

SUPERDENSITY: A NEW MODEL FOR VERTICAL URBANISM



URBAN FUTURES

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The SuperDensity concept was developed in collaboration with our friends at WSP, providing expertise on sustainability, vertical transport and movement systems.

HOW CAN ONE OF THE
WORLD'S DENSEST
CITIES BECOME
EVEN MORE DENSE?

IMAGINING URBAN FUTURES

AS DESIGNERS, WE ARE RELENTLESSLY CURIOUS –
CONSTANTLY SEEKING NEW WAYS TO HELP SHAPE THE
CITIES WE LIVE IN TO CREATE A BETTER AND MORE
SUSTAINABLE FUTURE.



THROUGH INDEPENDENT RESEARCH, DESIGN SPECULATION AND MEANINGFUL COLLABORATION, WE EXPLORE NEW MODELS OF DESIGN AND DELIVERY. NEW APPROACHES THAT WILL MAKE OUR CITIES MORE DISTINCTIVE, DIVERSE, LIVEABLE AND PROSPEROUS. THIS IS URBAN FUTURES AT HASSELL.

EACH URBAN FUTURES PROJECT PRESENTS AN INFORMED DESIGN RESPONSE TO A CONTEMPORARY ISSUE. WE WELCOME THE DEBATE AND DISCUSSION THESE CONCEPTS ATTRACT. WE ARE NOT PROPOSING THEM AS FINITE SOLUTIONS, RATHER AS CONVERSATION STARTERS FOR WIDER EXPLORATION, SCRUTINY AND DEVELOPMENT. IN THE SAME WAY WE WORK WITH CLIENTS, WE APPROACH EACH URBAN FUTURES PROJECT WITH AN OPEN MIND AND FROM MULTIPLE PERSPECTIVES.

WE DRAW ON THE EXPERTISE OF THE TALENTED ARCHITECTS, INTERIOR DESIGNERS, LANDSCAPE ARCHITECTS AND URBAN DESIGNERS THAT WORK IN THE 13 HASSELL STUDIOS AROUND THE WORLD AND WELCOME PARTNERSHIPS WITH A RANGE OF SPECIALIST COLLABORATORS. THERE IS NO MONOPOLY ON GOOD IDEAS, EVERY IDEA IS TESTED AND CHALLENGED REGARDLESS OF WHO HAS PROPOSED IT.

WITH MORE THAN HALF THE WORLD'S POPULATION NOW LIVING IN URBAN CENTRES, WE ARE PASSIONATE ABOUT ADDRESSING THE CHALLENGES FACED BY CITIES AROUND THE WORLD. WITH URBAN FUTURES, HASSELL STRIVES TO BE AT THE FOREFRONT OF GLOBAL URBAN THINKING.



As urban populations grow, the question for cities is to go out or go up to accommodate that growth. But what about already dense urban environments? Is it possible to increase density further without compromising social or environmental outcomes?

For many of us, Hong Kong is a vanguard of urban experimentation and innovation. When we are challenged by issues of density, connectivity, affordability and amenity, we often look to Hong Kong for answers.

It has some of the densest districts on the planet but is also considered to be a highly attractive and liveable urban environment.

Right now though, the city is under increasing population pressure, needing to accommodate a steadily growing population within a limited physical area.

So we posed for ourselves a simple question “how could Hong Kong, an already dense city, become even more dense?”

To respond, we need to understand the physical, social and environmental dimensions that constrain the city’s future growth. We need new spatial models for urbanisation.

And importantly we need to look beyond tall buildings (which do play a vital role in future city solutions) to other city systems, including streets and spaces, public infrastructure and transportation.

We began our research process by looking simply at the definitions of urban density. There are three primary ways of doing this, and each reflects a different dimension of the city.

UNDERSTANDING THE CITY OF HONG KONG

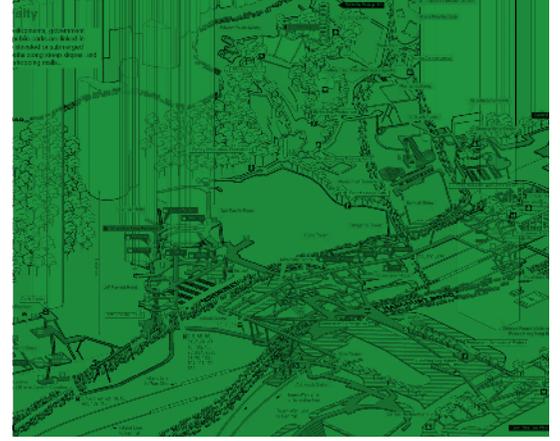
Hong Kong's characteristic urban form - dispersed high-density centres, surrounded by vast areas of natural vegetation - is the product of a number of historic, economic and social factors.



THE SHEK KIP MEI FIRE TRIGGERED A NEW APPROACH TO HOUSING PROVISION IN THE CITY



NEW TOWNS OF HIGH-RISE HOUSING GREW AND INTENSIFIED THE CITY



TRANSPORT AND DEVELOPMENT INTEGRATION IS A KEY SYSTEM OF THE CITY

The city grew rapidly at the end of the Second World War, with migrant workers flooding into the city from the Chinese mainland. Within one year, the city grew by 50%; a decade later, it had quadrupled to more than two million.

Many of the city's new residents lived in tightly-packed settlements on Hong Kong island and the lower end of the Kowloon peninsula.

The Shek Kip Fei fire of 1953 had a major impact on provision of housing.

More than 50,000 people were left homeless as one of the largest informal settlements was razed.

A new government housing policy was developed for the city.

Under which, most of Hong Kong's residents would be housed in new multi-storey buildings, in established and selected urban areas

A target of 24 square metres for each and every person was assigned.

Within a couple of decades, high-rise living was the norm with new towns spreading northwards over Kowloon.

This typology was supported by two other factors that emerged in the late twentieth century: the high price of land and the construction of Hong Kong's metro system.

High density residential development was able to deliver the best return on both private and public investment.

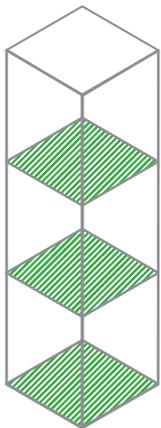
And these existing elements of Hong Kong might provide the starting point for our proposition of superdensity.

In particular, generous, proximate wilderness, fast access via layering of connections, the Peak Tram and slow road winding up the hillside.

UNDERSTANDING THE COMPLEXITIES OF URBAN DENSITY

There are three distinct ways of understanding - and measuring - urban density.

BUILDINGS (FLOOR AREA RATIO)



6:1 -
15:1

Floor Area Ratio is the ratio of a building's total floor area to its lot area, the measure most often used by planners and developers to describe the density of a site. FAR is a good approximation of built form, although does not always determine the height or coverage of a building.

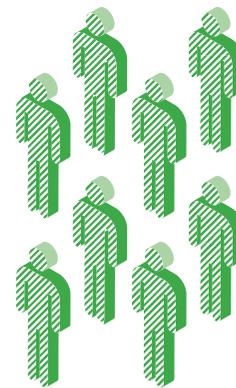
DWELLING UNITS (DWELLING PER HECTARE)



800 -
2000

DPH is a measure of the number of dwellings within a particular site or neighbourhood, often expressed as dwellings per hectare. As household sizes tend to be within a limited range, DPH may also provide an indication of the number of people that may be living within an area.

POPULATION (PEOPLE PER HECTARE)



REGION 70
CITY 250+

However, this is more accurately expressed by the third measurement of density, population or people per hectare.

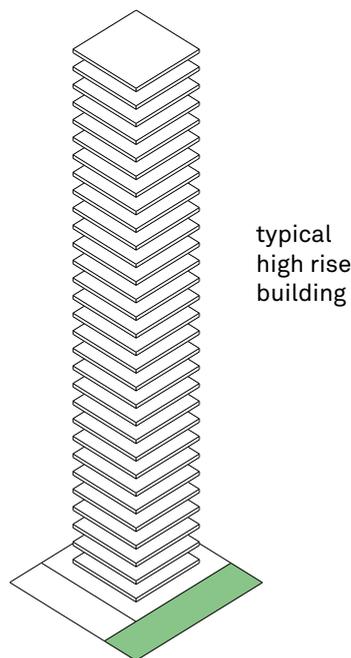
To have a complete picture of the density of a city, we need to understand all three of these dimensions. It is possible, for example, for a site to have a high FAR but relatively low DPH due to each dwelling having a particularly large floor area.

Similarly, in contexts where dwellings are very small in area, a moderate DPH can yield a relatively high PPH. By any of these measures though, Hong Kong is a high density city.

FARs of 15:1 and over are common, the city has small dwellings, occupied by often large family groups. The people density of the city is well above comparable world cities, 5, 6, 10 times. This is particularly the case when the unbuilt areas of the city are excluded.

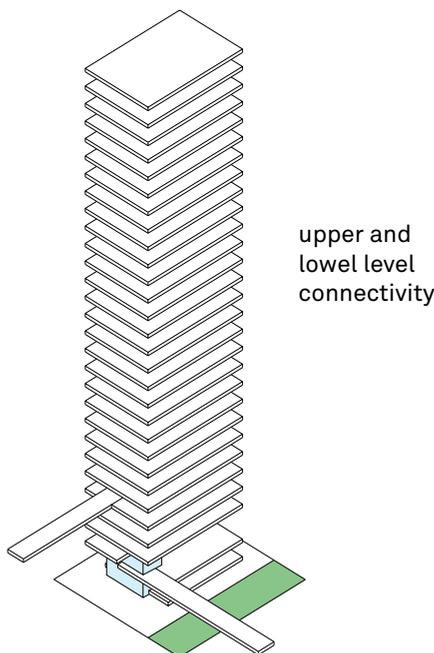
HOW DOES HONG KONG PUSH THROUGH THE NEXT THRESHOLD OF DENSITY?

BUILDINGS
(FLOOR AREA RATIO)



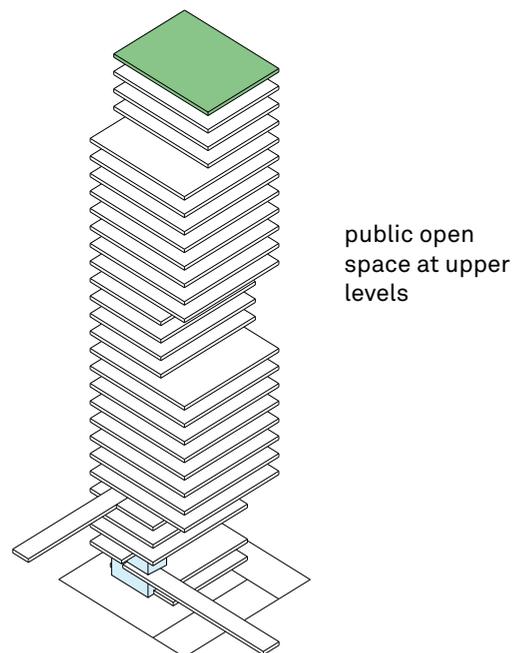
Building infrastructure — taller, thinner more efficient buildings

DWELLING UNITS
(DWELLING PER HECTARE)



Urban infrastructure — integrated connectivity, utilities and technology

POPULATION
(PEOPLE PER HECTARE)



Social infrastructure — public systems that create the “social license” for density

Looking at FAR, floor space can be optimised by the engineering of taller, thinner, more efficient building structures – a big focus for cities over the last decade.

Hong Kong provides a multitude of examples of these building types, with small-footprint tall buildings sandwiched into highly constrained sites throughout the city.

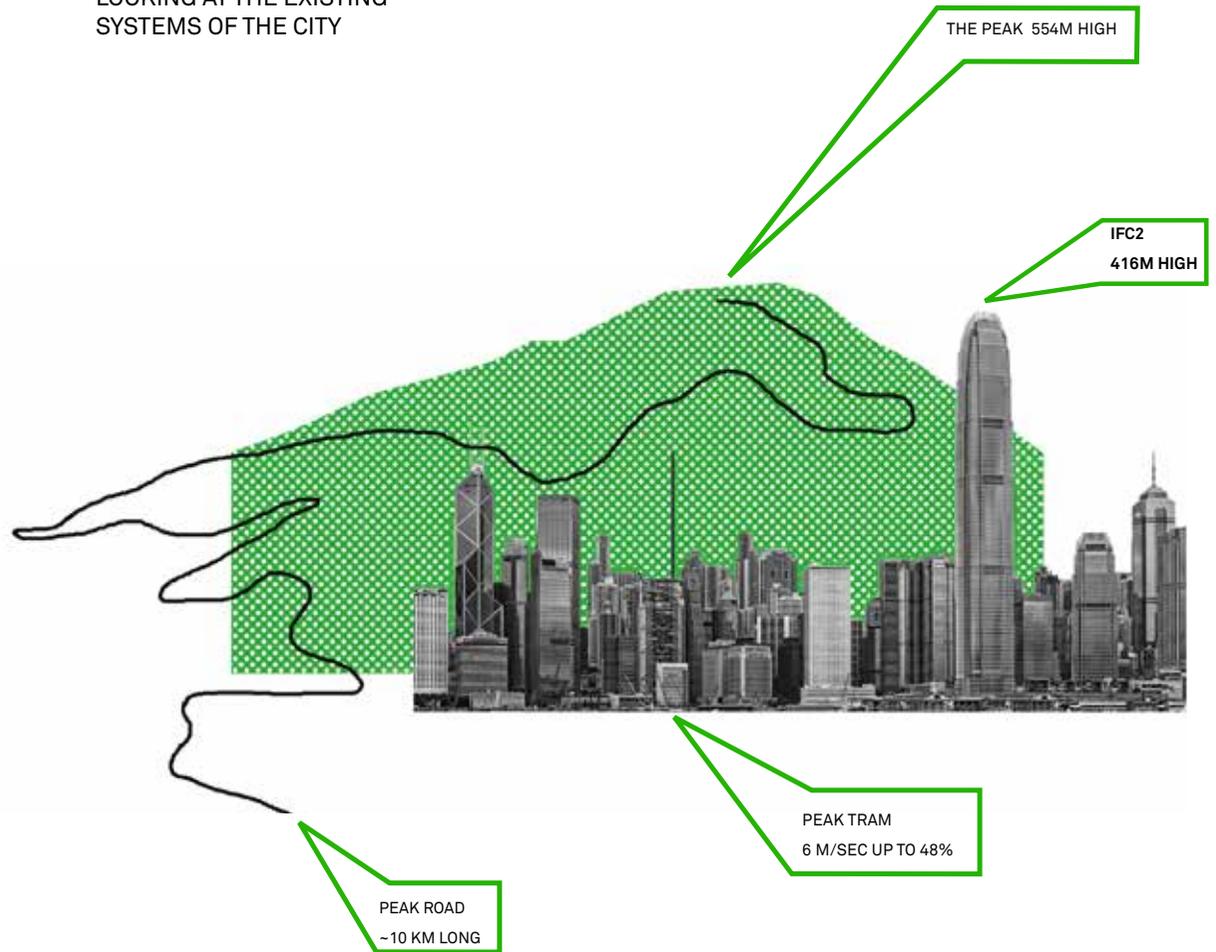
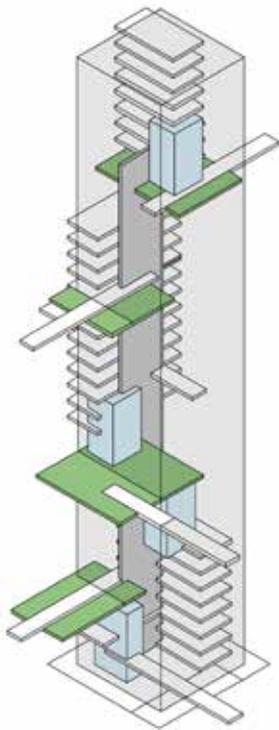
DPH, on the other hand, is more constrained by shared urban infrastructure such as transportation, water and energy networks. Like buildings, these systems are also primarily an engineering concern, with advances in technology and system design supporting higher levels of density – again, Hong Kong has long been an innovator in this area, optimising the integration of transport and development, and through multi-level movement systems throughout the city.

These engineering solutions are less effective when we consider the third measure of density, People per Hectare.

PPH relates more closely to the provision of social infrastructure, such as open spaces and parks, community facilities, and public and private amenity. Often as we intensify the city, we reduce the area available for public space and public infrastructure; and yet, these become more critical for communities living in dense cities.

And without them, we do not deliver the “social license” for density: we make more buildings and more dwellings, but do not necessarily provide the homes people want.

LOOKING AT THE EXISTING SYSTEMS OF THE CITY



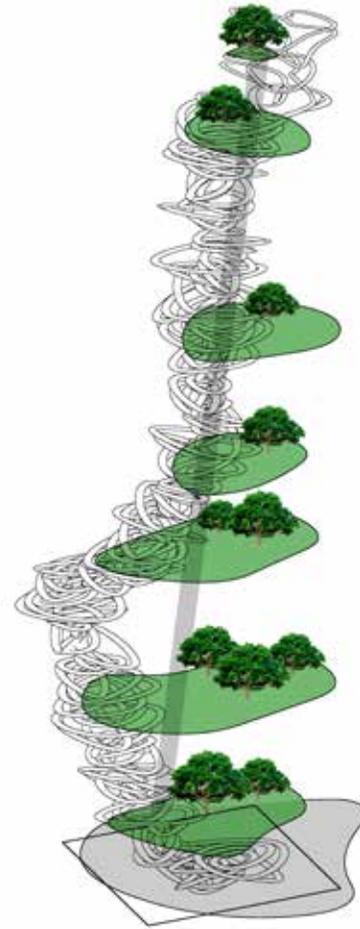
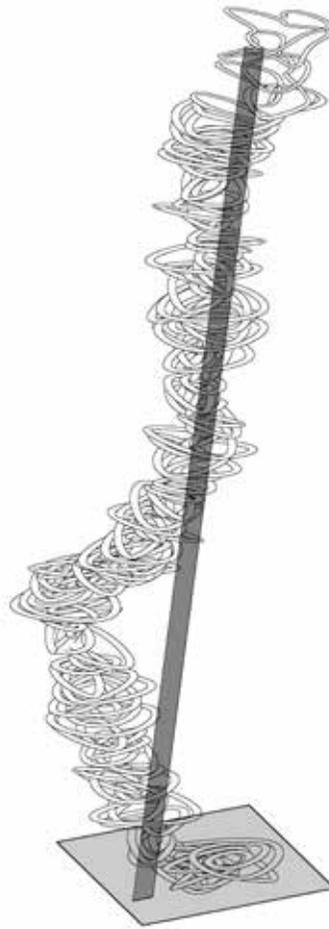
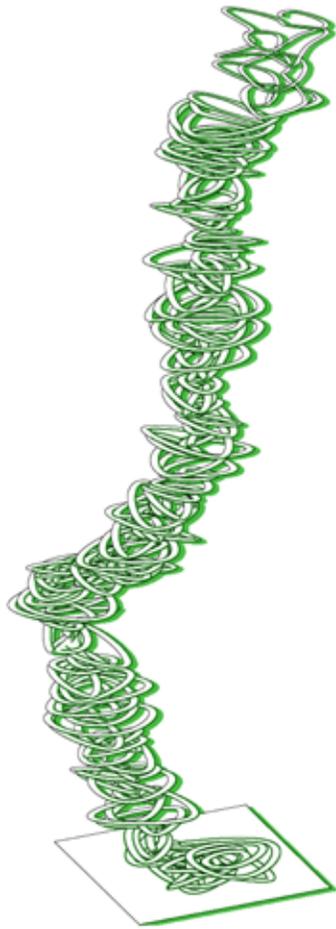
So, we believe the greatest potential lies in looking at this third dimension of density. And this defined for us a set of questions.

Could we create a vertical system of public spaces and public infrastructure? Could we create a truly public vertical street work? And how could this system support the idea of a superdense city?

And we realised a good starting point was looking at the existing systems of the city - the connectors, buildings and spaces that support higher density, and have the potential to support even higher densities. Of particular inspiration was the central part of the city, where some of Hong Kong's most prominent buildings (including the supertall International Finance Centre) sit against the vast greenness of Victoria Peak, reaching more than 550 metres above the city.

This area has a complex three-dimensional connectivity network, including hillside escalators, subsurface linkages and elevated walkways between buildings. And between the city and The Peak, are two main connectors: the inclined Peak Tram and the long and winding Peak Road.

A NEW MODEL FOR SUPERDENSITY



SUPER RAMP

A CONTINUOUS PUBLIC RAMP, 10,000 METRES IN LENGTH AND STRETCHING 500 METRES INTO THE SKY

Our proposal begins with the creation of a continuous ramp. A ramp is the most public, most accessible, most flexible of circulation paths we could imagine – as close to a street as possible.

Other movement systems like stairs, escalators and lifts suggest an exclusion of sections of the community, be it for economic or social or physical reasons.

VERTICAL TRAM

AN INCLINED SUPERTRAM STOPPING EVERY 80-100 METRES

Our ramp is more than 10 kilometres long, windings its way 500 metres in the sky – a horizontally compressed version of the slow road to Hong Kong's Peak.

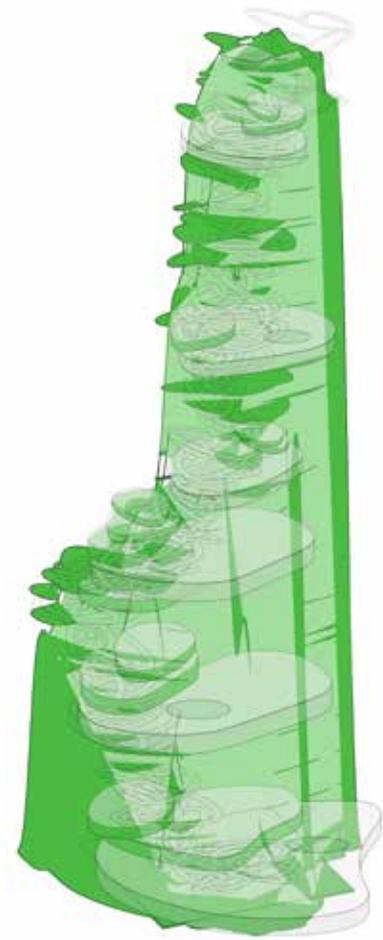
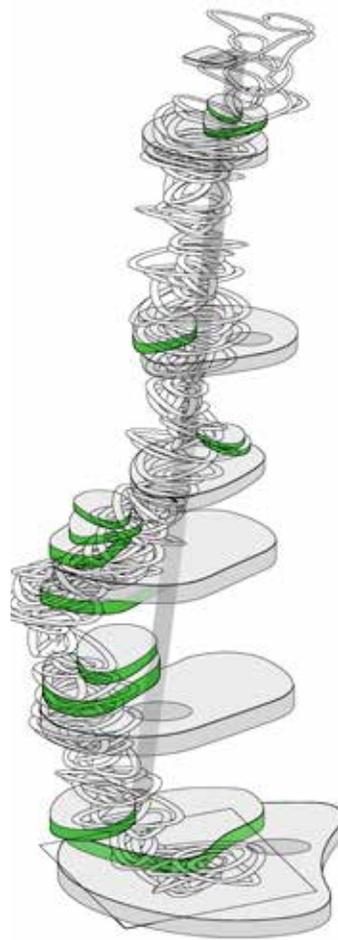
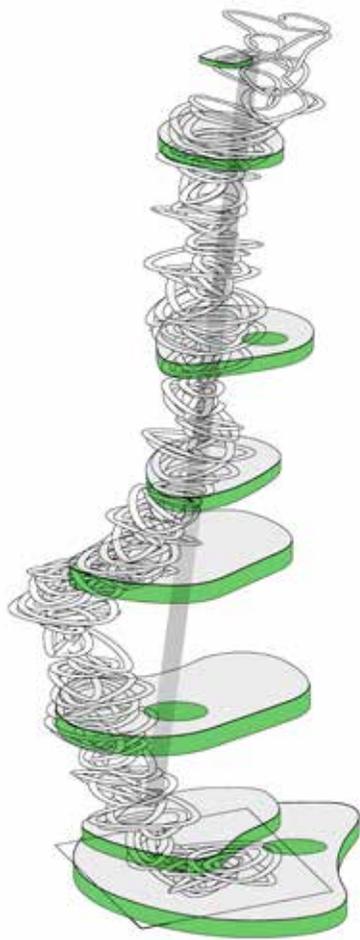
We then augment this slow path with a faster option – a vertical version of the Peak Tram, a rapid transport mode that stops every 80-100 metres. This supertram is akin to a bus or light rail that runs through a city street.

JUNGLE PARKS

PUBLIC JUNGLE PARKS - LUSH, GENEROUS AND OPEN TO THE ELEMENTS - AT TRAM STOPS

FAR
GREEN 4:1

At each stop, we propose new jungle parks – lush, generous and open to the elements.



PUBLIC SLABS

PUBLIC SLABS HOUSING
SCHOOLS, HOSPITALS, LIBRARIES
AND MARKETS

FAR
GREEN 4:1
PUBLIC 4:1

Below these, public slabs containing hospitals, libraries, schools, markets – the social infrastructure required for living and working populations.

PUBLIC CLUSTERS

INTENSELY ACTIVE CLUSTERS OF
RETAIL, WORKPLACES AND
ENTERPRISE CENTRES

FAR
GREEN 4:1
PUBLIC 4:1
ECONOMIC 2:1

And clusters of economic activity, retail, workplace and enterprise centres – a vertical version of street-facing shopfronts.

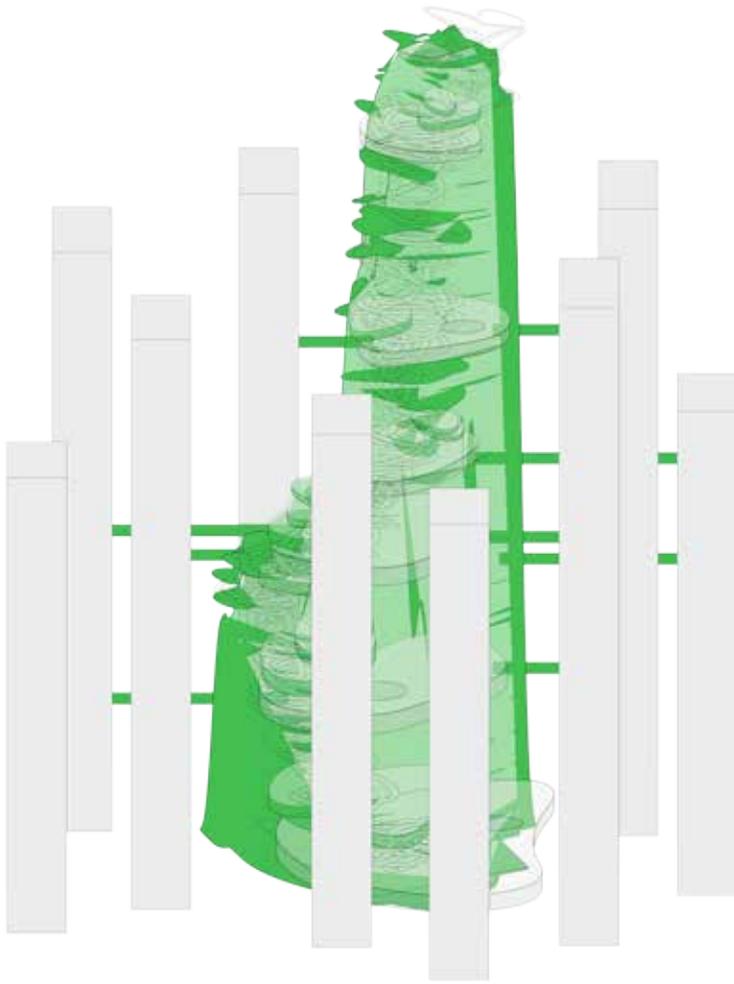
SHROUD

A STRUCTURAL SHROUD
FOR PROTECTION AND
PROPAGATION

FAR
GREEN 4:1
PUBLIC 4:1
ECONOMIC 2:1

We have to hold this all up, so we envisage a structural shroud around the whole system, which also creates a sense of enclosure and protection, as well as the potential for landscape propagation – a green armature that unites the system like a canopy of street trees.

We have now essentially created the idea of the vertical main street with fast and slow movement, open spaces, social, economic and ecological infrastructure.



SUPERDENSITY

A VERTICALISED CATALYST
FOR NEIGHBOURHOOD
RENEWAL

FAR
GREEN 4:1
PUBLIC 4:1
ECONOMIC 2:1
HOUSING 15:1

Our superdensity proposal alone is not superdense – perhaps 10:1 or even less.

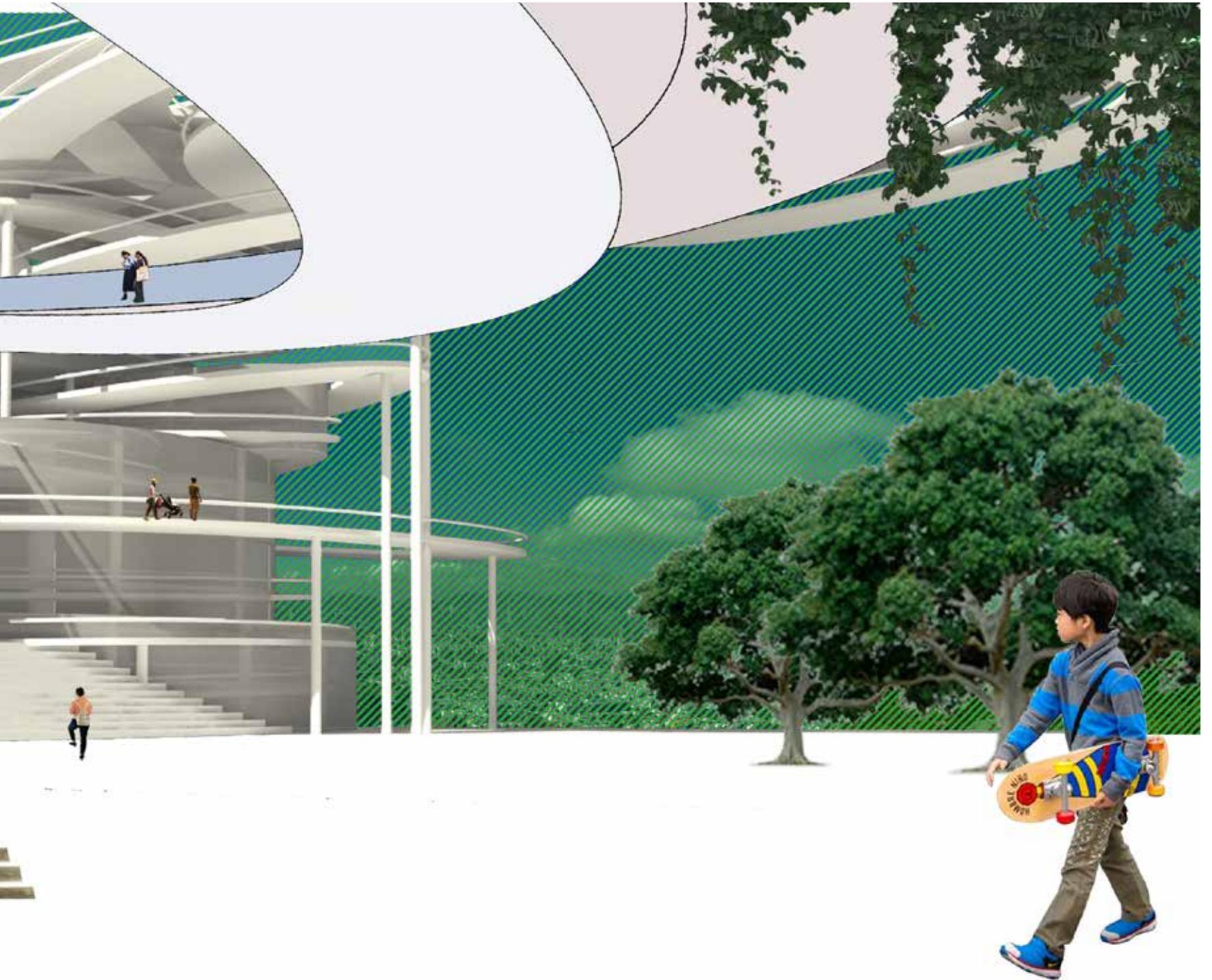
But it can catalyse a significant renewal of the surrounding neighbourhood, unlocking the potential for thousands of new homes, new workplaces, new neighbourhoods.

Upper level connections between buildings create a three-dimensional movement network across this new neighbourhood.

People who live high in towers are closer to public spaces and facilities. Much of life can be lived well above the ground plane and in fact, the more self-reliant this system becomes, the more effective it is.

It creates intensely active and engaging public places in the sky. A new type of urban neighbourhood.

INTENSELY ACTIVE AND ENGAGING NEIGHBOURHOODS IN THE SKY



NEW SKYLINE LANDMARKS
FOR A GLOBAL CITY





HOW WOULD THIS MODEL BE APPLIED TO THE CITY?



Finally, to test the application of this idea to the city. We looked a 10 hectare section of Kowloon, encompassing Shek Kip Mei, the very place where that unexpected event 50 years ago changed the course of housing in the city.

The population of this area is hard to calculate, so we estimate a community of around 50,000 people, occupying 15,000 dwellings.

In terms of social infrastructure, this area has four existing facilities

- _a community hall
- _a higher education centre
- _a library and
- _a church

But with the introduction of a SuperDensity system, we see any explosion of public benefit, with the potential for

- _4 new parks
- _3 sporting fields
- _3 schools
- _a cultural building and a hospital

Which support the intensification of the surrounding neighbourhood – at least 50% more homes, and potentially much more.

The self-containment of this system minimises impact on existing streets and transport systems.

EXISTING

10
HECTARES

HECTARES

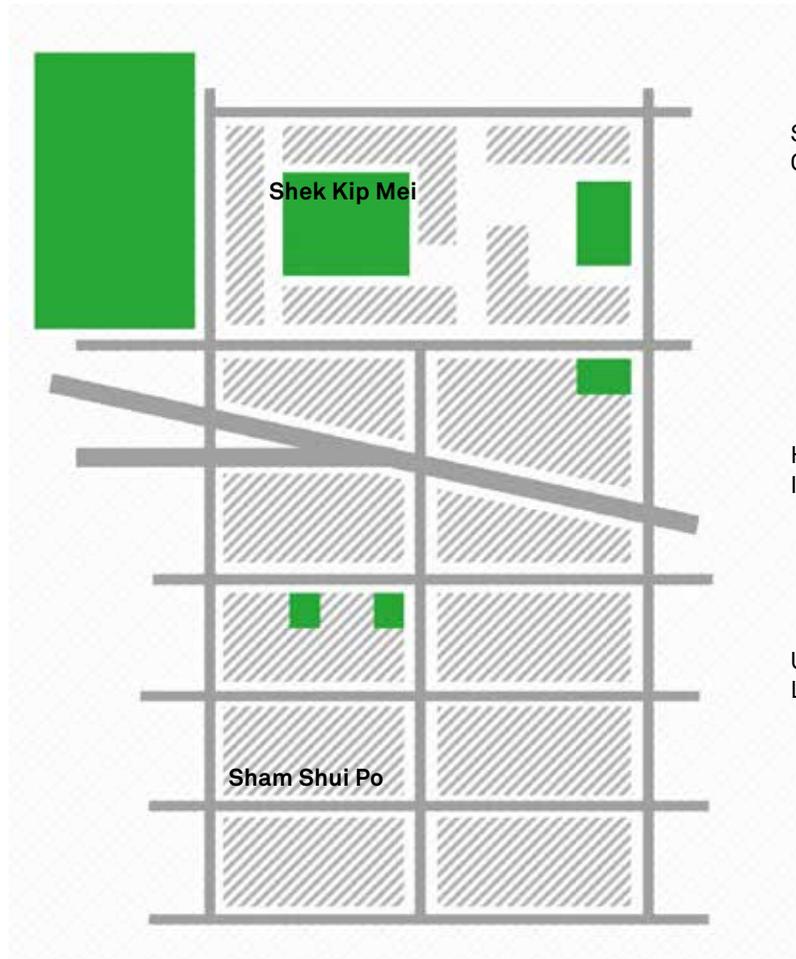
50000
RESIDENTS

RESIDENTS

15000
DWELLINGS

DWELLINGS

- 1 UNIVERSITY
- 1 LIBRARY
- 1 CHURCH
- 1 COMMUNITY HALL



Shek Kip Mei
Community Hall

Hong Kong
Institute of Technology

Un Chau Street Library
Living Stone Lutheran Church

POTENTIAL

10
HECTARES

HECTARES

75000
RESIDENTS

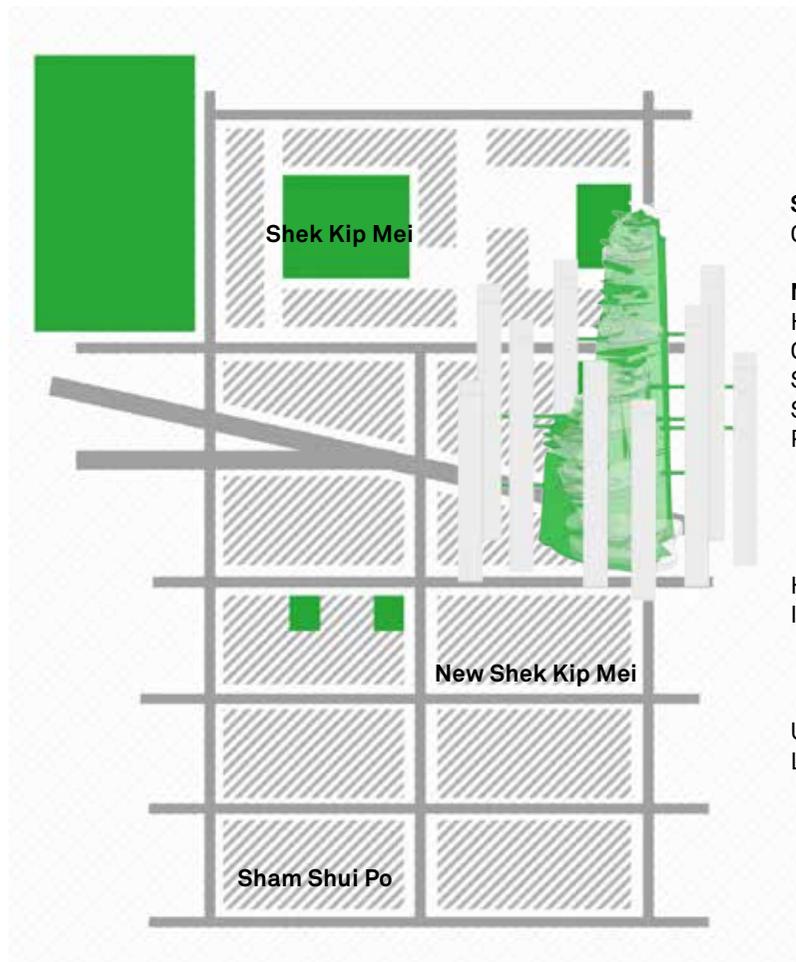
RESIDENTS

25000
DWELLINGS

DWELLINGS

- 1 UNIVERSITY
- 1 LIBRARY
- 1 CHURCH
- 1 COMMUNITY HALL

- 1 HOSPITAL
- 1 GALLERY
- 3 SCHOOLS
- 3 SPORTS FIELDS
- 4 PARKS



Shek Kip Mei
Community Hall

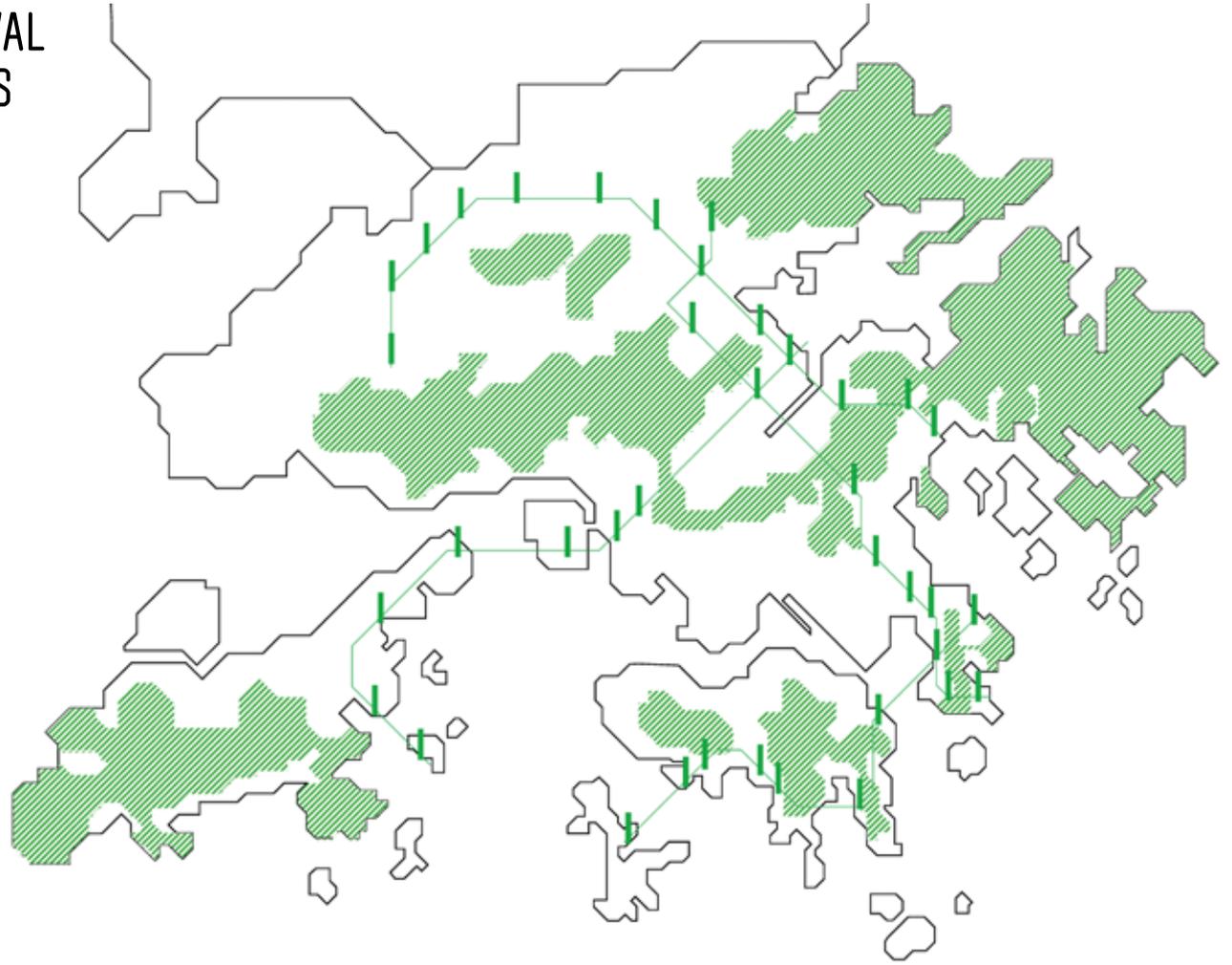
New Shek Kip Mei
Hospital
Gallery
Schools
Sports Fields
Parks

Hong Kong
Institute of Technology

Un Chau Street Library
Living Stone Lutheran Church

THE NEXT GENERATION OF HIGH-DENSITY NEIGHBOURHOODS

UNLOCKING RENEWAL POTENTIAL ACROSS THE ENTIRE CITY



This may one of many locations in the city where this type of renewal could occur. 40 places would easily yield homes for 1 million new residents.

We would see the redevelopment of major sites, whole streets and neighbourhoods, creating a multiplier effect of super-density across Hong Kong.

We have heard a number of people over the last 3 days speak about the importance of the city, of the ground plane, of public spaces.

Many of these incredibly exciting and evocative projects look at how we can add public benefit to private buildings, within residential, commercial and hotel developments.

With SuperDensity, we attempt to flip this model, to make public benefit the starting point, to create a system of public connectivity, public infrastructure, public spaces first ... one that allows for unrestricted public access at all levels, even to very top ... literally elevating the needs of the whole community to the highest level

With this, we may overcome the last hurdle of density, urban habitats as well as tall buildings, and creating the framework for the people-focused renewal of the city.

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