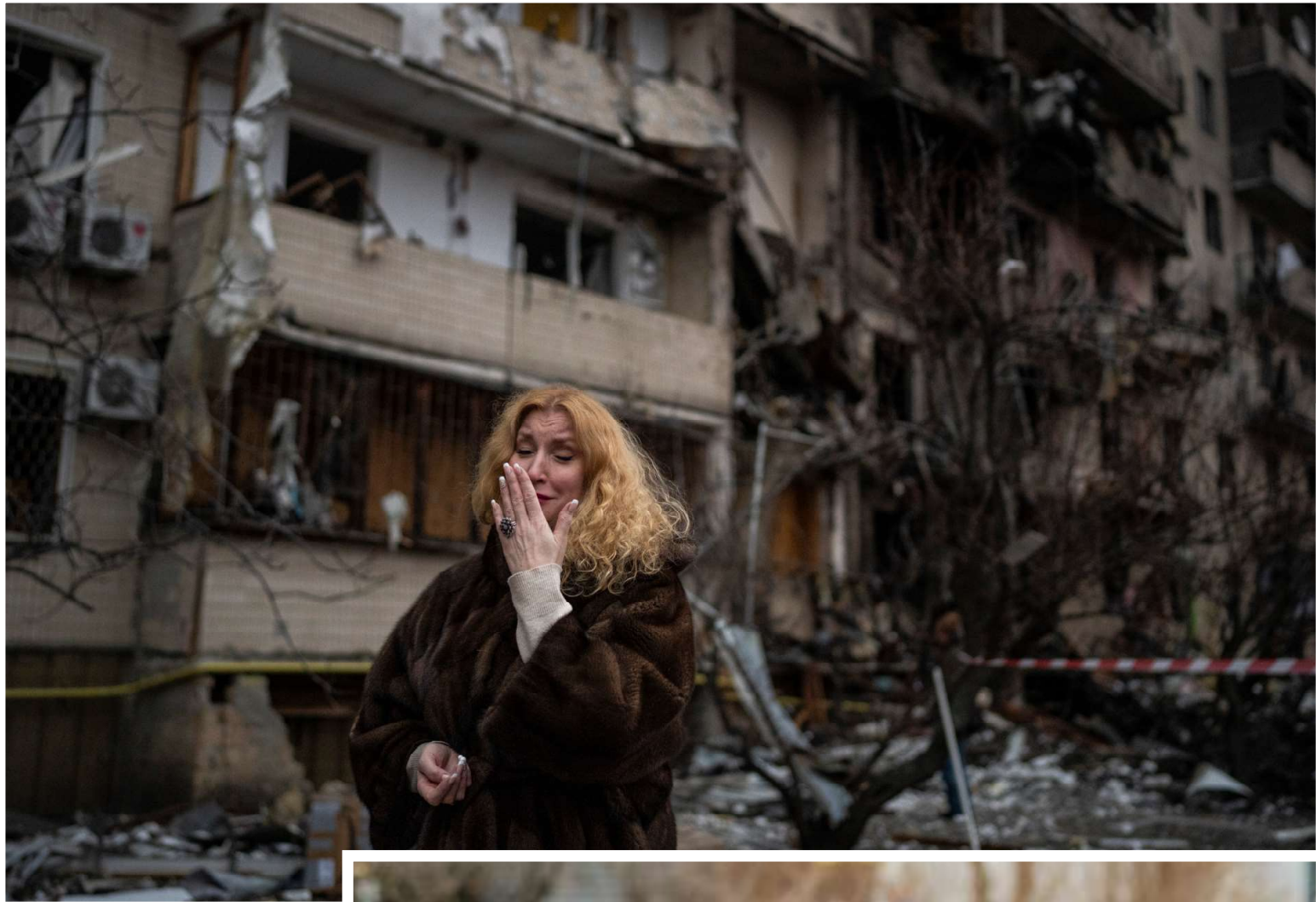


WAR EMERGENT ARCHITECTURE: RESPONSIBLE REHABILITATION AND RECYCLING MATERIALS IN UKRAINE

P5 | P. Rebeca Barbu

AR3CS100 | Graduation Studio Cross domain City of the Future
TU Delft | Faculty of Architecture





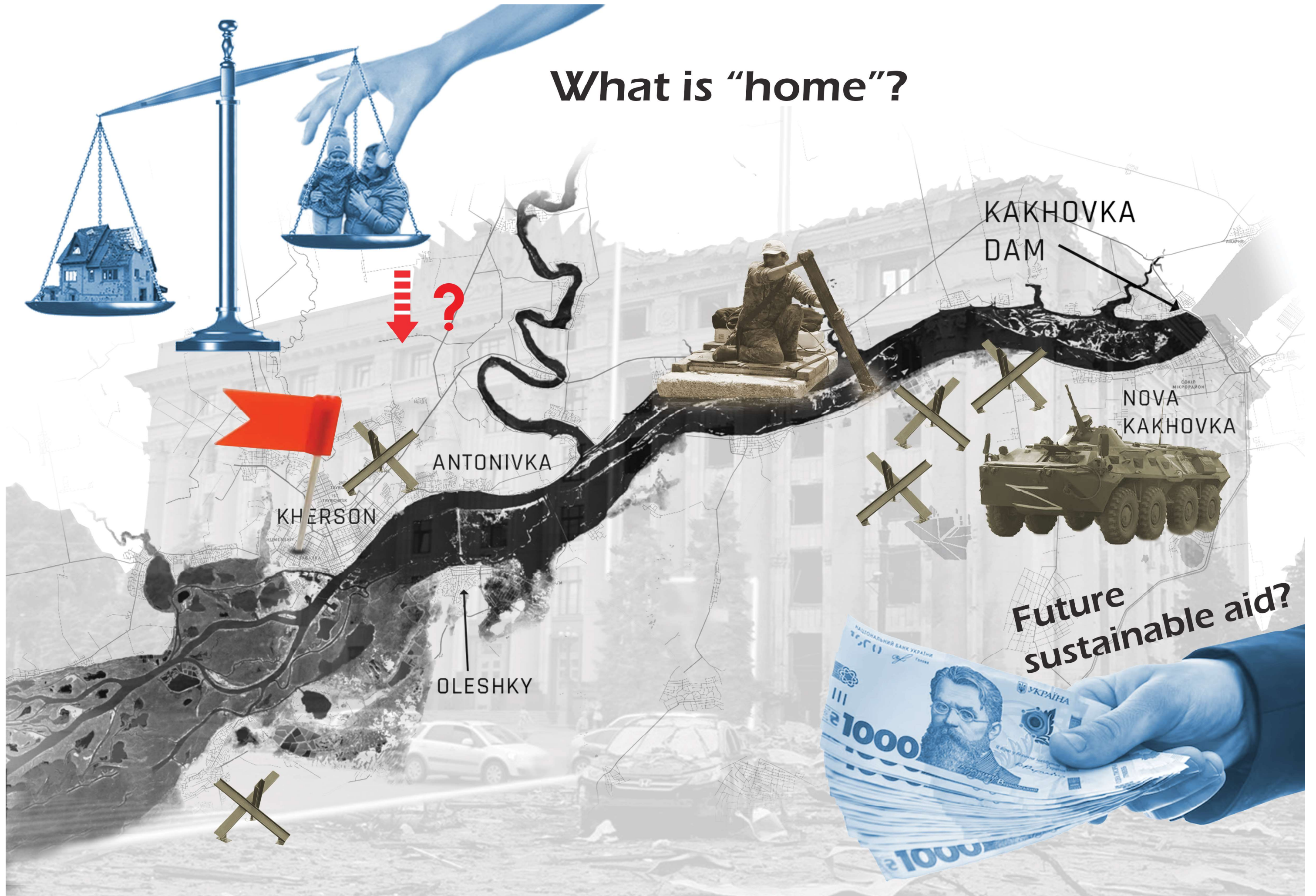
HOMELLESS

#

HOPELESS

How can architects create responsive opportunities for vulnerable groups dealing with loss in emergency situations?

What is "home"?



What is “home” ?

Who is “home” ?

Where is “home” ?

Where to respond ?

Who responds ?

What is a response ?

Survival **MODE**

Resilience **through** **CHANGE**

PLACE **Attachment**

The toxic legacy of the Ukraine war

21 February 2023

By Anna Turns, Features correspondent

Share



The UN warns that the war in Ukraine could leave a "toxic legacy for generations to come" (Credit: Dimitar Dilkoff/Getty Images)

Russia's invasion is leaving a toxic trace on Ukrainian soil, contaminating crops and posing a serious long-term risk to human health.

Share

AID & INTERNATIONAL DEVELOPMENT • 24 OCT 2023 MICHELLE KILFOYLE



Ukraine: what's the global economic impact of Russia's invasion?

Russia's brutal invasion has driven millions into poverty and debilitated – but not quite destroyed – Ukraine's economy. Meanwhile, sanctions are straining the Russian economy, but they are yet to end a war that has sown financial turmoil and personal hardship in the region and across the globe.

It was clear from the start that Putin's war in Ukraine would be [a global economic disaster](#). Its economic impacts may be insignificant next to the suffering and loss of life on the battlefields. But they do present critical challenges that leaders must resolve to limit yet more suffering through poverty, food shortages and the cost of living crisis.

To illuminate these challenges, Economics Observatory has been publishing expert

Related Questions

Rebuilding Ukraine: how will policy-makers shape the country after the war?

What might be the macroeconomic cost of the war in Ukraine?

War in Ukraine: what are the options for Europe's energy supply?

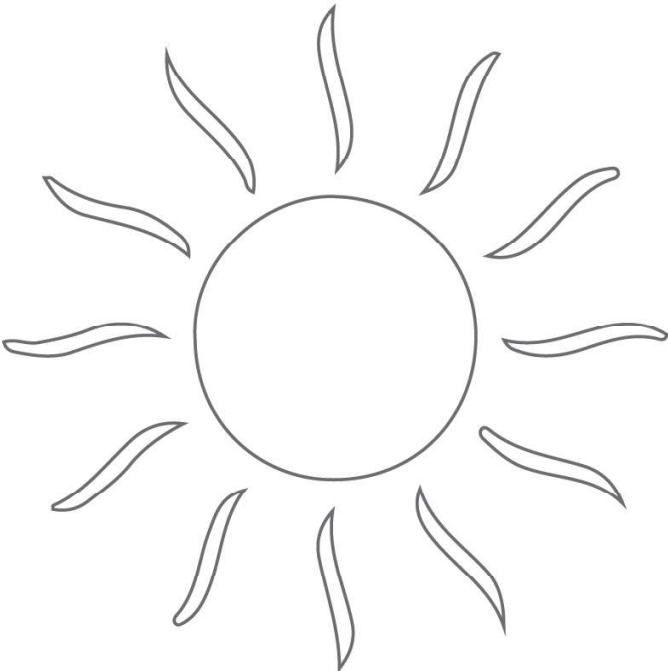
How is the war in Ukraine affecting global food security?

Sanctions on Russia: what are the ramifications of this new trade war?

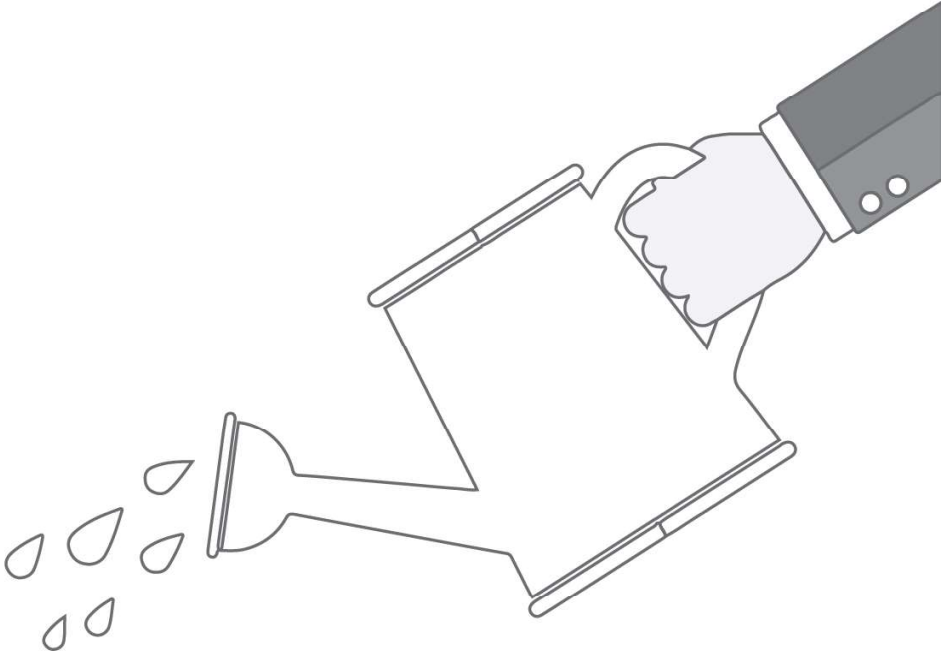
Widespread learning loss among Ukraine's children, as students enter fourth year of disruption to education

Continued attacks on education inside Ukraine and low-level enrolment in host countries have left many of Ukraine's 6.7 million 3–18-year-olds struggling to learn, warns UNICEF Regional Director for Europe and Central Asia Regina De Dominicis

Post-War Rehabilitation
& Economic Growth



LIGHT



WATER



AIR



SPACE

SOIL

PRESENT

Contaminated,
Deserted Land

After P1

DECONTAMINATION

- (Identify threats & risks of actions)
- Map & analyze the public concerns
 - Define vulnerable groups
 - Clarify employed responsibility & actions

P1-P2

PLOWING THE SOIL

- (History digging & factoring truths)
- Identify responsible actors
 - Address imbalances of response actions
 - Formulate needs & requirements of public

P2-P3

WATERING

- (Providing opportunities)
- Define architectural qualities
 - Draft design processes incl. response-ability
 - Determine position of public in scenario

P2

SCATTERING THE SEEDS

- (Implementing knowledge)
- Draft concept scenarios
 - Clarify response-ability role
 - Position site of action & actors

P3

THE DAYLIGHT FACTOR

- (Shining light on response abilities)
- Manual of architectural development
 - Community led design processes
 - Adaptability & performance

P4

THE HARVEST

- (Developing with care)
- Final design proposal & permanence
 - Reflection on process & maintenance

FUTURE

Prosperous,
Livable Land

PRESENT

Contaminated,
Deserted Land

After P1

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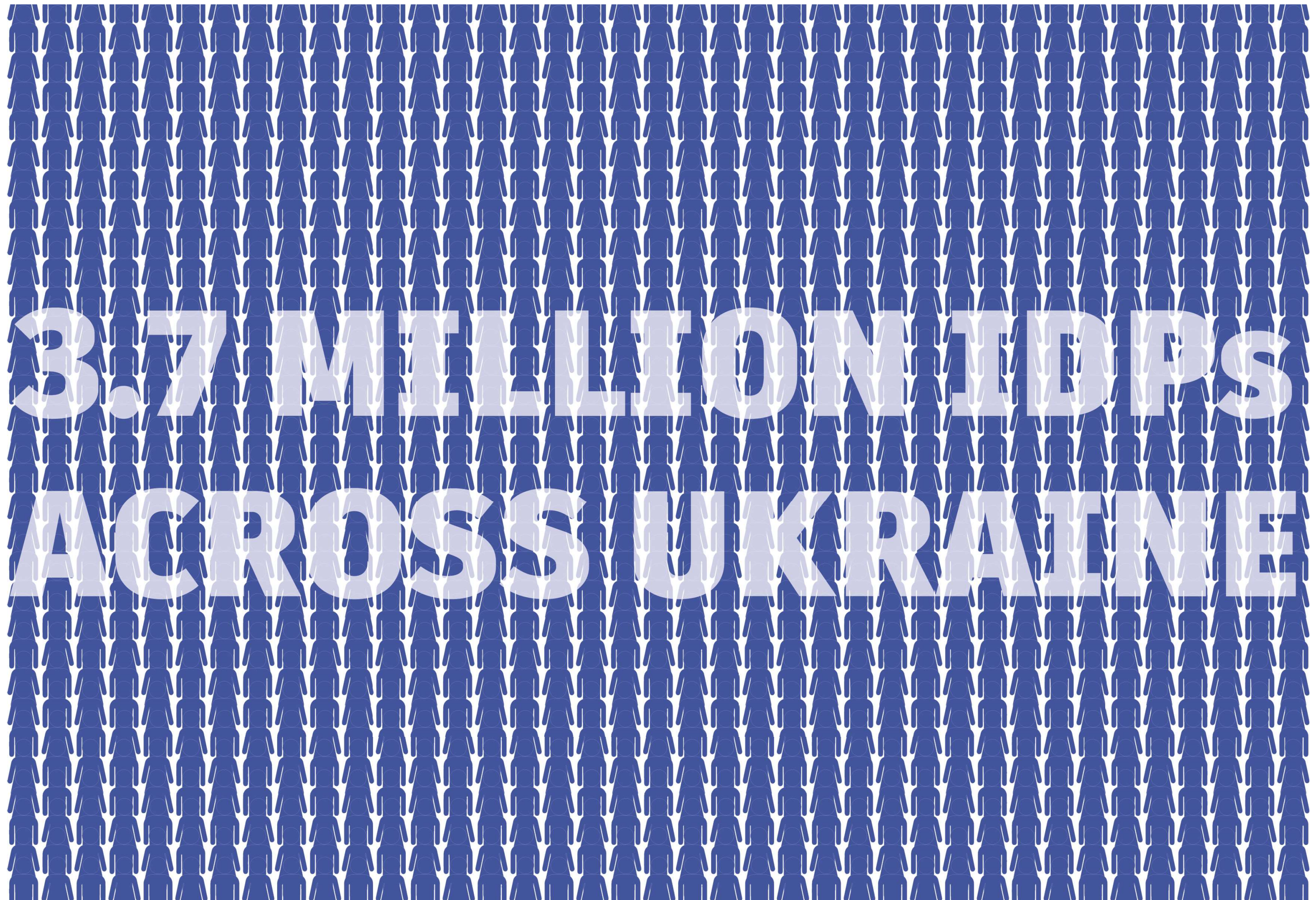
P4

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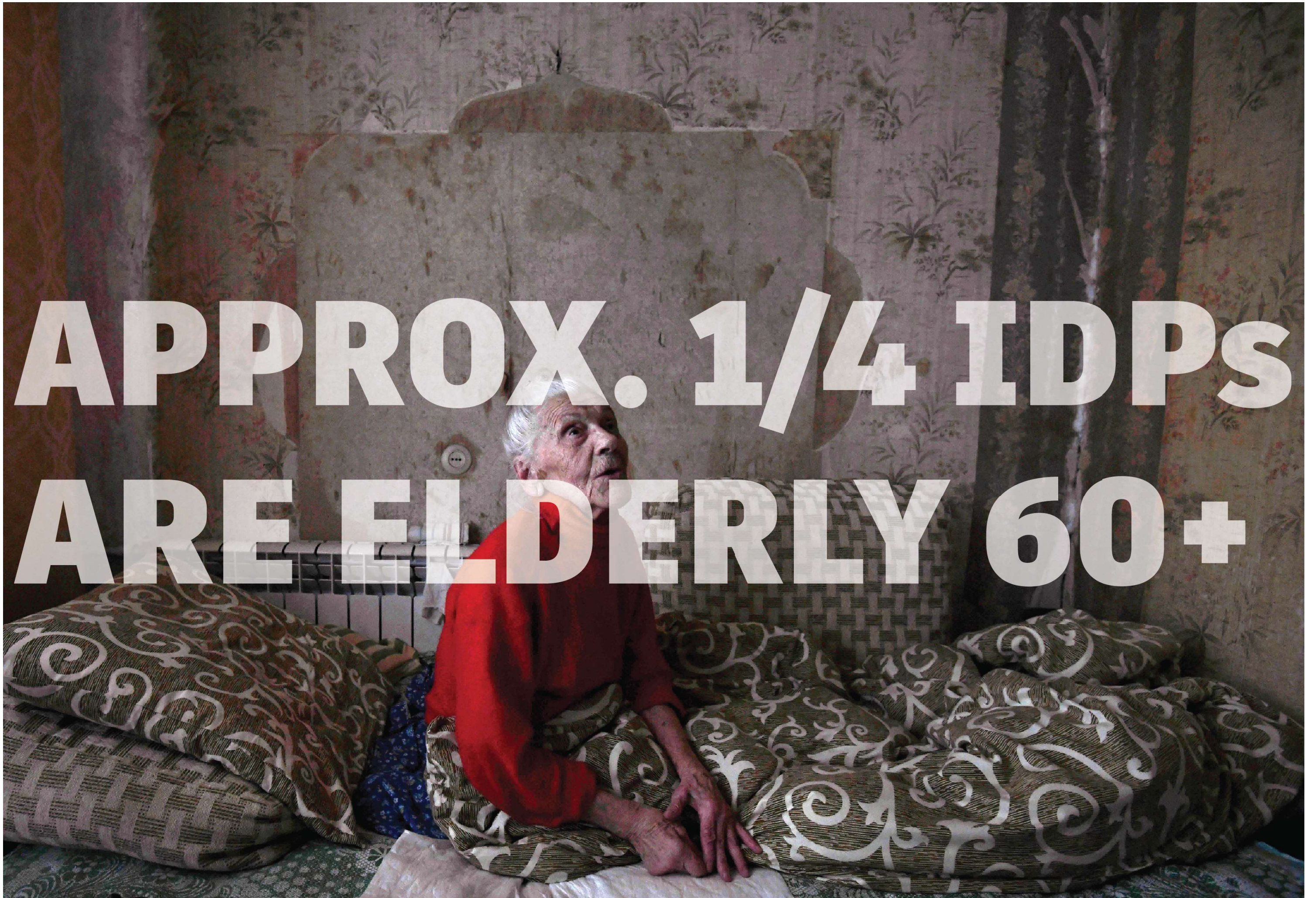
FUTURE

Prosperous,
Livable Land



3.7 MILLION IDPS
ACROSS UKRAINE

**APPROX. 1/4 IDPs
ARE ELDERLY 60+**







“There is **no desire** to do anything (...) The mood is not the same. A different life has suddenly come. (...) we can say that we have **a feeling that it is all inappropriate** now. Maybe young people perceive it differently. (...) And we cannot adapt to live here, we cannot get a job. So we are all waiting when we can go home.” - Wira, 68

“I want to go somewhere to work. But when **they ask me my age** and I say that I am 76 years old, **everyone refuses.**” - Borys, 76

“We **lack information**, especially pensioners. It is quite difficult for us here, due to **limited financial opportunities**. If there was a platform where such information would be collected, it would be very good.” - Lyubov, 60

Physical
Capital



Destroyed
housing



Lack of (functioning)
community
amenities



Lack of support
services



- Loss of belongings, documentation and properties
- Limited growth and self-development
- Health issues and loss of livelihood

Financial
Capital



Low household
housing



Lack of economic
opportunities



Fragmented & limited
governmental aid



- Increased poverty
- High unemployment rate
- Lack of (skilled) social workers
- More pressure on political and commercial services

Social & Human
Capital



Health issues



Lack of social
opportunities



Displacement &
isolation



- High mortality rate
- Forced to live in isolated shelters
- Decreasing mental health
- Lack of social integration (in local community)

Nature
Capital



Lack of planned
public parks



Industrial air
pollution



Low urban
biodiversity



- Imbalanced urban fabric
- Poor air quality
- Threat to people's health
- Loss of natural ecosystems

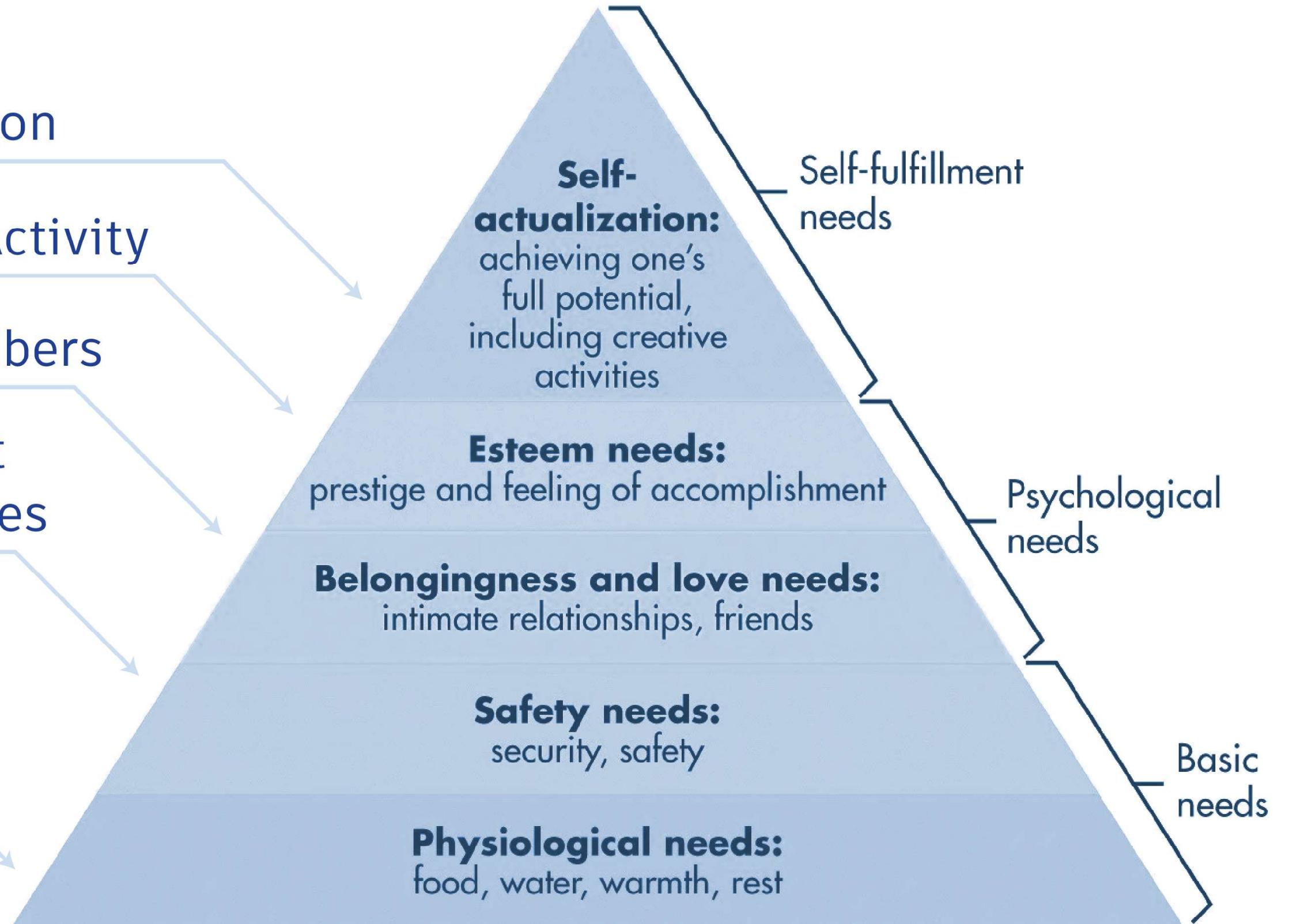
Hobbies, Meditation

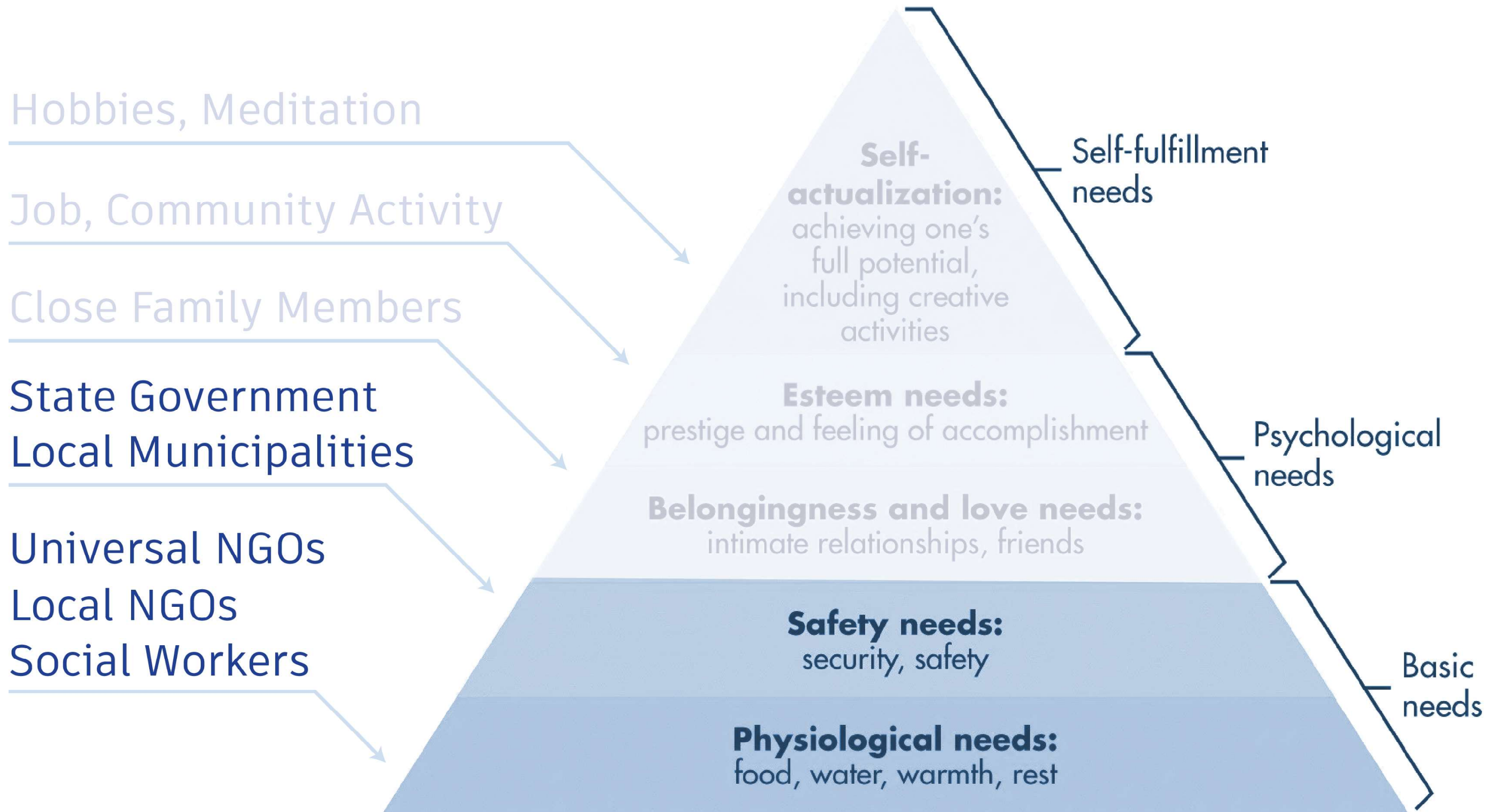
Job, Community Activity

Close Family Members

State Government
Local Municipalities

Universal NGOs
Local NGOs
Social Workers





Physical
Capital

- Loss of belongings, documentation and properties
- Limited growth and self-development
- Health issues and loss of livelihood



Sustainable
community
development

- Accessible (governmental) information
- Local community support groups
- Accessible NGOs social services
- Recycling construction techniques and materials

Financial
Capital

- Increased poverty
- High unemployment rate
- Lack of (skilled) social workers
- More pressure on political and commercial services



Livelihood
opportunities

- Service trading
- Joint / Shared working opportuntities
- Skills workshops and training
- Responsibility and tasks delegation

Social & Human
Capital

- High mortality rate
- Forced to live in isolated shelters
- Decreasing mental health
- Lack of social integration (in local community)



Human
Development

- Access to medical resources
- Mix of activities and programme
- Local community integration
- Mental health support groups


Nature
Capital

- Imbalanced urban fabric
- Poor air quality
- Threat to people's health
- Loss of natural ecosystems



Densification

- Planting new trees and wildflowers
- Regulated use of industrial factories
- Revival of biodiversity
- Community gardens



INTERGENERATIONAL ENVIRONMENTAL NURTURE & CARE

PRESENT

Contaminated,
Deserted Land

After P1

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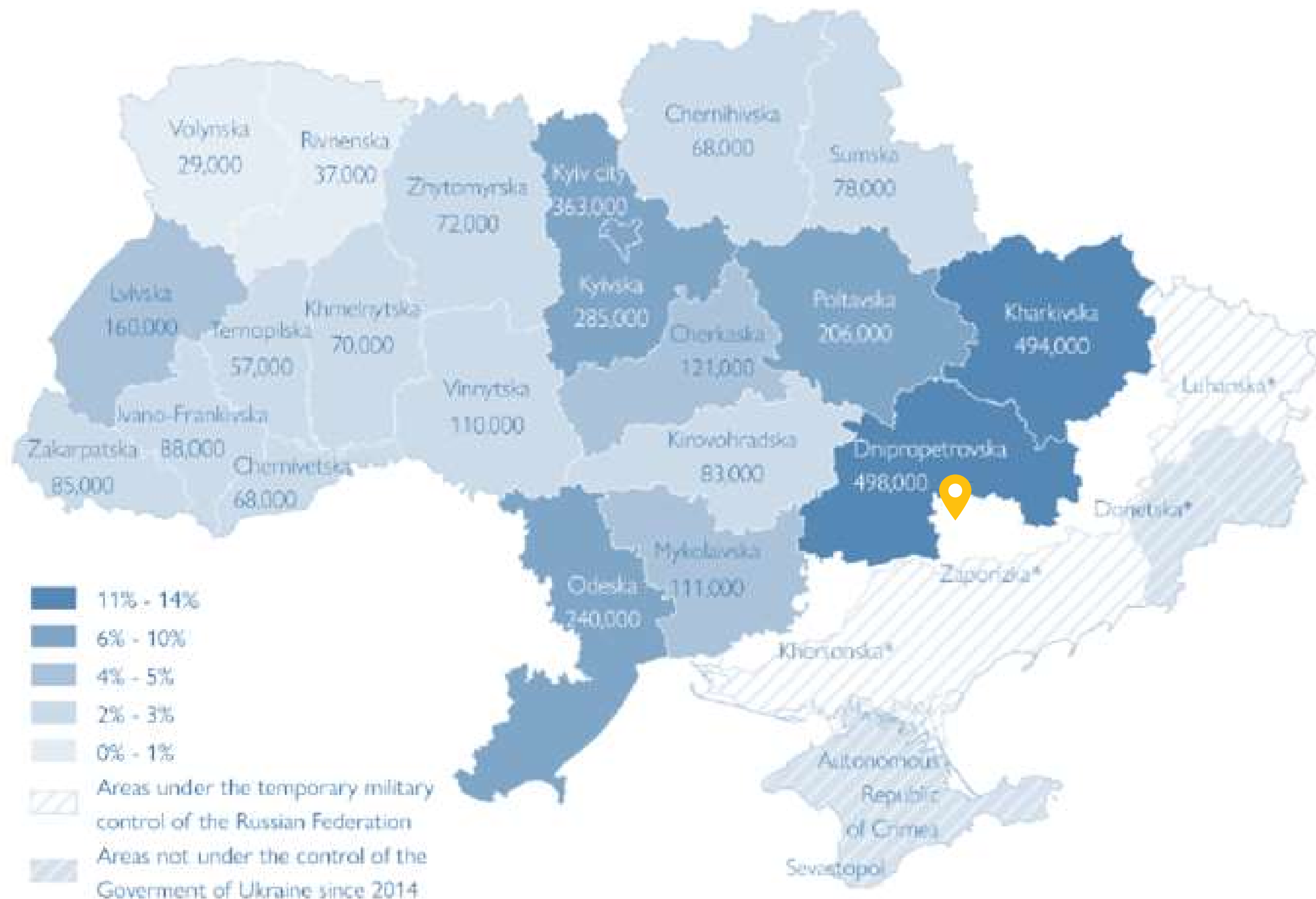
P4

THE HARVEST

- (Developing with care)
- Final design proposal & permanence
 - Reflection on process & maintenance

FUTURE

Prosperous,
Livable Land





ZAPORIZHZHIA CITY

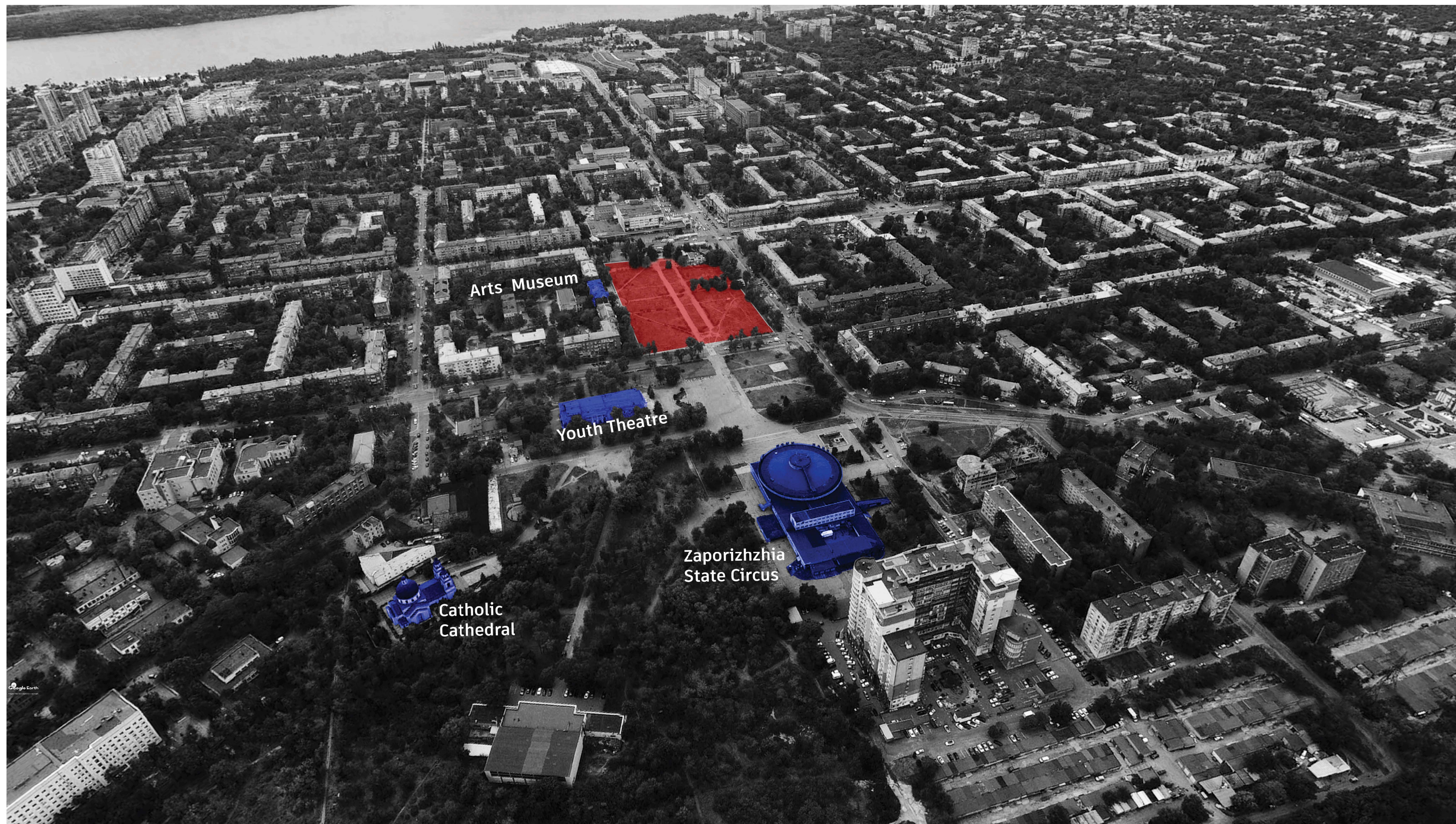


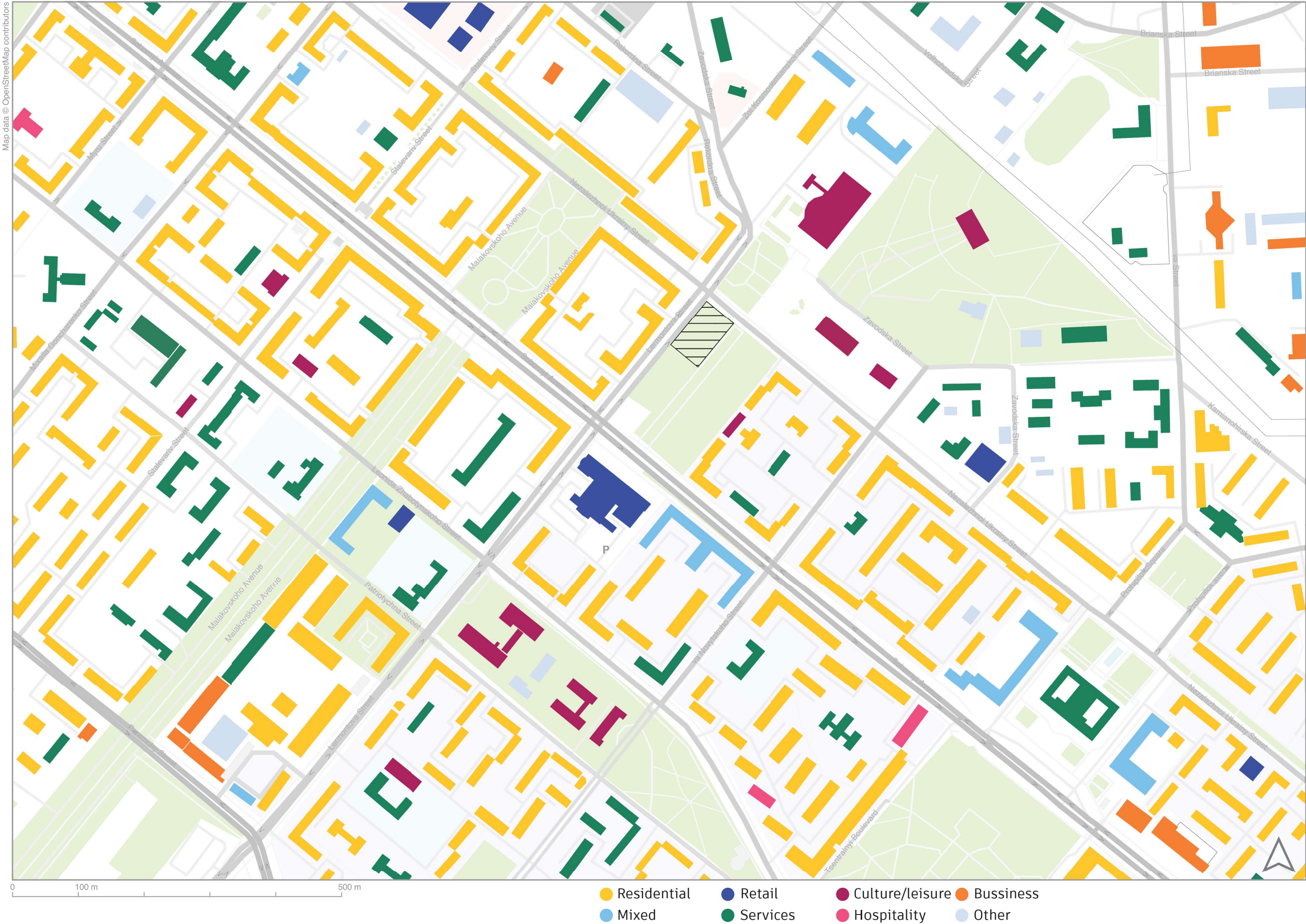


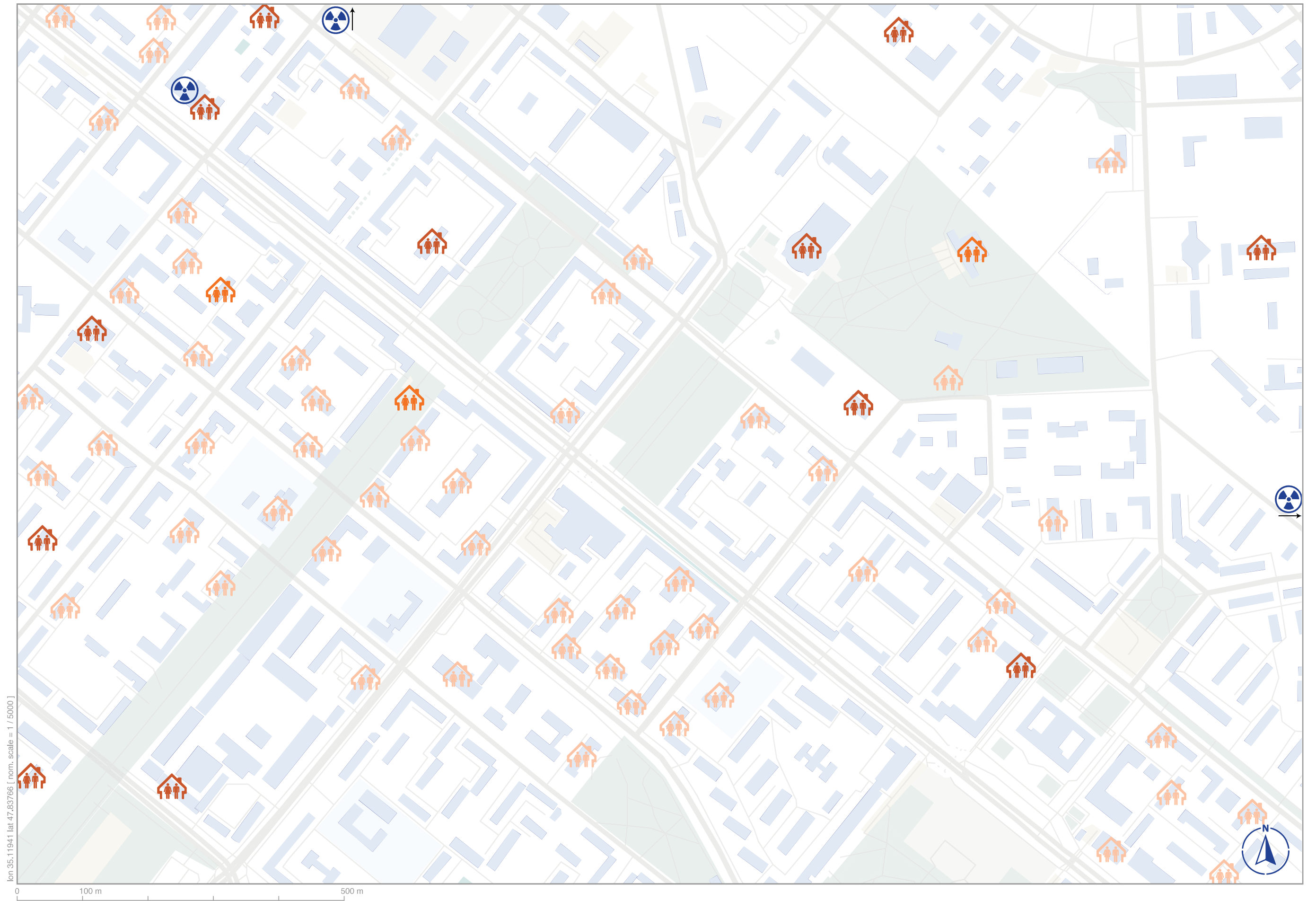
Children &
General
Medical Centre

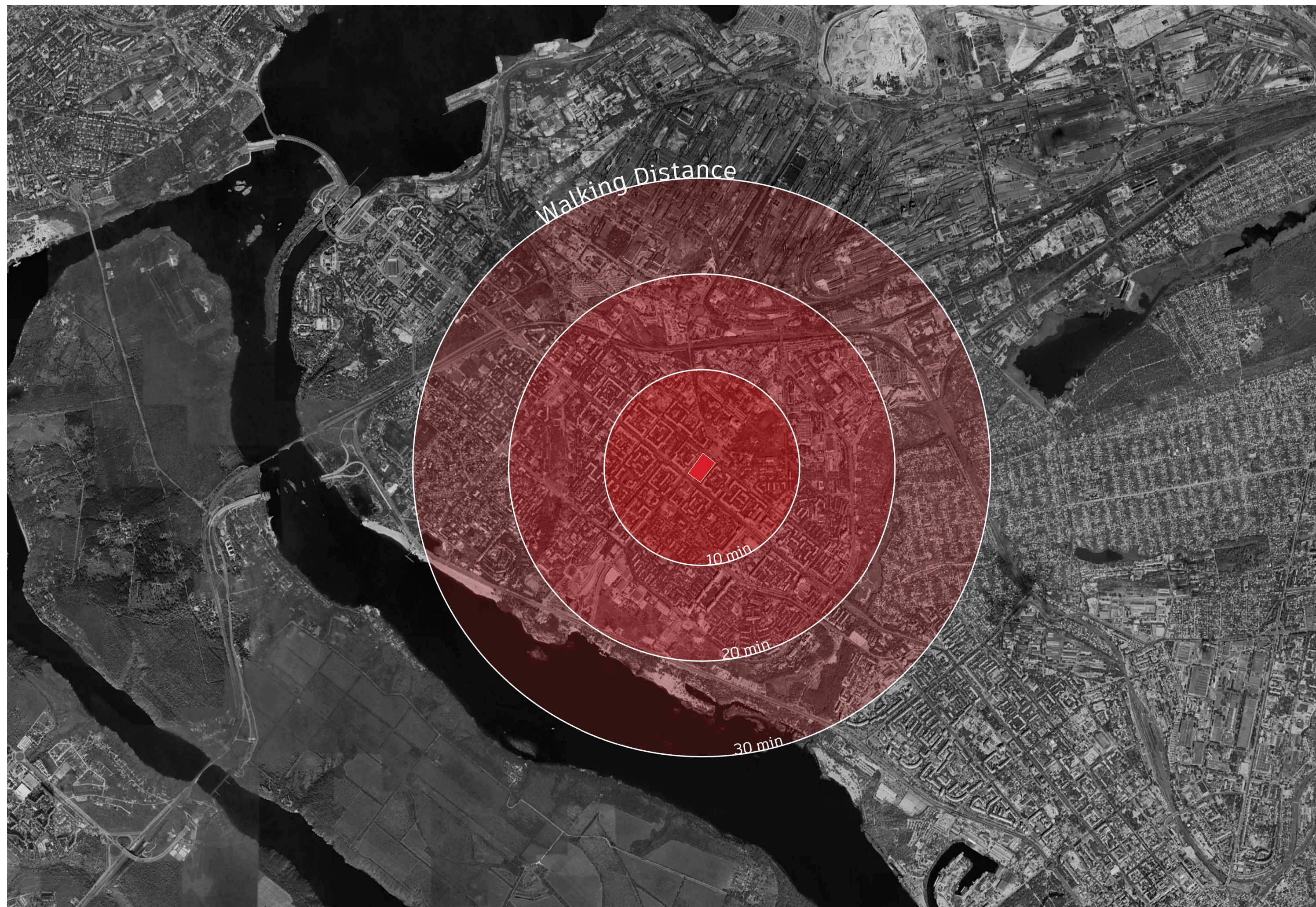
Maternity
Hospital

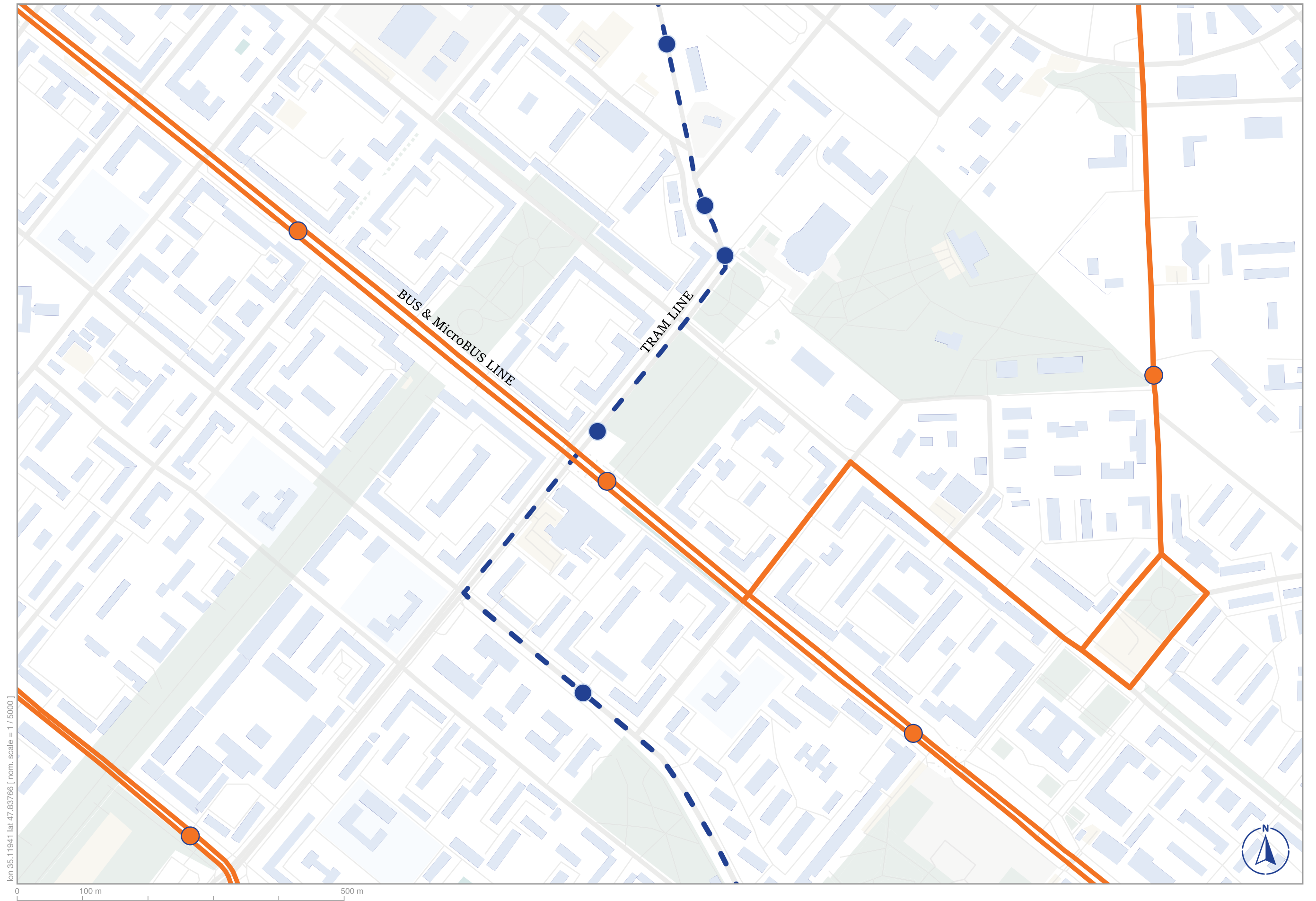
General
Hospital Centre

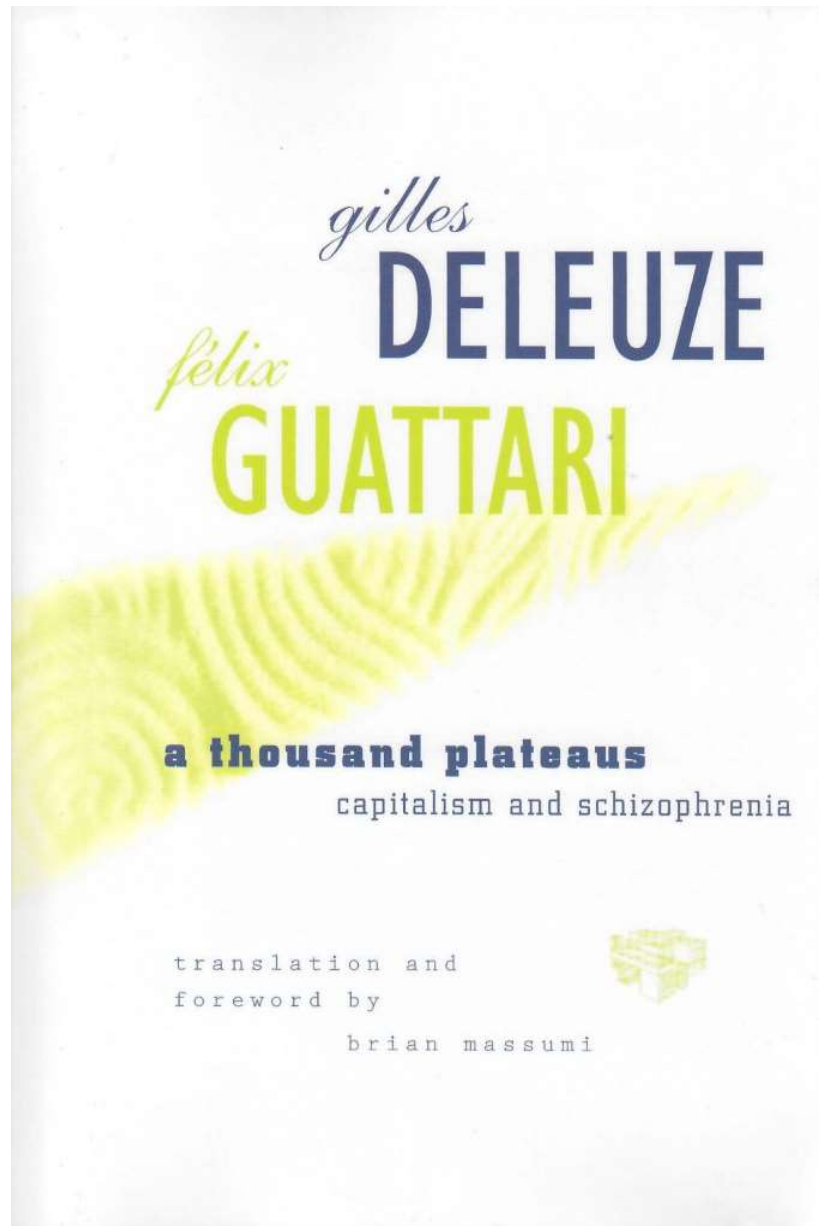








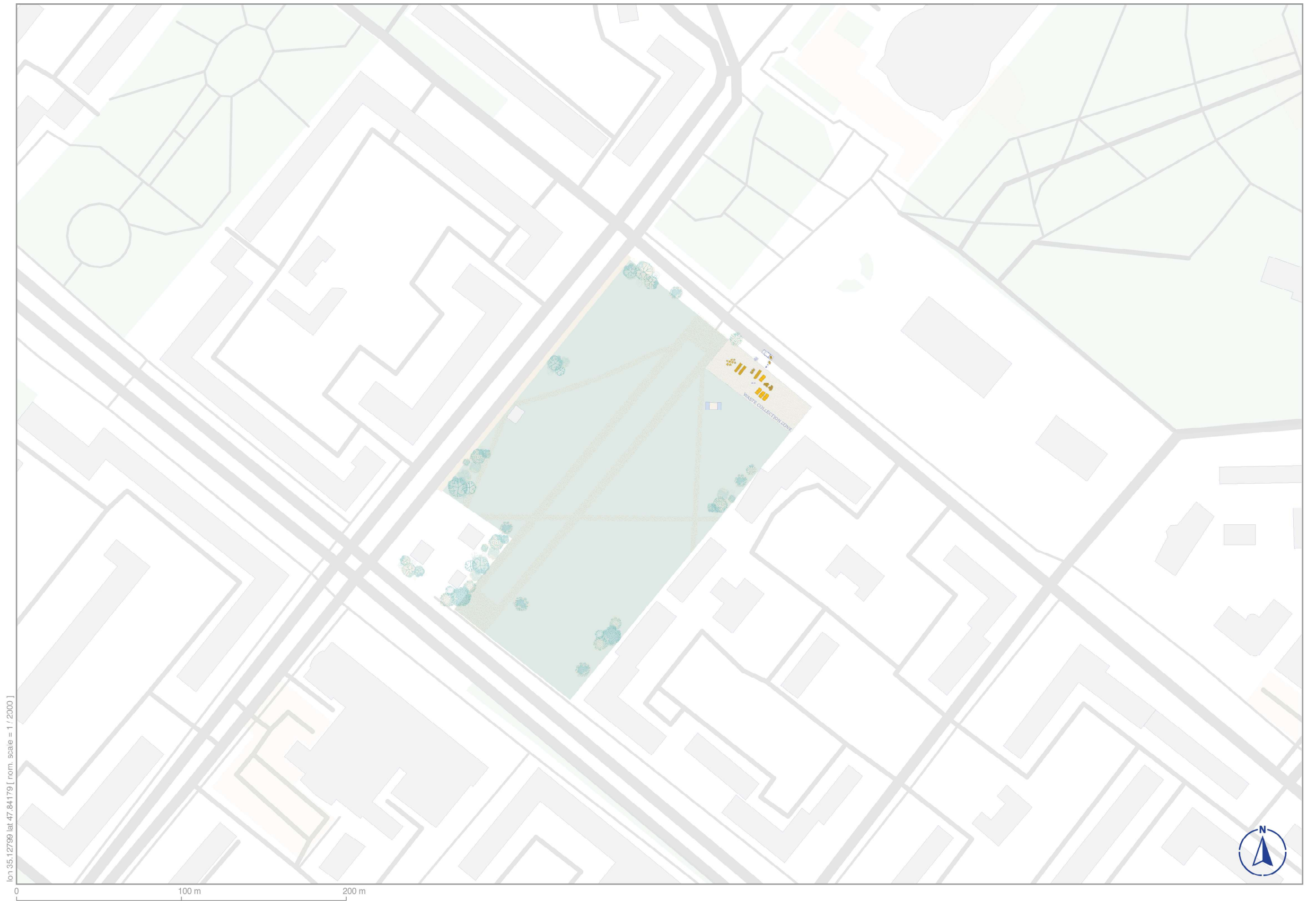




CHAPTER 10: BECOMING CHILD – BECOMING OTHER

1. A model for **embracing change**, resistance, and innovation is particularly pertinent in an era marked by rapid technological advances, environmental crises, and social upheaval. The concept challenges us to **reconsider our approaches** to education, social organization, and even political structures, **advocating for a more fluid, open-ended, and inclusive perspective** that values diversity and multiplicity.
2. Significant in the context of re-evaluating human-nature relationships. It suggests a more integrated and holistic approach, recognizing the **interconnectedness of human and non-human** elements in our world. This perspective aligns with growing **environmental consciousness** and the push towards more sustainable and harmonious ways of living.





lon 35.12799 lat 47.84179 [nom. scale = 1 / 2000]

0 100 m 200 m



lon 35.12799 lat 47.84179 [nom. scale = 1 / 100]

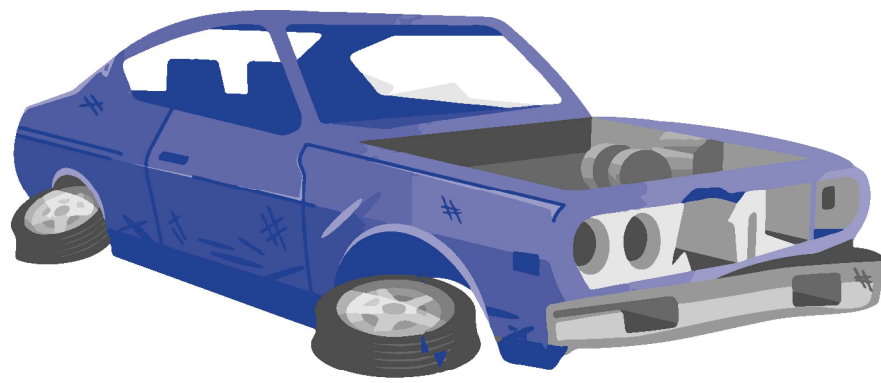
0 5 m 10 m



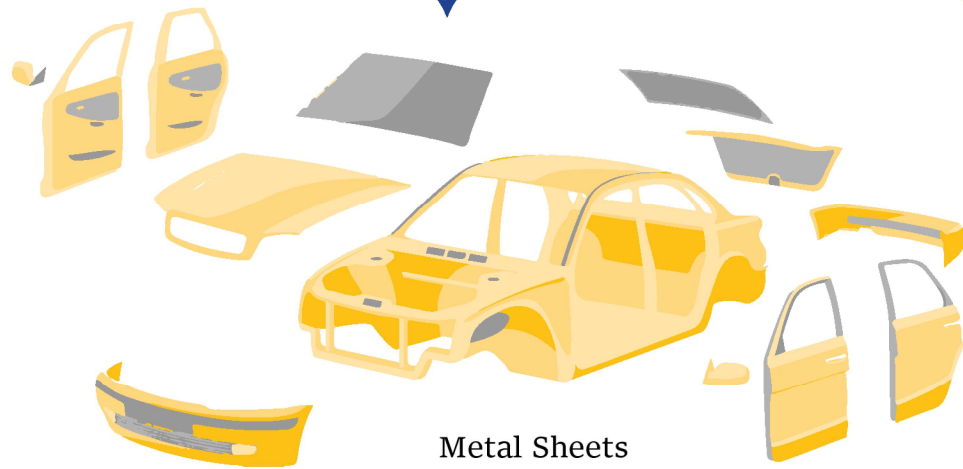
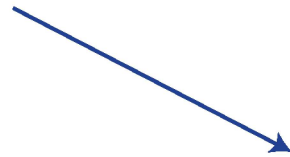








Rubber Tires



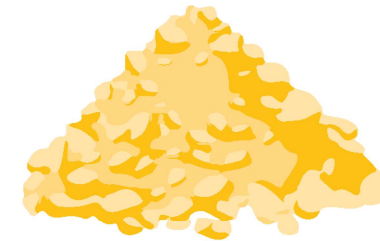
Metal Sheets
& Glass



Metal Disks



Fine Ground Debris



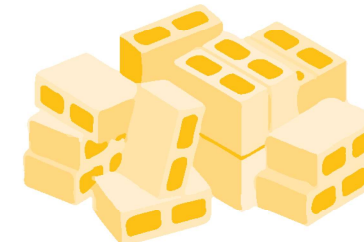
Coarse Ground Debris/
Stones



Metal Plates



Clay Bricks



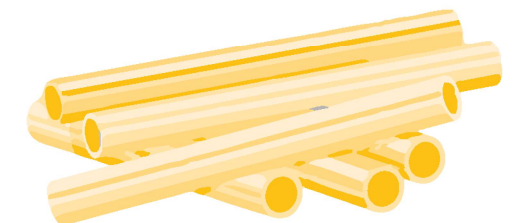
Perforated Bricks



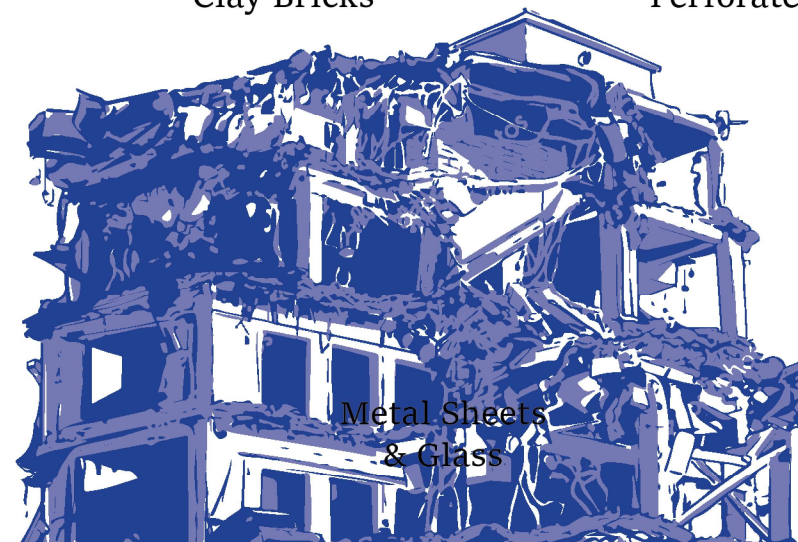
Roof Shingels



Reclaimed Wood

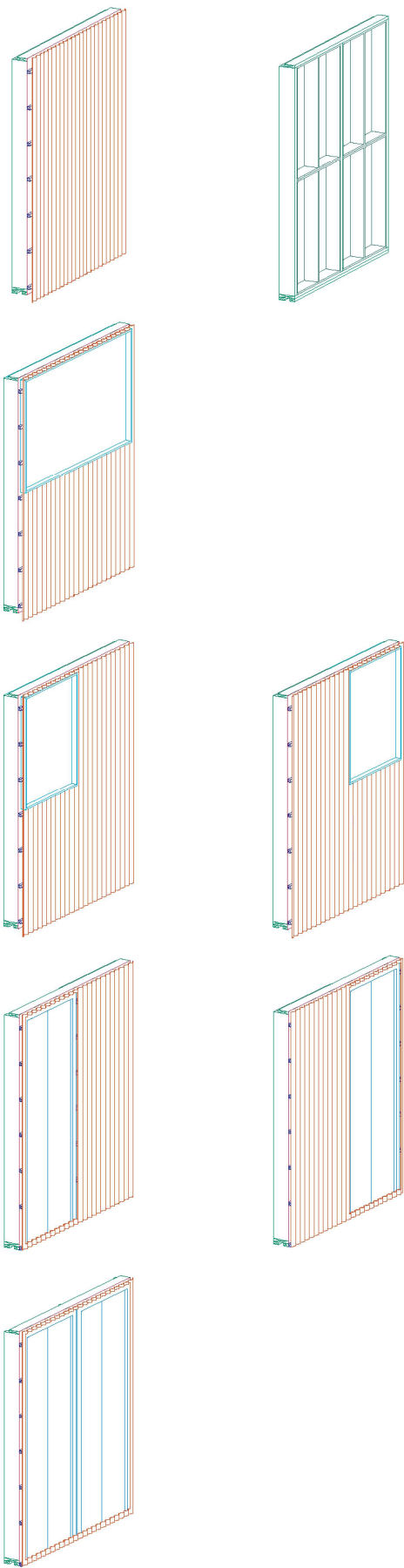


Metal/PVC Pipes

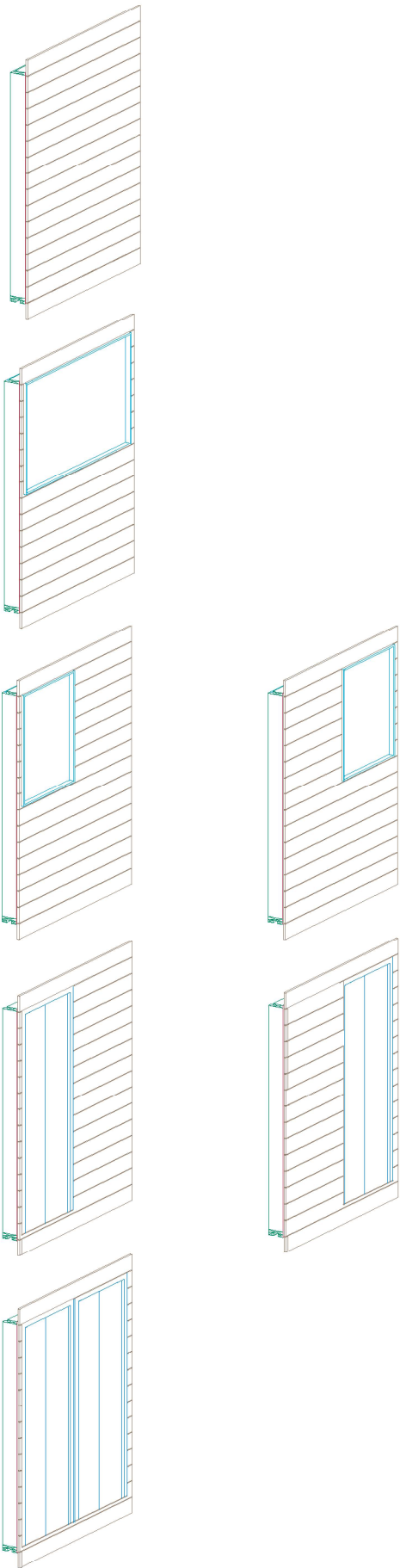


Metal Sheets
& Glass

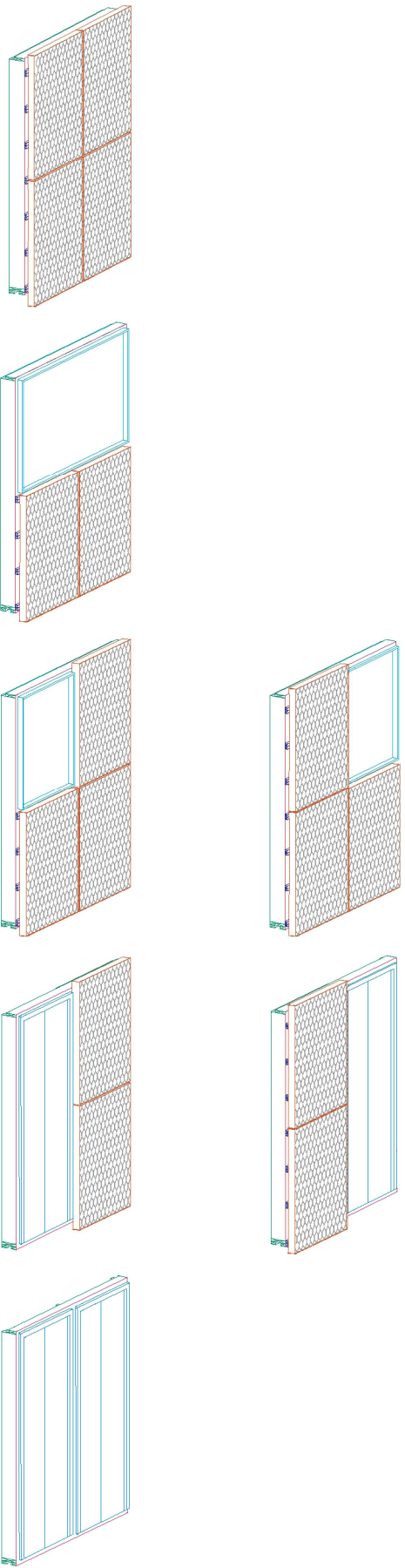
Steel Sheet
Cladding



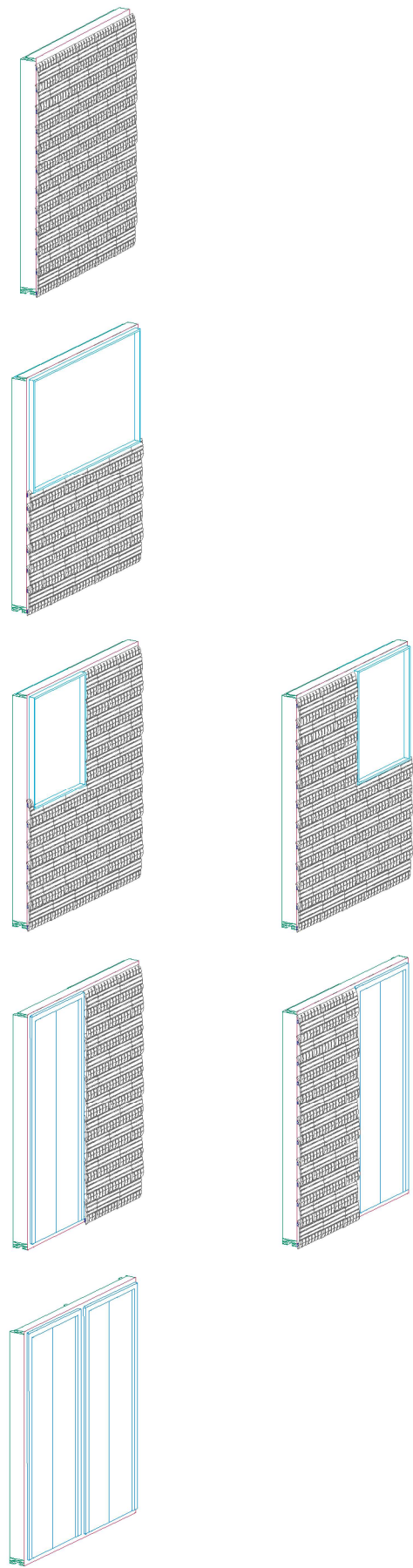
(Reclaimed) Wood
Cladding - horizontal

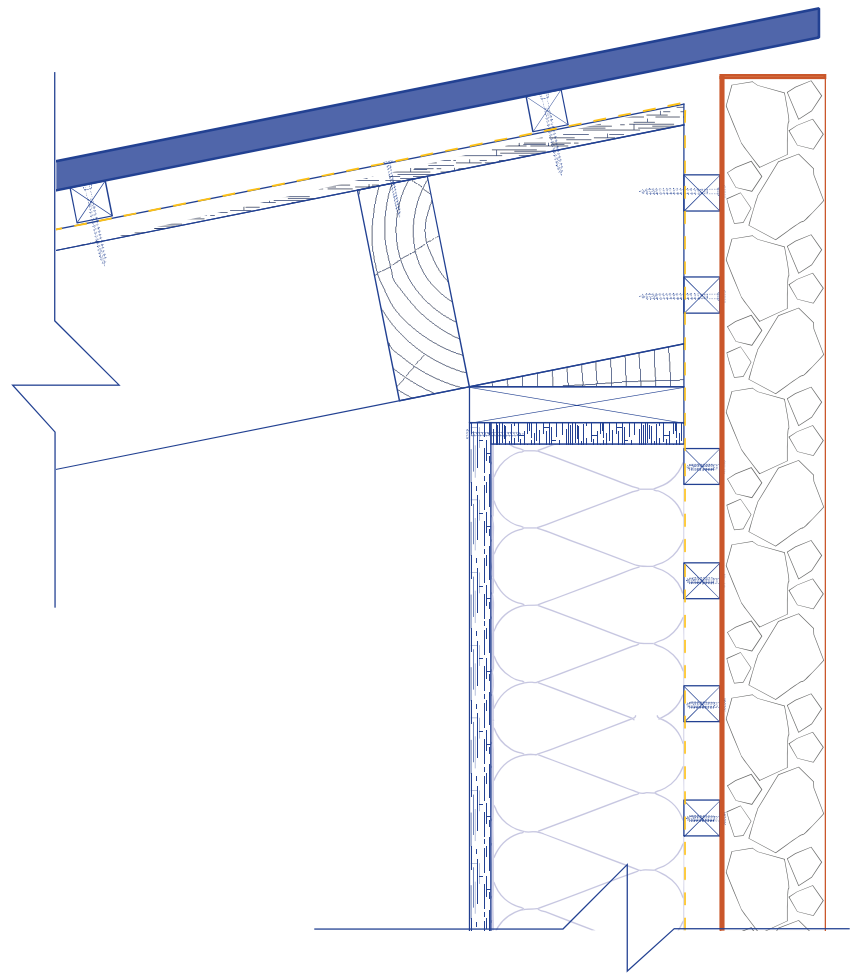
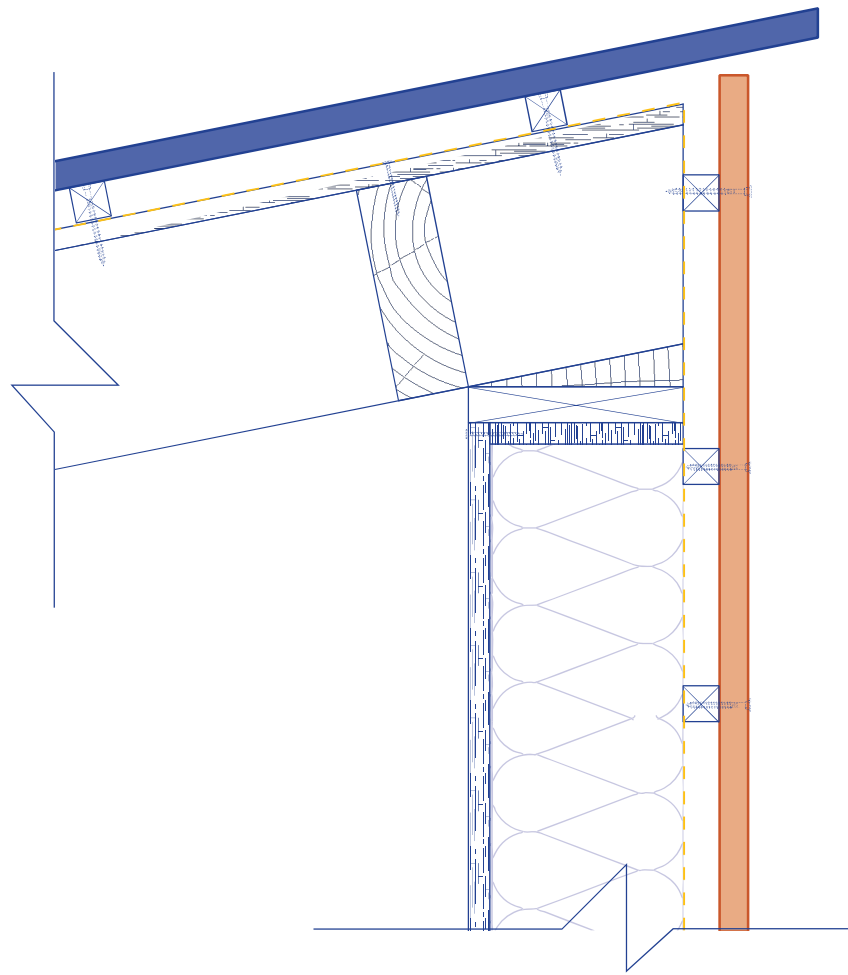
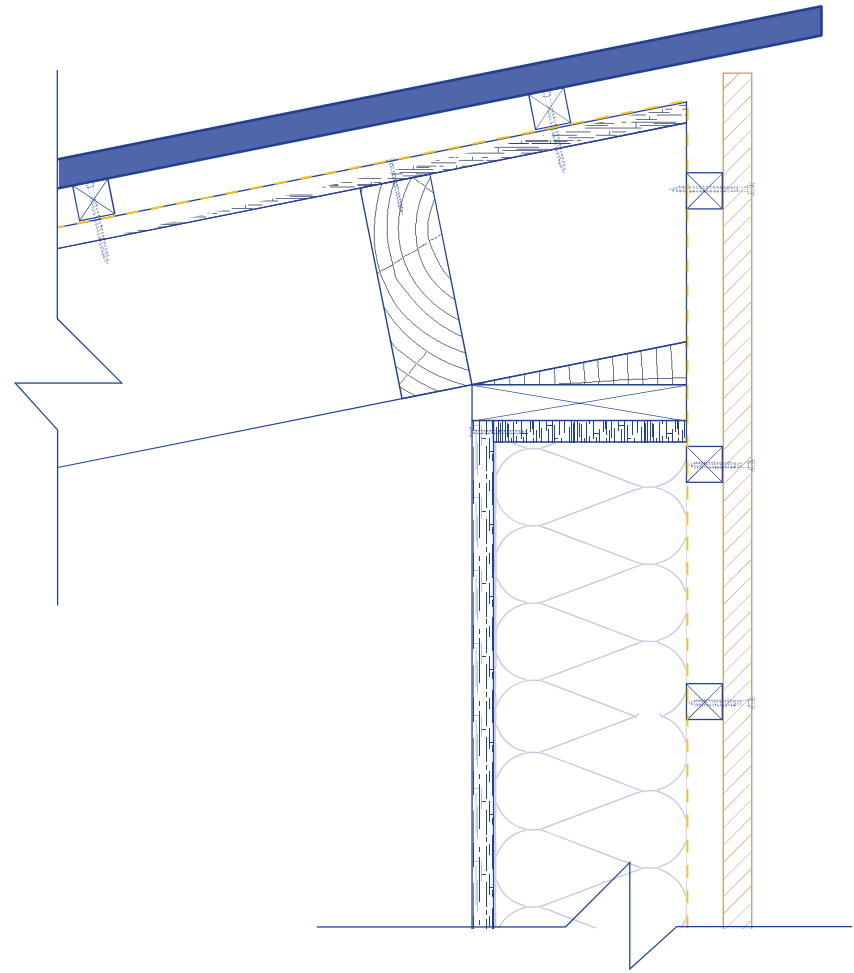
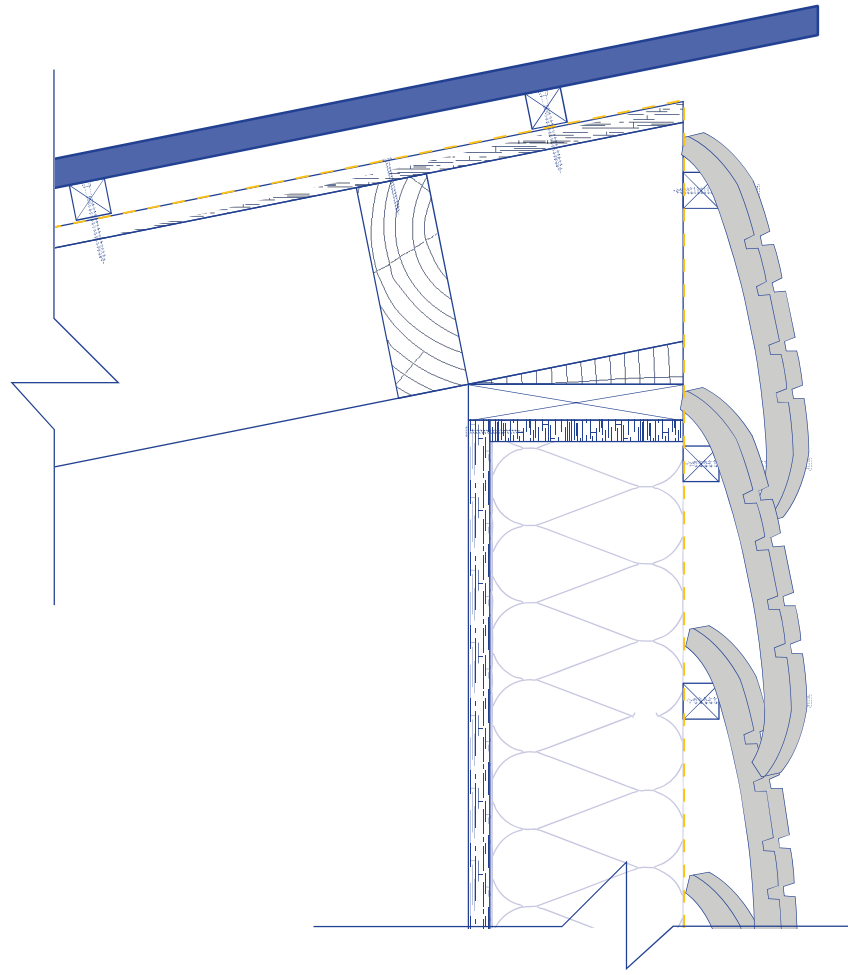


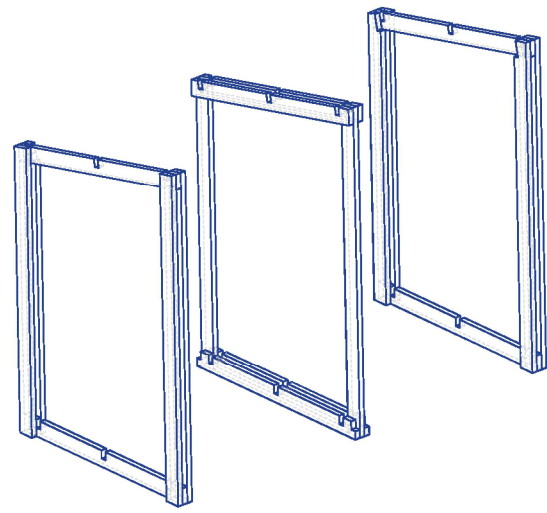
Rubble Gabion
Cladding



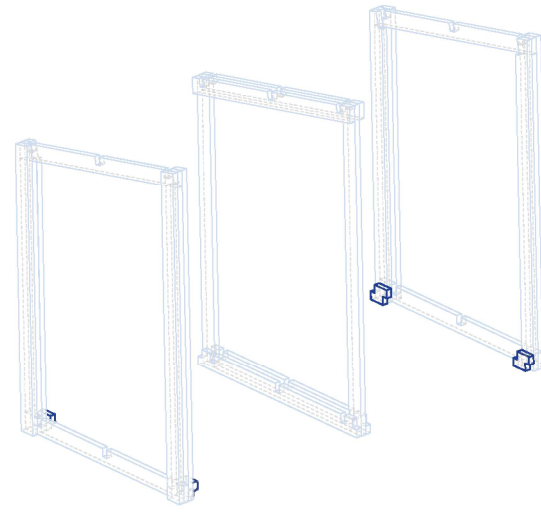
Rubber Tire
Cladding



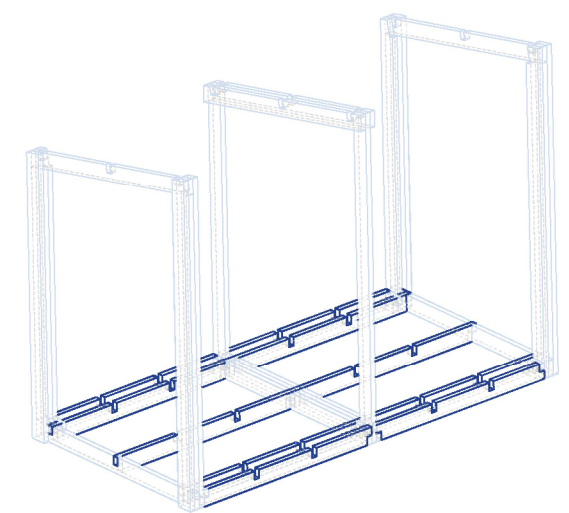




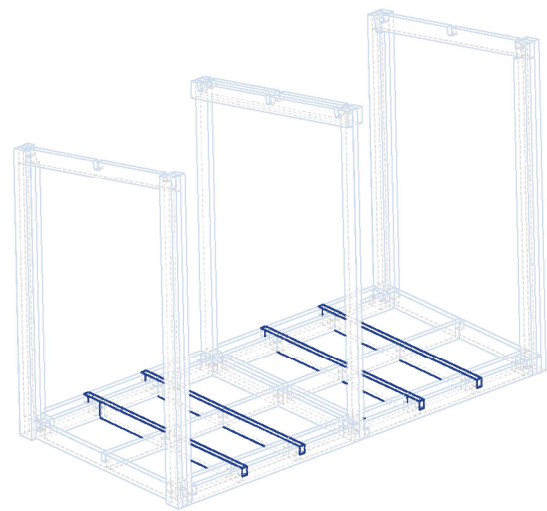
Step 1 - Portal Frames



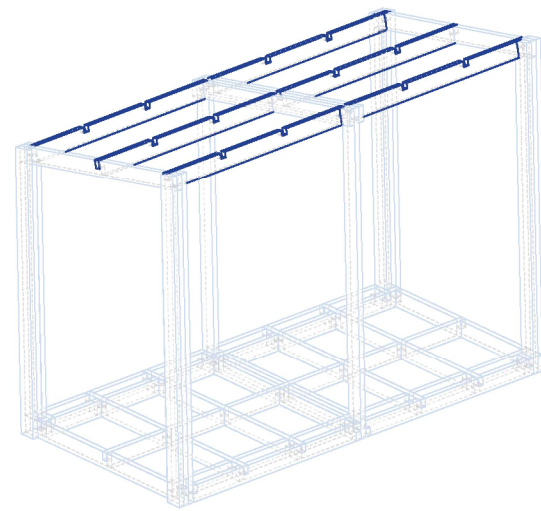
Step 2 - Inter-connectors



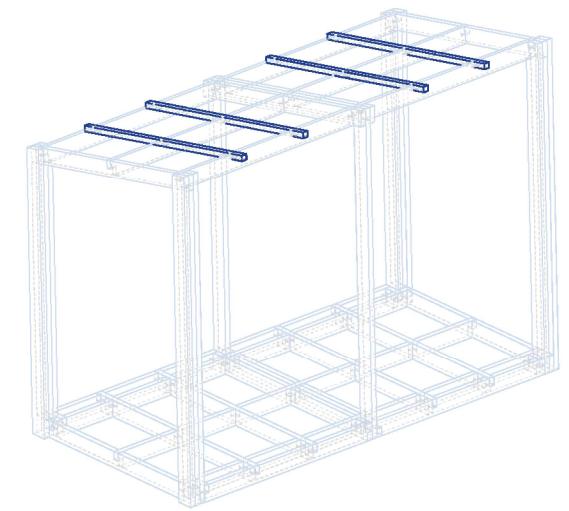
Step 3 - Floor Long Beams



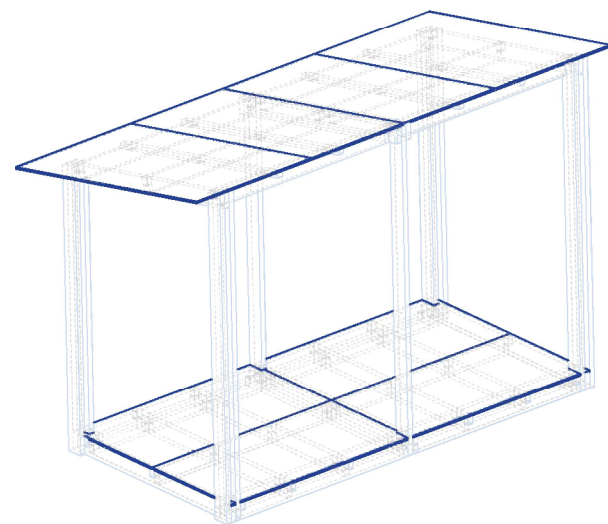
Step 4 - Floor Cross-Beams



Step 5 - Roof Long Beams

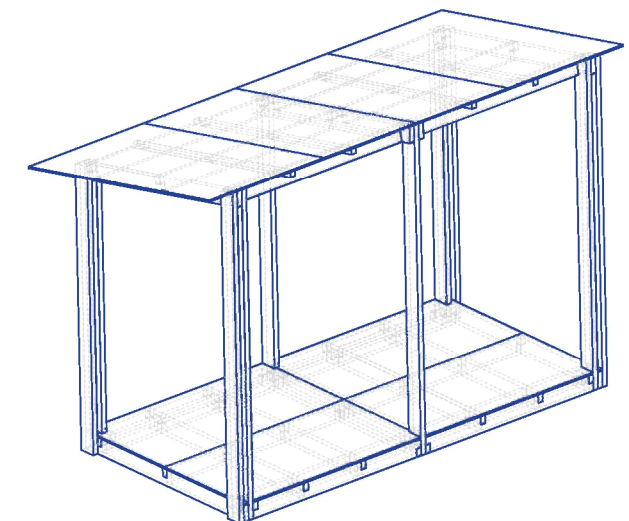


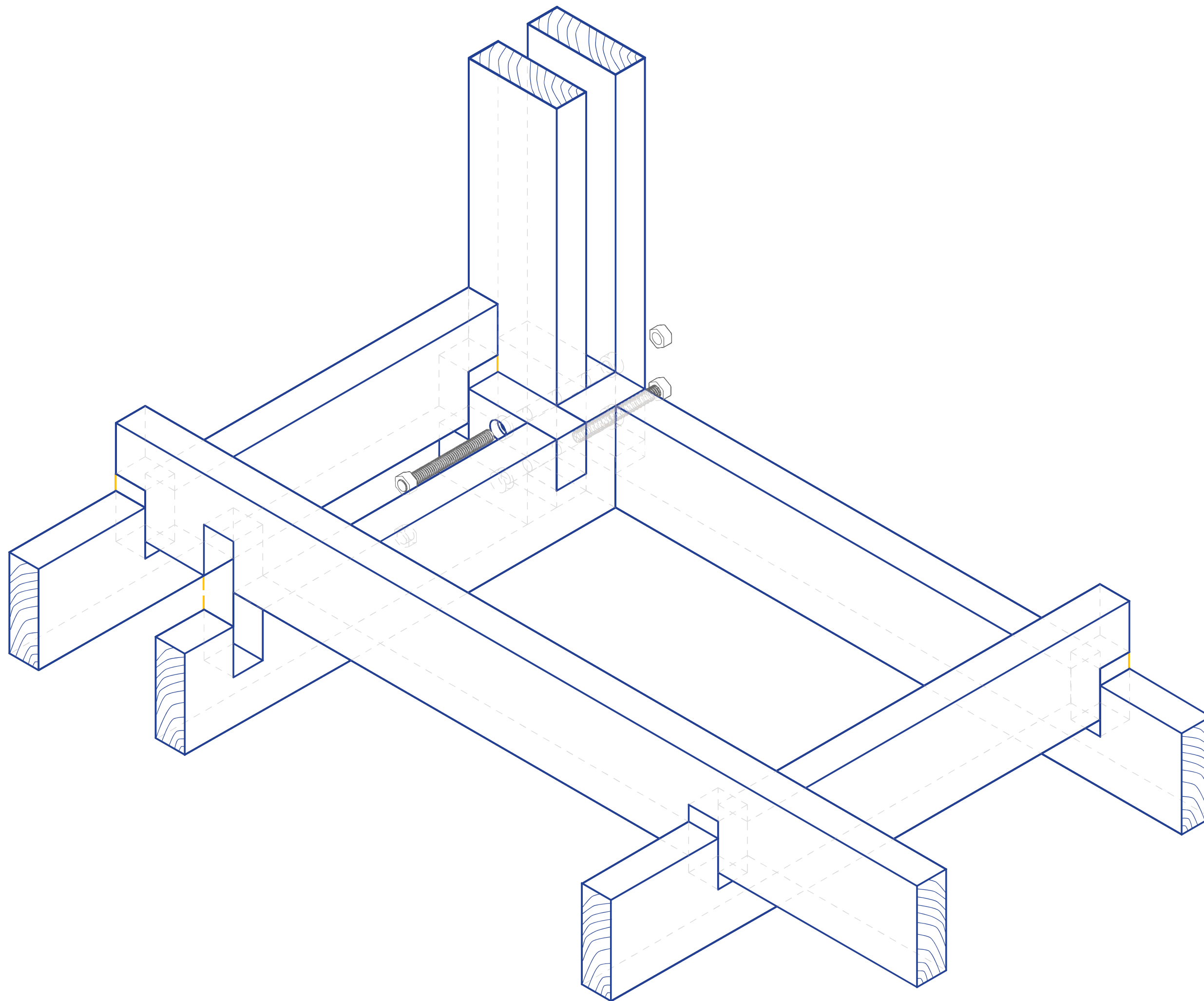
Step 6 - Roof Cross-Beams

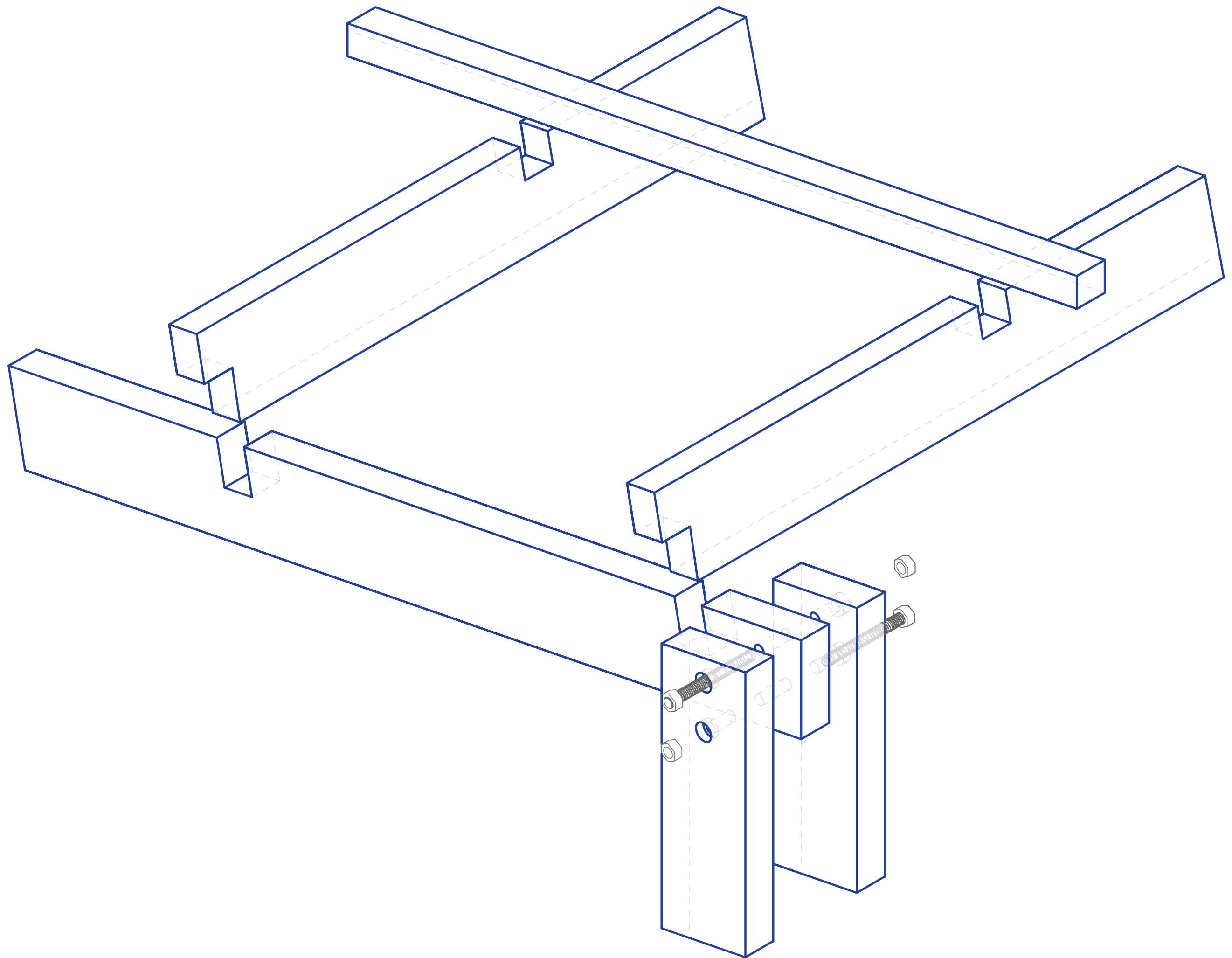


Step 7 - Floor & Roof Boards

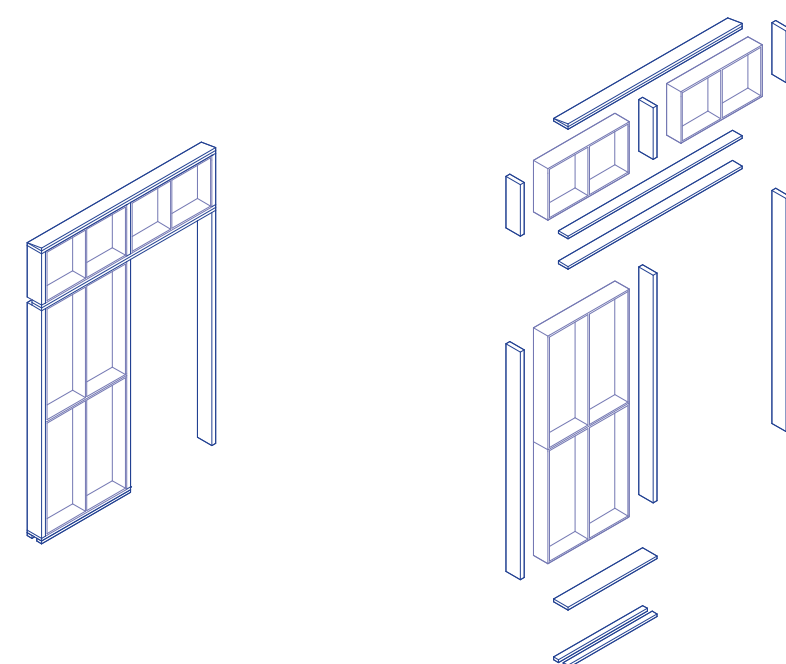
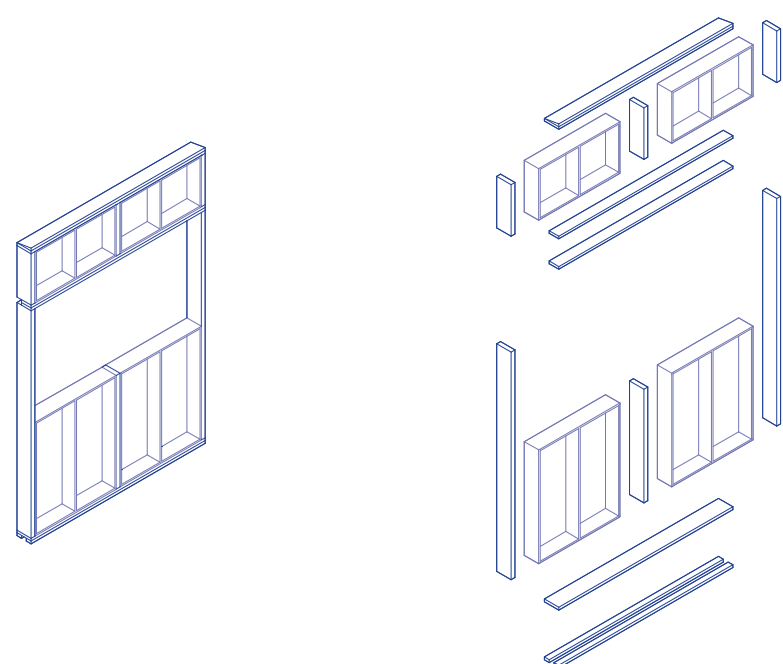
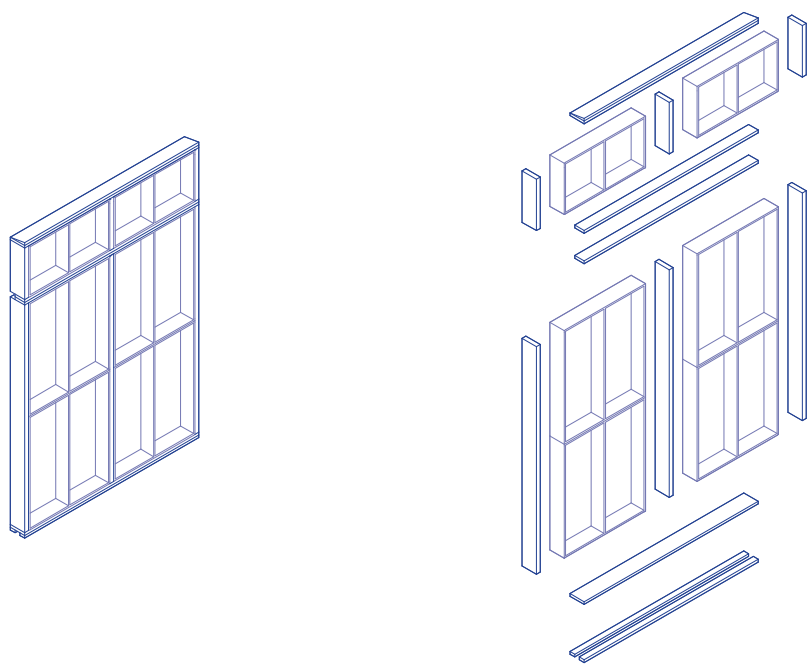
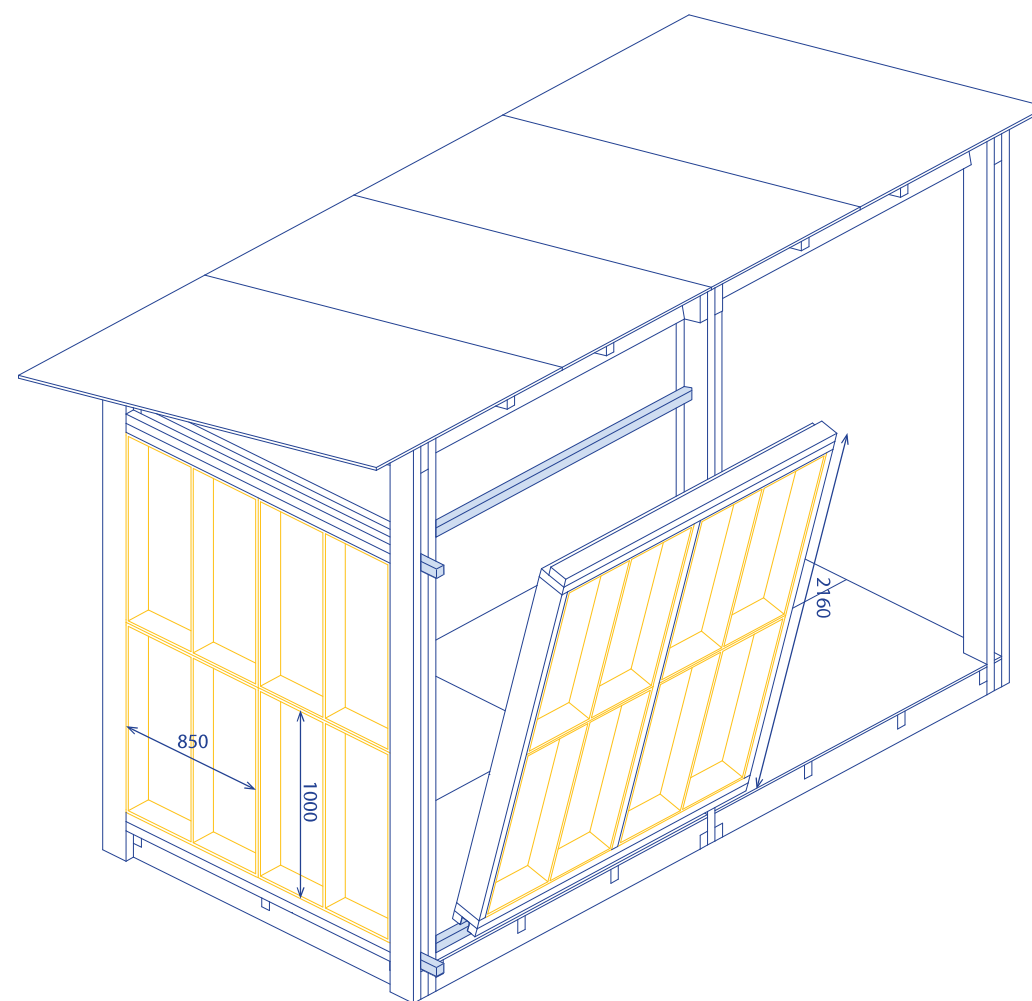
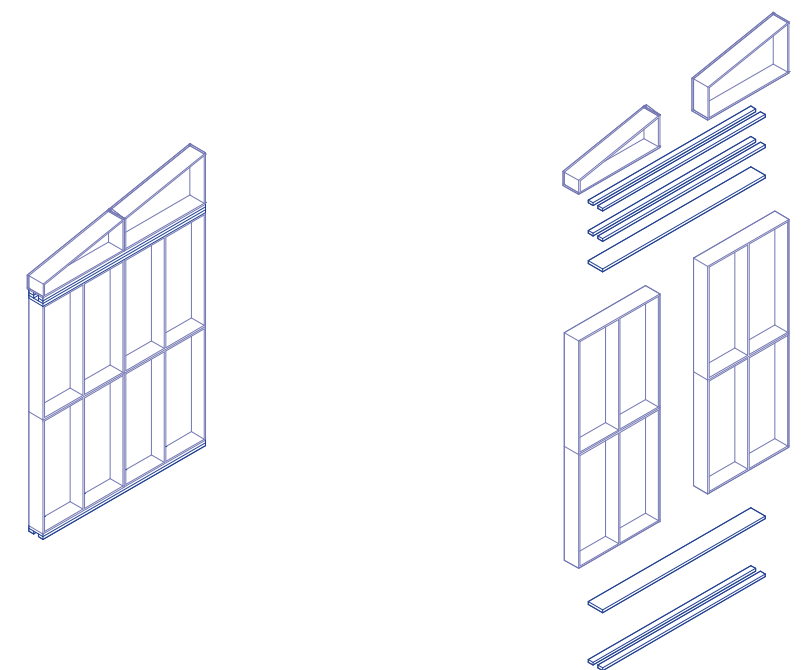
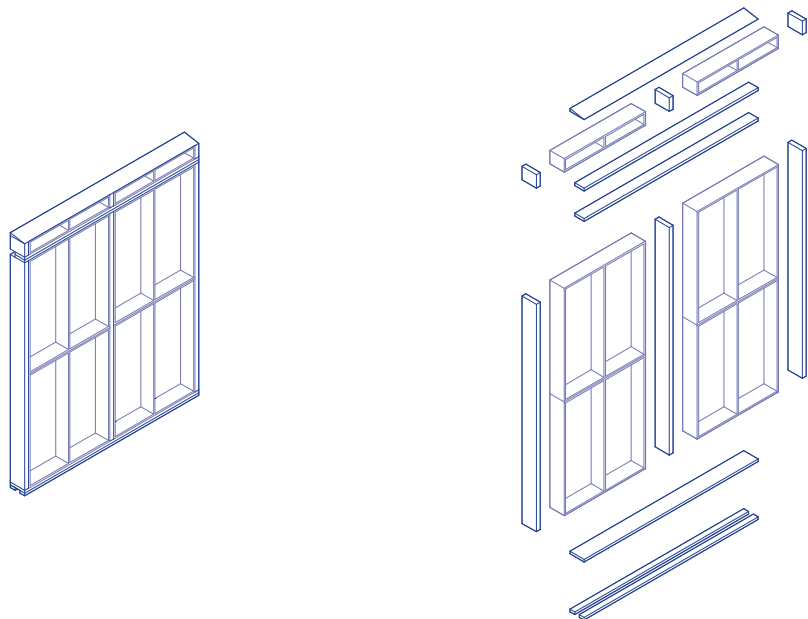
***Module
Structure
Construction
Step-by-Step***

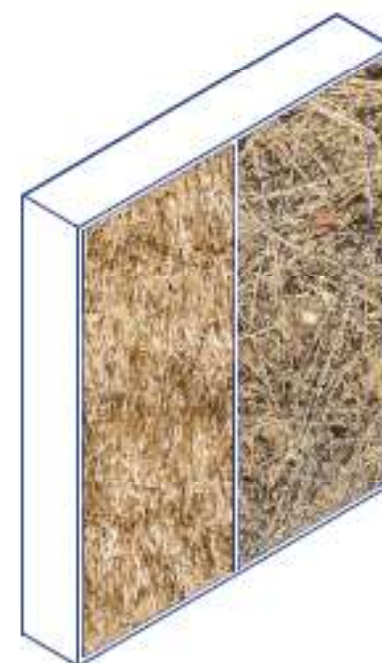
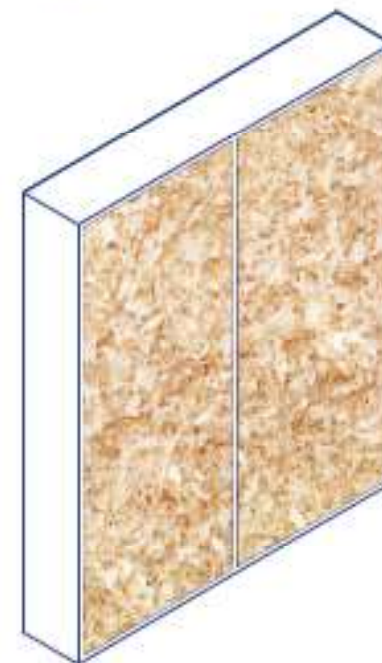
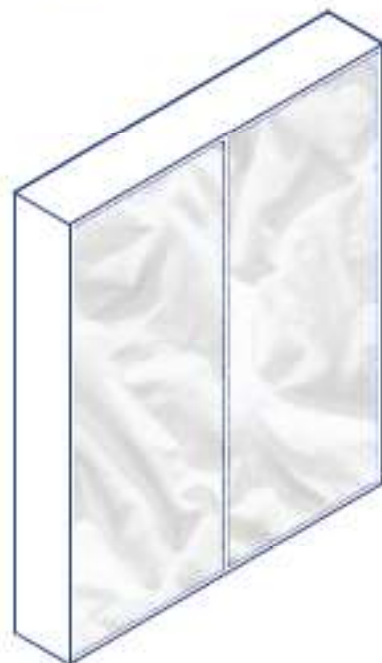
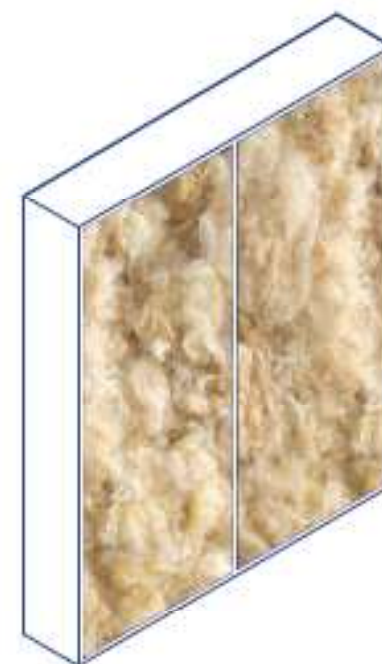
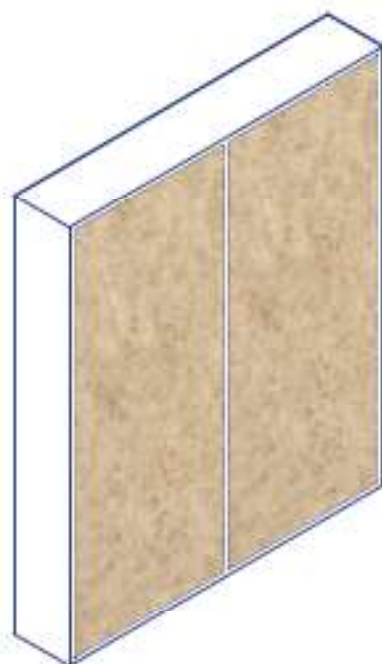
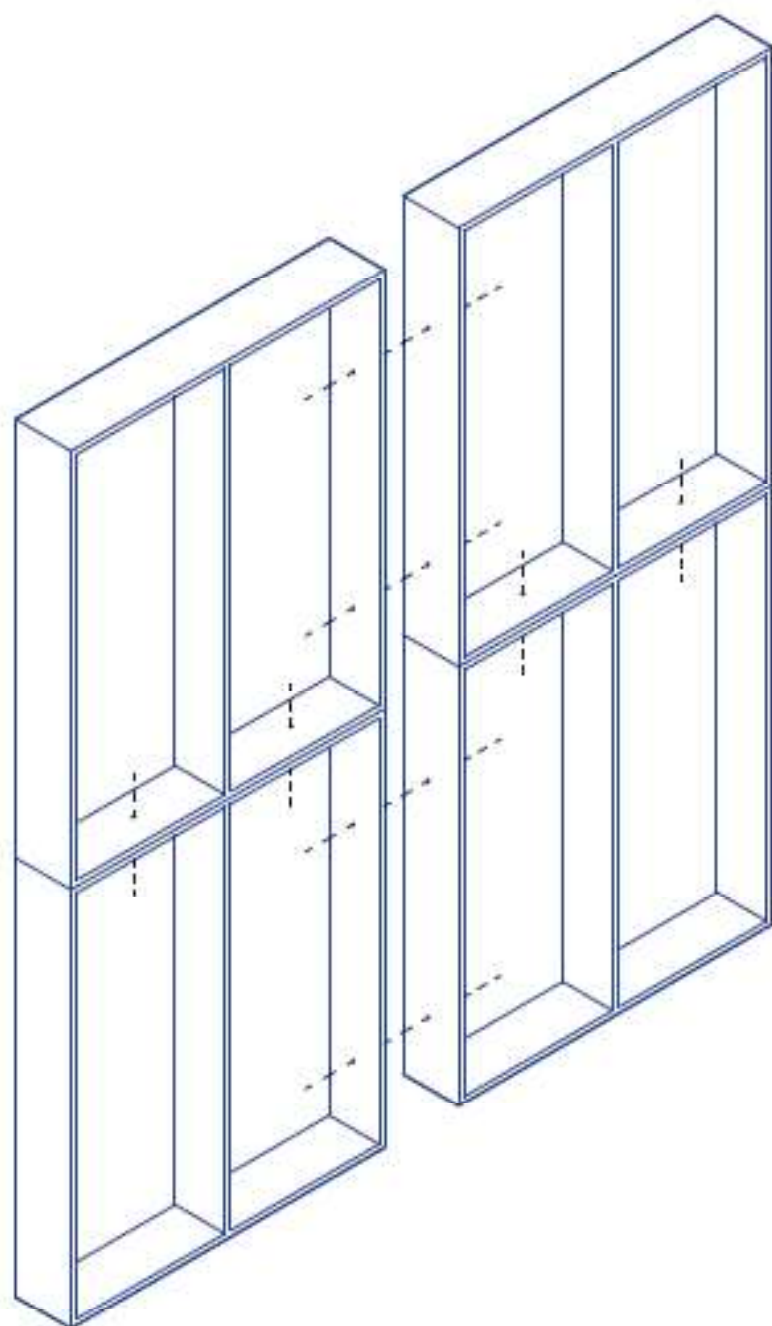












PRESENT

Contaminated,
Deserted Land

After P1

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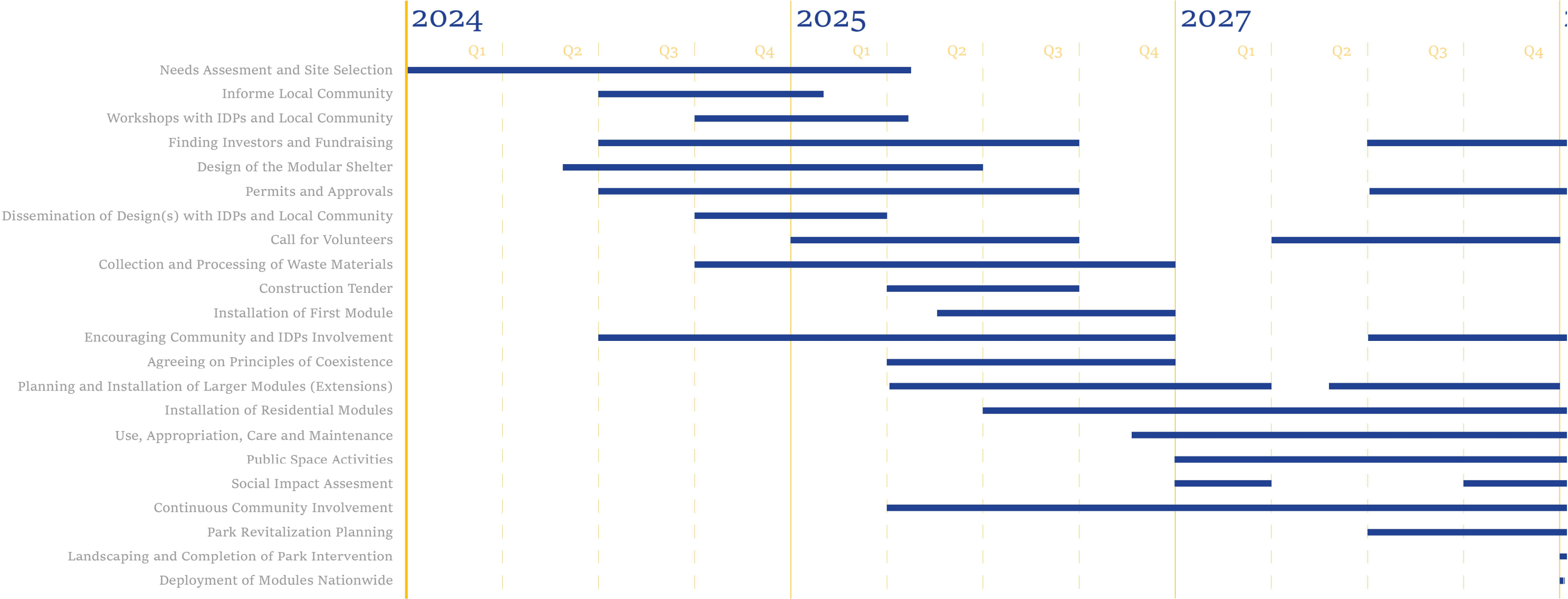
P4

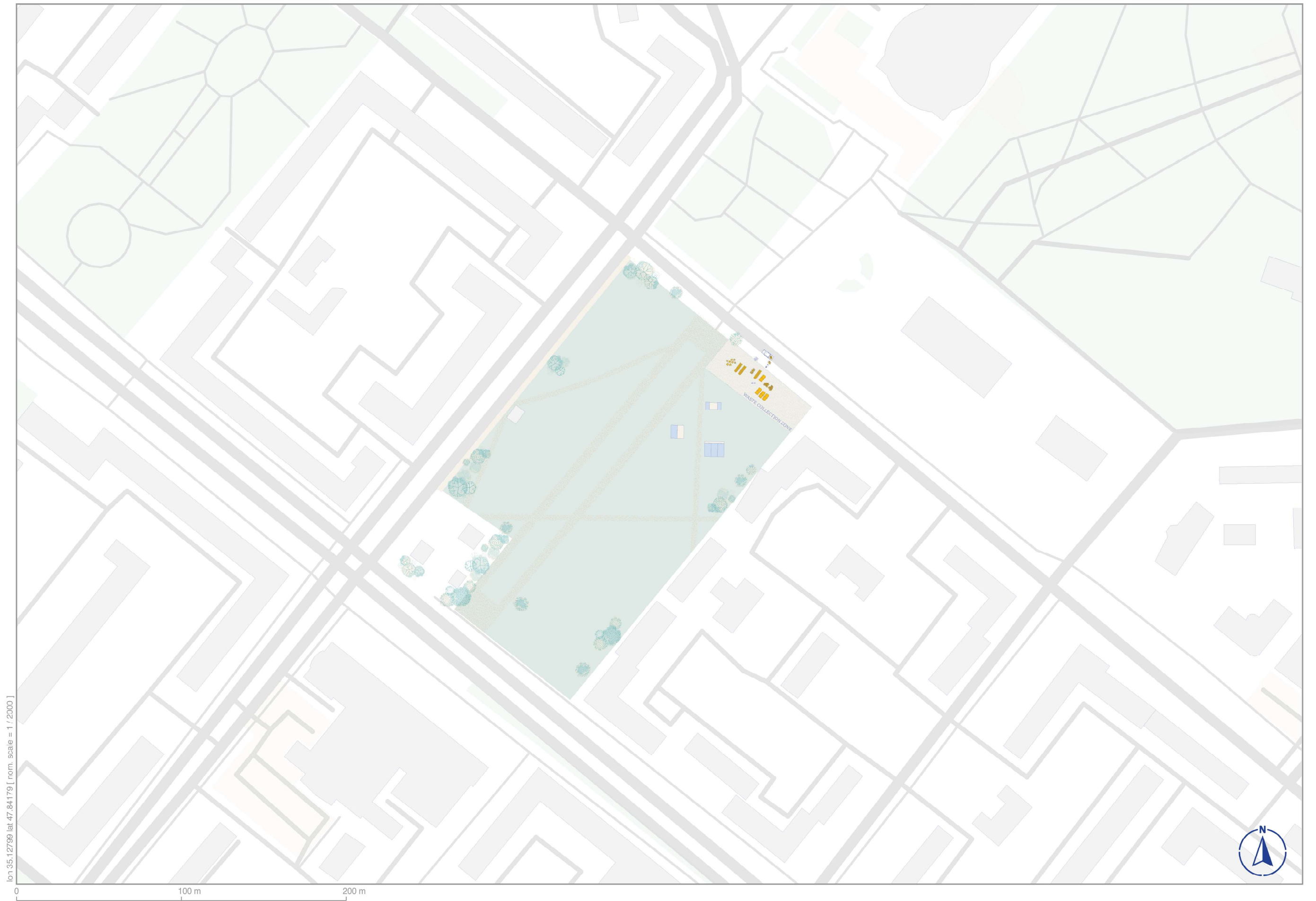
THE HARVEST

- (Developing with care)
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FUTURE

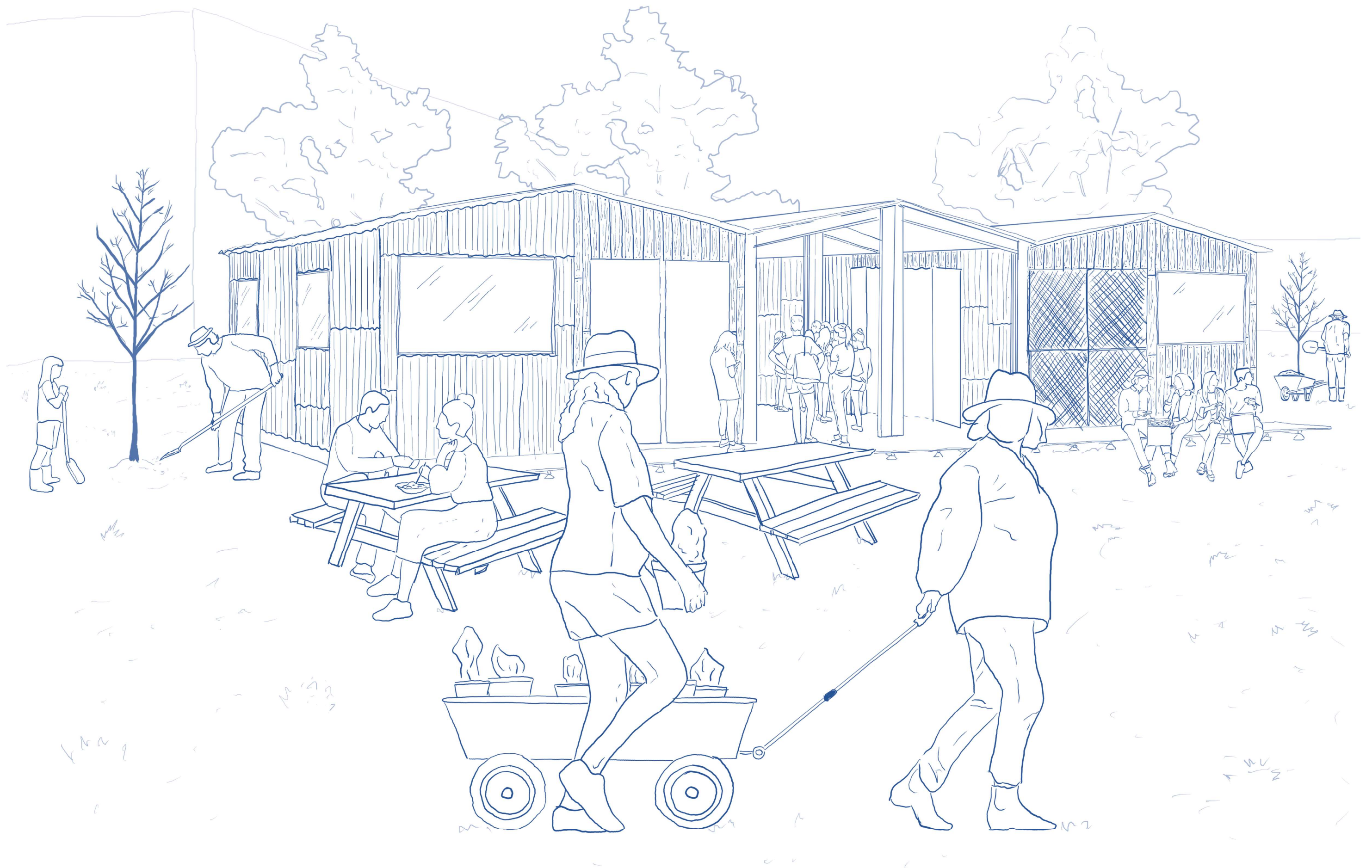
Prosperous,
Livable Land

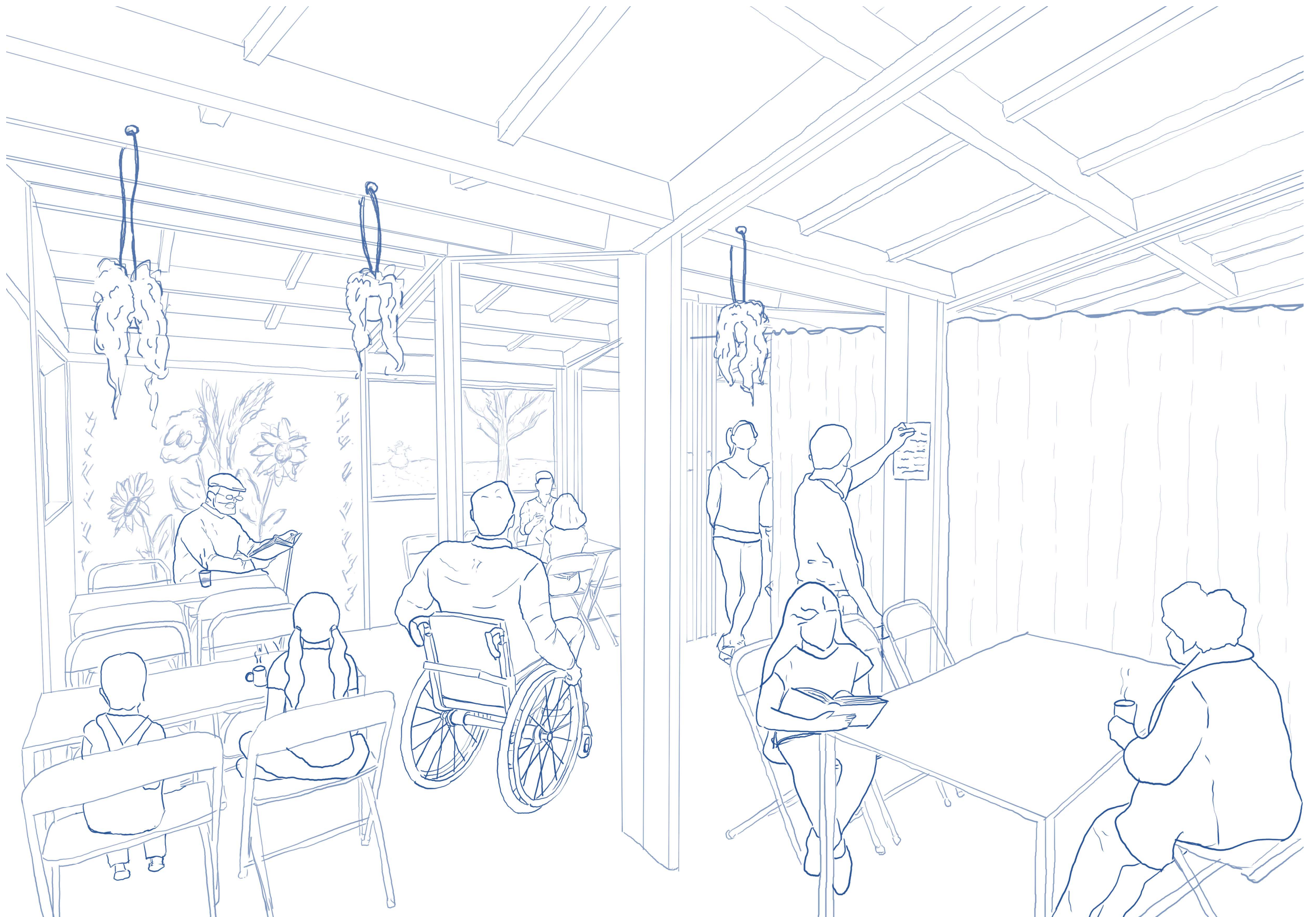


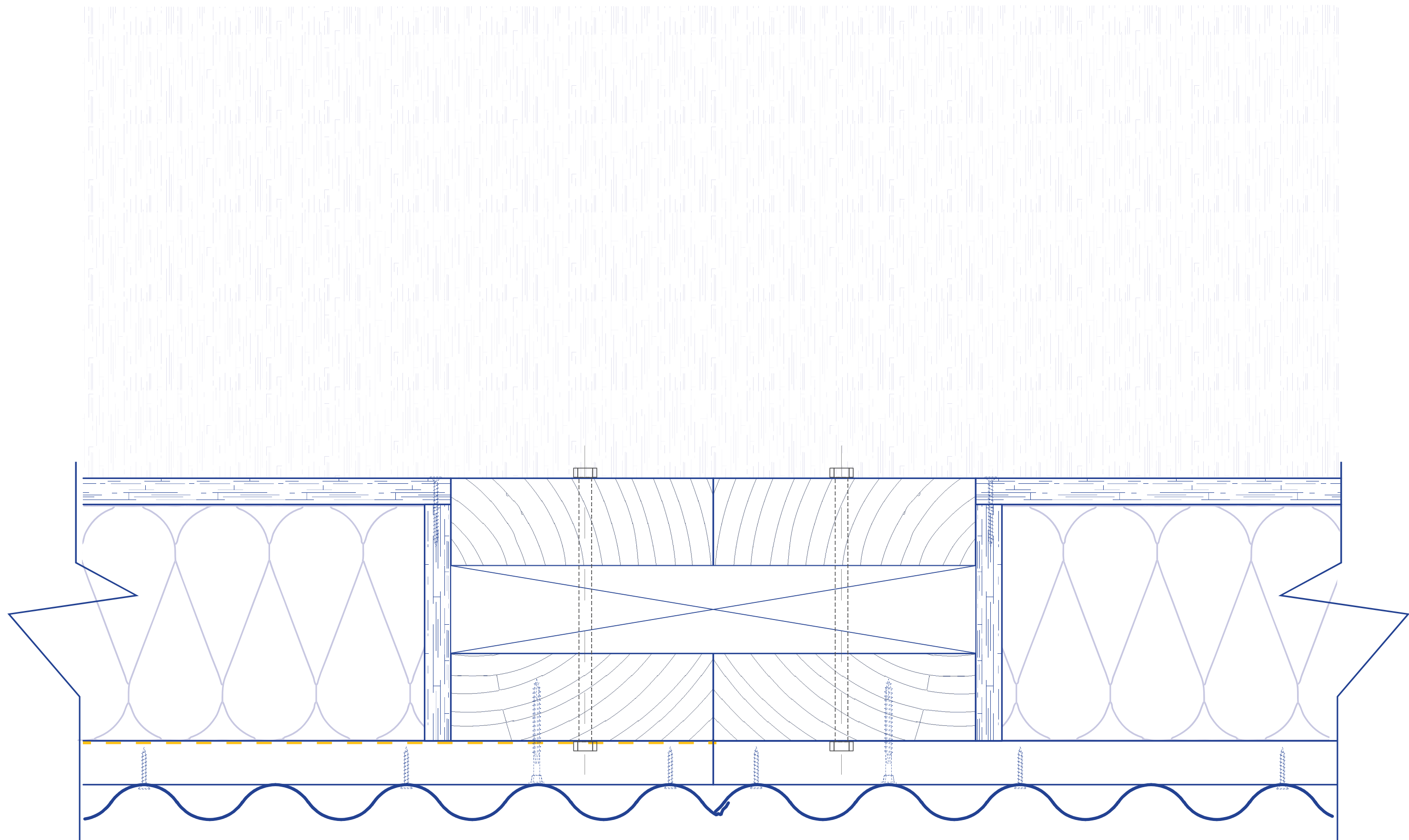


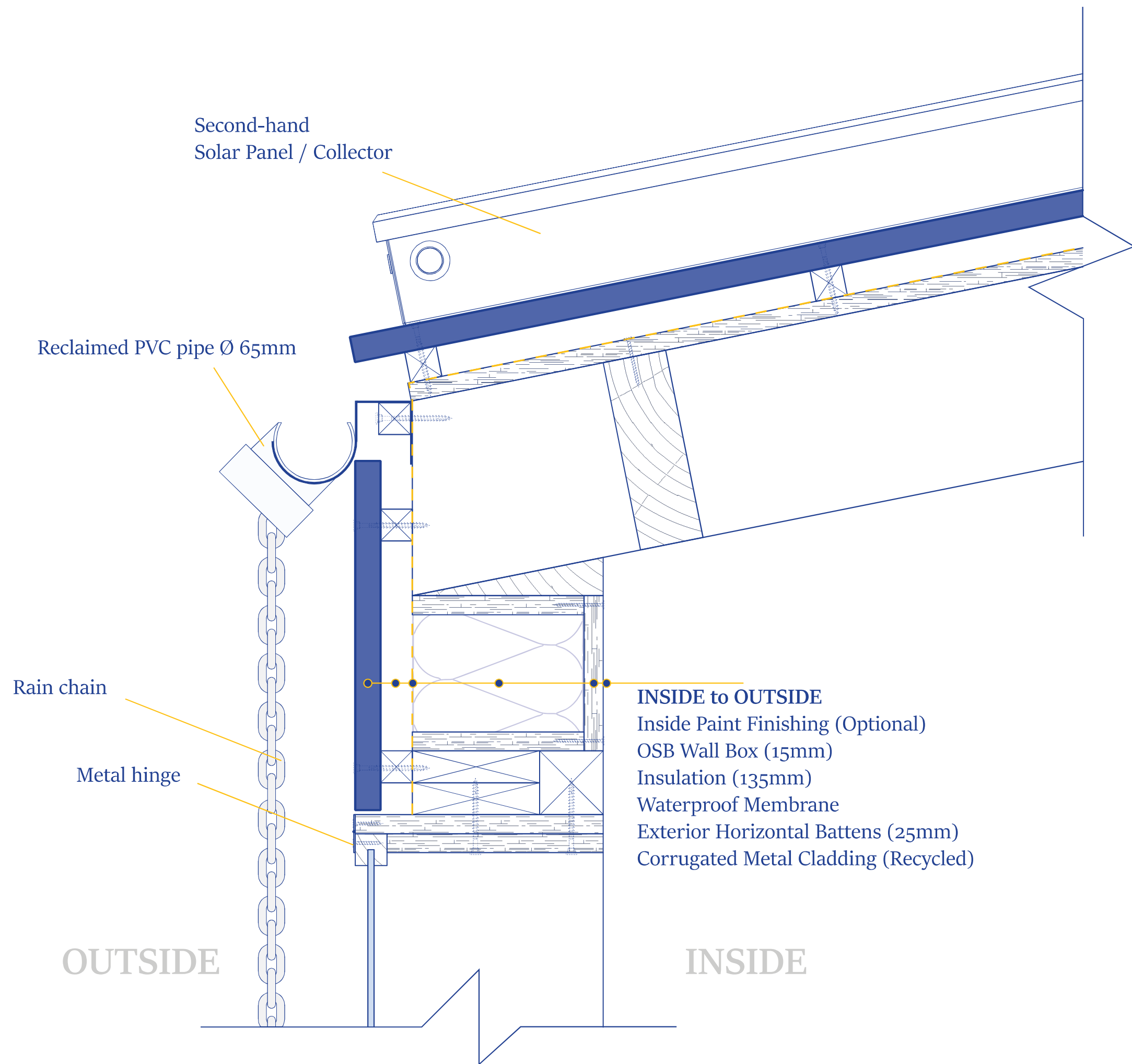
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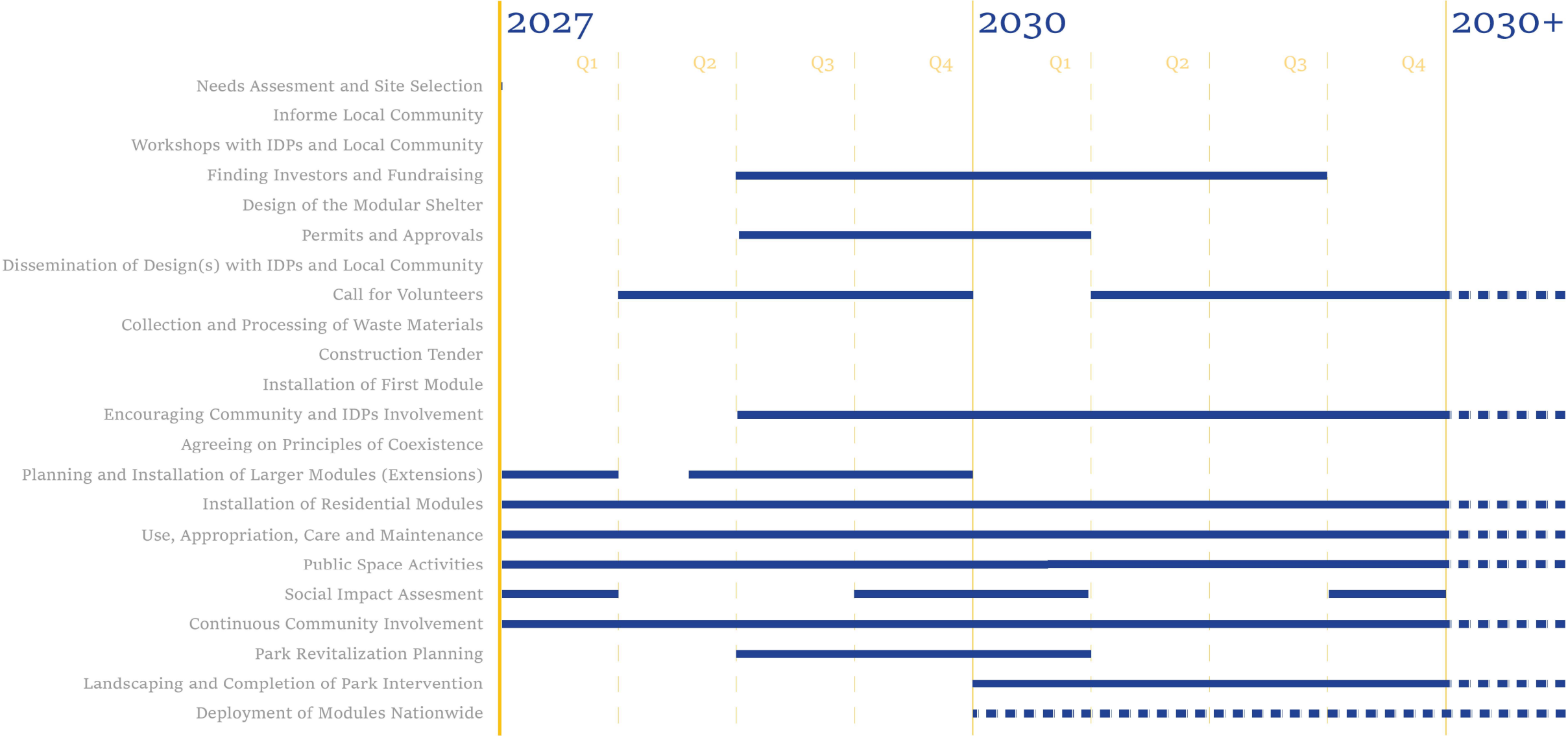


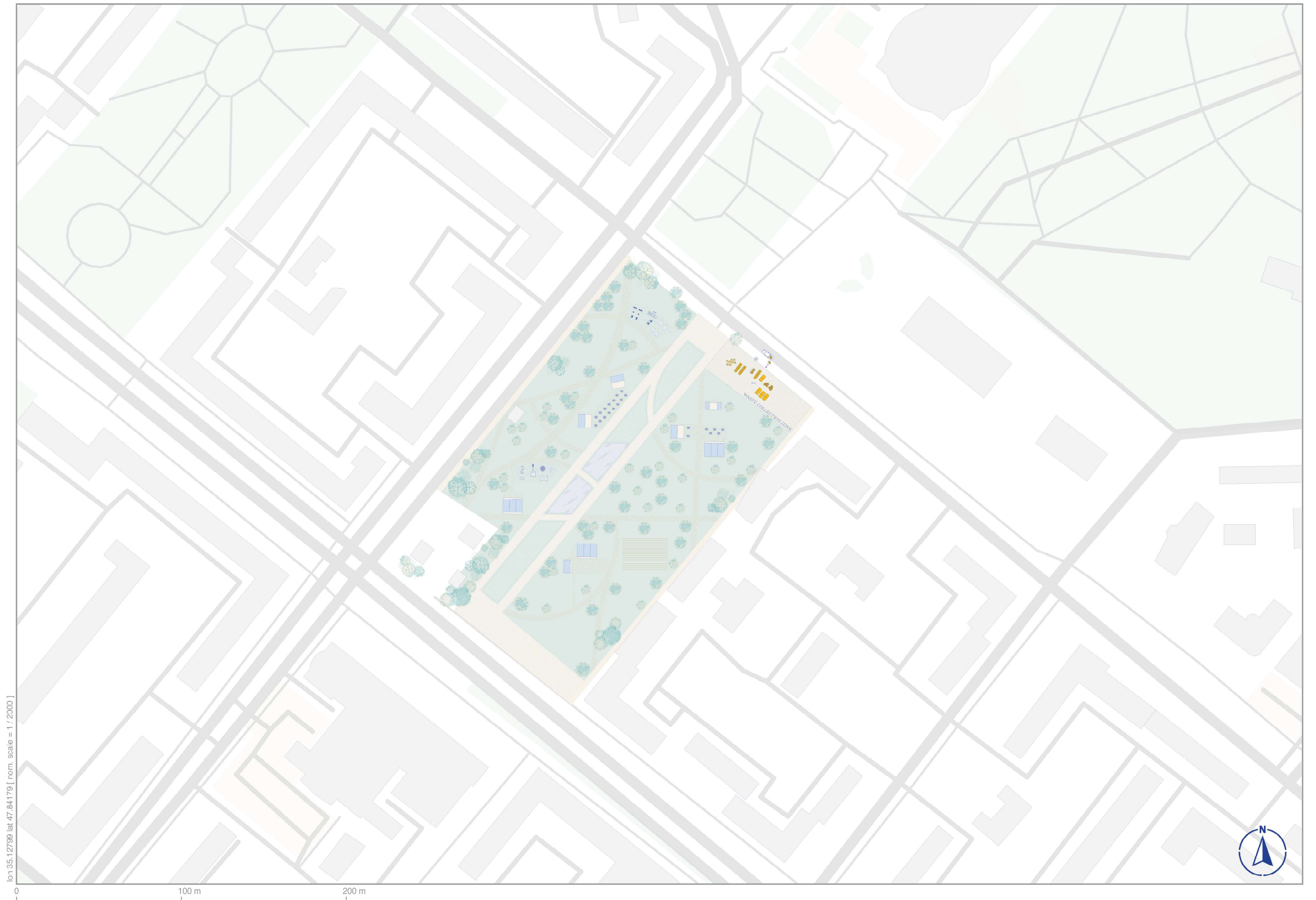


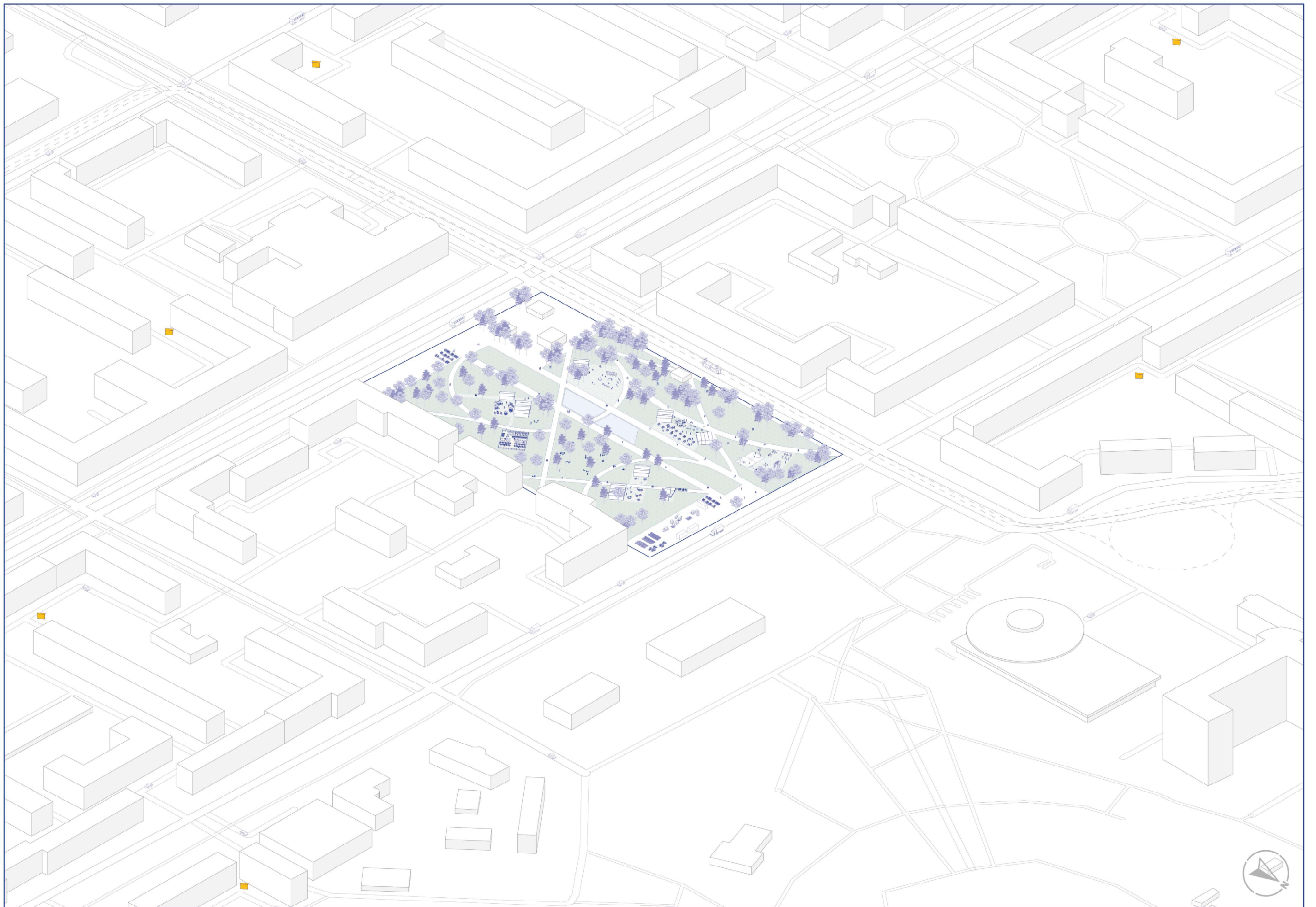




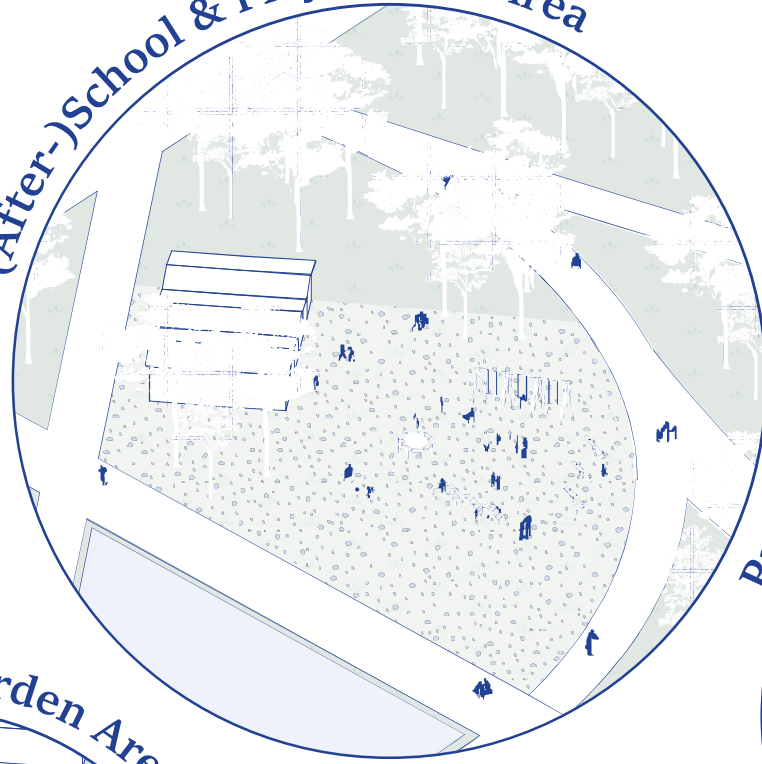




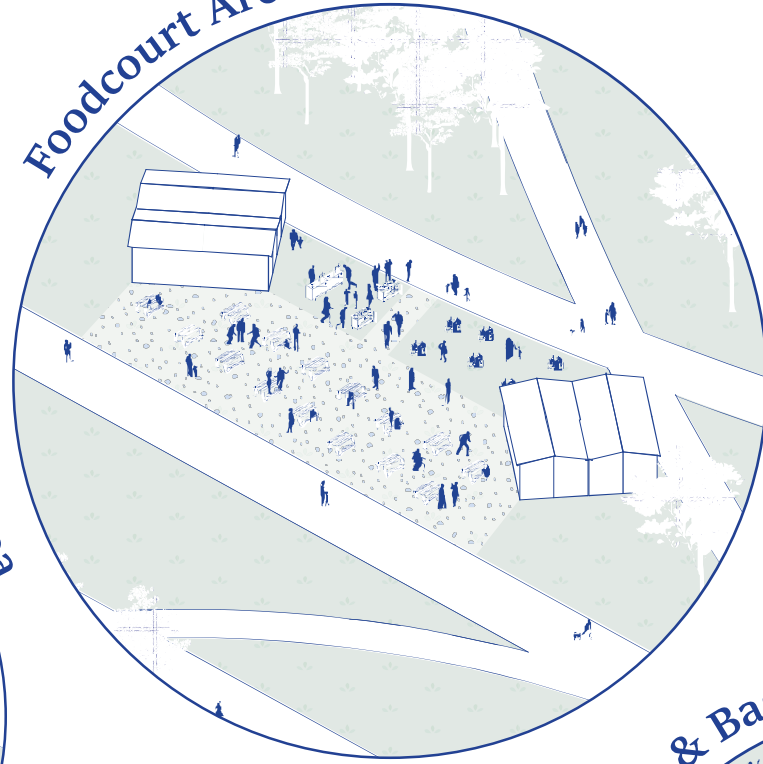




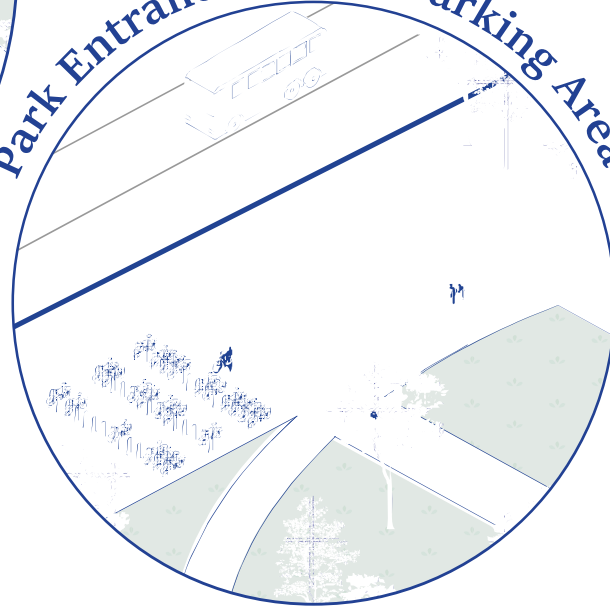
(After-)School & Playground Area



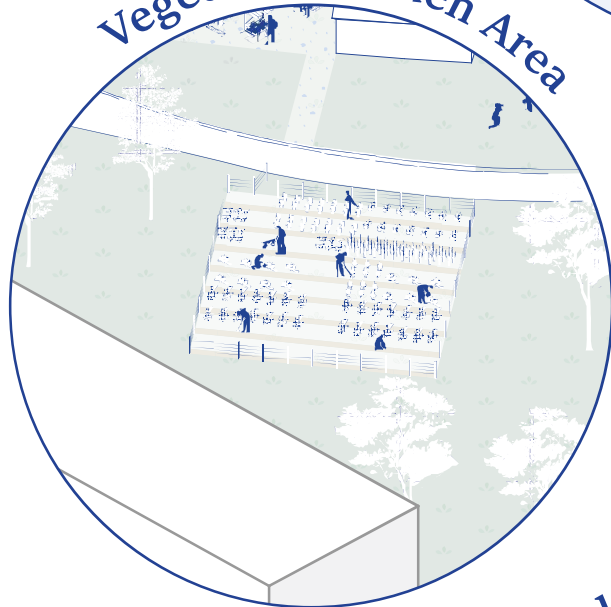
Foodcourt Area



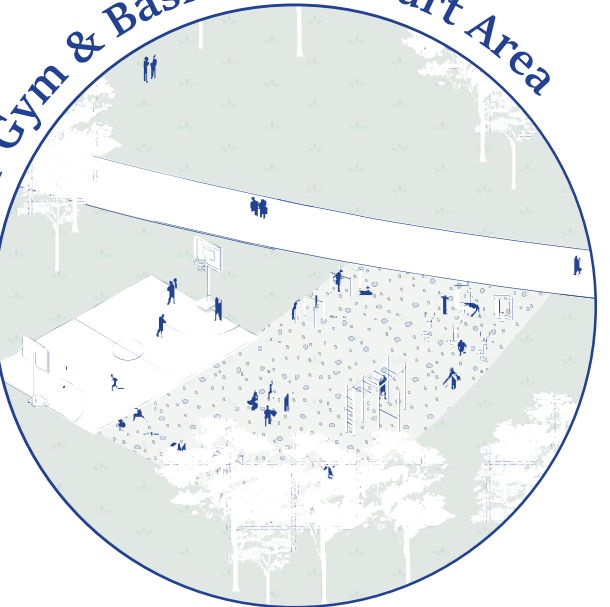
Park Entrance & Bike Parking Area



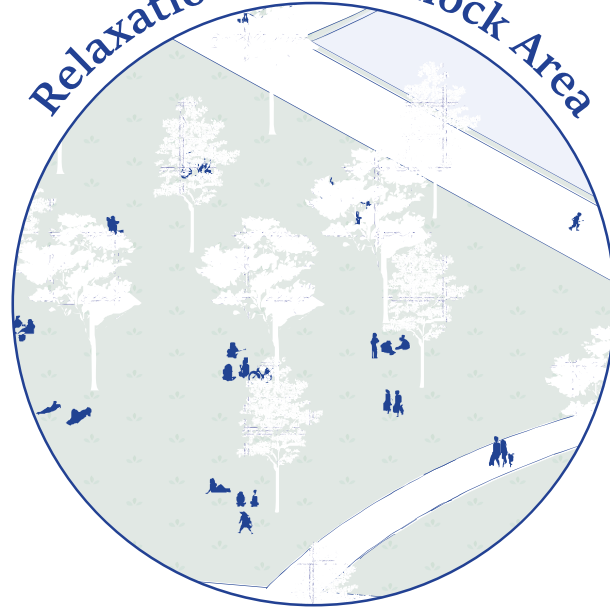
Vegetable Garden Area



Outdoor Gym & Basketball Court Area



Relaxation & Hammock Area



NFIs & Produce (Trade) Market Area



Information Centre, Lecture & Workshops Area



