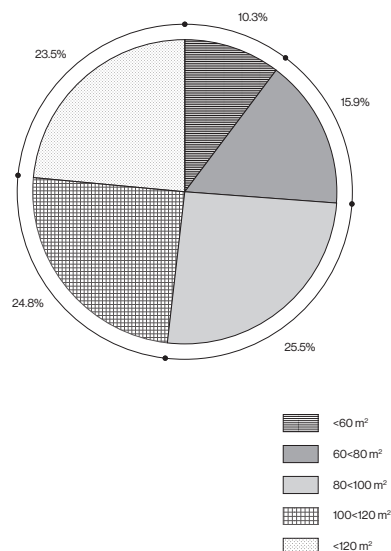


Fig. 17
Graph illustrating household sizes in 3-room flats, 1/2-room flats, and average (1980-2024).
Source: data.gov.sg / Author.

Fig. 18
Chart showing proportion of housing stock in Singapore according to floor area, 2024. Source: data.gov.sg / Author.

Problem Statement

3. Thermal Comfort

The availability of increasingly affordable air-conditioning systems, rising affluence, and changing cultural standards of comfort have led to the proliferation of privatised air-conditioning within Singaporean homes – a phenomenon by which Singapore has become both literally and metaphorically called the “air-conditioned nation”.⁷ The intensity of reliance of mechanical cooling has been facilitated by, at best, an ambivalence toward, and at worst, the direct obstruction of natural ventilation within mass housing architecture, with the two-fold ramifications of rapidly increasing energy demands and thermal inequity.

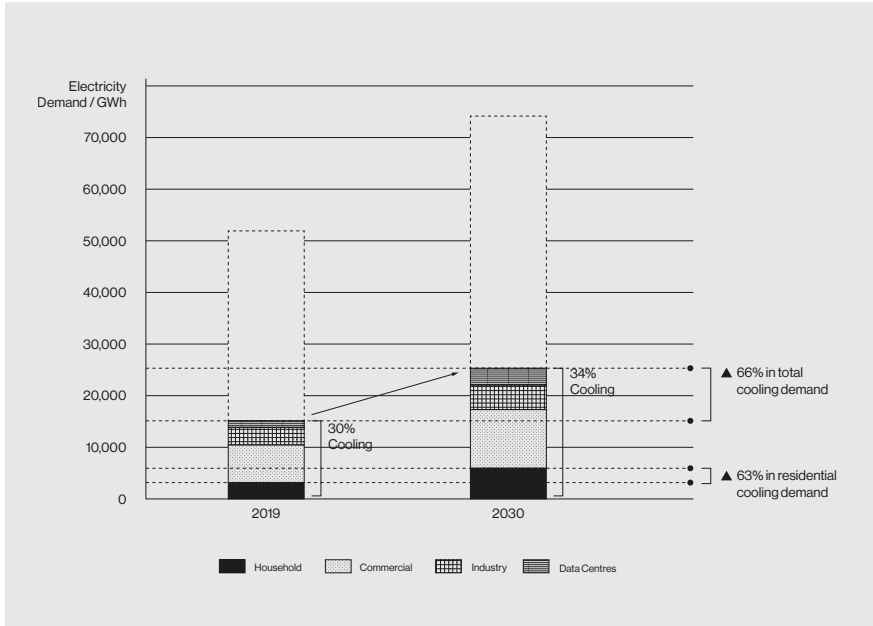
1. GROWING ENERGY DEMAND FOR COOLING

Increases in cooling demand are anticipated to be the largest source of energy demand growth by in Singapore, with residential cooling demand estimated to increase 63% between 2019 and 2030. Insofar as electricity production is still reliant on burning fossil fuels, this leads directly to an increase in carbon emissions. Furthermore, anticipated efficiency-focused ‘techno-fixes’ – such as the reduction of the carbon intensity of electricity production using renewable – are unlikely to reduce carbon emissions sufficiently to mitigate climate change, which must instead be pursued through sufficiency approaches, or consuming less energy in absolute terms.

2. AIR CONDITIONING AS A SOURCE OF THERMAL INEQUITY

Beyond energy demand, individualised reliance on air-conditioning is a driving factor toward growing thermal inequity. As air-conditioning relies on the expulsion of heat into the atmosphere, this contributes directly toward a cyclical increase in urban temperatures and the urban heat island effect, which in turn leads to increases in demand for air-conditioning. The result – the air-conditioning ‘paradox’ – is growing inequities between those who can afford to cool themselves, and the growing proportion of the population who must bear the thermal costs of the minority’s comfort.

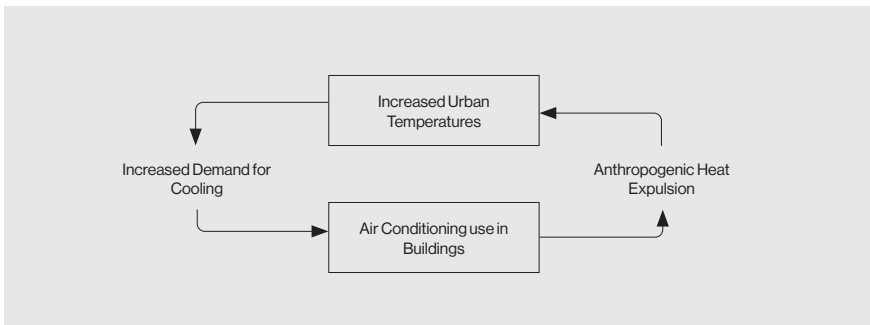
In response to these imperatives, this project rejects the normative notion that we should all be entitled to maximum, individualised, air-conditioning provided comfort. Instead, it posits that we must find alternative, low-tech, and collective ways of maintaining thermal comfort – whose definition must also be redefined – that do not reproduce or exacerbate existing climatic injustices. In doing so, it proposes an architecture of climatic affordances, which focus on bioclimatic design, passive cooling, and integration of vegetation, to make new regimes of comfort desirable.



THE AIR CONDITIONED NATION

82% of Singapore’s households rely on air conditioning; household energy demand for air conditioning is rising rapidly.

Fig. 19
Graph illustrating anticipated increases in electricity demand in Singapore.
Source: WWF-SG / Author.



THE URBAN COOLING PARADOX

Individualised air conditioning creates a cycle of increasing urban temperatures, demand for cooling, and thermal inequities.

Fig. 20-21
Public housing block facades showing individual household air conditioning compressors. Source: Torsten Scheel.

Position Statements

Summary

PHYSICAL

Obsolescence

→ We must refuse the assumed future of mass cyclical demolition and make use of existing housing stock.

SOCIAL

Domesticity

→ We must realise forms of living that are based on principles of collectivity, plurality, and conviviality.

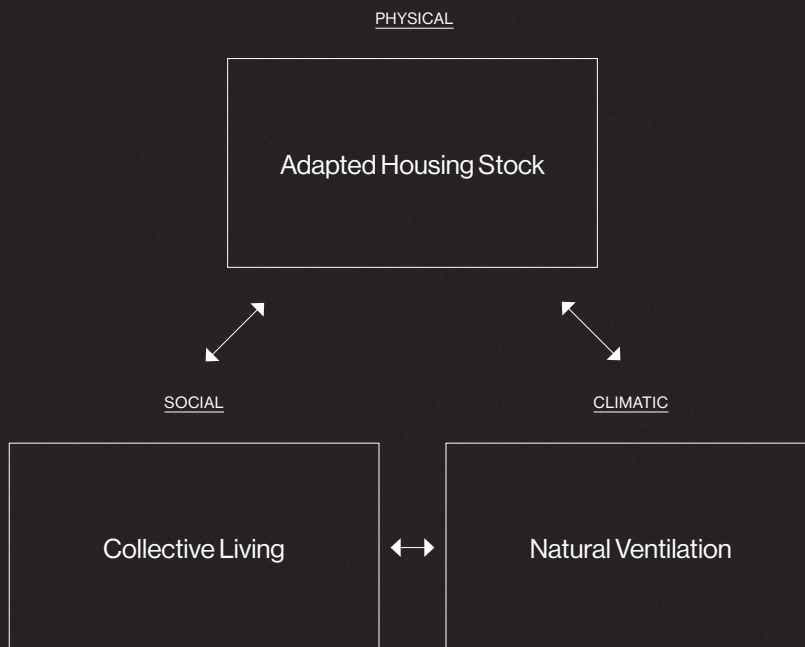
CLIMATIC

Thermal Comfort

→ We must make less energy intensive forms of thermal comfort desirable through bioclimatic design, passive cooling, and climatic flexibility.

Research Question

How can we adapt existing housing stock to accommodate forms of domestic and thermal collectivity?



SUB-QUESTIONS

- What qualities, deficiencies, and opportunities are present within existing modernist mass housing stock? How can these be preserved, remediated, or leveraged?
- How can we create architectural typologies that facilitate collective living while mediating between varied needs and desires for private and public space?
- How can we use bioclimatic design strategies to both enable and incentivise thermal comfort with reduced or no dependence on mechanical cooling?

Objectives

1. To demonstrate the feasibility, desirability, and necessity of refurbishing rather than demolishing existing mass housing stock.
2. To investigate means of retrofitting existing mass housing stock for more collective forms of living.
3. To investigate means of retrofitting existing mass housing stock for reduced reliance on mechanical cooling.

Additionally, this project has a direct relationship to my advocacy work as an Executive Committee Member of the modernist architectural conservation non-profit organization Docomomo Singapore. This project is thus envisaged as a platform upon which the real-world feasibility of retaining and retrofitting Selegie House can be explored, through direct engagement with policy-makers, experts, and the Singaporean public.

Relevance

This project's primary relevance lies in its advocacy for the reuse of existing public housing stock in Singapore.



Singapore has one of the shortest building lifespans in the world, while public housing makes up a significant proportion of the country's total building stock. In the face of the climate crisis, as well as the innumerable social and cultural costs associated with the assumed cyclical razing and rebuilding of the country, this project sees it as necessary to envision alternative futures for existing mass housing.

Furthermore, this cause has relevance for other contexts with large-scale modernist mass housing stock, such as Europe and the United Kingdom. Many of the critiques addressed by this project – including the imposition of normative forms of domesticity and over-reliance on mechanical forms of heating and cooling – are common to modernist mass housing stock internationally. The approaches proposed by this project, both methodological and architectural, may thus be relevant to confronting the legacy of modernist mass housing stock at large.

Finally, this project sees it as significant to investigate the potentials of reuse in resonating with other critical fields relevant to mass housing stock. In this way, it seeks to bridge the gap between a dominant reuse discourse, and broader considerations of climate and domesticity.

Fig. 22
Demolition of Dakota Crescent Estate,
c.2020. Source: remembersingapore.org

Methodology

Several methodologies are employed corresponding to specific stages and scales within the project framework.

POSITIONS

- Data analysis, specifically regarding the characteristics of existing housing stock (e.g. age, remaining lease, unit make-up); demographic trends (e.g. household composition); and energy statistics (e.g. cooling energy demand; carbon intensity of electricity production).
- Literature review, regarding topics of obsolescence, domesticity, and thermal comfort, both generally, related to mass housing as a category, and Singapore specifically.

PRINCIPLES

- Archival research, related to the history of the site and building (e.g. maps, photographs, building plans, newspaper articles, speeches, audio-visual materials).
- Redrawing existing and historic site and building situations at multiple scales (e.g. urban, building, dwelling scale) and drawing types (e.g. plans, sections, axonometrics, perspectives).
- Comparative study of different phases of the site and building's development to elucidate elements of critique, value, and opportunity, according to the principles of reuse, domesticity and thermal comfort.
- Schematic principles for intervention in the existing site at various scales (e.g. the dwelling, floor, building, and urban ensemble), according to the principles of reuse, domesticity, and thermal comfort.

PROPOSITION

- Typological scenarios according to potential household formations (e.g. singles, groups, extended families), degrees of collectivity, and natural ventilation.
- Research by design through multiple media (e.g. drawing, model-making, 3D visualisation, sketching) and across scales (e.g. dwelling, building, urban).
- Representation of final scheme through multiple media (e.g. drawings, renders, models, publications).

Theoretical Framework

OBSOLESCENCE

- Daniel Abramson has suggested that architectural obsolescence is not a natural nor pre-determined condition referring to the physical integrity of a structure. Rather, obsolescence is always relative, contingent, and 'constructed' through a myriad of economic, political and cultural forces.⁹ It follows that the condition of obsolescence can be 'de-' or 'reconstructed' by reformulating the political, cultural, and economic relevance of a site.
- In the Singaporean context, sociologist Chua Beng Huat has detailed extensively the political and economic contradictions by which the large-scale obsolescence of existing public housing stock has arisen and is being managed.¹⁰ Chua, however, focuses primarily on the policy implications of public housing obsolescence, while the physical ramifications of large-scale demolition and reconstruction have yet to be systematically investigated.

DOMESTICITY

- Marxist and Feminist scholars, such as Dolores Hayden, Alva Gotby, Kristen Ghodsee, Helen Hester, and Nick Srnicek have written extensively about the oppressive nature of the conventional nuclear family home.¹¹ They variously suggest that the nuclear family home form has been an instrument of capitalism to guarantee the reproduction of labour through the unpaid (typically female) domestic work; the site of gendered exploitation and abuse; an apparatus of political, economic, and social atomisation; and increasingly financialised instrument responsible for growing inequities. They suggest that emancipatory forms of living can be found by greater co-habitation, sharing in the burden of domestic work (particularly cooking, cleaning, and child-rearing), and decommoditised forms of ownership.
- Pier Vittorio Aurelia and Martino Tattara, who together form the architecture collective DOGMA, have written extensively about the architectural history of domesticity, while envisioning new forms of collective living in their architectural projects.¹² Drawing upon the aforementioned literature, DOGMA suggests that the nuclear family home, as well as the separation of home and work, are not natural but historically, economically, and politically constructed. They suggest that through new ownership forms (e.g. cooperatives, community land trusts, revived state provision), alongside reinterpreted architectural typologies (e.g. the urban villa, the longhouse, the boarding house, the residential hotel) we can envision new forms of collectivity.

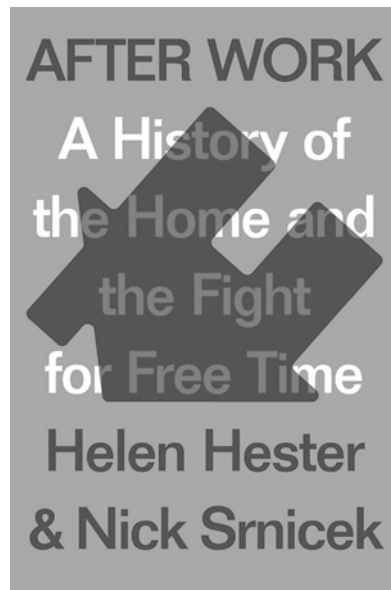
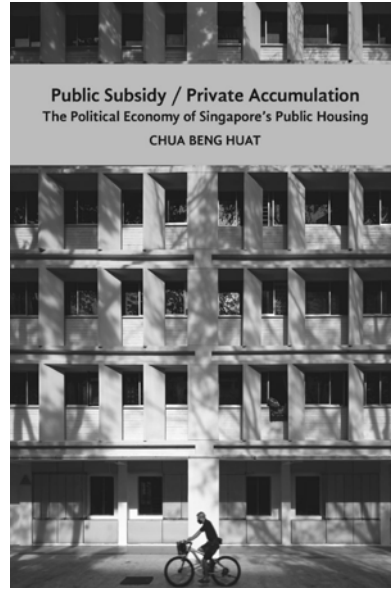


Fig. 23
Daniel Abramson,
Obsolescence: An Architectural History (University of Chicago Press, 2016).

Fig. 24
Chua Beng Huat,
Public Subsidy / Private Accumulation: The Political Economy of Singapore's Public Housing (NUS Press, 2024).

Fig. 25
Dolores Hayden, *The Grand Domestic Revolution: A History of Feminist Designs For American Homes, Neighborhoods, and Cities* (MIT Press, 1981)

Fig. 26
Helen Hester and Nick Srnicek, *After Work: A History of the Home and the Fight for Free Time* (Verso, 2023).

- In his seminal essay, *Figures, Doors, and Passages*, Architectural historian Robin Evans argues that it is the typological element of the corridor by which the architecture of the home has become less convivial.¹³ By comparing plans and paintings from across historical periods, Evans shows how social confrontation was facilitated by the spatial organisation of the enfilade (connected rooms) and subsequently atomised by the corridor leading to single-termination spaces (isolated rooms).
- In the Singaporean context, architectural historian and theorist Lillian Chee has investigated the characteristics of domesticity within Singaporean public housing estates.¹⁴ She charts the confrontations between the state's rigid imposition of domestic forms and individuals' resistance through the reconfiguration of the space of the flat. Chee also argues that conventional understandings of domesticity are interrupted in the Singaporean context by unique spatial, social, and cultural practices, such as the "void deck" (piloti undercroft of high-rise housing blocks).

COMFORT

- Architectural historian and theorist Daniel Barber has influentially suggested that comfort is not natural nor stable, but socially, culturally and technologically produced.¹⁵ He traces in his work architectural attempts to foster comfort in its various forms (by mediating light, air, humidity etc.) and its eventual descent into reliance on mechanical cooling systems. In today's context of climate breakdown, he suggests fossil fuel reliant regimes of comfort are untenable, and that we must "make discomfort desirable". Toward this end, he encourages to revisit the sufficiency-focused approaches of climatic modernism as a reservoir of approaches that can be appropriated today.
- In the Singaporean context, architectural historian Jiat-Hwee Chang has traced the ways in which the architecture and material culture of the home has interacted with the proliferation of air-conditioning.¹⁶ Chang argues that air conditioning technology is at the locus of a series of architectural and material inflections in the space of the home, such as the shift from louvred to glazed fenestration, and from rattan to leather furniture. He suggests that one cannot look at the air-conditioned home as a purely architectural object, but an "ecology of things" – from structures, to fixtures, furniture, lighting, and clothing – that both respond to and create thermal regimes.

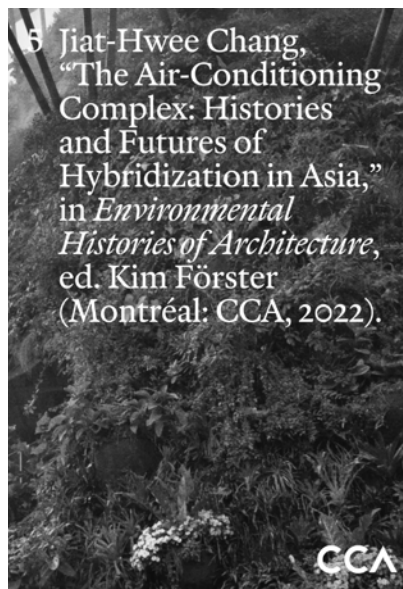
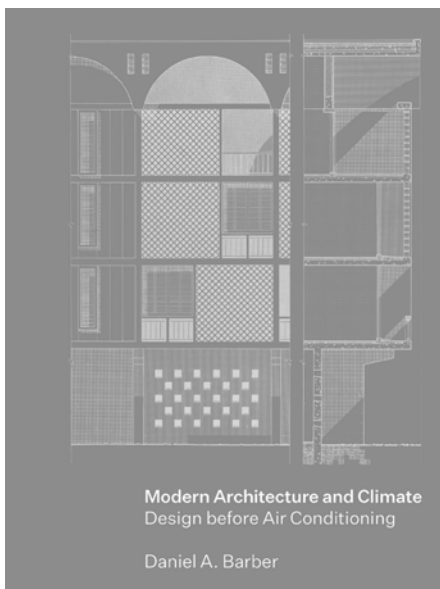
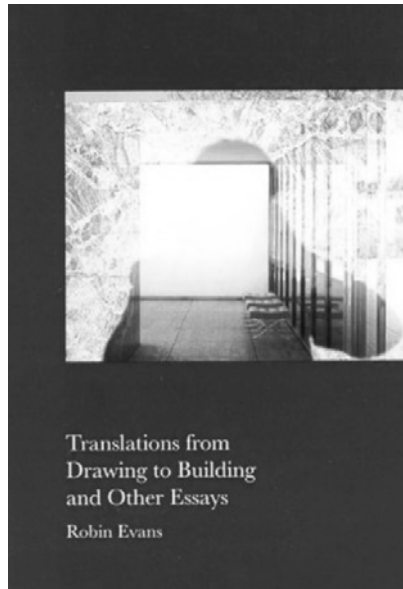
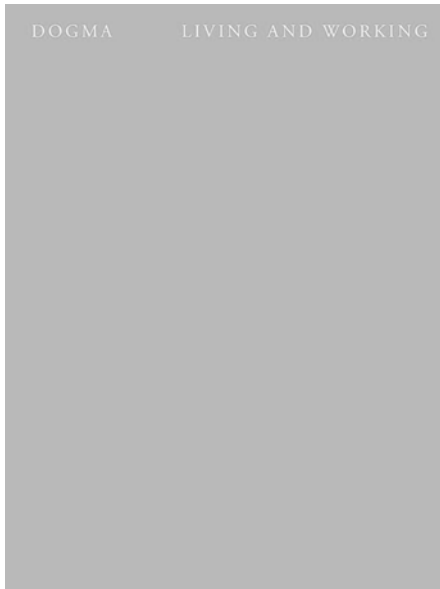


Fig. 27
DOGMA, *Living and Working* (MIT Press, 2022)

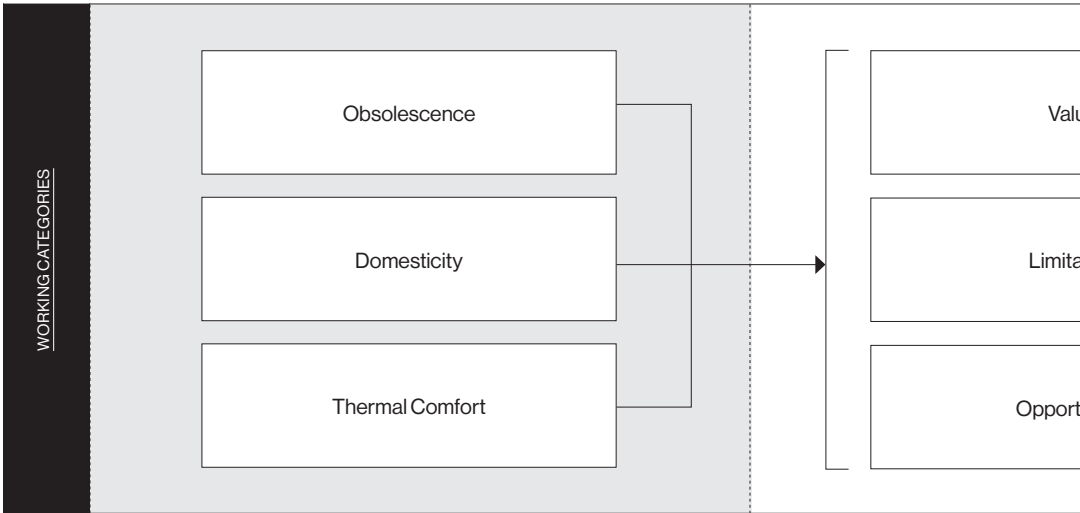
Fig. 28
Robin Evans, "Figures, Doors, and Passages", in *Translations from Drawing to Building and Other Essays* (MIT Press, 1997).

Fig. 29
Daniel Barber, *Modern Architecture and Climate: Design Before Air-Conditioning* (Princeton University Press, 2020).

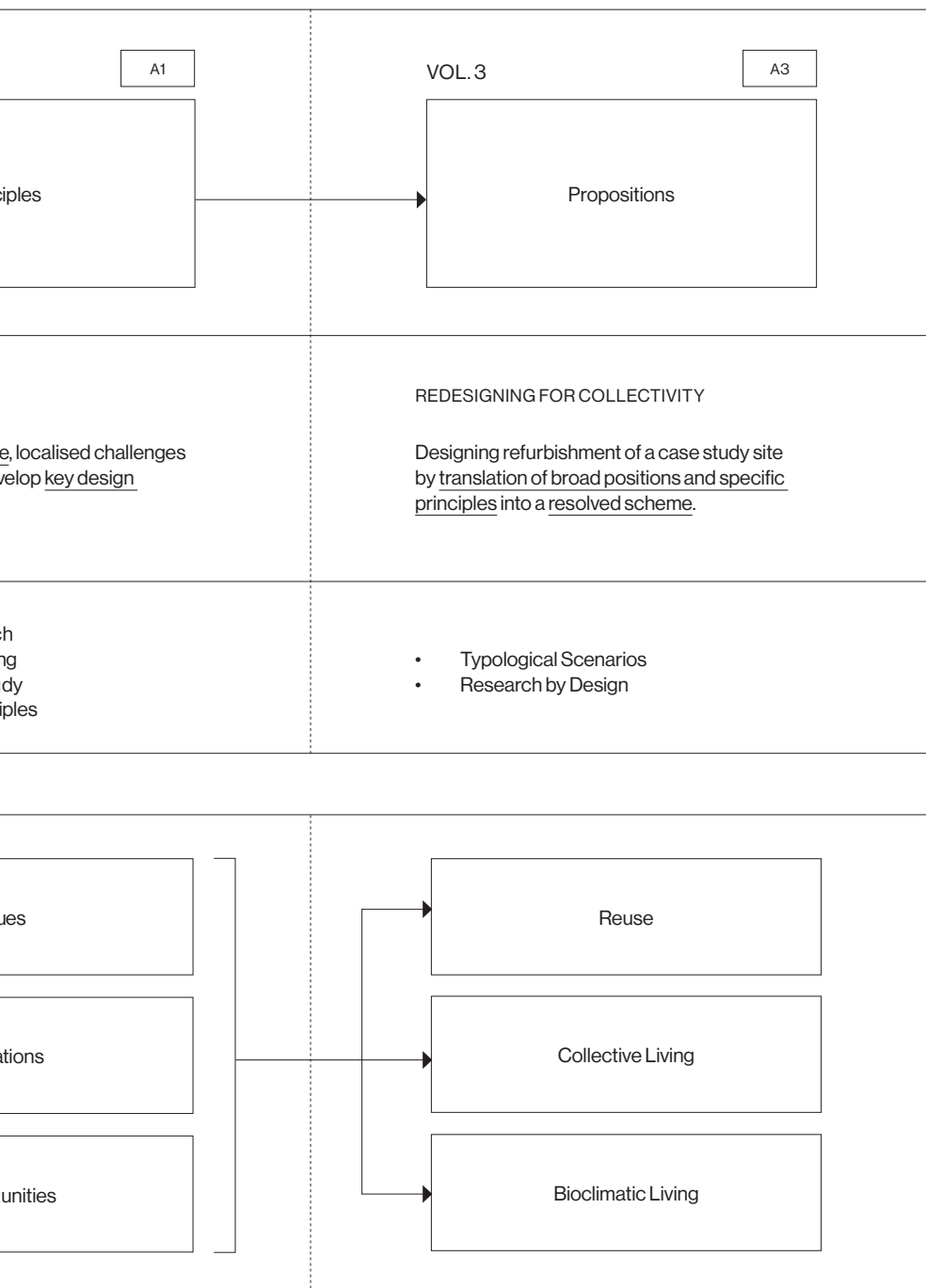
Fig. 30
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Planning Summary

PROJECT PHASE	VOL. 1 ● A0.5 Positions	VOL. 2 Principles
DESCRIPTION	THE CRISES OF EXISTING HOUSING STOCK Setting out the <u>large-scale conditions</u> affecting existing housing stock and <u>broad imperatives</u> for the future.	TAKING STOCK Analysis of a <u>specific site</u> and opportunities to develop <u>principles</u>.
METHODS	• Data Analysis • Literature Review	• Archival Research • Analytical Drawing • Comparative Studies • Schematic Principles



● — You are here



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6. Helen Hester and Nick Srnicek, *After Work: A History of the Home and the Fight for Free Time* (Verso, 2023); Dolores Hayden, *The Grand Domestic Revolution: A History of Feminist Designs For American Homes, Neighborhoods, and Cities* (MIT Press, 1981); Alva Gotby, *Feeling at Home: Transforming the Politics of Housing* (Verso, 2025).
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11. Helen Hester and Nick Srnicek, *After Work: A History of the Home and the Fight for Free Time* (Verso, 2023); Dolores Hayden, *The Grand Domestic Revolution: A History of Feminist Designs For American Homes, Neighborhoods, and Cities* (MIT Press, 1981); Alva Gotby, *Feeling at Home: Transforming the Politics of Housing* (Verso, 2025); Kristen Ghodsee, *Everyday Utopia: Better Ways of Living Equally* (Vintage, 2022).
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This is home, surely?

Retrofitting Singaporean Public Housing
for Domestic and Climatic Collectivity

Vol. 2

Principles

Jacob Meyers

Graduation Report

2/6/2026

Explore Lab 41

MSc Architecture, Urbanism and Building Sciences

TU Delft

Supervisors:

Dirk van den Heuvel (Research + Design)

Rufus van den Ban (Building Technology)

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Site Introduction

Selegie House

Selegie House was completed in 1963 by the Housing and Development Board (HDB), the national public housing agency established in 1960 by the newly formed Singapore Government. The HDB was set up by the social democratic People's Action Party (PAP) to provide affordable housing to the masses, who had faced a chronic housing shortage during post-war British colonial rule. As part of the HDB's First Five-Year Plan (1960-65), the agency aimed to construct 50,000 dwellings, the majority of which would take the form of high-rise modernist flats. The HDB's early work involved the completion of the British-planned Queenstown Estate, development on city-fringe infill sites, and rapid construction of 'emergency' flats to rehouse fire victims.

Parallel to this immediate work, the agency had the medium-term goal of undertaking urban renewal in the congested city centre. In 1960, the agency therefore acquired a plot of public land in central Singapore bound by Selegie Road, Short Street, and Nagapa Lane (the plot also contained Verappa Chetty Lane and Annamalai Lane which were subsequently expunged), on which shophouses had stood before the expiry of their 99-year leases from 1958. While planning was underway for a new high-rise "government skyscraper", the HDB staged a 'Low-Cost Housing Exhibition' on the Selegie Road site in 1960. The significant exhibition was the first large-scale publicity project launched by the HDB in the year of its inception, and featured models and drawings of its ambitious public housing plans. Notably, the exhibition also included a mural painted by students from the newly established Singapore Polytechnic School of Architecture, alongside a full-scale mock-up of a one-room flat with flexible furniture designed by then-student Tan Cheng Siong (later notable Singaporean post-independence architect who would design significant housing projects including Pearl Bank Apartments and Pandan Valley).

Announced in 1961, Selegie House was the first project in the HDB's urban renewal programme, featuring subsidised rental housing in 505 two-, three-, and four-room flats, alongside 39 ground-floor shophouses, a large restaurant, and a rooftop recreation club for HDB staff members, distributed across two 10-storey blocks, four 2-storey connecting blocks, and one 20-storey block, the tallest public housing structure and fifth tallest building in Singapore at the time. As part of the urban renewal programme, the flats prioritised resident applicants who required resettlement due to other urban development projects, while supporting mixed-use commercial activities in the city core. Designed to serve as a showpiece project for the new public housing agency and its urban renewal ambitions, Selegie House received considerable public attention, including its opening by Singapore's founding Prime Minister Lee Kuan Yew on 31 May 1963, publication in international construction journals, a dedicated six-page special 'Selegie House Supplement' in the national broadsheet newspaper The Straits Times, and feature on the cover of the 1963 HDB Annual Report.

NATIONAL LIBRARY,

SINGAPORE

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ANNUAL REPORT 1963



Selegie House. The first precinct of urban redevelopment in Singapore. Two blocks of 10-storey flats and a 20-storey block with 365 housing units including 39 shops and a restaurant. This 20-storey block is the tallest building constructed by the Housing Board up to date.



HOUSING & DEVELOPMENT BOARD
SINGAPORE

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7
SIN

Fig.1
Selegie House on the cover of the HDB
Annual Report 1963. Source: National
Library Board Singapore.



SITE LOCATION

Selegie House is located close to the city centre of Singapore, on the fringe of the Central Business District and adjacent to the cultural hub of the city, including major museums, art galleries, and universities. Selegie House is unique among Singaporean public housing developments as an urban infill, rather than 'new town' project.



0 1 2km



THE STRAITS TIMES FRIDAY, MAY 31, 1963 PAGE 18

Selegie House

A STRAITS TIMES SUPPLEMENT

A Housing Board achievement

Prime Minister will officially open building today

THE Prime Minister, Mr. Lee Kuan Yew, will open the Singapore Housing Board's "show piece," the \$3.8 million multi-storey Selegie House at 7 p.m. today.

About 1,500 guests are expected to view the building and the Prime Minister will cut the ribbon.

The Housing Board is planning a big celebration with a parade and fireworks to mark the opening of this magnificent landmark in one of the most thickly populated areas of the island.

LARGEST

The school, which is the largest in Singapore, is situated on a site of more than 4,000 sq. ft. in the two-storey block.

It is also the Board's first school building.

Selegie House, the largest of the Board's first school buildings, is situated on a site of more than 4,000 sq. ft. in the two-storey block.

There is also ample space around the building for the sports and delivery area.

All the flat are provided with modern facilities including electricity and gas facilities and also telephone and refrigeration services.

Arrangements for the date is complete and the Board is confident that the modern way of living is being shown.

Through the main door, the view of the building is the most impressive. The building is a landmark in the city.

JUTS OUT

Through the building, the view of the city is the most impressive. The building is a landmark in the city.

PARKING

While there are some parking spaces, the Board is confident that the modern way of living is being shown.

A side view of the \$3.8 mill. building which is ready for occupation. This is one of Singapore's tallest buildings.



"A DISTINCTIVE LANDMARK"

Congratulations
& Best Wishes
to



THE SINGAPORE HOUSING
& DEVELOPMENT BOARD
ON THEIR LATEST SUCCESS
SELEGIE HOUSE!
THE
20 STOREY SKYSCRAPER
OF DESIRABLE FLATS
& SHOPPING CENTRE

MAIN CONTRACTOR
LIP SENG CONSTRUCTION LIMITED
7, CHIN CHEW STREET, SINGAPORE 1. • TEL: 71586/78442

A NATIONAL ACHIEVEMENT

Selegie House was touted as a national achievement upon its completion in 1963, serving as a poster project for the newly established national housing agency. Its high-profile opening was accompanied by a dedicated 10-page supplement in the national broadsheet newspaper, *The Straits Times*.

Fig. 2-3
Selegie House special supplement in the national broadsheet newspaper. Source: *The Straits Times*, May 31 1963 / National Library Board Singapore.

Ready for occupation
AMPLE SPACE FOR CAR PARKS



A view of the modern apartment building, Selegie House, showing its distinctive architectural design and ample parking space.

Flats compact but spacious



The interior of a flat in Selegie House, showing a modern and spacious living area with large windows and built-in furniture.

CONGRATULATIONS TO THE SINGAPORE HOUSING BOARD FOR SUCCESS ON SELEGIE HOUSE

From:



SINGAPORE STEEL WELDING WIRE CO. & CO.
ISLAND STEEL WELDING WIRE CO.

100, RAFFLES PLACE, SINGAPORE 1.

Now! THE CHARTERED BANK IS OPENING A NEW BRANCH AT 2 SELEGIE HOUSE, SELEGIE ROAD, ON 1ST JUNE.



The Chartered Bank is opening a branch at 2 Selegie House, Selegie Road. This new branch offers modern and spacious premises in the new Selegie House building.



Our Bestwishes Congratulations TO The Singapore Housing Board on the completion of **SELEGIE HOUSE**.
SING WAH PLUMBING & ELECTRICAL CO. 17A, BANGKOW ROAD, SINGAPORE 1.

An important shopping area



A map showing the location of Selegie House in relation to the surrounding area, including the railway station and other landmarks.

Selegie House—how flats are rented out

Water is no problem for the tenants



Selegie House is a modern apartment building with a variety of flat sizes and amenities. The building is well-located and offers excellent value for money.

CONGRATULATIONS from SINGAPORE ENGINEERS LIMITED

5th Floor, Wing Building 9 & 10, Philip Street, SINGAPORE 1.
Tel: 8202 & 8201.

TO THE SINGAPORE HOUSING & DEVELOPMENT BOARD on the completion of SELEGIE HOUSE

Visionary behind the scenes



A portrait of a man, likely a key figure in the development of Selegie House, with text describing his role and vision.

CONGRATULATIONS TO THE SINGAPORE HOUSING BOARD

The new development of **SELEGIE HOUSE** is a landmark project for the Housing Board.

B. R. G. WELDMESH (S) LTD. & MALAYAN WIRE CO.

100, RAFFLES PLACE, SINGAPORE 1.

SPECIALLY BUILT FOR TENANTS' CONVENIENCE



A large photograph of Selegie House, a modern apartment building with a cantilevered restaurant on the top floor.

COMMANDS PANORAMIC VIEW

The building offers a panoramic view of the surrounding area, including the city skyline and the sea.

THE UNITED CHINESE BANK CONGRATULATES THE SINGAPORE HOUSING BOARD ON THE COMPLETION OF SELEGIE HOUSE

WE HAVE PLEASURE IN ANNOUNCING THE OPENING OF OUR BRANCH AT No. 1 SELEGIE HOUSE

ECAFE expert is impressed

'End of social evil is in sight'



A photograph of Selegie House, showing its modern architecture and the surrounding area.

The Board's flats are the cheapest in the world

A quote from ECAFE (Economic Commission for Asia and the Far East) praising the affordability of the flats in Selegie House.

THE SMALL MAN'S BANK

Announced THE OPENING SOON of their SELEGIE HOUSE SUB-BRANCH

- Savings Account Service
- Coin Bank Savings Account Service
- Safe Deposit Box Service
- Lady-in-Pink Service
- Fixed Deposit Service

Customers will be served entirely by Lady Staff

CHUNG KHIANG BANK LTD.



REBUILDING PROJECT FOR CENTRE OF SINGAPORE

THE multi-storey development at Selegie Road/Short Street is an important and extensive step in the

replanning of the central area of Singapore by the Singapore Housing and Development Board.

The site is in a central and densely populated area and occupies an area of approximately 90,600 square feet. It is within 1½ miles of the town centre and along a major road and is easily accessible from the town centre and other parts of Singapore. Piling work has begun and the building is expected to be completed at the end of 1962.

The project comprises three massive blocks linked together with shops, shopping arcade and landscaped courts at ground level. The main and central block is 18 storeys high and the two subsidiary blocks on either side of this main block are of 10 storeys.

The aim is to provide 490 housing units and an attractive and convenient shopping centre with 39 shops grouped in a pleasant arcade.

Based on contemporary ideas of shopping centre design, this centre will have such attractions as ample parking provision for shoppers, restful landscapes, paved arcades, open courts, children's playground, restaurants and cafes for shoppers to relax and also ample open areas for circulation.

The rentable shop and office spaces here will be attractive for department stores, business houses, professional suites, banks or insurance firms, restaurants and cafes.

The 490 dwelling units will house some 4,000 people. There will be

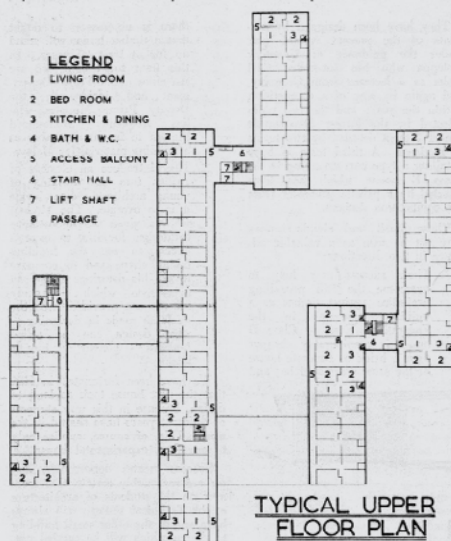
fast lifts and staircases to serve the tenants.

The whole of the ground floor area will be rented out as shops and offices, which will have living quarters available as required. There will be direct staircase links between the shops and the living quarters.

Construction is of reinforced frame with concrete walls or hollow-block infill walls. It is based on an 18'-0" module and the depth is 30'-0" per bay. Floors and ceilings are of rendered concrete slabs. A feature of the design will be the use of cantilevered access balconies. This will help to give stress on the horizontal feature in the design.

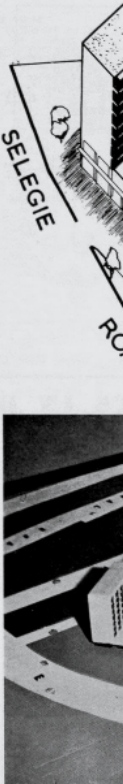
Precast design panels will be used for filling balconies and access balconies in the form of balustrading. The housing for lift machines and water tanks in the roofs will be neat structures specially planned to achieve unity of design and also to create a controlled roof line for these huge buildings.

As the ground floor area is used mainly for shop and office spaces, there will be a 3'-0" deep panel running right around the building for use as advertisement panels. This will permit proper control of advertising. For flexibility, shop and office owners are able to rent bays of 18'-0" to suit their needs and redecorate or reconstruct them as required subject to the Board's approval.



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THE HONG KONG & FAR EAST BUILDER—VOLUME 16, NUMBER 3

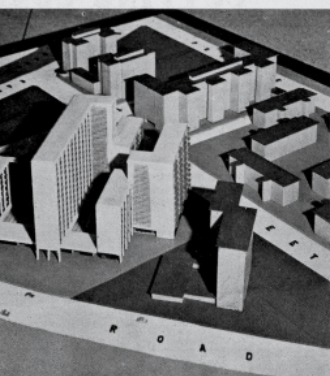
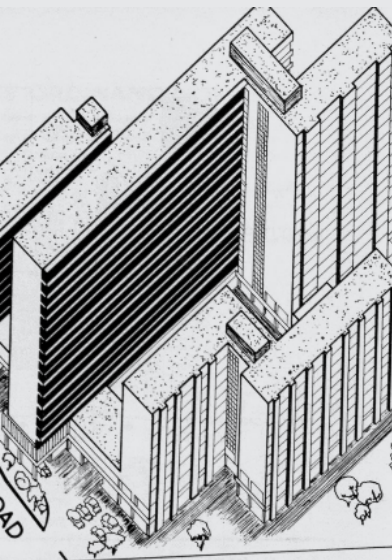


THE HONG KONG & FAR EAST BUILDER—VOLUME 16, NUMBER 3

INTERNATIONAL ATTENTION

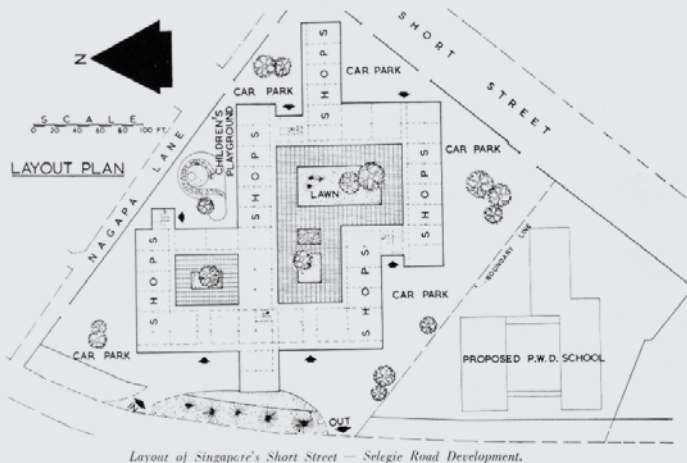
As a high-profile urban renewal project for the newly-established Singaporean public housing agency, Selegie House was also published in architectural and construction trade journals, such as the *The Hong Kong & Far East Builder*.

Fig. 4
"Rebuilding Project for Centre of Singapore", article on Selegie House. Source: *The Hong Kong & Far East Builder* 16, no. 3 (April 1962) / HKU Digital Archives.



(See next page)

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Layout of Singapore's Short Street — Selegie Road Development.

CUTTING COSTS IN BUILDING

COST-CUTTING by saving in manpower is the aim of everybody in the building industry where competition, even with building and end foreshadowed building in Hong Kong has reached a peak never known before.

Mechanisation is the answer to the problem of cost-cutting but there are many branches in building where the suitable machine is not easy to find. Transport with its loading and off loading, sometimes to be frequently repeated, has always been stubborn in its resistance to cost cutting.

But mechanisation is coming. Lam Woo and Co. are experimenting with a new type of hydraulic lorry crane which promises to reduce costs considerably from several points of view.

This Hiab lorry crane, one of three different models now in Hong Kong cuts costs in three ways: its fingertip dual control allows the

crane to be operated by the lorry driver who can keep his moving load in sight throughout the loading and unloading process; it fits into a small space of between 10 and 14 inches behind the cab, leaving the floor of the load space free; and its mobility does away with the need for cranes at both store and work sites.



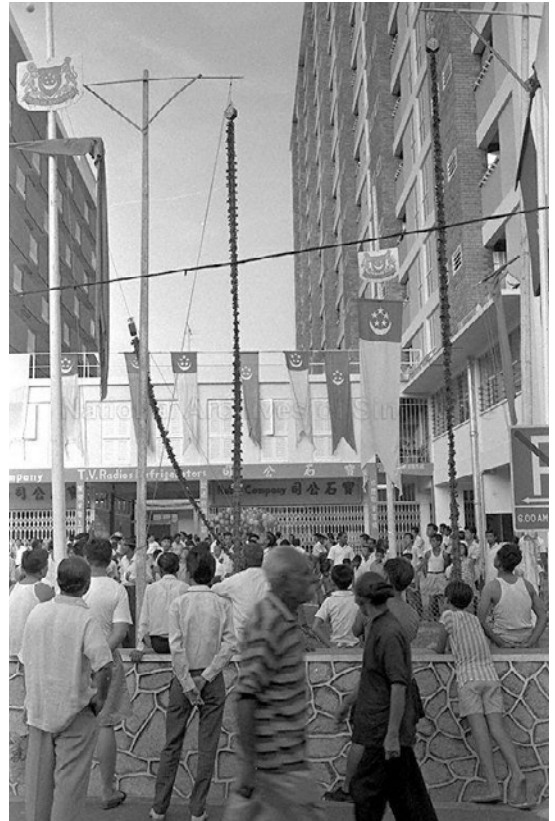
This particular crane can lift to a height of 13 feet, can, by using snags, be used for winching on the level or from below ground level, can swing 360 degrees, and can lift one ton at standard settings. By changing the valve this weight can be safely trebled.

For lifting these heavier weights and for working on awkward sites with uneven levels hydraulic outriggers can be supplied for fitting underneath the operating lorry. A power take off unit can also be supplied if the type and make of unit are made known.

But the great advantage of these cranes is that the hydraulic power, the elasticity of the folding and extending arm of the jib, and its accurate positioning make it possible for one man to do a job which previously demanded the services of several men — and the one man is always with the job, no matter where it is.

THE HONG KONG & FAR EAST BUILDER — VOLUME 16, NUMBER 3

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OPENING DAY

The opening of Selegie House was a national event, marked by a large public rally whose guest of honour was Singapore's founding Prime Minister Lee Kuan Yew. Hundreds of spectators watched speeches, followed by a firecracker show and the unfurling of a 10-storey tall celebratory banner from Selegie House's tallest block.

Fig. 5-7
"Rebuilding Project for Centre of Singapore", article on Selegie House. Source: *The Hong Kong & Far East Builder* 16, no. 3 (April 1962) / HKU Digital Archives.



Research Framework

Selegie House as Palimpsest

The research phase of the project focusses on the multi-layered history of Selegie House. In disentangling the physical layers of the building through site visits, archival materials, and analytical drawing, the research phase draws together the broad concerns of the project - obsolescence, domesticity, and thermal comfort - with the close reading of a specific site.

1. HISTORICAL ENQUIRY - SITE AS INDEX

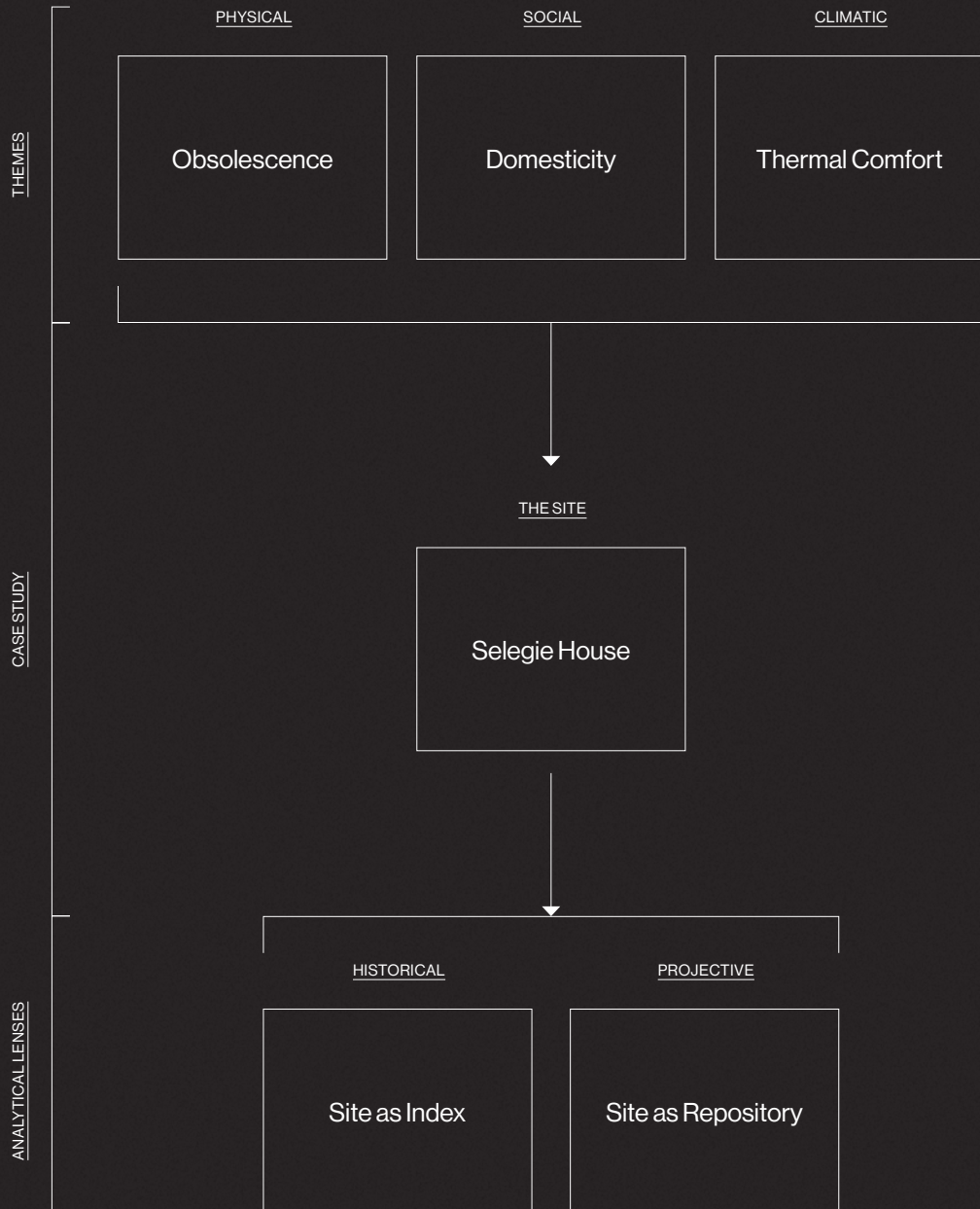
The first mode of engagement with the history of Selegie House is through historical enquiry, reading the site as a physical index of the ways in which the changing physical forms of public housing has been entangled with changing attitudes toward domesticity and thermal comfort. In this respect, the research phase argues that while Selegie House was originally constructed around a conception of collectivity and natural ventilation, subsequent physical modifications to the site were enacted both in response to and toward greater privacy and air-conditioning reliant thermal enclosure.

- How can Selegie House be read an evolving, physical index of changing domestic and climatic conventions within Singaporean public housing stock?

2. PROJECTIVE PRINCIPLES - SITE AS REPOSITORY

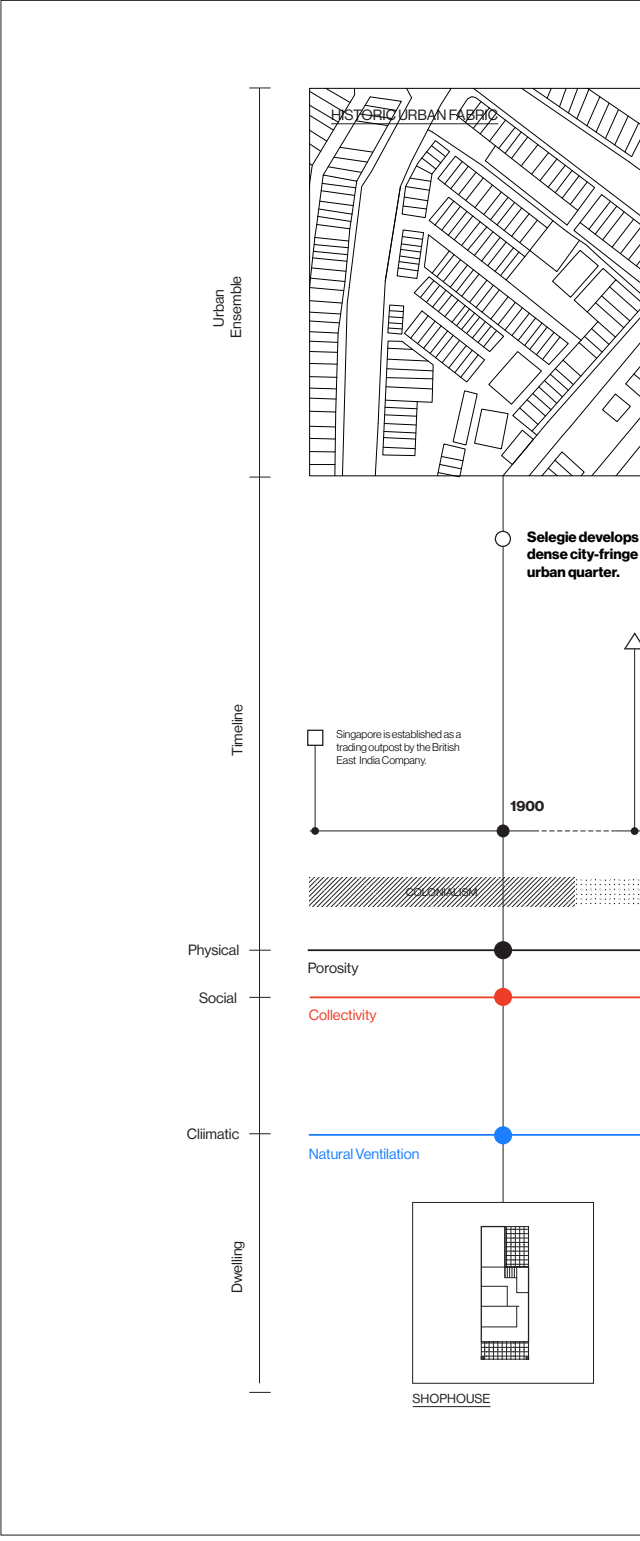
In addition to solely historical aims, the research phase also seeks to inform the design proposal. In this way, it is proposed that a close reading of existing layers of the site will provide principles that can inform projections toward new climatic and domestic regimes for Selegie House and Singaporean public housing stock at large. By grounding projective design principles in the history of the site, it is argued that the design proposal can be both practicable, as well as resonant with the existing physical and cultural fabric of the site - both challenging, while forming an extension and continuity of existing histories.

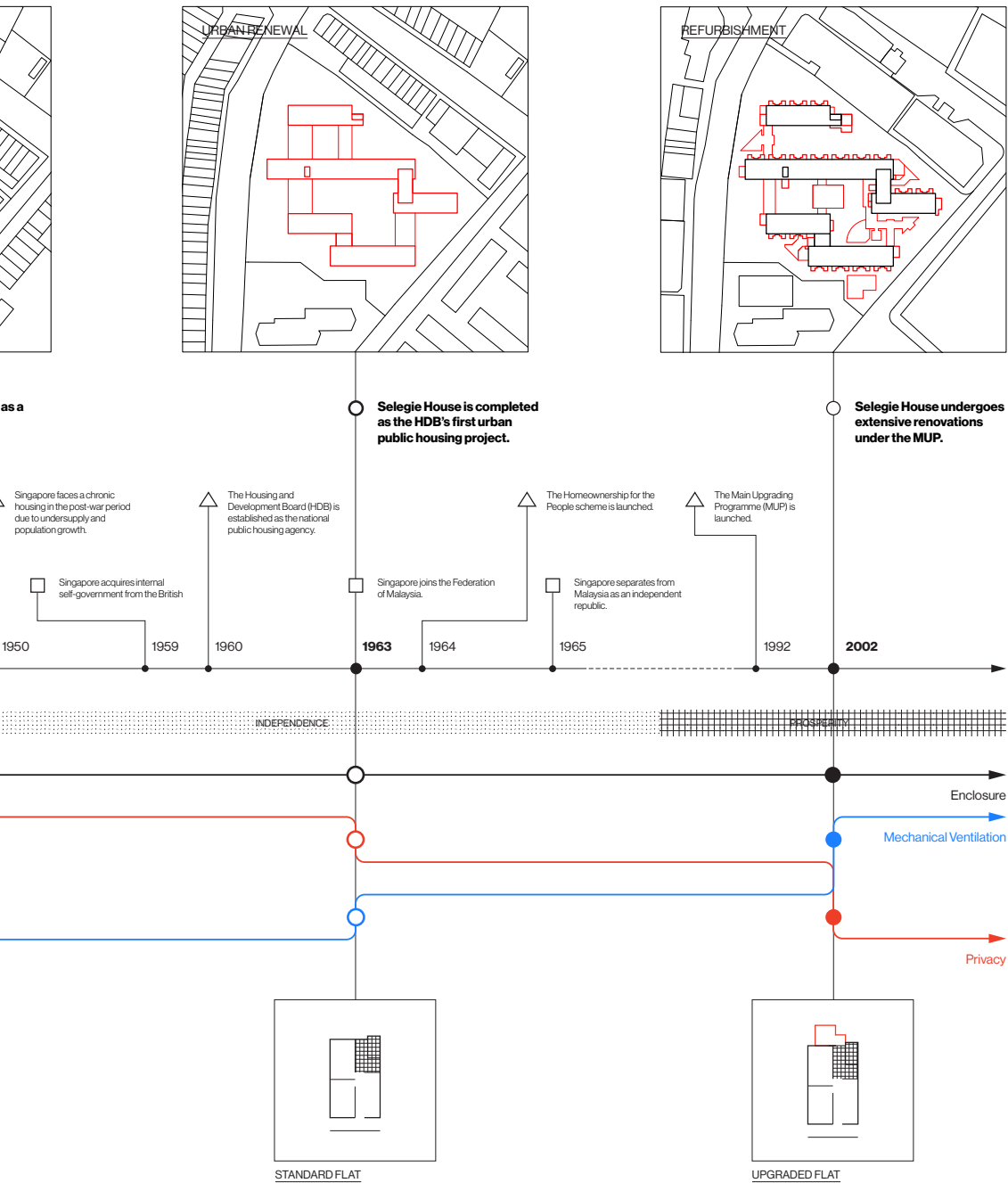
- What principles, strategies, and themes are latent within the history of Selegie House and its evolution, that may inform or facilitate the enactment of new climatic and domestic regimes?



THE RESEARCH MAP

Selegie House was analysed according to the physical, social, and climatic categories that guide the project. A narrative unfolded that revealed three dominant phases of the site's history: it's pre-independence historic urban fabric, the original form of Selegie House as it was completed in the 1960s, and the building following extensive renovations in the early-2000s. Each of these phases in turn served as an index of the evolving physical, social, and climatic qualities of Singaporean housing.





□ National △ Housing & Urban Development ○ Selegie Road Site ● Architectural ● Social ● Climatic





Fig. 8
RAF aerial photograph of Selegie Road,
1958. Source: National Archives of
Singapore.

Fig. 9
Plan of Selegie Road, Short Street, Al-
bert Street and Rochor Road, Singapore
Town Subdivision XIX, 1950-79. Source:
National Archives of Singapore.

URBAN RENEWAL

Selegie House was the first project in what would become a comprehensive urban renewal programme undertaken by the Singaporean government. Intended to rationalise, sanitise, and densify the city centre, historic urban lots would be forcibly acquired and consolidated, while existing structures were cleared, laying the groundwork for a new logic of large-scale modernist redevelopment.



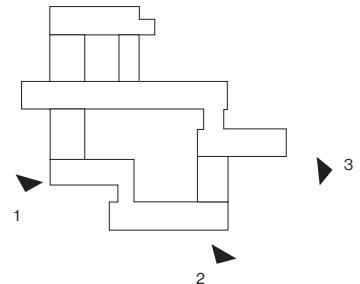
Fig. 10
Photograph of HDB Low-Cost Housing
Exhibition on the Selegie House site,
1960. Source: *Rumah Journal of the
Singapore Institute of Architects* (1961) /
National Library Board Singapore.

Fig. 11
Selegie House under construction,
c.1962. Source: National Archives of
Singapore.

Fig. 12
Selegie House under construction,
c.1962. Source: National Archives of
Singapore.

THE CONSTRUCTION

The central location of the Selegie House site meant that it played an important role for the national housing agency even before construction began. A significant exhibition marking the launch of the national public housing programme was held on the site, marking the first time the Singaporean public were shown the high-rise, modernist future that awaited them.



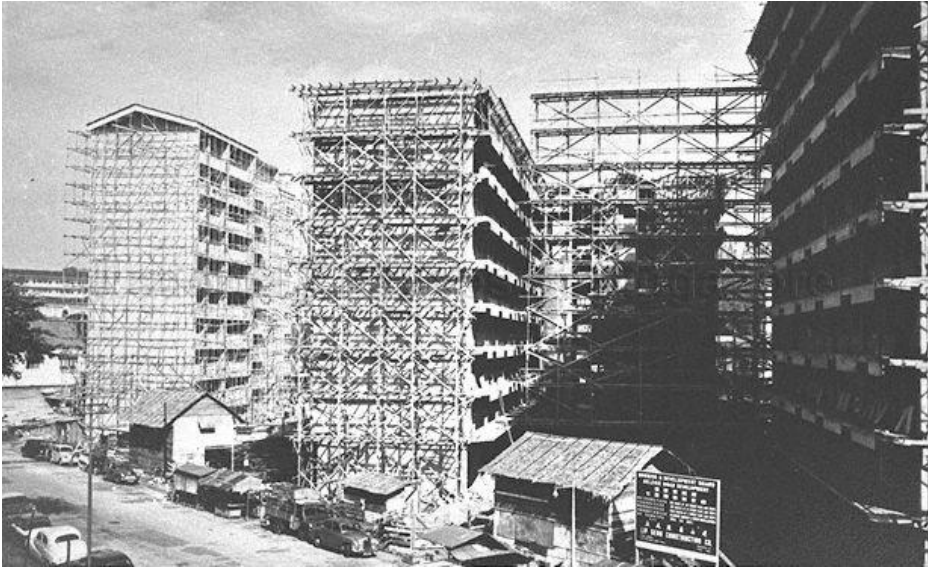


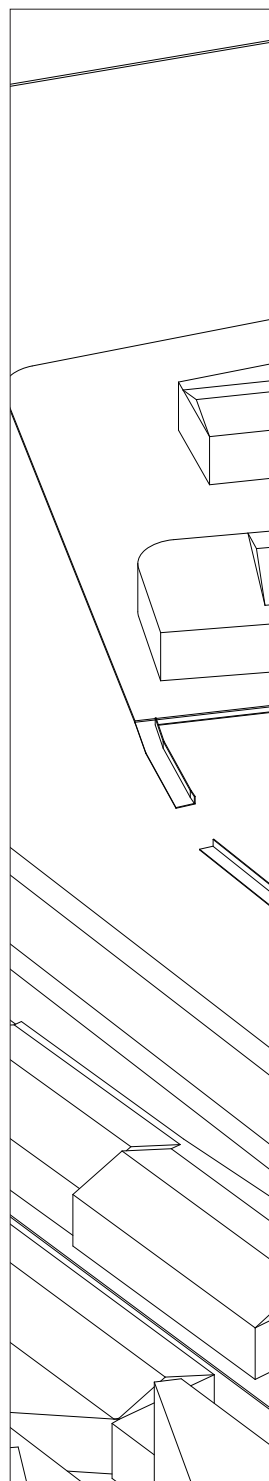


Fig. 13
Aerial photograph of Selegie House,
c.1963. Source: HDB Annual Report
1963.

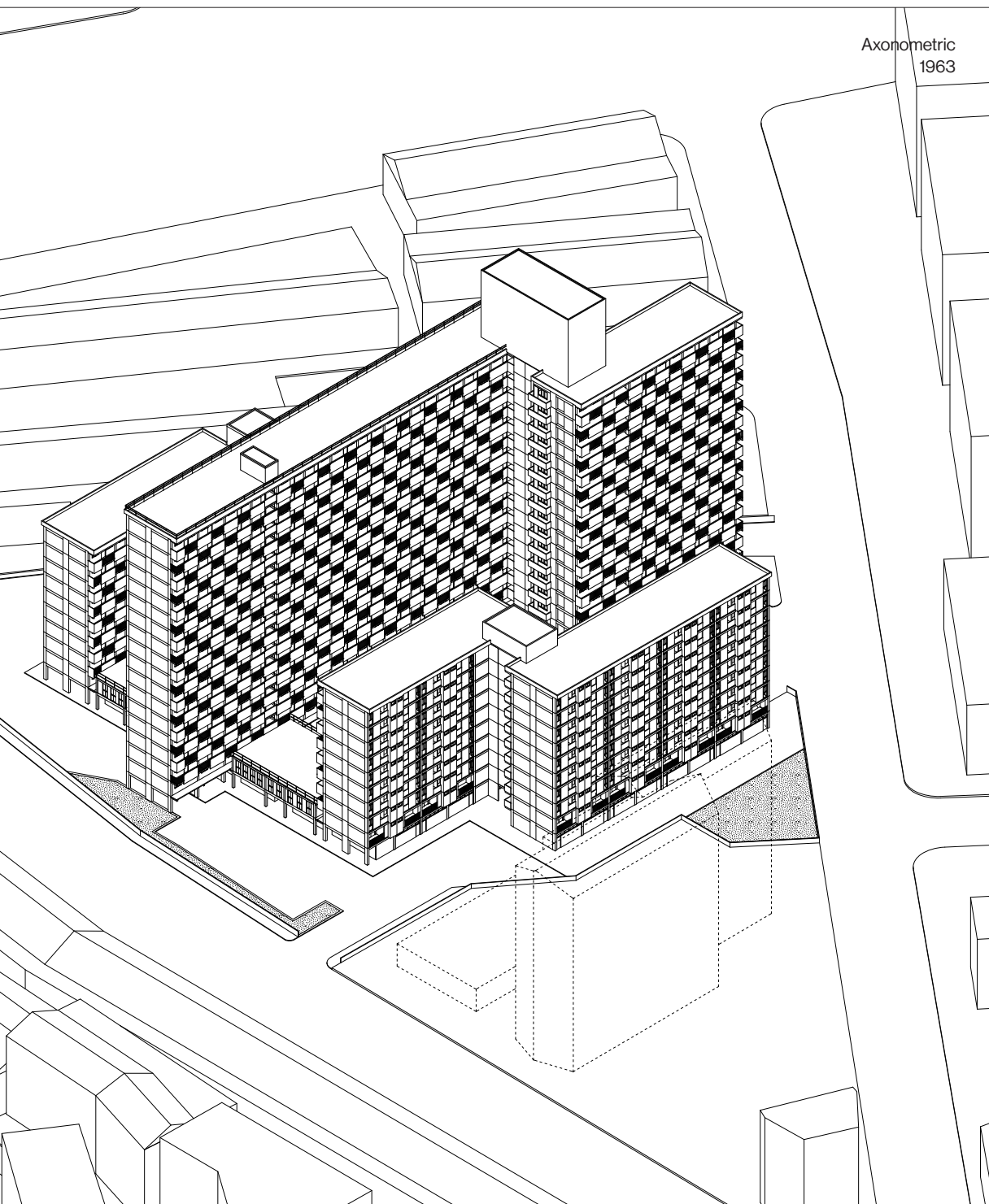
Fig. 14
Photograph of Selegie House and
construction workers, c.1960s. Source:
Brian Brake / National Museum of New
Zealand.

THE BUILDING IN 1963

When Selegie House was completed in 1963, it stood in stark contrast to the low-rise, largely historic urban fabric which surrounded the site. The ensemble comprised three deck-access slab blocks, with two 10-storey blocks and one 18-storey block, connected laterally by low-rise commercial volumes that also enclosed two courtyards.



Axonometric
1963



Axonometric
1990s

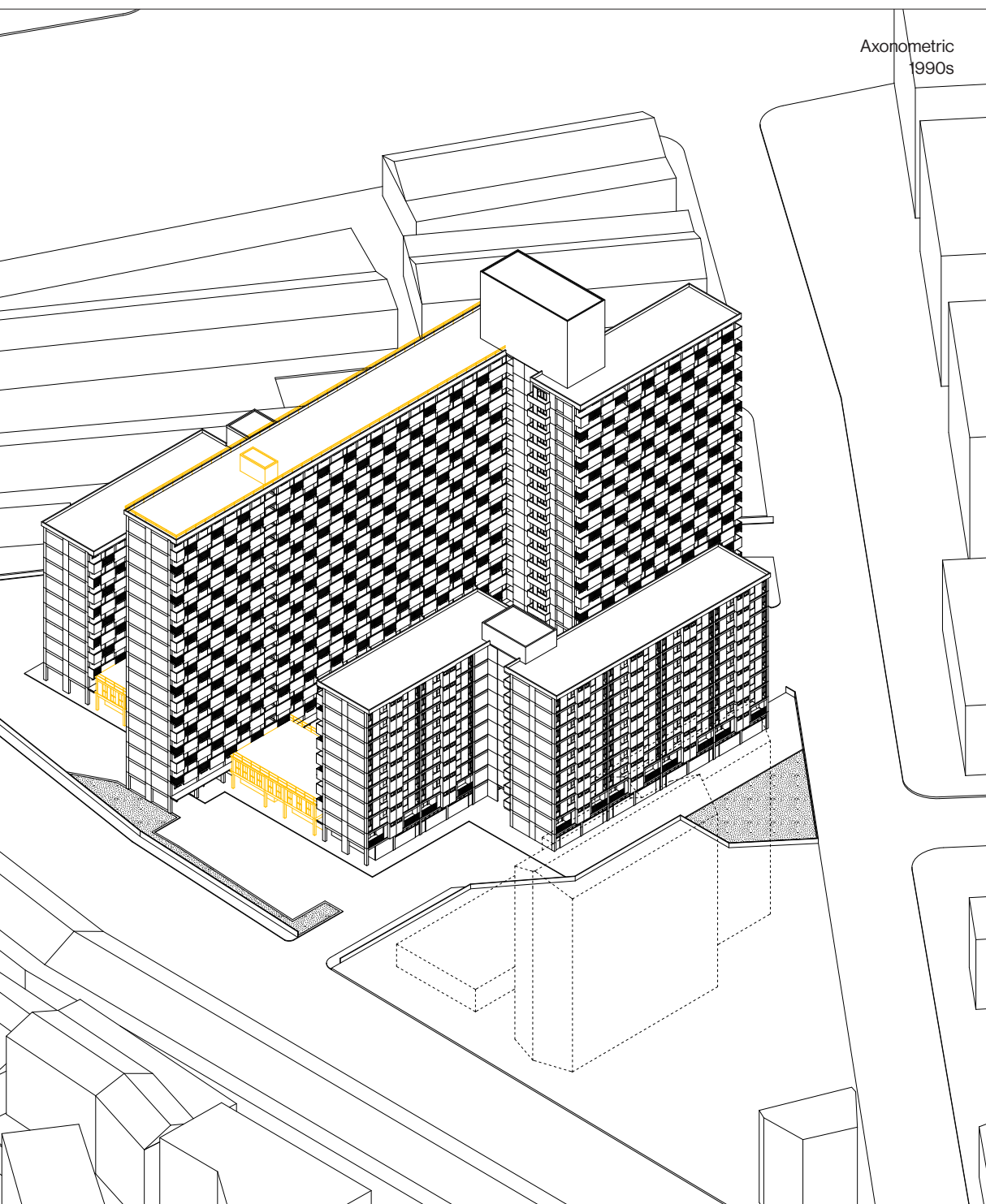
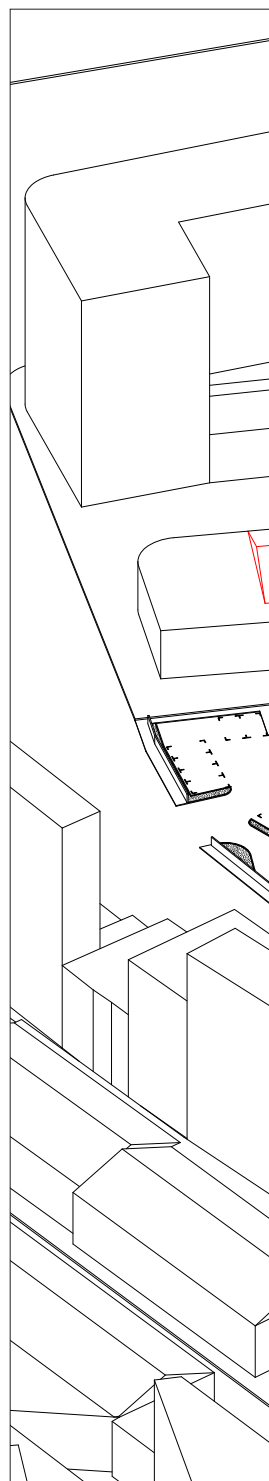




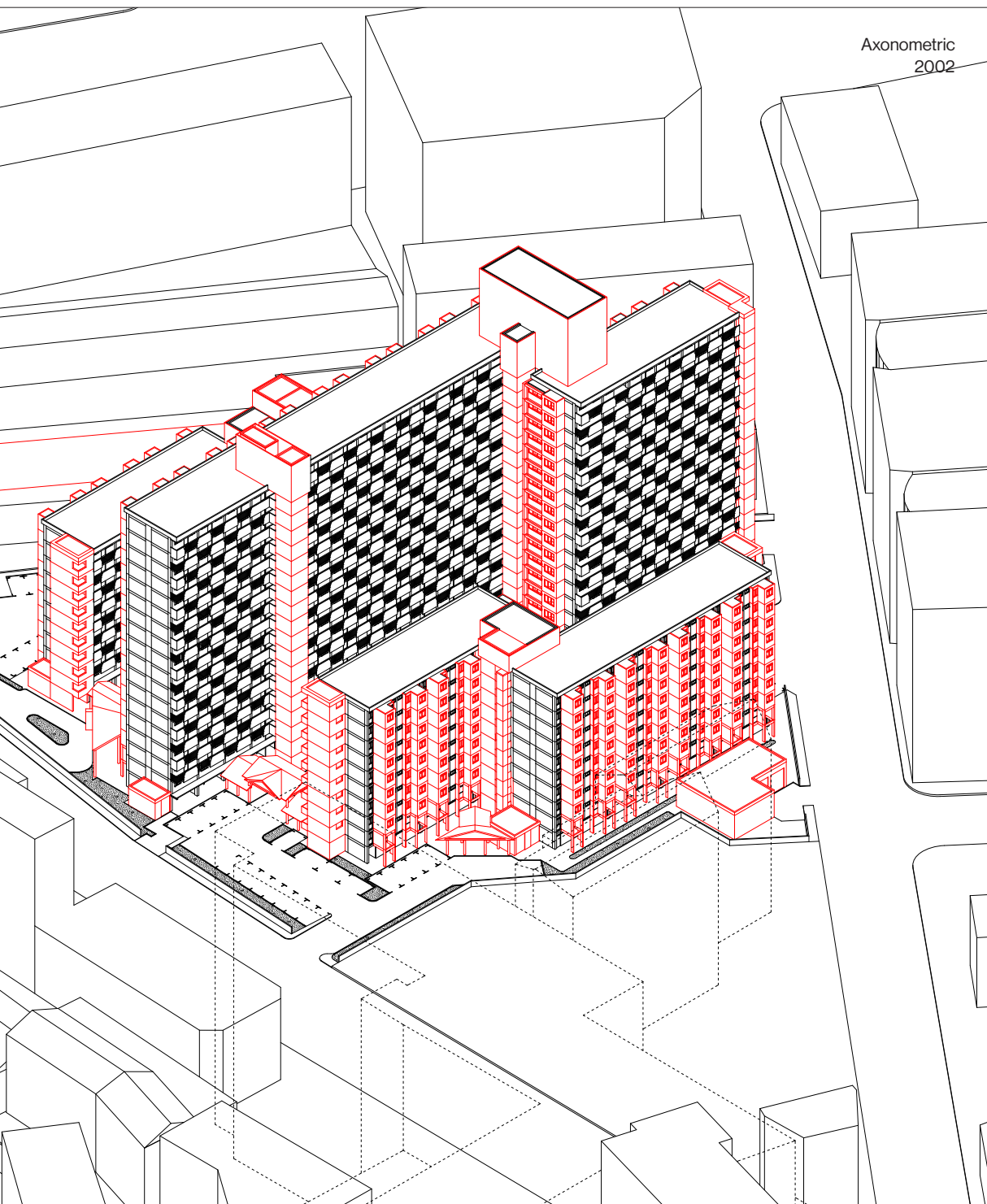
Fig. 17-18
Selegie House in the present day.
Source: Author's photographer.

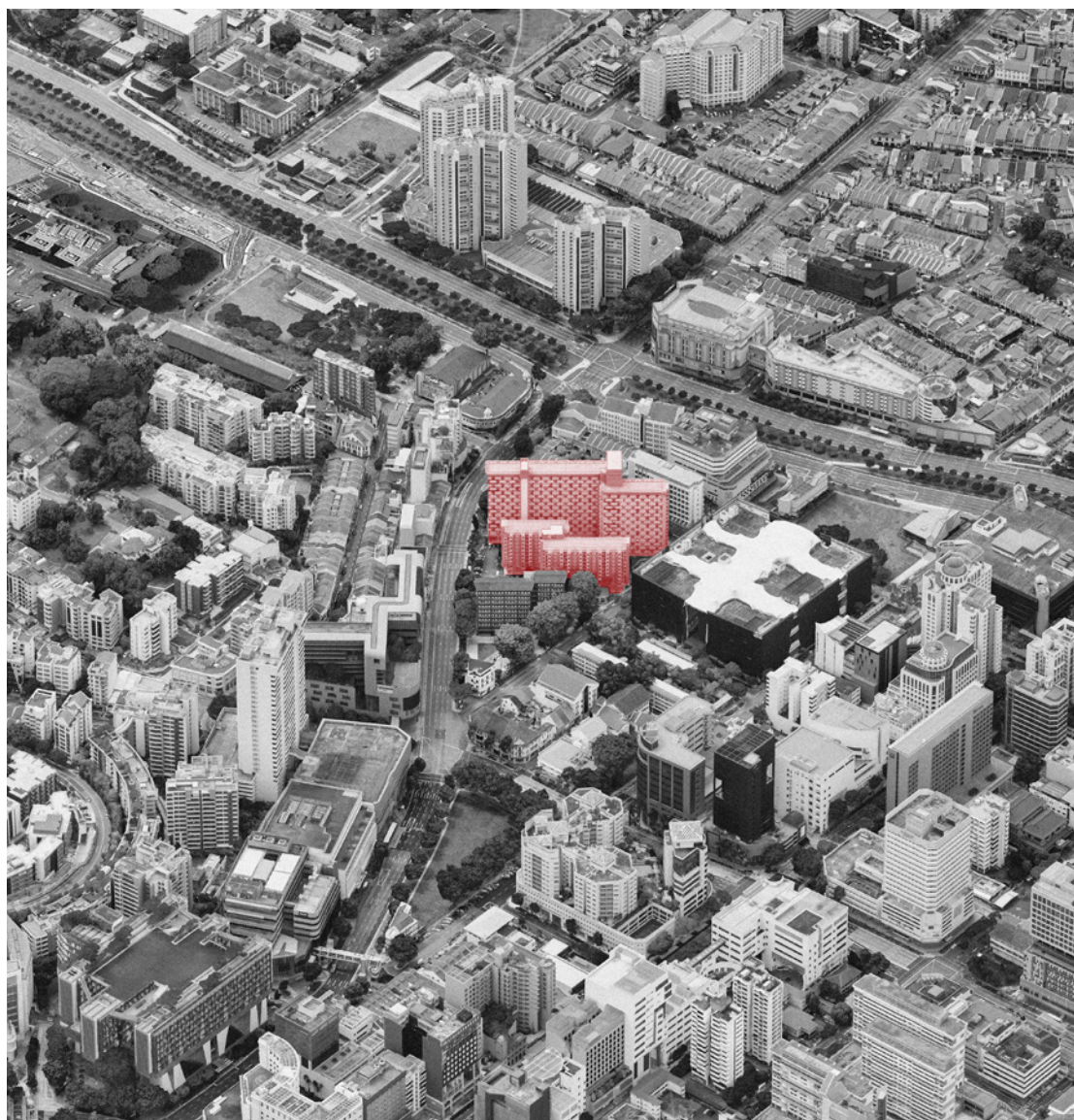
THE UPGRADED BUILDING

When upgrading works were completed in the early-2000s, Selegie House was radically transformed. The building featured new post-modern landscaping and facade elements, increased carparking provision, and extensions to individual flats. As a result of these alterations, the architectural clarity of the original modernist ensemble was significantly obscured.



Axonometric
2002

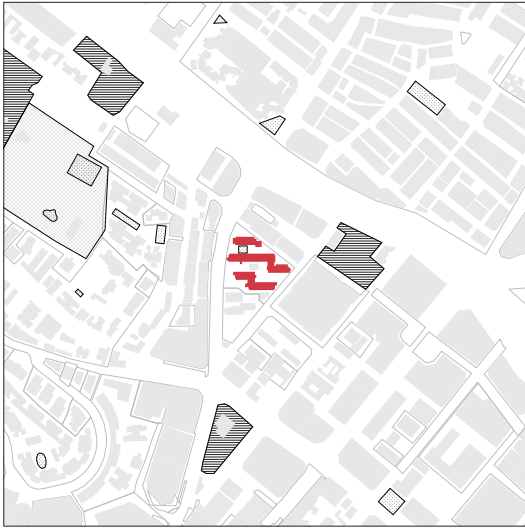




THE URBAN CONTEXT

Selegie House marked the beginning of decades of intense transformation of the surrounding neighbourhoods. Programmes, densities, and architectural styles, and building ages currently stand in stark contrast with Selegie House as a natural anchor amidst the incoherence of the surrounding areas.

Fig. 19
Selegie House in its present-day urban context. Source: Google Earth



GREEN AREAS

-  Designated Green Areas
-  Undesignated Green Areas



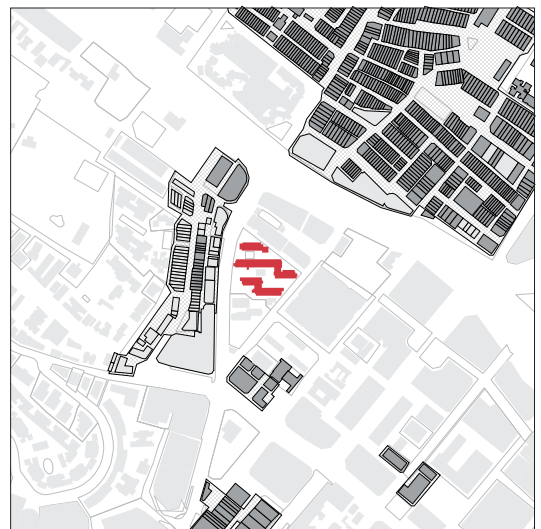
USAGE & NEIGHBOURHOOD

-  Mixed Use
-  Commercial
-  Civic / Institutional
-  Residential



TRANSPORTATION & ACCESS

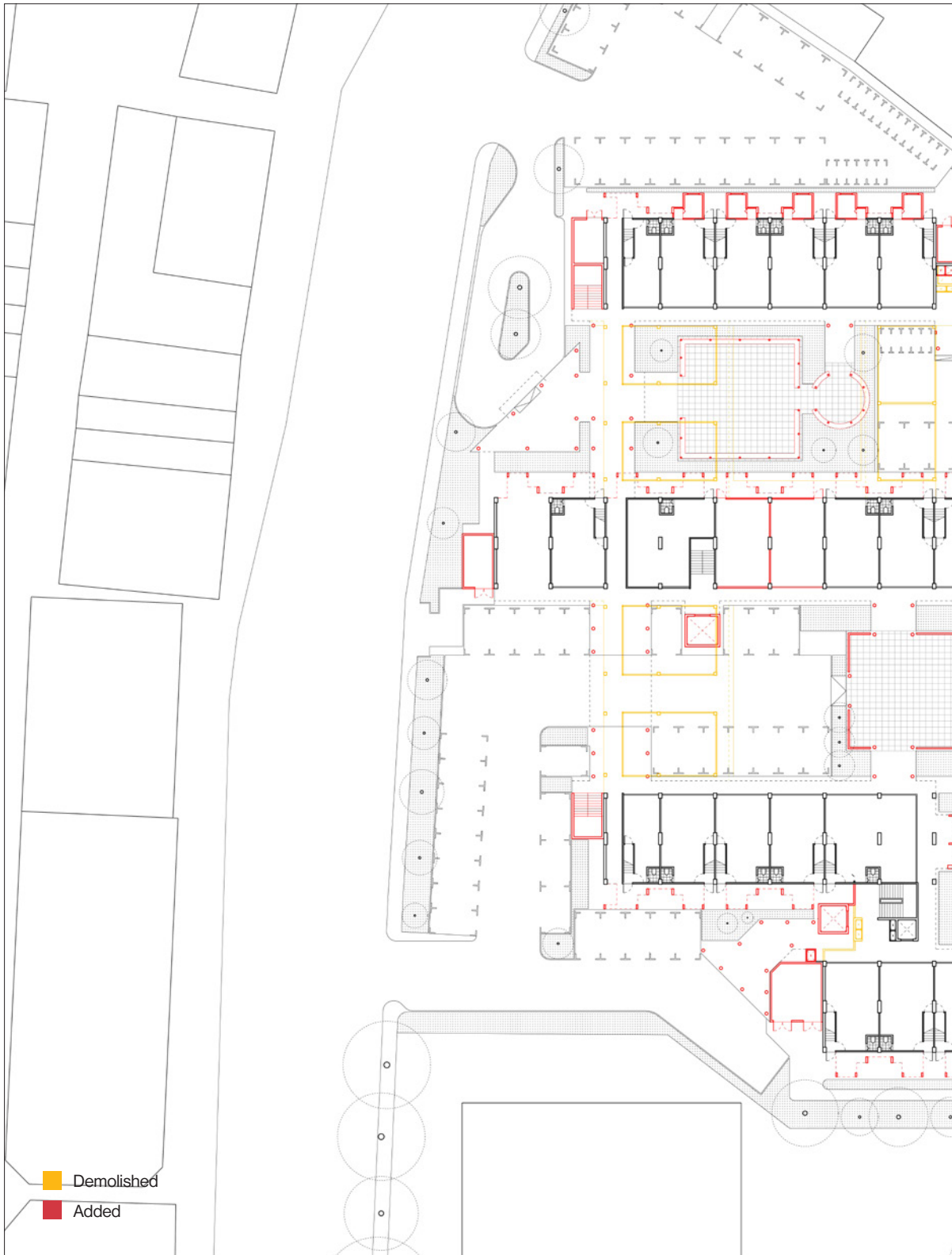
-  Major Road
-  Secondary Road
-  Pedestrian Thoroughfare
-  Subway Line
-  Subway Stop
-  Bus Stop

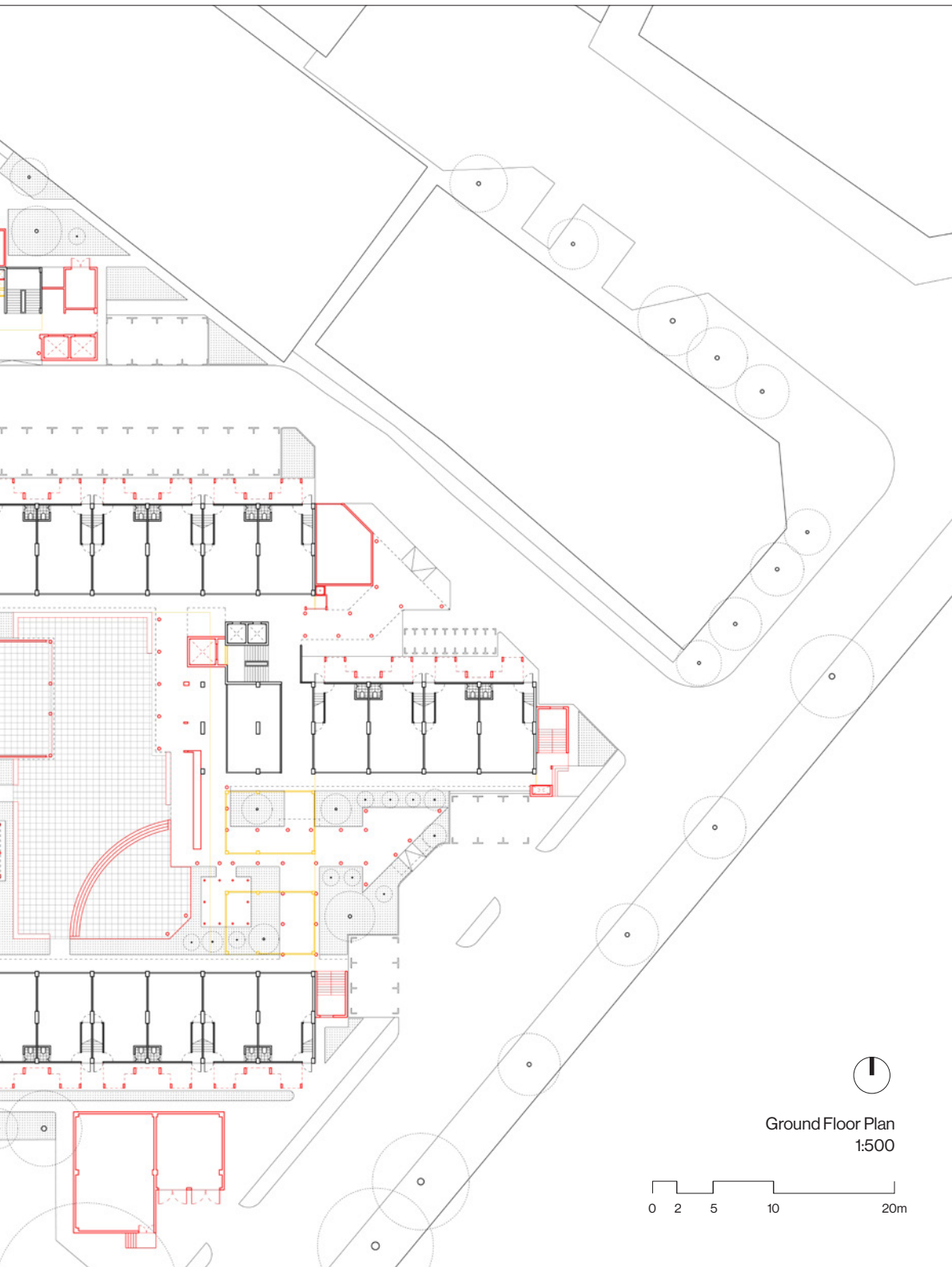


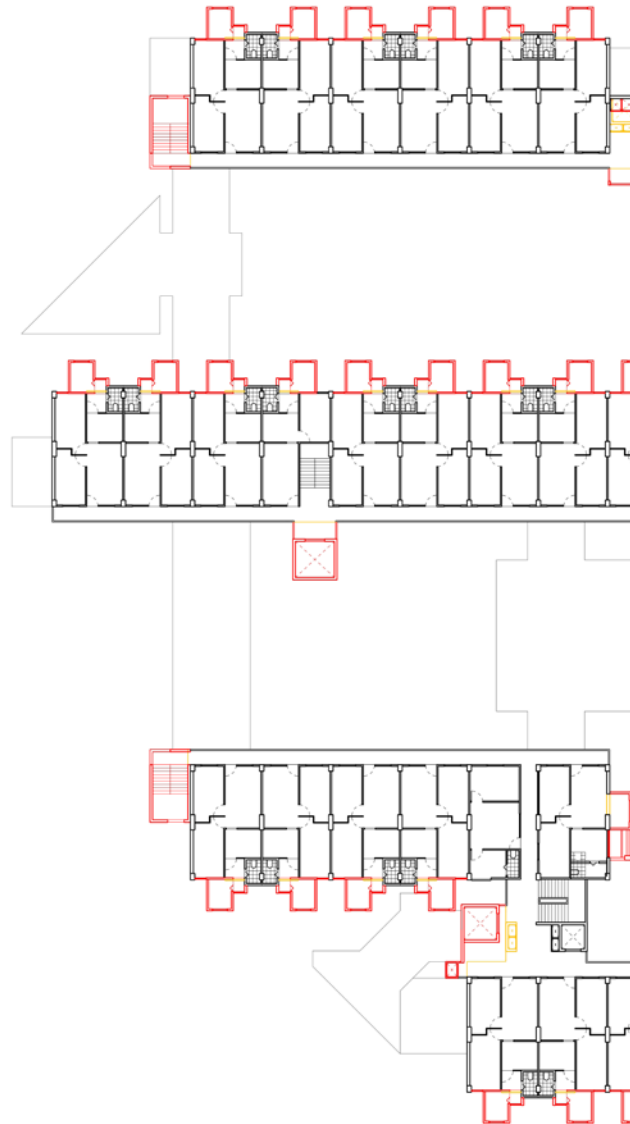
HERITAGE

-  Conservation Zone
-  Conserved Building
-  Not Conserved Building







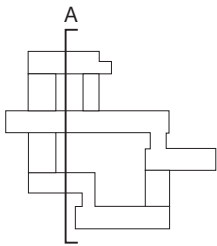
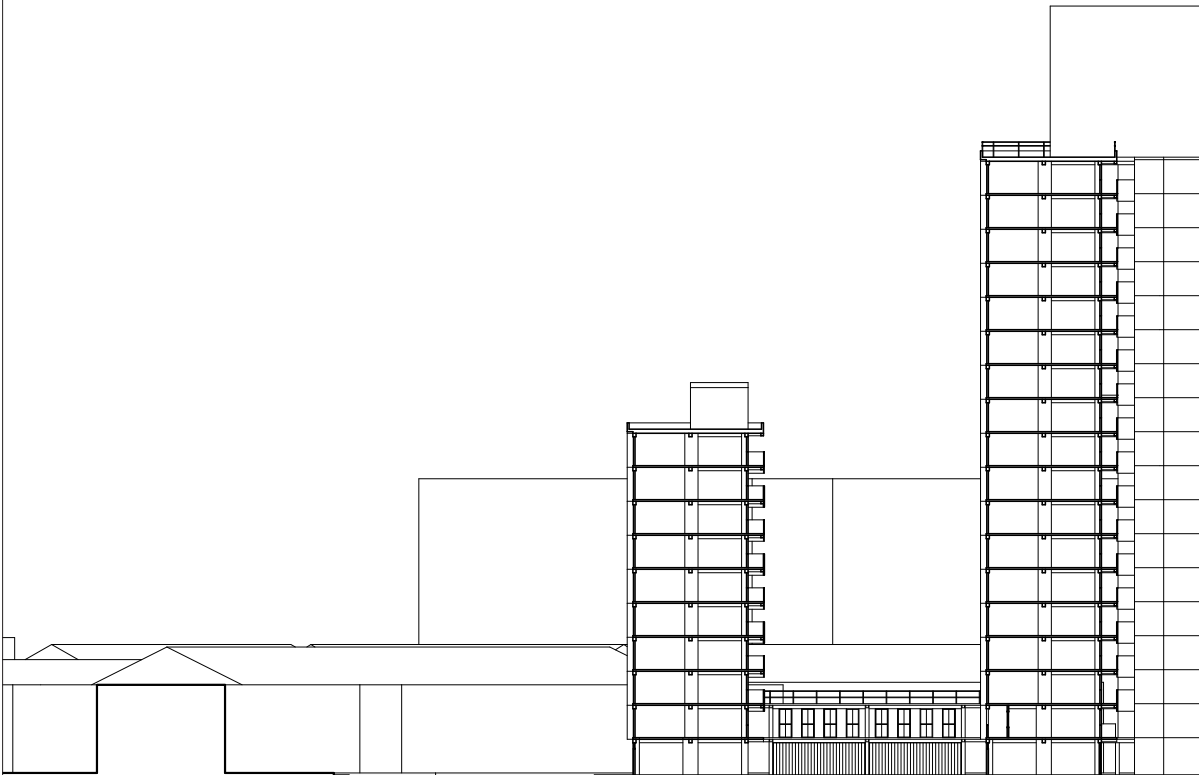


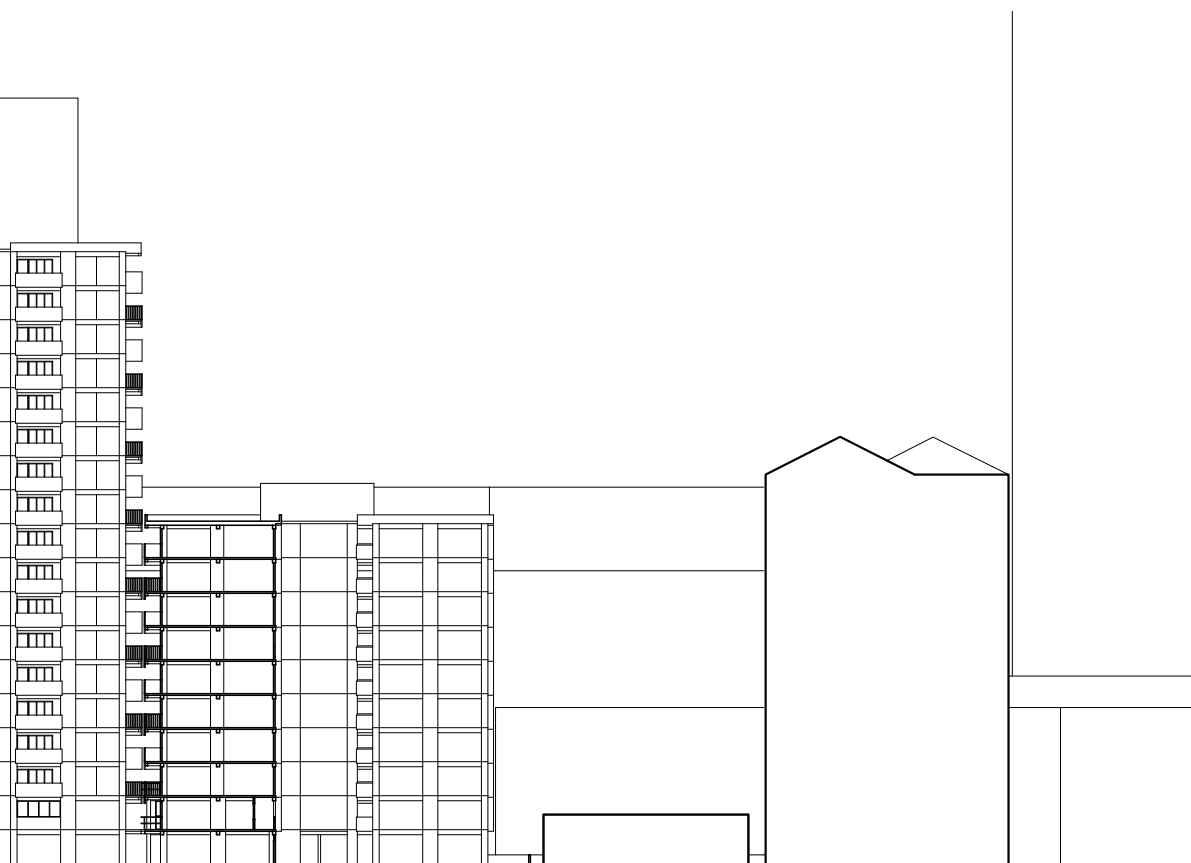
- Demolished
- Added



First Floor Plan
1:500



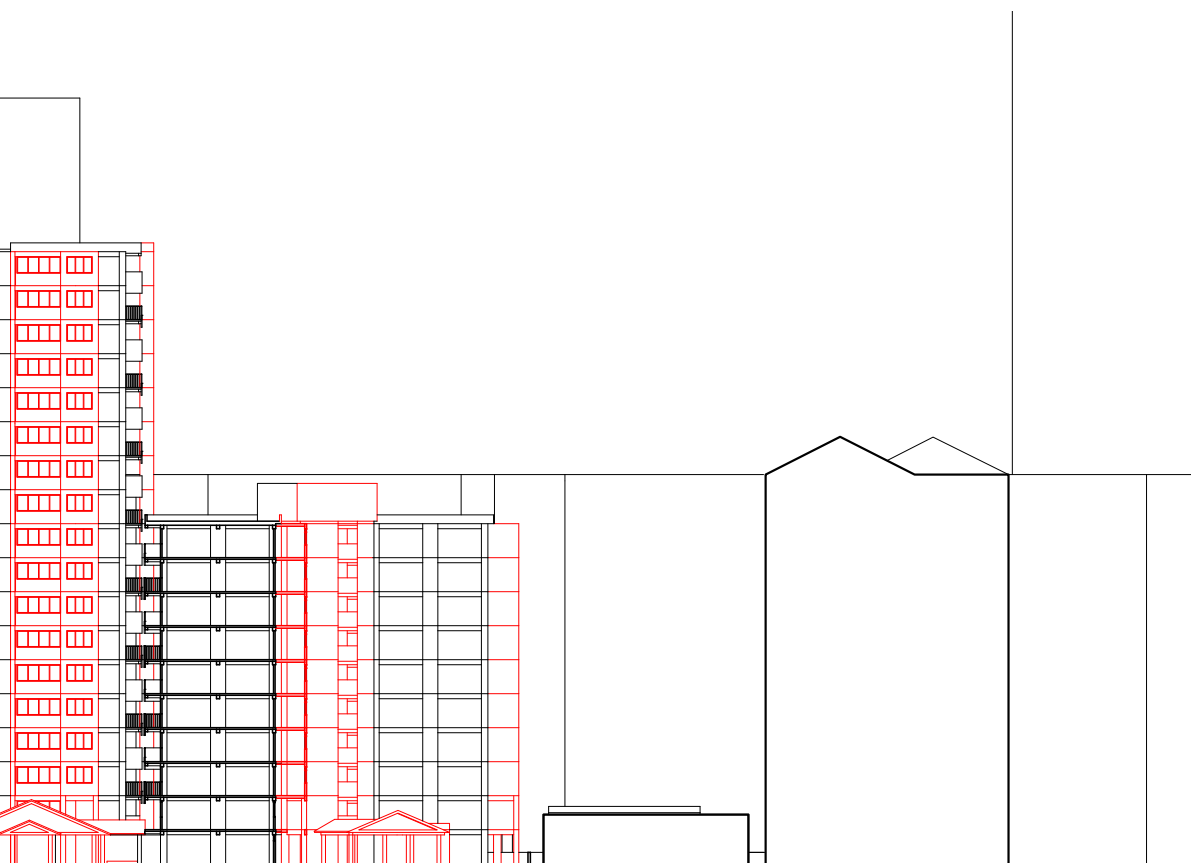




Section A (1963)
1:500

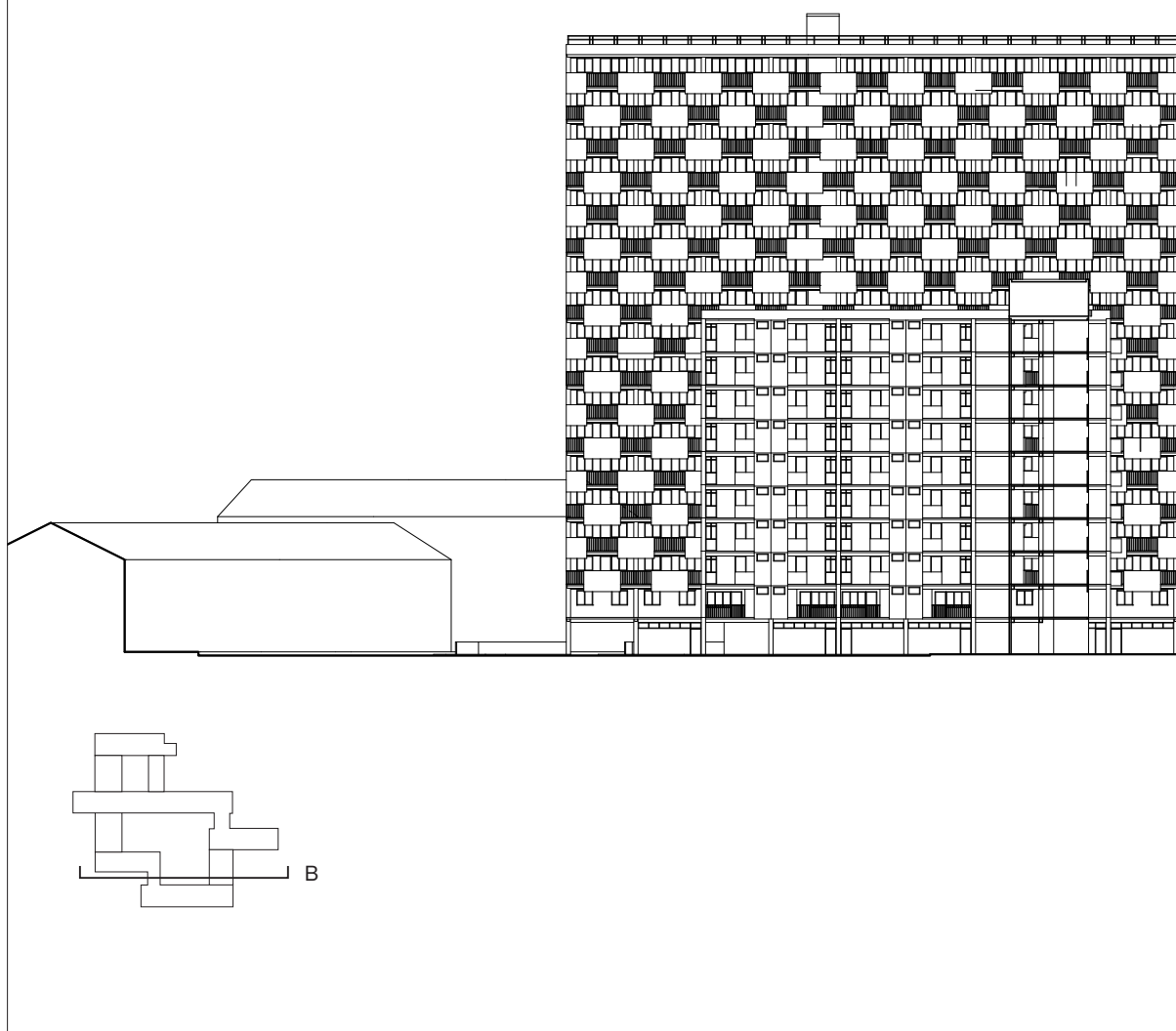


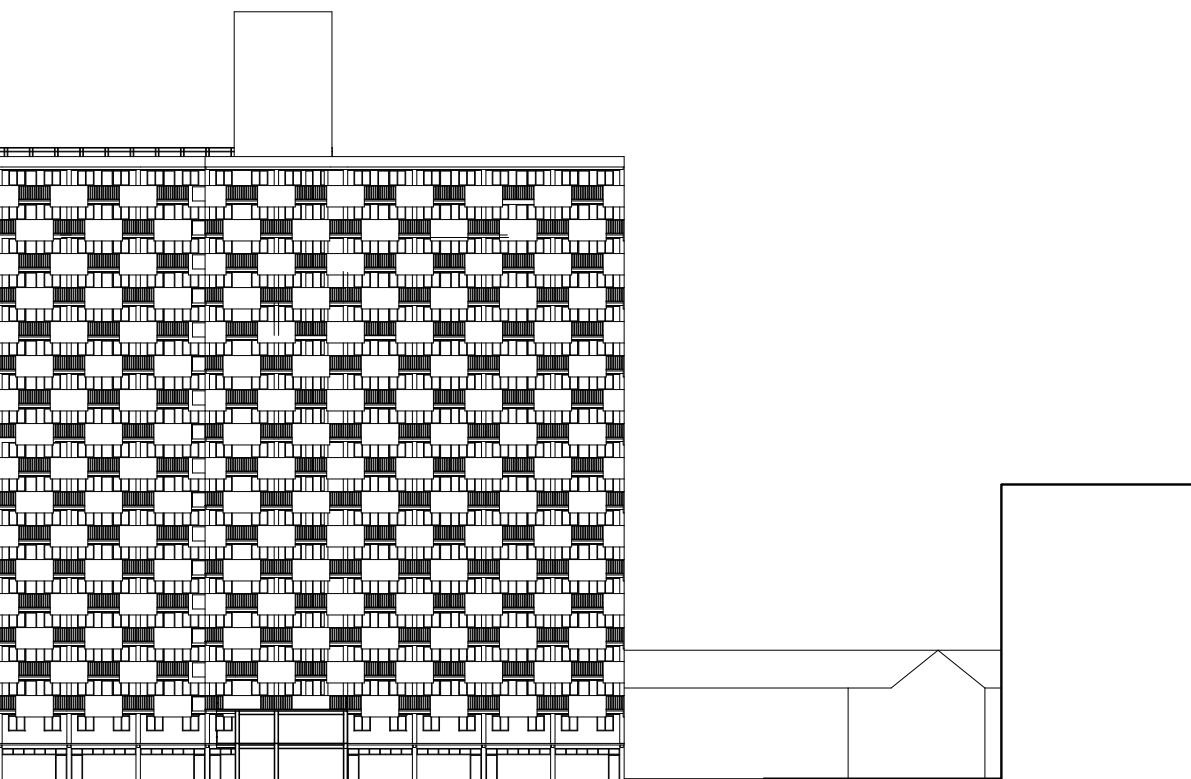




Section A (2002)
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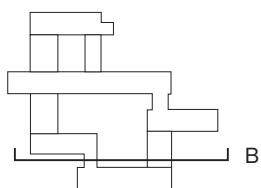
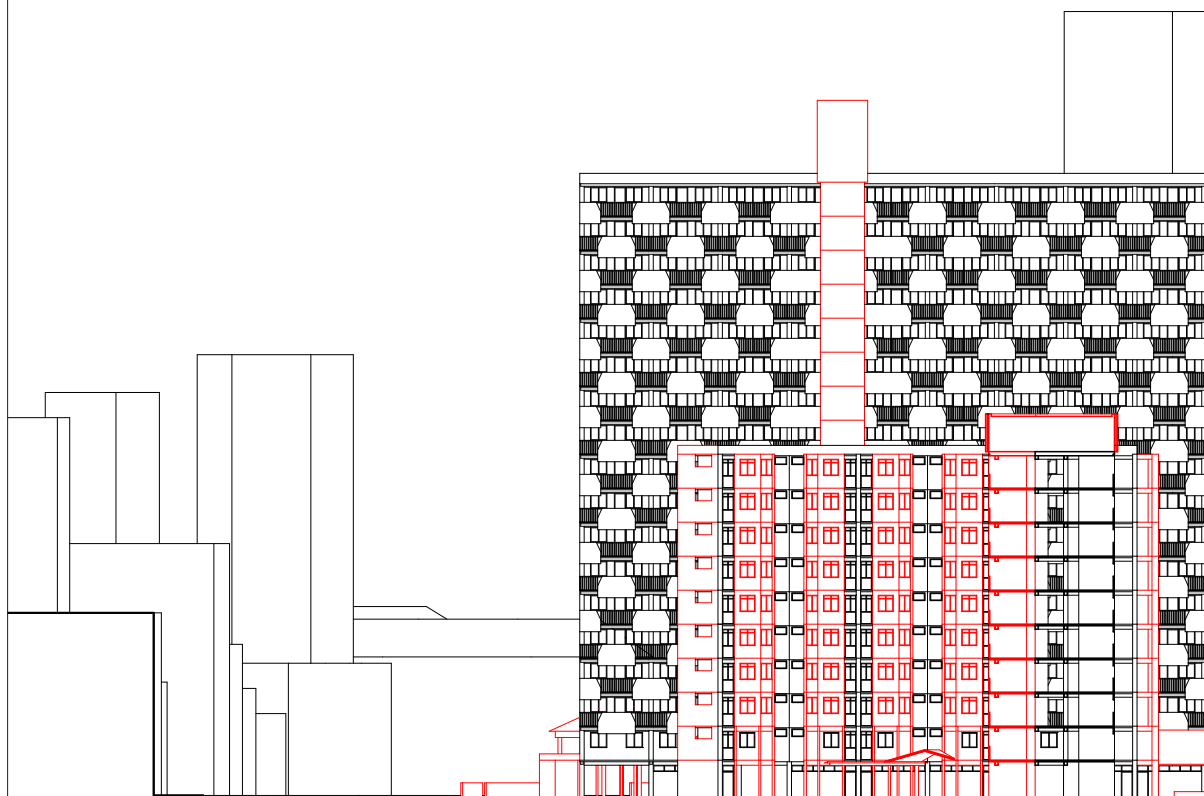




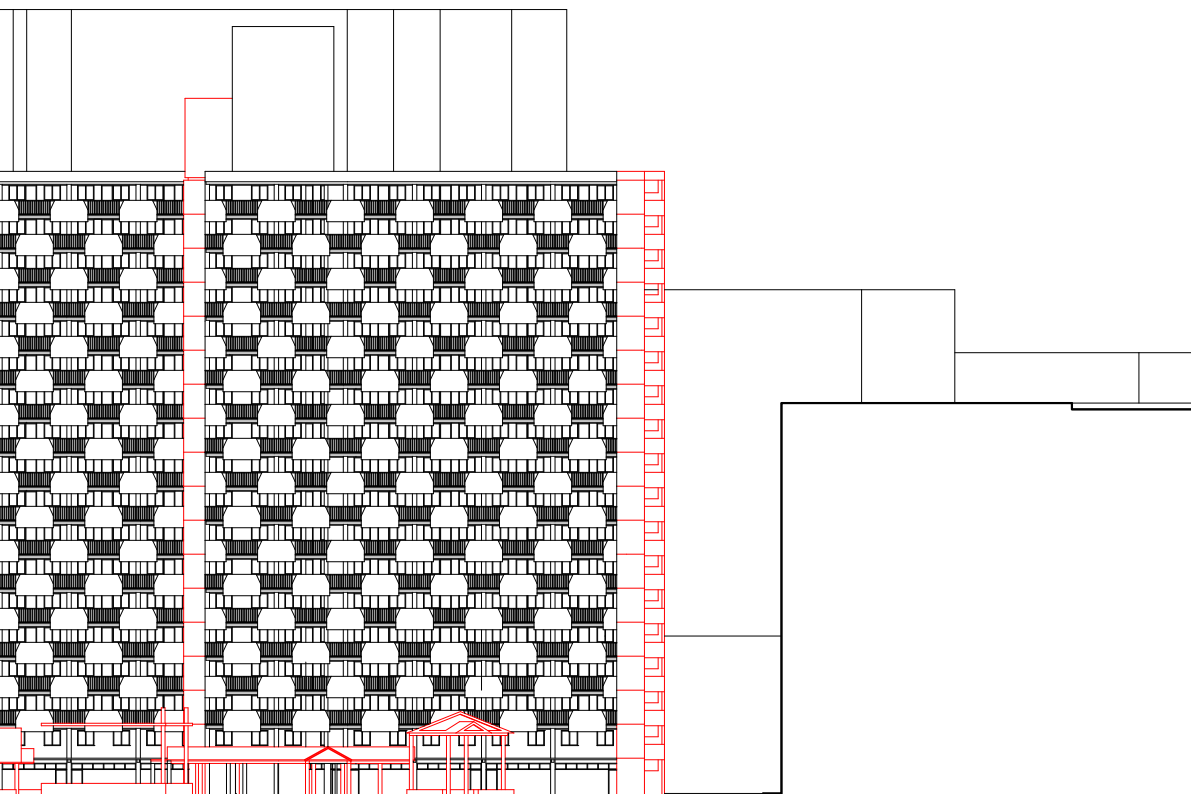


Section B (1963)
1:500





■ Added



Section B (2002)
1:500



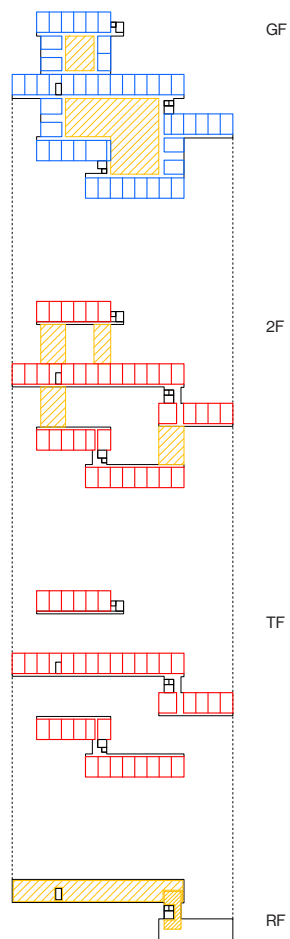


PROGRAMMATIC EVOLUTION

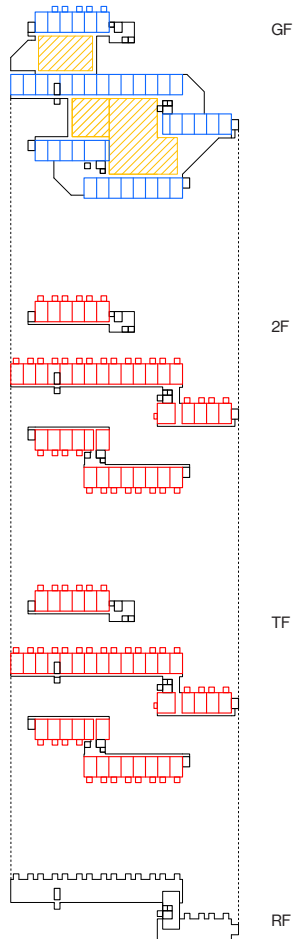
Selegie House's physical transformation coincided with significant changes in programming. While the building was envisioned in the 1960s as a mixed-use centre with numerous communal amenities, subsequent transformations saw the erosion of collective spaces in favour of expanded private spaces.

Fig. 20-21
Selegie House in the present day.
Source: Author's photograph.

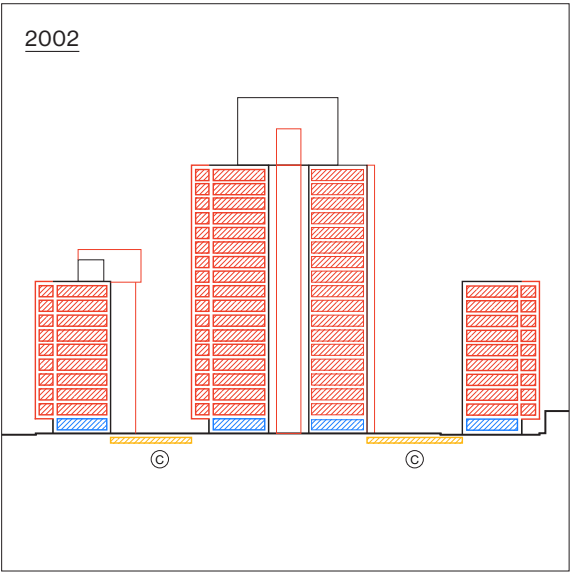
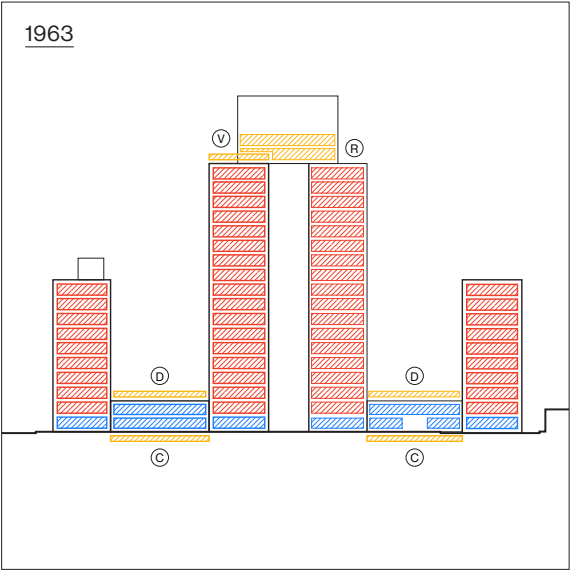
1963



2002



- Residential
- Commercial
- Collective
- Circulation



- (C) Courtyard
- (D) Deck
- (V) Viewing Gallery
- (R) Recreation Club
- Residential
- Commercial
- Collective



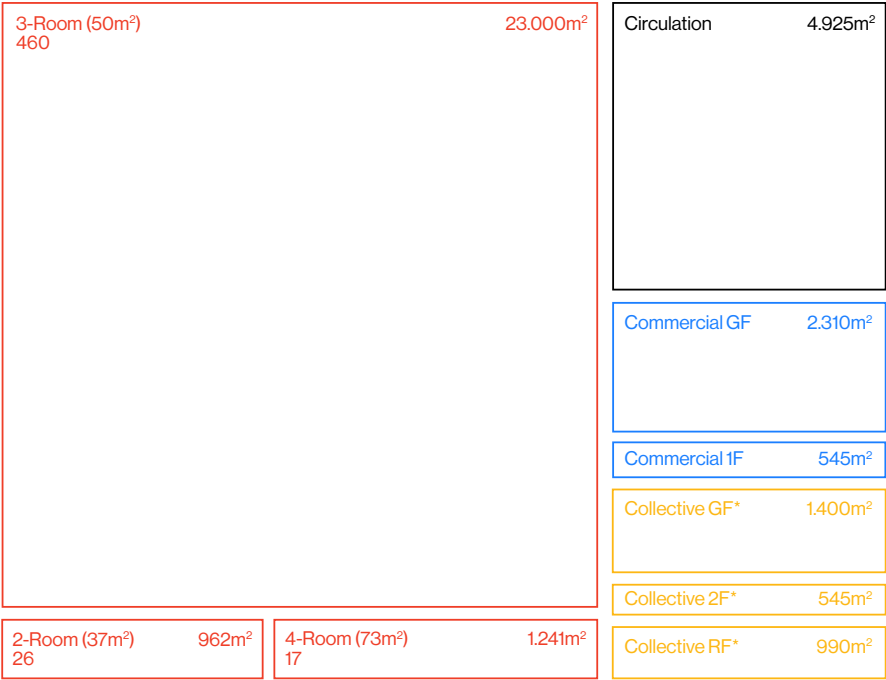
LOSS OF COMMUNAL SPACES

When completed, Selegie House featured communal amenities including a commercial plinth, play decks, a rooftop viewing gallery, and a recreation club. By the early-2000s, these spaces had been largely removed in favour of expanded individual flats.

Fig. 22-23
Opening of HDB Recreation Club on roof of Selegie House, 1964. Source: National Archives of Singapore.

Fig. 24-25
View from viewing gallery, Selegie House, 1969. Source: National Archives of Singapore.

1963



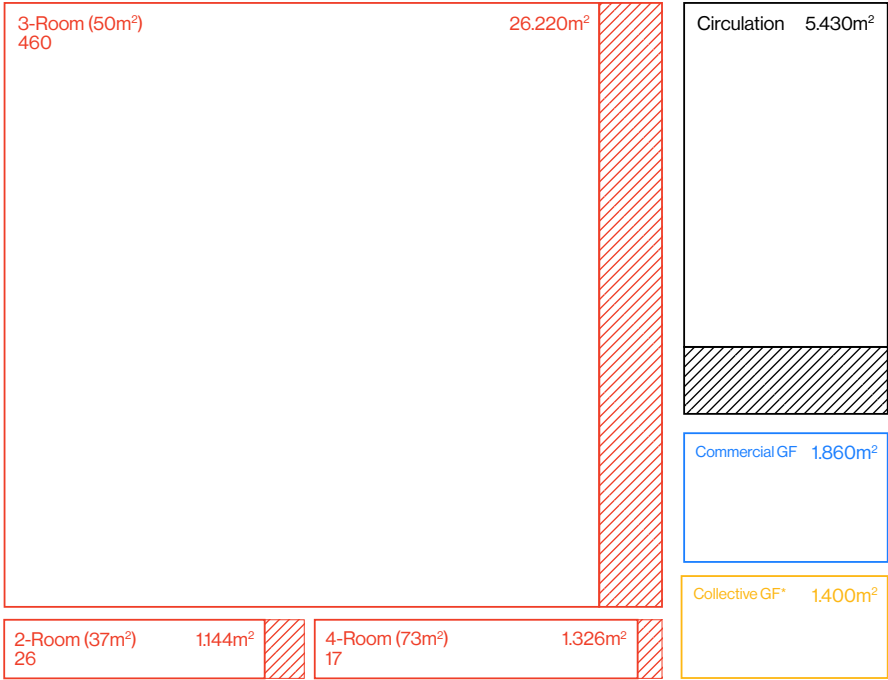
*Includes outdoor collective spaces.

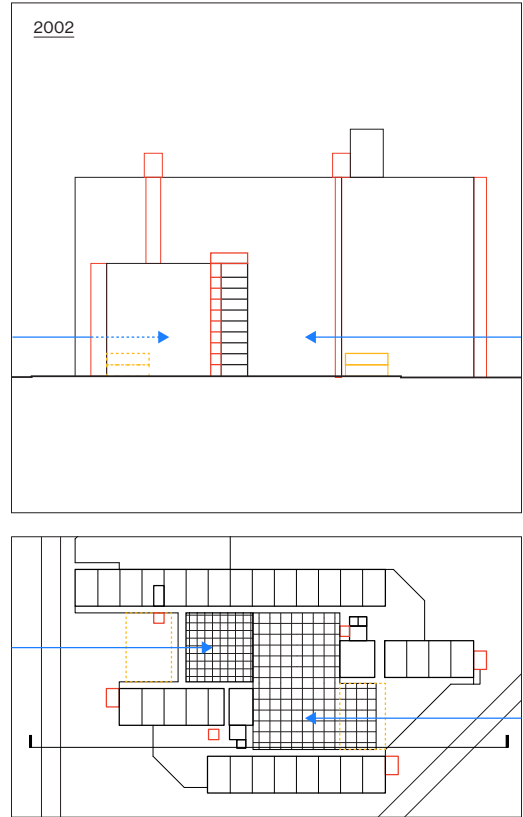
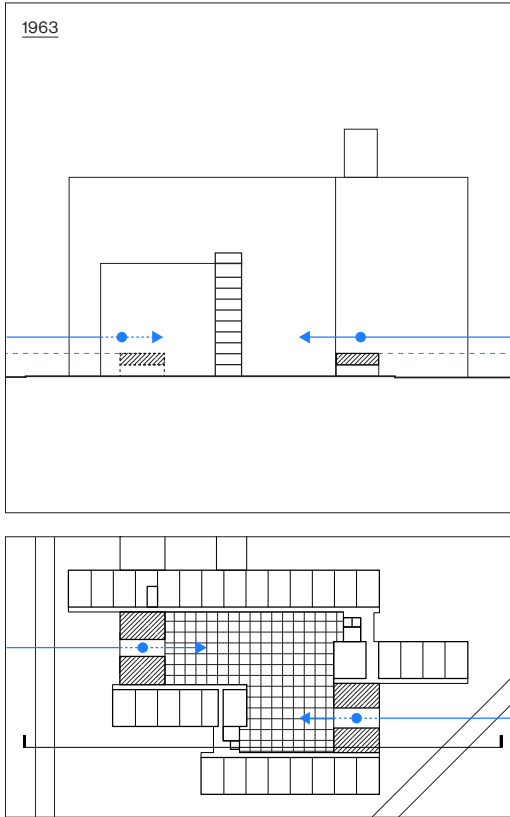
FLOOR AREA SHIFTS

This erosion of communal programming in favour of private space is visible in the allocation of building floor area: commercial and communal programmed spaces fell drastically compared to the significant expansion of private apartment floor areas.

- Residential
- Commercial
- Collective
- Circulation

2002





CHANGING SPATIAL QUALITY

Alongside absolute reductions in communal programming, late-20th century renovations significantly diminished the spatial quality of Selegie House's collective spaces. In particular, the courtyard, originally envisioned as a landscaped shopping promenade protected from the street by low-rise blocks, was exposed and largely turned into car parking.

Fig. 26-28
Photographs of Selegie House podium
and courtyard prior to opening, 1963.
 Source: National Archives of Singapore.





Fig. 29
Photograph showing demolition of commercial podium during upgrading works, c.2002. Source: Tan Kar Lin

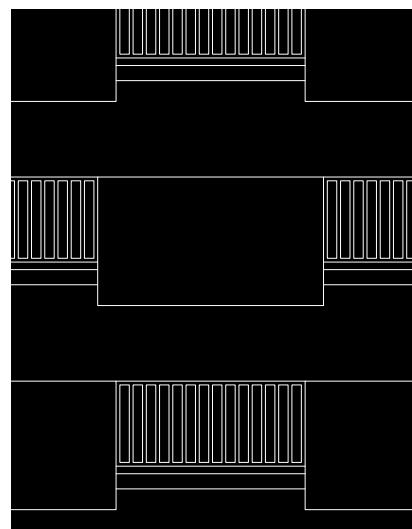
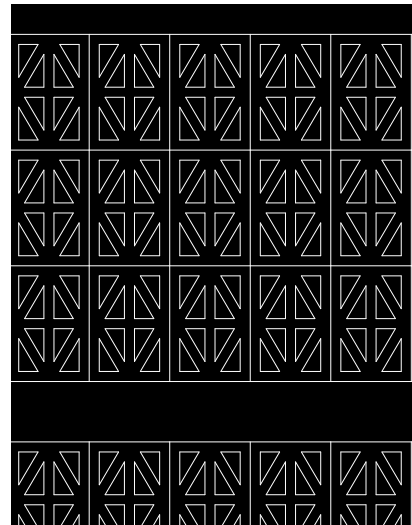




PRESENT-DAY COURTYARD

Today, the courtyard of Selegie House is a largely barren space, encroached upon by carparks and fringed with largely unused landscaping features. Lacklustre foot traffic has additionally caused many businesses to close down.

Fig. 30-31
Selegie House's courtyard in the present day. Source: Author's photograph.



CLIMATIC FEATURES

Compounding the loss of spatial and programmatic quality, numerous elements of humble architectural intelligence have been removed or modified. In particular, Selegie House's characteristic deep overhanging parapet walls and breeze blocks represent seemingly banal but highly effective shading devices.

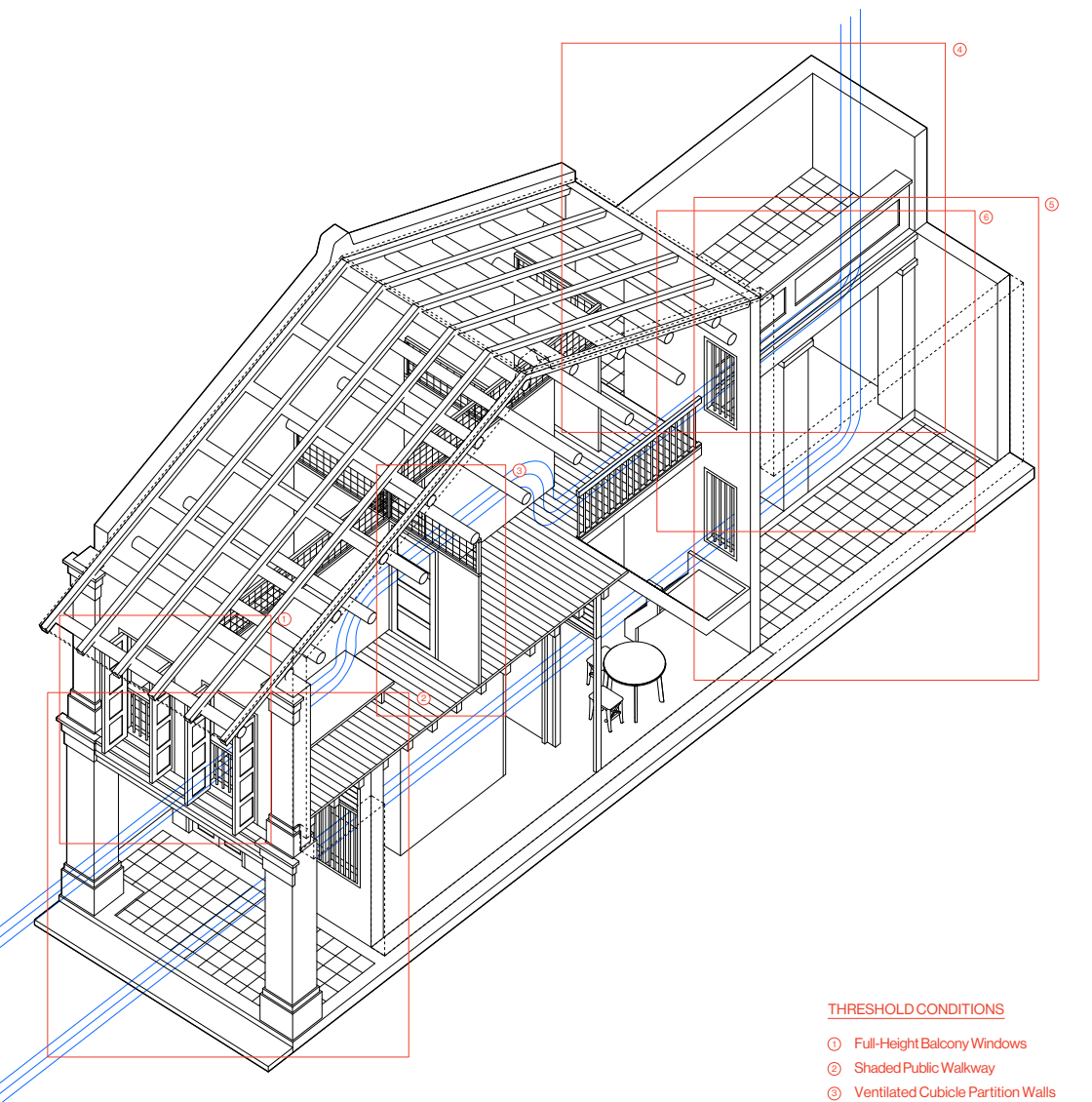


Fig. 33
Typical urban shophouses, c.1956.
Source: National Archives of Singapore.

Fig. 34
Interior of a shophouse cubicle, 1986.
Source: National Archives of Singapore.

The site on which Selegie House currently stands historically comprised a dense city block of vernacular 'shophouses': two- to three-storey terraced dwellings with a common ground floor walkway. The shophouse typology supported highly collective forms of life, while facilitating natural ventilation through a rear courtyard.

e



THRESHOLD CONDITIONS

- ① Full-Height Balcony Windows
- ② Shaded Public Walkway
- ③ Ventilated Cubicle Partition Walls
- ④ Indoor Air Conditioner Evaporator Unit
- ⑤ Opaque Internal Doors
- ⑥ Semi-Outdoor Kitchen

1963

The Three-Room

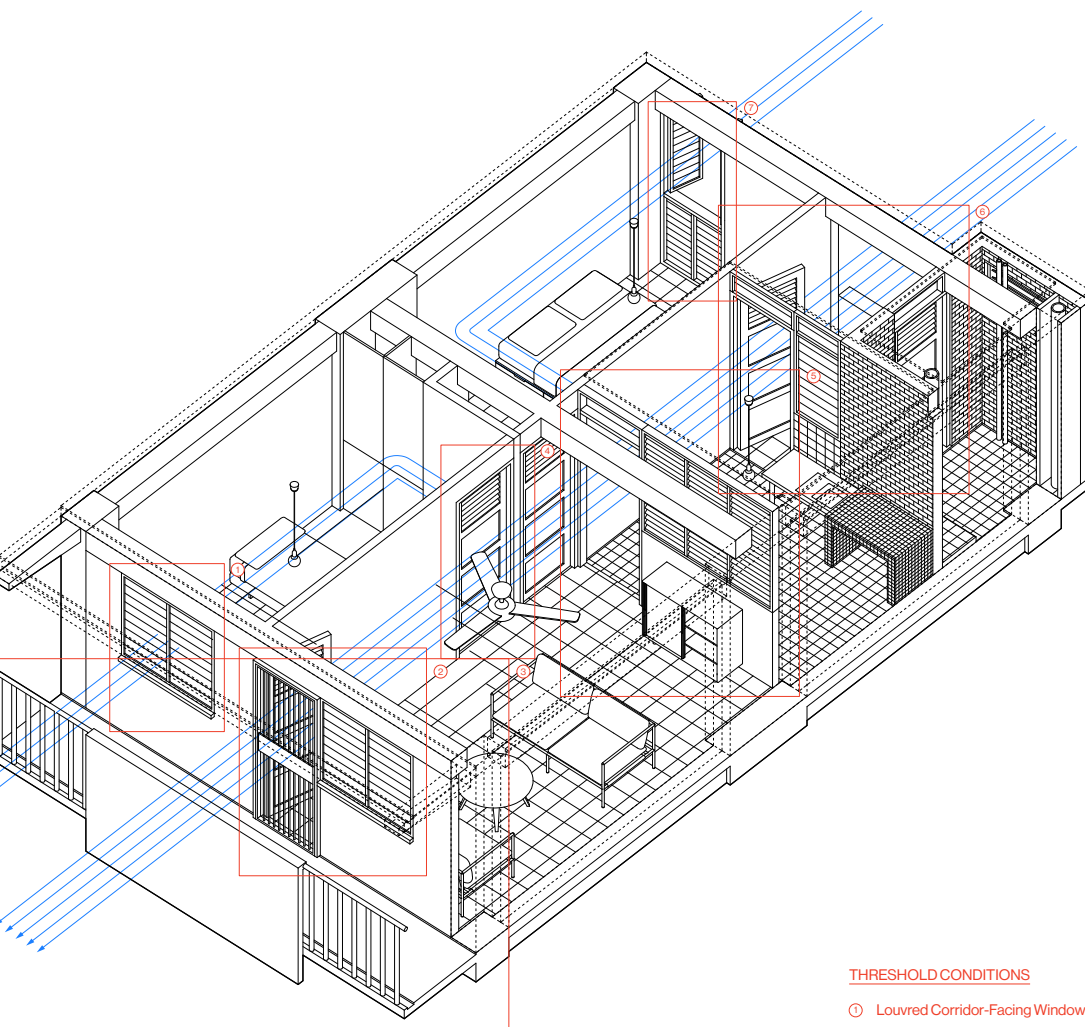


MODERNIST DOMESTICITIES

Selegie House was the harbinger of new living typologies in Singapore. The multi-family unit of the shophouse was atomised in the form of the three-room public housing flat for a single nuclear or extended family. Climatically, flats in Selegie House featured highly porous thresholds to facilitate cross ventilation in an era before widespread air-conditioning.

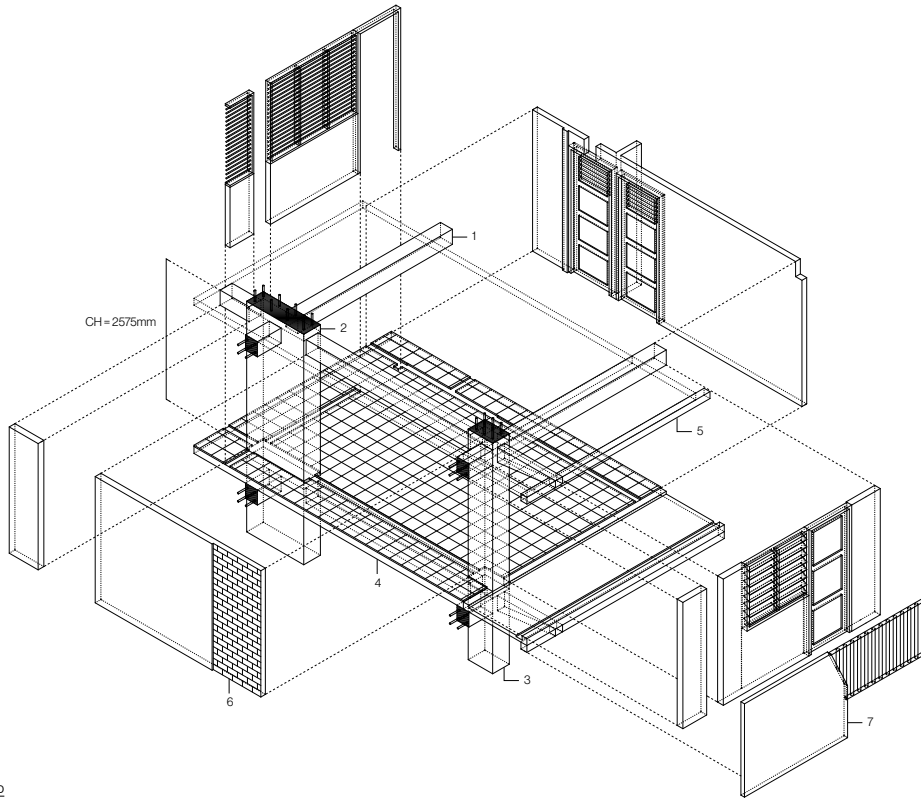
Fig. 35
3-Room Standard HDB flat interior,
c.1965 Source: HDB Annual Report 1965.

Fig. 36-7
HDB Low-Cost Housing Exhibition on
the present-day site of Selegie House,
1960. Source: *Rumah Journal of the
Singapore Institute of Architects* (1961).



THRESHOLD CONDITIONS

- ① Louvred Corridor-Facing Windows
- ② Double-Gated Front Door
- ③ Shaded Access Corridor Balcony
- ④ Ventilated Doors
- ⑤ Ventilated Partition Screen
- ⑥ Shaded Private Balcony
- ⑦ Full-Height Louvred Window

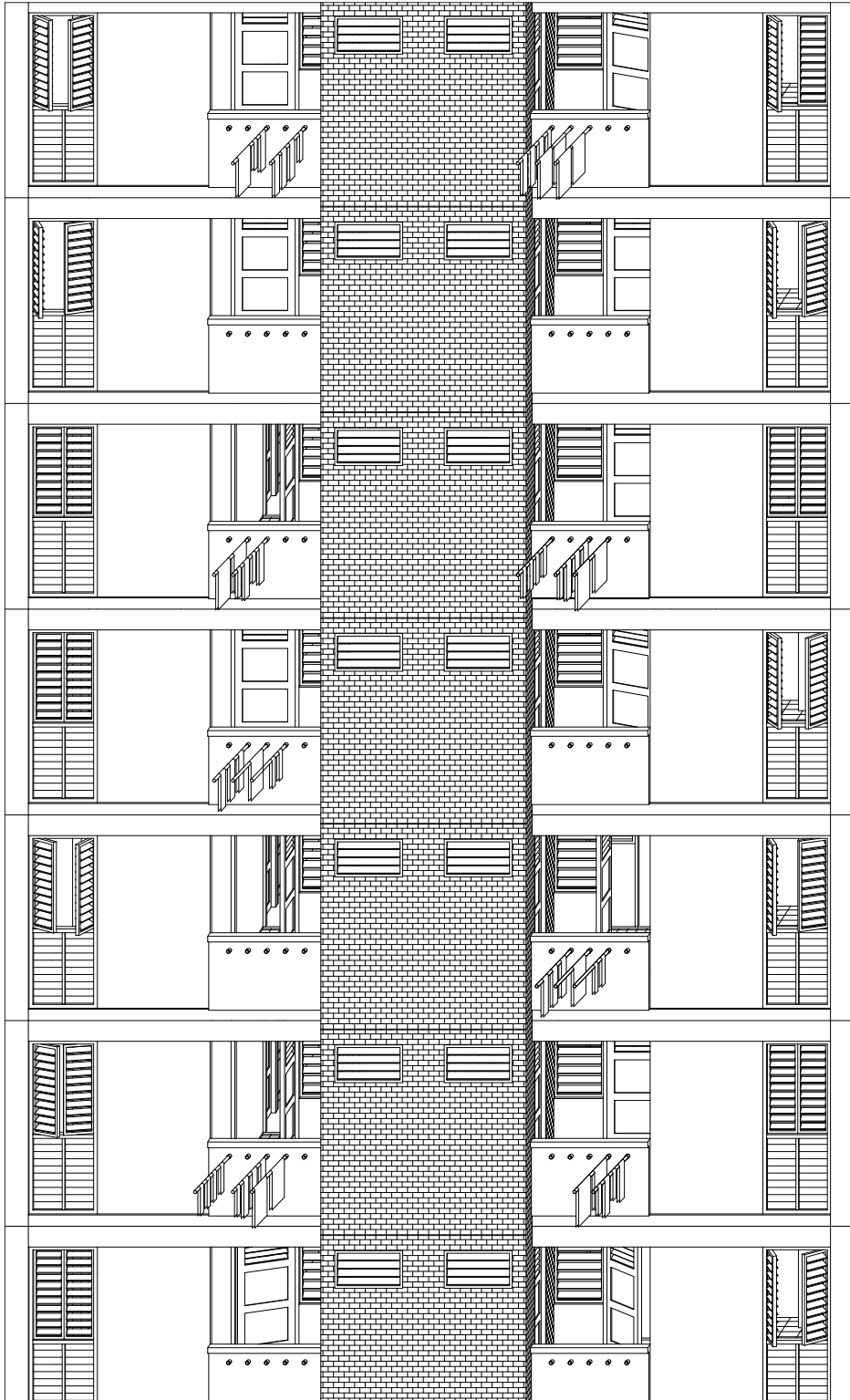


LEGEND

- | | |
|--|---|
| 1. Beam
Reinforced concrete 250x275mm | 5. Corridor structure
Reinforced concrete 100x100mm |
| 2. Column
Reinforced concrete 1200x350mm | 6. Partition wall
Concrete hollow block t=100mm
Cement render t=5mm |
| 3. Column
Reinforced concrete 515x350mm | 7. Parapet wall
Precast concrete t=75mm |
| 4. Floor slab
Reinforced concrete t=125mm
Floor finishing t=50mm | |

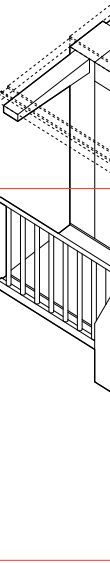
POROSITY AND FLEXIBILITY

Structurally, Selegie House featured a basic reinforced concrete frame, with a cantilevered access balcony and non-load bearing cement block infill walls. This tectonic logic was clearly expressed on the historic elevation, which featured articulated beams and columns, recessed infill walls with louvred fenestration, and an extruded service core.



1963

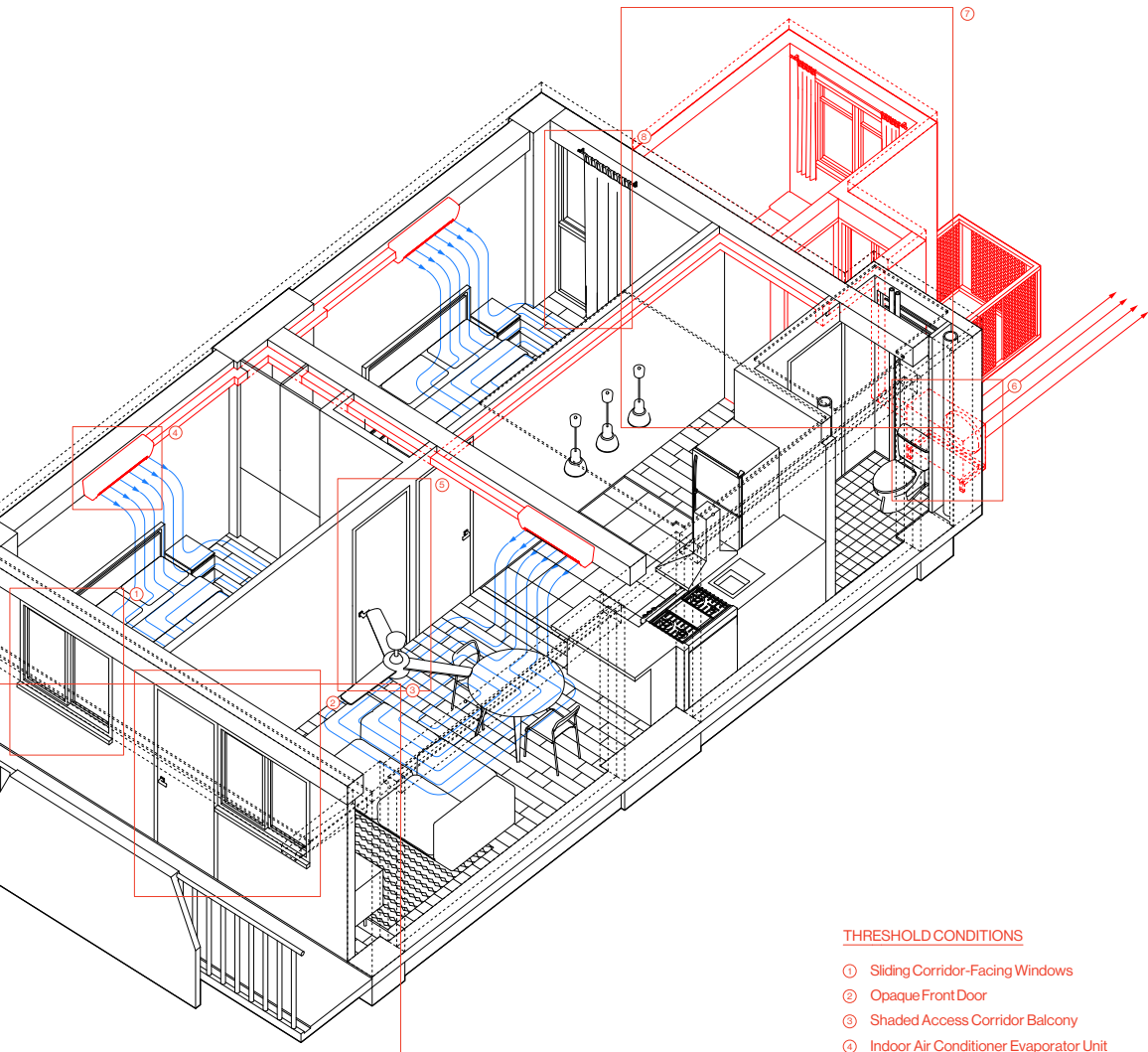
Upgraded Three



AIR-CONDITIONED TRANSFORMATION

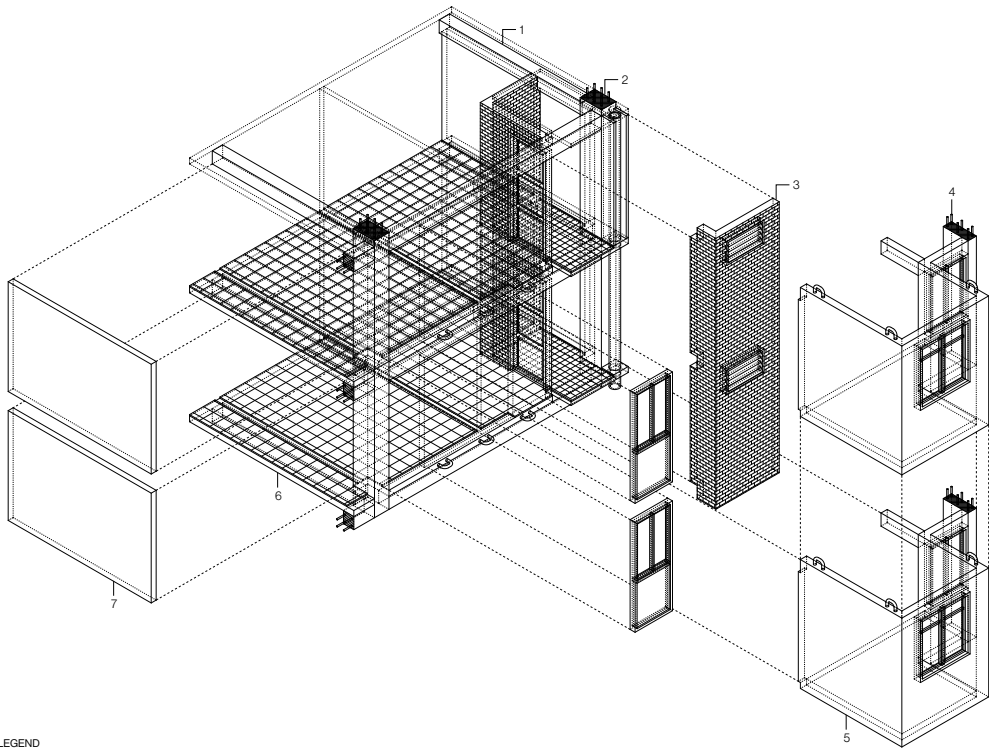
By the late-20th century, personal air conditioning had proliferated and become a common household amenity. This shift, alongside major renovations in 2002 which saw additional volumes being added to units, resulted in a drastic enclosure of previously porous flat typologies.

Fig. 38
Photographs of unit interiors at Selegie House, 2025. Source: PropertyGuru



THRESHOLD CONDITIONS

- ① Sliding Corridor-Facing Windows
- ② Opaque Front Door
- ③ Shaded Access Corridor Balcony
- ④ Indoor Air Conditioner Evaporator Unit
- ⑤ Opaque Internal Doors
- ⑥ Outdoor Air Conditioner Condenser Unit
- ⑦ Enclosed Space Extension
- ⑧ Full Height Casement Window

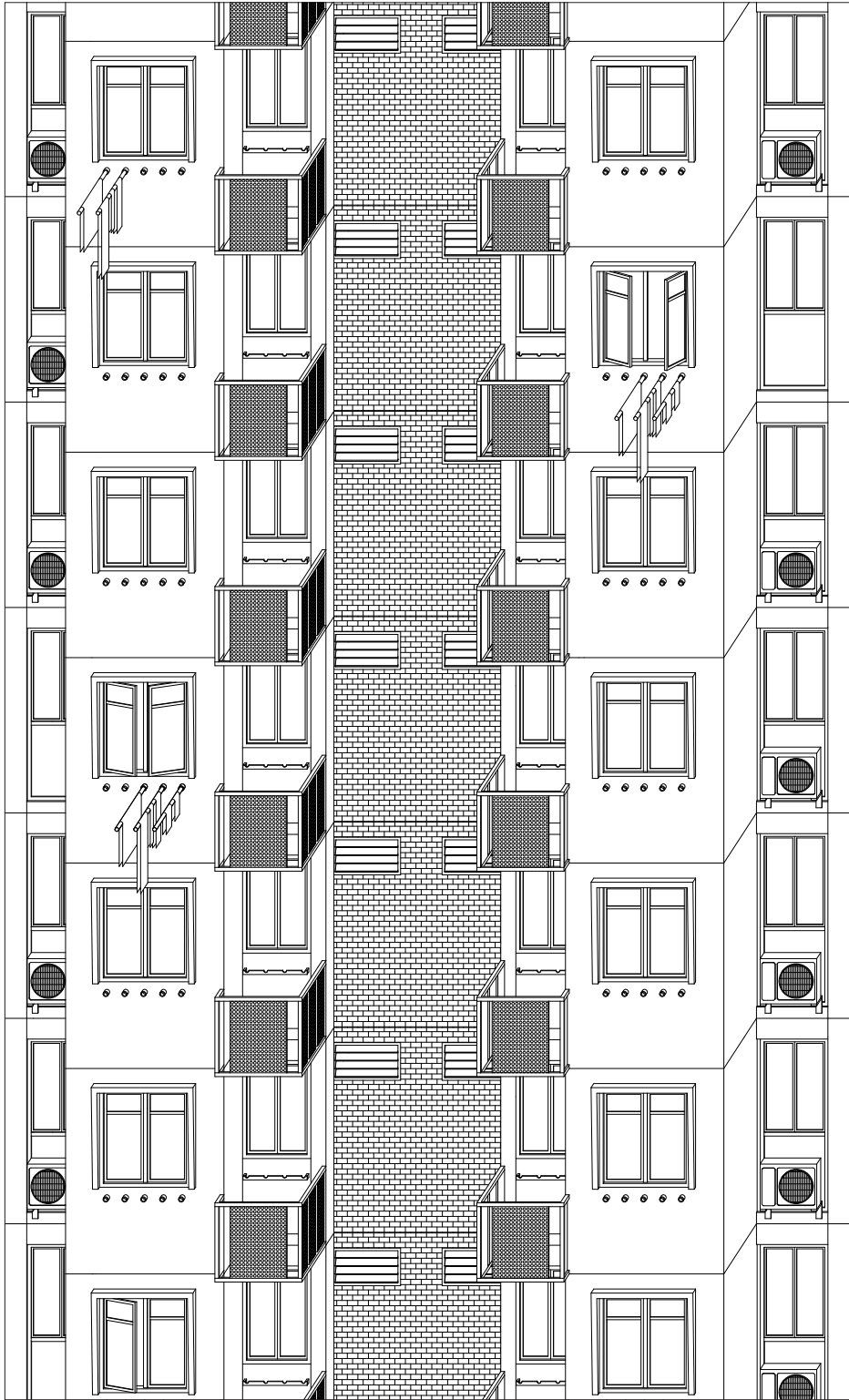


LEGEND

- | | |
|--|--|
| 1. Beam
Reinforced concrete 250x275mm | 5. SAI volumetric
Precast reinforced concrete t=120mm |
| 2. Column
Reinforced concrete 515x350mm | 6. Floor slab
Reinforced concrete t=125mm |
| 3. Bathroom Stack Wall
Brick t=120mm | Floor finishing t=50mm |
| 4. SAI column
Reinforced concrete 600x200mm | 7. Partition wall
Concrete hollow block t=100mm |
| | Cement render t=5mm |

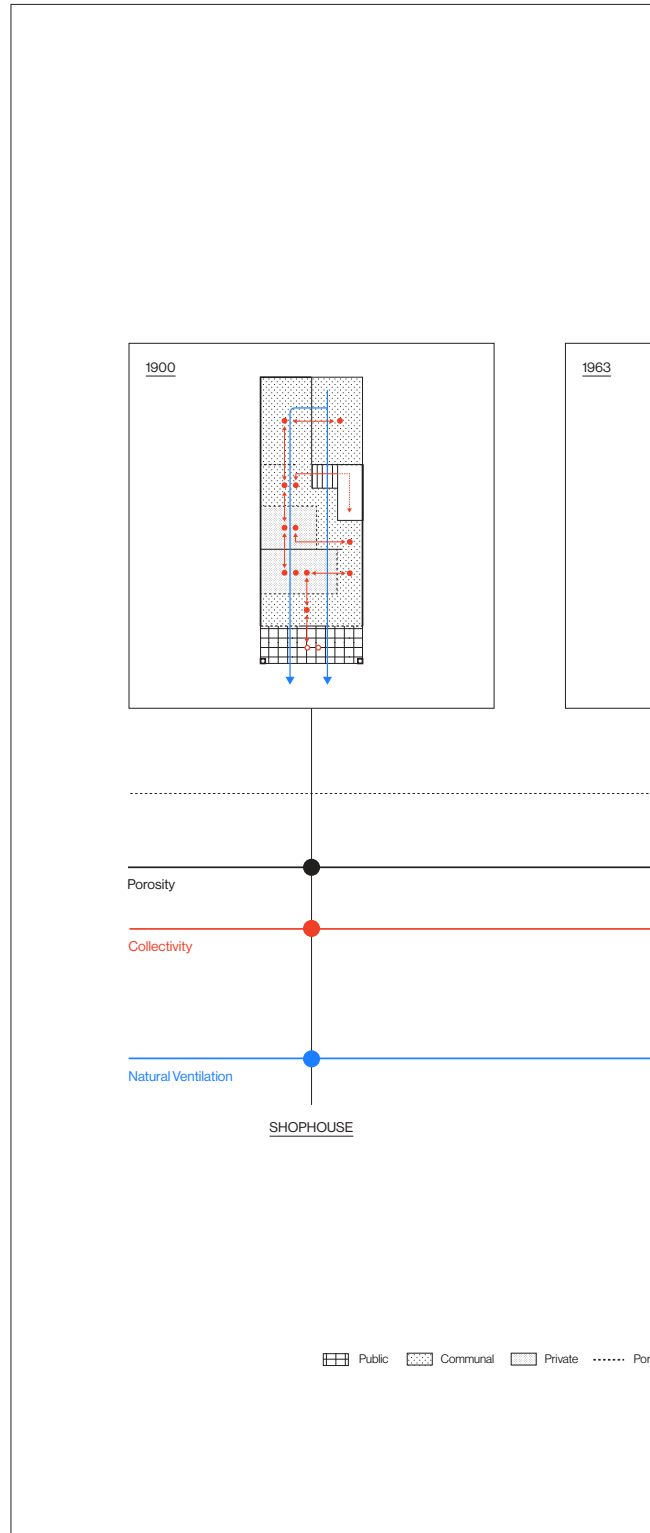
ENCLOSURE AND PRIVACY

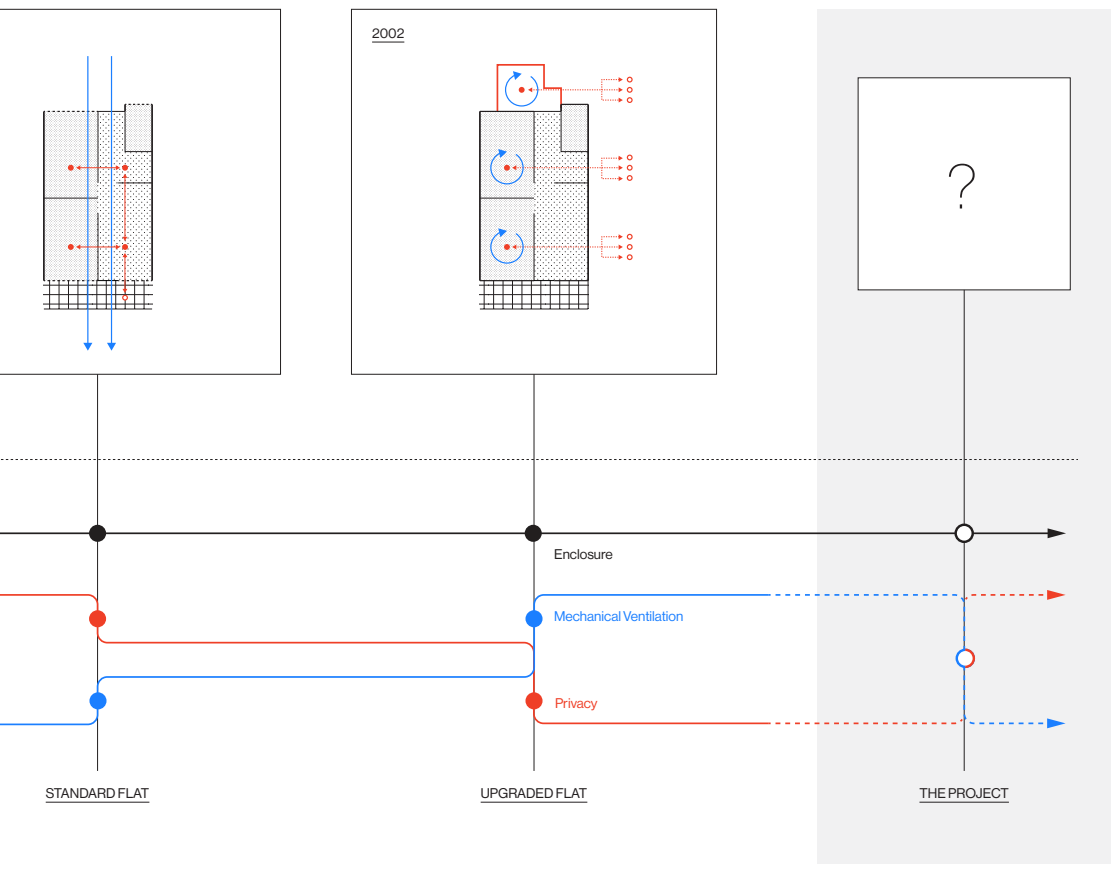
Major renovations and the addition of air-conditioning equipment also created radical tectonic shifts. A new, structurally independent pre-cast core was added to the rear of existing blocks, while facades became a palimpsest of new volumes, compressor units, and laundry screens.



FROM POROSITY TO PRIVACY

These evolution of Selegie House - from a historic urban shophouse quarter, to modernist estate, subject to major modifications in 2002 - indicate a trend toward more privatised and climatically sealed forms of life. As a proposal for the next chapter of Selegie House's evolution, this project seeks to invert these trends, embracing new forms of collectivity and porosity.





Research Conclusions

Porosity, Layering, and Additions

Based on a close reading of the historical qualities of Selegie House and its physical evolution over time, three 'latent strategies' are identified that correspond to the broad imperatives set out at the beginning of the project. The design phase of the project will not seek to replicate these latent strategies, but adopt them as a resonant point of departure for the next chapter in Selegie House's future.

1. REUSE —ADDITIONS

The first latent quality identified is that of additions to the existing structure. As highlighted in the research phase, Selegie House has been extensively modified over time to accommodate more private ways of living alongside a shifting reliance on air-conditioning. While these past transformations have been oriented toward less progressive ends, they speak to a history and capacity for physical expansion of Selegie House that can facilitate the site's reuse and intensification.

2. COLLECTIVE LIVING — LAYERING

The second latent quality identified is that of layering of programmes, degrees of public and privacy, and varied spatial qualities. Particularly as it was first envisioned in the 1960s, Selegie House featured a wide array of collective, public, and intermediary spaces interspersed at different levels of the building. While these spaces were subsequently removed or drastically reduced, they present a historical precedent for reinvigorating Selegie House with new collective civic qualities.

3. PASSIVE VENTILATION — POROSITY

The third latent quality identified in the research phase is that of porosity. When Selegie House was completed in the 1960s, an era predating large-scale domestic adoption of air-conditioning, the building comprised a layering of permeable thresholds that defined gradients between interior and exterior, public and private, and intimate and exposed, all while facilitating natural cross ventilation. While these qualities have since been lost through both building- and unit-level modifications, reinstating porosity could constitute a key driver for new passive ventilation regimes within the building.

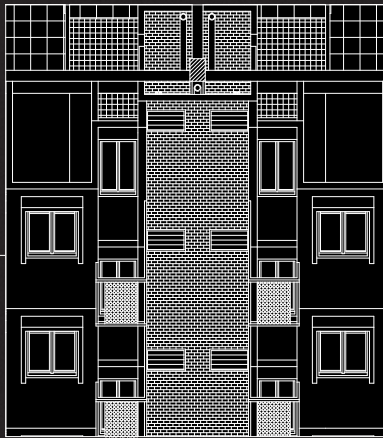
IMPERATIVES

EXISTING QUALITIES

LATENT STRATEGIES

PHYSICAL

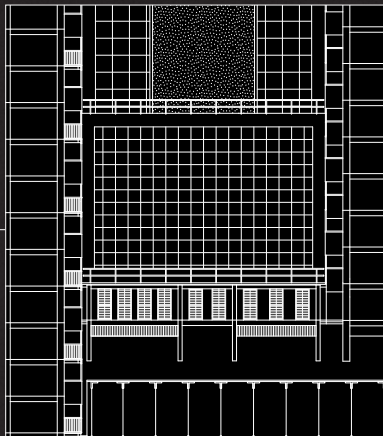
Reuse



Additions

SOCIAL

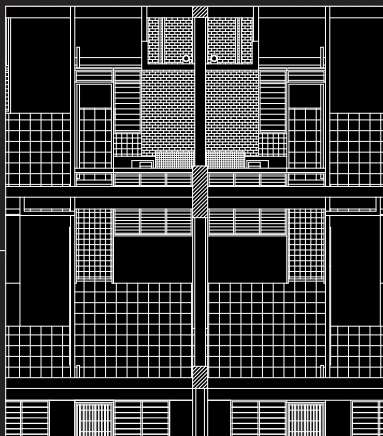
Collective Living



Layering

CLIMATIC

Passive Ventilation



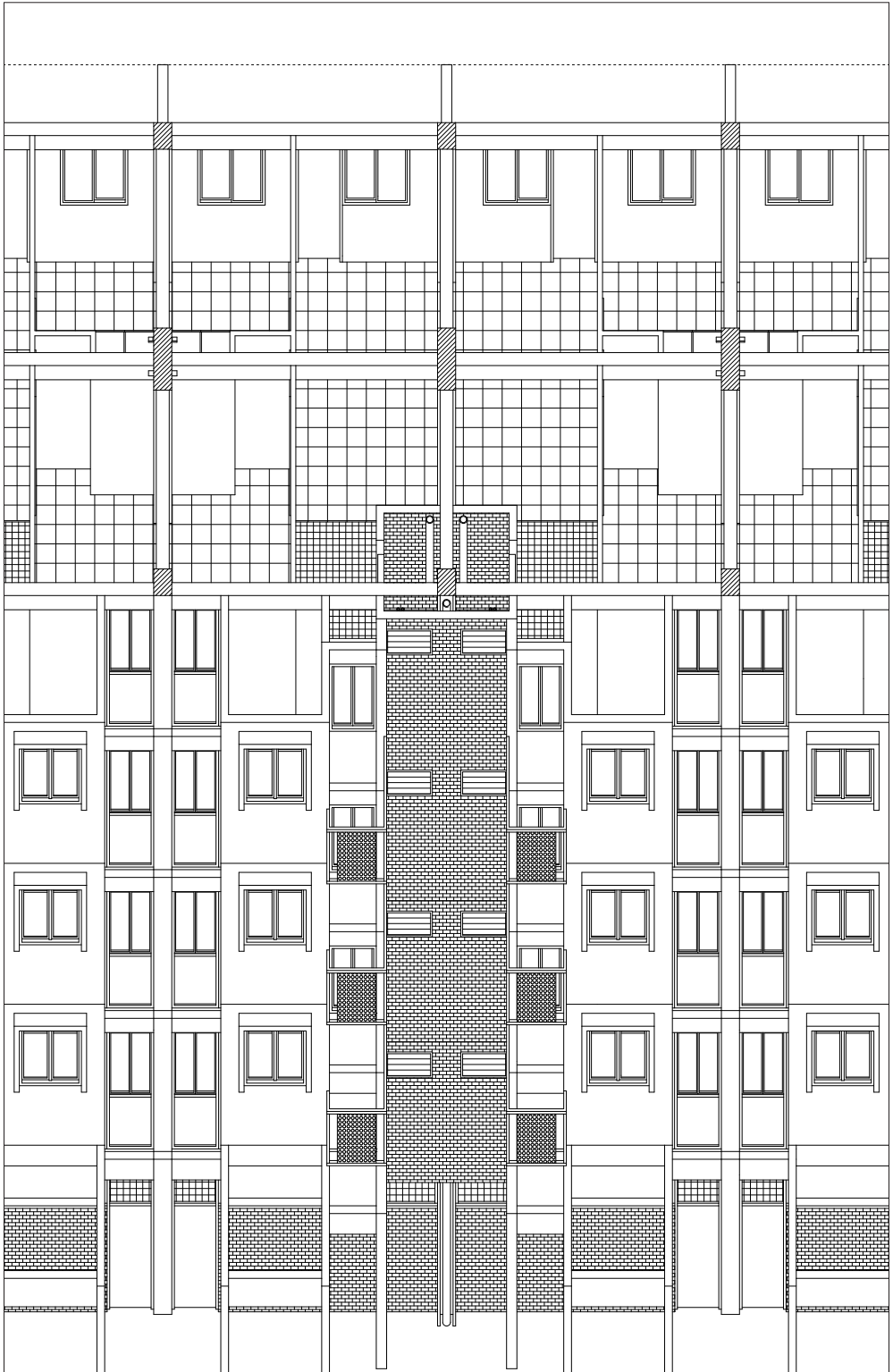
Porosity

Principle 1

Extendability

ADDITIONS AND EXTENSIONS

The first principle with which Selegie House can be adapted is that of extensibility. In the early-2000s, new prefabricated volumes expanded the volumes of individual flats, demonstrating the building's capacity for outward physical growth. While these latter additions contributed to increased atomisation, similar architectural strategies of expansion can be used to unlock new, more progressive climatic and domestic potentials.

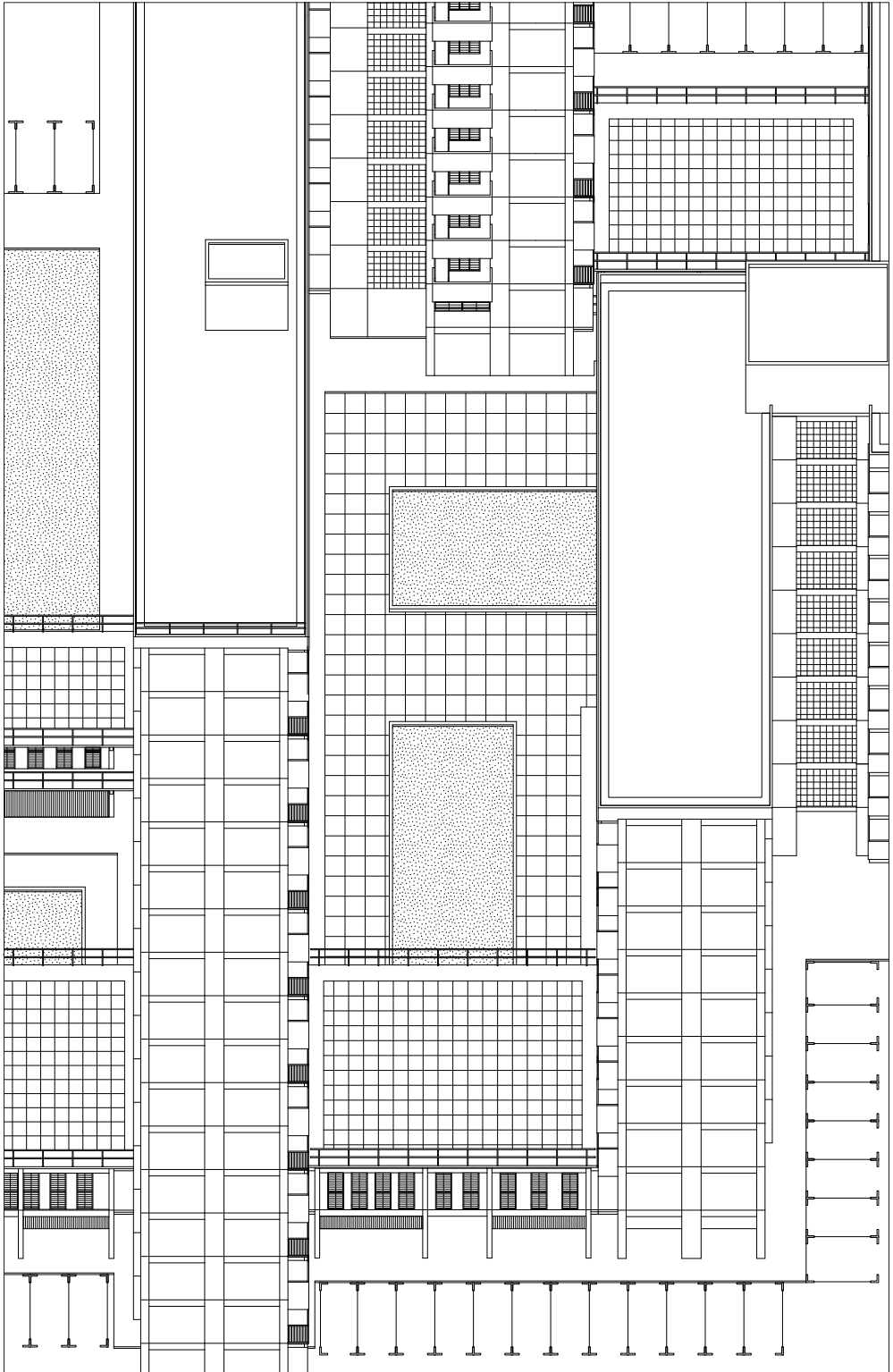


Principle 2

Programmatic Layering

LAYERED ACTIVITY

The second principle by which Selegie House can be adapted is that of layered collective programming. Selegie House was envisioned as a modernist 'city within a city', wherein the working classes would be afforded recreation, shopping, and service facilities, all contained within the estate ensemble across multiple volumes and levels. While this vision was eroded over subsequent decades, mixed-use collective spaces within Selegie House could enable new, more convivial and communal ways of life.

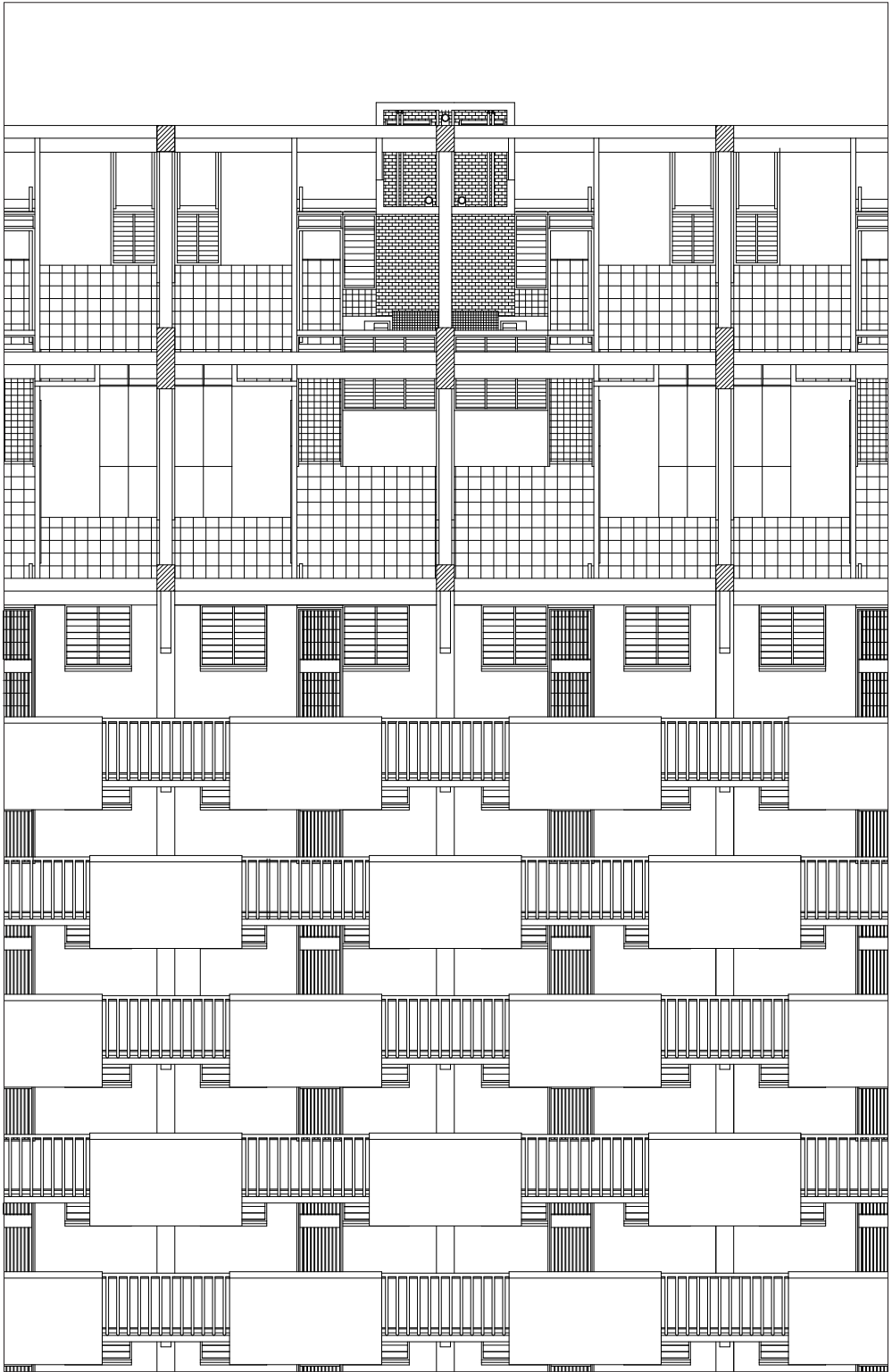


Principle 3

Porous Thresholds

SPATIAL AND CLIMATIC POROSITY

The final principle which can inform the adaptation of Selegie House is that of porous thresholds. When Selegie House was first completed, it was characterised by porosity at all scales, mediating both a sense of public and private, as well as outdoor and indoor, across the urban, building, and unit scales. This history of porous thresholds, long since replaced by a logic of enclosure, can be leveraged to enable new, more fluid, climatic conditions and domestic forms.



This is home, surely?

Retrofitting Singaporean Public Housing
for Domestic and Climatic Collectivity

Vol. 3

Propositions

Jacob Meyers

Graduation Report

2/6/2026

Explore Lab 41

MSc Architecture, Urbanism and Building Sciences

TU Delft

Supervisors:

Dirk van den Heuvel (Research + Design)

Rufus van den Ban (Building Technology)

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Introduction

Redesign: Adaptation, Collectivity, and Porosity

The third chapter 'Propositions', envisions a renewed future for Selegie House based on the positions developed in the first chapter - reuse, collective living, and natural ventilation - and the principles developed in the second chapter - additions, layering, and porosity, respectively. The redesign stage of the project adopts these principles and applies them at a range of scales, moving progressive between public and private, through the city, the urban ensemble, the building, the block, the apartment, and finally, the individual cell.

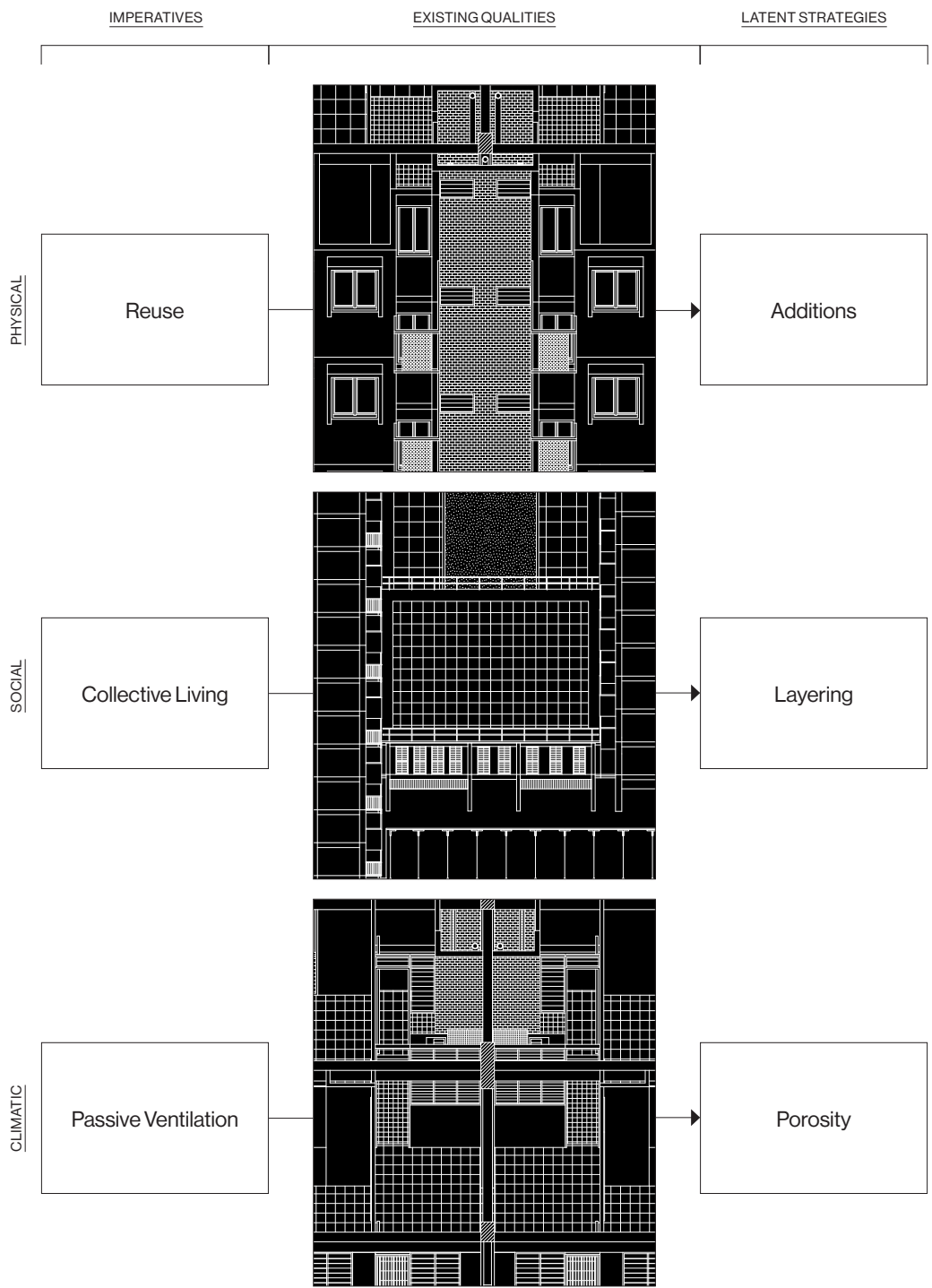
At a massing level, four key gestures - plinths, decks, veils, and a crown - are implemented - each of which add or remediate climatic or collective qualities to the existing building, while reinstating the vision of Selegie House as a coherent architectural and urban ensemble lost over decades of unsympathetic additions.

Programmatically, the original vision of Selegie House as an urban nexus is recalled, challenging the latter-day modification of the site into an essentially monofunctional residential complex. Through the vision of a mixed-use, vertical neighbourhood, new programmes are inserted with a focus on collective uses - at the ground level, on upper levels of residential blocks, and on the extensive roofs. Informing these strategies is the concept of 'nested scales' of collectivity, where conglomerates of increasing size - from groups of rooms to the complex as a whole - are catered to with a range of collective spaces - ranging from the shared living room to the urban courtyard.

Urbanistically, the site's unique location at the confluence at disparate neighbourhoods is reconceived as an opportunity to stitch together a historically incoherent part of Singapore's city centre. Through light-touch urban gestures in the surrounding area, such as the narrowing of adjacent streets, planting, and paving, the site is reimagined as an active pedestrian thoroughfare, and in so doing remediating the ruptures caused by mid-century urban renewal.

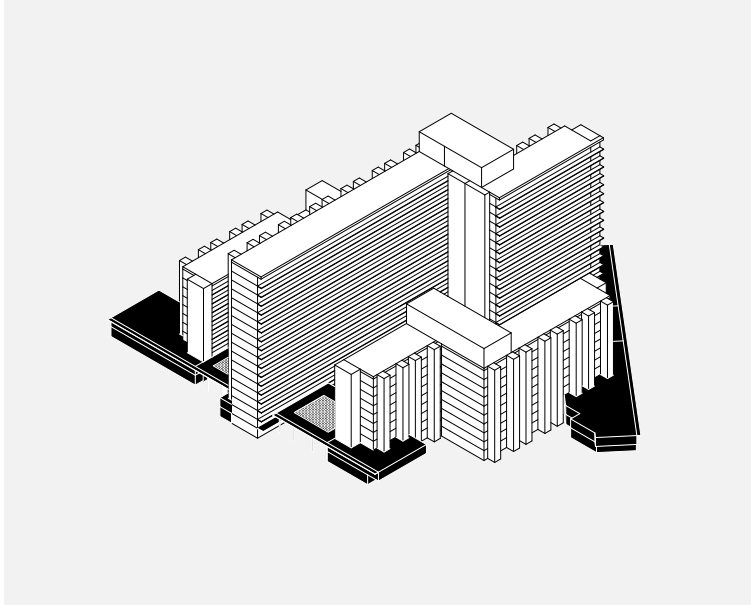
Climatically, the project is driven by a novel system of hybrid natural, mechanical, and solar-driven ventilation. The new roof crown contains a solar chimney, which drives an exhaust system connected to individual units. This exhaust is supplemented by a centralised chilled-water air-conditioning system providing lightly tempered air, whose circulation, further aided by fans and airflow-oriented apartment designs, is envisioned as creating a cooler, healthier, and less energy intensive climate than existing systems.

Finally, in terms of domestic typologies, a range of flat types are proposed to adapt the existing structure to new flexible, collective living arrangements. Rather than being demographically-determined, each flat type offers a range of spatial relationships that can be adopted by families, singles, or less normatively defined household arrangements.



Massing Gestures

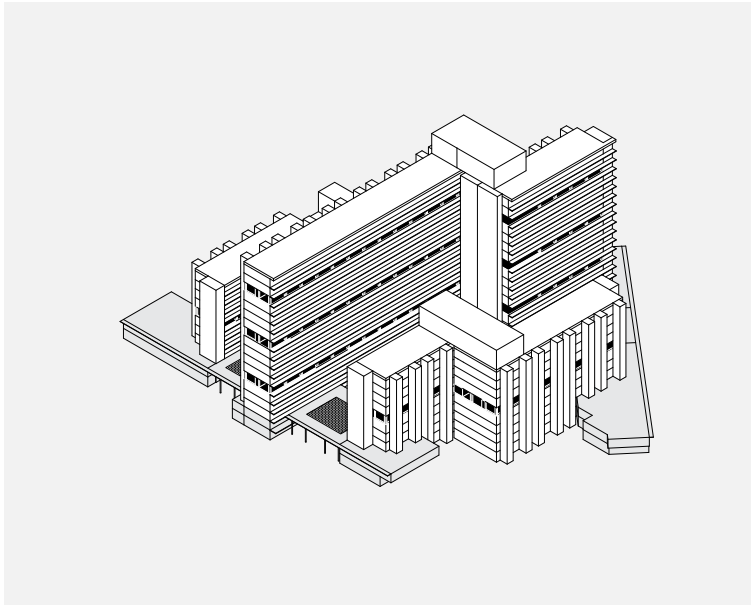
Plinths, Decks, Veil, and Crown



1. THE PLINTH

The plinths reintroduce and reinterpret the low-rise threshold volumes running perpendicular to the slab blocks featured in the building's original 1960s design. Oriented to run the along the site's boundaries, the plinths contain new large-scale collective spaces, while framing a previously ambiguous relationship between the streetscape and internal courtyards.

+ COMMUNAL SPACES
+ COURTYARD THRESHOLD

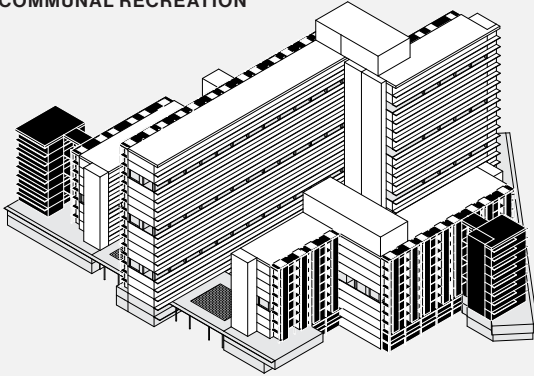


2. THE DECKS

Within the existing slab blocks, every fourth floor is reconfigured into a recessed deck, featuring flexible work spaces - addressing the post-Fordist reconvergence between production and reproduction - as well as spaces for communal gathering and recreation.

+ FLEXIBLE WORK SPACES
+ COMMUNAL RECREATION

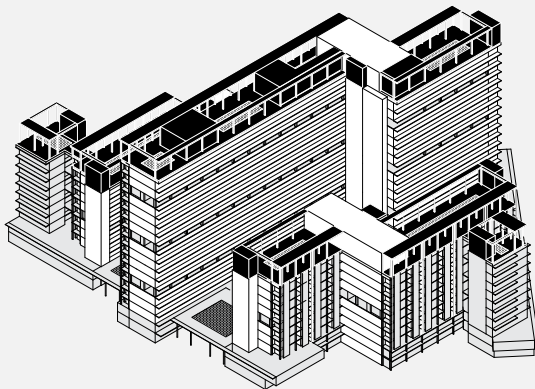
- + FLEXIBLE WORK SPACES
- + COMMUNAL RECREATION



3. THE VEIL

A 'veil' of rear balcony extensions to existing slab blocks, appended by two new extension towers, serves to create a deeper, shaded climatic gradient between interior and exterior spaces; unlock additional shared balcony living spaces; while intensifying the site through larger flat typologies.

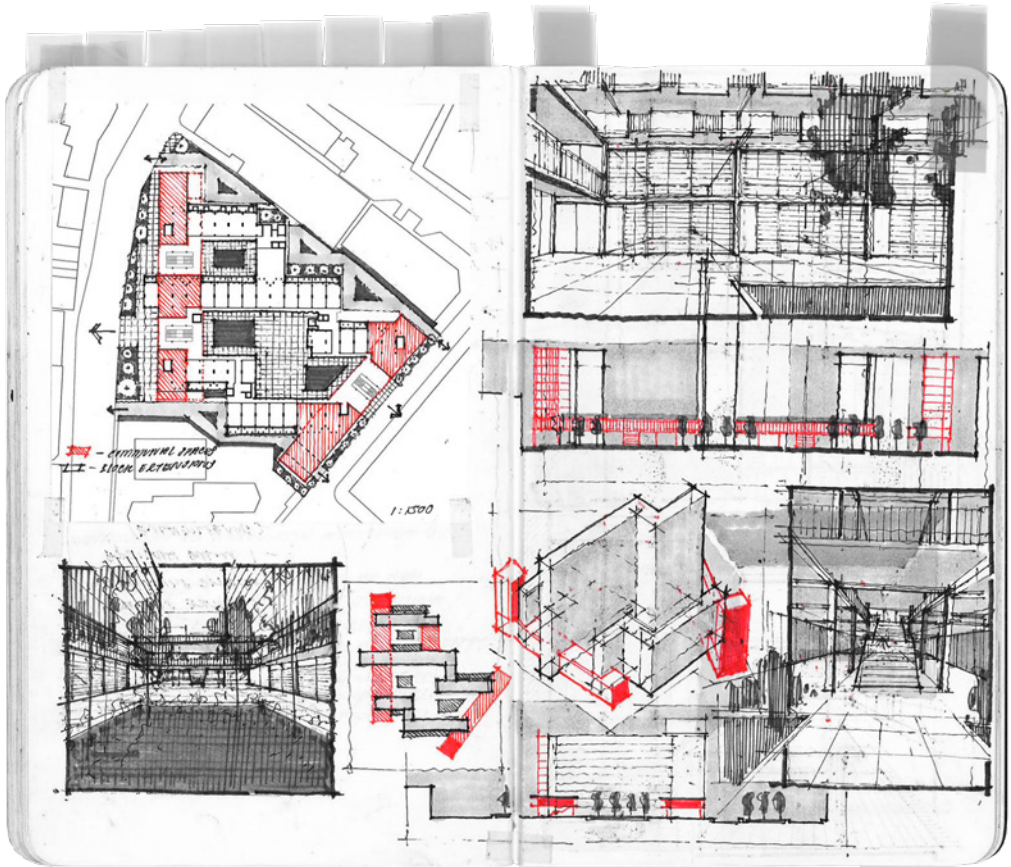
- + CLIMATIC BUFFER
- + ADDITIONAL LIVING AREA



4. THE CROWN

The 'crown' serves as an armature that draws together the site's diverse and heavily altered built forms within a common architectural ensemble; reactivates the buildings' roofscapes for collective activities; and contains a solar heating element and other mechanical and electrical services, as the climatic 'engine' of the building.

- + CLIMATIC ENGINE
- + ACTIVATION OF ROOFSCAPE



GESTURES AND MOMENTS

Each massing gesture was conceived alongside a series of spatial moments. For example, the plinth was envisioned as enclosing the courtyard as a calm enclave secluded from the street, mediated by a procession of passing underneath the plinth on the ground floor.

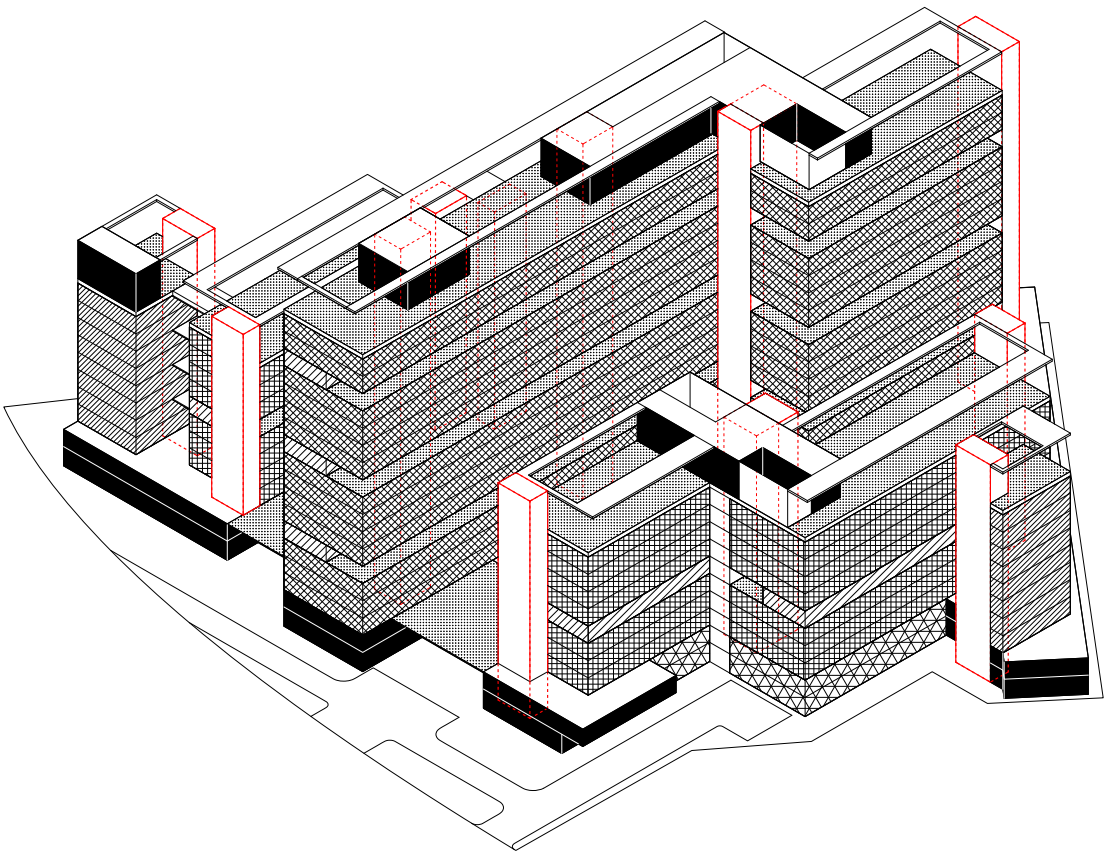


PLINTH AS URBAN FRAME

The plinth was envisioned as an urban frame, opening up where required to reveal and connect the courtyards to the street, while introducing a boundary and reestablishing a coherent street block. In this way, the project introduces a direct relationship to the street denied by the 'towers in a park' vision of the original urban renewal scheme.

Programmatic Organisation

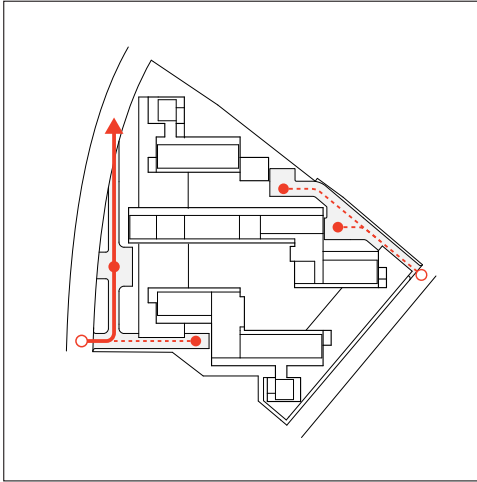
Vertical Mixed-Use Neighbourhood



PROGRAMMATIC ZONING

Challenging the evolution of Selegie House into an effectively monofunctional complex, the project recalls and reimagines the building's original realisation as a mixed-use urban enclave. Based on a vision of a mixed-use, vertically interconnected neighbourhood, new collective programming is introduced in the plinth; along mid-level decks within the slab blocks; and on the roof. Additionally, heretofore standardised typologies within all blocks are diversified, appealing to a wider demographic group.

- Communal Facilities
- Publicly Accessible Space
- Flexible Workspaces
- Type-A (Live-Work Ateliers)
- Type-B (Enfilade Studio)
- Type-C (Group House)
- Type-D (Cluster House)
- Vertical Circulation
- Primary Access
- Secondary Access



VEHICULAR ACCESS

Primary vehicle access is provided through a one-way driveway running parallel to Selegie Road. Additional service driveways, for loading and unloading, are provided facing both Selegie Road and Short Street. Parking is reduced to a minimum, given the site's excellent public transport connectivity.



URBAN & COURTYARD ACCESS

The central courtyard of the complex is envisioned as a key urban thoroughfare, providing a much-needed connection between Selegie Road and Short Street. The smaller northern courtyard is envisioned as a more private, secluded space without a through circulation route.

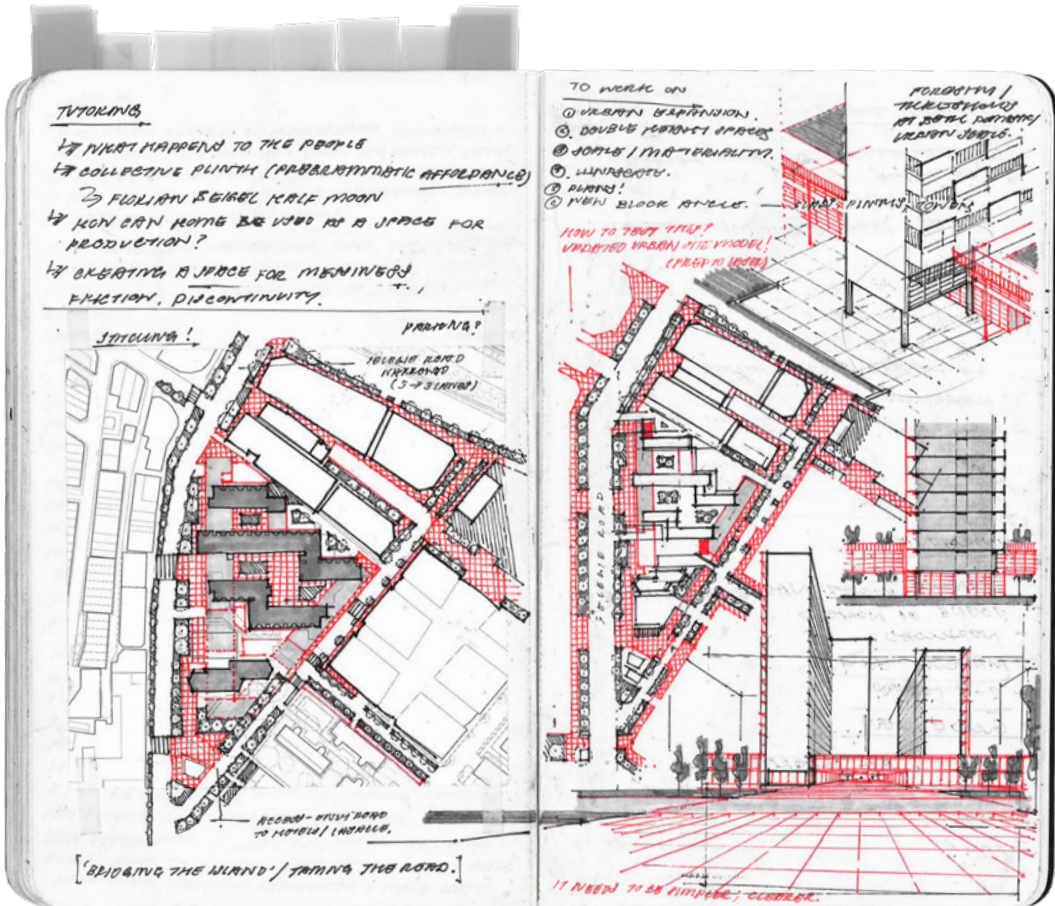


APARTMENT ACCESS

Individual apartments are accessed through public, deck-access corridors, as is common in Singaporean public housing. Reconfigured central lift cores are supplemented by stair cores for fire egress, while the two extension towers feature dedicated circulation cores.

Urban Integration

Restitching City Fabric

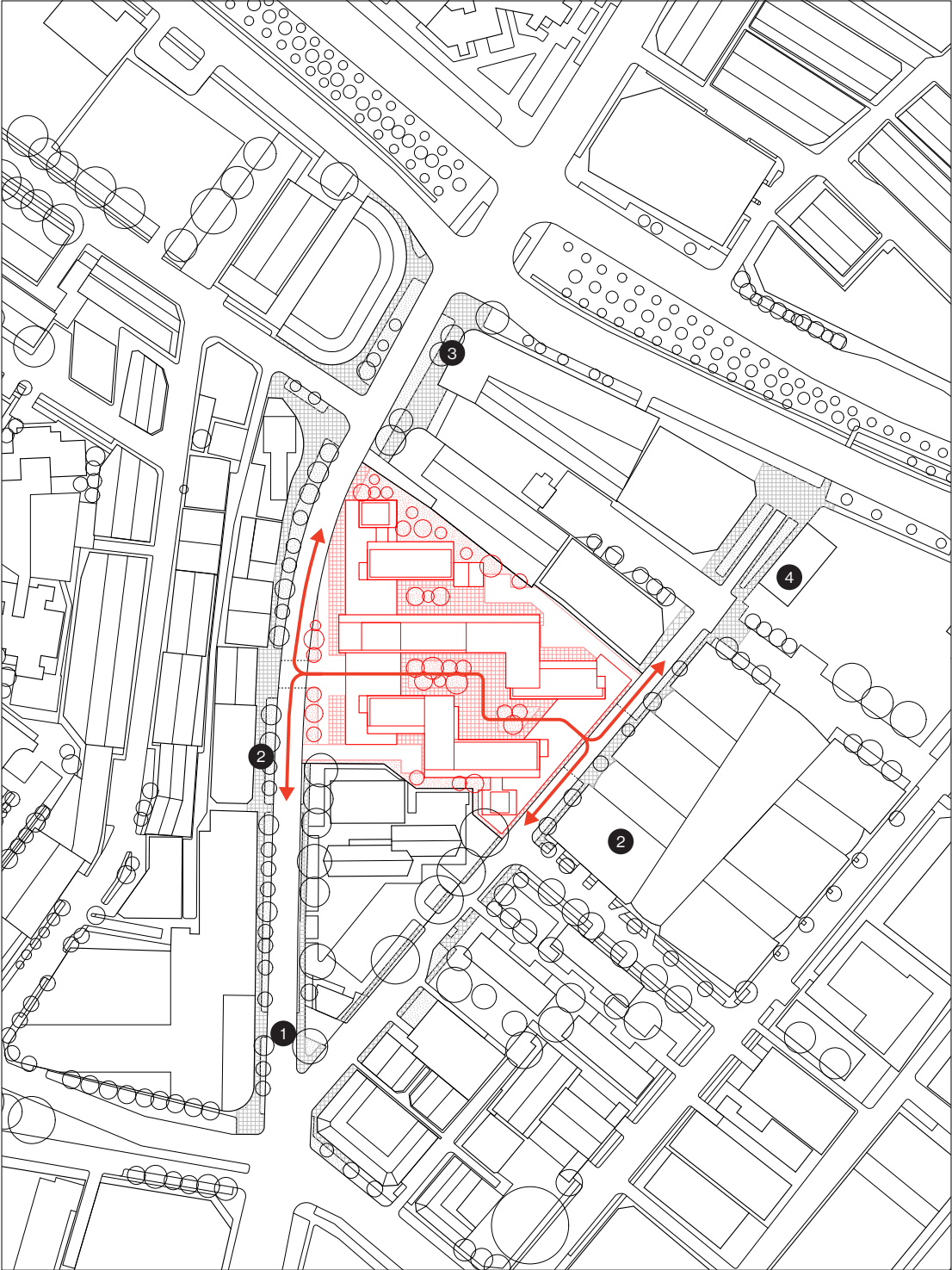


URBAN TREATMENT

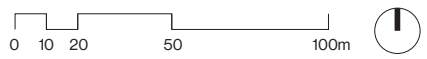
The transformation of Selegie House is seen as an opportunity to reintegrate a part of Singapore's city core left fragmented with poor pedestrian accessibility after decades of ill-considered urban renewal. A series of urban interventions - the narrowing of large adjacent roads and creation of larger at-grade pedestrian crossings - creates a new urban membrane, marked by regularised paving treatment.

URBAN STITCHING

- 1 Narrowing of Selegie Road
- 2 Enlarged Pedestrianised Crossing
- 3 Narrowing Road Junction
- 4 Access-Only Short Street

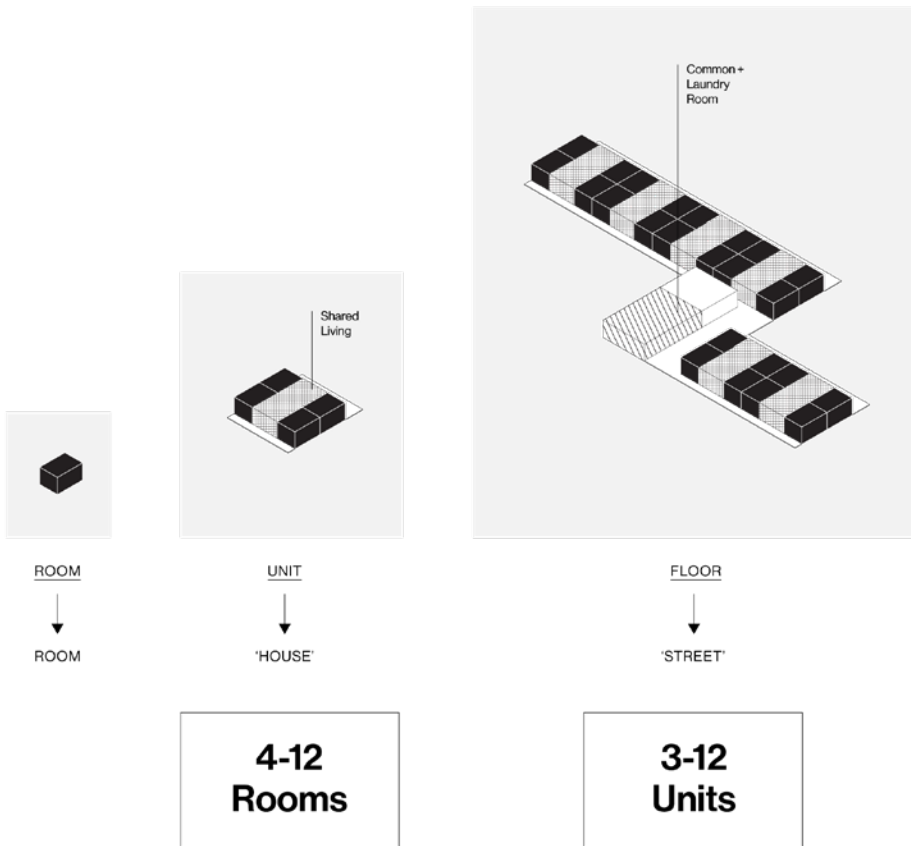


Site Plan
1:2500



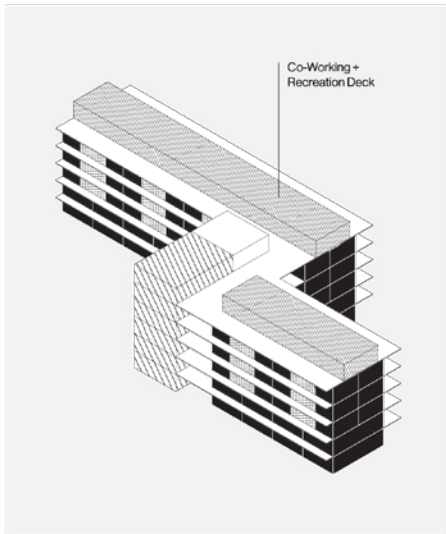
Nested Scales

From the Room to the City



NESTED LOGIC

The project envisions collective life mediated by a series of shared spaces within a series of nested scales, creating a deeper gradient between the private and public realms.

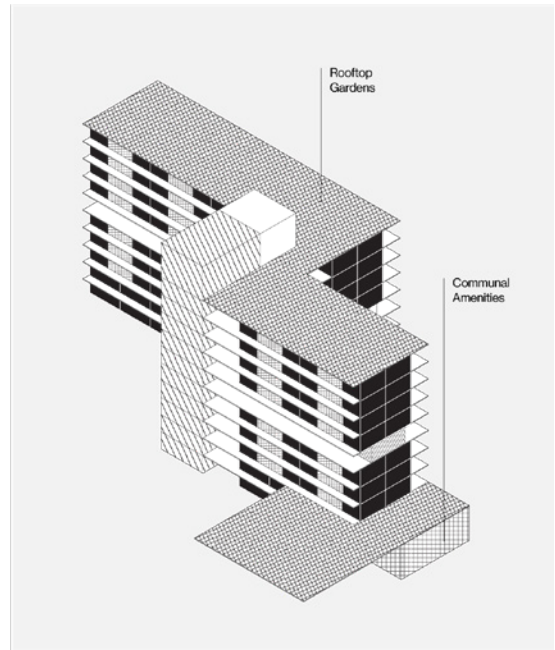


STACK



'NEIGHBOURHOOD'

**2-4
Floors**



BLOCK

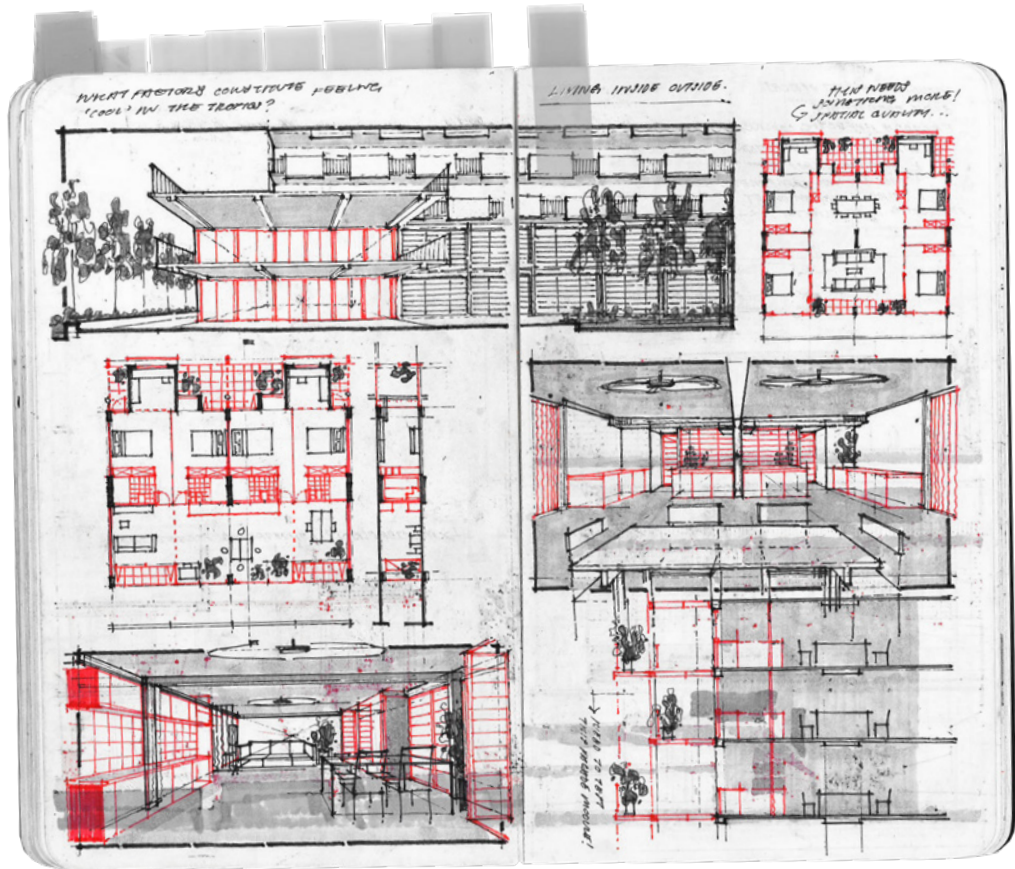


'TOWN'

**2-4
Stacks**

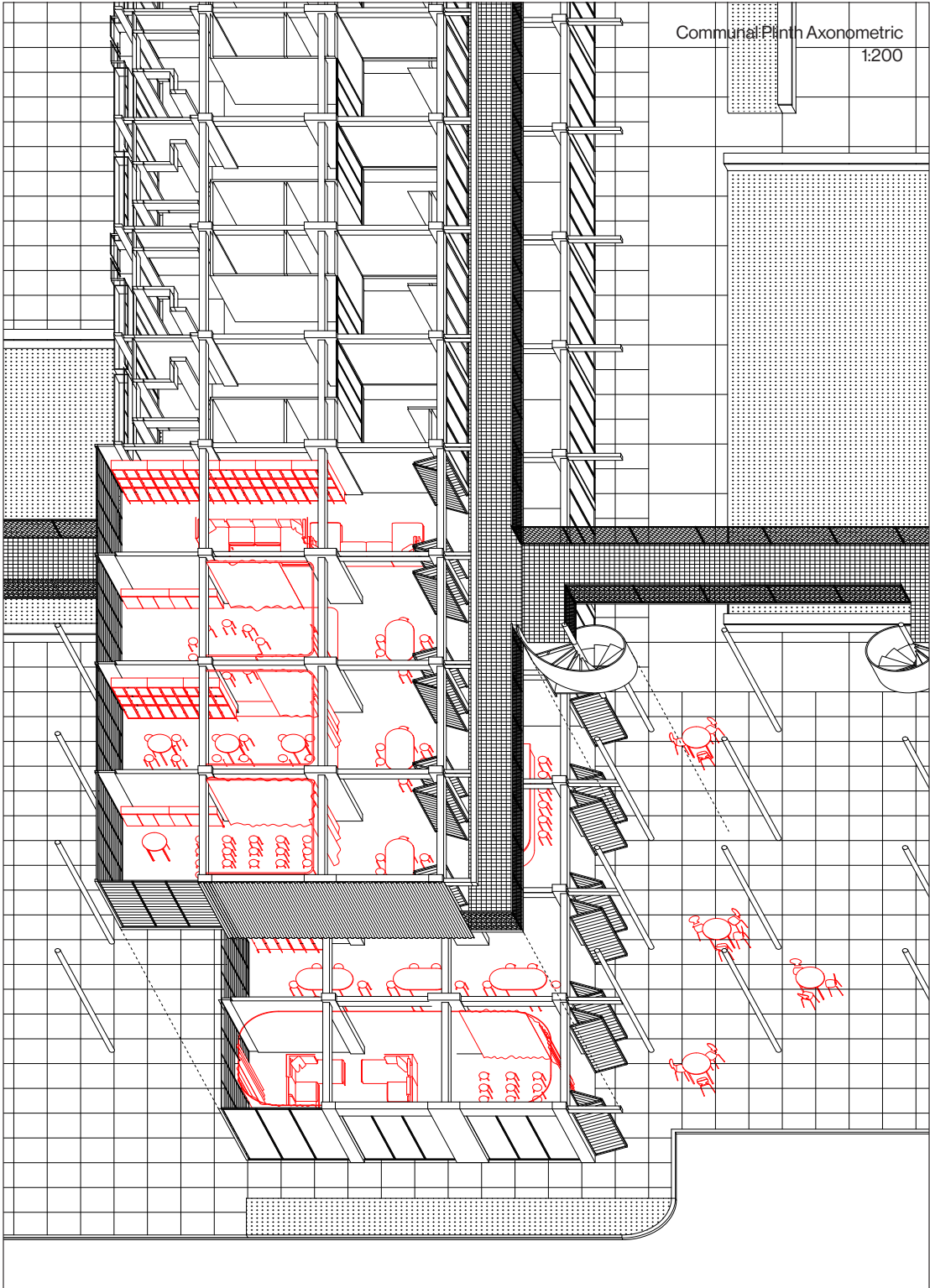
COLLECTIVE AMENITIES

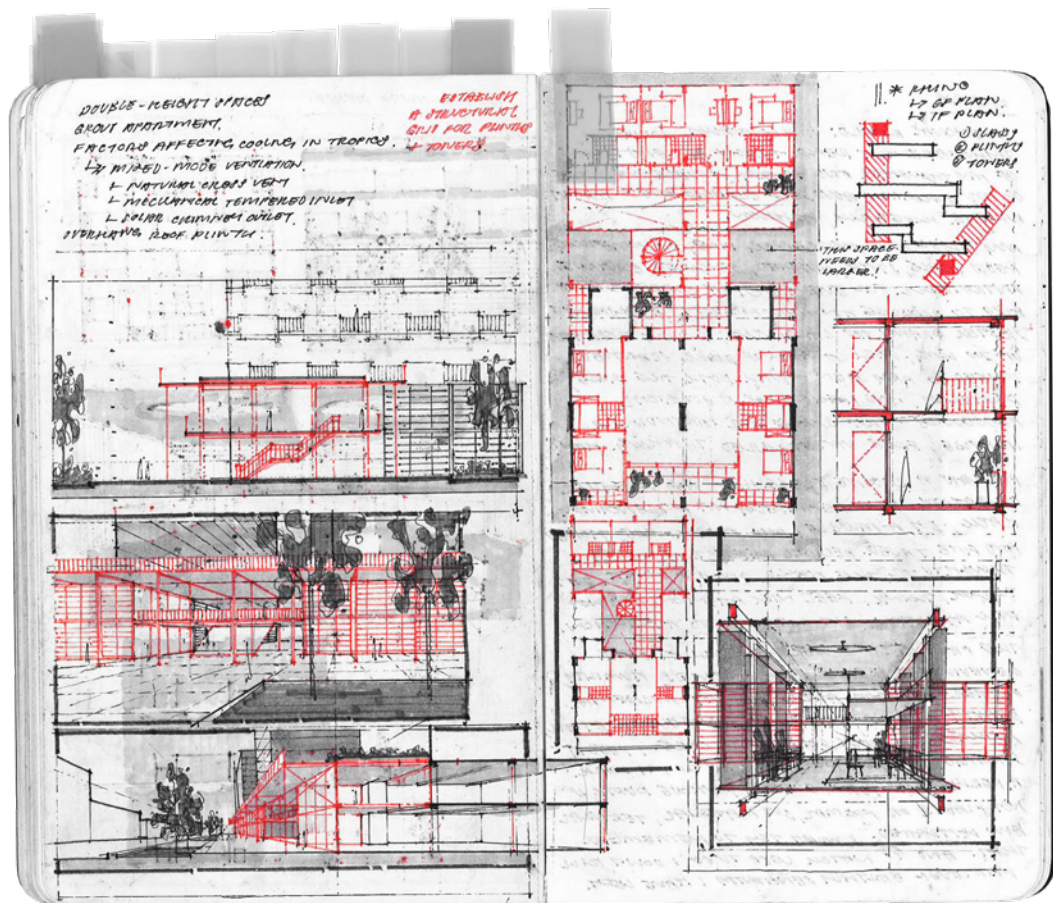
The concept of nested scales of collectivity are facilitated by a series of shared spaces of increasing scales: from the common living room, to the laundry room on each floor, the co-working deck every fourth floor, and the large-scale amenities provided on the plinth and roof.



FROM THE ROOM TO THE CITY

Shared spaces are envisioned as forming a continuum between the scale of the unit, between several private bedrooms, and the largest collective spaces, such as the community facilities contained within the plinth.





COMMUNAL PLINTH

The plinth is conceived as a spatial and programmatic anchor for the project. Subtly demarcating the public space of the street from the space of the courtyard, the plinth meets the existing building to form a series of large-scale communal spaces, such as community centres, food courts, and daycare facilities.

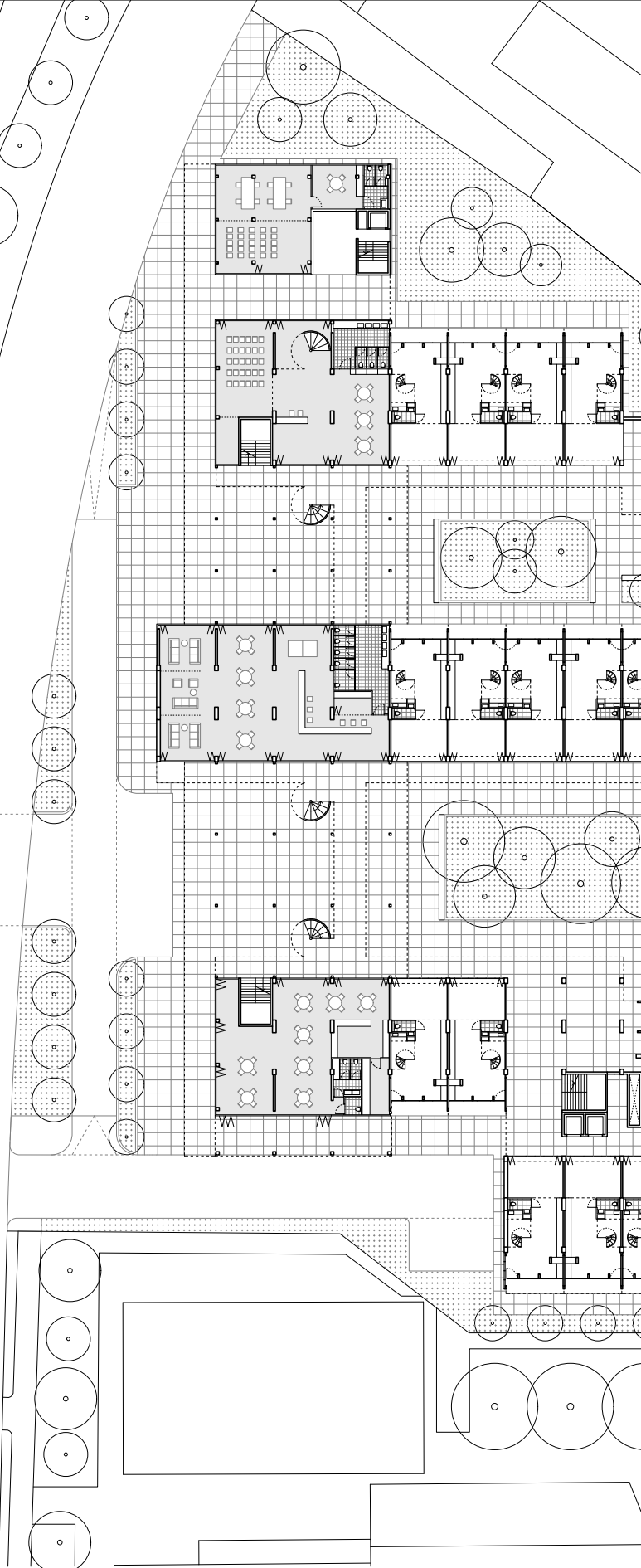


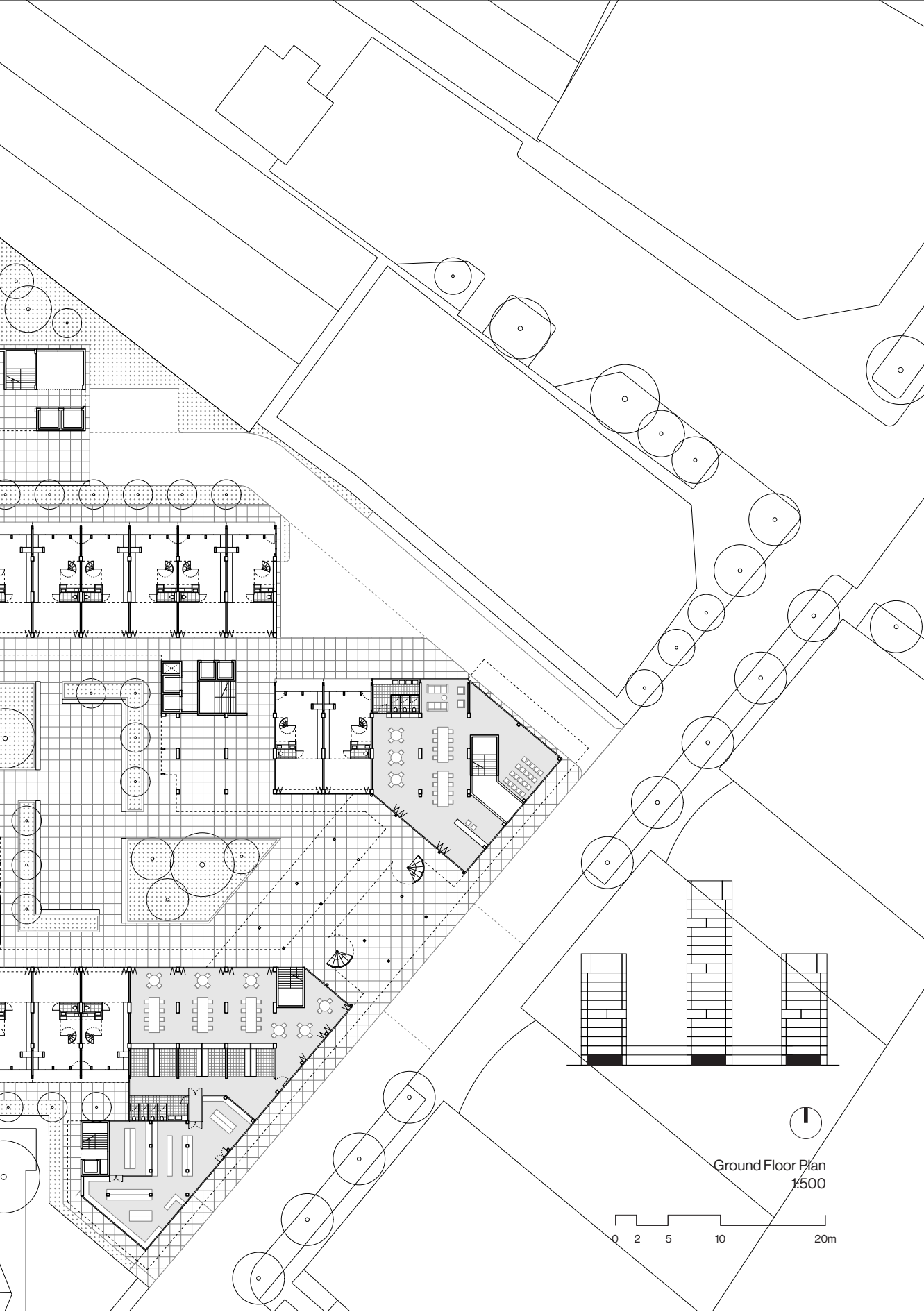
Key Drawings

Plans, Sections, and Elevations

THE STREET AND THE COURTYARD

The ground floor is characterised by a reconfigured relationship between the street and the courtyard mediated by the plinth. Double-height colonnades frame the entrance to the courtyards, whose corners are marked by street-facing amenities. Within the courtyard, the ground-floor of live-work units shape an environment of work, commerce, and light production, interspersed with planting.



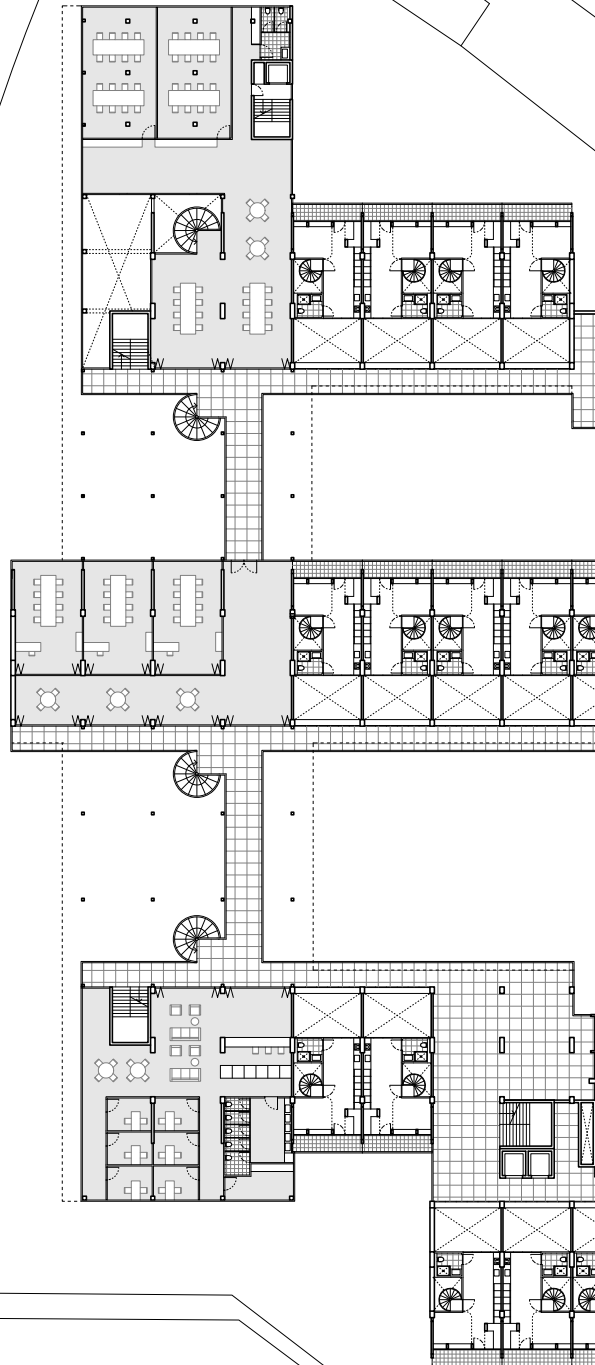


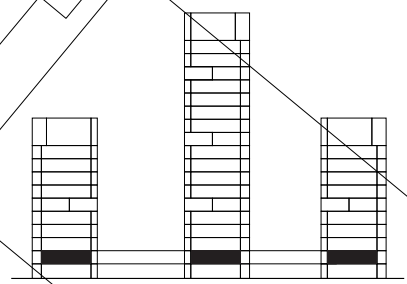
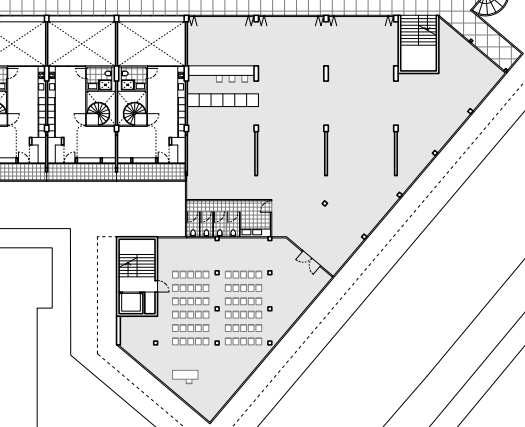
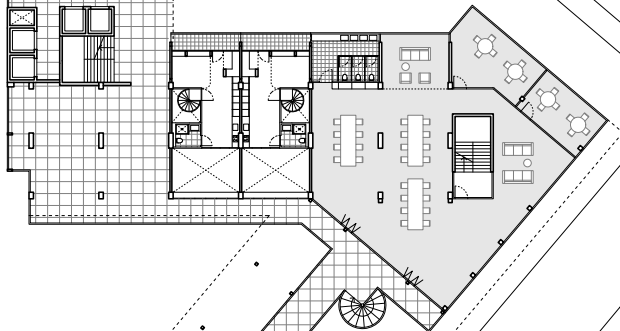
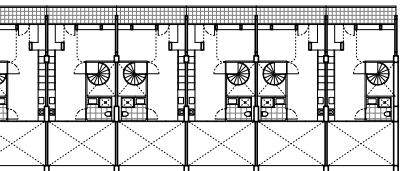
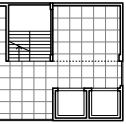
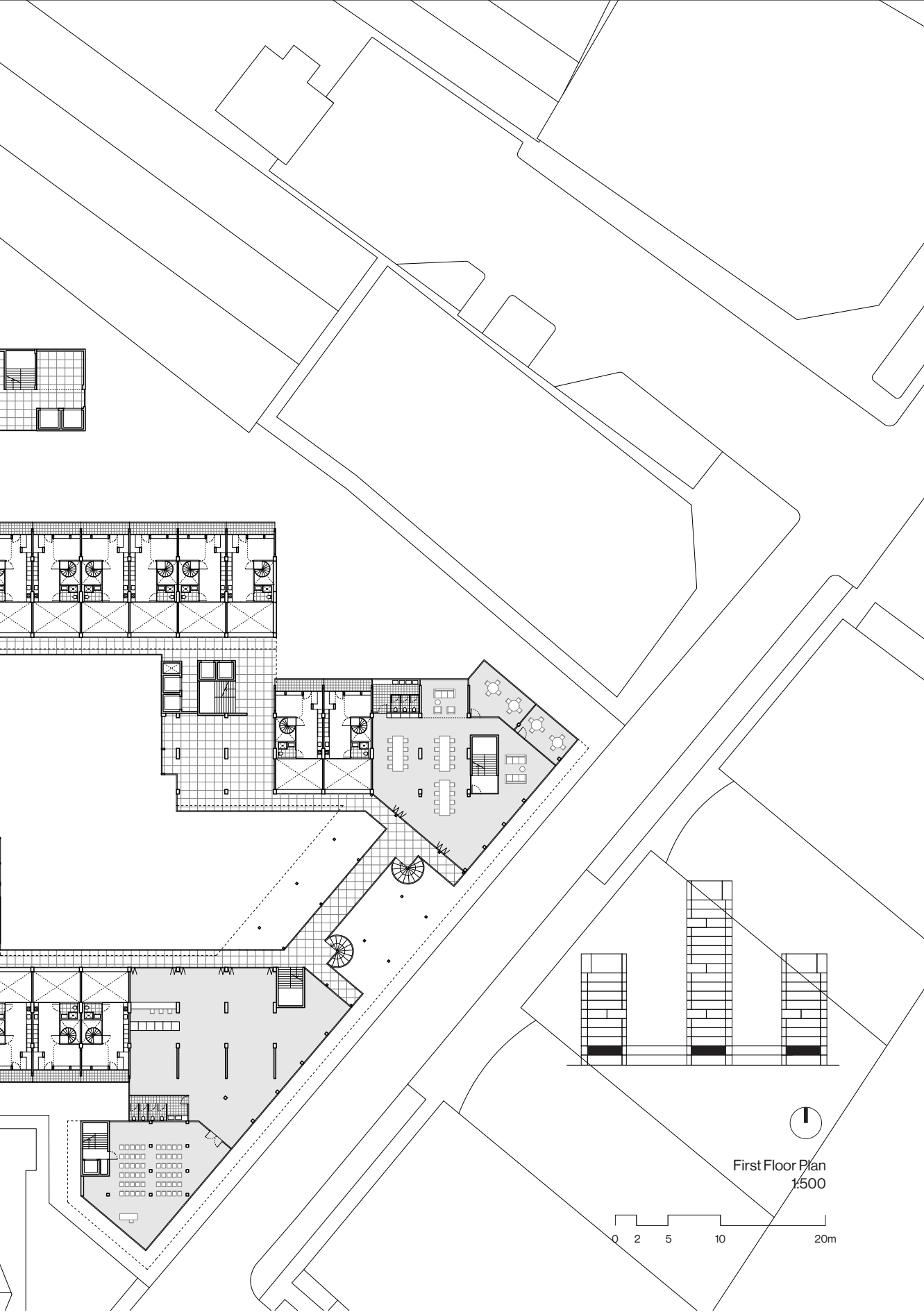
Ground Floor Plan
1:500

0 2 5 10 20m

THE ELEVATED DECK

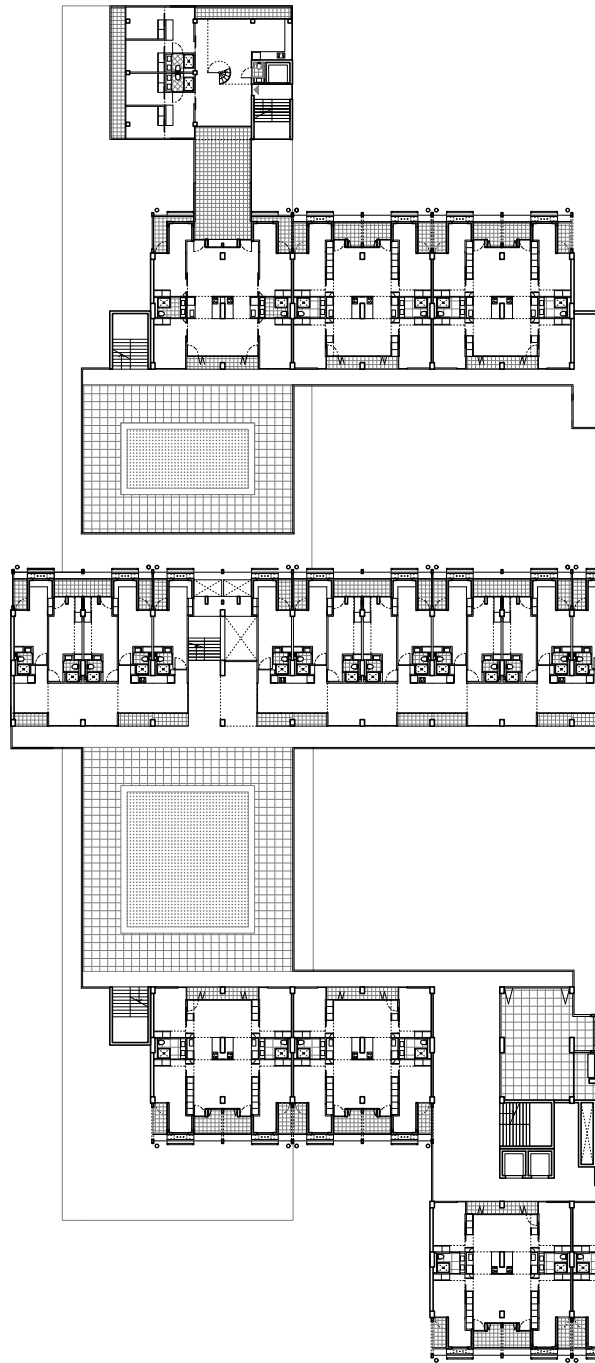
The first floor is characterised by the upper-level of the plinth, where less public-facing collective amenities, such as a senior activity centre are located. A new network of elevated walkways and bridges connects adjacent blocks, while allowing for accessible circulation using any lift core. These decks overlook the lushly planted courtyards.





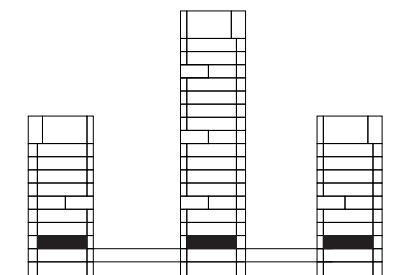
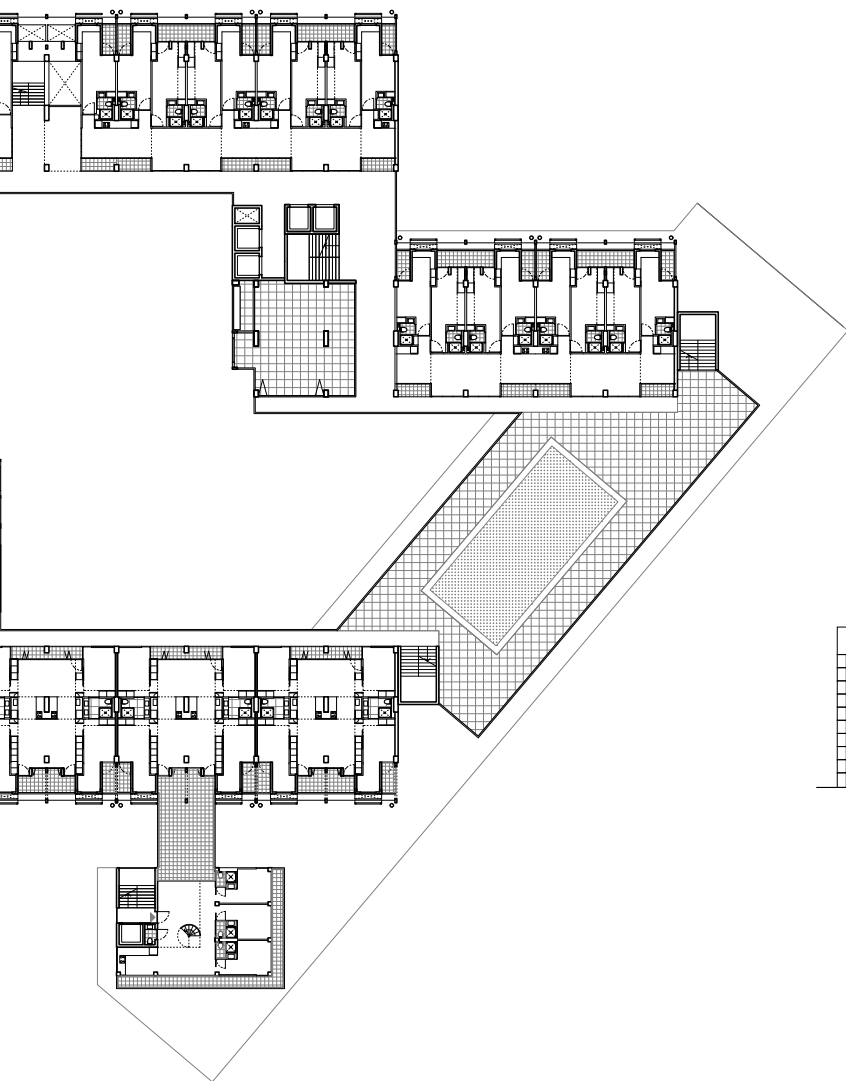
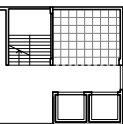
First Floor Plan
1:500





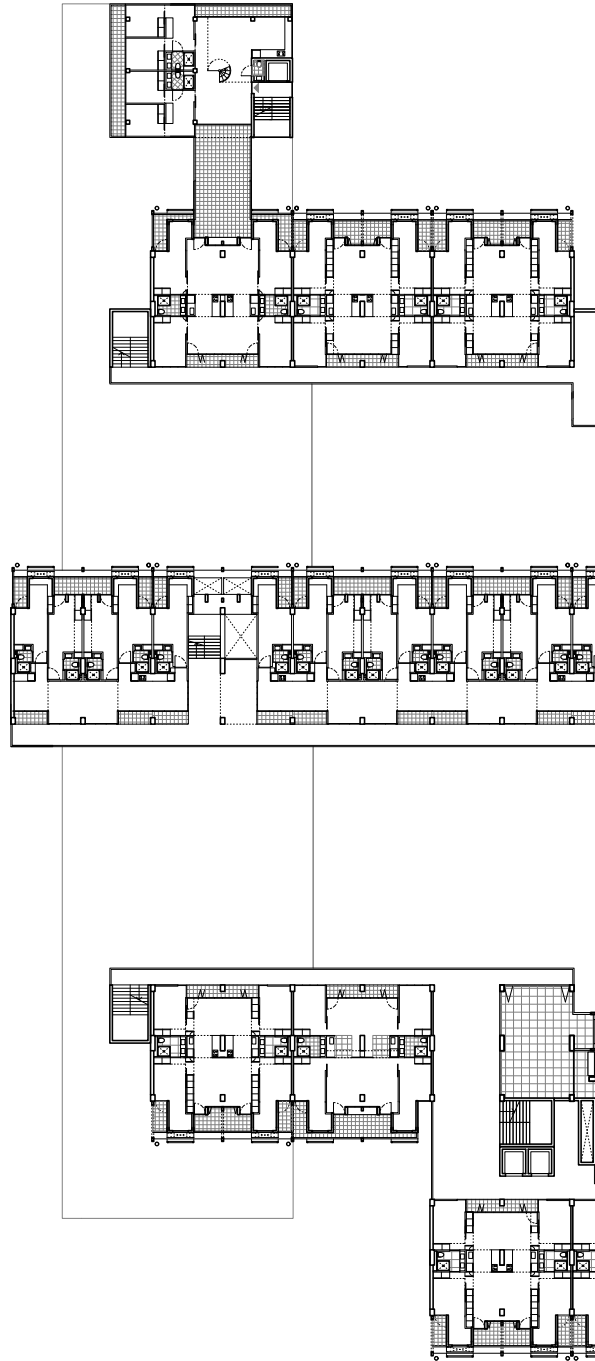
LOWER ROOF GARDENS

The roofs of the plinths are activated as a landscaped deck, marking the break between the public programming of the lower floors and the largely residential programming of the slab.



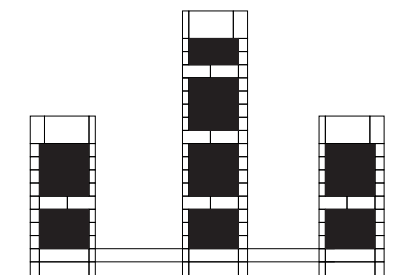
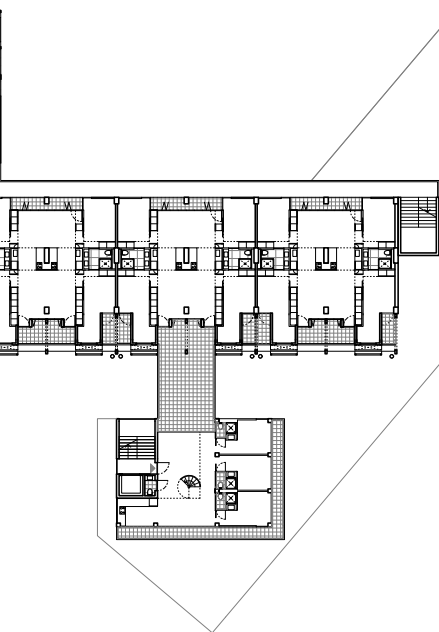
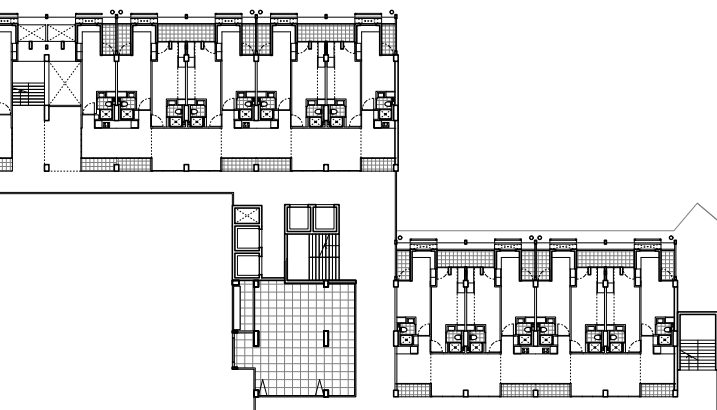
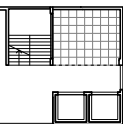
Second Floor Plan
1:500



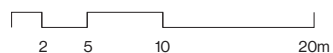


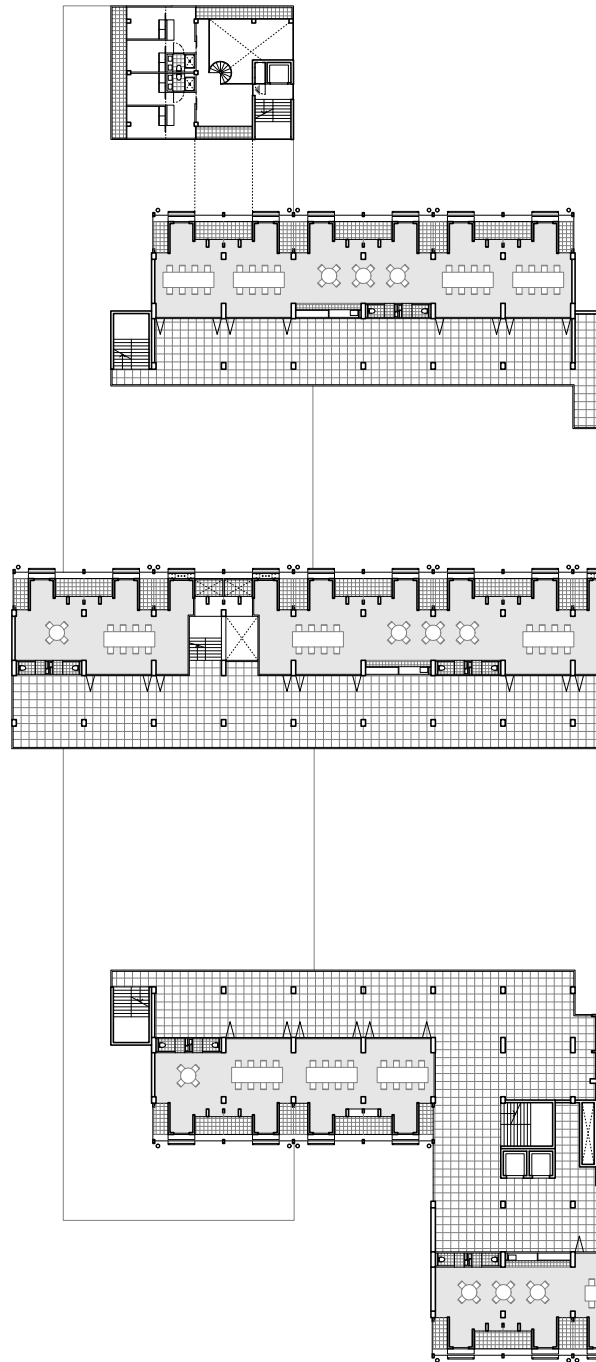
RESIDENTIAL FLOORS

The typical residential floor shows the arrangement of different unit typologies. The central block is used for the 'Enfilade Studio' type, with new stair cores inserted to facilitate fire egress. The northern and southern blocks feature the 'Group House' type and its 'Cluster House' subvariant. Each floor features a shared common and laundry room located at the circulation lobby.



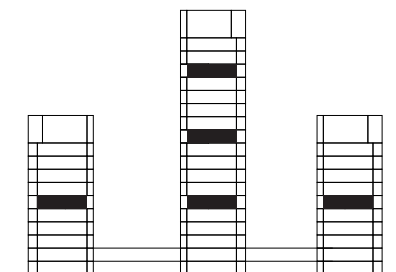
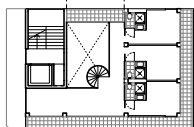
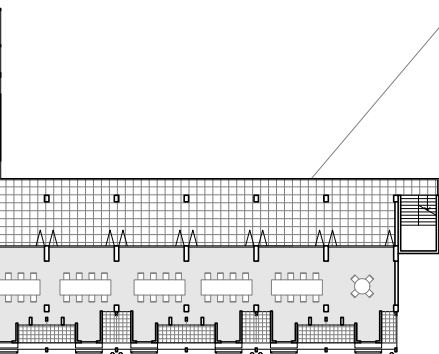
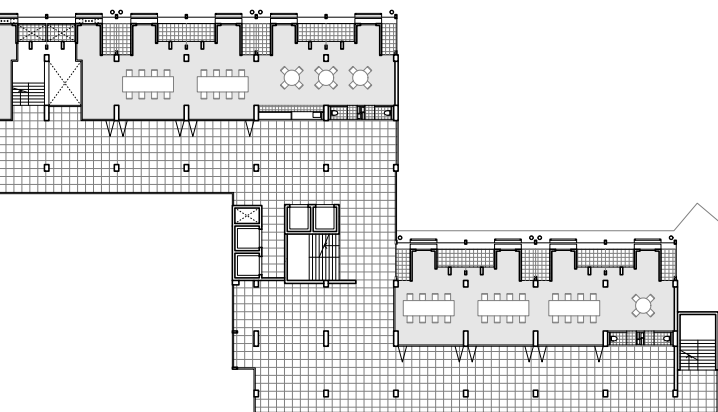
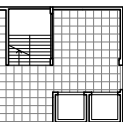
Typical Floor Plan
1:500



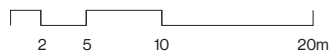


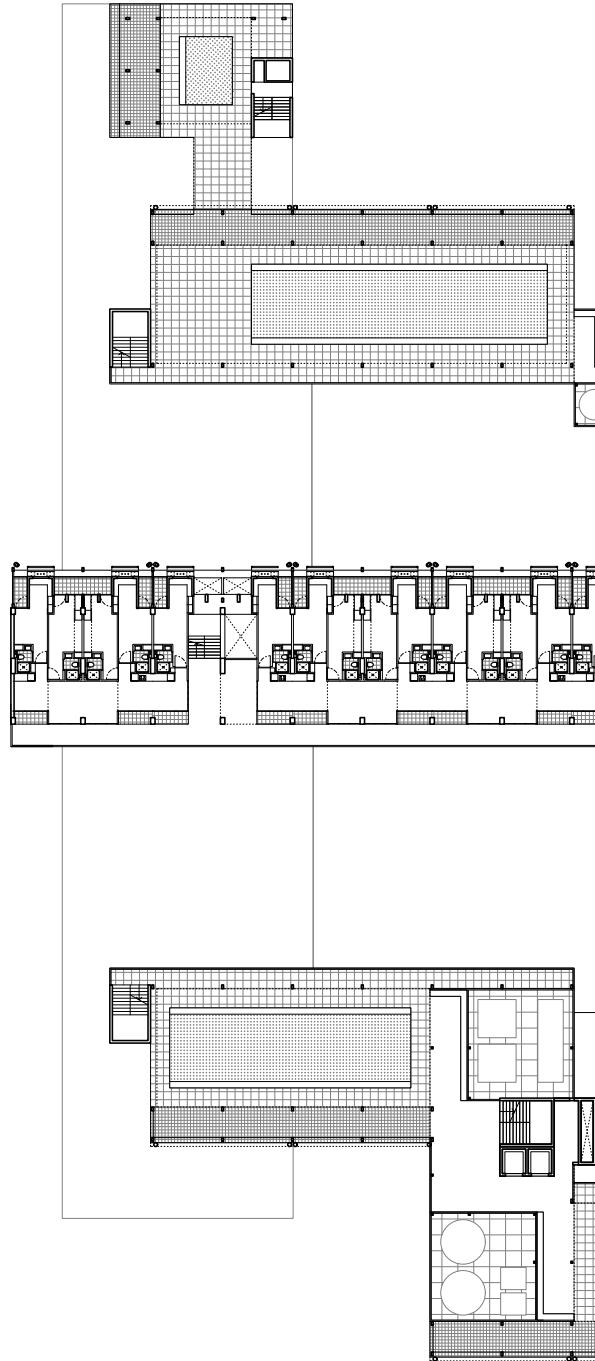
INTERMEDIARY DECK

Decks on every fourth floor feature recessed bands of flexible workspaces, which can either be organised for open-plan coworking or subdivided for leasing to small businesses. By recessing office spaces, a large circulation deck is created as a recreation space for adjacent residential units.



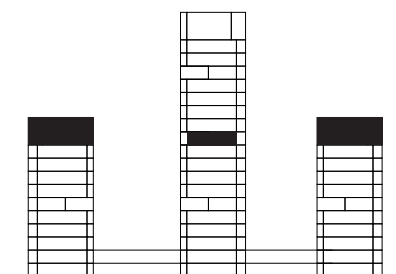
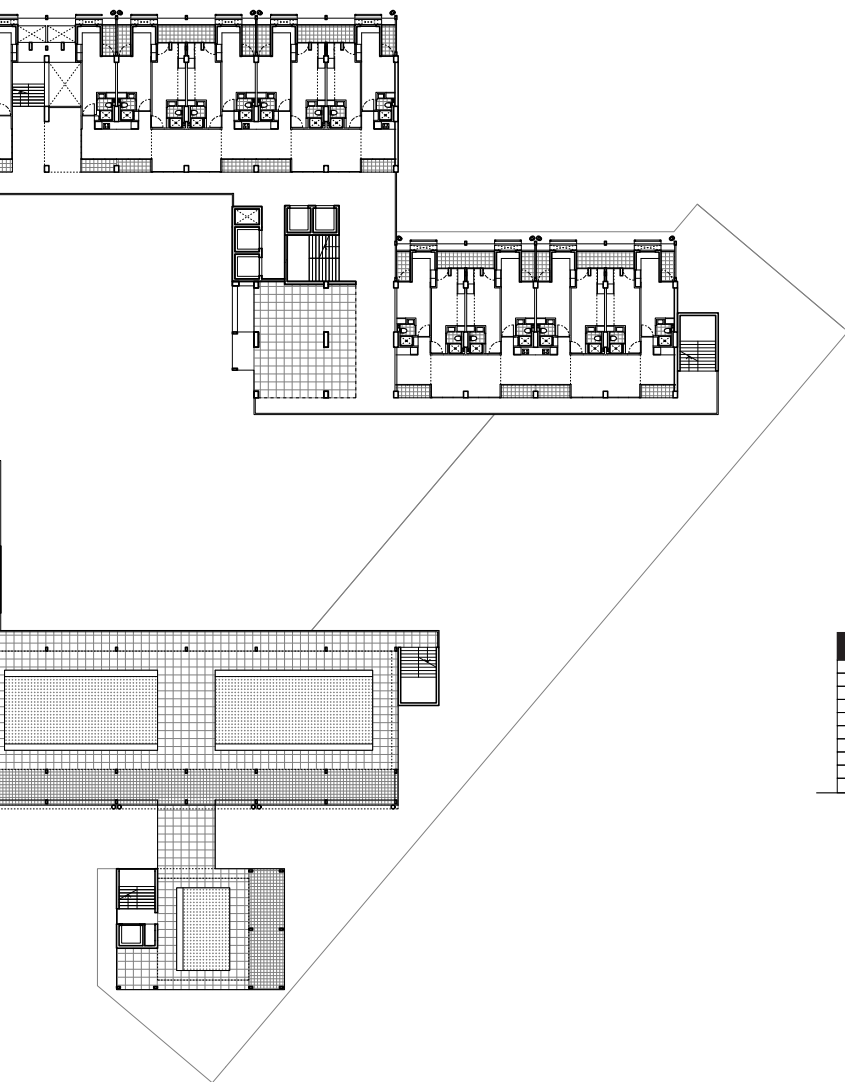
Intermediary Floor Plan
1:500



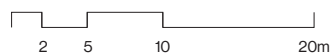


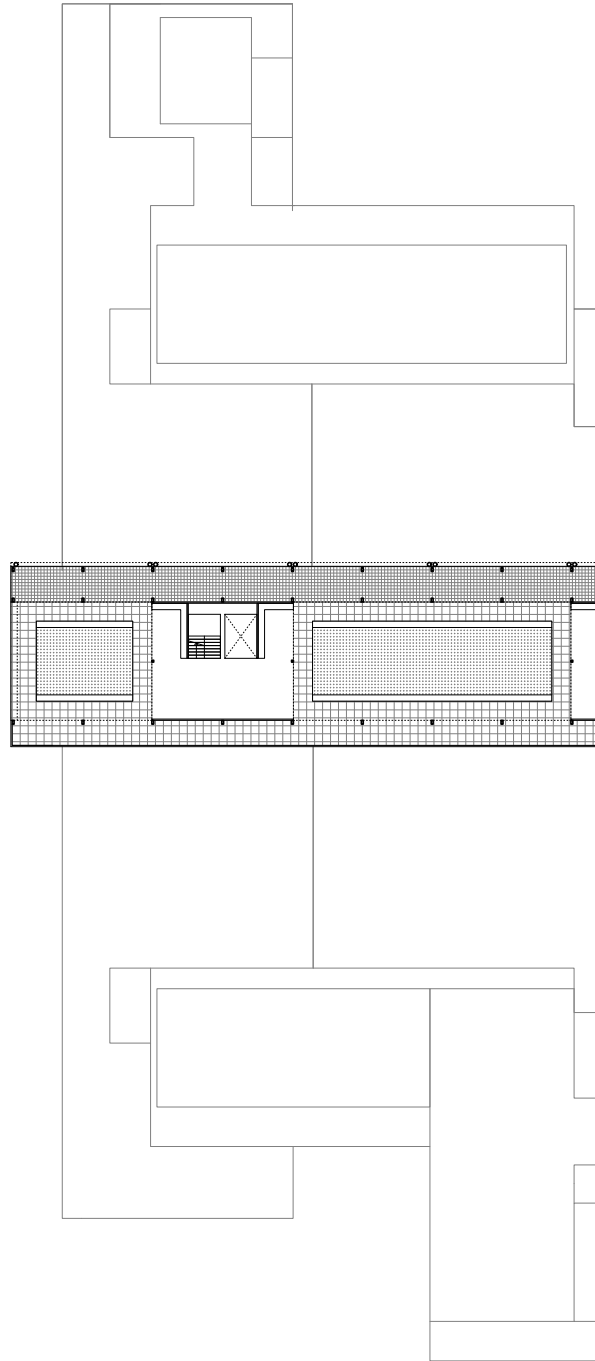
THE ELEVATED PARK IN THE CITY

The roof of the existing slab blocks are envisioned as an elevated public realm in the middle of the city. Interspered among circulation cores, pavillions, and planting, are volumes containing mechanical and electrical facilities, enveloped within the common language of the crown pergola.



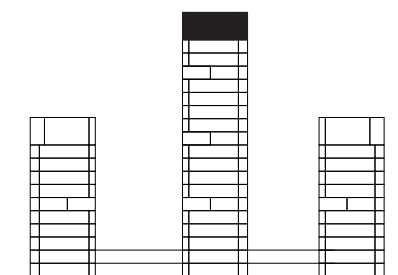
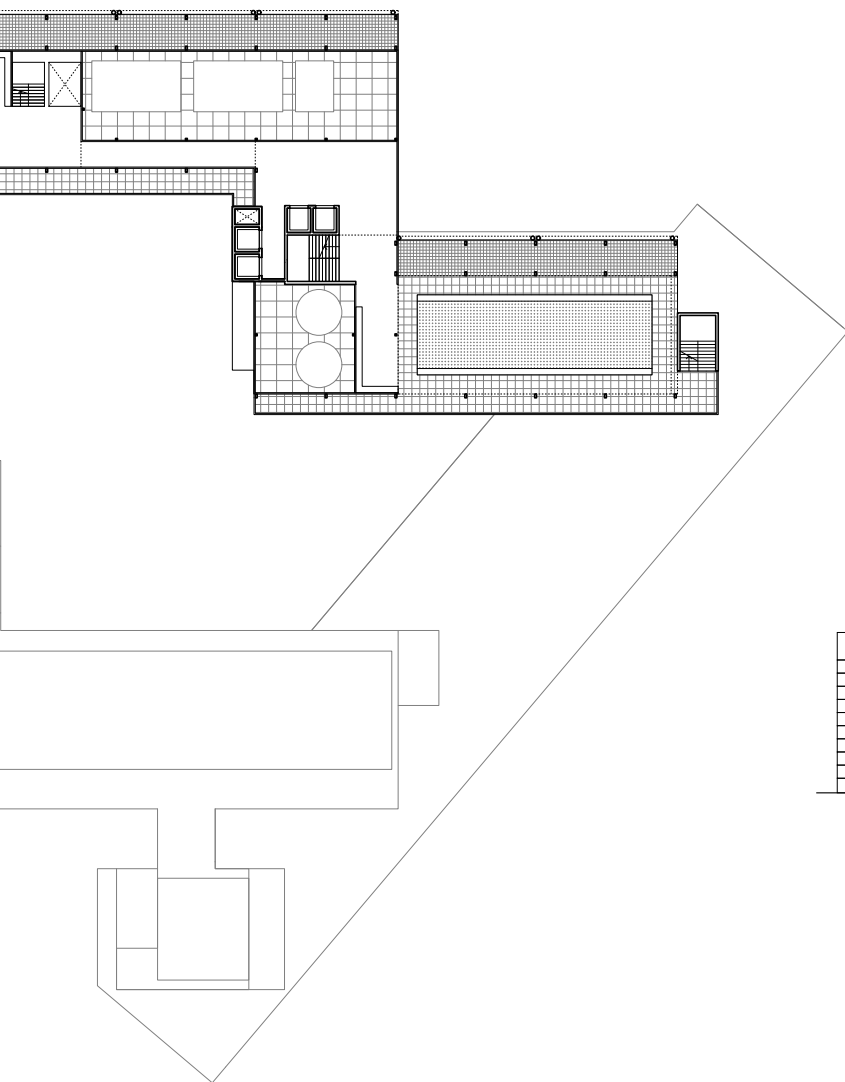
Lower Roof Plan
1:500



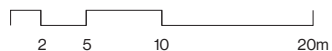


THE ELEVATED PARK IN THE CITY

The roof of the highest block commands sweeping views of the city centre, while recalling the historic activation of the roof of Selegie House as a viewing gallery, recreation centre, and event space. Featuring low-intensity landscaping and shaded pavillions surrounding circulation cores, the roofs provide views of the city that can be inhabited in different weather conditions.



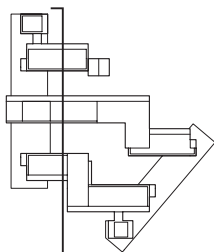
Roof Plan
1:500





SLABS, PLINTH, DECKS, AND COURTYARD

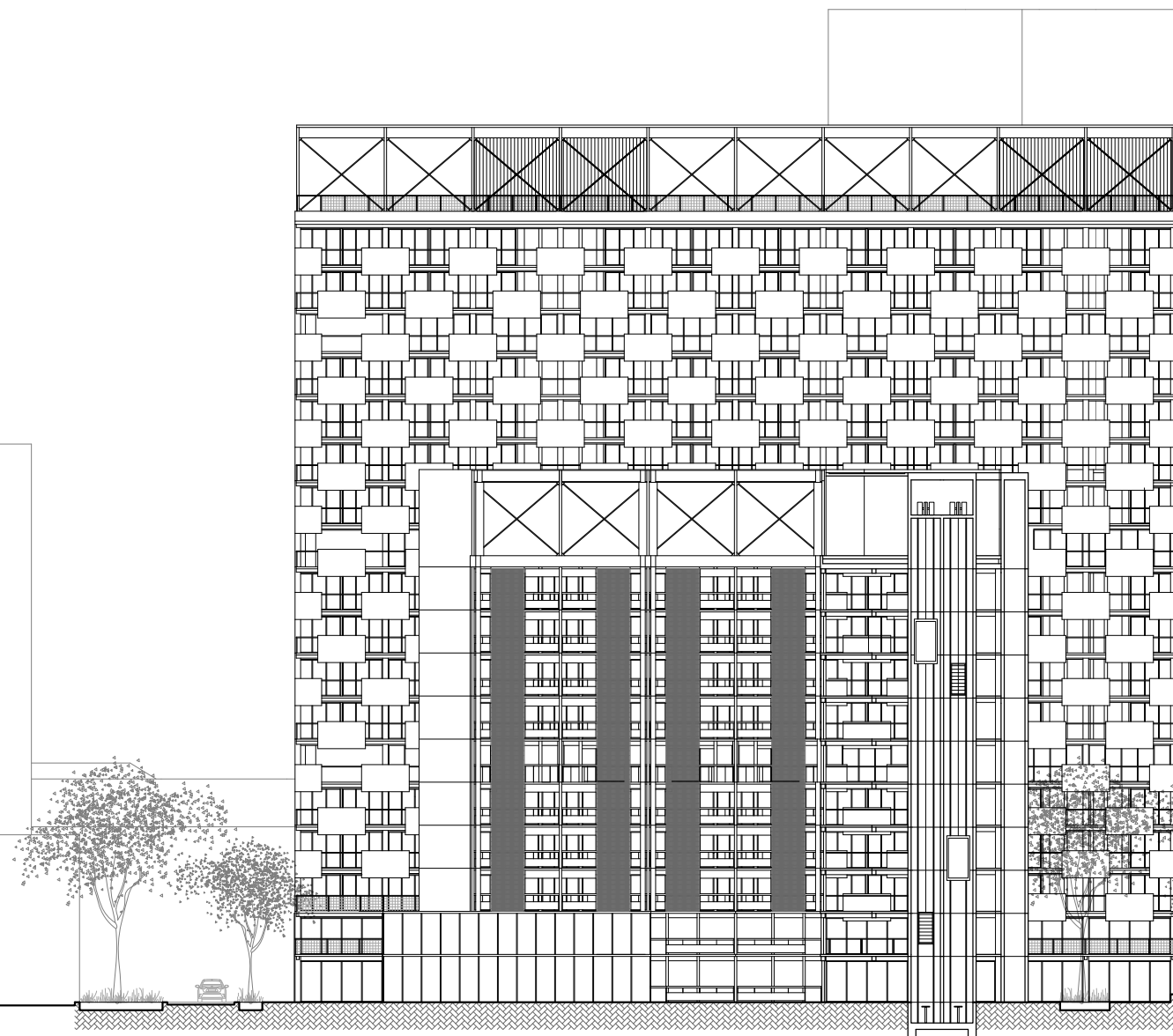
The short section of the site illustrates the main spatial gestures of the project: courtyards, enclosed by the slab blocks and lateral plinth, intermediary floors within the slabs, the tower extensions, and the roof terraces framed by pergolas.





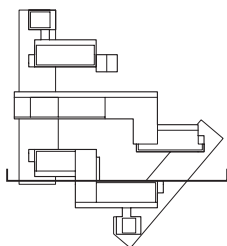
Section AA
1:350

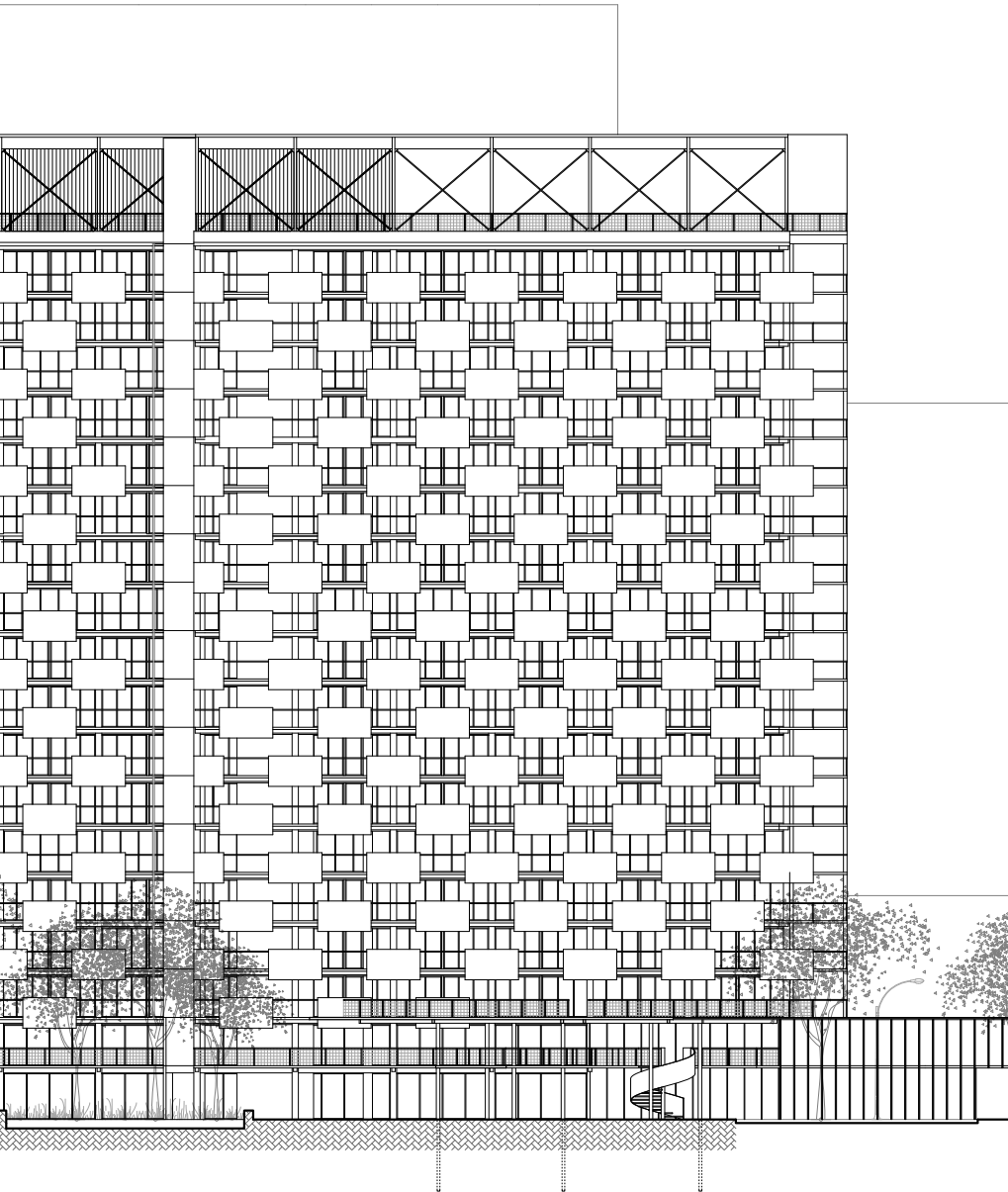




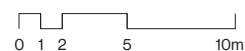
A BUILDING WITH TWO FACES

The revitalised project introduces a quality of a building with two faces: the historic and iconic checkerboard facade is retained and reinstated. The rear elevation of the blocks, whose historic legibility has already been altered by previous extensions, is further transformed through the addition of balconies, screens, and service ducts. Both the 'old' and 'new' face are brought together by the crown as a unifying element.





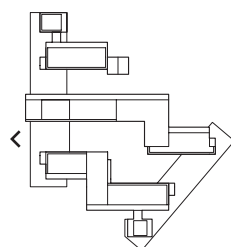
Section BB
1:350





THE PLINTH THRESHOLD

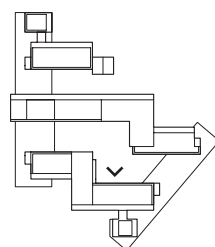
The plinth provides an urban-scaled colonnade where the building meets the city. Mediating between the traffic of Selegie Road and the respite of the planted courtyard, the plinth serves as an 'inhabited wall' of communal spaces that simultaneously intensifies and separate realms of public activity.





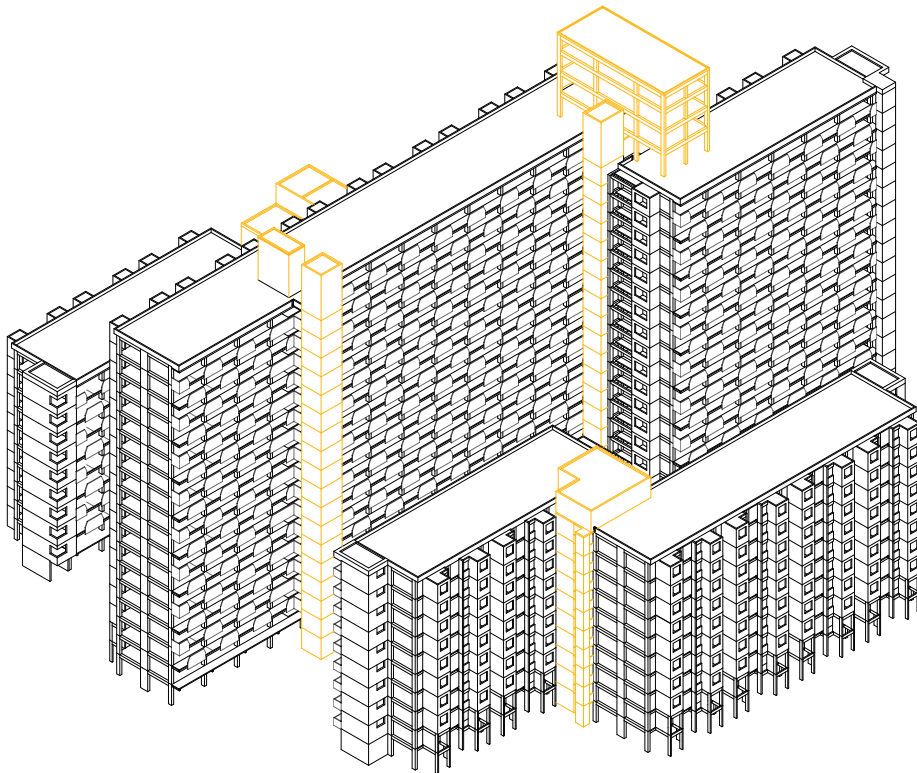
THE COURTYARD

In contrast to the busy street, the courtyard is envisioned as a calm urban enclave and thoroughfare, fringed by live-work units and containing landscaped plazas. With shading provided by the plinth and adjacent slab blocks, appended by public spaces within the piloti surrounding lift cores, the courtyards are envisioned as all-weather public spaces.



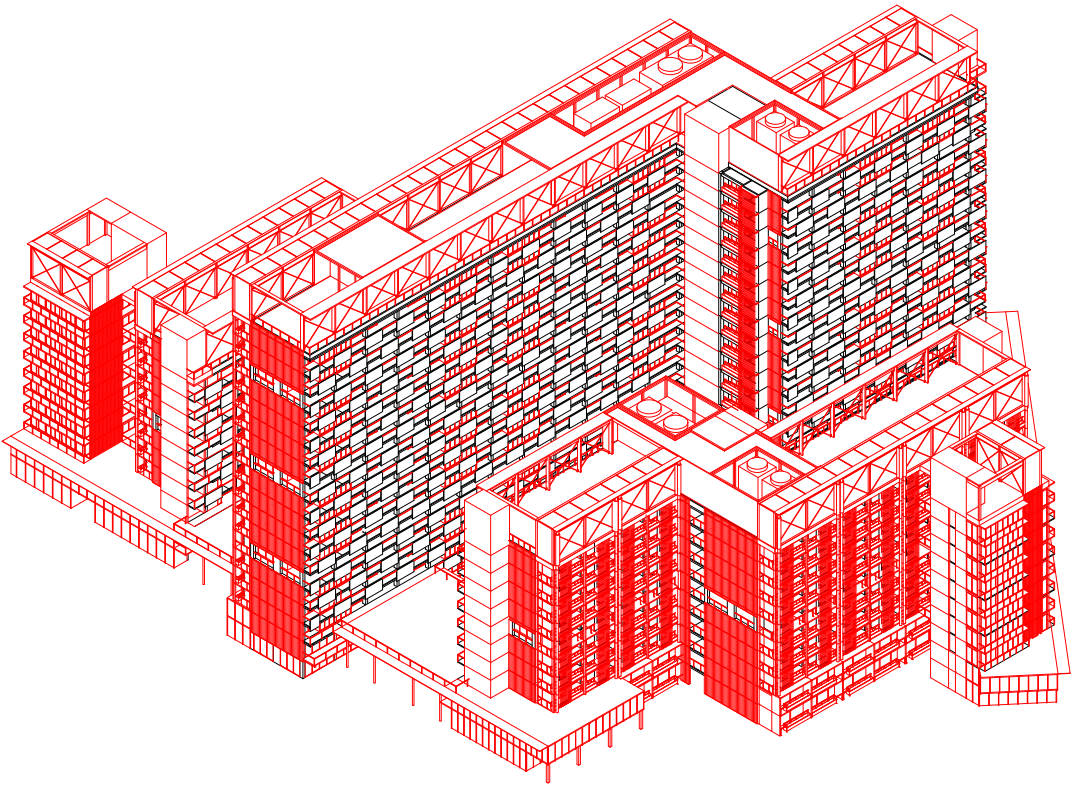
Structural Logic

Frame, Infill and Extensions



THE BARE EXISTING FRAME

The structural logic of the project begins with the existing: the reinforced concrete frame of Selegie House as it was constructed in the 1960s, alongside the precast concrete extensions added in the 1990s-2000s. Selective unsympathetic additions, such as appended vertical cores, are removed for improved integration.



THE NEW VEIL

Within and around this existing frame, a new veil is added, comprising a hybrid lightweight steel-framed structure (balcony extensions, crown) and reinforced concrete structure (plinth and new towers). Removed service cores are relocated within the existing structure, through the selective cutting of voids.

- Added
- Demolished

Structural Logic

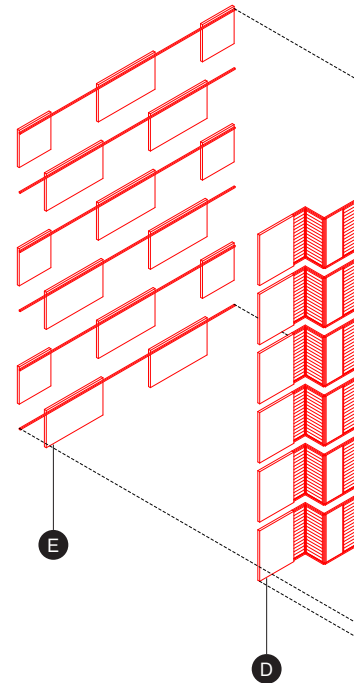
Frame, Infill and Extensions

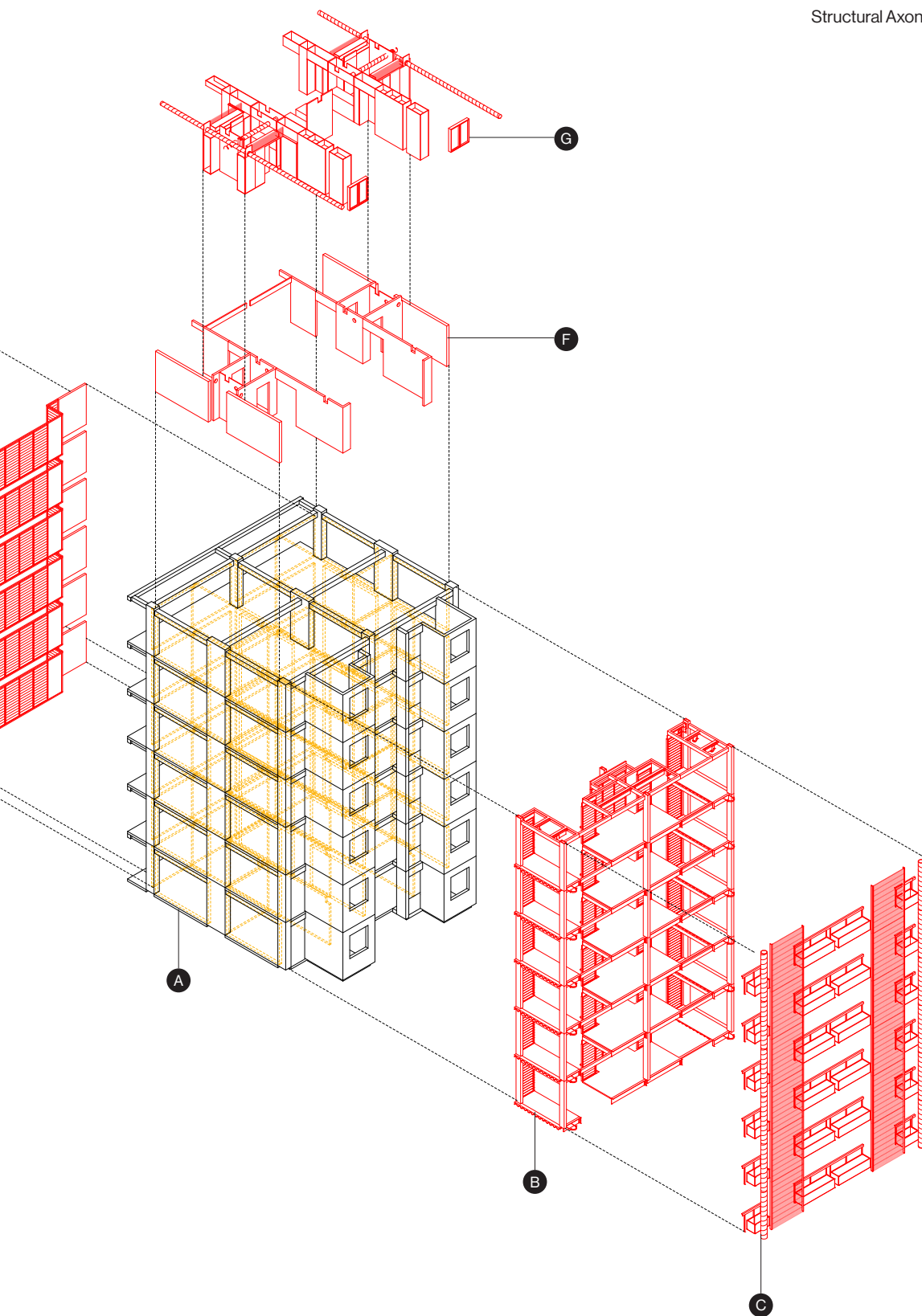
STRUCTURAL LAYERS

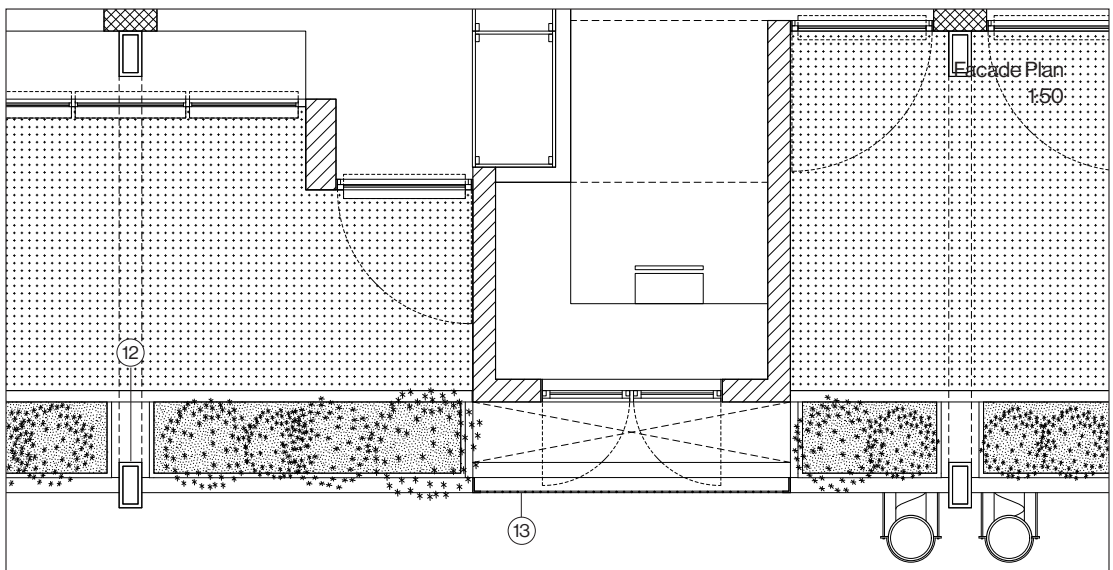
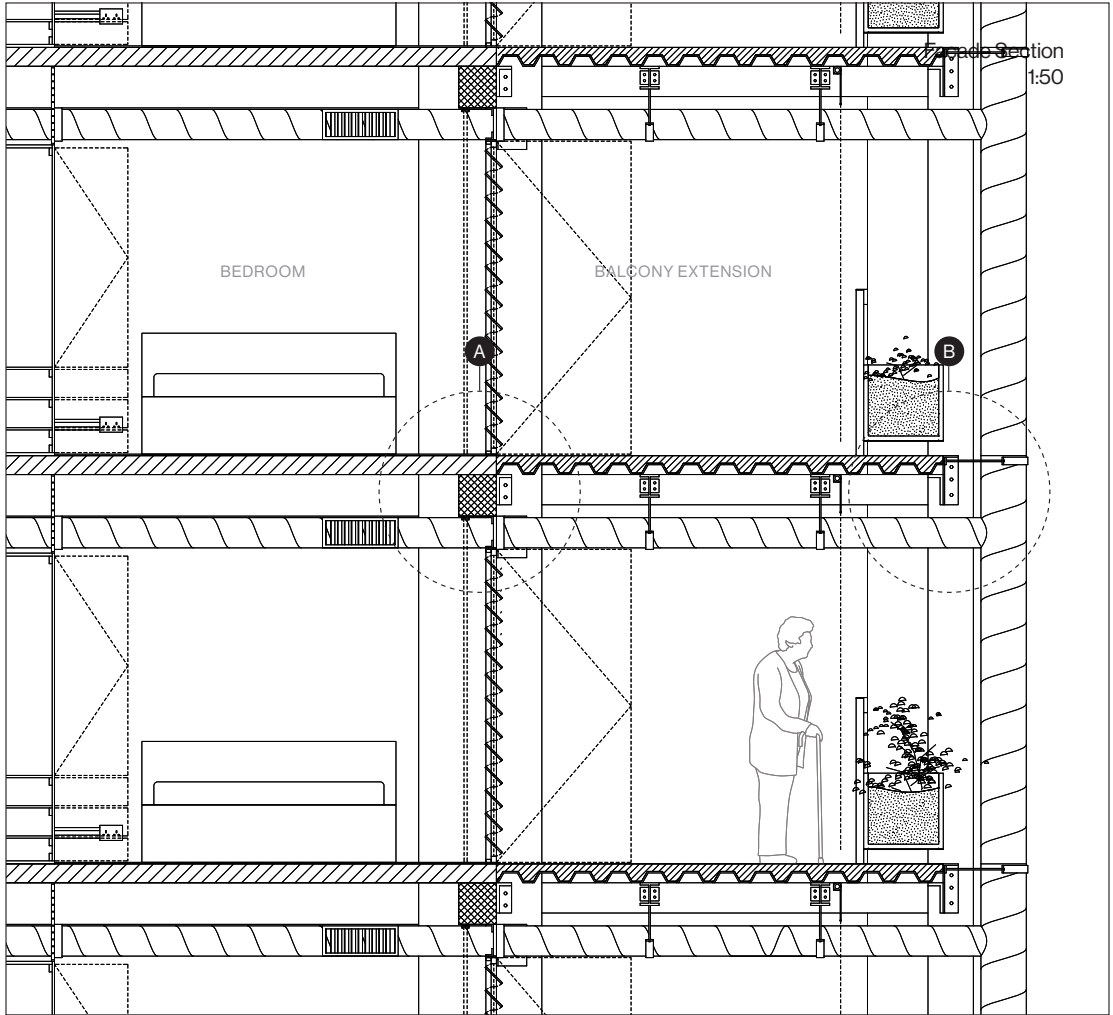
The new structural and infill layers are inserted within and onto the existing reinforced concrete frame as a core. To the rear of the block, a lightweight hybrid structure of steel framing with thin steel and concrete decking are added to form the balcony existensions. Upon this new frame are placed the cladding elements and service ducting. On the retained existing facade, precast concrete checkerboard parapet walls are reinstated. Interiors comprise lightweight cement block or steel stud-framed cement board partition walls.

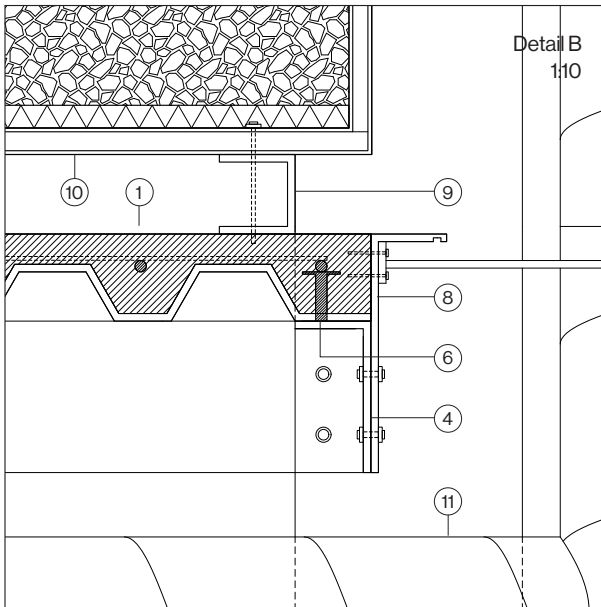
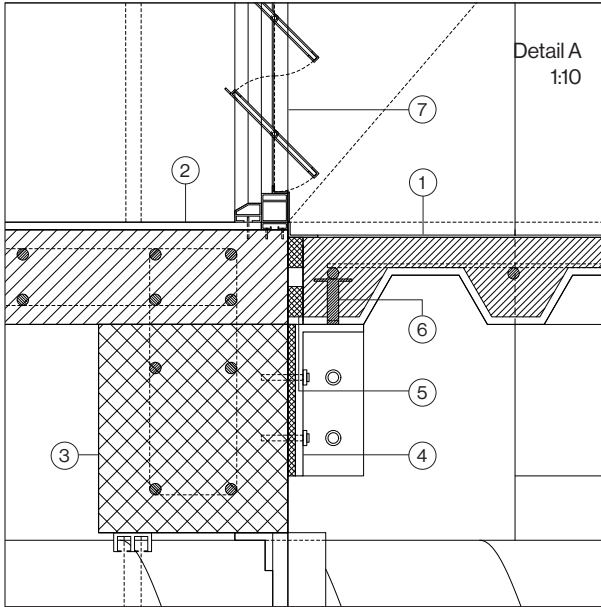
- A Existing Reinforced Concrete Skeleton Structure**
Reinforced concrete beam 250x275mm
Reinforced concrete column 515x350mm
Reinforced concrete slab 150mm
Precast concrete volumetric 150mm
- B New Balcony Structure**
Galvanised steel column 150x300mm
Galvanised steel beam 200x100mm
Reinforced concrete and steel decking 150mm
Aluminium framed glass louver windows
Aluminium framed glass louver doors
- C New Balcony Cladding**
Galvanised steel mesh 2100mm
Galvanised steel ducting 400mm
Painted steel planter boxes
- D Access Balcony Elevation**
Cement block partition wall 150mm
Aluminium framed glass louver windows
Aluminium framed glass louver doors
- E Existing Balustrade**
Precast concrete balustrade 1700x3000mm
- F Internal Walls**
Steel framed cement board partition wall 100mm
- G Internal Fit-Out**
Built-in plywood cabinetry 15mm
Galvanised steel ducting 200mm

Demolished Added





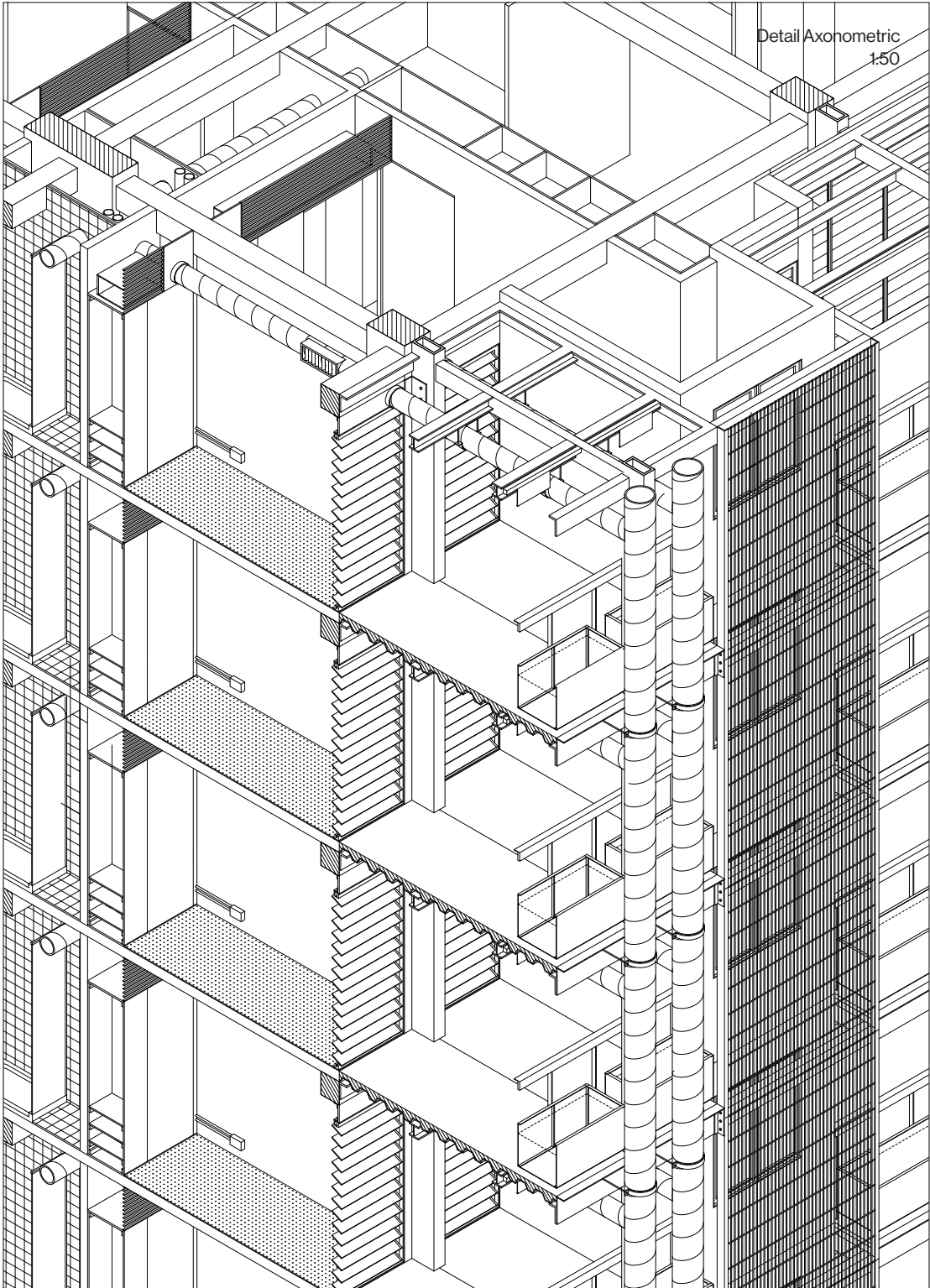


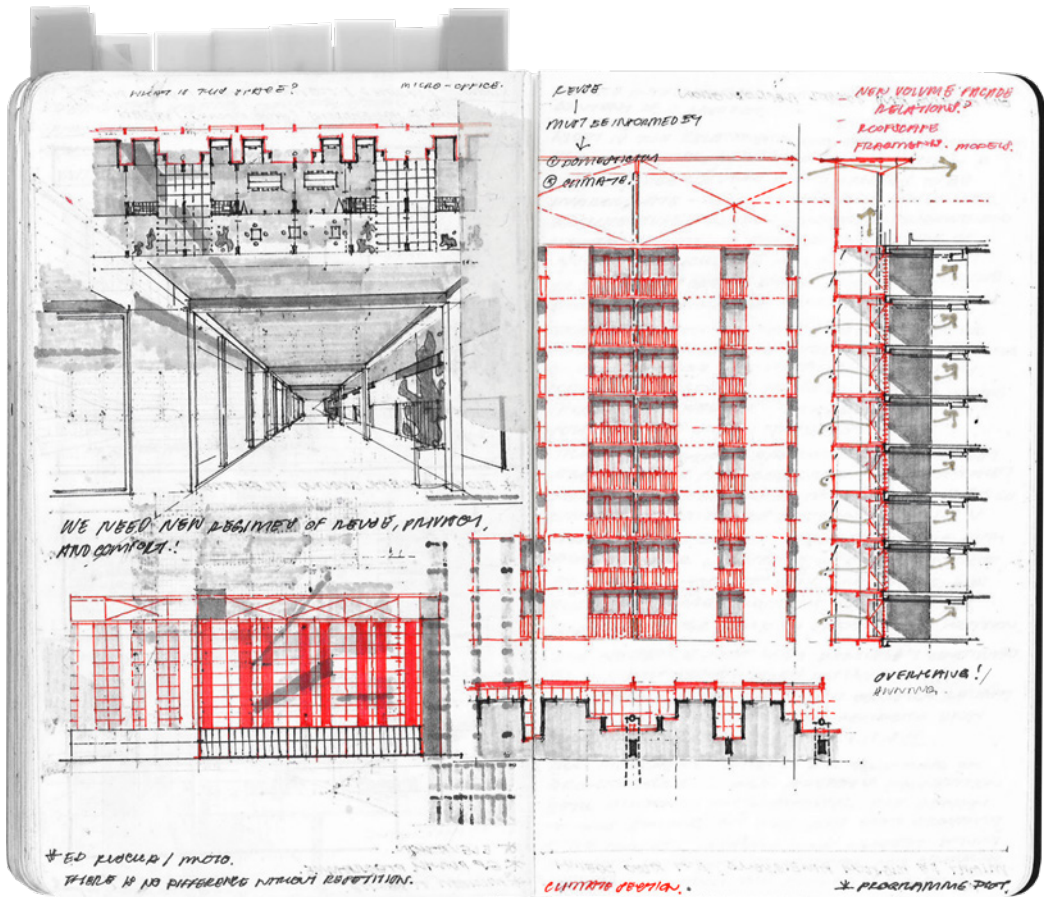


BALCONY EXTENSION DETAILS

The new balconies are constructed with lightweight and thin steel decking with a poured concrete slab. This hybrid floor assembly is attached to an independent steel framed loadbearing structure, and secured to the existing structure only for lateral stability. Joints between the existing and new structures feature silicone seals for waterproofing, accommodation of tolerances, and acoustic isolation.

- ① **Balcony Deck Structure**
Reinforced concrete slab 120mm
Galvanised steel decking
Primary beam steel hollow section 200x100mm
Secondary joists steel H-profile 150x100mm
- ② **Interior Floor Slab**
Cement screed floor finishing 10mm
Existing reinforced concrete slab 150mm
- ③ **Primary Existing Structure**
Reinforced concrete beam 250x275mm
Reinforced concrete column 515x350mm
- ④ **Structural Connection**
Steel L-profile plate 200x100mm
Mechanical anchor bolts 150mm
- ④ **Structural Connection**
Steel L-profile plate 200x100mm
Mechanical anchor bolts 150mm
Silicone seal 10mm
- ⑤ **Expansion + Acoustic Joint**
Silicone seal 20mm
- ⑥ **Shear Stud**
Welded galvanised steel flange 75mm
- ⑦ **Glass Louvred Door**
Aluminium jamb profile 25x35mm
Aluminium door frame profile 40x40mm
Operable 'Naco' glass louvres 850x150mm
- ⑧ **Fascia Profile**
Aluminium L-profile 325x100mm
- ⑨ **Planter Bracket**
Galvanised steel U-profile 100x95mm
- ⑩ **Planter Box**
Galvanised steel sheeting 50mm
Drainage membrane 50mm
- ⑪ **Ventilation Ducting**
Galvanised steel ducting 400mm
- ⑫ **Extension Primary Structure**
Galvanised steel column 300x150mm
- ⑬ **Shading Screen**
Galvanised steel mesh 50x200mm
Galvanised steel L-profile 50x100mm



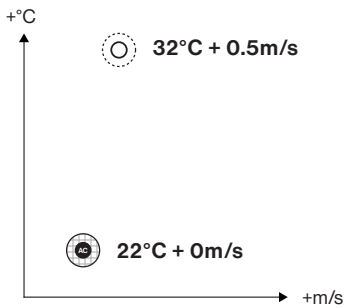
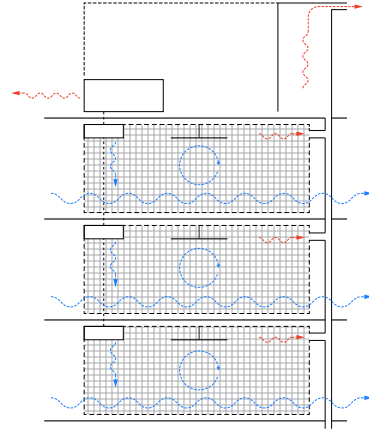
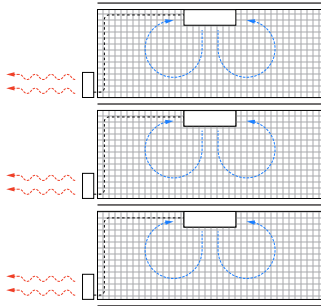


THE FACADE ASSEMBLY

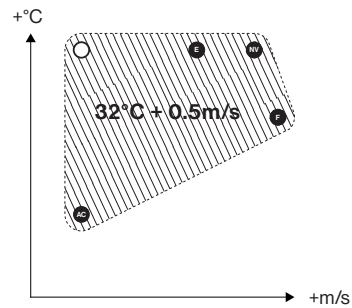
The new and existing come together in an expressive facade assembly. The balcony extensions form a new lightweight 'face' for the existing building, concealing previous additions. The complexity of the structure is moderated by simple edge detailing and the regulating clarity introduced by the mesh screen and ducting.

Climatic Strategies

Multi-Modal Hybrid Cooling



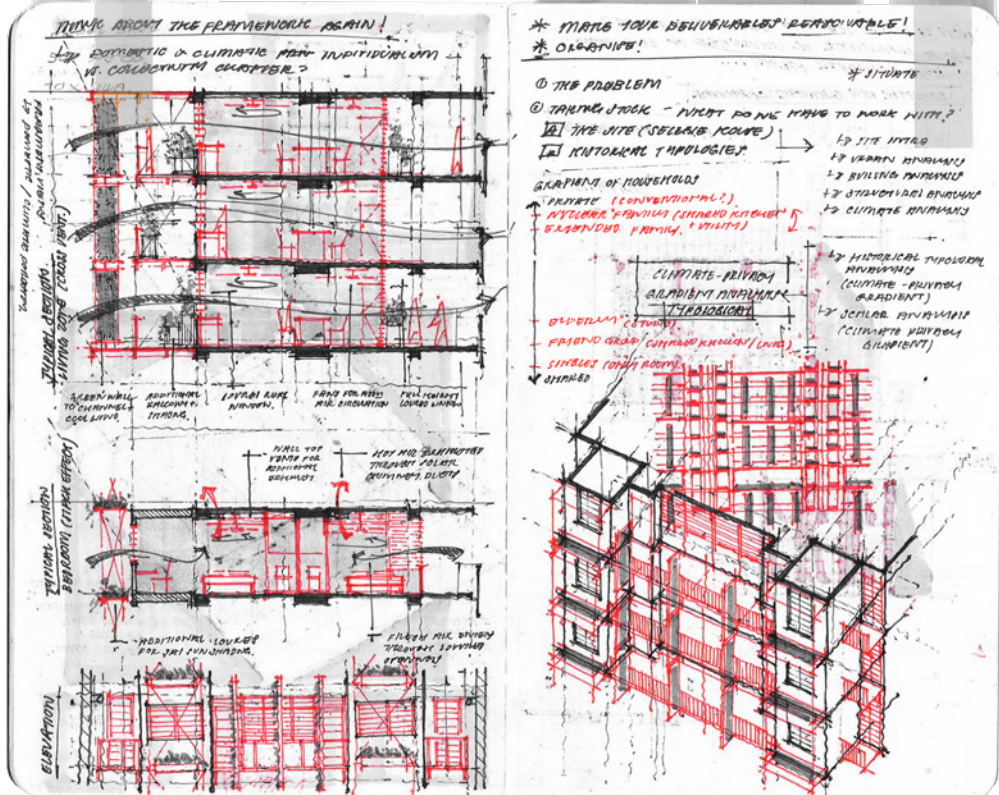
CONVENTIONAL AIR CONDITIONING



HYBRID COOLING

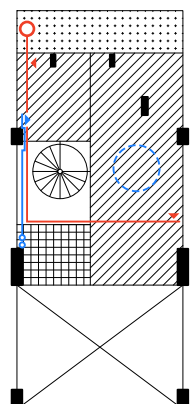
- ISOLATED NATURAL/MECHANICAL
- HIGHER ENERGY USE
- POOR AIR QUALITY
- + LOW ABSOLUTE TEMPERATURE

- + INTEGRATED NATURAL/MECHANICAL
- + LOWER ENERGY USE
- + HIGH AIR-FLOW
- + IMPROVED AIR QUALITY

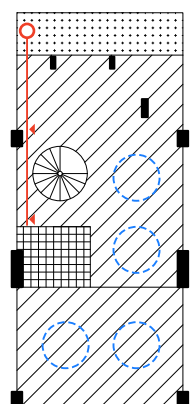


HYBRID COOLING

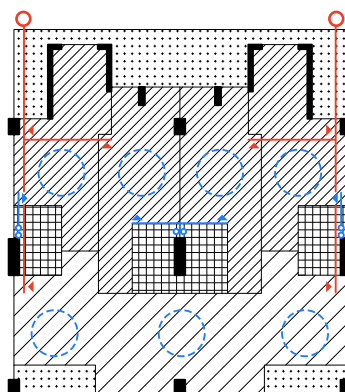
Challenging the conventional, energy-intensive logic of individualised air conditioning, the project adopts a novel hybrid cooling approach. By introducing lightly tempered, centralised air conditioning alongside natural ventilation-oriented design, fans, and solar-powered exhaust, a more holistic quality of thermal comfort (comprising temperature, air speed, and air quality) is achieved.



TYPE-A
LIVE-WORK ATELIER



TYPE-B
ENFILADE STUDIO

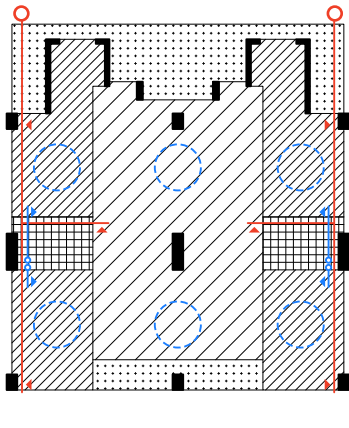


CLIMATE ZONING AND INSTALLATIONS

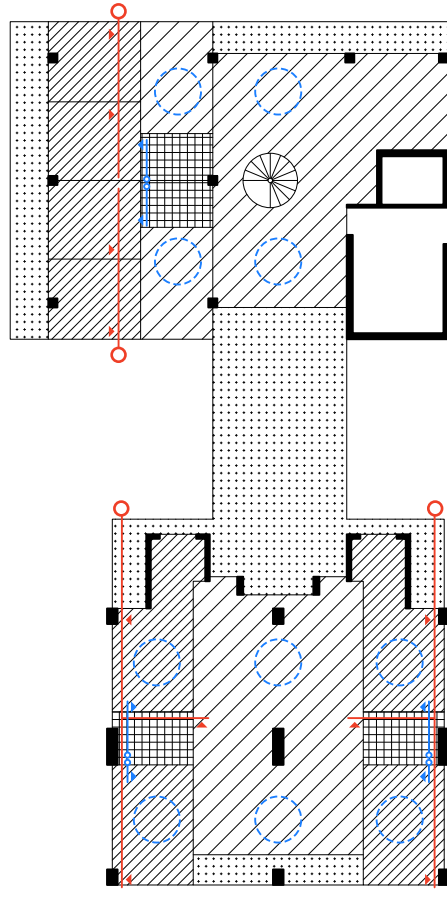
The unit-level climate strategy is shaped by the interplay of four elements: unit layouts designed to facilitate natural cross-ventilation; centralised air-conditioning outlets; solar exhaust outlets; and fans to drive air circulation/

- Natural Ventilation
- Hybrid Ventilation
- Wet Core
- Covered Outdoor

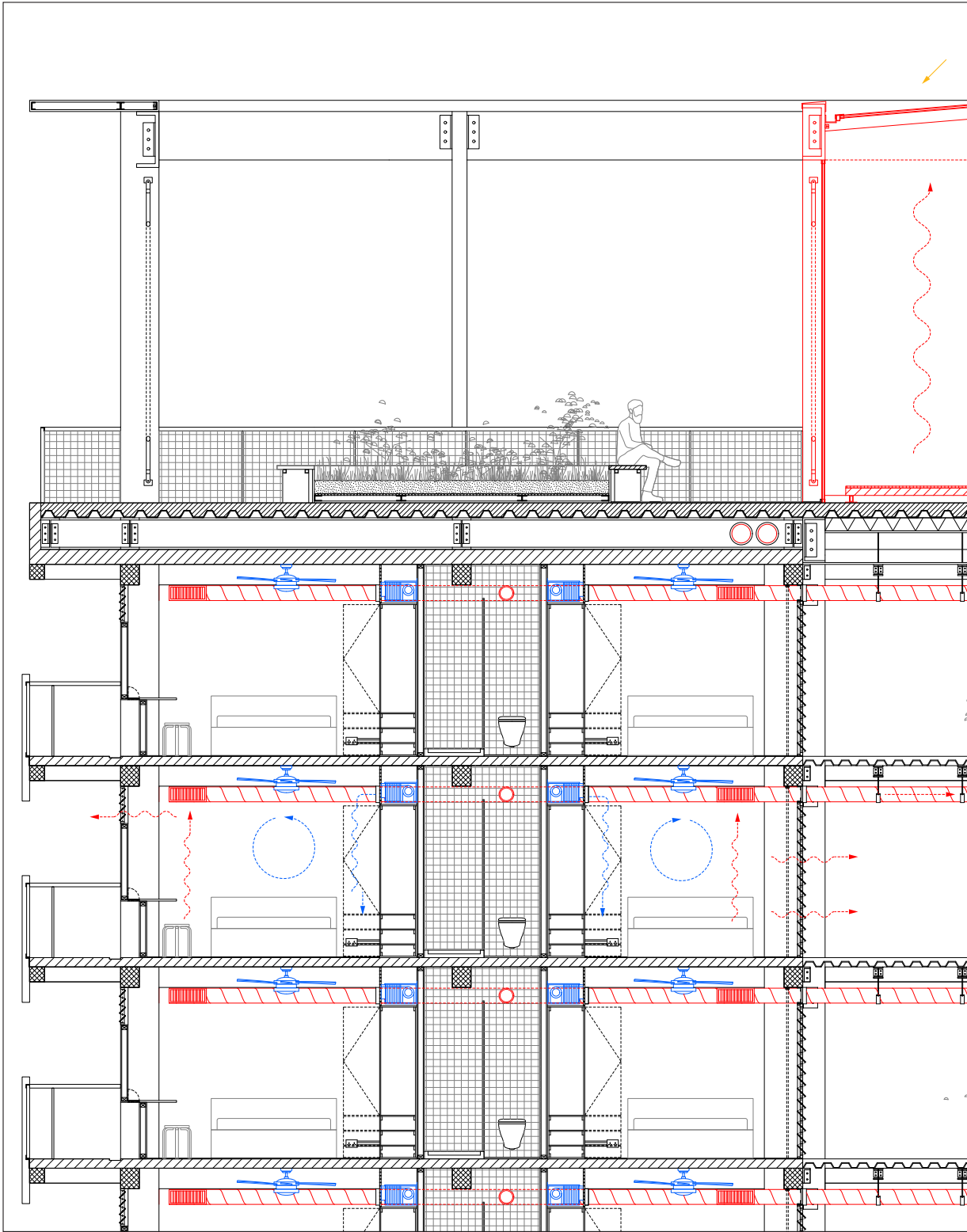
- Centralised Air-Conditioning
- Hybrid Solar Exhaust System
- Ceiling Fan

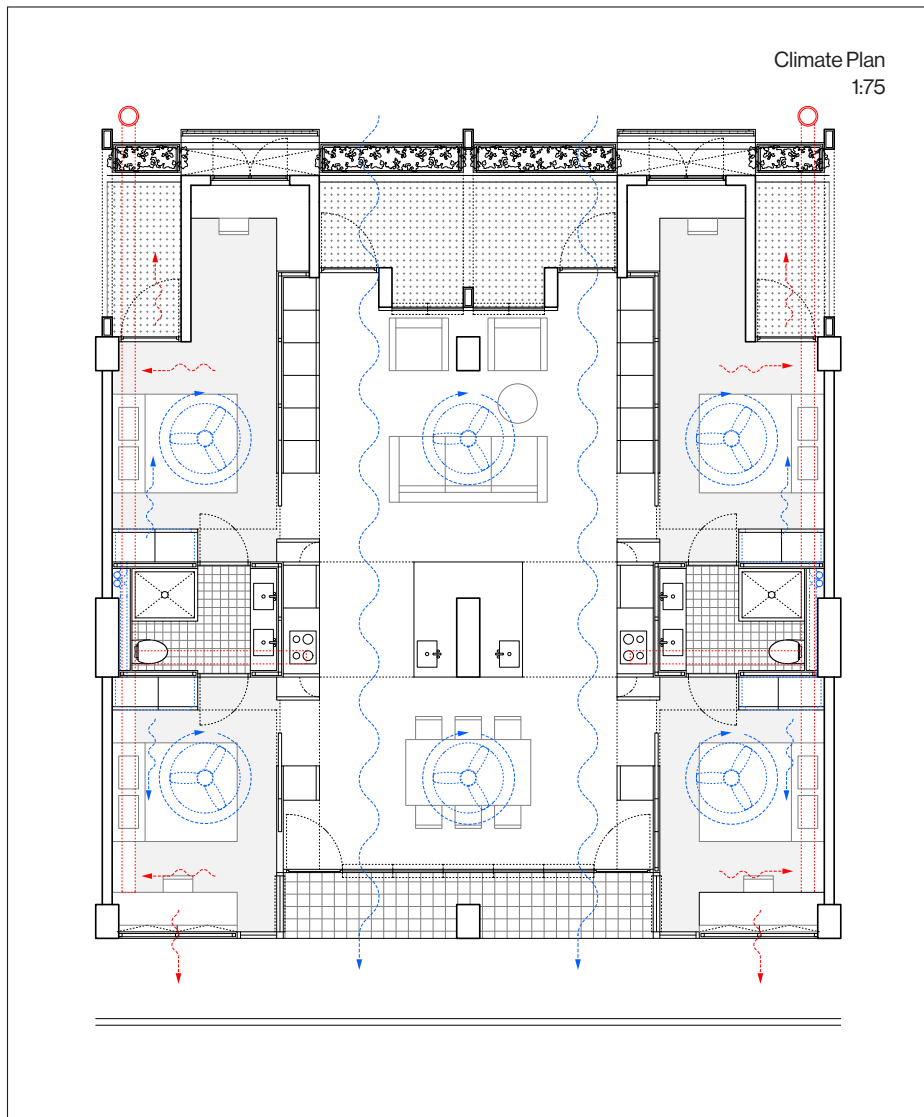
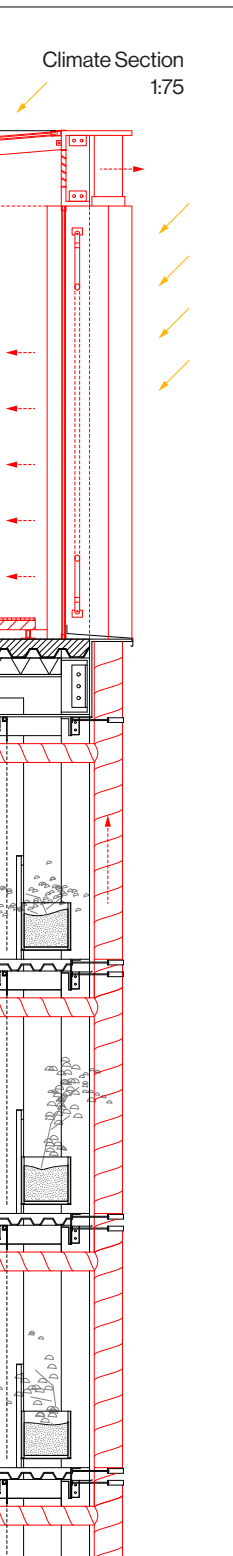


TYPE-C
GROUP HOUSE



TYPE-D
CLUSTER HOUSE



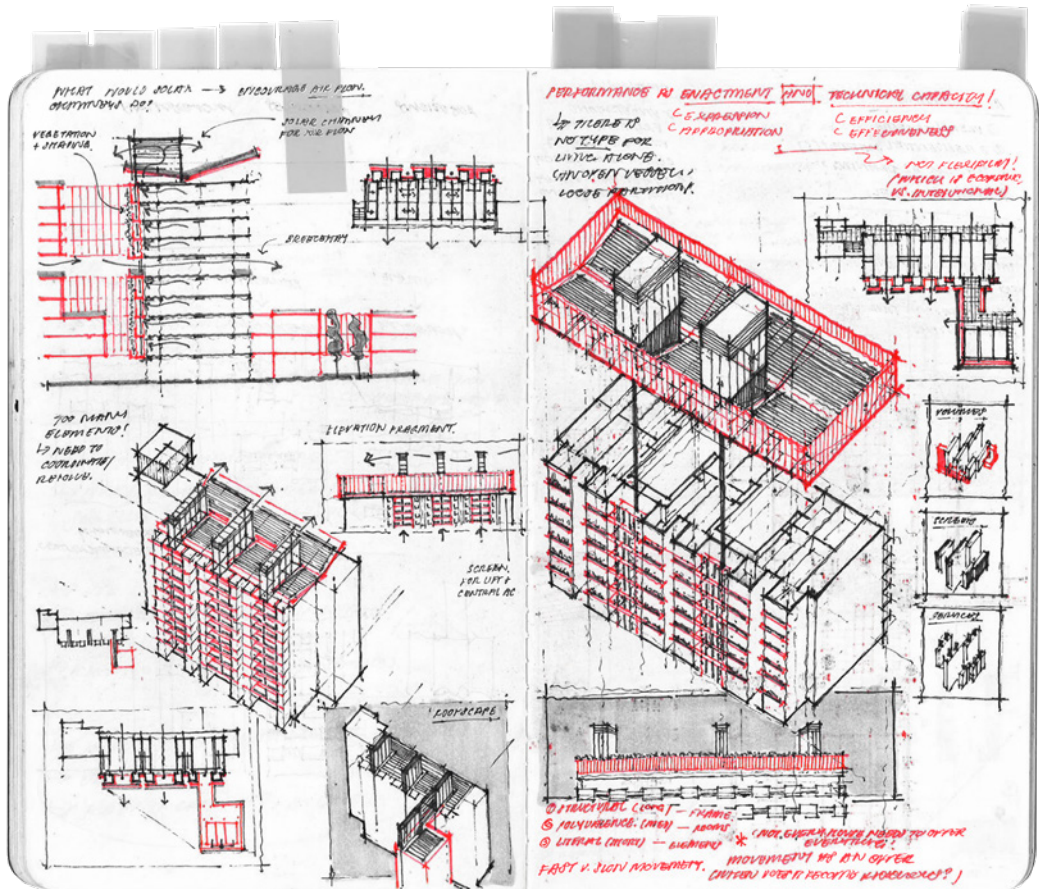


- | | |
|-----------------------------|-----------------|
| 1 Chilled Water In / Out | Blue Cooling |
| 2 Lightly-Tempered Air | Red Exhaust |
| 3 Passive Cross Ventilation | Yellow Sunlight |
| 4 Ceiling-Mounted Fan | |
| 5 Exhaust Ducting | |
| 6 Porous Facade | |
| 7 Solar Chimney Collector | |
| 8 Centrifugal Fan Exhaust | |

BUILDING- AND UNIT-LEVEL CLIMATE

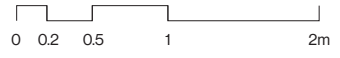
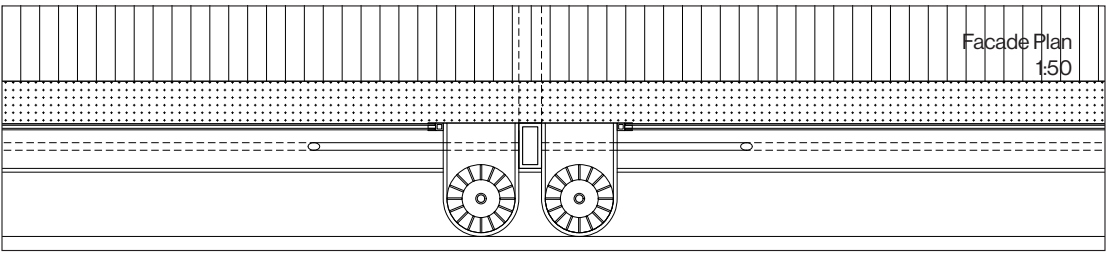
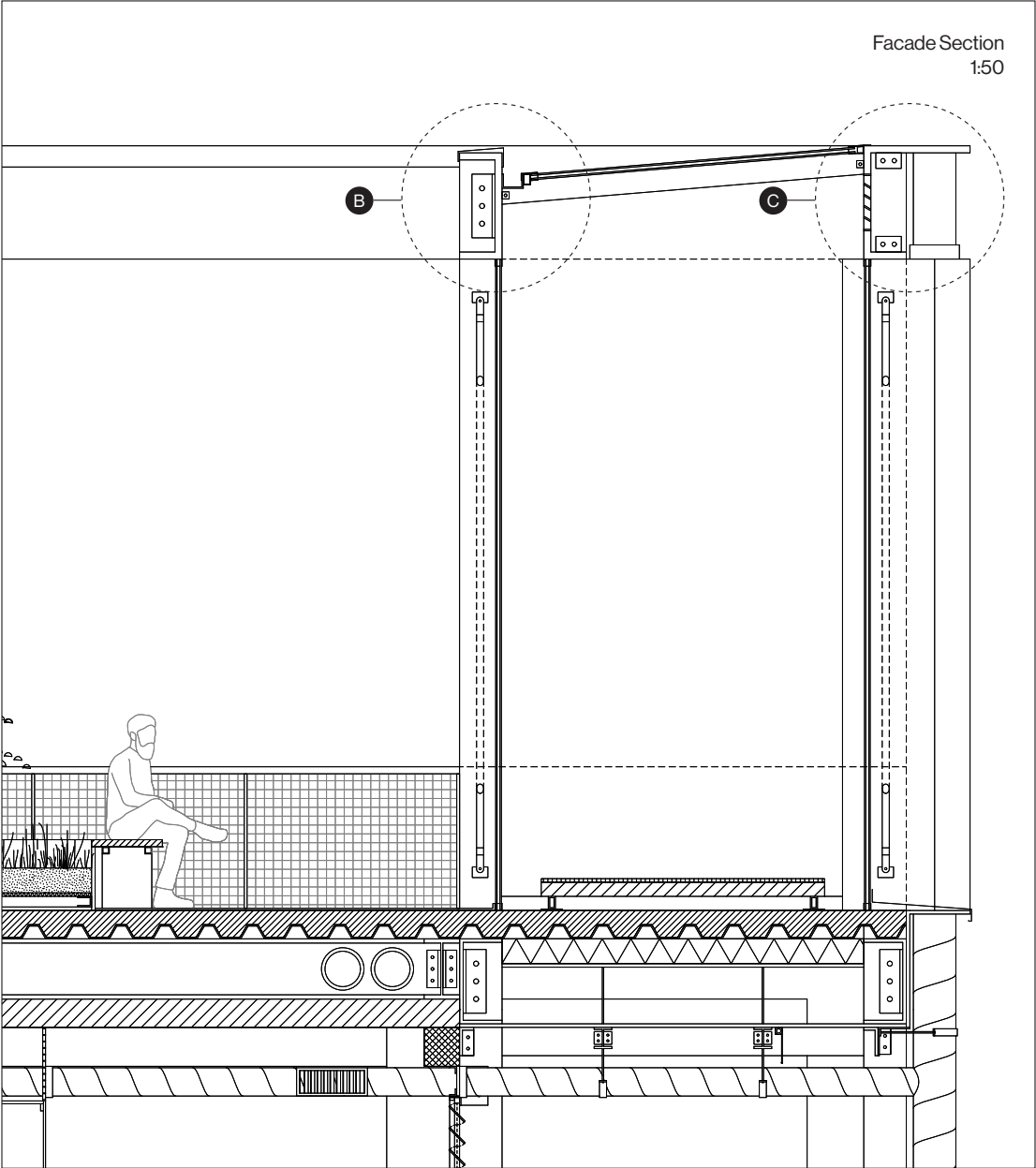
At the scale of the unit, installations are positioned to feed cooled air within the inner core of the bedroom, which is subsequently circulated by fans and cross-ventilation, and exhausted through ducting and operable fenestration. At the building-scale, the roof-level solar chimney located within the crown pergola acts as a large solar driven 'engine': heating up through the greenhouse effect and creating a strong upward stack effect force.

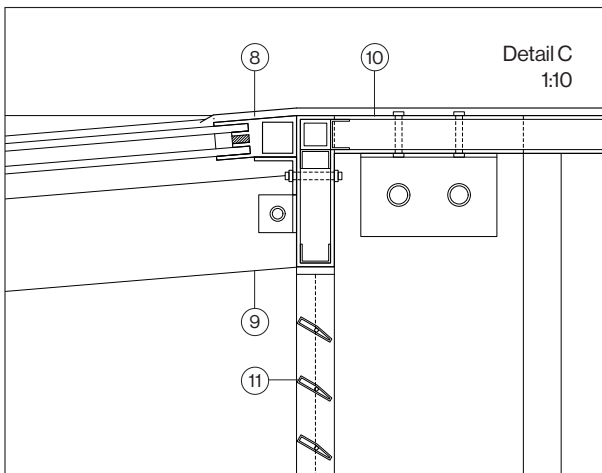
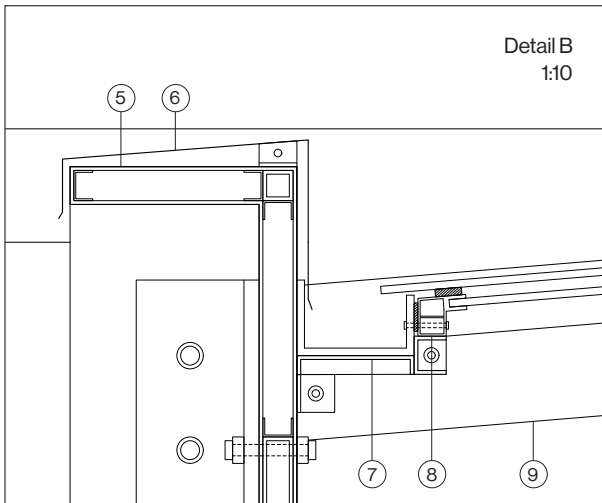
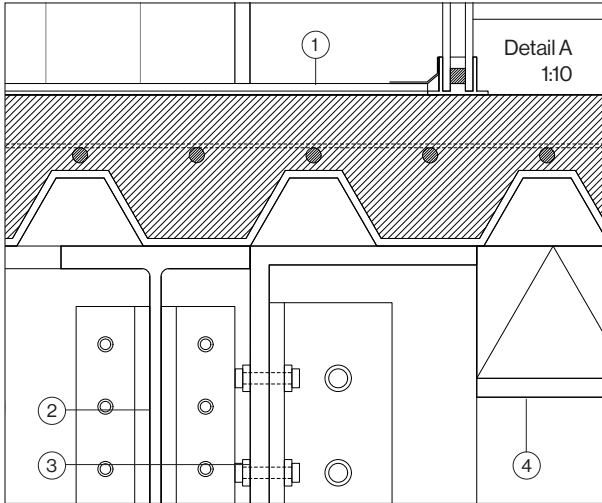




THE CLIMATE ASSEMBLY

The building's key climatic infrastructure is contained and expressed within the rear balcony extensions, which showcase ducting, screens, and deep shaded eaves, and culminate in the crown which contains the glass chamber of the solar chimney. In this way, the climatic logic of the building also becomes a dominant form of architectural expression.





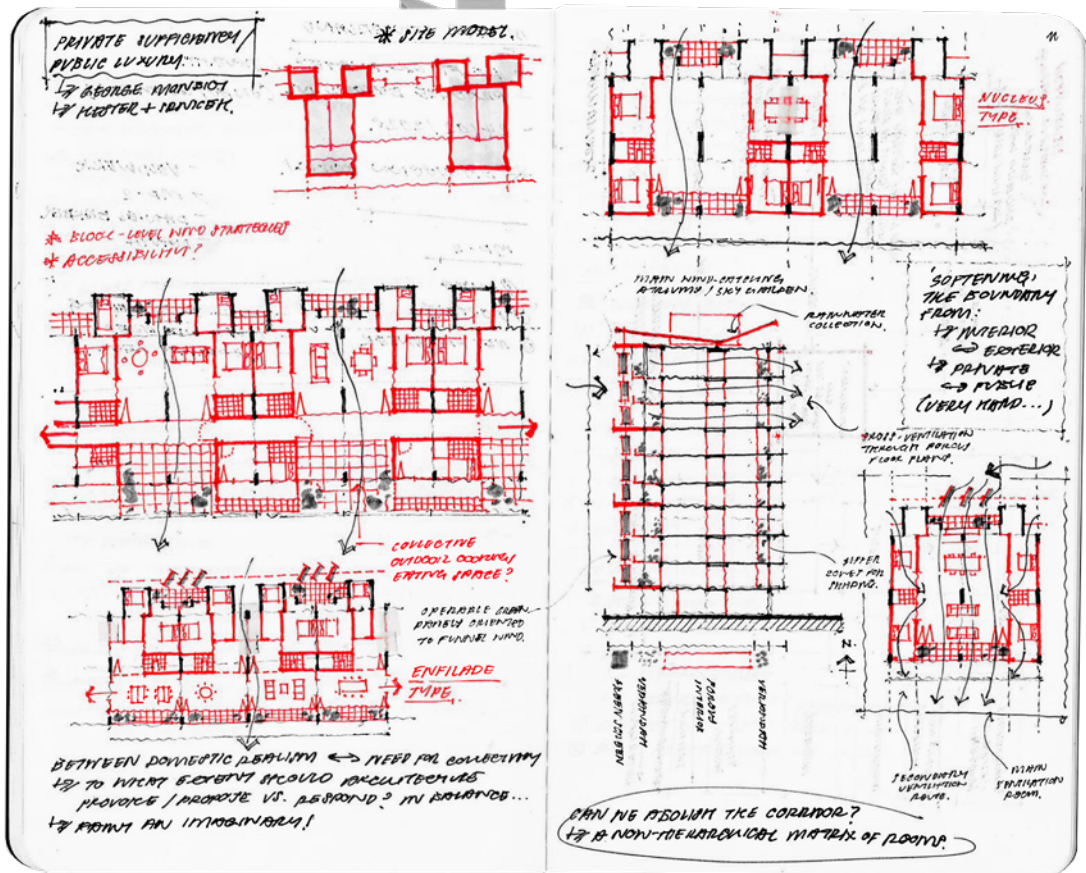
- ① **Roof Deck**
Asphalt tile floor finish 10mm
Waterproofing membrane 5mm
Reinforced concrete slab 200mm
Galvanised steel decking
- ② **Transfer Structure**
Primary steel H-beam 450x250mm
Secondary steel hollow section joists 250x150mm
- ③ **Extension Transfer Structure**
Steel U-section 600x300mm
- ④ **Insulation**
Rigid foam insulation 175mm
Plasterboard 25mm
- ⑤ **Crown Horizontal Profile**
Aluminium cladding profile 5mm
Aluminium mounting rail 50x25mm
Aluminium section 50x50mm
- ⑥ **Waterproofing**
Aluminium flashing profile 2mm
- ⑦ **Rainwater Gutter**
Aluminium U-profile 150x100mm
Steel mounting rail 25x155mm
- ⑧ **Solar Chamber Top Glazing**
Aluminium window frame profile 100x75mm
Steel mounting bracket 40x50mm
Double glazing 2x10mm
- ⑨ **Solar Chamber Roof Structure**
Steel joist profile 10x150mm
- ⑩ **Crown Horizontal Profile**
Aluminium cladding profile 5mm
Aluminium mounting rail 50x25mm
Aluminium section 50x50mm
- ⑪ **Solar Chimney Vents**
Aluminium ventilation louvers 50x10mm

CROWN CHIMNEY DETAILING

Detailing of the solar chimney mediates between the consistent architectural expression of the crown and the practical functioning of the chimney. A full glass enclosure - resembling a greenhouse - is formed within the steel structure, with an inclined glass top to aide in rainwater runoff. A louvred slot is integrated within the depth of the edge beam to provide exhaust for the chimney.

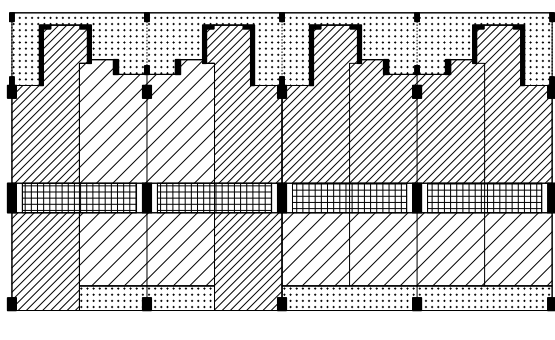
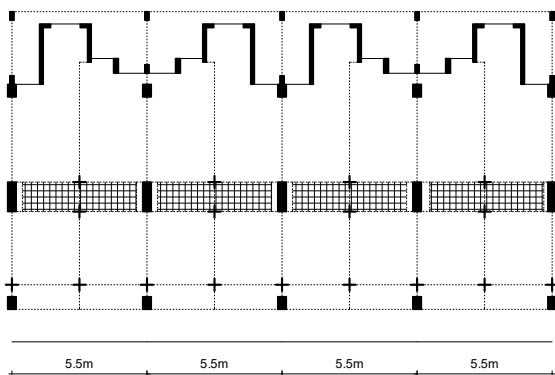
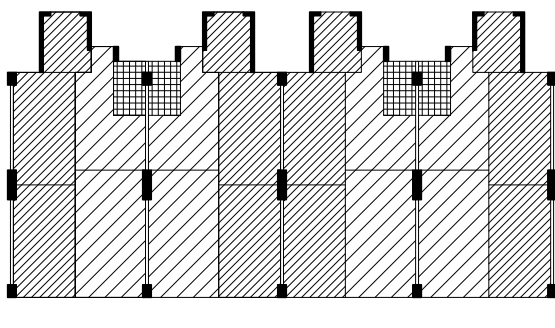
Apartment Typologies

Collective Domesticities



COLLECTIVE TYPOLOGICAL EXPERIMENTATION

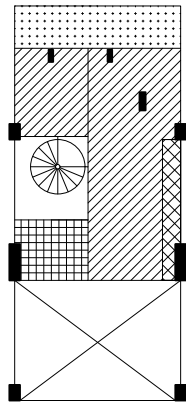
Central to the project is envisioning new apartment typologies for collective living. The process of developing collective living typologies did not depart from preconceived demographic groups, but forms of spatial organisation that were flexible enough to accommodate different households forms, mediated by different relationships between shared and private spaces.



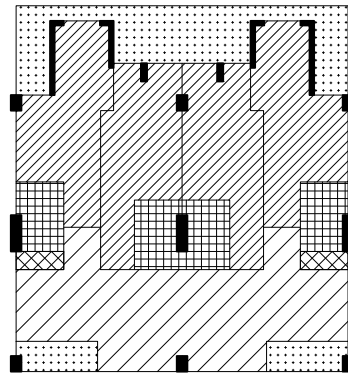
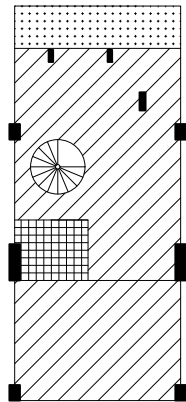
A NEW GENERIC ORDER

Central to the reinvented domestic typologies is the establishment of a new, flexible 'generic order' within the existing frame of the building. Service cores, previously located to the rear of the typical floor, are moved to the centre, effectively splitting the plan into four equally serviced bays. Within this framework, shared and private spaces were configured to form different typologies.

-  Common Living
-  Sleeping
-  Wet Core
-  Covered Outdoor



TYPE-A
LIVE-WORK ATELIER

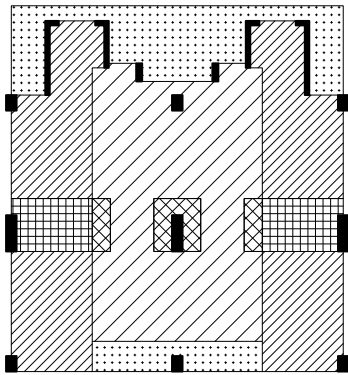


TYPE-B
ENFILADE STUDIO

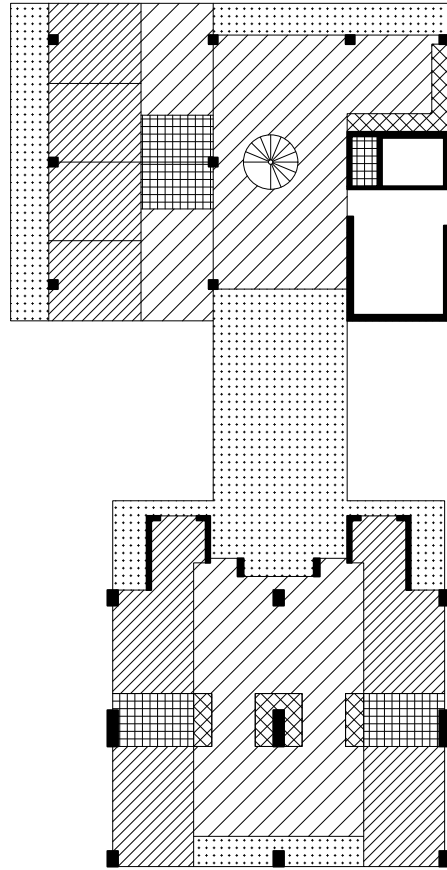
TYPOLOGICAL OVERVIEW

The project features four main typologies, each defined by their offering of a primary quality. Type-A, a live-work loft unit, offers spaces for production; Type-B, the enfilade studio, offers relatively private cells with a large common living space; Type-C, the group house, offers four bedrooms around a central living core; Type-D, the cluster house, is an appendage to the existing building with a double height living space and bridge, creating opportunities for large-scale group living.

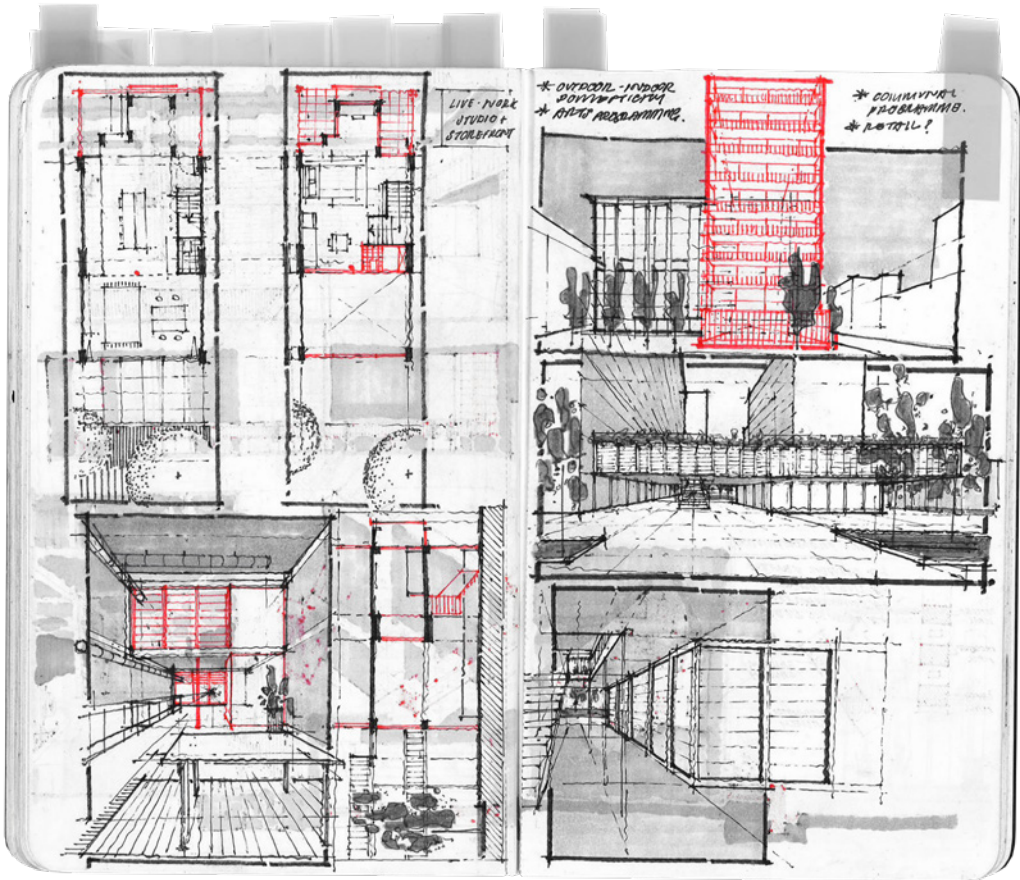
-  Structural Frame
-  Shared Living + Dining
-  Bedroom
-  Bathroom
-  Kitchen
-  Covered Outdoor Space



TYPE-C
GROUP HOUSE

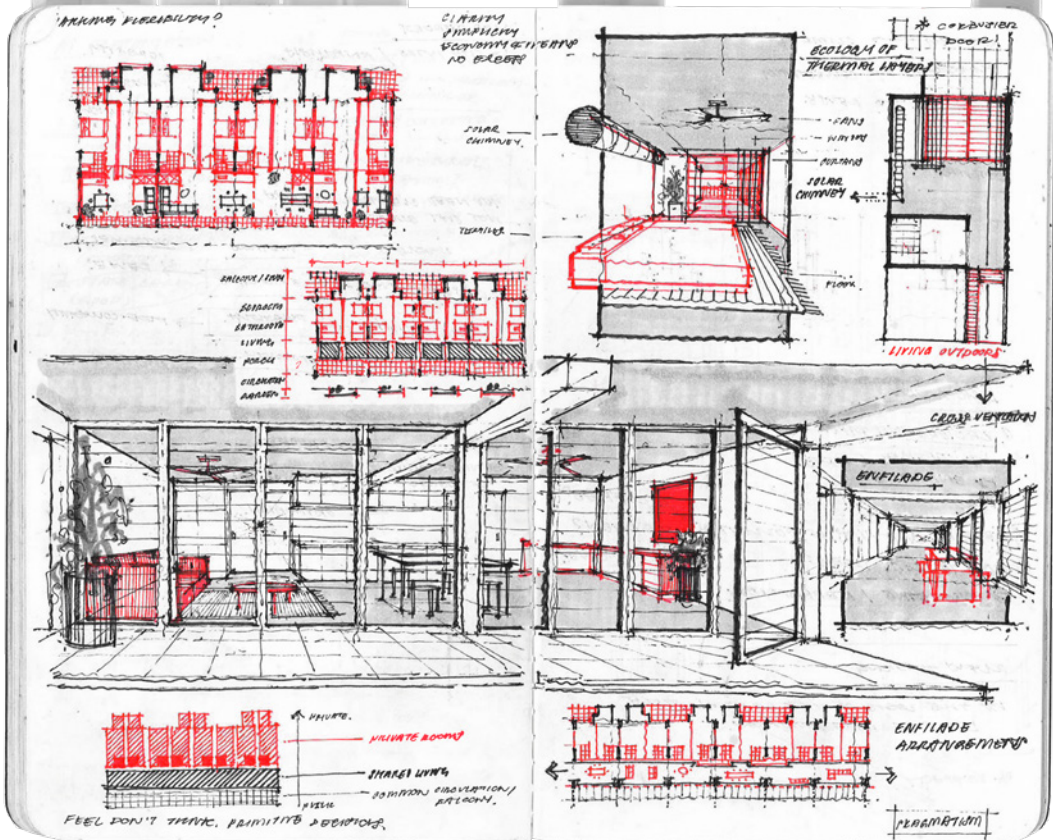


TYPE-D
CLUSTER HOUSE



TYPE-A DEVELOPMENT

The Type-A live-work loft units were inspired by the vernacular form of the shophouse, and the historic implementation of live-work units in the original design of Selegie House. The units are located on the ground and first floors, thus directly shaping the quality of the courtyard space.



TYPE-B DEVELOPMENT

The Type-B enfilade studio was envisioned to create micro-studios with en-suite bathrooms, that sit within a large shared living space. As the conventional family unit dissolves, this typology provides the opportunity live in large communes while maintaining a generous degree of individual privacy.

- * RIKETU YATIRIMCI - LOCAL COMMUNITY ATMO.
- * "POSSIBLE BUT NOT COMPULSORY"
- * PENITENTIARY IN JERUSALEM.

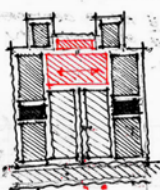
DO NOT TURN TO CONVENTIONAL!

LEVEL OF COLLECTIVITY (PROFILES)

- ① NUCLEAR FAMILY
- ② NUCLEAR FAMILY + PARENTS / ADULT CHILDREN.
- ③ GROUP LIVING FLAT
- ④ S.D.O.

PRIVATE

TYPOLOGY OF DWELLING → WAY OF LIVING



TYPOLGY ①
NUCLEAR FAMILY
WITH SHARED
KITCHEN

↳ TWO FAMILIES
INTO ONE UNIT...



THE CONDOMINIUM TYPE

- ↳ MODERATE SHARING
(KITCHEN AND BATHROOM)
- ↳ SHAREABLE ROOMS
(SHARED)
- ↳ NUCLEAR FAMILY /
EXTENDED FAMILY

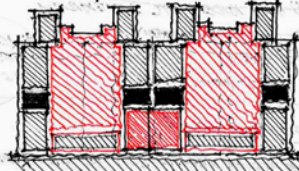
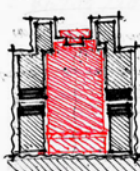
ESPECIALLY IN

↳ 2 WEEKS (WED / FRI)

↳ 2 WEEKS (SAT / SUNDAY + 5)

* SPEAK TO NATURAL
VENTILATION EXTENT?

* DEGREE OF MODULARITY / CONTROLL



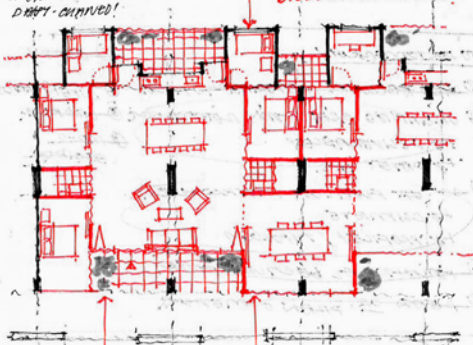
TYPOLGY ②

SHARED FLAT

* CAN BE
DEPT. CHANGED!

THE SHARING
IN THE FLAT.

KITCHEN ROOMS
(BATH ROOM) OR
STUDY OR BEDROOMS (Etc.)



SEMI-PUBLIC
TERRACE

SHARED ROOM
FLEXIBLE MODULAR
CHANGING

NEED DO MORE
HAVE IN COMMON?

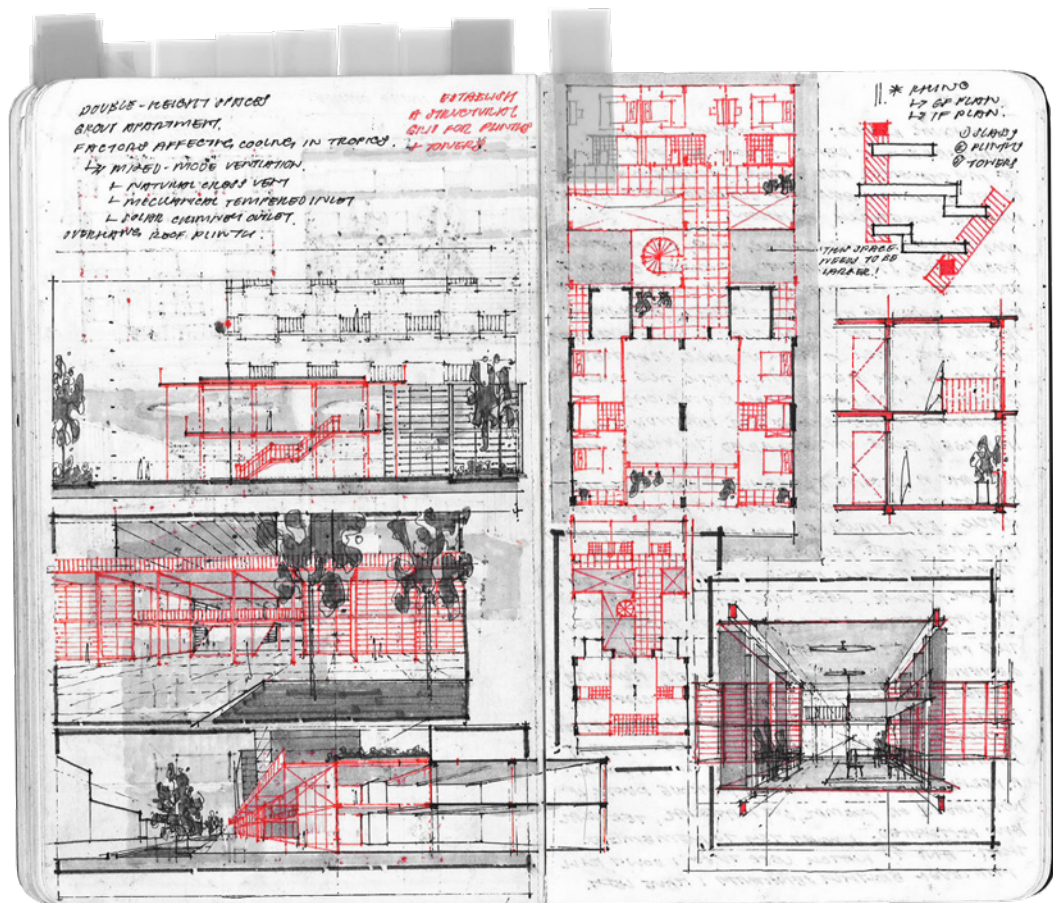
FLEXIBILITY /
INTERCULTURAL EXCHANGE?

SOFTLY DRINKING (SERVING)

↳ NOT JUST TYPE 1, 2, 3 BUT MANY DIFFERENT
TYPES TO IMPROVE SOCIETY... A NEW ORGANISM

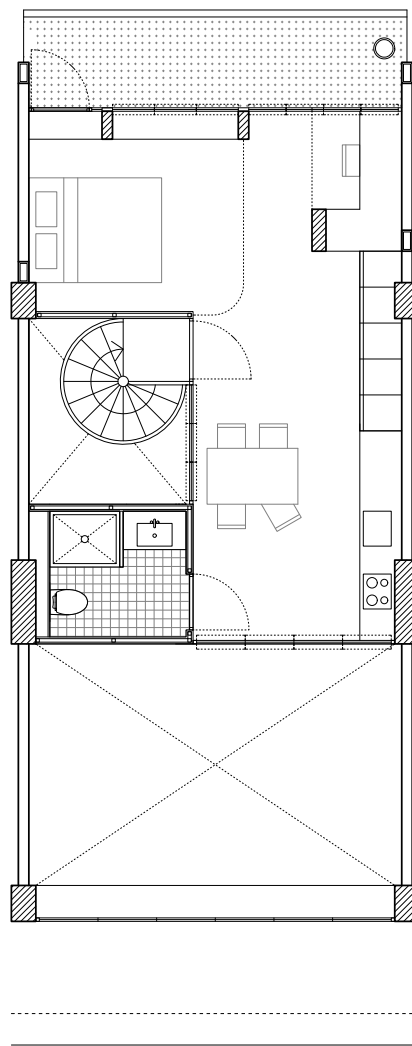
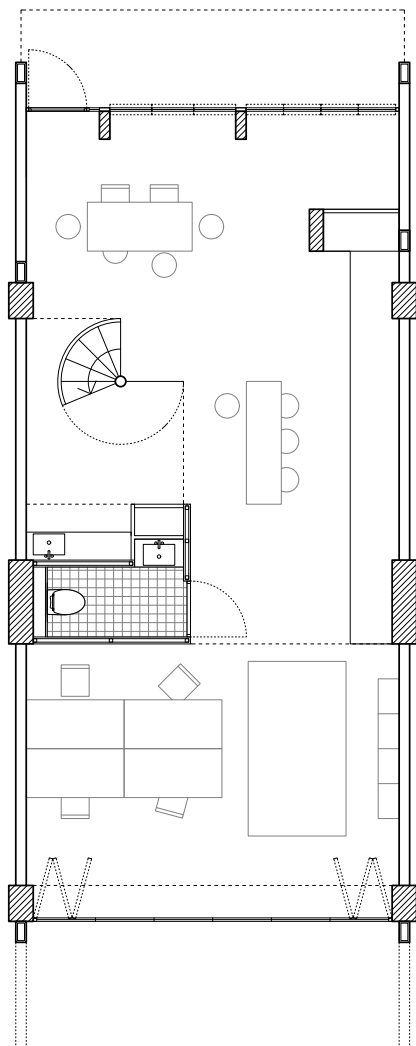
TYPE-C DEVELOPMENT

The Type-C unit is perhaps the most conventional of those proposed, featuring four bedrooms, two shared bathrooms, and a large central living, cooking, and eating core. This type enables more close-knit group living situations, such as between friends or family members.



TYPE-D DEVELOPMENT

The Type-D typology responded to a two-fold imperative: to intensify the existing site with new living units, while creating the opportunity for large 'cluster house' living. These units provide unique indoor-outdoor bungalow-style layouts in a high-rise setting, opening up new potential medium-scale cooperative living arrangements.



TYPE-A PLAN

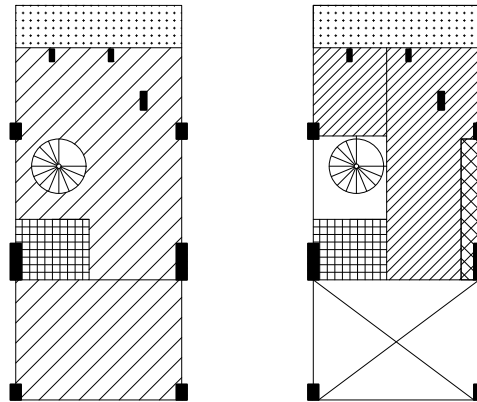
The ground plan of the Type-A unit features a main, double-height courtyard facing space (for a shopfront or workspace), and single-height rear space divided by a wet core and internal spiral stair. A studio apartment overlooks the main double-height space and has access to a large rear private balcony.



+ SHARED SPACE

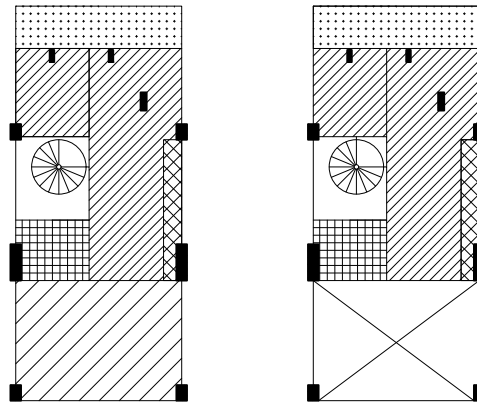
STANDARD CONFIGURATION

10 (Max) En-Suite Bedrooms + Shared Living + Kitchen



ALTERNATIVE CONFIGURATION

2 (Min) En-Suite Bedrooms + Shared Living + Kitchenette



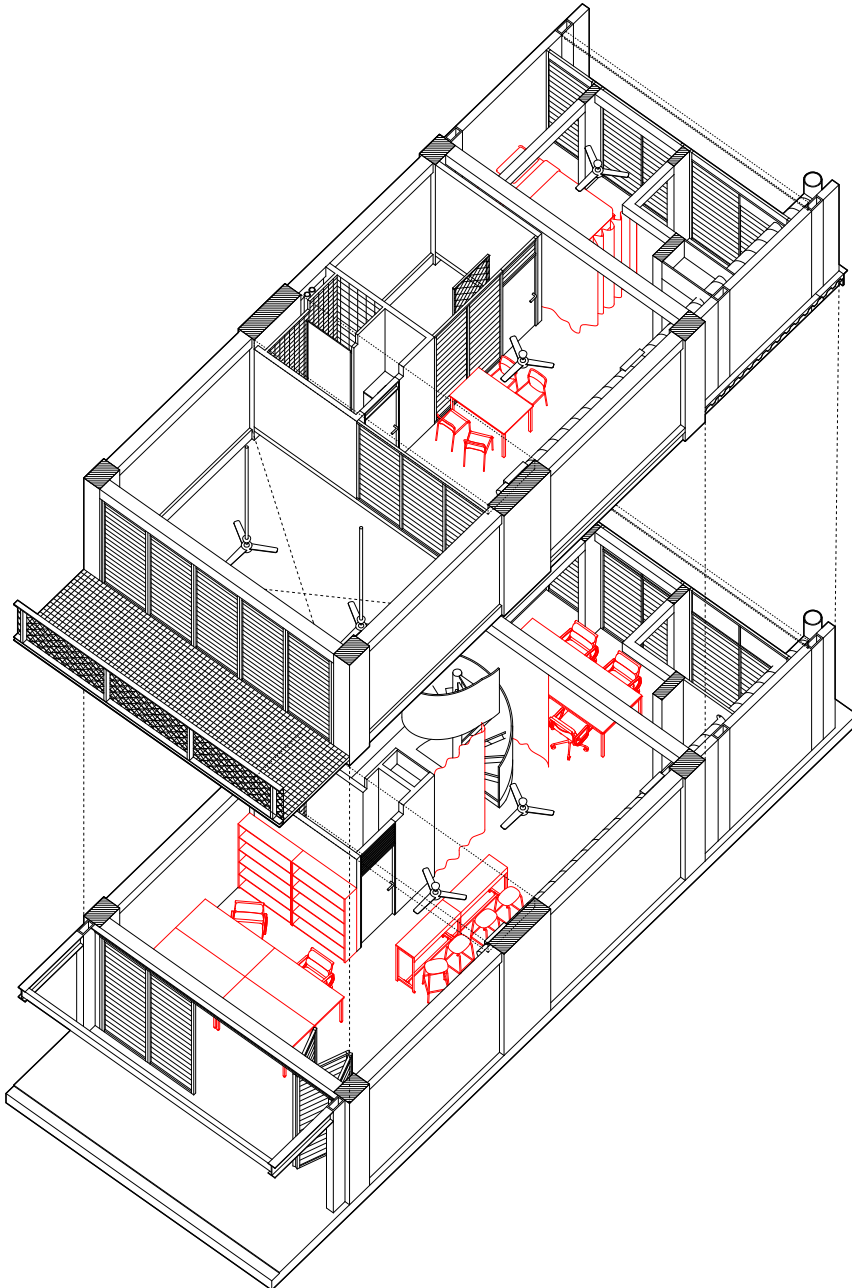
TYPE-A FLEXIBILITY

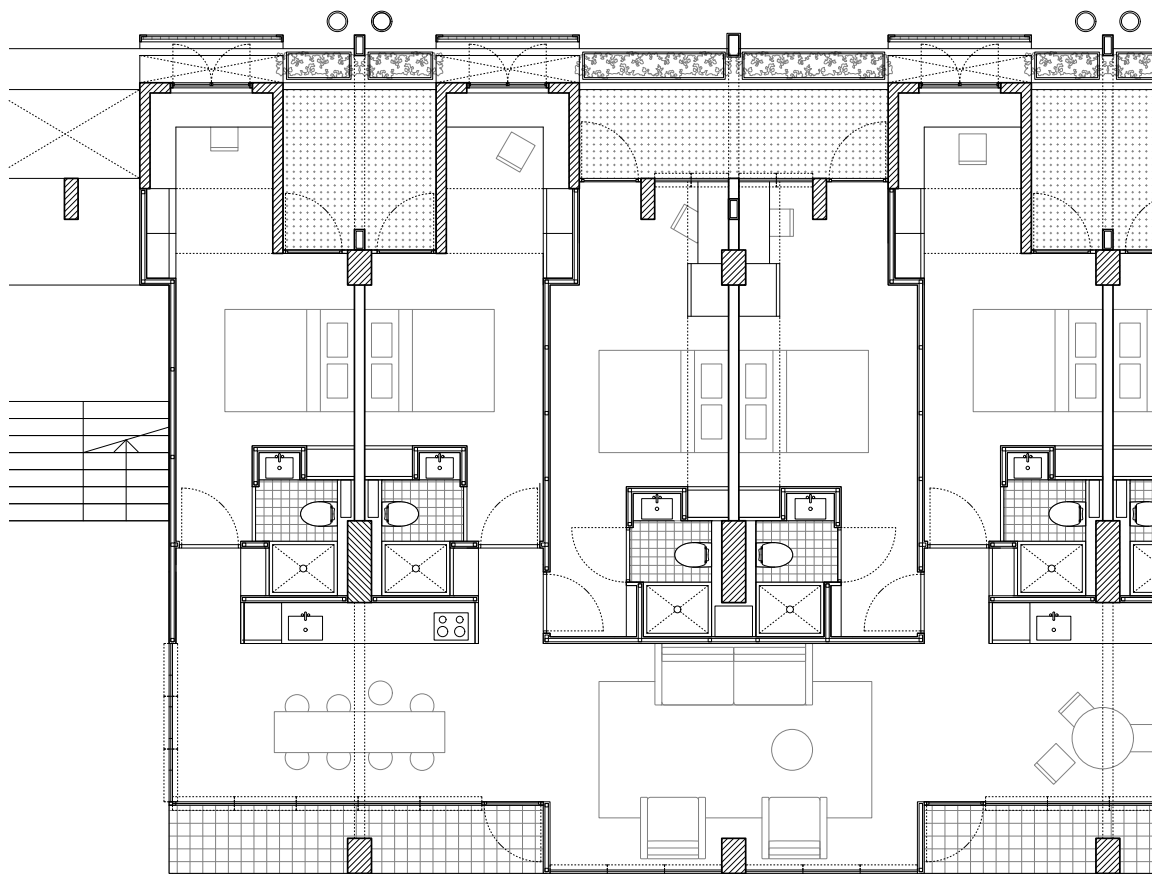
The Type-A unit is organised with a central stair core and two main entrances, from the front and rear. As such, the unit can be divided into two smaller studio apartments, with a common double-height workspace or shopfront.



TYPE-A ATMOSPHERIC QUALITY

The Type-A units feature a large, naturally ventilated double-height space at its core, allowing for cross-ventilation and views through the full depth of the building. Additionally, extensive use of louvred fenestration allow for spatial and climatic porosity between the studio loft unit and workspace below.

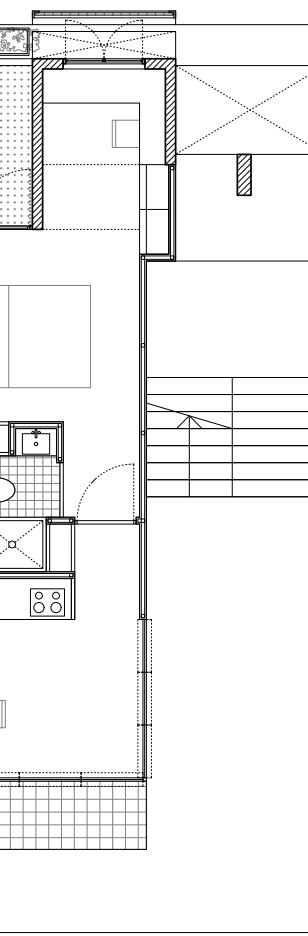




TYPE-B PLAN

The Type-B unit comprises staggered, self-contained micro-units (with an en-suite bathroom, space for a double-bed, desk, and cabinetry) with a large band of shared living, cooking, and eating spaces. The staggering of the bedrooms creates recesses for built-in kitchens and patio extensions to the common corridor.

Typical Plan
1:100

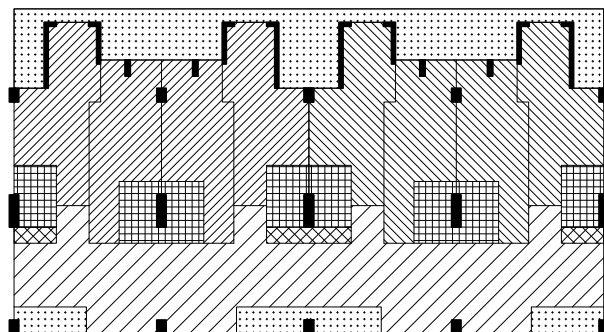


1 2 5m

Plan Logic Diagrams
1:250

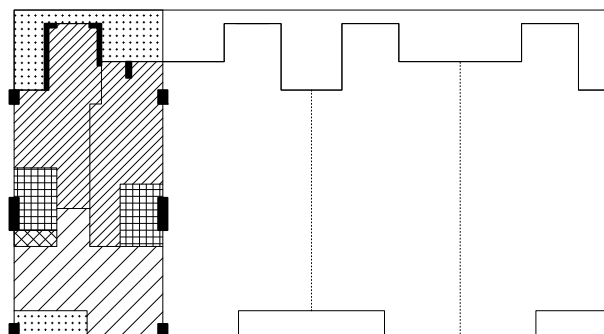
STANDARD CONFIGURATION

10 (Max) En-Suite Bedrooms + Shared Living + Kitchen



ALTERNATIVE CONFIGURATION

2 (Min) En-Suite Bedrooms + Shared Living + Kitchenette



0 1 2 5 10m

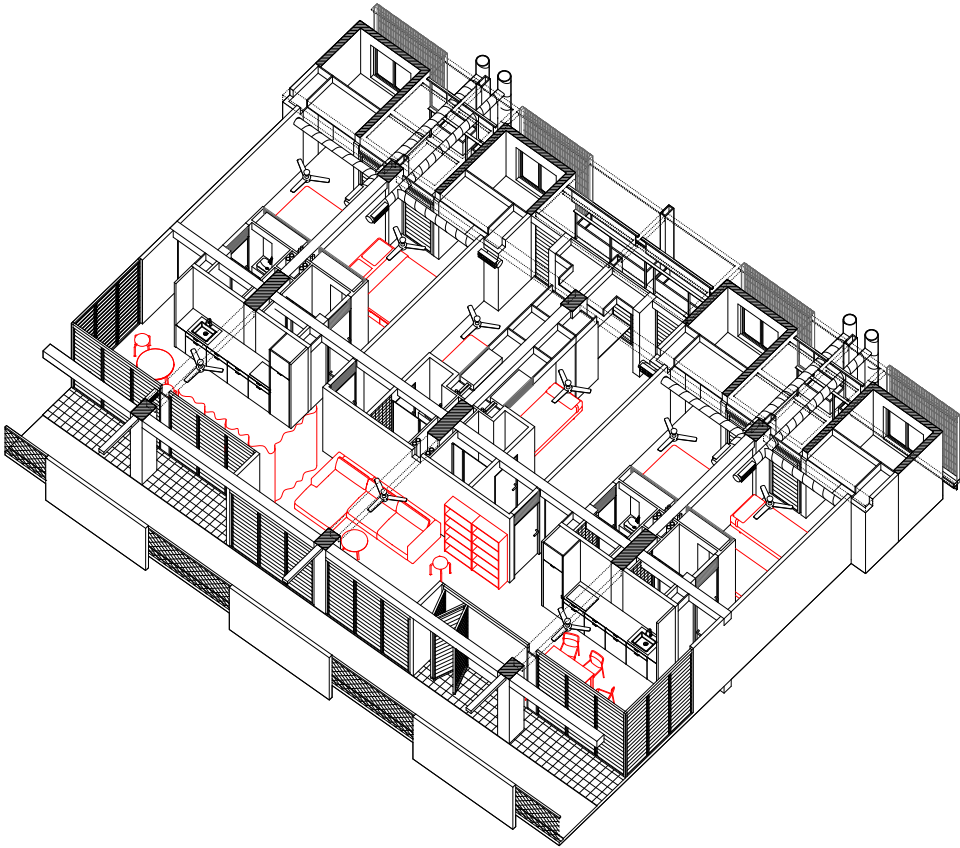
TYPE-B FLEXIBILITY

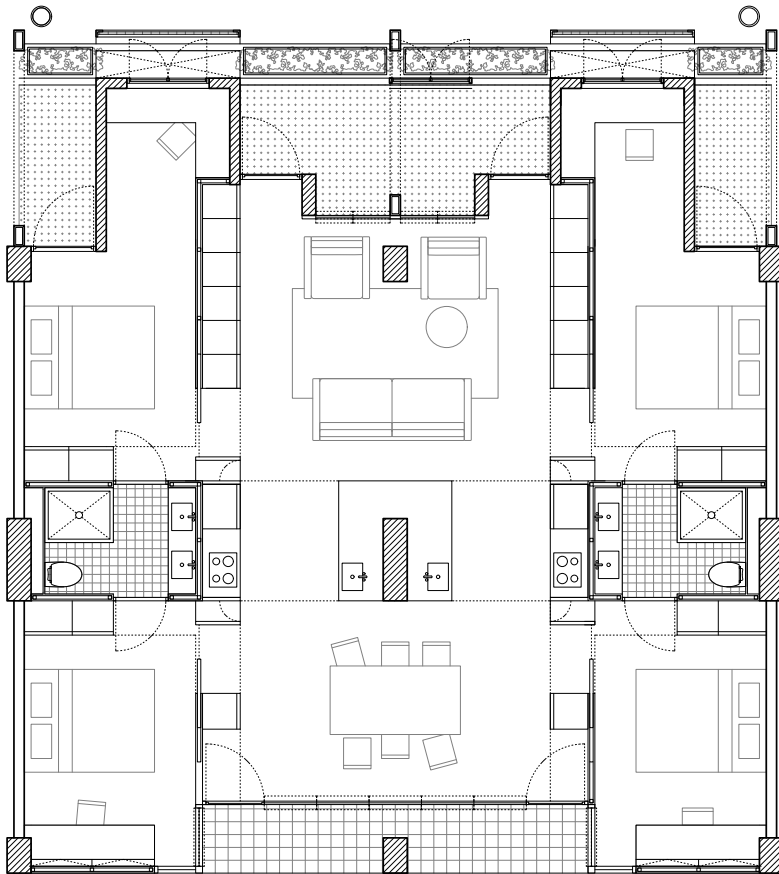
The organisation of individual bedrooms along a spine of living and kitchen spaces allows for extensions and subdivision to form different unit sizes: from large communal living arrangements to the smallest configuration of two bedrooms, a kitchenette, and foyer.



TYPE-B ATMOSPHERIC QUALITY

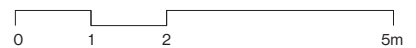
The central enfilade living space in Type-B units creates long views that open the typically cellular quality of mass housing types. Collective spaces are narrow so as to facilitate natural light, cross ventilation, and relationship with the corridor, and can be informally zoned through carpets and curtains.





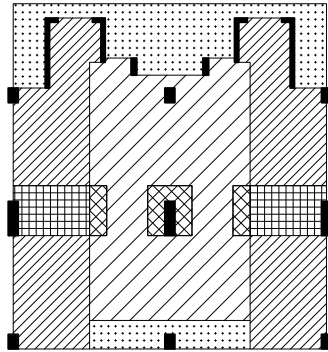
TYPE-C PLAN

Type-C units feature four similarly-sized bedrooms, each containing a double-bed, desk, and built in cabinetry, with shared bathrooms. A large central space contains flexible living, cooking and dining zones, with a recessed porch as an extension of the common corridor.



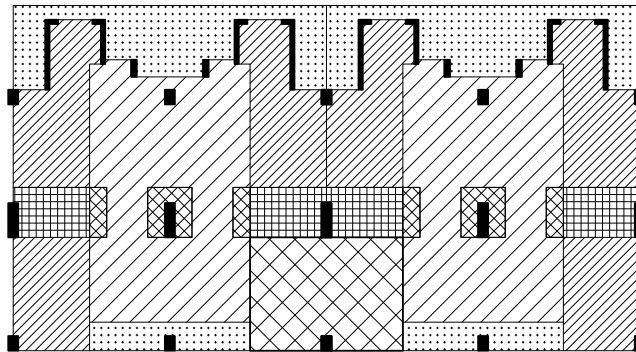
STANDARD CONFIGURATION

4 Bedrooms + Shared Living + Kitchen



ALTERNATIVE CONFIGURATION

6 Bedrooms + 2 Shared Living + 2 Kitchen + Nucleus Room



TYPE-C FLEXIBILITY

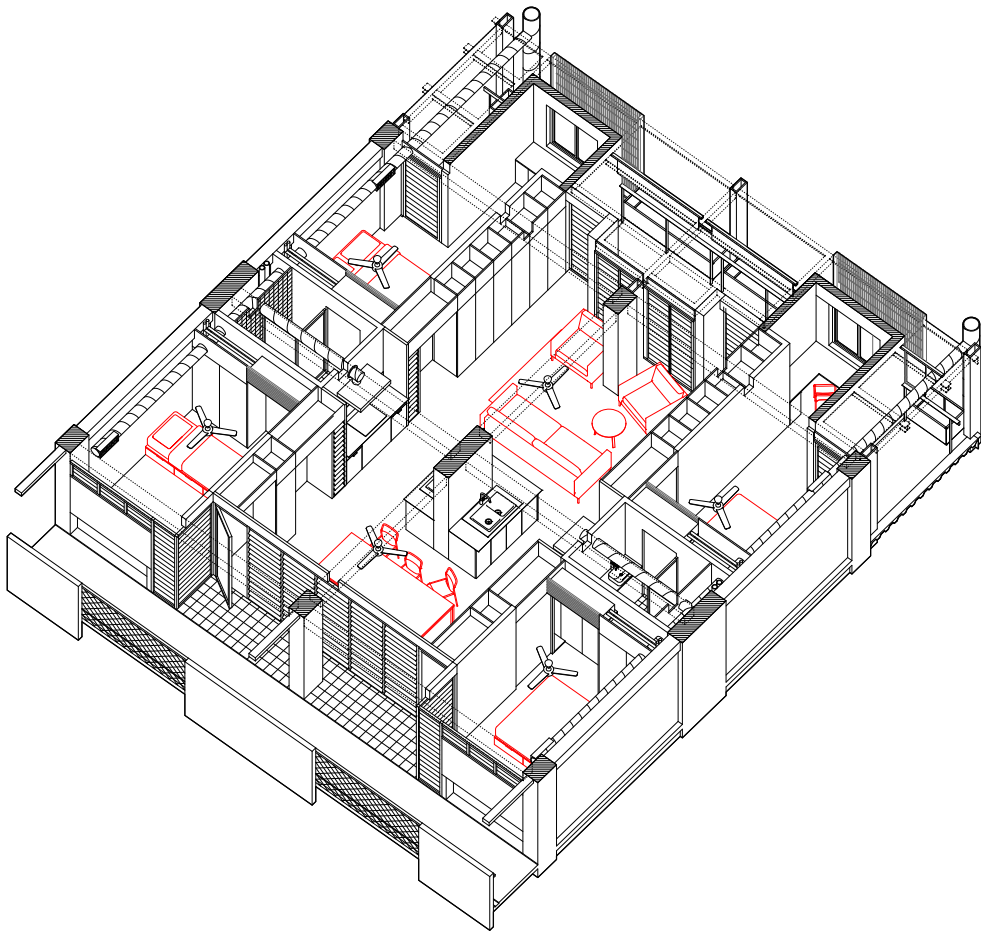
The flexibility of the Type-C unit is conceived through opportunities for interconnection: adjacent units could remove non-loadbearing party walls to create a shared 'nucleus room', facilitating shared living between extended families, or co-parenting in patchwork households.





TYPE-C ATMOSPHERIC QUALITY

The Type-C unit features a recessed porch that mediates between the large common living core of the unit and the corridor. Extensive full-height louvred fenestration facilitates cross ventilation, which is angled strategically to maintain privacy for individual bedrooms.





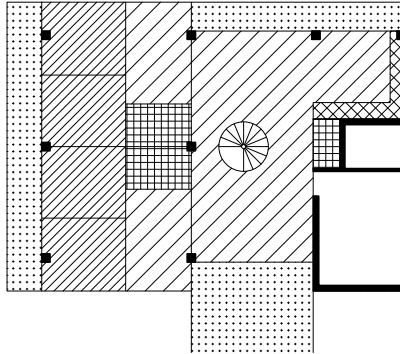
TYPE-D PLAN

The Type-D unit plan is an extension of the Type-C unit, featuring double-height volumes within a new structure, connected to the existing slab block by a series of outdoor bridges. The new tower features nested micro-units within a large apartment, creating diverse collective living opportunities.



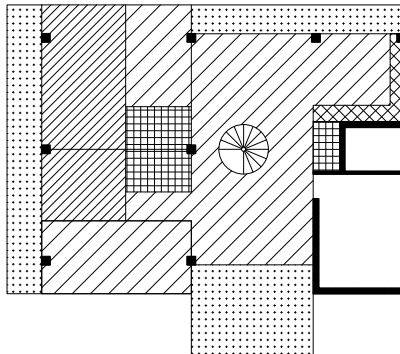
STANDARD CONFIGURATION

4 Bedrooms (Extensions) + Shared Living + Kitchen



ALTERNATIVE CONFIGURATION

2 Bedrooms (Extensions) + Shared Living + Kitchen + Office



TYPE-D FLEXIBILITY

As a new-build tower, the Type-D extension allows for a much more flexible column grid, and therefore internal configurations. The standard configuration of four bedrooms can be modified into two bedrooms and a large study, for example.



TYPE-D ATMOSPHERIC QUALITY

The atmospheric quality of the shared living space within the existing slab block (identical to the Type-C living space), presents a zone for airflow and conviviality, while subtly designed openings can mediate degrees of connection of private bedrooms to this room.

Conclusion + Reflection

A New Collectivity for Singapore's Existing Housing Stock

This project set out to imagine a future for Singapore's housing stock broadly, and Selegie House specifically, based on three imperatives: for reuse, collective living, and less energy-intensive forms of cooling. In relation to these imperatives, the thematic principles of physical adaptation, layering, and porosity were adopted as guiding strategies. These thematic strategies informed a range of gestures from the scale of the city, to the urban ensemble, the block, the floor, the unit and, eventually, the irreducible scale of housing: the individual sleeping cell. Broadly, these included the reactivation of the ground-plane through the introduction of a plinth, reconfiguration of unit types to embrace more diverse forms of living, balcony extensions to create a deeper thermal gradient, and roof additions to activate a new collective space while embracing building-level passive ventilation.

While these strategies were borne of an in-depth analysis of Selegie House and its unique history, they are envisioned as replicable - as serving as a generic model that can be applied to Singapore's modernist mass housing stock at-large. This will undoubtedly involve several additional challenges. Unlike Selegie House, which is situated within an existing urban context, much of Singapore public housing stock was constructed in the form of large, self-contained new towns. In this respect, even larger scales must be considered in the effort to rejuvenate these existing housing landscapes, extending beyond the architectural to include land-use planning, transportation, and the provision of public services. Nevertheless, at the scale of the precinct or cluster of blocks, this project provides a potential pathway for rejuvenation as Singapore's earliest mass housing stock reaches a critical point of either demolition or renewal. The significance of this decision should not be underestimated: as a country that redeveloped itself from the ground up once already from the 1960s, the environmental, social, and cultural costs of doing so once again could be fundamentally destructive to the fabric of Singaporean society. It is hoped that this proposal may provide one possible starting point for what will undoubtedly be the difficult task of avoiding this catastrophic, yet avoidable, scenario.

Perhaps most fundamentally, however, this project is both a reflection upon, and a provocation toward further interrogation of the relationship between the individual and society as it is manifested in housing. This project - both implicitly and explicitly - suggests that a degree of personal liberty should be sacrificed to face the imperative of living together - in both social and ecological terms - and in so doing overturns much contemporary conventional wisdom that associates housing as the absolute private preserve, in both physical, cultural, and economic terms. The consequences of this proposition are by no means simple, undoubtedly containing both emancipatory and oppressive potentials. However, as confront the question of housing in contexts facing both social and planetary crises, I believe the question of the collective must be urgently confronted, both by architects and society at large.

