

***GRADIENTS IN  
VERNACULAR TISSUES  
NAVIGATING THE MEKONG DELTA***



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VERNACULAR TISSUES  
NAVIGATING THE MEKONG DELTA***

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# ***GRADIENTS IN VERNACULAR TISSUES NAVIGATING THE MEKONG DELTA***

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Thesis submitted to obtain the degree of  
Master of Engineering Science: Architecture

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# **ABSTRACT**

This thesis explores the complex interplay between natural processes and human activities in the Mekong Delta through three interconnected themes: Gradients of Wetness, Gradients of Commons, and Gradients of Urbanism. Each theme examines different aspects of the dynamic landscape, socio-cultural and inhabitation structures in this unique region.

Gradients of Wetness addresses the varying degrees of water presence, from highly flooded areas to minimally wet zones. It highlights how these gradients influence land occupation and use, vegetation, and settlement patterns. By analysing the seasonal changes of water bodies like the Tonle Sap Lake and the Mekong River, the Western modern ideas of stable landscapes are challenged, emphasising the fluid boundaries between land and water.

Gradients of Commons looks into the changing dynamics between public and private spaces, communal resources, and shared amenities. It explores how these gradients blur the lines between what is considered public and private, influencing social interactions, economic activities, and cultural practices. By focusing on the communal aspects of urban living, it is revealed how shared amenities and spaces foster social cohesion and resilience among delta communities.

Gradients of Urbanism examines the changing urban landscape, infrastructure, and socio-economic conditions. It critically analyses urban tissues, the expansion of built-up areas, and the effects of national and international development policies on local communities. This section provides insights into the spatial changes and their socio-economic impacts on the region.

Through detailed fieldwork and analysis, these theses aim to provide a comprehensive understanding of the Mekong Delta's dynamic landscapes. The underlying patterns and mechanisms that shape the region offer valuable insights for truly sustainable development and management. There is a need to get away from a dichotomous way of thinking, to not view land versus water, private versus public, or urban development versus traditional architecture—but as interdependent sets of continuous gradients. In the Mekong Delta, local communities already perceive and manage these aspects as gradients, integrating them into their everyday practices. This indigenous approach teaches us that by embracing these fluid boundaries, Western perspectives can change, drawing on the practices that have supported the Delta's socio-ecological systems for generations.

# ***TABLE OF CONTENTS***

<i>ACKNOWLEDGEMENTS</i>	3
<i>ABSTRACT</i>	4
<i>TABLE OF CONTENTS</i>	5
<i>METHODOLOGY</i>	7

<b>GRADIENTS</b>	<b>9</b>	<b>GRADIENTS OF WETNESS</b>	<b>11</b>
		HASSE PEETERS	
<i>WHAT ARE GRADIENTS?</i>	9	<i>INTRODUCTION</i>	16
<i>OUR GRADIENTS</i>	10	<i>UNDERSTANDING THE GRADIENTS</i>	21
		<i>INHABITING THE GRADIENTS</i>	27
		<i>TRANSFORMING THE GRADIENTS</i>	61
		<i>CONCLUSION</i>	64

## **GRADIENTS OF COMMONS**

RUBEN DEJAEGER

<i>INTRODUCTION</i>	75
<i>UNDERSTANDING THE GRADIENTS</i>	77
<i>GRADIENTS BY INHABITING</i>	112
<i>TRANSFORMING THE GRADIENTS</i>	133
<i>REQUEST FOR THE COMMONS</i>	137
<i>CONCLUSION</i>	138

## **65 GRADIENTS OF URBANISM**

HELENE DE FERM

<i>INTRODUCTION</i>	144
<i>UNDERSTANDING THE GRADIENTS</i>	145
<i>INHABITING THE GRADIENTS</i>	151
<i>TRANSFORMING THE GRADIENTS</i>	173
<i>CONCLUSION</i>	181
<i>CONCLUSION</i>	184
<i>BIBLIOGRAPHY</i>	185

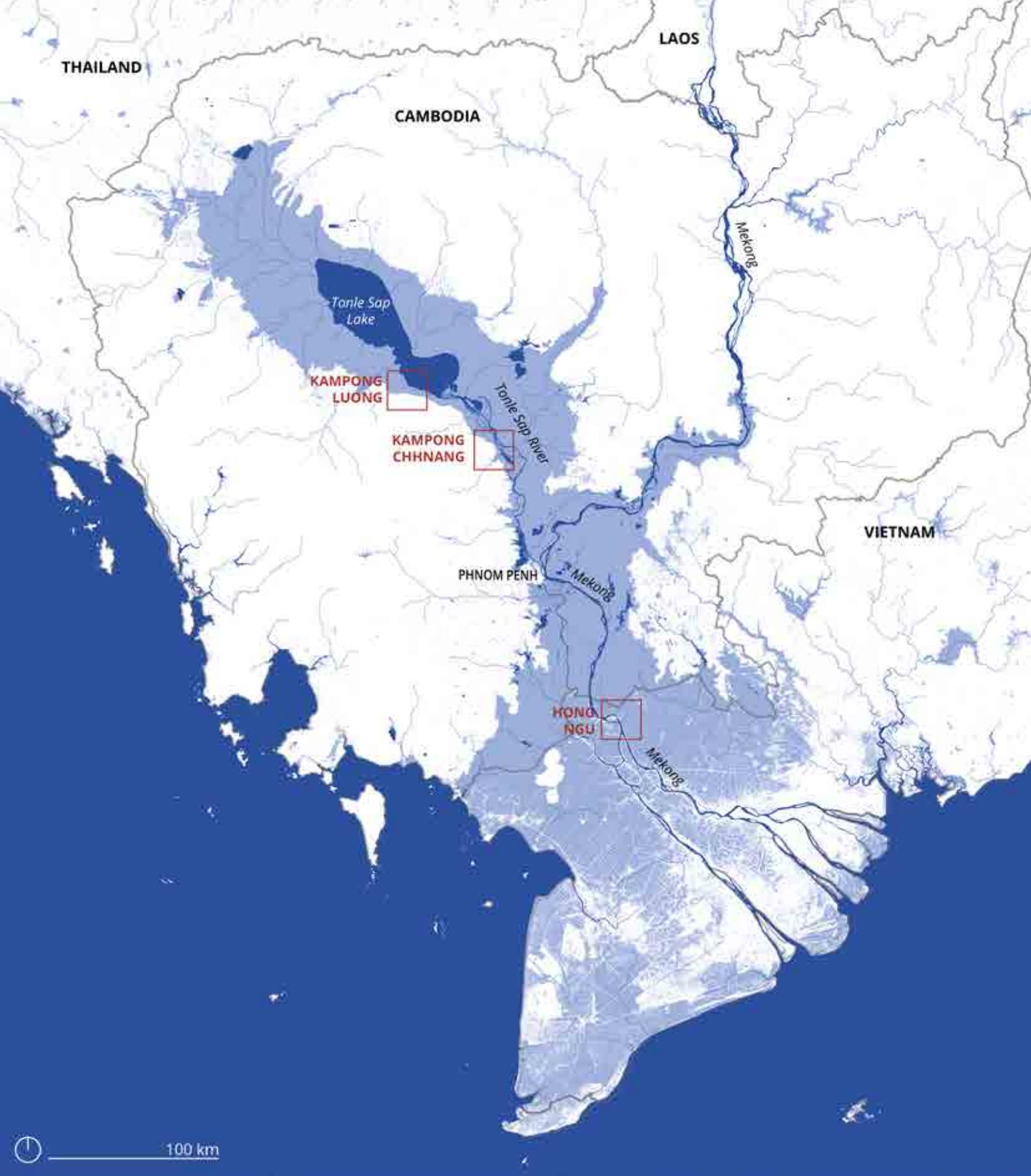
# METHODOLOGY

This book is an analysis of the fieldwork conducted in September and October 2023 by Helene De Ferm, Ruben Dejaegher and, Hasse Peeters. Ruben visited multiple villages in Kampong Thum Province east of Tonle Sap Lake in Cambodia and Hong Ngu in Vietnam. Hasse and Helene visited Kampong Luong and Kampong Chhnang in Cambodia and Hong Ngu in Vietnam.

In each town, three to four research areas were selected of 400 by 400 meter to analyse the inner workings of the settlements in more detail. The criteria for selecting these areas was to have different degrees of wetness. This meant that in each village a floating village, stilt housing and road-based housing or housing directly constructed on the ground were analysed.

Three themes that stood out during the fieldwork were further analysed. The first part, written by Hasse Peeters, focuses on the Gradients of Wetness. The second part, written by Ruben Dejaegher, focuses on the Gradients of Commons and the final part, written by Helene De Ferm, focusses on the Gradients of Urbanism.

**Figure 1**  
Three research areas: Kampong Luong and Kampong Chhnang in Cambodia, and Hong Ngu in Vietnam.  
(De Ferm, made with open source material)



THAILAND

LAOS

CAMBODIA

Tonle Sap Lake

KAMPONG LUONG

KAMPONG CHHNANG

Tonle Sap River

Mekong

VIETNAM

PHNOM PENH

Mekong

HONG NGU

Mekong

100 km

# ***GRADIENTS***

## ***WHAT ARE GRADIENTS?***

The concept of gradients can be found across various disciplines, ranging from physics and mathematics to biology and geology. At its core, a gradient signifies a gradual change in a property or condition over a distance, often characterized by a slope, rate of change, or transition from one state to another.

In physics and mathematics, gradients are commonly encountered in the study of fields such as temperature, pressure, and concentration. For instance, temperature gradients describe the change in temperature over a given distance, while concentration gradients depict the variation in the concentration of a substance within a medium. These gradients play a crucial role in processes such as diffusion, convection, and heat transfer, shaping the behavior and interactions of particles and substances (Earle, S., 2024).

In geology, gradients manifest in the form of elevation changes, slope angles, and geological formations. The gradual incline of mountain ranges, the slope of river valleys, and the stratification of sedimentary layers all exemplify the diverse expressions of gradients in the Earth's landscape. Understanding these geological gradients is essential for interpreting geological processes, landform evolution, and natural resource distribution (Libretexts, 2020).

In contrast to the nuanced perspective of gradients, the Western context often tends to conceptualize spatial boundaries in binary terms, delineating spaces as either dry or wet, public or private, developed or undeveloped. This approach overlooks the subtle transitions and gradients that characterize complex systems and environments. This shift in perspective allows for a more holistic understanding of the dynamic interplay between human activities and the natural environment.

Zooming into the realm of urbanism and human geography, gradients take on new dimensions and complexities. In the context of the Mekong Delta region, gradients of wetness, commons, and urbanism emerge as focal points of this thesis.

## OUR GRADIENTS

- 1 The **gradients of wetness** delineates the varying degrees of inundation and water presence across different areas within the delta, influencing land use, agriculture, and settlement patterns. This could encompass a spectrum ranging from highly flooded areas to those with minimal water presence, illustrating the diverse hydrological conditions and their implications on urban life.
- 2 Similarly, the **gradients of commons** reflects the evolving dynamics between public and private spaces, communal resources, and shared amenities within urban communities. It explores how these gradients blur traditional boundaries and shape social interactions, economic activities, and cultural practices.
- 3 Lastly, the **gradients of urbanism** examines the changing urban landscape, infrastructure, and socio-economic conditions. It covers urban tissues, the expansion of built-up areas, and the effects of national and international development policies on local communities. This section provides insights into the spatial changes and their socio-economic impacts on the region.

By examining gradients in their various forms and contexts, this thesis seeks to unravel the intricate interplay between natural processes, human activities, and spatial transformations in the Mekong Delta region. In this first part, our common book, we aim to uncover the underlying patterns, mechanisms, and implications of gradients on the dynamic delta landscapes.

*"Land and water, are not givens in nature; they are products of design on either side of an asserted line, a line that then unites them in a difference that favors land."  
(Mathur & da Cunha, n.d.)*

# ***GRADIENTS OF WETNESS***





# TABLE OF CONTENTS

<b>GRADIENTS OF WETNESS</b>	<b>11</b>
HASSE PEETERS	
<b><i>INTRODUCTION</i></b>	<b>16</b>
<i>FLUID BOUNDARIES</i>	16
<i>GRADIENTS OF WETNESS</i>	17
<b><i>UNDERSTANDING THE GRADIENTS</i></b>	<b>21</b>
<i>UNDERSTANDING THE FLOWS</i>	21
<i>GRADIENTS OF KAMPONG LUONG</i>	23
<i>GRADIENTS IN WET SEASON</i>	25
<i>GRADIENTS IN DRY SEASON</i>	26
<b><i>INHABITING THE GRADIENTS</i></b>	<b>27</b>
<i>INHABITING A SHIFTING TERRAIN</i>	29
<i>GRADIENTS AS A PRODUCTIVE RESOURCE</i>	55
<b><i>TRANSFORMING THE GRADIENTS</i></b>	<b>61</b>
<b><i>CONCLUSION</i></b>	<b>64</b>



# INTRODUCTION

## FLUID BOUNDARIES

A simple line, a spot coloured in blue, a static shape, an instant photograph,... That's how water is visualized to distinguish it from land, as two different entities with no common ground. Dynamic flows turn into static lines, creating the idea of a fixed location, of an entity with clear boundaries. Behind these boundaries, a hierarchy hides itself, where land is considered more important than water. Where water is expected to stay within its defined lines.

*“As land is seen as solid, stable and the basis of human habitation, water is seen as mobile and a threat to human settlement.”*

*(Bremner, 2019, p. 11).*

This hierarchy translates itself in designs and dictates a way of life. When water dares to exceed defined limits, humankind builds structures like dikes, levees and walls or heighten the land. All to protect, what is defined as habitable ground, from flooding. Floods are seen as a natural disaster, as the intrusion of water across established boundaries, invading undesired land territories (Mathur & da Cunha, 2009, p. 10). However, is it not the other way around? Are humans invading on the territory of rivers by inhabiting the floodplain?

*“We can continue to see these floods as drainage problems to solve, or we can see them for what they really are – erasures of the drawn line.”*

*(da Cunha, 2019, p. 211)*

Due to the impacts of global warming such as rising sea levels, increased temperatures, droughts and floods, the distinction between land and water is fading (Mathur & da Cunha, 2020). In response, there is a growing trend towards developing flood protection measures, aiming to reestablish the separation between water and land. A separation that only holds until water retakes its place.

*“In instances of flood, this violation is considered natural and the damage caused by it is labelled a natural disaster, forgetting that the line is a human invention.”*

*(Mathur & da Cunha, n.d.)*

◀ **Figure 1**  
Intricate interplay between water and land in Kampong Luong, Cambodia.  
(Peeters, September 2023)

## GRADIENTS OF WETNESS

It is often forgotten that natural features are in a constant state of motion. Waterfronts continually undergo alternations, they have no predictable path. So one can question if water is being approached with the right perspective. Instead of viewing water and land as opposing elements, could one consider varying gradients of wetness, acknowledging a fluidity of the distinctions?

Rather than giving water a fixed location, it should be recognized as having characteristic dynamism. Rivers and lakes are dynamic, seasonal forces of nature with lives of their own. In its fluid nature, water finds its own path. This might be called flooding, but it's just rivers doing what they naturally do, showing how alive and dynamic they are.

In order to illustrate this concept, the Tonle Sap Lake and the Mekong River are explored with their shifting seasons as a way to reorientate thinking in relation to the rhythms and cycles of water. These regions show an intricate interplay between water and land, where the traditional idea of a clear separation dissolves. Here, flooding is not seen as a disruption but rather as a fundamental part of the natural flow. There can be a reconceptualization from a fixed water-land perspective to one that recognizes the gradients of wetness, changing our vocabulary to align with this fluid understanding.

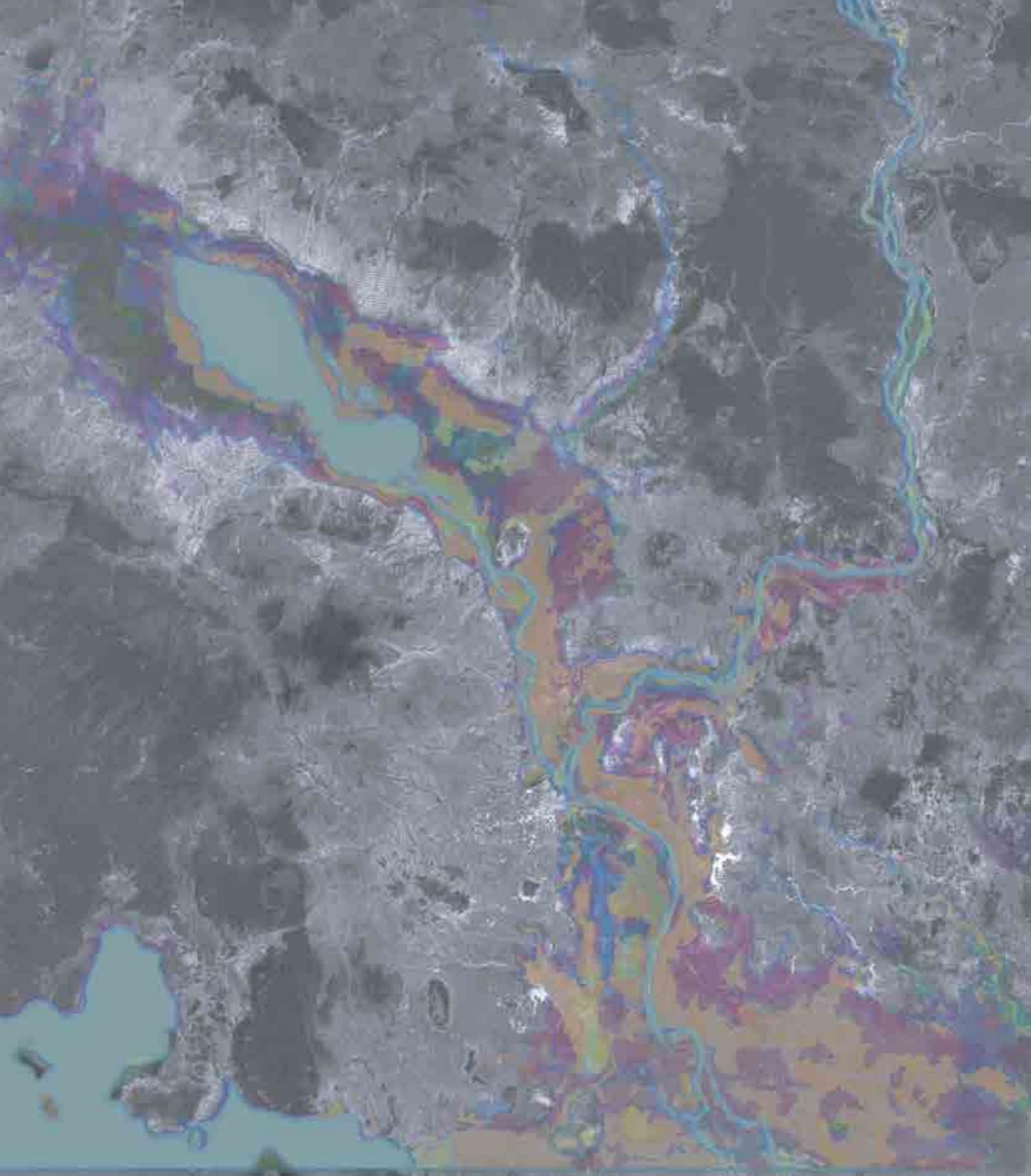
*'Rivers are alive. They're born, they live, they die. And if you open the lens wide enough, everything moves, nothing is static'*

*(Scott, 2020)*

**Figure 2** ►  
Movement of the Tonle Sap Lake over the past 30 years. Illustrating the dynamic shifts in the Tonle Sap Lake's movement and territory occupation.  
Source: Google Earth

20 km



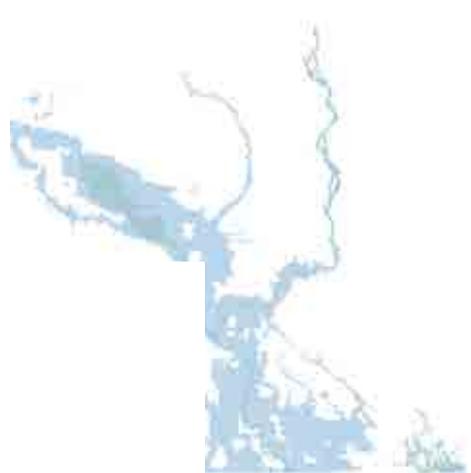




WET/DRY 2000



WET/DRY 2005



WET/DRY 2010



WET/DRY 2015



WET/DRY 2020

◀ **Figure 3**  
Comparison of the Tonle Sap  
Lakes expanse in wet and dry  
season over the past 30 years.  
The maps were used as layers  
on the previous drawing.  
Source: Google Earth

80 km



# UNDERSTANDING THE GRADIENTS

*“The most reliable aspect of river movement is what is called the flood pulse. It is the most important movement in the annual life of a river, it is that part of the year during which the river overflows its channel banks and occupies its habitual floodplain.”*

*(Scott, 2020)*

## UNDERSTANDING THE FLOWS

The region surrounding the Tonle Sap Lake experiences a seasonal metamorphosis, causing a dynamic interplay of ever-changing gradients of wetness. The Tonle Sap Lake, Tonle Sap River and Mekong River form an interconnected system that responds dynamically to the seasons.

The wet season, from late May to October, is characterized by intense rainfall, particularly driven by the southwest monsoon. During this period, the water level of the Mekong River significantly increases. So much so that it overflows into the Tonle Sap River, which causes the river to reverse its flow in the direction of the Tonle Sap Lake. Water reaches into the hinterlands and the floodplain of the lake gets saturated. The lakes expanse can reach up to 30 kilometres away from its waterfront during dry season, highlighting the significant impact of the wet season on the landscape (Poole & Briggs, 2006).

In November, the transition to the dry season occurs and the water level of the Mekong River starts to reduce. As a result, the Tonle Sap River reverts back to its previous flow direction, acting as a drainage system that channels water from the Tonle Sap Lake back into the Mekong. Consequently, the lake’s water level drops and the waterfront withdraws from the floodplain, reducing the surface area of the lake.

This constant shifting of waterlines throughout the year underscores the absence of rigid boundaries, emphasizing that the relationship between land and water is inherently dynamic and perpetually changing, challenging any attempts at strict control.

Mekong River \_\_\_\_\_

Tonle Sap Lake \_\_\_\_\_

Tonle Sap River \_\_\_\_\_

**Figure 4** ►

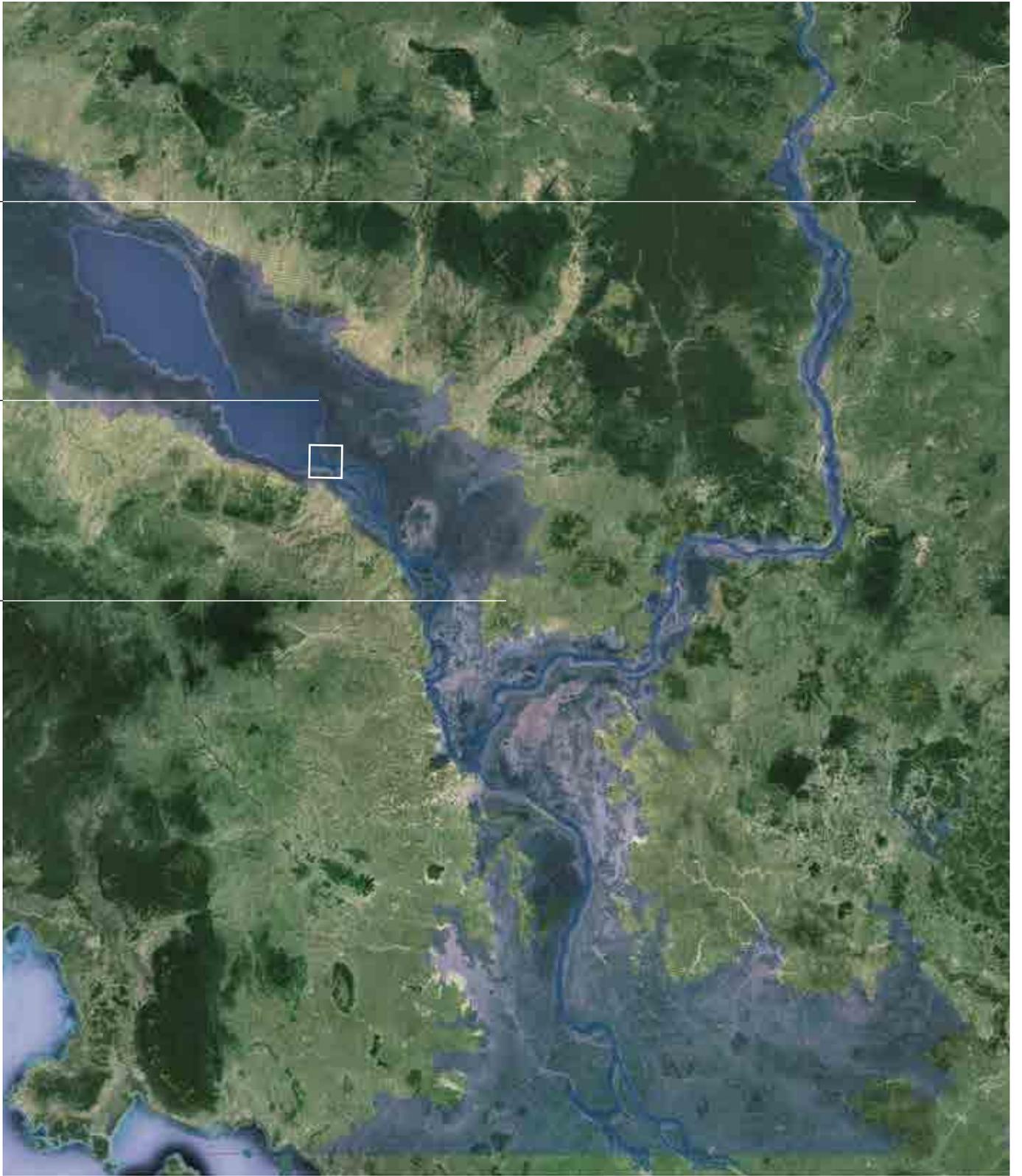
The Tonle Sap Lake, Tonle Sap River and Mekong River form an interconnected system that responds dynamically to the varying seasons.

Source: Google Earth (2023)

Kampong Luong 

20 km





## GRADIENTS OF KAMPONG LUONG

**Figure 5** ▶  
Gradients of Kampong Luong  
from deep water to 'high land'.

Deep water —————  
Always wet

Inundated shrubs —————  
Seasonally wet

Inundated forest —————  
Seasonally wet

*"The flooding of a floodplain represents the lungs of a river, in a literal sense  
the condition of its vitality and that of the creatures who depend upon it."*

*(Scott, 2020)*

Ponds —————  
Seasonally varying  
in depth

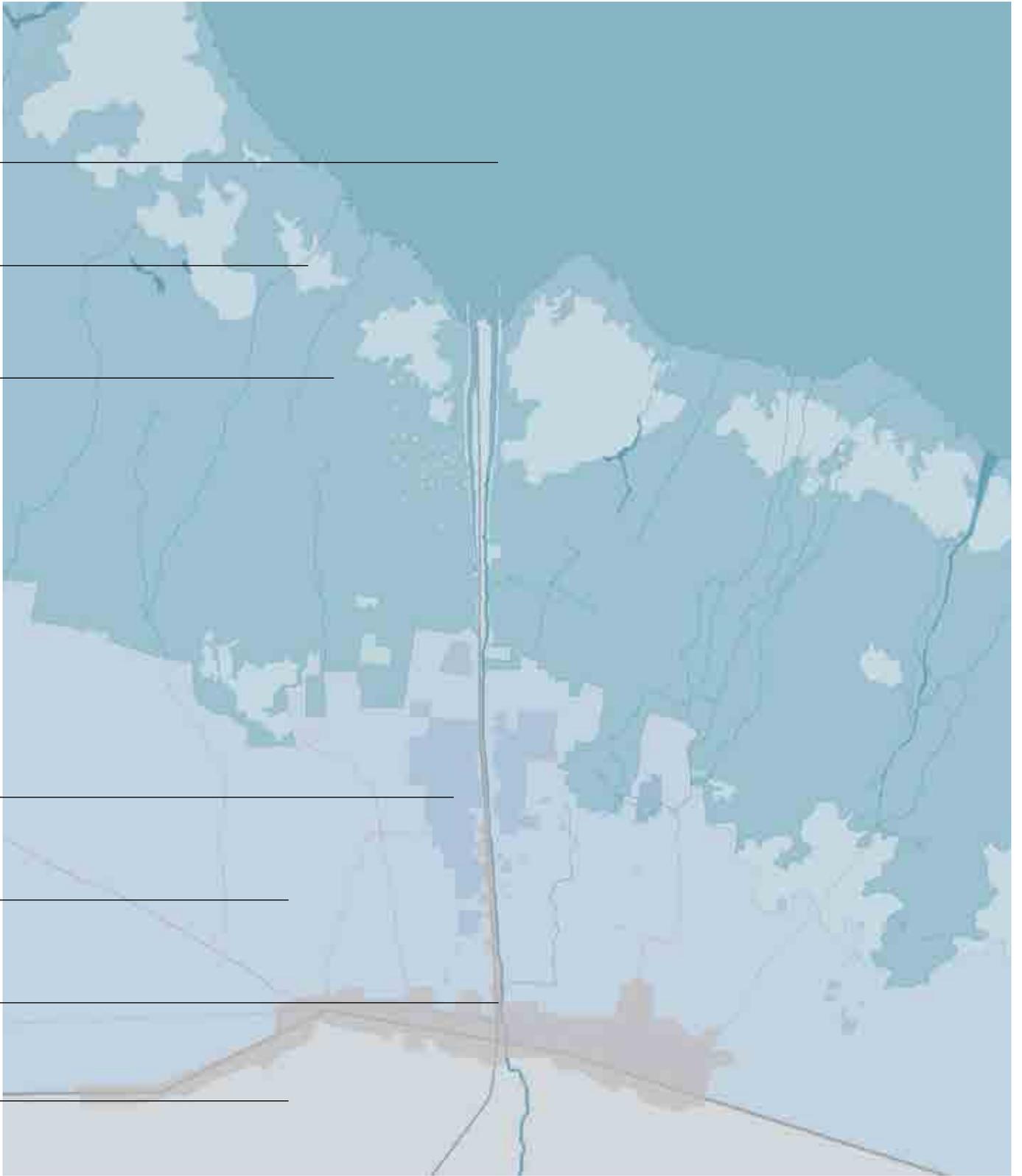
Flood-recession rice —————  
Seasonally varying  
in depth

'High land' village center —————

Rainfed agriculture —————  
Seasonally saturated

500 m





## GRADIENTS IN WET SEASON

Starting at the end of May, when the Mekong floods the Tonle Sap plain and rainwater swells its tributaries, the center of Cambodia becomes an immense body of water. The Tonle Sap Lake becomes a reservoir for life, as it absorbs forests, rice fields, roads, and more into its vast expanse.

During the height of the rainy season, every watercourse surrounding the lake swells, creating an interconnected network of waterways. Fields are flooded and the areas beyond the lake's reach get saturated by rain, nourishing the soil. New watercourses emerge, carving their way through the landscape.

In the midst of this dynamic scene, the floodplain undergoes a transformation. The inundated forests and vegetation contribute to the nutrient richness of the water, creating an optimal habitat for diverse fish species/animals. At the same time, the flooded land/floodplain gets a break, giving it a chance to restore its fertility. This regular flooding, a consequence of nature doing its thing, brings life to the environment, making it fresh and renewed in just a few months (Poole & Briggs, 2006).

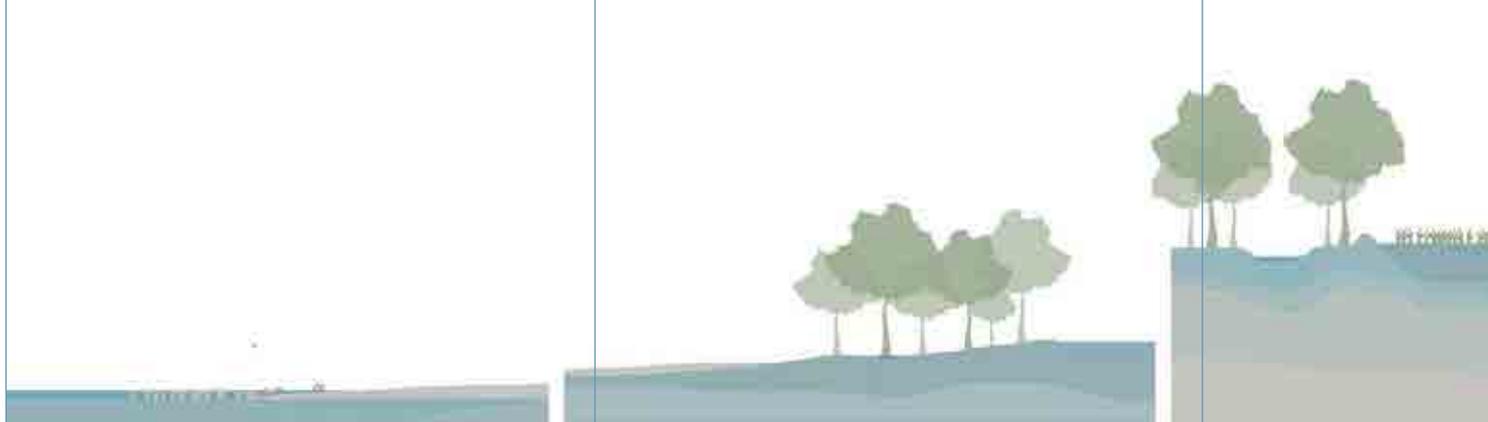
Deep water

Inundated forest

Flood-recession rice



WET SEASON



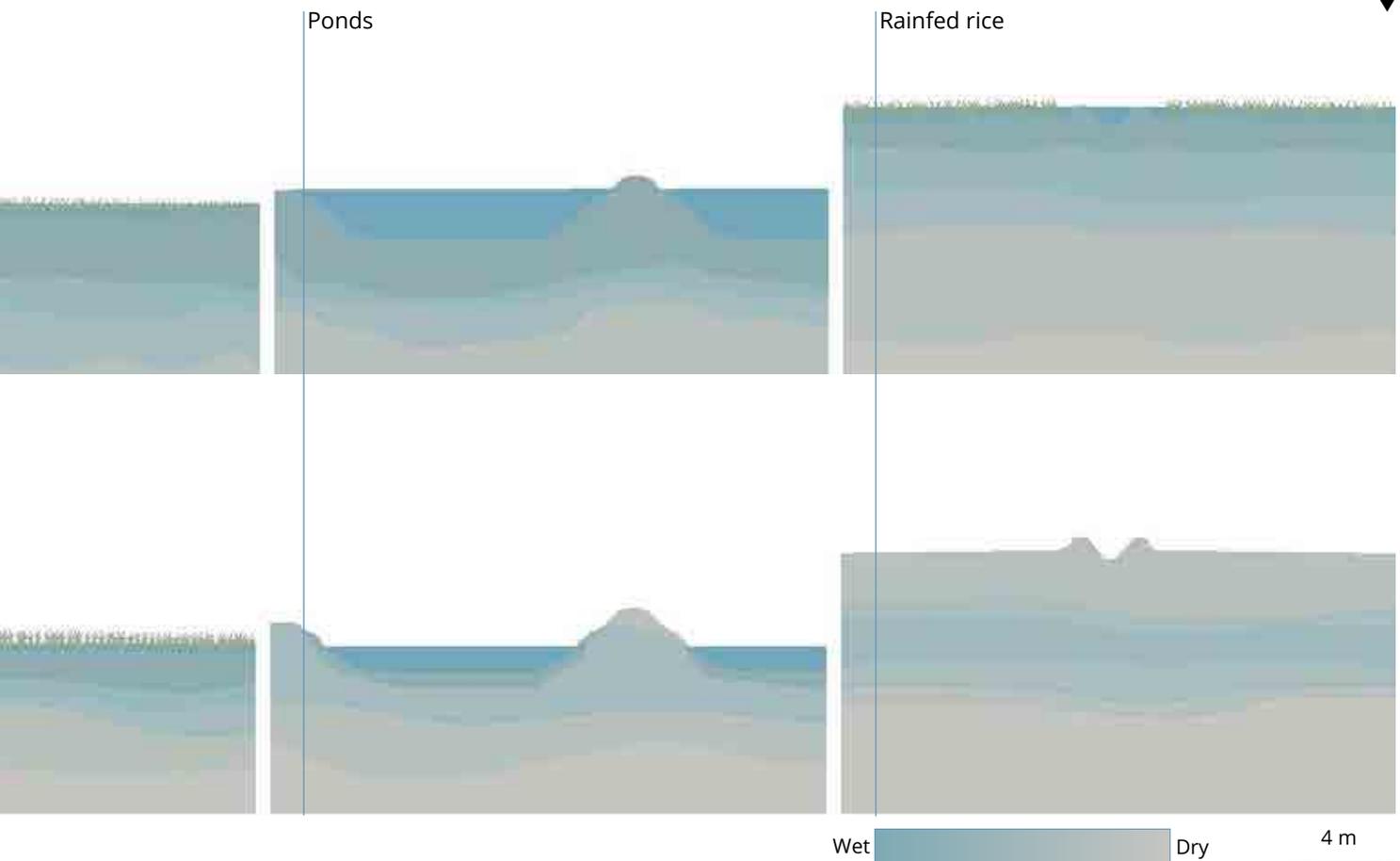
DRY SEASON

## GRADIENTS IN DRY SEASON

As the dry season unfolds and the water recedes, the floodplain and shallow areas of the lake become accessible again, offering valuable space for fishing and agriculture. With the receding water, muddy pools, ponds and saturated rice paddies are left behind on the plain. In this seasonal transition, villagers cultivate crops such as rice, mung beans, watermelon, pumpkins and others. As the sun intensifies, pastures and rice fields dry up, and water holes gradually disappear (Poole & Briggs, 2006). The landscape transforms into a vast plain decorated with grasses, trees, and cultivated plants, creating a distinct contrast to the wet season landscape.

The continuous movement of water in these natural cycles creates varying gradients of wetness across the landscape, where water is an ever-present force. It demonstrates that when allowing nature to follow its course, distinguishing land from water becomes impossible. The changing shapes of the natural landscape occur without human intervention, yet still offer resources for human use.

**Figure 6**  
Section through the gradients  
of Kampong Luong in wet and  
dry season.



# INHABITING THE GRADIENTS

The Tonle Sap Lake and its surrounding wetlands serve as the habitat for over 3 million people (Conservation International, 2017), whose livelihoods depend on its ever-changing rhythms. Rather than visualizing the lake as contained between set boundaries, these communities perceive it as a dynamic force, changing with each passing season. Without the fertile floodplain provided by the seasonal ebb and flow of Tonle Sap, the very foundation of these communities would cease to exist.

Among these communities is Kampong Luong, one of 170 floating villages (Poole, 2016) adapt to and live with these dynamic patterns that dictate the way of settling. In order to live within this fluctuating landscape, a heightened level of anticipation is crucial. This anticipation is not only observable in the daily lifestyle of the residents but also profoundly influences the architectural choices made to harmonize with the shifts in water levels.

The architectural framework conceived for settlements around the lake goes beyond the mere construction of physical structures; it represents an effort to erase the conventional lines separating water and land. By inhabiting this shifting landscape, lines get turned into gradients. It is a matter of inhabiting the shifting gradients, rather than inhabiting the land.

**Figure 7** ▶  
Kampong Luong.  
The dynamic coexistence  
of human settlement and  
the ever-changing water  
landscape.  
(Peeters, October 2023)

**Figure 8** ▶▶  
Aerial image of Kampong  
Luong.  
(De Ferm, October 2023)

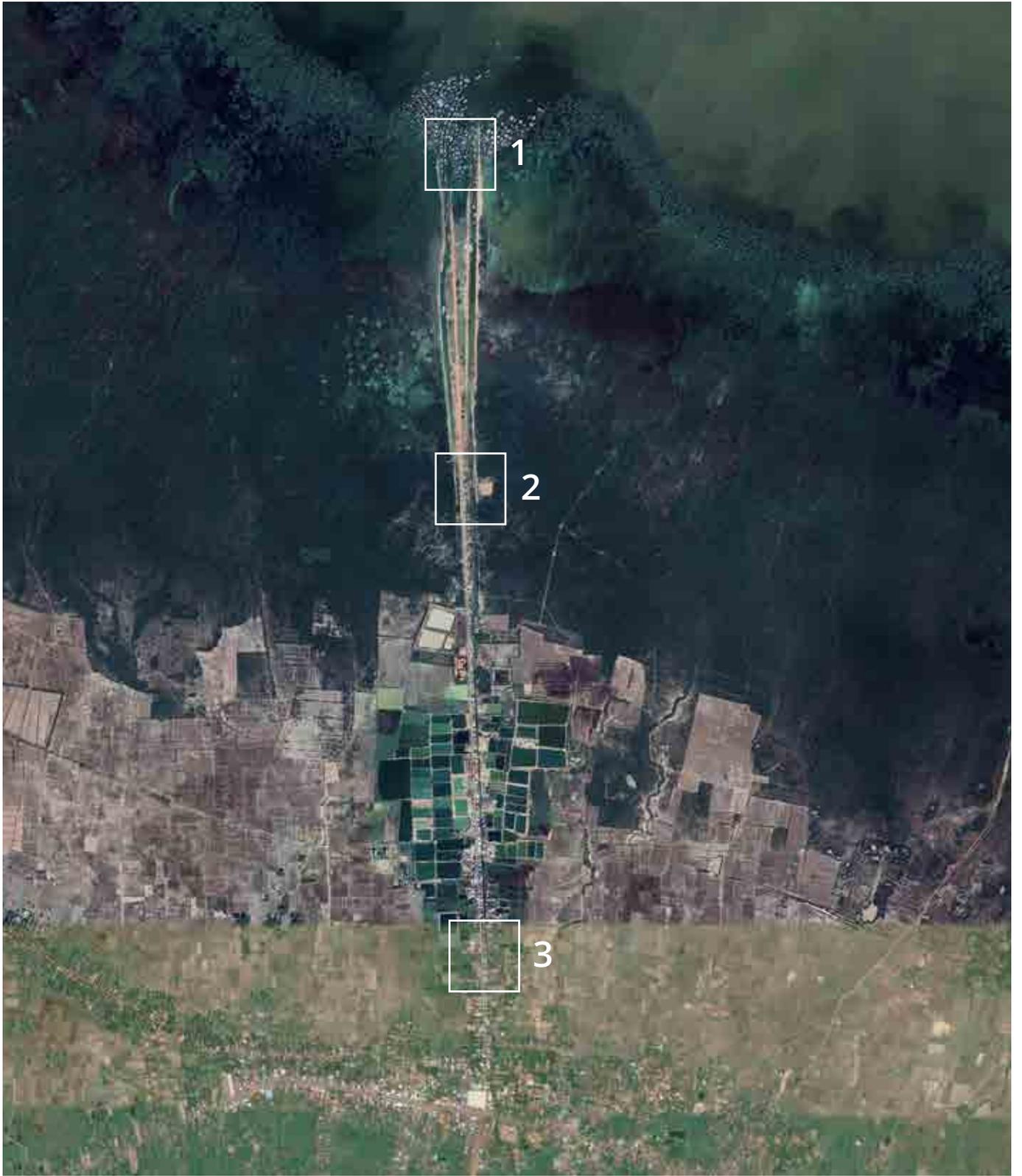




# INHABITING A SHIFTING TERRAIN







## KAMPONG LUONG

Kampong Luong, near Krakor in Cambodia, exemplifies adaptation to the gradients of wetness. The village features floating homes that move with the Tonle Sap Lake's seasonal changes, shifting closer to the shore in the wet season and out to the lake during the dry season. Stilt houses along the lake's edge adjust to rising waters, while ground-bound settlements facilitate agriculture in periodically inundated areas. This dynamic structure highlights the villagers' resilience and harmonious integration with their environment, balancing fishing and farming according to the water levels.

### SQUARE 1: FLOATING VILLAGE

This area consists entirely of floating houses that adapt to the seasonal changes of the Tonle Sap Lake. During the wet season, the village is closer to the lake shore and nestled among the tree canopies of the inundated forest. In the dry season, it relocates to the open lake to facilitate fishing activities.



### SQUARE 2: MOVING SETTLEMENT

This square features a mix of stilt houses along the lake's tributaries and floating houses that move inland during the wet season. The stilt houses are aligned with the lake's tributaries due to their reliance on the lake for fishing.



### SQUARE 3: RIVERSIDE SETTLEMENT

This area features a mix of stilt houses and ground-bound houses linked to the river and productive landscapes. The buildings blend seamlessly with the surrounding microtopography, creating a fluid connection between the settlements and the natural environment that supports agricultural activities.



◀ **Figure 9**  
Kampong Luong  
Source: Google Earth (2023)

500 m

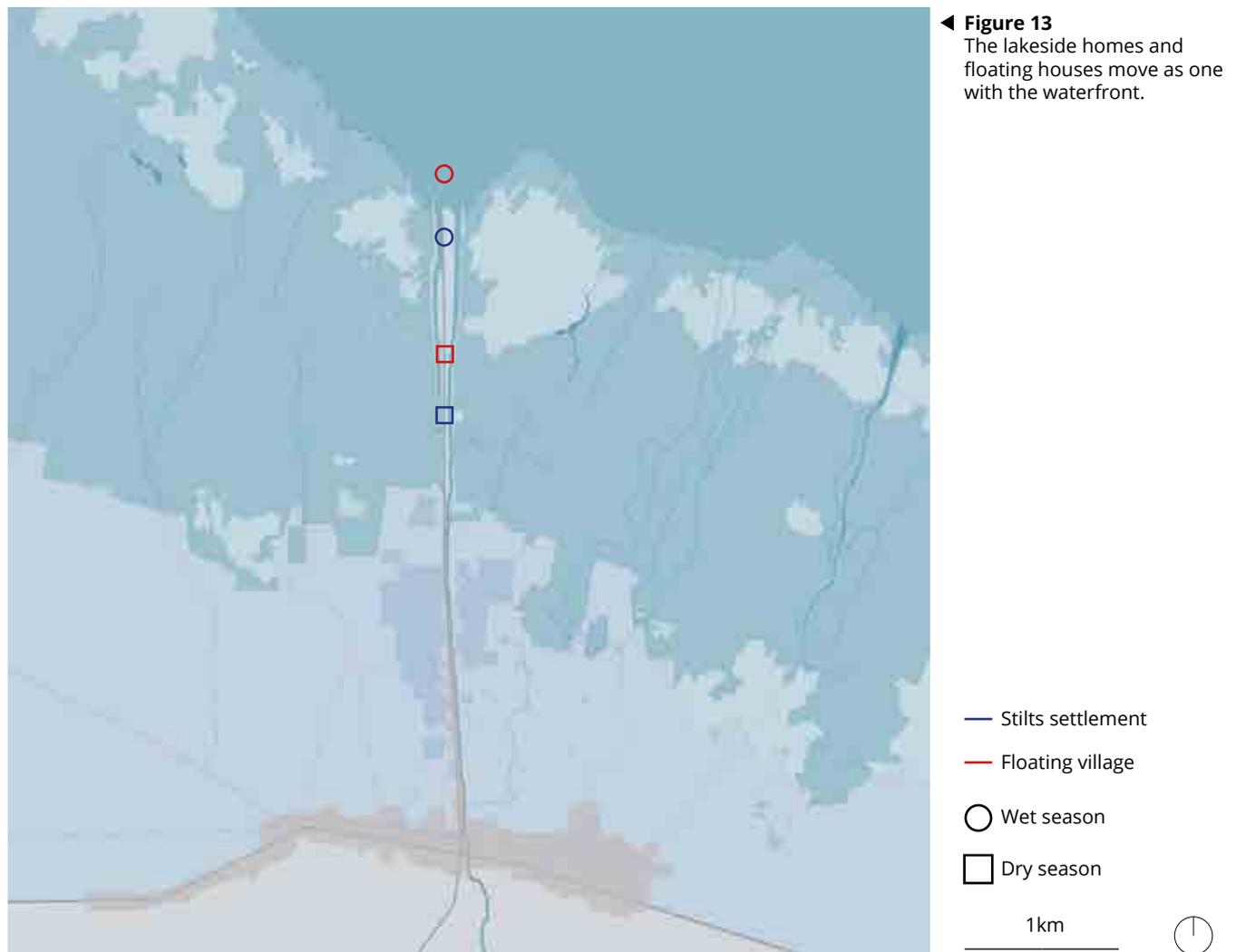


**Figure 10-12** ▶  
Research areas of 400 by 400 m  
in Kampong Luong  
(De Ferm, September 2023)

## SQUARE 1&2: ADAPTING TO THE TEMPORALITY OF THE GRADIENTS

In the wetlands, communities reside amidst floating structures and pathways shaped by daily life and natural forces like floods and vegetation. These settlements are composed of cultivated plants, water gardens, fishing lots, floating homes and houses on stilts used for various activities such as farming, fishing, and living. What's fascinating is how these settlements, with their paths and boundaries evolve with the changing seasons, constantly undergoing re-construction (Vu et al., 2022).

In Kampong Luong, both a floating and stilt community reside along the lake and its shores, each interacting differently with the lake, inundated forest, and land. Despite their different configurations, they both respond to the same water rhythm. The relationship between these settlements and the lake is fluid, with no rigid boundaries, as they move in sync with one another. The lakeside homes and floating houses seamlessly merge with the waterfront.





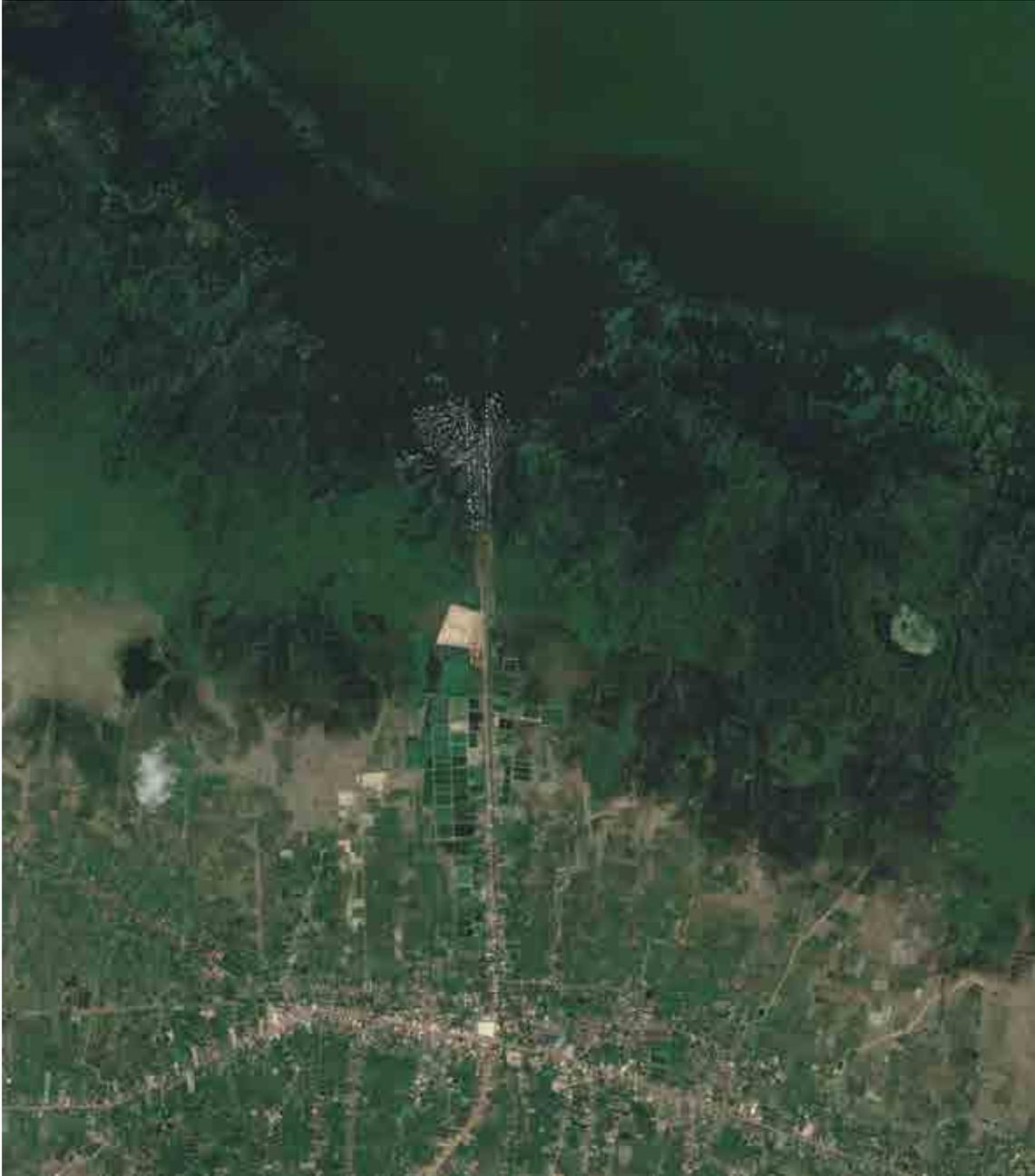
**Figure 14** ▶  
Floating village of Kampong  
Luong.  
(De Ferm, September 2023)



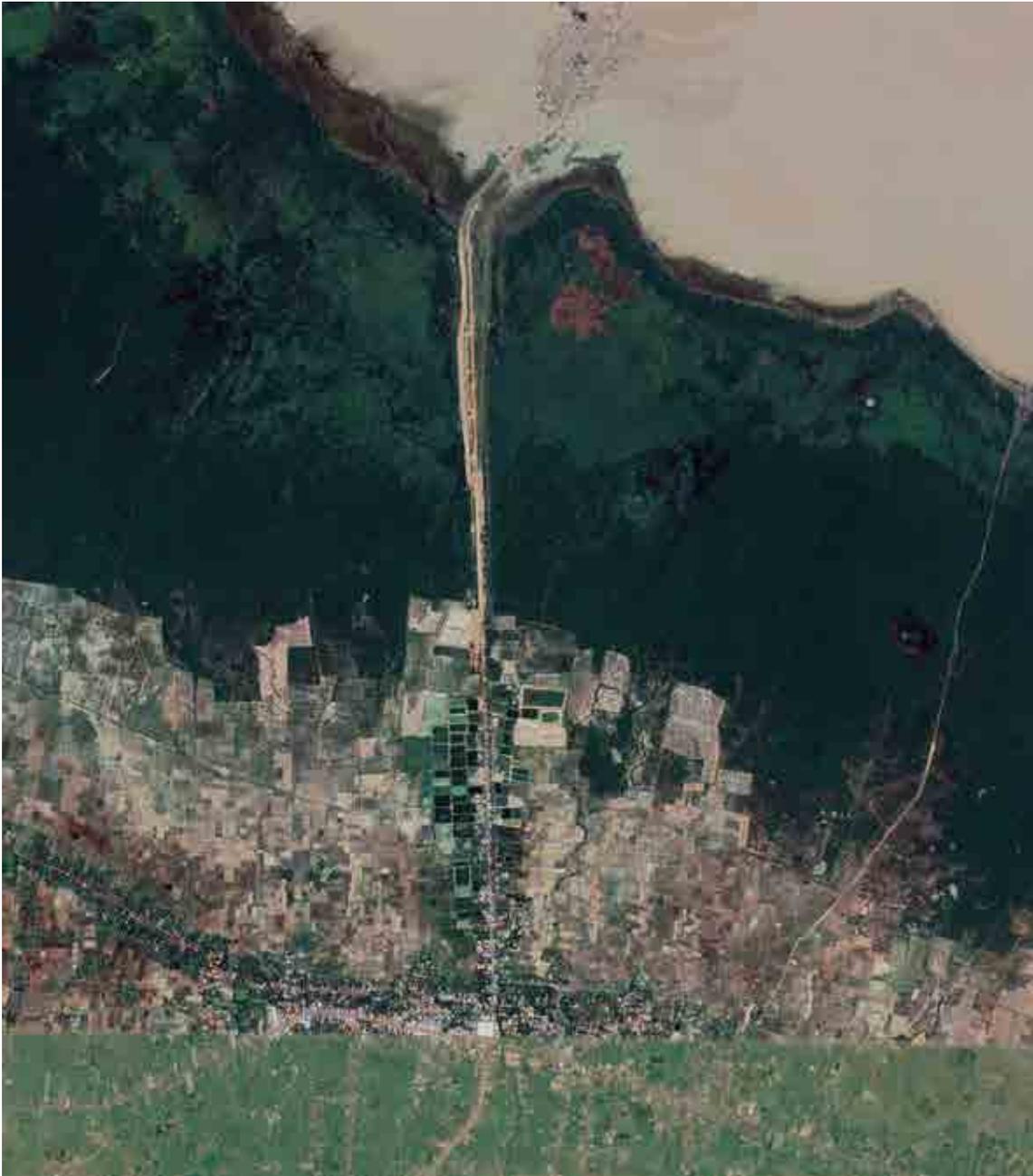
**Figure 15** ▶  
Stilt houses along the river  
mouth.  
(De Ferm, September 2023)

The floating village of Kampong Luong moves from closer to the lake's edge and in between the inundated forest in wet season, to the open lake during the dry season to facilitate fishing. The entire village relocates repeatedly each season in harmony with the lake's rhythms.

During the transition between the dry and wet seasons, the lakeshore shifts 2.5 km inland, causing the relocation of houses situated along the lakeshore. The movable stilt houses along the river mouth adjust their position up to 8 times a year to remain aligned with the lakeshore.



**Figure 16**  
Kampong Luong - wet season  
Source: Google Earth (2017)



**Figure 17**  
Kampong Luong - dry season  
Source: Google Earth (2019)

## SQUARE 1: FLUID ORGANISATION

As previously mentioned, the entire floating village relocates to the open water during the dry season. Throughout the wet season, the village shifts closer to the lake shore, nestled among the tree canopies of the inundated forest.

When observing the layout of the floating village from above, two main axes become apparent, along which the houses are linearly arranged. These axes align with the river's location during the dry season, which is typically the deepest point of the lake. On either side of these axes, the arrangement of houses appears less organised. In these areas, the presence of the inundated forest causes houses to be positioned between the protruding treetops, forming clusters. These clusters usually consist of multiple houses, often housing members of the same family. The configuration and organisation of the floating village are greatly influenced by the dimensions of the waterways and the hydrography of the area.



◀ **Figure 18**  
Floating houses clustered between the tree canopies and lineary placed along the main axes.

**Figure 19** ▶

Example of a cluster between the tree canopies: relatives live next to each other. (De Ferm, October 2023)



**Figure 20** ▶

The axes form the main water streets of the floating village. (Peeters, October 2023)



**Figure 21** ▶

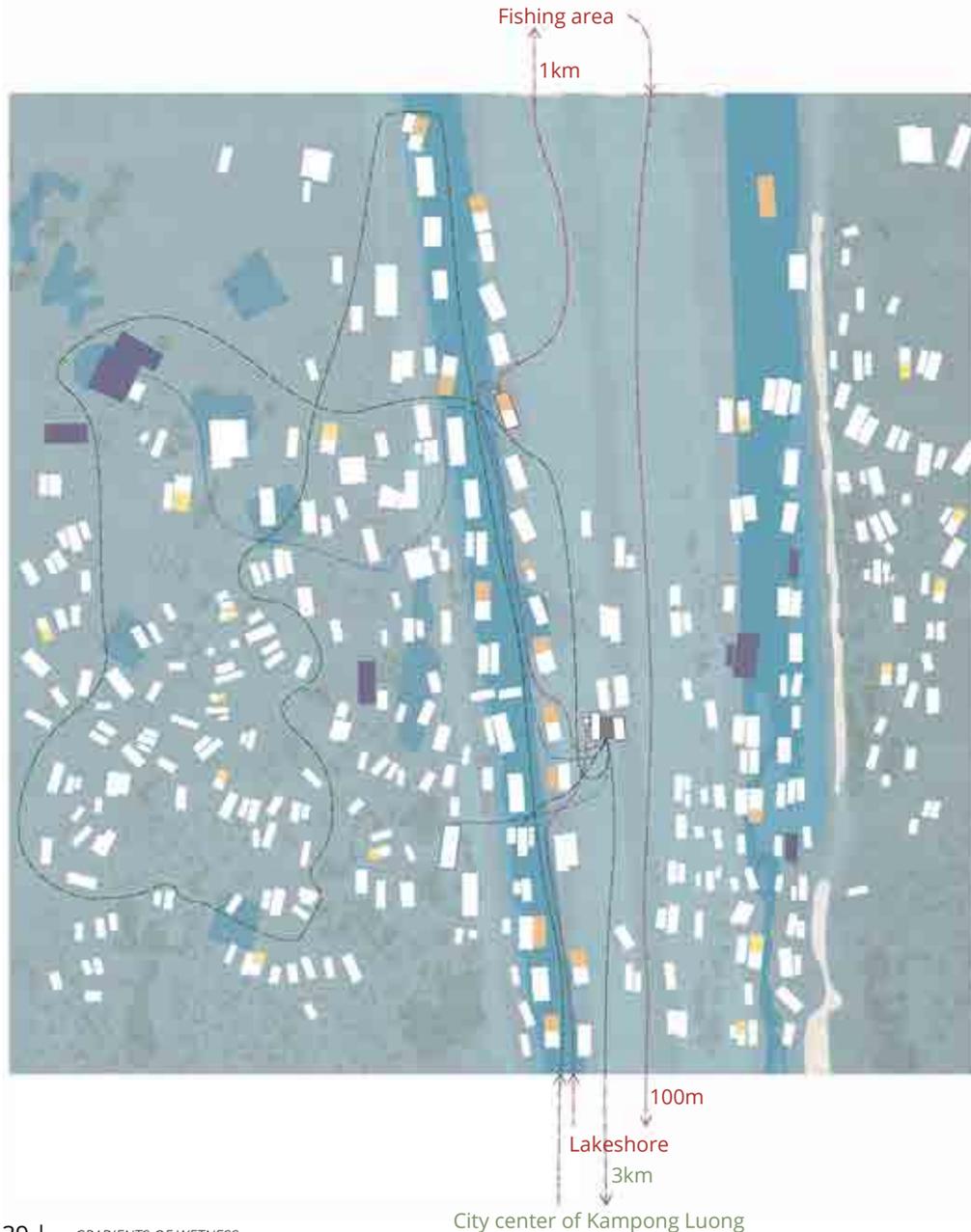
Differences in microtopography, hydrography and vegetation determine the configuration of the lake's settlement. (Peeters, October 2023)



The central axis serves as a central route for daily movement. It accommodates the majority of boat traffic and functions as the 'main street' of the floating village. Along this central route, essential services such as barbershops, boat repair workshops, and laundry services are situated. Spaces designated for social activities are more centrally located among the floating houses. Churches, temples, schools and playgrounds for children are a few examples. Additionally, grocery shops are dispersed throughout the village, with one typically found every few houses.

The floating village community encompasses more than mere housing. Although fishing constitutes the primary economic activity on the lake, sustaining a functioning village requires a diverse range of services and infrastructure. This broader community infrastructure becomes evident when observing a family's daily routines, as shown in the drawing below.

**Figure 23-31** ▶  
Daily movement of a family living on the lake.  
(Peeters, October 2023)



◀ **Figure 22**  
The public and community infrastructure of the floating village.



1 km outside the floating village, the fishing area begins. Before starting a day of fishing, the boat gets refueled at the petrol station. Around 4 p.m. the fishing is done and the catch is transported to the local market in the village center. The floating solar power station, 500m outside the village, charges the batteries of the houses.



Early in the morning she goes to the market on land in the city center to buy fresh goods to sell in the floating village. From morning until noon she goes with her boatshop from house to house, selling fresh vegetables and fruits. When the kids come home from school lunch is made. In the afternoon she brings clothes to the laundry service nearby.



At 7 a.m. the children get picked up by a school boat to go to school for half a day. In the afternoon the children help at home or are free to play on the floating playground, located close by their home.





▲  
**Figure 32**  
Small floating gardens adjacent to the houses are used for cultivating herbs and spices. (Peeters, October 2023)



▲  
**Figure 33**  
A villager comes to check his fish catch of the day. (Peeters, October 2023)



▲  
**Figure 34**  
Floating vendors passing by a  
floating grocery shop.  
(De Ferm, October 2023)



▲  
**Figure 35**  
A spirit house for a deity, must  
be positioned at an elevation  
higher than the houses of the  
floating village.  
(Peeters, October 2023)

## SQUARE 2: FLUID MOVEMENT

In Square 2, houses come and go depending on the season. In the wet season, floating houses, located on the tributaries of the lake, move inland. On land, most stilt houses are aligned with tributaries connected to the lake, due to their reliance on the lakes resources, particularly for fishing. While some houses remain in place throughout the whole year, equipped with land plots for continuous cultivation and residency, they are constructed from durable and more expensive materials. Other land-based houses move along the tributary or road trajectory according to water levels.



◀ **Figure 36**  
The different typologies in square 2, Kampong Luong.

-  Year-round stilt house
-  Movable stilt house
-  Floating house

40 m



Wet season



Dry season

**Figure 37** ▶  
Year-round wooden stilt house.  
A bamboo bridge makes the  
house accessible during high  
flood.  
(Peeters, October 2023)



**Figure 38** ▶  
Temporary stilt house of a  
family of four people. When  
this picture was taken, they  
had just relocated their  
home closer to the lakefront.  
(Peeters, October 2023)



**Figure 39** ▶  
Floating house on one of the  
tributaries.  
(Peeters, October 2023)





Stilt houses on land frequently gather in clusters with riverside floating houses. They often have familial ties or economic alliances, such as shared fishing enterprises. A wooden beam acts as a bridge connecting the different houses of each cluster.

The houses are constructed from lightweight materials such as corrugated metal sheets and fabric, alongside flexible wooden structures, allowing them to be repositioned approximately eight times a year. Many temporary structures incorporate solar panels to ensure access to electricity.

Along the riverbank, optimal conditions for cultivating vegetables exist, benefitting from the frequently rising water levels that nourish the soil. These vegetables provide a source of sustenance for the inhabitants.

Some people derive income from services unrelated to fishing, such as hairdressing, retail, or dining establishments. These services are often situated on high terrain, close to the road. Their movement is dictated by the port's location, as it serves as the hub of economic activities.

Level of wetness



Section AA'

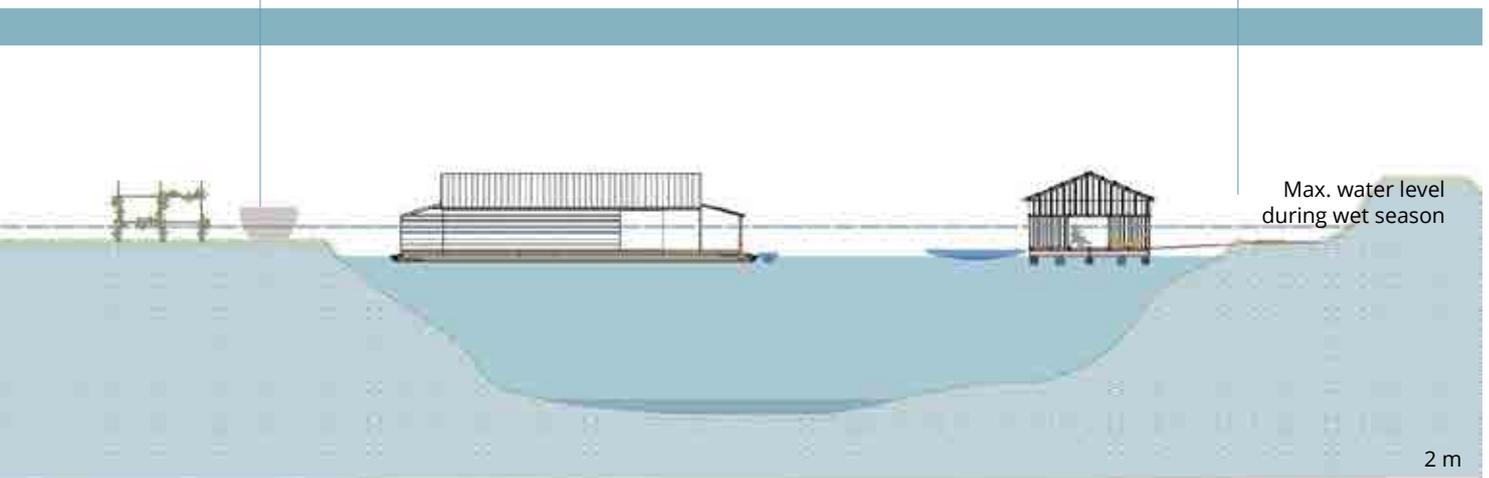


**Figure 40-44**  
Movable houses along the road and tributaries connected to the lake.  
(Peeters, October 2023)

Rainwater harvesting is facilitated through large ceramic vessels, collecting rainwater for essential purposes such as cooking and washing, while drinking water is obtained from nearby shops or the village centre.

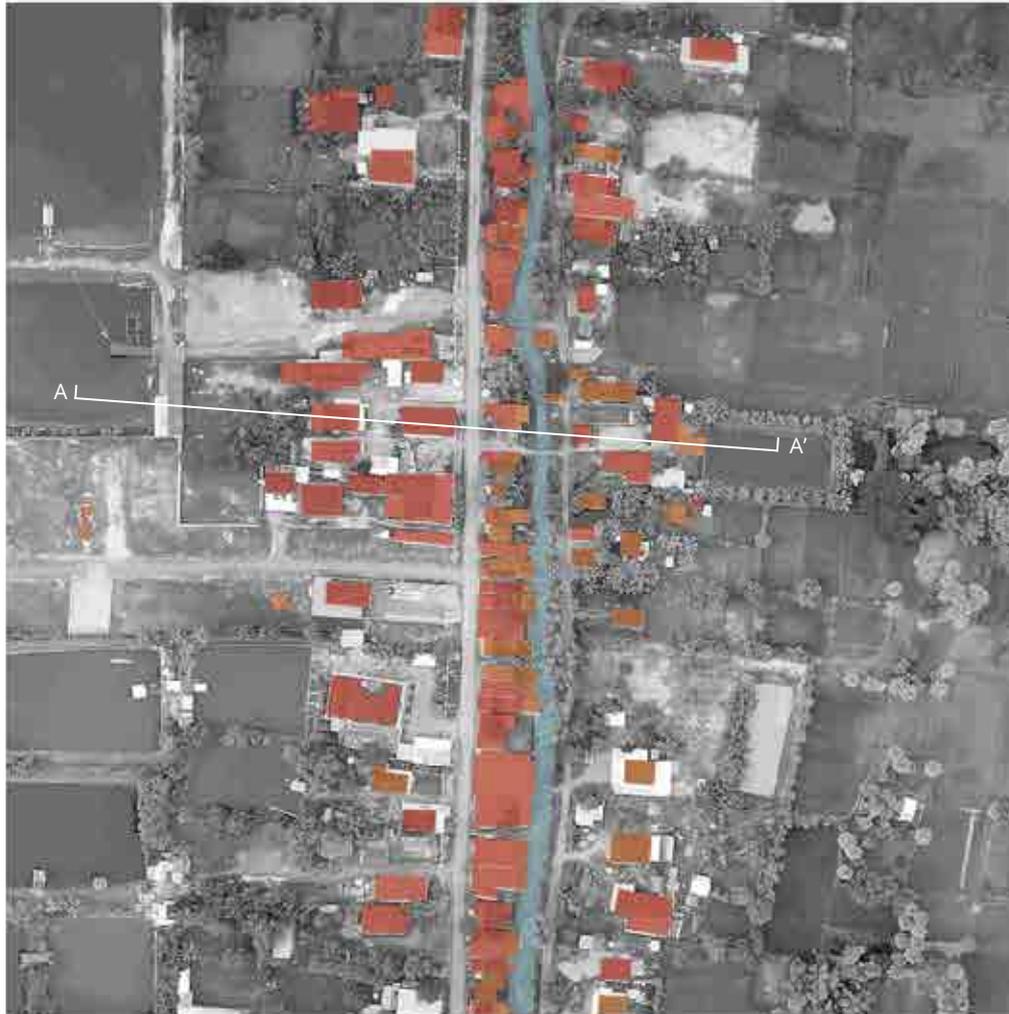
**Figure 45**  
Section AA' of Square 2

The facades of floating houses are made out of wood or steel sheets, supported by wooden frames and held afloat by bamboo branches or large barrels. Towards the end of dry season, these structures are often brought ashore for maintenance, utilizing wood harvested from the surrounding forest.



### SQUARE 3: FLUID CONNECTIONS

In Square 3, the intricate interplay between microtopography and water emerges as a defining feature for habitation. Microtopography serves as more than just land features, it acts as a canvas upon which various interactions with water unfold. These diverse relationships with water are reflected in the way people inhabit the riverside. Seamlessly integrating with the surrounding microtopography, the buildings mirror the water-land connections seen in the natural landscape.



◀ **Figure 46**  
The different typologies in square 3, Kampong Luong.

-  Ground bound houses
-  Stilt houses
-  Combination



Section AA'

Buildings are located on different topographical levels: on high land, in proximity to the river's edge, and on the river's edge. All one part with the landscape, all in different relation to the river. Heightened pathways and bridges are placed on top of the natural microtopography, connecting the landscape's natural flows with the settlement structures (Vu et al., 2022).



◀ **Figure 48**  
The bridge connects the two sides of the riverbank.  
(Peeters, September 2023)



◀ **Figure 49**  
View on Square 3. Houses are placed on high land, near the river's edge, and on the riverbank.  
(De Ferm, September 2023)

▼  
**Figure 47**  
The buildings are strategically placed on varying topographical levels. They harmonize with the surrounding terrain, each reflecting a unique connection to the river or connected to productive land.



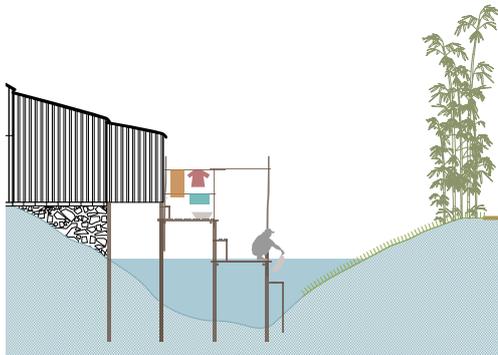
## Typology A: on the riverbank

This house is positioned on elevated terrain and extends over the riverbank, supported by a stone foundation. The wooden extension at the back of the house gradually descends into the water. As the seasons shift, so do the water levels, shaping the dynamic functions of the settlement's structures.



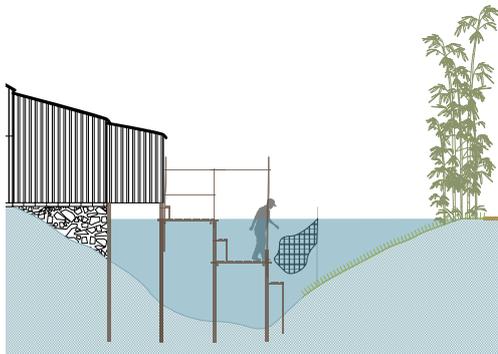
### March - dry season

During the dry months of the year, all levels of the wooden terraces reveal themselves. The different platforms can serve various purposes such as drying clothes, cooking, or providing a small terrace for relaxation. The riverbank is utilized to be able to access the water.



### October - wet season

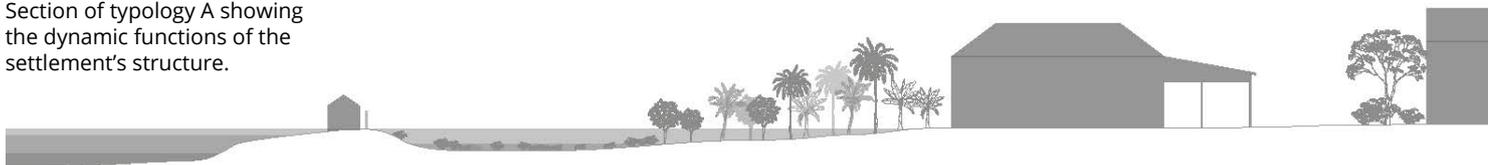
In the rainy season, the river reaches the lowest level of the wooden structure. The water is now easily accessible from the wooden platforms, facilitating activities such as dishwashing, bathing or cooking.



### October - after heavy rainfall

Following heavy rainfall, floodwaters rise to the foundation of the house, presenting an opportunity for fishing due to the increased water flow. The water reaches the highest wooden platform. The water flows faster which means it's time to fish.

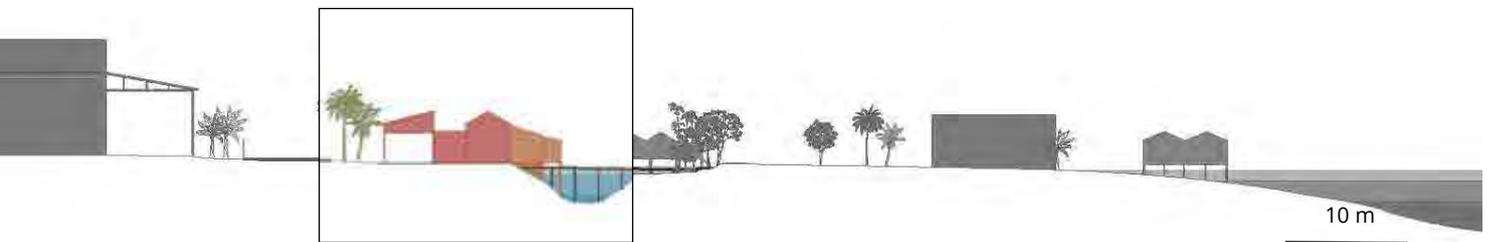
▲  
**Figure 50**  
Section of typology A showing the dynamic functions of the settlement's structure.



**Figure 51** ▶  
The wooden structure serves as an expansion of the living space. This image was taken during flooding season. (Peeters, September 2023)



**Figure 52** ▶  
The wooden structure completely disappeared after a heavy rainfall during flooding season. (De Ferm, October 2023)



## Typology B: on the river's edge

Living spaces adapt in response to seasonal fluctuations in water levels. Depending on the river's water level, living areas may expand or contract accordingly. During periods of low water levels, the space beneath the house, between the stilts, can be utilized as additional living space. In contrast, when water levels rise, the stilts serve a different purpose, allowing the house to remain elevated and dry above the waterline.



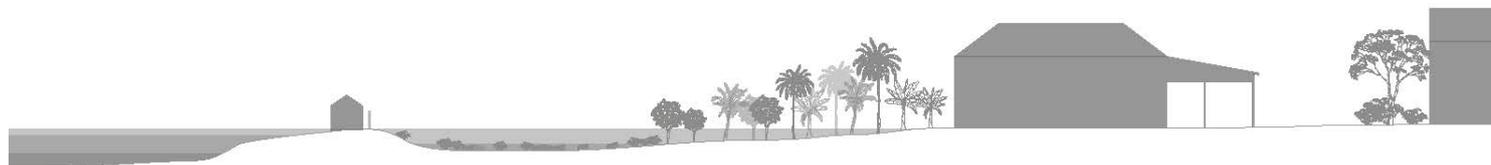
**Figure 53**

While the house on stilts remains fixed, everything else is changing throughout the year.



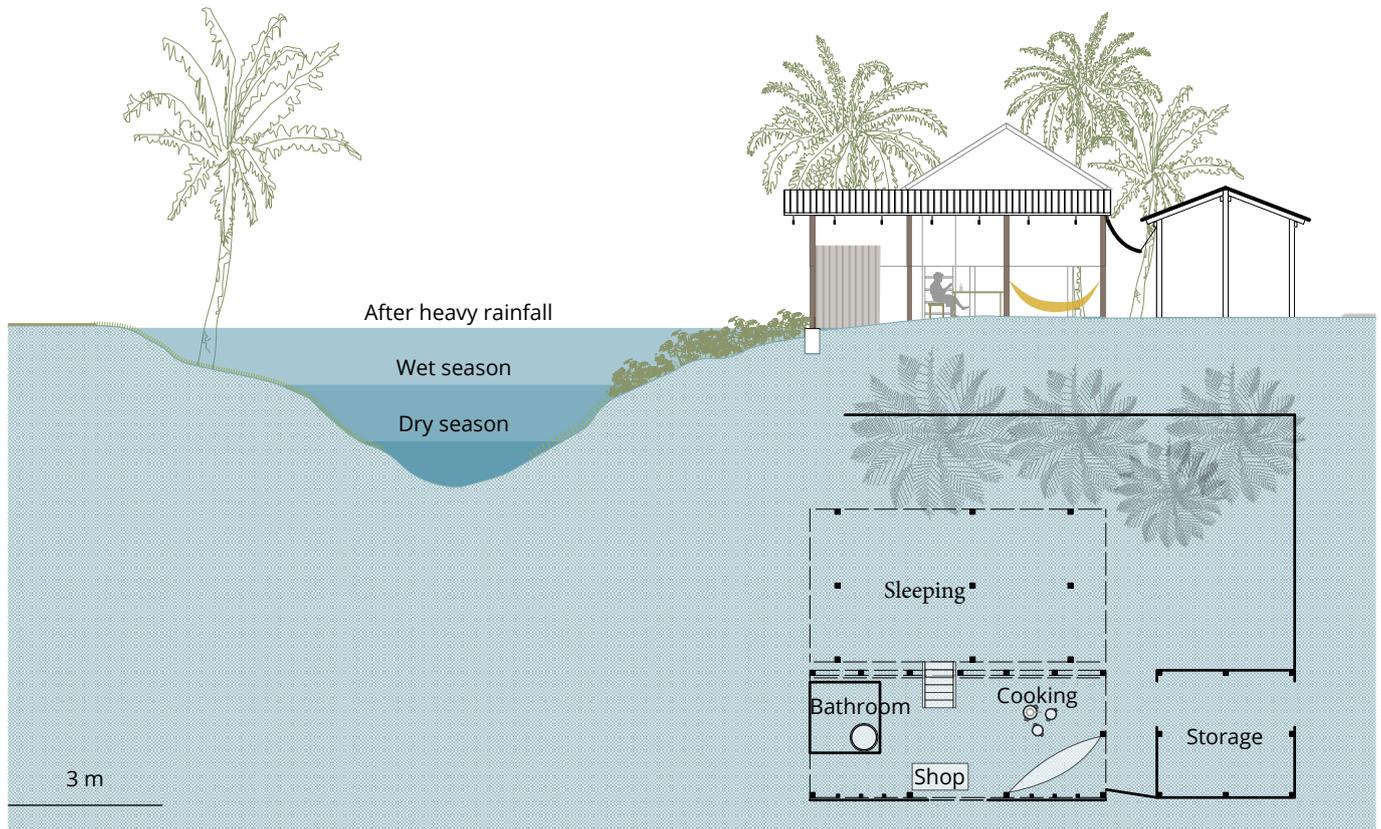
**Figure 54-56**

These pictures were taken before and after a heavy rainfall during wet season. (Peeters, October 2023)



## Typology C: on the higher riverbank

As the wet season arrives, the house becomes partially submerged under floodwaters. To mitigate the impact of the rising river levels, activities and amenities are strategically positioned farther from the river's edge. This gradient in land use corresponds directly to the varying degrees of wetness experienced across the landscape. Along the riverbank, lush vegetation prevents erosion and stabilizes the soil. Remarkably, the house stands without the need for a protective dike, relying instead on the natural resilience of its surroundings and the thoughtful placement of essential structures.

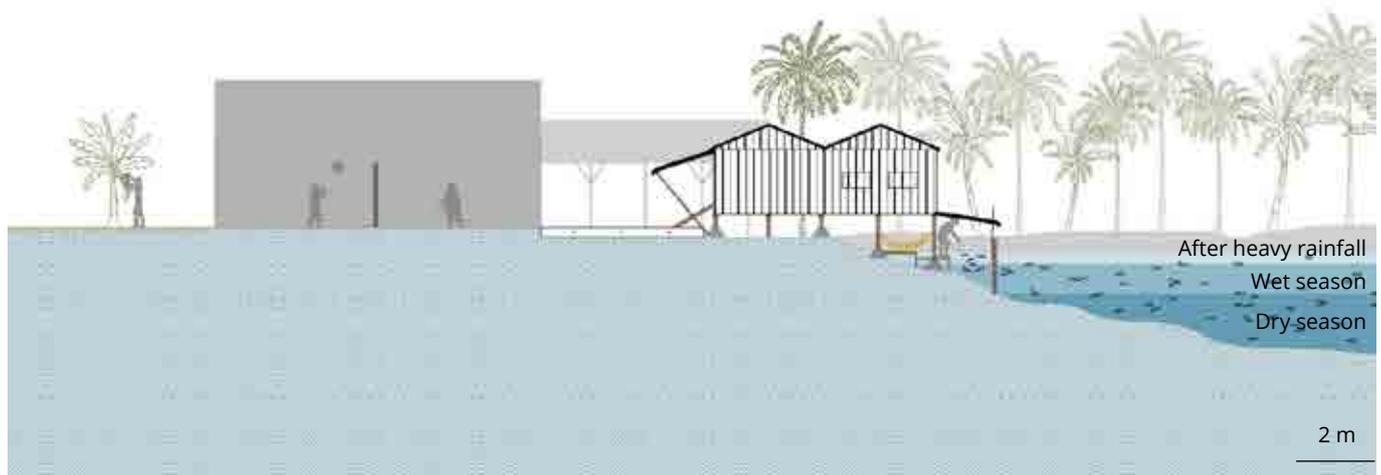


▲  
**Figure 57**  
Section of the water level during the different seasons.



## Typology 4: in connection with productive landscape

Moving beyond the immediate riverbanks, homes are strategically positioned not solely with regard to the river, but rather in alignment with a productive landscape. Stilted structures, linked to ponds or rice paddies, are prevalent on both sides of the river but are more prominent farther inland. Connecting these fields and ponds is an elaborate irrigation network of canals, ensuring a steady water supply throughout the year. This productive landscape serves dual purposes: cultivation of products for the market or for sustenance by the families residing on the plot.



**Figure 58**  
Section of the water level  
during the different seasons.



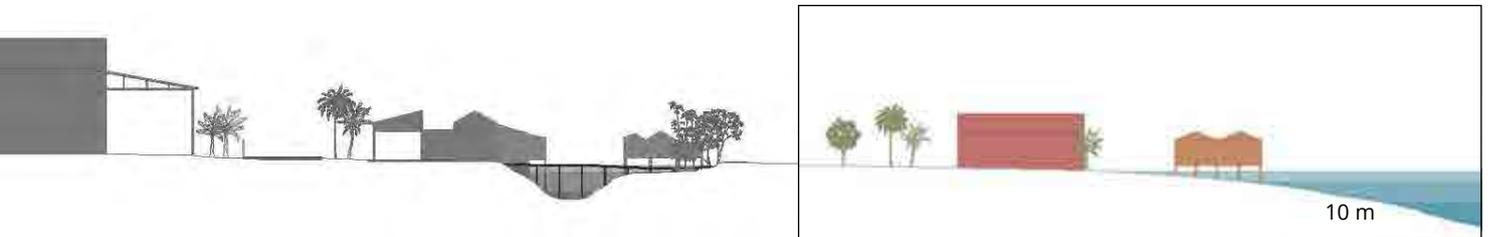
**Figure 59** ▶  
The stilt house extends over the pond, establishing a seamless connection with the productive landscape.  
(Peeters, October 2023)



**Figure 60** ▶  
Fishing pond connected to the plot  
(Peeters, October 2023)



**Figure 61** ▶  
Resident feeding the fish in the pond.  
(Peeters, October 2023)



# GRADIENTS AS A PRODUCTIVE RESOURCE

Amidst this dynamic environment lies the Tonle Sap, one of the world's most ecologically diverse and hydrologically complex great lakes. The surrounding freshwater flooded forests support over 200 fish species, facilitating their intricate movement and migration crucial for productivity. Tonle Sap Lake, also known as the Great Lake, serves as a vital inland water body and one of Southeast Asia's largest and richest freshwater fishing areas, sustaining large human populations and elaborate cultures for centuries (Evans et al., 2004, p. 3).

The shifting gradients of wetness within the landscape bring about corresponding changes in vegetation patterns, intricately linked to the rhythmic pulse of the water system. As wetness levels fluctuate, so too does the composition of vegetation, influencing agricultural and fishing practices that adapt harmoniously with floods and monsoons. Depending on seasonal water conditions, agricultural activities undergo modifications to optimize yields and mitigate risks associated with water variability.

Cambodia's freshwater capture fisheries rank fourth globally, with a substantial portion originating from Tonle Sap Lake and Tonle Sap River, valued at 200 million US dollars annually. Fish and rice form the cornerstone of the Cambodian diet, serving as staple foods deeply ingrained in the culture (Poole & Briggs, 2006).

The fishing season follows a seasonal rhythm, concluding as water levels rise toward the end of May, allowing fish to reproduce in the inundated forest. It reopens on October 1st, coinciding with the reversal of floodwaters, marked by a ceremony honouring the spirits, with fishing lot boundaries delineated with wooden poles and bamboo (Poole & Briggs, 2006).

While agricultural land in Cambodia is predominantly privately owned, the forest and fisheries resources surrounding the lake are designated for public use. Exploiting these resources, including fish, fuelwood, and wildlife, provides vital support for livelihoods, particularly for impoverished populations.

Rice farming is prevalent in the Tonle Sap region, alongside the cultivation of various vegetables and fruits along riverbanks, providing essential food and income for communities. Aquaculture and fishing in ponds cater to both local consumption and sale in markets, utilizing rainwater-fed ponds for agricultural and household activities (Bremner, 2019).

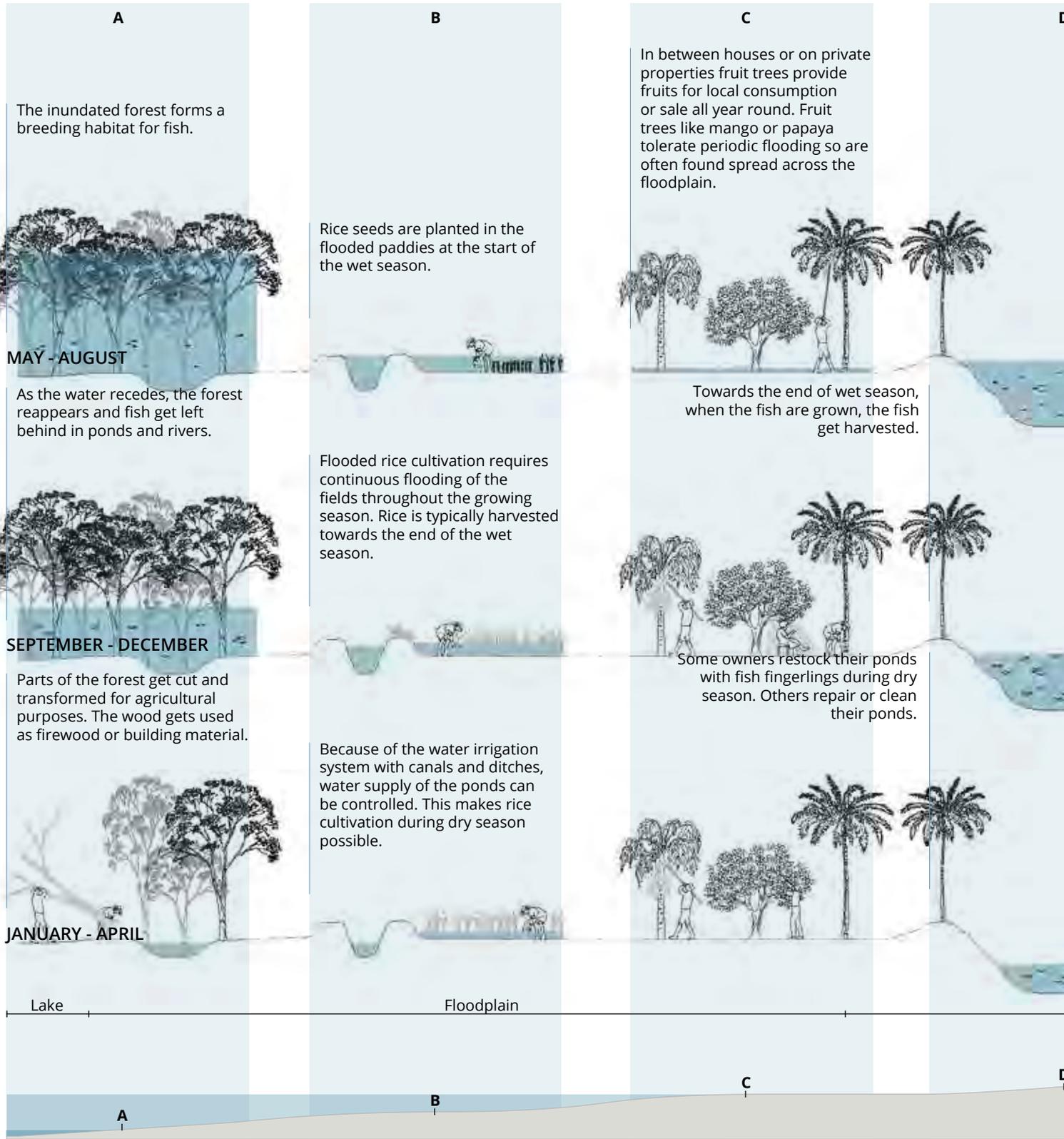
The productive vegetation surrounding Tonle Sap Lake plays a crucial role in supporting local livelihoods, with water management becoming critical during the dry season for sustaining agriculture. The fertile flood plains surrounding the lake offer ideal conditions for developing farming systems, managing fish resources, and manipulating water flows to support livelihoods and ensure ecological integrity.

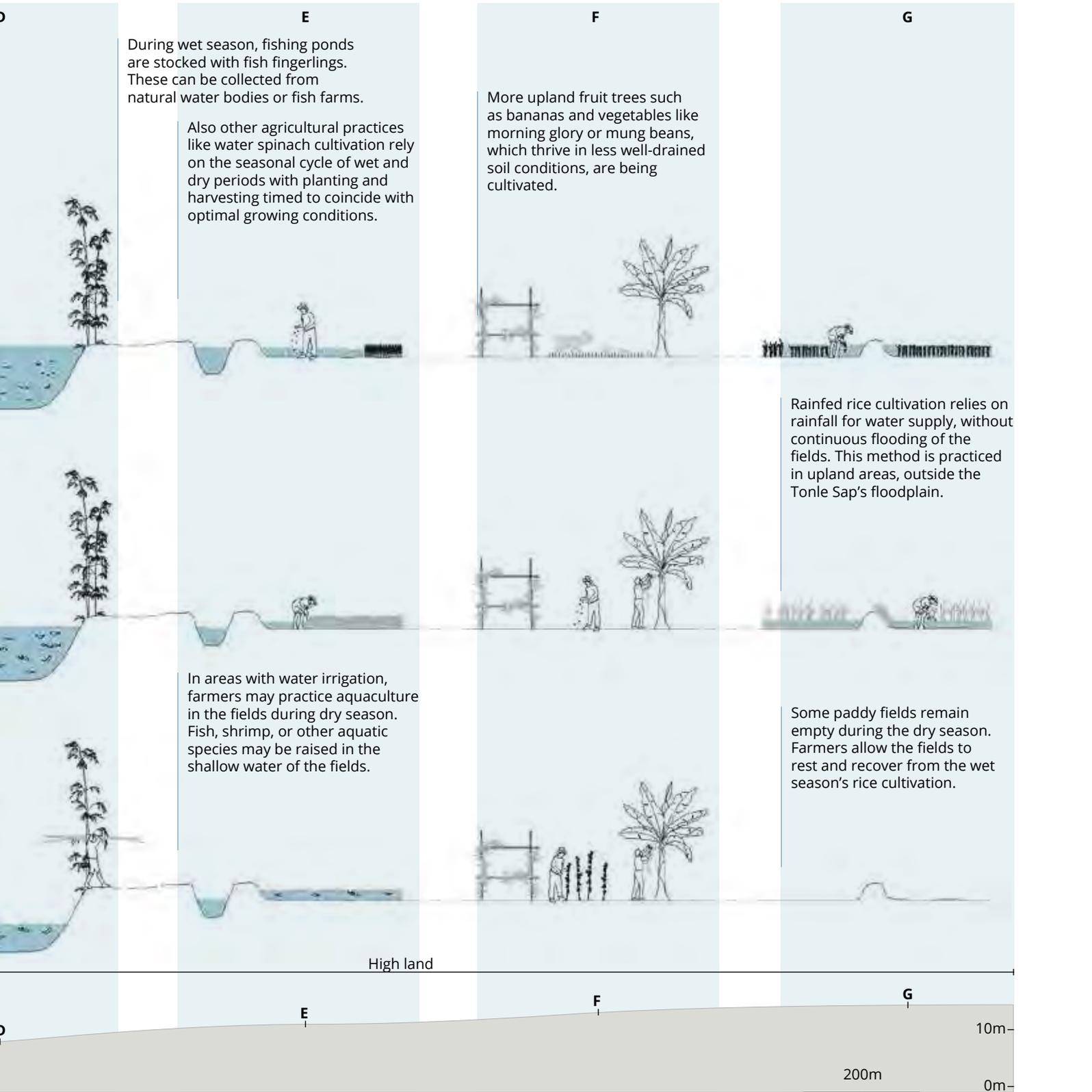
**Figure 63**  
Gradients as a productive resource.



**Figure 62** ►  
Man throwing out his fishing net into the water  
(De Ferm, October 2023)







During wet season, fishing ponds are stocked with fish fingerlings. These can be collected from natural water bodies or fish farms.

Also other agricultural practices like water spinach cultivation rely on the seasonal cycle of wet and dry periods with planting and harvesting timed to coincide with optimal growing conditions.

More upland fruit trees such as bananas and vegetables like morning glory or mung beans, which thrive in less well-drained soil conditions, are being cultivated.

Rainfed rice cultivation relies on rainfall for water supply, without continuous flooding of the fields. This method is practiced in upland areas, outside the Tonle Sap's floodplain.

In areas with water irrigation, farmers may practice aquaculture in the fields during dry season. Fish, shrimp, or other aquatic species may be raised in the shallow water of the fields.

Some paddy fields remain empty during the dry season. Farmers allow the fields to rest and recover from the wet season's rice cultivation.

High land

E

F

G

10m

200m

0m





# TRANSFORMING THE GRADIENTS

Today, The Tonle Sap Lake is facing more and more challenges that are reshaping its landscape and ecosystem as well as inhabitants' livelihoods and daily practices.

The inundated forest, once a vital habitat for fish and a source of livelihood for many, is steadily shrinking. This decline is attributed to the growing population and the consequent gradual destruction of forest resources, primarily driven by the expansion of agricultural land. As floodwaters recede, small-scale fishing and farming encroach closer to the land, diminishing the habitat and nutrients crucial for fish during the flood season (Evans et al., 2004).

Illegal fishing activities pose another significant threat, leading to the overexploitation of freshwater fisheries. Fishing lot operations, which monopolize large areas of the lake and tightly guard access, restrict poorer fishermen from accessing already limited fishing areas. Moreover, the use of illegal fishing gear, such as nets with small mesh sizes and electro-fishing devices, worsens the problem of fish stocks, including the capture of juvenile fish (Poole & Briggs, 2006).

Additionally, the lake's ecosystem is further strained by large-scale development projects along its shoreline and floodplain, as later described in the section Gradients of Urbanism. These projects, often driven by urbanization and industrialization, alter the natural dynamics of the lake and its surrounding areas. Infrastructure development, such as the construction of roads, dikes, and land filling, encroaches upon critical habitats and disrupts the natural flow of water. Moreover, land reclamation projects for agriculture and urban expansion further diminish the available space for natural ecosystems to thrive (Poole & Briggs, 2006).

Furthermore, deforestation and dam construction present significant threats to these vital resources and the populations relying on them. Rampant commercial logging in various countries contributes to forest degradation, affecting the entire watershed draining into the Mekong River and Tonle Sap Lake. Major dams, such as the Mandwan Dam in China and the Pak Mun Dam in Thailand, are already altering water flows and fish movements, posing risks to downstream aquatic ecosystems. With numerous major dams planned or under construction along the Mekong, immediate action is imperative to safeguard the ecological integrity of these water bodies and the well-being of the communities reliant on them (Evans et al., 2004).

**Figure 82** ►

River clogging in Hong Ngu  
(Dejaegher, October 2023)





*"We live in times of wetness, a wetness that is everywhere before it is made  
land and water somewhere"*

*(Mathur & da Cunha, n.d.)*

# **CONCLUSION**

In a world where water and land are often perceived as distinct and separate entities with fixed boundaries, it becomes essential to reconsider our understanding of these natural elements. The fluidity of water, its ever-changing presence, challenges rigid distinctions of land/water and wet/dry. In exploring the dynamic relationship between water and land, particularly exemplified by the Tonle Sap Lake and Mekong River, it becomes evident that the conventional perspective of delineating fixed boundaries does not align with nature's inherent dynamism.

The seasonal fluctuations experienced in regions such as the Tonle Sap Lake reveal a constant interplay of wetness gradients, where water and land continuously and seamlessly transition and coexist. Rather than viewing floods as disruptions, they should be recognized as essential components of the natural rhythm, sustaining life and ecosystems. The architectural adaptations observed in communities like Kampong Luong exemplify how human settlements can harmonize with these dynamic environments, embracing the fluidity of water rather than resisting it.

By acknowledging the gradients of wetness and understanding the interconnectedness of water and land, one can begin to appreciate the intricate balance of ecosystems and the vital resources they provide. However, environmental challenges such as deforestation, pollution, and the construction of dams are threatening these delicate balances, and it becomes imperative to take action. Safeguarding the ecological integrity of water bodies like the Tonle Sap Lake requires a concerted effort to mitigate human impacts and prioritize sustainable practices that honour the fluidity and vitality of nature.

***GRADIENTS OF COMMONS***





# TABLE OF CONTENTS

<b>GRADIENTS OF COMMONS</b>	<b>65</b>
RUBEN DEJAEGHER	
<b><i>INTRODUCTION</i></b>	<b>75</b>
<b><i>UNDERSTANDING THE GRADIENTS</i></b>	<b>77</b>
<i>WHAT IS A COMMON?</i>	77
<i>PUBLIC AND PRIVATE AS A NON-CONCEPT</i>	79
<i>... FROM A HISTORICAL PERSPECTIVE</i>	82
<i>COMMONS WITHIN CLUSTERS</i>	95
<b><i>GRADIENTS BY INHABITING</i></b>	<b>112</b>
<i>VERNACULAR TYPOLOGIES</i>	112
<b><i>TRANSFORMING THE GRADIENTS</i></b>	<b>133</b>
<i>TRAGEDY OF THE COMMONS</i>	134
<i>ENCLOSURE OF THE COMMONS</i>	135
<b><i>REQUEST FOR THE COMMONS</i></b>	<b>137</b>
<i>DISCLOSURE OF THE COMMONS</i>	137
<b><i>CONCLUSION</i></b>	<b>138</b>

# PREFACE

## CẨM O'N ...

Amidst the towering trees, dark clouds suddenly rolled in, announcing an impending rainstorm. Caught off guard, I sought shelter under a nearby tree, parking my motorbike nearby.

As I stood there, sheltered from the rain, my attention was drawn to two men seated across the street, engaged in conversation under the protection of their veranda. They gestured for me to join them, offering protection from the rain. Before I could fully grasp the situation, my motorbike had been moved to a dry and secure spot. *Cẩm ơn...*

The homeowner swiftly motioned for me to take a seat, inquiring if I desired a drink. Moments later, sugar cane stalks were expertly crushed and served in a glass with ice cubes, a refreshing treat for the weary traveller. *Cẩm ơn...*

Engaging in conversation with the homeowner – Hiep, as he introduced himself – I learned that he was a photographer, while his wife ran a small café. As the evening drew near and the rain subsided, I was graciously invited to join them for dinner alongside their two children. A simple yet satisfying meal of rice, greens, omelette, and flavourful dried fish awaited us. *Cẩm ơn...*

This encounter left an indelible impression on me, showcasing the kindness, generosity, and warmth with which these people welcomed a stranger into their midst. It reminded me of the goodness that exists within communities, regardless of whether we know each other or not.

This event, along with numerous similar occurrences thereafter, sparked the research discussed in this part of the thesis. It initiated an exploration into the concept of the *commons*...

**Figure 1** ►  
Picture of the diner with Hiep's family in Hong Ngu, Vietnam. (Dejaegher, September 2023)





# **RESEARCH QUESTIONS**

## **(RE-)QUEST FOR THE COMMONS**

### **QUEST FOR THE COMMONS**

*What are types of vernacular commons found in the examined region of Hong Ngu and how are they utilized by the communities in terms of social interaction, cultural activities, and everyday functions?*

In recent Western urbanism, there has been a notable trend towards a more compartmentalized and separated approach to living spaces, marked by distinct zones for residential, commercial, and public functions. This rigid segregation often results in a lack of vibrant communal spaces, hindering organic interactions and social cohesion inherent in traditional Vietnamese vernacular tissues. The Western model's emphasis on clearly demarcated zones can contribute to a sense of isolation and a dearth of community engagement. The studied vernacular fabric, on the other hand, shows interesting gradients between publicness and intimacy, between community and individual that result in a vibrant living environment.

### **TRANSFORMING THE GRADIENTS**

*What challenges have the commons faced over time through urbanization and modernization?*

The appearance and layout of the Mekong Delta's settlements have undergone changes over the years, consequently affecting the commons. The transition from water-based to road-based urbanism has added a new layer of significance to the dikes, making them integral to the functioning of the communities. However, the streetscape is beginning to develop a shifting relationship with the community. Modernity introduces the enclosure of the commons, and more and more fences and gates are emerging as the Achilles' heel of the commons.

### **REQUEST FOR THE COMMONS - LESSONS FROM THE VERNACULAR**

*How might acquired insights from the Mekong Delta be applied to enhance village development and urbanism in Western societies like Flanders, Belgium?*

In a society where neighbour disputes are commonplace, where properties are fenced off with hedges and access is controlled by tall gates, where there are debates over enclosures placed centimetres too far, and where neighbours hardly know each other, there is a pressing need for a rediscovery of commons. As often happens, we only realize the importance of things to us when we lose them. A request for the commons.

# RESEARCH AREAS



## HONG NGU

Located in Vietnam's Dong Thap province, Hong Ngu is an important city in the Mekong Delta, close to the border with Cambodia. The city is known as a commercial and agricultural centre in the region. Its strategic location along the Mekong River fosters dynamic trade activities and agricultural endeavours that drive the local economy. In recent years, the city has experienced significant growth and expansion, putting increasing pressure on the relationship between new urban developments and vernacular settlements. The fieldwork in Hong Ngu investigated the following four areas of research:

Mekong River

City of Hong Ngu

### 1 RIVERSIDE

Located in the northern part of the city, this hamlet is made up of vernacular linear settlements along the river, gradually coming into contact with the new urbanism of the city's expansion, driven by the construction of a new road and bridge over the canal.



### 2 RIVERSIDE AGRARIAN HAMLET

This area also comprises linear settlements along both sides of the river and a large concentration of floating houses and fish farms. They are surrounded by extensive rice fields and fish ponds.



### 3 URBAN-RURAL CONFLUENCE

This area in the western part of Hong Ngu contains various types of tissues. On the one hand, there is the expansion of new urbanism along the bridge connection with the city. On the other hand, at the tip of the area, there are string settlements as well as clustered hamlets.

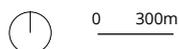


### 4 RIVERSIDE SYMBIOSIS

This area on the island surrounded by the Mekong River presents an intriguing mix of living patterns. Here, both the string settlements and isolated farms in the forest surrounded by fish ponds and productive landscape coexist alongside each other.



◀ **Figure 2**  
Hong Ngu  
Source: Google Earth (2023)



► **Figures 3-5**  
Research areas of 400 by 400m in Hong Ngu.  
Source: Google Earth (2023)

# INTRODUCTION

*“Almost every inch of the (Mekong) delta’s surfaces are cultivated by human hands (including water surfaces), but the Mekong can in a matter of days erase every trace of such work.”*

(Biggs, 2010, p.6)

As emphasized in the previous chapter, the rivers and channels of the *Mekong Delta*, near the *Tonle Sap Lake* in Cambodia and in the *Trans-Bassac Depression* in Vietnam are prone to overflow during the rainy season and can profoundly impact the built environment, including the commons.

With the insightful quote from David Biggs’ (2010) *Quagmire*, the research aims to bridge the connection between the preceding chapter on *Gradients of Wetness* and the broader exploration of common spaces and community dynamics witnessed during fieldwork in Cambodia and Vietnam.

The terminology of shared or common space is recognised in Western contexts, although it is not as prevalent or deeply embedded in everyday life, where places are typically categorised as either *public* or *private*. In this chapter *Gradients of Commons*, the first subsection will explore this concept in depth. Following this, the history of traditional villages relevant to the governed areas in the Mekong Delta will be examined. While the foundations of current community life were established there, various aspects will be linked to observations made during the fieldwork in the summer of 2023.

In the third part, various building typologies identified during the fieldwork are discussed with specific attention given to gradients of common spaces.

Finally, the last section briefly discusses a new trend, influenced by Western practices, where common spaces are enclosed, leading to a changing relationship with the community.

**Figure 6** ►  
Open space used for  
gatherings in Hong Ngu,  
Vietnam.  
(Dejaegher, September 2023)





# UNDERSTANDING THE GRADIENTS

## WHAT IS A COMMON?

The term *common* has a rich history and is derived from the Proto-Indo-European word *ko-moin-i*, which means something that is *held in common* or *shared by all*. This linguistic root reveals a paradoxical nature inherent in the concept of the common, where it is both owned by no one and therefore owned by all, or owned by all and therefore owned by no one (De Cauter, 2021). However, understanding the distinction between a *common* and a *common space* remains elusive without further exploration.

In her seminal work *Governing the Commons*, Elinor Ostrom outlined three essential elements that make up a common:

- a community
- a common-pool resource
- and a set of rules devised by the community to manage and sustain the common resource (De Cauter, 2021).

A common-pool resource refers to a natural or artificial resource system that is shared by multiple users, where access and benefits are not limited to any one individual. This shared access can create risks of resource degradation. Examples of commons include grasslands, forests, fisheries, and irrigation systems (Ostrom, 2015). Therefore, the community needs to jointly develop collaboratively devise mechanisms to ensure the sustainable use of the resource system.

On the other hand, a common space embodies a set of spatial relations forged through commoning practices, which involve the creation and sharing of goods and services (Stavrides, 2016). Practices of *commoning* play a central role in fostering new social relations and forms of communal living among individuals. Similar to a common, a common space is accessible to all members of the community.

While a common denotes a shared resource, a common space refers to a shared physical location where social interactions and collective activities take place.

However, the concept of common space may be less prevalent in the Western context, where acts of spatial enclosure often transform common spaces into collectively private spaces (such as the outdoor areas of gated communities) or public spaces managed by authorities (Stavrides, 2016). These spaces are commonly categorized as *semi-public* within Western terminology.

**Figure 7** ►  
Explanation of a *common*.

## COMMONS IN HONG NGU

This concept drawing illustrates the **forest** (*rùng*<sup>1</sup>) as a common resource in vernacular Hong Ngu. In this depiction, the forest is presented as a shared space that is accessible to the community for various purposes such as gathering firewood, foraging for food, and engaging in cultural practices. The presence of individuals engaged in activities within the forest underscores the communal nature of its use, emphasising the community's collective stewardship and responsibility of the community for this valuable resource.



This depiction of a **pond** (*Đìa/ bàu/ lung*<sup>1</sup>), seamlessly integrated into the forested landscape of the Hong Ngu people, illustrates the harmonious coexistence of human activities within the natural environment. In the foreground, a fisherman is actively engaged in fish farming, while the dense forest vegetation around the pond remains undisturbed. This underlines the dual functionality of the space: both the forest and the pond serve as common resources, providing economic and nutritional benefits to the community.



This drawing shows a **field** (*Đồng*<sup>1</sup>) integrated into the forested area of vernacular Hong Ngu. It reflects the community's agricultural practices, providing food security and livelihoods. Trees and vegetation surround the rice field, demonstrating harmony with the natural environment. Cattle grazing within the rice field illustrates the land's multi-functional use by the community environment.



1 (Vu Thi Phuong Linh, personal communication, May 31, 2024)

## PUBLIC AND PRIVATE AS A NON-CONCEPT

In the previous paragraph, an exploration of the concept of *common space* was initiated. Now, the interrelationship between *common space* and the concepts of *public* and *private places* will be explored and particularly show the nuances when placed within a non-Western context. Shelton (1999) notes that in the Western context, the city itself is divided into two distinct domains: the *public* and the *private*.

According to the Cambridge Dictionary (2023), a *public* place is defined as

*“an empty area that is available to or involving people in general, rather than being limited to a particular group”.*

Consequently, a *private* place is defined as

*“an area for the use of or belonging to one particular person or group only, or not shared or available to other people”.*

The definitions provided that Western perspectives feature a distinct separation between *public* and *private* spaces. *Public* spaces are typically open and accessible to the entire community, involving areas to which the community has both access and responsibility. In contrast, *private* spaces are owned by individuals or groups and are not open to the general public (Shelton, 1999).

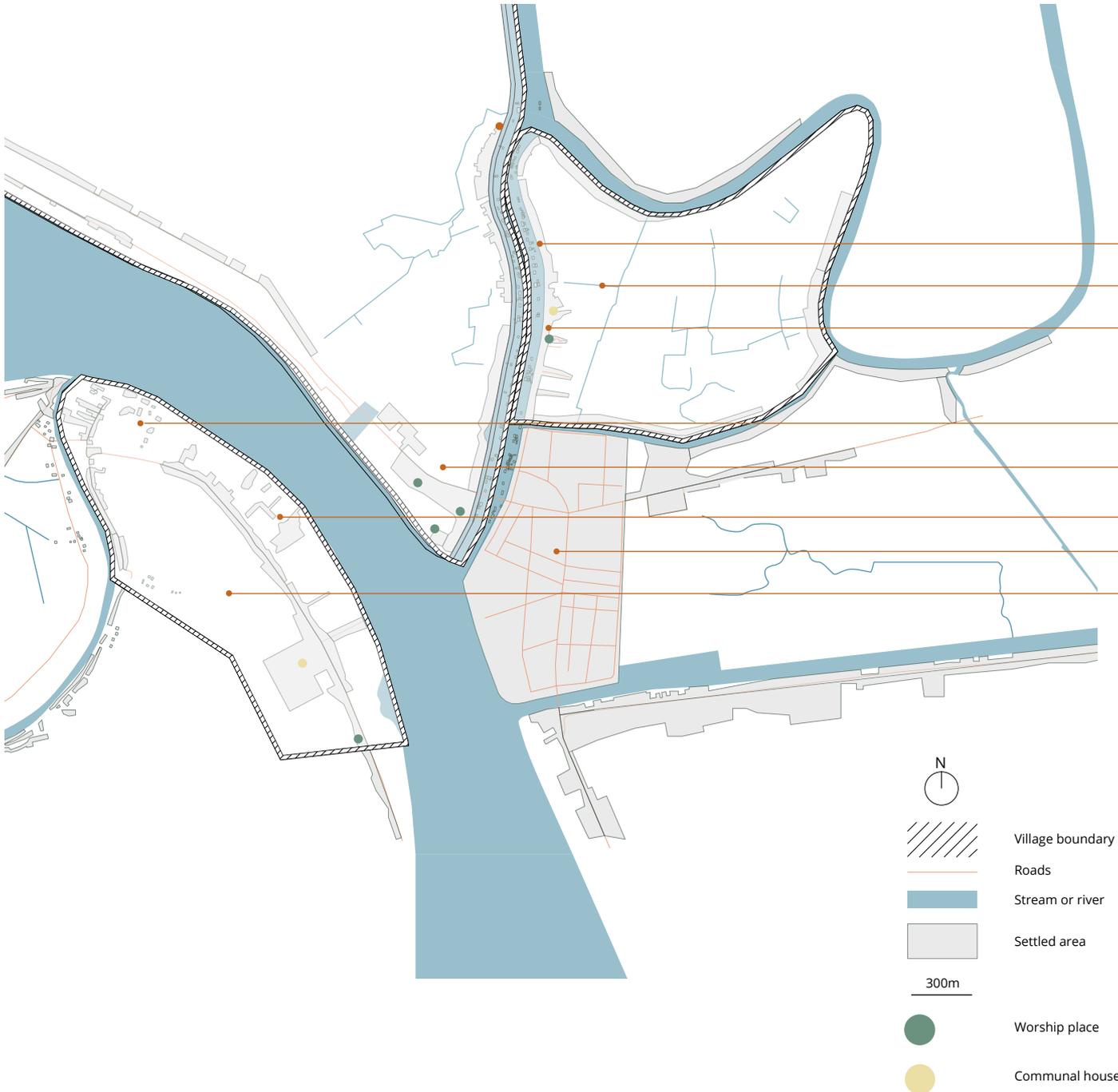
Building upon Shelton's insights into the Japanese city, his concepts can be extended to the broader Asian context, presenting the distinction as a non-concept. Shelton asserts that the *public-private* duo is challenging to translate into these cultures directly. He introduces a concept where *private* is linked to *family* or *clan*, and *public* to the idea of the *outside*. Consequently, the *private* or *familial* represents everything that remains when everything *outside* is abstracted (Shelton, 1999).

However, in Asian countries, clear-cut boundaries are not as prevalent as in the West; instead, there exist diverse layers of complexity. The blending of these boundaries introduces a certain level of ambiguity. For example, a street may exist beyond the physical confines of an individual plot but within the broader concept of the *familial* (Shelton, 1999).

The subsequent chapters will further explore this concept. To maintain clarity in further discussions, the duo *inside-outside* will be temporarily employed to elucidate the concept, as also suggested by Drummond (2000).

**Figure 8** ►  
Open space used for  
gatherings in Hong Ngu,  
Vietnam.  
(Dejaegher, September 2023)





## ... FROM A HISTORICAL PERSPECTIVE

In the next section, a deeper exploration of the history of traditional villages, relevant to the areas studied during the fieldwork, will be undertaken. The objective is to gain a better understanding of the origins of the contemporary sense of community in these regions.

The knowledge acquired will be gradually intertwined or discussed alongside findings and illustrations from the fieldwork.

### HAMLETS AND VILLAGES

Hamlet 1: linear

Village 1: **Tan Hoi**

Example of *river-hugging*

- *Làng/xã* = village
- *Xóm* = hamlet

(Vu Thi Phuong Linh, personal communication, May 31, 2024)

Hamlet 2: isolated

Village 2: **An Lac**

Hamlet 3: clustered

City of Hong Ngu

Village 3: **An Thanh**

The inhabited world within the Mekong Delta has a rich history marked by numerous transformations. Traditionally, Khmer, Cham, Chinese and Vietnamese settlements in the delta region developed along rivers, utilizing water for daily activities and rice field irrigation. These settlements often formed near rivers and utilized them as natural boundaries. This settlement pattern, known as *river-hugging*, has been observed by Taylor (2012).

However, Taylor (2012) notes a distinction in the relationship with water between the Khmer and Vietnamese communities. The Khmer communities typically centered around a pagoda or *wat* as a central focal point, situated at a distance from major rivers amidst rice fields. They constructed houses on stilts for flood protection and enclosed them with gardens for cultivating crops and fruit trees.

By the 1700s, a significant migration occurred as the Khmer territories were largely abandoned by their occupants in the part of the delta that is now Vietnam, who were displaced by the Annamites or ethnic Vietnamese. The new settlers altered the settlement pattern by occupying the banks of rivers and adjacent streams, which served as vital transportation routes connecting houses within settlements to markets elsewhere via waterways. This interconnected network facilitated trade and communication among the villages in the region.

The map (Figure 9) illustrates an example of the settlement pattern in *Hong Ngu* within the Mekong Delta. Hickey (1966) observes that these villages (*làng*) often have natural boundaries and contain a gradient of different clusters forming a hamlet (*xóm*). He distinguishes various settlement types: clustered, isolated, and linear settlements. These hamlets collectively form a village interconnected by waterways and dikes, serving as the primary means of communication.

◀ **Figure 9**  
Map of Hong Ngu (2007)  
showing the formation of  
hamlets and villages within  
natural boundaries.  
Based on Google Earth (2007)

## COMMUNAL BUILDINGS

- *Đình* = communal house
- *Chùa* = Buddhist pagoda

(Vu Thi Phuong Linh, personal communication, May 31, 2024)

*“Each village has a number of public interest works built by contributions from the villagers.”*

(Phan, 1993, p.15)

Phan (1993) underscores the collaborative effort of village residents in constructing significant public buildings, notably the communal house which can serve as a communal meeting space, and temples dedicated to Buddha worship. The responsibility for these cultural landmarks extends to the entire village rather than individual hamlets. Communal houses and temples are often constructed in close proximity, although it is not a strict requirement.

Additionally, Oranratmanee and Sachakul (2014) posit that contemporary public spaces in Southeast Asia have evolved from ancient and meaningful common spaces within villages. These spaces, acting as connections between villages, house compounds, and fields, have paved the way for the towns and cities we observe today.

Fieldwork in Cambodia and Vietnam provided first hand encounters with these structures. In the top-left photo (Figure 10), a communal house in Hong Ngu (*Đình*) serves as a venue for sports and gatherings in the late afternoon. The bottom left captures a space for Buddha worship (*Chùa*), where residents gather multiple times a day for prayer (Figure 12).

On the right, corresponding structures from Cambodia are depicted. The top-right photo showcases a community house within a larger complex with temples, functioning as a communal meeting space (Figure 11). The bottom-right image features a temple or *wat* dedicated to the cult of Buddha (Figure 13).

These architectural elements stand as testaments to the enduring significance of communal spaces in shaping the cultural and social fabric of these regions.

**Figure 10** ►

Communal house in Hong Ngu, Vietnam.  
(Dejaegher, September 2023)

**Figure 11**

Communal house as part of a religious complex in Kampong Thom, Cambodia.  
(Dejaegher, September 2023)

**Figure 12** ►

Worship place for Buddha in Hong Ngu, Vietnam.  
(Dejaegher, September 2023)

**Figure 13**

A picture taken of a *wat* in Stoeng, Cambodia.  
(Dejaegher, September 2023)



## AGRICULTURAL PRACTICES

*“Man plows, wife transplants, and buffalo harrows.”*

(Phan, 1993, p.68)

Phan (1993) delves into the historical context, revealing that ancient Vietnam, from the 10th century A.D. until the mid-19th century colonial period, primarily functioned as an agricultural land, devoid of foreign trade. This agrarian focus defined both the daily life and the economic landscape of the region.

Biggs (2010) sheds light on a fascinating cultural exchange that transpired between migrating Vietnamese populations from the North and the Khmer communities residing in parts of the Mekong Delta. This exchange extended to various aspects of daily life, including architectural elements and local agricultural practices. Notably, Vietnamese settlers assimilated Khmer tools and agricultural techniques, adapting to marshy soils and new grass varieties.

During fieldwork, there was the opportunity to witness the tangible results of this cultural exchange. The landscapes were adorned with diverse features such as fruit trees, plantations, rice fields, and fishing ponds, illustrating the varied productivity of farmers in both Cambodia and Vietnam.

Within this agricultural framework, Hickey (1966) highlights the distinctive role of women in familial and social life. Women, beyond their essential contributions to rice cultivation alongside fathers and husbands, played a crucial part in small-scale trade within villages and community structures. While agriculture was pivotal for family self-sufficiency, women actively engaged in local markets, significantly contributing to their families' income. This interconnectedness of agriculture, cultural exchange, and the role of women portrays a rich interwovenness of historical and contemporary dynamics in the region.

### Figure 14 ►

An evening walk by men accompanied by their buffaloes in Stoeng, Cambodia. (Dejaegher, September 2023)

### Figures 15-18 ►►

Pictures of agricultural practices compiled during fieldwork in Hong Ngu, Vietnam. (Dejaegher, September 2023)







## SMALL STREET COMMERCE

*“The local people who know trade are all women.”*

(Chandler, 2018, p.91)

D. Chandler (2008, p.91) also notes this phenomenon in his *History of Cambodia*, “The local people who know how to trade are all women. There is a market every day from around six in the morning until midday. There are no stalls, only a kind of tumbleweed mat laid out on the ground, each mat in its usual place.”

This quote succinctly captures the historical economic landscape of Cambodia, and similarly, it remains representative of the present-day reality in both Cambodia and Vietnam, as observed during the fieldwork.

Today, the local economy thrives with the ubiquitous presence of street vendors, predominantly women, in these Southeast Asian countries. Markets are situated in city centres or at the crossroads of various streets in more rural areas, characterized by an assortment of food stalls shielded from the sun. From six in the morning, residents gather to sell their fresh catches or harvested fruits. Around noon, as the sun reaches its scorching peak, the markets wind down.

A similar pattern is observed with itinerant vendors who traverse the streets with their merchandise. Walking or riding on motorbikes, they visit homes to sell their goods. Streets empty around noon due to the intense heat but come alive again in the late afternoon when residents return from work.

*“Find a place, construct and then deconstruct the shelter, move to another place and construct and deconstruct it again.”*

(Oranratmanee and Sachakul, 2014, p.214)

Oranratmanee and Sachakul (2014) highlight that these street vendors, with their diverse wares, bring a quality of domestic life to the streets. *Mobility* and *flexibility* aptly describe this phenomenon. Most street markets can be easily assembled and disassembled, relocating to different spots in the city. They become temporary urban elements that appear and disappear, altering the meaning of the street through their transient use.

**Figure 19** ►  
Female fruit vendors protected from the sun around 11 am in the streets of Hong Ngu. (Dejaegher, September 2023)

**Figures 20-24** ►►  
Pictures of petty street commerce in Vietnam. (Dejaegher, September 2023)







## CLUSTERING - BY PROXIMITY

Because the area of the villages are constrained by various fields and adjacent villages, new hamlets are developed by groups of people, often the poorer farmers (Phan, 1993). Such hamlets will typically emerge in nearby open spaces, such as across the river (see Figure 3), and function as satellite hamlets.

Phan (1993) distinguishes two forms of grouping people to form communities. On the one hand, some communities are related to each other, and on the other hand, communities have come into existence by living in proximity to each other.

*“Inhabitants did not necessarily have to be each other’s relatives.”*

(Phan, 1993, p.60)

He notes that in traditional villages, residents often were not related to each other and thus originated according to the proximity method. However, this does not mean that they are strangers to each other. Phan (1993) observes that building good relationships among residents was crucial for constructing dikes to protect common areas and developing irrigation channels to irrigate common rice fields.

*“Brothers living at a distance can’t equal close-by neighbours.”*

(Phan, 1993, p.63)

This quote suggests that physical proximity plays a crucial role in fostering meaningful relationships among residents in communities. The idea that brothers living at a distance cannot equal close-by neighbours aligns with the everyday life dynamics in these vernacular areas.

In these communities, neighbours are not just individuals who happen to live nearby; they are considered as family. Close proximity allows for a deep sense of connection and shared responsibility. This closeness is manifested in various social practices, such as inviting each other over for meals or drinks, children growing up together, and providing support during significant life events like weddings and funerals.

The shared spaces in vernacular areas, whether they are communal courtyards or shared alleyways, become vital in shaping and nurturing social relationships. Common spaces serve as the backdrop for the development of bonds that are crucial to the functioning and well-being of the community. The concept of physical closeness emphasized in the quote aligns with the significance of common spaces in vernacular areas, where the immediacy of relationships is facilitated by the spatial arrangement of residences and shared areas.

## CLUSTERING - BY KINSHIP

The second form of settling people is through kinship, involving the concept of the small family or *nuclear family* and the principle of *extended families*.

The former are essentially the smallest and most compact social units that played a crucial role in traditional villages. Phan (1993) associates this grouping with a small-scale agrarian economy, where each household serves as a production unit, evident in the dimensions of the houses.

Typically, a nuclear family comprises parents living together with their children in the same household. The eldest son, serving as the primary heir, assumes responsibility for caring for the parents. Upon marriage, the remaining sons establish separate households, usually residing in their wives' homes. This last arrangement leads to the formation of *extended families*, a phenomenon consistently observed during fieldwork. Relatives, including grandparents, aunts, and uncles, frequently opt to live together or close to one another on available plots of land.

When Phan (1993) discusses the existence of a bloodline organization, he refers to the presence of numerous small families, each with its own heart, private property, and economy, forming a community born out of kinship.

The practice of family rituals for ancestor worship, family graves, and a family economy in the form of shared rice fields was not uncommon.

# COMMONS WITHIN CLUSTERS

This section examines two different types of tissues identified during the fieldwork, each associated with different clustering patterns. Research Area 1 focuses on a linear settlement along a waterway, while Research Area 4 examines two isolated clusters.

Conditions in 2007, which correspond closely to the information described in the previous section, are compared with those observed during the fieldwork in 2023. The plans and sections from the 2007 analysis are based on satellite imagery from Google Earth (2007). Given that the expansion of Hong Ngu along the waterways only began in the early 2000s, the year 2007 serves as a valuable reference to illustrate and compare the historical concepts discussed in the previous section with the conditions observed during the fieldwork.

**Figure 25** ►  
A picture taken from  
neighbours in Hong Ngu,  
Vietnam.  
(Dejaegher, September 2023)



## LINEAR SETTLEMENT

### SQUARE 1 - RIVERSIDE TRANSITIONAL HAMLET



▲ **Figure 26**  
Research area 1 in Hong Ngu.  
Source: Google Earth (2023)



Square 1 is an example of a linear settlement along riverbanks or waterways, which are used for fish farms due to limited space. These fish farms expand the economic activities of the residents to include year-round fish farming. According to Phan (1993), this pattern of lateral lanes leading from the road to the water and rice fields is called a *fish bone*.

In 2007, the landscape consisted mainly of a mix of rice fields, fish ponds, water basins and cajeput trees extending along the dike built by the residents (Biggs, 2010). Phan (1993) describes the presence of various ponds in the backyards of traditional villages, serving multiple purposes such as water use, cooling, and nutrient supply for fish farming or plant growth.

The cut-and-fill technique is evident, with the earth excavated for the ponds being used to build the dike that protects the community from flooding.

The plan (Figure 27) highlights different clusters in different colours, reflecting existing clusters from the 2023 fieldwork. These clusters represent community life based on proximity and kinship. Although most neighbours and residents are not related, there is a strong sense of community. The different colours indicate family clusters.

The location of the fish ponds and the presence of family graves in the rice fields are notable. This suggests that fish ponds are shared across clusters, or that clusters are integrated into larger extended families to which the ponds belong. The presence of graves indicates that the fields are not solely owned by nuclear families, but are often cultivated by different components of extended families.

## Pocket gardens

- *Vườn* = garden

In 2007, the landscape of the area consisted mainly of a mixture of common rice fields, cajeput trees and fish ponds. By 2023, significant changes had occurred. Not only have the clusters themselves increased in size, but the gradient between landscapes becomes more nuanced. Many fish ponds disappeared to make way for the expansion of the clusters. Fieldwork showed that many houses now have small pocket gardens (*vườn*) in their backyards, connected to the dikes by narrow alleys. They are often not very large and do not get much sun because of the large trees. Within a cluster, they provide a small private outdoor space. Fruit trees such as banana and palm trees, which were scarce in 2007, are now more common in the clusters and provide small-scale food production for personal consumption.

## Village street as mediator

- *Hẻm* = alley or small lane
- *Đường làng* = Village street

(Vu Thi Phuong Linh, personal communication, May 31, 2024)

As Shelton (1999) observes, although the street may be considered *outside* the residential plot, it becomes an integral part of the domestic space, the *inside*, serving as a vibrant stage for the intersection of private and public life in Asian urban settings.

The Vietnamese concept of the road, both *hẻm* and *đường làng*, refers not only to the street itself, but also to certain parts of it, such as sidewalks, which are annexed by residents for domestic and commercial activities. Residents are well aware that the pavement does not belong to them, but they seem to feel that they need to use the space to carry out these activities and consider it to be their property while they are using it (Drummond, 2000).

Activities and communal practices in streets vary throughout the day. This creates a mixed use of the dike, which brings a dynamic quality to hamlets and villages. It is created by the accumulation of layer upon layer of movable objects, by the coming and going of street vendors and food stalls, and by spontaneous encounters between residents and children playing.

Observations show that in linear settlements the street is used in the morning for activities such as breakfast, trading and socialising before going to work or school. By midday, the street becomes less crowded and people seek shaded areas to rest. Street trees provide natural shade on the street and pavements and, where necessary, fabrics are hung between houses to provide shaded areas. This is also the time when clothes and food such as coconuts and fish are put out on the street to dry in the sun. In the afternoon, residents come out of the shade and reclaim the street. Market vendors reappear and children play after school. Residents visit each other or meet for a drink at the local café. In the evening, social gatherings of friends and family start to happen, not in the street, but in the threshold spaces of different houses. This happens from the moment the sun begins to set, and from this point on the street serves mainly as a means of transport through the hamlets.

### Figure 27-28

Plan and section of area 1 in 2007 and 2023 with indication of family clusters in Hong Ngu.



### Figures 29-32

Pictures taken in pocket gardens. (Dejaegher, October 2023)



### Figures 33-36

Aerial pictures of a street in area 1 during the day. (Dejaegher, October 2023)



# Square 1 - 2007



20m

Cluster 1: fish-producing

Cluster 2

Cluster 3: farmers

Cluster 4: shopkeeping house

Fish pond

Square 1 - 2023



Spinach field Family tomb



## Pocket gardens



An example of an alley, often very narrow spaces, leading from the dike to pocket gardens.



An example of a small pocket garden where productive fruit trees alternate with smaller plants and crops where the fruit is for personal use.



An example of water catchment basins in a garden where small fish are cultivated for personal consumption.



Within clusters, it is customary to place family graves of deceased relatives in the gardens and will stay reminders of past generations.

# Street as mediator: mixed-use throughout day

vibrant - calm



6 AM

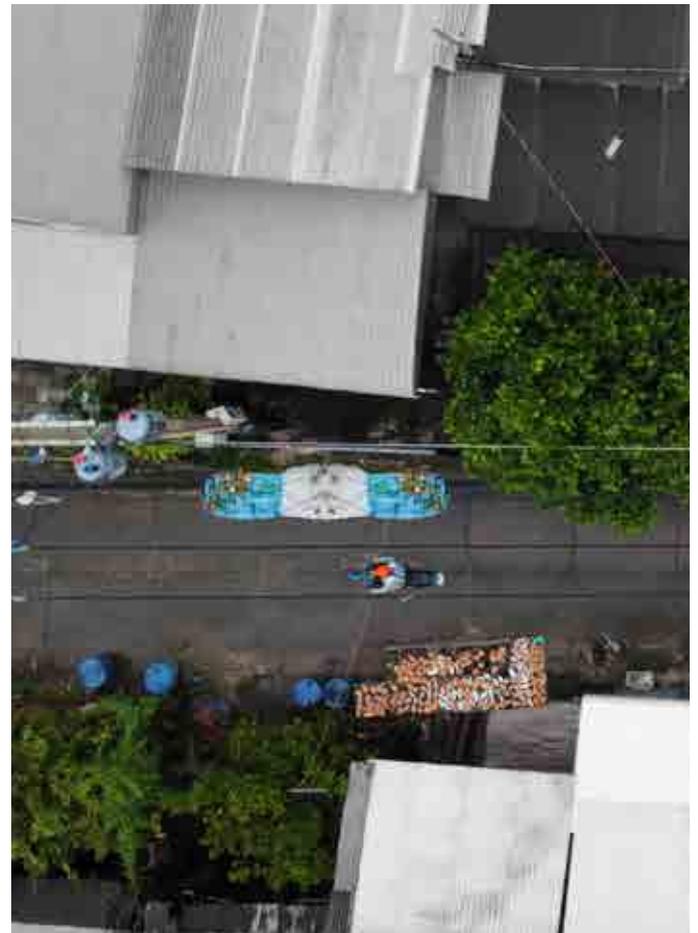


1 PM

## Awakening of the village



## The advantage of the sun to dry everything





*creating shade*



*Drying in the sun*



*Preparations for diner*



*children playing*



*Eating and drinking next door*

3 PM

6 PM

*Reclaiming the street*



*Time for social gatherings*



## ISOLATED HAMLET/ KIN CLUSTER

### SQUARE 4 - RIVERSIDE SYMBIOSIS



Square 4 is a combination of clustered settlements along the dikes and isolated farmhouses in the forest area enclosed by these dikes. The red and blue clusters are examples of clustering by kinship, forming nuclear family units. Typically, a single house is built to last for generations, becoming the ancestral home. This house serves as the central location for altars used for ancestor worship and is also used for rituals and celebrations (Hickey, 1966).

The landscape in 2007 was dominated by a mixture of cajeput trees and fishing ponds between which the clusters are settled (Figure 38). The fishing ponds were numerous and determine the shape of the landscape, acting as natural boundaries to separate the clusters. The trees and ponds thus create a kind of subtle demarcation, forming *rooms* within which the clusters and community life unfold. The fish ponds serve as common pool resources for both clusters and can be maintained through good cooperation. They are located along footpaths that branch off from the raised dikes.



▲ **Figure 37**  
Research area 4 in Hong Ngu.  
Source: Google Earth (2023)



## Courtyard as mediator

- *Vườn nhà* = family garden

(Vu Thi Phuong Linh, personal communication, May 31, 2024)

In 2023 in Square 4, the landscape is also changed by the addition of pocket gardens near the houses along the dikes (Figure 39). For the two clusters within the forest area, fruit trees have become more prominent beginning to form productive gardens for the households that are part of the kin cluster (*vườn nhà*). They intertwine with the clusters and the fishing ponds as part of the landscape. The economic activities of the clusters have expanded to include harvesting the fruits, primarily for personal use but also for sale to other residents.

Here too, the number of fishing ponds has decreased significantly. However, each cluster still owns a few ponds, serving as natural boundaries between them. Observations during fieldwork revealed that these ponds are no longer common-pool resources for the entire community but are used only within the cluster itself.

Whereas in the linear settlements the road served as the structure for the residents' communal practices, the isolated farmhouses cluster around a communal courtyard.

Tall trees provide shade, allowing the fish ponds and productive gardens to be worked on throughout the day. Children can play in the courtyard among the chickens and other animals that roam freely. Most of the farmhouses are stilted, providing protection from possible flooding and a pleasant living space where hammocks can be hung for afternoon relaxation. This is where visitors are first welcomed. The more private quarters are on the upper floor and can only be reached via an external staircase.

**Figure 38-39** ▶  
Plan and section of area  
4 in 2007 and 2023 with  
indication of family clusters  
in Hong Ngu.

**Figures 40-43** ▶▶  
Pictures taken in a  
communal courtyard.  
(Dejaegher, October 2023)

Square 4 - 2007



Cluster within a room    Pond as natural boundary    Cluster within a room



20m



Cluster 1  
Cluster 2

Fish pond

Square 4 - 2023



Fish pond Tombs Courtyard Tomb



## Courtyard as mediator



A transitional area leads to the common courtyard of a nuclear family. It is surrounded by tall trees and fruit trees that provide pleasant shade, enabling commoning practices throughout the day.



An example of a pocket garden within the productive cluster of farmhouses. Similar to the linear settlements, the gardens consist of low crops and plants used for household consumption.



The communal courtyard often has outdoor kitchens where breakfast, lunch, dinner and hot drinks such as tea can be prepared. The portable fireplace allows family gatherings to take place in different parts of the courtyard.



An example of a fish pond belonging to a cluster of families, often surrounded by coconut or banana trees.



# GRADIENTS BY INHABITING

To reference Biggs' (2010) quote from the introduction of this chapter again, "Almost every inch of the (Mekong) delta's surfaces are cultivated by human hands". This indicates that the gradients of the commons are not naturally occurring but rather created by human activities and ways of life. In summary, it is not humans who have inhabited the gradients of commons, but rather the gradients have emerged by habitation.

## VERNACULAR TYPOLOGIES

After examining the broader narrative of the history of *commons* in Cambodia and Vietnam and delving into the structure of villages and settlements and the story of family clusters, this chapter will focus on some vernacular typologies from both Cambodia and Vietnam that can be representative of both countries and were observed during our fieldwork.

In the preceding sections, the emphasis was on traditional villages primarily being agrarian communities. However, this part will explore more contemporary typologies observed during fieldwork.

The main emphasis of this narrative will be on how the boundary between *inside* and *outside* is articulated and how the transition is made. Consequently, the typologies are categorized based on their socio-economic function, namely a single-family house, a shopkeeping house, and a farm house, both on land and on water.

## GRADIENTS BETWEEN OUTSIDE AND INSIDE

### Threshold spaces

*“Thus, just as the living room reappears on the street, with chairs, hearth and altar, so, only much more loudly, the street migrates into the living room.”*

(Stavrvides, 2016, p. 67)

Threshold spatiality refers to the nuanced spatial characteristics of passageways that both connect and separate, providing insight into the spaces created by shared use. These thresholds act as boundaries, demarcating the separation between *inside* and *outside*, as is evident in door thresholds. However, they also facilitate connection, acting as intermediate zones that bridge different atmospheres (Stavrvides, 2016).

By considering shared spaces as threshold spaces, avenues are opened for exploring diverse practices of space use that go beyond mere enclosure and invite new participants into the realm of the shared. These threshold spaces embody the essence of sharing by creating transitional spaces where the inside opens up to the outside (Stavrvides, 2016).

In the previous section, the concept of both the street and courtyard as mediator were introduced, pointing out the connective nature they have between the various threshold spaces of vernacular dwellings. It is these spaces that embody the gradient of common spaces in both string settlements and isolated clusters. The images show examples of how some of these threshold spaces can take shape in vernacular fabrics.

**Figure 44** ►  
Different kind of threshold spaces.  
(Dejaegher, September 2023)



## I. SINGLE-FAMILY HOUSE

### I.I LAND

The drawings on the right serve as a representative example of a typology of a residential building without other economically related activities. This example is taken from a vernacular fabric in Hong Ngu, but can also serve as an illustration for the studied regions in Cambodia.

The residences are rectangular, with the length often being much longer than the width.

The transition between *inside* and *outside* is typically made through a fluid succession of different spaces.

The *outside* area is here divided into two parts. On the one hand, there is the street, typically ranging from two to four meters, and on the other hand, the sidewalk, which is often annexed by the residents as part of their domestic space.

The transition to the *inside* area is typically bridged by the placement of a covered outdoor space or veranda, followed by the living space that is in open connection with each other. In this latter space, the altar to worship ancestors is located – making it an essential part of the household's culture and shared space - and is often securable by fences or gates.

If there is a considerable distance between the houses and the street, bamboo, wood, or another material is used to create bridges, establishing a more *reserved* attitude and allowing domestic activities to be more separated from those of the community.

Following these spaces are the more private areas with functions such as bedrooms, the kitchen, bathroom, and storage space. The kitchen is often related to the back, which could be the river, but a pocket garden or fishpond can also occur (Hanh & Duong, 2018).

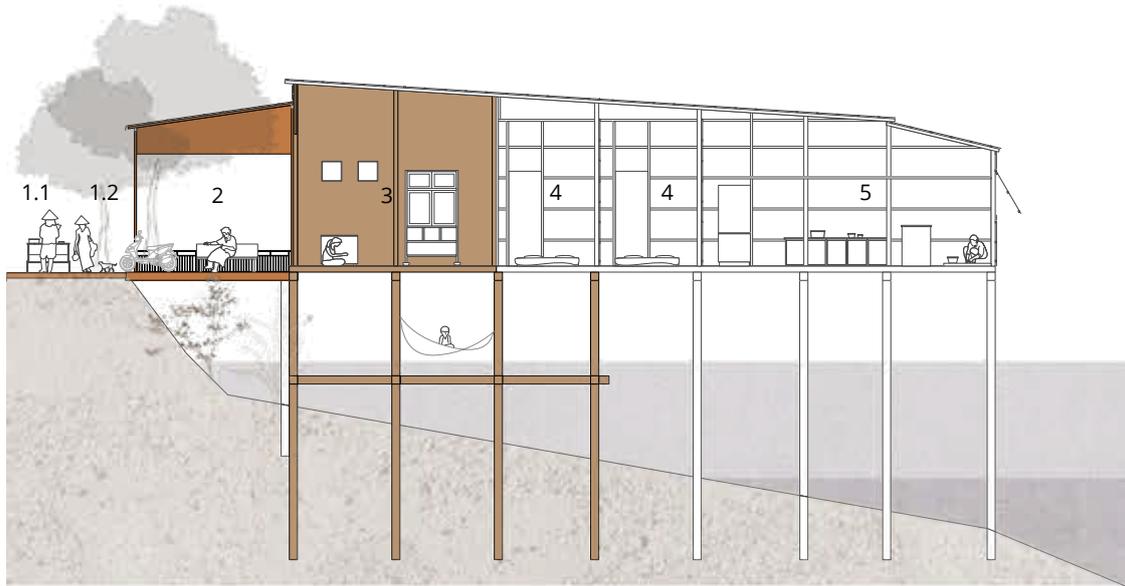
#### *Outside*

- 1.1 Street
- 1.2 Sidewalk

#### *Inside*

- 2 Veranda
- 3 Living space - altar
- 4 Sleeping space
- 5 Kitchen and storage
- 6 Bathroom

**Figure 45** ►  
Plan and section of a  
representative single-family  
house in Hong Ngu, Vietnam.



Outside Inside



4m



## I.II WATER

To discuss the case of houses on the water, the focus is on the typology of floating houses observed in Cambodia and Vietnam. To distinguish it from the typology of fish farms that follows later (see *Farm house - Water*), an example of a house that is completely cut off from the mainland during the wet season is shown in the drawings on the right.

The transition between *outside* and *inside* is made through a veranda at the front of the house, often facing the waterway. It forms a transitional zone that is often richly decorated with many flowers and serves as a reception area. Visitors gain access to the house by mooring their boat to the veranda.

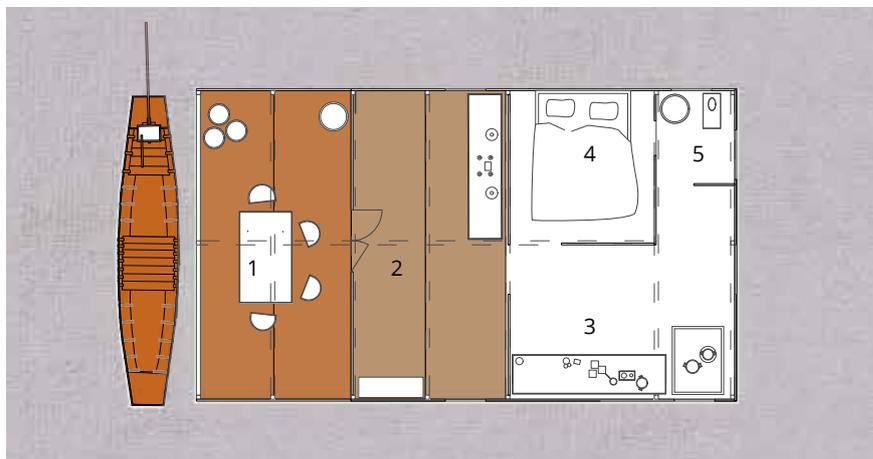
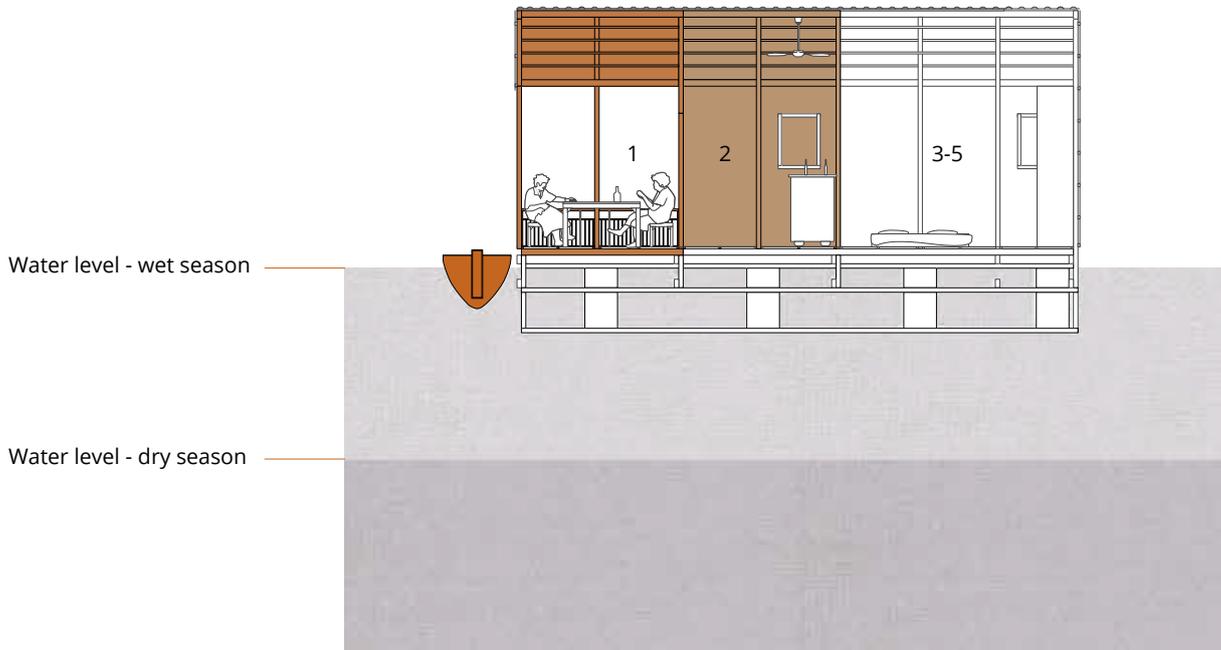
Depending on the size, there may be a table or chairs here, and it can be used for eating or having a drink. Connected to the veranda is the living space where the altar for ancestors is also placed.

Subsequently, there are more private rooms such as bedrooms, the bathroom, the kitchen, and storage spaces. These are located at the back of the house, which, during the dry season, is connected to the mainland consisting of for example forests.

*Inside*

- 1 Veranda
- 2 Living space - altar
- 3 Kitchen
- 4 Sleeping space
- 5 Bathroom

**Figure 46** ►  
Plan and section of a representative single-family house in Phat Sanday, Cambodia.



Outside Inside



2m





▲  
**Figure 47**  
Veranda of a representative  
single-family house in Hong  
Ngu, Vietnam.  
(Dejaegher, September 2023)



▲  
**Figure 48**  
Veranda of a representative  
single-family floating house in  
Hong Ngu, Vietnam.  
(Dejaegher, September 2023)

## II. SHOPKEEPING HOUSE

### II.I LAND

The drawings on the right serve as a representative example of a typology of a shopkeeping typology from vernacular fabric in Hong Ngu, but can also serve as an illustration for the studied region in Cambodia.

On land, shopkeeping houses are prevalent in various sizes and forms for anyone wanting to buy/sell products to passers-by and the community to sustain their livelihoods. They complement the mobile economy of street vendors, as discussed earlier.

It can involve the sale of grocery products, everyday items like washing products, cafes, workshops of traditional craftsmen such as woodworking.

Whether it's a large or small business, they all share one common characteristic: the commercial space is combined with the living area for the family (*inside*), usually located at the rear of the house and openly connected to the commercial section, often filled in the verandas, to draw a comparison with the residential houses from the *Single-family house - Land*. These verandas serve as the threshold space between the more private rooms and the *outside*.

From the fieldwork, it can be concluded that these typologies play a crucial role in vital vernacular street life: the colorful merchandise, the seating and eating benches, and the permanent presence of vendors contribute significantly to the sense of community.

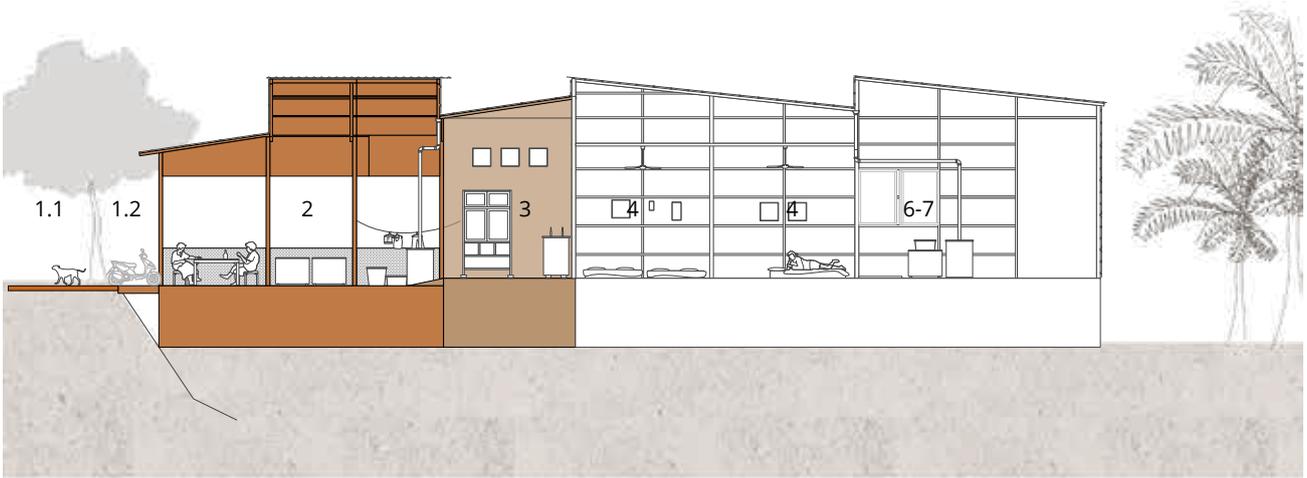
#### *Outside*

- 1.1 Street
- 1.2 Sidewalk

#### *Inside*

- 2 Veranda - cafe
- 3 Living space - altar
- 4 Sleeping space
- 5 Corridor - storage
- 6 Kitchen
- 7 Bathroom

**Figure 49** ►  
Plan and section of a representative shopkeeping house in Hong Ngu, Vietnam.



Outside Inside



4m



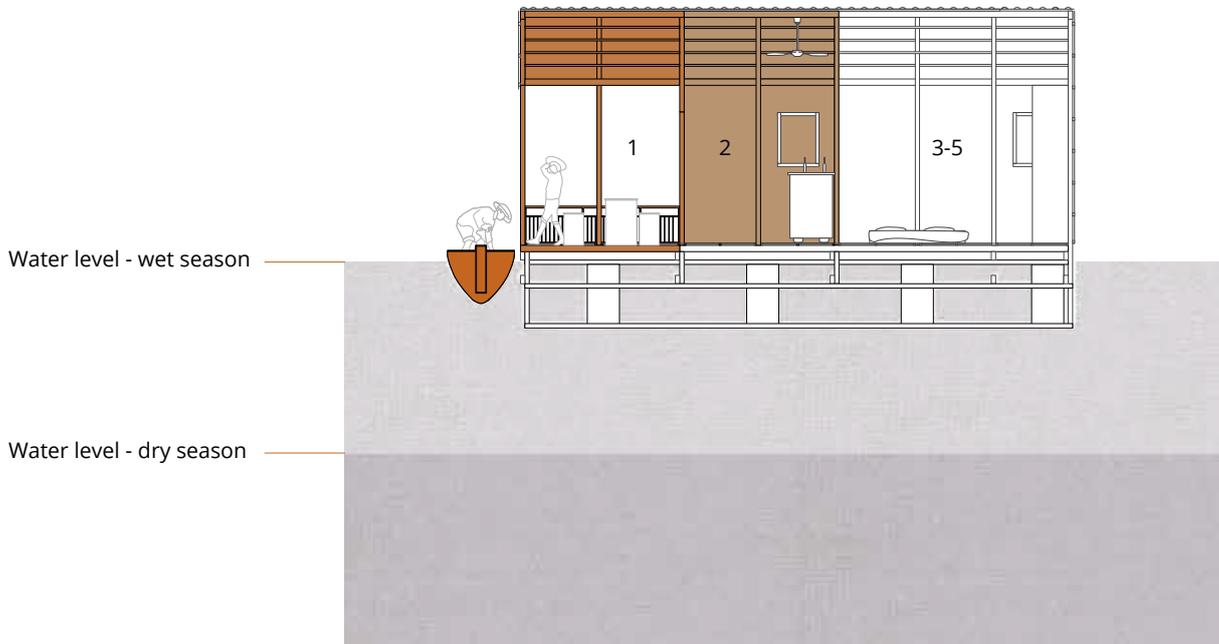
## II.II WATER

The typology for commercial houses on the water doesn't fundamentally differ from the residential typology discussed in the part *Single-family house – Water*. Just like on land, the commercial space is combined with the living area for the family. The economic activity is operated in the covered veranda located at the front of the floating house. This plays a crucial role in community life and serves as a docking station for the boats of residents who come to make purchases.

### *Inside*

- 1 Veranda - shop
- 2 Living space - altar
- 3 Kitchen
- 4 Sleeping space
- 5 Bathroom

**Figure 50** ►  
Plan and section of a representative floating shopkeeping house in Phat Sanday, Cambodia.



Outside    Inside



2m





**Figure 51**  
A cafe in Hong Ngu, Vietnam.  
(Dejaegher, September 2023)



**Figure 52**  
A floating shopkeeping house  
in Phat Sanday, Cambodia.  
(Dejaegher, September 2023)

### III. FARM HOUSE

#### III.I LAND

The illustrations on the right provide a typical example of a residential building typology often associated with agricultural activities. Originating from the Khmer ethnic group in Cambodia, this example is drawn from the vernacular fabric of Hong Ngu, Vietnam, where it is commonly found.

These dwellings typically have a more square layout, with roughly equal dimensions in length and width. They are situated on larger plots, allowing for various agricultural pursuits like livestock keeping, fruit tree cultivation, rice farming, and the maintenance of water ponds. The size of these homes often accommodates a nuclear family, and if the need arises due to an expanding family, some members may reside nearby.

The transition between *inside* and *outside* in this type takes a distinct form. The living space is usually elevated one and a half to three meters<sup>2</sup> above the ground, supported by a grid of stilts. This design creates a covered outdoor space, providing shade for various activities like hammock use, agricultural work, and storage. Initially, this space serves as a communal area for welcoming neighbours, guests, and family.

Due to their location on larger plots, these houses are set back from the street, with access to the more private areas facilitated by ladders, stairs, or walkways. In Khmer tradition, this architectural type is known as *Laeng Pteah*, which translates to *climbing to the house* (Collins & Hok, 2021).

Beyond this, the transition to the *inside* occurs through a covered veranda, offering shade and seclusion. Adjacent to this space are private areas that may be left open or divided using temporary or permanent enclosures.

#### Outside

1 Street

#### Inside

2 Covered space

3 Veranda

4 Altar

5 Living space

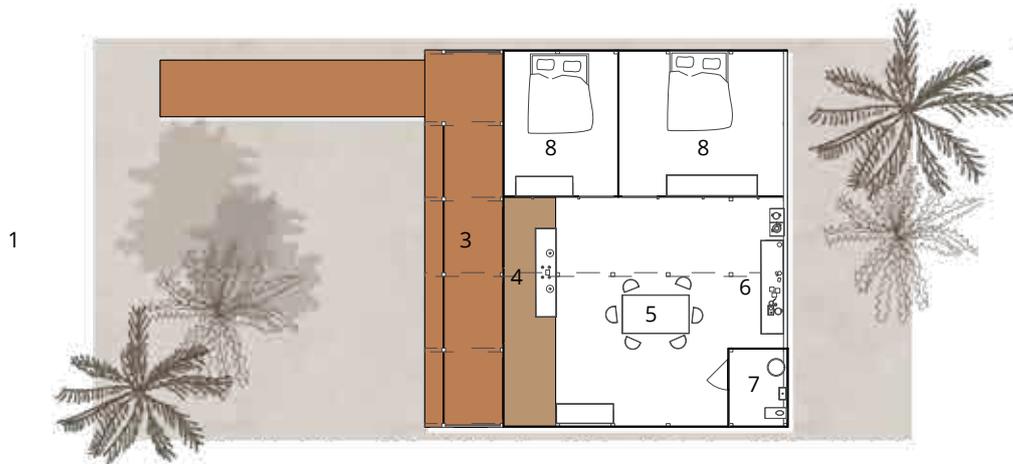
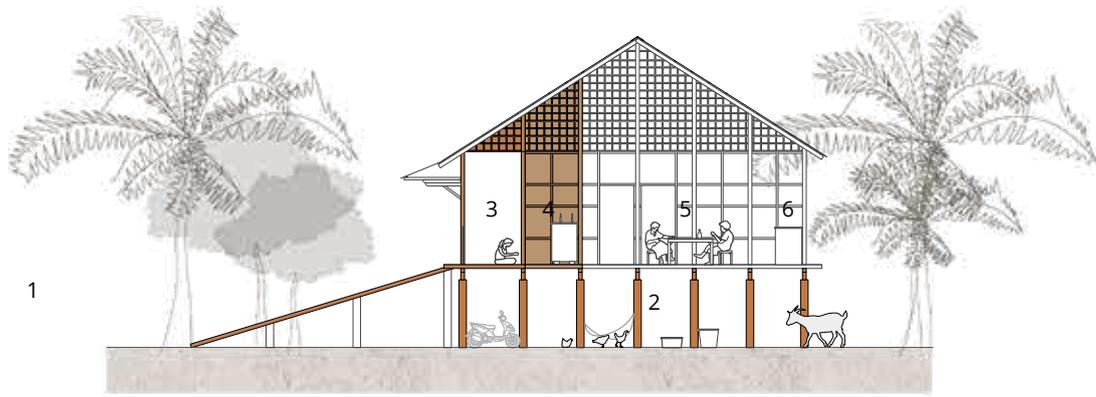
6 Kitchen

7 Bathroom

8 Sleeping space

<sup>2</sup> The findings from the fieldwork indicate that the stilts' height in Vietnam was generally lower, averaging around 1.5 meters, in contrast to Cambodia where stilts were higher, ranging from 2 to 3 meters.

**Figure 53** ►  
Plan and section of a representative farm house in Hong Ngu, Vietnam.



Outside Inside



4m



### III.II WATER

To describe the farm houses on the water, the case of various fish farms, observed both in Cambodia and especially in Vietnam (Hong Ngu), is dealt with. In the section *Clustering – by proximity*, the emergence of satellite hamlets was explained by a lack of available space due to the densification of hamlets and villages. Conversations with residents during fieldwork in Hong Ngu revealed that rivers and canals were annexed in the quest for living space.

The typology on the right side differs from the previous floating houses as it incorporates a large fish cage beneath the built space (Figure 54). This provides farmers the opportunity to engage in a new economic activity, namely the cultivation of various fish species throughout the year. This can range from small-scale production for personal use to larger-scale production for trade, often reflected in the size of the houses, which typically have a rectangular shape. These fish farms are often found in clusters, either family-related or economically linked.

The transition between *outside* and *inside* takes on a slightly more complex form. If the farms are not connected to the mainland, they are often only accessible by a boat that docks at the veranda. If they are connected to the riverbanks, a complex network of floating wooden planks is provided, connecting the various houses. These bridges are also linked to the veranda at the front of the building to provide access.

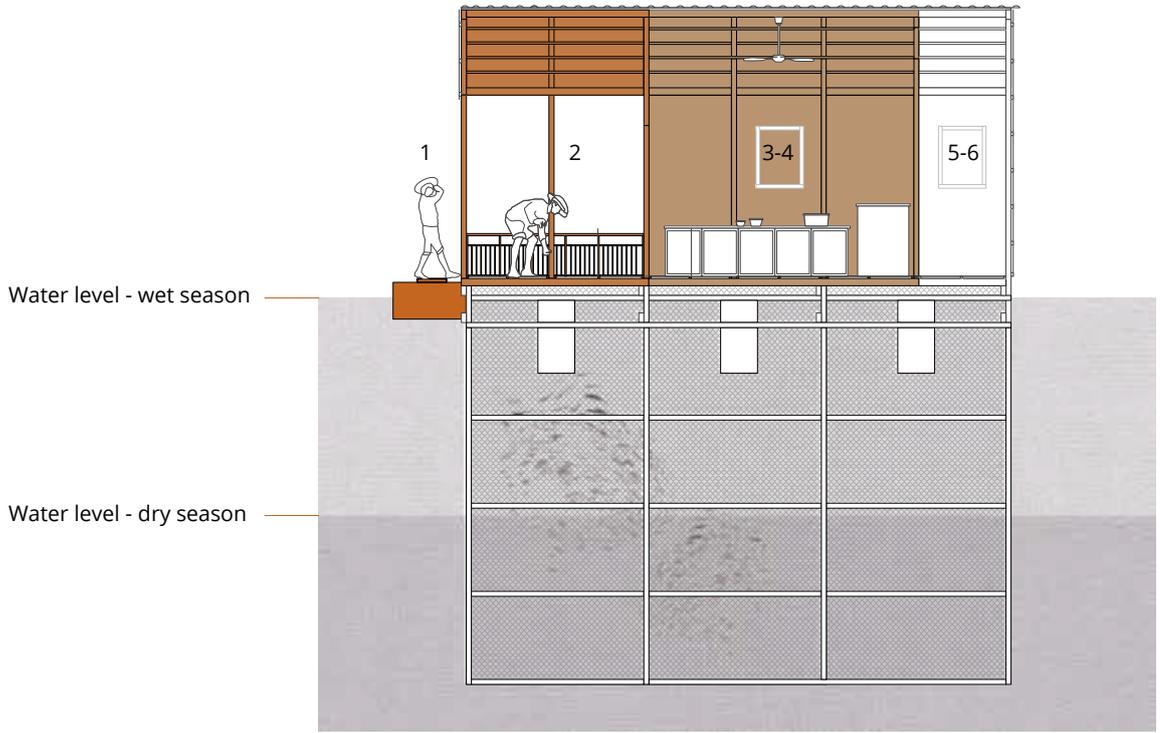
The veranda is typically a covered space, serving as a threshold space between the private quarters and the wooden bridges to welcome guests. It is a multifunctional space often adorned with flowers and plants. As well as providing access to the fish cages, this area is often used for socialising, drinking or eating.

The other rooms can vary significantly from farm to farm. In smaller-scale cases, there may be space designated for sleeping or a kitchen to facilitate daily life. In larger-scale farms, these areas are often solely dedicated to fish production, with residents living in adjacent houseboats, floating houses (see *Single-family house – Water*), or dwellings on the mainland (see *Single-family house – Land*).

#### *Inside*

- 1 Bridge
- 2 Veranda - workspace
- 3 Workspace
- 4 Kitchen
- 5 Sleeping space
- 6 Bathroom

**Figure 54** ►  
Plan and section of a representative floating fish farm in Hong Ngu, Vietnam.



Outside    Inside



2m





**Figure 55**  
Khmer farm house typology in  
Hong Ngu, Vietnam.  
(Dejaegher, September 2023)



**Figure 56**  
A fish farm on the river bank before  
floating in water in Hong Ngu, Vietnam.  
(Dejaegher, September 2023)

# ***TRANSFORMING THE GRADIENTS***



# TRAGEDY OF THE COMMONS

The previous sections of this thesis discussed how access to common resources carries inherent risks, particularly due to the problem of free-riding identified by Ostrom (2015). Because it is difficult to exclude individuals from access to common resources and the benefits provided by others, there is a temptation for everyone to refrain from contributing to the common good and instead free-ride at the expense of others' efforts.

Consider, for example, the rice field in Hong Ngu where community herders also graze their cattle. Each herder may increase the number of cattle he brings to the rice field because he benefits directly from this action while bearing only a limited share of the consequences of overgrazing (Ostrom, 2015). If all participants choose to free-ride, driven by individualism and self-interest, this will inevitably lead to the tragedy and degradation of the commons.

*“Closure is the Achilles heel of the commons.”*

(De Cauter, 2021, p.88)

Hardin's (1968) argument highlights the vulnerability of common pool resources to overexploitation and degradation without regulation or private ownership, and that a commons can only be justified under conditions of low population density. In response to the challenges posed by the tragedy of the commons, societies have historically resorted to enclosure as a solution. Enclosure involves the conversion of common land into private property, often through legal or economic means. While enclosure aims to promote efficiency and sustainable resource management, it also has social and environmental consequences, such as the displacement of rural communities, the loss of traditional livelihoods and the concentration of land ownership.



**Figure 57** ►  
Illustration of the *tragedy of a commons*.

# ENCLOSURE OF THE COMMONS

*“Nowadays, thanks to economic growth, stilt houses or wooden houses of ethnic minorities are giving place to brick houses with ground floor.”*

(Nguyễn et al., 2004, p.9)

## RECENT DEVELOPMENTS

The evolving landscape of Vietnamese communities reflects the impact of recent developments and Western influences on the interplay between interior and exterior living spaces.

A telling example is captured in the image on the right, showcasing the emergence of modern land-bound houses that increasingly dot the urban scenery. These standalone houses, with foundations firmly grounded and often elevated two to three meters with sand for stabilization, frequently boast more floors than the surrounding traditional dwellings.

However, this shift comes hand in hand with a noticeable trend of enclosing these new residences with high fences, signalling a shift in the relationship dynamics between the community and its inhabitants.

The residents of these modern homes, typically more affluent, often fortify their properties, potentially creating a sense of separation from the broader community.

This change in housing patterns and property demarcation, influenced by Western design and affluence, introduces both new architectural styles and challenges to the traditional communal fabric.



**Figure 58** ►  
Street photo of gated houses  
taken in Hong Ngu, Vietnam.  
(Dejaegher, September 2023)



# ***REQUEST FOR THE COMMONS***

## **DISCLOSURE OF THE COMMONS**

As noted in the previous section, the enclosure of commons has implications for the vital life of clusters and communities as outlined in this part of the thesis. It is a phenomenon that is certainly familiar in the Western context, where there is a trend towards a more compartmentalised and segregated approach to living spaces, characterised by separate zones for residential, commercial and public functions.

Drawing on insights from vernacular fabrics in Vietnam, the challenge is to explore ways to reintegrate commons and communal spaces, encourage mixed-use developments and promote a more connected urban environment that prioritises community wellbeing over strict functional divisions. Reintegrating or *disclosing* the commons means not only sharing what has been privatised, but also protecting and caring for the commons (De Caeter, 2021). Addressing this issue will require a paradigm shift in Western urban planning towards a more inclusive and integrated approach.

# CONCLUSION

The second chapter of the thesis, *Gradients of Commons*, navigates through the concepts of commons and common spaces that remain alive in vernacular tissues such as those explored in Hong Ngu, Vietnam. It seeks to gain insight into these concepts and to reframe the Western dualism of private-public in a different perspective.

After a brief introduction to terminology, the historical development of traditional villages in the Mekong Delta is revisited, using Hong Ngu as a case study. The formation of different types of hamlets - linear settlements along waterways, isolated farmhouses and clustered groups - collectively form villages where communal buildings such as places of worship are constructed and maintained. The formation of clusters and communities plays a key role in the establishment of the commons. Good neighbours are seen as family, and everyone helps each other when needed, fostering the mutual understanding necessary for sustainable management of the commons. Traditional villages were strongly agricultural, with agriculture being the main economic activity of the inhabitants. Women play a special role here, dominating small-scale trade and street vending, pulling carts full of fruit from door to door. These practices of communal living and other social activities give an extra layer of meaning to the dikes, which are never used solely for transport. The concept of the street as mediator refers to the fact that residents mentally annex parts of it as private property for domestic activities. In isolated hamlets, the communal courtyard takes on the role of connector, providing a framework for families' communal practices.

From the fabrics studied, it is clear that threshold spaces act as bridges between the different atmospheres from outside to inside. Spaces under stilts, different verandas with or without economic activities, the partitioning of spaces using resources such as cloths and curtains, are just a few examples from the fieldwork that, because of their flexibility, can determine the vitality of the communities.

Where the story began with a move away from the Western duality of private and public, the final chapter closes the circle. Increasingly, and partly driven by Western influences, vernacular fabrics are confronted with the enclosure of the commons: fences and gates appear in the streetscape, putting pressure on the relationship between the community and the commons.



***GRADIENTS OF URBANISM***



◀ **Figure 1**  
Urban area of Kampong  
Chhnang (based on Google  
Earth 2022).

# TABLE OF CONTENTS

<b>GRADIENTS OF URBANISM</b> HELENE DE FERM	<b>139</b>
<b><i>INTRODUCTION</i></b>	<b>144</b>
<b><i>UNDERSTANDING THE GRADIENTS</i></b>	<b>145</b>
<i>PRE-COLONIAL URBANISM: THE KAMPONG</i>	145
<i>COLONIAL URBANISM</i>	148
<i>CONTEMPORARY URBANISM: GLOBALISATION</i>	148
<b><i>INHABITING THE GRADIENTS</i></b>	<b>151</b>
<b><i>TRANSFORMING THE GRADIENTS</i></b>	<b>173</b>
<i>FILLING THE LAND</i>	173
<i>RELOCATION</i>	177
<i>URBAN DEVELOPMENT</i>	179
<i>EMBANKMENT</i>	180
<b><i>CONCLUSION</i></b>	<b>181</b>



# ***INTRODUCTION***

The previous chapters talked about gradients and blurred boundaries. This phenomenon can also be observed on a larger, urban scale. Multi-cultural influences and the need to adapt to the ever-changing gradients of wetness lead to a patchwork of different urban fabrics. From vernacular housing to French colonial buildings to new development projects.

Firstly, in order to understand Gradients of Urbanism, a brief historical overview is given. Secondly, the specific fabrics observed during the fieldwork are further explained. These changes follow a larger narrative of transformations in urban settings, which is further discussed in the final part of this chapter.

# UNDERSTANDING THE GRADIENTS

## PRE-COLONIAL URBANISM: THE KAMPONG

Cambodia is home to impressive and ancient religious and imperial structures, yet historically, it was not an urban society. The majority of the population lived in rural settlements. (Wright, 1991, p. 166).

In *A History of Cambodia* (1996), David Chandler describes three different Cambodian villages in the early 19th century. One of which is a 'Kampong'. It derives from the Malay word meaning 'landing place' and is often used to describe a settlement near waterways that sustains a population of a few hundred people. These settlements were notable for their diversity, including Chinese or Sino-Khmer, Malay, and Cham inhabitants, each group often residing in separate hamlets within the Kampong. Despite their segregated living arrangements, the Kampong maintained connections with nearby villages and the broader landscape (Chandler, 1996, p. 113).

Chandler notes that Cambodian villages lacked formal governance structures, unlike Vietnam. Although a village government was more visible in the Kampong compared to other settlement types, there is no evidence of villages being governed by formally constituted councils of elders, which was common in 19th-century Vietnam. French writers of the 19th century often denigrated Cambodian society, comparing its lack of centralised governance to the 'rational' administration of their own or that of the Vietnamese (Chandler, 1996, p. 116).

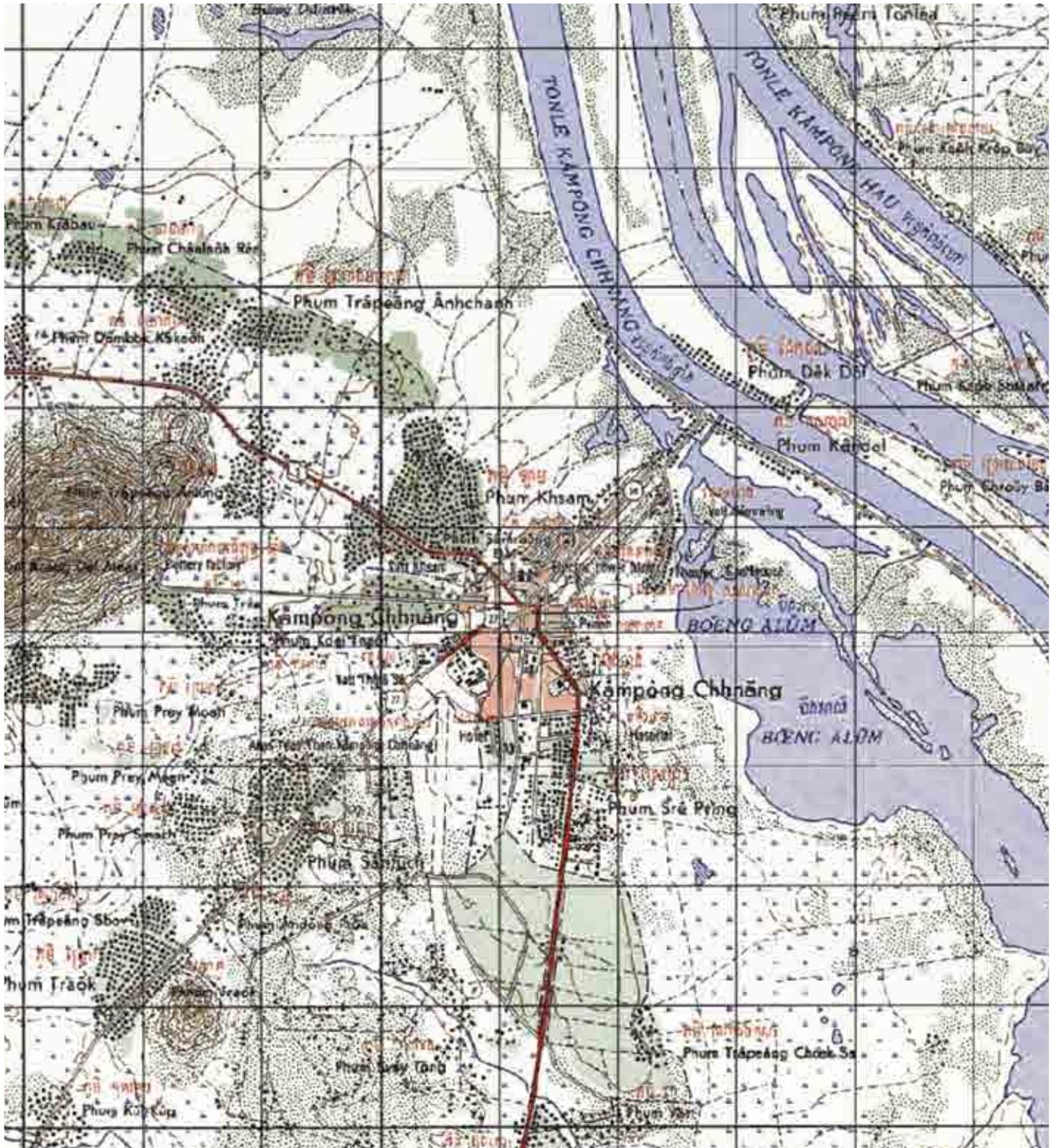
Chandler also touches on Cambodian ideas about political geography prior to French colonisation. He notes that Cambodians did not conceive their country as being defined by lines on a map.

*"Maps were rarely used, and no locally drawn map of Cambodia in the early nineteenth century appears to have survived."*

(Chandler, 1996, p. 110)

**Figure 2**  
Centre of Sangkat  
Kampong chhnang  
(De Ferm, October 2023)





## FRENCH COLONIAL URBANISM

It is only after the start of the French Colonial administration, which started in 1863 (Chandler, 1996, p. 16), that urban planning and urban development started. Maurice Long, the Governor-General of Indochina from 1919 until 1923, created the official Urbanism Department in 1923. During the 1920s, the French invested an unprecedented amount into Indochina. Maurice Long acquired a government loan to boost commercial and industrial growth in the colony. (Wright, 1991, pp. 208-210).

## CONTEMPORARY URBANISM: GLOBALISATION

As Richard Marshall explained in *Emerging Urbanity: Global Urban Projects in the Asia Pacific Rim* (2003), development in many colonised Asian nations was controlled by foreign powers more focussed on the exploitation of their resources rather than the local population. Post-independence, these nations often relied on foreign aid and loans for their development. An intense expansion of private enterprises became possible, free from colonial rule. This led to significant growth in the private sector, similar to developments in the property market. The migration from rural to urban settings put pressure on urban infrastructures. In response, many Asian nations developed export manufacturing industries in order to support the needs of their growing urban populations. This economic strategy contributed to the expansion of Asian markets (Marshall, 2003, pp. 10-11).

*“Globalisation became the new mantra of the media, international business, and national governments. It became a label that could be applied to just about anything.”*

(Marshall, 2003, p. 11)

Marshall reveals how urban projects want to project an image and gain a competitive position. The messiness of urbanity is avoided.

*“Absent urbanism is the deliberate construction of city form through the articulation of buildings, roadways, streets, parks and sidewalks without any attempt to foster a social sphere.”*

(Marshall, 2003, p. 192)

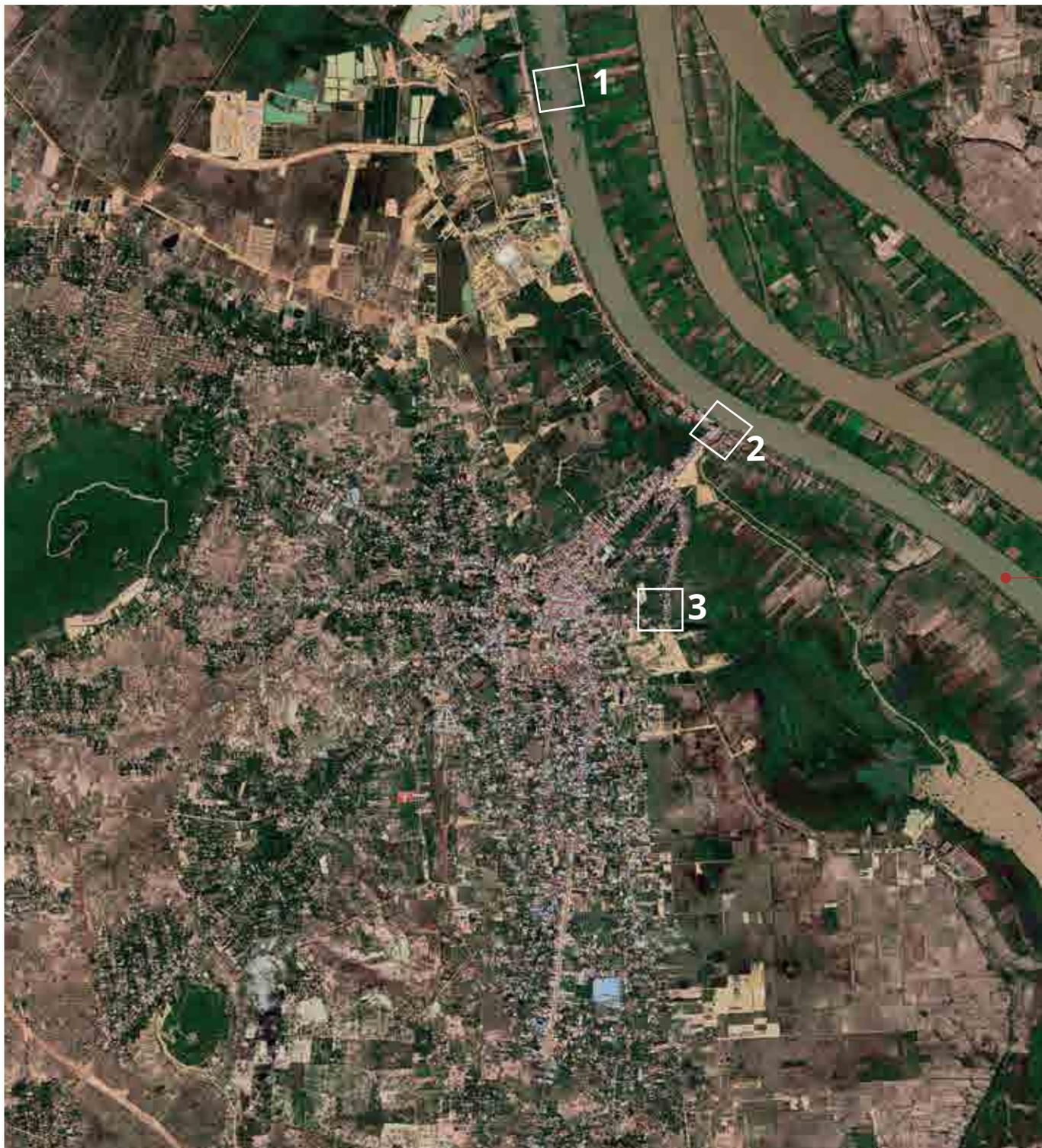
Urban life will be a shared experience for most of the world, with one common perspective on urbanity. Social and economic forces change the way cities are perceived and built. There is a tendency towards “sameness” in cities. Marshall sees this in real estate projects that aim for a “world standard”. These projects can be seen as progress on the one hand, but also as a decrease in cultural diversity and richness on the other hand (Marshall, 2003, p. 1).

◀ **Figure 3**  
Map of Kampong Chhnang  
in 1972. Source: Defence  
Mapping Agency Topographic  
Center (1972)



2 km

# RESEARCH AREAS



## KAMPONG CHHNANG

This part of the common booklet primarily focusses on Kampong Chhnang. It is a city located in the Cambodian province of the same name, on the west bank of the Tonle Sap River.

In order to analyse the gradient of urbanism, three areas of 400 by 400 metres were selected to further examine during the fieldwork. The floating village north of the city is the first square. The second square is in the centre of Sangkat Kampong Chhnang and contains both stilt houses and houses constructed on elevated ground. The third and southern most square consists mostly of stilt houses connected to an elevated road.

Tonle Sap River

### 1 FLOATING VILLAGE

This area is part of the floating village north of Kampong Chhnang.



### 2 HISTORIC PORT

This area is situated in the historic port of the city. Different types of stilt houses and buildings from the French colonial period co-exist here.



### 3 STILT HOUSES

This area is situated further from the Tonle Sap River and contains a system of stilt houses centred along an elevated road.



◀ **Figure 4**  
Kampong Chhnang  
Source: Google Earth (2021)



2 km

**Figure 5-7** ▶  
Research areas of 400 by 400 m in Kampong Chhnang  
Source: Google Earth (2023)

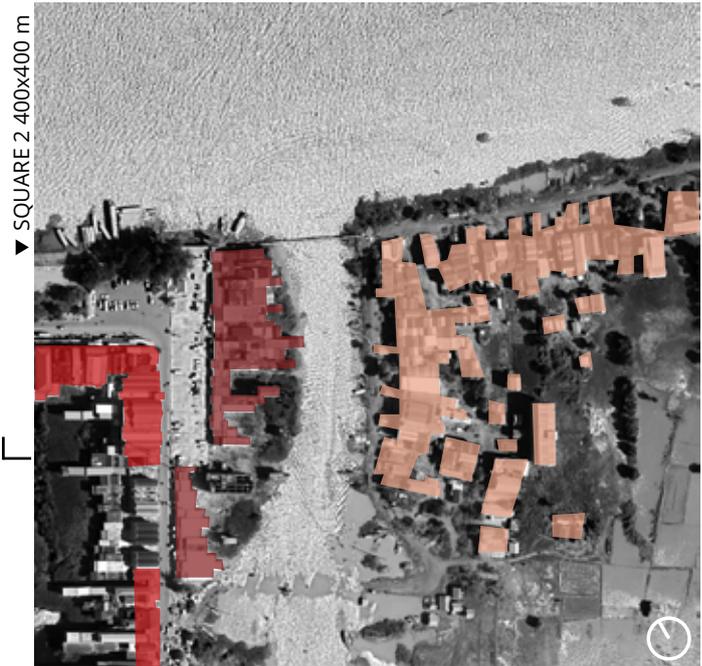
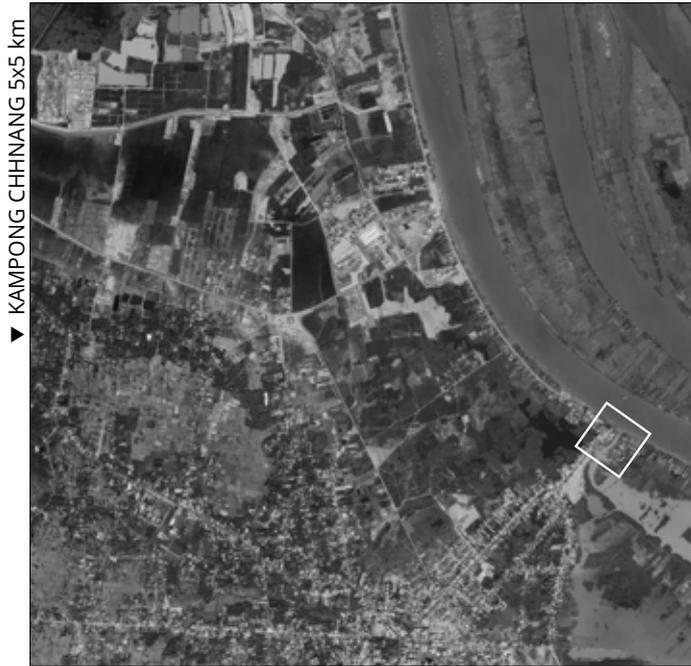
# ***INHABITING THE GRADIENTS***

For many years, urban areas have been shaped and constructed by their inhabitant. The urban fabric reflects a mixture of diverse cultural influences and climate adaptive architecture. Religious temples, vernacular housing, French colonial buildings all coexist to form the urban landscape seen today.

## **PORT AREA**

Square 2 is located in the historic port of Kampong Chhnang. The city is well known for its pottery which was sold in the port to be transported by the Tonle Sap River. This port, however, flooded completely in the rainy season rendering it useless for several months. In the French colonial period, the land around the port was filled, making trading possible in both the rainy and dry season (Kampong Chhnang Provincial Administration, 2019).





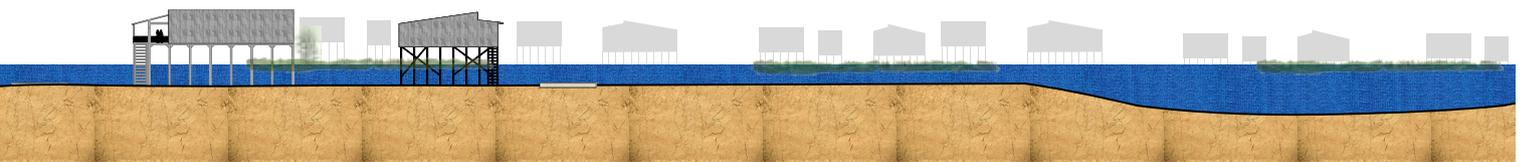
- I. French Colonial Buildings
- III. Stilt Houses connected to elevated road
- VI. Stilt Village

▼ **Figure 8**  
Section of Square 2

40 m

---

**Figure 9** ►►  
View of Square 2







# TISSUES SQUARE 2 - HISTORIC PORT

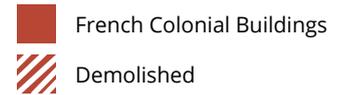
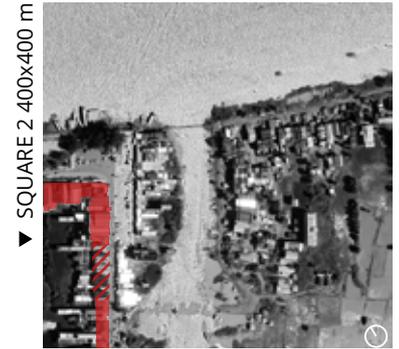
## I. FRENCH COLONIAL QUARTER

On this filled in area, a row of French colonial buildings was constructed in 1931 (Mao, 2021). These hold both commercial and residential functions with the ground floor open towards the street to allow shopkeepers to sell their goods.

In December 2021, 16 families were asked to leave their houses due to safety concerns. The old colonial buildings (fig. 12) had a high risk of collapse. The buildings were not deemed unique or valuable enough to invest in to preserve them (Lay, 2021). In October 2023, construction of new buildings that replace the demolished ones was ongoing (fig. 13).

## II. STILT HOUSES

Behind these buildings are stilt houses which are accessible in between the new buildings. (fig. 10)



**Figure 10** ▲  
Stilt houses behind new buildings (De Ferm, October 2023)

**Figure 11** ▼  
Section of square 2





**Figure 12** ▶  
Facade of old colonial buildings  
before being demolished.  
(Mao, 2021)



**Figure 13** ▶  
Ongoing construction of new  
buildings in place of the old  
colonial buildings.  
(De Ferm, October 2023)



▲  
**Figure 14**  
Road in French Colonial Quarter  
(De Ferm, October 2023)

►  
**Figure 15**  
Facades in French Colonial Quarter  
(De Ferm, October 2023)

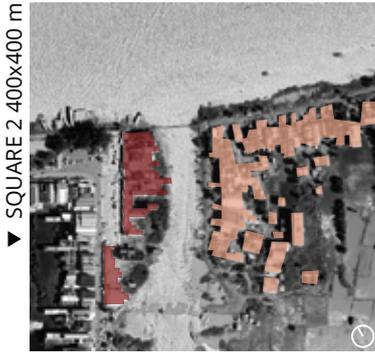


សំបកកញ្ចប់  
សំបកកញ្ចប់  
សំបកកញ្ចប់

free way







### III. STILT HOUSES CONNECTED TO ELEVATED ROAD

Across the French colonial buildings, on the other side of the square, stand stilt houses which are constructed on top of a concrete grid. Many of these houses have a small shop or restaurant oriented towards the square. Towards the water the houses extend on top of wooden stilts. In March 2023, many of the houses were destroyed in a fire (Khouth, 2023).

### IV. STILT HOUSES

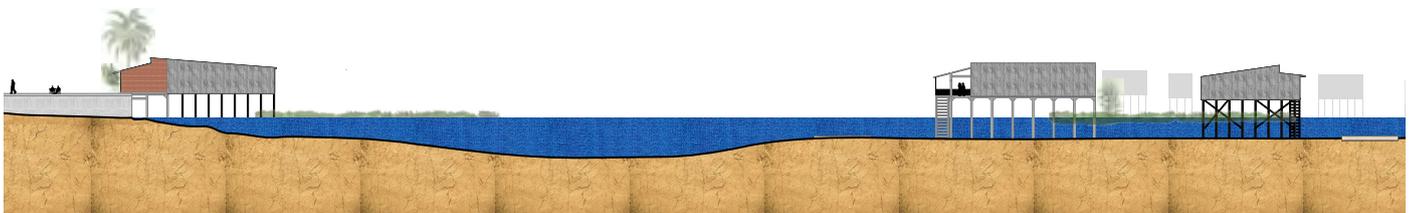
The stilt houses further to the south are not directly connected to the elevated road or public square but are either accessible by dirt road in the dry season or by boat in the wet season.

- ◀ **Figure 16**  
Stilt house on concrete and wooden stilts connected to the public square  
(Peeters, October 2023)
- ◀ **Figure 17**  
Stilt houses not connected to elevated road or square  
(De Ferm, October 2023)

▼ **Figure 18**  
Section of square 2

40 m

---





◀ **Figure 19**  
Stilt houses affected by the fire  
in March 2023  
(De Ferm, October 2023)



**Figure 20** ▶  
Stilt house with shop  
towards the elevated square  
(Peeters, October 2023)

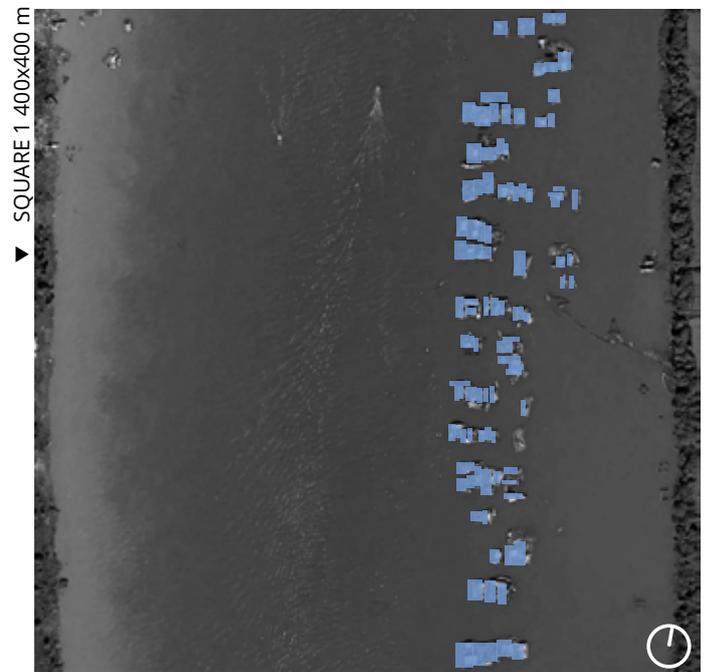
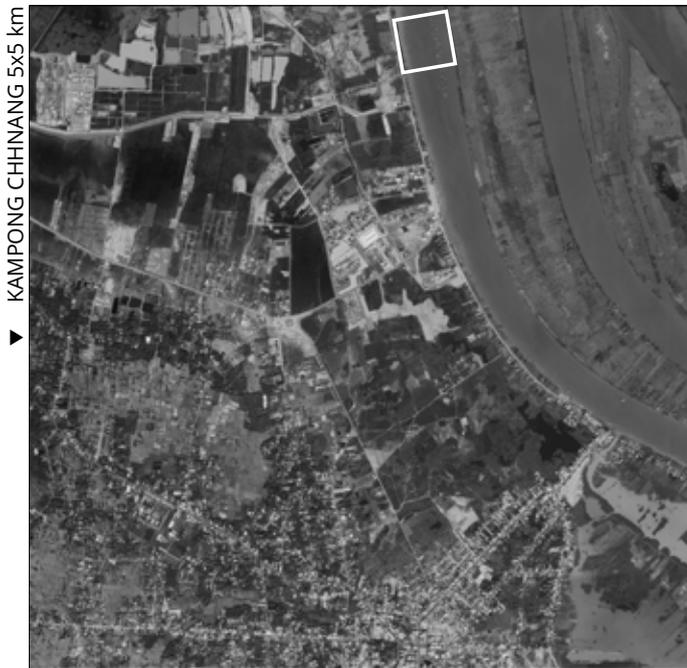
**Figure 21** ▶  
Stilt house accessible by boat  
in wet season or by dirt road  
in dry season  
(De Ferm, October 2023)

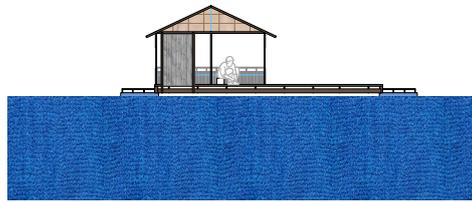


# TISSUES SQUARE 1 - FLOATING VILLAGE

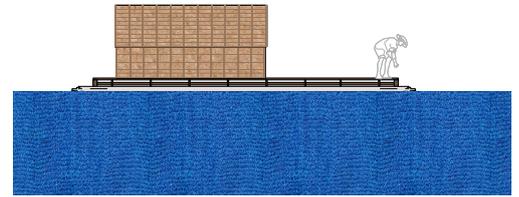
## V. FLOATING VILLAGE

Unlike the floating village in Kampong Luong, discussed in Gradients of Wetness, this one does not move according to the season. In the wet season, they fish near to Kampong Chhnang, in the dry season, they go far-ther away from the city to fish. The village, however, stays in the same location. This village also does not have places for public life as seen in Kampong Luong. It is more dependent on the stilt village nearby and its school.

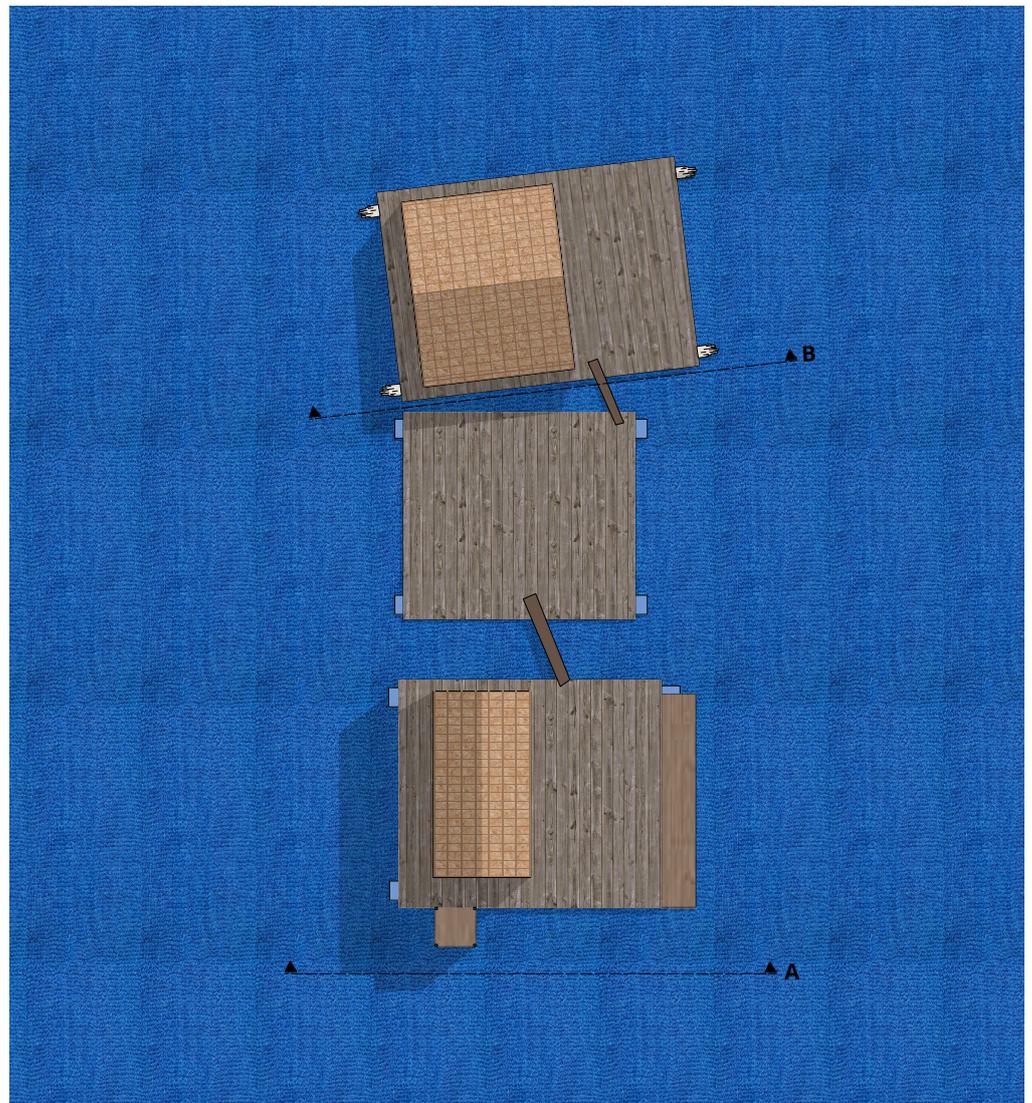




Section A



Section B



**Figure 22** ▶  
Plan and section of floating  
house in square 1  
1/100

2 m



▲  
**Figure 23**  
Floating houses in square 1  
(De Ferm, October 2023)



▲  
**Figure 24**  
(De Ferm, October 2023)

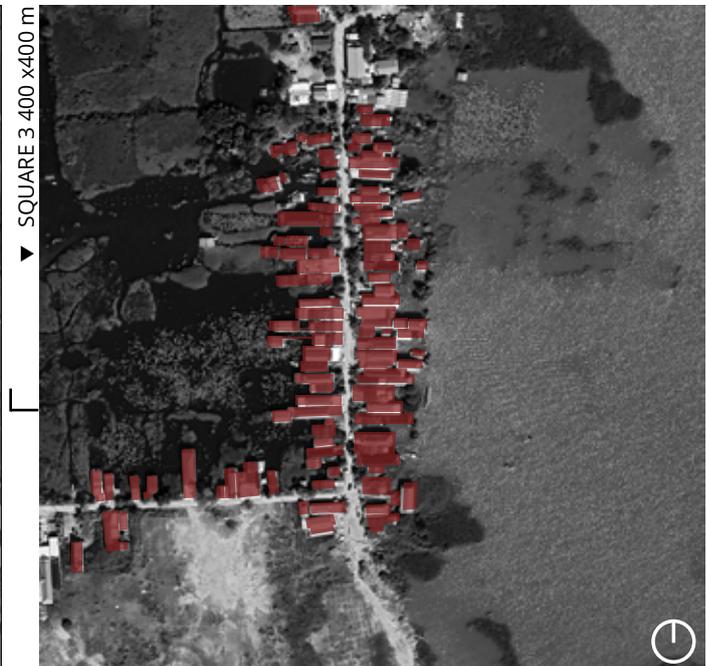
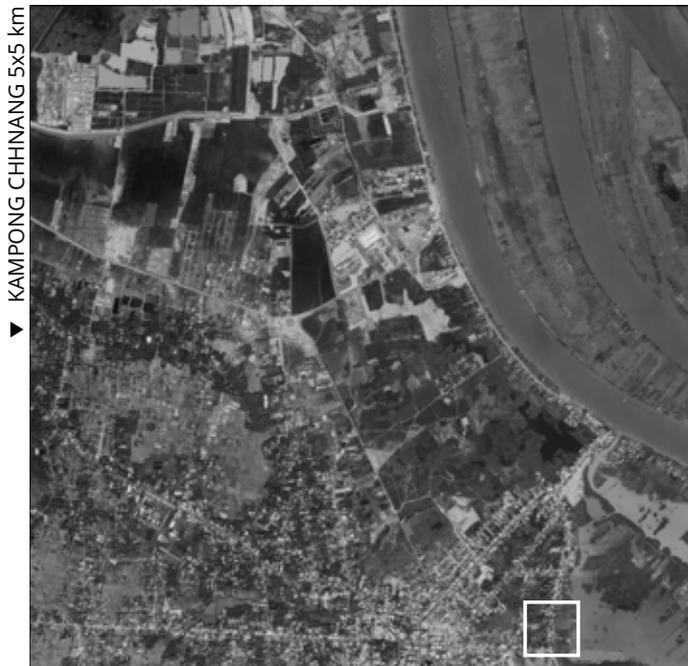
# TISSUES SQUARE 3 - STILT HOUSES

## VI. STILT HOUSES

Further away from the river is a system of stilt houses centred along a central elevated road. Most of these houses are connected to this road by small bridges in wood or concrete.

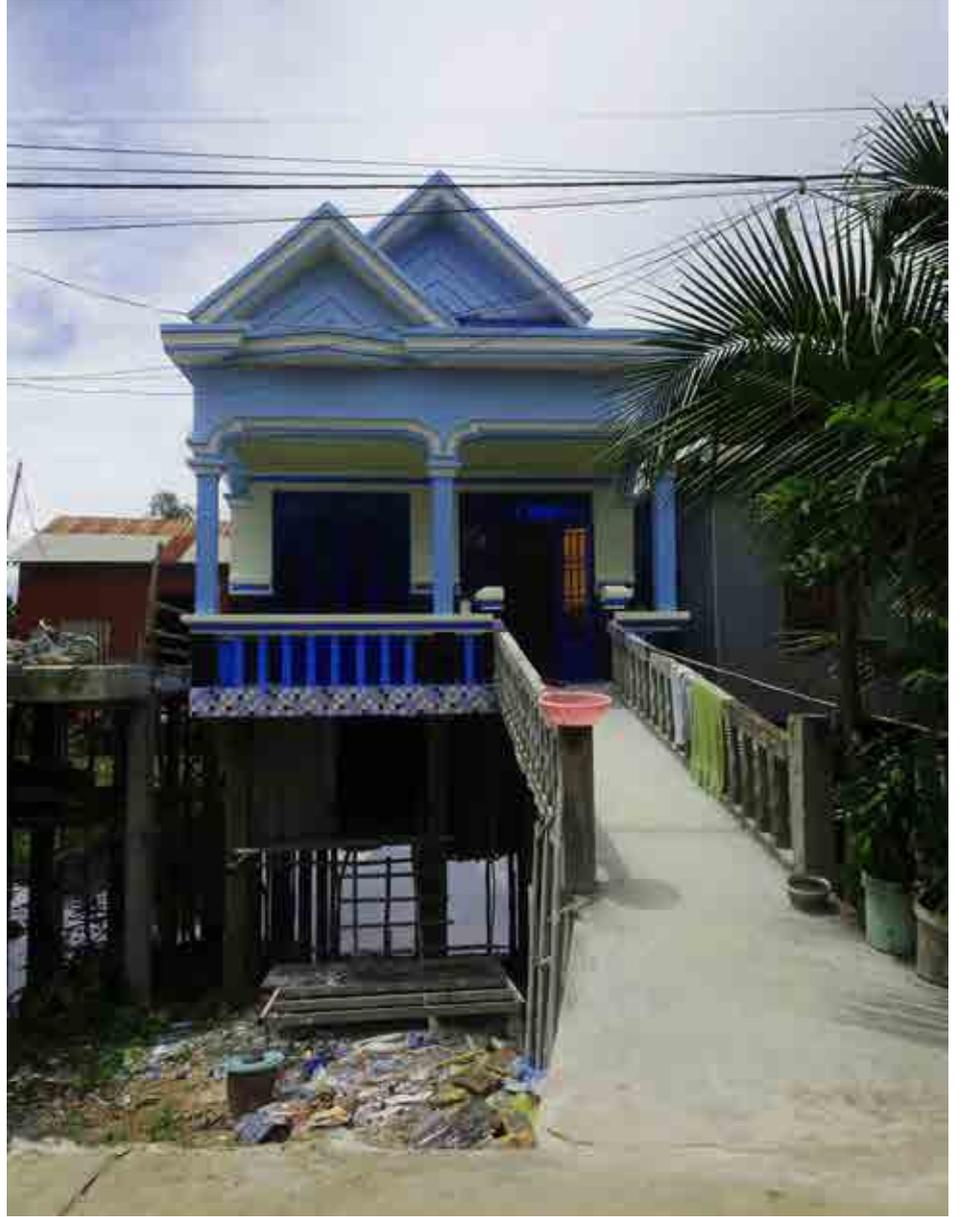
► **Figure 25-26**  
Elevated road  
(De Ferm, October 2023)

►► **Figure 27-29**  
Entrances to stilt houses  
(De Ferm, October 2023)











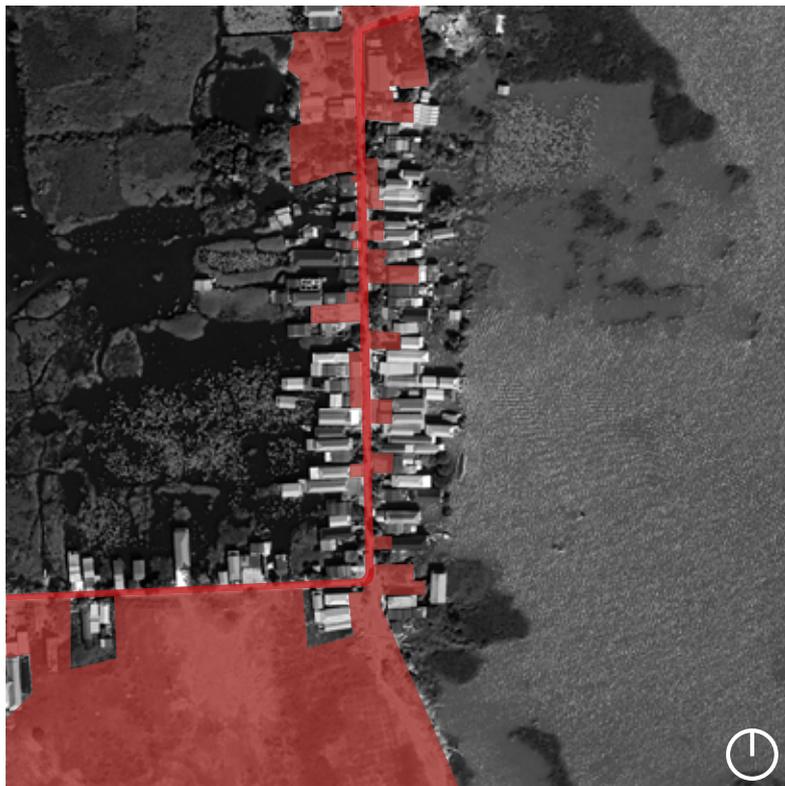


# TRANSFORMING THE GRADIENTS

## FILLING THE LAND

Within these urban fabrics, many ongoing transformations were happening. One of these is filling the land with either sand or concrete. Square 3 is used as an example in this case. The roads are elevated and stay dry all year round. Next to these roads the inhabitants often filled the land in front of their house for better access to their homes. The area in the south, whilst previously inundated in the wet season, has now been made level with the road.

▼ SQUARE 3 400x400 m



**Figure 26** ▶  
Ongoing construction of  
wastewater treatment plant  
South of square 3  
(De Ferm, October 2023)



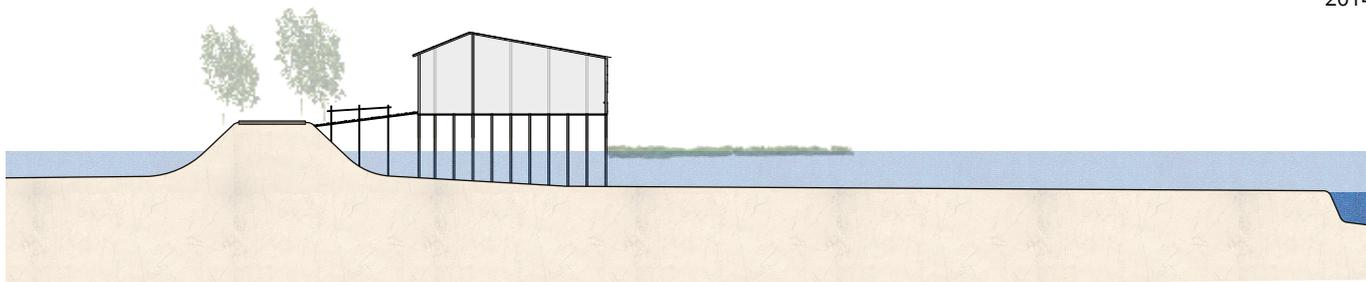


# FILLING THE LAND

Comparing square 3 from 2014 to 2023 shows significant changes. In 2014 the houses in this area were primarily wood and were not directly connected to the road. Over the years, more wooden structures have been replaced by concrete and the ground in front of the houses have been elevated.

**Figure 30** ▶  
SQUARE 3 1/4000  
2014

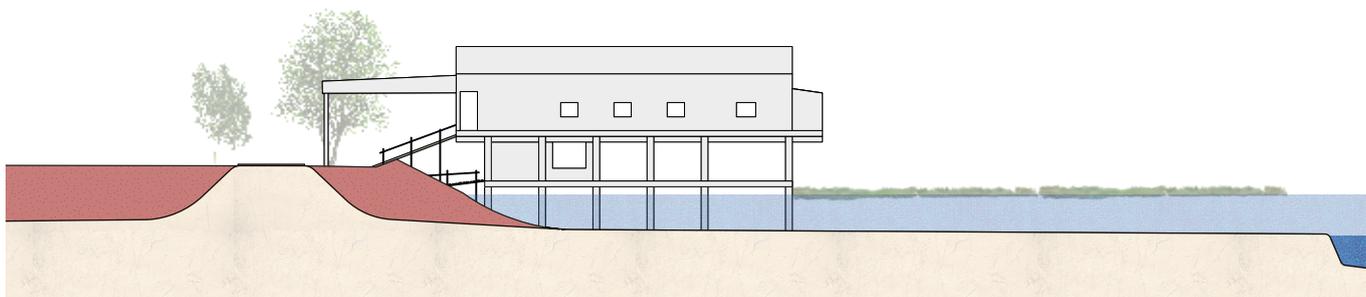
▼ **Figure 31**  
SECTION A 1/400  
2014

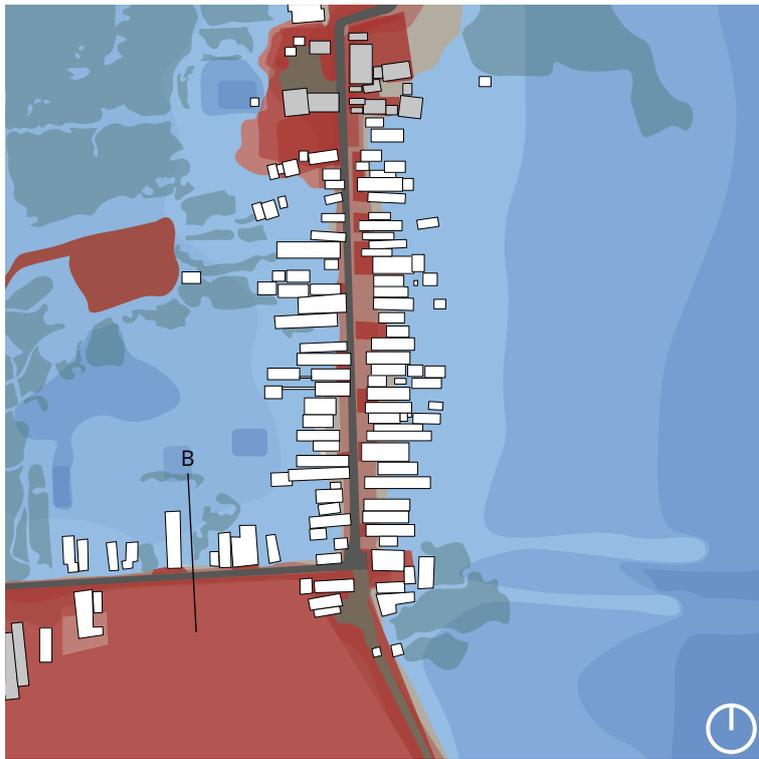


**Figure 33** ▶  
SQUARE 3 1/4000  
2023

▼ **Figure 32**  
SECTION B 1/400  
2023

8 m





100 m

# RELOCATION

The floating village in square 1 used to be an integral part of Kampong Chhnang and was located at the city's waterfront. In June 2021, the government relocated over 600 floating houses and the residing families. The fish farms were seen as a threat to the local environment. On the west bank of the Tonle Sap River, an area of 40 hectares was raised to develop a new village for the affected families (Orm, 2021).

A new garment factory was promised to ensure employment, but years after the relocation of the families, not more than a few walls have been constructed, leaving the residents without reliable work. Basic amenities like electricity, running water or schools have also not been provided. Additionally, the homes regularly flood, with floods reaching up to two meters forcing them into makeshift upper floors or hammocks (Soriththeavy & Kelliher, 2022).

Many of the inhabitants decided to move back into floating houses and fish farms to make a living. This time, further upstream and thus disappearing from view and losing connection to the city.

Current location of floating village

Relocation site

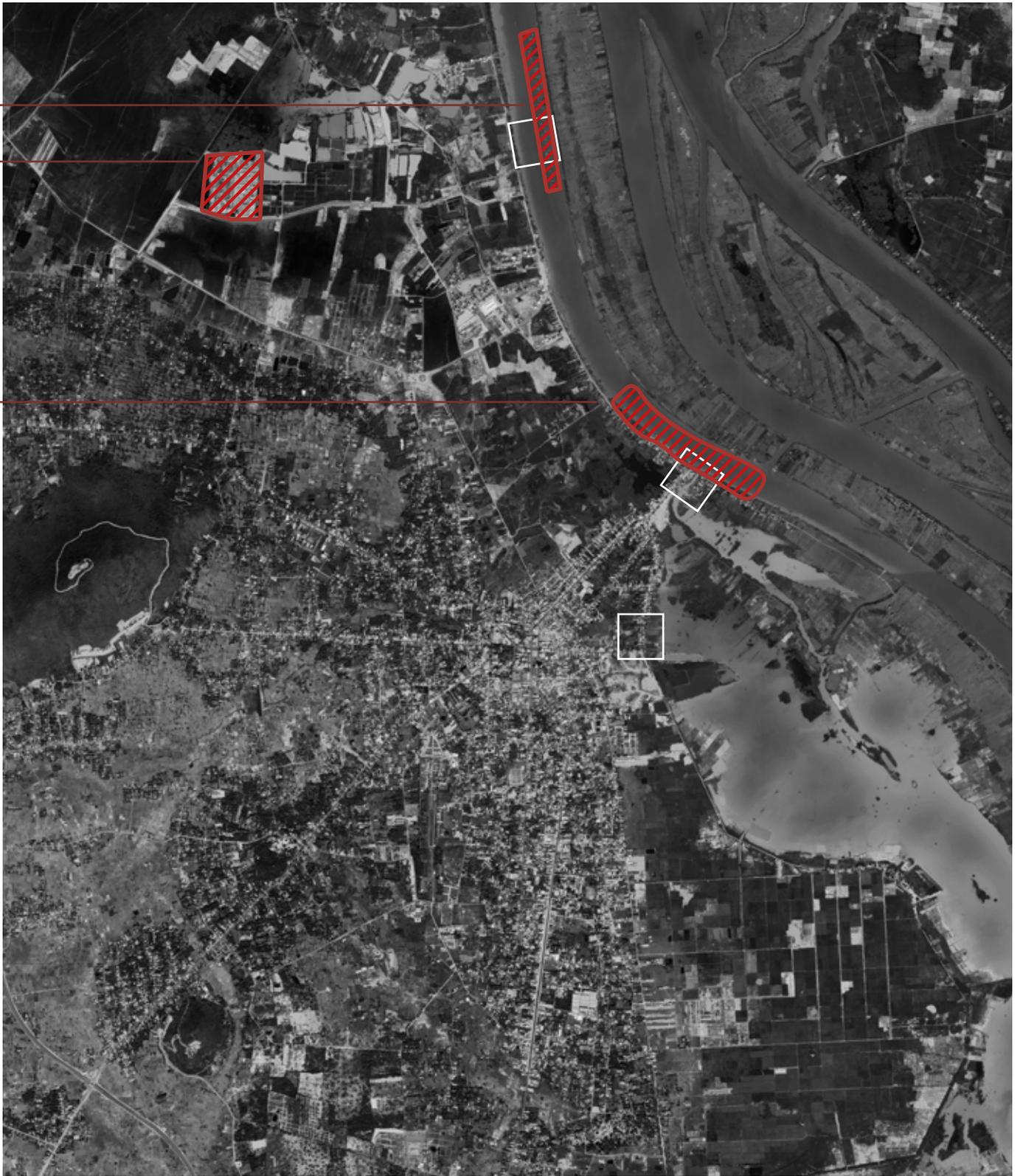
Original location of floating village



**Figure 35** ▶  
Kampong Chhnang  
Source: Google Earth (2021)

2 km

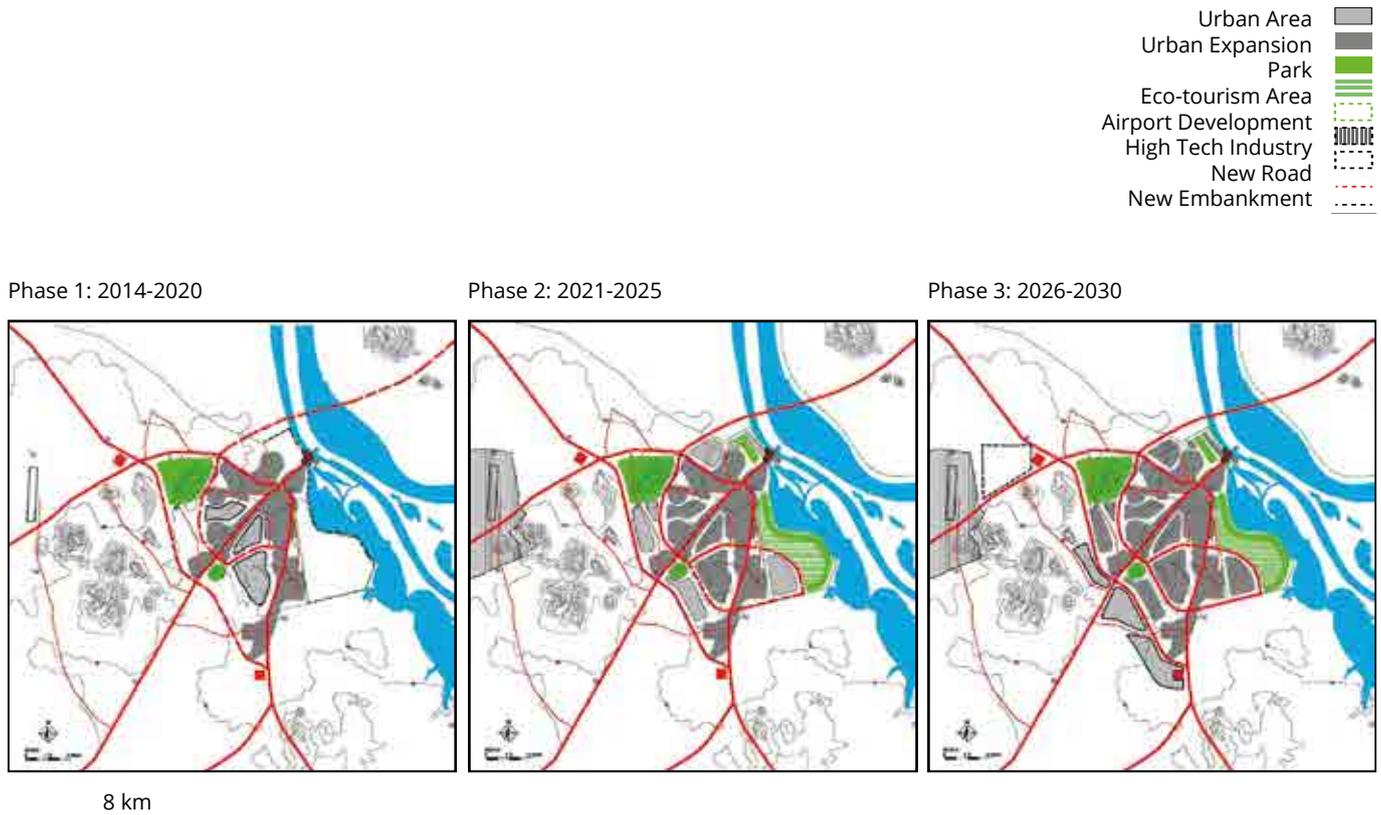
◀ **Figure 34**  
An aerial view of the flooded relocation site for ethnic Vietnamese people in Kampong Chhnang province. Source: Soriththeavy & Kelliher (2022)



# URBAN DEVELOPMENT

In November 2015 the Tonle Sap Urban Development Framework (TSUADF) was approved. Financed by the ADB, it aims to enhance environmental protection and economic activities in the towns surrounding the Tonle Sap Lake. "An important role of the TSUADF will be to highlight the importance of managing sustainable urban growth in an integrated manner with environmental management, both at strategic and local levels." (ADB, 2014b, p. 244).

▼ **Figure 36**  
A phased development plan that was proposed in 2014 to act as a framework for urban development growth (ADB, 2014b, pp. 17-20)



# EMBANKMENT

Part of this project was the construction of a flood protection embankment in Kampong Chhnang, designed to mitigate the annual flooding. The existing embankment, originally built during the Khmer Rouge era, has been resisting floods for agricultural activities and permanent settlements.

The strategy for enhancing this embankment involves multiple phases. The embankment's design includes fixing its height to effectively manage water flow between Kampong Chhnang and the Tonle Sap Lake (ADB, 2014a).

▼ **Figure 37**  
Embankment proposal  
(ADB, 2014a, p. 68).



▼ **Figure 38**  
Embankment proposal  
Made with fig. 37 and  
google Earth (2022)



# CONCLUSION

The vernacular urbanism is synchronised with daily life and seasonal changes. During fieldwork, a lifestyle where people cultivate the land, tend to animals, and make a living in close proximity to their house was observed. The boundary between urban and rural is blurred, allowing a lifestyle closely tied to the land and seasonal changes.

Kampong Chhnang has retained a lot of its urban tissues. There is however an urge to organise and modernise the landscape. Tourism, developers, globalisation all pressure for change in name of economic development. Big actors impose urbanisation projects with this “world standard”. By striving for a homogeneity in projects and filling the land to facilitate this, they become vulnerable as they are less adapted to the specific environment and the gradients of wetness. The relationship between the adaptable vernacular tissues with the gradients of the landscape is lost in many projects.





# CONCLUSION

The concept of gradients, which spans disciplines from physics and mathematics to biology and geology, essentially means a gradual change in a property or condition over a distance, characterised by a slope, rate of change, or transition from one state to another.

In the context of the Mekong Delta, this thesis explores gradients in terms of wetness, commons and urbanism, revealing the complex interplay between natural processes, human activities and spatial transformations. It shows that conventional perspectives of fixed boundaries do not correspond to the inherent dynamism of nature. In the cases of water and land, public and private, urban and rural, there are seamless transitions and coexistence where boundaries are blurred.

This thesis demonstrates that the Western context can learn valuable lessons from the vernacular tissues of the Mekong Delta. The study of wetness gradients reveals the dynamic relationship between water and land, challenging the rigid distinctions often imposed by conventional perspectives. Similarly, the study of commons shows how traditional communal spaces thrive on mutual support and shared resources, in contrast to the Western dualism of private and public spaces. The final part discusses existing urban tissues and their dynamic forms, allowing a lifestyle closely tied to the land and seasonal changes.

However, each of the three chapters also contains a warning: these gradients are in transformation. The pressures of modernisation, globalisation and economic development threaten the delicate balance of these gradients, leading to the erosion of traditional practices and communal structures.

In conclusion, this thesis not only highlights the importance of understanding and preserving the intricate gradients that define the Mekong Delta, but also calls for a re-evaluation of Western approaches and views towards spatial organisation. By embracing the fluidity and interconnectedness inherent in natural and social systems, there is an opportunity to create more sustainable and resilient urban environments.

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### Figure 9:

Facebook User. (23 November 2020). [Photo]. Facebook. Retrieved 14 May 2024, from [https://www.facebook.com/KgChhnangProvince/photos/a.288611101308938/1829662730537093/?type=3&locale=ms\\_](https://www.facebook.com/KgChhnangProvince/photos/a.288611101308938/1829662730537093/?type=3&locale=ms_)



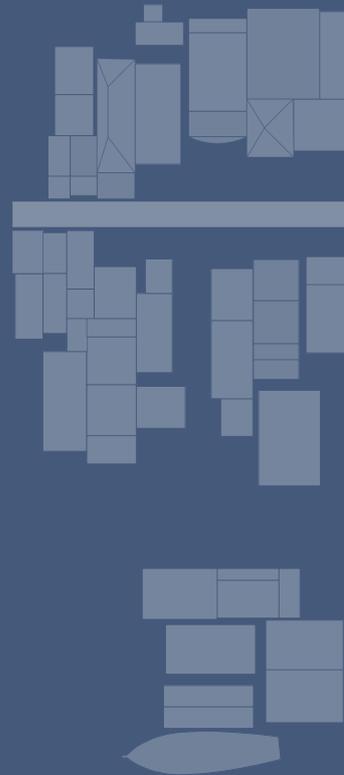
This thesis explores the complex interplay between natural processes and human activities in the Mekong Delta through three interconnected themes: Gradients of Wetness, Gradients of Commons, and Gradients of Urbanism. Each theme examines different aspects of the dynamic landscape, socio-cultural and inhabitation structures in this unique region.

Gradients of Wetness addresses the varying degrees of water presence, from highly flooded areas to minimally wet zones. It highlights how these gradients influence land occupation and use, vegetation, and settlement patterns. By analysing the seasonal changes of water bodies like the Tonle Sap Lake and the Mekong River, the Western modern ideas of stable landscapes are challenged, emphasising the fluid boundaries between land and water.

Gradients of Commons looks into the changing dynamics between public and private spaces, communal resources, and shared amenities. It explores how these gradients blur the lines between what is considered public and private, influencing social interactions, economic activities, and cultural practices. By focusing on the communal aspects of urban living, it is revealed how shared amenities and spaces foster social cohesion and resilience among delta communities.

Gradients of Urbanism examines the changing urban landscape, infrastructure, and socio-economic conditions. It critically analyses urban tissues, the expansion of built-up areas, and the effects of national and international development policies on local communities. This section provides insights into the spatial changes and their socio-economic impacts on the region.

Through detailed fieldwork and analysis, these theses aim to provide a comprehensive understanding of the Mekong Delta's dynamic landscapes. The underlying patterns and mechanisms that shape the region offer valuable insights for truly sustainable development and management. There is a need to get away from a dichotomous way of thinking, to not view land versus water, private versus public, or urban development versus traditional architecture—but as interdependent sets of continuous gradients. In the Mekong Delta, local communities already perceive and manage these aspects as gradients, integrating them into their everyday practices. This indigenous approach teaches us that by embracing these fluid boundaries, Western perspectives can change, drawing on the practices that have supported the Delta's socio-ecological systems for generations.







# ***BRIDGING CULTURES***

## ***APPLYING MEKONG DELTA STRATEGIES IN FLANDERS***

**A CASE STUDY OF LINT, BELGIUM**

# ***BRIDGING CULTURES***

## ***APPLYING MEKONG DELTA STRATEGIES IN FLANDERS***

**A CASE STUDY OF LINT, BELGIUM**

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# ***BRIDGING CULTURES***

## ***APPLYING MEKONG DELTA STRATEGIES IN FLANDERS***

**A CASE STUDY OF LINT, BELGIUM**

Ruben Dejaegher  
Hasse Peeters

Thesis submitted to obtain the degree of  
Master of Engineering Science: Architecture

**Thesis supervisor:**  
Prof. Kelly Shannon

**Co-supervisor:**  
Vu Thi Phuong Linh

**Assessors:**  
Prof. Bruno De Meulder  
Prof. Trinh Tu Anh  
Prof. Vu Thi Hong Hanh

Academic year 2023-2024

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Finally, we would like to thank our parents for allowing us to undertake this topic and fieldwork, and for their unwavering support throughout the process.

# ABSTRACT

*Bridging Cultures* explores the potential of integrating principles of Mekong Delta vernacular architecture into the Flemish village of *Lint*. Building on the fieldwork of the first booklet, *Gradients in Vernacular Tissues*, the study explores how the adaptive, community-centred practices of the Mekong Delta can address urban and environmental challenges in Western contexts.

The core research revolves around adapting the principles of gradients - wetness, commons and urbanism - from the Mekong Delta to inform village development in Flanders, Belgium. Western urban development often struggles to create sustainable, resilient communities in the midst of rapid urbanisation. The rigid separation of spaces in Western planning contrasts with the seamless integration found in the Mekong Delta, where public and private spheres overlap, fostering community resilience and efficient resource use.

The analysis identifies key concepts: *Gradients of Wetness* challenge static perceptions of land-water and promote fluid, dynamic landscapes. *Gradients of Commons* highlight the importance of communal spaces that blur the boundaries between the public and private spheres and foster social networks. *Gradients of Urbanism* advocate a balanced approach to urban planning that preserves cultural heritage while meeting modern needs.

*Bridging Cultures* identifies several innovations from the Mekong Delta, such as flexible stilt houses, modular tube houses and intergenerational housing. These practices, deeply embedded in local culture, offer valuable lessons for Western contexts. For example, adaptability in housing and the use of locally sourced, lightweight materials can enhance resilience and sustainability in Flemish villages.

The design proposal for *Lint* integrates these lessons and aims to reverse the trend of unsustainable urban sprawl. By promoting shared living and communal spaces, the proposal aims to improve the quality of life and foster vibrant, connected communities. The controversy surrounding the *Zevenhuizen* project in *Lint* highlights the need for a thoughtful, community-based approach to development.

*Bridging Cultures* shows that principles from the Mekong Delta can inspire a paradigm shift in Flemish village development. By embracing communal living and adaptive design, it is possible to create resilient, sustainable urban environments that respect local traditions while addressing contemporary challenges.



# TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>4</b>
<b>ABSTRACT</b>	<b>5</b>
<b>TABLE OF CONTENTS</b>	<b>7</b>
<b>INTRODUCTION</b>	<b>9</b>
<b>RESEARCH QUESTION</b>	<b>11</b>
<b>LEARNING FROM THE MEKONG DELTA</b>	<b>13</b>
<i>STORY OF GRADIENTS</i>	14
<i>TYPOLOGICAL INNOVATION</i>	20
<i>CASE STUDIES</i>	21
<b>DESIGNING IN FLANDERS: WHILE LEARNING FROM THE MEKONG DELTA</b>	<b>69</b>
<i>LINT ANALYSIS</i>	70
<i>EFFECTS OF GLOBAL WARMING</i>	97
<i>A GLIMPSE INTO THE FUTURE OF LINT</i>	104
<b>DESIGNING SUSTAINABLE SOLUTIONS: LINT IN FOCUS</b>	<b>115</b>
<i>DESIGN STRATEGIES</i>	116
<i>FOREST ROOMS</i>	135
<i>PUBLIC ROOMS</i>	141
<i>COMMON ROOMS</i>	145
<i>QUESTIONING THE FUTURE OF LINT</i>	170
<b>CONCLUSION</b>	<b>177</b>
<b>BIBLIOGRAPHY</b>	<b>180</b>



# INTRODUCTION

*Bridging Cultures* is the sequel to the common booklet *Gradients in Vernacular Tissues*. Starting from the Mekong Delta, where fieldwork explored the concept of 'living with gradients', this booklet delves into an exploration of how these perspectives can be adapted to a Flemish context. The unique viewpoints and cultural practices of the communities of the Mekong Delta offer valuable lessons for developing a new way of understanding and intervening in the landscape, one that values the landscape, community feeling, dynamics, anticipation and adaptation.

The booklet begins by categorizing key aspects of vernacular tissues in the Mekong Delta, characterized by the different gradients studied in the common book. It then explores how these insights can be translated to the Western world, particularly Flanders. As global warming, demographic growth, economic crises, and modern planning change the environment in Flanders, much can be learned from the low impact way of living in the Mekong Delta to anticipate these changes.

A site in Lint, Flanders, has been chosen for design research. The design aims to address the changing environments in Flanders and proposes a different approach to urban expansion, land occupation and communal living. The design, for both the near and far future, serves as a counterproposal to an existing project for the site.

This hypothesis posits that the application of these principles will lead to an enhanced understanding of the landscape, improved community dynamics, and a proactive approach to anticipating and adapting to environmental changes. By drawing insights from Cambodia and Vietnam, we aim to create strategies for a more resilient future, informed by the dynamics of the gradients that characterizes the vernacular in the Mekong Delta. The goal is to foster a more nuanced and adaptive understanding of how to navigate and design within fluid, ever-changing environments.



# RESEARCH QUESTION

*How can the principles and practices derived from the study of vernacular tissues and gradients in the Mekong Delta be adapted to inform and enhance village development and urbanism in Western societies like Flanders, Belgium?*

◀ **Figure 1**  
In Kampong Chhnang, Cambodia, the narrow streets become communal gathering places in the afternoon. (Peeters, October 2023)

Urban development in Western societies, particularly in regions like Flanders, Belgium, faces the challenge of creating sustainable, resilient, and socially cohesive communities in the face of rapid urbanization and environmental pressures. Traditional Western urban planning often emphasizes a clear division between dry and wet, private and public, and formal and informal spaces, which can lead to fragmented communities and inefficient use of space.

In contrast, the vernacular tissues of the Mekong Delta in Vietnam and Cambodia offer a rich tapestry of living environments where the gradients of wetness, commons, and urbanism seamlessly integrate to create vibrant, adaptive, and resilient communities. The region exhibits a unique blend of communal and individual spaces, where public and private realms overlap, fostering a strong sense of community and efficient resource use.

The challenge lies in translating these principles from a non-Western context, characterized by different cultural, social, and environmental conditions, to the Western context of Flanders. This translation must address not only the physical design but also the underlying social and cultural practices that support these environments.

◀ **Figure 2**  
No street activity in the wide streets of Lint during the afternoon. (Dejaegher, April 2024)



# ***LEARNING FROM THE MEKONG DELTA***

# STORY OF GRADIENTS

In the previous booklet *Gradients in Vernacular Tissues: Navigating the Mekong Delta*, the concepts of Gradients of Wetness, Gradients of Commons, and Gradients of Urbanism are explored. The booklet examines the interplay between natural processes, human activities, and spatial transformations in the Mekong Delta region through the lens of these gradients.

In *Bridging Cultures: Applying Mekong Delta Strategies in Flanders*, we build upon these foundational concepts, delving deeper into the insights gained from our experiences in the Mekong Delta. This booklet focuses on applying these lessons to new contexts, demonstrating how the principles observed in the Mekong Delta can inform and inspire innovative approaches to landscape management and urban development.

## GRADIENTS OF WETNESS

Gradients of Wetness challenges traditional perceptions of water and land as separate, static entities. Instead of fixed boundaries, it explores the dynamic interplay between land and water, particularly focusing on the Tonle Sap Lake and Trans-Bassac Depression. These regions exemplify how natural features like rivers and lakes are in constant motion, creating varying degrees of wetness. The seasonal flooding and receding waters illustrate that land and water are not opposites, but part of a continuous, fluid system. 'Gradients of Wetness' advocates for a shift in perspective to embrace this fluidity, recognizing the inherent dynamism of natural landscapes.

The unique viewpoint of water-based communities in the regions of the Mekong Delta offers an opportunity to reimagine an approach to landscape management and adaptation to global warming by recognizing water and land not as distinct entities, but as interconnected gradients.

**Figure 3** ►  
Gradients of wetness visible in Hong Ngu during wet season. Stilt and floating houses coexist with the wetland. (Dejaegher, October 2023)





## GRADIENTS OF COMMONS

The chapter *Gradients of Commons* delves into the non-Western context of commons and communal spaces, acting as an intermediary between private and public spheres. In vernacular fabrics, the strictly dual boundary between these latter categories blurs, creating gradients between publicness and intimacy, and community and individuality, resulting in a vibrant living environment.

The chapter emphasizes the importance of communal spaces in sustaining the social fabric of vernacular communities. These spaces form a physical infrastructure where practices of commoning - such as agricultural activities and small street commerce - can flourish as a social network. It demonstrates that these spaces are not merely physical locations, but also essential parts of cultural and social life, continuously adapting to daily rhythms and nurturing communal bonds.

*Gradients of Commons* advocates for a paradigm shift to embrace this blurring of boundaries, highlighting the dynamic and integrated nature of these communal spaces. It warns readers that these vernacular commons are increasingly under threat from growing Western influences, which tend to impose rigid private-public distinctions that can disrupt the traditional communal lifestyle.



**Figure 4** ►  
The street functions as a common in Hong Ngu.  
(Dejaegher, September 2023)



## GRADIENTS OF URBANISM

*Gradients of Urbanism* highlights the richly diverse urban fabric of the regions in the Mekong Delta, characterized by vernacular housing, French colonial buildings, and modern developments. This variety reflects the region's history and its adaptation to both cultural influences and environmental conditions.

This chapter discusses ongoing transformations, such as land filling and urban development projects, which aim to modernize the region while balancing environmental protection and economic growth. However, this push for modernization introduces a tension between traditional, adaptive urban forms and the pressures of globalization and modernization. Homogeneous, economically driven development strategies impose the unique vernacular character of the urban landscape.

The Mekong Delta's urban fabric is thus a patchwork of old and new, local and foreign, which must navigate the delicate balance between preserving its distinctive cultural heritage and embracing the demands of modern development.

*Gradients of Urbanism* highlights the need to rethink urban planning. Advocating for a balance between village and urban densities, it calls for creating village-like architecture that retains its unique character. This approach requires a shift in urban development: integrating vernacular buildings with necessary future densification without erasing the past. By learning from the Mekong Delta's mistakes, a sustainable approach can be adopted that respects cultural heritage while meeting contemporary needs.



**Figure 5** ▶  
Gradients of Urbanism visible in Hong Ngu. Land fillings and new development imposes the vernacular landscape. (De Ferm, October 2023)



# TYPOLOGICAL INNOVATION

In the Mekong Delta, what is considered innovative in other regions, and therefore in this thesis, is simply part of everyday life for local communities. Several typological innovations derived from these vernacular practices offer valuable insights that can be adapted to the Flemish context.

The local adaptations and cultural practices of the Mekong Delta communities are deeply embedded in their way of living and interacting with their environment. Concepts such as flexibility, adaptability, and communal living are not merely theoretical; they are embedded in the daily lives and built environments of these communities.

For the local communities, these practices are a natural response to their unique challenges and opportunities. However, when viewed from an external perspective, particularly in the context of Western urban planning, the vernacular practices can be seen as innovative solutions to common issues such as climate change, rapid urbanisation, and social cohesion.

The following section will present seven typological innovations derived from the Mekong Delta.



**Figure 6** ►  
Asian centred world map.  
Source: Adobe Stock

## CASE STUDIES

The aim of 'Bridging Cultures' is to translate the key learnings from the fieldwork in the Mekong Delta to the Flemish context of Lint. It is crucial to recognise that this translation cannot be a literal copy-paste, but requires adaptation to the local context, environment, and climate.

Each lesson from the Mekong Delta is accompanied by case studies from the Western architectural context, as well as examples from Japan. These case studies demonstrate how similar principles have been successfully applied in different cultural and climatic settings, providing a rich source of inspiration for the design proposal, and highlighting the importance of adapting sustainable practices to the specific needs and characteristics of each region.

By combining these diverse insights, the design proposal for Lint aims to create a unique, contextually appropriate solution that respects local traditions while incorporating innovative, global strategies for sustainability and community building. This approach ensures that the project is both locally relevant and globally informed, fostering a resilient and inclusive urban environment.



## 1A. ADAPTIBILITY/FLEXIBILITY

The concepts of flexibility and adaptability are deeply woven into the fabric of daily life and are essential to the resilience of vernacular architecture. As documented in the common booklet, these principles are not just architectural choices, but responses to the environmental, social and economic conditions that shape these communities.

Traditional Vietnamese and Cambodian houses are designed with a high degree of flexibility. For instance, houses are frequently constructed on stilts, thereby enabling the versatile utilisation of the space beneath the principal living areas. This may be employed as storage, livestock stables or communal areas, depending upon the season and immediate requirements. This adaptability is of particular significance in regions prone to flooding, where elevated structures provide protection from rising waters.

Furthermore, the interiors of these houses are typically open and multi-purpose, allowing them to be easily reconfigured for different activities throughout the day. The use of movable partitions, folding furniture and lightweight materials facilitates this fluidity, allowing families to adapt their living environments as their needs change.



▲  
**Figure 7**  
Families are able to customize  
their living spaces to meet  
evolving needs.  
(Dejaegher, September 2023)

## 1B. LIVING IN DIMENSIONS

The typical Kinh group housing unit, often referred to as a *tube house* in Vietnam, is four metres wide. These tube houses serve as modular units and can be expanded indefinitely to accommodate growing families, forming clusters. This creates a high-density landscape characterized by clustered configurations.

These narrow structures serve as a backbone of Vietnamese urban landscapes, known for their adaptability and scalability. As families expand, additional floors or rooms can seamlessly integrate into the existing structure, resulting in a layered and dynamic living space. Despite their compact size, tube houses offer remarkable flexibility, enabling various configurations to meet different needs.



**Figure 8**

Tube house extend into the river to accommodate growing families.  
(Dejaegher, September 2023)



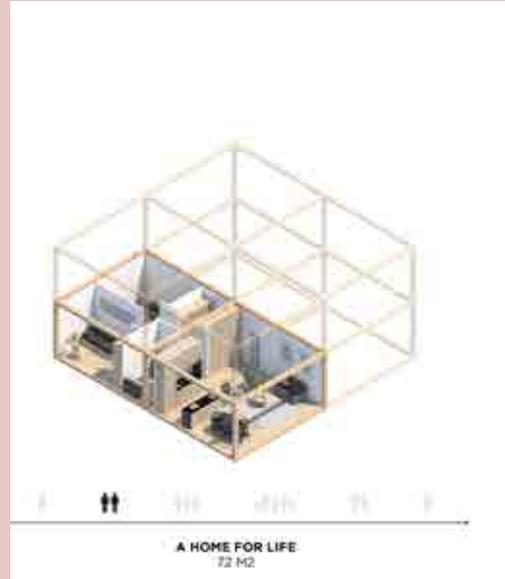
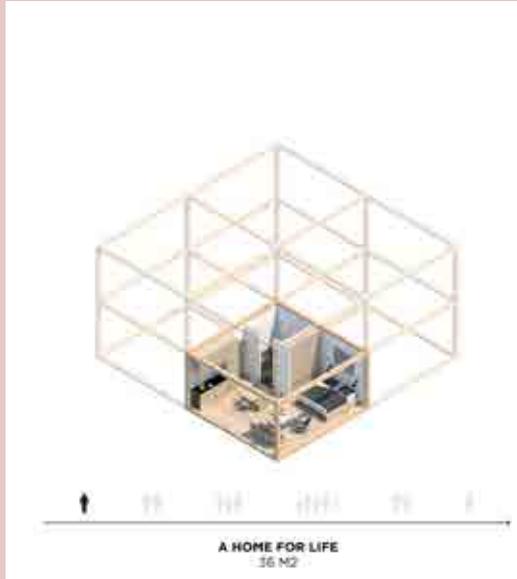
▲  
**Figure 9**  
Clusters of floating houses  
arranged in rows, with  
interconnected homes and fish  
farms.  
(Peeters, October 2023)



▲  
**Figure 10**  
The stilt framework facilitates  
expansion beneath the current  
dwelling.  
(Peeters, October 2023)

## Urban Village Project - EFFEKT Architects

Launched in 2018 by EFFEKT Architects, the *Urban Village Project* is a visionary new housing model designed to provide affordable and livable homes in cities around the world. It aims to intelligently address contemporary urban challenges such as rapid urbanisation, ageing populations, loneliness and global warming (EFFEKT, 2024c).



## KEY LEARNINGS

### Adaptable homes for a life-time:

The Urban Village Project's modular system consists of a load-bearing timber structure as the basic unit, which can be interlocked and stacked to achieve the desired density and height in different urban environments. The 'skin' elements, such as floor slabs and walls, are also modular in size, allowing for the addition or omission of certain elements. In other words, residents can remain in the same location throughout their lives and adapt their living space as their family situation changes. Additional modules next to, above or below can be purchased and easily connected to increase living space and comfort as required. Conversely, these changes can be easily reverted back to the basic unit.

◀ **Figure 11**  
Different unit combinations in  
Urban Village Project.  
Source: (EFFEKT, 2024b)

## Seijo Townhouses - Kazuyo Sejima & Associates

This collective housing project offers an alternative to the typical developments constructed in the suburbs of Tokyo, which often lack a connection to traditional Japanese homes.

The community comprises 20 compact volumes cleverly interlocked and interconnected above ground through gardens, terraces, and footbridges on upper floors. Maintaining a human scale for the residences and arranging windows in a manner where they never directly face each other, preserves the sense of privacy.



## KEY LEARNINGS

### Creating gradients of intimacy:

The project emphasises the creation of gradients of intimacy through the strategic arrangement of small residential units to form shared courtyards. This innovative design approach prioritises privacy without compromising communal living. By clustering units around shared outdoor spaces, the project fosters a sense of community while maintaining the individuality and privacy of each unit.

A key aspect of this design is the careful placement of windows to ensure that residents can enjoy natural light and views without sacrificing privacy. This clever arrangement allows for visual connections between indoor and outdoor spaces while preventing direct sight lines between neighbouring units, preserving a sense of personal space.

In addition, the inclusion of shared amenities such as communal gardens, roof terraces and common areas further enhances the sense of community and encourages social interaction between residents. These shared spaces exemplify the concept of the commons, serving as resources that are collectively managed and enjoyed by the community.

## Void Space / Hinged Space Housing - Steven Holl

The *Void Space/Hinged Space Housing* project, designed by Steven Holl and completed in Fukuoka, Japan in 1991, is an example of innovative architectural design that harmonises with its environment. The project features *voids* to maximise natural light and communal spaces, alongside adaptable *hinged* living units to meet the evolving needs of residents. The integration of indoor and outdoor spaces enhances the quality of life and reflects traditional Japanese architectural principles (Steven Holl Architects, 2024).



## KEY LEARNINGS

### Multi-use of living area:

A key learning from the *Void Space/Hinged Space Housing* project in Fukuoka, Japan, is the innovative use of hinged panels inspired by traditional Japanese architecture. These panels allow living spaces to be dynamically adapted to different needs throughout the day and night.

During the day, the hinged panels can be opened to create spacious, interconnected areas that enhance natural light and ventilation. At night, they can be closed to provide privacy and create more intimate, functional spaces. This approach not only maximises the flexibility and usability of living spaces, but also reflects the traditional Japanese emphasis on adaptable and multifunctional environments.

This principle of flexible design can be valuable in creating responsive and resilient living spaces in different cultural and climatic contexts.

◀ **Figure 13**  
Visualisation of the hinged panels.  
Source: (Steven Holl Architects,  
2024)

## 2. LIVING WITH THE SEASONS

In the vernacular every day practices in Vietnam and Cambodia, seasonal changes are not merely climatic shifts; they are fundamental elements that shape the way people live and interact with their environment. For instance, the alternating periods of rainfall and drought influence the agricultural cycle, construction techniques and even social rituals. Houses are designed to accommodate these changes, with features such as raised floors and flexible spaces that can adapt to changing conditions.

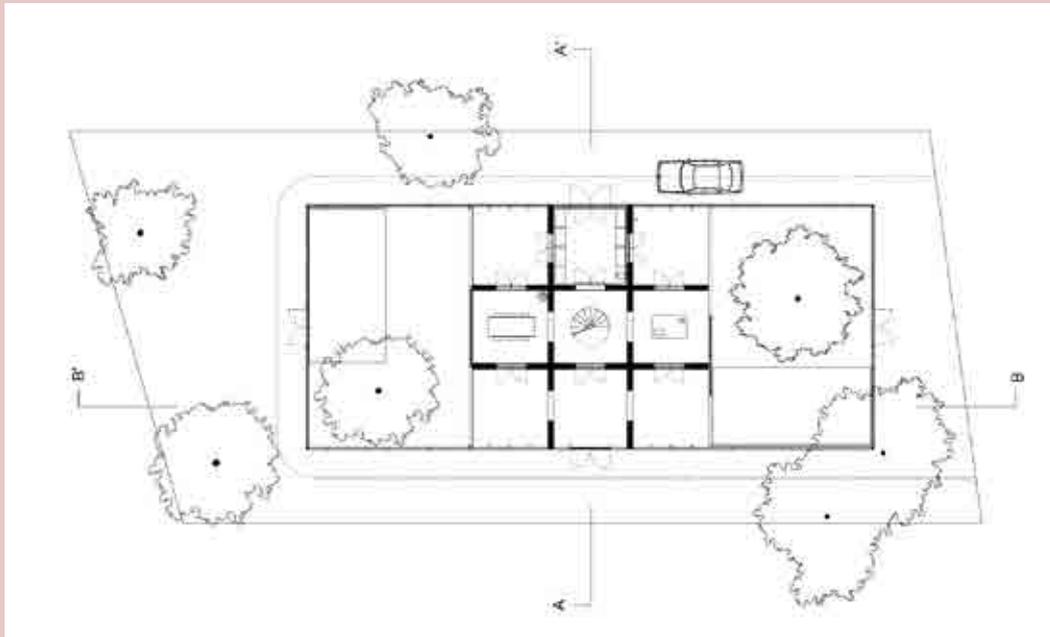
### **Figure 14** ►

During the dry season, the wooden structure of the house extends the living space, while in the wet season, it becomes fully submerged.  
(Peeters, September 2023)



## Villa Buggenhout - KGDVS

*Villa Buggenhout*, designed by OFFICE Kersten Geers & David Van Severen, is a detached house located near the Flemish village of Buggenhout. The design features an open *outside house* on the ground floor and a closed *inside house* on the first floor. The supporting walls on the ground floor divide the house into nine quadrants, allowing the exterior walls to be open and integrated with the surroundings (*Villa Buggenhout*, n.d.).



## KEY LEARNINGS

### Solid and light structure:

The load-bearing walls divide the interior into nine distinct quadrants, each capable of forming a living space. This structural design allows the exterior walls to be transparent, blending seamlessly with the environment and allowing natural light to flood the interior. The spaces are connected by double doors that can be opened to create a continuous flow throughout the house.

### Flexibility and mobility of the interior:

The furniture is compact and made of lightweight materials, making it easy to move. For example, the kitchen counter is mounted on wheels so that it can be moved between quadrants or even rolled outside. Apart from the central circulation quadrant, no space on the ground floor has a fixed function. This flexibility allows the residents to adapt their living environment to their needs and the changing seasons, taking advantage of the different light conditions throughout the year.

◀ **Figure 15**  
Visualisation of Villa Buggenhout.  
Source: (Villa Buggenhout, n.d.)

### 3. INTERGENERATIONAL LIVING

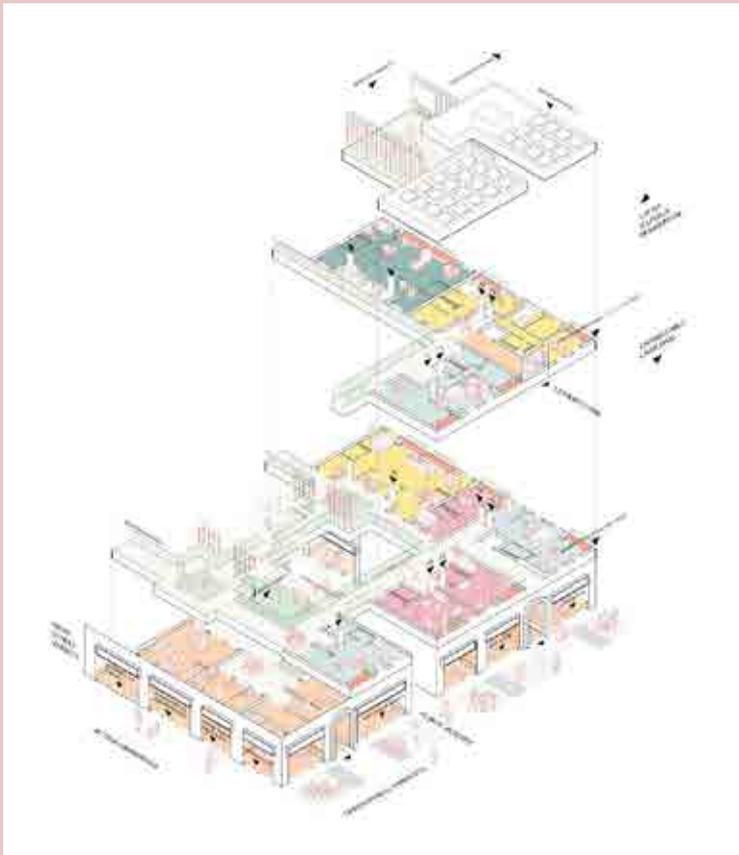
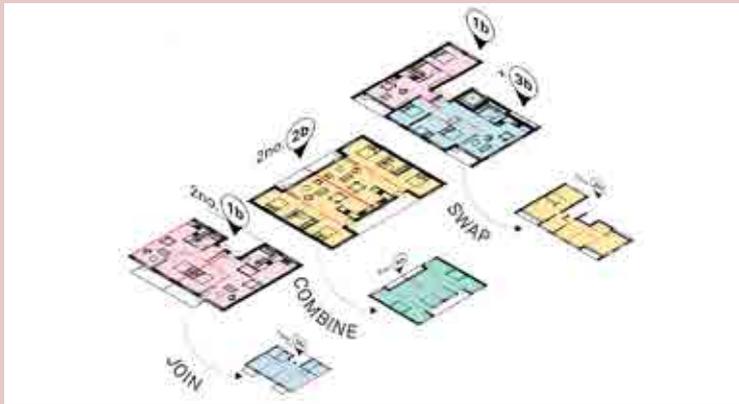
In Vietnam and Cambodia, intergenerational living is a deeply embedded cultural practice that ensures family ties and community cohesion remain strong. As families expand, it is not uncommon for them to continue residing in the same house or in close proximity. Should there be sufficient space, new units are frequently added to the parental home in order to accommodate the children and their families. Alternatively, children may opt to reside in the surrounding area, thereby creating a cluster of family homes. This arrangement serves to maintain the link between parents and children and to ensure that care and support can be provided as needed.



**Figure 16**  
A mother and her three children, living next to each other, work together drying fish as a means of income. (Dejaegher, September 2023)

## Home Beyond Boundaries - Studio Weave & JA Projects - Competition entry Enfield Council: Intergenerational Living - 2020

The *Home Beyond Boundaries* project, focuses on creating intergenerational neighbourhoods. The aim is to reshape physical and social boundaries to foster sustainable and supportive relationships across three scales: the Home, the Block, and the Street. The project envisions a flexible, dynamic housing model that adapts to the changing needs of its residents, promoting intergenerational living and enhancing community ties. This approach ensures a supportive environment where people of different generations can thrive together (J.A Projects, 2020).



## KEY LEARNINGS

### Adaptable Living Spaces:

Units can be swapped, combined, and split according to changing family situations. An open structure allows for flexibility and enables changes to the layout of the units. For example, a staircase can be added to link a vacant retail unit on a lower floor. Additionally, adaptability is enhanced through *small clustering*, where neighbouring units are closely grouped to improve security, familiarity, and co-existence. This way, a room formerly used as a home office can be swapped with a neighbour's room to accommodate a growing family.

### Open Communal Spaces:

Throughout the building block, flexible areas are provided for various activities, fostering interaction among residents of all ages. These communal areas are designed to be adaptable, allowing their use to shift and change according to the residents' needs and preferences.

### Diverse and Inclusive housing typologies:

The adaptability of the units attracts residents of different ages and backgrounds. A varied offering draws a diverse group of people, made possible by the flexibility of the units, which can each have a unique layout. This includes live/work units on the ground floor, promoting a blend of living and working spaces, as well as small unit clusters interspersed with larger clusters, each with a flexible interior.

*“Our homes should evolve with our changing circumstances  
- they must grow, shrink and adapt.”*

(J.A Projects, 2020)

◀ **Figure 17**  
Visualisations of *Home Beyond Boundaries* competition entry.  
Source: (J.A Projects, 2020)

## 4A. VƯỜN NHÀ

*Vườn nhà* can be translated to *family garden*. It is seen as the heart of a household, where family and social life converge. It refers to the small spaces in between and underneath traditional Vietnamese houses, such as shared areas beneath stilt houses or communal courtyards. These spaces serve as vital social hubs where families gather, work, and interact, reinforcing a sense of community. Economically, *Vườn nhà* can be utilized for agriculture and aquaculture, contributing to local sustenance and trade.



▲  
**Figure 18**  
Cluster of houses with family  
gardens interspersed among  
them.  
(Dejaegher, September 2023)

## 4B. HÉM

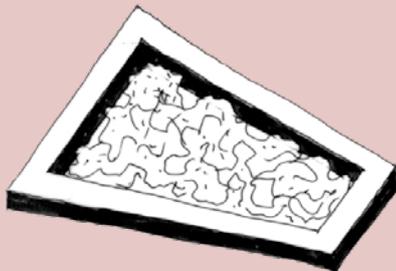
In the context of Vietnamese urbanism, *hém* refers to the complex network of alleys and narrow passageways that weave their way through the urban landscape. Often overlooked in formal urban planning, these spaces are vital to the daily lives of residents. They serve not only as circulation routes, but also as places for social interaction, commerce and community activities. Parts of these public spaces are often mentally annexed by residents, allowing domestic activities to spill out and creating multiple layers of urban life.



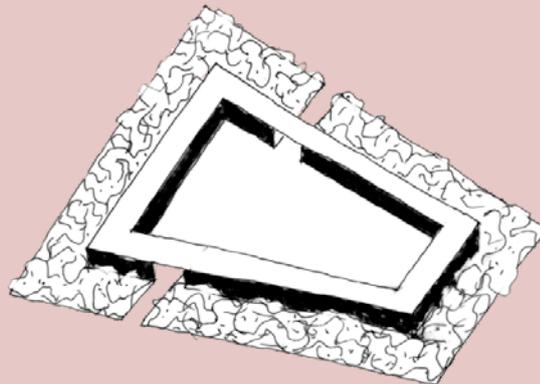
▲  
**Figure 19**  
In addition to being a circulation route, hém also functions as a space for social interaction, commerce, and communal activities. (Peeters, October 2023)

## Düren Housing Complex - AHH - Düren, Germany - 1993-1997

In Düren, central courtyards were designed as communal spaces within perimeter blocks, creating urban intimacy. House entrances are located on the inner side, replacing the traditional street-facing entrances. This inner area serves as a communal space, visible from all sides. Private gardens have been moved to the outer edges, reversing the typical perimeter block design by placing communal spaces in the center and gardens on the exterior (Hertzberger, 2000).



TRADITIONAL BUILDING BLOCK WITH GARDENS IN THE MIDDLE.



PRIVATE GARDENS LOCATED ON THE OUTSIDE, GIVING THE COURTYARD A COMMUNAL FUNCTION.

## KEY LEARNINGS

### Staircases as social hubs:

The communal staircases, which lead to multiple units on the first floor, start from the inner courtyard. This design integrates the staircases into the communal space, transforming them into vibrant meeting points and extensions of common space. As a result, they naturally become gathering spots for residents.

### Reversal of the building block:

In Düren, the housing units are arranged in a perimeter block with openings for access to the inner courtyard. By clustering units around a central area and orienting entrances and circulation paths towards the inner courtyard, a lively and integrated communal space is created. All entrances and circulation paths to the houses are located on the inner side, taking over the traditional functions of streets that usually surround the outside of the block. This layout provides an alternative to conventional street-facing designs, creating a vibrant and communal living environment.

◀ **Figure 20**  
Visualisations of *Düren Housing Complex*.  
Source: (AHH, n.d.)

## Hyllegaard Høje - EFFEKT

The *Hyllegaard* project by EFFEKT architects near Copenhagen revitalises an old farm to improve community life. Organised into six clusters, each with its own characteristics, the masterplan includes central community houses for gatherings. Green corridors connect the residential areas and serve as communal spaces. In addition, a significant area is dedicated to permaculture, supporting local food production and shared use (Hyllegaard Høje, z.d.).



## KEY LEARNINGS

### Clustered living:

The *Hyllegaard Høje* project demonstrates the benefits of clustered housing design in fostering dynamic and close-knit communities. By organising residential units into distinct clusters, each with its own characteristics and community dynamics, the project promotes social interaction, a sense of belonging and collective engagement among residents. This clustering approach creates shared outdoor spaces such as courtyards, green spaces and pedestrian walkways that serve as central hubs for social gatherings and recreational activities. The proximity of homes within these clusters encourages spontaneous interactions and strengthens social bonds between neighbours. In addition, the clustering strategy allows for efficient use of land and resources while facilitating sustainable community development.

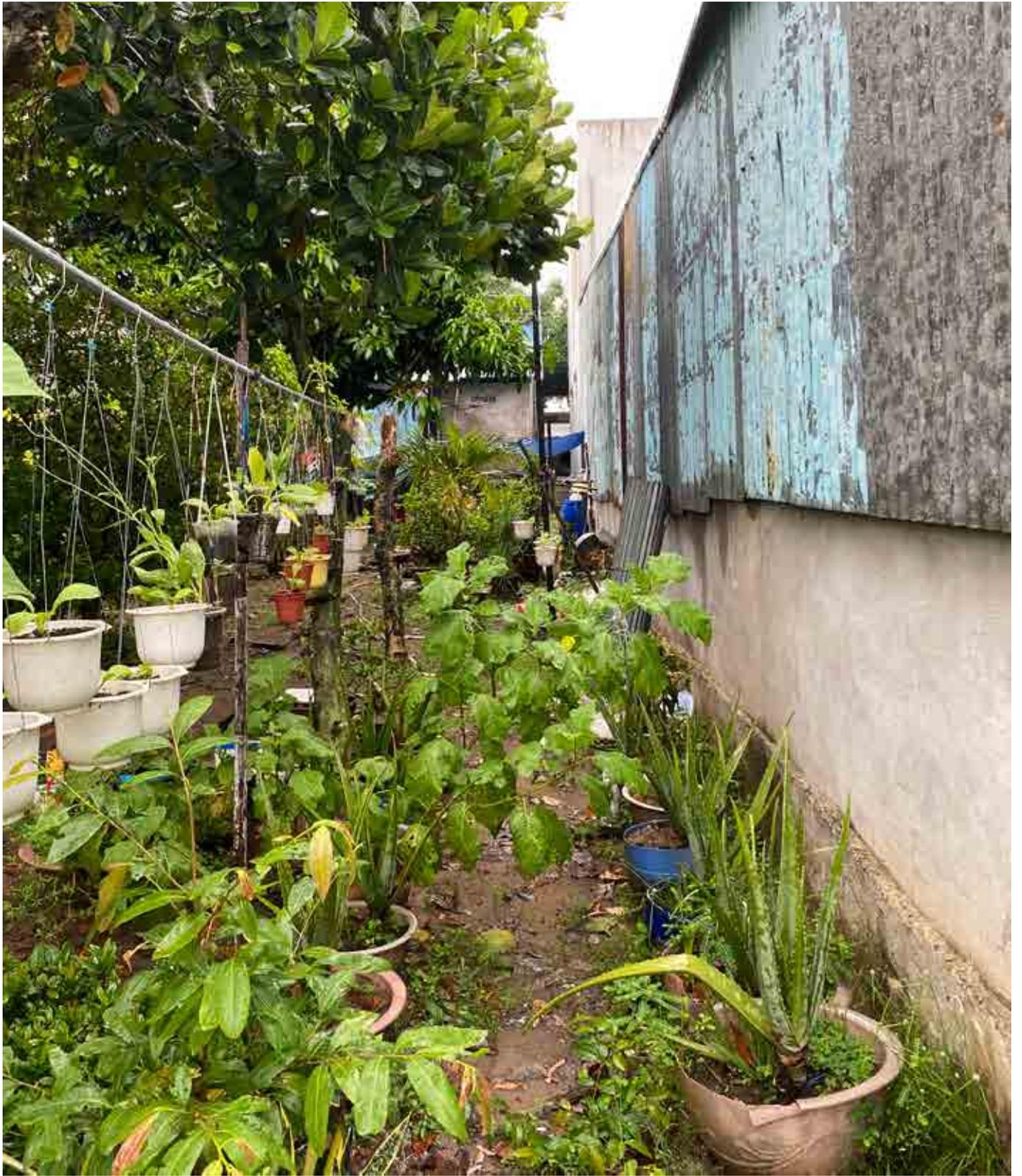
◀ **Figure 21**  
Visualisation of *Hyllegaard Høje*.  
Source: (Hyllegaard Høje, z.d.)

## 5. POCKET GARDENS

Pocket gardens are small, productive green spaces located near houses along dikes or within clusters of farmhouses. These gardens, often situated in backyards and connected by narrow alleys, are utilized for growing fruit trees and small crops primarily for personal consumption.

They serve as private outdoor spaces, enhancing the self-sufficiency of households and integrating with the broader landscape of the community. They illustrate a blending of domestic and communal spaces.

**Figure 22** ►  
Pocket garden with productive fruit trees and smaller plants and crops, intended for personal use.  
(Dejaegher, September 2023)



## Grand Parc Bordeaux - Lacaton & Vassal Architects

The innovative renovation of the old social housing tower in Bordeaux has significantly increased and improved the living space and quality for the residents. By adding an external structure to the façade, spacious conservatories and terraces were incorporated, allowing for more space, natural light and flexibility (Walsh, 2021).



## KEY LEARNINGS

### Smart external grid for more private space:

Prior to the renovation, residents had minimal terraces. The addition of the external grid brought several improvements. The exoskeleton, composed of 3.8 metre prefabricated modules, provides both a balcony and a winter garden, separated by light, movable panels. The winter garden, which is 2.5 metres deep, significantly increases the living space of the apartment. Large sliding windows connect the winter garden and balcony, creating a seamless transition from private indoor space to a pleasant semi-public outdoor space. In addition, the new façade provides thermal benefits by acting as an intermediate space that improves the energy performance of the old building.

◀ **Figure 23**  
Visualisation of *Grand Parc*  
*Bordeaux*.  
Source: (Walsh, 2021)

## 6. MATERIALITY

Traditional Vietnamese and Cambodian houses are constructed using lightweight, locally sourced materials such as bamboo, wood, and thatch. These materials are not only affordable but also flexible and lightweight, allowing structures to be easily adapted or relocated in response to the delta's seasonal flooding. During the hottest times of the day, textiles are often used to create shade, providing a simple yet effective way to keep homes cool.

In contemporary times, corrugated metal sheets are commonly used for roofing, providing durability and protection from the elements. The integration of natural materials like bamboo and wood with modern elements such as metal sheets and solar panels reflects a blend of tradition and innovation.

The choice of materials also supports the local economy and sustainability practices. Bamboo and wood are renewable resources that can be harvested locally, reducing the environmental impact and fostering local craftsmanship. Additionally, the use of these materials enables the community to maintain and repair their homes with relative ease.



**Figure 24**

Textile is used to create shade during the hottest times of the day.  
(Peeters, October 2023)

## Biome - EFFEKT Architects

*Biome* is a housing solution introduced by EFFEKT architects in 2021, designed to move away from unsustainable traditional construction methods where each building is created from scratch. Using a modular timber hybrid system, *Biome* aims to provide a high quality of living while promoting sustainability (EFFEKT, 2024a).



## KEY LEARNINGS

### **Building as material bank:**

Biome's modular systems are constructed from cross-laminated timber (CLT), reinforcing the sustainable nature of the project. With their light and flexible structure, these buildings exemplify the concept of adaptability, allowing them to be seen as material banks for other new projects or extensions within the Biome concept. This materiality enhances the circularity of the project, allowing materials such as walls and floors to be reused within the site.

### **Material as variation and infill:**

Thanks to the fixed grid structure of the houses, it is possible to infill them with different materials to create different looks. Windows can be closed with wooden panels or curtains, which are flexible and can be easily replaced with other infills and materials as required. This flexibility ensures that buildings can adapt to changing needs and preferences, promoting both functionality and aesthetic diversity.

◀ **Figure 25**  
Alternation of the facade in *Biome*.  
Source: (EFFEKT, 2024a)

## 7. CITY MAKERS

In Cambodia and Vietnam, the vibrant interplay between residential areas and local economies creates a unique urban fabric where city makers - vendors, craftsmen, and small business owners - integrate seamlessly into everyday life. This phenomenon transforms urban spaces into dynamic, multifunctional environments where commerce and community coexist in close quarters.

**Figure 26** ►  
Street vendor selling pastries  
and fruits in Hong Ngu  
(Peeters, October 2023)





▲  
**Figure 27**  
Daily market on the public square of Kampong Chhnang.  
(Peeters, October 2023)



▲  
**Figure 28**  
Street vendor selling ice cream  
in the alleys of Hong Ngu.  
(Peeters, October 2023)

## Bonus Track - Tsubame Architects

The idea behind *Bonus Track* was to create a new shopping street in the Shimokitazawa neighbourhood in Tokyo, Japan, where the former Odakyu Railway used to be located.

High rents are forcing small shops to make way for large retail chains. Therefore, a good balance was sought between floor area and rent so owners could operate their shops. The project consists of dual-use units that combine living and working spaces, making tenants more likely to contribute to a successfully developed and active project site. The communal space is conceived as a 'shopping street in the woods', providing a pleasant addition to the small interiors and functioning as a small park for the environment (Tsubame Architects, z.d.).



## KEY LEARNINGS

### Revitalisation of an old neighbourhood:

The project demonstrates the transformative potential of integrating living and working spaces to breathe new life into urban neighbourhoods. By seamlessly integrating residential and commercial functions, the project introduces a dynamic mix of activities that bring vibrancy to previously monotonous residential areas. This integration not only diversifies the neighbourhood landscape, but also fosters a sense of vitality by encouraging interaction and engagement among residents and visitors alike. Crucially, the project goes beyond mere infrastructure development to create welcoming public and semi-public spaces that serve as community hubs. What sets this approach apart is its reliance on community-led maintenance, with shopkeepers incentivised to ensure the cleanliness and attractiveness of these spaces. This symbiotic relationship between commerce and public space underscores the project's broader goal of fostering a cohesive and thriving neighbourhood ecosystem.

— Bonus Track

◀ **Figure 29**  
Visualisation of *Bonus Track*, Tokyo.  
Source: (Tsubame Architects, z.d.)

## 8. SEASONAL VEGETATION CHANGES

The vegetation in the Mekong Delta varies significantly with the changing seasons. During the wet season, the area experiences extensive flooding, transforming fields and forests into a water-rich environment. Inundated forests and aquatic plants thrive, contributing to the nutrient richness of the water and creating an optimal habitat for fish and other wildlife. Riverine vegetation, also flourishes along the waterways, providing critical protection against erosion and serving as important breeding grounds for aquatic species.

As the water recedes in the dry season, the landscape transitions back to drier land, revealing ponds, muddy pools, and saturated rice paddies. This change allows for the cultivation of various crops such as rice, mung beans, watermelons, and pumpkins. Multi-species orchards, featuring a variety of fruit trees like mangoes, lychees, and jackfruits, also become more prominent during this season. The sun's intensity dries out pastures and fields, leading to a different vegetation pattern dominated by grasses, trees, and cultivated plants.

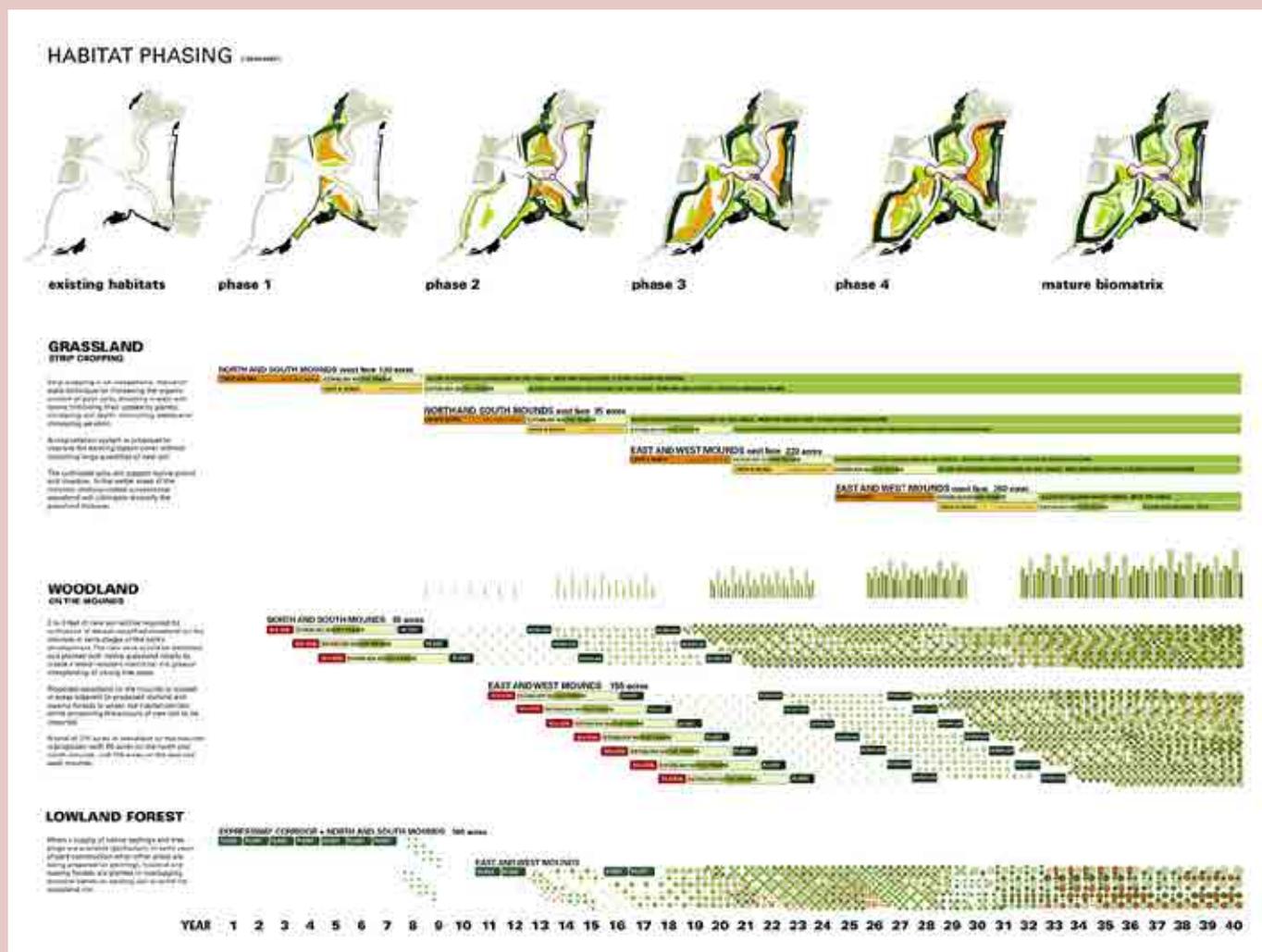
Overall, the dynamic shifts in water levels between seasons create diverse vegetation patterns that support both ecological balance and year-round agricultural productivity.



**Figure 30**  
Banana trees along the  
riverbank become fully  
submerged during the flood  
season.  
(Peeters, October 2023)

# Fresh Kills Park – James Corner Field Operations –New York, U.S - 2001-2006

Fresh Kills Park in New York City is a massive project aimed at transforming what was once the world’s largest landfill into a sustainable parkland. The master plan involves reclaiming the 2,200-acre site on Staten Island and turning it into a recreational space with diverse landscapes, including wetlands, meadows, and woodlands. The plan also incorporates environmental restoration efforts to improve water quality and support wildlife habitats (Field Operations, 2006).



## KEY LEARNINGS

### Strategic planning of vegetation:

The *Fresh Kills* project offers valuable insights into the strategic planting of vegetation that evolves with the seasons. Different plant species exhibit growth, flowering, and foliage characteristics that vary throughout the year. By carefully selecting and arranging plant species, landscapes can transform dynamically throughout the year.

### Vegetation in phases:

Planting vegetation in different phases aligns with the natural rhythms of growth and ensures continuous visual interest and ecological functionality within the park. Rather than planting all vegetation at once, the process may be phased to align with seasonal cycles and project timelines. This allows for the gradual establishment of plant communities and ensures that the landscape evolves naturally over time. This approach not only enhances the aesthetic appeal but also supports biodiversity, habitat creation, and ecosystem resilience.

### Native plant species:

The process begins with the selection of plant species that are well-suited to the local climate, soil conditions, and ecological context of the site. Native species are often prioritized for their ability to thrive in the region and support local wildlife. Incorporating native and adaptive plant species fosters sustainable land management practices, promoting the long-term health and vitality of the park's ecosystems.

◀ **Figure 31**  
Visualisation of *Fresh Kills Park*,  
New York.  
Source: (Field Operations,  
2006)



# ***DESIGNING IN FLANDERS***

## **WHILE LEARNING FROM THE MEKONG DELTA**

The journey from the vibrant, water-based settlements of the Mekong Delta to the Flemish village of Lint is rooted in a quest to uncover and apply vernacular principles to contemporary architectural challenges. Cities in Flanders have experienced a positive architectural development through numerous (inter)national design competitions. However, critical examination reveals a pressing problem rooted in the wider urban sprawl that connects these cities. This sprawl, coupled with rampant densification in the rural village cores, consumes significant parts of the Flemish landscape. In these rural villages, where architectural competitions are rare, the market often fills the void, resulting in generic apartment blocks sold at high prices and new subdivision projects that perpetuate the Flemish dream of individual houses with gardens.

As architecture students, we recognise that this prevailing model of detached houses on private plots is both spatially and environmentally unsustainable. Despite this, many people, including younger generations, still see the detached house in the countryside as the ultimate living goal. Concepts such as co-housing and shared living are often misunderstood and dismissed as niche, alternative lifestyles that are perceived as lacking personal space and privacy.

By choosing to design in Flanders, we want to show that living together does not mean a loss of quality of life. On the contrary, it can enrich lives and improve residential environments. Drawing on lessons from our fieldwork in Cambodia and Vietnam, we aim to reverse the trend in Flemish villages. We want to create architecture that serves as *hardware* for new forms of community living and social interaction between neighbours. This approach does not mean the end of private space, but rather provides opportunities to meet housing needs that go beyond individual desires and foster a vibrant and sustainable community fabric.

Through this comparative study, we hope to show that the principles of communal living and shared spaces observed in the vernacular architecture of Southeast Asia can inspire a paradigm shift in the architectural and urban development of Flemish villages like Lint.

# LINT ANALYSIS

## POSITIONING LINT

Lint is a rural village located in the Flemish Region of Belgium, situated southeast of the city of Antwerp. Geographically, it is part of the broader Antwerp metropolitan area. Lint lies in proximity to the Scheldt River and its tributaries, de Nete and the Ruppel rivers.

The village's landscape is characterized by agricultural fields, meadows, and patches of woodland, reflecting its predominantly rural setting. But economically, Lint relies on the city of Lier, on the East side of Lint.

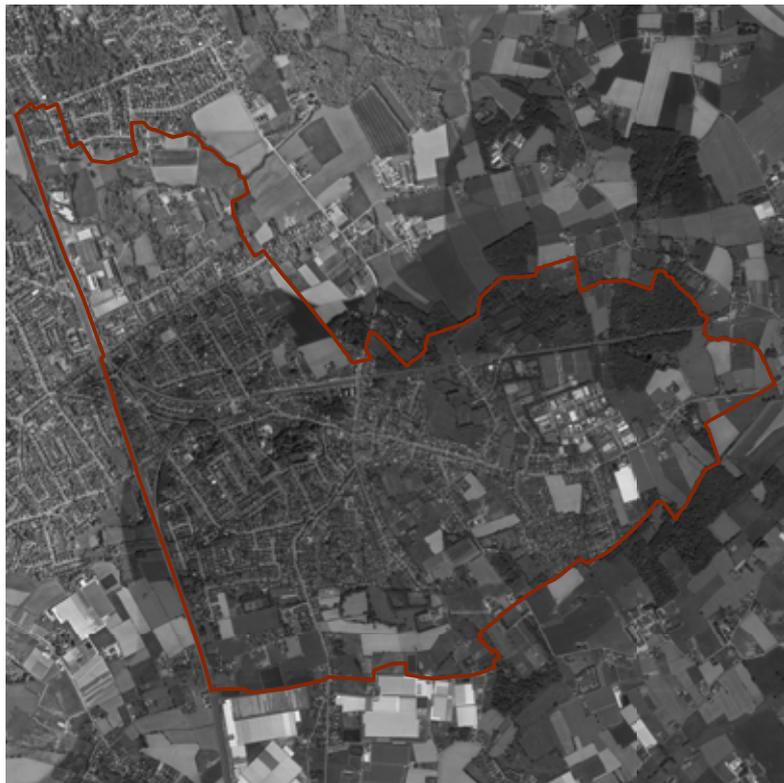
**Figure 32**

Areal view of Lint, with its administrative boundary indicated in red.

Source: Google Earth (2024)



1km



Antwerp

Scheldt river

Lier

Lint

Rupel river

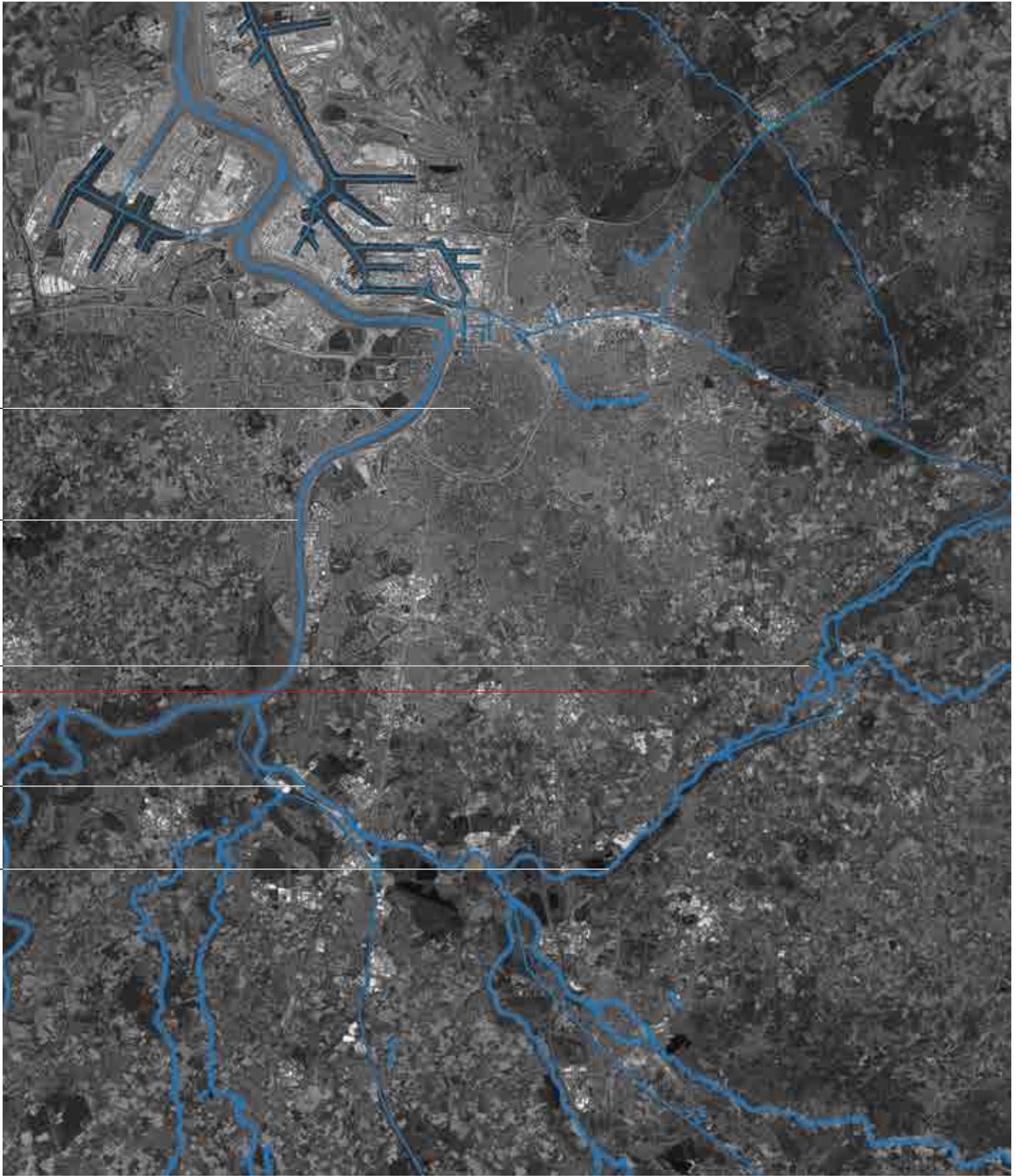
Nete river

**Figure 33**

The Scheldt river and its tributaries surround Lint. Source: Google Earth (2024) and Geopunt

3 km





# METHODOLOGY



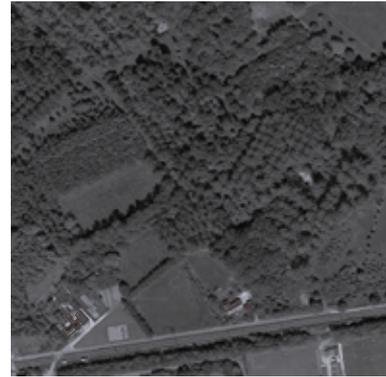
## RESEARCH AREAS

To conduct the analysis in Lint, the same methodology was used as in the studies in Vietnam and Cambodia, focusing on four distinct village tissues, each measuring 400 x 400 metres. As it was impractical to survey the entire village, the analysis was concentrated on the area around the *Zevenhuizen* site, excluding the western part of Lint. This decision was based on the predominance of nineteenth-century block fabric in the western area, which was included in one of the research squares.

The selection of areas aimed to capture a diverse representation of village fabric, land use and surface permeability.

### SQUARE 1: PAPENDONK FOREST

Square 1 is located in the northern part of the village and includes the Papendonk Forest, one of the few remnants of urban forestry around Lint. This forest plays an important role in the village's water management system.



### SQUARE 2: ZEVENHUIZEN

Square 2 focuses on the *Zevenhuizen* site and its adjacent ribbon development, essential for understanding the current state and characteristics of the area. The final design proposal will also be situated within this zone.



### SQUARE 3: HISTORIC LINT

Square 3 focuses on the historic centre of Lint, which developed around the intersection of the two main roads that form the morphological backbone of the village.

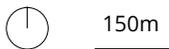


### SQUARE 4: SOCIAL HOUSING

The area of square 4 includes significant 19th century block tissues and contains a substantial portion of Lint's social housing.



◀ **Figure 34**  
Areal view of Lint.  
Source: Google Earth (2023)



**Figure 35-38** ▶  
Research areas of 400 by 400 metres in Lint.  
Source: Google Earth (2023)

## THE CONTROVERSY OF THE ZEVENHUIZEN PROJECT



## NOT IN MY BACK YARD

The *Zevenhuizen* project has caused considerable controversy in Lint over the past years. This planned development aims to accommodate the expected population growth by expanding the village. The 9.3 hectare site is designed to accommodate a mix of apartments and houses, including 75 social housing units. The total of 191 units is split between 99 apartments and 92 detached houses. A key feature of the *Zevenhuizen* site is its large central *green* area, complete with walking and cycling paths, various play areas and an extensive water management system. This system includes a large water buffer pond and several wadi areas distributed throughout the site to facilitate the infiltration of rainwater into the ground, thus meeting both recreational and environmental needs (Matexi, 2024).

Despite these planned benefits, the project has faced strong opposition from local residents. The laying of the foundation stone has been delayed due to several legal challenges to the building permits, which have been filed with the Council for Permit Disputes. Opponents have raised a number of concerns, ranging from the potential flood risk to the area to the significant loss of high quality natural space. However, the underlying sentiment seems to be a classic case of *not in my backyard* syndrome. Residents are resistant to the idea of hundreds of new people moving into their neighbourhood, fearing increased noise, congestion and loss of scenic views (R. Verhoeven, personal communication, 11 April 2024).

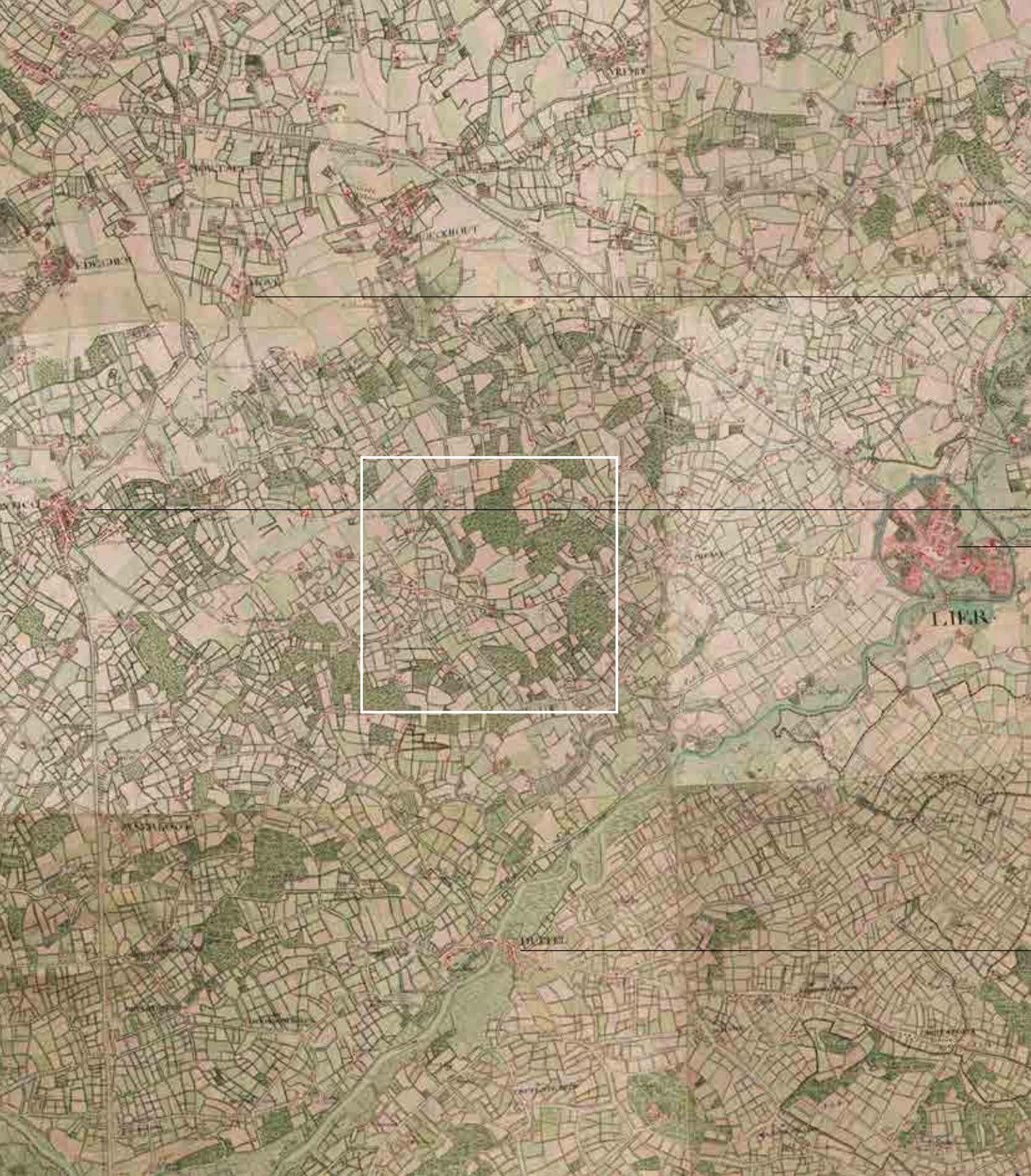
The ongoing conflict between the council, the developer and local residents will not be resolved any time soon. This delay gives us an opportunity to study and critically analyse the *Zevenhuizen* case.

In the project description, Matexi, the developer, often uses the word *green* to emphasise the ecological benefits of the *Zevenhuizen* project. However, this term often refers only to the colour and lacks a deeper, substantive meaning. What exactly does *green* mean in this context? Is it grass, trees, bushes and plants? Will a park be created or will it be more of a wooded area? This kind of *greenwashing* is increasingly used to convince buyers of a project's sustainable qualities, but it often turns out to be an empty phrase with little real meaning.

-  Water buffer and wadi
-  Dwelling unit
-  Parking lot/ garage box
-  Streets and paths

◀ **Figure 39**  
*Zevenhuizen* project by Matexi.  
Source: Matexi (2024)





◀ **Figure 40**  
 Ferraris map 1777  
 Source: Geopunt, April 2024



## HISTORY OF LINT

### ORIGIN OF LINT

At the crossing of the roads to Hove, Duffel, Lier, and Kontich (the current centre as visible in Square 3), the first village buildings emerged, gradually growing into a small community of around 600 inhabitants. From the 13th century onwards, the then hamlet of Kontich, got its name for the first time, Lint. The various lands, forests, and farms became the property of monasteries and abbeys, with the most significant landowner being the Saint Bavo Abbey of Ghent. From the Ferraris map, it can be inferred that the buildings in Lint belonged to the parish with number 22 for a long time. Parishes consisted of a community of believers who provided religious services from birth to burial (Hertogs, 2020).

In the northeast of Lint, there was a cluster of seven houses (*huizen* in Dutch), surrounded by communal vegetable gardens and fields. This street would later be renamed the *Zevenhuizenstraat*, a place that will be an important subject in this thesis (Lint, 2024).

Hove

Kontich

Lier

*Zevenhuizenstraat*

Duffel



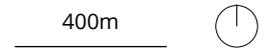
▶ **Figure 41**  
 Lint on the Ferraris map 1777  
 Source: Geopunt, April 2024

400m

## HISTORY OF THE COMMONS

In the period of the 13th century, Flemish villages formed tight-knit communities, where residents knew each other and collaborated for various purposes. Most of the population in medieval Flanders lived in rural areas and were directly dependent on agriculture for their livelihoods. This village life was regulated by the feudal system, where landlords owned the land and farmers paid rent to use it. These lands could consist of forests or meadows, the original commons that emerged in the Middle Ages. They established their own rules to manage the estates and strictly ensured autonomy (Team Vlaams Bouwmeester, 2023). Agriculture was often organized in the so-called *open-field system*, where long stretches of land were cultivated. This was because the plow had to be pulled by a team of oxen, which could only be turned with difficulty. Most farmers could only afford a few oxen, making the maintenance of an ox team a common affair (A Short History of Enclosure in Britain | the Land Magazine, n.d.).

**Figure 42** ►  
Land occupations of humanity throughout history, starting from Ferraris (1777)  
Source: Arcgis, Cartesius and Topomapviewer



## ENCLOSURE OF THE COMMONS AND DEFORESTATION

From the fifteenth century onwards, the phenomenon of enclosure began to emerge in England, followed by the rest of Europe including Flanders. Many of these commons, often by force, were taken from local communities, redistributed, and enclosed into privatized lands allocated to those considered as the rightful owners. Strictly speaking, the term *enclosure* refers to the modification of land rights (Oxford Centre for Global History, 2022). The land came into the possession of an owner who was free to do as he pleased, and the commoners could not graze, draw water, or chop wood anymore. In practice, this almost always involved enclosing the areas with a physical boundary and meant the end of the open-field system and communal pastures (Oxford Centre for Global History, 2022). On the Ferraris map of 1777, this phenomenon is visible where a row of trees encloses the various fields. This was a result of economic changes such as the rise of the market economy and the growth of the lucrative wool industry. Many former commons were converted to pastures to allow sheep to graze full-time for wool production. The same fate was reserved for much of the forests, which were systematically transformed into pastures or agricultural land.

Agriculture	Ferraris 1777	Topographic map 1873	2024	
Urbanization	Ferraris 1777	Vandermaelen 1846-1854	Topographic map 1903	2024
Forest	Ferraris 1777	Vandermaelen 1846-1854	Topographic map 1910-1940	2024





◀ **Figure 43**  
Orthophotograph of Lint  
captured during the summer  
of 1971.  
Source: Geopunt

## INDEPENDENCE OF THE HAMLET

From 1830 onwards, the hamlet of Lint aimed for civil independence, and for the new municipality, the same borders were established as those of the parish. In the west, this consisted of the railway line between Antwerp and Brussels, which became the physical border with Kontich. By the end of the 19th century, the first industry began to establish itself here, consisting of factories for soap and soda. The construction in the early 20th century mainly consisted of row houses of two floors with some units from the 19th century in between. From 1970 onwards, the main thoroughfares were connected by recent subdivisions for single-family homes (Lint, 2024).

**Figure 44**  
Two-story workers' houses featured  
on a postcard sent in 1904.  
Source: (Hertogs, 2020)



*“Urban sprawl in Belgium was a carefully orchestrated political project with a threefold objective: the ruralization of industrial workers, the promotion of homeownership, and the reinforcement of family values.”*

(Dogma, 2022, p. 168)

## EXPLORING TISSUE DIVERSITY

The four different research squares, as representative sample tissues, are thus intended to provide a comprehensive analysis of Lint. For those who are not immediately familiar with the context of Flemish villages, several questions are likely to arise. What does a typical Flemish village look like? What kind of buildings can be found in it? Which typologies are present?

In this chapter, the four different squares are put under a magnifying glass and dissected into the following themes: tissue diversity, land occupation and use, and surface permeability.

### CARPET OF TISSUES

The current state of Lint has been analysed, and within the four squares, six distinct urban fabrics have been identified. These have interwoven with the landscape and existing structures over time. The most conspicuous of these fabrics are the *block fabric*, the typical Flemish ribbon development or *urban sprawl*, and the *villa* neighbourhoods. In the area analysed in Figure 45, these fabrics represent 35%, 22%, and 20% of the urban landscape, respectively.

The prevalence of the *block* tissue is largely attributable to the western side of Lint, which encompasses the 19th-century fabric. This area comprises a significant proportion of social housing. The fabric is characterised by the predominance of monotonous apartment buildings situated along wide streets, which connect to form a block-like area.

As anticipated in Flanders, *ribbon* development constitutes a significant proportion of Lint's urban landscape, particularly in the more recent extensions of the village. These developments facilitate connectivity between Lint and the neighbouring municipality of Duffel (to the south) and the city of Lier (to the east). Linear settlements extend over considerable distances, modifying the landscape through the construction of associated infrastructure and utilities.

Furthermore, numerous villa districts emerge from the urban sprawl, perpetuating the Flemish tradition of detached single-family residences with expansive gardens within Lint.

It is also noteworthy that a small and medium-sized enterprise (SME) zone is situated to the east, which is somewhat isolated from the residential areas of the village.

Lier  
→



Duffel  
↓

300m



**Figure 45**  
Different urban fabrics of Lint.  
Source: Google Earth (2023)



Small and medium-sized enterprises



Villa



Ribbon



Block



Town centre



Garden city



**Figure 46**

Plan zooms in on each urban tissue, with percentages indicating the extent of each urban fabric.

*“The success of living in the countryside peaked in the 1980s and 1990s when a new **wave of detached homes flooded** the already saturated countryside.”*

(Dogma, 2022, p. 168)

## LAND OCCUPATION AND USE

The trend in Flanders since the late 19th century remains unchanged, with around 80% of the housing stock consisting of single-family houses. This is the result of political decisions in Belgium that have consistently encouraged home ownership (Dogma, 2022).

As shown in Figure 45 in the previous paragraph, Lint is no exception to this phenomenon. Both villa neighbourhoods, ribbon developments and garden cities accommodate single-family houses - detached or semi-detached - each with an individual garden, often surrounded by hedges or fences.

However, recent data indicate a new trend in the housing market, with a notable increase in the proportion of apartments in older village centres (Departement Omgeving, 2021). There is a political push to densify existing centres, which in itself is not problematic and has the potential to revitalise the village. While in large cities projects are often realised after international competitions, this is not the case for smaller villages in Flanders. The market responds eagerly to this opportunity, resulting in a wave of housing developments. New housing often seeks out charming and interesting locations, but often gives little back to the environment, which can have a destructive effect (Team Vlaams Bouwmeester, 2023).

In Lint, the phenomenon of *appartementisering*<sup>1</sup> is not yet dominant, although this may change in the coming years. At present, there are several apartment blocks in Square 4 that are mainly social housing. In the village center (Square 3), apartments are more common than other housing types. These consist mainly of smaller houses divided into apartments, with the ground floors sometimes used for commercial purposes. Consequently, these two squares have a relatively high density for Flemish villages, with 26,1 and 19,8 dwellings per hectare respectively.

The *Zevenhuizen* site (Square 2), however, tells a different story. Here, the distribution of (semi-)detached houses and terraced houses is almost equal, combined with urban sprawl around the inner area, resulting in a much lower density of 5.6 dwellings per hectare.

---

1 It is the phenomenon of old village centres being demolished to make way for new generic apartment blocks - often with a higher building height than the surrounding buildings - in order to achieve greater density.

● Public function

● Apartment

● Economic function

● Terraced house



**Square 1** - Papendonkbos

	%
<i>Apartment</i>	<b>0</b>
<i>Terraced</i>	<b>25</b>
<i>Semi-detached</i>	<b>50</b>
<i>Detached</i>	<b>25</b>
<i>Dwellings/ha</i>	<b>0,25</b>



**Square 2** - Zevenhuizen site

	%
<i>Apartment</i>	<b>0</b>
<i>Terraced</i>	<b>34</b>
<i>Semi-detached</i>	<b>30</b>
<i>Detached</i>	<b>29</b>
<i>Dwellings/ha</i>	<b>5,6</b>

○ Dwelling combined with economic function

● Semi-detached house

● Detached house



**Square 3 - Historic Lint**

	%
<i>Apartment</i>	<b>52</b>
<i>Terraced</i>	<b>20</b>
<i>Semi-detached</i>	<b>22</b>
<i>Detached</i>	<b>6</b>
<i>Dwellings/ha</i>	<b>19,8</b>



**Square 4 - Social housing**

	%
<i>Apartment</i>	<b>33</b>
<i>Terraced</i>	<b>62</b>
<i>Semi-detached</i>	<b>4</b>
<i>Detached</i>	<b>1</b>
<i>Dwellings/ha</i>	<b>26,1</b>

**Figure 47-50**  
Land occupation and use  
analysed in the four squares.  
Source: Google Earth (2023)

## LINT THROUGH THE LENS





▲  
**Figure 51-68**  
Scenes from a walk through Lint.  
(Dejaegher, April 2024)

*“We need to look for the **landscape under the city**, to expose large green and blue structures and connect them as units, ensuring they penetrate to the very centres of our urbanized areas. ”*

(Wieërs, 2021, p. 8)

## GRADIENTS OF PERMEABILITY

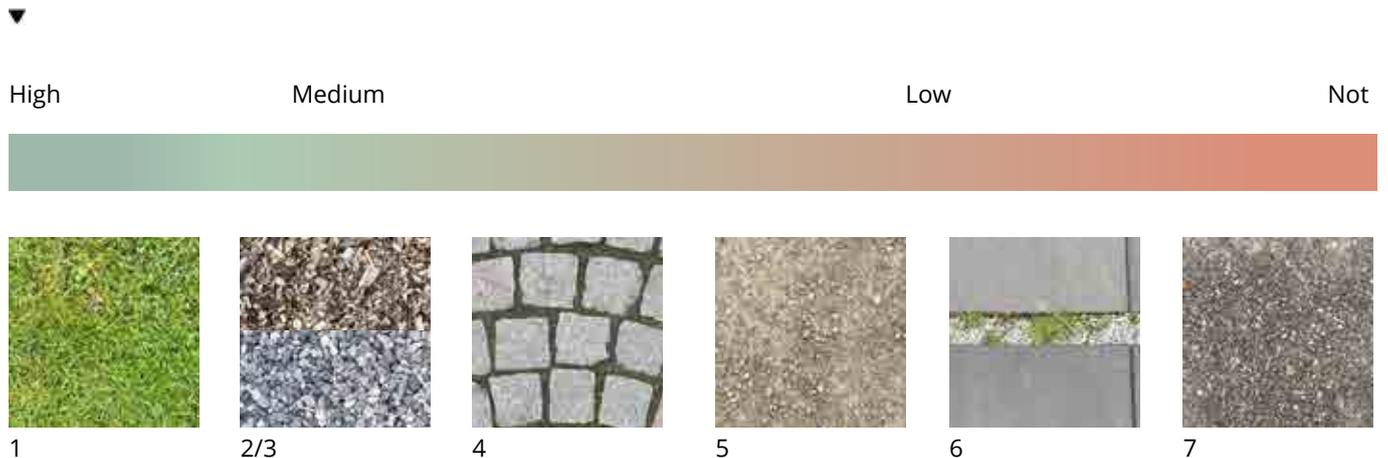
In the context of global warming, the concept of permeability gradients in villages and cities is becoming increasingly important. Permeability refers to the ability of surfaces to allow water to pass through them, ranging from highly permeable materials such as grass and gravel to impermeable materials such as asphalt and concrete. Understanding and managing these gradients is essential to creating sustainable and resilient communities.

Permeable surfaces facilitate the natural infiltration of rainwater into the ground, reducing run-off and the risk of flooding. They also replenish groundwater supplies, which are vital for agriculture and drinking water. Impermeable surfaces, on the other hand, can lead to significant environmental problems such as increased run-off, erosion and water pollution. A balanced approach to land cover is therefore crucial to maintaining the ecological health of village landscapes.

Below this is an outline of the various materials found during the fieldwork at Lint, classified according to their soil cover characteristics. The maps on the following pages illustrate the gradient of permeability, from highly permeable surfaces to those that are impermeable.

- 1 Grass
- 2 Tree bark
- 3 Gravel
- 4 Cobblestones with joints
- 5 Gravel path
- 6 Combinations
- 7 Asphalt

**Figure 69**  
Different surface coverages in Lint.  
(Dejaegher, April 2024)

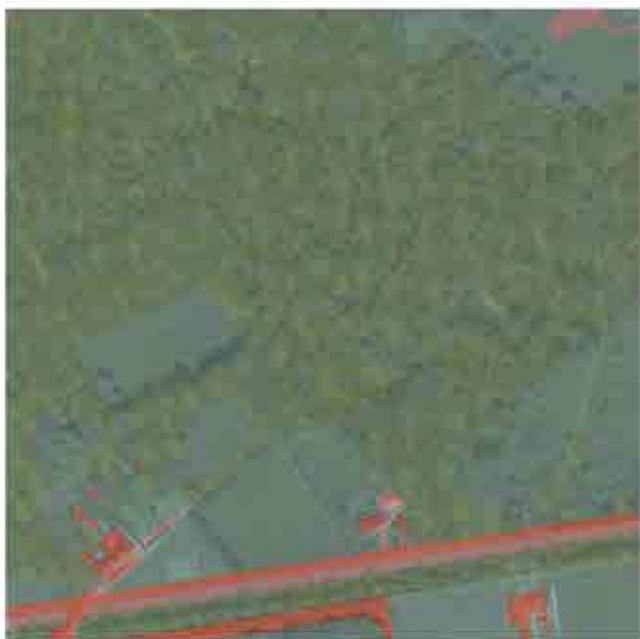


The analysis of the four research sites shows that the use of impermeable materials is predominant. This applies not only to the different types of pavement used for roads and paths, such as concrete and asphalt, but also to the roofing materials of the houses. Analysis of satellite photographs shows that green roofs and similar sustainable solutions have not yet been widely adopted.

However, it cannot be overlooked that all four squares have high permeability areas as a significant counterpoint. Consistent with previous analyses of building density, it is clear that impervious surfaces are most prevalent in squares 3: historic Lint and 4: social housing.

	%
<i>High</i>	<b>91</b>
<i>Medium</i>	<b>2</b>
<i>Low</i>	<b>3</b>
<i>Not</i>	<b>4</b>

	%
<i>High</i>	<b>76</b>
<i>Medium</i>	<b>4</b>
<i>Low</i>	<b>2</b>
<i>Not</i>	<b>18</b>



**Square 1** - Papendonkbos



**Square 2** - Zevenhuizen site



	%
High	<b>43</b>
Medium	<b>2</b>
Low	<b>1</b>
Not	<b>54</b>

	%
High	<b>50</b>
Medium	<b>1</b>
Low	<b>3</b>
Not	<b>46</b>



**Square 3** - Historic Lint



**Square 4** - Social housing

**Figure 70-73**  
 Gradient in permeability across the  
 four squares.  
 Source: Google Earth (2024)

*“If we choose the path of destruction, the planet will continue to descend irreversibly into the Anthropocene Epoch, the biologically final age in which the planet exists almost exclusively by, for, and of ourselves.”*

(Wilson, 2016, p. 18)

# EFFECTS OF GLOBAL WARMING

## FLANDERS' CHALLENGES AHEAD

As the world continues to grapple with the escalating impacts of global warming, Flanders, finds itself at the forefront of numerous challenges. With its low-lying terrain and dense population centres, Flanders is particularly vulnerable to the adverse effects of global warming. Over the next hundred years, the region is expected to confront a myriad of environmental, social, and economic challenges, many of which demand urgent attention and proactive solutions.

One of the most pressing concerns for Flanders is the rising sea levels. With a significant portion of its territory situated below sea level, the region faces the constant threat of inundation from the North Sea. As temperatures rise and polar ice melts, sea levels are projected to increase, exacerbating the risk of coastal flooding and erosion. This poses a grave threat to Flanders' coastal communities, infrastructure, and vital ecosystems (Klimaatportaal Vlaanderen, n.d.).

Moreover, Flanders is likely to experience more frequent and intense heatwaves and extreme weather events. Higher temperatures may result in heat-related illnesses, decreased agricultural productivity, and a strain on energy resources as demand for cooling rises. Extreme weather events such as storms, droughts, and heavy rainfall are expected to become more frequent, disrupting transportation, damaging property, and risking public safety (Klimaatportaal Vlaanderen, n.d.).

The implications of global warming extend beyond the environment, encompassing socio-economic aspects as well. Changes in temperature and rainfall patterns could alter agricultural practices, affecting crop yields and threatening food security. Additionally, shifting climatic conditions may lead to the spread of pests and diseases, further impacting agricultural productivity (Lynas, 2008).

Furthermore, the demographic effects of global warming cannot be overlooked. As certain areas become increasingly uninhabitable due to extreme weather events or rising sea levels, there may be mass migrations within and across borders, placing strain on social services and exacerbating existing inequalities. Vulnerable populations, including the elderly, children, and low-income communities, will likely experience a greater impact (Lynas, 2008).

The following section examines the main effects of global warming in Flanders and their impact on Lint for the present, 2050, and 2100, focusing on pluvial floods, drought, and rising temperatures (Vlaamse Milieumaatschappij, n.d.).

The maps shown are based on a high-impact scenario, representing a worst-case outcome if current global practices continue. This scenario assumes that global emissions and greenhouse gas concentrations will follow the current path, and that a transition to a low-carbon economy will not occur in the coming decades. Consequently, the high-impact scenario projects a global average temperature increase between 3.2 and 5.4 °C by 2100 (Klimaatportaal Vlaanderen, n.d.).

Recently flooded areas



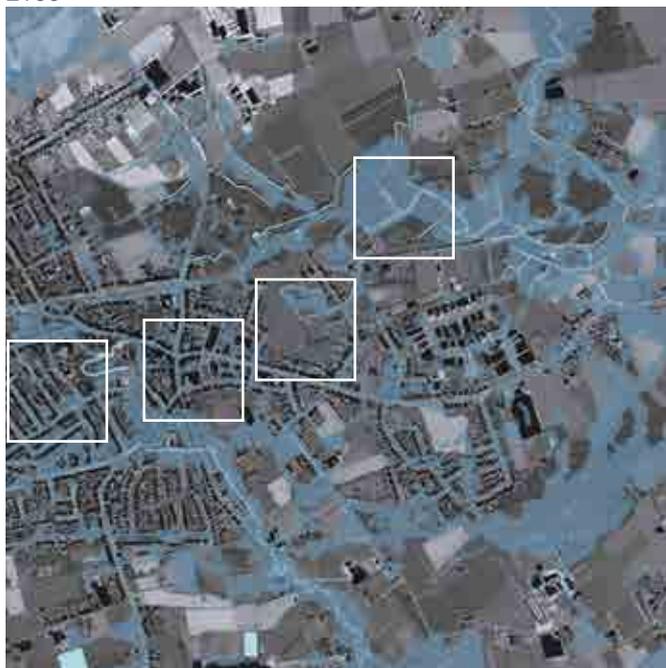
▲ **Figure 74**  
Recently flooded areas in Lint.  
(Source: Geopunt Vlaanderen,  
March 2024)

2050



▲ **Figures 75**  
Predicted expansion in areas  
facing flood risk for 2050.  
(Source: Klimaatportaal  
Vlaanderen, March 2024)

2100



### FLOOD (PLUVIAL)

When experiencing heavy rainfall, Lint often faces localized flooding around its main waterways. Predictions indicate that by 2050, winter rainfall will increase up to 7%, and by 2100, the increase will reach 29% (Vlaamse Milieumaatschappij, n.d.). This will lead to more frequent flooding in areas near the waterways and in parts of western Lint with high levels of hard surfaces. The forest belt to the northeast, the lowest area in Lint, will act as a buffer to manage the extensive rainfall. As most of Lint's waterways flow towards this forest, there is a high risk of pluvial flooding.

 Flood-prone areas

500m



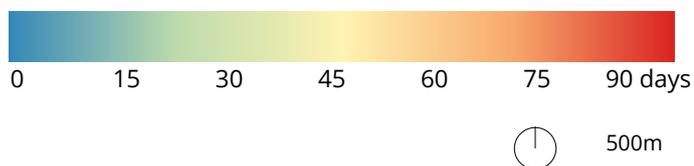
#### Figures 76

Predicted expansion in areas facing flood risk for 2100. (Source: Klimaatportaal Vlaanderen, March 2024)

## DROUGHT

These maps show the average number of days within a year characterized by drought conditions. An agricultural drought day occurs when the relative soil moisture content drops below the level at which crop production begins to experience stress (Klimaatportaal Vlaanderen, n.d.).

Due to rising temperatures and reduced rainfall in the summer, the occurrence of drought periods is expected to significantly increase. This increase is particularly prominent in the village centre, where the number of drought days escalates rapidly. The forested areas also experience a notable rise in drought days, as vegetation relies on soil moisture to meet its water requirements. A decrease in soil moisture can lead to stress and damage in the vegetation.



2023



**Figure 77**  
Amount of drought days  
throughout 2023.  
(Source: Klimaatportaal  
Vlaanderen, March 2024)

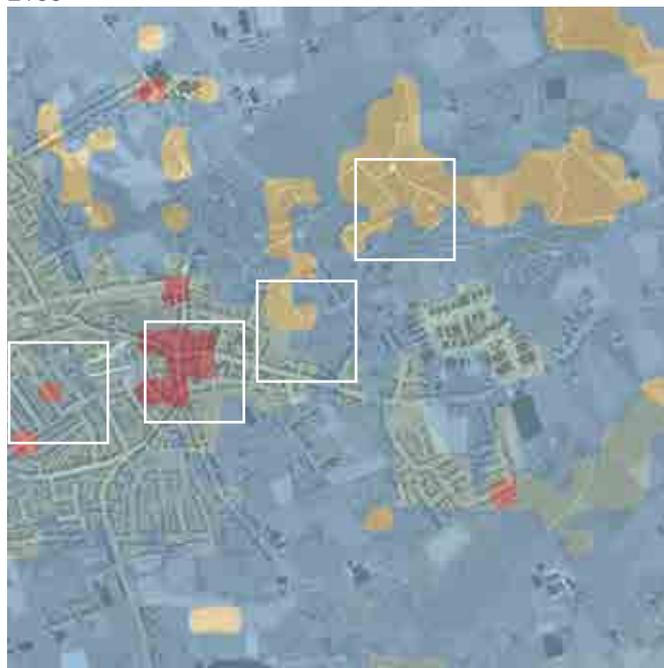
2050



**Figures 78**

In 2050, the effects of drought starts to noticeably increase in the village center.  
(Source: Klimaatportaal Vlaanderen, March 2024)

2100



**Figures 79**

The forested area and village center of Lint experience the longest periods of drought.  
(Source: Klimaatportaal Vlaanderen, March 2024)

2023



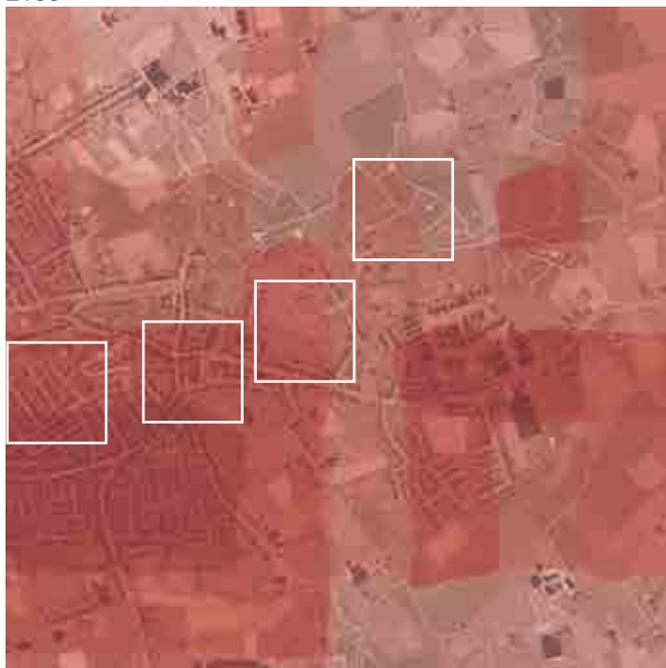
▲  
**Figure 80**  
Average temperature during the summer months in 2023.  
(Source: Klimaatportaal Vlaanderen, March 2024)

2050



▲  
**Figures 81**  
Predicted average summer temperature in 2050.  
(Source: Klimaatportaal Vlaanderen, March 2024)

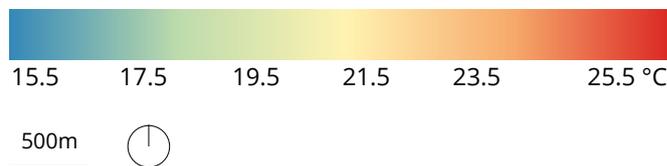
2100



### INCREASE OF TEMPERATURE

The average temperature during the summer months (June, July, August) are used to compare the increase in summer temperature in 2023, 2050, and 2100.

The heat island effect, a phenomenon where urban areas experience higher temperatures than surrounding rural areas due to human activities and built structures absorbing and retaining heat, is clearly visible while looking at the three maps. The industry zone and most densely build areas in Lint face the highest summer temperatures.



▲  
**Figures 82**  
The densely built eastern part of Lint, together with the industry zone, face the highest temperatures in 2100.  
(Source: Klimaatportaal Vlaanderen, March 2024)

# A GLIMPSE INTO THE FUTURE OF LINT

## FUTURE DEVELOPMENT AND PROJECTS

In addition to the *Zevenhuizen* site, there are numerous concrete and potential development plans either existing or already underway in Lint. Some of these projects are situated on areas that are already built upon, while many others utilize open, permeable spaces for their expansion. A significant portion of Lint's open area is allocated for these new housing initiatives, whit a low-density approach to landscape utilization, particularly focusing on single-family housing projects.

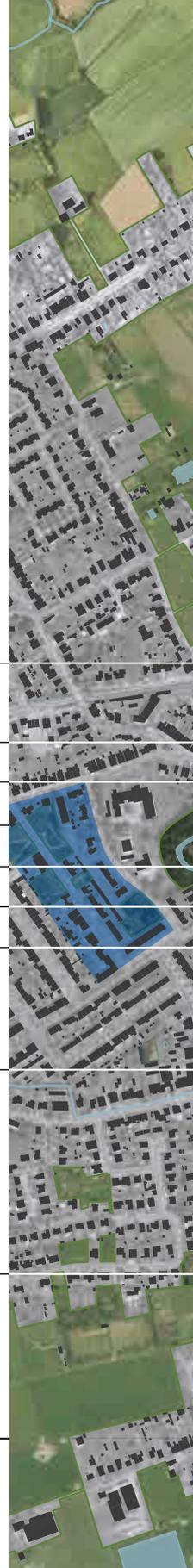
Planned development projects

- Former open area
- Former built area

1. 100 dwellings
2. 191 dwellings
3. 34 dwellings
4. 275 dwellings
5. 120 dwellings
6. 7 dwellings
7. 8 dwellings
8. 9 dwellings
9. 14 dwellings
10. 6 dwellings + supermarket

**Figure 83**  
Future development projects  
in Lint.  
Source: (R. Verhoeven,  
personal communication, 11  
April 2024)

150m







**1. Future expansion Zevenhuizensite**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Matexi, Thisrand

**Amount of dwellings:** 100

**Area:** 1.4 ha

**Status:** On hold

**Previously:** Open permeable area



**4. Kasteelpark**  
(Metapolis, 2017), (R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Thisrand, Municipality Lint

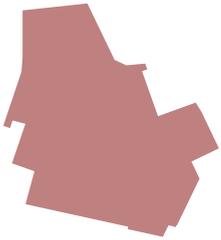
**Architect:** Metapolis Architects

**Amount of dwellings:** re-development of 275 apartments for social housing

**Area:** 16 ha

**Status:** In construction

**Existing:** Social housing



**2. Zevenhuizensite**  
(Matexi, 2024)

**Developer:** Matexi, Danneels, Novus, Thisrand

**Amount of dwellings:** 191

**Area:** 9.3 ha

**Status:** Permit submitted

**Previously:** Agricultural fields



**5. Papendonk**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Van Wellen

**Amount of dwellings:** 120

**Area:** 2,4 ha

**Status:** Planning stage

**Previously:** Open permeable area with farm



**3. Residentie Greenhouse - Schranshoevenlaan**  
(Cores Development, 2024)

**Developer:** Cores Development

**Architect:** POLO architects

**Amount of dwellings:** 34

**Area:** 0.5 ha

**Status:** In construction

**Previously:** Greenhouse



**6. Kerkhofweg**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Unknown

**Amount of dwellings:** 7

**Area:** 0.4 ha

**Status:** For sale

**Previously:** Open permeable area



**7. Liersesteenweg**  
(Danneels, n.d.)

**Developer:** Danneels

**Amount of dwellings:** 8

**Area:** 0.8 ha

**Status:** Permitted and sold

**Previously:** Agricultural fields



**9. Kinderstraat-Roetaard**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Unknown

**Amount of dwellings:** 14

**Area:** 0.4 ha

**Status:** Permit submitted

**Previously:** Open permeable area



**8. Kriekhof 53**  
(Evillas, n.d.)

**Developer:** Evillas

**Amount of dwellings:** 9

**Area:** 0.4 ha

**Status:** Planned, for sale

**Previously:** Old villa



**10. Bossentstraat**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Unknown

**Amount of dwellings:** 6 + supermarket

**Area:** 1,1 ha

**Status:** In planning stage

**Previously:** Agricultural fields

2023



Future projects



+ 520

+ 650

+ 100

◀ **Figure 84**  
Present demographic data of Lint by neighbourhood (top), including future projects (bottom).  
Source: (Deelgemeente Lint in cijfers en grafieken, 2024)

## EVALUATING DEMOGRAPHIC SHIFTS

If all the additional units from future projects in Lint are multiplied by the average number of residents per household in Flanders - 2.30 residents (Vlaamse Statistische Autoriteit, 2023) - there could soon be more than 1000 new inhabitants, an increase of almost 15% compared to the current population. This significant demographic shift could have a major impact on the spatial quality of the village. Where will all these new inhabitants come from? Newcomers to a village often do not know their way around as well as the locals, and their own home often becomes the centre of their world. They consume the village but do not really belong to it. Herein lies the challenge for urban planners and architects to create public spaces and housing that encourage residents to engage with this space (Team Vlaams Bouwmeester, 2023).

In particular, greenfield sites are being developed for these projects, raising concerns about sustainable land use. The government has a responsibility to ensure housing rights for all and emphasises the importance of affordable housing in these village expansions (Wieërs, 2021). An interview with the mayor revealed that many young residents of Lint are forced to move to neighbouring communities to find more affordable housing. The local government aims to address this problem by keeping the younger generation in Lint (R. Verhoeven, personal communication, 11 April 2024).

The prevalence of single-family houses, as highlighted in the chapter on land use, underlines the need for new housing typologies that go beyond the dichotomy between single-family houses and apartments and offer diverse and sustainable housing options for the future.

250      500      750      1000      1250      1500      1750      2000      2500

# IN CONVERSATION WITH THE MAYOR

## MENTAL MAP OF LINT

In order to gain a deeper insight into the spatial and symbolic significance of Lint from the mayor's perspective, a mental mapping exercise was carried out. This method, often used in geography and environmental psychology, provides a concrete way of understanding an individual's spatial perceptions and cognitive representations. According to Reinders (2008), mental mapping involves the collection, organisation, retrieval and manipulation of information about one's environment. In Lint, the mayor's mental map serves as a valuable tool for uncovering the local leadership's subjective perceptions and priorities regarding the village's spatial configuration. This approach allows us to explore not only the physical layout, but also the symbolic meanings, associations and experiences that the mayor ascribes to different places.



▲  
**Figure 85**  
Mental map by Rudy Verhoeven.  
(R. Verhoeven, personal communication, 11 April 2024)



Lint's two main roads, dating back to its inception, are still perceived as dominant features in the village. The intersection hosts various public functions that collectively form the core, such as the church with its adjoining square.



Symbolizing Lint's local economy, these represent businesses located exclusively in the town centre, as concluded in the *Land Occupation and Use* section.



These two hearts symbolize two significant houses for the mayor. Firstly, the larger heart represents the town hall, situated in the serene and green municipal park. Secondly, just a stone's throw away from the town hall, lies his own residence, where he lives with his family.



Recently, the municipality acquired one of Lint's oldest cafes following the passing of its iconic owner, Lucienne. The mayor holds this cafe dear to his heart, as it was an important part of his youth. It will be transformed into a new cultural space for Lint, along with the adjacent party hall.



Both the men's and women's volleyball teams in Lint aspire to play at a high level. The community centre *De Witte Merel* also houses indoor sports facilities where training sessions and matches can be organized.



The Scouts and Chiro are two youth organizations in Lint that are important for the children. Their premises and grounds are located northeast of the *Zevenhuizen* site.



This abbreviation stands for small and medium-sized enterprises and represents the only area in Lint designated for such businesses.



This former convent now serves as a reception centre, managed by the Red Cross organisation, providing accommodation for families, individuals, and unaccompanied minor foreigners.



These trees symbolize the Papendonk forest, an important part of Lint for the mayor as it is the only *true* piece of nature in the municipality.

◀ **Figure 86-89**  
Picture of cafe Lucienne, the municipal park, a wood shop in SME zone, and an example of local economy in the centre.  
(Dejaegher, April 2024)



## REIMAGINING LINT'S GROWTH

Lint's spatial development faces significant challenges that require a critical re-evaluation of current strategies. The reliance on single-family detached housing, a model historically supported by government policy, has resulted in extensive land consumption and low-density sprawl. This pattern of development is increasingly unsustainable, exacerbating environmental problems such as reduced natural infiltration areas and urban heat island effects. A shift towards higher density in village contexts, without resorting to high-rise buildings, is imperative.

The concept of *village-like* architecture offers a promising solution, aiming to balance higher density with the preservation of the rural aesthetic and community feel of the village. However, the practical implementation of this concept remains a challenge. The development of new housing typologies that break the dichotomy between houses and apartments is crucial. Options such as cluster housing, co-housing projects and low-rise, high-density developments could provide the necessary compromise, but require careful integration of shared green spaces to maintain village character.

Furthermore, the ongoing controversy surrounding the *Zevenhuizen* project highlights the tension between development and community acceptance. The promotion of the project as 'green' raises questions about the authenticity of its environmental claims. This kind of greenwashing can undermine trust and calls for more substantive commitments to sustainability. Opposition from local residents, concerned about increased noise, congestion and loss of natural space, highlights the need for transparent and genuinely sustainable planning practices.

The mayor's findings also highlight a pressing issue: the migration of young residents to neighbouring communities due to the lack of affordable housing in Lint. This trend threatens the demographic balance of the village and underlines the urgency of affordable and diverse housing solutions. The prevalence of single-family homes, as identified in the land use analysis, further emphasises the need for innovative housing models that meet diverse needs and prevent socio-spatial segregation.

In conclusion, the future development of Lint needs to embrace the principles of sustainable urbanism while maintaining its village identity. This includes encouraging mixed-use development, improving land permeability and preserving open space for both environmental and social benefits. By addressing these critical issues, Lint can become a resilient community that meets the needs of its residents while respecting environmental limits.

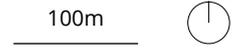


# ***DESIGNING SUSTAINABLE SOLUTIONS***

**LINT IN FOCUS**

# DESIGN STRATEGIES

**Figure 90** ▶  
The remaining urban forests of Lint.



## STRATEGY 1 - GRADIENTS OF VEGETATION



### Existing vegetation

The existing vegetation on the design site establishes clear boundaries. Straight and curved lines of trees create the impression of enclosed forest *rooms*.

### Strategy: Strengthen the forest geometry

The existing forest geometries of lines, curves, and rooms are enhanced and linked to the urban forests through the addition of diverse vegetation and an econduct, strengthening the forest belt of Lint.

● Added trees

In Lint's northern region, parts of the Papendonk forest, dating back to the town's origins, still remain. Additionally, scattered remnants of forested areas can be found throughout the territory.

The forest belt of Lint exhibits characteristic geometric patterns. Within the densely packed trees, clearings emerge, creating rooms for residential and agricultural purposes. At the edges of the forest and dispersed around Lint, lines of trees define edges and boundaries.

Although the site has been recently primed for the upcoming project, traces of the original geometry of the flora persist along the watercourse. A few rows of poplar and oak trees, alongside low shrubbery and grasses, define the boundaries of agricultural plots.

A first design strategy entails linking the urban forest patches within Lint by partially restoring natural habitats on the site. Additionally, this approach aims to reinforce the forest while expanding upon the existing geometric patterns inherent in the forest layout.

### Types of urban forests

- Planted trees
- Forest trees
- Shrubs
- High grasses

### Land use

- Open area
- Agriculture
- House plots/ residential area





**Figures 91**  
The existing geometry of  
the Papendonck forest,  
characterised by rooms,  
edges  
and lines.  
(Dejaegher, April 2024)



**Figure 92**

The current vegetation on the design site defines clear boundaries.  
(Dejaegher, April 2024)

## STRATEGY 2 - GRADIENTS OF DENSITY

In today's suburban areas, large villas, scattered throughout the landscape, are a common sight. Across Flanders, ribbon developments feature rows of spacious villas on individual plots, emphasizing privacy and separation of neighbours. These large homes typically start as residences for families and are often already larger than necessary. However, after the children leave, parents frequently continue to live in these overly spacious houses.

This pattern is also evident in Lint, where villas line the streets, except in the more densely packed social housing area with apartments. When taking the average of the housing density of the previously analysed squares, Lint's average density becomes 17.5 houses per hectare (Authors calculation, 2024).

Currently, Lint's low-density housing consumes significant landscape space, and future plans suggest this trend will continue. Given challenges such as biodiversity loss, increasing land hardening, and demographic changes, there's a need to rethink housing design. Suburban living should be replaced with more urban and collectively organized housing models (Mabilde, 2018).

The aim for the 9-hectare design site is to double the housing density to 35 houses per hectare. This approach aims towards maximizing the use of the landscape with high-density housing. While 35 houses per hectare (Departement Omgeving Vlaanderen, 2019) aligns with the average density across Flanders, it's important to note that this average includes urban areas. Therefore, achieving this density on our site signifies a transition towards a more urban density within a suburban setting, all while maintaining the quality and ambiance of suburban living.

**Figure 93** ▶

The existing buildings with their property lines, in and around the design site.  
Source: Google Earth (2023)

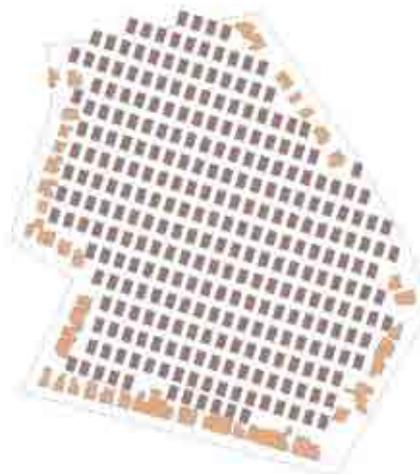


- House plots
- Existing buildings
- New buildings



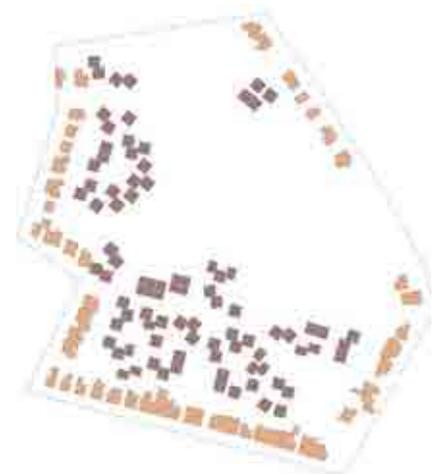
### Existing urban figure

The boundaries of the site are fully occupied by large single family homes, creating a low-density residential area that extensively uses the available land. The residential buildings have an average ground area of 135 square metres.



### Hypothesis: double the density

A density of 35 houses per hectare results in 315 dwellings on our site of 9 hectares. If these units followed the existing pattern of large, single-family homes, the entire site would be occupied.

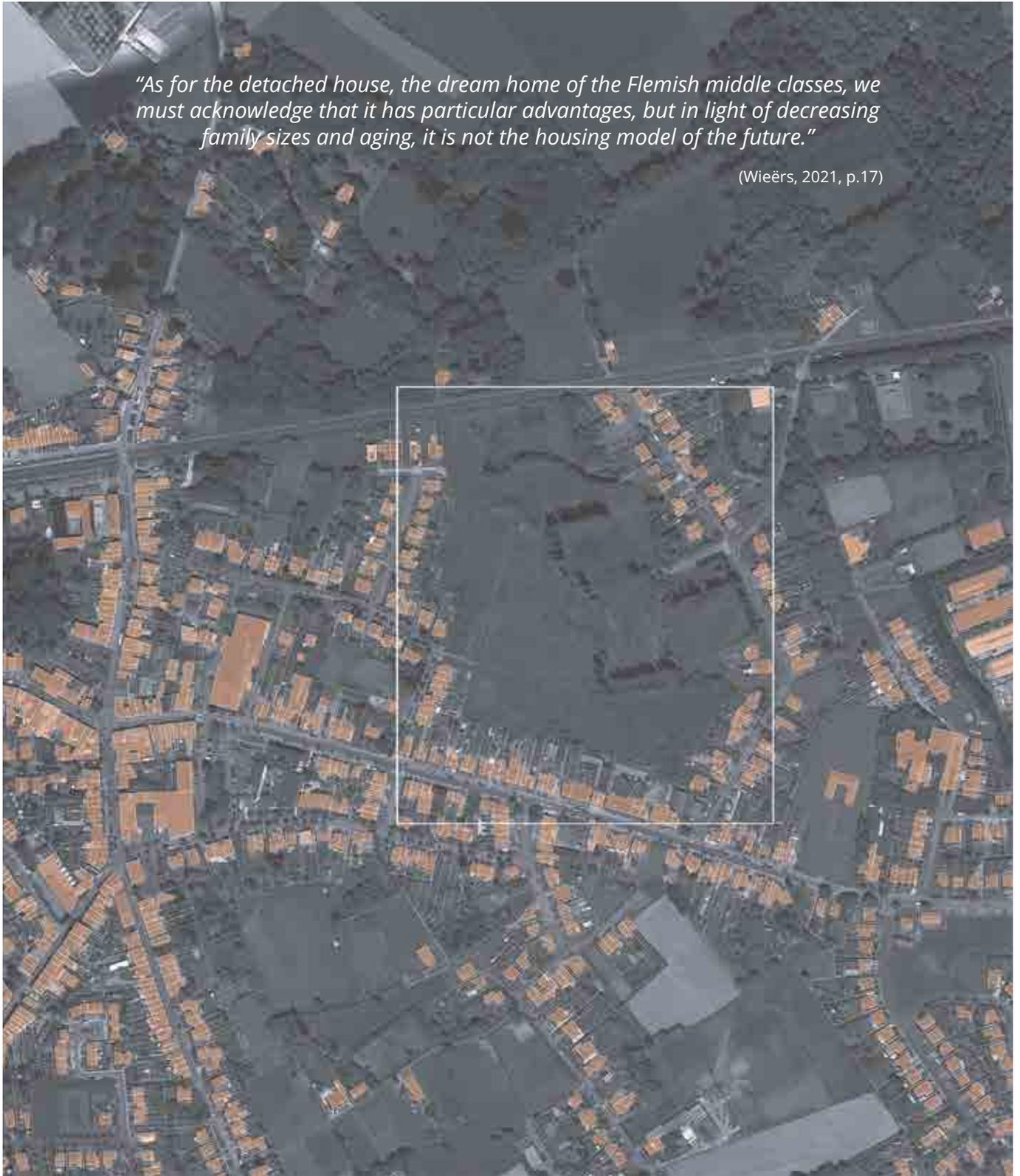


### Strategy: high-density clustering

By clustering homes and transitioning from single-family to multi-family residences, high-density zones can be created while preserving more nature. This approach would result in only one-tenth of the site being built upon.

*"As for the detached house, the dream home of the Flemish middle classes, we must acknowledge that it has particular advantages, but in light of decreasing family sizes and aging, it is not the housing model of the future."*

(Wieërs, 2021, p.17)





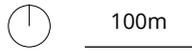
**Figures 94**  
Semi-detached houses lining  
the streets in Lint.  
(Dejaegher, April 2024)



**Figure 95**  
Villas border the design site.  
(Dejaegher, April 2024)



◀ **Figure 96**  
 Pluvial flood predictions and the different soil types of Lint.  
 (Source: Databank ondergrond Vlaanderen and Geopunt)



Pluvial flood prediction

- Recently flooded
- 2050
- 2100

Soil type

- Moderately dry sandy loam (**good infiltration**)
- Moderately wet sandy loam (**bad infiltration**)
- Wet sandy loam (**water stagnation**)

## STRATEGY 3 - GRADIENTS OF WETNESS

The site's topographical features indicate that it sits partially at a lower elevation, making it prone to future flooding. This lower area is bordered by a natural waterway that connects to the Papendonk forest in northern Lint, which acts as Lint's water buffer, collecting water from all surrounding waterways due to its lowest position.

In addition to topography, soil composition also affects pluvial flood predictions. The areas with wet sandy loam are at higher risk of flooding compared to those with dry sandy loam, primarily due to wet sandy loam's tendency to experience water stagnation problems.

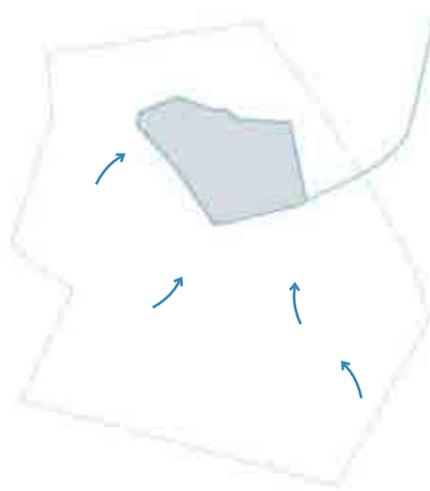
As da Cunha and Mathur point out, water is uncontrollable and has its own dynamics: "With water expected to become more 'difficult' with climate change, plans are underway to reinforce the line with walls, levees, and other barriers, thicken it with ecotones and land-uses that accommodate in time the uncertainty of water in space, or simply redraw it on higher ground. These solutions will work until, that is, water defies them. They perpetuate a land-centric imagination that sets water up to be non-compliant, unpredictable, and violent, yet somehow controllable." (Mathur & da Cunha, n.d.)

Therefore, anticipated flood patterns will help in designing a water buffering and infiltration zone that uses the site's natural microtopography. This approach allows water to flow naturally to these areas and infiltrate along the way, rather than trying to control and direct it.



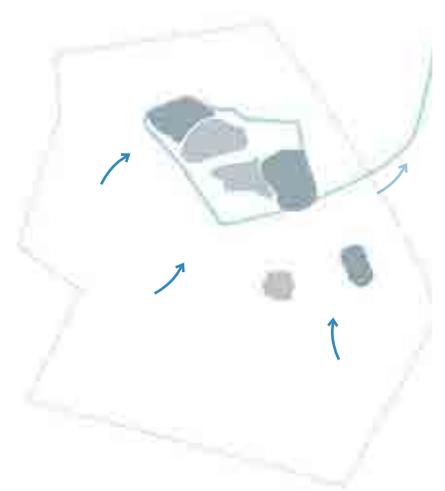
### Flood predictions

The predicted floods are expected to remain primarily within the lowest area of the site.



### Hypthesis: floods and flows define shape

The shape of the water buffer zone is defined by the area at the highest risk of flooding over the next 100 years. Rainwater from the surrounding area naturally flows toward this buffer zone.



### Strategy: a connected system

Wadis and ponds create an interconnected system, allowing them to overflow into one another.

- Pond
- Wadi

## STRATEGY 4 - GRADIENTS OF USE

The land use analysis of Lint reveals a distinct functional zoning within the village. Small-scale economic activities such as cafes, clothing stores, and hair salons are predominantly clustered in the town centre. Meanwhile, SMEs like timber traders and garage operators are situated in an isolated zone to the east, along with semi-public spaces. While the central part of Lint boasts a number of parks and squares, sports and recreational facilities are predominantly found to the east.

In each case, the *Zevenhuizen* site forms a buffer between them.

A fourth design aspiration involves introducing mixed-use functions to breathe new life into these neighborhoods.

Land use

- Parking lots
- Public spaces
- Public buildings
- Health care
- Economic function



### Existing economic functions

Small-scale economic activities are concentrated in the village centre, while SMEs are situated to the east. As a result, the *Zevenhuizen* site in the middle remains an inactive economic zone.

### Strategy 1: interaction with village center and SME

Creating interaction between the design site, the village centre, and the SME area will eliminate the current distinct zoning. For instance, the SME area can be adapted to include housing, while the design site can accommodate SMEs, thereby integrating economic activity and residential use.

### Strategy 2: creating mixed use

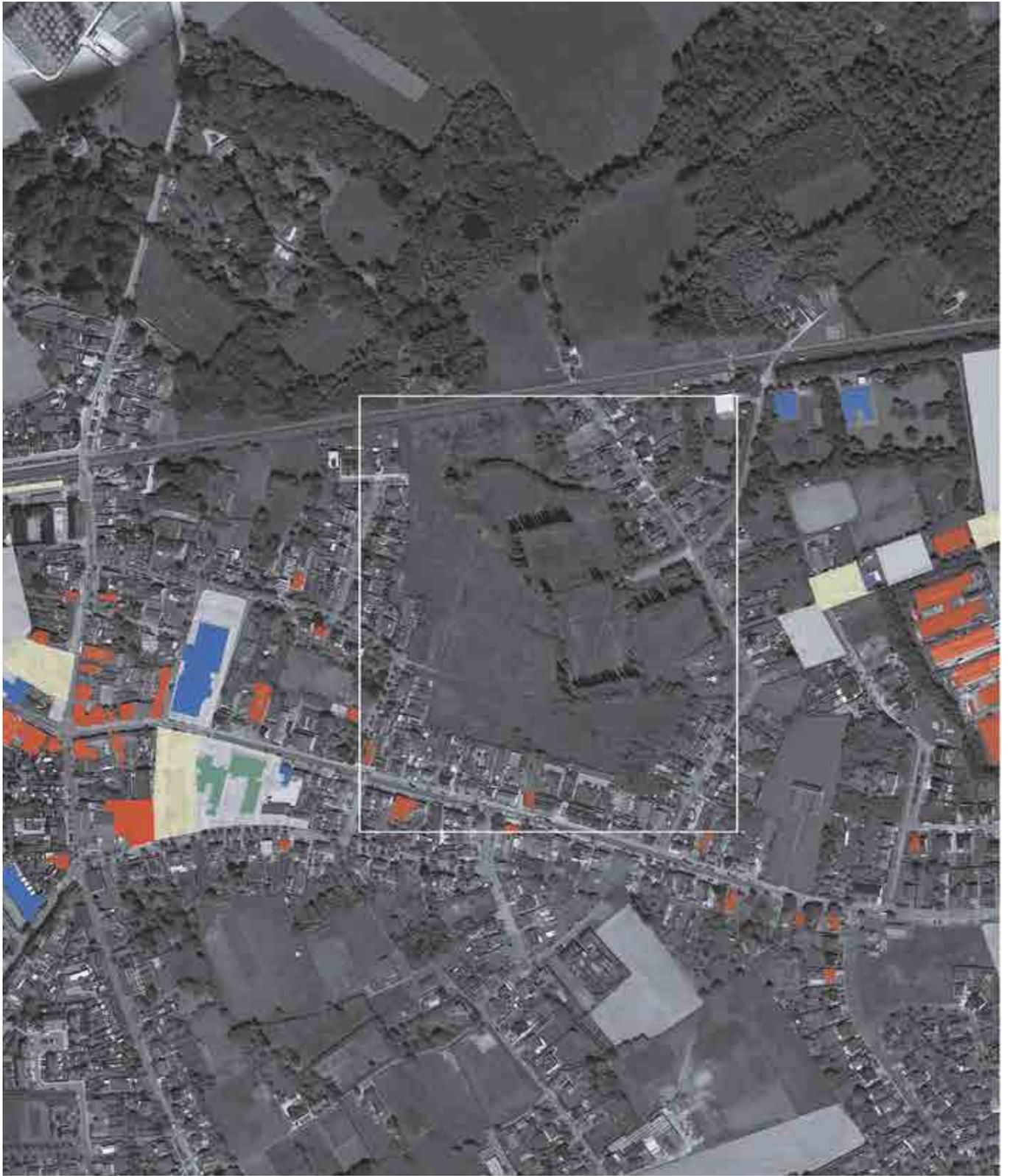
By incorporating mixed uses, such as economic functions, communal spaces, and healthcare facilities, into the newly developed units, a diverse range of users will be attracted. In a later phase, this mix of uses can also be introduced into the existing housing units.

**Figure 97** ▶

The public and economic spaces of Lint are clustered into functional zones.  
Source: Google Earth (2023)

100m





## STRATEGY 5 - GRADIENTS OF PUBLICNESS

Public spaces are scattered throughout Lint, with the municipal park in the west being the largest, covering 20 000m<sup>2</sup>. Key public buildings, such as the church, library, and primary school, are located in the village centre. By designing a significant portion of the site as public space with public functions, a continuity of public areas extending from the village centre can be established.

Additionally, there is a clear separation between public and private spaces, with no intermediate areas. This distinction is evident on the design site as well. By creating a gradient of public spaces, ranging from very public to communal to private, the rigid property lines can be softened.



### Existing public space

The site is entirely dedicated to agricultural practices, with the fields and properties of the surrounding houses fully fenced off. A public walking route is the only passage that crosses the site.



### Hypothesis: expanding public space

The municipal park, covering 20,000 m<sup>2</sup>, is the largest public space in Lint, with a few smaller public areas in the village center. By dedicating an area equal in size to the municipal park on this site, Lint's public space would increase by 25%.

### Strategy: gradients of publicness by recommoning

The public space transitions into common areas, these common areas surround the housing clusters. The common areas transition into communal courtyards within each cluster. This blend forms a continuum between public and private spaces within clusters.

#### Land use

- Parking lots
- Public spaces
- Public buildings
- Health care
- Economic function

#### Gradients of publicness

- Public
- Common
- Private
- Non-human common

**Figure 98** ▶  
The public and economic spaces of Lint are clustered into functional zones.  
Source: Google Earth (2023)

100m





## STRATEGY 6 - GRADIENTS OF WILDNESS

Currently, Lint is lacking biodiversity due to urbanisation and agricultural practices that reduce natural habitats. Extensive development has led to habitat fragmentation, while intensive farming often relies on monocultures and chemical inputs that harm wildlife. These factors combined have significantly diminished the variety of species in the area, making it essential to implement strategies that restore and enhance biodiversity.

Increasing biodiversity in Lint is crucial for several reasons. Enhanced biodiversity improves ecosystem resilience, helping the environment withstand and recover from disturbances such as climate change and pollution. It also supports a wider variety of plant and animal species, contributing to ecological balance and health. Biodiverse areas can provide better ecosystem services, such as cleaner air and water, and can boost the overall quality of life for residents.

Present land occupations



### Hypothesis: giving 40% of the site back to nature

Only 10% of the site will be developed as built area, while the remaining 90% will be dedicated to shared spaces. Of this, 50% will be designated as human commons, with the remaining 40% serving as non-human commons for rewilding efforts.



### Strategy 1: creating rewilded 'rooms'

Most of the already existing forest rooms will be strengthened and dedicated to rewilding. In these rooms different ecosystems can develop.



### Strategy 2: Gradients of wildness

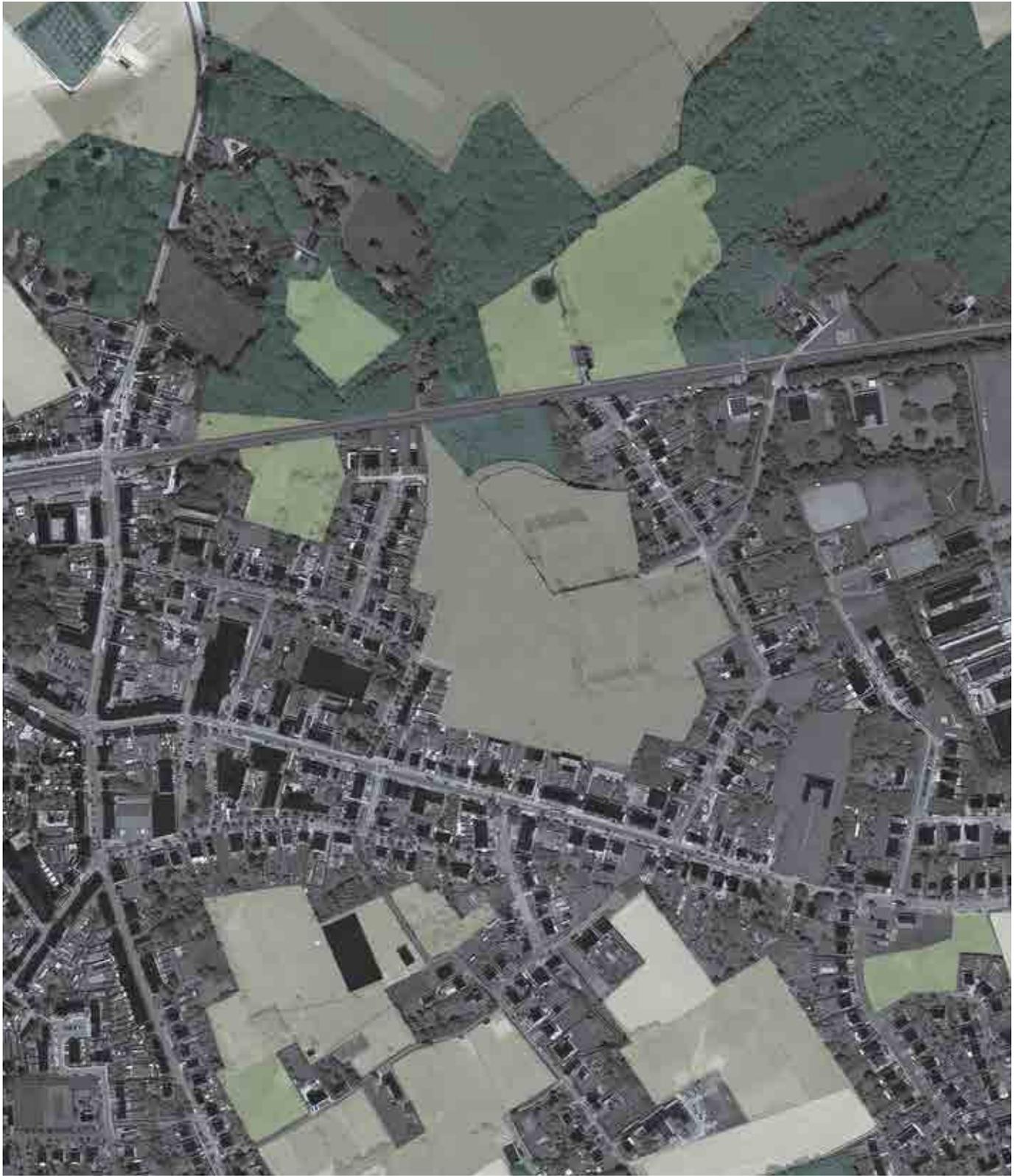
Gradients of wildness range from wild to semi-wild to manicured. One area is entirely dedicated to rewilding, allowing nature to thrive naturally. Closer to the built environment, the landscape becomes more structured and intentionally designed to define boundaries and create pleasant common courtyards.

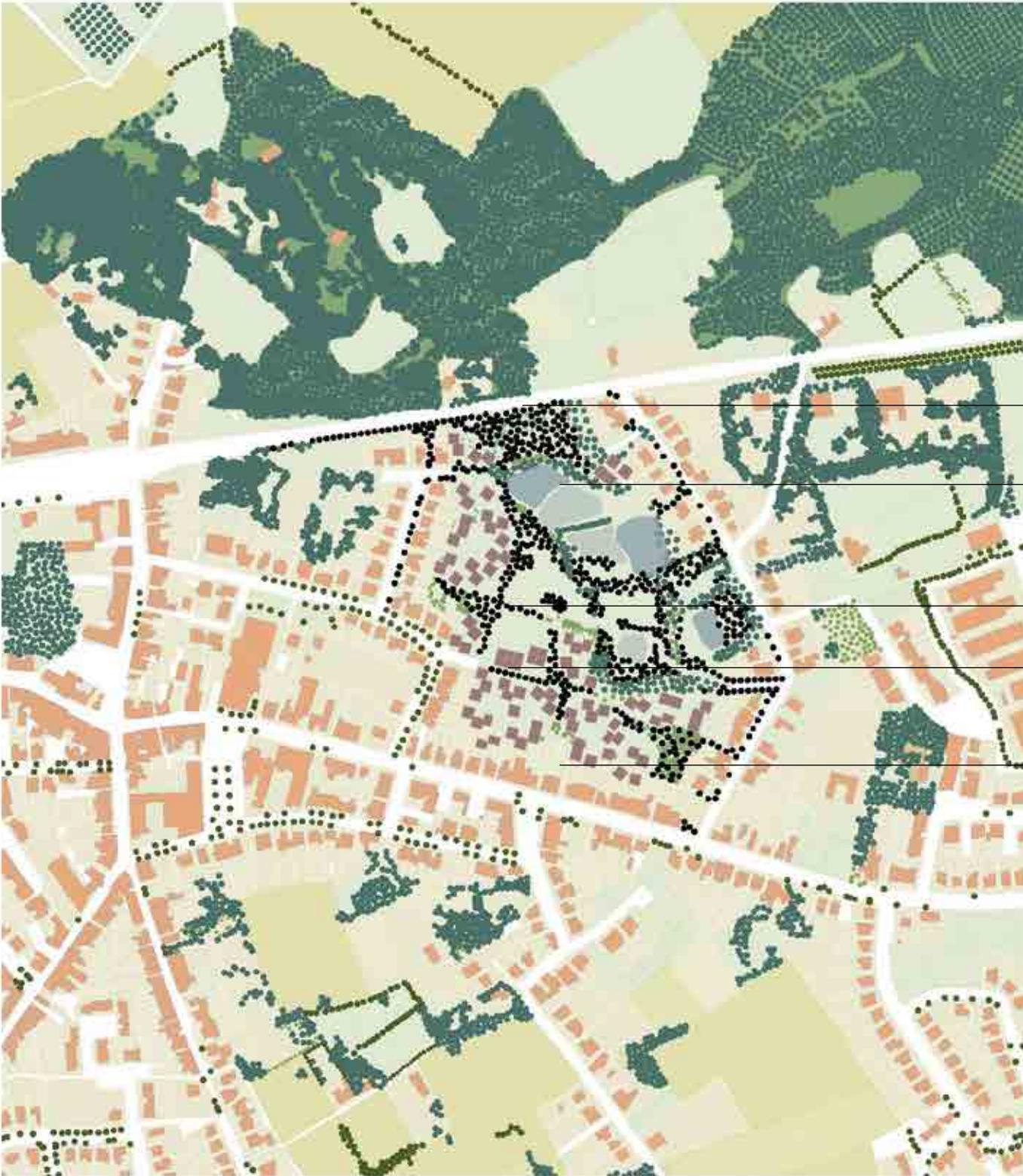


**Figure 99** Present land occupations of Lint. (Source: Geopunt Vlaanderen)

100m







## CO-PRESENCE OF THE GRADIENTS

The combination of these gradients creates different *rooms* in which they can coexist, with some being more prominent than others. The three types of rooms created are *forest rooms*, *public rooms*, and *communal rooms*.

This multifaceted approach creates a vibrant, interconnected urban environment that enhances the quality of life for its residents. The forest rooms provide lush green spaces that contribute to biodiversity and ecological balance. Public rooms are designed to facilitate social interaction and neighbourhood activities, while community rooms encourage shared living and resources, fostering a strong sense of community.

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### GRADIENTS OF VEGETATION / GRADIENTS OF REWILDING

Restore the forest belt and urban biodiversity

---

### GRADIENTS OF WETNESS

Create an interconnected buffer system to anticipate floods

---

### GRADIENTS OF PUBLIC SPACE

Form a connected system of public and common spaces for the new and current inhabitants

---

### GRADIENTS OF DENSITY

Introduce high-density clusters through multi-family housing units

---

### GRADIENTS OF USE

Integrate mixed uses on site to create a diverse living environment

The design follows the 3 30 300 rule, which is essential for improving urban quality of life. Each housing unit overlooks at least three trees, providing a direct connection to nature and promoting mental wellbeing. The total canopy cover of the site is 30%, contributing to environmental sustainability by reducing the urban heat island effect and improving air quality. In addition, a high quality park is located within 300 metres of each residence, providing easy access to recreational spaces and encouraging physical activity (3-30-300 Regel, n.d.).

By implementing these principles, the design not only addresses environmental and social sustainability, but also creates a harmonious living environment where nature and community coexist seamlessly. This holistic approach ensures that residents enjoy the benefits of green spaces, fostering a resilient and healthy urban ecosystem.

◀ **Figure 100**  
Coexisting of the gradients  
results in different rooms.



100m



## FOREST ROOMS

*“And while at it, we are unnecessarily destroying a large part of the rest of life. Imagine! Hundreds of millions of years in the making, and we are extinguishing Earth’s biodiversity as though the species of the natural world are no better than weeds and kitchen vermin. Have we no shame?”*

(Wilson, 2016, p.36)

This quote from E.O. Wilson sums up how the scarce space in Flanders is still managed today. As mentioned earlier in the analysis, many new developments are planned in the Lint area, almost all of them on former open spaces. The remaining nature in the current landscape is still seen as leftover space for human consumption one day.

The design aims to reverse this trend by introducing biodiversity into the site through forest rooms. In addition, the rooms integrate a water system to address the flooding predicted by earlier analysis. The *Zevenhuizen* watercourse is incorporated into the new water management system, which includes infiltration ponds (dark blue) and a network of wadi’s (light blue) designed to collect and absorb overflow from heavy rainfall.

*“In this vision of life on Earth, wilderness no longer exists; all parts of the world, even the most remote, have been adulterated to some degree. Living nature, as it evolved before the coming of man, is dead or dying.”*

(Wilson, 2016, p. 48)

The chapter *Gradients of Commons* from the first booklet explained the concept of commons from a human perspective. This design will extend the concept to include fauna and flora, ecosystems that also form commons. Within the forest spaces, human presence will be prohibited to protect these ecosystems, creating a non-human common.

◀ **Figure 101**  
The forest rooms serve as a space for non-human commons.



Existing popular

Zevenhuizen course

Single-family house



(Wet) meadow + shrubs

(Wet) meadow

Shallow water

Shrub

Forest

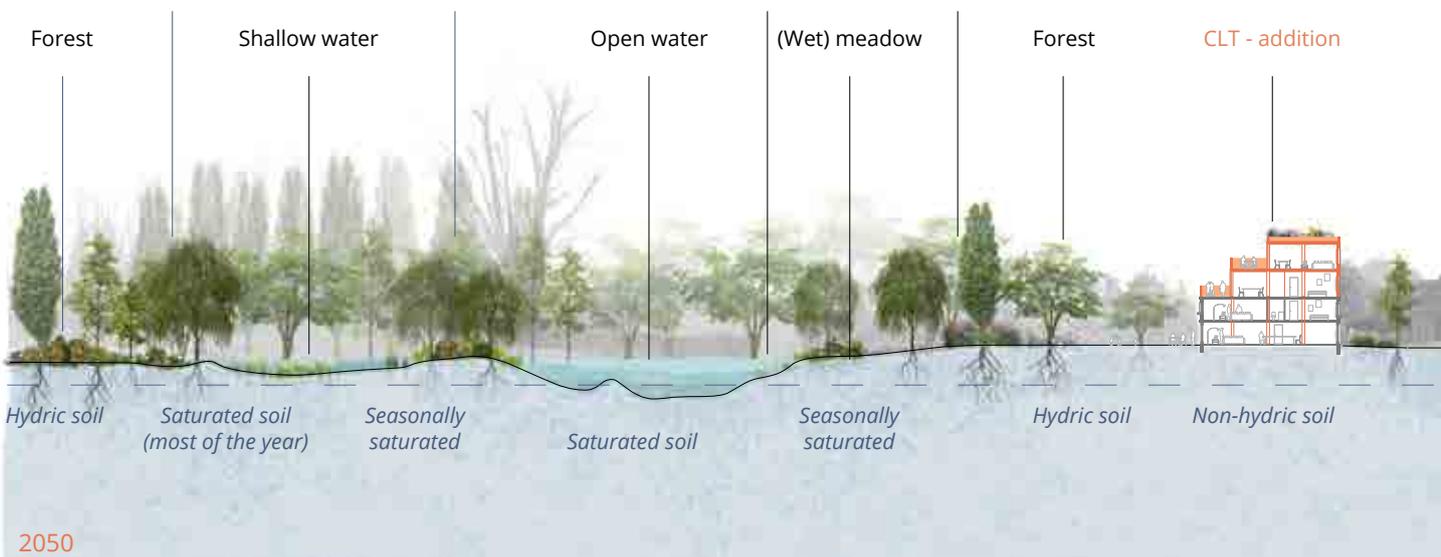
Shallow water

Open water

(Wet) meadow

Forest

CLT - addition



Wild

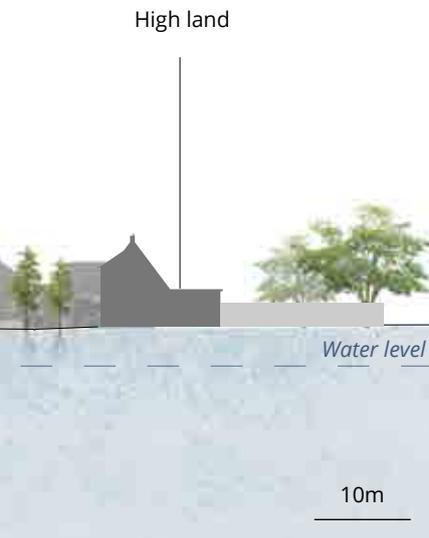
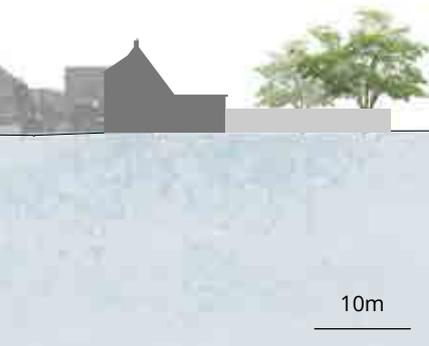
## REWILDING AND REVITALIZATION

The natural condition of the *Zevenhuizen* site has deteriorated significantly. In 2022, preparatory maintenance work was carried out to make the site inaccessible to the public and ready for construction. Trees were cut down and the remaining land was sown with maize and is now used for agriculture. The only remaining trees are a row of poplars and a row of pollarded oaks. (N-VA Lint, 2024)

A section of the site shows the *Zevenhuizen* watercourse, which connects the site's water management with the buffer zone of the lower-lying Papendonk forest to the north. The dashed line in the lower section illustrates the current water level in Lint, showing that the deepened ponds in the design are intended to hold water permanently, thereby attracting water-based ecosystems. If the wadi's overflow, the adjacent swales are designed to capture the excess water.

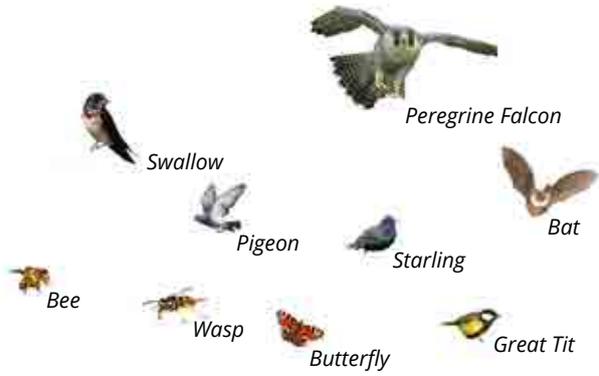
The top section also cuts through an existing detached villa, whose garden is enclosed by a wall and serves as the residence of a single family. The design proposes to radically return this area to nature by planting new native tree species at a sufficient distance from the existing trees. These new plantings will create a natural division of the forest rooms, forming an urban corridor for the local fauna. A radical return to nature also means that the area will be inaccessible to humans, creating a non-human common.

The density of the existing detached villas will be increased by adding floors of lightweight construction, such as cross-laminated timber (CLT), to the existing buildings and converting the houses into multiple compact living units. In addition, the perimeter fences of the properties will be removed to create an open relationship between the gardens and the new natural area in the rewilding zone. This approach aims to accommodate three to four times the current number of residents on the same land area.

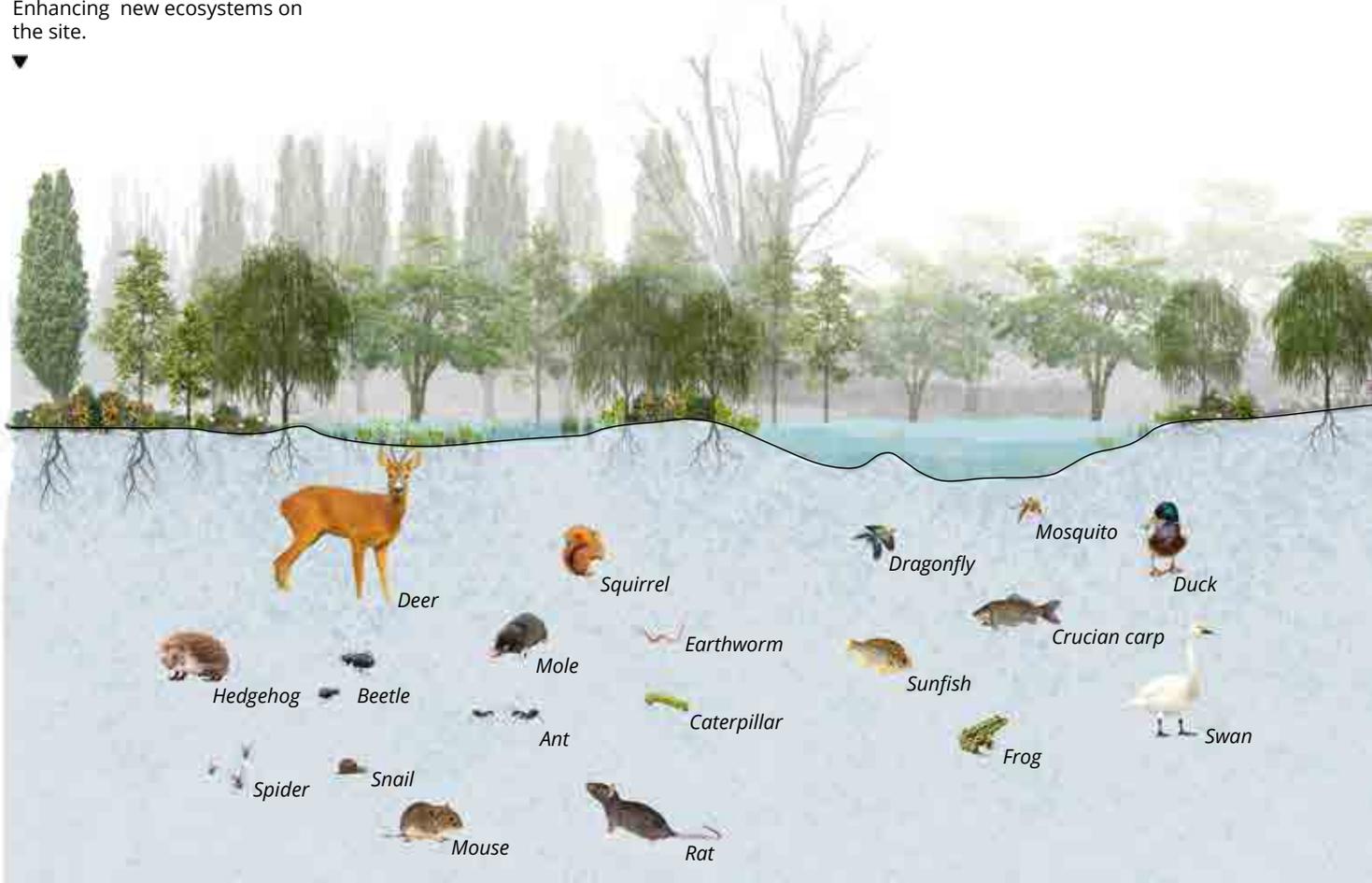


Manicured

◀ **Figure 102**  
Section of present situation  
and future design proposal.



**Figure 103**  
Enhancing new ecosystems on  
the site.



## ENHANCING THE BIODIVERSITY

By focusing on rewilding and prohibiting human presence, the site has the potential to enhance biodiversity and foster the creation of new ecosystems - in air, water, and soil, and in both fauna and flora.

In this *non-human common*, species live in a protected area where they can thrive. The interconnected urban forest spaces, linked by tree corridors, allow flora and fauna to spread and expand across the site over the years.

*“The word ‘wilderness’ refers to undomesticated places not yet yoked to the human will. In the parlance of conservation science, ‘wilderness’ means a large area within which natural processes unfold in the absence of deliberate human intervention, where life remains ‘self-willed’.”*

(Wilson, 2016, p. 48)





## PUBLIC ROOMS

The analysis of land use in Lint revealed that, apart from the municipal park, there are few public spaces of sufficient size and quality.

Strategy 5 had already clarified that an equivalent area of public space would be added to the site in the form of public rooms. Separated from the non-human commons by corridors of trees, these rooms are centrally located on the site and serve as a public hub. From this hub, various paved paths meander through the site, creating connections to the public spaces at the boundaries of the site. New buildings for public village functions are planned, and the various footpaths and cycle routes weave through the site, providing good accessibility and a link between the west and east sides of Lint.

◀ **Figure 104**  
The public rooms serve as a social hub, connecting the eastern and western parts of Lint.





Human common

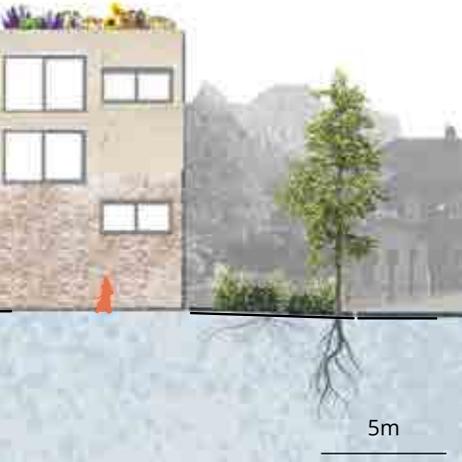


Non-human common

Non-human common



Non-human common



Human common

## PUBLIC CONNECTEDNESS

### 1 GRASSY AREA FOR ACTIVITIES

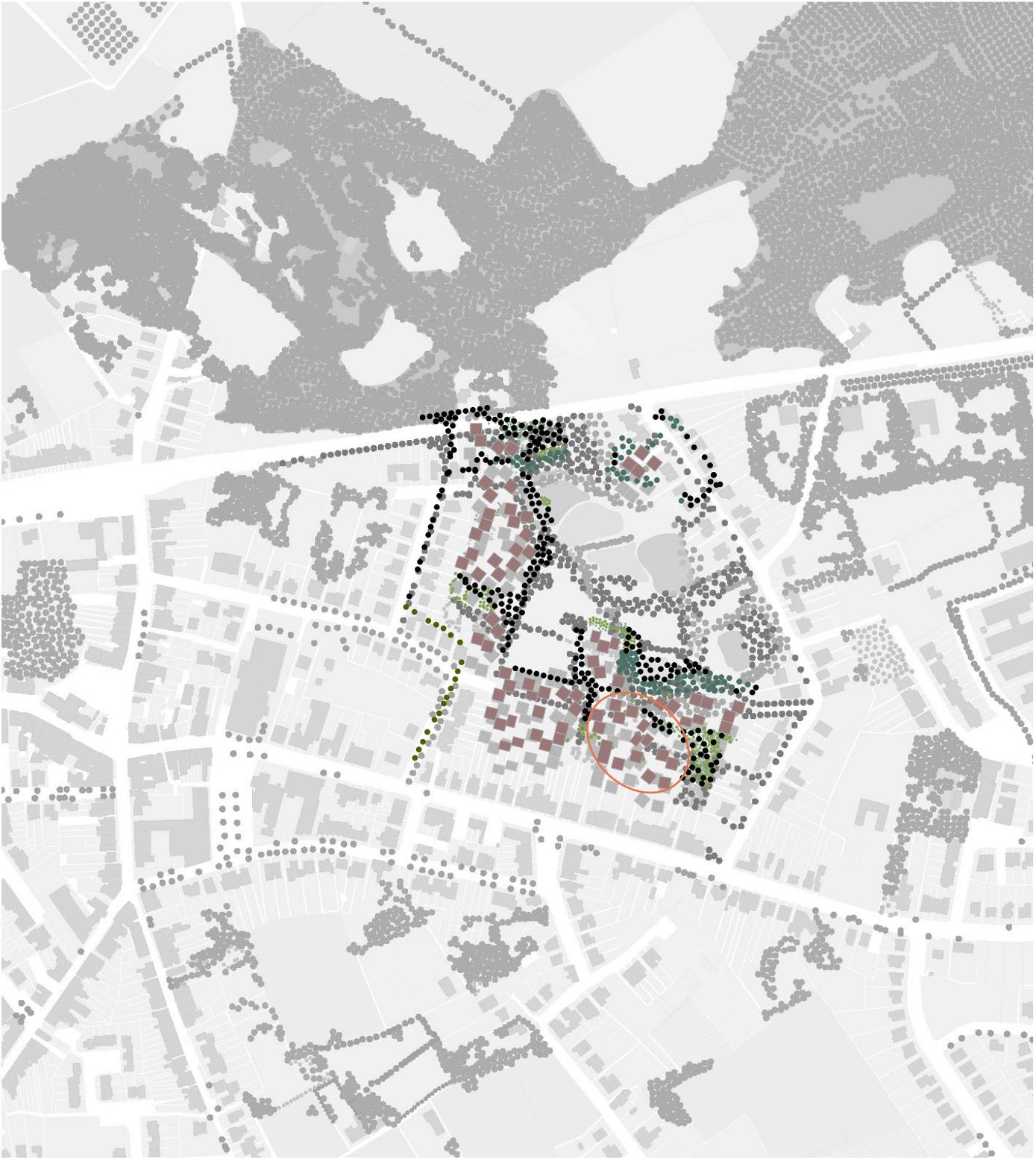
Situated in the middle of the site, between two elevated cycle and walking paths linking the west and east sides, this grassy area is intended to be multifunctional for all Lint residents. In the summer it can host food truck festivals with live music, be the site of lovely picnics or the venue for local youth football tournaments.

The public space is naturally separated from the non-human common by a gradient of vegetation. There are no fences or barriers; instead, the natural shape of the vegetation subtly communicates to residents that the rewilding zone is off-limits, fostering a sense of respect for the protected area.

### 2 PUBLIC ALLEYS

In the built-up areas around the site, some plots remain undeveloped. It has been decided to leave these spaces empty, so that the public area can extend towards the rewilding zone. These alleys can be used for public or commercial activities such as coffee bars or small cafés. A view platform hovers above the infiltration pond, allowing local residents to view the new fauna and flora that Lint will provide without being a disruptive presence.

◀ **Figure 105**  
The public rooms interact with the forest rooms without disrupting the non-human commons.



## COMMON ROOMS

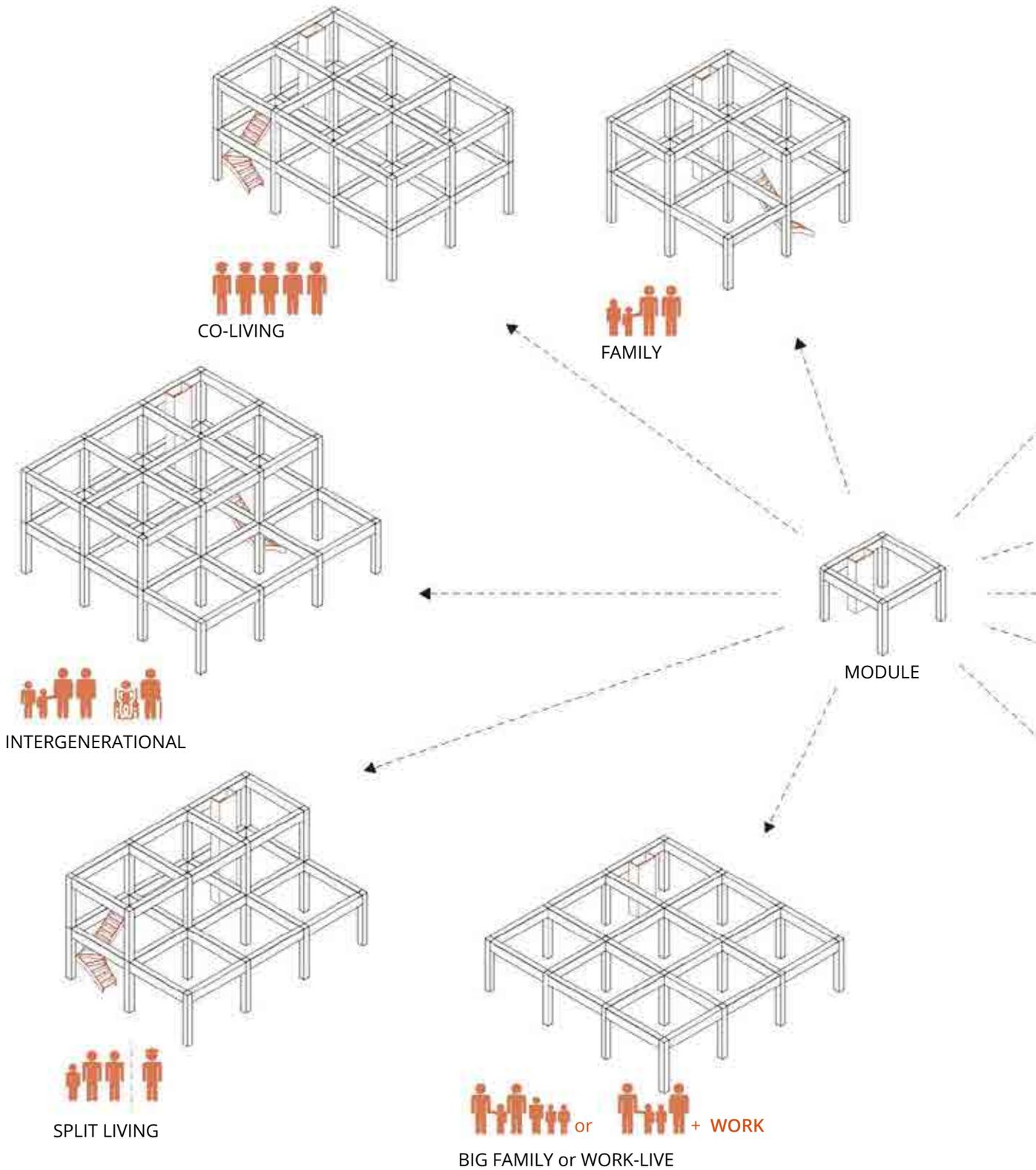
The third and final type of room is the common room, where innovative typologies of communal living nestle into the open spaces defined by nature and its forest corridors. Here there is a shift from individual plots to clusters of dwellings under the motto “living with and in nature”.

The communal spaces act as a bridge between the existing peripheral buildings and the newly planned public spaces. The following part of the thesis will further explain the function of these communal spaces.

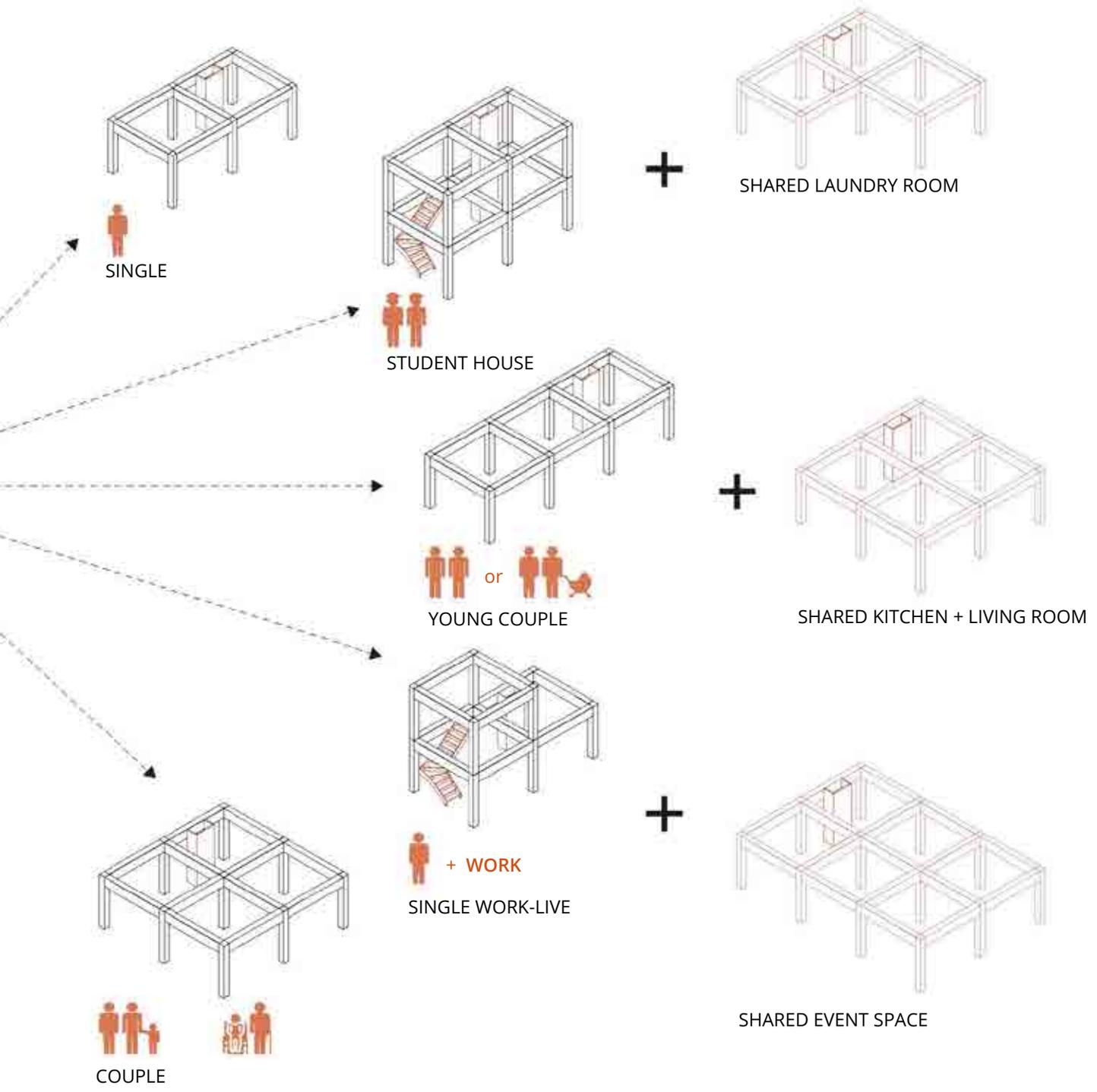
It begins with the modular construction of the clusters, starting with the smallest unit, which can then be scaled and expanded. After creating different housing units, they are stacked and connected to smaller clusters that form a large, interconnected community around common courtyards, where living and experiencing together are central.

◀ **Figure 106**  
The housing clusters integrate with nature, bridge old and new, and create communal areas.





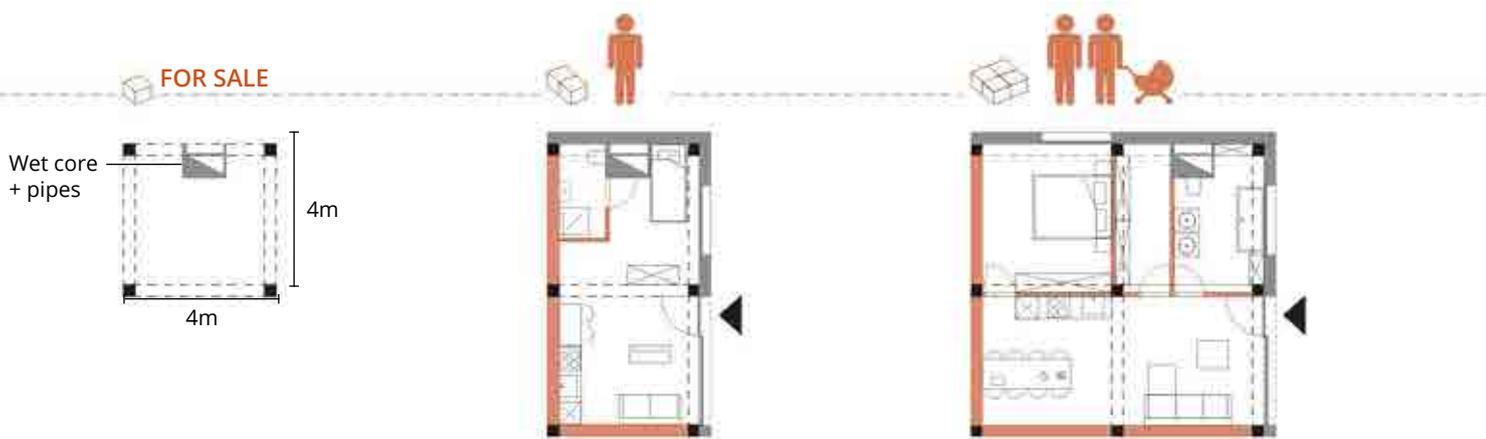
# CONCEPT: ADAPTABLE UNITS



# LIFELONG HOMES

The modular home system is designed for flexibility and customization, built from standardized modules each measuring four by four meters. These modules are prefabricated and constructed from cross-laminated timber (CLT), allowing for rapid assembly and disassembly.

Homes grow with their occupants, from a cozy studio for a single person to a spacious dwelling for a growing family, accommodating every stage of life.



Each unit's construction begins with a base module that includes a wet core and necessary piping. This wet core is a standard feature in every unit, serving as the starting point for the modular system. From this initial module, the system can be expanded and adapted to create a variety of unit configurations, providing a versatile solution for modern building requirements.

A single person can reside comfortably in a small studio of 32 m<sup>2</sup>. By situating a compact bathroom in the corner, the remaining space stays open, allowing for a flexible interior layout.

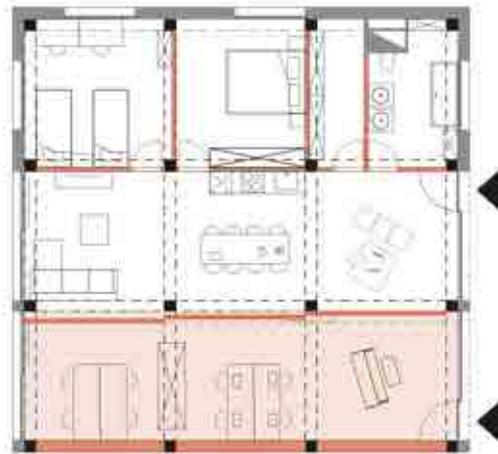
For a young couple, the space can expand to four modules. The bathroom can be enlarged, and the living areas can be rearranged to create a more spacious environment.



- CLT structure
- Fixed exterior walls
- Flexible partition walls



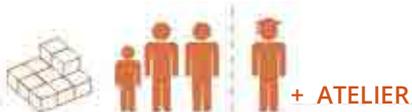
When the family expands, so does the home. When the family grows, the home can grow with it. Adding two more modules provides a shared bedroom for young children and an additional playroom, accommodating the evolving needs of the family.



The modular system's flexibility extends beyond housing. Additional functions, such as a shop or an atelier for workshops, can be incorporated, creating a live-work unit. These units can become the vibrant centre of a housing cluster.

The extra atelier space can either be integrated into the main living area or kept separate with sliding walls. The atelier also has its own entrance, ensuring privacy and minimal disruption to the main living space when desired.

**Figure 107**  
Modular home system.



REUSE



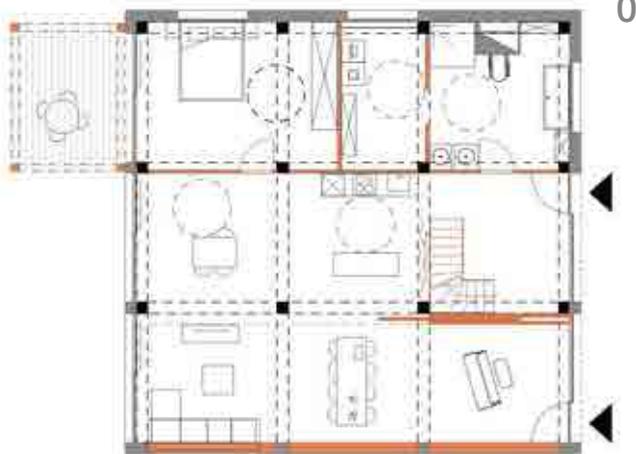
MATERIAL BANK

Walls can be easily removed and reconfigured to meet changing needs. The removed walls are collected in a communal material bank and reused by other residents on the site. This process promotes sustainability by reducing waste and minimizing the need for new materials. The continuous circulation of building elements ensures that resources are efficiently utilized, contributing to an eco-friendly and resource-conscious community.

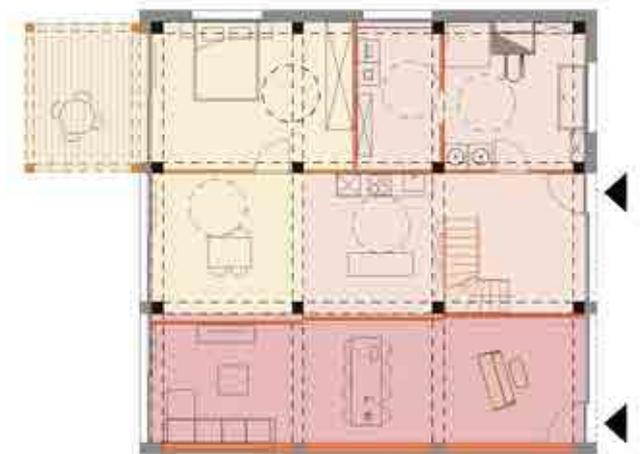


When children grow up and go off to study, a studio can be added on top of the existing unit. This provides a private space for a student, complete with a bathroom and kitchen area. It remains connected to the main house but has a separate entrance on the first floor.

In addition to indoor space, each "home within a home" is allocated its own outdoor area. This is facilitated by a flexible exoskeleton attached to the housing units



ONE OPEN LIVING SPACE



SPLIT LIVING SPACE

● Grandparents ● Family ● Both



+1

For aging grandparents needing care, a multigenerational unit can be created, offering privacy for everyone when needed. The first floor is made completely wheelchair accessible. A large living and dining area can be separated from the grandparents' living space with sliding walls and a curtain divides the entrance from the living areas. The sliding walls allow for the creation of two distinct living spaces or can be opened up to form one large living area.

In addition to indoor space, each "home within a home" is allocated its own outdoor area. This is facilitated by a flexible exoskeleton attached to the housing units.

2m





## ADAPTING TO THE SEASONS

The adaptable layout of the units allows the interior to change with the sun's position throughout the seasons. This design ensures that the spaces remain comfortable and energy-efficient year-round, seamlessly adjusting to seasonal variations and changing sunlight.

### Summer Configuration

In the summer, the unit's living space can transform into an expansive open area, where spaces serve multiple functions, allowing sunlight to fill the space. The suggested interior layout shown above demonstrates this versatility.

During the morning, the east side of the unit is perfect for capturing the early sunlight, making it an ideal spot for a small breakfast table. As the day progresses, the southern section of the unit can become too hot, making it suitable for an atelier space, which is often used for evening workshops. On cooler days, this area can also function as a dining space. As the day progresses and the sun moves away from its highest point, the western part of the unit becomes the focus. The living area with couch, located in the west, benefits from the evening sun, making it an excellent space for relaxing in the afternoon. The dining area is also strategically placed here to enjoy the last rays of sunlight in the evening.

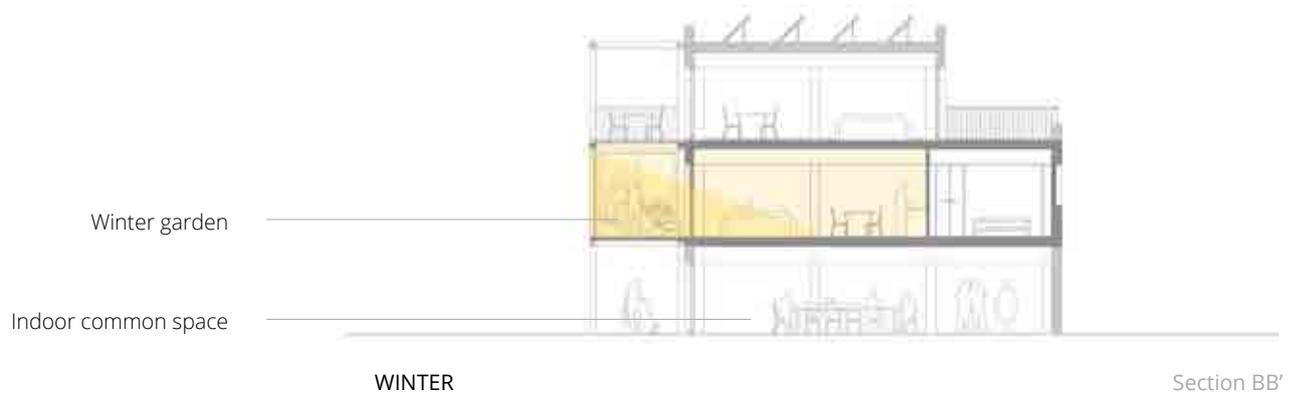
### Winter Configuration

In the winter, with shorter and colder days, the layout shifts to maximize warmth. An enclosed colder area can be created by closing the moving panels. This allows the entry space and the atelier area, which can be kept cooler, to be separated from the main living area. The living area then moves to the south and west parts of the unit, as these receive more sunlight and are warmer during the winter months.

**Figure 108**  
Unit configuration in summer and winter.  
Source Gaisma, May 2024

2,5m 

-  Enclosed colder area
-  Comfortable temperature
-  Afternoon thermal peak



The cross-sections illustrate the light entering from the south at noon in both summer and winter, highlighting the multi-functional role of the exoskeleton. With a south-west orientation in most units, the exoskeleton offers a private terrace. In the summer, it acts as an additional outdoor space and its depth prevents direct sunlight from entering the living areas, preventing overheating. In winter, sunlight enters at a lower angle, allowing the living spaces inside the unit to still benefit from the thermal advantages. The exoskeleton can be used as a winter garden, acting as a thermal buffer to improve energy performance.

# STACKING AND CONNECTING UNITS

## BRIDGES BETWEEN GENERATIONS

When these various types of residential units are combined by connecting and stacking them, an engaging living environment is created with a diverse mix of social groups and classes.

-  **Communal unit**  
Each cluster has at least one communal unit that can be used for communal activities or for washing and drying clothes.
-  **Single-family unit (140 m<sup>2</sup>)**  
This apartment can be equipped with a master bedroom and at least two separate rooms for young children. It features a large open living and dining area that can be flexibly and adaptably arranged.
-  **Intergenerational unit (236 m<sup>2</sup>) + wheelchair accessible unit**  
The ground floor unit is wheelchair accessible and can be part of an intergenerational living arrangement, with the upstairs unit providing sleeping and living space for the younger generation. There is also a larger living and dining area on the ground floor for the whole family, which can be further divided if required.
-  **Studio (48 m<sup>2</sup>)**  
This compact unit is spacious enough to serve as a first home for a single person or young couple, with plenty of living space and private outdoor space.
-  **Life-work family unit (140 m<sup>2</sup>) + small studio (32 m<sup>2</sup>)**  
This unit is spacious enough to accommodate a family, with the option to divide part of the living area into a study for the residents. The small studio upstairs, accessed via an internal staircase, can be used as a first home for one of the grown-up children.
-  **Apartment (64 m<sup>2</sup>)**  
This apartment is spacious enough for a couple with a child. It provides a suitable living space until the child moves out.
-  **Studio (32 m<sup>2</sup>)**  
This studio is for one person.





## AN ARCHITECTURE FOR ENCOUNTER

The first step in creating new ways of living together has already been taken: stacking and connecting residential units for different social groups, allowing them to expand or contract with their life stages.

To facilitate effective interaction between residents, communal spaces are introduced in the form of roof terraces, platforms and courtyard gardens.

The courtyard gardens serve as central areas within the clusters where different types of vegetation can thrive. Residents can create small vegetable gardens or gather for picnics in these spaces.

A staircase leads from the courtyard to the platform, which provides access to the various residential units on the first floor. This large space can be used for a variety of activities, giving children a place to play and neighbours a place to eat together. The communal roof terrace is more intimate and can be used for communal meals and barbecues in good weather.

In addition to the communal areas, all units have private outdoor spaces in the form of roof terraces or spaces created within the exoskeleton.

The platform creates a large covered area on the ground floor that functions as a threshold space that can be used even in bad weather. It mediates between the different residential units, commercial spaces and communal areas on the ground floor.

● Communal spaces

● Private terraces

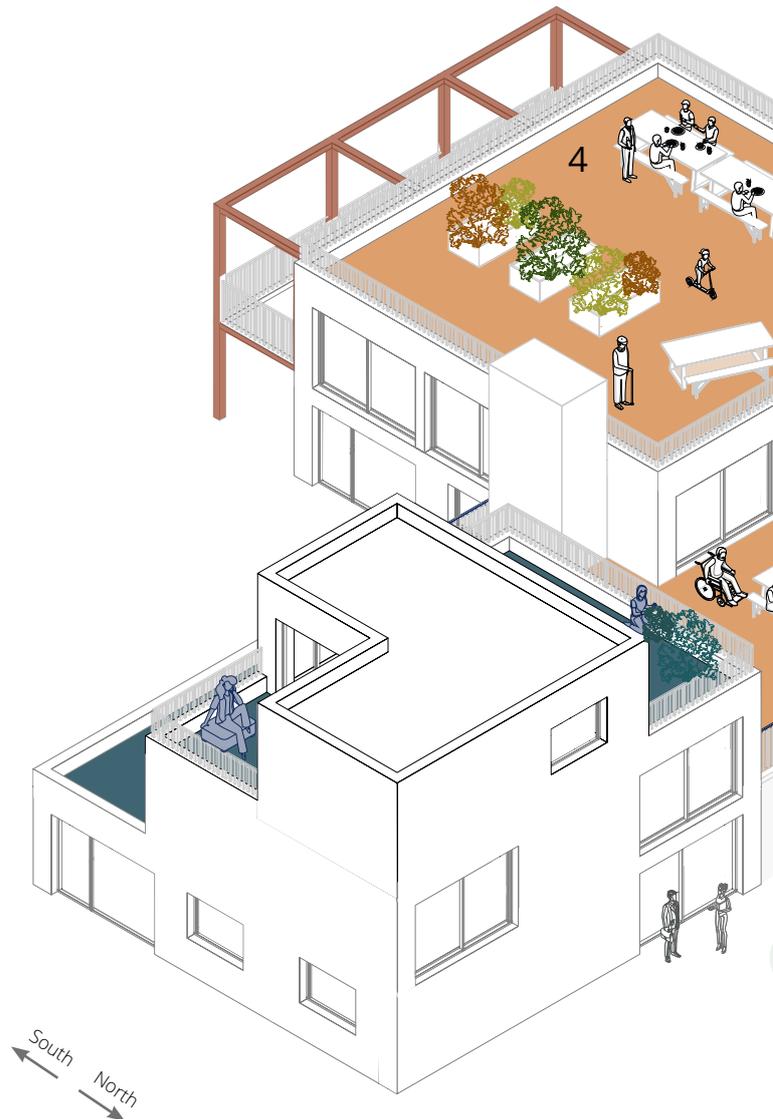
● Exoskeleton

1 Courtyard garden

2 Staircase

3 Platform

4 Roof terrace





## MIXED-USE OF THE GROUND FLOOR

### Private dwellings

The gray units on the plan represent the residential units within the various clusters. Thanks to the modular system, these units can vary in size and layout, creating a vibrant and diverse mix of living spaces.

### Economic functions

Each cluster includes a range of live-work units to boost the vitality of the neighbourhood and the local economy of Lint. These units range from office space for young entrepreneurs to cafes and bakeries that can provide food and drink for cluster residents.

### Communal units

Each cluster includes at least one common unit accessible to all residents of that cluster. The common unit is designed to be wheelchair accessible. In addition to a large kitchen and dining area, this unit includes various laundry facilities and storage space. This approach allows for the technical facilities in the residential units themselves to be minimized, optimizing the living space.

#### 1 Exoskeletons

are added to the west and south sides of the units to create high-quality private outdoor spaces.

#### 2 Threshold space

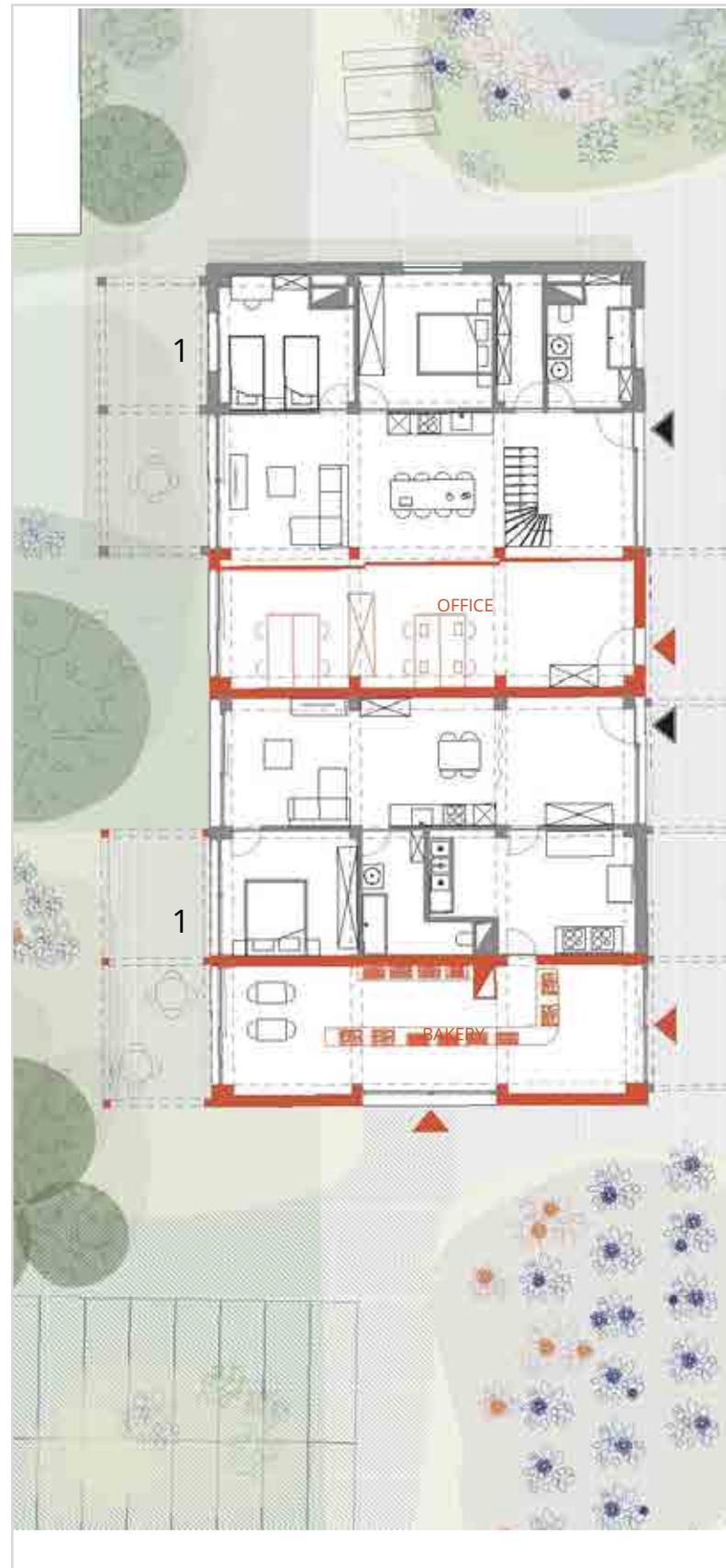
The same modular grid is extended to the courtyard between the various residential blocks, creating a covered threshold space between the economic, common, and private units, and forming the circulation platform on the first floor.

#### 3 Wheelchair accessible unit



Level +0

2m





## COURTYARD PLATFORM AS MEDIATOR

The first floor platform also serves a mediating function, facilitating interaction between various units. The entrances to the units are situated in narrower corridors or under smaller platforms, thus creating a **gradient of intimacy** that transitions from the common area to private spaces.

## GRADIENTS OF PERMEABILITY

Reflecting on the analysis of the permeability of the research areas in Lint, the design of the clusters and the surrounding environment is oriented towards the minimisation of impermeability to the greatest extent possible.

The legend below illustrates the layout of the pathways and vegetation. Where feasible, roofs are equipped with green roofs, which serve to retain and slowly discharge rainwater.



Good permeability  
High grasses



Good permeability  
Low grasses



Medium permeability  
Tree bark

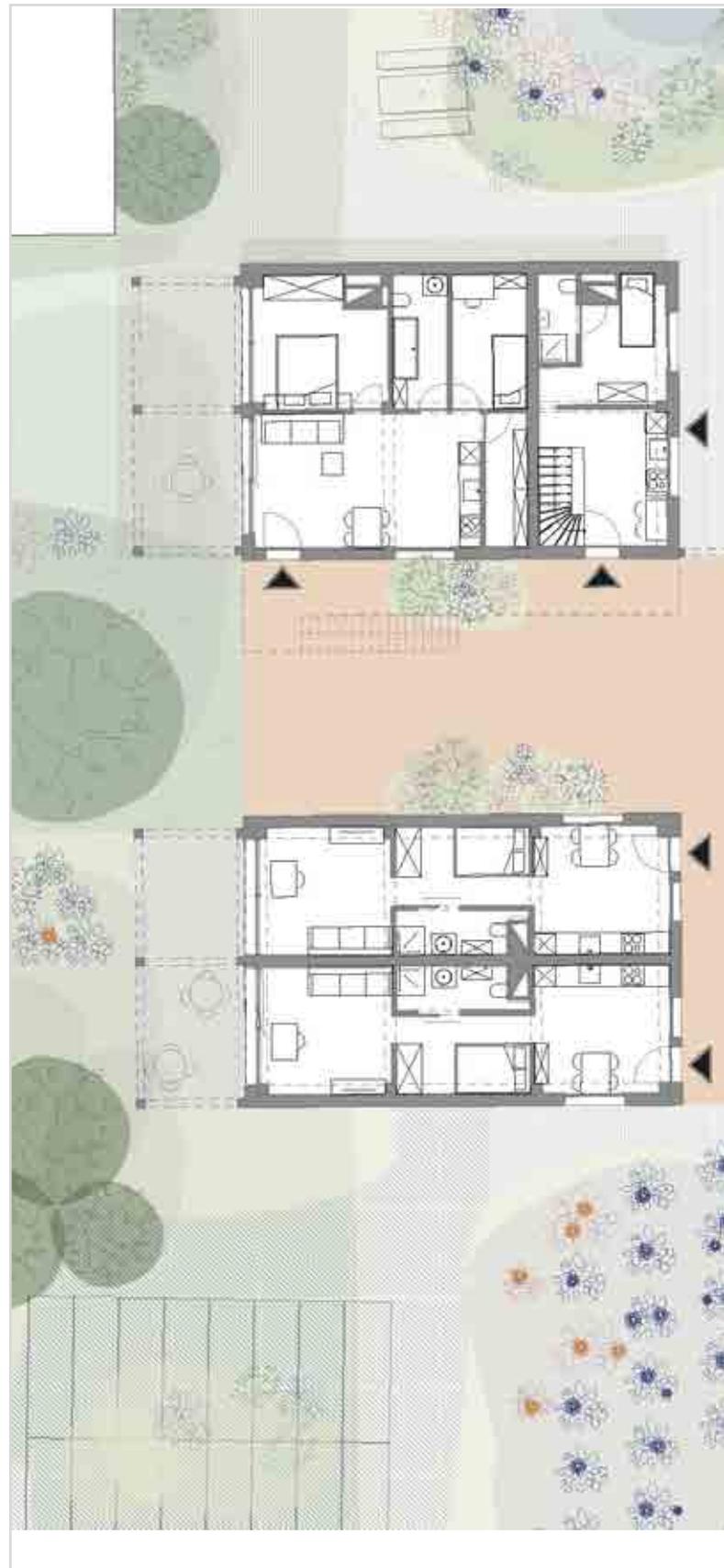


Low permeability  
Gravel path



Level +1

2m





# CLUSTER WITHIN A CLUSTER

## GRADIENTS OF PUBLICNESS



Public - Common

- 1 Public alleys**  
run alongside the clusters and lead to the communal areas.
- 2 Housing clusters**  
are arranged around communal courtyards.
- 3 Urban farming**  
Community gardens allow residents to grow their own vegetables and fruit.
- 4 Wadi's**  
manage water drainage on a smaller scale within clusters.
- 5 Playground**  
Each cluster has a play area and equipment for the youngest residents.
- 6 Renewable energy**  
Photovoltaic panels will be installed on the roofs of the highest units to provide the clusters with renewable energy.

Collage



The roof plan illustrates a potential cluster development within a common room surrounded by forest corridors extending from the rewilding zone. Alongside these trees, public alleys run from the main street, allowing villagers to reach the public room without passing through a cluster.

In the rewilding area, the water management system is designed to handle future floods, while smaller wadi areas and infiltration ponds are implemented within the common rooms to manage water at a local level. Combined with the emphasis on unpaved surfaces and high permeability, the design aims to return as much water as possible to the ground.

In the transitional space between the public and common areas, larger meeting places such as playgrounds can be established, and communal urban gardens can be created, thereby enabling the residents of the entire cluster to engage in urban farming.



Roofplan



7,5m



## MATERIALITY

The decision was made to use cross-laminated timber (CLT) for the construction of the various residential units. There are several compelling reasons for this choice. Firstly, as wood, CLT is significantly more sustainable than other materials such as concrete or brick. This means that the overall carbon footprint of the project will be significantly lower, in line with the project's environmental objectives.

CLT's strength and versatility play a crucial role in the modularity and circularity of the design. Its structural integrity allows the creation of modular units that can be easily assembled, disassembled and reconfigured. This modularity is enhanced by the combination of traditional craft techniques with modern construction methods, resulting in hybrid components that have a longer lifespan and can better withstand changes when units need to be expanded or reduced. This adaptability is essential in creating a resilient and sustainable housing solution.

In addition to its practical benefits, timber offers significant aesthetic value. The natural appearance of CLT can be fully appreciated within the cluster spaces, which blend harmoniously with the surrounding woodland corridors. This integration of natural materials helps to create a serene and visually appealing environment for residents.

The design also allows residents to personalise these spaces according to their preferences and needs. The exoskeleton can be customised with various elements, such as textile screens that can be flexibly rolled up or down to control sunlight and privacy. Residents can also convert these spaces into conservatories or verandas, or use sliding wooden panels to completely enclose the spaces, creating additional living areas that can be used throughout the year.

This approach not only enhances the functionality and comfort of the units, but also allows residents to actively participate in the design of their living environment. By providing the flexibility to adapt and personalise spaces, the design fosters a sense of ownership and community, essential components of a sustainable and vibrant neighbourhood.





# FROM ISOLATION TO INTEGRATION

EXISTING: 2024



Collage  
↓

## EMBRACING THE EXISTING BUILDINGS

The roof plan shown earlier visualises the whole project. However, it is important to recognise that in reality this would have to be carried out cluster by cluster over a number of years.

The design process was challenged by the current periphery development of the site, consisting of detached and terraced houses, each with its own enclosed garden, sheds and garage boxes.

In the first phase of implementation, the clusters are positioned to approach the existing buildings and associated structures. The functioning of the clusters around the communal courtyards with gardens and wadi areas remains consistent with the earlier explanation during this phase.

Terraced houses



## PHASE 2: 2050



Collage

### INTEGRATING AND ENHANCING THE EXISTING BOUNDARY

However, in a later phase of the project, when a generational change occurs among the residents of the peripheral buildings, it is proposed to radically remove the fences and outbuildings and integrate the houses into the project.

The removal of private gardens is a significant decision, especially for Flemish residents. However, as designers we believe that this will not affect the residents' quality of life. On the contrary, the addition of the exoskeleton still provides residents with access to private outdoor spaces.

By opening the bridge to the clusters, more open space is freed up, allowing for the expansion of new units and the creation of high quality interspace. Elements such as urban farming, playgrounds and seating areas can flourish.

The ground floor of existing terraced houses can be functionally transformed to create space for new local economies and small and medium-sized enterprises (SMEs). A beekeeper and his bees can find space to thrive and sell fresh honey in a shop. A local organic market can sell vegetables, fruit and fresh produce from the community gardens, and a restaurant can use these products to serve local dishes.



5m

EXISTING: 2024



PHASE 2: 2050



## QUESTIONING THE FUTURE OF LINT



## A SUSTAINABLE ALTERNATIVE FOR LINT

The concept of sustainability can be broadly described as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations Brundtland Commission, 1987). It goes beyond simply installing photovoltaic panels and using renewable energy. The three pillars include environmental, social and economic aspects, often referred to as Planet, People and Profit.

Our design proposal for the Zevenhuizen site in Lint, Belgium represents a comprehensive approach to sustainable urban development that integrates these three core components.

### PLANET

Inspired by the Mekong Delta, our design embraces the concept of living with water, which is essential for managing flood risks and increasing resilience to global warming. The site is designed to work with future anticipated flooding and the urban heat island effect, incorporating green infrastructure such as water buffer ponds, wadi areas for rainwater infiltration and extensive vegetation. Solar panels installed on the roofs of some units provide renewable energy, reducing the carbon footprint and promoting energy independence. The use of cross-laminated timber (CLT) as the primary material for modular units and circular components provides an alternative to other high footprint construction materials such as concrete. The transformation of private gardens and sheds into high quality communal gardens with play areas and urban agriculture not only enhances biodiversity but also creates a sustainable urban ecosystem.

### PEOPLE

Our commons integration approach, learned from the Mekong Delta, focuses on creating common spaces that enhance community interaction and social cohesion by arranging units in clusters that create gradients of intimacy. The communal gardens and playgrounds provide residents with opportunities for social engagement, recreation and community activities. Urban farming initiatives allow residents to participate in growing their own food, fostering a sense of community and self-reliance. Intergenerational living arrangements and diverse housing options ensure that people of all ages and backgrounds can live together and support each other, strengthening the social fabric.

### PROFIT

The design incorporates a diverse mix of housing units to suit different demographic groups, from small and affordable units for individuals and couples to larger units suitable for families and intergenerational living. This inclusivity ensures that the housing market remains accessible and adaptable to the changing needs of the population. By providing work/life units and space for small and medium sized enterprises (SMEs) on the ground floor of the existing terraced houses, we are encouraging local economic growth and resilience. These SMEs, which could include craft workshops, restaurants, cafes and shops selling products from our urban farming initiatives, create employment opportunities and stimulate the local economy. Profit also goes beyond economics, since the proposal would profit the health and quality of life of humans and provide havens for diverse biodiversity to thrive.

### INTEGRATING LESSONS FROM LINT

Our analysis of Lint informed several critical aspects of our design, particularly the need to address urban sprawl and harmoniously integrate existing built boundaries. By re-imagining new development as a vibrant community hub with shared gardens and spaces for SMEs, we not only preserve the character of the area, but also enhance its functionality and sustainability. This integration of new nature and vegetation with urban agriculture and community spaces creates a seamless blend between the built environment and natural ecosystems, promoting a higher quality of life for residents.

◀ **Figure 109**  
Proposed design for  
the Zevenhuizen site.



100m

## A FUTURE VISION FOR LINT

The creation of urban *forest rooms* in Zevenhuizen and the future vision for Lint demonstrate a shift towards a more symbiotic relationship between human settlements and natural ecosystems. By taking inspiration from the existing geometries of the Papendonck forest and the rows of poplars on the site, we have created a landscape where biodiversity thrives and new ecosystems can flourish undisturbed. This framework of urban tree corridors and forest rooms forms a resilient infrastructure that supports community clusters, fostering a new form of urbanism in harmony with nature.

However, the ongoing development in Lint reveals a tension between this progressive vision and current city policies that still view green spaces as residual space for human use. This highlights a critical challenge: the need to shift perceptions and policies to recognise the intrinsic value of open spaces, not just as resources to be consumed, but as vital components of a sustainable urban ecosystem.

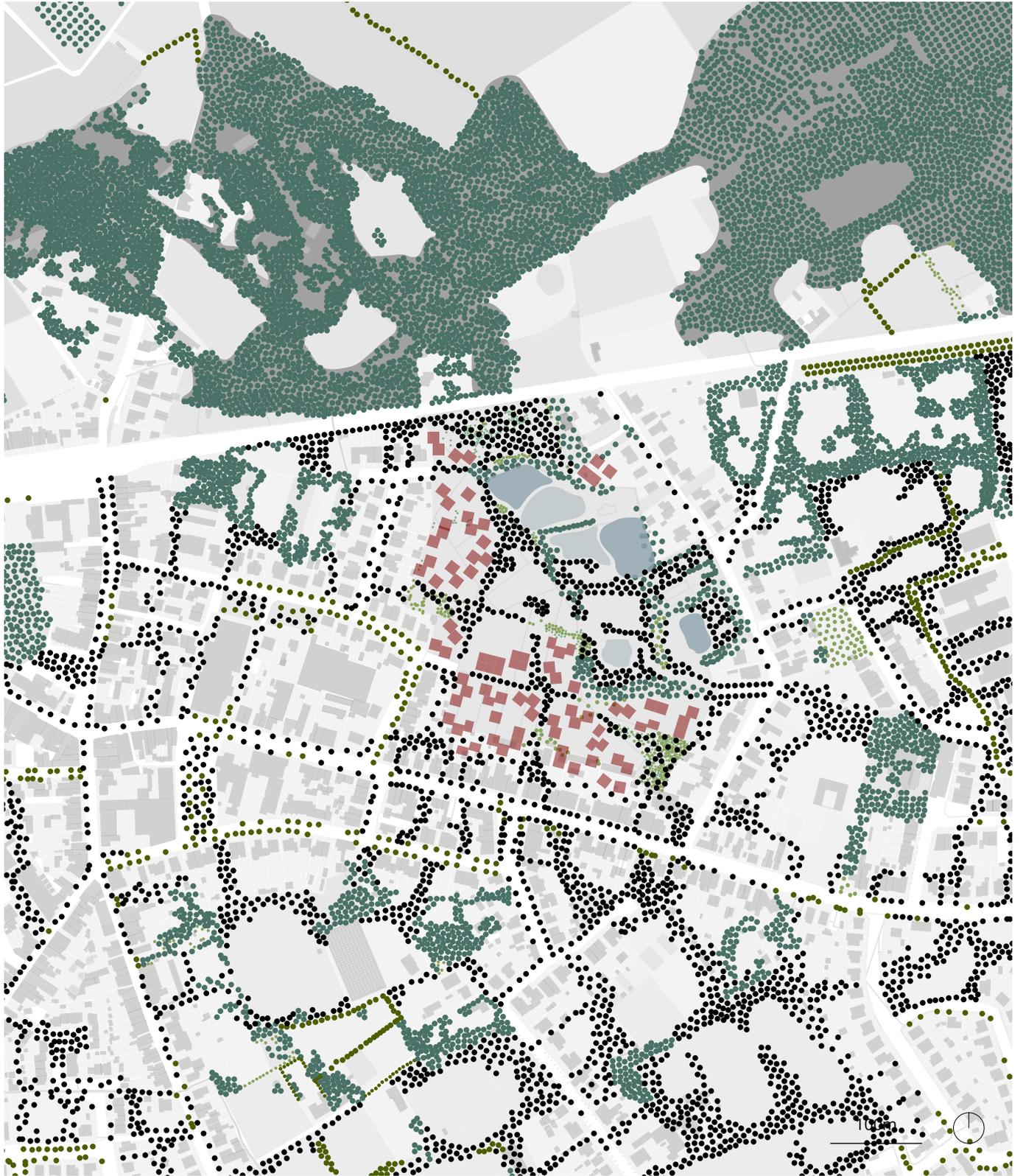
While the urban tree corridors in our design currently meet paved roads, this need not be seen as an end point. The ample width of these streets and their car parks can adapt to future shifts in mobility, providing more space for both slow-moving traffic and more nature. The paving and planting of street trees will provide connections with the *tentacles* on the Zevenhuizen site, allowing growth to spread throughout the village. The concept of *rooms* can spread like a virus, embedding a new landscape urbanism, agriculture and recreation in harmony with nature.

It is no longer humans but nature that takes precedence in the open spaces, determining where humans can settle and coexist with the natural environment and, importantly, where *not*.

**Figure 110** ►  
Future vision for Lint.

100m

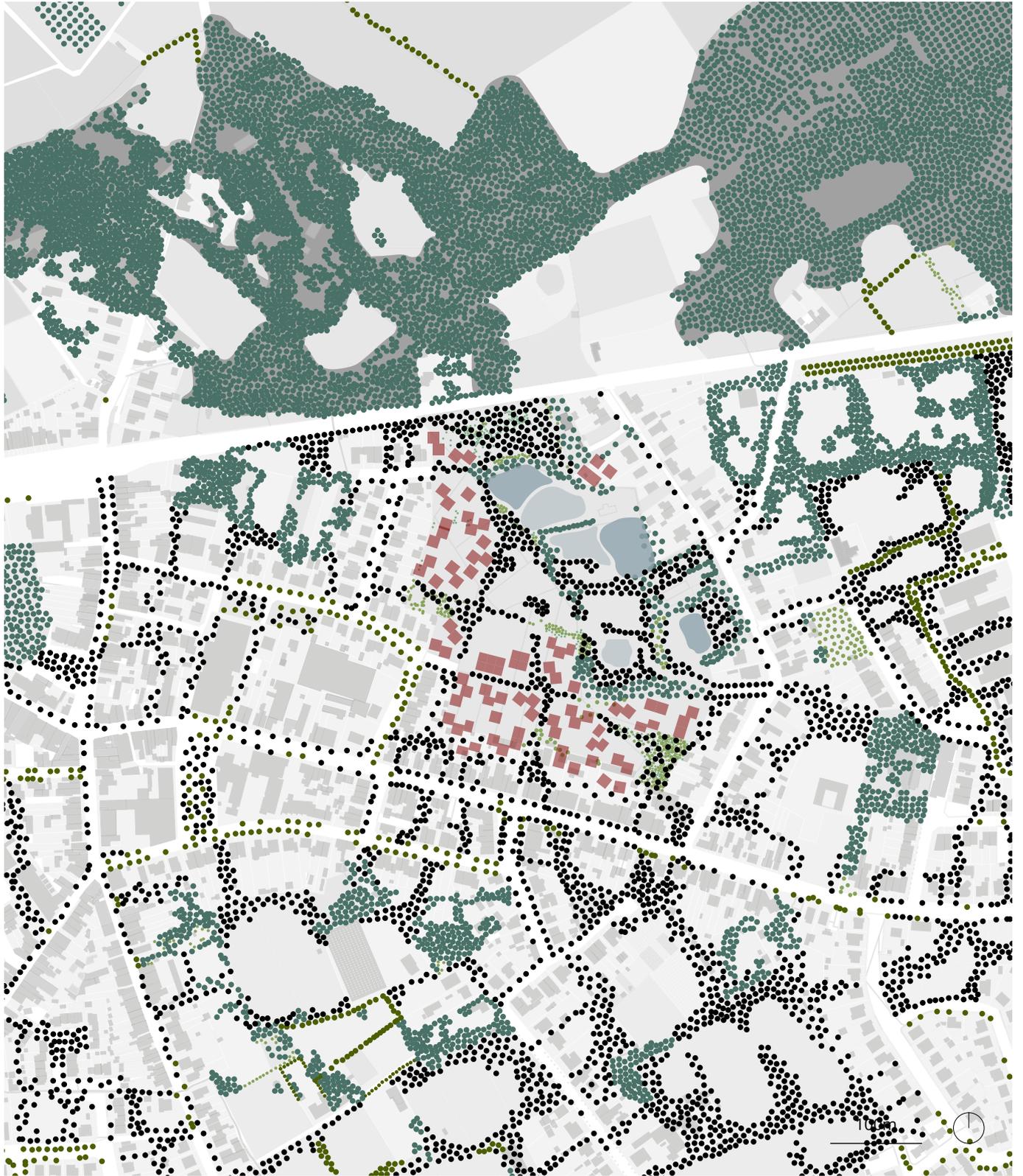




# PLANNED FUTURE FOR LINT



# ALTERNATIVE FUTURE FOR LINT





# ***CONCLUSION***

In this thesis fieldwork, exploration and analysis took place in the Mekong Delta in Cambodia and Vietnam, focusing on studying vernacular tissues, where local communities are intertwined with the landscape. Through this study, numerous key insights emerged, later applied to a design project in Flanders. These insights encompassed various aspects, including adaptability and flexibility, materiality, the role of commons and city-makers, living with seasons, and adapting to the consequences of global warming.

While cultural practices and local adaptations are deeply rooted in their specific contexts and are thus not directly transferable, they do offer valuable insights. These insights, however, can be interpreted and adjusted to suit the distinctive landscapes, socio-cultural dimensions, and climates of other regions.

In applying these lessons to Flanders, it was recognised that they needed to be adapted to the local context. This approach made it possible to develop solutions that were sensitive to the specific needs and characteristics of the region. The opportunity was taken to look into the future of Lint and to propose a design that promotes sustainability in its three facets: environmental, social and economic. As a result, the Zevenhuizen case has been designed as a powerful tool to adapt to the effects of global warming on a village scale and can serve as a pilot project and starting point for further expansion in the rest of the village.

We hope that this thesis demonstrated that innovative and contextually appropriate design can arise from understanding and reinterpreting key facets of vernacular practices from diverse cultures. As we face the existential crisis of global warming, there is a need for innovation, but this innovation must go beyond the technological. It is also about learning from Indigenous techniques, adapting them to local contexts and creating powerful solutions where high and low tech elements are integrated in a symbiotic way.

The experiences encountered in Vietnam and Cambodia has changed our approach to design and reshaped us as architects. Cultures can learn from one another and blend in meaningful ways. This journey has broadened our perspective, which moved away from the Western individualistic and homogeneous methods of building. It has opened us up to a more inclusive and adaptable perspective, one that anticipates the constant changes we and our environment are experiencing. Much like the diverse cultures that have been explored—full of dynamics, never static, always unique, and full of valuable lessons—our way of designing has become the same.

**Figure 111**

Landscape sensitive ribbon development in Hong Ngu, Vietnam.  
(De Ferm, October 2023)



**Figure 112**

Road based ribbon development in Lint, Flanders.  
(Dejaegher, September 2023)





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*Bridging Cultures* explores the potential of integrating principles of Mekong Delta vernacular architecture into the Flemish village of *Lint*. Building on the fieldwork of the first booklet, *Gradients in Vernacular Tissues*, the study explores how the adaptive, community-centred practices of the Mekong Delta can address urban and environmental challenges in Western contexts.

The core research revolves around adapting the principles of gradients - wetness, commons and urbanism - from the Mekong Delta to inform village development in Flanders, Belgium. Western urban development often struggles to create sustainable, resilient communities in the midst of rapid urbanisation. The rigid separation of spaces in Western planning contrasts with the seamless integration found in the Mekong Delta, where public and private spheres overlap, fostering community resilience and efficient resource use.

The analysis identifies key concepts: *Gradients of Wetness* challenge static perceptions of land-water and promote fluid, dynamic landscapes. *Gradients of Commons* highlight the importance of communal spaces that blur the boundaries between the public and private spheres and foster social networks. *Gradients of Urbanism* advocate a balanced approach to urban planning that preserves cultural heritage while meeting modern needs.

*Bridging Cultures* identifies several innovations from the Mekong Delta, such as flexible stilt houses, modular tube houses and intergenerational housing. These practices, deeply embedded in local culture, offer valuable lessons for Western contexts. For example, adaptability in housing and the use of locally sourced, lightweight materials can enhance resilience and sustainability in Flemish villages.

The design proposal for *Lint* integrates these lessons and aims to reverse the trend of unsustainable urban sprawl. By promoting shared living and communal spaces, the proposal aims to improve the quality of life and foster vibrant, connected communities. The controversy surrounding the *Zevenhuizen* project in *Lint* highlights the need for a thoughtful, community-based approach to development.

*Bridging Cultures* shows that principles from the Mekong Delta can inspire a paradigm shift in Flemish village development. By embracing communal living and adaptive design, it is possible to create resilient, sustainable urban environments that respect local traditions while addressing contemporary challenges.





# ***BRIDGING CULTURES***

## ***APPLYING MEKONG DELTA STRATEGIES IN FLANDERS***

**A CASE STUDY OF LINT, BELGIUM**

# ***BRIDGING CULTURES***

## ***APPLYING MEKONG DELTA STRATEGIES IN FLANDERS***

**A CASE STUDY OF LINT, BELGIUM**

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# ***BRIDGING CULTURES***

## ***APPLYING MEKONG DELTA STRATEGIES IN FLANDERS***

**A CASE STUDY OF LINT, BELGIUM**

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Thesis submitted to obtain the degree of  
Master of Engineering Science: Architecture

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Academic year 2023-2024

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# ABSTRACT

*Bridging Cultures* explores the potential of integrating principles of Mekong Delta vernacular architecture into the Flemish village of *Lint*. Building on the fieldwork of the first booklet, *Gradients in Vernacular Tissues*, the study explores how the adaptive, community-centred practices of the Mekong Delta can address urban and environmental challenges in Western contexts.

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The design proposal for *Lint* integrates these lessons and aims to reverse the trend of unsustainable urban sprawl. By promoting shared living and communal spaces, the proposal aims to improve the quality of life and foster vibrant, connected communities. The controversy surrounding the *Zevenhuizen* project in *Lint* highlights the need for a thoughtful, community-based approach to development.

*Bridging Cultures* shows that principles from the Mekong Delta can inspire a paradigm shift in Flemish village development. By embracing communal living and adaptive design, it is possible to create resilient, sustainable urban environments that respect local traditions while addressing contemporary challenges.



# TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS</b>	<b>4</b>
<b>ABSTRACT</b>	<b>5</b>
<b>TABLE OF CONTENTS</b>	<b>7</b>
<b>INTRODUCTION</b>	<b>9</b>
<b>RESEARCH QUESTION</b>	<b>11</b>
<b>LEARNING FROM THE MEKONG DELTA</b>	<b>13</b>
<i>STORY OF GRADIENTS</i>	14
<i>TYPOLOGICAL INNOVATION</i>	20
<i>CASE STUDIES</i>	21
<b>DESIGNING IN FLANDERS: WHILE LEARNING FROM THE MEKONG DELTA</b>	<b>69</b>
<i>LINT ANALYSIS</i>	70
<i>EFFECTS OF GLOBAL WARMING</i>	97
<i>A GLIMPSE INTO THE FUTURE OF LINT</i>	104
<b>DESIGNING SUSTAINABLE SOLUTIONS: LINT IN FOCUS</b>	<b>115</b>
<i>DESIGN STRATEGIES</i>	116
<i>FOREST ROOMS</i>	135
<i>PUBLIC ROOMS</i>	141
<i>COMMON ROOMS</i>	145
<i>QUESTIONING THE FUTURE OF LINT</i>	170
<b>CONCLUSION</b>	<b>177</b>
<b>BIBLIOGRAPHY</b>	<b>180</b>



# INTRODUCTION

*Bridging Cultures* is the sequel to the common booklet *Gradients in Vernacular Tissues*. Starting from the Mekong Delta, where fieldwork explored the concept of 'living with gradients', this booklet delves into an exploration of how these perspectives can be adapted to a Flemish context. The unique viewpoints and cultural practices of the communities of the Mekong Delta offer valuable lessons for developing a new way of understanding and intervening in the landscape, one that values the landscape, community feeling, dynamics, anticipation and adaptation.

The booklet begins by categorizing key aspects of vernacular tissues in the Mekong Delta, characterized by the different gradients studied in the common book. It then explores how these insights can be translated to the Western world, particularly Flanders. As global warming, demographic growth, economic crises, and modern planning change the environment in Flanders, much can be learned from the low impact way of living in the Mekong Delta to anticipate these changes.

A site in Lint, Flanders, has been chosen for design research. The design aims to address the changing environments in Flanders and proposes a different approach to urban expansion, land occupation and communal living. The design, for both the near and far future, serves as a counterproposal to an existing project for the site.

This hypothesis posits that the application of these principles will lead to an enhanced understanding of the landscape, improved community dynamics, and a proactive approach to anticipating and adapting to environmental changes. By drawing insights from Cambodia and Vietnam, we aim to create strategies for a more resilient future, informed by the dynamics of the gradients that characterizes the vernacular in the Mekong Delta. The goal is to foster a more nuanced and adaptive understanding of how to navigate and design within fluid, ever-changing environments.



# RESEARCH QUESTION

*How can the principles and practices derived from the study of vernacular tissues and gradients in the Mekong Delta be adapted to inform and enhance village development and urbanism in Western societies like Flanders, Belgium?*

◀ **Figure 1**  
In Kampong Chhnang, Cambodia, the narrow streets become communal gathering places in the afternoon. (Peeters, October 2023)

Urban development in Western societies, particularly in regions like Flanders, Belgium, faces the challenge of creating sustainable, resilient, and socially cohesive communities in the face of rapid urbanization and environmental pressures. Traditional Western urban planning often emphasizes a clear division between dry and wet, private and public, and formal and informal spaces, which can lead to fragmented communities and inefficient use of space.

In contrast, the vernacular tissues of the Mekong Delta in Vietnam and Cambodia offer a rich tapestry of living environments where the gradients of wetness, commons, and urbanism seamlessly integrate to create vibrant, adaptive, and resilient communities. The region exhibits a unique blend of communal and individual spaces, where public and private realms overlap, fostering a strong sense of community and efficient resource use.

The challenge lies in translating these principles from a non-Western context, characterized by different cultural, social, and environmental conditions, to the Western context of Flanders. This translation must address not only the physical design but also the underlying social and cultural practices that support these environments.

◀ **Figure 2**  
No street activity in the wide streets of Lint during the afternoon. (Dejaegher, April 2024)



# ***LEARNING FROM THE MEKONG DELTA***

# STORY OF GRADIENTS

In the previous booklet *Gradients in Vernacular Tissues: Navigating the Mekong Delta*, the concepts of Gradients of Wetness, Gradients of Commons, and Gradients of Urbanism are explored. The booklet examines the interplay between natural processes, human activities, and spatial transformations in the Mekong Delta region through the lens of these gradients.

In *Bridging Cultures: Applying Mekong Delta Strategies in Flanders*, we build upon these foundational concepts, delving deeper into the insights gained from our experiences in the Mekong Delta. This booklet focuses on applying these lessons to new contexts, demonstrating how the principles observed in the Mekong Delta can inform and inspire innovative approaches to landscape management and urban development.

## GRADIENTS OF WETNESS

Gradients of Wetness challenges traditional perceptions of water and land as separate, static entities. Instead of fixed boundaries, it explores the dynamic interplay between land and water, particularly focusing on the Tonle Sap Lake and Trans-Bassac Depression. These regions exemplify how natural features like rivers and lakes are in constant motion, creating varying degrees of wetness. The seasonal flooding and receding waters illustrate that land and water are not opposites, but part of a continuous, fluid system. 'Gradients of Wetness' advocates for a shift in perspective to embrace this fluidity, recognizing the inherent dynamism of natural landscapes.

The unique viewpoint of water-based communities in the regions of the Mekong Delta offers an opportunity to reimagine an approach to landscape management and adaptation to global warming by recognizing water and land not as distinct entities, but as interconnected gradients.

**Figure 3** ►  
Gradients of wetness visible in Hong Ngu during wet season. Stilt and floating houses coexist with the wetland. (Dejaegher, October 2023)





## GRADIENTS OF COMMONS

The chapter *Gradients of Commons* delves into the non-Western context of commons and communal spaces, acting as an intermediary between private and public spheres. In vernacular fabrics, the strictly dual boundary between these latter categories blurs, creating gradients between publicness and intimacy, and community and individuality, resulting in a vibrant living environment.

The chapter emphasizes the importance of communal spaces in sustaining the social fabric of vernacular communities. These spaces form a physical infrastructure where practices of commoning - such as agricultural activities and small street commerce - can flourish as a social network. It demonstrates that these spaces are not merely physical locations, but also essential parts of cultural and social life, continuously adapting to daily rhythms and nurturing communal bonds.

*Gradients of Commons* advocates for a paradigm shift to embrace this blurring of boundaries, highlighting the dynamic and integrated nature of these communal spaces. It warns readers that these vernacular commons are increasingly under threat from growing Western influences, which tend to impose rigid private-public distinctions that can disrupt the traditional communal lifestyle.

**Figure 4** ►  
The street functions as a common in Hong Ngu.  
(Dejaegher, September 2023)





## GRADIENTS OF URBANISM

*Gradients of Urbanism* highlights the richly diverse urban fabric of the regions in the Mekong Delta, characterized by vernacular housing, French colonial buildings, and modern developments. This variety reflects the region's history and its adaptation to both cultural influences and environmental conditions.

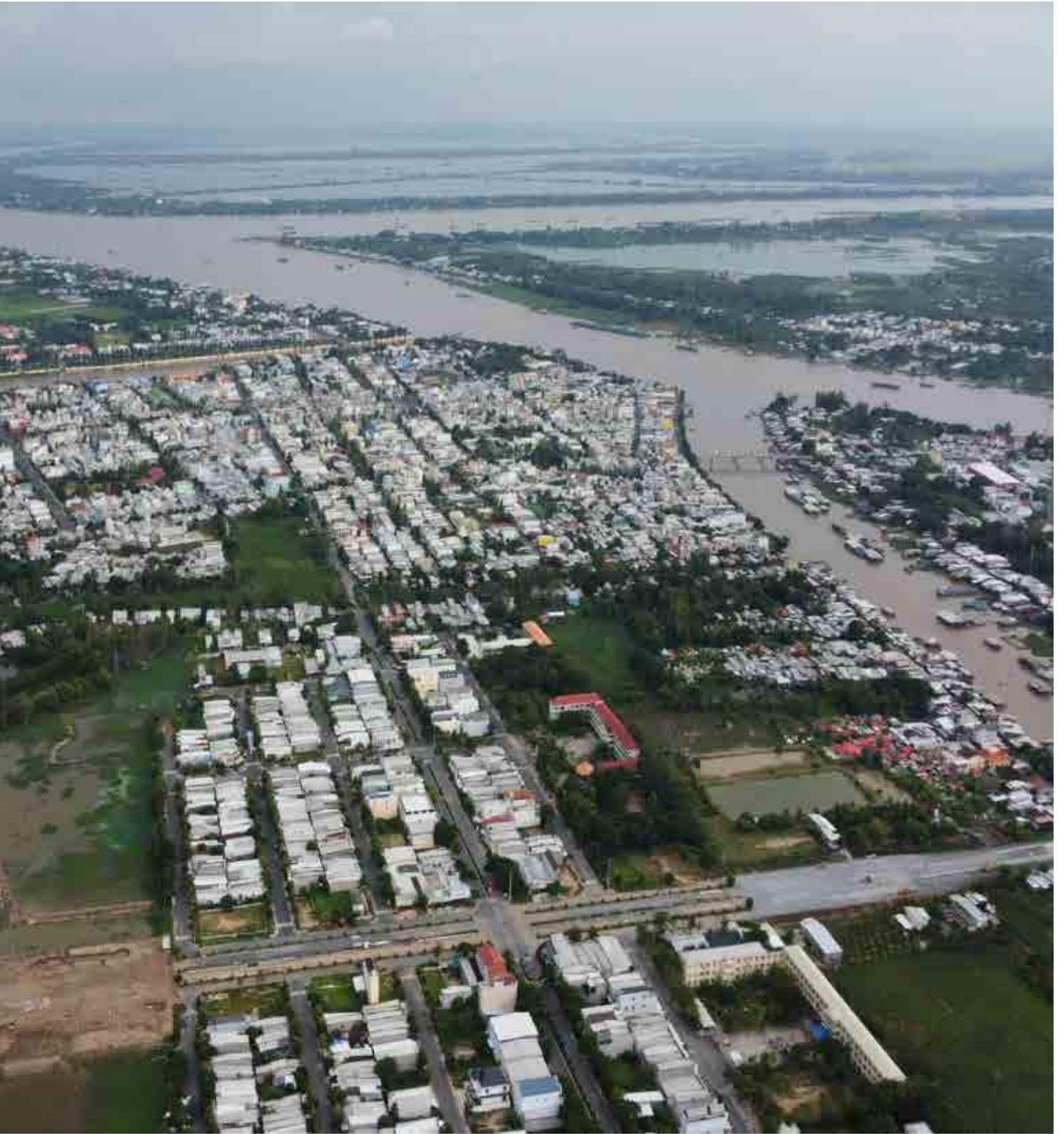
This chapter discusses ongoing transformations, such as land filling and urban development projects, which aim to modernize the region while balancing environmental protection and economic growth. However, this push for modernization introduces a tension between traditional, adaptive urban forms and the pressures of globalization and modernization. Homogeneous, economically driven development strategies impose the unique vernacular character of the urban landscape.

The Mekong Delta's urban fabric is thus a patchwork of old and new, local and foreign, which must navigate the delicate balance between preserving its distinctive cultural heritage and embracing the demands of modern development.

*Gradients of Urbanism* highlights the need to rethink urban planning. Advocating for a balance between village and urban densities, it calls for creating village-like architecture that retains its unique character. This approach requires a shift in urban development: integrating vernacular buildings with necessary future densification without erasing the past. By learning from the Mekong Delta's mistakes, a sustainable approach can be adopted that respects cultural heritage while meeting contemporary needs.



**Figure 5** ▶  
Gradients of Urbanism visible in Hong Ngu. Land fillings and new development imposes the vernacular landscape. (De Ferm, October 2023)



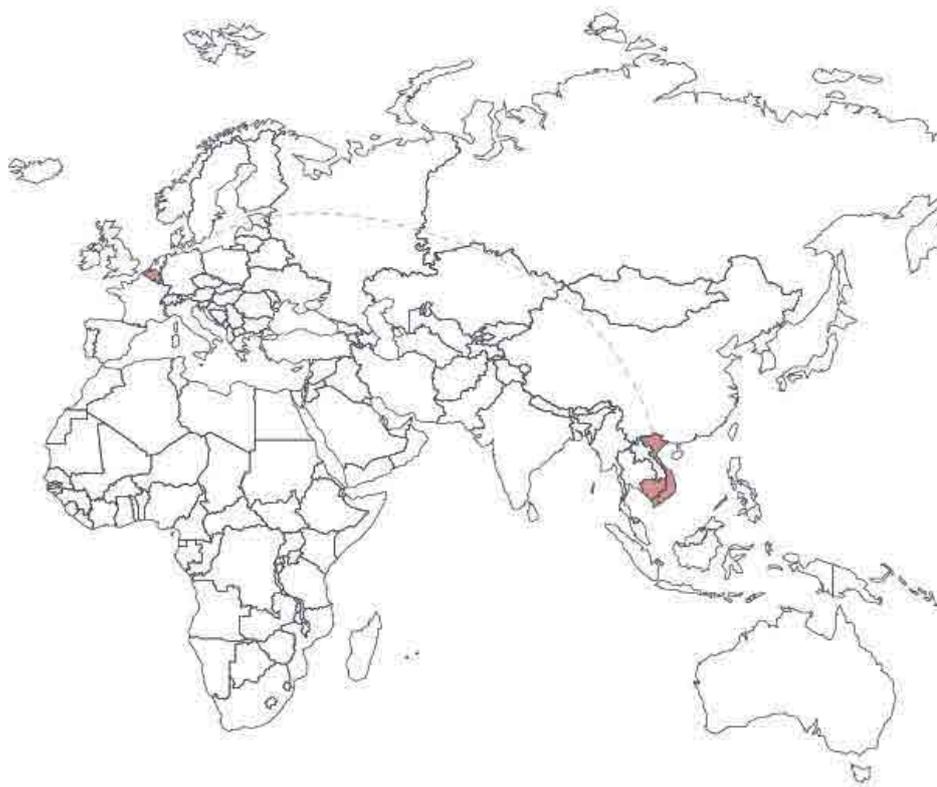
# TYPOLOGICAL INNOVATION

In the Mekong Delta, what is considered innovative in other regions, and therefore in this thesis, is simply part of everyday life for local communities. Several typological innovations derived from these vernacular practices offer valuable insights that can be adapted to the Flemish context.

The local adaptations and cultural practices of the Mekong Delta communities are deeply embedded in their way of living and interacting with their environment. Concepts such as flexibility, adaptability, and communal living are not merely theoretical; they are embedded in the daily lives and built environments of these communities.

For the local communities, these practices are a natural response to their unique challenges and opportunities. However, when viewed from an external perspective, particularly in the context of Western urban planning, the vernacular practices can be seen as innovative solutions to common issues such as climate change, rapid urbanisation, and social cohesion.

The following section will present seven typological innovations derived from the Mekong Delta.



**Figure 6** ►  
Asian centred world map.  
Source: Adobe Stock

## CASE STUDIES

The aim of 'Bridging Cultures' is to translate the key learnings from the fieldwork in the Mekong Delta to the Flemish context of Lint. It is crucial to recognise that this translation cannot be a literal copy-paste, but requires adaptation to the local context, environment, and climate.

Each lesson from the Mekong Delta is accompanied by case studies from the Western architectural context, as well as examples from Japan. These case studies demonstrate how similar principles have been successfully applied in different cultural and climatic settings, providing a rich source of inspiration for the design proposal, and highlighting the importance of adapting sustainable practices to the specific needs and characteristics of each region.

By combining these diverse insights, the design proposal for Lint aims to create a unique, contextually appropriate solution that respects local traditions while incorporating innovative, global strategies for sustainability and community building. This approach ensures that the project is both locally relevant and globally informed, fostering a resilient and inclusive urban environment.



## 1A. ADAPTIBILITY/FLEXIBILITY

The concepts of flexibility and adaptability are deeply woven into the fabric of daily life and are essential to the resilience of vernacular architecture. As documented in the common booklet, these principles are not just architectural choices, but responses to the environmental, social and economic conditions that shape these communities.

Traditional Vietnamese and Cambodian houses are designed with a high degree of flexibility. For instance, houses are frequently constructed on stilts, thereby enabling the versatile utilisation of the space beneath the principal living areas. This may be employed as storage, livestock stables or communal areas, depending upon the season and immediate requirements. This adaptability is of particular significance in regions prone to flooding, where elevated structures provide protection from rising waters.

Furthermore, the interiors of these houses are typically open and multi-purpose, allowing them to be easily reconfigured for different activities throughout the day. The use of movable partitions, folding furniture and lightweight materials facilitates this fluidity, allowing families to adapt their living environments as their needs change.



▲  
**Figure 7**  
Families are able to customize  
their living spaces to meet  
evolving needs.  
(Dejaegher, September 2023)

## 1B. LIVING IN DIMENSIONS

The typical Kinh group housing unit, often referred to as a *tube house* in Vietnam, is four metres wide. These tube houses serve as modular units and can be expanded indefinitely to accommodate growing families, forming clusters. This creates a high-density landscape characterized by clustered configurations.

These narrow structures serve as a backbone of Vietnamese urban landscapes, known for their adaptability and scalability. As families expand, additional floors or rooms can seamlessly integrate into the existing structure, resulting in a layered and dynamic living space. Despite their compact size, tube houses offer remarkable flexibility, enabling various configurations to meet different needs.



**Figure 8**

Tube house extend into the river to accommodate growing families.  
(Dejaegher, September 2023)



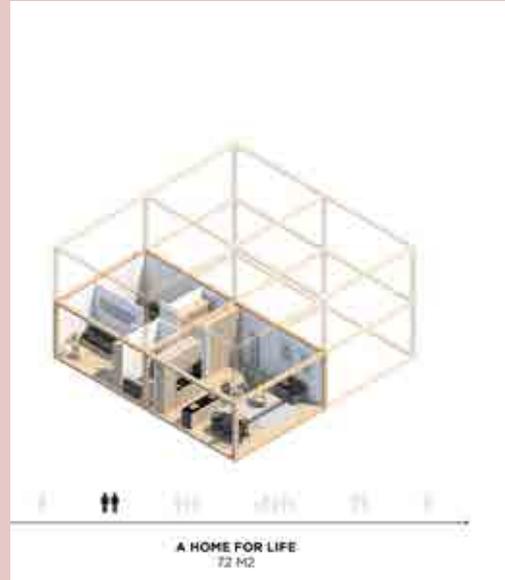
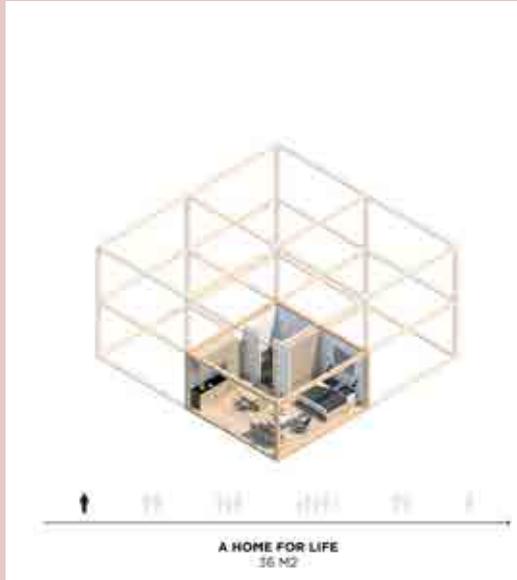
**Figure 9**  
Clusters of floating houses  
arranged in rows, with  
interconnected homes and fish  
farms.  
(Peeters, October 2023)



▲  
**Figure 10**  
The stilt framework facilitates expansion beneath the current dwelling.  
(Peeters, October 2023)

## Urban Village Project - EFFEKT Architects

Launched in 2018 by EFFEKT Architects, the *Urban Village Project* is a visionary new housing model designed to provide affordable and livable homes in cities around the world. It aims to intelligently address contemporary urban challenges such as rapid urbanisation, ageing populations, loneliness and global warming (EFFEKT, 2024c).



## KEY LEARNINGS

### Adaptable homes for a life-time:

The Urban Village Project's modular system consists of a load-bearing timber structure as the basic unit, which can be interlocked and stacked to achieve the desired density and height in different urban environments. The 'skin' elements, such as floor slabs and walls, are also modular in size, allowing for the addition or omission of certain elements. In other words, residents can remain in the same location throughout their lives and adapt their living space as their family situation changes. Additional modules next to, above or below can be purchased and easily connected to increase living space and comfort as required. Conversely, these changes can be easily reverted back to the basic unit.

◀ **Figure 11**  
Different unit combinations in  
Urban Village Project.  
Source: (EFFEKT, 2024b)

## Seijo Townhouses - Kazuyo Sejima & Associates

This collective housing project offers an alternative to the typical developments constructed in the suburbs of Tokyo, which often lack a connection to traditional Japanese homes.

The community comprises 20 compact volumes cleverly interlocked and interconnected above ground through gardens, terraces, and footbridges on upper floors. Maintaining a human scale for the residences and arranging windows in a manner where they never directly face each other, preserves the sense of privacy.



## KEY LEARNINGS

### Creating gradients of intimacy:

The project emphasises the creation of gradients of intimacy through the strategic arrangement of small residential units to form shared courtyards. This innovative design approach prioritises privacy without compromising communal living. By clustering units around shared outdoor spaces, the project fosters a sense of community while maintaining the individuality and privacy of each unit.

A key aspect of this design is the careful placement of windows to ensure that residents can enjoy natural light and views without sacrificing privacy. This clever arrangement allows for visual connections between indoor and outdoor spaces while preventing direct sight lines between neighbouring units, preserving a sense of personal space.

In addition, the inclusion of shared amenities such as communal gardens, roof terraces and common areas further enhances the sense of community and encourages social interaction between residents. These shared spaces exemplify the concept of the commons, serving as resources that are collectively managed and enjoyed by the community.

## Void Space / Hinged Space Housing - Steven Holl

The *Void Space/Hinged Space Housing* project, designed by Steven Holl and completed in Fukuoka, Japan in 1991, is an example of innovative architectural design that harmonises with its environment. The project features *voids* to maximise natural light and communal spaces, alongside adaptable *hinged* living units to meet the evolving needs of residents. The integration of indoor and outdoor spaces enhances the quality of life and reflects traditional Japanese architectural principles (Steven Holl Architects, 2024).



## KEY LEARNINGS

### Multi-use of living area:

A key learning from the *Void Space/Hinged Space Housing* project in Fukuoka, Japan, is the innovative use of hinged panels inspired by traditional Japanese architecture. These panels allow living spaces to be dynamically adapted to different needs throughout the day and night.

During the day, the hinged panels can be opened to create spacious, interconnected areas that enhance natural light and ventilation. At night, they can be closed to provide privacy and create more intimate, functional spaces. This approach not only maximises the flexibility and usability of living spaces, but also reflects the traditional Japanese emphasis on adaptable and multifunctional environments.

This principle of flexible design can be valuable in creating responsive and resilient living spaces in different cultural and climatic contexts.

◀ **Figure 13**  
Visualisation of the hinged panels.  
Source: (Steven Holl Architects,  
2024)

## 2. LIVING WITH THE SEASONS

In the vernacular every day practices in Vietnam and Cambodia, seasonal changes are not merely climatic shifts; they are fundamental elements that shape the way people live and interact with their environment. For instance, the alternating periods of rainfall and drought influence the agricultural cycle, construction techniques and even social rituals. Houses are designed to accommodate these changes, with features such as raised floors and flexible spaces that can adapt to changing conditions.

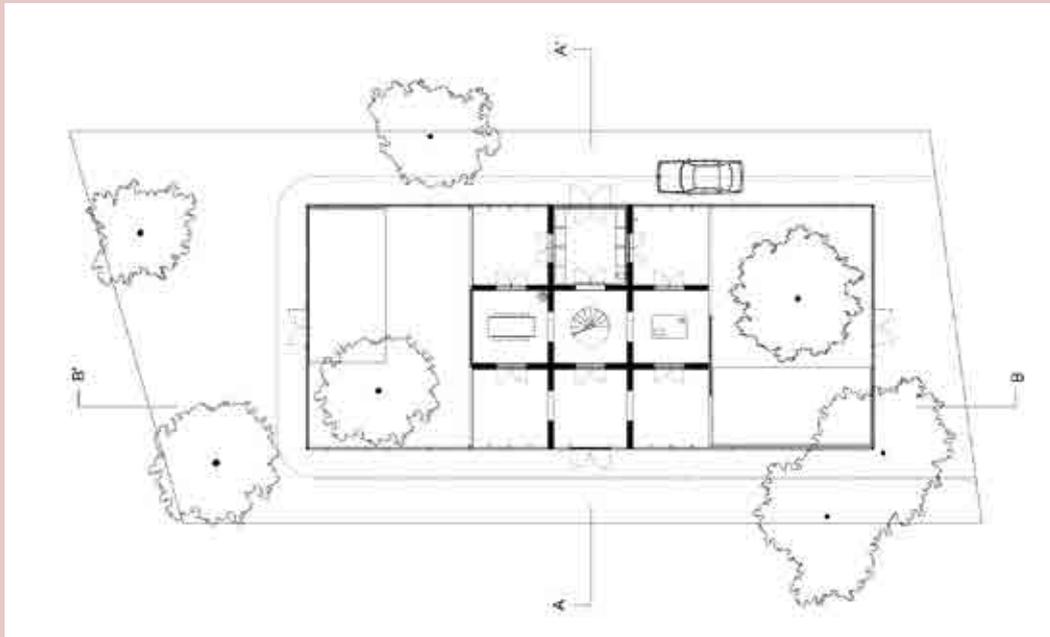
### **Figure 14** ▶

During the dry season, the wooden structure of the house extends the living space, while in the wet season, it becomes fully submerged.  
(Peeters, September 2023)



## Villa Buggenhout - KGDVS

*Villa Buggenhout*, designed by OFFICE Kersten Geers & David Van Severen, is a detached house located near the Flemish village of Buggenhout. The design features an open *outside house* on the ground floor and a closed *inside house* on the first floor. The supporting walls on the ground floor divide the house into nine quadrants, allowing the exterior walls to be open and integrated with the surroundings (*Villa Buggenhout*, n.d.).



## KEY LEARNINGS

### Solid and light structure:

The load-bearing walls divide the interior into nine distinct quadrants, each capable of forming a living space. This structural design allows the exterior walls to be transparent, blending seamlessly with the environment and allowing natural light to flood the interior. The spaces are connected by double doors that can be opened to create a continuous flow throughout the house.

### Flexibility and mobility of the interior:

The furniture is compact and made of lightweight materials, making it easy to move. For example, the kitchen counter is mounted on wheels so that it can be moved between quadrants or even rolled outside. Apart from the central circulation quadrant, no space on the ground floor has a fixed function. This flexibility allows the residents to adapt their living environment to their needs and the changing seasons, taking advantage of the different light conditions throughout the year.

◀ **Figure 15**  
Visualisation of Villa Buggenhout.  
Source: (Villa Buggenhout, n.d.)

### 3. INTERGENERATIONAL LIVING

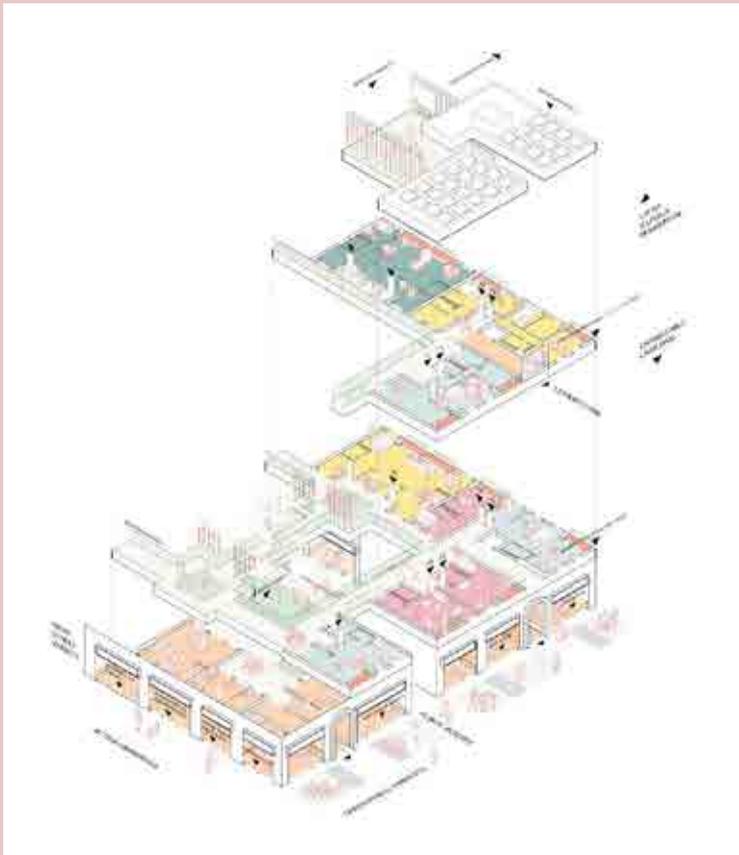
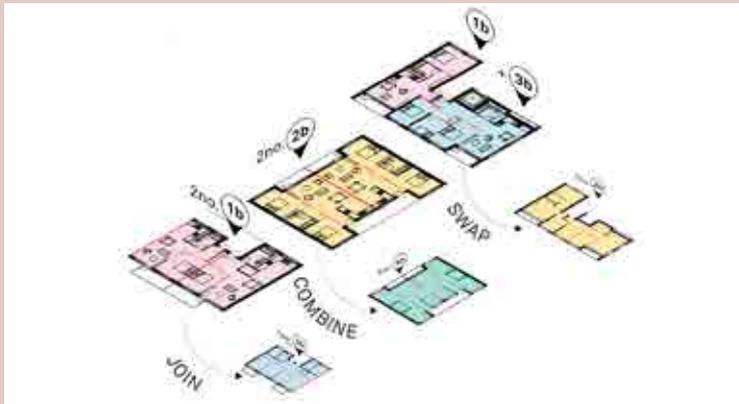
In Vietnam and Cambodia, intergenerational living is a deeply embedded cultural practice that ensures family ties and community cohesion remain strong. As families expand, it is not uncommon for them to continue residing in the same house or in close proximity. Should there be sufficient space, new units are frequently added to the parental home in order to accommodate the children and their families. Alternatively, children may opt to reside in the surrounding area, thereby creating a cluster of family homes. This arrangement serves to maintain the link between parents and children and to ensure that care and support can be provided as needed.



**Figure 16**  
A mother and her three children, living next to each other, work together drying fish as a means of income. (Dejaegher, September 2023)

## Home Beyond Boundaries - Studio Weave & JA Projects - Competition entry Enfield Council: Intergenerational Living - 2020

The *Home Beyond Boundaries* project, focuses on creating intergenerational neighbourhoods. The aim is to reshape physical and social boundaries to foster sustainable and supportive relationships across three scales: the Home, the Block, and the Street. The project envisions a flexible, dynamic housing model that adapts to the changing needs of its residents, promoting intergenerational living and enhancing community ties. This approach ensures a supportive environment where people of different generations can thrive together (J.A Projects, 2020).



## KEY LEARNINGS

### Adaptable Living Spaces:

Units can be swapped, combined, and split according to changing family situations. An open structure allows for flexibility and enables changes to the layout of the units. For example, a staircase can be added to link a vacant retail unit on a lower floor. Additionally, adaptability is enhanced through *small clustering*, where neighbouring units are closely grouped to improve security, familiarity, and co-existence. This way, a room formerly used as a home office can be swapped with a neighbour's room to accommodate a growing family.

### Open Communal Spaces:

Throughout the building block, flexible areas are provided for various activities, fostering interaction among residents of all ages. These communal areas are designed to be adaptable, allowing their use to shift and change according to the residents' needs and preferences.

### Diverse and Inclusive housing typologies:

The adaptability of the units attracts residents of different ages and backgrounds. A varied offering draws a diverse group of people, made possible by the flexibility of the units, which can each have a unique layout. This includes live/work units on the ground floor, promoting a blend of living and working spaces, as well as small unit clusters interspersed with larger clusters, each with a flexible interior.

*“Our homes should evolve with our changing circumstances  
- they must grow, shrink and adapt.”*

(J.A Projects, 2020)

◀ **Figure 17**  
Visualisations of *Home Beyond Boundaries* competition entry.  
Source: (J.A Projects, 2020)

## 4A. VƯỜN NHÀ

*Vườn nhà* can be translated to *family garden*. It is seen as the heart of a household, where family and social life converge. It refers to the small spaces in between and underneath traditional Vietnamese houses, such as shared areas beneath stilt houses or communal courtyards. These spaces serve as vital social hubs where families gather, work, and interact, reinforcing a sense of community. Economically, *Vườn nhà* can be utilized for agriculture and aquaculture, contributing to local sustenance and trade.



▲  
**Figure 18**  
Cluster of houses with family  
gardens interspersed among  
them.  
(Dejaegher, September 2023)

## 4B. HÉM

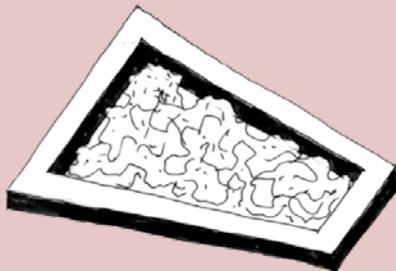
In the context of Vietnamese urbanism, *hém* refers to the complex network of alleys and narrow passageways that weave their way through the urban landscape. Often overlooked in formal urban planning, these spaces are vital to the daily lives of residents. They serve not only as circulation routes, but also as places for social interaction, commerce and community activities. Parts of these public spaces are often mentally annexed by residents, allowing domestic activities to spill out and creating multiple layers of urban life.



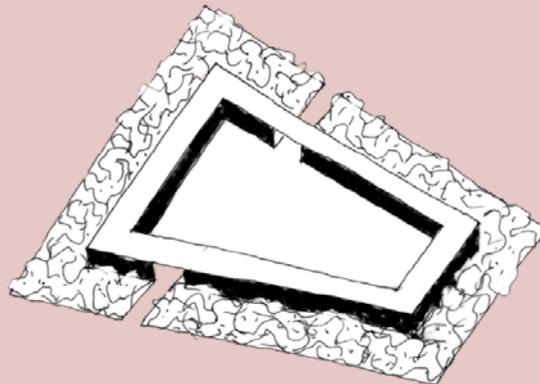
▲  
**Figure 19**  
In addition to being a circulation route, hém also functions as a space for social interaction, commerce, and communal activities. (Peeters, October 2023)

## Düren Housing Complex - AHH - Düren, Germany - 1993-1997

In Düren, central courtyards were designed as communal spaces within perimeter blocks, creating urban intimacy. House entrances are located on the inner side, replacing the traditional street-facing entrances. This inner area serves as a communal space, visible from all sides. Private gardens have been moved to the outer edges, reversing the typical perimeter block design by placing communal spaces in the center and gardens on the exterior (Hertzberger, 2000).



TRADITIONAL BUILDING BLOCK WITH GARDENS IN THE MIDDLE.



PRIVATE GARDENS LOCATED ON THE OUTSIDE, GIVING THE COURTYARD A COMMUNAL FUNCTION.

## KEY LEARNINGS

### Staircases as social hubs:

The communal staircases, which lead to multiple units on the first floor, start from the inner courtyard. This design integrates the staircases into the communal space, transforming them into vibrant meeting points and extensions of common space. As a result, they naturally become gathering spots for residents.

### Reversal of the building block:

In Düren, the housing units are arranged in a perimeter block with openings for access to the inner courtyard. By clustering units around a central area and orienting entrances and circulation paths towards the inner courtyard, a lively and integrated communal space is created. All entrances and circulation paths to the houses are located on the inner side, taking over the traditional functions of streets that usually surround the outside of the block. This layout provides an alternative to conventional street-facing designs, creating a vibrant and communal living environment.

◀ **Figure 20**  
Visualisations of *Düren Housing Complex*.  
Source: (AHH, n.d.)

## Hyllegaard Høje - EFFEKT

The *Hyllegaard* project by EFFEKT architects near Copenhagen revitalises an old farm to improve community life. Organised into six clusters, each with its own characteristics, the masterplan includes central community houses for gatherings. Green corridors connect the residential areas and serve as communal spaces. In addition, a significant area is dedicated to permaculture, supporting local food production and shared use (Hyllegaard Høje, z.d.).



## KEY LEARNINGS

### Clustered living:

The *Hyllegaard Høje* project demonstrates the benefits of clustered housing design in fostering dynamic and close-knit communities. By organising residential units into distinct clusters, each with its own characteristics and community dynamics, the project promotes social interaction, a sense of belonging and collective engagement among residents. This clustering approach creates shared outdoor spaces such as courtyards, green spaces and pedestrian walkways that serve as central hubs for social gatherings and recreational activities. The proximity of homes within these clusters encourages spontaneous interactions and strengthens social bonds between neighbours. In addition, the clustering strategy allows for efficient use of land and resources while facilitating sustainable community development.

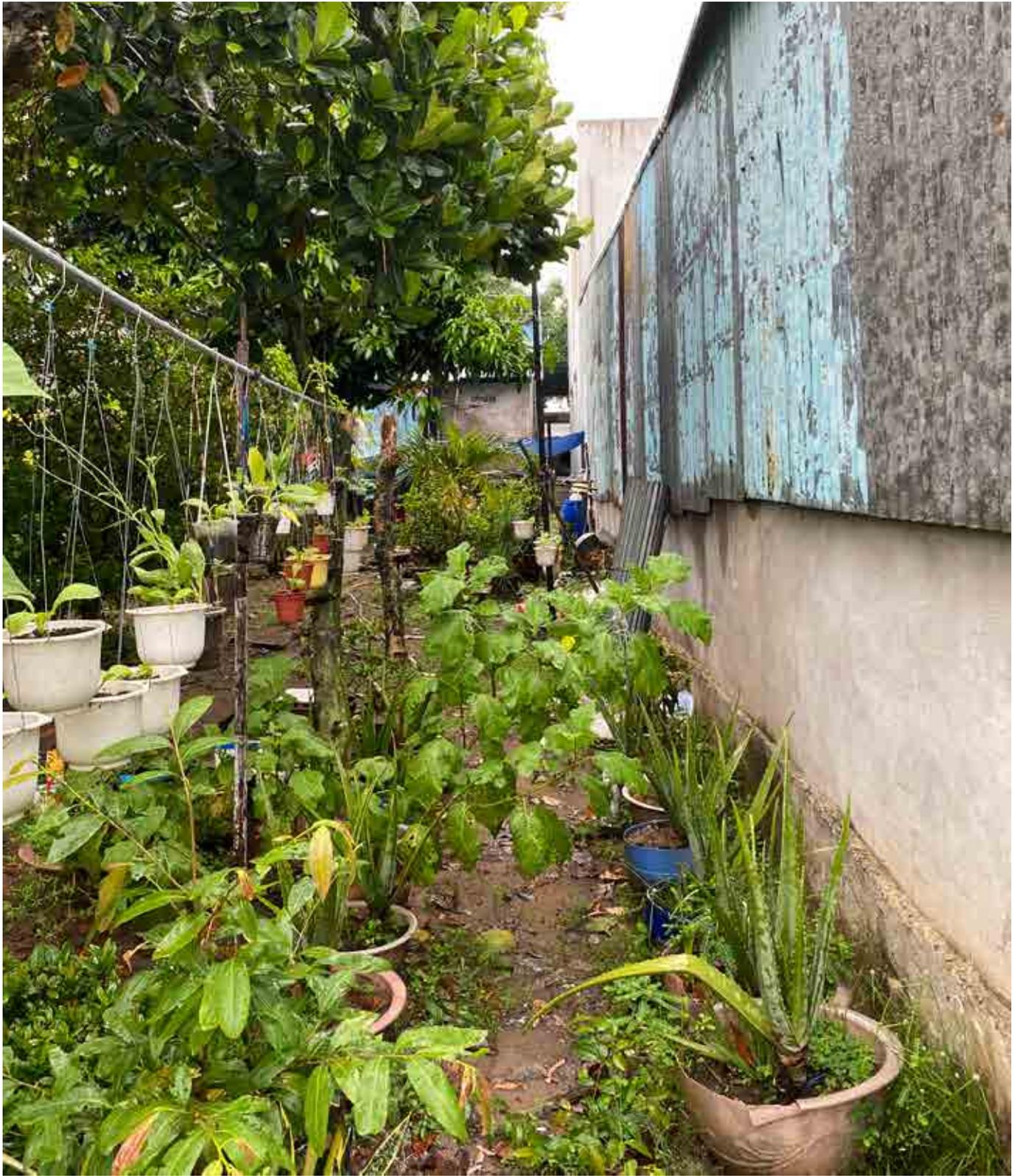
◀ **Figure 21**  
Visualisation of *Hyllegaard Høje*.  
Source: (Hyllegaard Høje, z.d.)

## 5. POCKET GARDENS

Pocket gardens are small, productive green spaces located near houses along dikes or within clusters of farmhouses. These gardens, often situated in backyards and connected by narrow alleys, are utilized for growing fruit trees and small crops primarily for personal consumption.

They serve as private outdoor spaces, enhancing the self-sufficiency of households and integrating with the broader landscape of the community. They illustrate a blending of domestic and communal spaces.

**Figure 22** ►  
Pocket garden with productive fruit trees and smaller plants and crops, intended for personal use.  
(Dejaegher, September 2023)



## Grand Parc Bordeaux - Lacaton & Vassal Architects

The innovative renovation of the old social housing tower in Bordeaux has significantly increased and improved the living space and quality for the residents. By adding an external structure to the façade, spacious conservatories and terraces were incorporated, allowing for more space, natural light and flexibility (Walsh, 2021).



## KEY LEARNINGS

### Smart external grid for more private space:

Prior to the renovation, residents had minimal terraces. The addition of the external grid brought several improvements. The exoskeleton, composed of 3.8 metre prefabricated modules, provides both a balcony and a winter garden, separated by light, movable panels. The winter garden, which is 2.5 metres deep, significantly increases the living space of the apartment. Large sliding windows connect the winter garden and balcony, creating a seamless transition from private indoor space to a pleasant semi-public outdoor space. In addition, the new façade provides thermal benefits by acting as an intermediate space that improves the energy performance of the old building.

◀ **Figure 23**  
Visualisation of *Grand Parc*  
*Bordeaux*.  
Source: (Walsh, 2021)

## 6. MATERIALITY

Traditional Vietnamese and Cambodian houses are constructed using lightweight, locally sourced materials such as bamboo, wood, and thatch. These materials are not only affordable but also flexible and lightweight, allowing structures to be easily adapted or relocated in response to the delta's seasonal flooding. During the hottest times of the day, textiles are often used to create shade, providing a simple yet effective way to keep homes cool.

In contemporary times, corrugated metal sheets are commonly used for roofing, providing durability and protection from the elements. The integration of natural materials like bamboo and wood with modern elements such as metal sheets and solar panels reflects a blend of tradition and innovation.

The choice of materials also supports the local economy and sustainability practices. Bamboo and wood are renewable resources that can be harvested locally, reducing the environmental impact and fostering local craftsmanship. Additionally, the use of these materials enables the community to maintain and repair their homes with relative ease.



**Figure 24**

Textile is used to create shade during the hottest times of the day.  
(Peeters, October 2023)

## Biome - EFFEKT Architects

*Biome* is a housing solution introduced by EFFEKT architects in 2021, designed to move away from unsustainable traditional construction methods where each building is created from scratch. Using a modular timber hybrid system, *Biome* aims to provide a high quality of living while promoting sustainability (EFFEKT, 2024a).



## KEY LEARNINGS

### **Building as material bank:**

Biome's modular systems are constructed from cross-laminated timber (CLT), reinforcing the sustainable nature of the project. With their light and flexible structure, these buildings exemplify the concept of adaptability, allowing them to be seen as material banks for other new projects or extensions within the Biome concept. This materiality enhances the circularity of the project, allowing materials such as walls and floors to be reused within the site.

### **Material as variation and infill:**

Thanks to the fixed grid structure of the houses, it is possible to infill them with different materials to create different looks. Windows can be closed with wooden panels or curtains, which are flexible and can be easily replaced with other infills and materials as required. This flexibility ensures that buildings can adapt to changing needs and preferences, promoting both functionality and aesthetic diversity.

◀ **Figure 25**  
Alternation of the facade in *Biome*.  
Source: (EFFEKT, 2024a)

## 7. CITY MAKERS

In Cambodia and Vietnam, the vibrant interplay between residential areas and local economies creates a unique urban fabric where city makers - vendors, craftsmen, and small business owners - integrate seamlessly into everyday life. This phenomenon transforms urban spaces into dynamic, multifunctional environments where commerce and community coexist in close quarters.

**Figure 26** ►  
Street vendor selling pastries  
and fruits in Hong Ngu  
(Peeters, October 2023)





▲  
**Figure 27**  
Daily market on the public  
square of Kampong Chhnang.  
(Peeters, October 2023)



▲  
**Figure 28**  
Street vendor selling ice cream  
in the alleys of Hong Ngu.  
(Peeters, October 2023)

## Bonus Track - Tsubame Architects

The idea behind *Bonus Track* was to create a new shopping street in the Shimokitazawa neighbourhood in Tokyo, Japan, where the former Odakyu Railway used to be located.

High rents are forcing small shops to make way for large retail chains. Therefore, a good balance was sought between floor area and rent so owners could operate their shops. The project consists of dual-use units that combine living and working spaces, making tenants more likely to contribute to a successfully developed and active project site. The communal space is conceived as a 'shopping street in the woods', providing a pleasant addition to the small interiors and functioning as a small park for the environment (Tsubame Architects, z.d.).



## KEY LEARNINGS

### Revitalisation of an old neighbourhood:

The project demonstrates the transformative potential of integrating living and working spaces to breathe new life into urban neighbourhoods. By seamlessly integrating residential and commercial functions, the project introduces a dynamic mix of activities that bring vibrancy to previously monotonous residential areas. This integration not only diversifies the neighbourhood landscape, but also fosters a sense of vitality by encouraging interaction and engagement among residents and visitors alike. Crucially, the project goes beyond mere infrastructure development to create welcoming public and semi-public spaces that serve as community hubs. What sets this approach apart is its reliance on community-led maintenance, with shopkeepers incentivised to ensure the cleanliness and attractiveness of these spaces. This symbiotic relationship between commerce and public space underscores the project's broader goal of fostering a cohesive and thriving neighbourhood ecosystem.

— Bonus Track

◀ **Figure 29**  
Visualisation of *Bonus Track*, Tokyo.  
Source: (Tsubame Architects, z.d.)

## 8. SEASONAL VEGETATION CHANGES

The vegetation in the Mekong Delta varies significantly with the changing seasons. During the wet season, the area experiences extensive flooding, transforming fields and forests into a water-rich environment. Inundated forests and aquatic plants thrive, contributing to the nutrient richness of the water and creating an optimal habitat for fish and other wildlife. Riverine vegetation, also flourishes along the waterways, providing critical protection against erosion and serving as important breeding grounds for aquatic species.

As the water recedes in the dry season, the landscape transitions back to drier land, revealing ponds, muddy pools, and saturated rice paddies. This change allows for the cultivation of various crops such as rice, mung beans, watermelons, and pumpkins. Multi-species orchards, featuring a variety of fruit trees like mangoes, lychees, and jackfruits, also become more prominent during this season. The sun's intensity dries out pastures and fields, leading to a different vegetation pattern dominated by grasses, trees, and cultivated plants.

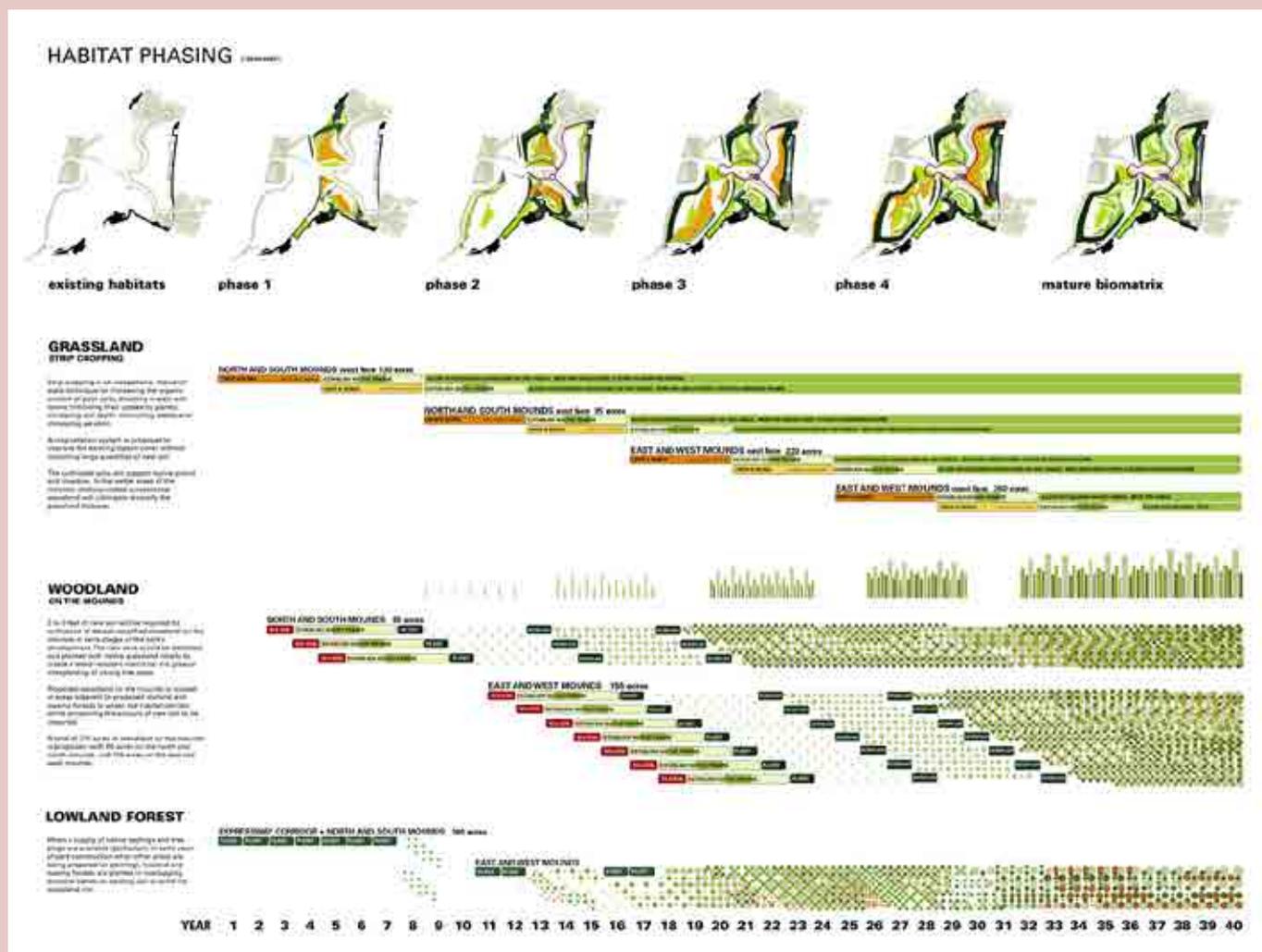
Overall, the dynamic shifts in water levels between seasons create diverse vegetation patterns that support both ecological balance and year-round agricultural productivity.



**Figure 30**  
Banana trees along the  
riverbank become fully  
submerged during the flood  
season.  
(Peeters, October 2023)

# Fresh Kills Park – James Corner Field Operations –New York, U.S - 2001-2006

Fresh Kills Park in New York City is a massive project aimed at transforming what was once the world’s largest landfill into a sustainable parkland. The master plan involves reclaiming the 2,200-acre site on Staten Island and turning it into a recreational space with diverse landscapes, including wetlands, meadows, and woodlands. The plan also incorporates environmental restoration efforts to improve water quality and support wildlife habitats (Field Operations, 2006).



## KEY LEARNINGS

### Strategic planning of vegetation:

The *Fresh Kills* project offers valuable insights into the strategic planting of vegetation that evolves with the seasons. Different plant species exhibit growth, flowering, and foliage characteristics that vary throughout the year. By carefully selecting and arranging plant species, landscapes can transform dynamically throughout the year.

### Vegetation in phases:

Planting vegetation in different phases aligns with the natural rhythms of growth and ensures continuous visual interest and ecological functionality within the park. Rather than planting all vegetation at once, the process may be phased to align with seasonal cycles and project timelines. This allows for the gradual establishment of plant communities and ensures that the landscape evolves naturally over time. This approach not only enhances the aesthetic appeal but also supports biodiversity, habitat creation, and ecosystem resilience.

### Native plant species:

The process begins with the selection of plant species that are well-suited to the local climate, soil conditions, and ecological context of the site. Native species are often prioritized for their ability to thrive in the region and support local wildlife. Incorporating native and adaptive plant species fosters sustainable land management practices, promoting the long-term health and vitality of the park's ecosystems.

◀ **Figure 31**  
Visualisation of *Fresh Kills Park*,  
New York.  
Source: (Field Operations,  
2006)



# ***DESIGNING IN FLANDERS***

## **WHILE LEARNING FROM THE MEKONG DELTA**

The journey from the vibrant, water-based settlements of the Mekong Delta to the Flemish village of Lint is rooted in a quest to uncover and apply vernacular principles to contemporary architectural challenges. Cities in Flanders have experienced a positive architectural development through numerous (inter)national design competitions. However, critical examination reveals a pressing problem rooted in the wider urban sprawl that connects these cities. This sprawl, coupled with rampant densification in the rural village cores, consumes significant parts of the Flemish landscape. In these rural villages, where architectural competitions are rare, the market often fills the void, resulting in generic apartment blocks sold at high prices and new subdivision projects that perpetuate the Flemish dream of individual houses with gardens.

As architecture students, we recognise that this prevailing model of detached houses on private plots is both spatially and environmentally unsustainable. Despite this, many people, including younger generations, still see the detached house in the countryside as the ultimate living goal. Concepts such as co-housing and shared living are often misunderstood and dismissed as niche, alternative lifestyles that are perceived as lacking personal space and privacy.

By choosing to design in Flanders, we want to show that living together does not mean a loss of quality of life. On the contrary, it can enrich lives and improve residential environments. Drawing on lessons from our fieldwork in Cambodia and Vietnam, we aim to reverse the trend in Flemish villages. We want to create architecture that serves as *hardware* for new forms of community living and social interaction between neighbours. This approach does not mean the end of private space, but rather provides opportunities to meet housing needs that go beyond individual desires and foster a vibrant and sustainable community fabric.

Through this comparative study, we hope to show that the principles of communal living and shared spaces observed in the vernacular architecture of Southeast Asia can inspire a paradigm shift in the architectural and urban development of Flemish villages like Lint.

# LINT ANALYSIS

## POSITIONING LINT

Lint is a rural village located in the Flemish Region of Belgium, situated southeast of the city of Antwerp. Geographically, it is part of the broader Antwerp metropolitan area. Lint lies in proximity to the Scheldt River and its tributaries, de Nete and the Ruppel rivers.

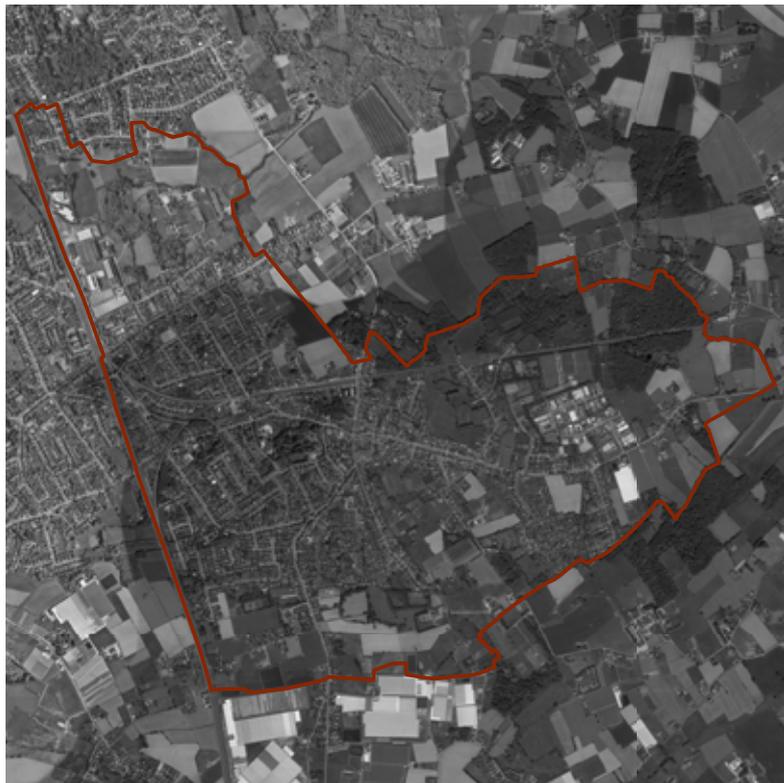
The village's landscape is characterized by agricultural fields, meadows, and patches of woodland, reflecting its predominantly rural setting. But economically, Lint relies on the city of Lier, on the East side of Lint.

**Figure 32**

Areal view of Lint, with its administrative boundary indicated in red.  
Source: Google Earth (2024)



1km



Antwerp

Scheldt river

Lier

Lint

Rupel river

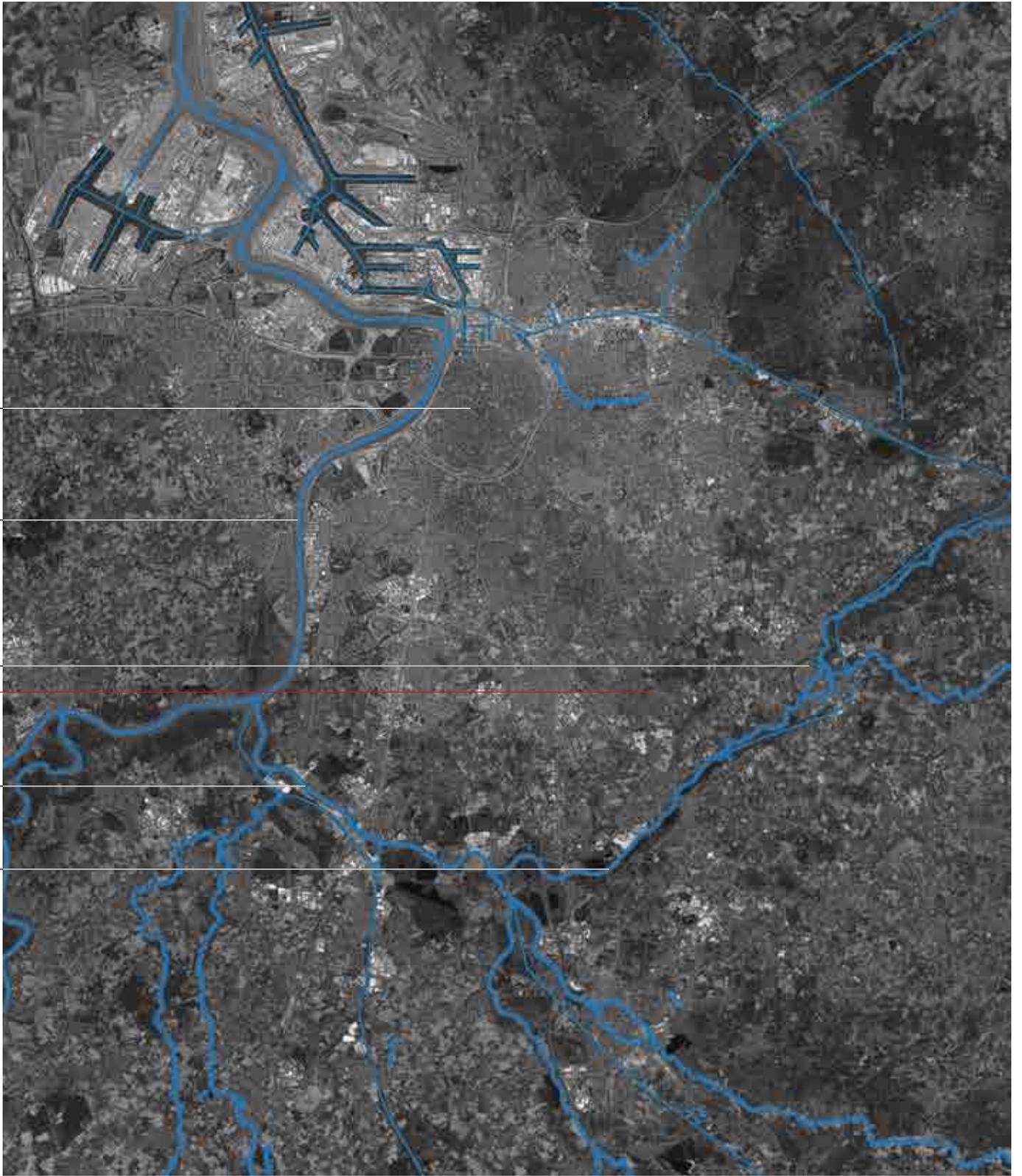
Nete river

**Figure 33**

The Scheldt river and its tributaries surround Lint.  
Source: Google Earth (2024) and Geopunt

3 km





# METHODOLOGY



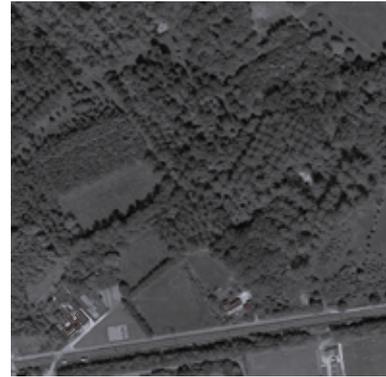
## RESEARCH AREAS

To conduct the analysis in Lint, the same methodology was used as in the studies in Vietnam and Cambodia, focusing on four distinct village tissues, each measuring 400 x 400 metres. As it was impractical to survey the entire village, the analysis was concentrated on the area around the *Zevenhuizen* site, excluding the western part of Lint. This decision was based on the predominance of nineteenth-century block fabric in the western area, which was included in one of the research squares.

The selection of areas aimed to capture a diverse representation of village fabric, land use and surface permeability.

### SQUARE 1: PAPENDONK FOREST

Square 1 is located in the northern part of the village and includes the Papendonk Forest, one of the few remnants of urban forestry around Lint. This forest plays an important role in the village's water management system.



### SQUARE 2: ZEVENHUIZEN

Square 2 focuses on the *Zevenhuizen* site and its adjacent ribbon development, essential for understanding the current state and characteristics of the area. The final design proposal will also be situated within this zone.



### SQUARE 3: HISTORIC LINT

Square 3 focuses on the historic centre of Lint, which developed around the intersection of the two main roads that form the morphological backbone of the village.

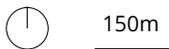


### SQUARE 4: SOCIAL HOUSING

The area of square 4 includes significant 19th century block tissues and contains a substantial portion of Lint's social housing.



◀ **Figure 34**  
Areal view of Lint.  
Source: Google Earth (2023)



**Figure 35-38** ▶  
Research areas of 400 by 400 metres in Lint.  
Source: Google Earth (2023)

## THE CONTROVERSY OF THE ZEVENHUIZEN PROJECT



## NOT IN MY BACK YARD

The *Zevenhuizen* project has caused considerable controversy in Lint over the past years. This planned development aims to accommodate the expected population growth by expanding the village. The 9.3 hectare site is designed to accommodate a mix of apartments and houses, including 75 social housing units. The total of 191 units is split between 99 apartments and 92 detached houses. A key feature of the *Zevenhuizen* site is its large central *green* area, complete with walking and cycling paths, various play areas and an extensive water management system. This system includes a large water buffer pond and several wadi areas distributed throughout the site to facilitate the infiltration of rainwater into the ground, thus meeting both recreational and environmental needs (Matexi, 2024).

Despite these planned benefits, the project has faced strong opposition from local residents. The laying of the foundation stone has been delayed due to several legal challenges to the building permits, which have been filed with the Council for Permit Disputes. Opponents have raised a number of concerns, ranging from the potential flood risk to the area to the significant loss of high quality natural space. However, the underlying sentiment seems to be a classic case of *not in my backyard* syndrome. Residents are resistant to the idea of hundreds of new people moving into their neighbourhood, fearing increased noise, congestion and loss of scenic views (R. Verhoeven, personal communication, 11 April 2024).

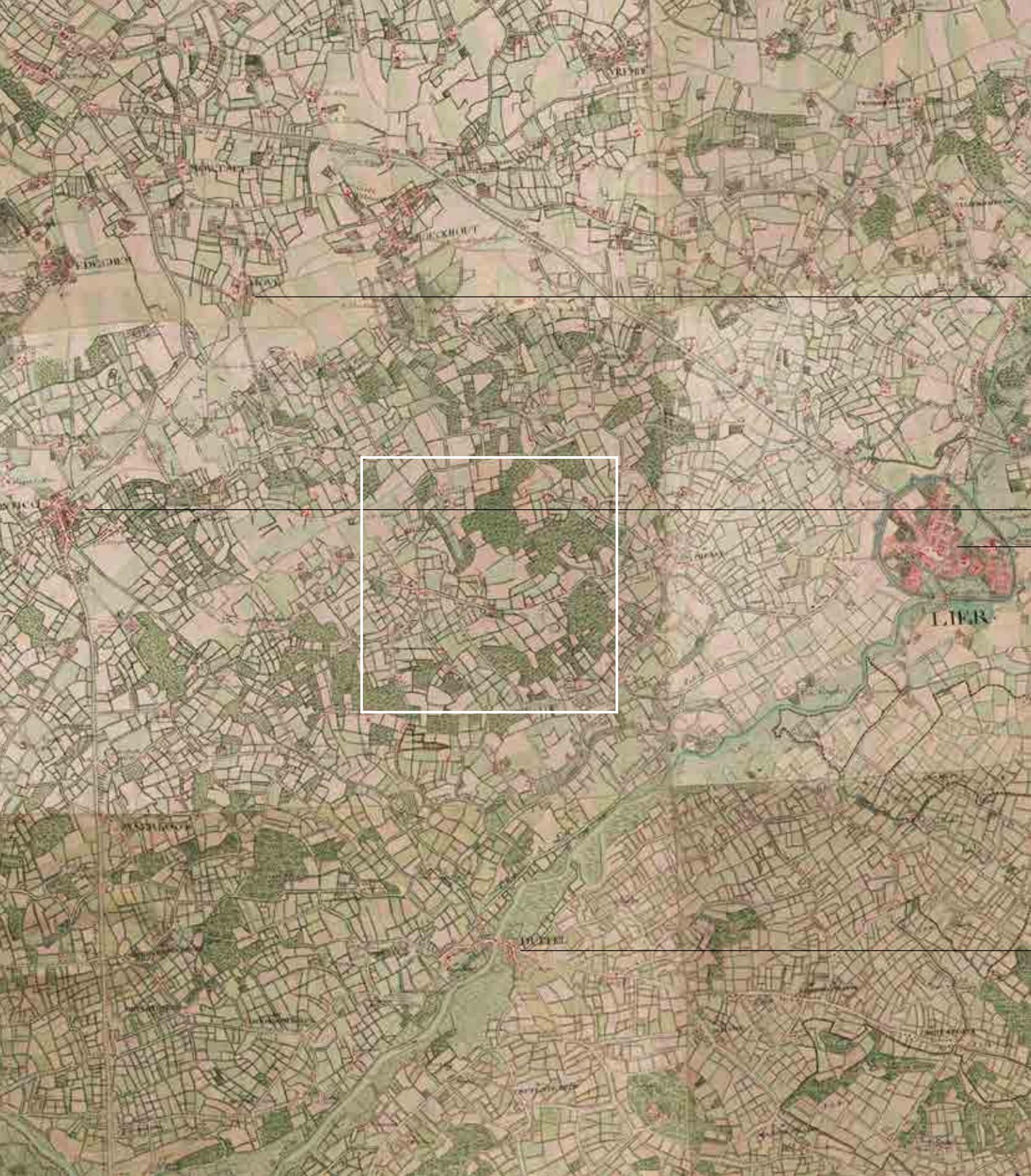
The ongoing conflict between the council, the developer and local residents will not be resolved any time soon. This delay gives us an opportunity to study and critically analyse the *Zevenhuizen* case.

In the project description, Matexi, the developer, often uses the word *green* to emphasise the ecological benefits of the *Zevenhuizen* project. However, this term often refers only to the colour and lacks a deeper, substantive meaning. What exactly does *green* mean in this context? Is it grass, trees, bushes and plants? Will a park be created or will it be more of a wooded area? This kind of *greenwashing* is increasingly used to convince buyers of a project's sustainable qualities, but it often turns out to be an empty phrase with little real meaning.

-  Water buffer and wadi
-  Dwelling unit
-  Parking lot/ garage box
-  Streets and paths

◀ **Figure 39**  
*Zevenhuizen* project by Matexi.  
Source: Matexi (2024)





◀ **Figure 40**  
 Ferraris map 1777  
 Source: Geopunt, April 2024



## HISTORY OF LINT

### ORIGIN OF LINT

At the crossing of the roads to Hove, Duffel, Lier, and Kontich (the current centre as visible in Square 3), the first village buildings emerged, gradually growing into a small community of around 600 inhabitants. From the 13th century onwards, the then hamlet of Kontich, got its name for the first time, Lint. The various lands, forests, and farms became the property of monasteries and abbeys, with the most significant landowner being the Saint Bavo Abbey of Ghent. From the Ferraris map, it can be inferred that the buildings in Lint belonged to the parish with number 22 for a long time. Parishes consisted of a community of believers who provided religious services from birth to burial (Hertogs, 2020).

In the northeast of Lint, there was a cluster of seven houses (*huizen* in Dutch), surrounded by communal vegetable gardens and fields. This street would later be renamed the *Zevenhuizenstraat*, a place that will be an important subject in this thesis (Lint, 2024).

Hove

Kontich

Lier

*Zevenhuizenstraat*

Duffel



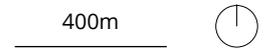
▶ **Figure 41**  
 Lint on the Ferraris map 1777  
 Source: Geopunt, April 2024

400m

## HISTORY OF THE COMMONS

In the period of the 13th century, Flemish villages formed tight-knit communities, where residents knew each other and collaborated for various purposes. Most of the population in medieval Flanders lived in rural areas and were directly dependent on agriculture for their livelihoods. This village life was regulated by the feudal system, where landlords owned the land and farmers paid rent to use it. These lands could consist of forests or meadows, the original commons that emerged in the Middle Ages. They established their own rules to manage the estates and strictly ensured autonomy (Team Vlaams Bouwmeester, 2023). Agriculture was often organized in the so-called *open-field system*, where long stretches of land were cultivated. This was because the plow had to be pulled by a team of oxen, which could only be turned with difficulty. Most farmers could only afford a few oxen, making the maintenance of an ox team a common affair (A Short History of Enclosure in Britain | the Land Magazine, n.d.).

**Figure 42** ►  
Land occupations of humanity throughout history, starting from Ferraris (1777)  
Source: Arcgis, Cartesius and Topomapviewer



## ENCLOSURE OF THE COMMONS AND DEFORESTATION

From the fifteenth century onwards, the phenomenon of enclosure began to emerge in England, followed by the rest of Europe including Flanders. Many of these commons, often by force, were taken from local communities, redistributed, and enclosed into privatized lands allocated to those considered as the rightful owners. Strictly speaking, the term *enclosure* refers to the modification of land rights (Oxford Centre for Global History, 2022). The land came into the possession of an owner who was free to do as he pleased, and the commoners could not graze, draw water, or chop wood anymore. In practice, this almost always involved enclosing the areas with a physical boundary and meant the end of the open-field system and communal pastures (Oxford Centre for Global History, 2022). On the Ferraris map of 1777, this phenomenon is visible where a row of trees encloses the various fields. This was a result of economic changes such as the rise of the market economy and the growth of the lucrative wool industry. Many former commons were converted to pastures to allow sheep to graze full-time for wool production. The same fate was reserved for much of the forests, which were systematically transformed into pastures or agricultural land.

Agriculture	Ferraris 1777	Topographic map 1873	2024	
Urbanization	Ferraris 1777	Vandermaelen 1846-1854	Topographic map 1903	2024
Forest	Ferraris 1777	Vandermaelen 1846-1854	Topographic map 1910-1940	2024





◀ **Figure 43**  
Orthophotograph of Lint  
captured during the summer  
of 1971.  
Source: Geopunt

## INDEPENDENCE OF THE HAMLET

From 1830 onwards, the hamlet of Lint aimed for civil independence, and for the new municipality, the same borders were established as those of the parish. In the west, this consisted of the railway line between Antwerp and Brussels, which became the physical border with Kontich. By the end of the 19th century, the first industry began to establish itself here, consisting of factories for soap and soda. The construction in the early 20th century mainly consisted of row houses of two floors with some units from the 19th century in between. From 1970 onwards, the main thoroughfares were connected by recent subdivisions for single-family homes (Lint, 2024).

**Figure 44**  
Two-story workers' houses featured  
on a postcard sent in 1904.  
Source: (Hertogs, 2020)



*“Urban sprawl in Belgium was a carefully orchestrated political project with a threefold objective: the ruralization of industrial workers, the promotion of homeownership, and the reinforcement of family values.”*

(Dogma, 2022, p. 168)

## EXPLORING TISSUE DIVERSITY

The four different research squares, as representative sample tissues, are thus intended to provide a comprehensive analysis of Lint. For those who are not immediately familiar with the context of Flemish villages, several questions are likely to arise. What does a typical Flemish village look like? What kind of buildings can be found in it? Which typologies are present?

In this chapter, the four different squares are put under a magnifying glass and dissected into the following themes: tissue diversity, land occupation and use, and surface permeability.

### CARPET OF TISSUES

The current state of Lint has been analysed, and within the four squares, six distinct urban fabrics have been identified. These have interwoven with the landscape and existing structures over time. The most conspicuous of these fabrics are the *block fabric*, the typical Flemish ribbon development or *urban sprawl*, and the *villa* neighbourhoods. In the area analysed in Figure 45, these fabrics represent 35%, 22%, and 20% of the urban landscape, respectively.

The prevalence of the *block* tissue is largely attributable to the western side of Lint, which encompasses the 19th-century fabric. This area comprises a significant proportion of social housing. The fabric is characterised by the predominance of monotonous apartment buildings situated along wide streets, which connect to form a block-like area.

As anticipated in Flanders, *ribbon* development constitutes a significant proportion of Lint's urban landscape, particularly in the more recent extensions of the village. These developments facilitate connectivity between Lint and the neighbouring municipality of Duffel (to the south) and the city of Lier (to the east). Linear settlements extend over considerable distances, modifying the landscape through the construction of associated infrastructure and utilities.

Furthermore, numerous villa districts emerge from the urban sprawl, perpetuating the Flemish tradition of detached single-family residences with expansive gardens within Lint.

It is also noteworthy that a small and medium-sized enterprise (SME) zone is situated to the east, which is somewhat isolated from the residential areas of the village.

Lier  
→



Duffel  
↓

300m



**Figure 45**  
Different urban fabrics of Lint.  
Source: Google Earth (2023)



Small and medium-sized enterprises

10 %



Villa

20 %



Ribbon

22 %



Block

35 %



Town centre

7 %



Garden city

6 %



**Figure 46**

Plan zooms in on each urban tissue, with percentages indicating the extent of each urban fabric.

*“The success of living in the countryside peaked in the 1980s and 1990s when a new **wave of detached homes flooded** the already saturated countryside.”*

(Dogma, 2022, p. 168)

## LAND OCCUPATION AND USE

The trend in Flanders since the late 19th century remains unchanged, with around 80% of the housing stock consisting of single-family houses. This is the result of political decisions in Belgium that have consistently encouraged home ownership (Dogma, 2022).

As shown in Figure 45 in the previous paragraph, Lint is no exception to this phenomenon. Both villa neighbourhoods, ribbon developments and garden cities accommodate single-family houses - detached or semi-detached - each with an individual garden, often surrounded by hedges or fences.

However, recent data indicate a new trend in the housing market, with a notable increase in the proportion of apartments in older village centres (Departement Omgeving, 2021). There is a political push to densify existing centres, which in itself is not problematic and has the potential to revitalise the village. While in large cities projects are often realised after international competitions, this is not the case for smaller villages in Flanders. The market responds eagerly to this opportunity, resulting in a wave of housing developments. New housing often seeks out charming and interesting locations, but often gives little back to the environment, which can have a destructive effect (Team Vlaams Bouwmeester, 2023).

In Lint, the phenomenon of *appartementisering*<sup>1</sup> is not yet dominant, although this may change in the coming years. At present, there are several apartment blocks in Square 4 that are mainly social housing. In the village center (Square 3), apartments are more common than other housing types. These consist mainly of smaller houses divided into apartments, with the ground floors sometimes used for commercial purposes. Consequently, these two squares have a relatively high density for Flemish villages, with 26,1 and 19,8 dwellings per hectare respectively.

The *Zevenhuizen* site (Square 2), however, tells a different story. Here, the distribution of (semi-)detached houses and terraced houses is almost equal, combined with urban sprawl around the inner area, resulting in a much lower density of 5.6 dwellings per hectare.

---

1 It is the phenomenon of old village centres being demolished to make way for new generic apartment blocks - often with a higher building height than the surrounding buildings - in order to achieve greater density.

Public function

Apartment

Economic function

Terraced house



**Square 1** - Papendonkbos

	%
<i>Apartment</i>	<b>0</b>
<i>Terraced</i>	<b>25</b>
<i>Semi-detached</i>	<b>50</b>
<i>Detached</i>	<b>25</b>
<i>Dwellings/ha</i>	<b>0,25</b>



**Square 2** - Zevenhuizen site

	%
<i>Apartment</i>	<b>0</b>
<i>Terraced</i>	<b>34</b>
<i>Semi-detached</i>	<b>30</b>
<i>Detached</i>	<b>29</b>
<i>Dwellings/ha</i>	<b>5,6</b>

○ Dwelling combined with economic function

● Semi-detached house

● Detached house



**Square 3 - Historic Lint**

	%
<i>Apartment</i>	<b>52</b>
<i>Terraced</i>	<b>20</b>
<i>Semi-detached</i>	<b>22</b>
<i>Detached</i>	<b>6</b>
<i>Dwellings/ha</i>	<b>19,8</b>



**Square 4 - Social housing**

	%
<i>Apartment</i>	<b>33</b>
<i>Terraced</i>	<b>62</b>
<i>Semi-detached</i>	<b>4</b>
<i>Detached</i>	<b>1</b>
<i>Dwellings/ha</i>	<b>26,1</b>

**Figure 47-50**  
Land occupation and use  
analysed in the four squares.  
Source: Google Earth (2023)

## LINT THROUGH THE LENS





▲  
**Figure 51-68**  
Scenes from a walk through Lint.  
(Dejaegher, April 2024)

*“We need to look for the **landscape under the city**, to expose large green and blue structures and connect them as units, ensuring they penetrate to the very centres of our urbanized areas. ”*

(Wieërs, 2021, p. 8)

## GRADIENTS OF PERMEABILITY

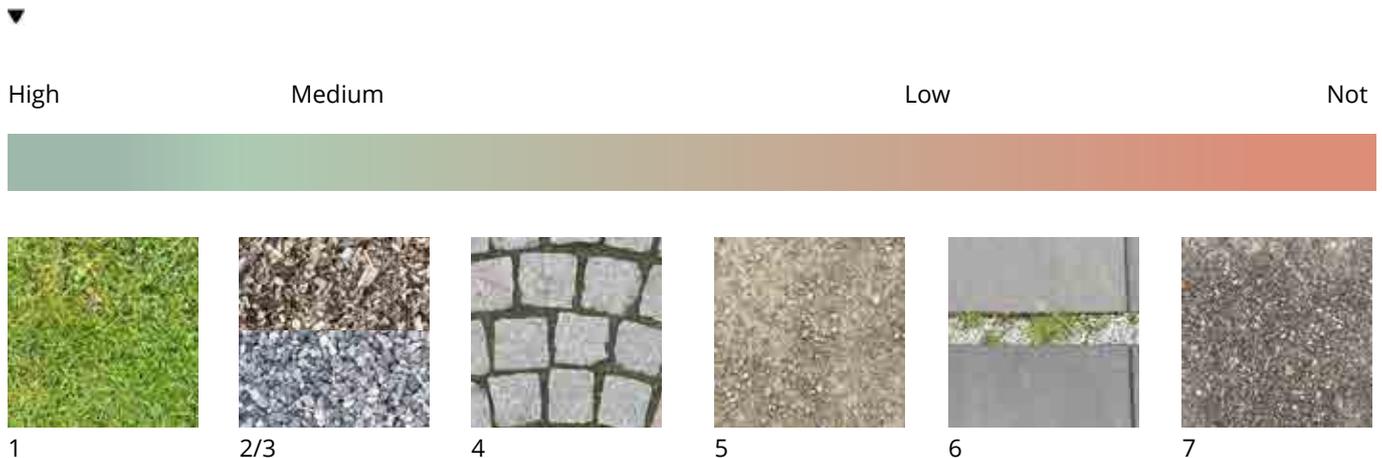
In the context of global warming, the concept of permeability gradients in villages and cities is becoming increasingly important. Permeability refers to the ability of surfaces to allow water to pass through them, ranging from highly permeable materials such as grass and gravel to impermeable materials such as asphalt and concrete. Understanding and managing these gradients is essential to creating sustainable and resilient communities.

Permeable surfaces facilitate the natural infiltration of rainwater into the ground, reducing run-off and the risk of flooding. They also replenish groundwater supplies, which are vital for agriculture and drinking water. Impermeable surfaces, on the other hand, can lead to significant environmental problems such as increased run-off, erosion and water pollution. A balanced approach to land cover is therefore crucial to maintaining the ecological health of village landscapes.

Below this is an outline of the various materials found during the fieldwork at Lint, classified according to their soil cover characteristics. The maps on the following pages illustrate the gradient of permeability, from highly permeable surfaces to those that are impermeable.

- 1 Grass
- 2 Tree bark
- 3 Gravel
- 4 Cobblestones with joints
- 5 Gravel path
- 6 Combinations
- 7 Asphalt

**Figure 69**  
Different surface coverages in Lint.  
(Dejaegher, April 2024)

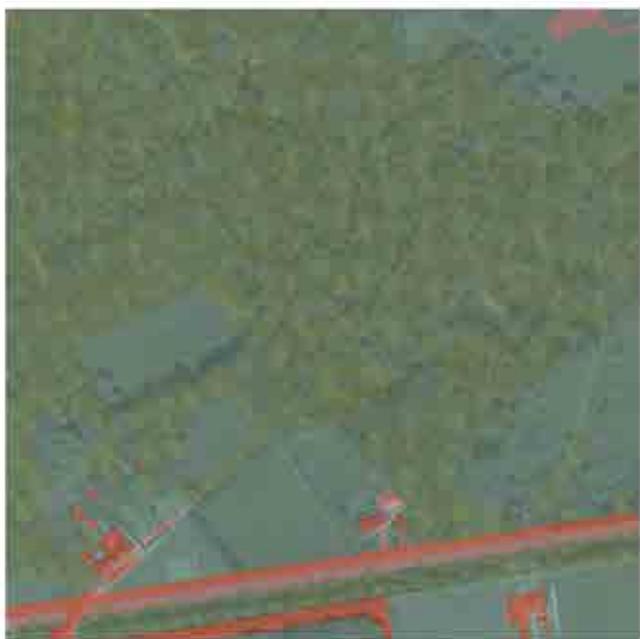


The analysis of the four research sites shows that the use of impermeable materials is predominant. This applies not only to the different types of pavement used for roads and paths, such as concrete and asphalt, but also to the roofing materials of the houses. Analysis of satellite photographs shows that green roofs and similar sustainable solutions have not yet been widely adopted.

However, it cannot be overlooked that all four squares have high permeability areas as a significant counterpoint. Consistent with previous analyses of building density, it is clear that impervious surfaces are most prevalent in squares 3: historic Lint and 4: social housing.

	%
<i>High</i>	<b>91</b>
<i>Medium</i>	<b>2</b>
<i>Low</i>	<b>3</b>
<i>Not</i>	<b>4</b>

	%
<i>High</i>	<b>76</b>
<i>Medium</i>	<b>4</b>
<i>Low</i>	<b>2</b>
<i>Not</i>	<b>18</b>



**Square 1** - Papendonkbos



**Square 2** - Zevenhuizen site



	%
High	<b>43</b>
Medium	<b>2</b>
Low	<b>1</b>
Not	<b>54</b>

	%
High	<b>50</b>
Medium	<b>1</b>
Low	<b>3</b>
Not	<b>46</b>



**Square 3** - Historic Lint



**Square 4** - Social housing

**Figure 70-73**  
 Gradient in permeability across the  
 four squares.  
 Source: Google Earth (2024)

*“If we choose the path of destruction, the planet will continue to descend irreversibly into the Anthropocene Epoch, the biologically final age in which the planet exists almost exclusively by, for, and of ourselves.”*

(Wilson, 2016, p. 18)

# EFFECTS OF GLOBAL WARMING

## FLANDERS' CHALLENGES AHEAD

As the world continues to grapple with the escalating impacts of global warming, Flanders, finds itself at the forefront of numerous challenges. With its low-lying terrain and dense population centres, Flanders is particularly vulnerable to the adverse effects of global warming. Over the next hundred years, the region is expected to confront a myriad of environmental, social, and economic challenges, many of which demand urgent attention and proactive solutions.

One of the most pressing concerns for Flanders is the rising sea levels. With a significant portion of its territory situated below sea level, the region faces the constant threat of inundation from the North Sea. As temperatures rise and polar ice melts, sea levels are projected to increase, exacerbating the risk of coastal flooding and erosion. This poses a grave threat to Flanders' coastal communities, infrastructure, and vital ecosystems (Klimaatportaal Vlaanderen, n.d.).

Moreover, Flanders is likely to experience more frequent and intense heatwaves and extreme weather events. Higher temperatures may result in heat-related illnesses, decreased agricultural productivity, and a strain on energy resources as demand for cooling rises. Extreme weather events such as storms, droughts, and heavy rainfall are expected to become more frequent, disrupting transportation, damaging property, and risking public safety (Klimaatportaal Vlaanderen, n.d.).

The implications of global warming extend beyond the environment, encompassing socio-economic aspects as well. Changes in temperature and rainfall patterns could alter agricultural practices, affecting crop yields and threatening food security. Additionally, shifting climatic conditions may lead to the spread of pests and diseases, further impacting agricultural productivity (Lynas, 2008).

Furthermore, the demographic effects of global warming cannot be overlooked. As certain areas become increasingly uninhabitable due to extreme weather events or rising sea levels, there may be mass migrations within and across borders, placing strain on social services and exacerbating existing inequalities. Vulnerable populations, including the elderly, children, and low-income communities, will likely experience a greater impact (Lynas, 2008).

The following section examines the main effects of global warming in Flanders and their impact on Lint for the present, 2050, and 2100, focusing on pluvial floods, drought, and rising temperatures (Vlaamse Milieumaatschappij, n.d.).

The maps shown are based on a high-impact scenario, representing a worst-case outcome if current global practices continue. This scenario assumes that global emissions and greenhouse gas concentrations will follow the current path, and that a transition to a low-carbon economy will not occur in the coming decades. Consequently, the high-impact scenario projects a global average temperature increase between 3.2 and 5.4 °C by 2100 (Klimaatportaal Vlaanderen, n.d.).

Recently flooded areas



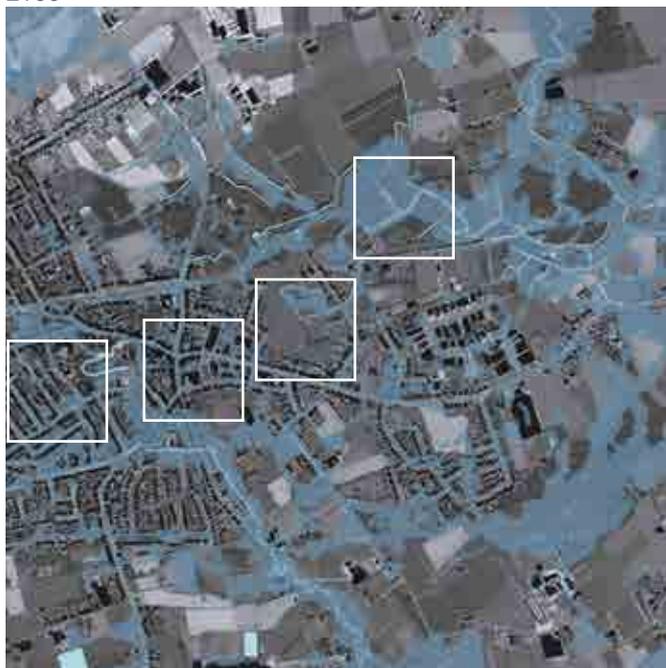
▲ **Figure 74**  
Recently flooded areas in Lint.  
(Source: Geopunt Vlaanderen,  
March 2024)

2050



▲ **Figures 75**  
Predicted expansion in areas  
facing flood risk for 2050.  
(Source: Klimaatportaal  
Vlaanderen, March 2024)

2100



### FLOOD (PLUVIAL)

When experiencing heavy rainfall, Lint often faces localized flooding around its main waterways. Predictions indicate that by 2050, winter rainfall will increase up to 7%, and by 2100, the increase will reach 29% (Vlaamse Milieumaatschappij, n.d.). This will lead to more frequent flooding in areas near the waterways and in parts of western Lint with high levels of hard surfaces. The forest belt to the northeast, the lowest area in Lint, will act as a buffer to manage the extensive rainfall. As most of Lint's waterways flow towards this forest, there is a high risk of pluvial flooding.

 Flood-prone areas

500m



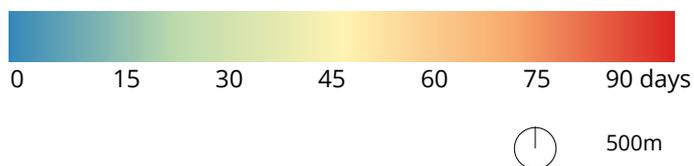
#### Figures 76

Predicted expansion in areas facing flood risk for 2100. (Source: Klimaatportaal Vlaanderen, March 2024)

## DROUGHT

These maps show the average number of days within a year characterized by drought conditions. An agricultural drought day occurs when the relative soil moisture content drops below the level at which crop production begins to experience stress (Klimaatportaal Vlaanderen, n.d.).

Due to rising temperatures and reduced rainfall in the summer, the occurrence of drought periods is expected to significantly increase. This increase is particularly prominent in the village centre, where the number of drought days escalates rapidly. The forested areas also experience a notable rise in drought days, as vegetation relies on soil moisture to meet its water requirements. A decrease in soil moisture can lead to stress and damage in the vegetation.



2023



**Figure 77**  
Amount of drought days  
throughout 2023.  
(Source: Klimaatportaal  
Vlaanderen, March 2024)

2050



**Figures 78**

In 2050, the effects of drought starts to noticeably increase in the village center.  
(Source: Klimaatportaal Vlaanderen, March 2024)

2100



**Figures 79**

The forested area and village center of Lint experience the longest periods of drought.  
(Source: Klimaatportaal Vlaanderen, March 2024)

2023



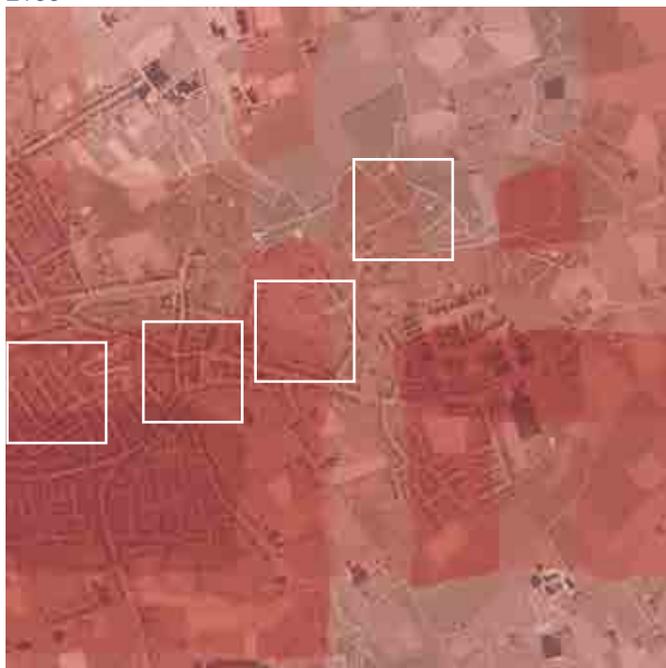
▲  
**Figure 80**  
Average temperature during  
the summer months in 2023.  
(Source: Klimaatportaal  
Vlaanderen, March 2024)

2050



▲  
**Figures 81**  
Predicted average summer  
temperature in 2050.  
(Source: Klimaatportaal  
Vlaanderen, March 2024)

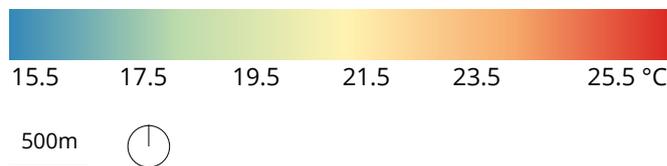
2100



### INCREASE OF TEMPERATURE

The average temperature during the summer months (June, July, August) are used to compare the increase in summer temperature in 2023, 2050, and 2100.

The heat island effect, a phenomenon where urban areas experience higher temperatures than surrounding rural areas due to human activities and built structures absorbing and retaining heat, is clearly visible while looking at the three maps. The industry zone and most densely build areas in Lint face the highest summer temperatures.



▲  
**Figures 82**  
The densely built eastern part of Lint, together with the industry zone, face the highest temperatures in 2100.  
(Source: Klimaatportaal Vlaanderen, March 2024)

# A GLIMPSE INTO THE FUTURE OF LINT

## FUTURE DEVELOPMENT AND PROJECTS

In addition to the *Zevenhuizen* site, there are numerous concrete and potential development plans either existing or already underway in Lint. Some of these projects are situated on areas that are already built upon, while many others utilize open, permeable spaces for their expansion. A significant portion of Lint's open area is allocated for these new housing initiatives, whit a low-density approach to landscape utilization, particularly focusing on single-family housing projects.

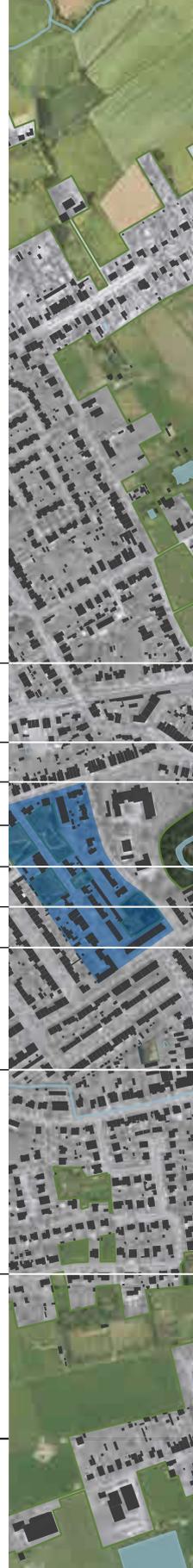
Planned development projects

- Former open area
- Former built area

1. 100 dwellings
2. 191 dwellings
3. 34 dwellings
4. 275 dwellings
5. 120 dwellings
6. 7 dwellings
7. 8 dwellings
8. 9 dwellings
9. 14 dwellings
10. 6 dwellings + supermarket

**Figure 83**  
Future development projects  
in Lint.  
Source: (R. Verhoeven,  
personal communication, 11  
April 2024)

150m







**1. Future expansion Zevenhuizensite**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Matexi, Thisrand

**Amount of dwellings:** 100

**Area:** 1.4 ha

**Status:** On hold

**Previously:** Open permeable area



**4. Kasteelpark**  
(Metapolis, 2017), (R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Thisrand, Municipality Lint

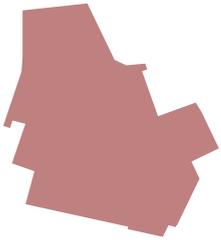
**Architect:** Metapolis Architects

**Amount of dwellings:** re-development of 275 apartments for social housing

**Area:** 16 ha

**Status:** In construction

**Existing:** Social housing



**2. Zevenhuizensite**  
(Matexi, 2024)

**Developer:** Matexi, Danneels, Novus, Thisrand

**Amount of dwellings:** 191

**Area:** 9.3 ha

**Status:** Permit submitted

**Previously:** Agricultural fields



**5. Papendonk**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Van Wellen

**Amount of dwellings:** 120

**Area:** 2,4 ha

**Status:** Planning stage

**Previously:** Open permeable area with farm



**3. Residentie Greenhouse - Schranshoevenlaan**  
(Cores Development, 2024)

**Developer:** Cores Development

**Architect:** POLO architects

**Amount of dwellings:** 34

**Area:** 0.5 ha

**Status:** In construction

**Previously:** Greenhouse



**6. Kerkhofweg**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Unknown

**Amount of dwellings:** 7

**Area:** 0.4 ha

**Status:** For sale

**Previously:** Open permeable area



**7. Liersesteenweg**  
(Danneels, n.d.)

**Developer:** Danneels

**Amount of dwellings:** 8

**Area:** 0.8 ha

**Status:** Permitted and sold

**Previously:** Agricultural fields



**9. Kinderstraat-Roetaard**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Unknown

**Amount of dwellings:** 14

**Area:** 0.4 ha

**Status:** Permit submitted

**Previously:** Open permeable area



**8. Kriekhof 53**  
(Evillas, n.d.)

**Developer:** Evillas

**Amount of dwellings:** 9

**Area:** 0.4 ha

**Status:** Planned, for sale

**Previously:** Old villa



**10. Bossentstraat**  
(R. Verhoeven, personal communication, 11 April 2024)

**Developer:** Unknown

**Amount of dwellings:** 6 + supermarket

**Area:** 1,1 ha

**Status:** In planning stage

**Previously:** Agricultural fields

2023



Future projects



+ 520

+ 650

+ 100

◀ **Figure 84**  
Present demographic data of Lint  
by neighbourhood (top), including  
future projects (bottom).  
Source: (Deelgemeente Lint in cijfers  
en grafieken, 2024)

## EVALUATING DEMOGRAPHIC SHIFTS

If all the additional units from future projects in Lint are multiplied by the average number of residents per household in Flanders - 2.30 residents (Vlaamse Statistische Autoriteit, 2023) - there could soon be more than 1000 new inhabitants, an increase of almost 15% compared to the current population. This significant demographic shift could have a major impact on the spatial quality of the village. Where will all these new inhabitants come from? Newcomers to a village often do not know their way around as well as the locals, and their own home often becomes the centre of their world. They consume the village but do not really belong to it. Herein lies the challenge for urban planners and architects to create public spaces and housing that encourage residents to engage with this space (Team Vlaams Bouwmeester, 2023).

In particular, greenfield sites are being developed for these projects, raising concerns about sustainable land use. The government has a responsibility to ensure housing rights for all and emphasises the importance of affordable housing in these village expansions (Wieërs, 2021). An interview with the mayor revealed that many young residents of Lint are forced to move to neighbouring communities to find more affordable housing. The local government aims to address this problem by keeping the younger generation in Lint (R. Verhoeven, personal communication, 11 April 2024).

The prevalence of single-family houses, as highlighted in the chapter on land use, underlines the need for new housing typologies that go beyond the dichotomy between single-family houses and apartments and offer diverse and sustainable housing options for the future.

250      500      750      1000      1250      1500      1750      2000      2500

# IN CONVERSATION WITH THE MAYOR

## MENTAL MAP OF LINT

In order to gain a deeper insight into the spatial and symbolic significance of Lint from the mayor's perspective, a mental mapping exercise was carried out. This method, often used in geography and environmental psychology, provides a concrete way of understanding an individual's spatial perceptions and cognitive representations. According to Reinders (2008), mental mapping involves the collection, organisation, retrieval and manipulation of information about one's environment. In Lint, the mayor's mental map serves as a valuable tool for uncovering the local leadership's subjective perceptions and priorities regarding the village's spatial configuration. This approach allows us to explore not only the physical layout, but also the symbolic meanings, associations and experiences that the mayor ascribes to different places.



▲  
**Figure 85**  
Mental map by Rudy Verhoeven.  
(R. Verhoeven, personal communication, 11 April 2024)



Lint's two main roads, dating back to its inception, are still perceived as dominant features in the village. The intersection hosts various public functions that collectively form the core, such as the church with its adjoining square.



Symbolizing Lint's local economy, these represent businesses located exclusively in the town centre, as concluded in the *Land Occupation and Use* section.



These two hearts symbolize two significant houses for the mayor. Firstly, the larger heart represents the town hall, situated in the serene and green municipal park. Secondly, just a stone's throw away from the town hall, lies his own residence, where he lives with his family.



Recently, the municipality acquired one of Lint's oldest cafes following the passing of its iconic owner, Lucienne. The mayor holds this cafe dear to his heart, as it was an important part of his youth. It will be transformed into a new cultural space for Lint, along with the adjacent party hall.



Both the men's and women's volleyball teams in Lint aspire to play at a high level. The community centre *De Witte Merel* also houses indoor sports facilities where training sessions and matches can be organized.



The Scouts and Chiro are two youth organizations in Lint that are important for the children. Their premises and grounds are located northeast of the *Zevenhuizen* site.



This abbreviation stands for small and medium-sized enterprises and represents the only area in Lint designated for such businesses.



This former convent now serves as a reception centre, managed by the Red Cross organisation, providing accommodation for families, individuals, and unaccompanied minor foreigners.



These trees symbolize the Papendonk forest, an important part of Lint for the mayor as it is the only *true* piece of nature in the municipality.

◀ **Figure 86-89**  
Picture of cafe Lucienne, the municipal park, a wood shop in SME zone, and an example of local economy in the centre.  
(Dejaegher, April 2024)



## REIMAGINING LINT'S GROWTH

Lint's spatial development faces significant challenges that require a critical re-evaluation of current strategies. The reliance on single-family detached housing, a model historically supported by government policy, has resulted in extensive land consumption and low-density sprawl. This pattern of development is increasingly unsustainable, exacerbating environmental problems such as reduced natural infiltration areas and urban heat island effects. A shift towards higher density in village contexts, without resorting to high-rise buildings, is imperative.

The concept of *village-like* architecture offers a promising solution, aiming to balance higher density with the preservation of the rural aesthetic and community feel of the village. However, the practical implementation of this concept remains a challenge. The development of new housing typologies that break the dichotomy between houses and apartments is crucial. Options such as cluster housing, co-housing projects and low-rise, high-density developments could provide the necessary compromise, but require careful integration of shared green spaces to maintain village character.

Furthermore, the ongoing controversy surrounding the *Zevenhuizen* project highlights the tension between development and community acceptance. The promotion of the project as 'green' raises questions about the authenticity of its environmental claims. This kind of greenwashing can undermine trust and calls for more substantive commitments to sustainability. Opposition from local residents, concerned about increased noise, congestion and loss of natural space, highlights the need for transparent and genuinely sustainable planning practices.

The mayor's findings also highlight a pressing issue: the migration of young residents to neighbouring communities due to the lack of affordable housing in Lint. This trend threatens the demographic balance of the village and underlines the urgency of affordable and diverse housing solutions. The prevalence of single-family homes, as identified in the land use analysis, further emphasises the need for innovative housing models that meet diverse needs and prevent socio-spatial segregation.

In conclusion, the future development of Lint needs to embrace the principles of sustainable urbanism while maintaining its village identity. This includes encouraging mixed-use development, improving land permeability and preserving open space for both environmental and social benefits. By addressing these critical issues, Lint can become a resilient community that meets the needs of its residents while respecting environmental limits.

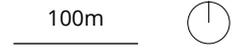


# ***DESIGNING SUSTAINABLE SOLUTIONS***

**LINT IN FOCUS**

# DESIGN STRATEGIES

**Figure 90** ▶  
The remaining urban forests of Lint.



## STRATEGY 1 - GRADIENTS OF VEGETATION



### Existing vegetation

The existing vegetation on the design site establishes clear boundaries. Straight and curved lines of trees create the impression of enclosed forest *rooms*.

### Strategy: Strengthen the forest geometry

The existing forest geometries of lines, curves, and rooms are enhanced and linked to the urban forests through the addition of diverse vegetation and an econduct, strengthening the forest belt of Lint.

● Added trees

In Lint's northern region, parts of the Papendonk forest, dating back to the town's origins, still remain. Additionally, scattered remnants of forested areas can be found throughout the territory.

The forest belt of Lint exhibits characteristic geometric patterns. Within the densely packed trees, clearings emerge, creating rooms for residential and agricultural purposes. At the edges of the forest and dispersed around Lint, lines of trees define edges and boundaries.

Although the site has been recently primed for the upcoming project, traces of the original geometry of the flora persist along the watercourse. A few rows of poplar and oak trees, alongside low shrubbery and grasses, define the boundaries of agricultural plots.

A first design strategy entails linking the urban forest patches within Lint by partially restoring natural habitats on the site. Additionally, this approach aims to reinforce the forest while expanding upon the existing geometric patterns inherent in the forest layout.

### Types of urban forests

- Planted trees
- Forest trees
- Shrubs
- High grasses

### Land use

- Open area
- Agriculture
- House plots/ residential area





**Figures 91**  
The existing geometry of  
the Papendonck forest,  
characterised by rooms,  
edges  
and lines.  
(Dejaegher, April 2024)



**Figure 92**

The current vegetation on the design site defines clear boundaries.  
(Dejaegher, April 2024)

## STRATEGY 2 - GRADIENTS OF DENSITY

In today's suburban areas, large villas, scattered throughout the landscape, are a common sight. Across Flanders, ribbon developments feature rows of spacious villas on individual plots, emphasizing privacy and separation of neighbours. These large homes typically start as residences for families and are often already larger than necessary. However, after the children leave, parents frequently continue to live in these overly spacious houses.

This pattern is also evident in Lint, where villas line the streets, except in the more densely packed social housing area with apartments. When taking the average of the housing density of the previously analysed squares, Lint's average density becomes 17.5 houses per hectare (Authors calculation, 2024).

Currently, Lint's low-density housing consumes significant landscape space, and future plans suggest this trend will continue. Given challenges such as biodiversity loss, increasing land hardening, and demographic changes, there's a need to rethink housing design. Suburban living should be replaced with more urban and collectively organized housing models (Mabilde, 2018).

The aim for the 9-hectare design site is to double the housing density to 35 houses per hectare. This approach aims towards maximizing the use of the landscape with high-density housing. While 35 houses per hectare (Departement Omgeving Vlaanderen, 2019) aligns with the average density across Flanders, it's important to note that this average includes urban areas. Therefore, achieving this density on our site signifies a transition towards a more urban density within a suburban setting, all while maintaining the quality and ambiance of suburban living.

**Figure 93** ▶

The existing buildings with their property lines, in and around the design site.  
Source: Google Earth (2023)

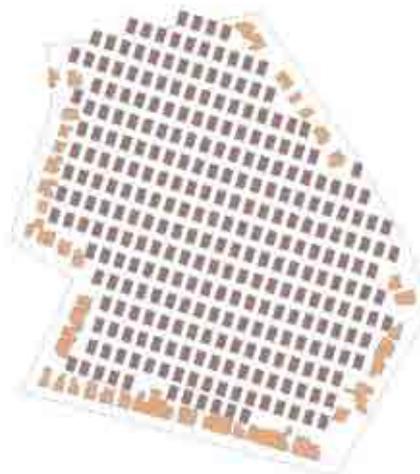


- House plots
- Existing buildings
- New buildings



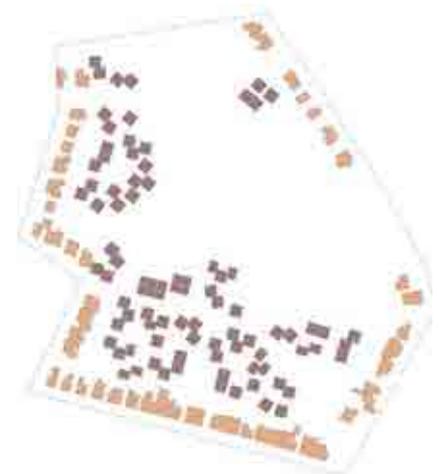
### Existing urban figure

The boundaries of the site are fully occupied by large single family homes, creating a low-density residential area that extensively uses the available land. The residential buildings have an average ground area of 135 square metres.



### Hypothesis: double the density

A density of 35 houses per hectare results in 315 dwellings on our site of 9 hectares. If these units followed the existing pattern of large, single-family homes, the entire site would be occupied.

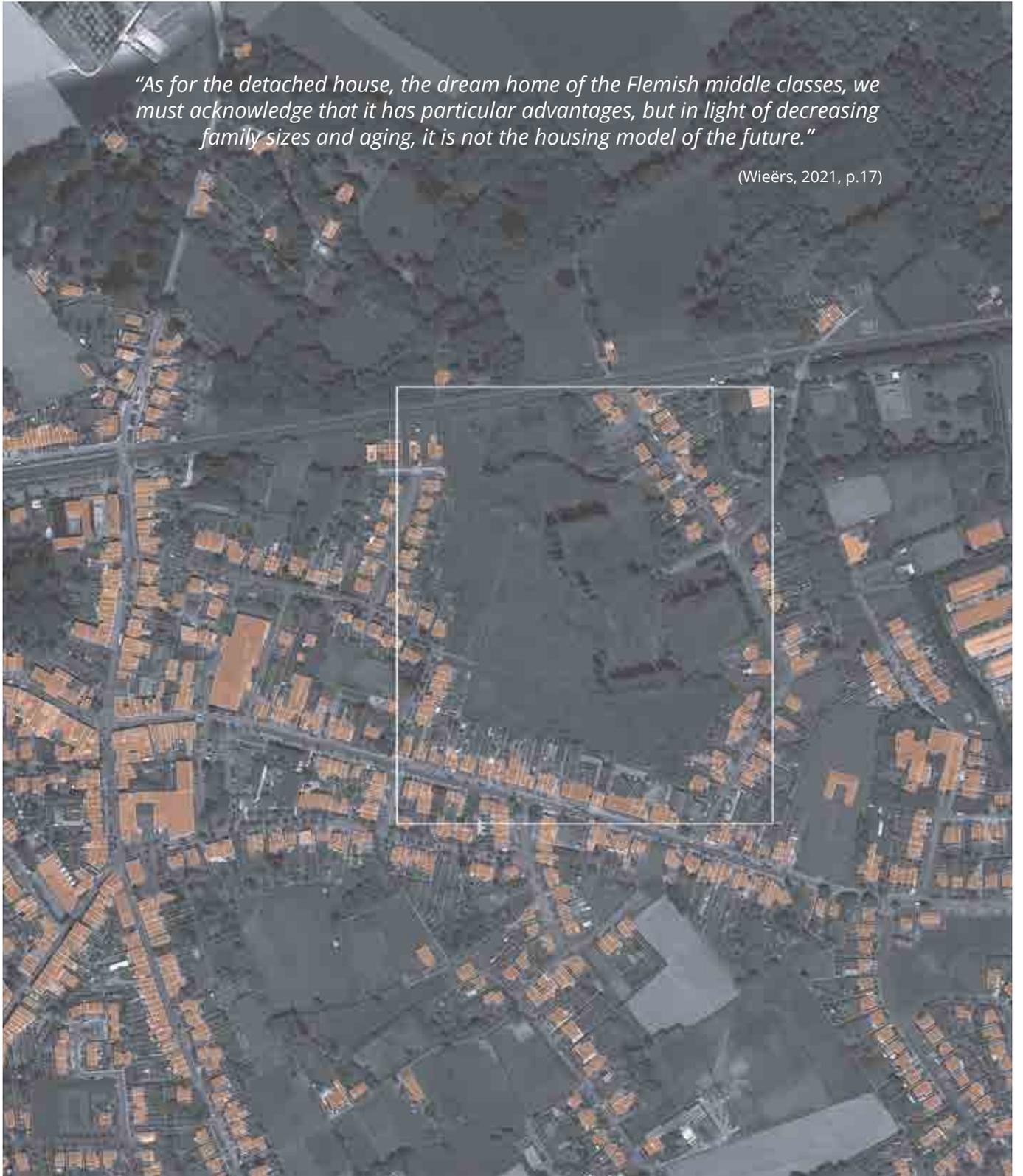


### Strategy: high-density clustering

By clustering homes and transitioning from single-family to multi-family residences, high-density zones can be created while preserving more nature. This approach would result in only one-tenth of the site being built upon.

*"As for the detached house, the dream home of the Flemish middle classes, we must acknowledge that it has particular advantages, but in light of decreasing family sizes and aging, it is not the housing model of the future."*

(Wieërs, 2021, p.17)

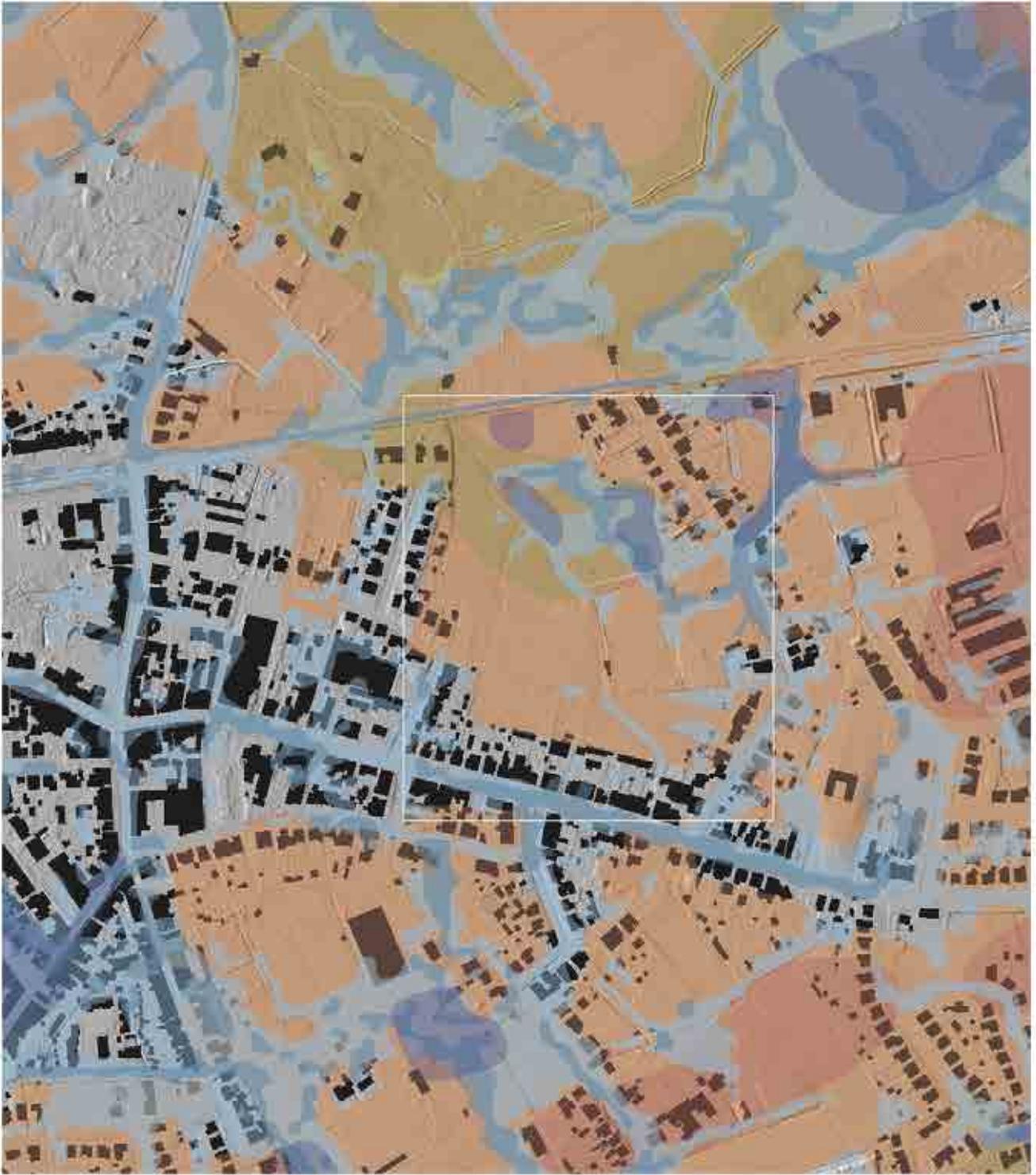




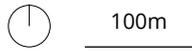
**Figures 94**  
Semi-detached houses lining  
the streets in Lint.  
(Dejaegher, April 2024)



**Figure 95**  
Villas border the design site.  
(Dejaegher, April 2024)



◀ **Figure 96**  
 Pluvial flood predictions and the different soil types of Lint.  
 (Source: Databank ondergrond Vlaanderen and Geopunt)



Pluvial flood prediction

- Recently flooded
- 2050
- 2100

Soil type

- Moderately dry sandy loam (**good infiltration**)
- Moderately wet sandy loam (**bad infiltration**)
- Wet sandy loam (**water stagnation**)

## STRATEGY 3 - GRADIENTS OF WETNESS

The site's topographical features indicate that it sits partially at a lower elevation, making it prone to future flooding. This lower area is bordered by a natural waterway that connects to the Papendonk forest in northern Lint, which acts as Lint's water buffer, collecting water from all surrounding waterways due to its lowest position.

In addition to topography, soil composition also affects pluvial flood predictions. The areas with wet sandy loam are at higher risk of flooding compared to those with dry sandy loam, primarily due to wet sandy loam's tendency to experience water stagnation problems.

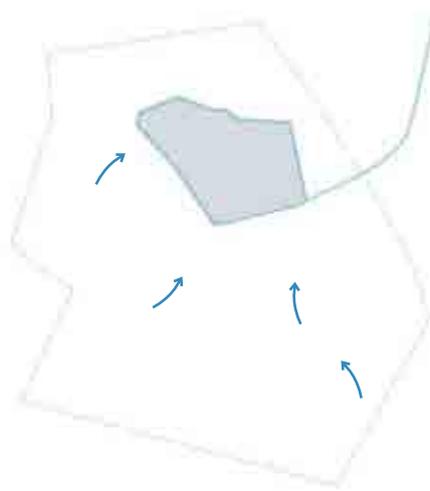
As da Cunha and Mathur point out, water is uncontrollable and has its own dynamics: "With water expected to become more 'difficult' with climate change, plans are underway to reinforce the line with walls, levees, and other barriers, thicken it with ecotones and land-uses that accommodate in time the uncertainty of water in space, or simply redraw it on higher ground. These solutions will work until, that is, water defies them. They perpetuate a land-centric imagination that sets water up to be non-compliant, unpredictable, and violent, yet somehow controllable." (Mathur & da Cunha, n.d.)

Therefore, anticipated flood patterns will help in designing a water buffering and infiltration zone that uses the site's natural microtopography. This approach allows water to flow naturally to these areas and infiltrate along the way, rather than trying to control and direct it.



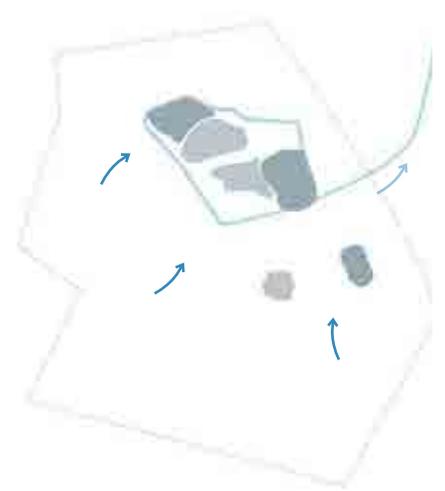
### Flood predictions

The predicted floods are expected to remain primarily within the lowest area of the site.



### Hypthesis: floods and flows define shape

The shape of the water buffer zone is defined by the area at the highest risk of flooding over the next 100 years. Rainwater from the surrounding area naturally flows toward this buffer zone.



### Strategy: a connected system

Wadis and ponds create an interconnected system, allowing them to overflow into one another.

- Pond
- Wadi

## STRATEGY 4 - GRADIENTS OF USE

The land use analysis of Lint reveals a distinct functional zoning within the village. Small-scale economic activities such as cafes, clothing stores, and hair salons are predominantly clustered in the town centre. Meanwhile, SMEs like timber traders and garage operators are situated in an isolated zone to the east, along with semi-public spaces. While the central part of Lint boasts a number of parks and squares, sports and recreational facilities are predominantly found to the east.

In each case, the *Zevenhuizen* site forms a buffer between them.

A fourth design aspiration involves introducing mixed-use functions to breathe new life into these neighborhoods.

Land use

- Parking lots
- Public spaces
- Public buildings
- Health care
- Economic function



### Existing economic functions

Small-scale economic activities are concentrated in the village centre, while SMEs are situated to the east. As a result, the *Zevenhuizen* site in the middle remains an inactive economic zone.

### Strategy 1: interaction with village center and SME

Creating interaction between the design site, the village centre, and the SME area will eliminate the current distinct zoning. For instance, the SME area can be adapted to include housing, while the design site can accommodate SMEs, thereby integrating economic activity and residential use.

### Strategy 2: creating mixed use

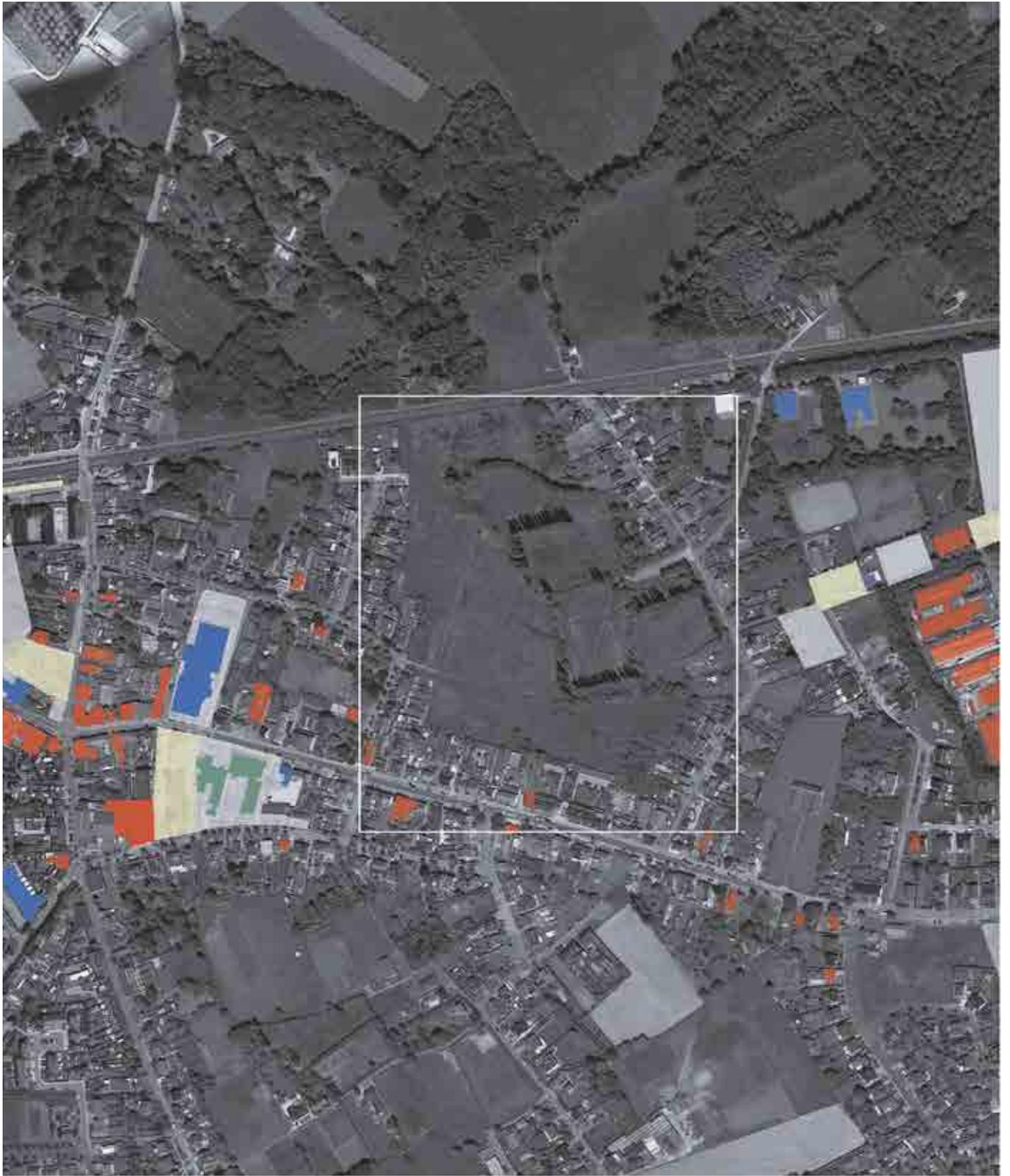
By incorporating mixed uses, such as economic functions, communal spaces, and healthcare facilities, into the newly developed units, a diverse range of users will be attracted. In a later phase, this mix of uses can also be introduced into the existing housing units.

**Figure 97** ▶

The public and economic spaces of Lint are clustered into functional zones.  
Source: Google Earth (2023)

100m





## STRATEGY 5 - GRADIENTS OF PUBLICNESS

Public spaces are scattered throughout Lint, with the municipal park in the west being the largest, covering 20 000m<sup>2</sup>. Key public buildings, such as the church, library, and primary school, are located in the village centre. By designing a significant portion of the site as public space with public functions, a continuity of public areas extending from the village centre can be established.

Additionally, there is a clear separation between public and private spaces, with no intermediate areas. This distinction is evident on the design site as well. By creating a gradient of public spaces, ranging from very public to communal to private, the rigid property lines can be softened.



### Existing public space

The site is entirely dedicated to agricultural practices, with the fields and properties of the surrounding houses fully fenced off. A public walking route is the only passage that crosses the site.



### Hypothesis: expanding public space

The municipal park, covering 20,000 m<sup>2</sup>, is the largest public space in Lint, with a few smaller public areas in the village center. By dedicating an area equal in size to the municipal park on this site, Lint's public space would increase by 25%.

### Strategy: gradients of publicness by recommoning

The public space transitions into common areas, these common areas surround the housing clusters. The common areas transition into communal courtyards within each cluster. This blend forms a continuum between public and private spaces within clusters.

#### Land use

-  Parking lots
-  Public spaces
-  Public buildings
-  Health care
-  Economic function

#### Gradients of publicness

-  Public
-  Common
-  Private
-  Non-human common

**Figure 98** ▶

The public and economic spaces of Lint are clustered into functional zones. Source: Google Earth (2023)

100m



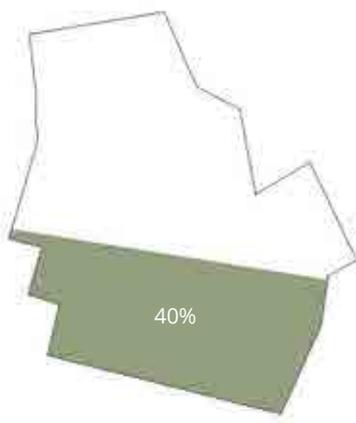


## STRATEGY 6 - GRADIENTS OF WILDNESS

Currently, Lint is lacking biodiversity due to urbanisation and agricultural practices that reduce natural habitats. Extensive development has led to habitat fragmentation, while intensive farming often relies on monocultures and chemical inputs that harm wildlife. These factors combined have significantly diminished the variety of species in the area, making it essential to implement strategies that restore and enhance biodiversity.

Increasing biodiversity in Lint is crucial for several reasons. Enhanced biodiversity improves ecosystem resilience, helping the environment withstand and recover from disturbances such as climate change and pollution. It also supports a wider variety of plant and animal species, contributing to ecological balance and health. Biodiverse areas can provide better ecosystem services, such as cleaner air and water, and can boost the overall quality of life for residents.

Present land occupations



### Hypothesis: giving 40% of the site back to nature

Only 10% of the site will be developed as built area, while the remaining 90% will be dedicated to shared spaces. Of this, 50% will be designated as human commons, with the remaining 40% serving as non-human commons for rewilding efforts.



### Strategy 1: creating rewilded 'rooms'

Most of the already existing forest rooms will be strengthened and dedicated to rewilding. In these rooms different ecosystems can develop.



### Strategy 2: Gradients of wildness

Gradients of wildness range from wild to semi-wild to manicured. One area is entirely dedicated to rewilding, allowing nature to thrive naturally. Closer to the built environment, the landscape becomes more structured and intentionally designed to define boundaries and create pleasant common courtyards.

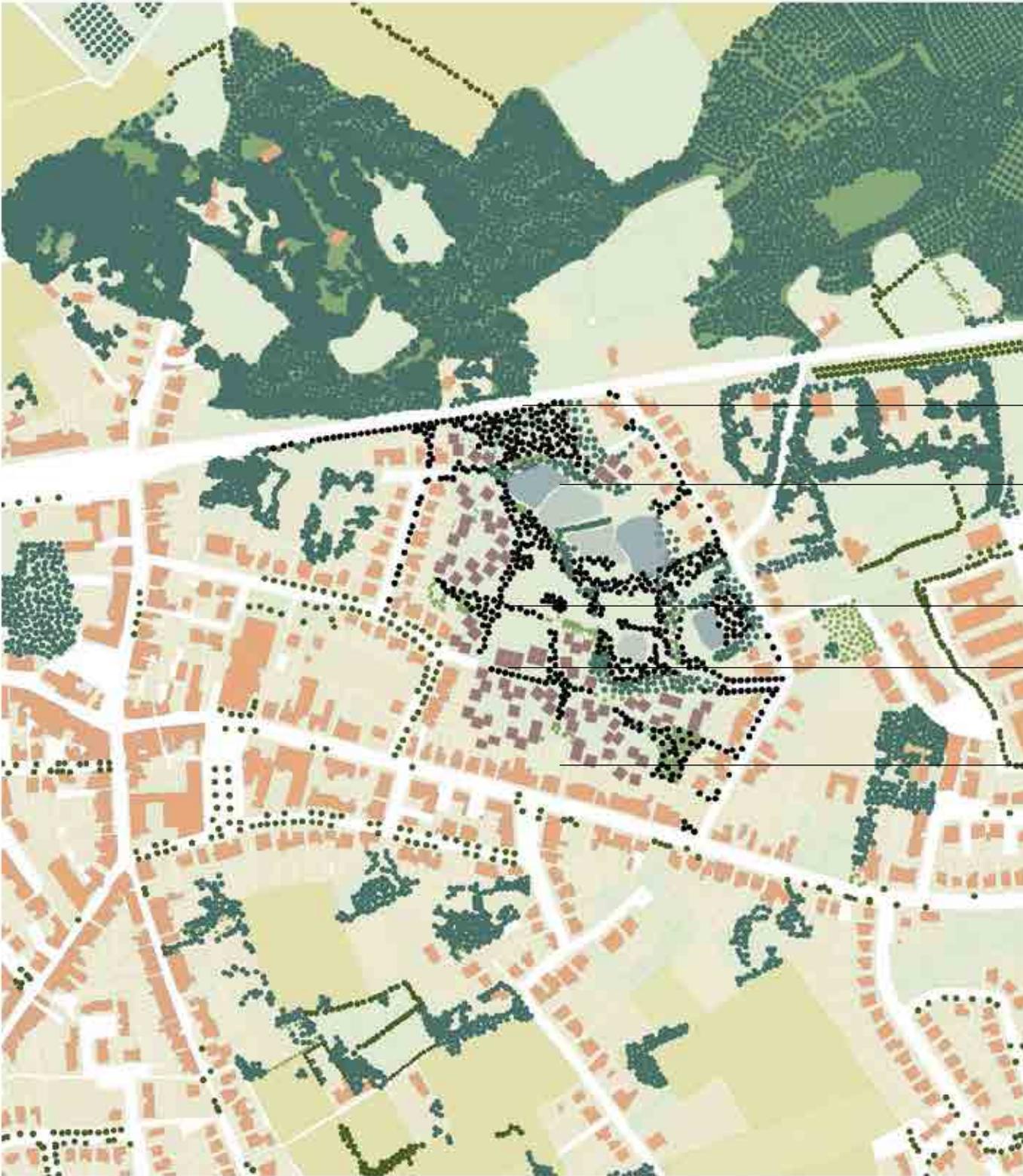


**Figure 99** Present land occupations of Lint. (Source: Geopunt Vlaanderen)

100m







## CO-PRESENCE OF THE GRADIENTS

The combination of these gradients creates different *rooms* in which they can coexist, with some being more prominent than others. The three types of rooms created are *forest rooms*, *public rooms*, and *communal rooms*.

This multifaceted approach creates a vibrant, interconnected urban environment that enhances the quality of life for its residents. The forest rooms provide lush green spaces that contribute to biodiversity and ecological balance. Public rooms are designed to facilitate social interaction and neighbourhood activities, while community rooms encourage shared living and resources, fostering a strong sense of community.

---

### GRADIENTS OF VEGETATION / GRADIENTS OF REWILDING

Restore the forest belt and urban biodiversity

---

### GRADIENTS OF WETNESS

Create an interconnected buffer system to anticipate floods

---

### GRADIENTS OF PUBLIC SPACE

Form a connected system of public and common spaces for the new and current inhabitants

---

### GRADIENTS OF DENSITY

Introduce high-density clusters through multi-family housing units

---

### GRADIENTS OF USE

Integrate mixed uses on site to create a diverse living environment

The design follows the 3 30 300 rule, which is essential for improving urban quality of life. Each housing unit overlooks at least three trees, providing a direct connection to nature and promoting mental wellbeing. The total canopy cover of the site is 30%, contributing to environmental sustainability by reducing the urban heat island effect and improving air quality. In addition, a high quality park is located within 300 metres of each residence, providing easy access to recreational spaces and encouraging physical activity (3-30-300 Regel, n.d.).

By implementing these principles, the design not only addresses environmental and social sustainability, but also creates a harmonious living environment where nature and community coexist seamlessly. This holistic approach ensures that residents enjoy the benefits of green spaces, fostering a resilient and healthy urban ecosystem.

◀ **Figure 100**  
Coexisting of the gradients  
results in different rooms.



100m



## FOREST ROOMS

*“And while at it, we are unnecessarily destroying a large part of the rest of life. Imagine! Hundreds of millions of years in the making, and we are extinguishing Earth’s biodiversity as though the species of the natural world are no better than weeds and kitchen vermin. Have we no shame?”*

(Wilson, 2016, p.36)

This quote from E.O. Wilson sums up how the scarce space in Flanders is still managed today. As mentioned earlier in the analysis, many new developments are planned in the Lint area, almost all of them on former open spaces. The remaining nature in the current landscape is still seen as leftover space for human consumption one day.

The design aims to reverse this trend by introducing biodiversity into the site through forest rooms. In addition, the rooms integrate a water system to address the flooding predicted by earlier analysis. The *Zevenhuizen* watercourse is incorporated into the new water management system, which includes infiltration ponds (dark blue) and a network of wadi’s (light blue) designed to collect and absorb overflow from heavy rainfall.

*“In this vision of life on Earth, wilderness no longer exists; all parts of the world, even the most remote, have been adulterated to some degree. Living nature, as it evolved before the coming of man, is dead or dying.”*

(Wilson, 2016, p. 48)

The chapter *Gradients of Commons* from the first booklet explained the concept of commons from a human perspective. This design will extend the concept to include fauna and flora, ecosystems that also form commons. Within the forest spaces, human presence will be prohibited to protect these ecosystems, creating a non-human common.

◀ **Figure 101**  
The forest rooms serve as a space for non-human commons.



Existing popular

Zevenhuizen course

Single-family house



(Wet) meadow + shrubs

(Wet) meadow

Shallow water

Shrub

Forest

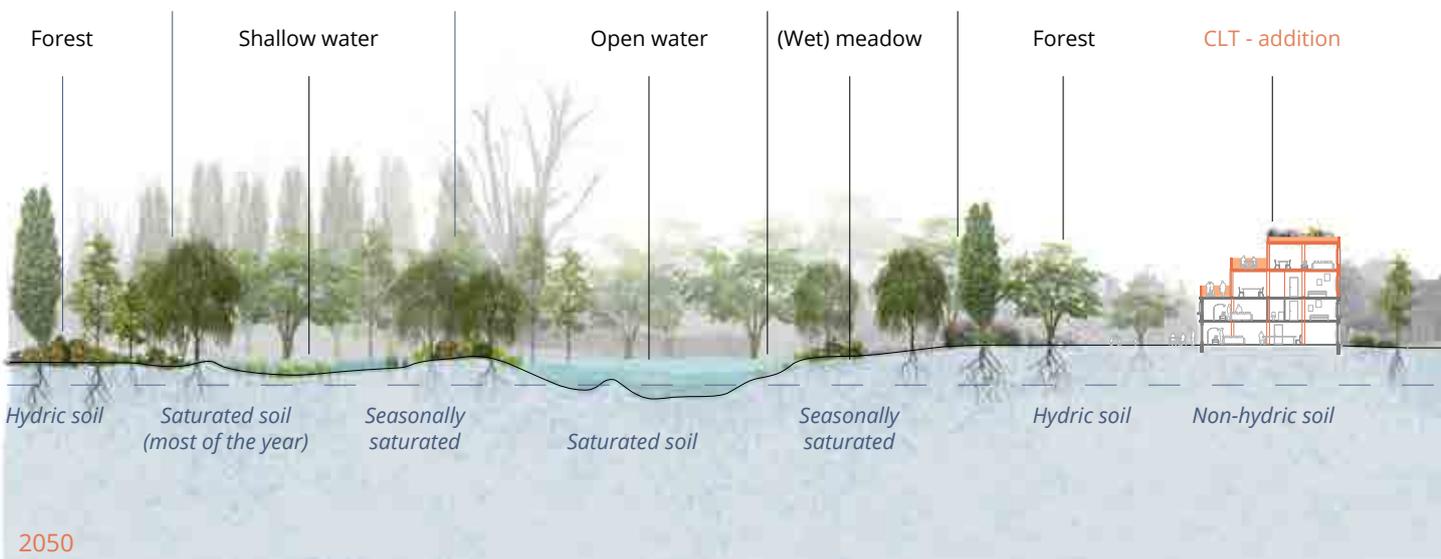
Shallow water

Open water

(Wet) meadow

Forest

CLT - addition



Hydric soil

Saturated soil (most of the year)

Seasonally saturated

Saturated soil

Seasonally saturated

Hydric soil

Non-hydric soil

Wild

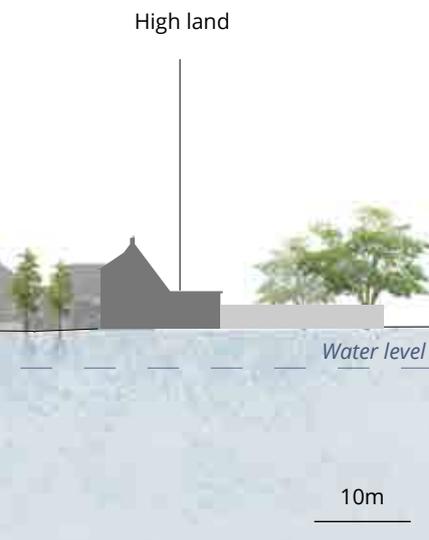
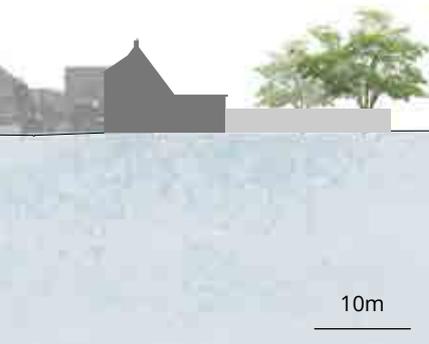
## REWILDING AND REVITALIZATION

The natural condition of the *Zevenhuizen* site has deteriorated significantly. In 2022, preparatory maintenance work was carried out to make the site inaccessible to the public and ready for construction. Trees were cut down and the remaining land was sown with maize and is now used for agriculture. The only remaining trees are a row of poplars and a row of pollarded oaks. (N-VA Lint, 2024)

A section of the site shows the *Zevenhuizen* watercourse, which connects the site's water management with the buffer zone of the lower-lying Papendonk forest to the north. The dashed line in the lower section illustrates the current water level in Lint, showing that the deepened ponds in the design are intended to hold water permanently, thereby attracting water-based ecosystems. If the wadi's overflow, the adjacent swales are designed to capture the excess water.

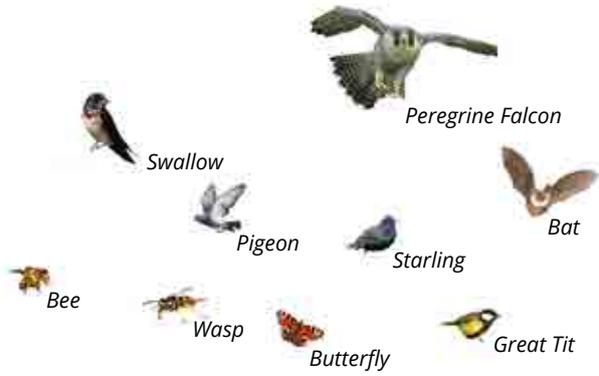
The top section also cuts through an existing detached villa, whose garden is enclosed by a wall and serves as the residence of a single family. The design proposes to radically return this area to nature by planting new native tree species at a sufficient distance from the existing trees. These new plantings will create a natural division of the forest rooms, forming an urban corridor for the local fauna. A radical return to nature also means that the area will be inaccessible to humans, creating a non-human common.

The density of the existing detached villas will be increased by adding floors of lightweight construction, such as cross-laminated timber (CLT), to the existing buildings and converting the houses into multiple compact living units. In addition, the perimeter fences of the properties will be removed to create an open relationship between the gardens and the new natural area in the rewilding zone. This approach aims to accommodate three to four times the current number of residents on the same land area.



Manicured

◀ **Figure 102**  
Section of present situation  
and future design proposal.



**Figure 103**  
Enhancing new ecosystems on  
the site.



## ENHANCING THE BIODIVERSITY

By focusing on rewilding and prohibiting human presence, the site has the potential to enhance biodiversity and foster the creation of new ecosystems - in air, water, and soil, and in both fauna and flora.

In this *non-human common*, species live in a protected area where they can thrive. The interconnected urban forest spaces, linked by tree corridors, allow flora and fauna to spread and expand across the site over the years.

*“The word ‘wilderness’ refers to undomesticated places not yet yoked to the human will. In the parlance of conservation science, ‘wilderness’ means a large area within which natural processes unfold in the absence of deliberate human intervention, where life remains ‘self-willed’.”*

(Wilson, 2016, p. 48)





## PUBLIC ROOMS

The analysis of land use in Lint revealed that, apart from the municipal park, there are few public spaces of sufficient size and quality.

Strategy 5 had already clarified that an equivalent area of public space would be added to the site in the form of public rooms. Separated from the non-human commons by corridors of trees, these rooms are centrally located on the site and serve as a public hub. From this hub, various paved paths meander through the site, creating connections to the public spaces at the boundaries of the site. New buildings for public village functions are planned, and the various footpaths and cycle routes weave through the site, providing good accessibility and a link between the west and east sides of Lint.

◀ **Figure 104**  
The public rooms serve as a social hub, connecting the eastern and western parts of Lint.





Human common



Non-human common

Non-human common



Non-human common



Human common

## PUBLIC CONNECTEDNESS

### 1 GRASSY AREA FOR ACTIVITIES

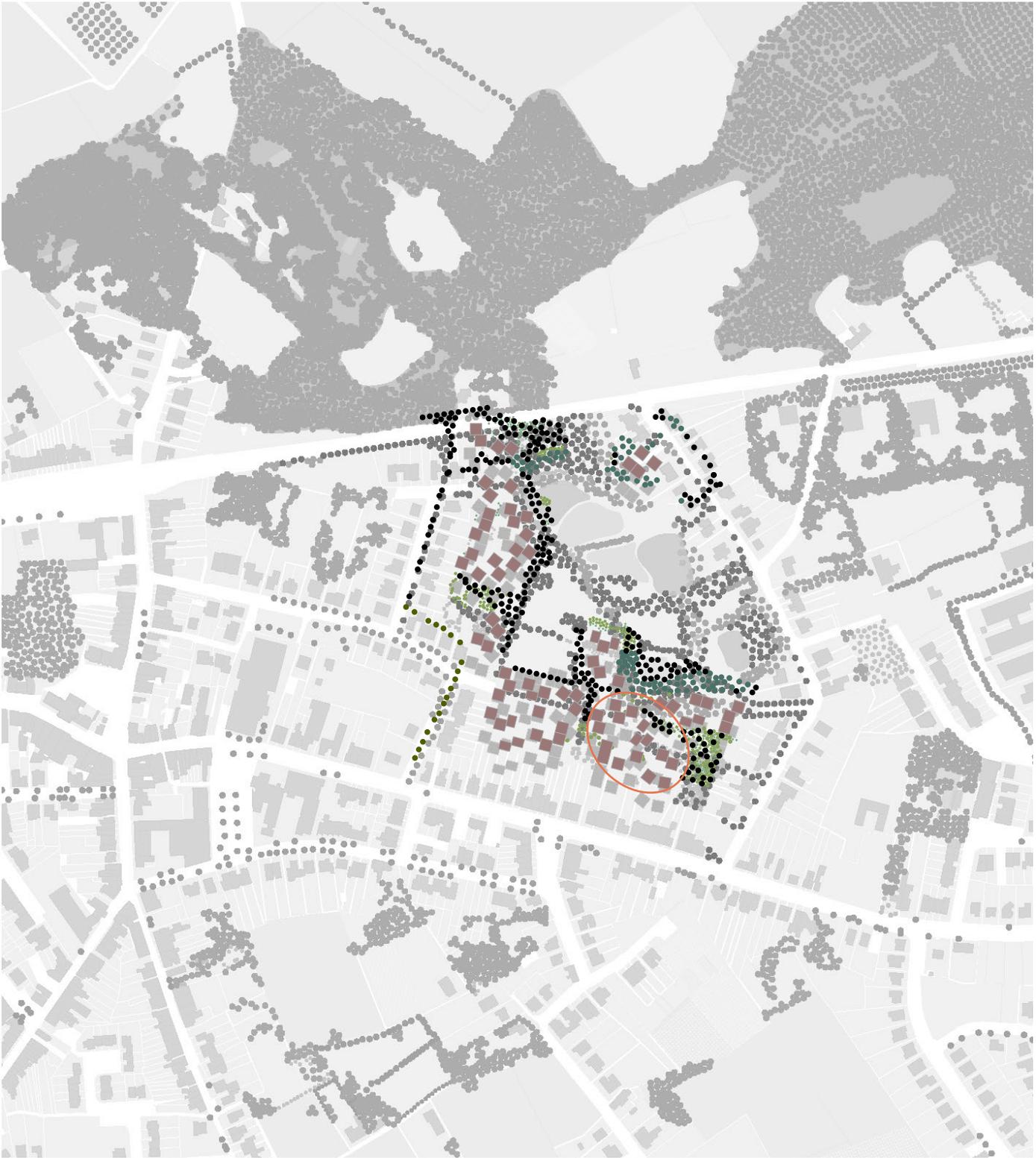
Situated in the middle of the site, between two elevated cycle and walking paths linking the west and east sides, this grassy area is intended to be multifunctional for all Lint residents. In the summer it can host food truck festivals with live music, be the site of lovely picnics or the venue for local youth football tournaments.

The public space is naturally separated from the non-human common by a gradient of vegetation. There are no fences or barriers; instead, the natural shape of the vegetation subtly communicates to residents that the rewilding zone is off-limits, fostering a sense of respect for the protected area.

### 2 PUBLIC ALLEYS

In the built-up areas around the site, some plots remain undeveloped. It has been decided to leave these spaces empty, so that the public area can extend towards the rewilding zone. These alleys can be used for public or commercial activities such as coffee bars or small cafés. A view platform hovers above the infiltration pond, allowing local residents to view the new fauna and flora that Lint will provide without being a disruptive presence.

◀ **Figure 105**  
The public rooms interact with the forest rooms without disrupting the non-human commons.



## COMMON ROOMS

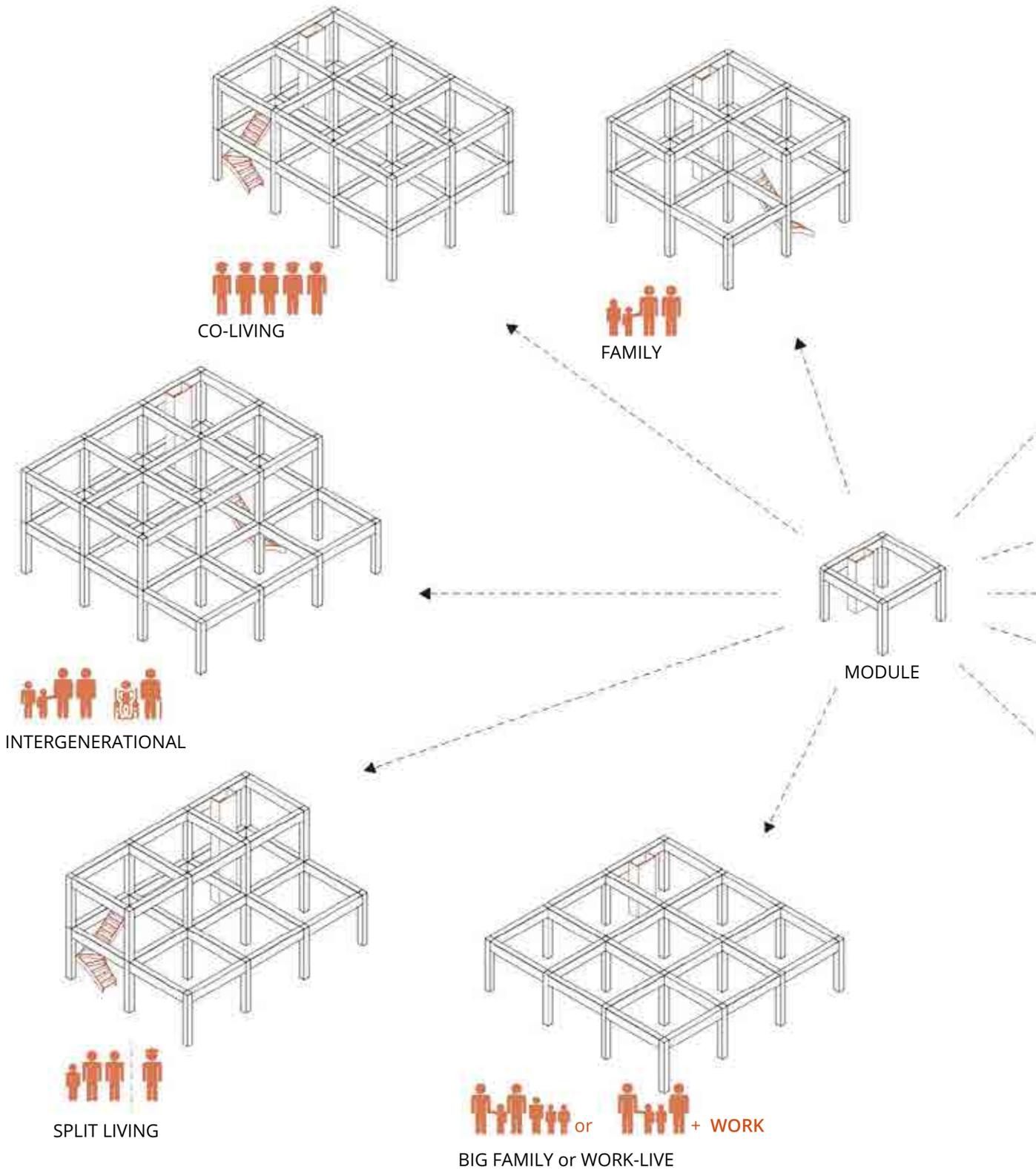
The third and final type of room is the common room, where innovative typologies of communal living nestle into the open spaces defined by nature and its forest corridors. Here there is a shift from individual plots to clusters of dwellings under the motto “living with and in nature”.

The communal spaces act as a bridge between the existing peripheral buildings and the newly planned public spaces. The following part of the thesis will further explain the function of these communal spaces.

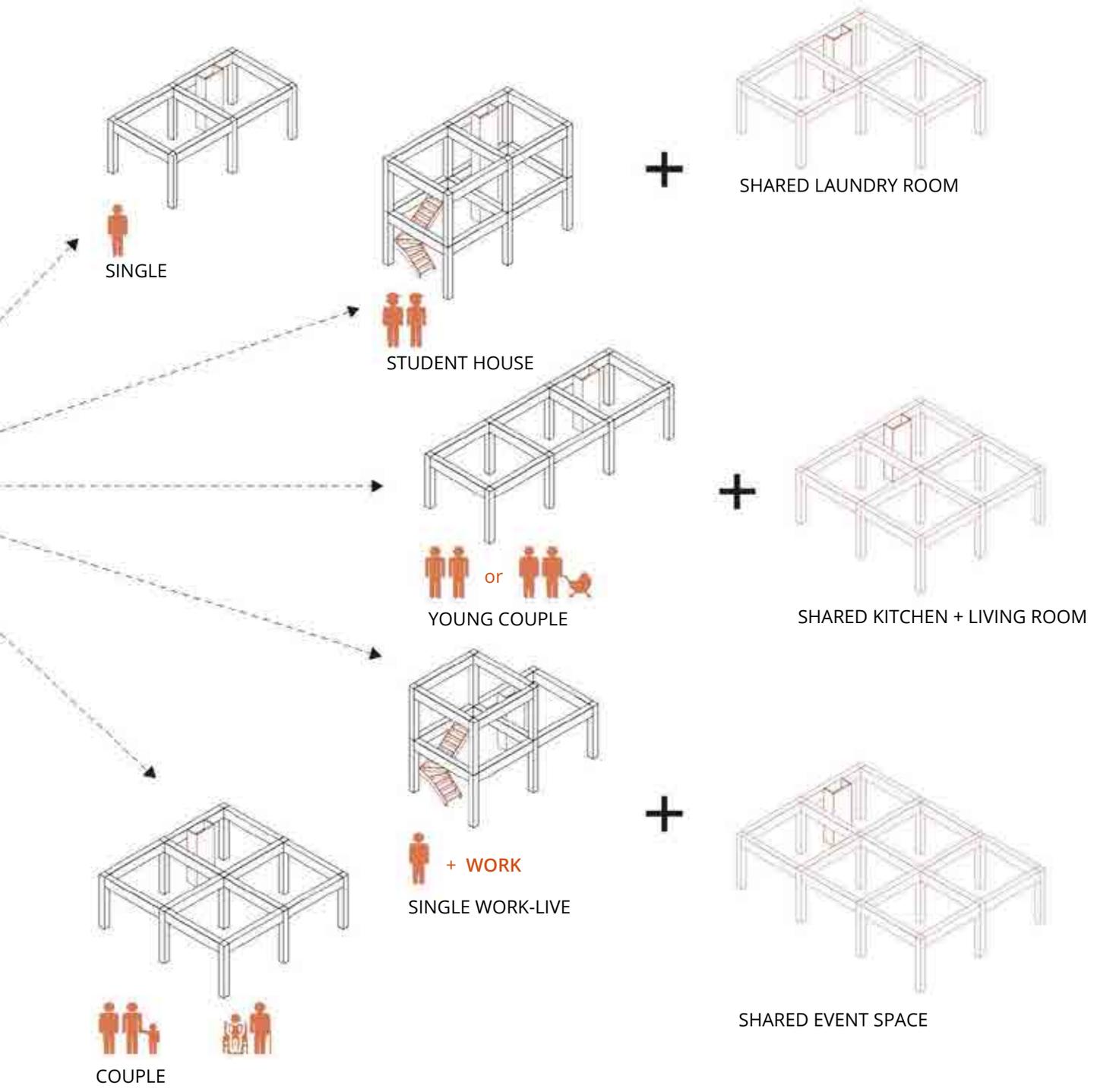
It begins with the modular construction of the clusters, starting with the smallest unit, which can then be scaled and expanded. After creating different housing units, they are stacked and connected to smaller clusters that form a large, interconnected community around common courtyards, where living and experiencing together are central.

◀ **Figure 106**  
The housing clusters integrate with nature, bridge old and new, and create communal areas.





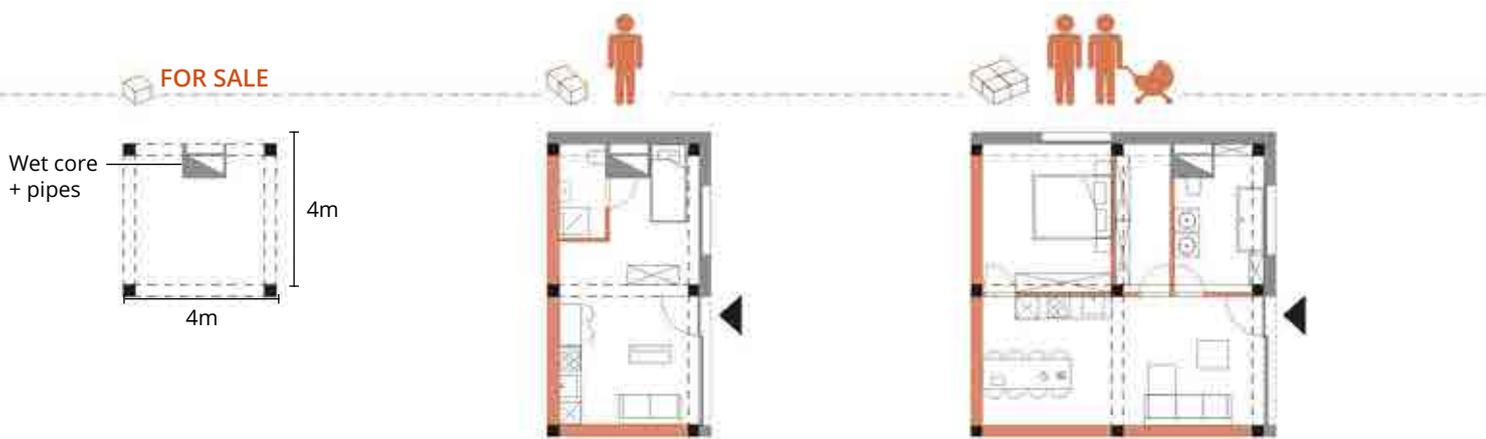
# CONCEPT: ADAPTABLE UNITS



# LIFELONG HOMES

The modular home system is designed for flexibility and customization, built from standardized modules each measuring four by four meters. These modules are prefabricated and constructed from cross-laminated timber (CLT), allowing for rapid assembly and disassembly.

Homes grow with their occupants, from a cozy studio for a single person to a spacious dwelling for a growing family, accommodating every stage of life.



Each unit's construction begins with a base module that includes a wet core and necessary piping. This wet core is a standard feature in every unit, serving as the starting point for the modular system. From this initial module, the system can be expanded and adapted to create a variety of unit configurations, providing a versatile solution for modern building requirements.

A single person can reside comfortably in a small studio of 32 m<sup>2</sup>. By situating a compact bathroom in the corner, the remaining space stays open, allowing for a flexible interior layout.

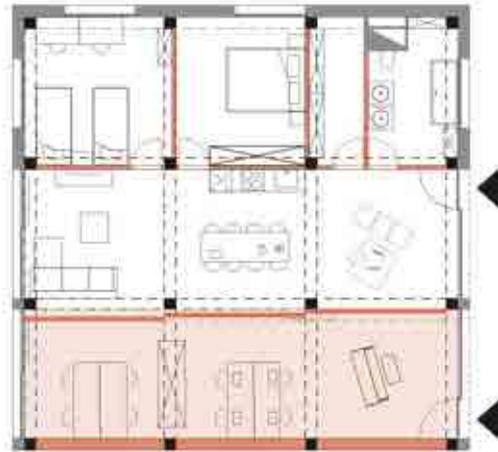
For a young couple, the space can expand to four modules. The bathroom can be enlarged, and the living areas can be rearranged to create a more spacious environment.



- CLT structure
- Fixed exterior walls
- Flexible partition walls



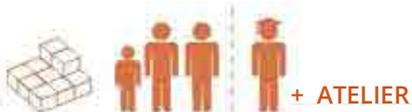
When the family expands, so does the home. When the family grows, the home can grow with it. Adding two more modules provides a shared bedroom for young children and an additional playroom, accommodating the evolving needs of the family.



The modular system's flexibility extends beyond housing. Additional functions, such as a shop or an atelier for workshops, can be incorporated, creating a live-work unit. These units can become the vibrant centre of a housing cluster.

The extra atelier space can either be integrated into the main living area or kept separate with sliding walls. The atelier also has its own entrance, ensuring privacy and minimal disruption to the main living space when desired.

**Figure 107**  
Modular home system.



REUSE



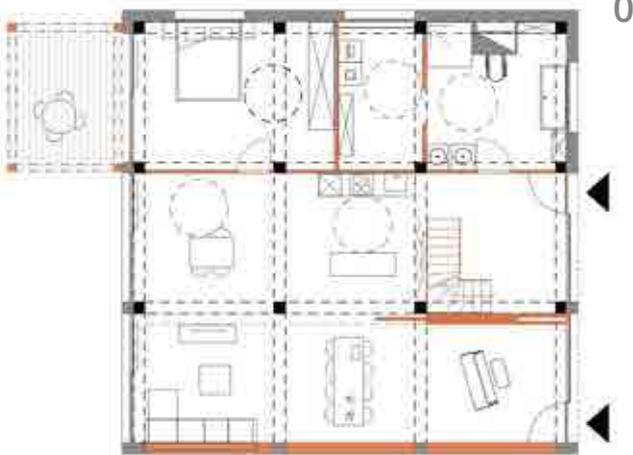
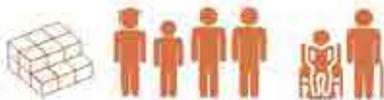
MATERIAL BANK

Walls can be easily removed and reconfigured to meet changing needs. The removed walls are collected in a communal material bank and reused by other residents on the site. This process promotes sustainability by reducing waste and minimizing the need for new materials. The continuous circulation of building elements ensures that resources are efficiently utilized, contributing to an eco-friendly and resource-conscious community.

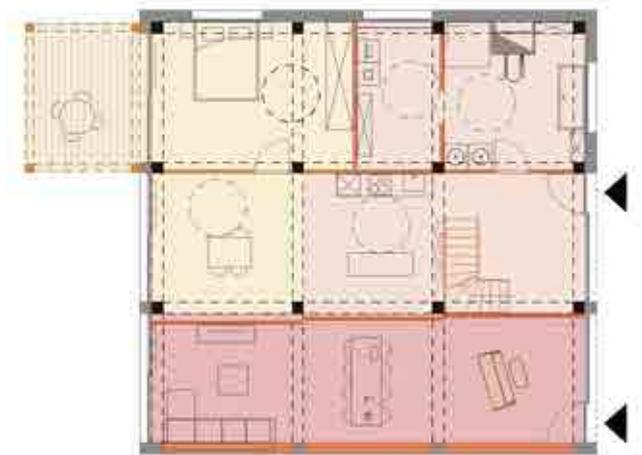


When children grow up and go off to study, a studio can be added on top of the existing unit. This provides a private space for a student, complete with a bathroom and kitchen area. It remains connected to the main house but has a separate entrance on the first floor.

In addition to indoor space, each “home within a home” is allocated its own outdoor area. This is facilitated by a flexible exoskeleton attached to the housing units

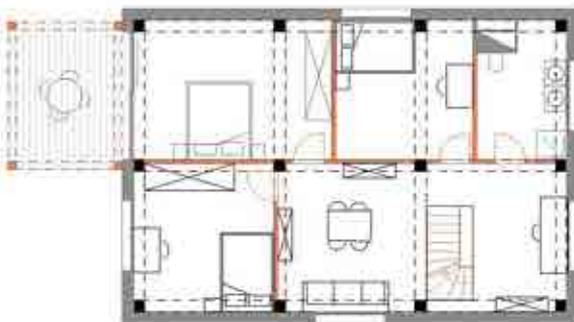


ONE OPEN LIVING SPACE



SPLIT LIVING SPACE

● Grandparents ● Family ● Both



+1

For aging grandparents needing care, a multigenerational unit can be created, offering privacy for everyone when needed. The first floor is made completely wheelchair accessible. A large living and dining area can be separated from the grandparents' living space with sliding walls and a curtain divides the entrance from the living areas. The sliding walls allow for the creation of two distinct living spaces or can be opened up to form one large living area.

In addition to indoor space, each "home within a home" is allocated its own outdoor area. This is facilitated by a flexible exoskeleton attached to the housing units.

2m





## ADAPTING TO THE SEASONS

The adaptable layout of the units allows the interior to change with the sun's position throughout the seasons. This design ensures that the spaces remain comfortable and energy-efficient year-round, seamlessly adjusting to seasonal variations and changing sunlight.

### Summer Configuration

In the summer, the unit's living space can transform into an expansive open area, where spaces serve multiple functions, allowing sunlight to fill the space. The suggested interior layout shown above demonstrates this versatility.

During the morning, the east side of the unit is perfect for capturing the early sunlight, making it an ideal spot for a small breakfast table. As the day progresses, the southern section of the unit can become too hot, making it suitable for an atelier space, which is often used for evening workshops. On cooler days, this area can also function as a dining space. As the day progresses and the sun moves away from its highest point, the western part of the unit becomes the focus. The living area with couch, located in the west, benefits from the evening sun, making it an excellent space for relaxing in the afternoon. The dining area is also strategically placed here to enjoy the last rays of sunlight in the evening.

### Winter Configuration

In the winter, with shorter and colder days, the layout shifts to maximize warmth. An enclosed colder area can be created by closing the moving panels. This allows the entry space and the atelier area, which can be kept cooler, to be separated from the main living area. The living area then moves to the south and west parts of the unit, as these receive more sunlight and are warmer during the winter months.

**Figure 108**  
Unit configuration in summer and winter.  
Source Gaisma, May 2024

2,5m 

-  Enclosed colder area
-  Comfortable temperature
-  Afternoon thermal peak



The cross-sections illustrate the light entering from the south at noon in both summer and winter, highlighting the multi-functional role of the exoskeleton. With a south-west orientation in most units, the exoskeleton offers a private terrace. In the summer, it acts as an additional outdoor space and its depth prevents direct sunlight from entering the living areas, preventing overheating. In winter, sunlight enters at a lower angle, allowing the living spaces inside the unit to still benefit from the thermal advantages. The exoskeleton can be used as a winter garden, acting as a thermal buffer to improve energy performance.

# STACKING AND CONNECTING UNITS

## BRIDGES BETWEEN GENERATIONS

When these various types of residential units are combined by connecting and stacking them, an engaging living environment is created with a diverse mix of social groups and classes.

-  **Communal unit**  
Each cluster has at least one communal unit that can be used for communal activities or for washing and drying clothes.
-  **Single-family unit (140 m<sup>2</sup>)**  
This apartment can be equipped with a master bedroom and at least two separate rooms for young children. It features a large open living and dining area that can be flexibly and adaptably arranged.
-  **Intergenerational unit (236 m<sup>2</sup>) + wheelchair accessible unit**  
The ground floor unit is wheelchair accessible and can be part of an intergenerational living arrangement, with the upstairs unit providing sleeping and living space for the younger generation. There is also a larger living and dining area on the ground floor for the whole family, which can be further divided if required.
-    **Studio (48 m<sup>2</sup>)**  
This compact unit is spacious enough to serve as a first home for a single person or young couple, with plenty of living space and private outdoor space.
-  **Life-work family unit (140 m<sup>2</sup>) + small studio (32 m<sup>2</sup>)**  
This unit is spacious enough to accommodate a family, with the option to divide part of the living area into a study for the residents. The small studio upstairs, accessed via an internal staircase, can be used as a first home for one of the grown-up children.
-  **Apartment (64 m<sup>2</sup>)**  
This apartment is spacious enough for a couple with a child. It provides a suitable living space until the child moves out.
-  **Studio (32 m<sup>2</sup>)**  
This studio is for one person.





## AN ARCHITECTURE FOR ENCOUNTER

The first step in creating new ways of living together has already been taken: stacking and connecting residential units for different social groups, allowing them to expand or contract with their life stages.

To facilitate effective interaction between residents, communal spaces are introduced in the form of roof terraces, platforms and courtyard gardens.

The courtyard gardens serve as central areas within the clusters where different types of vegetation can thrive. Residents can create small vegetable gardens or gather for picnics in these spaces.

A staircase leads from the courtyard to the platform, which provides access to the various residential units on the first floor. This large space can be used for a variety of activities, giving children a place to play and neighbours a place to eat together. The communal roof terrace is more intimate and can be used for communal meals and barbecues in good weather.

In addition to the communal areas, all units have private outdoor spaces in the form of roof terraces or spaces created within the exoskeleton.

The platform creates a large covered area on the ground floor that functions as a threshold space that can be used even in bad weather. It mediates between the different residential units, commercial spaces and communal areas on the ground floor.

● Communal spaces

● Private terraces

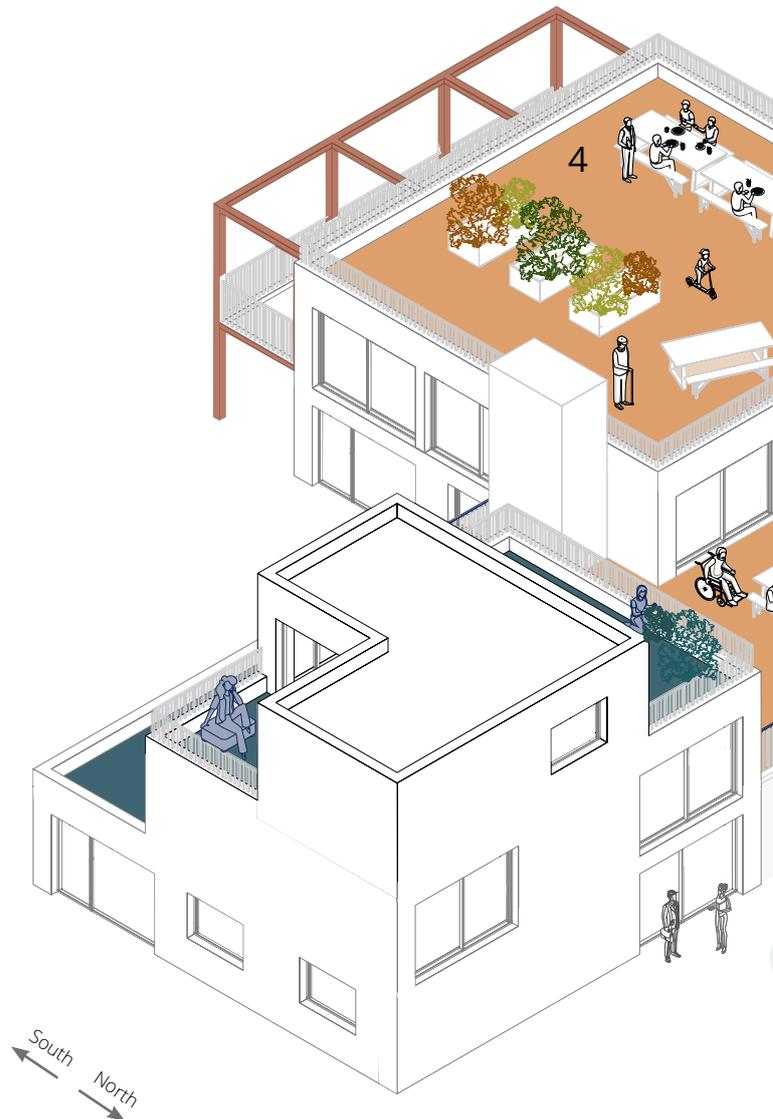
● Exoskeleton

1 Courtyard garden

2 Staircase

3 Platform

4 Roof terrace





## MIXED-USE OF THE GROUND FLOOR

### Private dwellings

The gray units on the plan represent the residential units within the various clusters. Thanks to the modular system, these units can vary in size and layout, creating a vibrant and diverse mix of living spaces.

### Economic functions

Each cluster includes a range of live-work units to boost the vitality of the neighbourhood and the local economy of Lint. These units range from office space for young entrepreneurs to cafes and bakeries that can provide food and drink for cluster residents.

### Communal units

Each cluster includes at least one common unit accessible to all residents of that cluster. The common unit is designed to be wheelchair accessible. In addition to a large kitchen and dining area, this unit includes various laundry facilities and storage space. This approach allows for the technical facilities in the residential units themselves to be minimized, optimizing the living space.

#### 1 Exoskeletons

are added to the west and south sides of the units to create high-quality private outdoor spaces.

#### 2 Threshold space

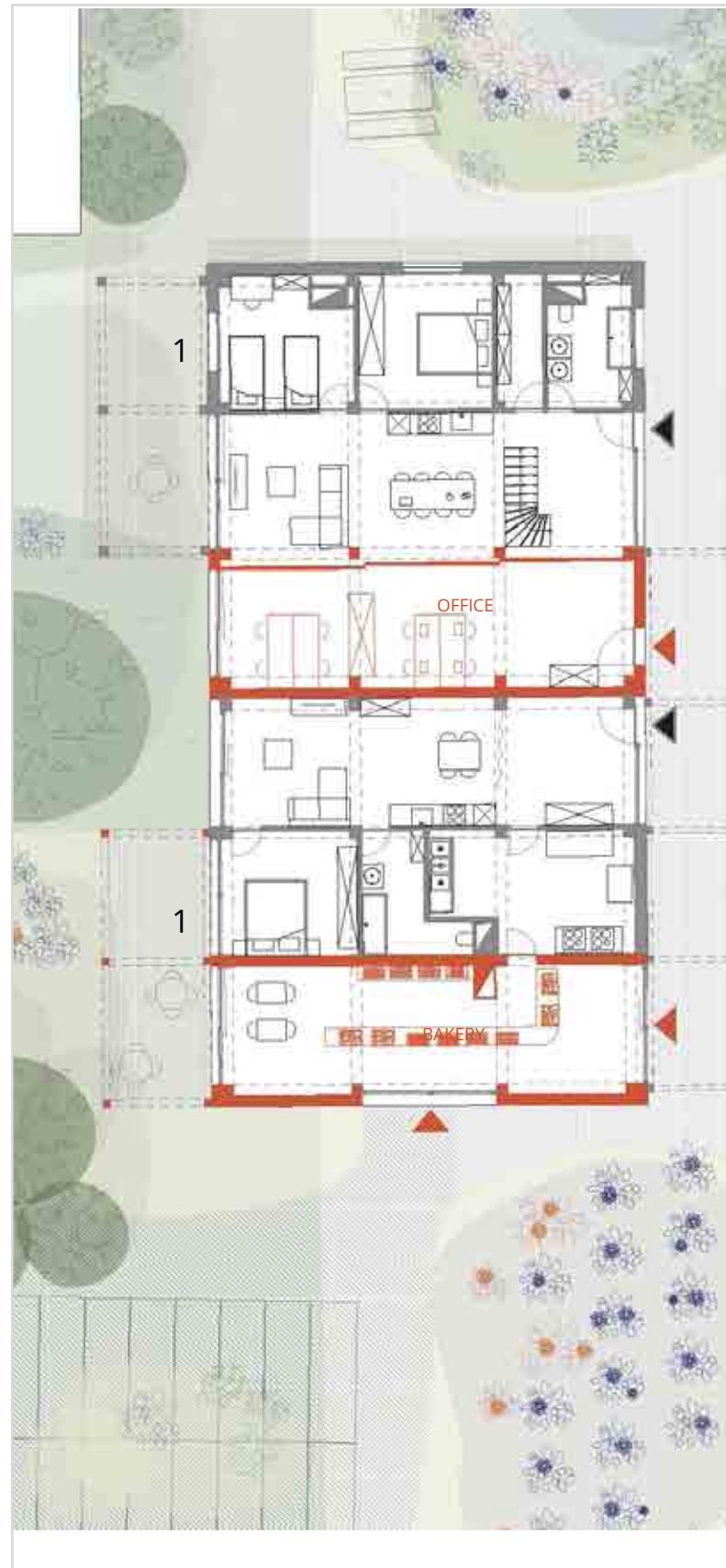
The same modular grid is extended to the courtyard between the various residential blocks, creating a covered threshold space between the economic, common, and private units, and forming the circulation platform on the first floor.

#### 3 Wheelchair accessible unit



Level +0

2m





## COURTYARD PLATFORM AS MEDIATOR

The first floor platform also serves a mediating function, facilitating interaction between various units. The entrances to the units are situated in narrower corridors or under smaller platforms, thus creating a **gradient of intimacy** that transitions from the common area to private spaces.

## GRADIENTS OF PERMEABILITY

Reflecting on the analysis of the permeability of the research areas in Lint, the design of the clusters and the surrounding environment is oriented towards the minimisation of impermeability to the greatest extent possible.

The legend below illustrates the layout of the pathways and vegetation. Where feasible, roofs are equipped with green roofs, which serve to retain and slowly discharge rainwater.



Good permeability  
High grasses



Good permeability  
Low grasses



Medium permeability  
Tree bark

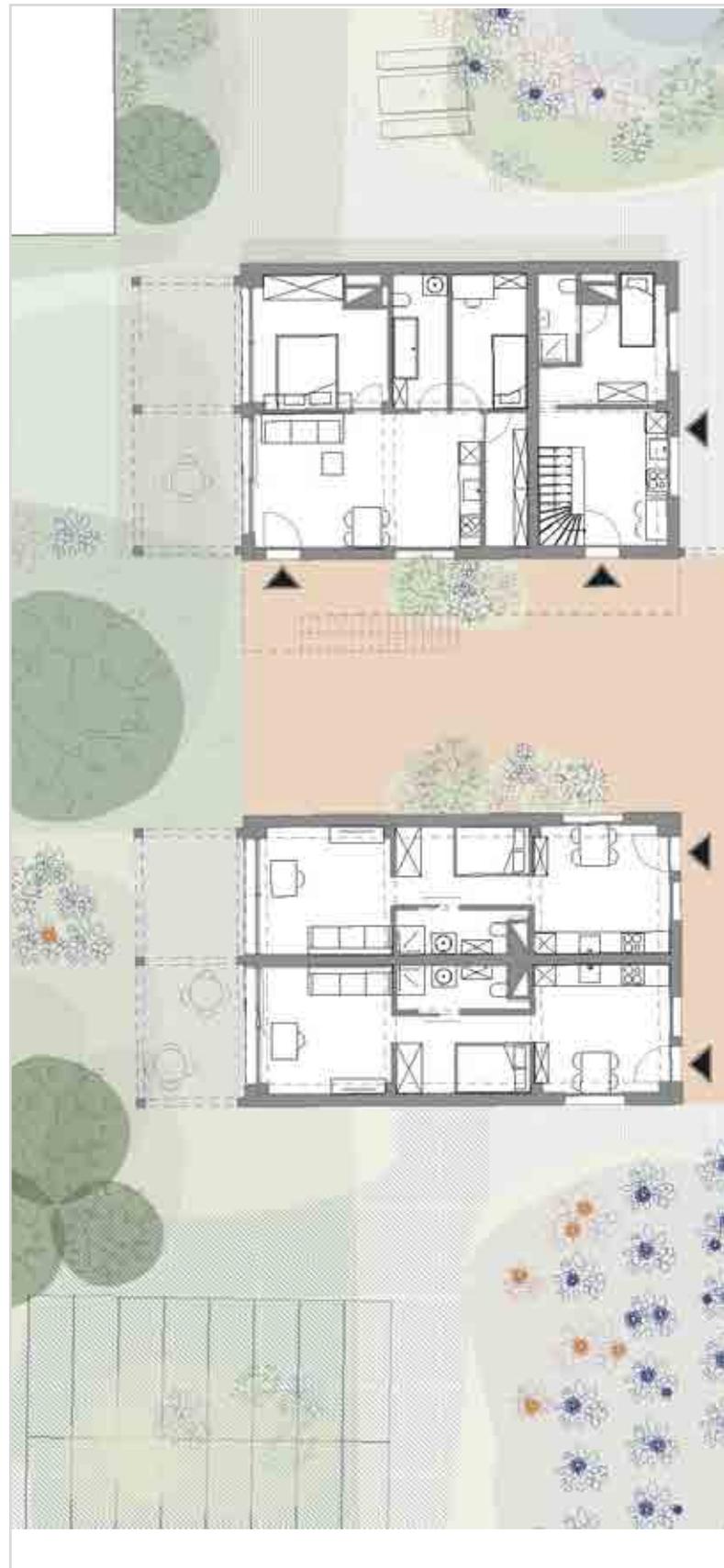


Low permeability  
Gravel path



Level +1

2m





# CLUSTER WITHIN A CLUSTER

## GRADIENTS OF PUBLICNESS



Public - Common

- 1 Public alleys**  
run alongside the clusters and lead to the communal areas.
- 2 Housing clusters**  
are arranged around communal courtyards.
- 3 Urban farming**  
Community gardens allow residents to grow their own vegetables and fruit.
- 4 Wadi's**  
manage water drainage on a smaller scale within clusters.
- 5 Playground**  
Each cluster has a play area and equipment for the youngest residents.
- 6 Renewable energy**  
Photovoltaic panels will be installed on the roofs of the highest units to provide the clusters with renewable energy.

Collage



The roof plan illustrates a potential cluster development within a common room surrounded by forest corridors extending from the rewilding zone. Alongside these trees, public alleys run from the main street, allowing villagers to reach the public room without passing through a cluster.

In the rewilding area, the water management system is designed to handle future floods, while smaller wadi areas and infiltration ponds are implemented within the common rooms to manage water at a local level. Combined with the emphasis on unpaved surfaces and high permeability, the design aims to return as much water as possible to the ground.

In the transitional space between the public and common areas, larger meeting places such as playgrounds can be established, and communal urban gardens can be created, thereby enabling the residents of the entire cluster to engage in urban farming.



Roofplan

7,5m



## MATERIALITY

The decision was made to use cross-laminated timber (CLT) for the construction of the various residential units. There are several compelling reasons for this choice. Firstly, as wood, CLT is significantly more sustainable than other materials such as concrete or brick. This means that the overall carbon footprint of the project will be significantly lower, in line with the project's environmental objectives.

CLT's strength and versatility play a crucial role in the modularity and circularity of the design. Its structural integrity allows the creation of modular units that can be easily assembled, disassembled and reconfigured. This modularity is enhanced by the combination of traditional craft techniques with modern construction methods, resulting in hybrid components that have a longer lifespan and can better withstand changes when units need to be expanded or reduced. This adaptability is essential in creating a resilient and sustainable housing solution.

In addition to its practical benefits, timber offers significant aesthetic value. The natural appearance of CLT can be fully appreciated within the cluster spaces, which blend harmoniously with the surrounding woodland corridors. This integration of natural materials helps to create a serene and visually appealing environment for residents.

The design also allows residents to personalise these spaces according to their preferences and needs. The exoskeleton can be customised with various elements, such as textile screens that can be flexibly rolled up or down to control sunlight and privacy. Residents can also convert these spaces into conservatories or verandas, or use sliding wooden panels to completely enclose the spaces, creating additional living areas that can be used throughout the year.

This approach not only enhances the functionality and comfort of the units, but also allows residents to actively participate in the design of their living environment. By providing the flexibility to adapt and personalise spaces, the design fosters a sense of ownership and community, essential components of a sustainable and vibrant neighbourhood.





# FROM ISOLATION TO INTEGRATION

EXISTING: 2024



Collage  
↓

## EMBRACING THE EXISTING BUILDINGS

The roof plan shown earlier visualises the whole project. However, it is important to recognise that in reality this would have to be carried out cluster by cluster over a number of years.

The design process was challenged by the current periphery development of the site, consisting of detached and terraced houses, each with its own enclosed garden, sheds and garage boxes.

In the first phase of implementation, the clusters are positioned to approach the existing buildings and associated structures. The functioning of the clusters around the communal courtyards with gardens and wadi areas remains consistent with the earlier explanation during this phase.

Terraced houses



## PHASE 2: 2050



+0	Honey store	Local bio market	Restaurant	
+1		Apartments		Exoskeleton
+2		Apartments		

Collage

### INTEGRATING AND ENHANCING THE EXISTING BOUNDARY

However, in a later phase of the project, when a generational change occurs among the residents of the peripheral buildings, it is proposed to radically remove the fences and outbuildings and integrate the houses into the project.

The removal of private gardens is a significant decision, especially for Flemish residents. However, as designers we believe that this will not affect the residents' quality of life. On the contrary, the addition of the exoskeleton still provides residents with access to private outdoor spaces.

By opening the bridge to the clusters, more open space is freed up, allowing for the expansion of new units and the creation of high quality interspace. Elements such as urban farming, playgrounds and seating areas can flourish.

The ground floor of existing terraced houses can be functionally transformed to create space for new local economies and small and medium-sized enterprises (SMEs). A beekeeper and his bees can find space to thrive and sell fresh honey in a shop. A local organic market can sell vegetables, fruit and fresh produce from the community gardens, and a restaurant can use these products to serve local dishes.



5m

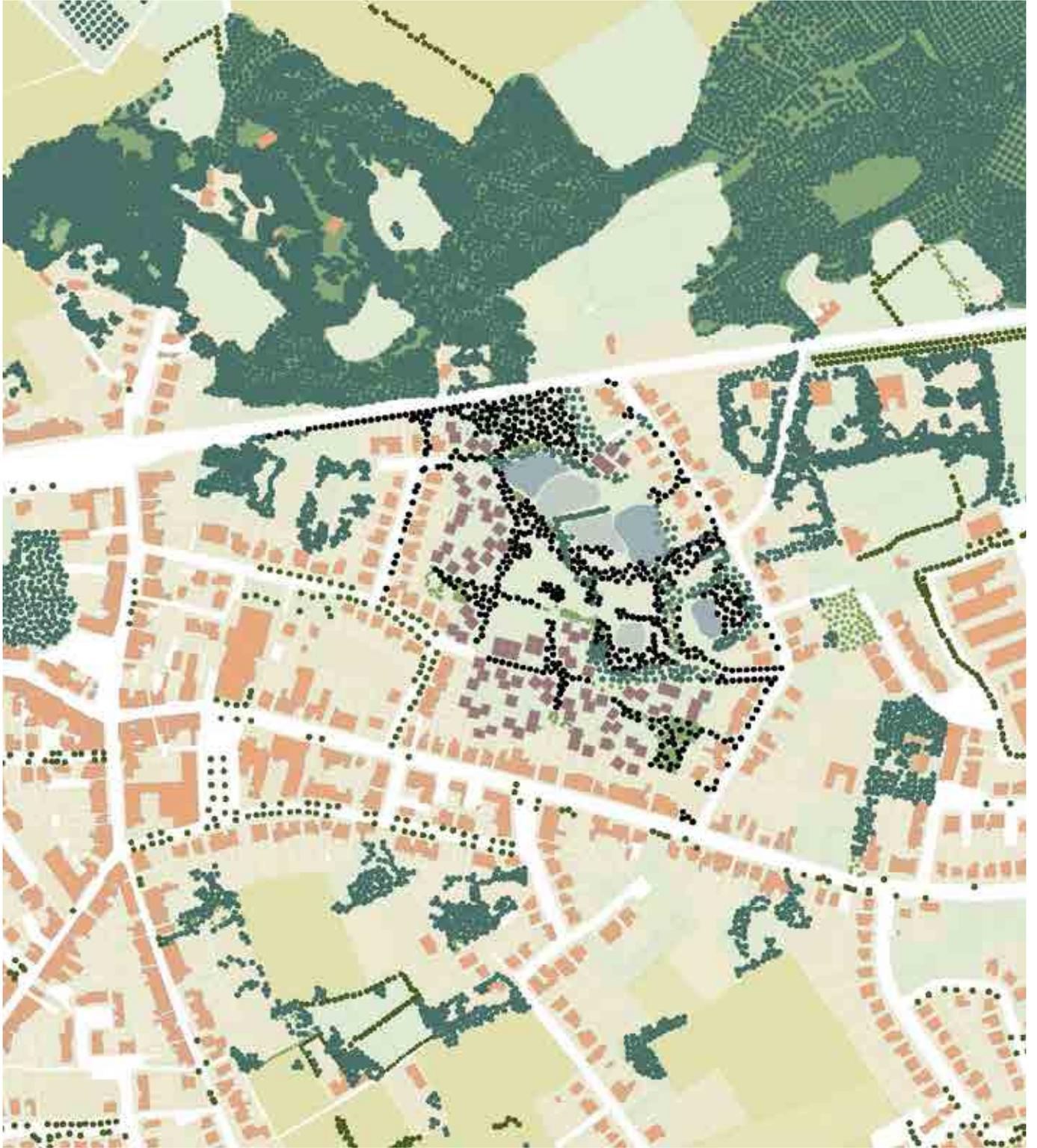
EXISTING: 2024



PHASE 2: 2050



## QUESTIONING THE FUTURE OF LINT



## A SUSTAINABLE ALTERNATIVE FOR LINT

The concept of sustainability can be broadly described as “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (United Nations Brundtland Commission, 1987). It goes beyond simply installing photovoltaic panels and using renewable energy. The three pillars include environmental, social and economic aspects, often referred to as Planet, People and Profit.

Our design proposal for the Zevenhuizen site in Lint, Belgium represents a comprehensive approach to sustainable urban development that integrates these three core components.

### PLANET

Inspired by the Mekong Delta, our design embraces the concept of living with water, which is essential for managing flood risks and increasing resilience to global warming. The site is designed to work with future anticipated flooding and the urban heat island effect, incorporating green infrastructure such as water buffer ponds, wadi areas for rainwater infiltration and extensive vegetation. Solar panels installed on the roofs of some units provide renewable energy, reducing the carbon footprint and promoting energy independence. The use of cross-laminated timber (CLT) as the primary material for modular units and circular components provides an alternative to other high footprint construction materials such as concrete. The transformation of private gardens and sheds into high quality communal gardens with play areas and urban agriculture not only enhances biodiversity but also creates a sustainable urban ecosystem.

### PEOPLE

Our commons integration approach, learned from the Mekong Delta, focuses on creating common spaces that enhance community interaction and social cohesion by arranging units in clusters that create gradients of intimacy. The communal gardens and playgrounds provide residents with opportunities for social engagement, recreation and community activities. Urban farming initiatives allow residents to participate in growing their own food, fostering a sense of community and self-reliance. Intergenerational living arrangements and diverse housing options ensure that people of all ages and backgrounds can live together and support each other, strengthening the social fabric.

### PROFIT

The design incorporates a diverse mix of housing units to suit different demographic groups, from small and affordable units for individuals and couples to larger units suitable for families and intergenerational living. This inclusivity ensures that the housing market remains accessible and adaptable to the changing needs of the population. By providing work/life units and space for small and medium sized enterprises (SMEs) on the ground floor of the existing terraced houses, we are encouraging local economic growth and resilience. These SMEs, which could include craft workshops, restaurants, cafes and shops selling products from our urban farming initiatives, create employment opportunities and stimulate the local economy. Profit also goes beyond economics, since the proposal would profit the health and quality of life of humans and provide havens for diverse biodiversity to thrive.

### INTEGRATING LESSONS FROM LINT

Our analysis of Lint informed several critical aspects of our design, particularly the need to address urban sprawl and harmoniously integrate existing built boundaries. By re-imagining new development as a vibrant community hub with shared gardens and spaces for SMEs, we not only preserve the character of the area, but also enhance its functionality and sustainability. This integration of new nature and vegetation with urban agriculture and community spaces creates a seamless blend between the built environment and natural ecosystems, promoting a higher quality of life for residents.

◀ **Figure 109**  
Proposed design for  
the Zevenhuizen site.



100m

## A FUTURE VISION FOR LINT

The creation of urban *forest rooms* in Zevenhuizen and the future vision for Lint demonstrate a shift towards a more symbiotic relationship between human settlements and natural ecosystems. By taking inspiration from the existing geometries of the Papendonck forest and the rows of poplars on the site, we have created a landscape where biodiversity thrives and new ecosystems can flourish undisturbed. This framework of urban tree corridors and forest rooms forms a resilient infrastructure that supports community clusters, fostering a new form of urbanism in harmony with nature.

However, the ongoing development in Lint reveals a tension between this progressive vision and current city policies that still view green spaces as residual space for human use. This highlights a critical challenge: the need to shift perceptions and policies to recognise the intrinsic value of open spaces, not just as resources to be consumed, but as vital components of a sustainable urban ecosystem.

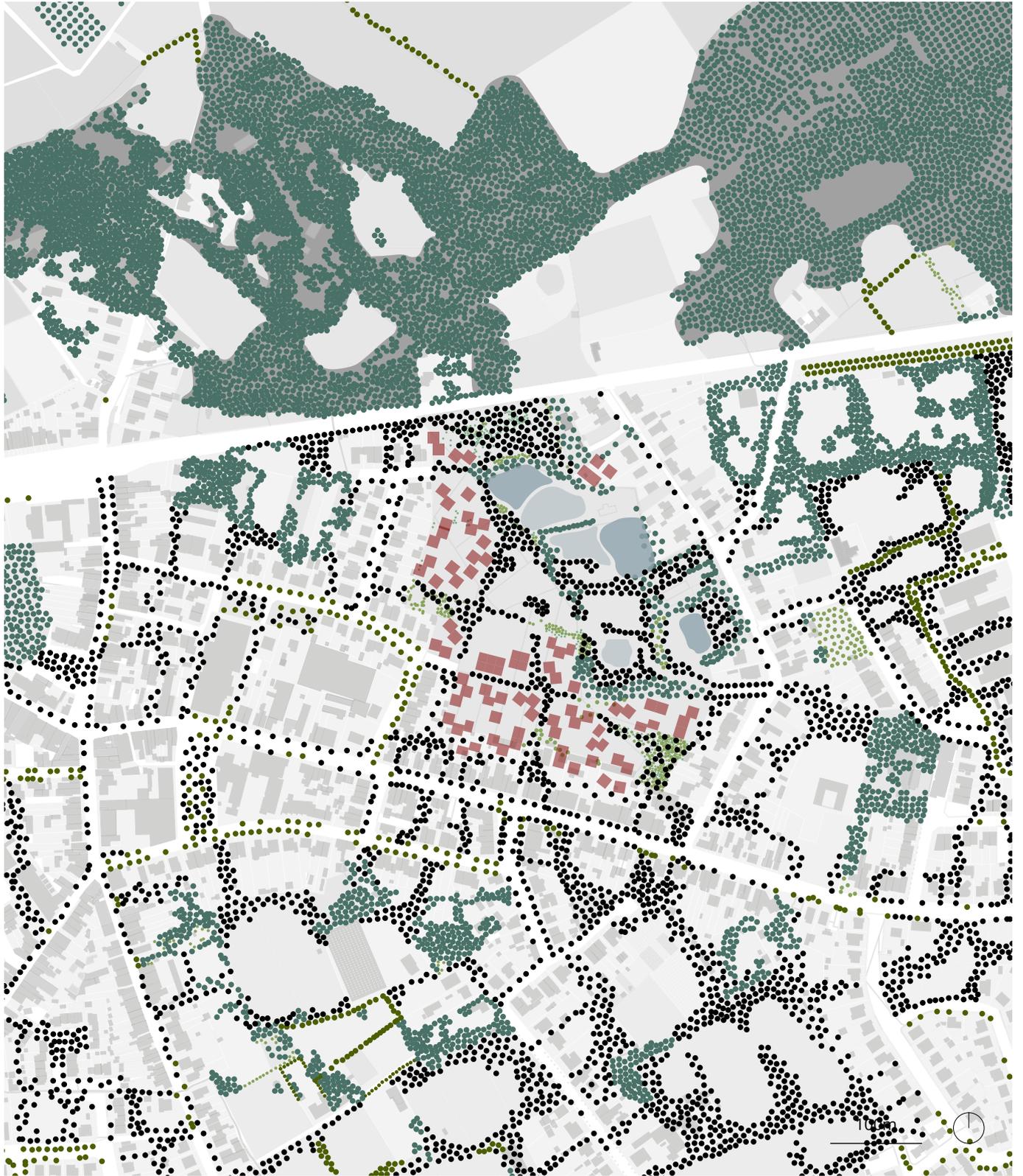
While the urban tree corridors in our design currently meet paved roads, this need not be seen as an end point. The ample width of these streets and their car parks can adapt to future shifts in mobility, providing more space for both slow-moving traffic and more nature. The paving and planting of street trees will provide connections with the *tentacles* on the Zevenhuizen site, allowing growth to spread throughout the village. The concept of *rooms* can spread like a virus, embedding a new landscape urbanism, agriculture and recreation in harmony with nature.

It is no longer humans but nature that takes precedence in the open spaces, determining where humans can settle and coexist with the natural environment and, importantly, where *not*.

**Figure 110** ►  
Future vision for Lint.

100m

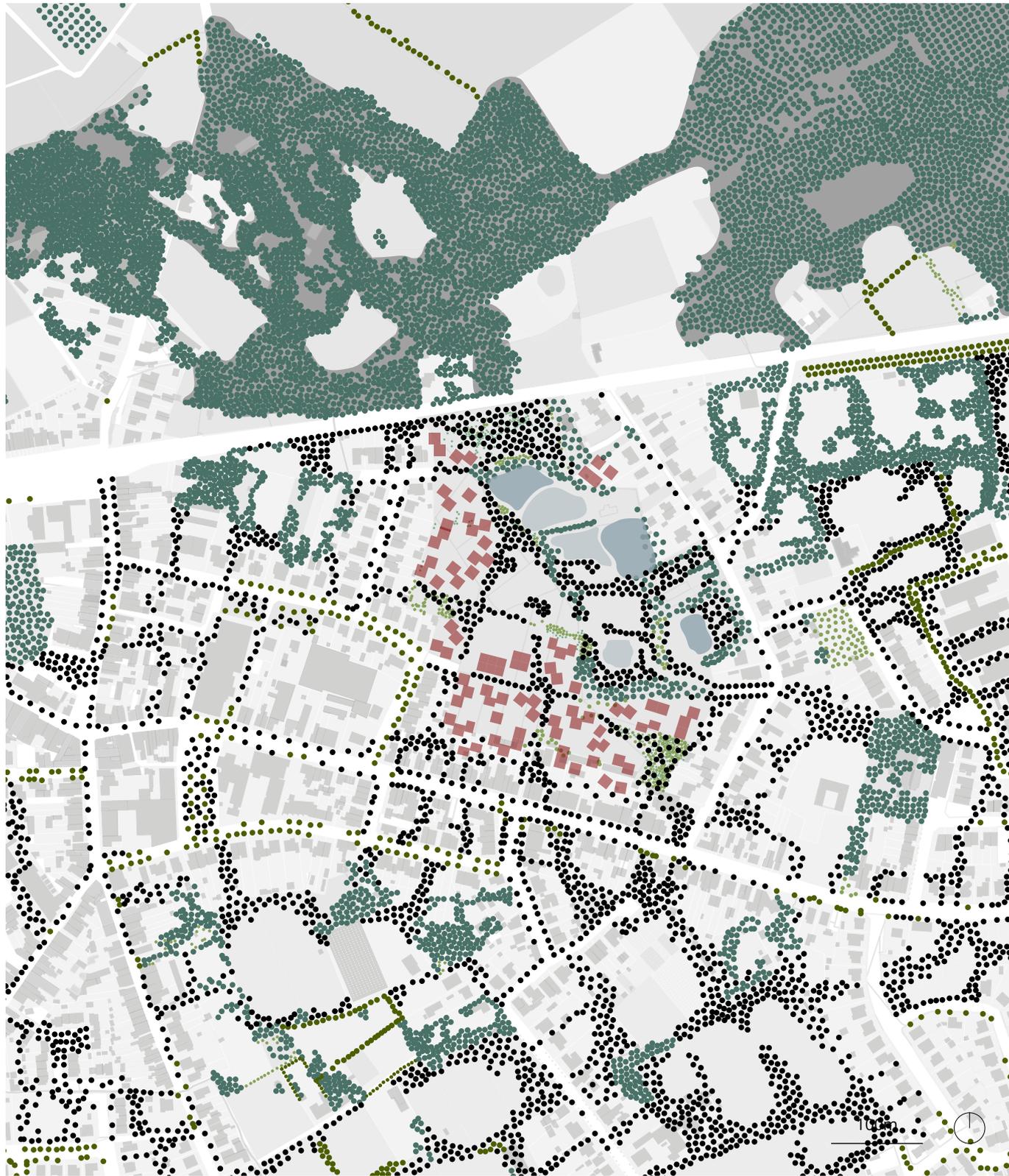




# PLANNED FUTURE FOR LINT



# ALTERNATIVE FUTURE FOR LINT





# ***CONCLUSION***

In this thesis fieldwork, exploration and analysis took place in the Mekong Delta in Cambodia and Vietnam, focusing on studying vernacular tissues, where local communities are intertwined with the landscape. Through this study, numerous key insights emerged, later applied to a design project in Flanders. These insights encompassed various aspects, including adaptability and flexibility, materiality, the role of commons and city-makers, living with seasons, and adapting to the consequences of global warming.

While cultural practices and local adaptations are deeply rooted in their specific contexts and are thus not directly transferable, they do offer valuable insights. These insights, however, can be interpreted and adjusted to suit the distinctive landscapes, socio-cultural dimensions, and climates of other regions.

In applying these lessons to Flanders, it was recognised that they needed to be adapted to the local context. This approach made it possible to develop solutions that were sensitive to the specific needs and characteristics of the region. The opportunity was taken to look into the future of Lint and to propose a design that promotes sustainability in its three facets: environmental, social and economic. As a result, the Zevenhuizen case has been designed as a powerful tool to adapt to the effects of global warming on a village scale and can serve as a pilot project and starting point for further expansion in the rest of the village.

We hope that this thesis demonstrated that innovative and contextually appropriate design can arise from understanding and reinterpreting key facets of vernacular practices from diverse cultures. As we face the existential crisis of global warming, there is a need for innovation, but this innovation must go beyond the technological. It is also about learning from Indigenous techniques, adapting them to local contexts and creating powerful solutions where high and low tech elements are integrated in a symbiotic way.

The experiences encountered in Vietnam and Cambodia has changed our approach to design and reshaped us as architects. Cultures can learn from one another and blend in meaningful ways. This journey has broadened our perspective, which moved away from the Western individualistic and homogeneous methods of building. It has opened us up to a more inclusive and adaptable perspective, one that anticipates the constant changes we and our environment are experiencing. Much like the diverse cultures that have been explored—full of dynamics, never static, always unique, and full of valuable lessons—our way of designing has become the same.

**Figure 111**

Landscape sensitive ribbon development in Hong Ngu, Vietnam.  
(De Ferm, October 2023)



**Figure 112**

Road based ribbon development in Lint, Flanders.  
(Dejaegher, September 2023)





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*Bridging Cultures* explores the potential of integrating principles of Mekong Delta vernacular architecture into the Flemish village of *Lint*. Building on the fieldwork of the first booklet, *Gradients in Vernacular Tissues*, the study explores how the adaptive, community-centred practices of the Mekong Delta can address urban and environmental challenges in Western contexts.

The core research revolves around adapting the principles of gradients - wetness, commons and urbanism - from the Mekong Delta to inform village development in Flanders, Belgium. Western urban development often struggles to create sustainable, resilient communities in the midst of rapid urbanisation. The rigid separation of spaces in Western planning contrasts with the seamless integration found in the Mekong Delta, where public and private spheres overlap, fostering community resilience and efficient resource use.

The analysis identifies key concepts: *Gradients of Wetness* challenge static perceptions of land-water and promote fluid, dynamic landscapes. *Gradients of Commons* highlight the importance of communal spaces that blur the boundaries between the public and private spheres and foster social networks. *Gradients of Urbanism* advocate a balanced approach to urban planning that preserves cultural heritage while meeting modern needs.

*Bridging Cultures* identifies several innovations from the Mekong Delta, such as flexible stilt houses, modular tube houses and intergenerational housing. These practices, deeply embedded in local culture, offer valuable lessons for Western contexts. For example, adaptability in housing and the use of locally sourced, lightweight materials can enhance resilience and sustainability in Flemish villages.

The design proposal for *Lint* integrates these lessons and aims to reverse the trend of unsustainable urban sprawl. By promoting shared living and communal spaces, the proposal aims to improve the quality of life and foster vibrant, connected communities. The controversy surrounding the *Zevenhuizen* project in *Lint* highlights the need for a thoughtful, community-based approach to development.

*Bridging Cultures* shows that principles from the Mekong Delta can inspire a paradigm shift in Flemish village development. By embracing communal living and adaptive design, it is possible to create resilient, sustainable urban environments that respect local traditions while addressing contemporary challenges.

