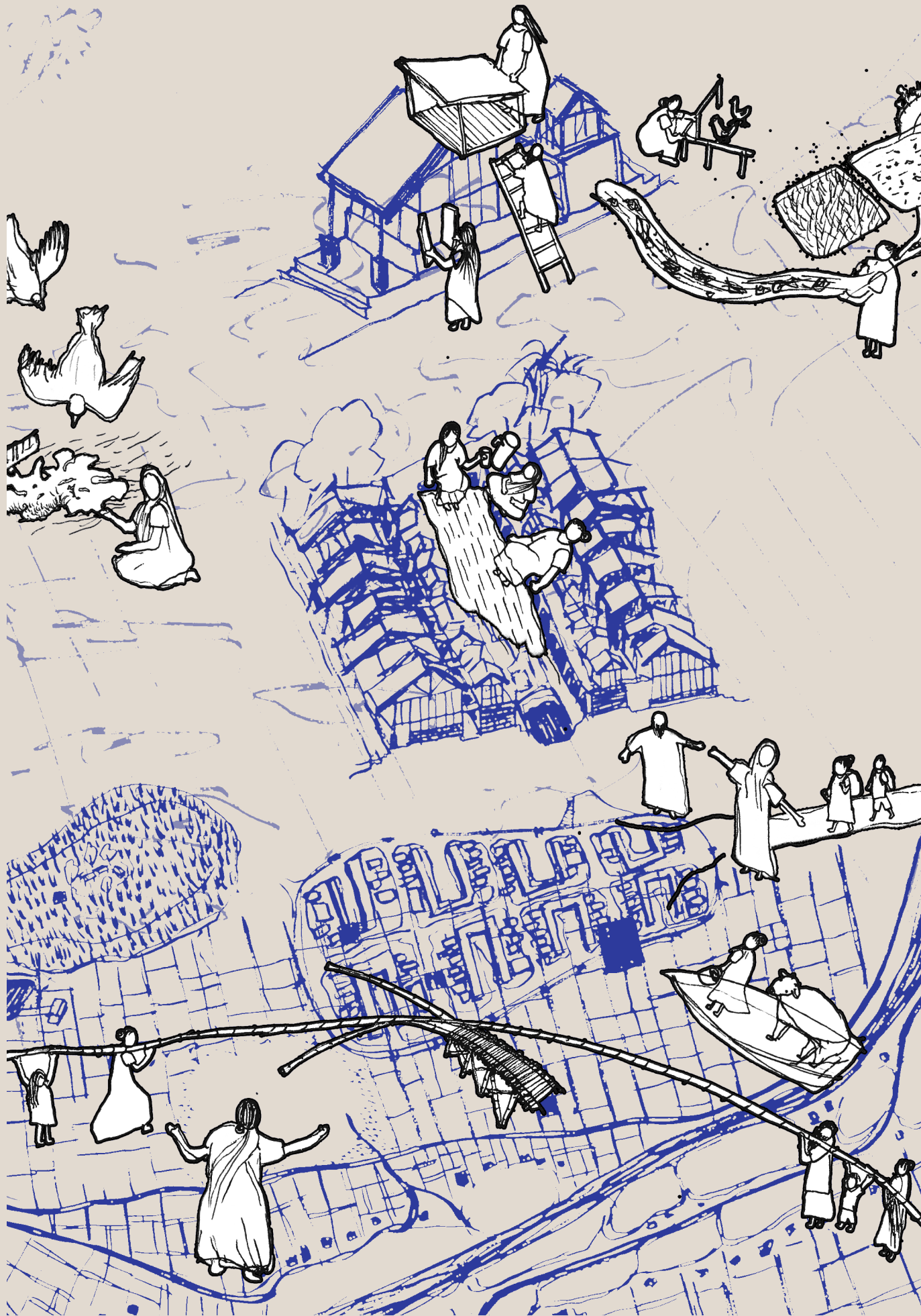




HOUSING FOR THE WOMEN OF HAORS

**imagining an alternate
feminist future to increase
women's access to resources**

Nelson Mota
Marina Tabassum
Mo Smit
Rohan Varma
Dick van Gameren



imagining an alternate
feminist future to
increase women's
access to resources

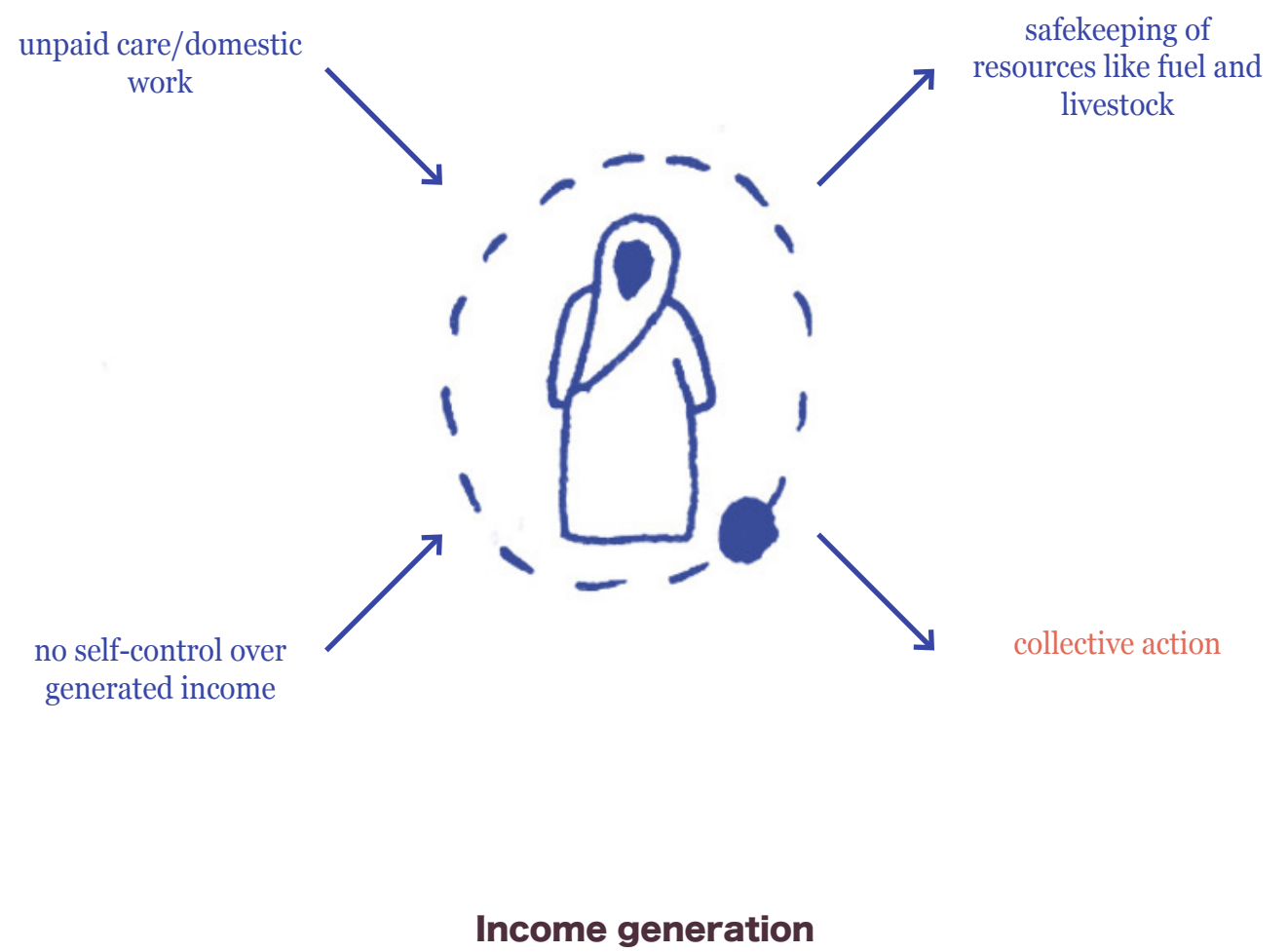
HOUSING FOR THE WOMEN OF HAORS

Sue Vern Lai

1 July 2024

research question

**HOW CAN AN
ALTERNATE FEMINIST
FUTURE BE IMAGINED
TO INCREASE
WOMEN'S ACCESS TO
RESOURCES?**

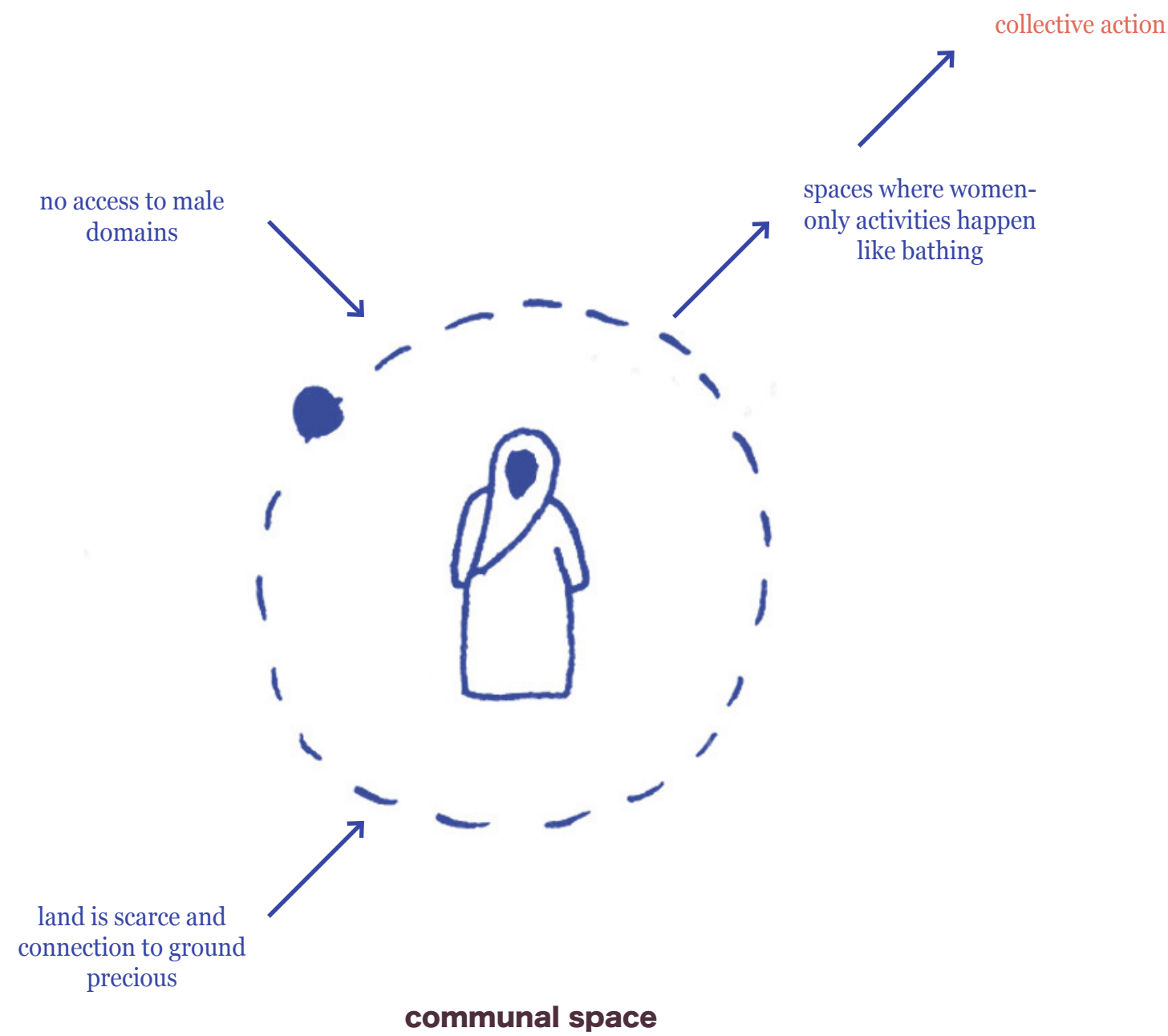


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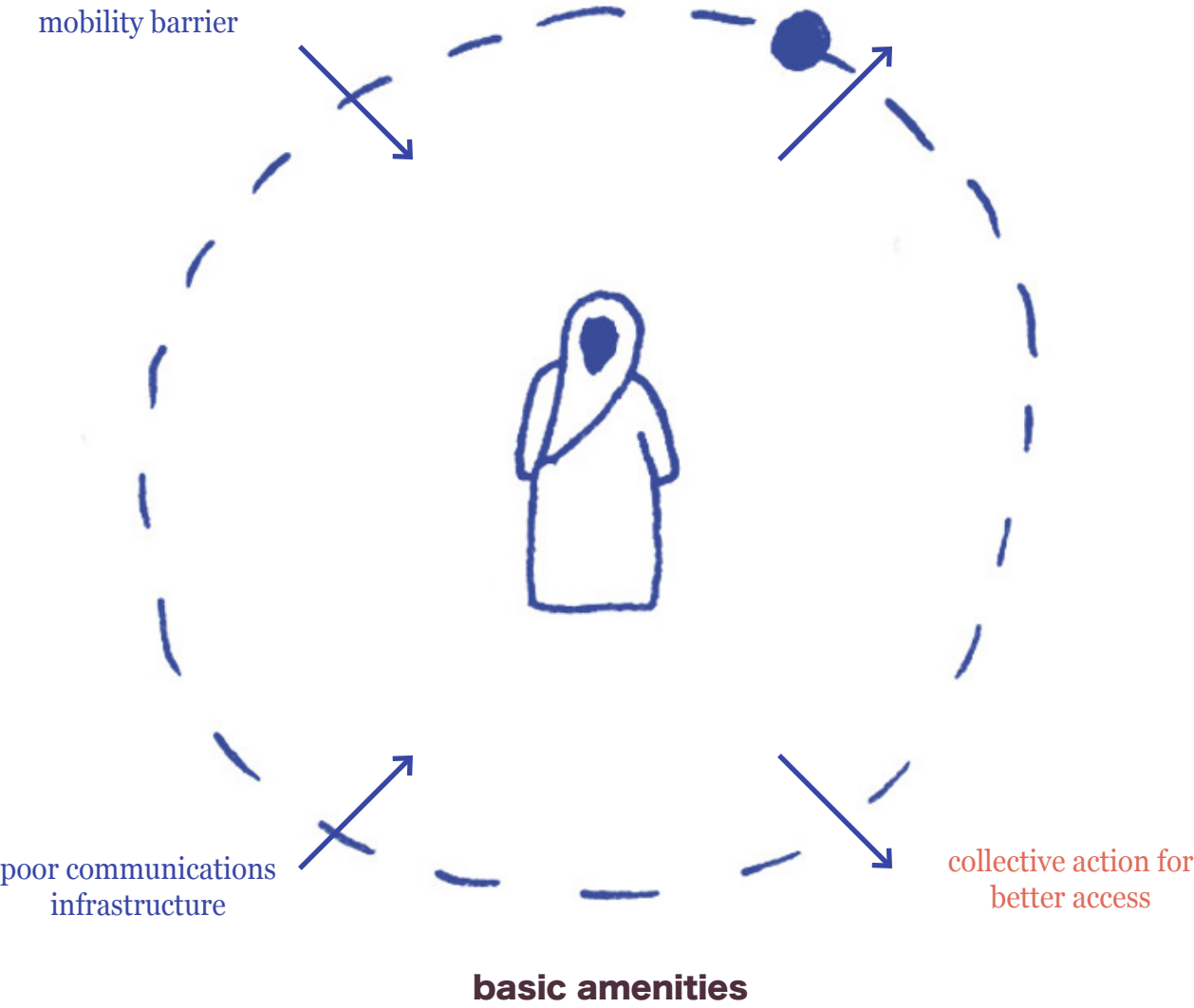


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Gender Equality Toolbox, “Collective Action,” May 9, 2019, accessed October 15, 2023, <https://www.gatesgenderequalitytoolbox.org/measuring-empowerment/agency/collective-action/>.



Fatema Akhter Hiramoni, “Quality of Life among Women Living in Haor Basin in Bangladesh and Its Socio-Economic Predictors.”

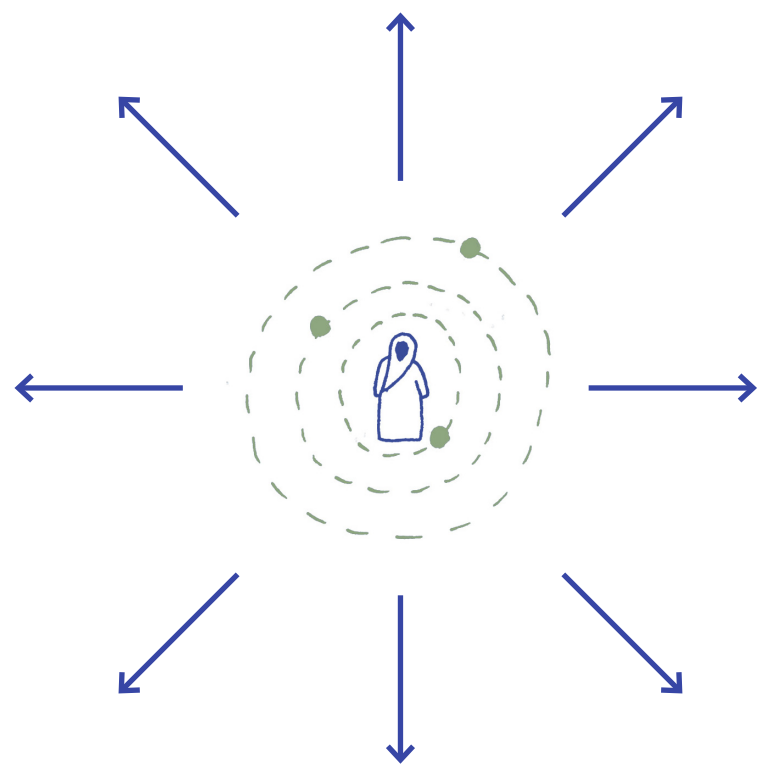
Goutam Roy, “Education in Haor Areas: Should Distance Be the Barrier to Access Education? | Bangladesh Education Article,” October 16, 2020, accessed October 15, 2023, <https://bdeduarticle.com/education-in-haor-areas-should-distance-be-the-barrier-to-access-education/>.

Sarah Gillingham, “CARE Bangladesh Programme Strategy: Haor Region 2015 – 2020” (CARE, February 2016), https://www.carebangladesh.org/publication/Publication_5340141.pdf.

The Carter Center, “Women and the Right of Access to Information,” accessed October 15, 2023, <https://www.cartercenter.org/peace/ati/women.html>.

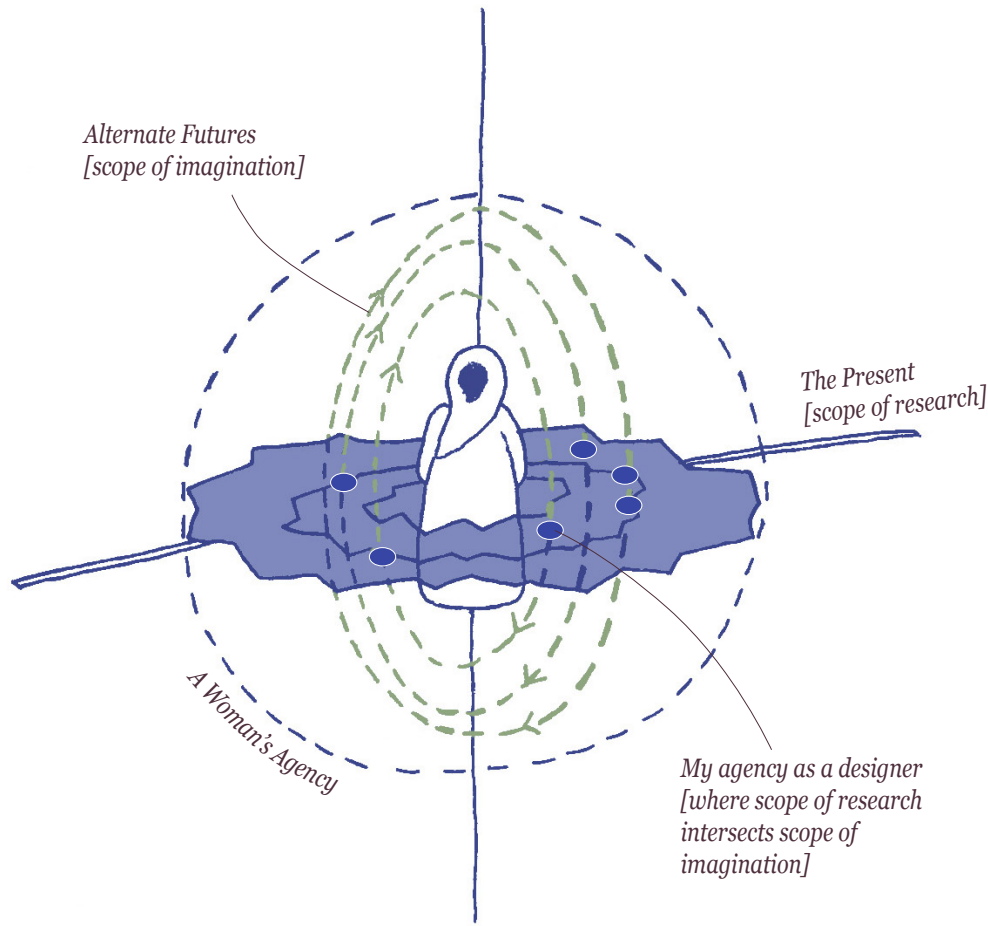
the manifesto

**TO CREATE A
HIERARCHY OF
COLLECTIVE ACTION
TO INCREASE
WOMEN'S ACCESS TO
RESOURCES**



INCREASING OPPORTUNITIES
FOR COLLECTIVE ACTION

=



EXPANDING
A WOMAN'S SPHERE OF AGENCY
IN THE HAORS

Gender Equality Toolbox, "Collective Action," May 9, 2019, accessed October 15, 2023, <https://www.gatesgenderequalitytoolbox.org/measuring-empowerment/agency/collective-action/>.

**“WOMEN AND GIRLS ENGAGE
IN *collective action* WHEN
THEY STAND TOGETHER IN
SOLIDARITY AND EXERCISE
VOICE *to transform
institutions and power
relations.*”**

“Collective action is a powerful tool for social transformation and is fundamental to women and girls’ empowerment on a societal level.”

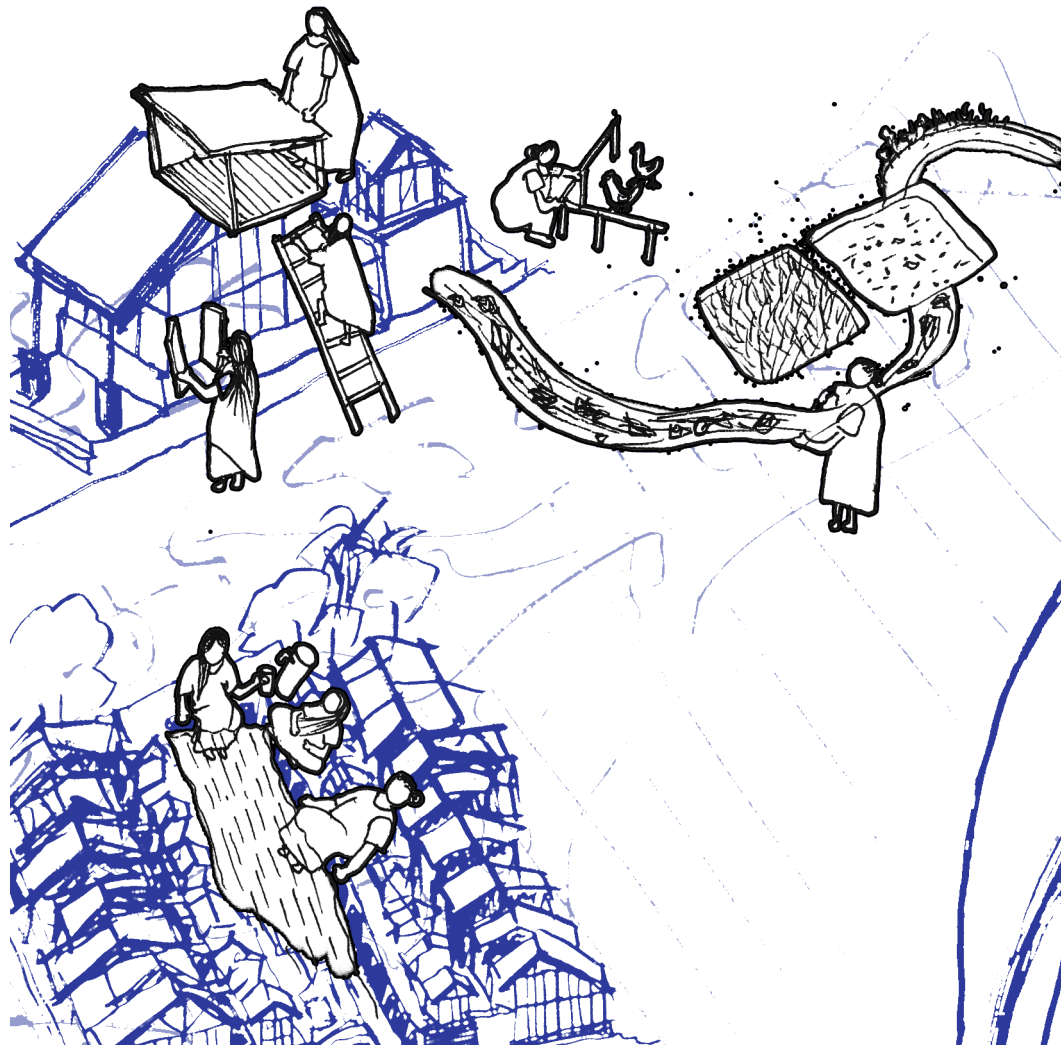
“Many factors can contribute to a woman’s ability to participate in collective action, including social capital through her network and her ability to move safely and freely throughout her community.”

Gender Equality Toolbox, “Collective Action,”
May 9, 2019, accessed October 15, 2023,
[https://www.gatesgenderequalitytoolbox.org/
measuring-empowerment/agency/collective-
action/](https://www.gatesgenderequalitytoolbox.org/measuring-empowerment/agency/collective-action/).



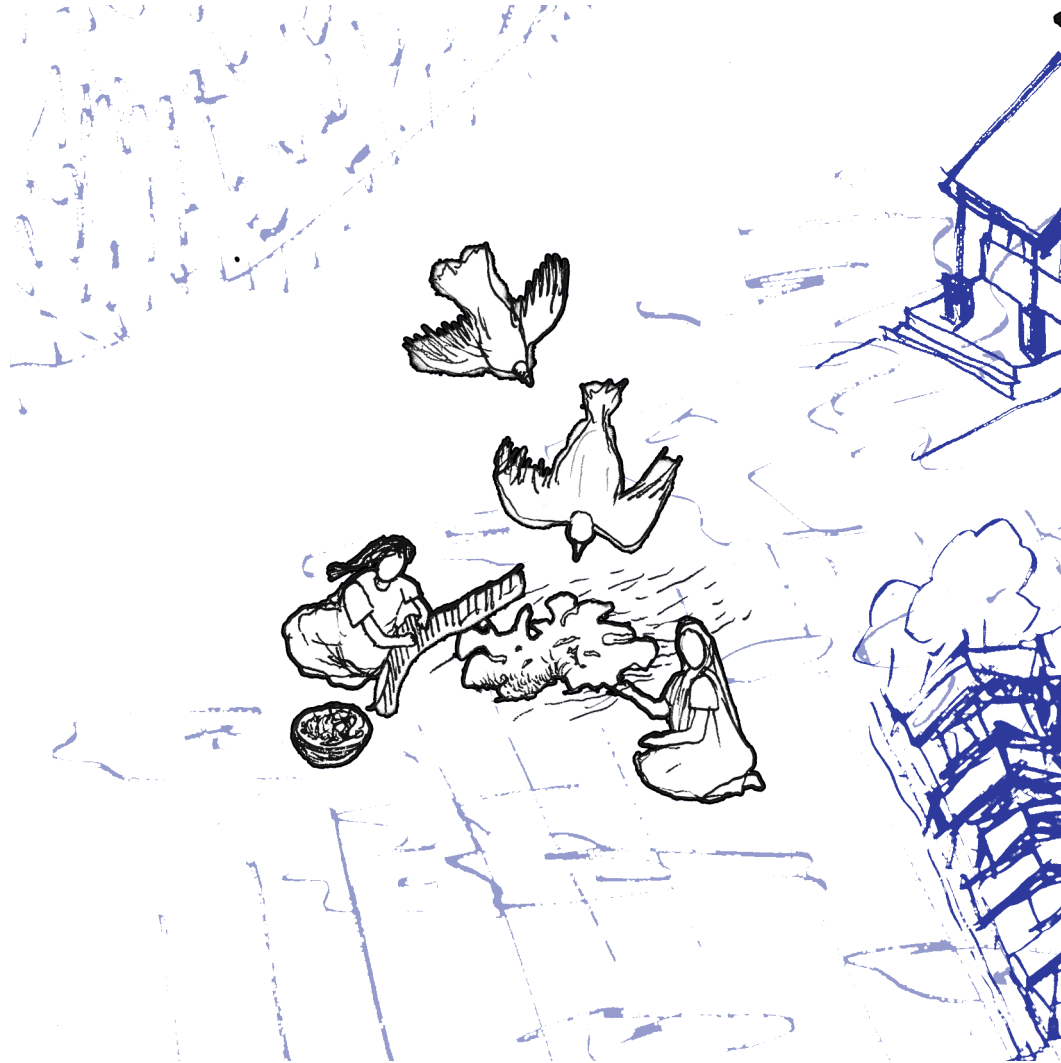
1 *Spatial*

Women have the ability to interact with other women and form increasingly large groups for collective action, in a safe gender-sensitive way



2 *Temporal*

Women can be secure and continue to participate in collective action during floods and dry season



3

Managerial and Ecological

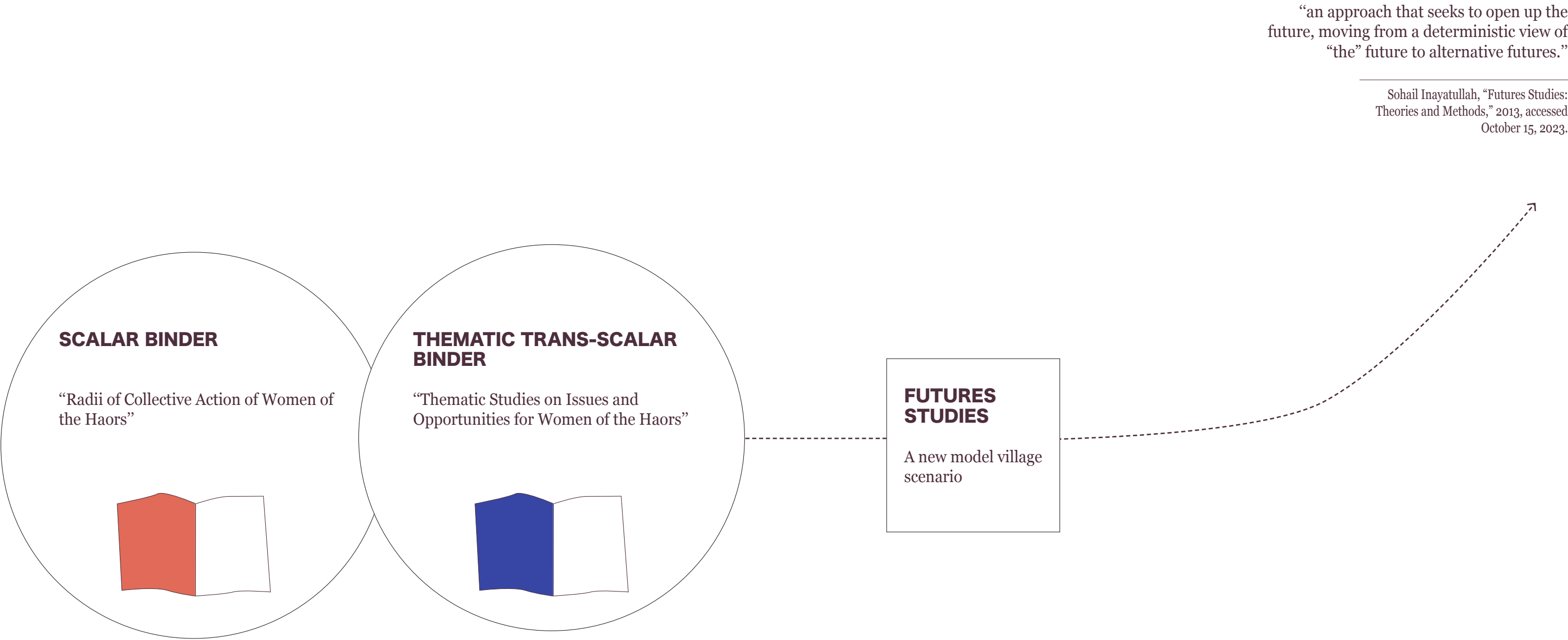
The systems are sustainable
and safeguarded

approach

DIVERGENCE

“The future is that openness of becoming
that enables divergences from what exists.”

RESEARCH-DESIGN LINK















wetlands, biodiversity



production, social nodes



connectivity, amenities



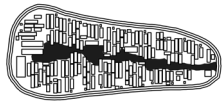
materiality, construction system

water system, energy system

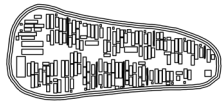




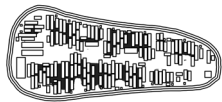
HIERARCHY OF COLLECTIVE ACTION



central linear courtyard



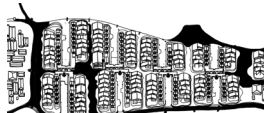
ghat



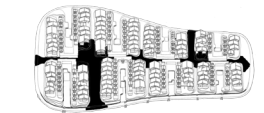
tertiary alleys



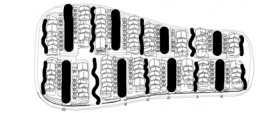
existing



territory



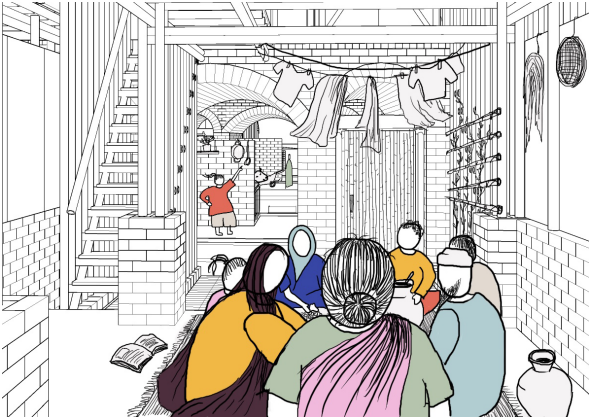
village



cluster



dwelling and details



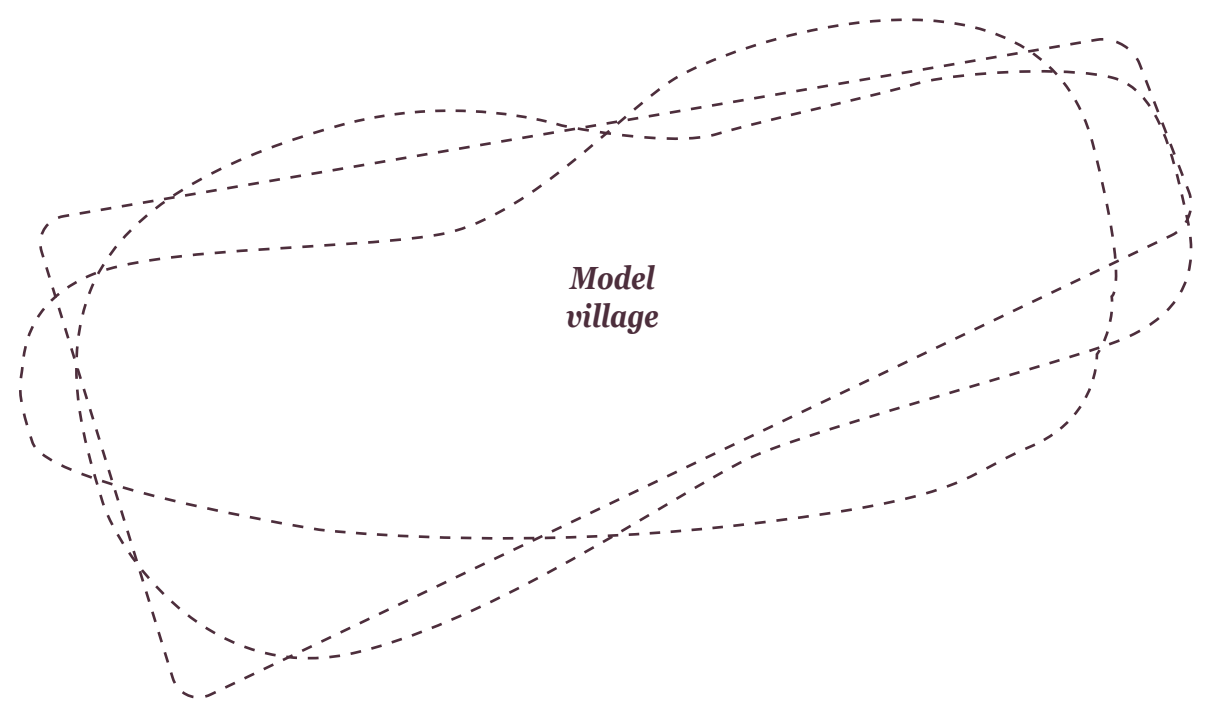
proposed



*Ratonshri
village*

460 people per hectare
77 dwellings per hectare

35V4+Q7F Road, Tahirpur Upazila,
Sunamganj District, Sylhet Division,
Bangladesh



*Model
village*

1.5x people per hectare
same dwellings per hectare,
each dwelling has access to a toilet, bathroom, kitchen,
communal courtyard, street front, water supply, electricity
and biogas generation
min. 2.4x more floor space per resident
2.6x more amenities area per resident

housing for the women of haors

DETAILS

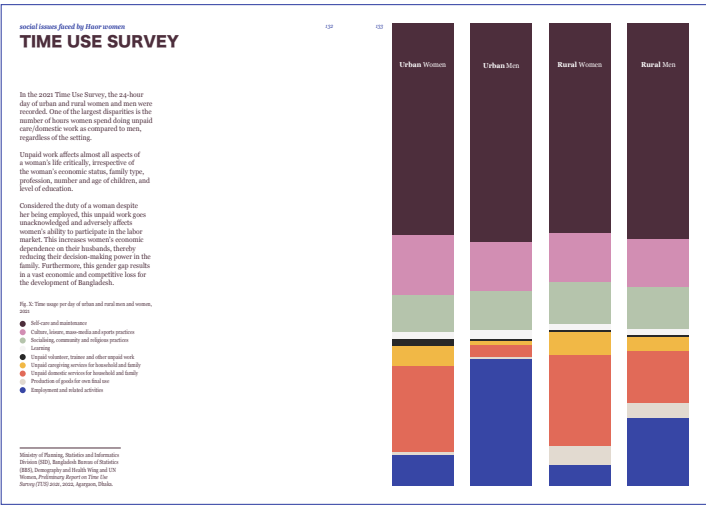
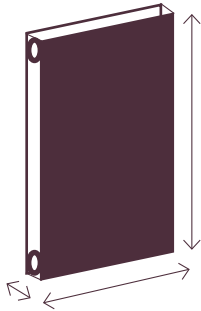
SHEARING LAYERS FOR WOMEN



scalar binder_dwelling_maintain the dwelling

spatial

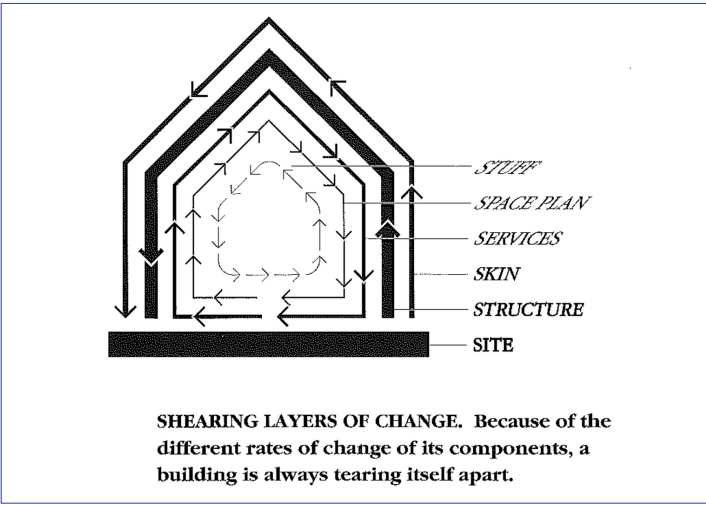
ensure women have access to materials and construction by using a grid (a scale) centred around women



thematic binder_social issues faced by Haor women_time use survey

temporal

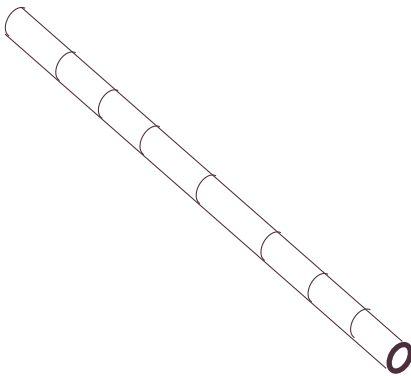
reduce time women spend in building maintenance

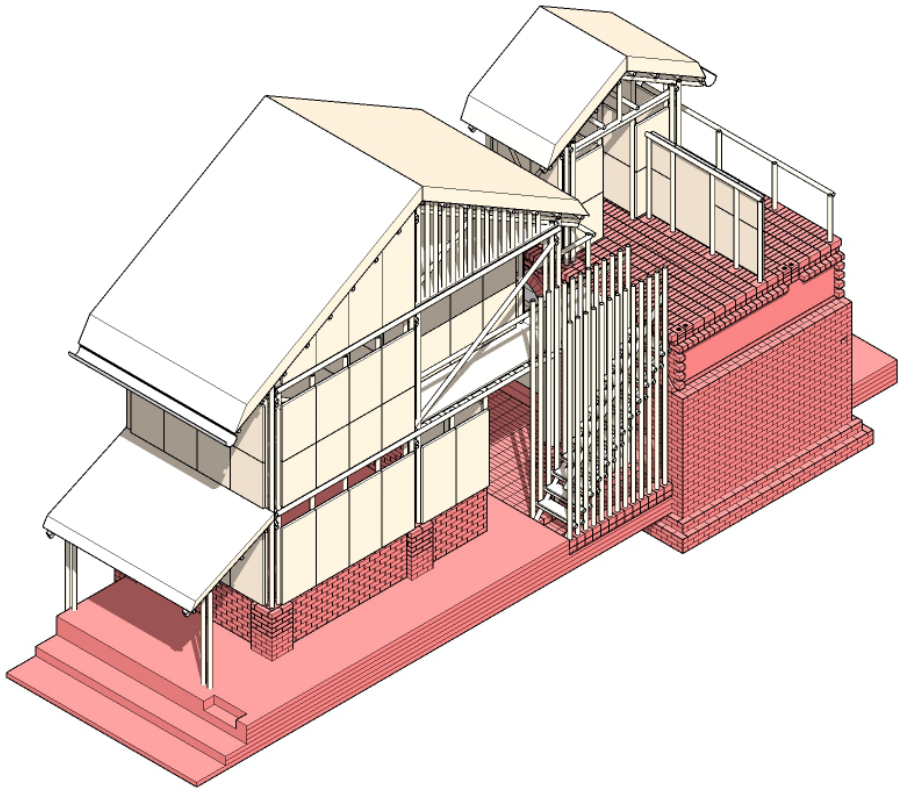


Stewart Brand, “How Buildings Learn: What Happens After They’re Built”

managerial and ecological

close loops as much as possible to allow circularity of construction





dwelling unit

Accessibility of raw materials

Production of building blocks

SITE: 100+ YEARS

Brick primary components

STRUCTURE: 30+ YEARS

Primary bamboo structure + thatch roof

SPACE PLAN

Secondary and tertiary structure

SKIN: 5-10 YEARS

Prefabricated bamboo panels

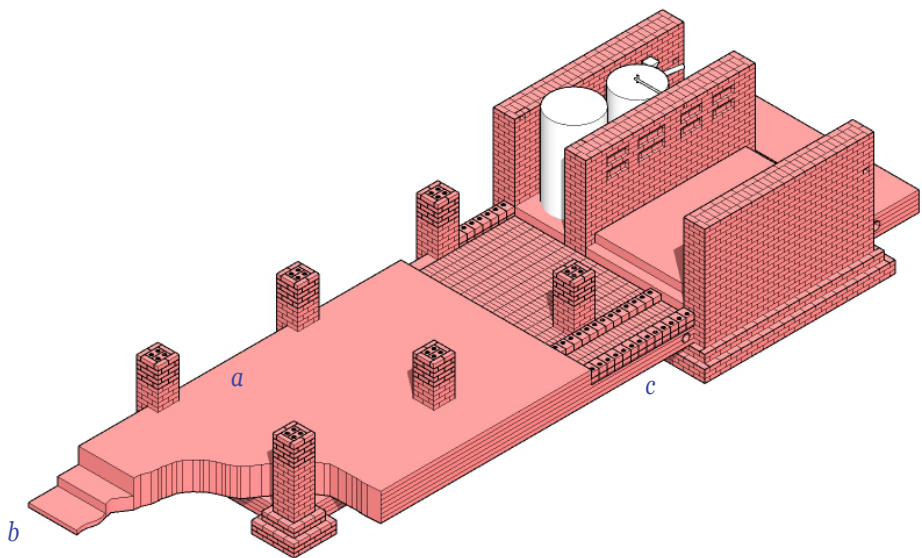
SERVICES

Rain, sun, waste

STUFF

Furniture and stairs

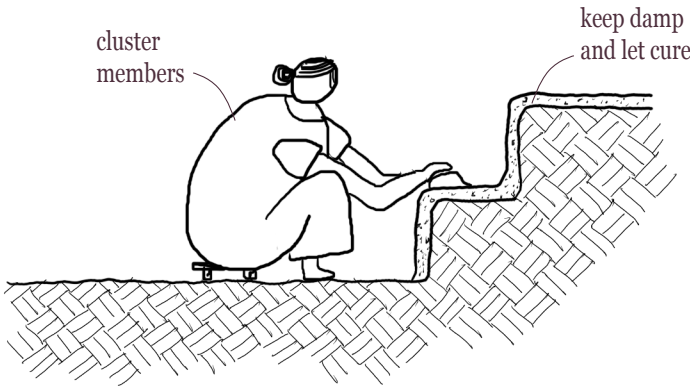
kit of parts



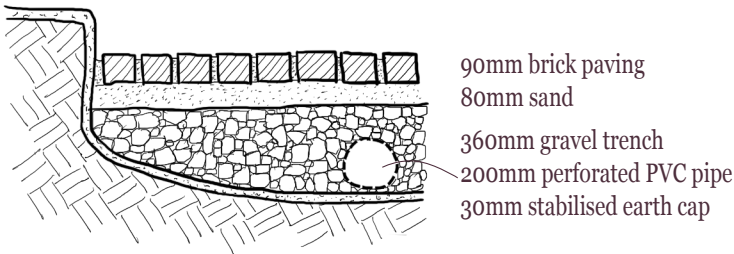
plinth



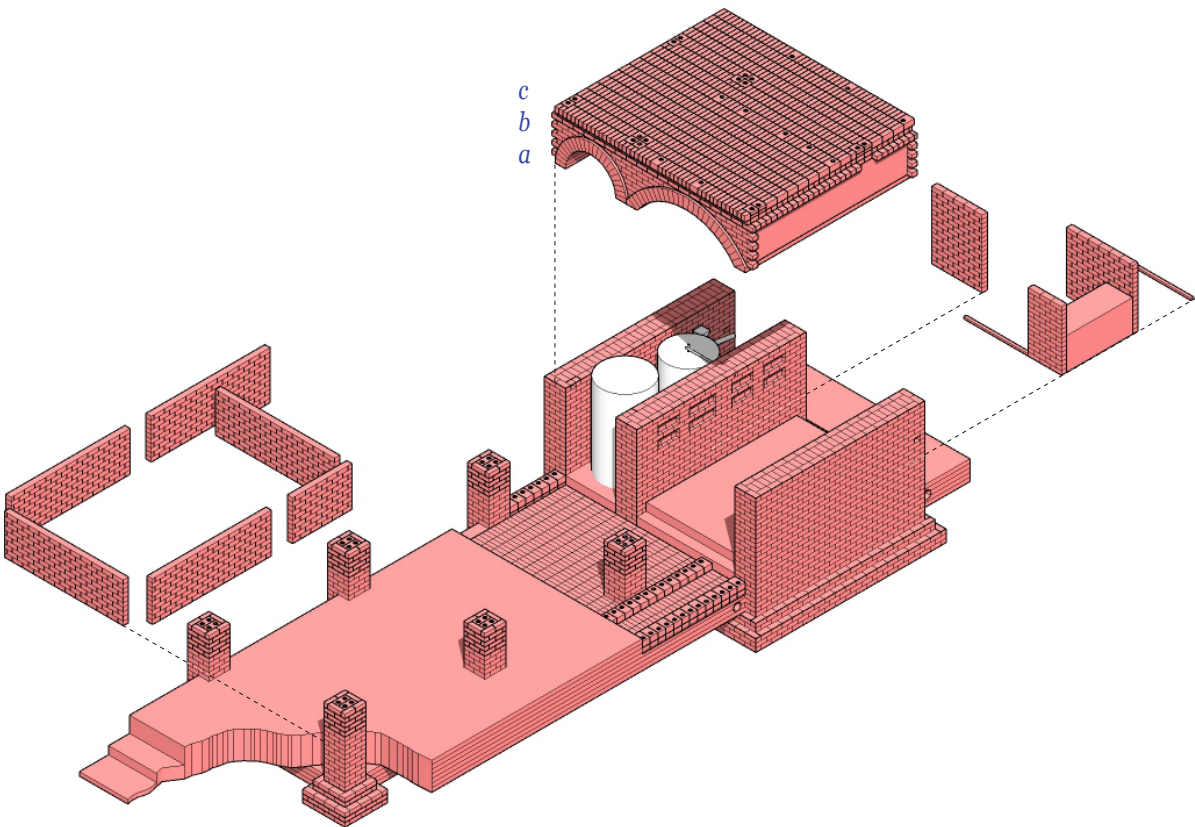
a compacted with hand-held rammer



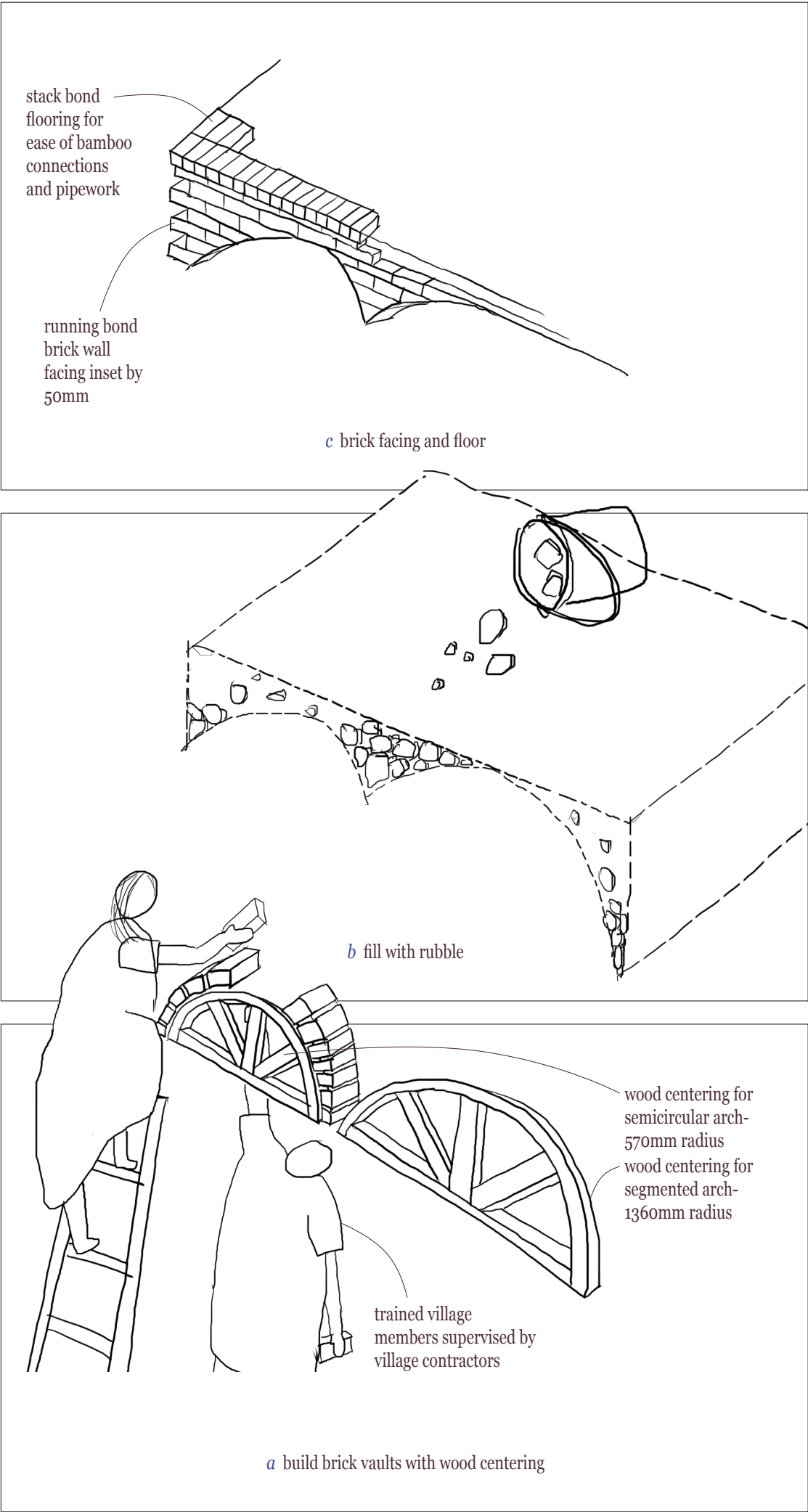
b capped with lime-stabilised earth

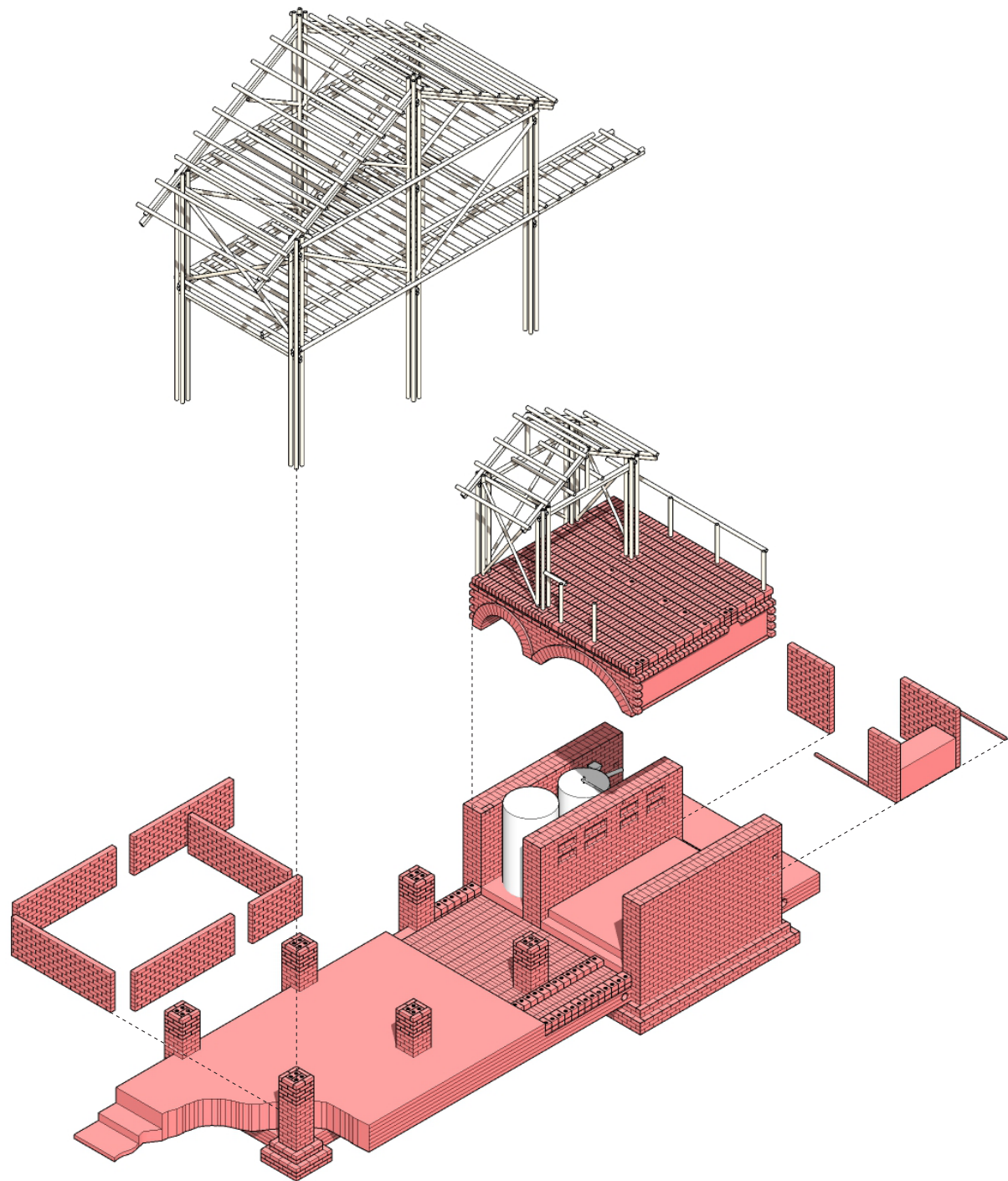


c french drain detail

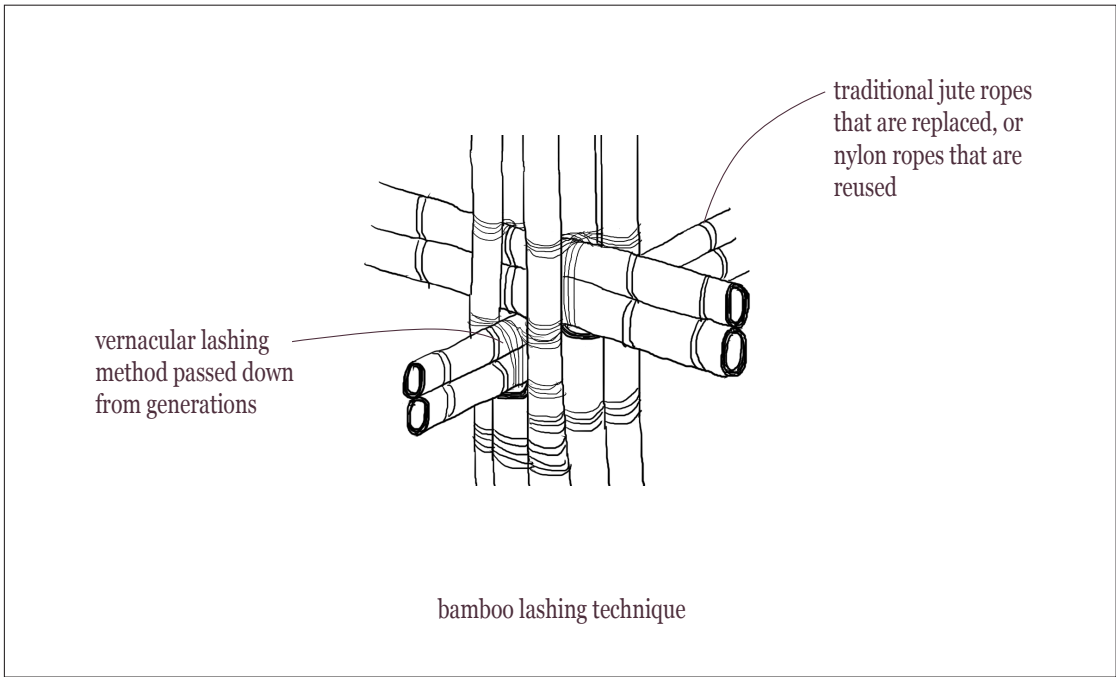


loadbearing and infill brickwork

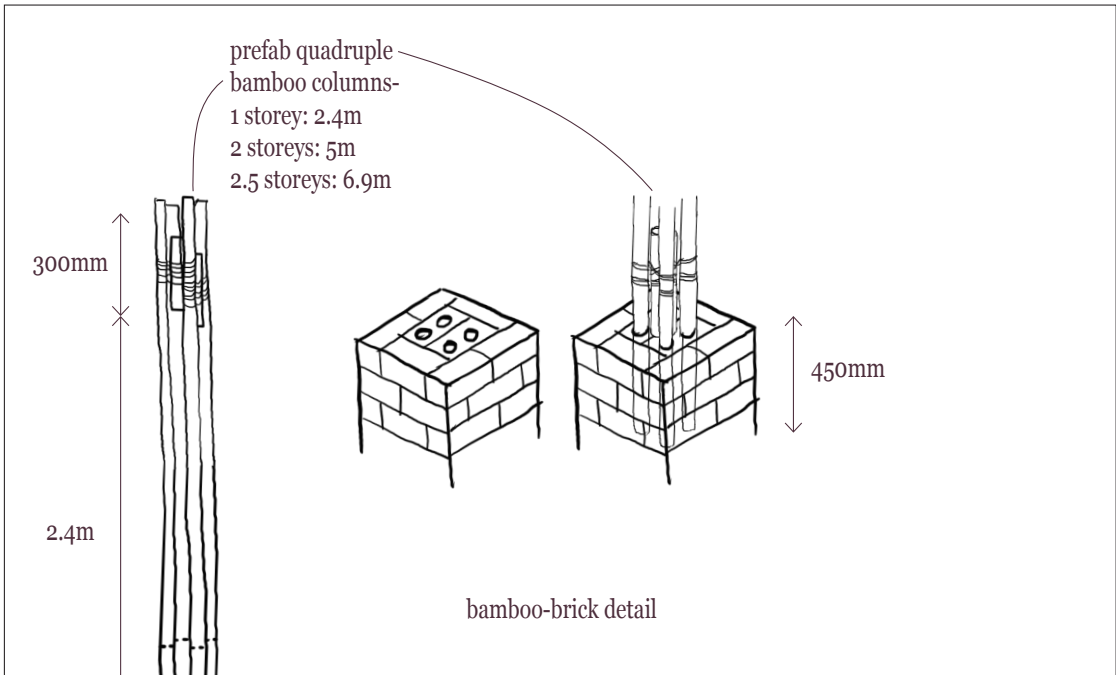




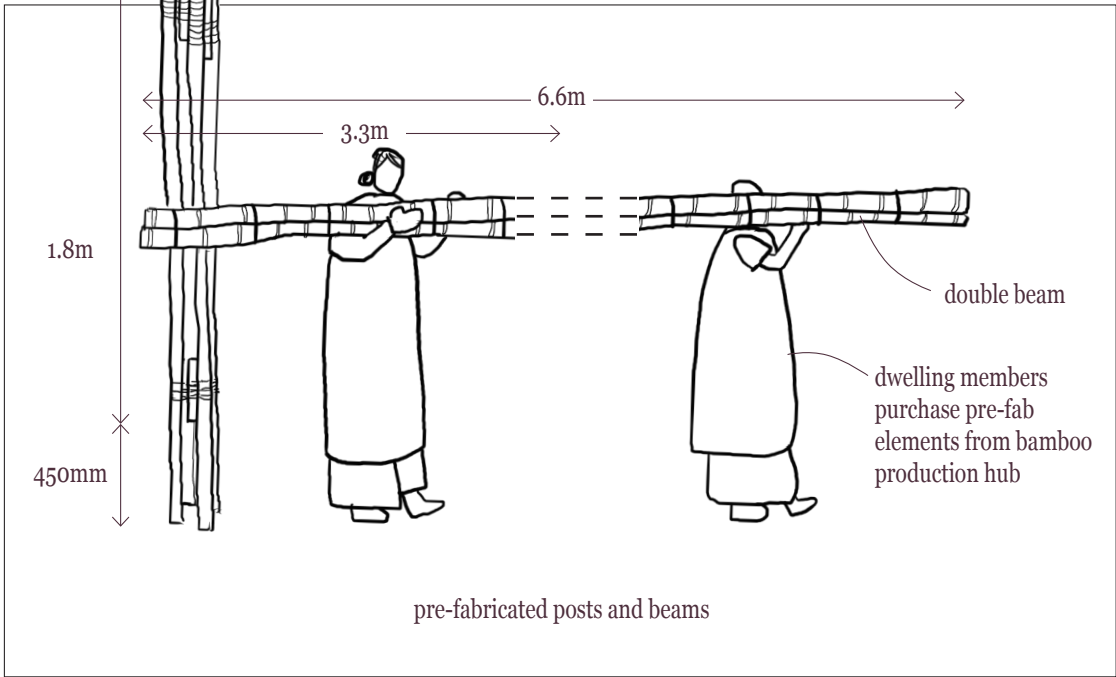
post-and-beam structure



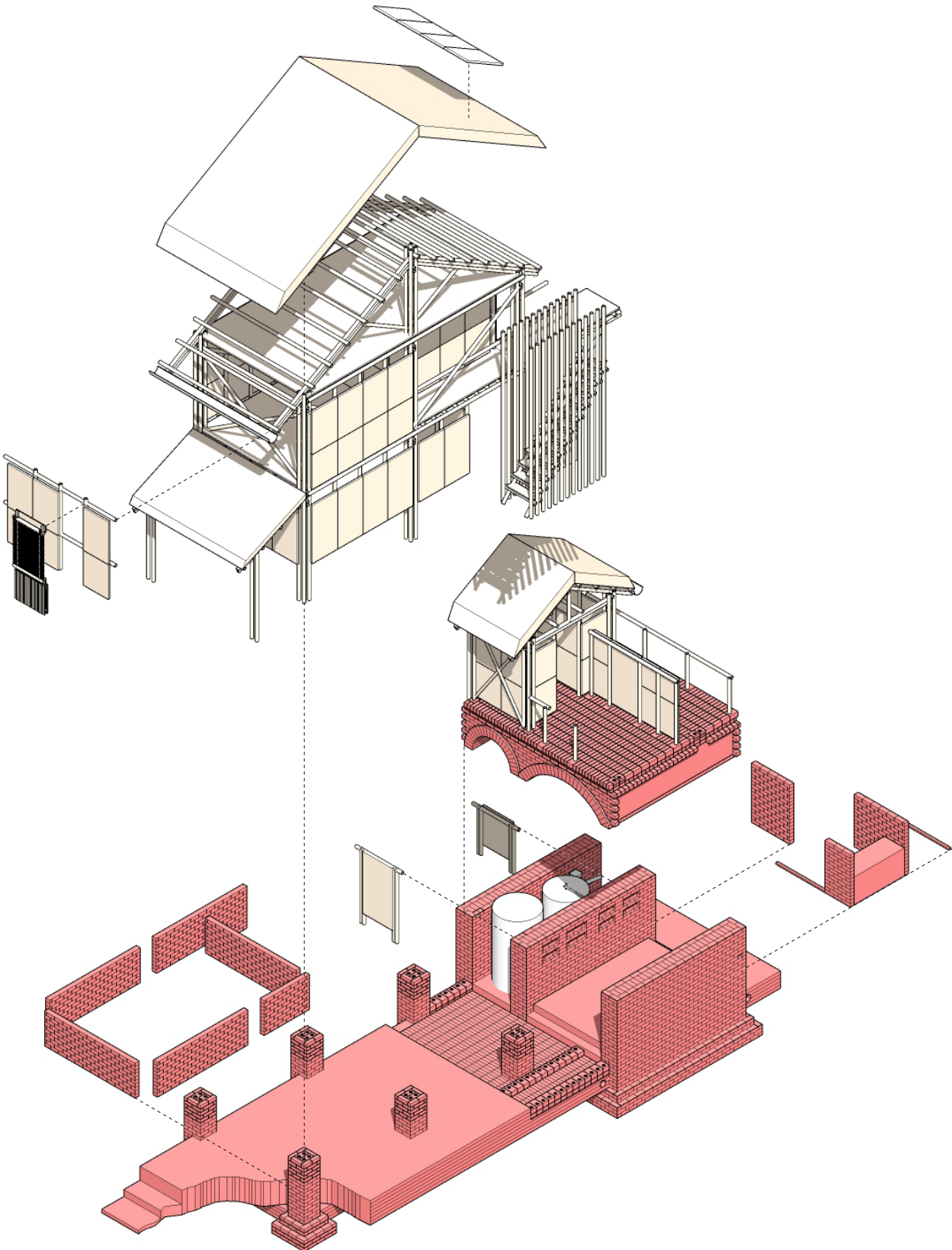
bamboo lashing technique



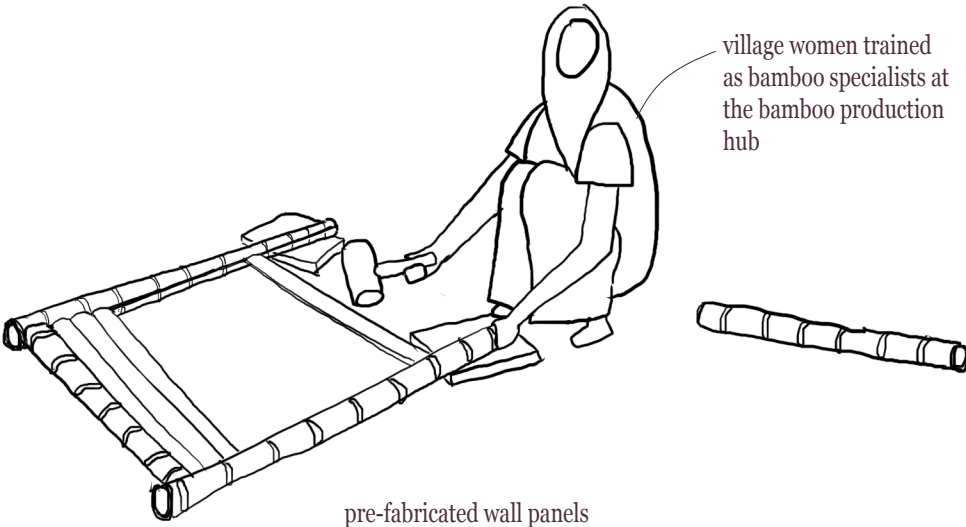
bamboo-brick detail



pre-fabricated posts and beams



skin



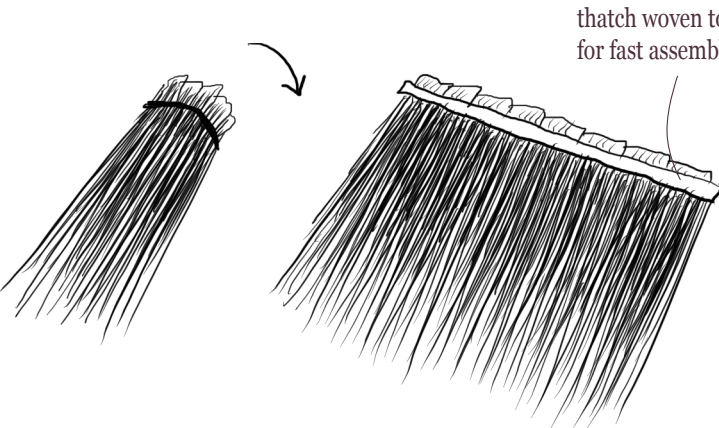
village women trained as bamboo specialists at the bamboo production hub

pre-fabricated wall panels



split bamboo flooring panels that are unrolled on site for fast assembly

floor panels



thatch woven together for fast assembly on site

thatch roof modules

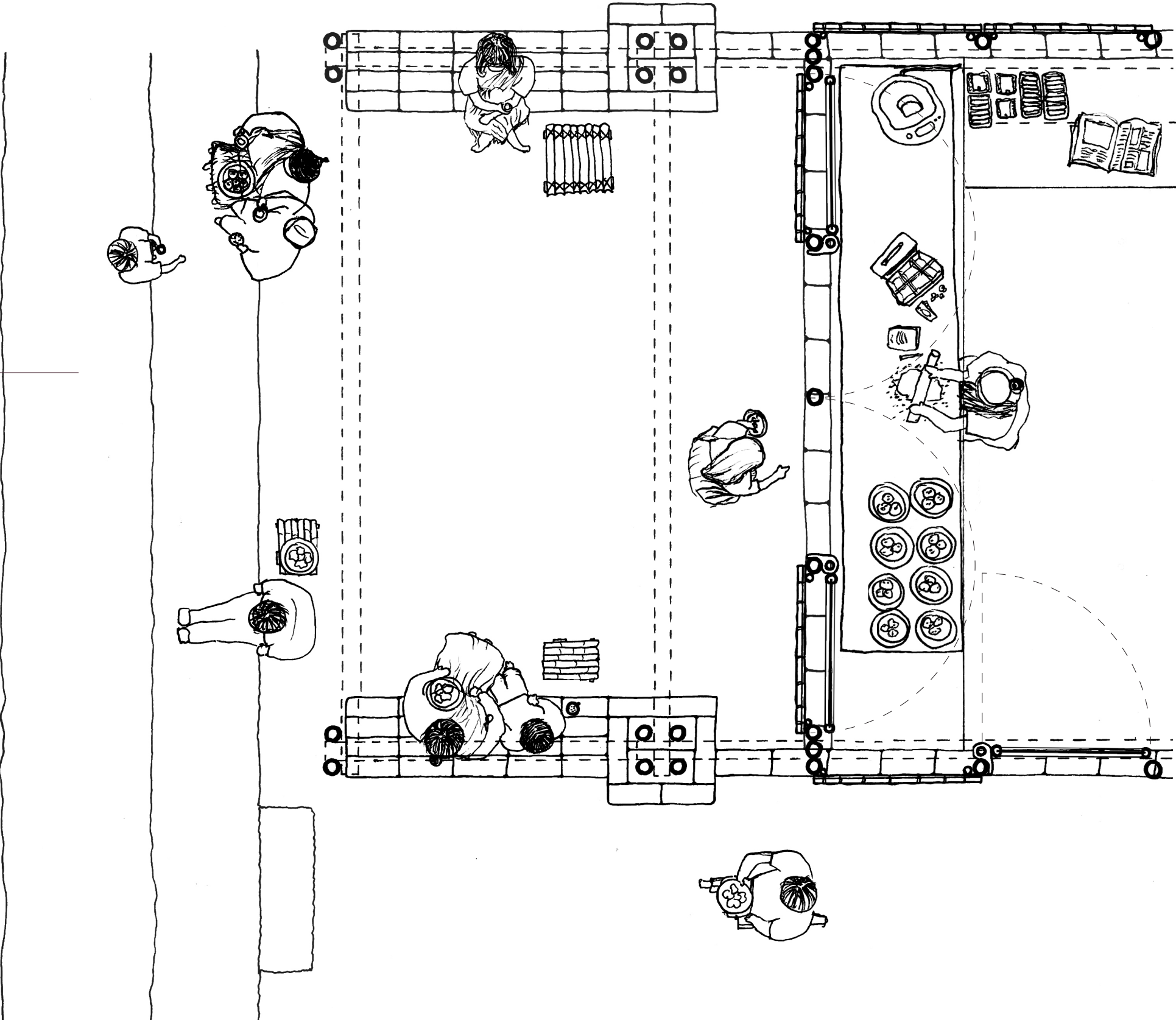
DWELLING SHOPFRONT DETAIL



detailed section



detailed elevation



1:20 @70.7% [1:20 @A2]

DWELLING SHOPFRONT DETAIL

0 20 60 120cm

Primary structure (PS)

Brick piers 480 x 480mm with strap beams
Prefab quadruple bamboo posts (pre-treated) 75 mm diameter
Bamboo cross-bracing 75 mm diameter
Prefab bamboo double beams 75mm diameter

Secondary structure (SS)

Bamboo posts and beams (pre-treated) 75 mm diameter

Split bamboo panel 750mm width (1) comes in 900, 1100 and 1500mm heights

40mm diameter split bamboo
75mm diameter bamboo frame

Woven bamboo panel 750mm width (2) comes in 900, 1100 and 1500mm heights

Woven bamboo 5mm thick
75mm diameter bamboo frame

Louvre window module 750mm width (3) comes in 900, 1100 and 1500mm heights

40mm diameter split bamboo angled at 45 degrees
75mm diameter bamboo frame

Roof panel 1200 x 900 (R)

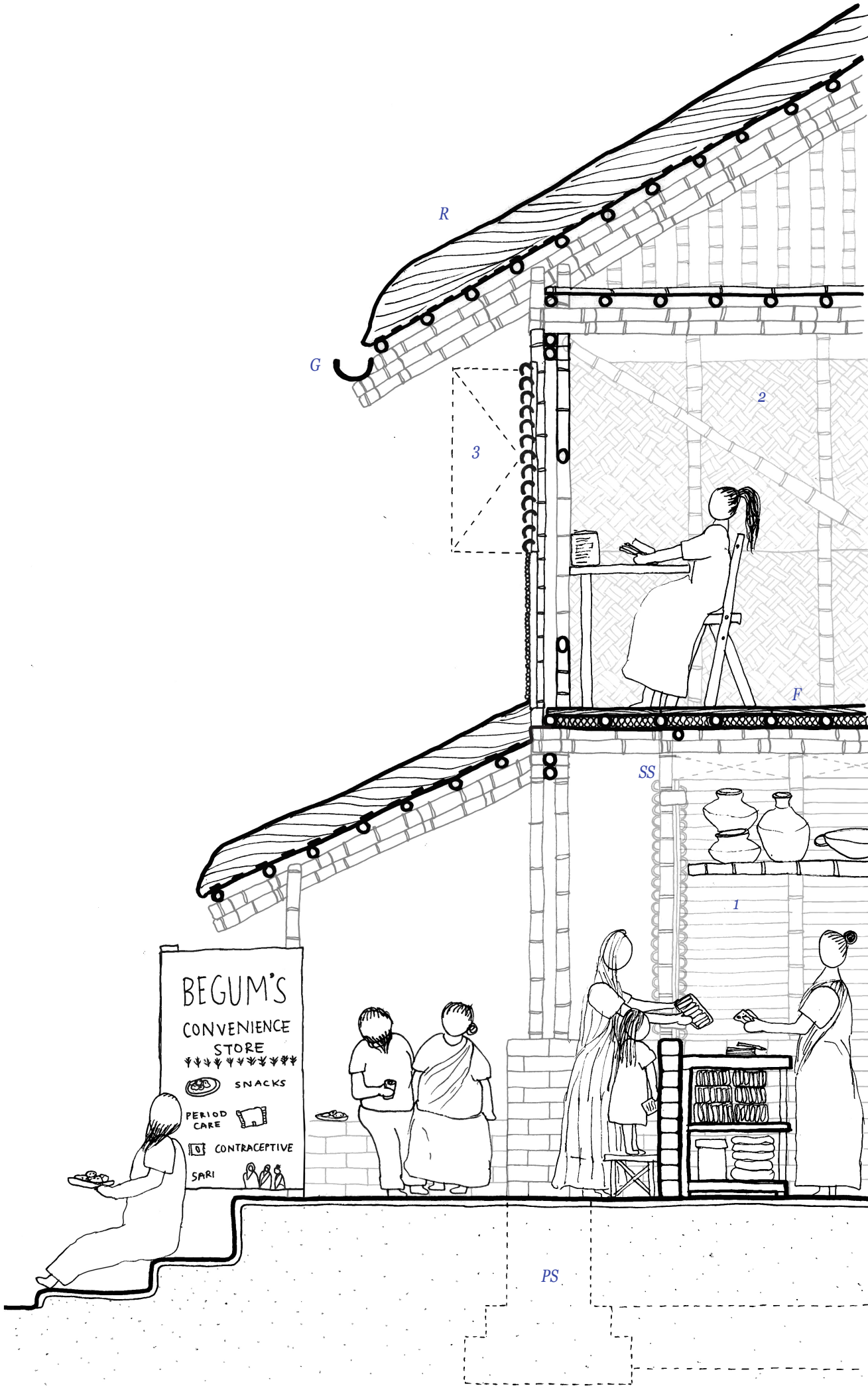
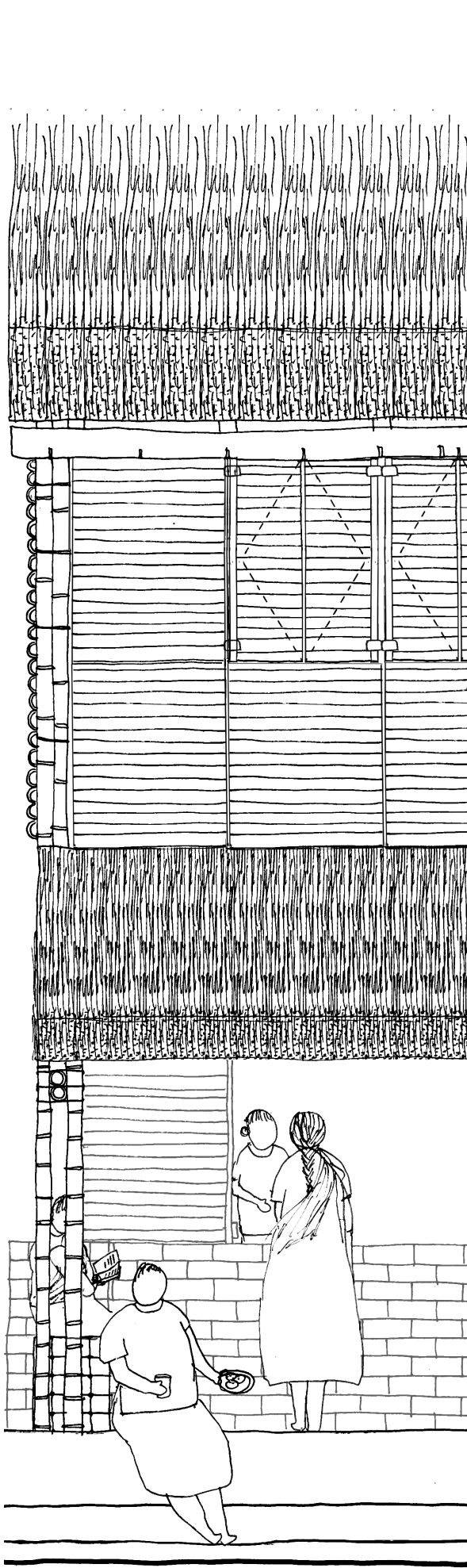
Thatch (catkin grass, rice, straw) sewn together onto bamboo strip

Treated bamboo gutter (G)

250mm diameter lined bamboo gutter

Wooden floor boards (F)

150mm wide floor boards made locally in the Haors, 40mm thick

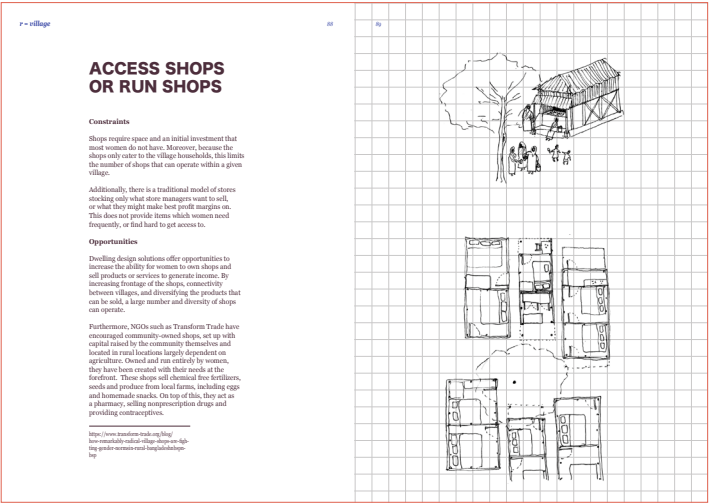


housing for the women of haors

DWELLING

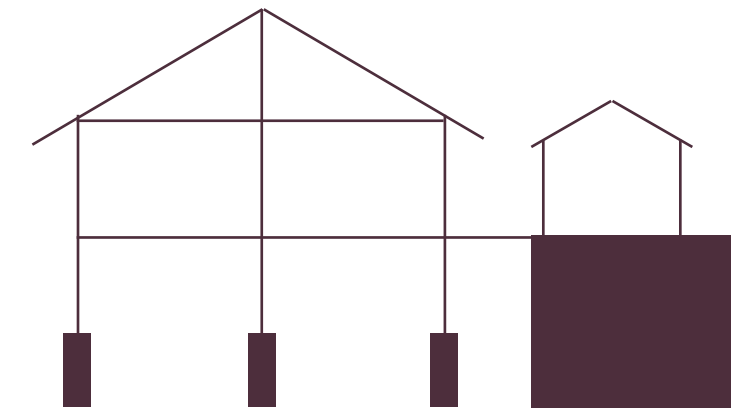
DWELLING

SEEDS FOR WOMEN



scalar binder_village_access shops or run shops

spatial



contrast between front and back | live and work zone | individual and collective | bamboo and earth | ephemeral and monumental | frame structure and load-bearing structure



thematic binder_water management_flooding priorities

temporal

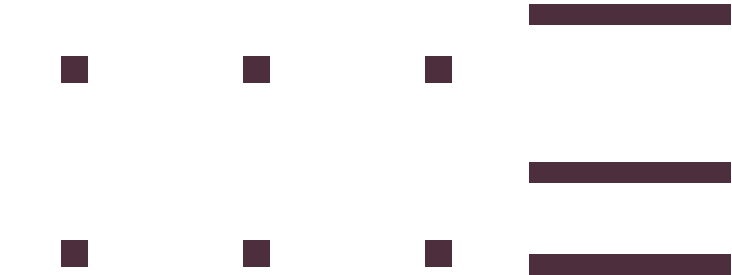


women's priorities during floods translated into plinth heights for different spatial zones



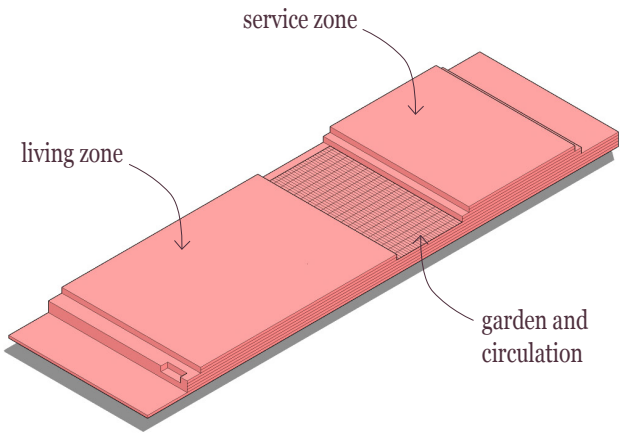
thematic binder_water management_paani apa

managerial and ecological

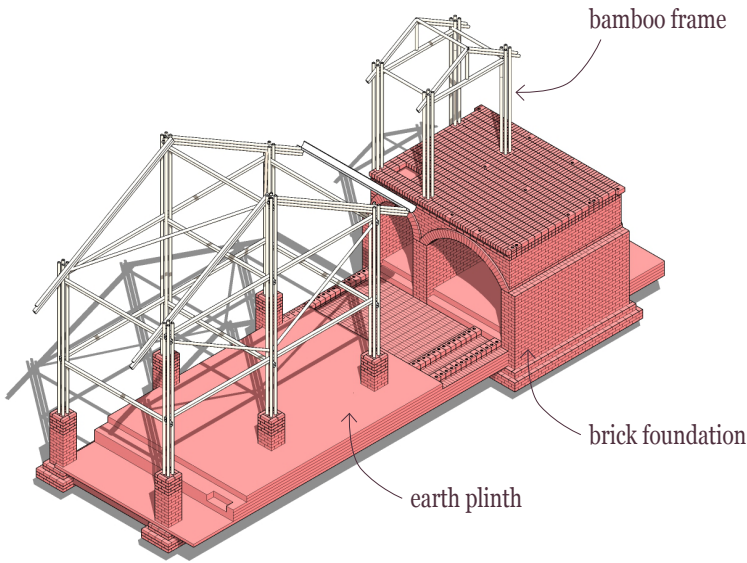


the collective and individual are delineated clearly, so it is easy to implement cluster groups and infrastructural systems

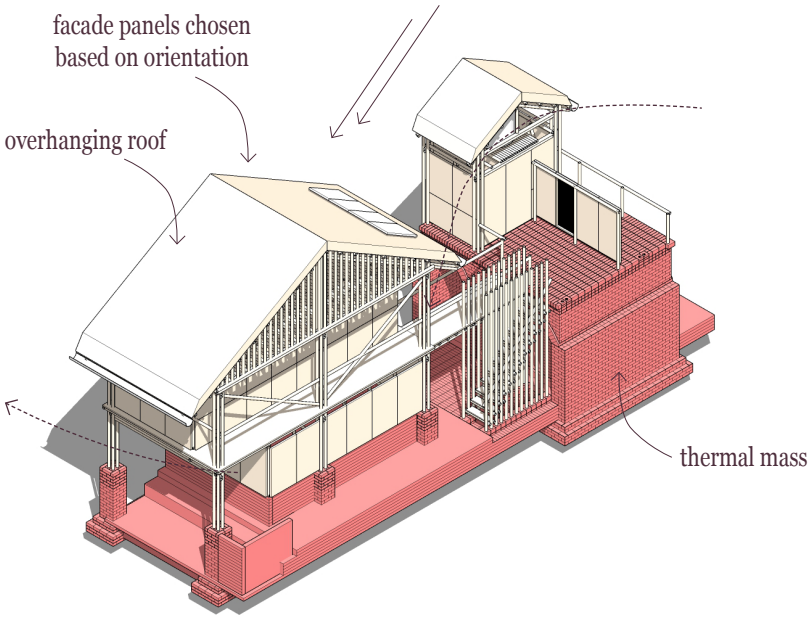
DESIGN PRINCIPLES



SPATIAL ZONES

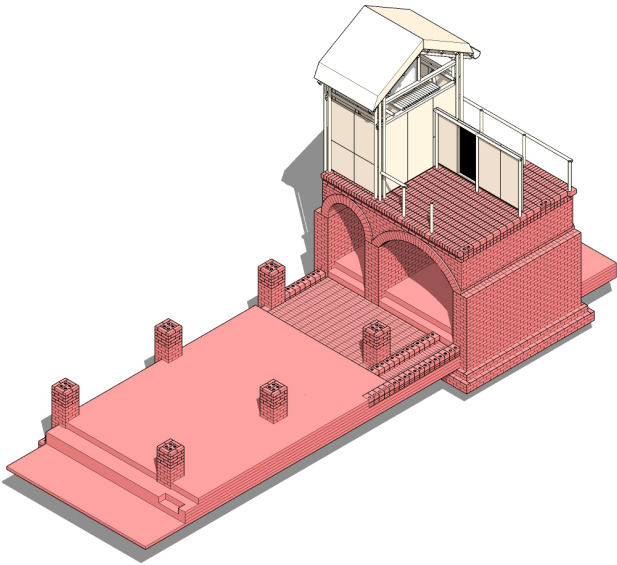


STRUCTURAL CONCEPT



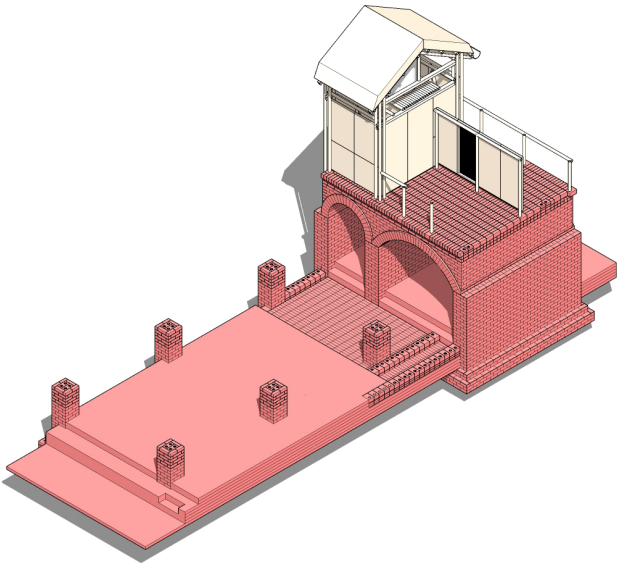
CLIMATE DESIGN

HOUSE TYPE(S)

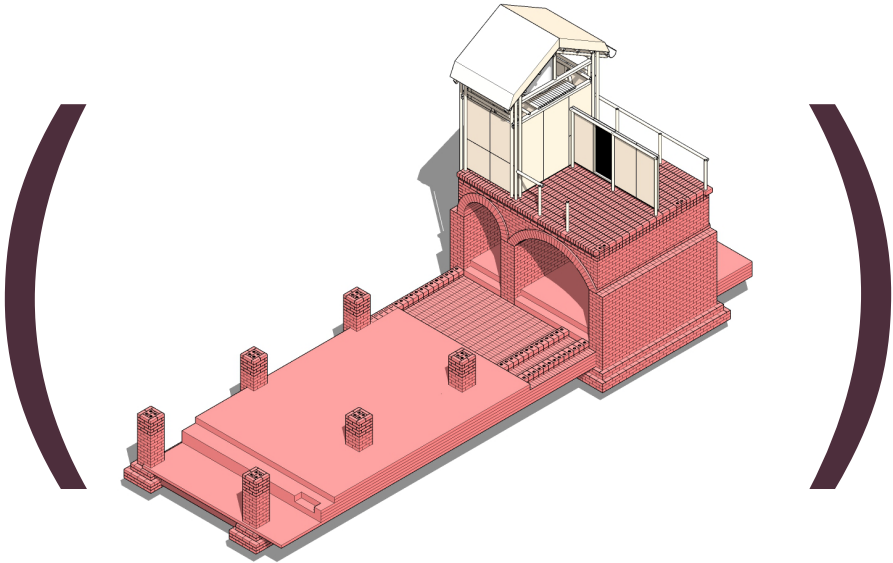


TYPE A

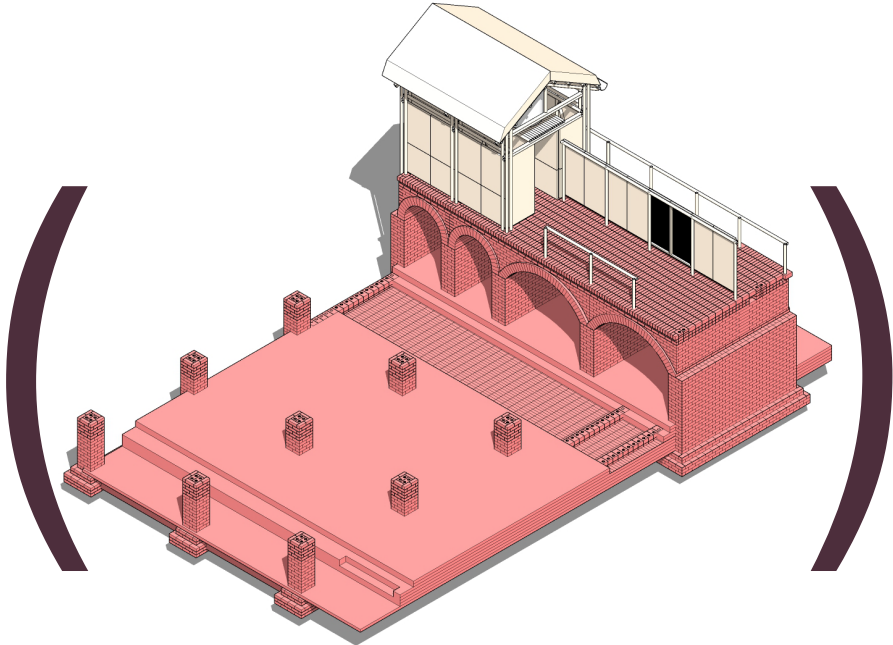
HOUSE TYPE(S)



TYPE A

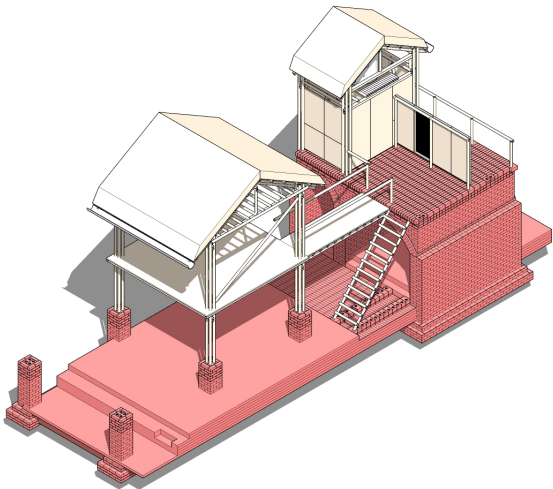


TYPE B

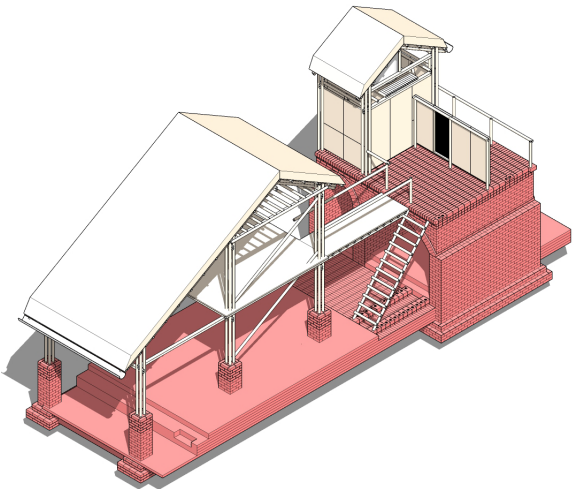


TYPE C

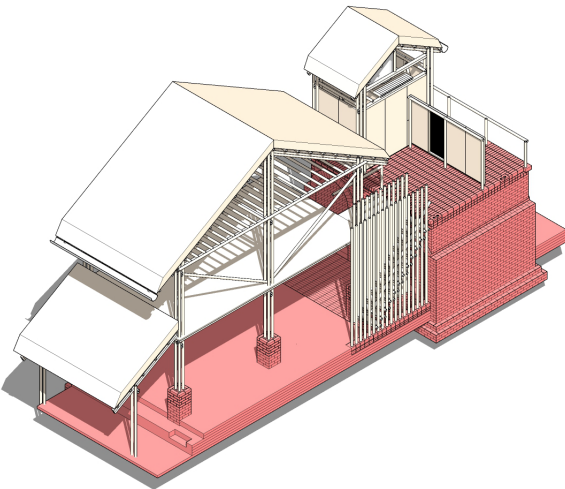
FLEXIBILITY



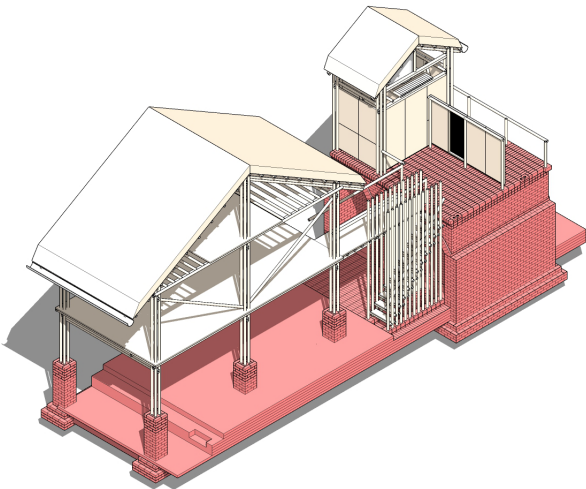
SMALL FAMILY



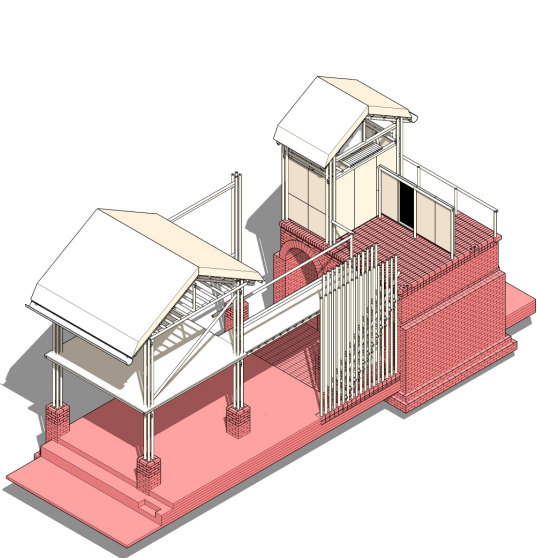
WORKSHOP SPACE IN THE FRONT



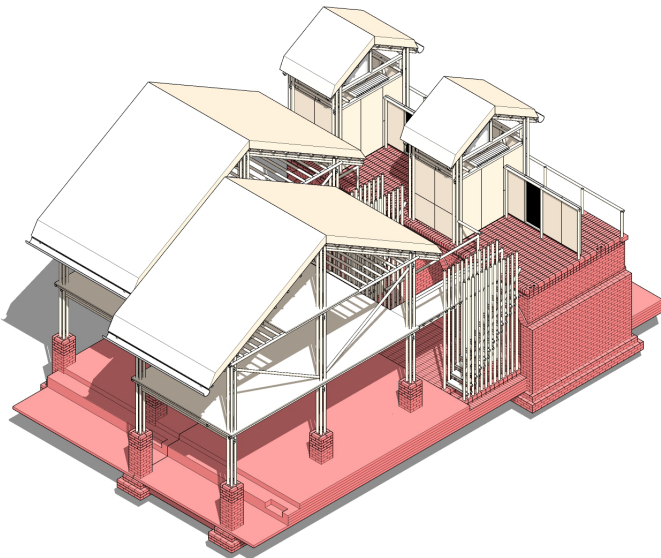
VERANDAH SPACE



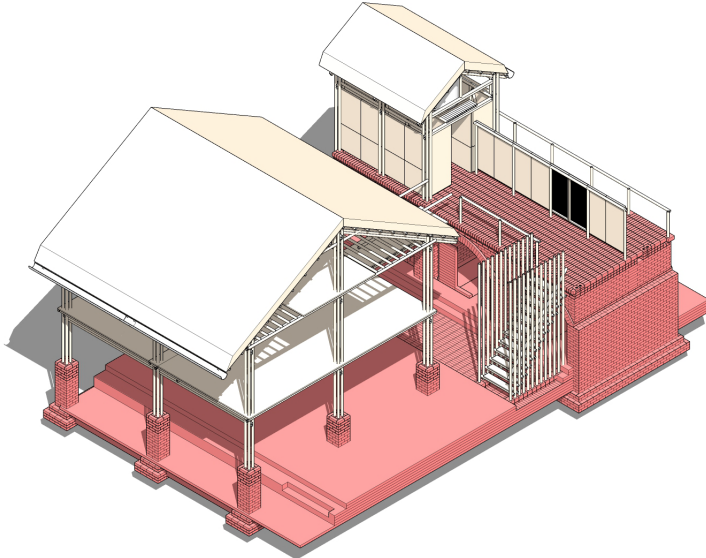
BALCONY IN THE FRONT



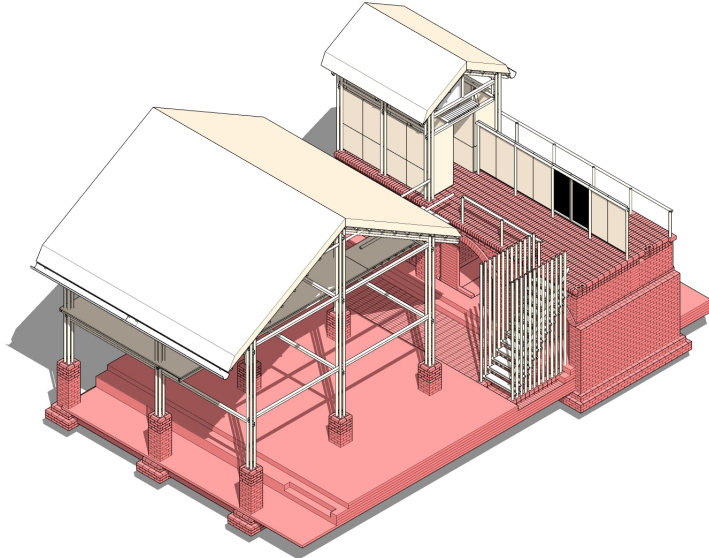
SMALL GF SHOP



NEIGHBOURING PLOTS CONNECT

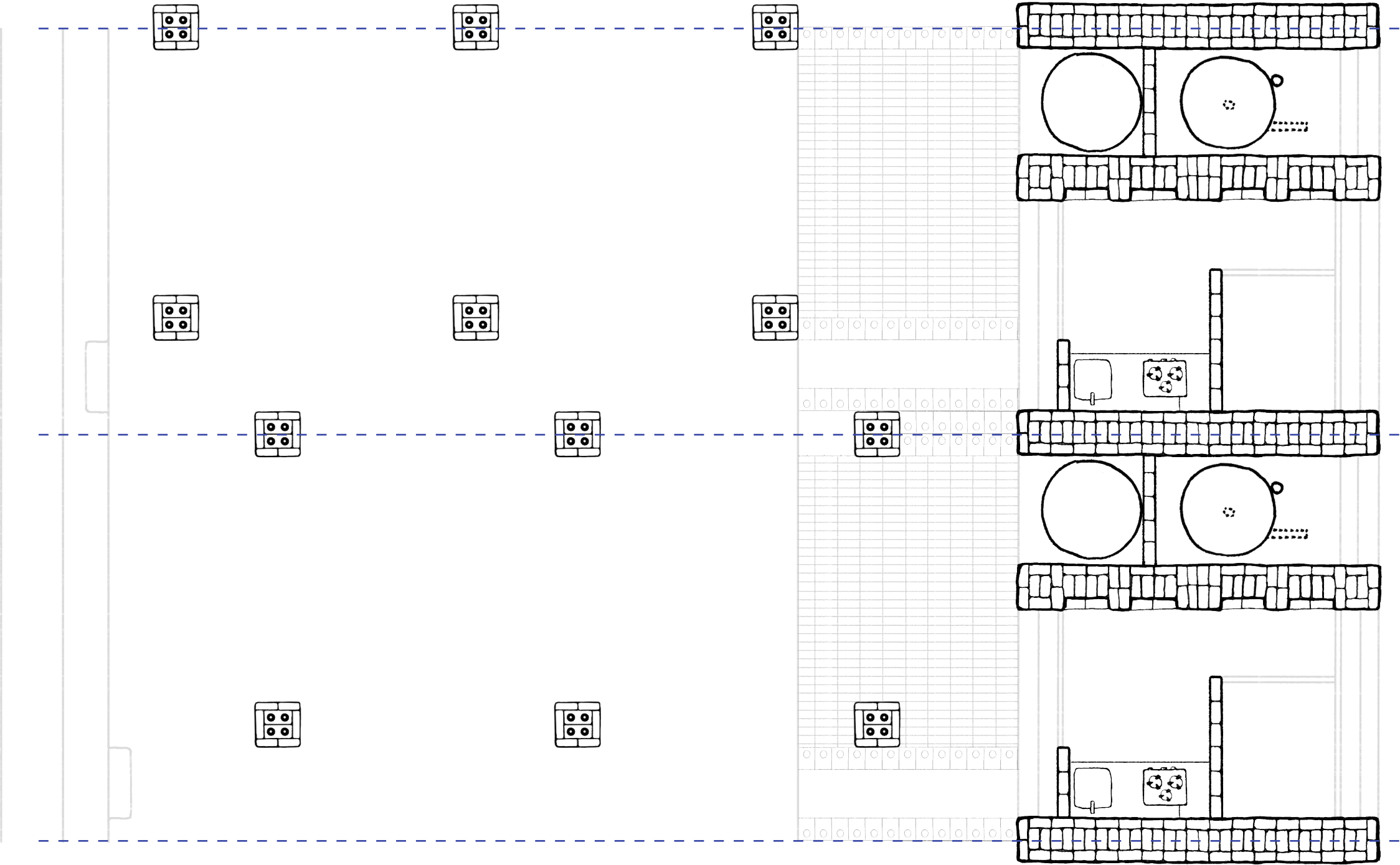


WOMEN'S REFUGE



PUBLIC AMENITY

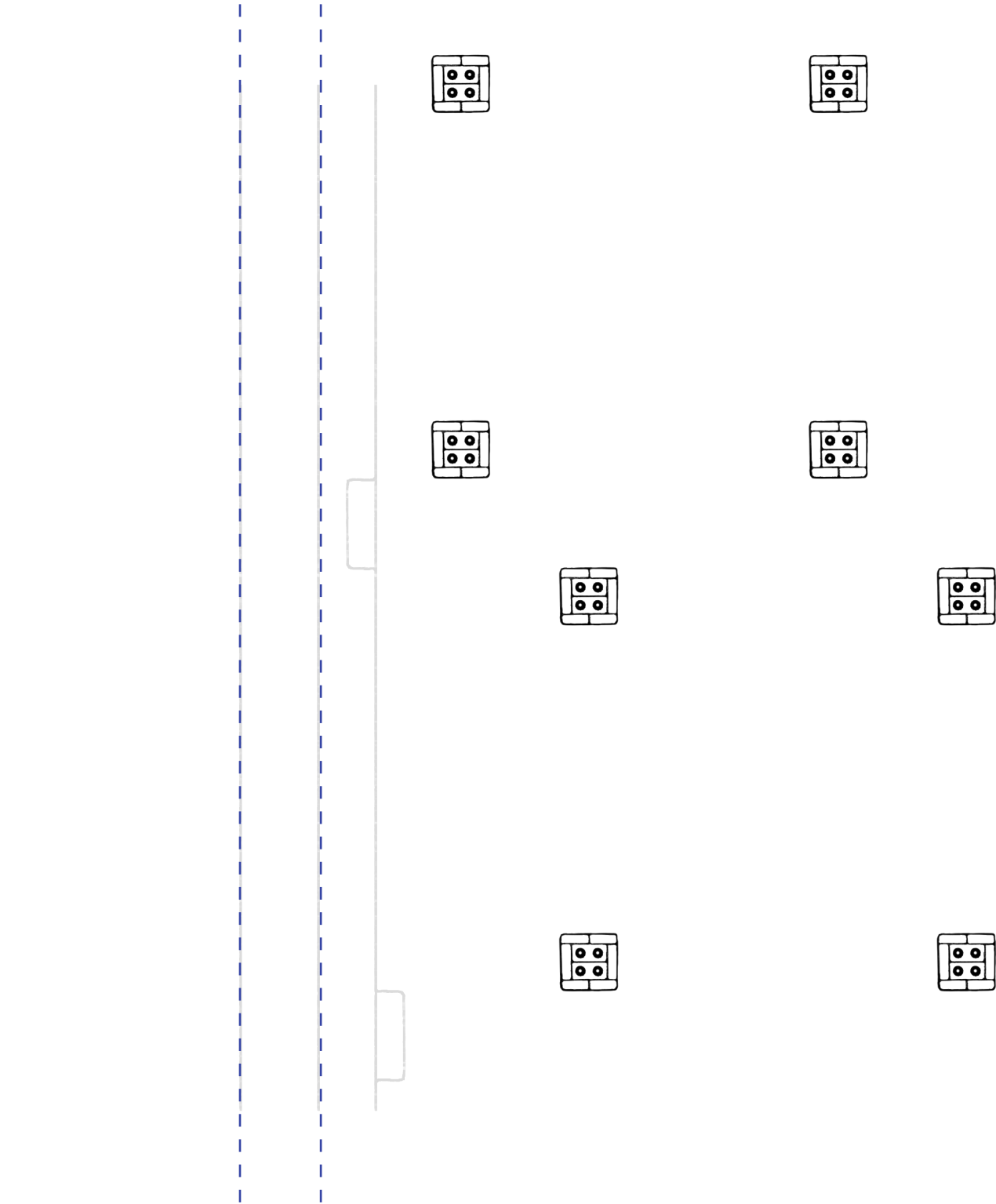
TYPE A, TYPE B: GF SEEDS



Type B

Type A

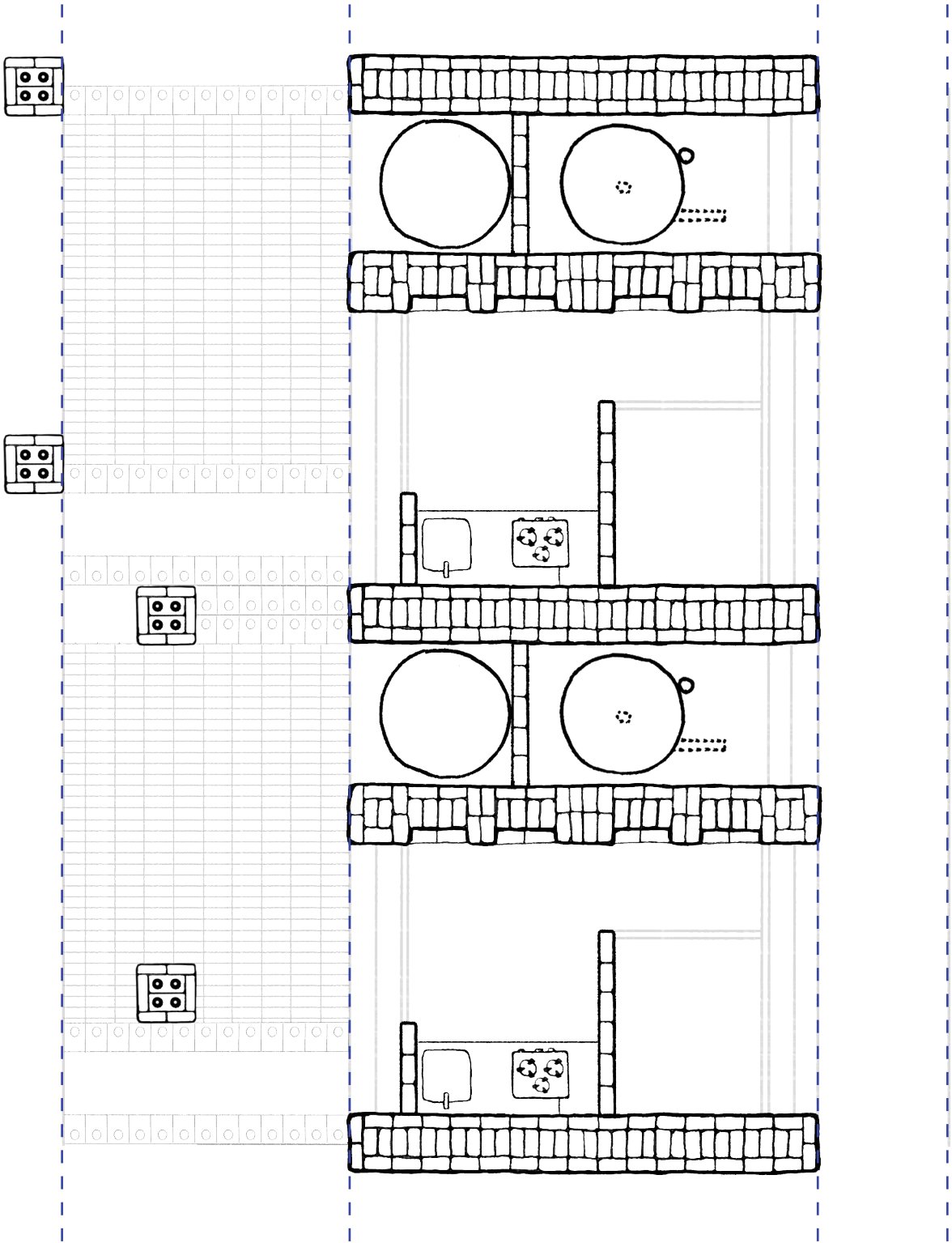
TYPE A, TYPE B: GF SEEDS



street

shared
walkway

living zone



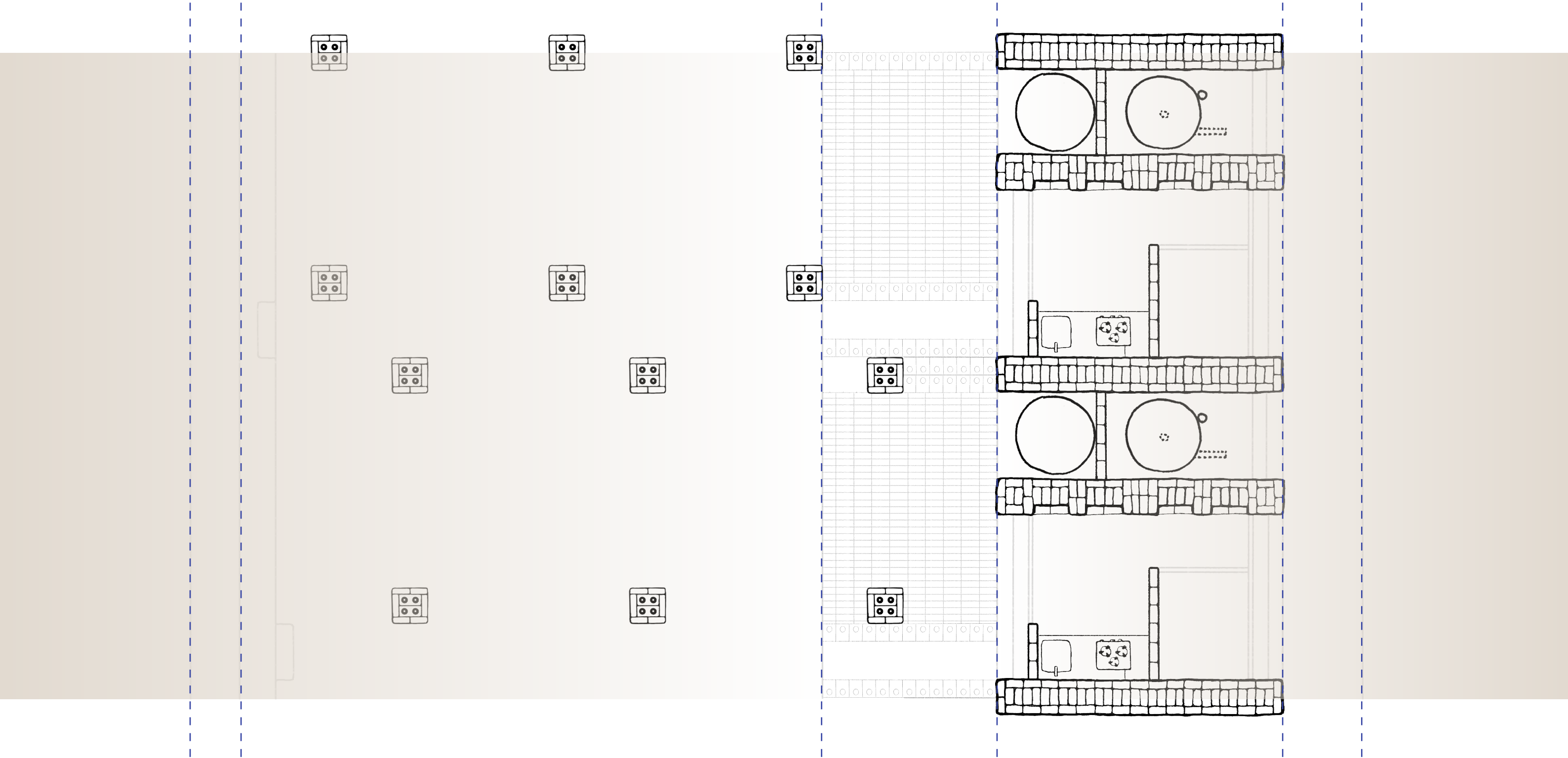
open-to-sky space

service zone

shared
walkway

communal
courtyard

TYPE A, TYPE B: GF SEEDS



street

shared
walkway

living zone

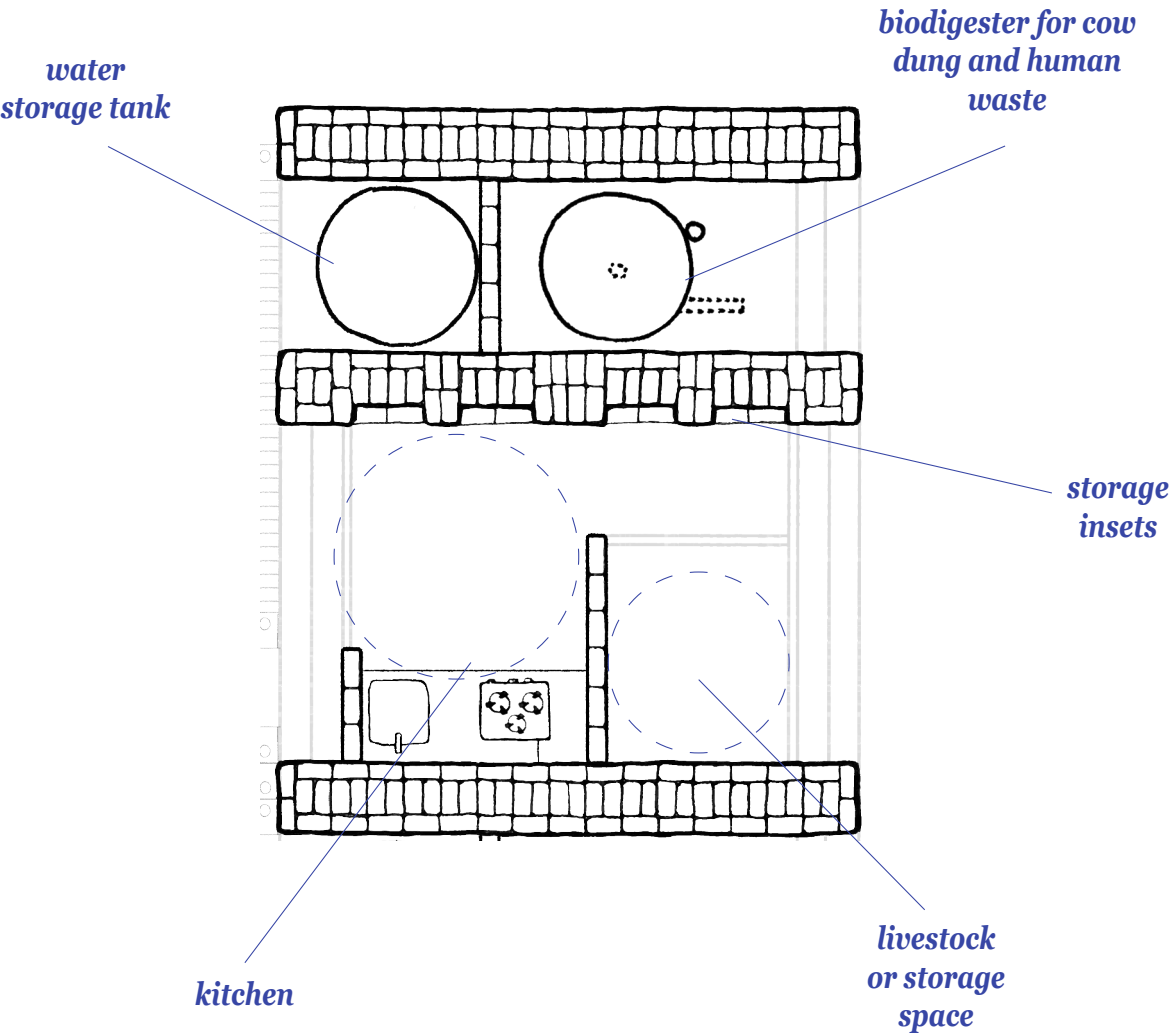
open-to-sky space

service zone

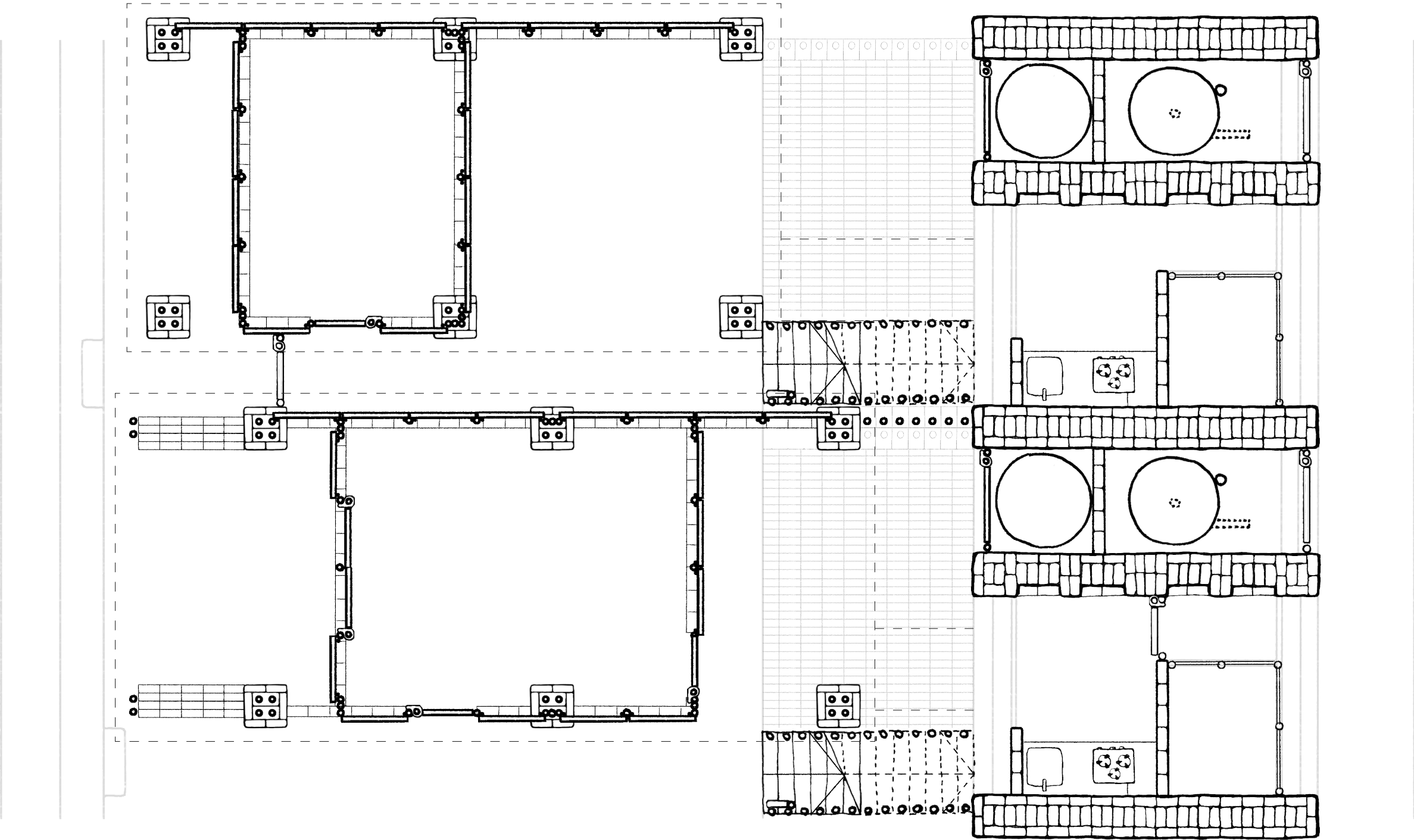
shared
walkway

communal
courtyard

TYPE A, TYPE B: GF SEEDS



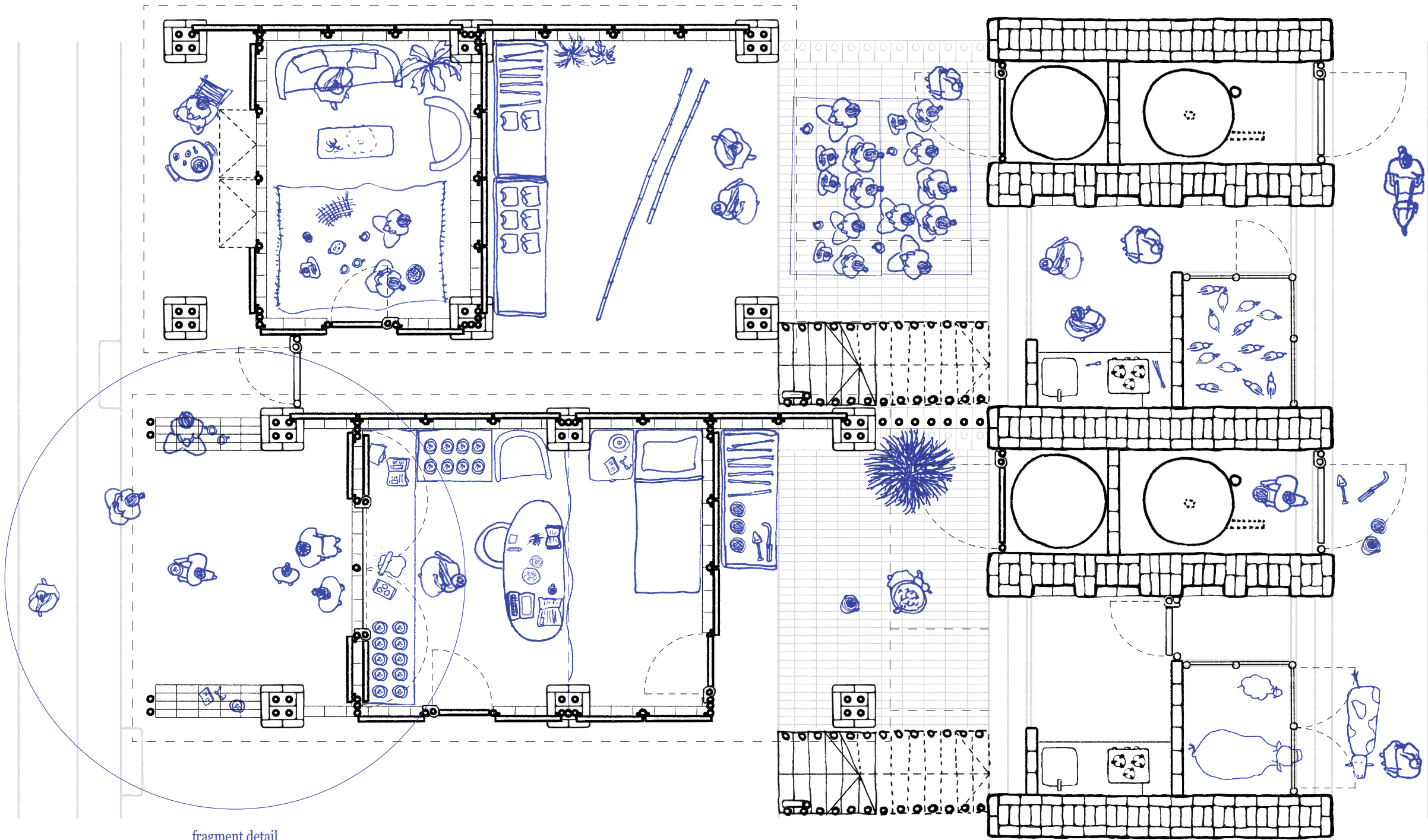
TYPE A, TYPE B: EXAMPLE INFILL WALLS



TYPE A, TYPE B: EXAMPLE 10AM



craftswomen household with poultry rearing, part
of community marketing group

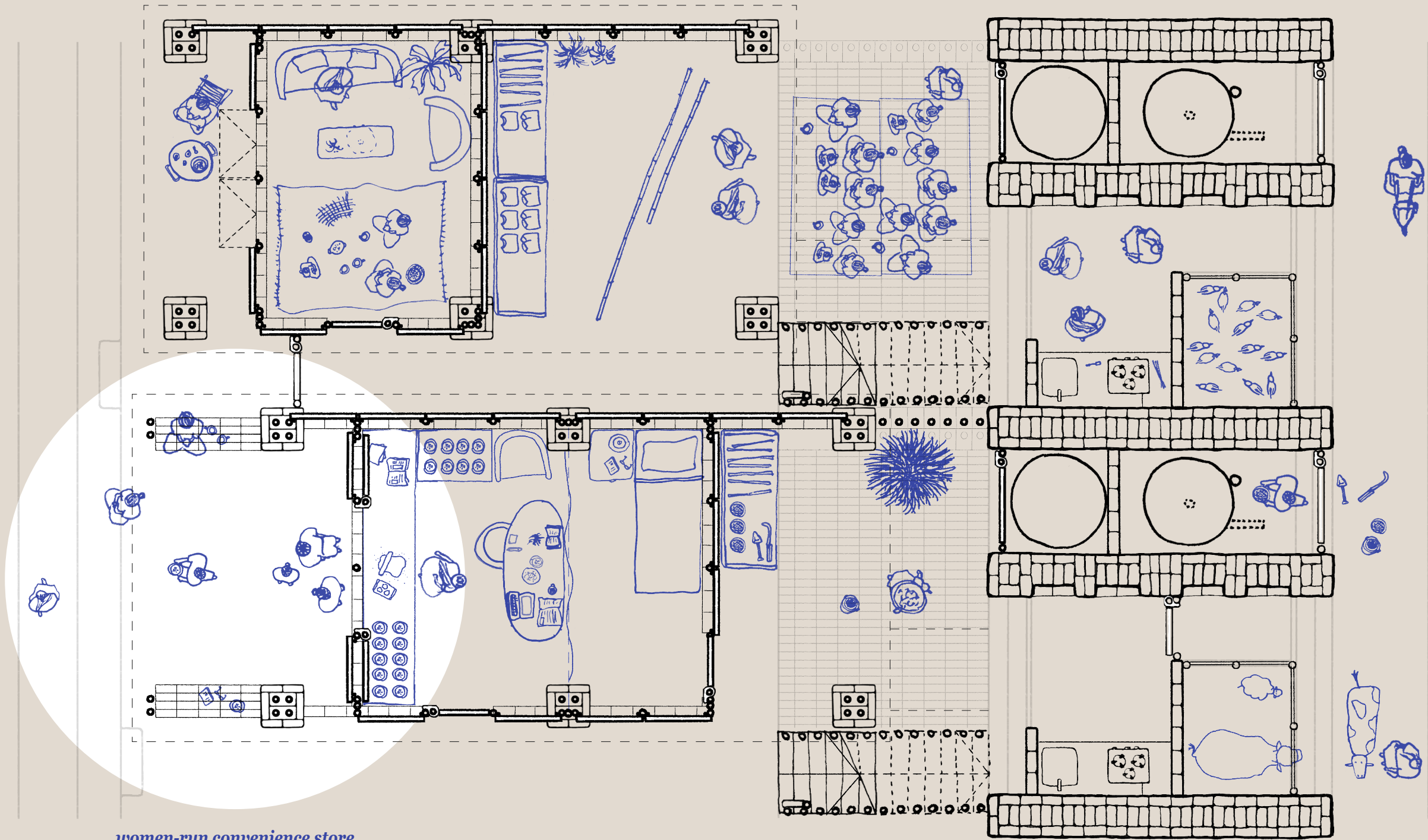
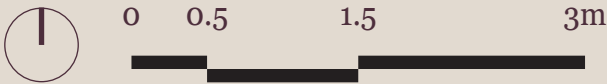


fragment detail

farming and small business household

1:50

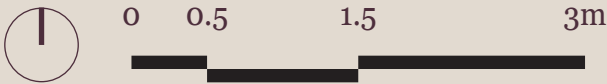
TYPE A, TYPE B: EXAMPLE 10AM



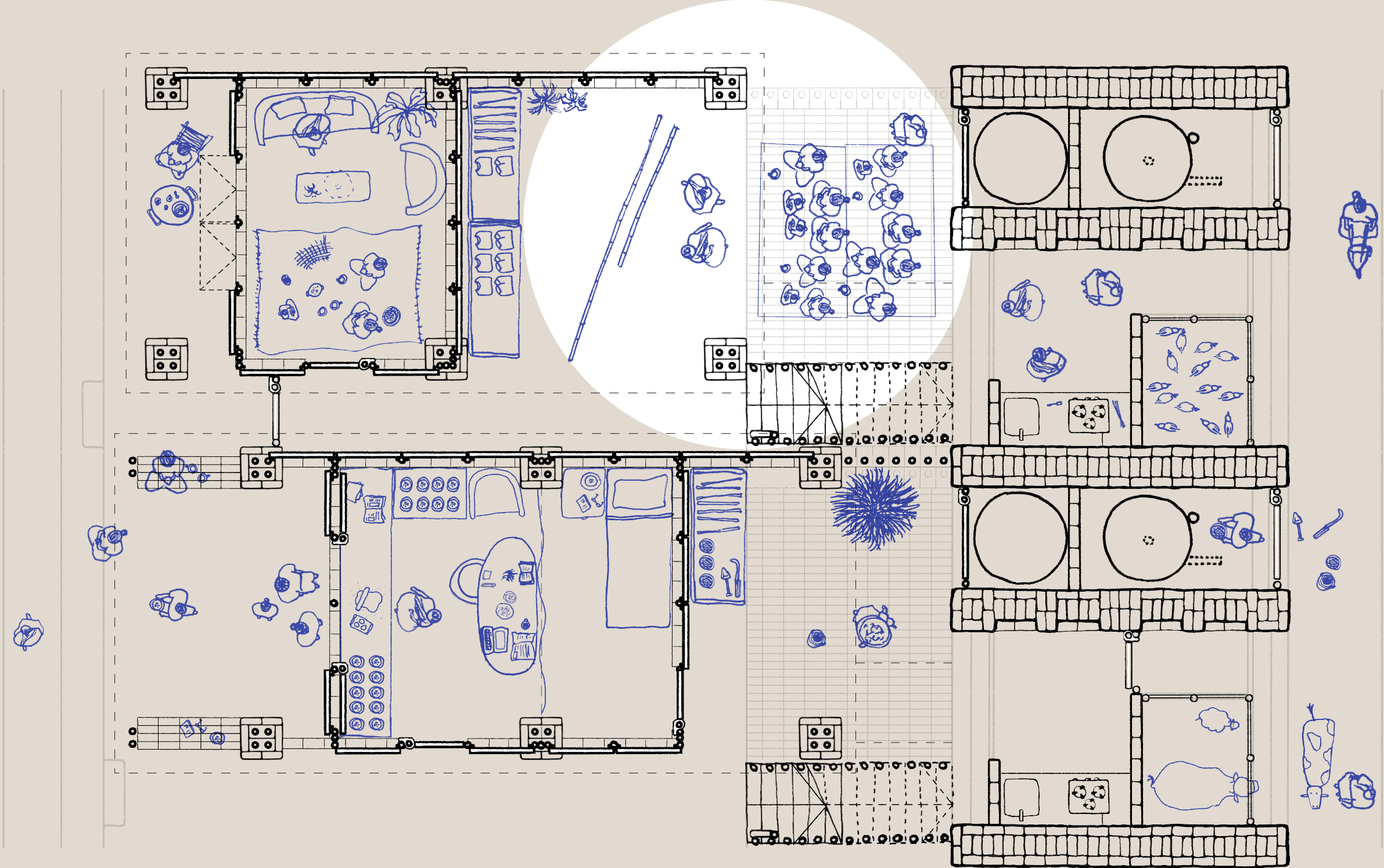
women-run convenience store

1:50

TYPE A, TYPE B: EXAMPLE 10AM

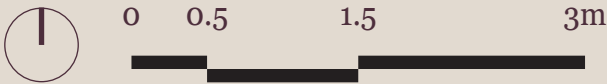


NGO-led training



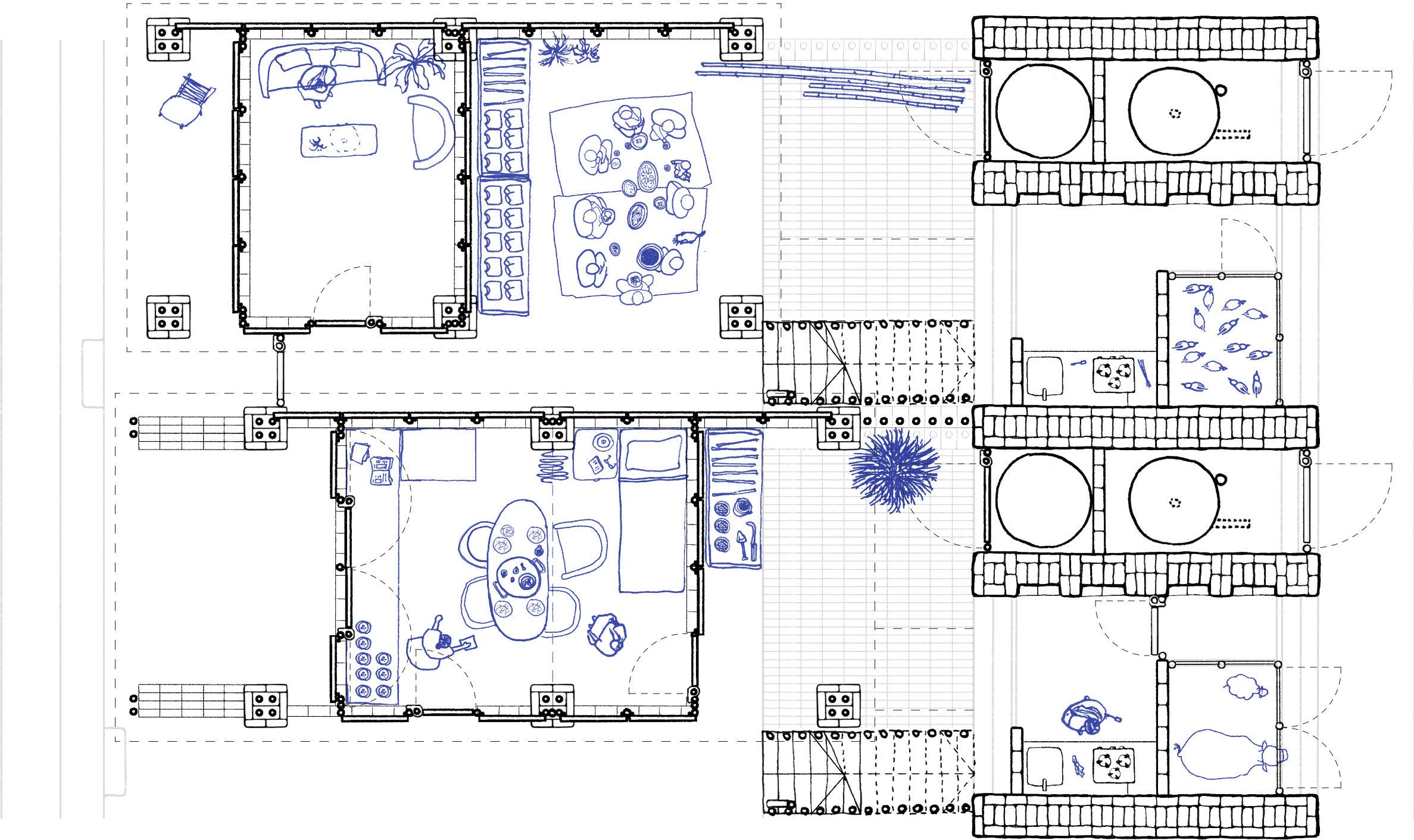
1:50

TYPE A, TYPE B: EXAMPLE 10AM



*farming and biodigester
symbiosis*

TYPE A, TYPE B: EXAMPLE 6PM

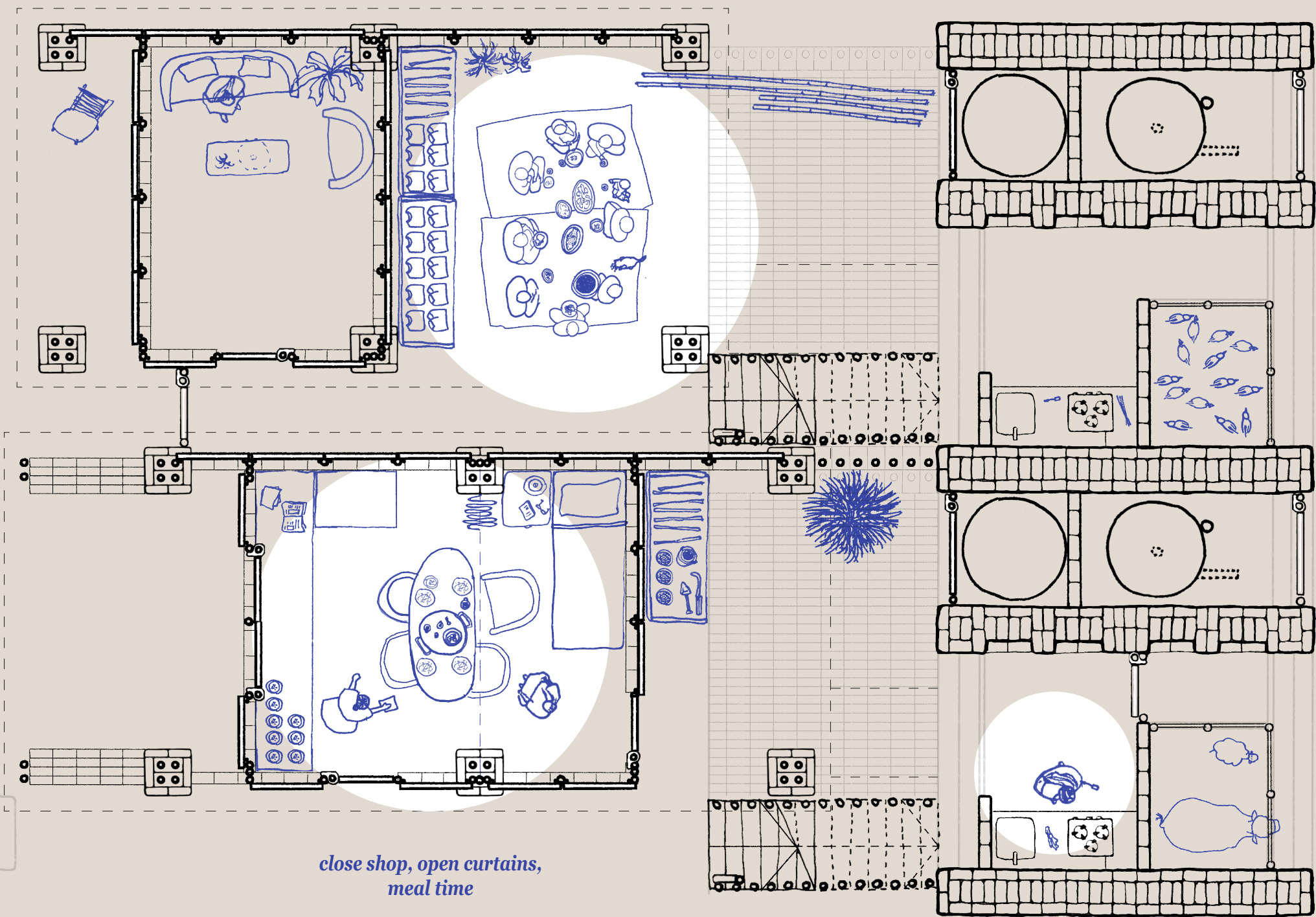


1:50

TYPE A, TYPE B: EXAMPLE 6PM



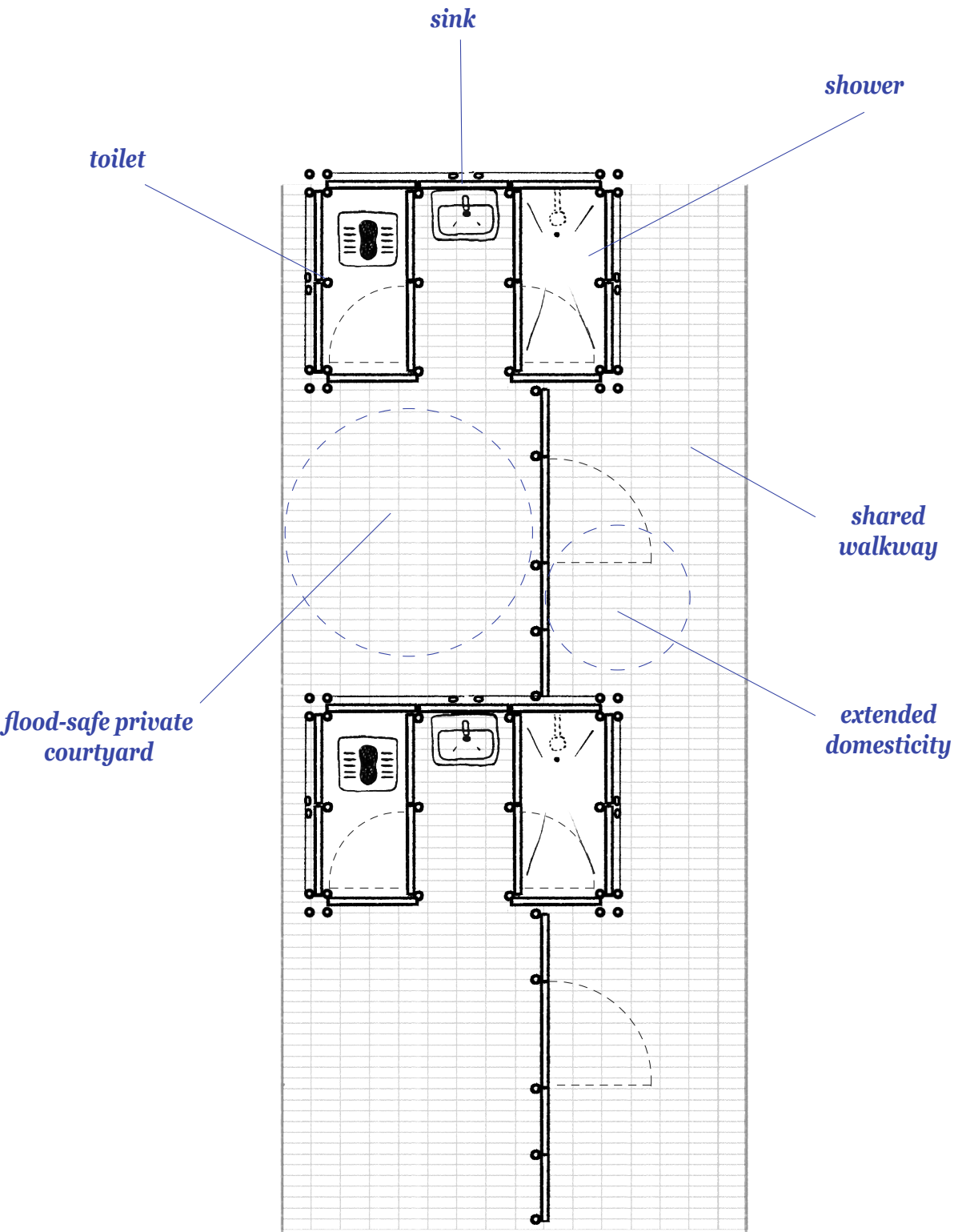
meal time



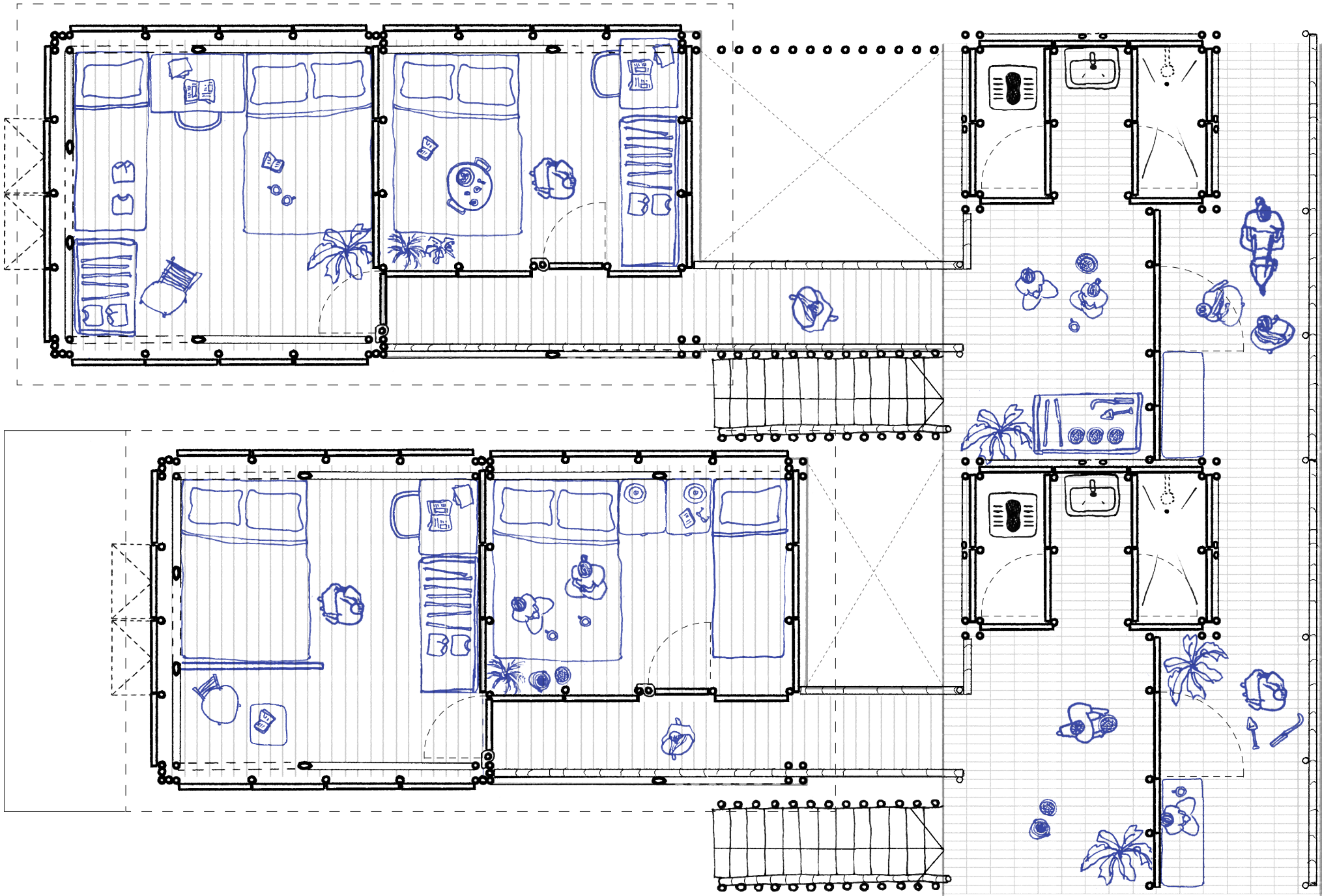
close shop, open curtains,
meal time

cooking

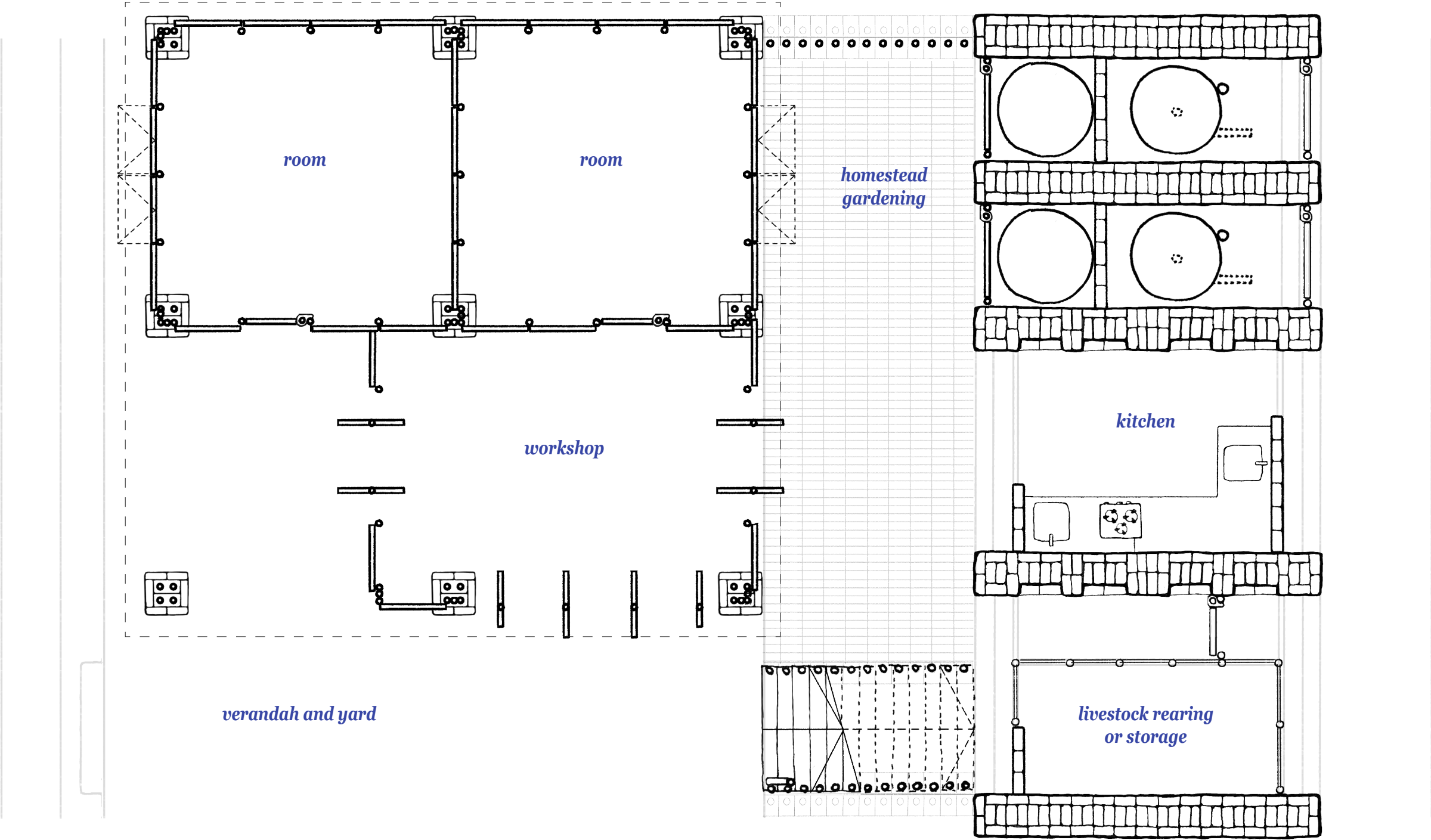
TYPE A, TYPE B:
1F SEEDS



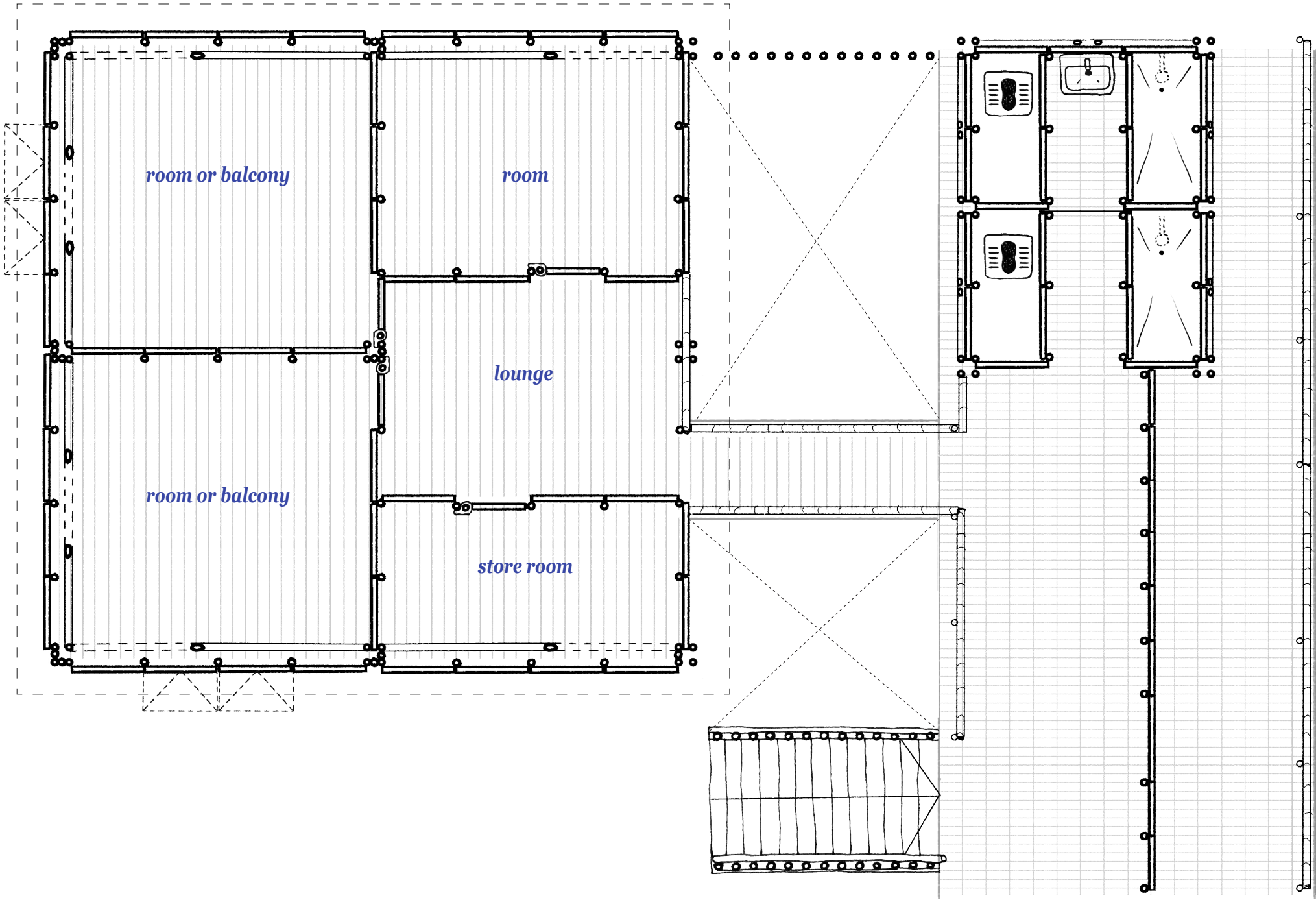
TYPE A, TYPE B: EXAMPLE 1F PLAN

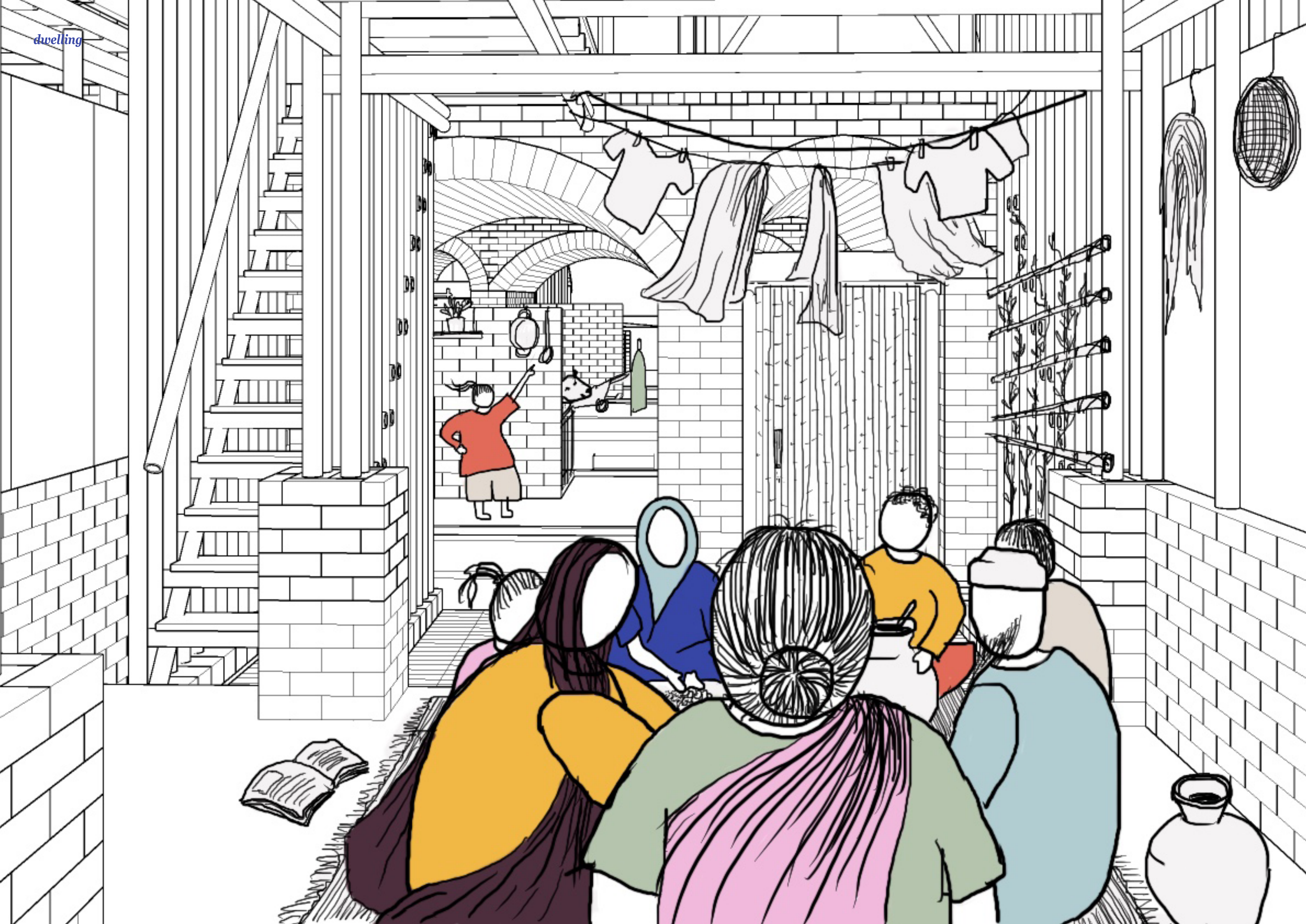


TYPE C: EXAMPLE GF PLAN



TYPE C: EXAMPLE 1F PLAN

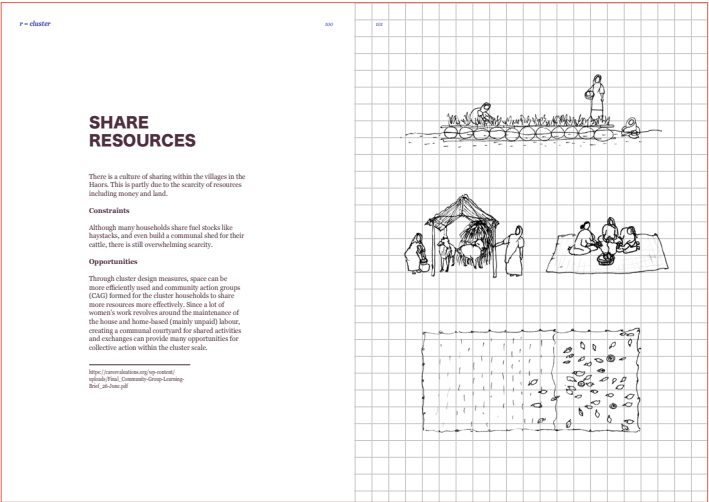




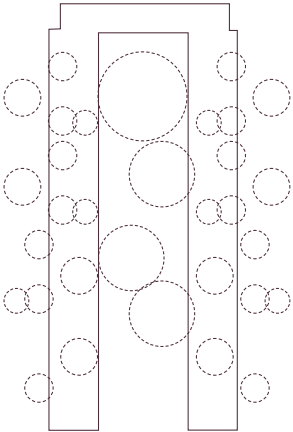
housing for the women of haors

CLUSTER

COMMUNITY ACTION GROUPS:
SAFEGUARDING THE COLLECTIVE AND THE INDIVIDUAL

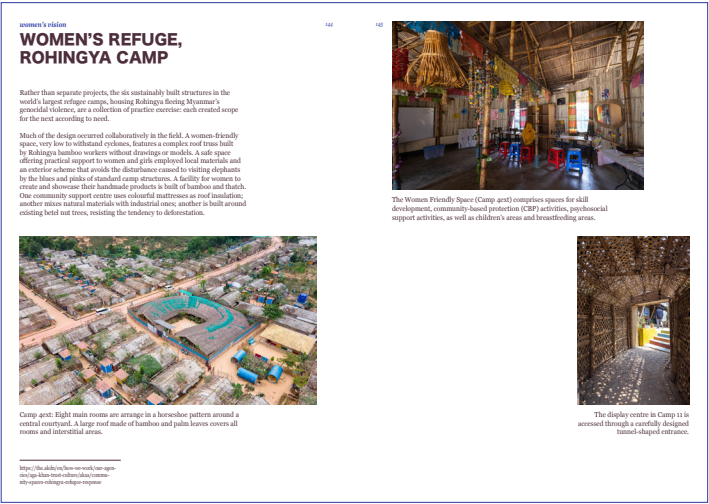


scalar binder_cluster_share resources

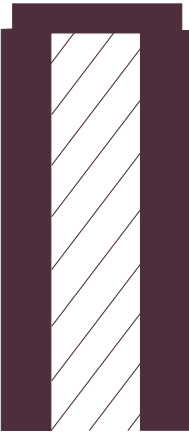


allocate space for women to generate income within the collective cluster and the individual dwellings

spatial

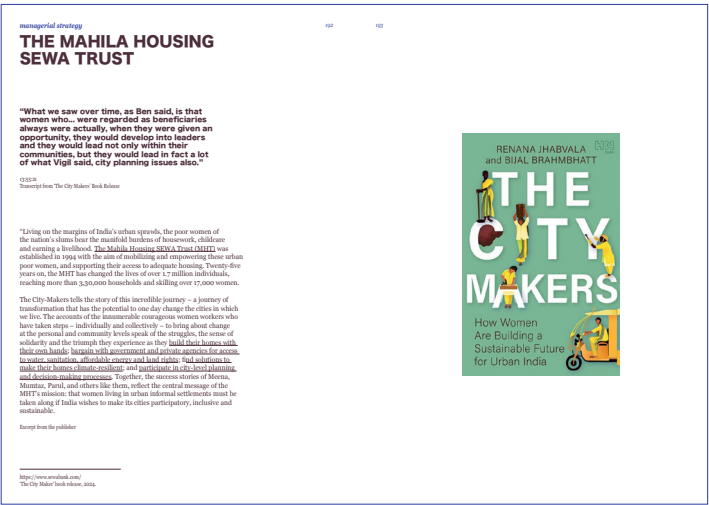


thematic binder_women's vision_women's refuge, rohingya camp

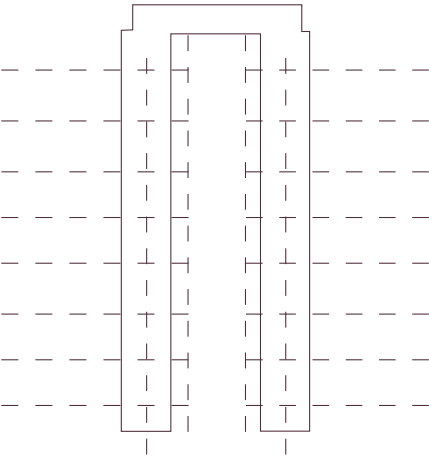


safeguard a communal courtyard for women to work in a safe space

temporal



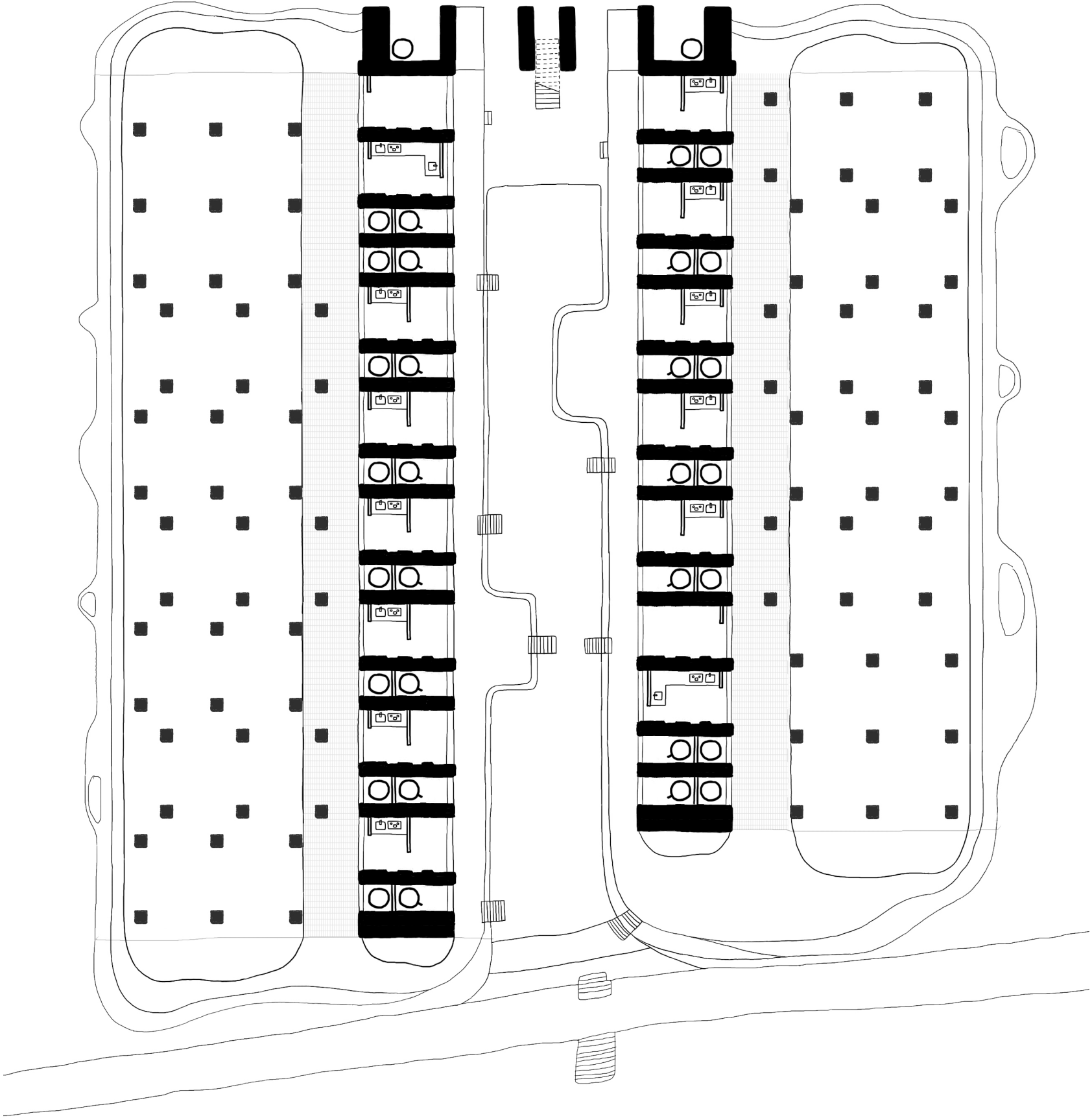
thematic binder_managerial strategy_the mahila housing sewa trust



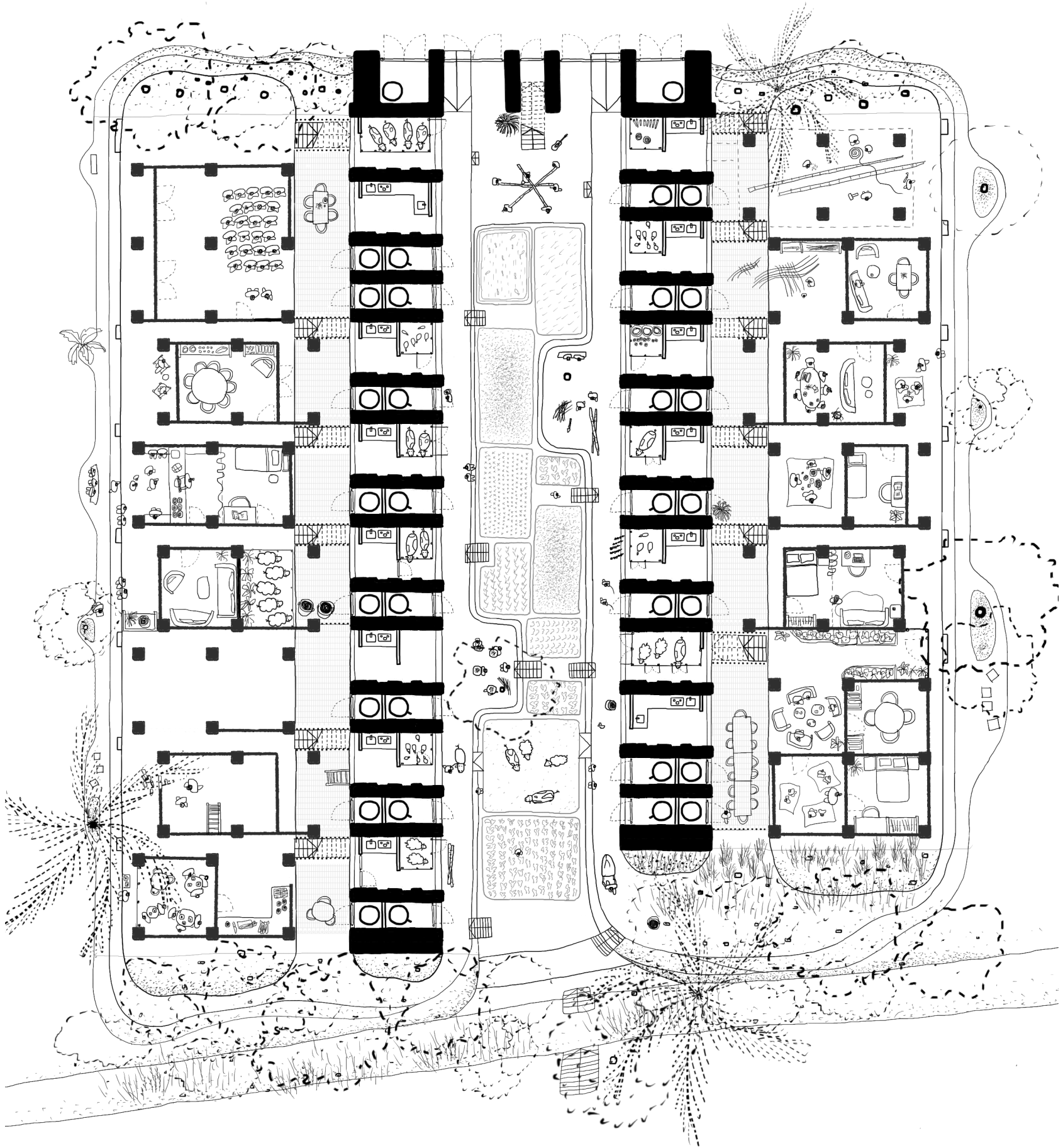
create clusters which have clear demarcations for maintenance and ownership, and group finance possibilities

managerial and ecological

CLUSTER GF SEEDS



CLUSTER GF PLAN



CLUSTER GF PLAN



public amenity

patrilineal family line

shophouse

livestock rearing

young couple in co-design process with architect

expanding family doing construction

teahouse and residence

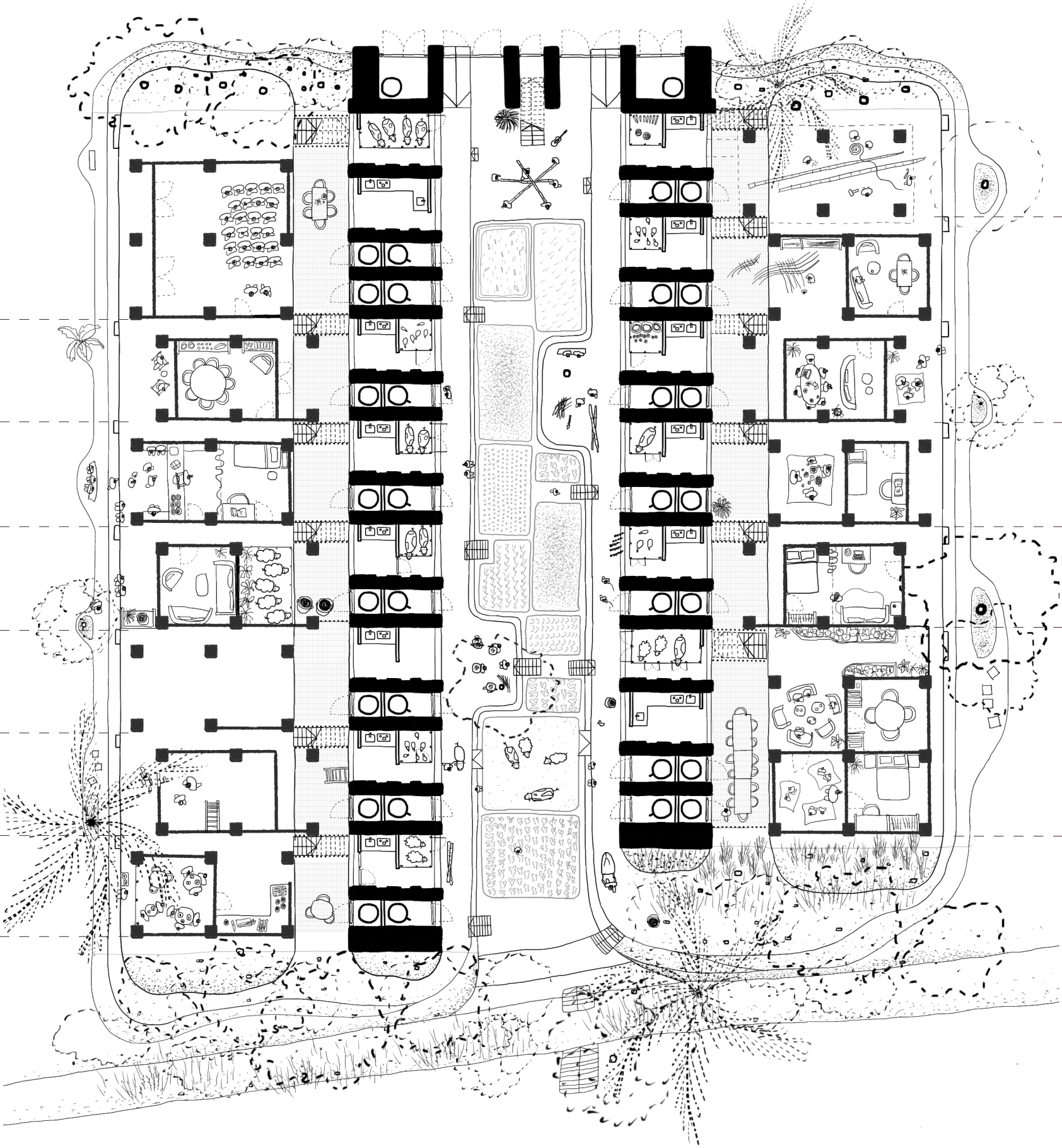
ground floor workshop

combined units Type A and Type B, women-headed households

small family

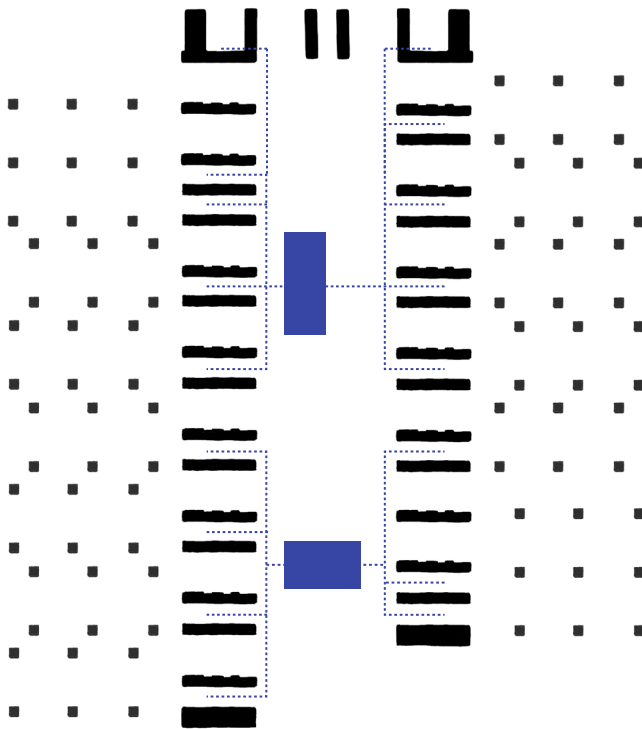
business partners of livestock-rearing household opposite

women's refuge



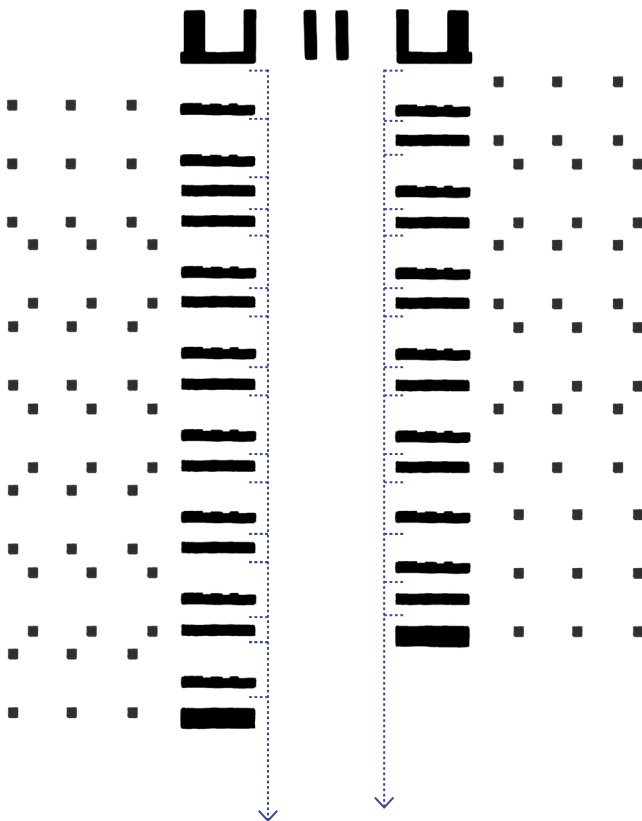


INFRASTRUCTURE SPINE



WATER SECURITY

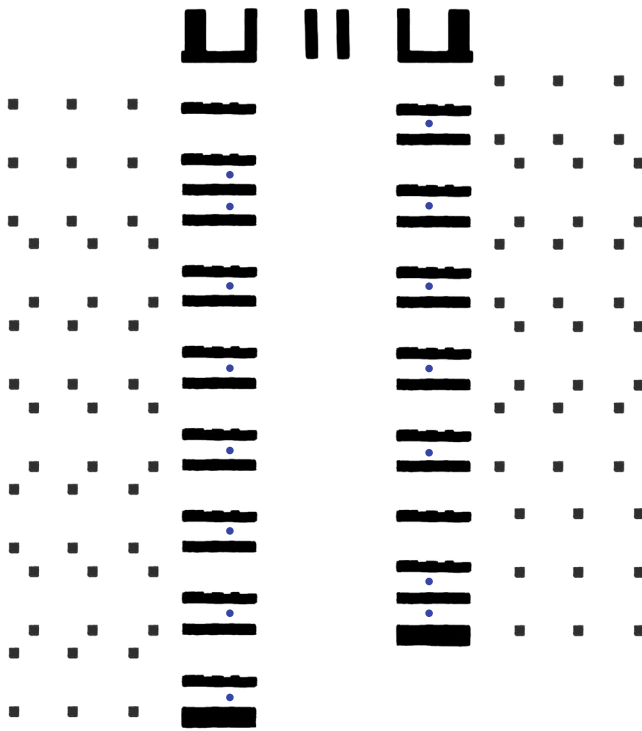
water storage ponds with heleophyte filter,
supplies to water tanks



GREYWATER PURIFICATION

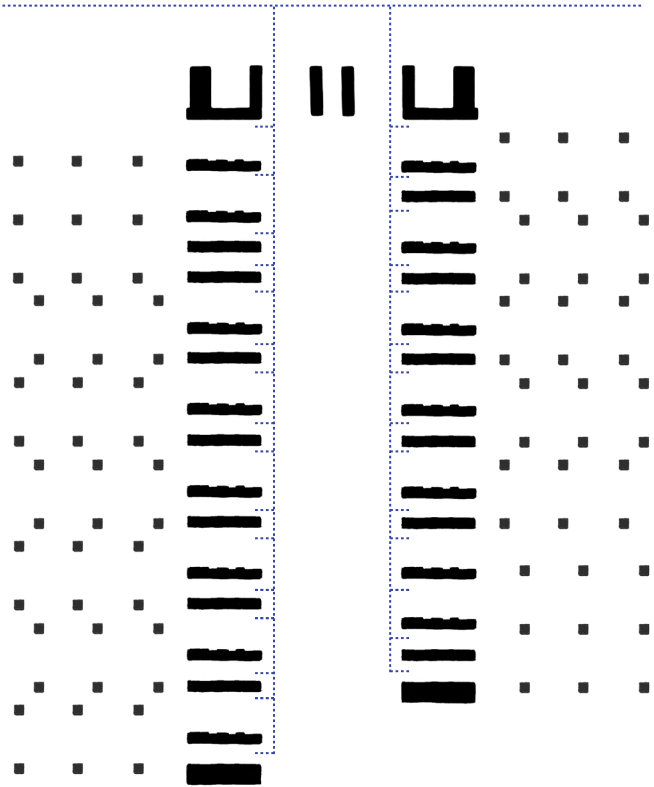
greywater purification by fish ponds or reed
beds

INFRASTRUCTURE SPINE



BLACKWATER

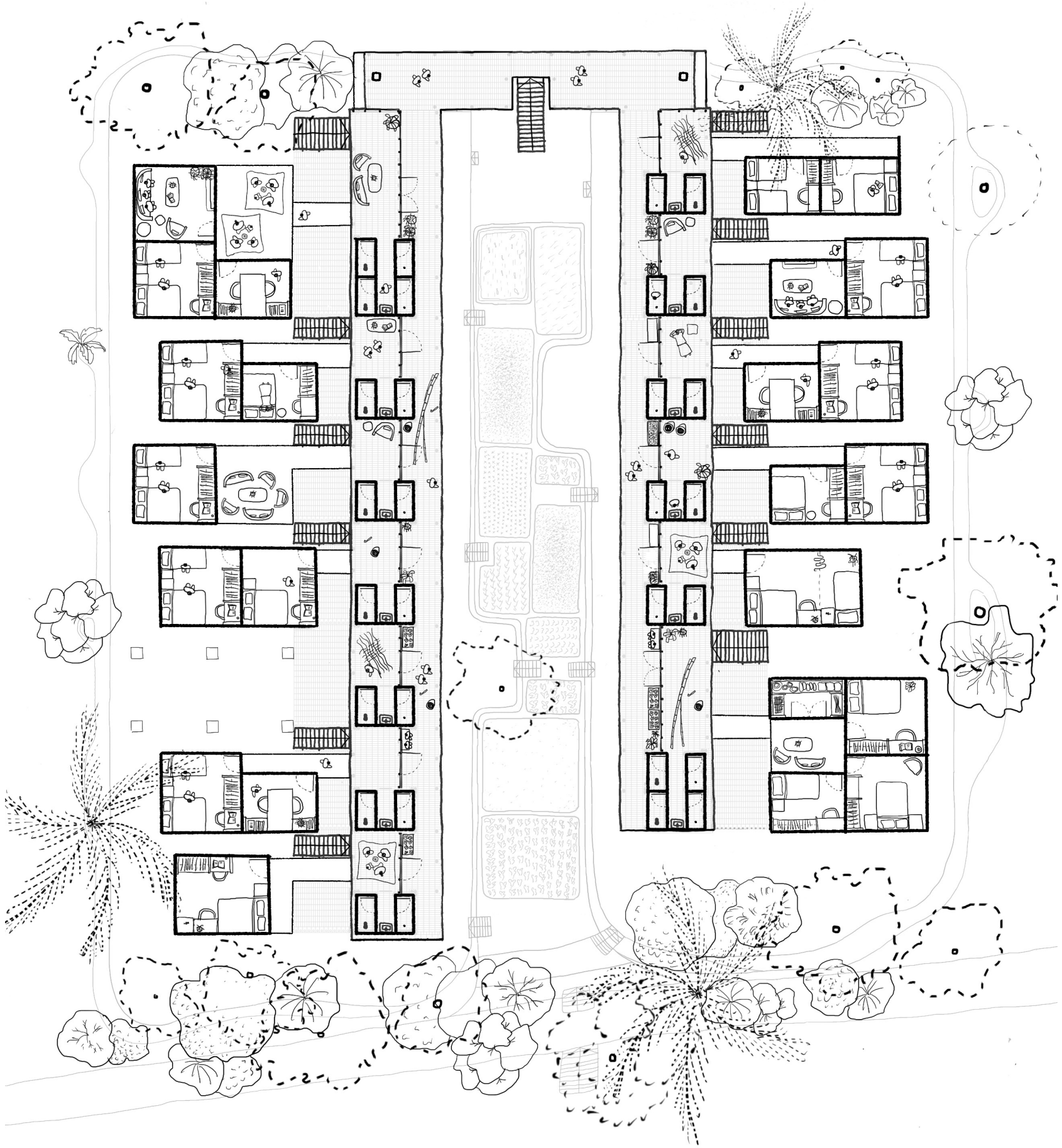
by gravity, the waste from the 1F toilet directly enters the biodigester below, getting rid of blackwater at the source, and generating useful energy simultaneously



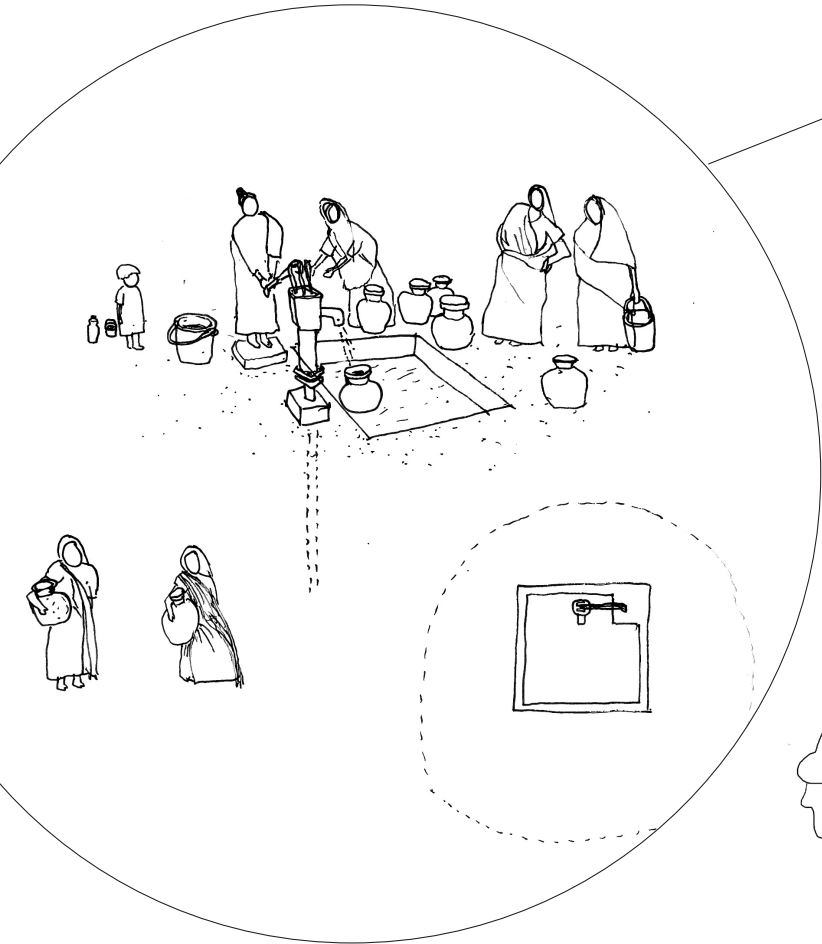
FUTURE SEWAGE SYSTEM/ ELECTRICITY/PIPED WATER/GAS

the spine design makes future implementations of systems easier

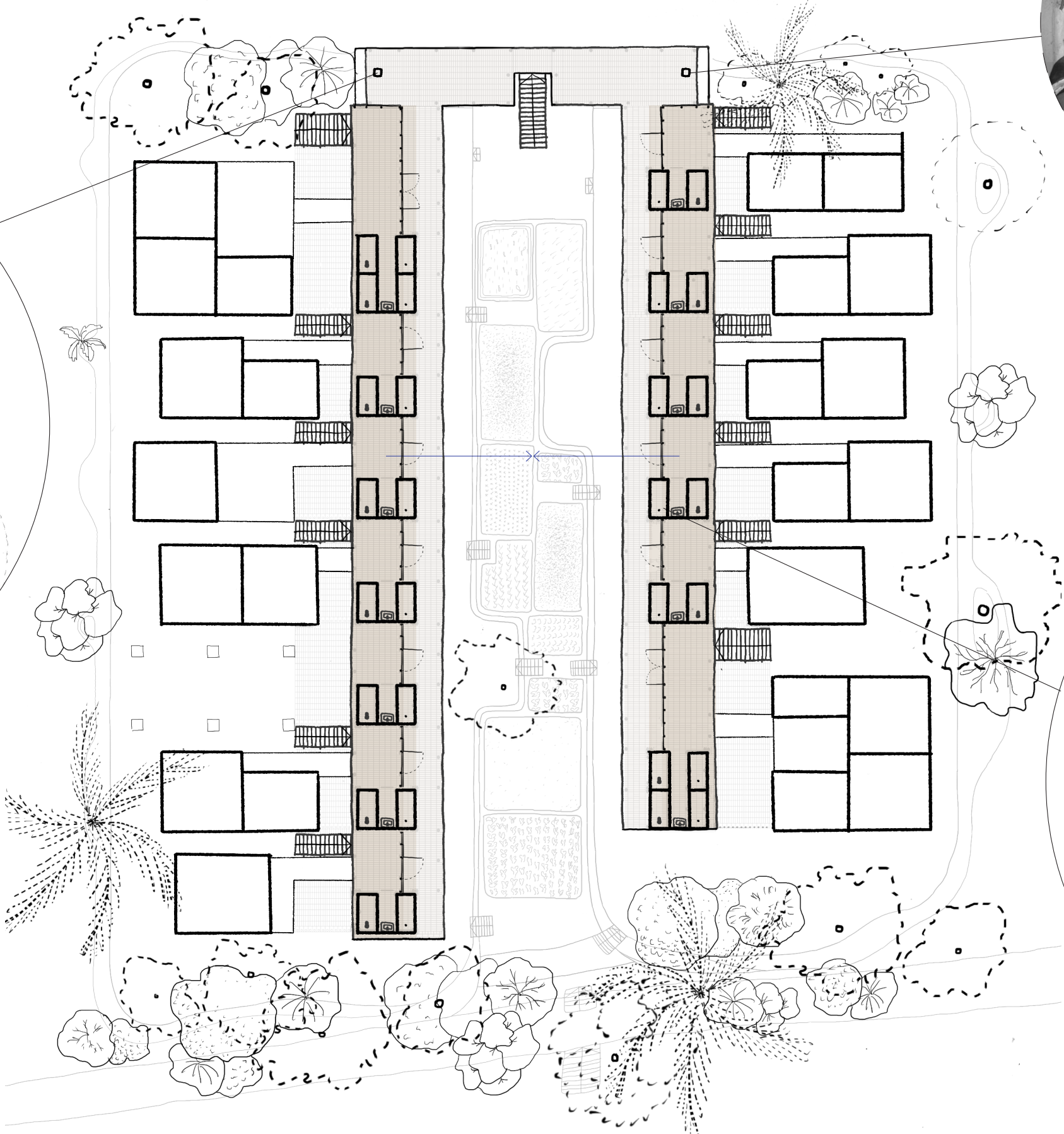
CLUSTER 1F PLAN



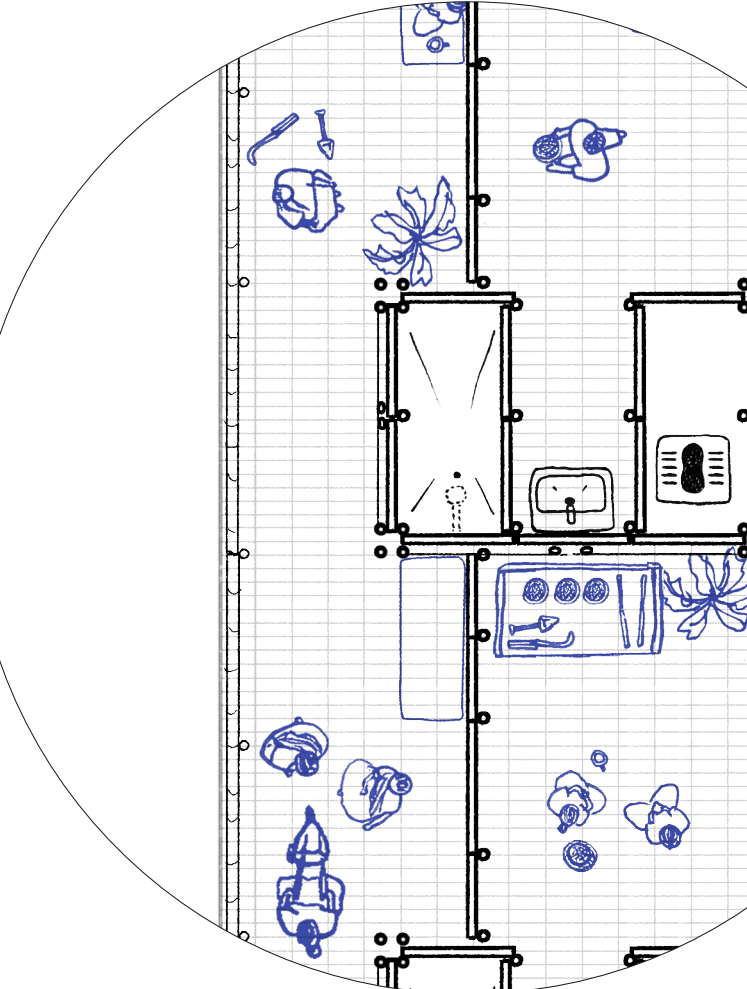
CLUSTER 1F PLAN



drinking water supply is traditionally also a social space for women



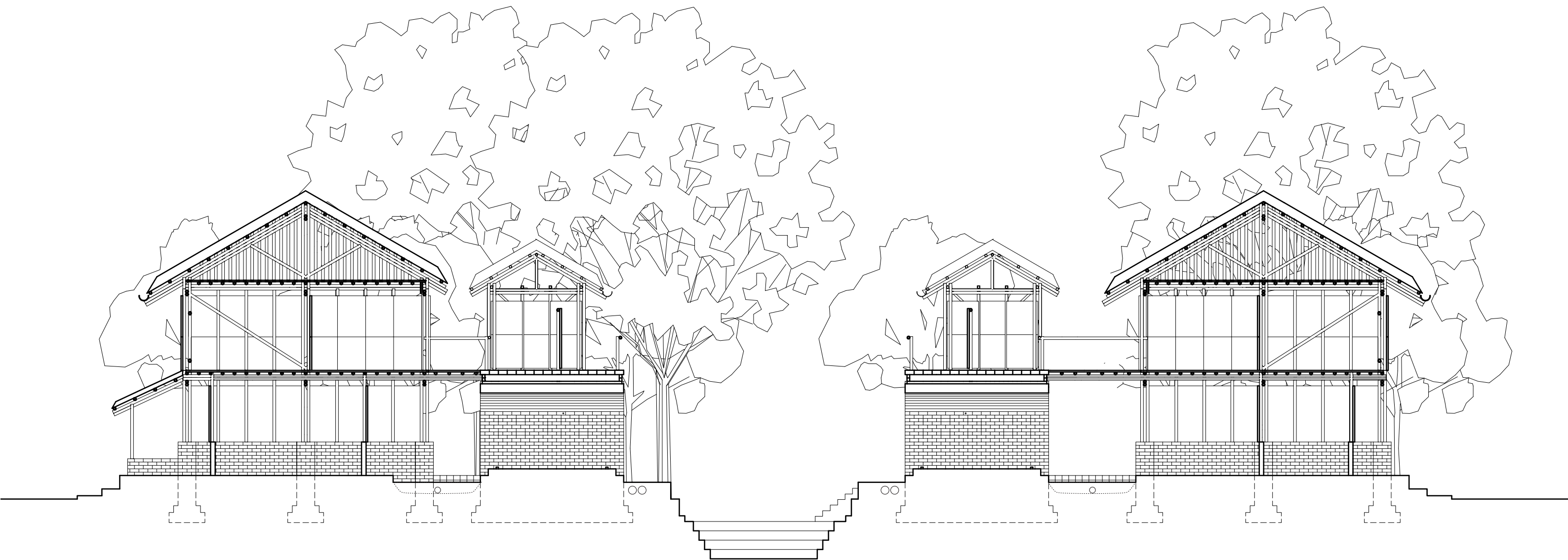
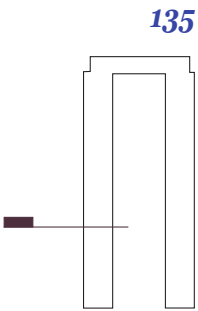
biosand filter
<https://www.ledars.org/wash/bfscb/>



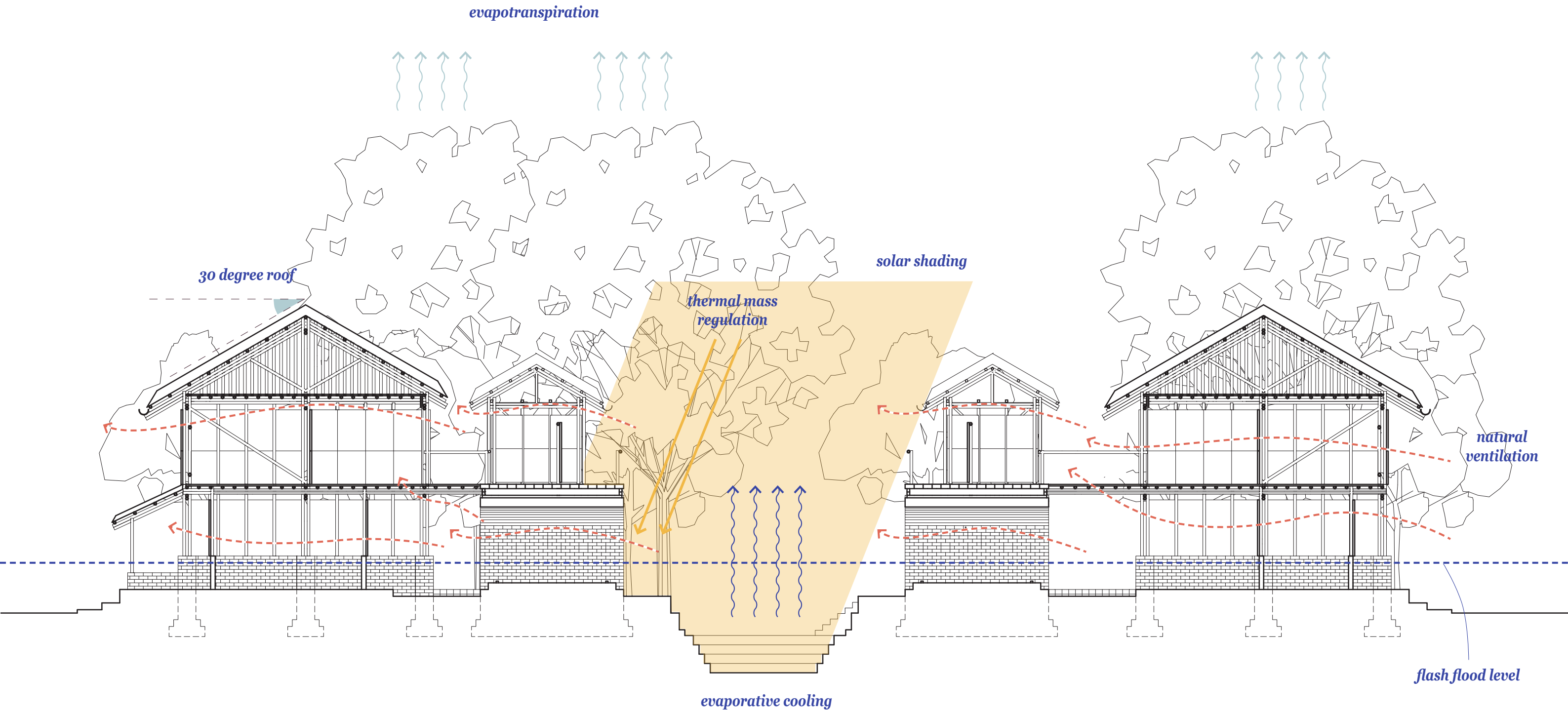
extended domesticity

ACTIVATION OF COMMUNAL SPINE

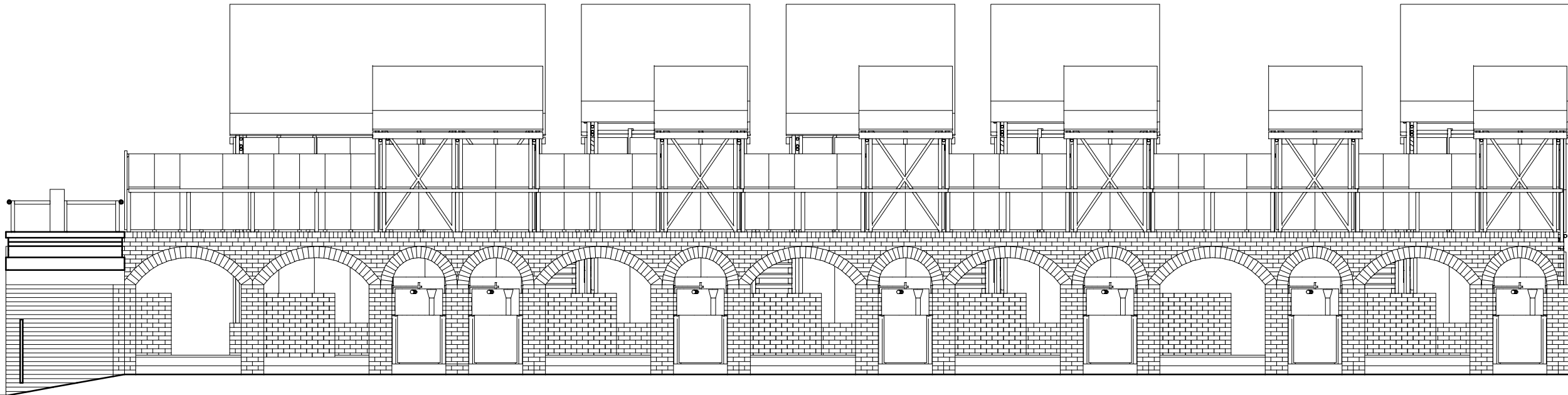
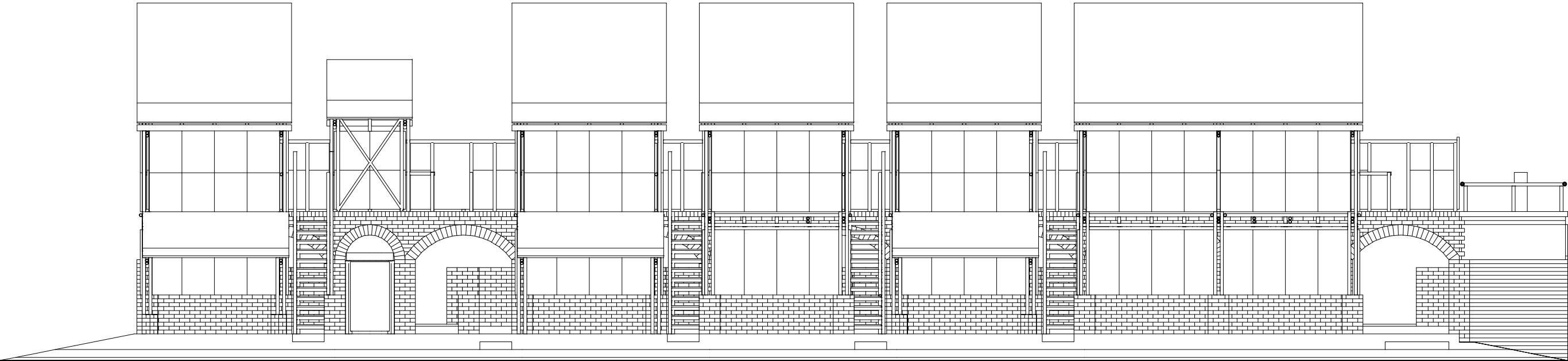
CLUSTER SECTION



CLIMATE DESIGN



CLUSTER FRONT AND BACK ELEVATIONS



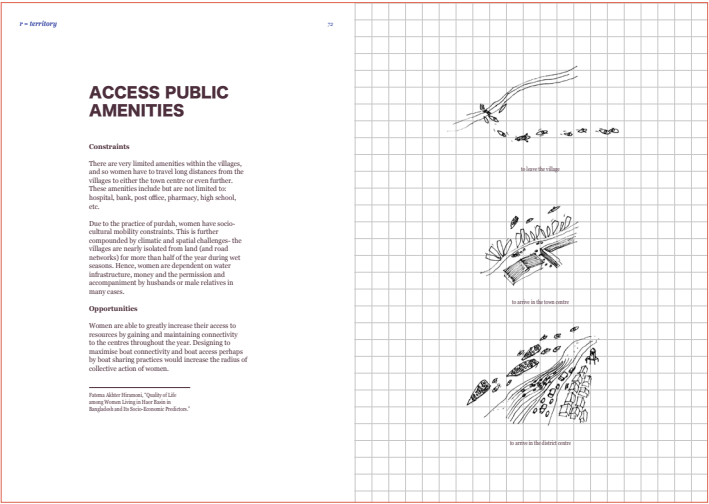


housing for the women of haors

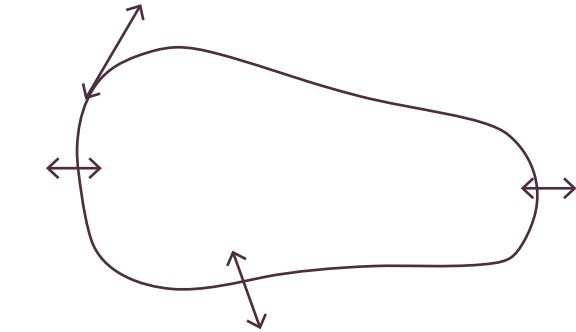
VILLAGE

A RESPONSIVE SYSTEM TO
MAXIMISE ACCESS FOR WOMEN

scalar binder_territory_access public
amenities

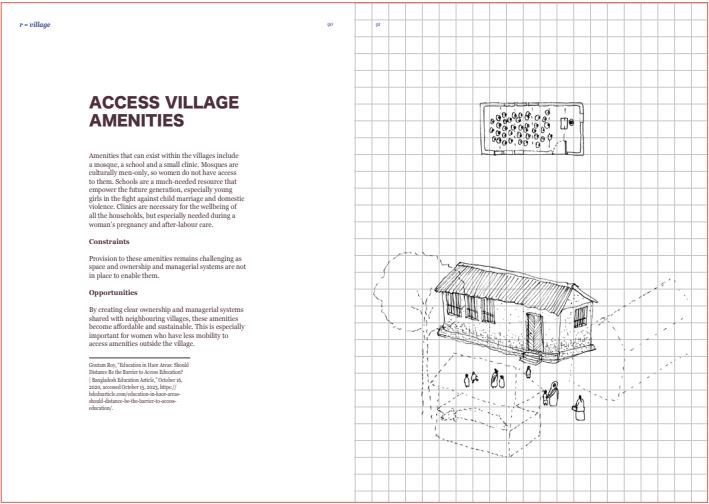


spatial

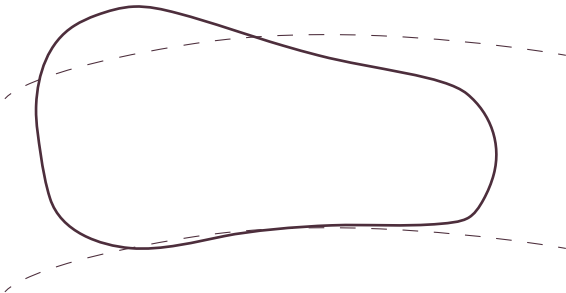


increase connectivity to share amenities between nearby villages

scalar binder_village_access village
amenities

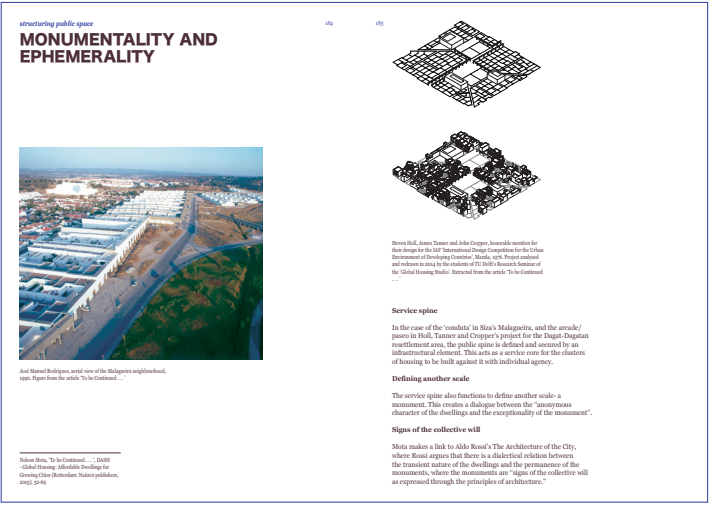


temporal

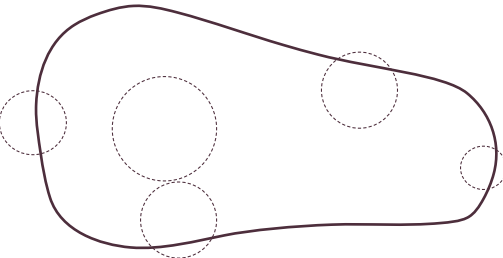


shape the village along the river, creating maximum access to
both the river of one side and the paddyfields on the other.

thematic binder_structuring public
space_monumentality and ephemerality



managerial and ecological



create a hierarchy within public space, responding to managerial
levels within the village

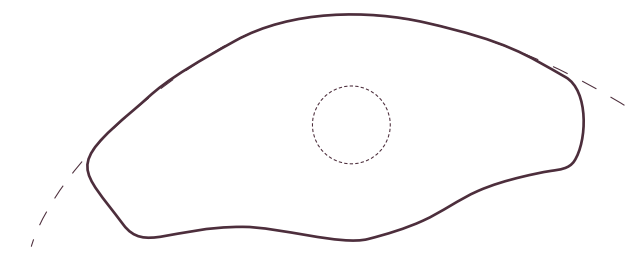
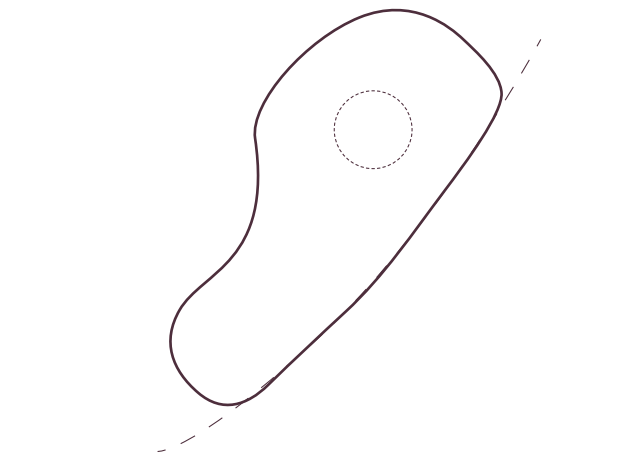
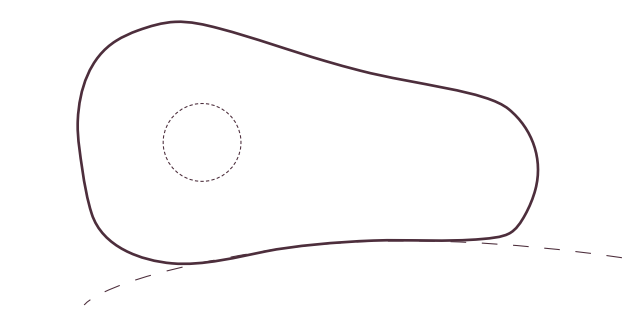
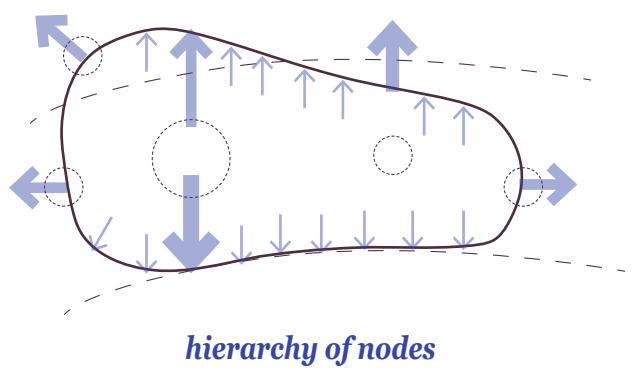
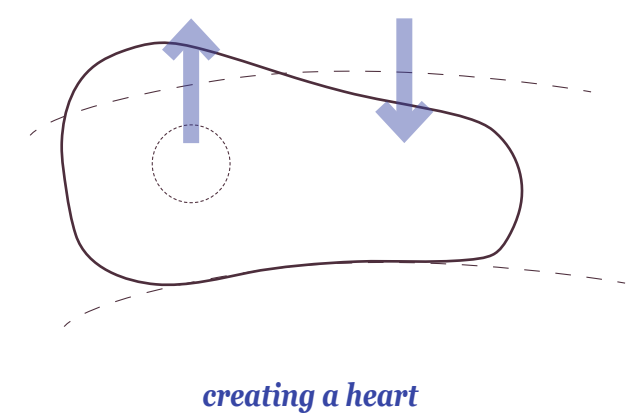
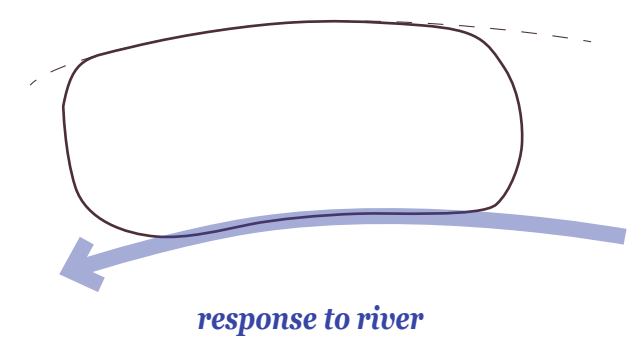


1:500

VILLAGE PLAN



RESPONSIVENESS



responsiveness



1:500

VILLAGE PLAN





1:500

VILLAGE PLAN





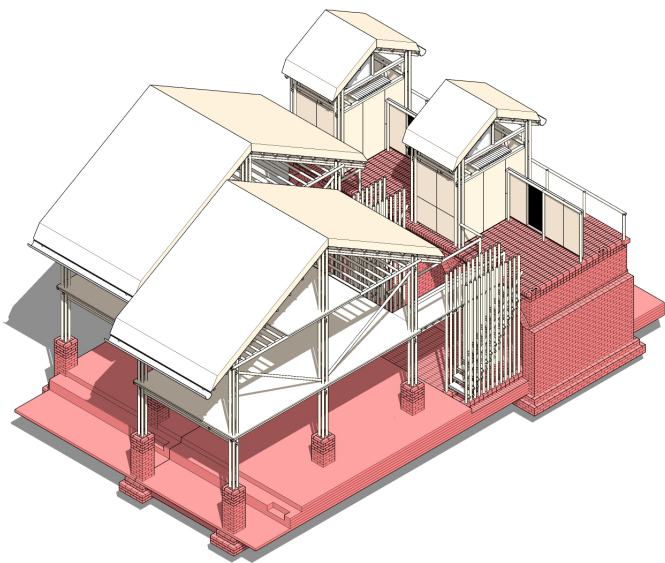


1:500

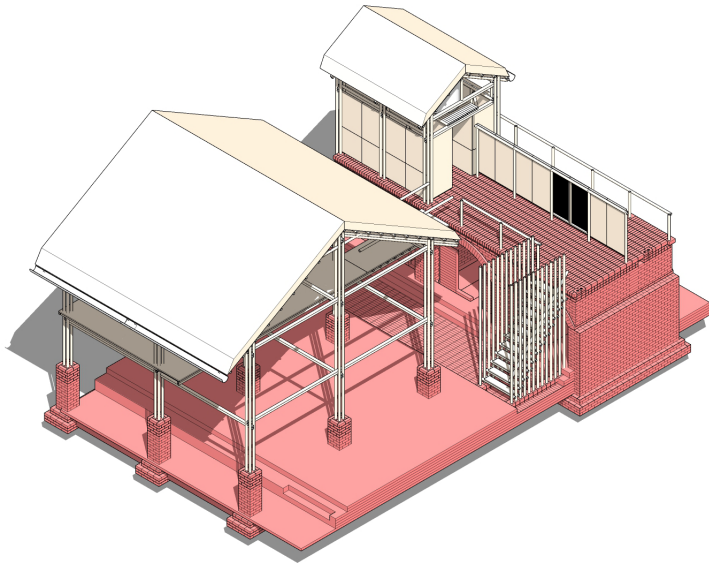
MAIN NODES



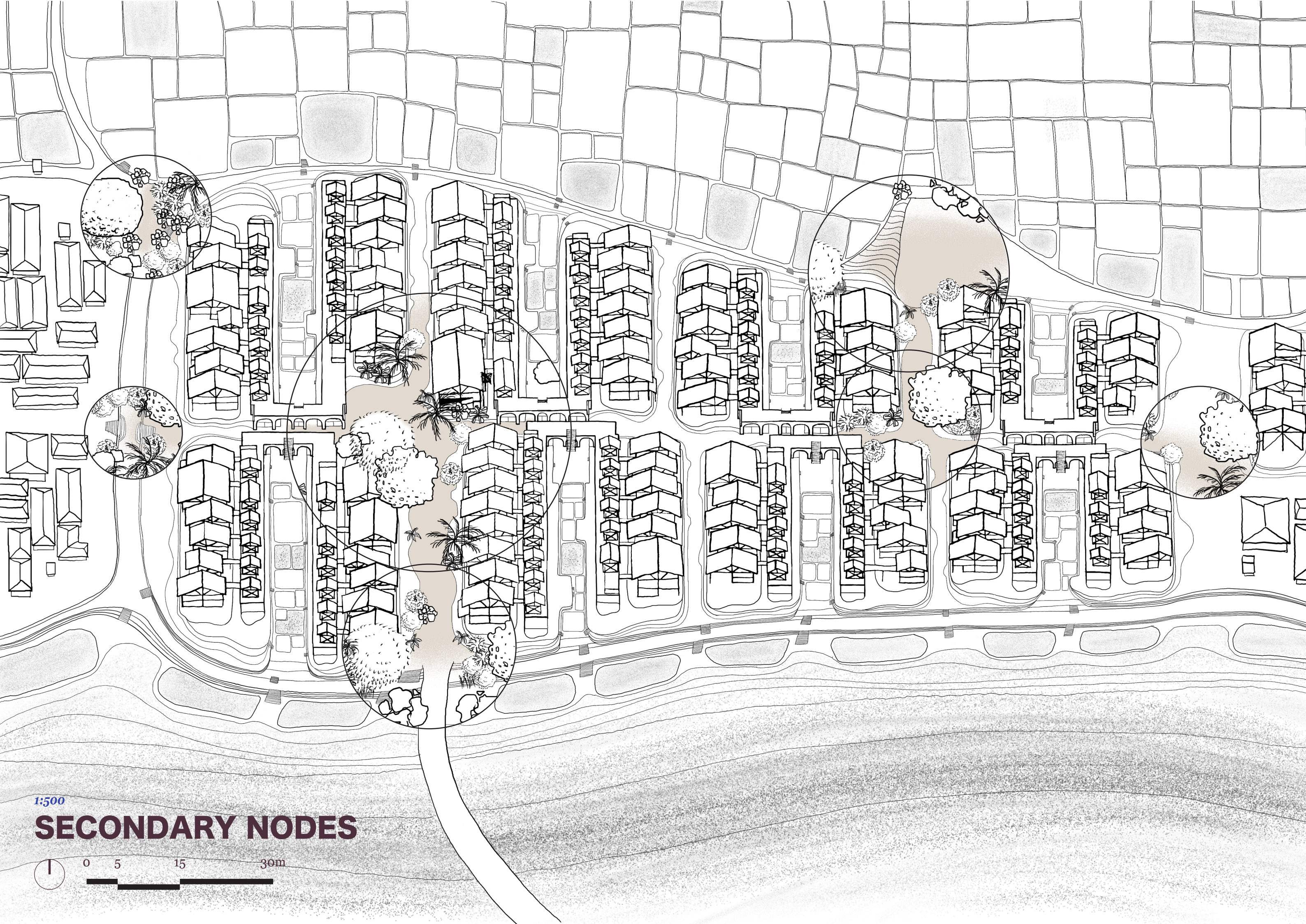
FUTUREPROOFING



A + B



C / 2

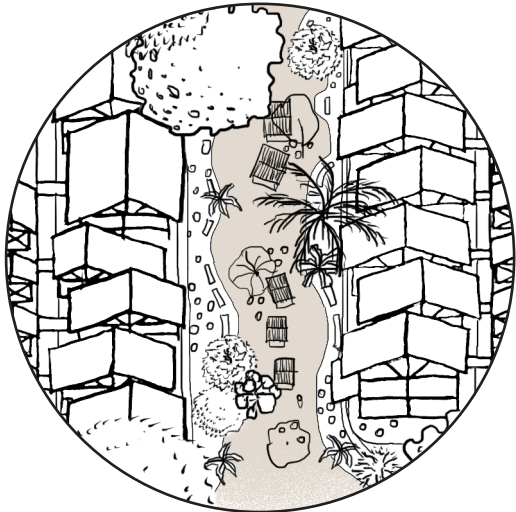


1:500

SECONDARY NODES



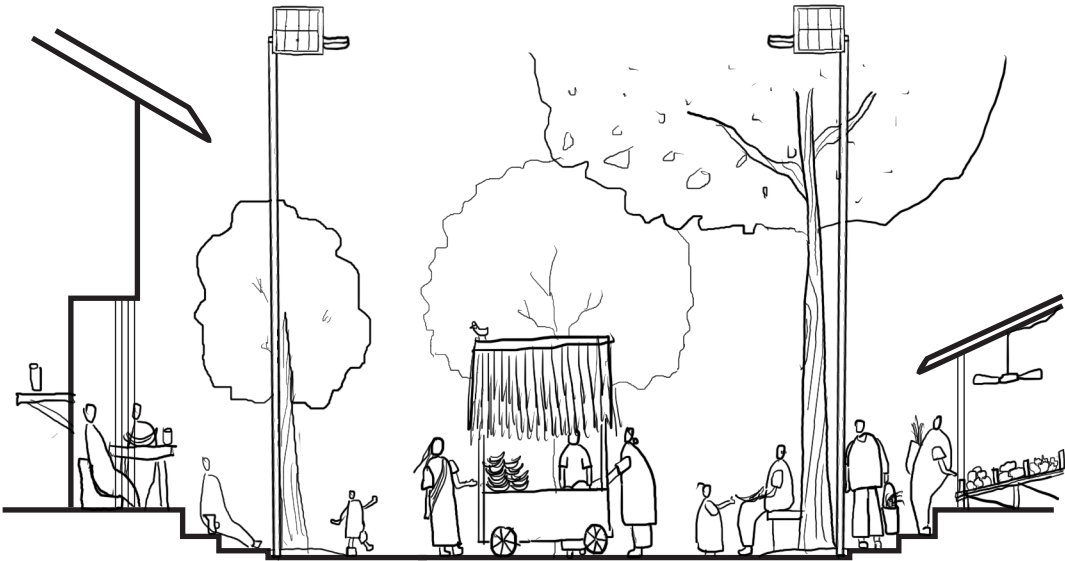
PLACEMAKING



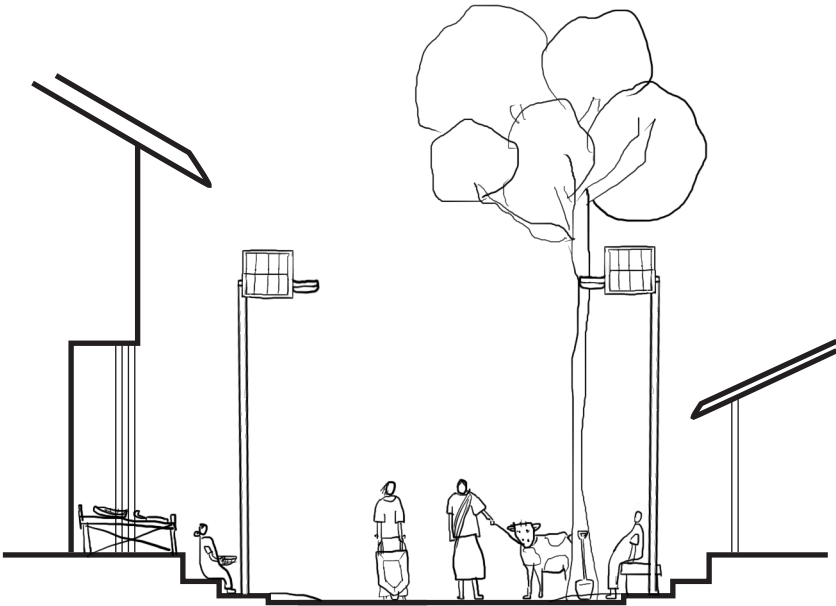
9m



6m

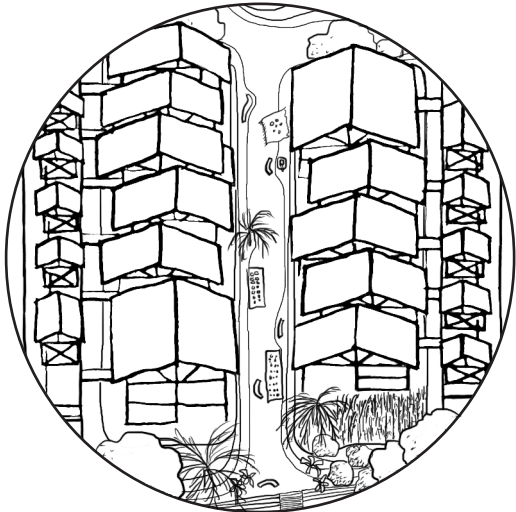


bridge street

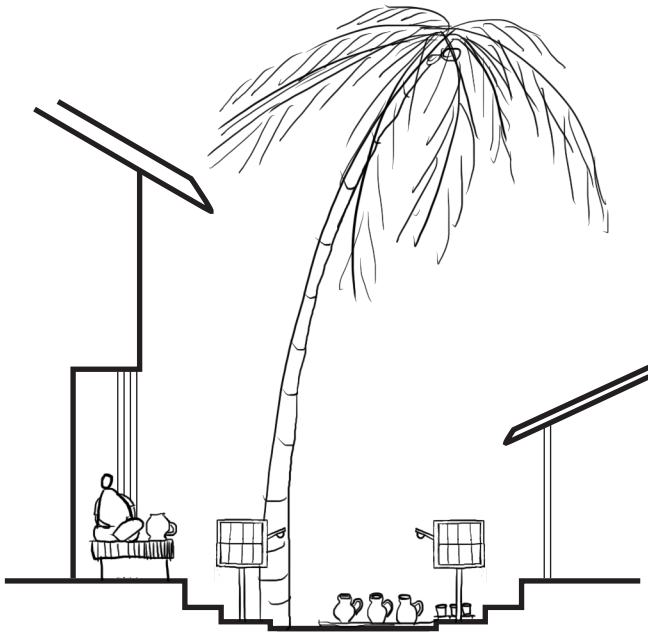


paddyfield street

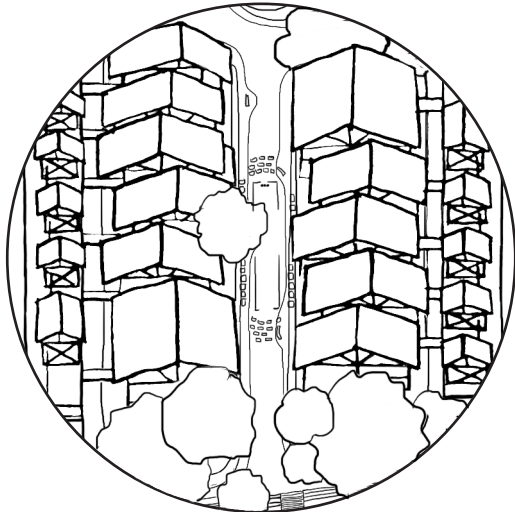
PLACEMAKING



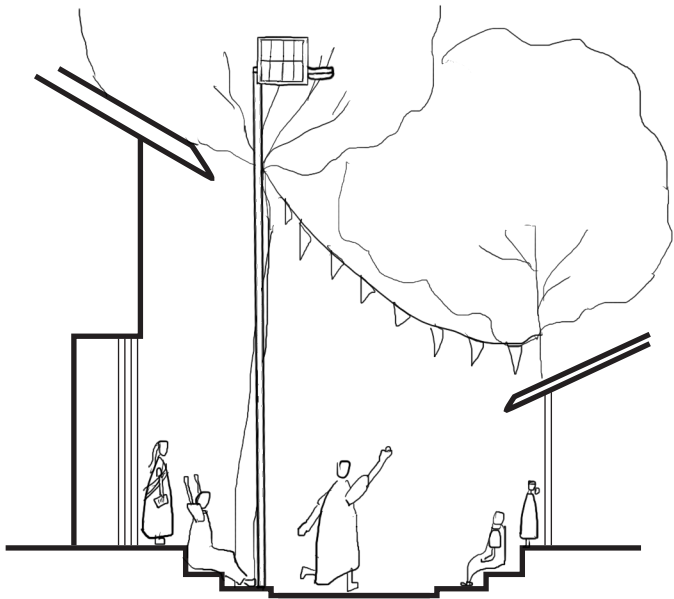
3.5m



potter's street

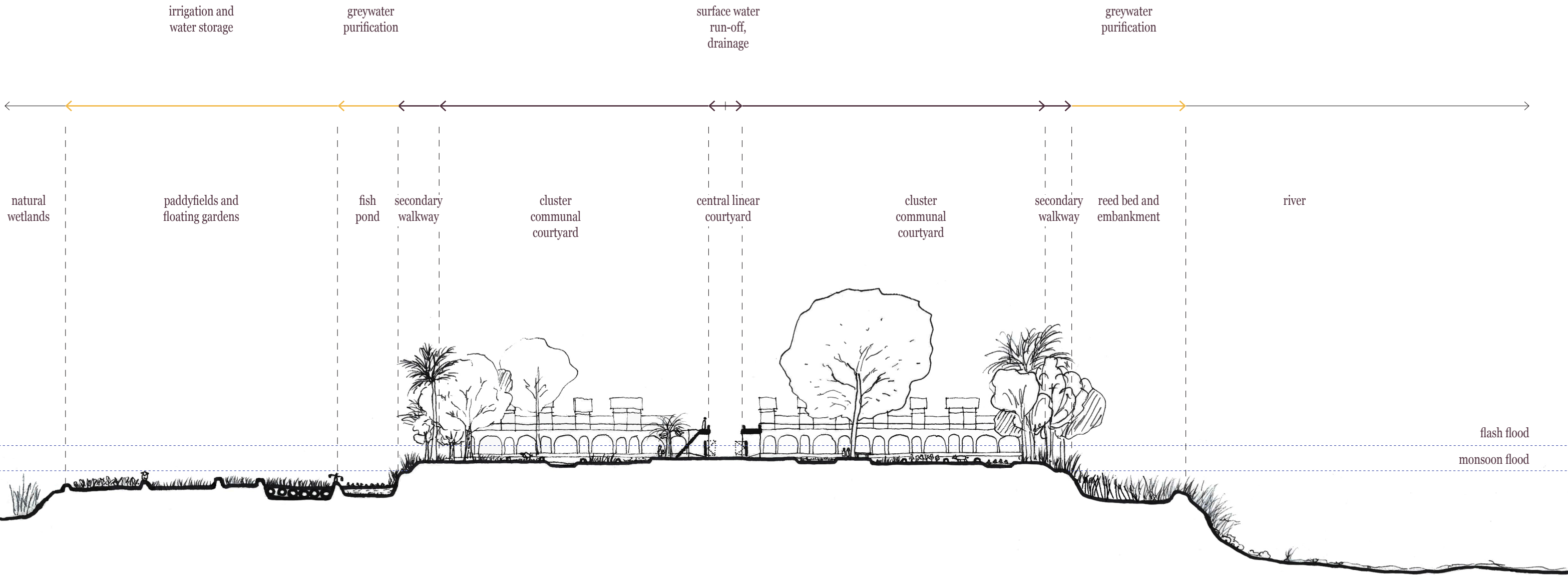
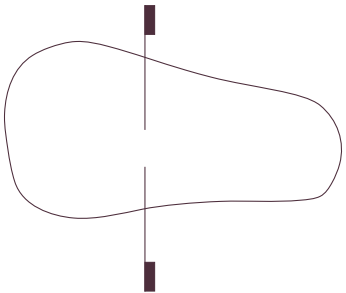


3.5m



cricket street

PADDYFIELD TO RIVER



housing for the women of haors

TERRITORY

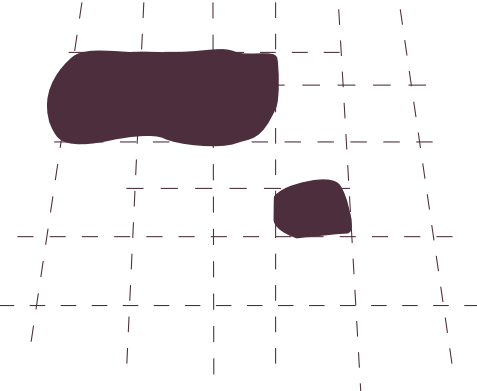
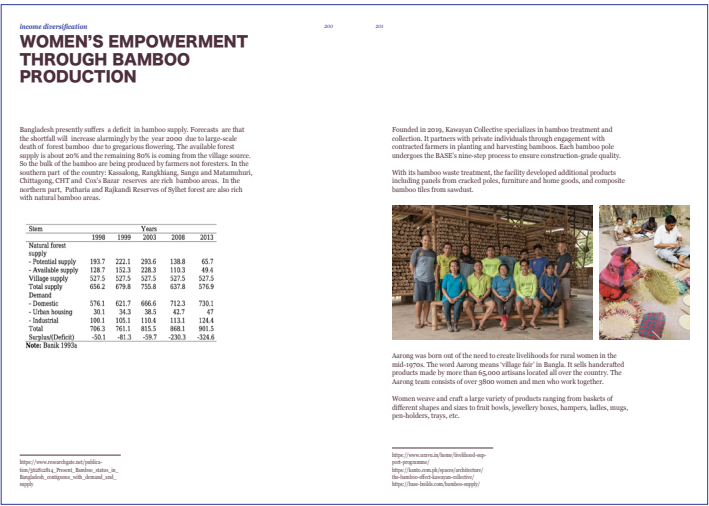
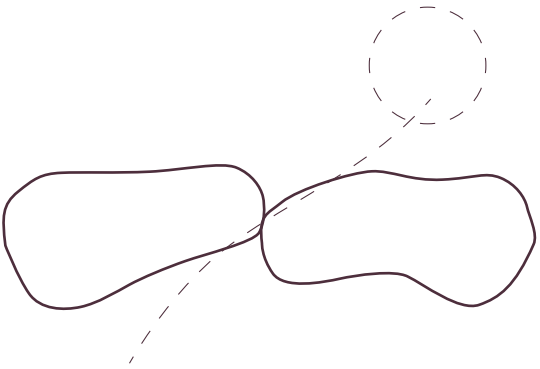
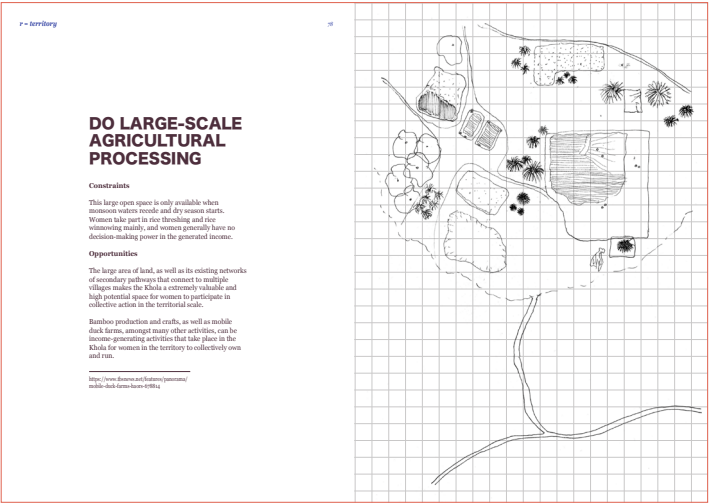
TERRITORY

NODES TO ACCESS WIDER TERRITORY

scalar binder_territory_do large-scale agricultural processing

spatial

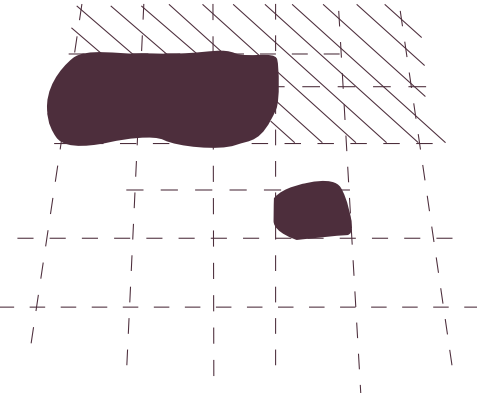
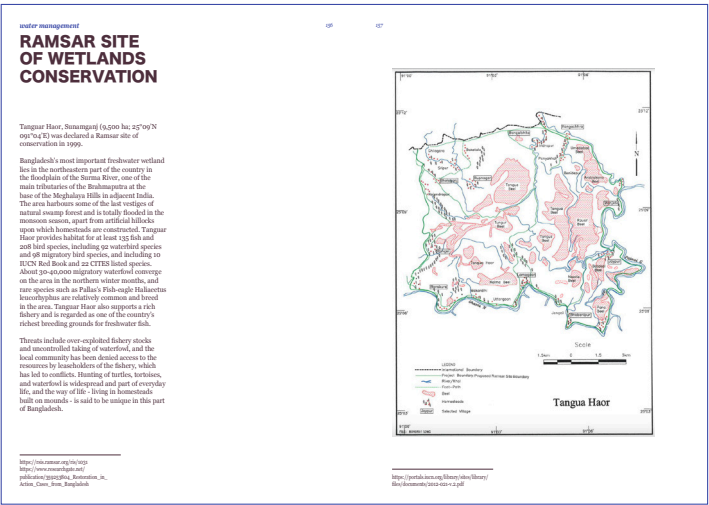
use the existing networks of Khola and secondary walkways to create nodes for social and economic activity



thematic binder_income diversification_women's empowerment through bamboo production

temporal

use the patchwork of paddyfields as a base for income diversification, adapting to external disruptions

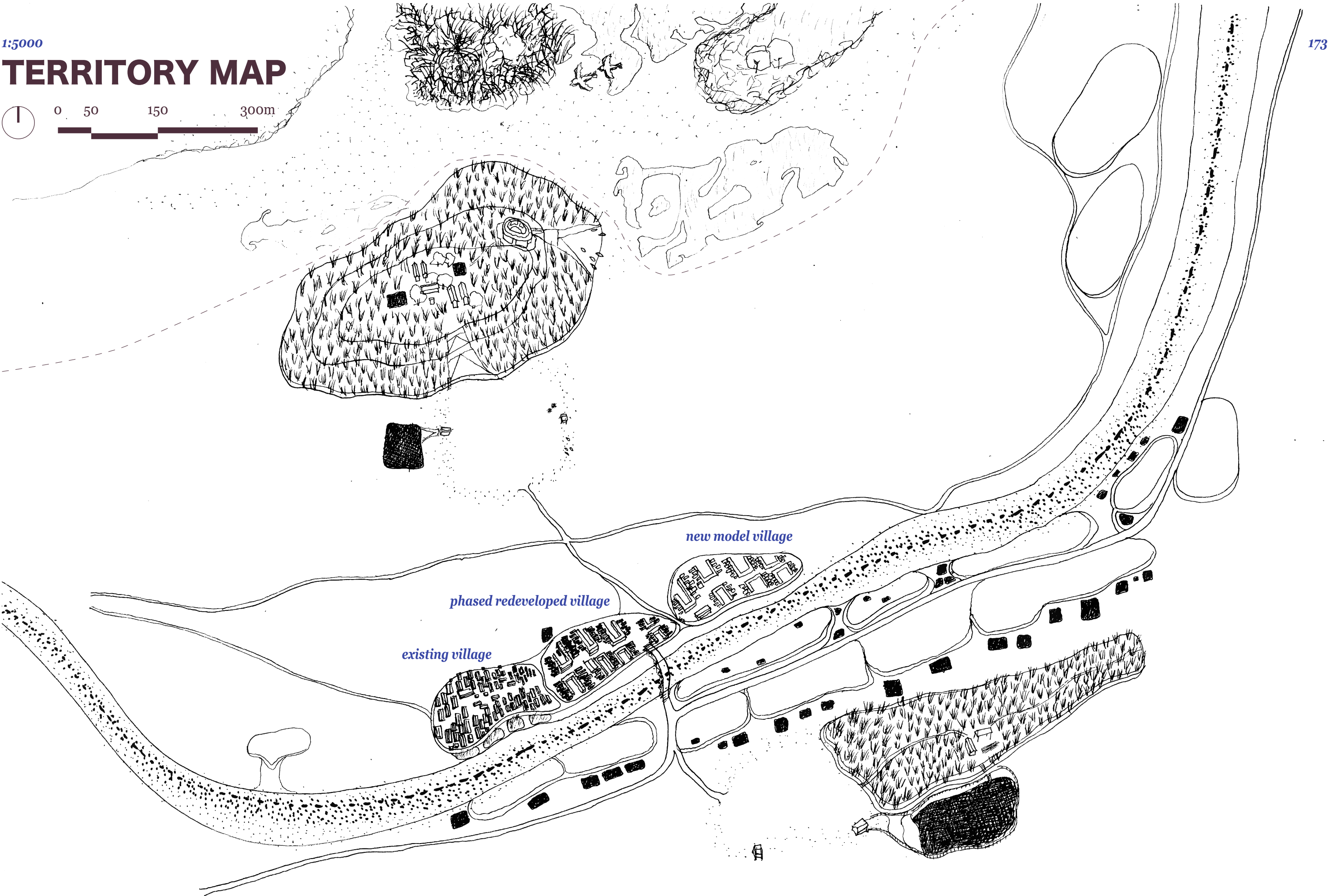


thematic binder_water management_Ramsar site of wetlands conservation

managerial and ecological

protect the natural wetlands, improving diversity and thereby managing flood risks

TERRITORY MAP



1:5000

TERRITORY MAP



forests

natural wetlands

bamboo plantation

duck pond and shed

khola

storm shelter

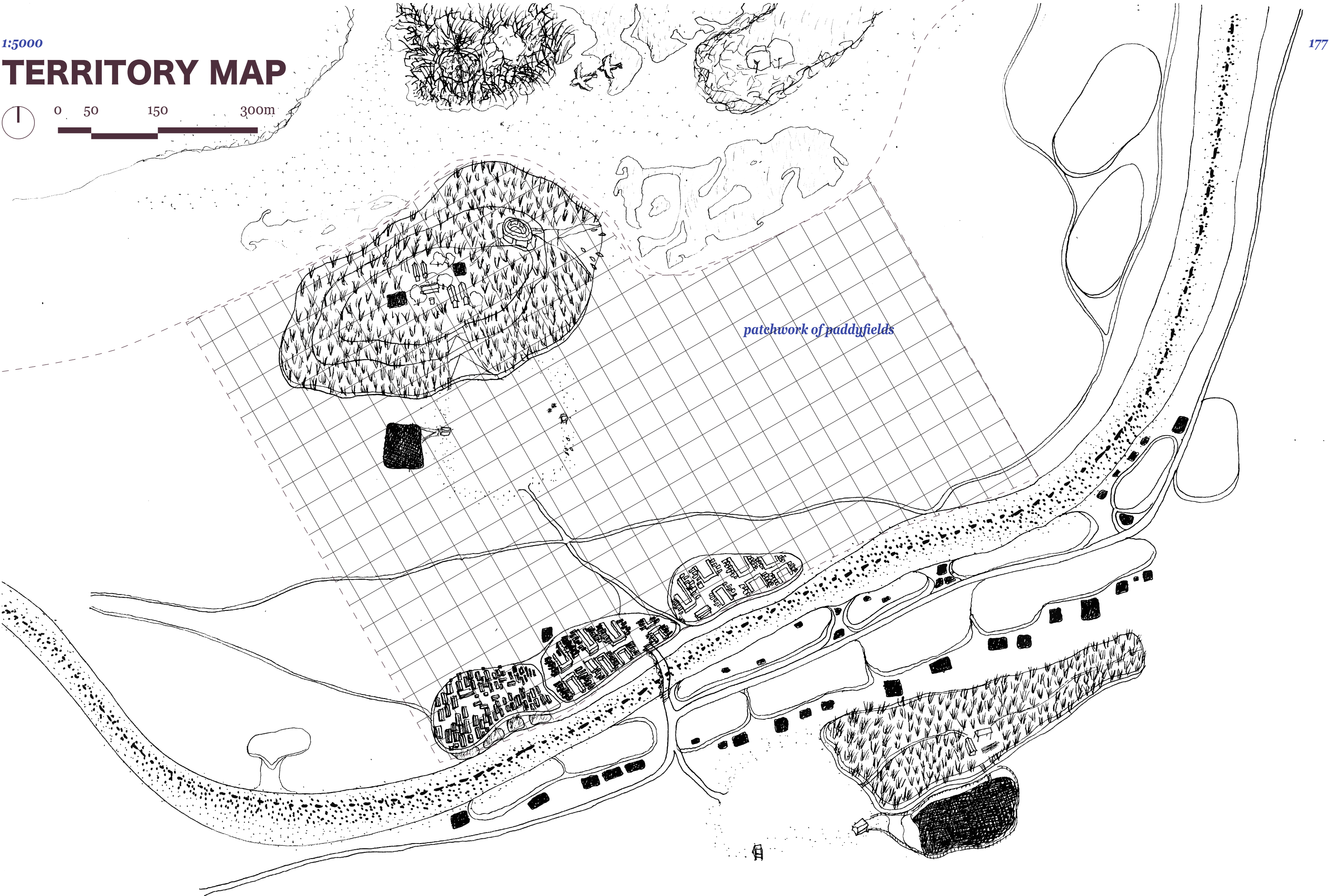
secondary walkways

beels

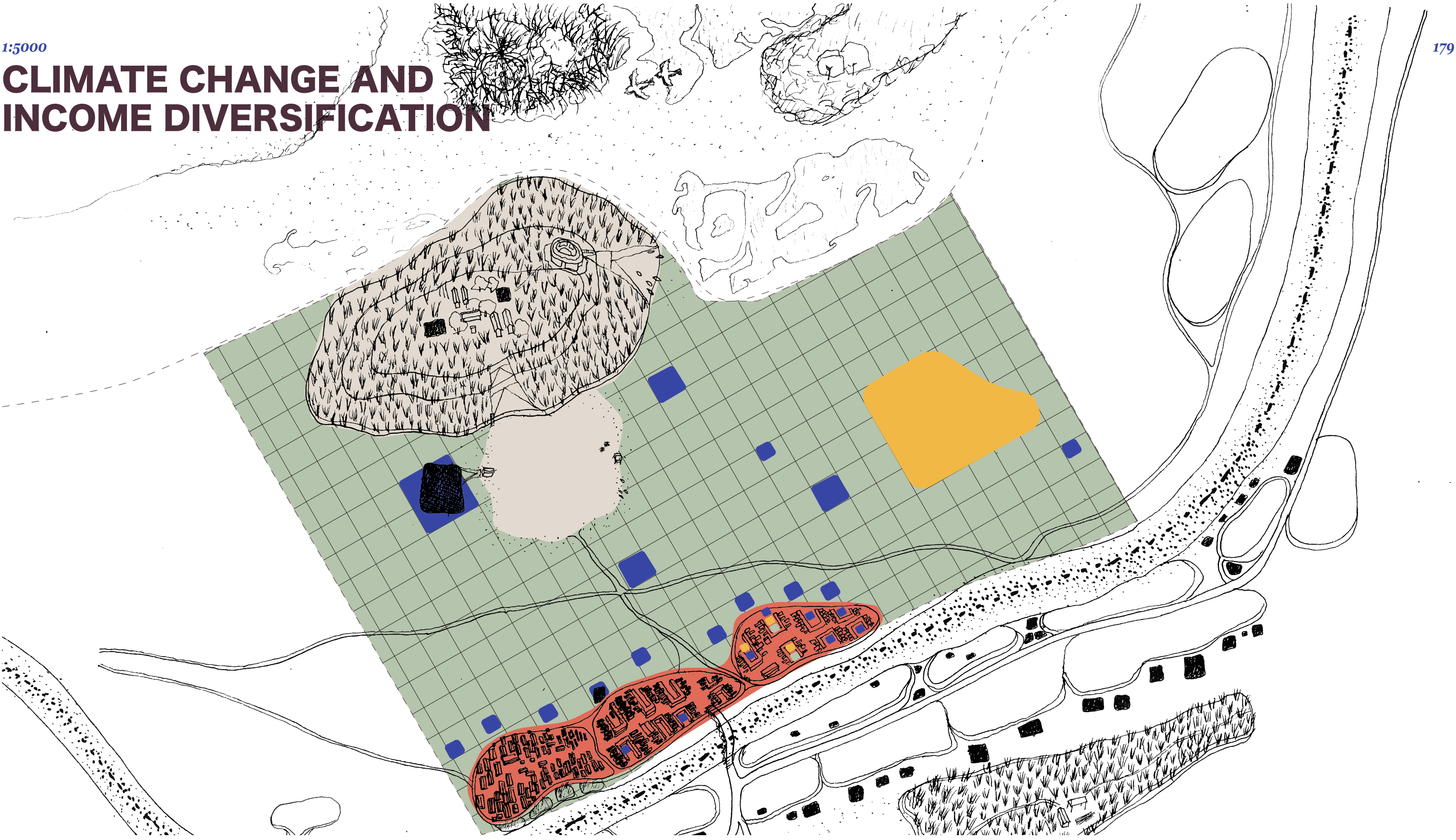
paddyfields

main road

TERRITORY MAP



CLIMATE CHANGE AND INCOME DIVERSIFICATION



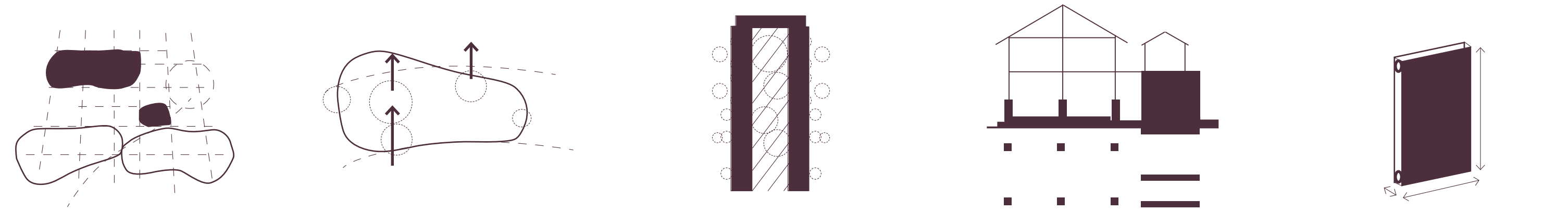
Space		Income source	
<div></div>	Paddyfields	crops	
<div></div>	Villages	shops/small businesses, local contracting	
<div></div>	Ponds	fish, duck	
<div></div>	Grazing land	cow, chicken, sheep, duck, goat, cheese, silage	
<div></div>	Bamboo plantation and hub	prefab panels, bamboo equipment	



implications

THE FEMINIST SYSTEM





TERRITORY

VILLAGE

CLUSTER

DWELLING

DETAILS

Nodes to access wider territory

- use the existing networks of Khola and secondary walkways to create nodes for social and economic activity
- use the patchwork of paddyfields as a base for income diversification, adapting to external disruptions
- protect the natural wetlands, improving diversity and thereby managing flood risks

A responsive system to maximise access for women

- increase connectivity to share amenities between nearby villages
- shape the village along the river, creating maximum access to both the river of one side and the paddyfields on the other.
- create a hierarchy within public space, responding to managerial levels within the village

Community action groups: safeguarding the collective and the individual

- allocate space for women to generate income within the collective cluster and the individual dwellings
- safeguard a communal courtyard for women to work in a safe space
- create clusters which have clear demarcations for maintenance and ownership, and group finance possibilities

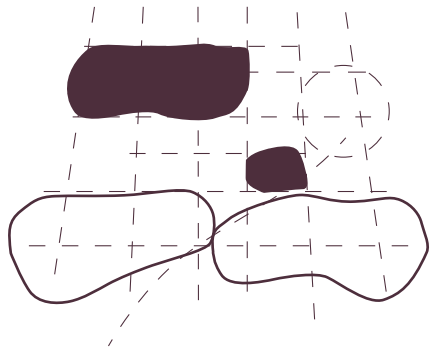
Seeds for women

- contrast between front and back | live and work zone | individual and collective | bamboo and earth | ephemeral and monumental | frame structure and load-bearing structure
- women's priorities during floods translated into plinth heights for different spatial zones
- the collective and individual are delineated clearly, so it is easy to implement cluster groups and infrastructural systems

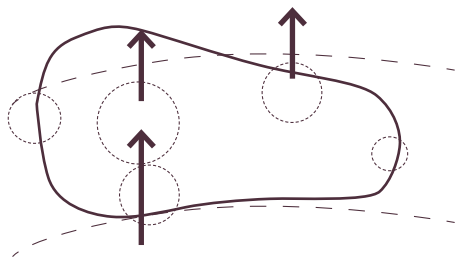
Shearing layers for women

- ensure women have access to materials and construction by using a grid (a scale) centred around women
- reduce time women spend in building maintenance
- close loops as much as possible to allow circularity of construction

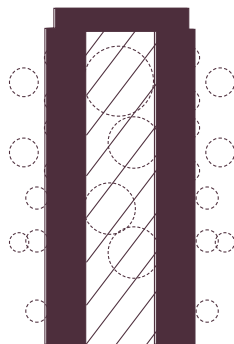
CREATING A HIERARCHY OF COLLECTIVE ACTION



TERRITORY



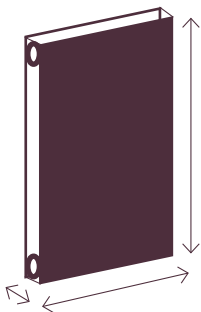
VILLAGE



CLUSTER

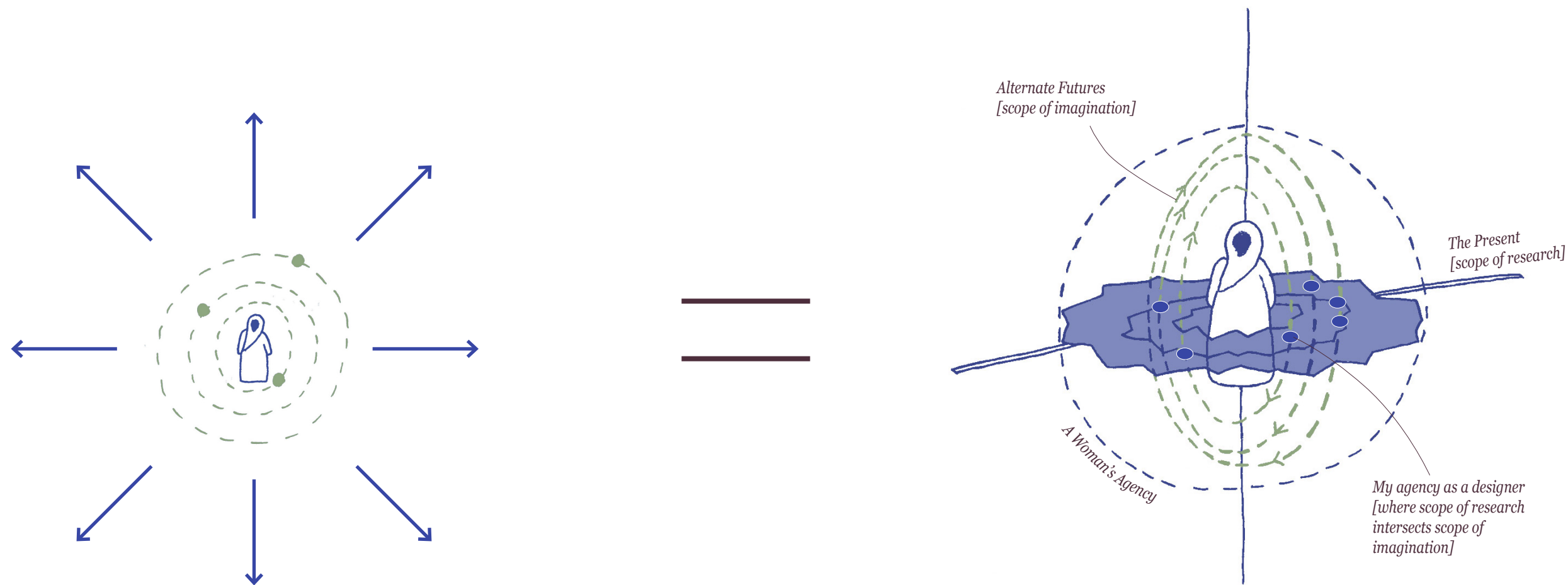


DWELLING



DETAILS

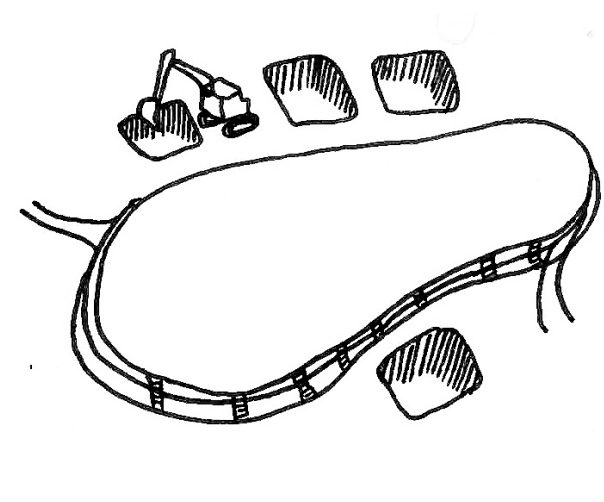
CREATING A HIERARCHY OF COLLECTIVE ACTION



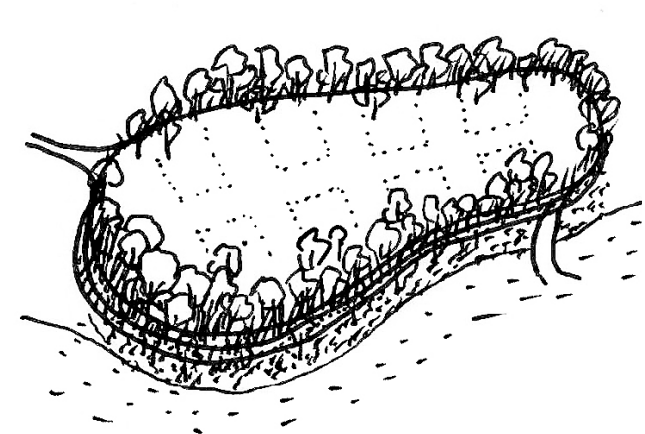
EXPANDING A WOMAN'S SPHERE OF AGENCY IN THE HAORS



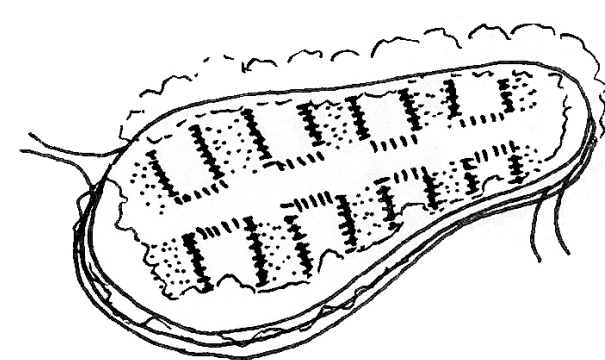
PHASE 1: GROUNDWORK



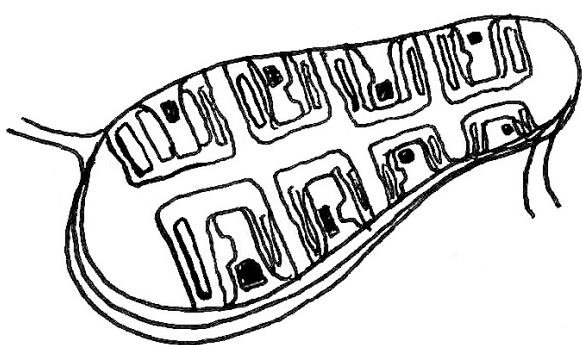
YEAR 1 DRY SEASON
SEDIMENT + CONNECT MOUNDS



YEAR 1 DRY SEASON
SHAPE MOUND

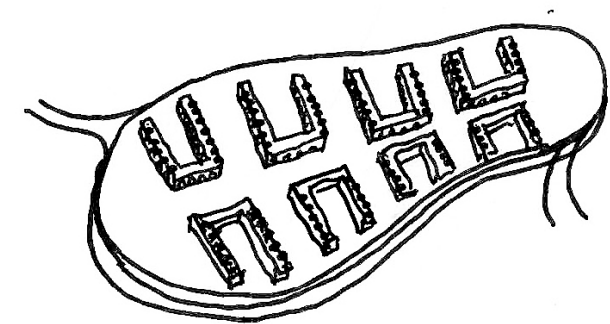


YEAR 1 WET SEASON
BRICK FOUNDATIONS, TANKS
AND UNDERGROUND PIPES

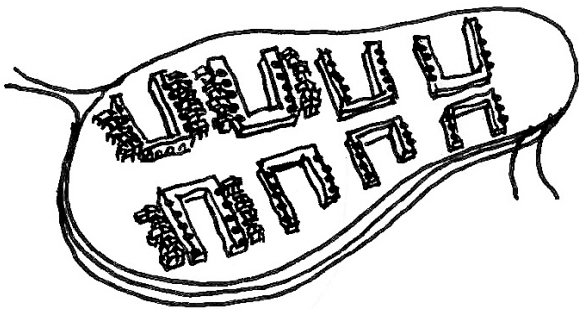


YEAR 2 DRY SEASON
PLINTH AND COMMUNAL POND

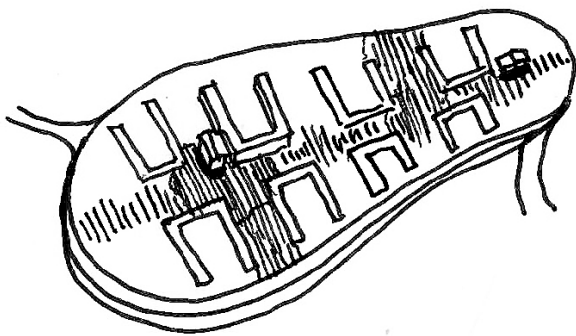
PHASE 2: PRIMARY STRUCTURE



YEAR 2 DRY SEASON
COMMUNAL SPINE

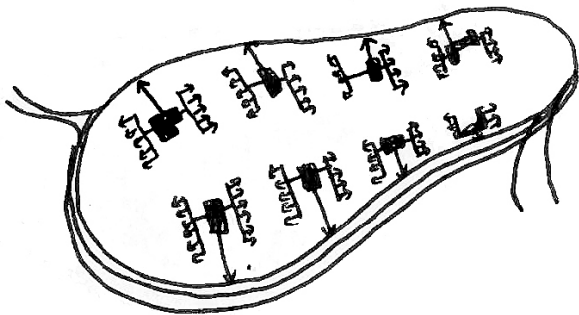


YEAR 2 DRY SEASON
BAMBOO DWELLINGS

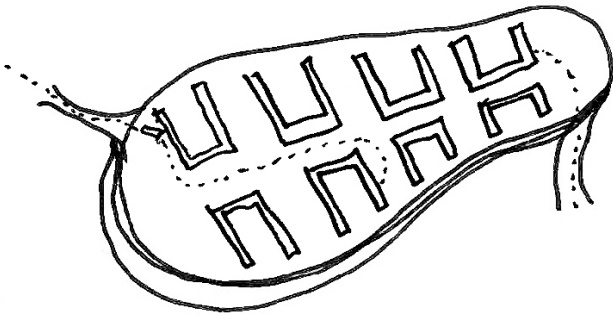


YEAR 2 DRY SEASON
AMENITIES

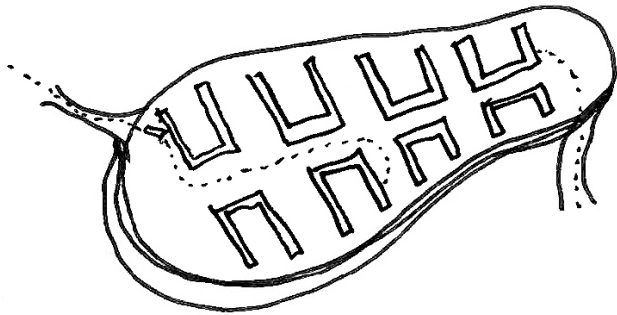
PHASE 3: DWELLING INFILLS AND FIT-OUT



YEAR 2 WET SEASON
BIODIGESTER AND TANKS
RUNNING

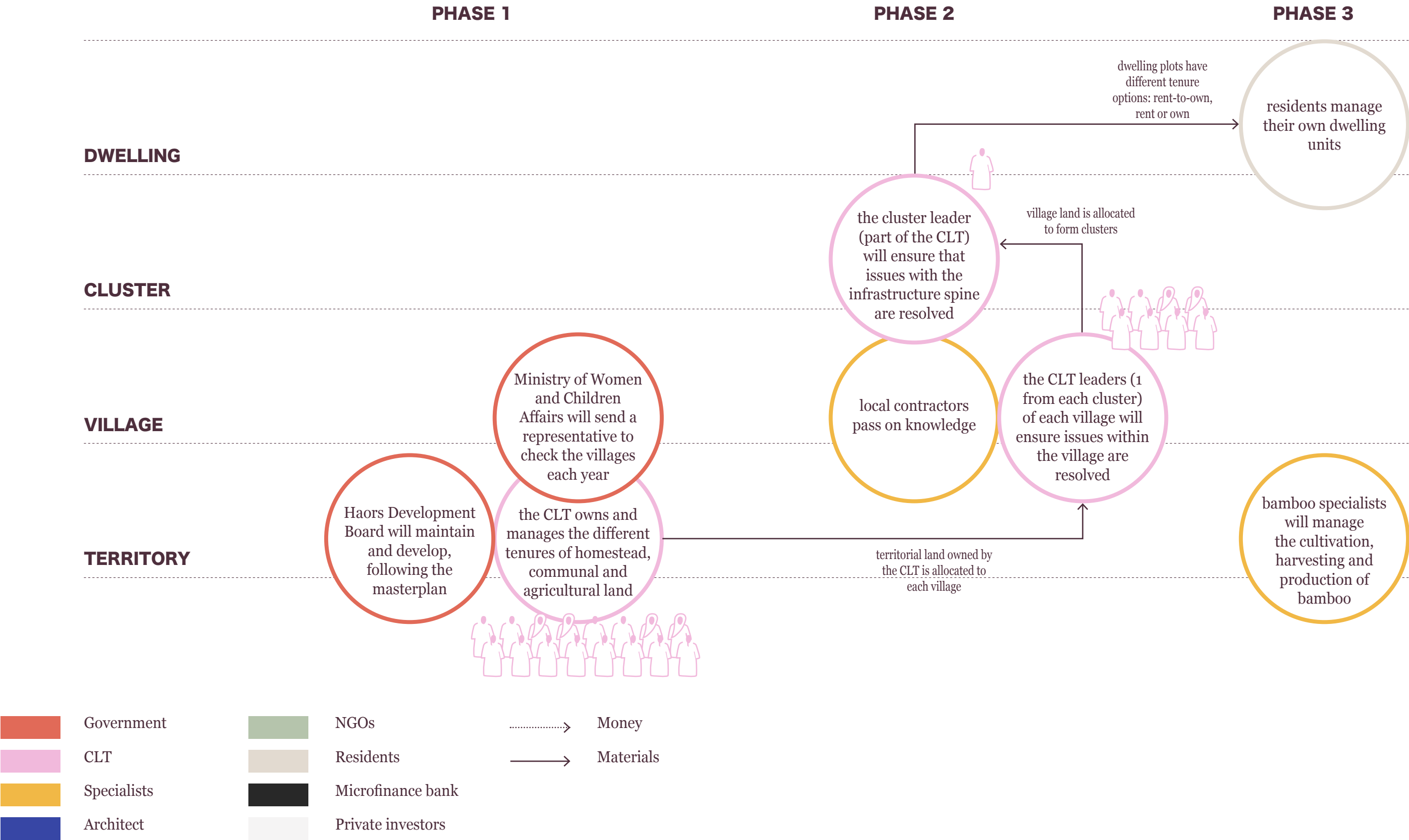


DRY SEASON
WALL AND FLOOR PANELS

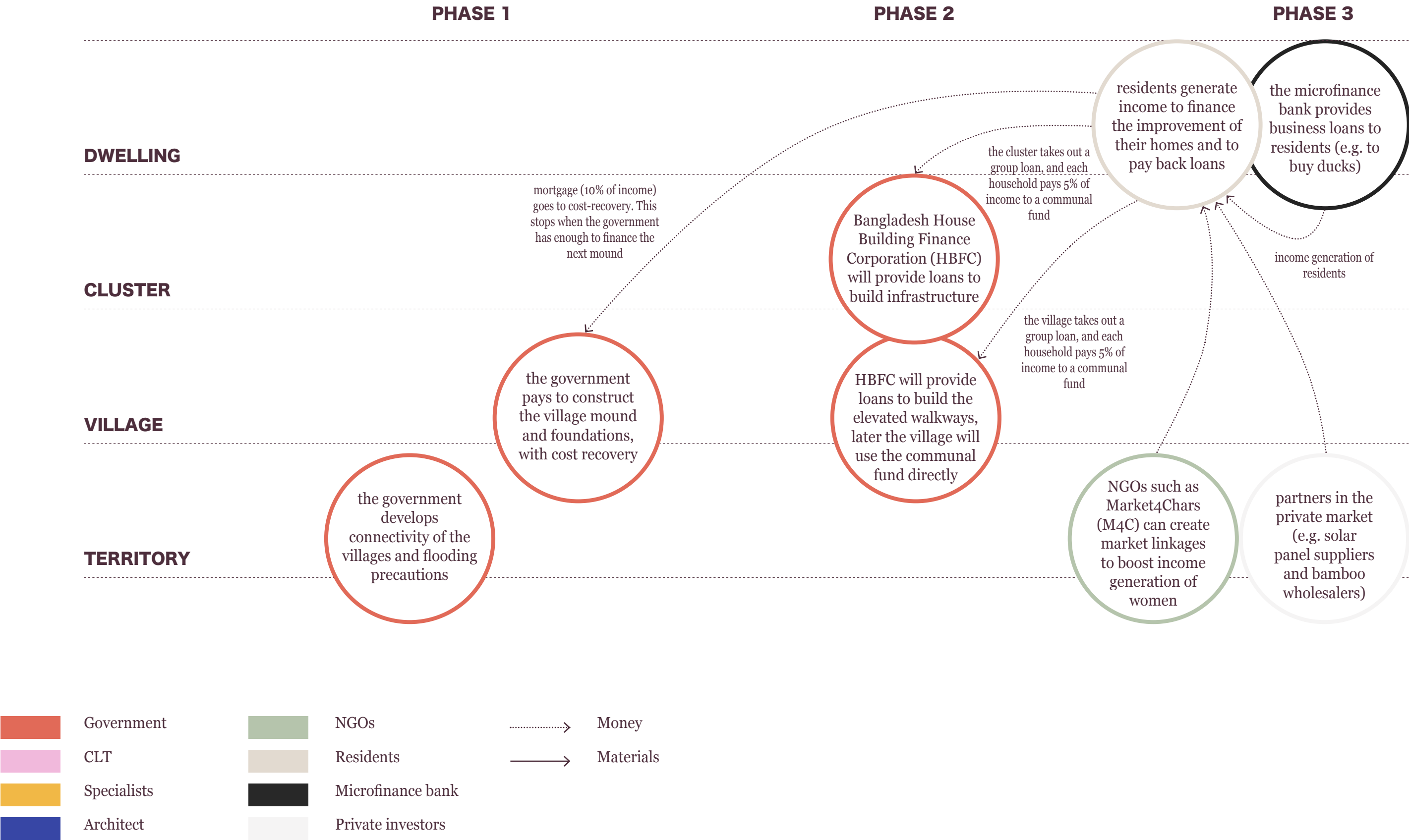


YEAR 2 WET SEASON
FURNITURE

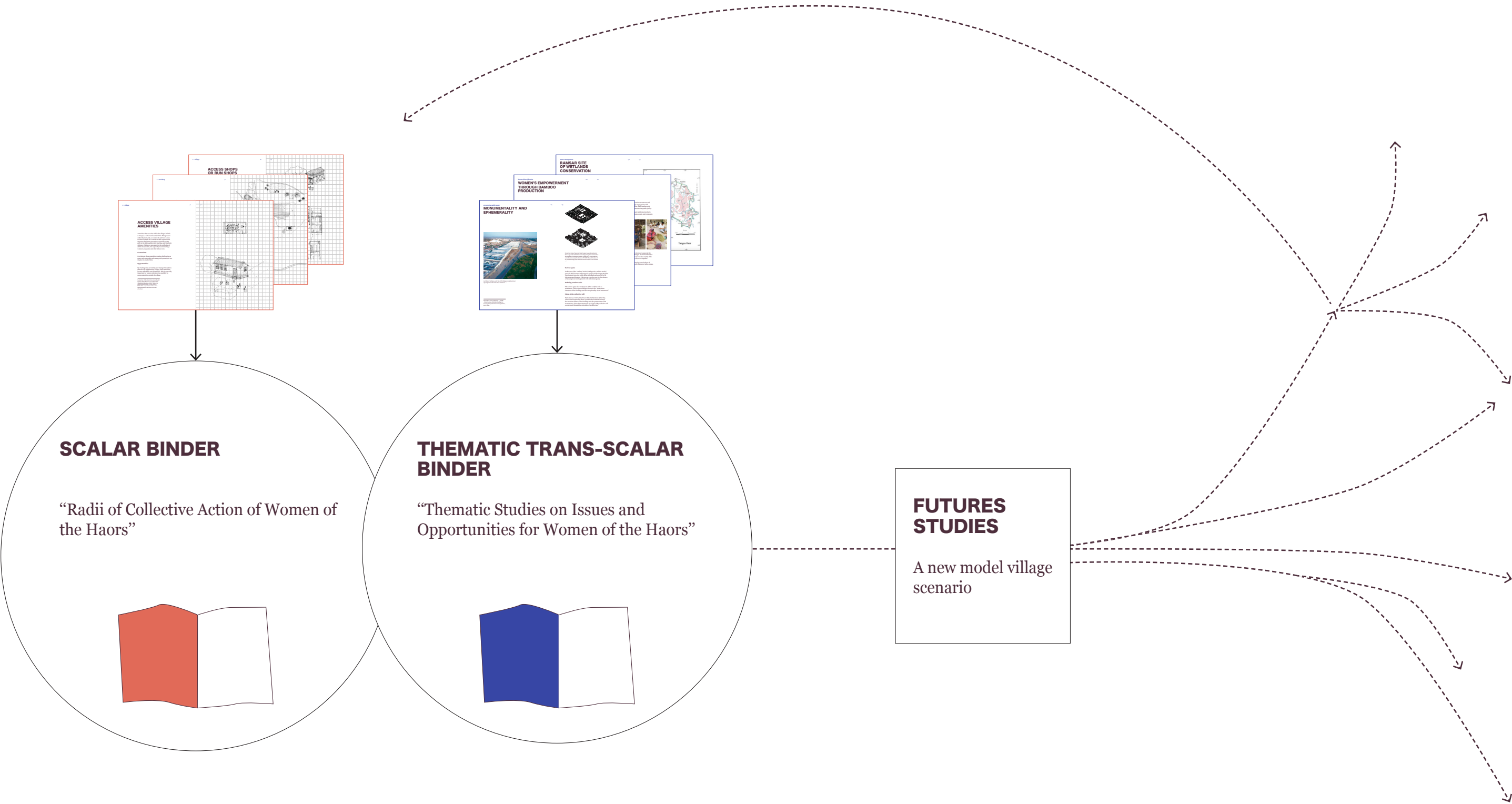
SUSTAINABILITY

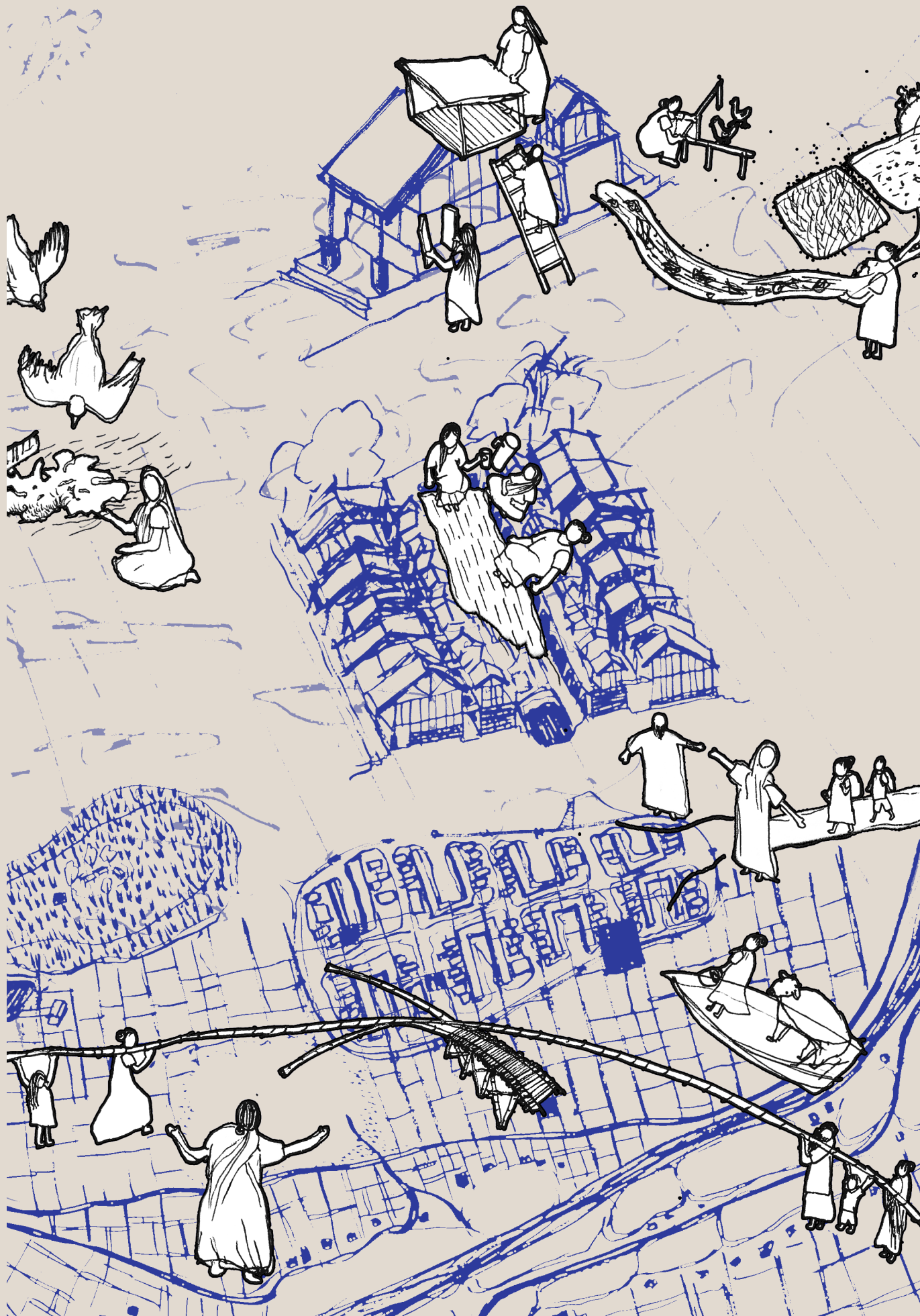


REPLICABILITY



FEMINIST SPATIAL PRACTICE





imagining an alternate
feminist future to
increase women's
access to resources

HOUSING FOR THE WOMEN OF HAORS