

“portfolio

oikopolis
rise of the cooperative

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monsoon '20

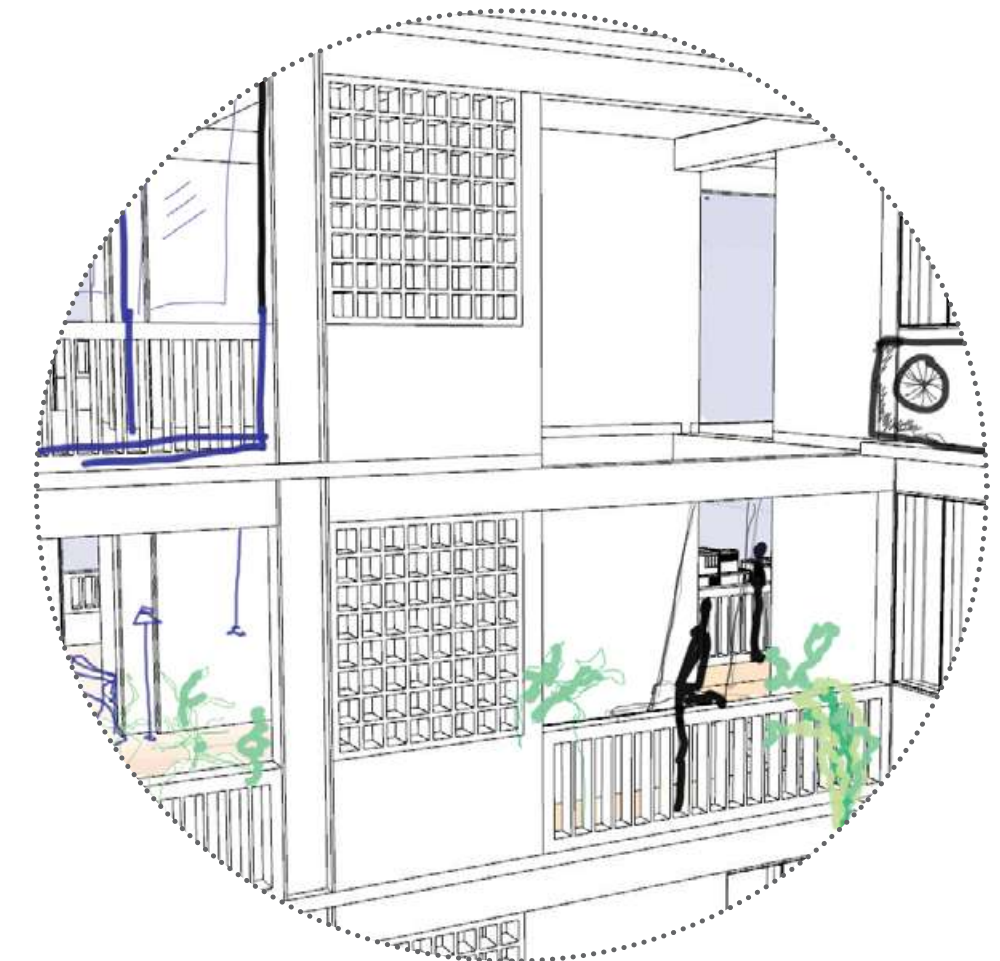
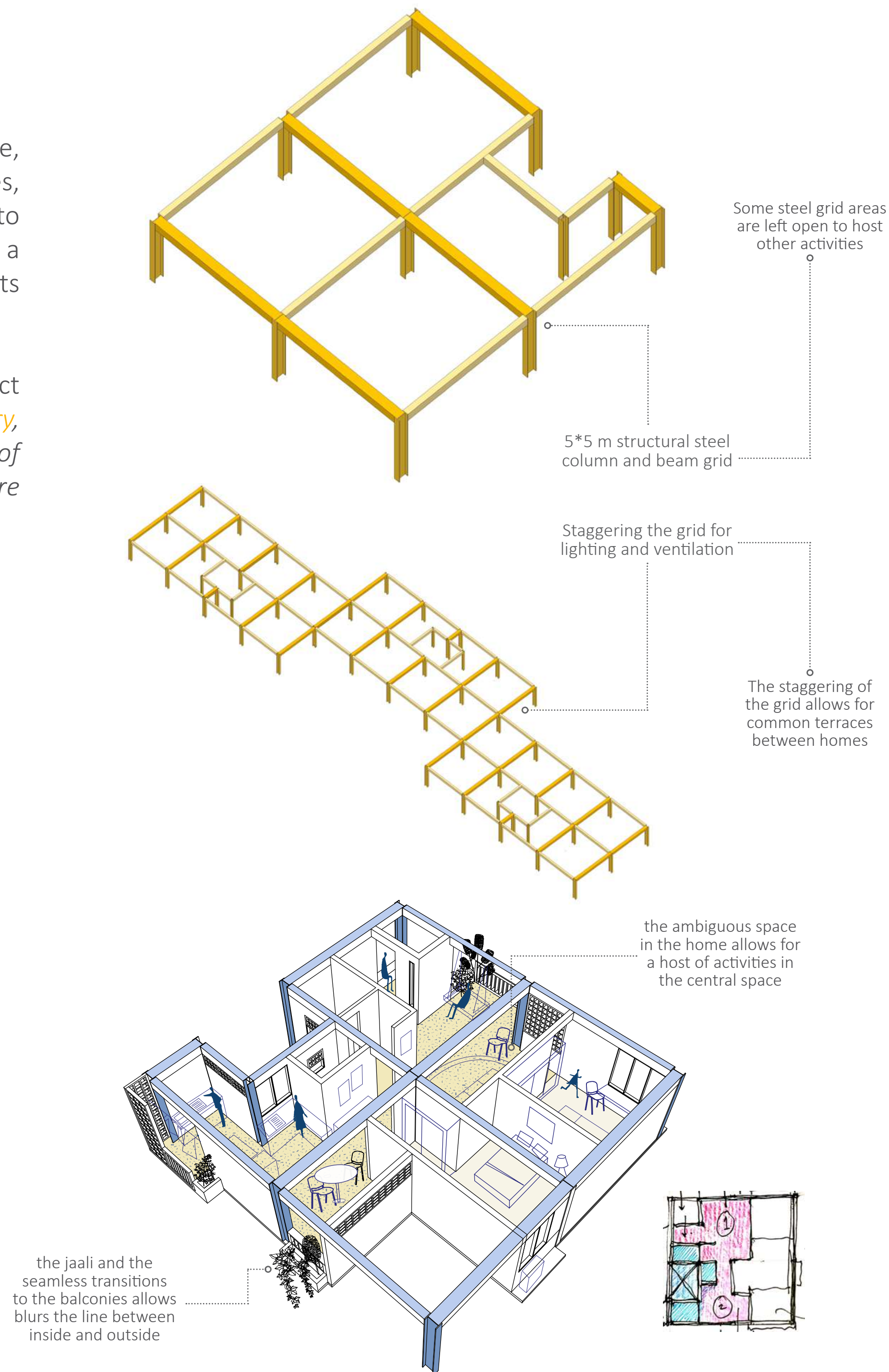
Ujjvala Krishna
UA9116

concerns and ideas in housing

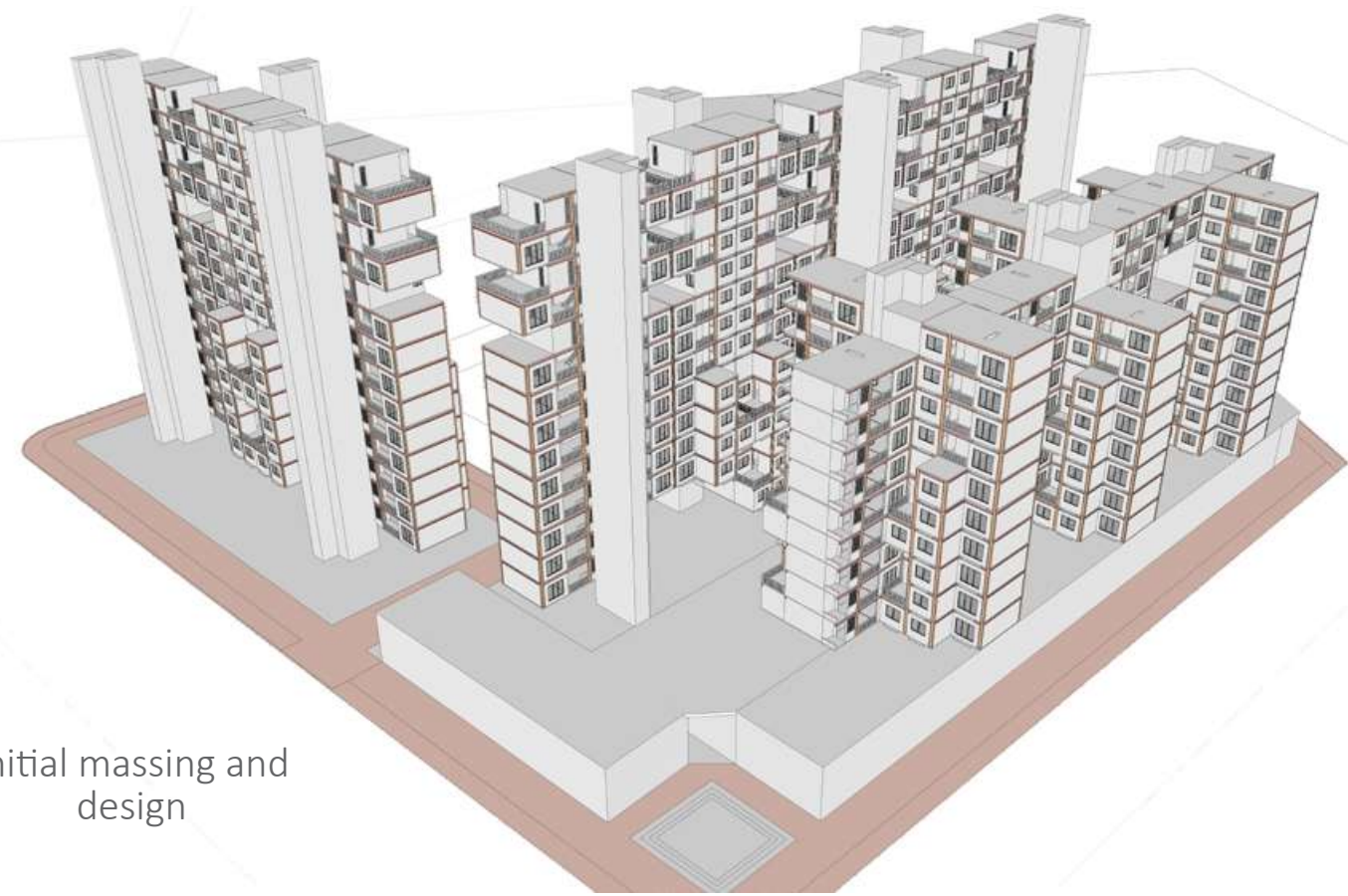
concerns and design

Streets littered with construction waste, debris cluttering the outskirts of our cities, tons and truckloads of material going into landfills. Architecture leaves in its wake a mound full of waste, and we as architects seem to be happily oblivious of this.

This redevelopment housing project proposal, looks to *create a cycle of recovery, both in the process of the demolition of the existing structure as well as the future redevelopment of the newly built.*



“ Creating this cycle of recovery and reuse though is not seen as a separate entity, but rather works in tandem with a host of other concerns within the realm of housing. The units are themselves *configured to create a connect with the outside, to blur the lines between the interior and the exterior, and to break away from the fixed spaces usually found in apartments, by creating one large ambiguous space within each home.*



Initial massing and design



Massing development on the 5*5 grid



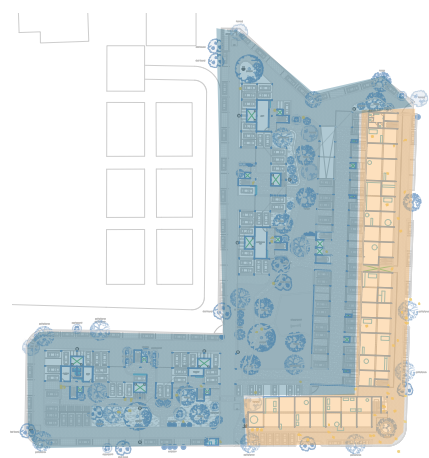
Final massing and site development

Homes arranged according to the staggered grid across the site based on margins

Podium that sits on top of the two level stilt parking and is accessed from the commercial area and the ground floor

Cutouts in the overall mass of the project due to the units variations

Commercial Area on two floors that opens to the city



“

Following the concern behind the project, each inhabitant will be given a **User Manual for future reference**, to possibly realise the potential of their individual homes in the cycle of reuse and recovery, and see how each material within their home will be recovered and put to approximate uses.

The site of the project is divided such that one part remains open to the public and is accessible by all, while you, as inhabitants get to go deeper into the site to access the residential area.



Phase 2 of demolition

24 units demolished in second phase
done after basic structural system and flooring / plastering and WC/toilet is done in new units

each unit has one bedroom and one living room- to house 4 individuals- or two couples/families






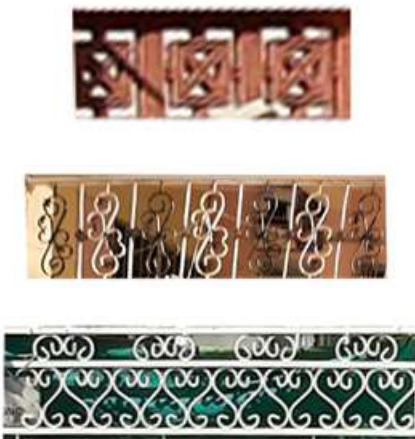
one bathroom and kitchen to be shared by 4 individuals

Accomodate 96 individuals living on site for 20 months

Phase 1 of demolition

180 units demolished in the first phase
Individuals working on site shift to the constructed units after phase 2 demolition

development and phasing of demolition
massing development

Material	Volume Recovered for every 2 Units	Volume Recovered for 204 Units	15% additional construction	Total Volume of material recovered	State of Material Recovered	Reuse and Recycling possible
<div>Brick</div> 	55.394 cubic metre	5650.19 cubic metre	847.5 cubic metre	6497.69 cubic metre	<p>every cubic metre of volume holds approximately 494 bricks</p> <p>32,09,859 bricks recovered</p> <div> <div>6,41,972 full bricks</div> <div>3248.75 cubic metre volume of brickbats</div> <div>1949.25 cubic metre volume of brick rubble</div> </div>	<p>Full bricks will be used in the construction of the new compound wall 350 m in length</p> <p>51,870 full recovered bricks used</p> <p>Remaining full bricks sold for low cost and temporary construction at the cost rs. 4/brick</p> <p>Brickbats used for foundation fill</p> <p>Brickbats and brick rubble sold to recycling agency like Kesarjan by volume</p>
<div>Concrete</div> 	30.42 cubic metre	1034.28 cubic metre	155.14 cubic metre	1189.42 cubic metre	<p>concrete rubble recovered from site, to be sent for recycling and reuse</p>	<p>concrete rubble crushed to from new aggregate for fresh concrete</p> <p>broken concrete pieces to be reused as concrete pavers</p> <p>concrete rubble recycled into concrete grass pavers and blocks</p>
<div>Doors</div> <div>Windows</div> <div>Gates</div> <div>Railings</div>	   			as individual elements from original homes	<p>recovered as whole elements to be reused as objects carrying value in the new homes</p>	<p>reused in the constructed homes in place of new elements, according to inhabitant's chioce</p>

recovering material from original structure on demolition for reuse and recycle

material recovery and reuse

“ addressing the concern of material recovery and reuse

Costs

Item of Consideration	Approximate Costs	
construction cost (21460 rs/sqm) fsi + 5%	~ 58 cr	took rs.2000/sqft for buildable fsi and added 5% extra fsi to it
14,000 rent for 204 units for 36 months	~ 10.3 cr	selling/reusing recovered demolition material
one-time transportation fee 10k for 204 houses	~ 0.2 cr	material recovery cost offset
architects fee 2%	~ 1 cr	
fsi fee- Jantri rate	~ 6 cr	
demolition- Rs.240/sqm	~ 0.26 cr	
Rera permission expense	~ 0.03 cr	
structural engineer's fee	~ 0.053 cr	
register development agreement	~ 0.22 cr	
scrutiny fees	~ 0.015 cr	
fire permission	~ 0.0025 cr	
miscellaneous	~ 1 cr	
landscaping 2690/sqm	~ 1.614 cr	area of landscaping to be taken as ~ 6000 sqm
recycling agency fees	~ 0.5 cr	
developer's overheads	~ 1.5 cr	
total	~ 81.19 cr	

Gains

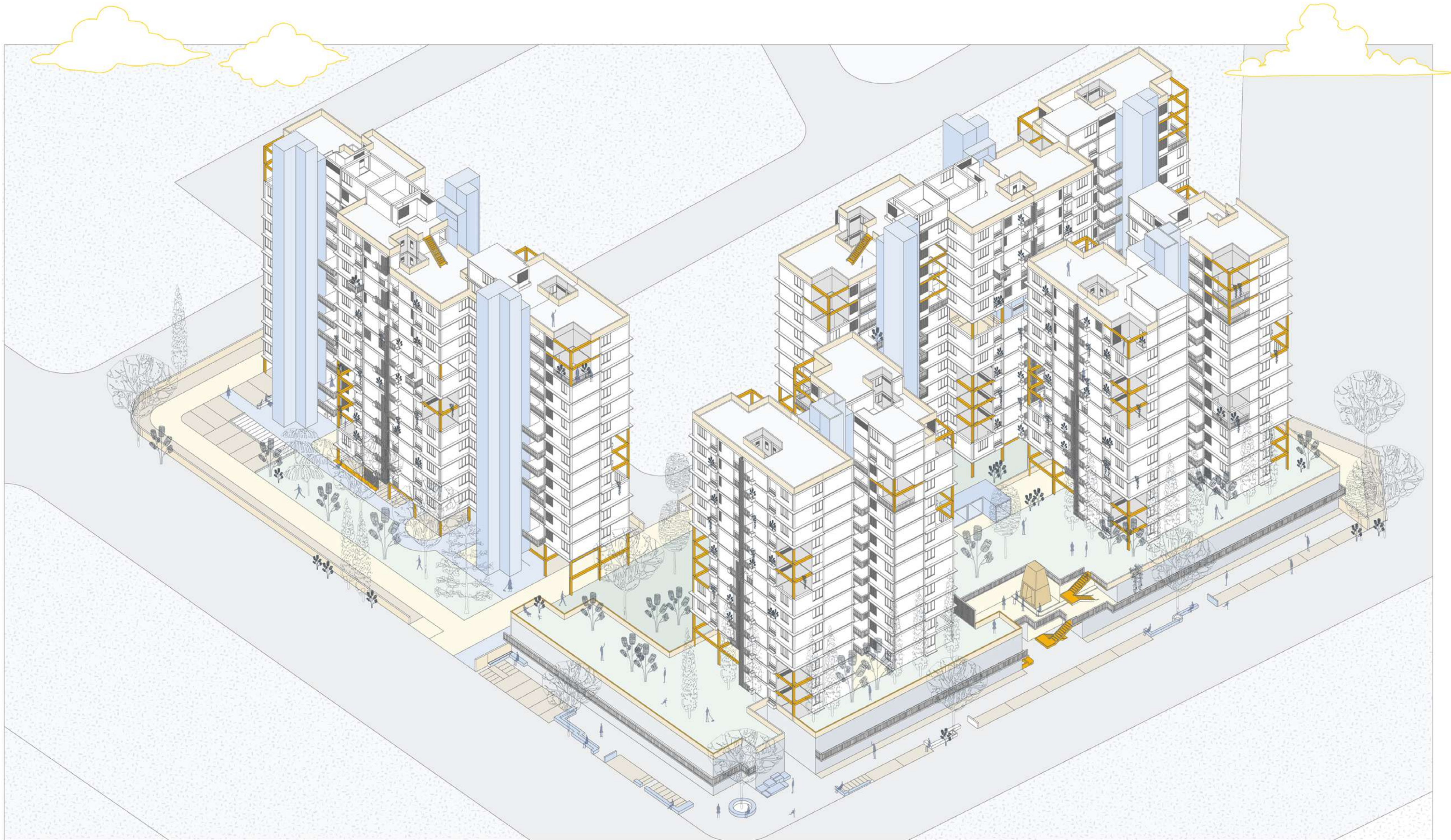
Item of Consideration	Approximate Costs
saleable residential area = 4569 sqm	~ 39 cr
saleable 8.7% area commercial	~ 47.12 cr
total	~ 86.12 cr

Profits for Developer

Approximate Profit	~ 4.92 cr
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“ to gauge the commercial viability of the project

profitability calculations



5m 0m 5m 10m

View of the Proposal from the South-East

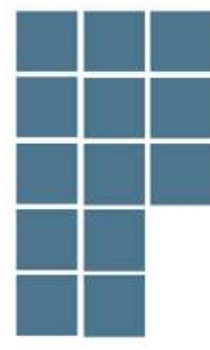
Axonometric View

Sale Component

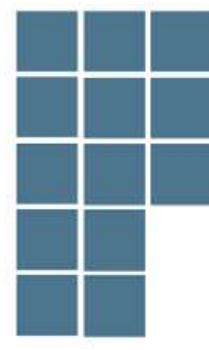
Residential Unit Area



Type A
91.5 sqm.
X 86



Type B
84 sqm.
X 50



Type C
96.5 sqm.
X 40



Type D/E
104.5 sqm.
X 58



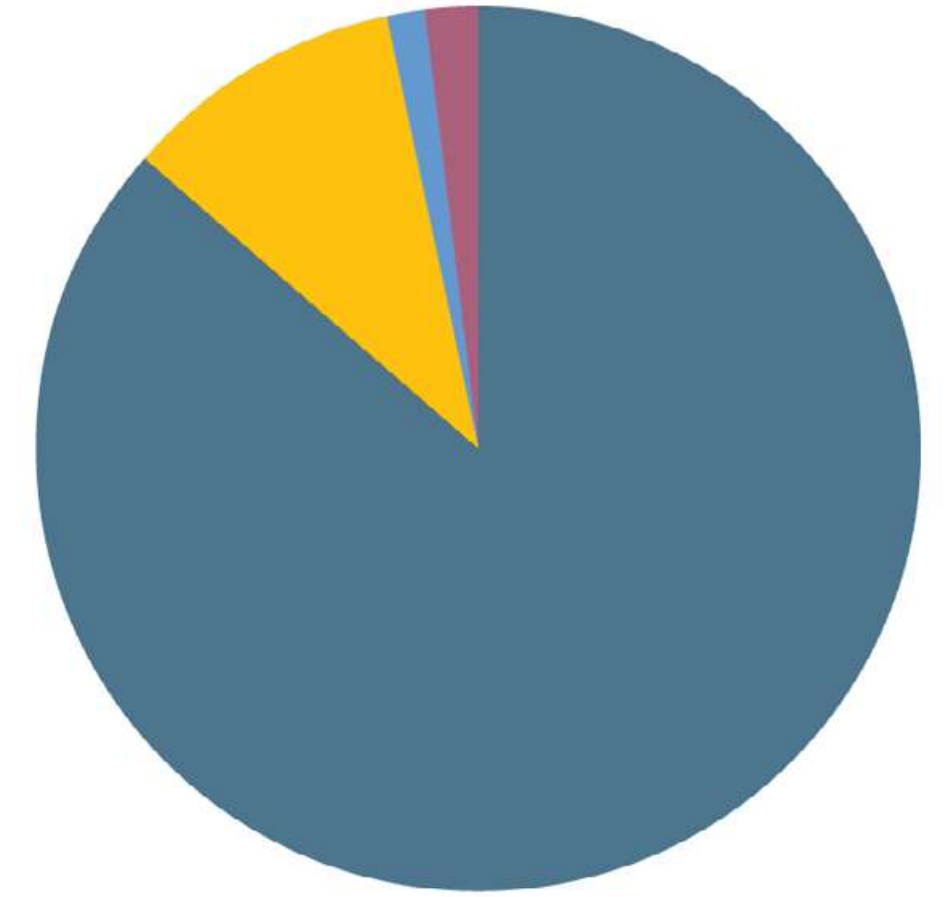
Type F/G
135.5 sqm.
X 9

Commercial Unit Area



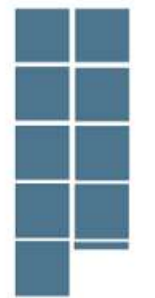
avg 102.3 sqm.
X 24

Total Area %



Non-Sale Component

Residential Unit Area



Base Type
91.5 sqm.
X 204
18666 sqm.

Common Area



3.2 sqm.
X 243
775 sqm.

10 sqm. area



RERA Carpet Area (Units)



Commercial Area



Circulation- (Non-Free of FSI)



Amenities

Parking

Residential



220

Guest



4

Commercial



13



20 Cars



10 Cars

FSI - 2.7

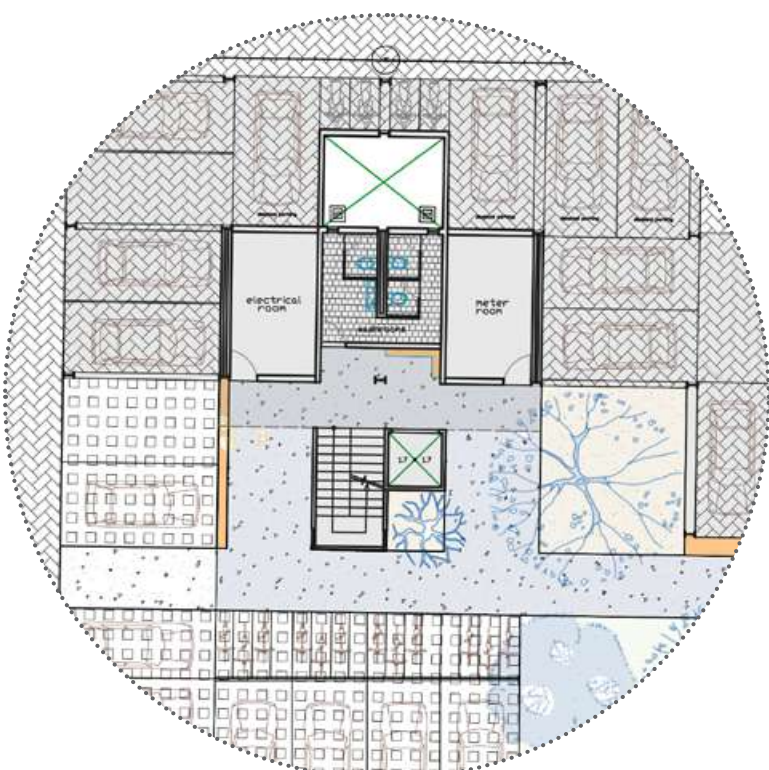
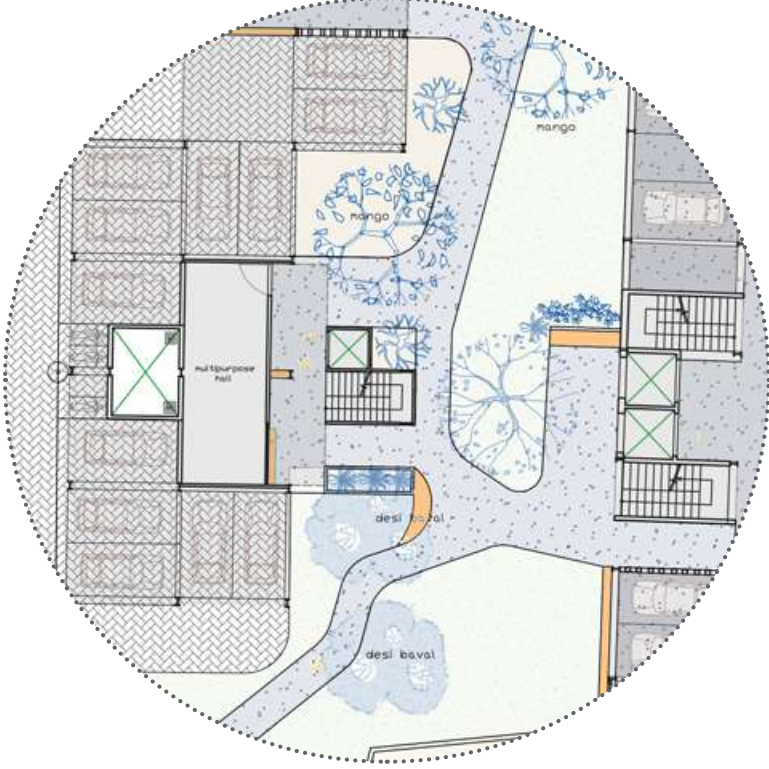
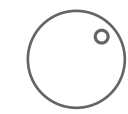
Achieved

parking and ratio of saleable
to non-saleable area

fact sheet

Site plan

Plan the ground level



A
Lift lobby
and the two
level stilt
parking

B
Lift lobby
and the stilt
parking



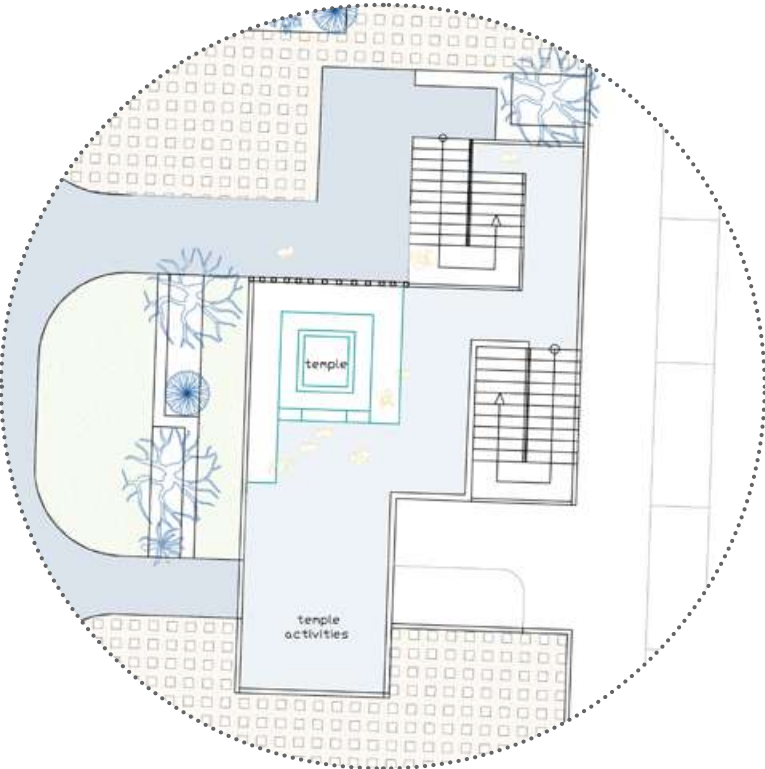
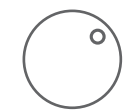
	stone paver tiles		recycled permeable concrete grass pavers
	recyclable ceramic tiles		reused broken concrete paving
	recycled clay brick pavers		earth

	champa		mango
	saptaparni		peltorum
	peepal		desi baval
	asopalav		

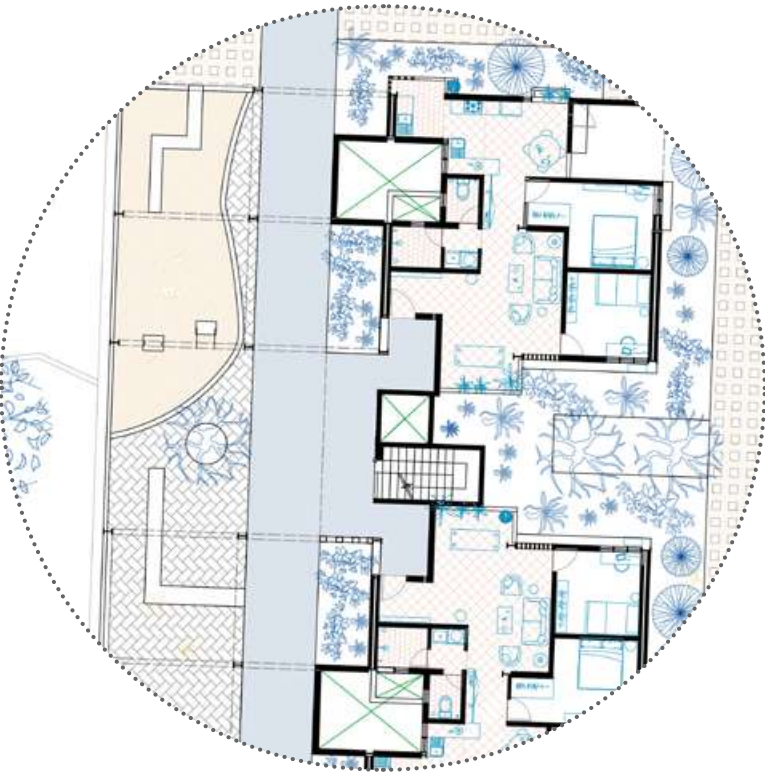
Podium level plan

Plan at the G+2 level

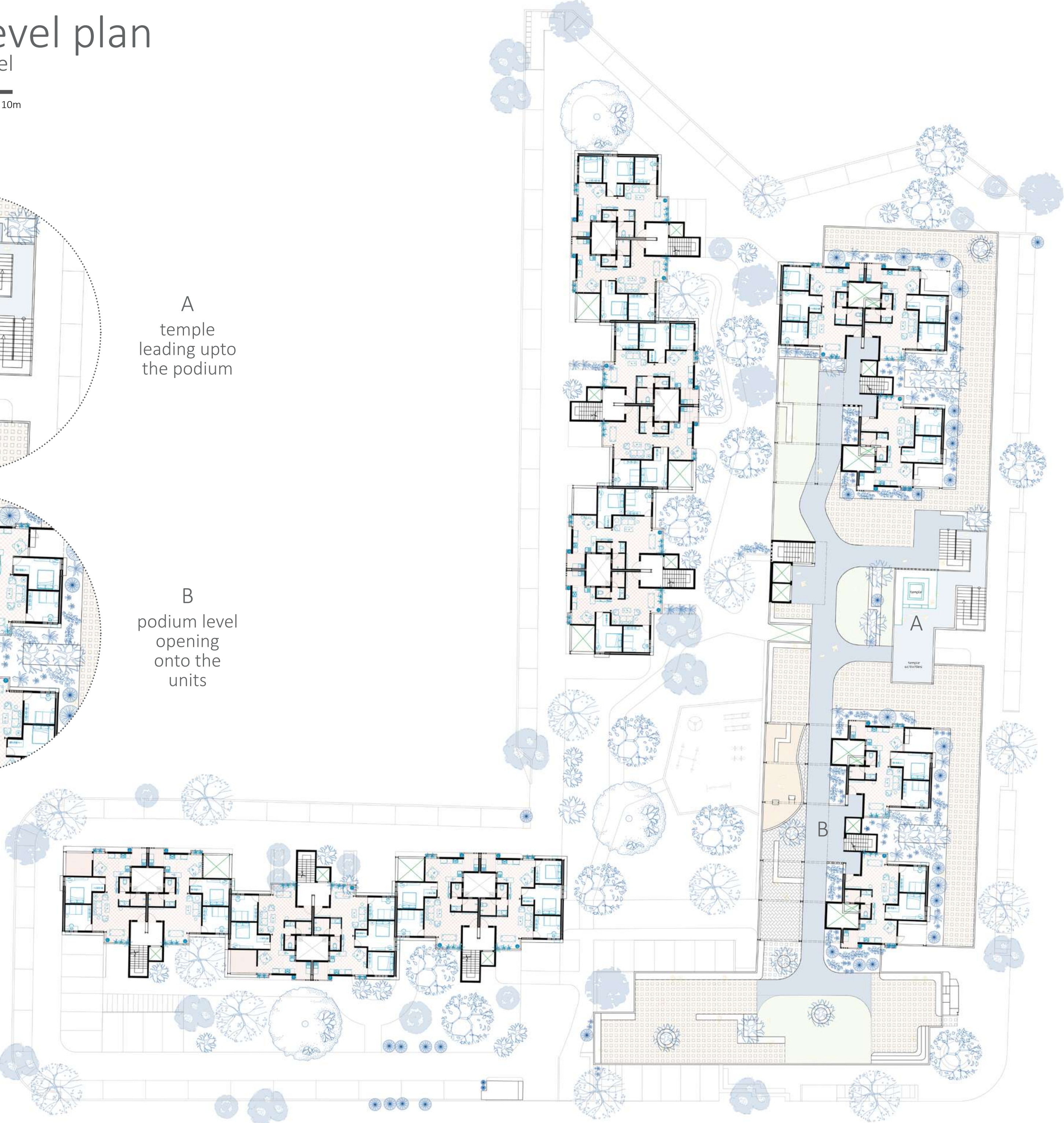
5m 0m 5m 10m



A
temple
leading upto
the podium



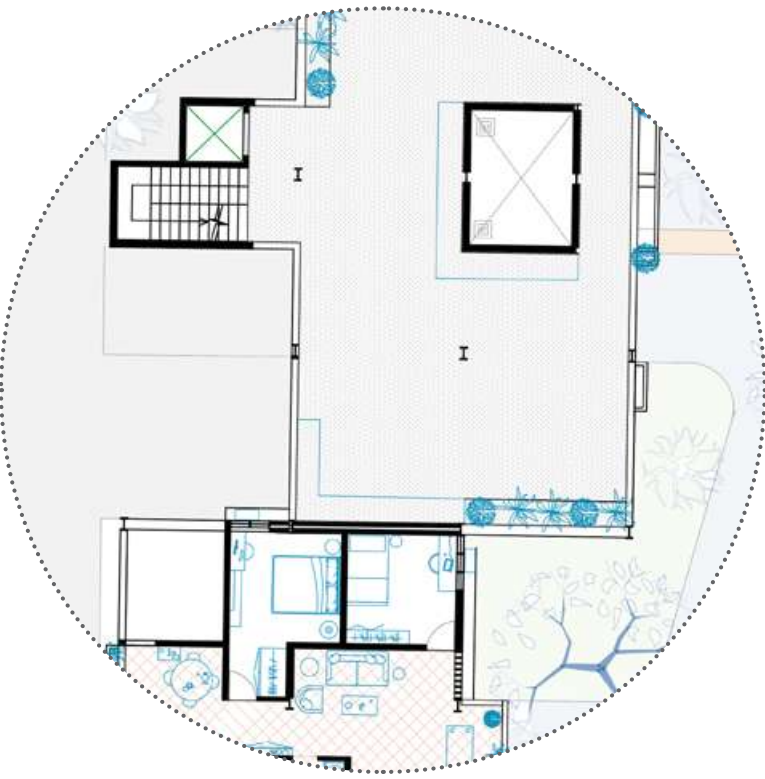
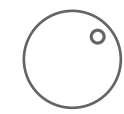
B
podium level
opening onto
the units



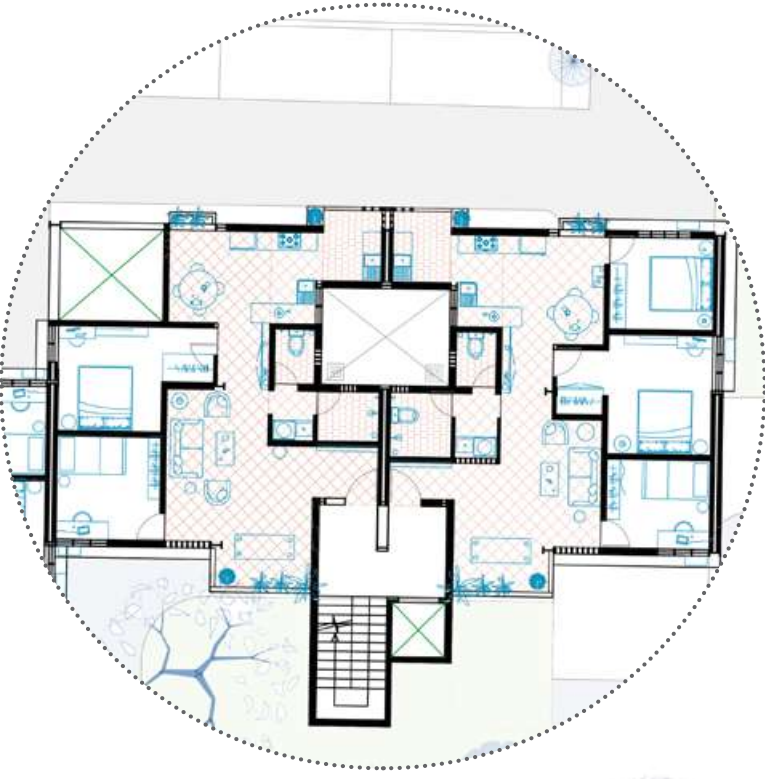
- champa
- saptaparni
- peepal
- asopalav
- mango
- peltoforum
- desi baval
- stone paver tiles
- recyclable ceramic tiles
- recycled clay brick pavers
- recycled permeable concrete grass pavers
- reused broken concrete paving
- earth

Higher Level Floor Plan

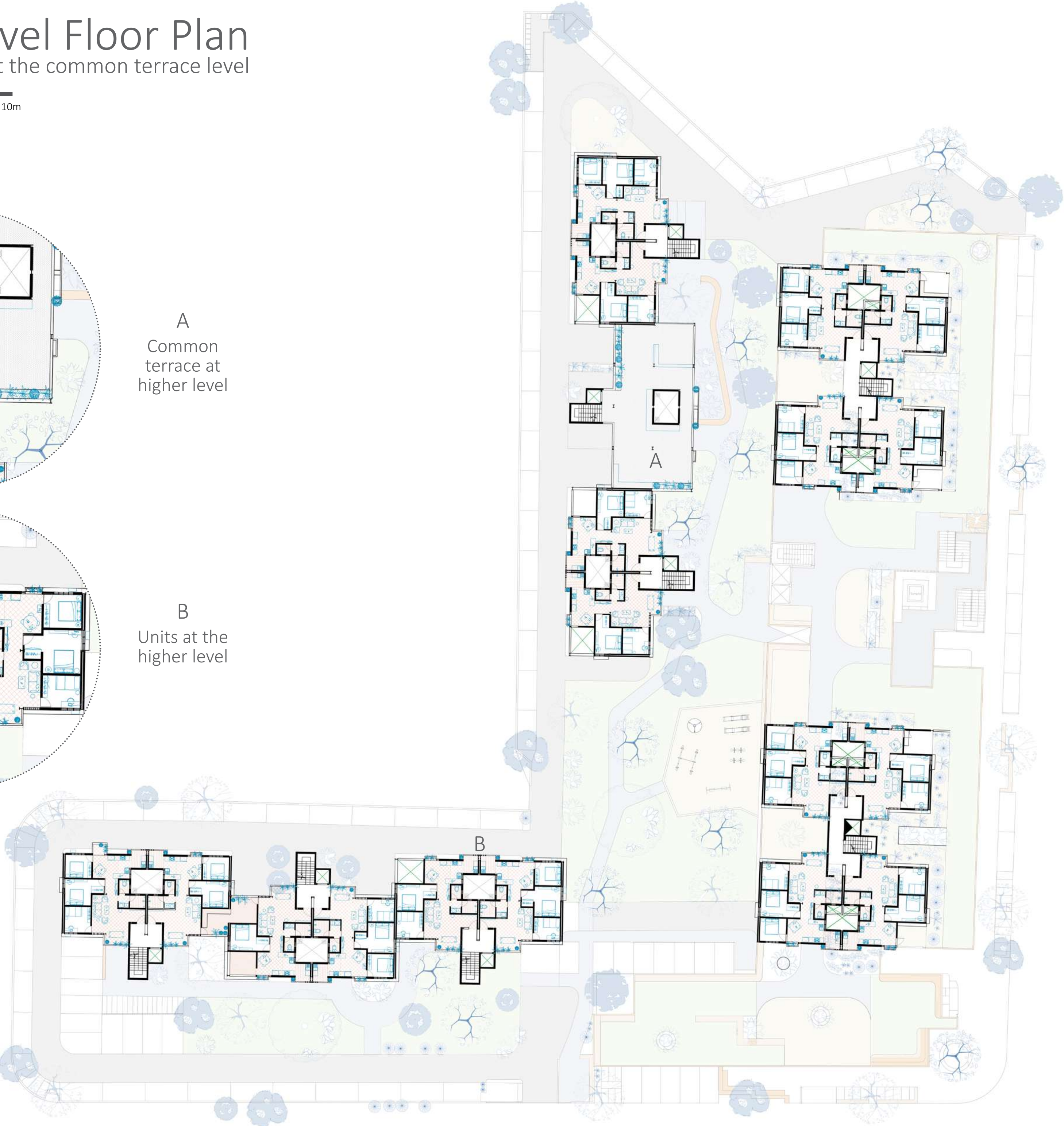
Typical floor plan at the common terrace level



A
Common
terrace at
higher level



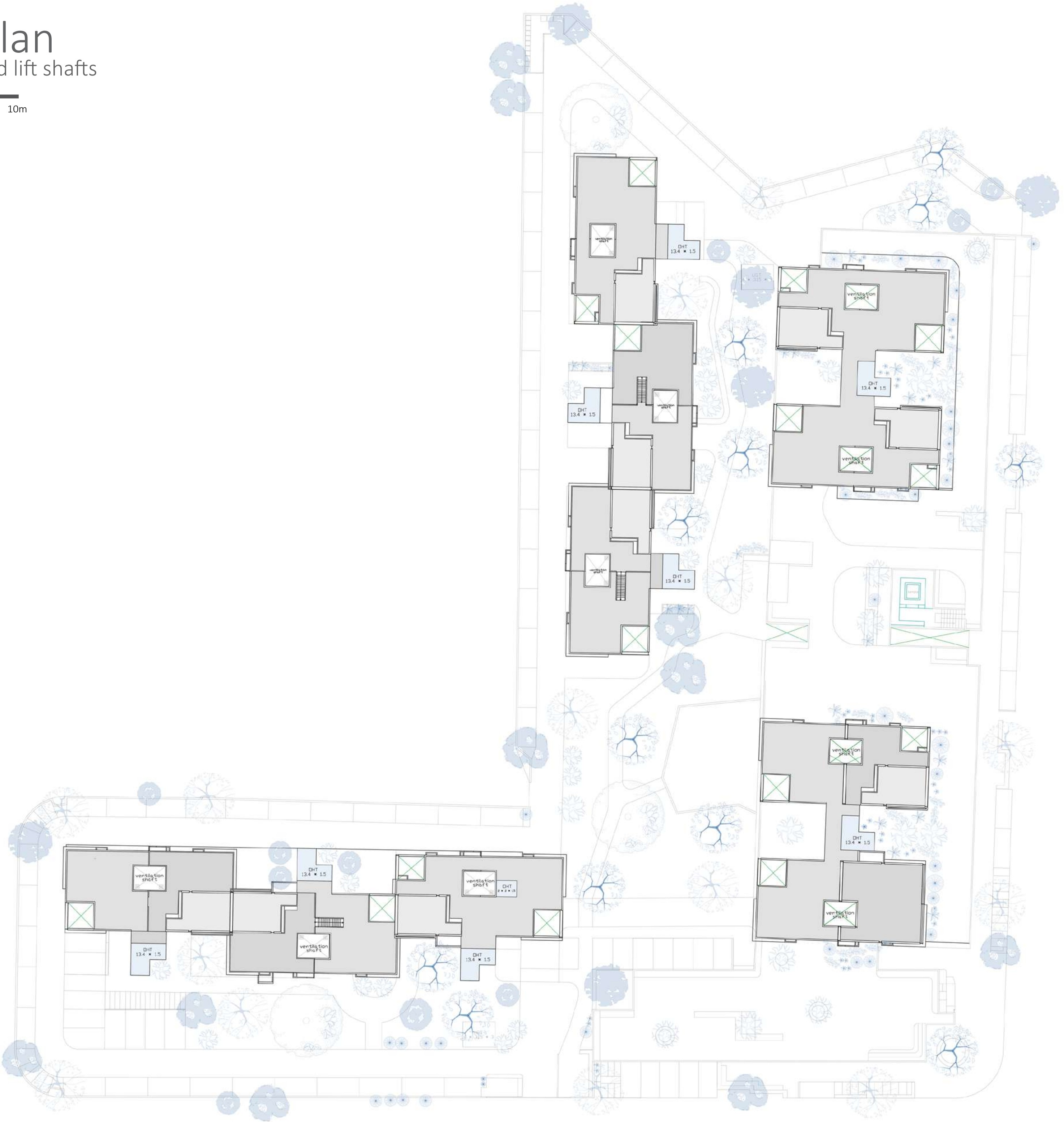
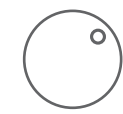
B
Units at the
higher level



- champa
- saptaparni
- peepal
- asopalav
- mango
- peltoforum
- desi baal
- stone paver tiles
- recyclable ceramic tiles
- recycled clay brick pavers
- recycled permeable concrete grass pavers
- reused broken concrete paving
- earth

Terrace Plan

Plan with OHTs and lift shafts

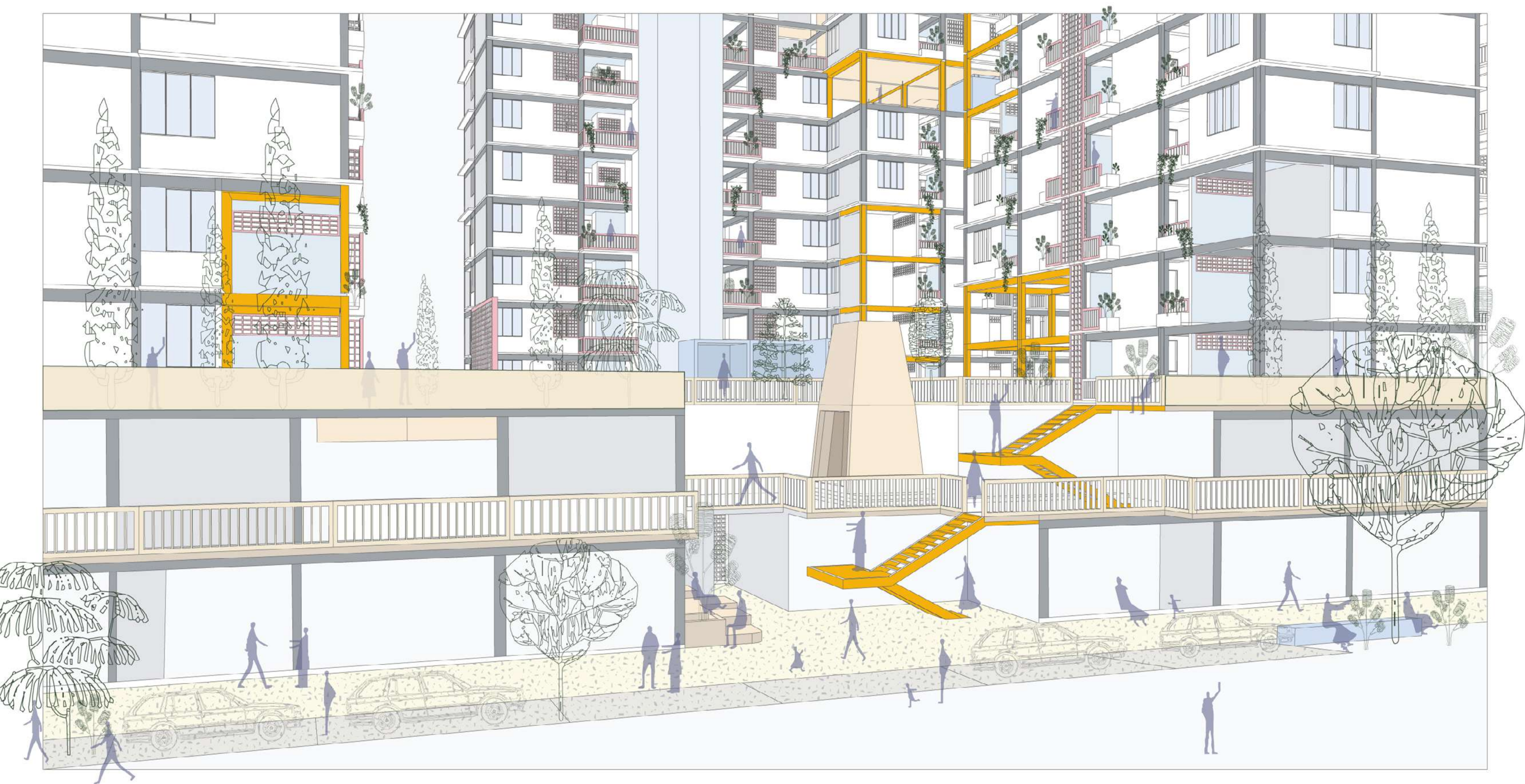


- champa
- saptaparni
- peepal
- asopalav
- mango
- peltoforum
- desi baval
- stone paver tiles
- recyclable ceramic tiles
- recycled clay brick pavers
- recycled permeable concrete grass pavers
- reused broken concrete paving
- earth



5m 0m 5m 10m

View of the Proposal from the 18 m street
View from the street

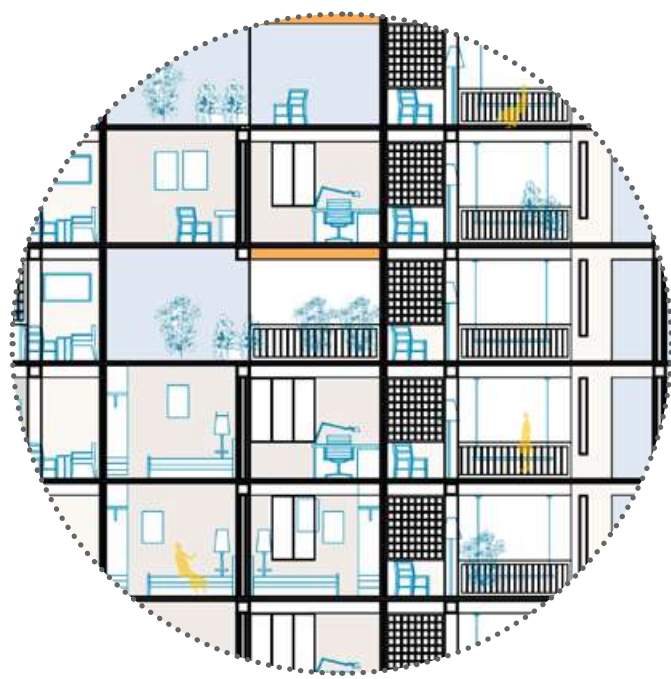


5m 0m 5m 10m

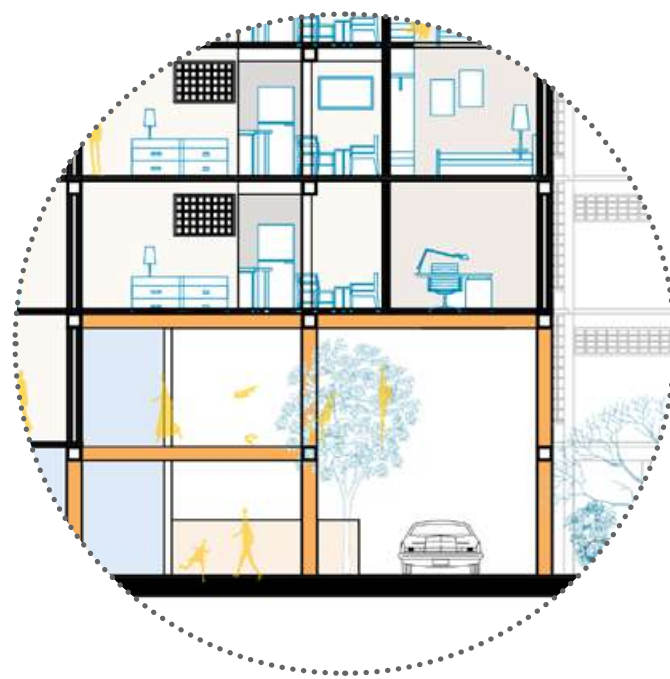
View looking towards the temple from the 12 m street

View of the Commercial space

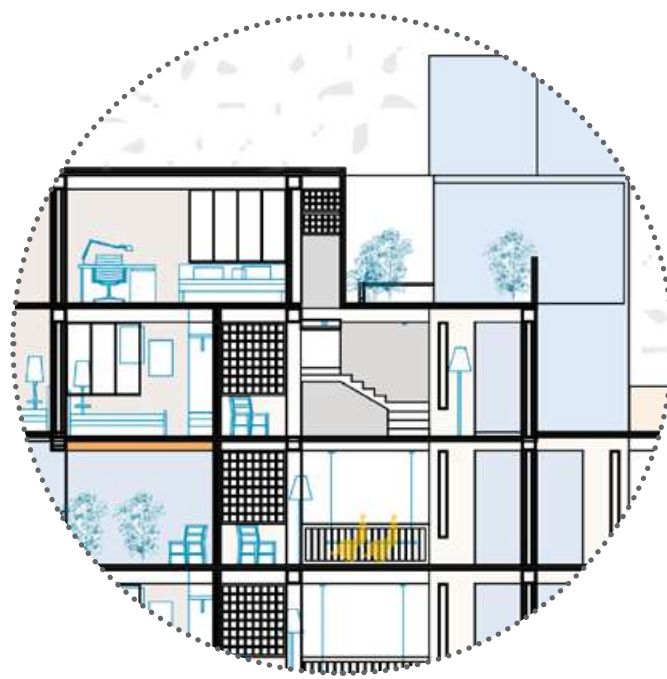
“ the temple is embedded between the podium and the commercial floor, accessible to both the residents and the public



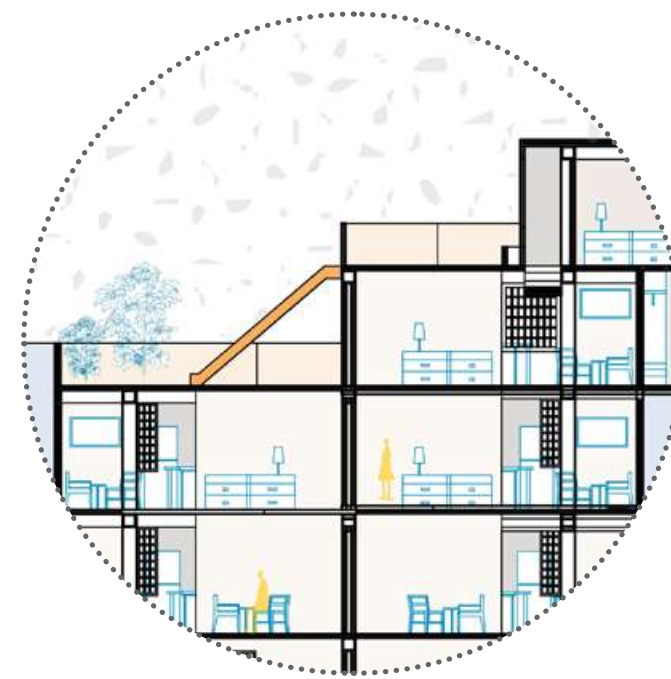
A



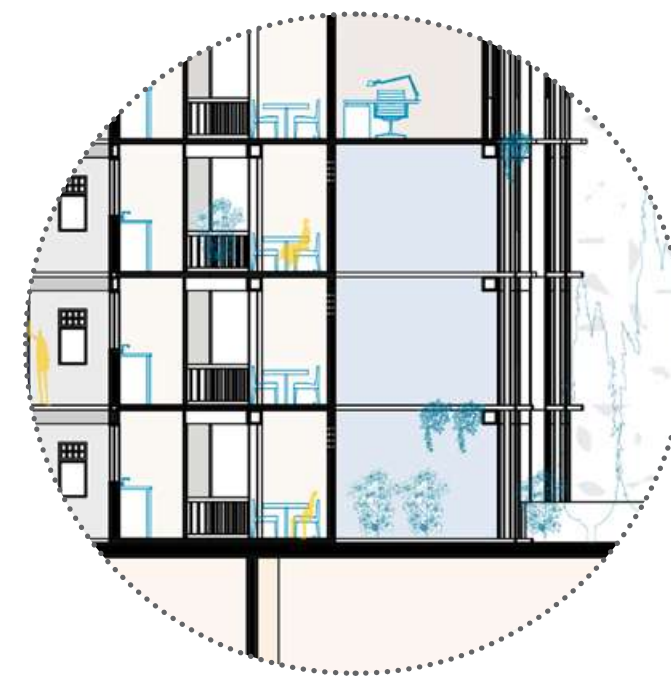
B



C



D



E

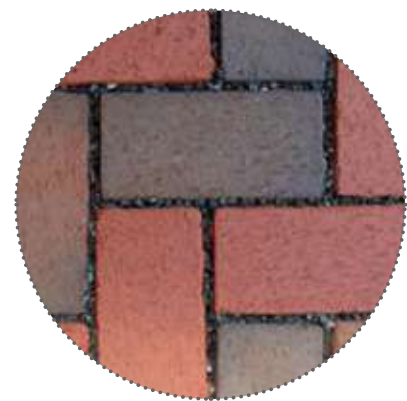
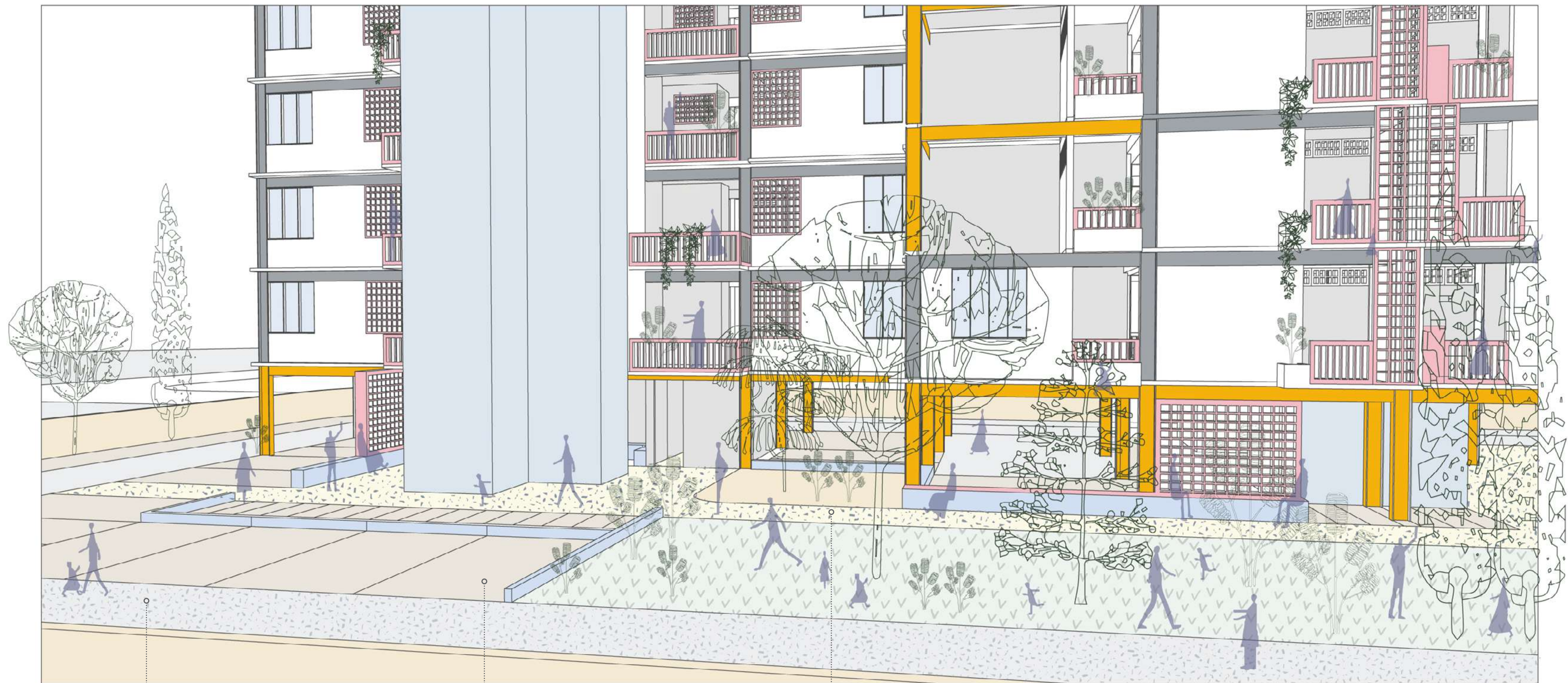


5m 0m 5m 10m

Section cutting through the residential and the commercial

Section AA





recycled
brick pavers



recycled
concrete
grass pavers



reused
broken
concrete
paving

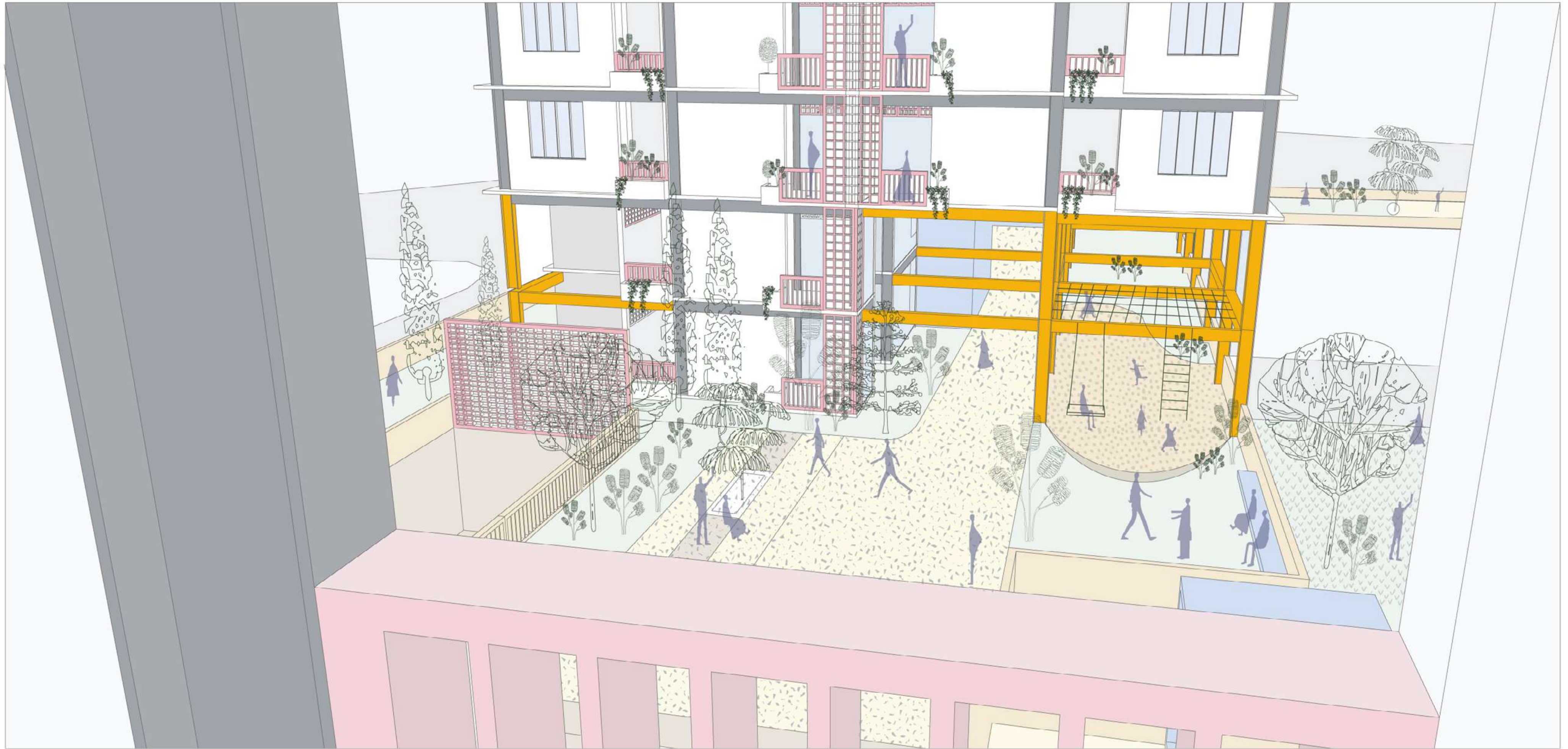
2m 0m 2m 6m

Looking at the lift lobby and the stilt parking below units

View of the stilt level

“

the stilt level incorporates the blurring of the inside and the outside by using jaalis and half walls in the space



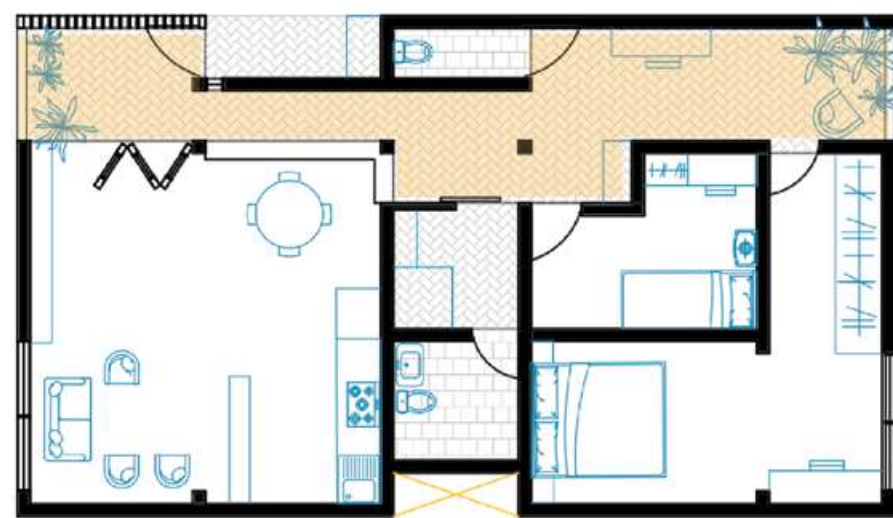
2m 0m 2m 6m

Looking at the lift lobby and the podium above the parking

View of the podium

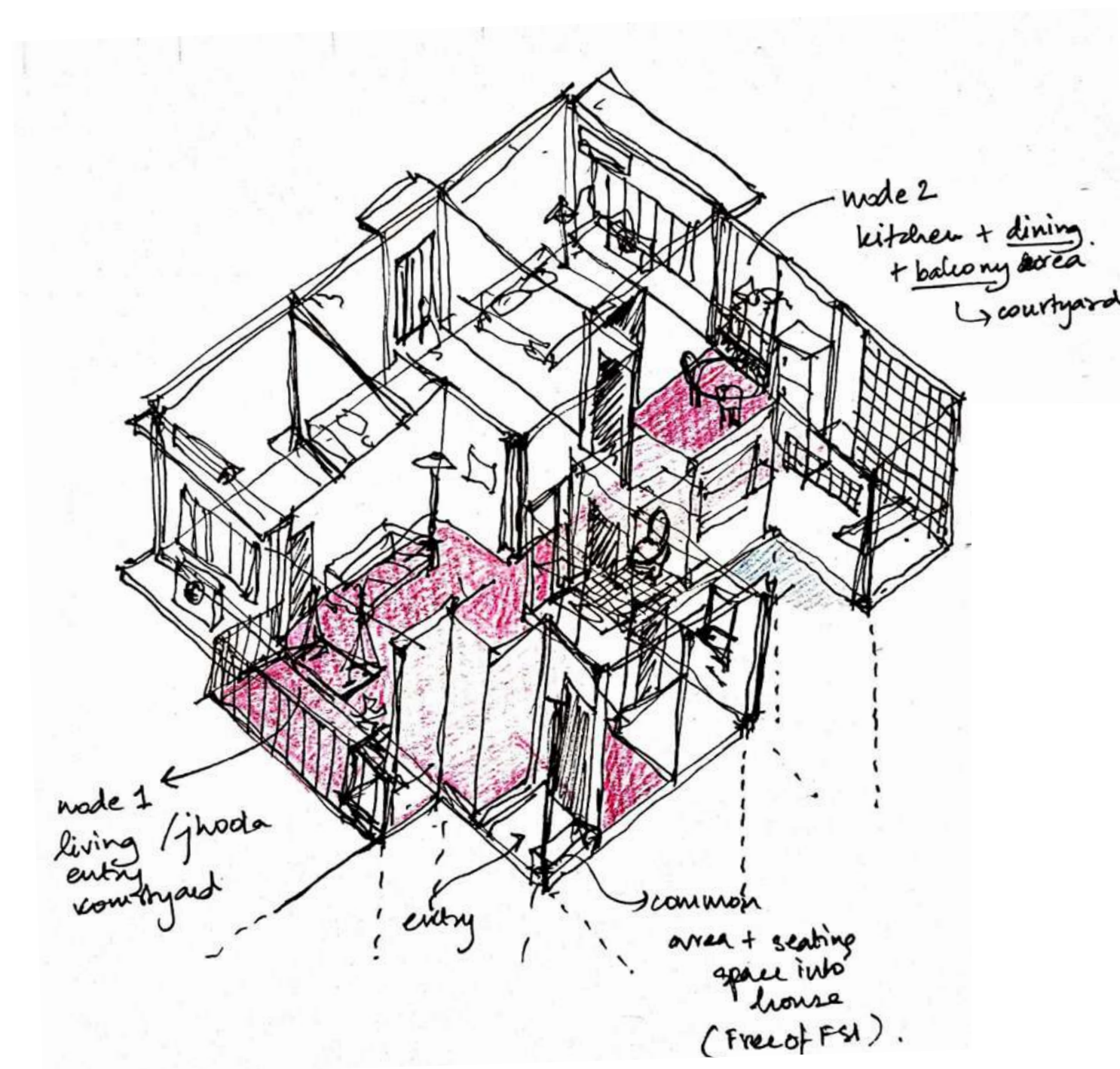
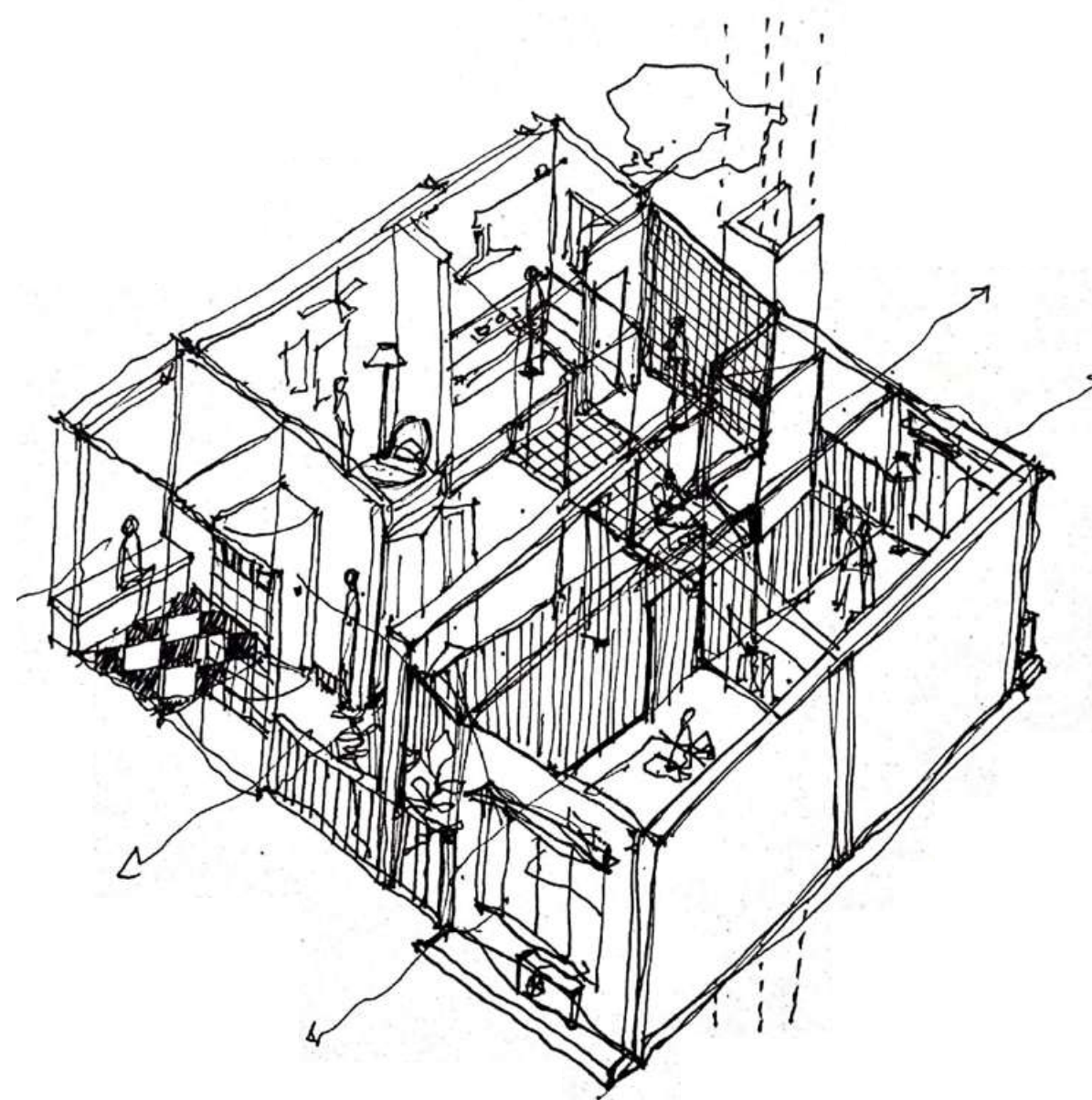
“

the podium sits atop the parking and the commercial area and hosts various spaces like the outdoor gym and the park for children under the steel grid



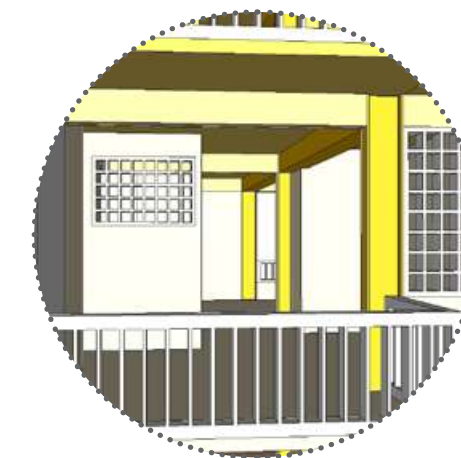
1.0m 0m 1.0m 3.0m

ambiguosness of the central space
Unit Development



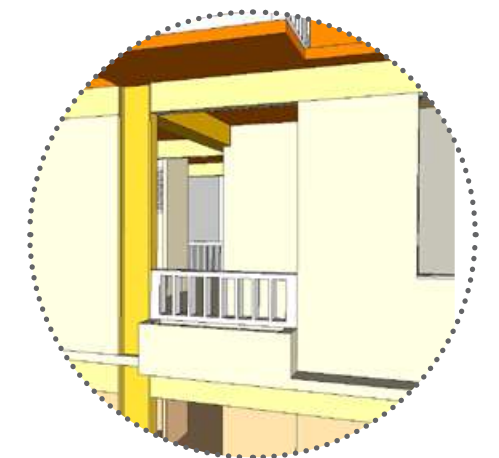
Homes in apartment blocks usually face a **disconnect with the ground**. They have a **strict organisation** with specific spaces for activities. They **lack ambiguity**, for spaces to host a variety of activities. Moreover the home is organised such that the sleeping spaces are pushed towards the inside of the house, with the living and kitchen towards the front.

The project proposes homes that have a **central ambiguous space that extends across the width of the home**, to blur the line between the inside and outside, and to create a space that hosts a variety of functions



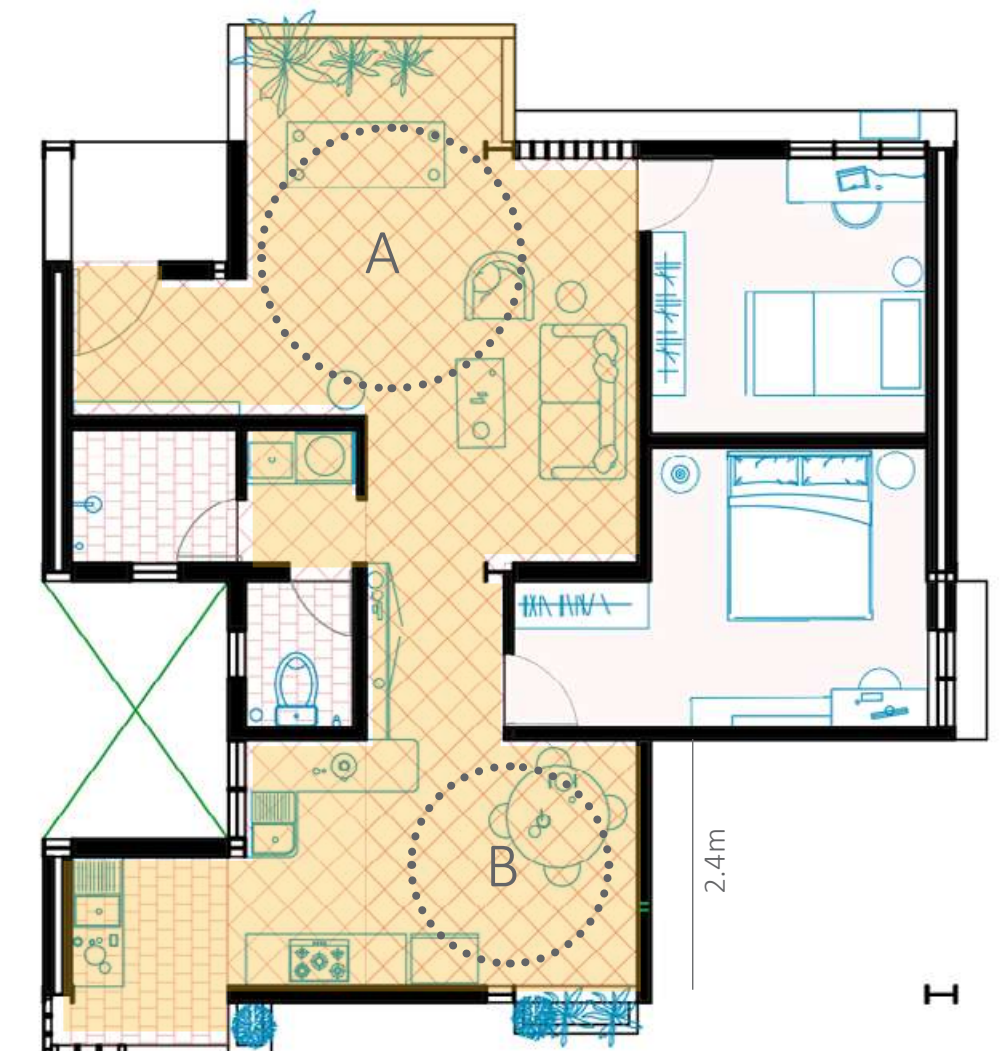
node A

living area that extends into the kitchen



node B

kitchen and eating area that extends to the utility

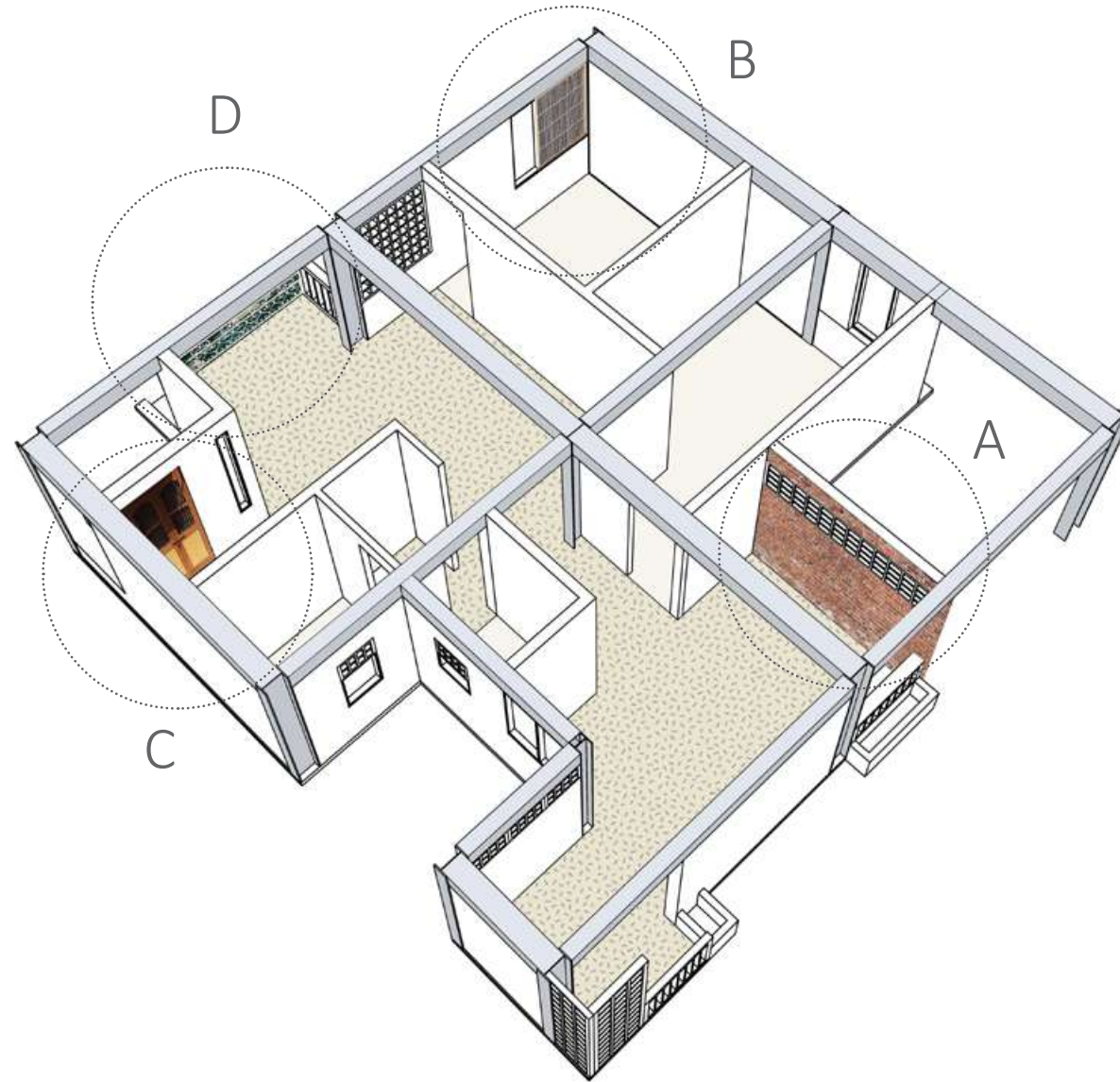


central ambiguous space

Element on site

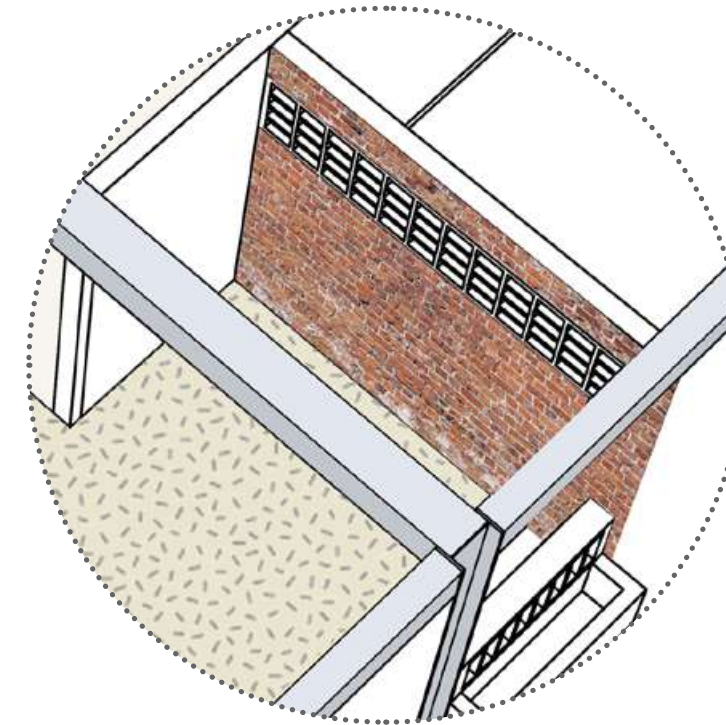


Element reused in new home



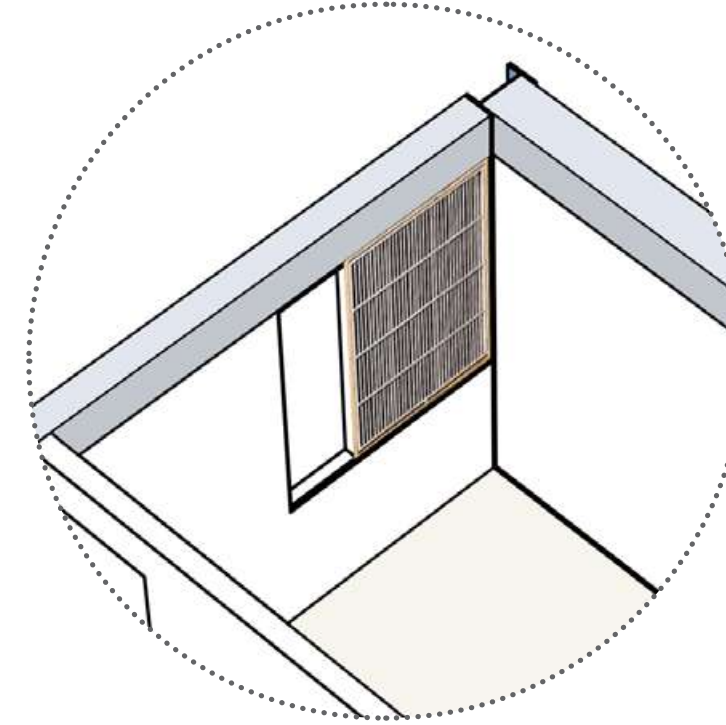
Type of Element

A



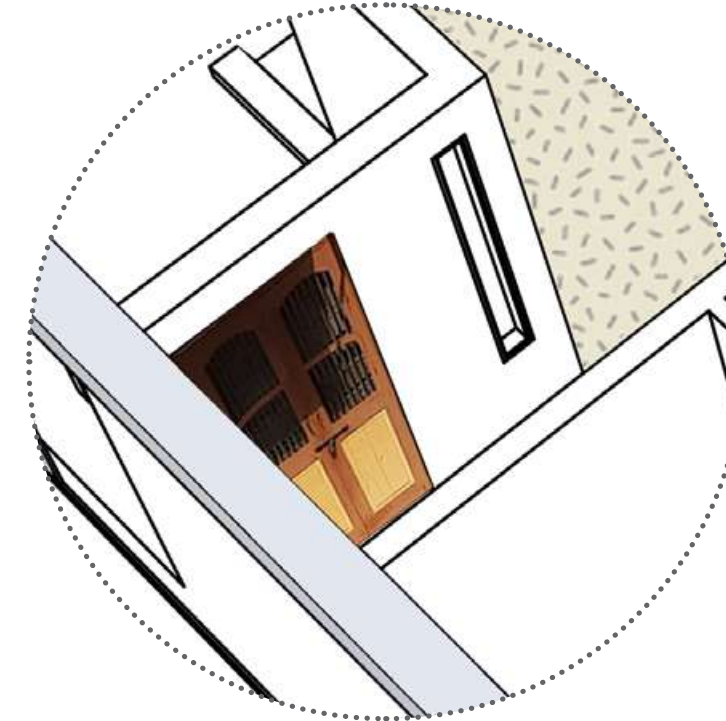
Old full bricks recovered from original structure to be reused as part unplastered wall with in new homes

B



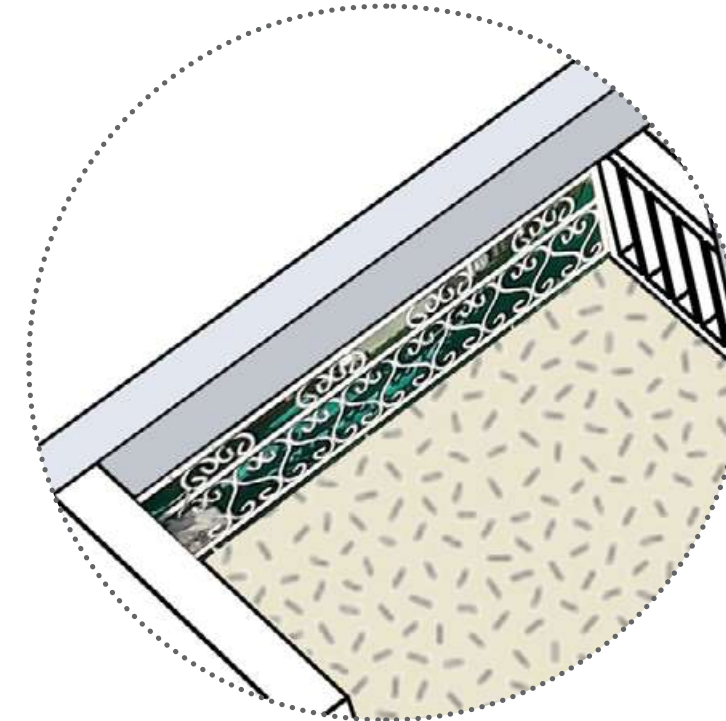
Complete windows and frames recovered from original units reused in the new homes according to inhabitants

C



Old wooden doors and gates recovered can be reused in the new homes based on the choice of inhabitants

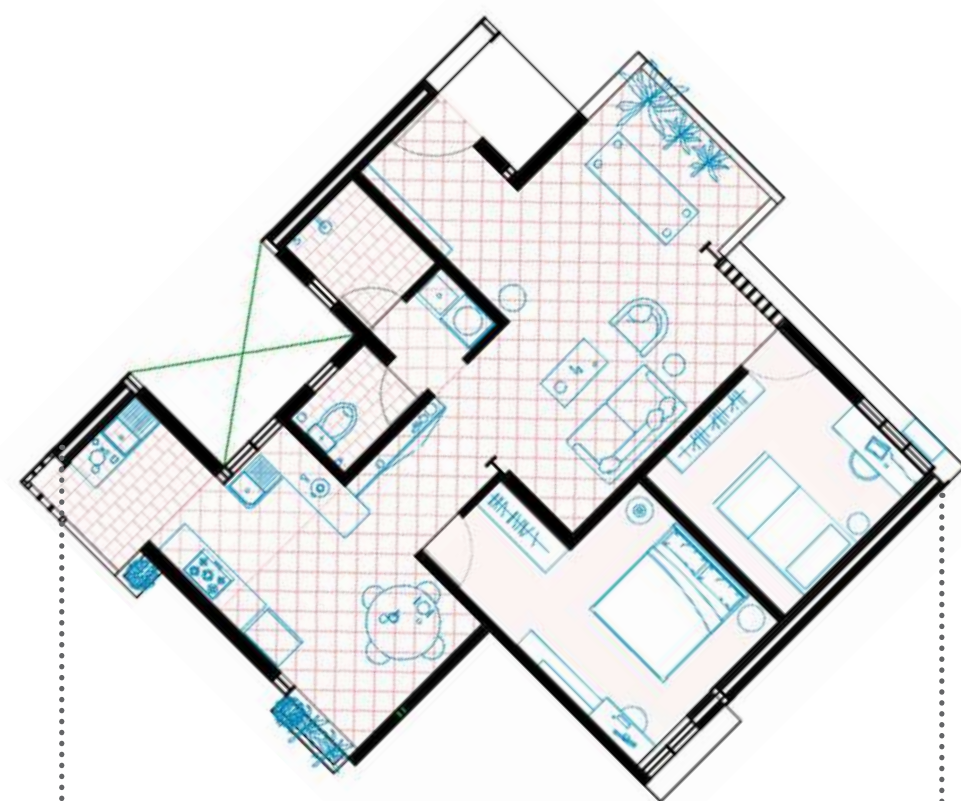
D



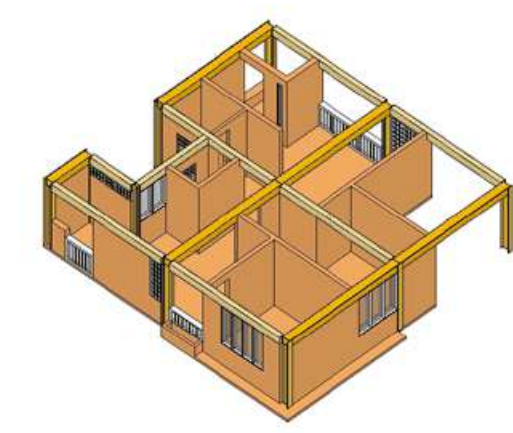
Metal and terracotta railings and balcony parapets recovered can be reused in the new home as parapet walls and railings

finding value in the original

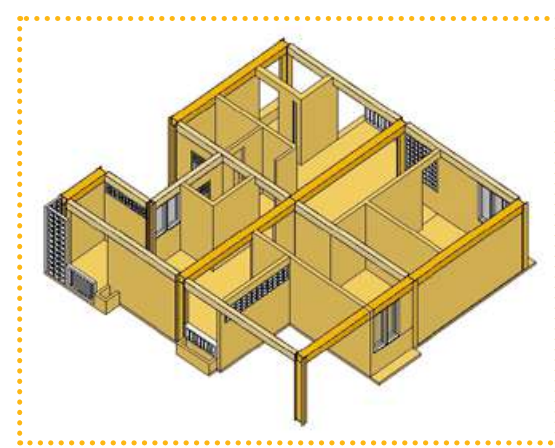
Material recovery and reuse



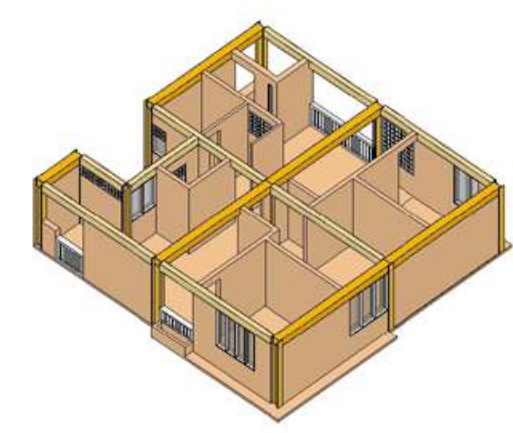
Type A
Carpet Area
82.35 sqm X 86
Approx. Cost
Base Unit
2 sleeping spaces + 1 extension
+ 2 toilets



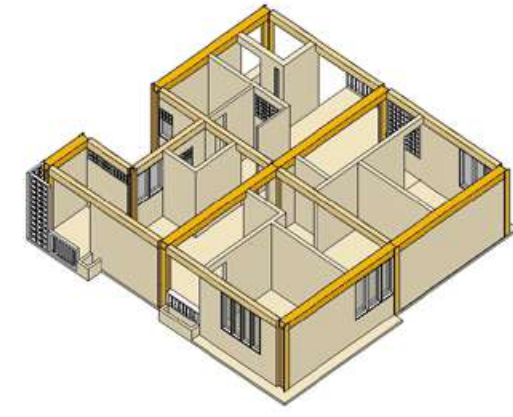
B
Smaller



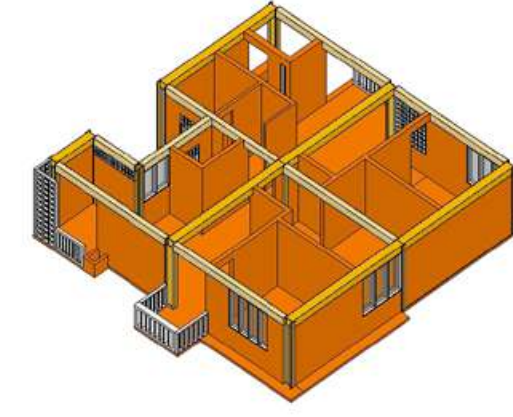
A
Base Unit



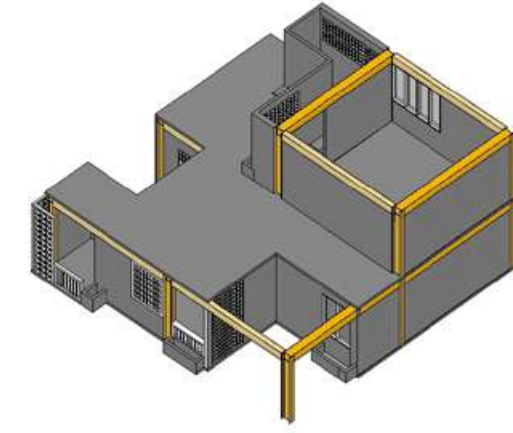
C
Larger



D
Larger

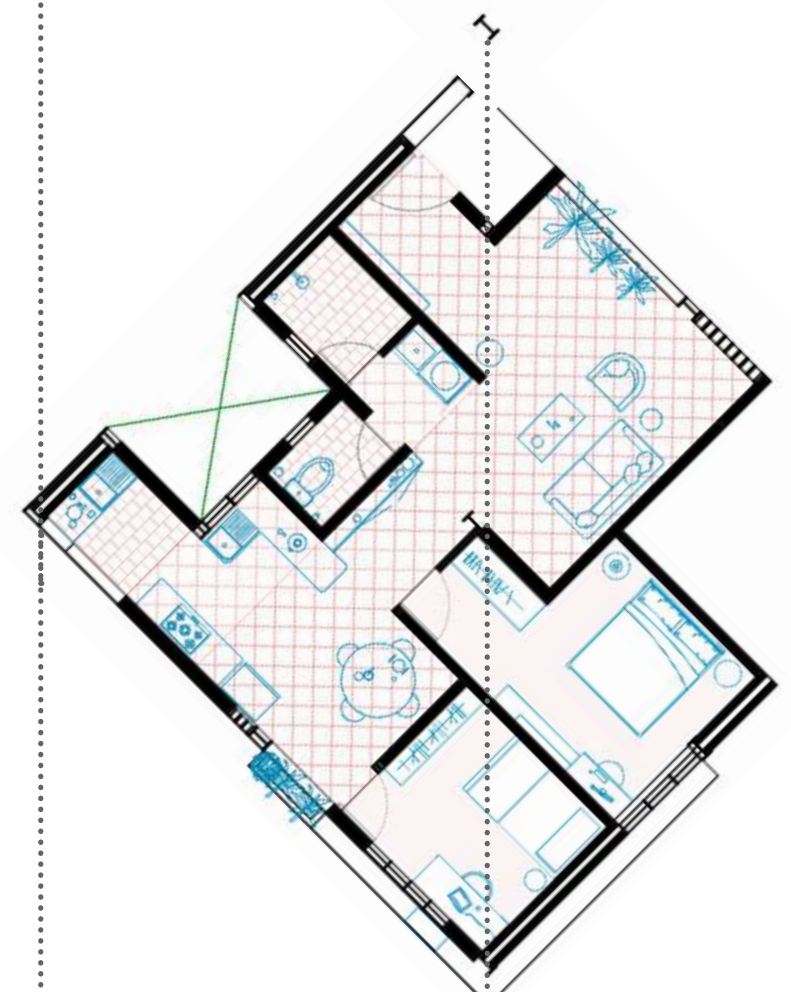


E
Larger

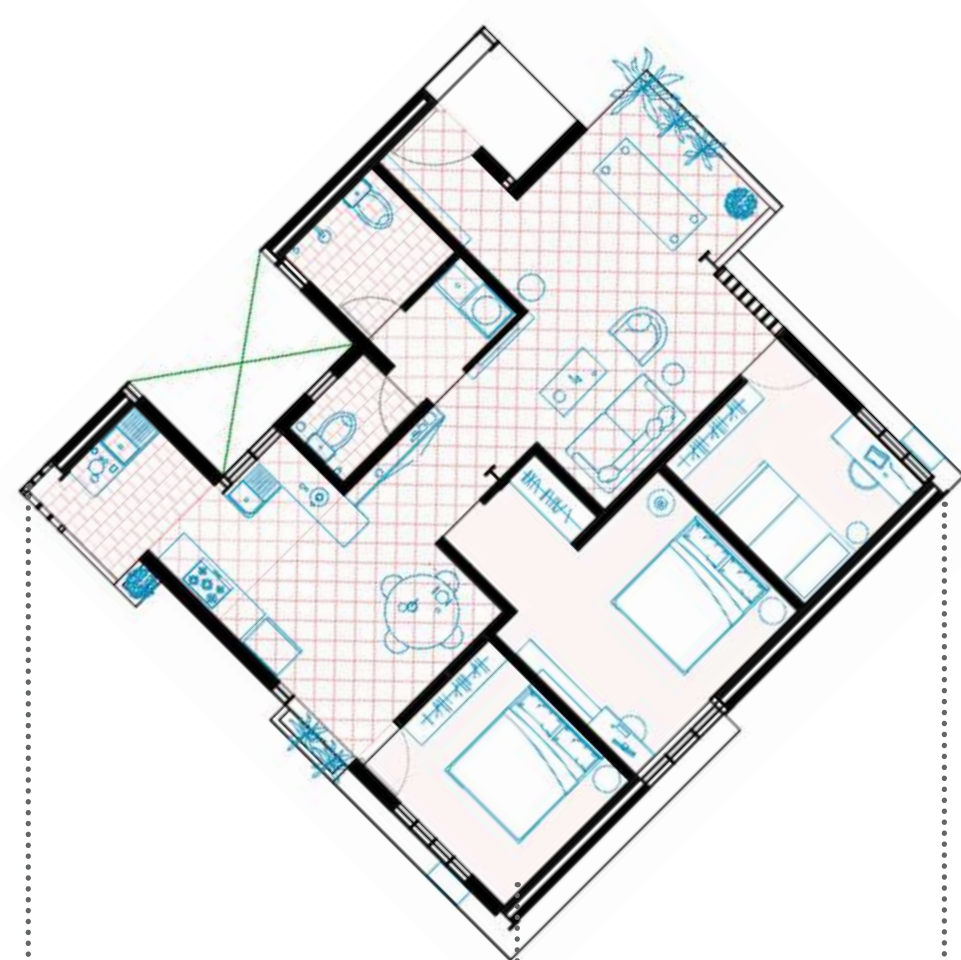


F/G
Larger
double storeyed

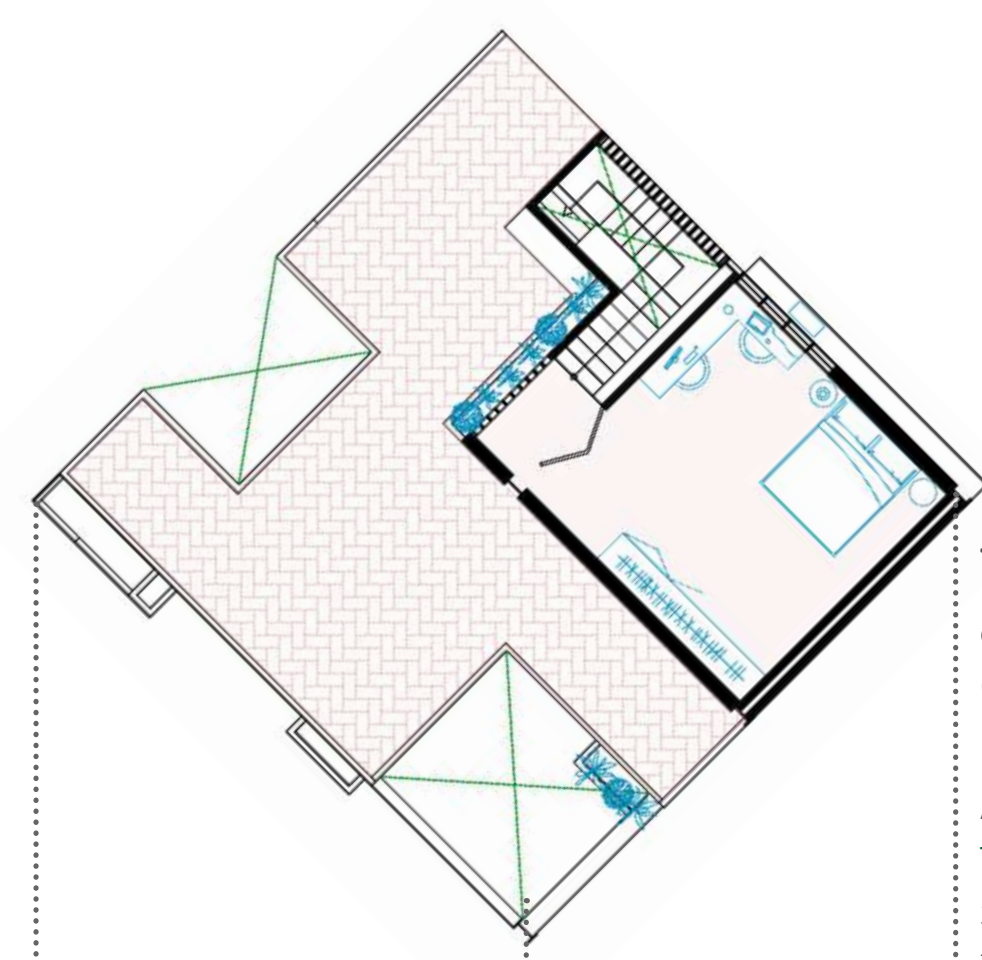
“ Each original inhabitant is entitled to a base 91.5 sqm area free of any cost. Though the project proposal offers a variety of size options, with inhabitants eligible to choose a home either larger or smaller than base size.



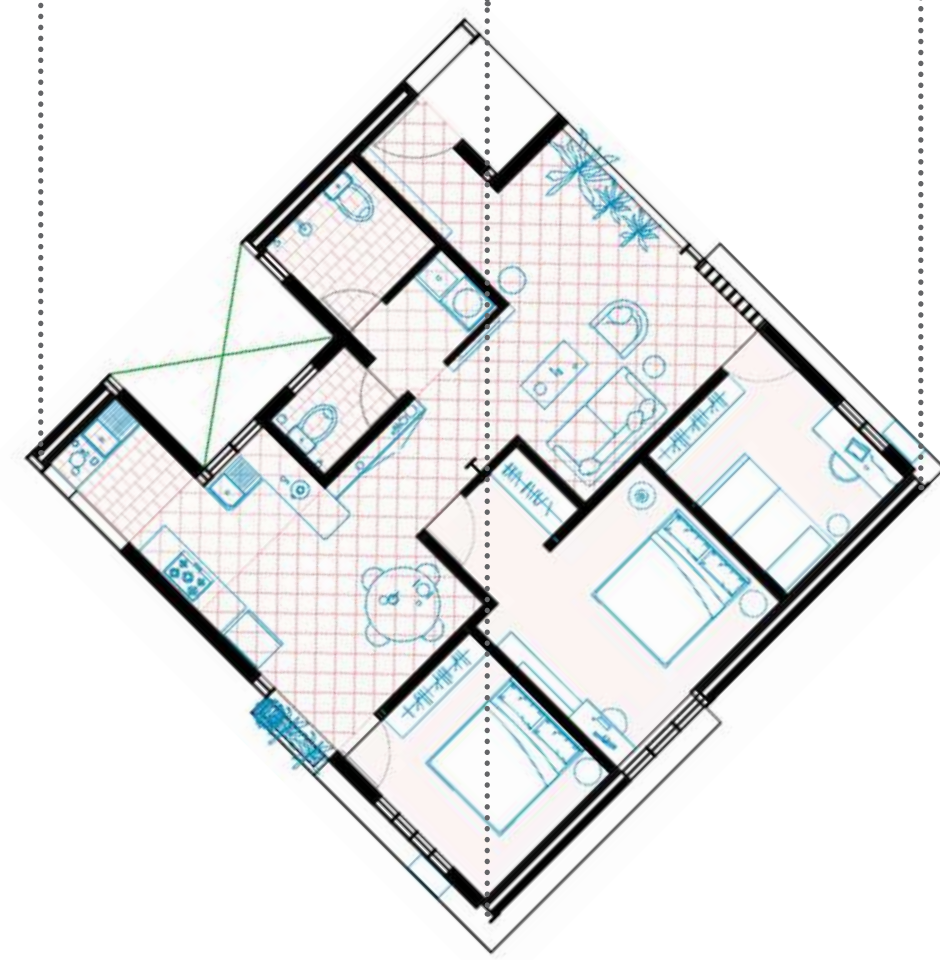
Type B
Carpet Area
75.6 sqm X 50
Approx. Cost
In return 6.3L
2 sleeping spaces + 1 toilet



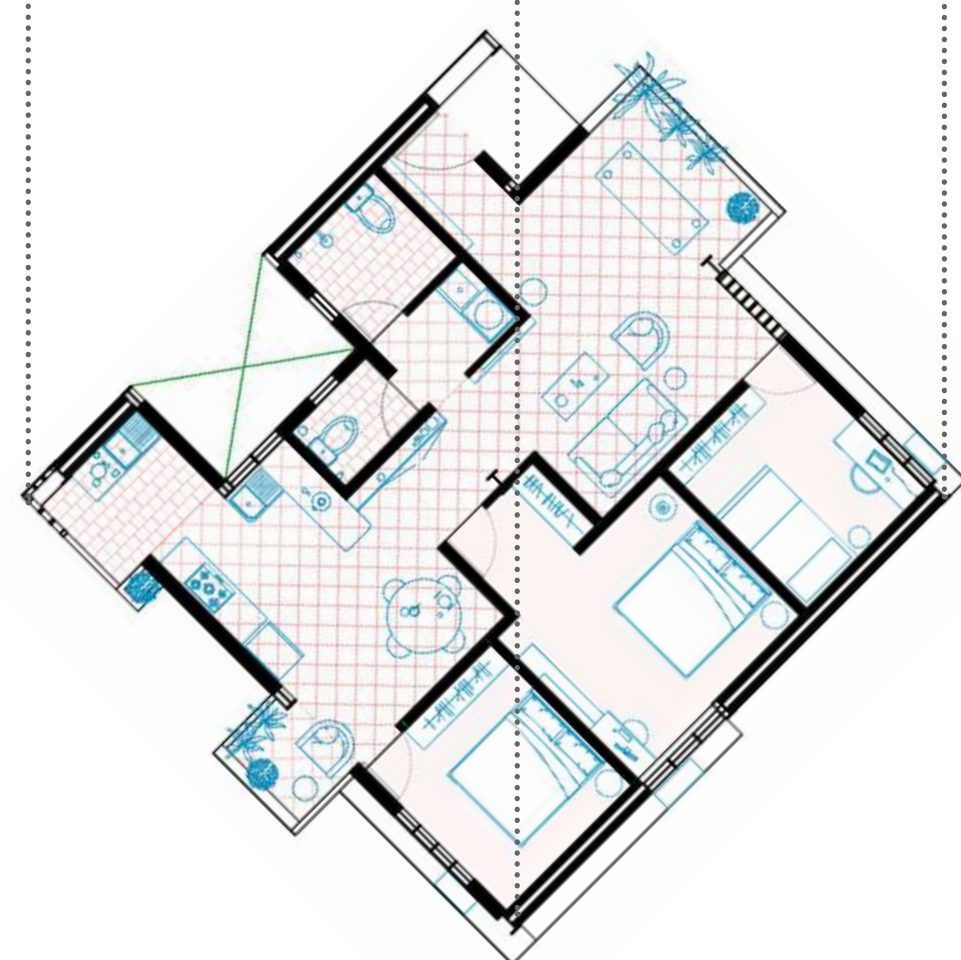
Type D
Carpet Area
91.8 sqm X 48
Approx. Cost
To be paid 8.9L
3 sleeping spaces + 2 toilets
+ 1 extension



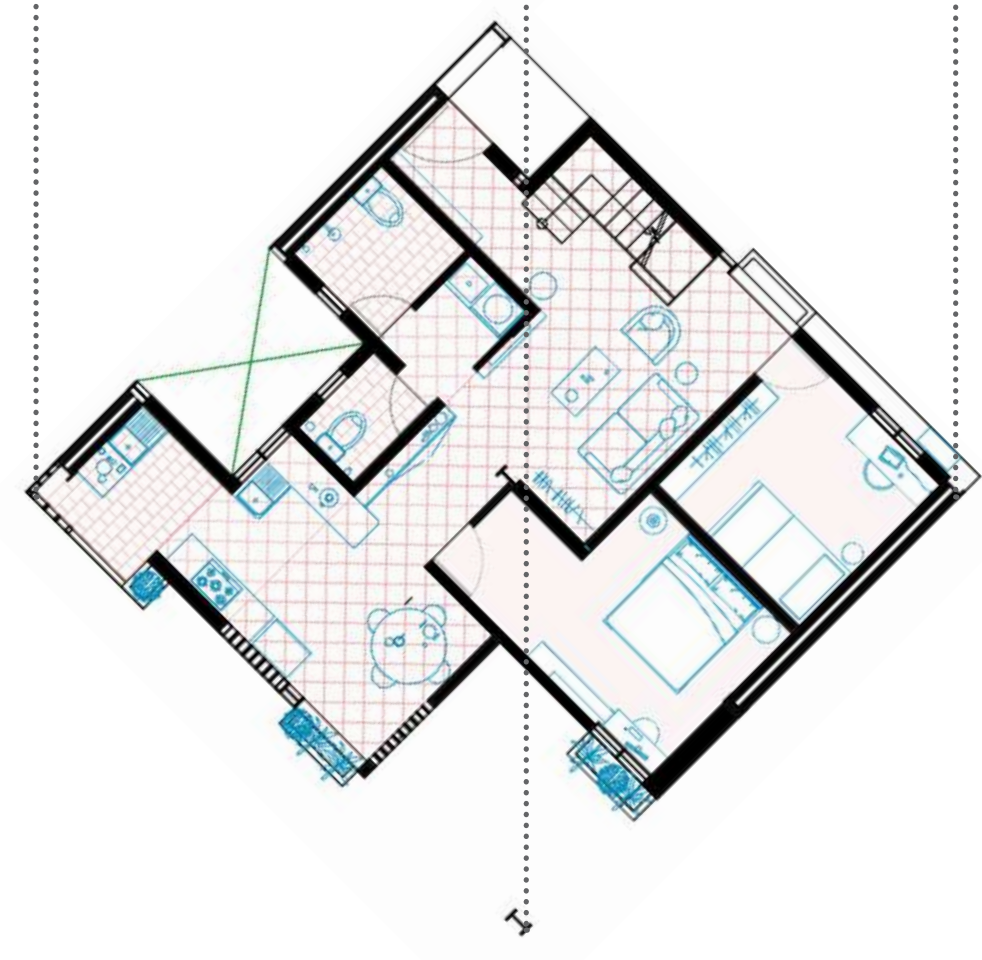
Type F/G
double storey
Carpet Area
115.8 sqm X 9
Approx. Cost
To be paid 31.6L
3/4 sleeping spaces
+ 2 toilets



Type C
Carpet Area
86.9 sqm X 40
Approx. Cost
To be paid 4.3L
3 sleeping spaces + 2 toilets

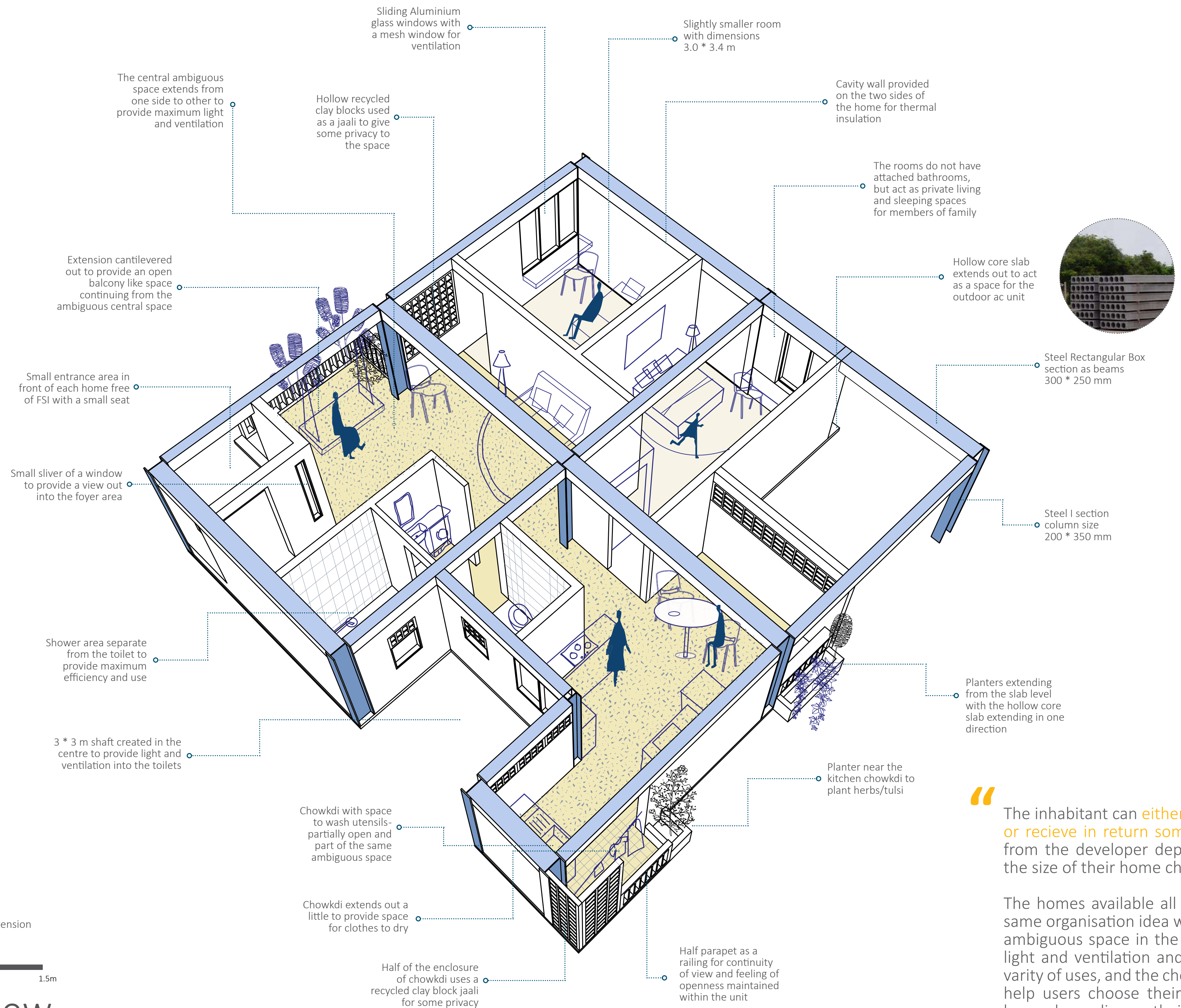


Type E
Carpet Area
994.4 sqm X 10
Approx. Cost
To be paid 11.35L
3 sleeping spaces + 2 toilets
+ 2 extensions



Unit Types





Type A
 Carpet Area
 82.35 sqm X 86
 Approx. Cost
 Base Unit
 2 sleeping spaces + 1 extension
 + 1 toilet

0.5m 0m 0.5m 1.5m

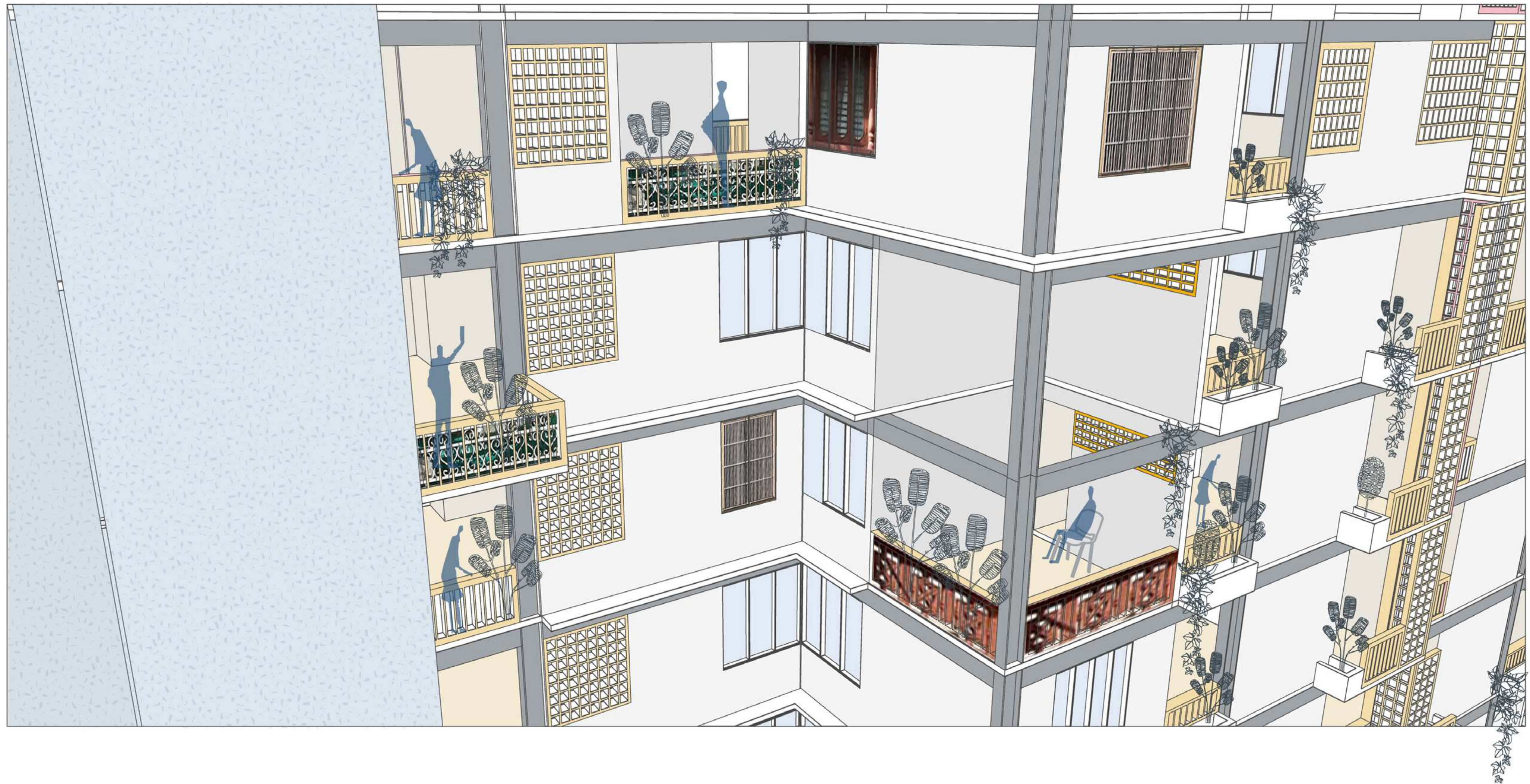
Unit View

“ The inhabitant can either pay more or receive in return some amount from the developer depending on the size of their home chosen.

The homes available all follow the same organisation idea with a large ambiguous space in the centre for light and ventilation and to host a variety of uses, and the choice rather help users choose their preferred home depending on their need.

“

Each home opens out onto the street with the ambiguous space extending from one end to the other with planters at the edges. Moreover, the reused elements from their original houses add value to the new homes



2m 0m 2m 6m

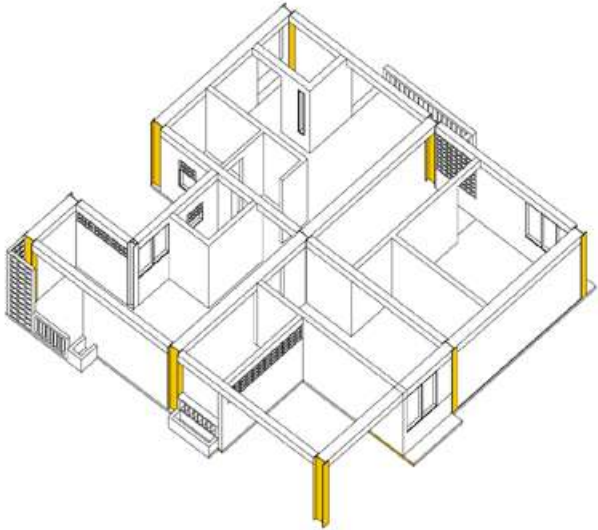
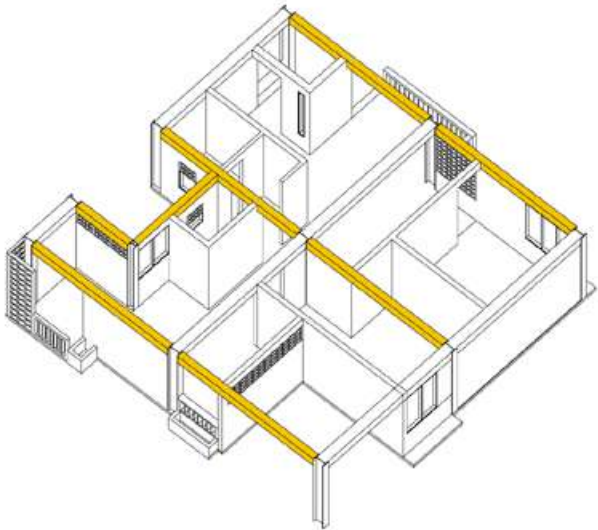
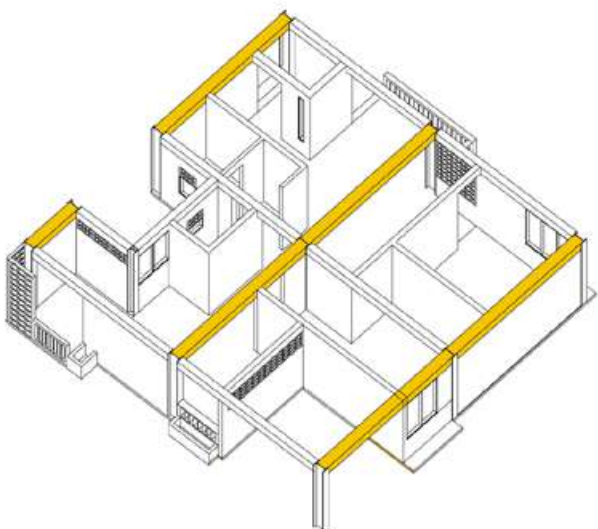
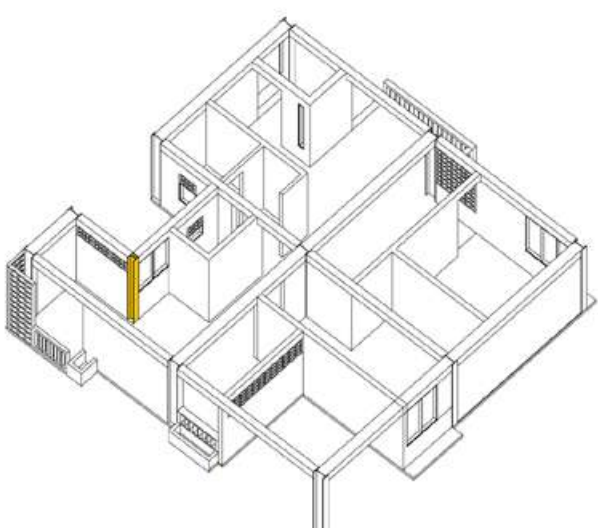
Looking at the homes facing the South 18 m street

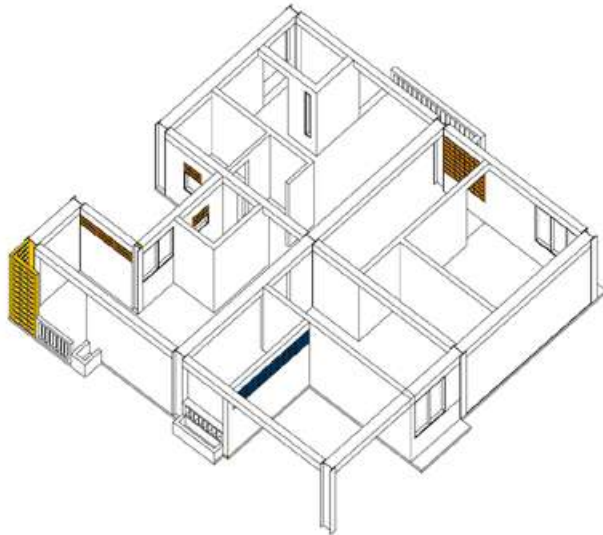
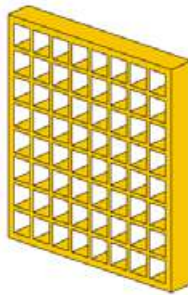
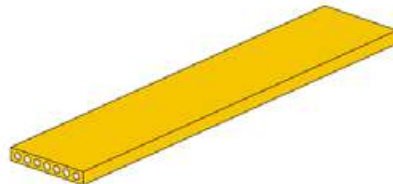
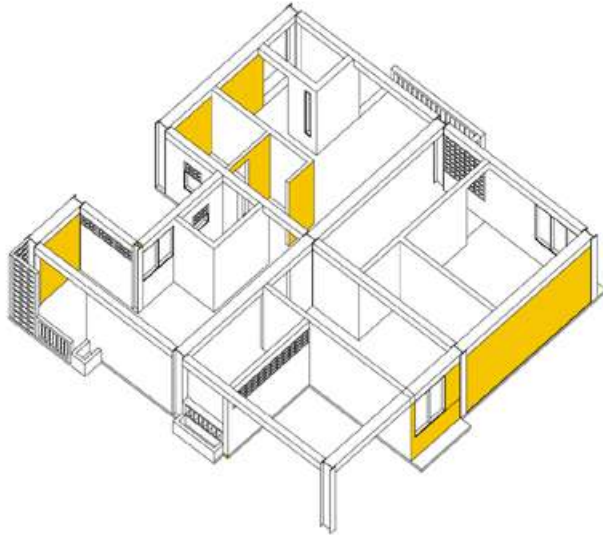
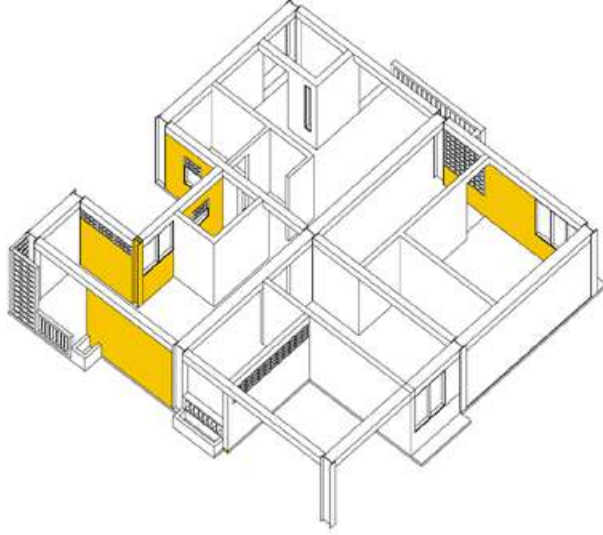
View of homes with the reused elements

Material Manual for Future Redevelopment

Finding value in the death of the building

“ Each original inhabitant will be given a user manual for reference for future redevelopment or demolition to gauge the approximate material recovery

Placement of Material within Unit	Material Details	Quantity	Possible Usage of Material	Agency to be Contacted	~ Cost Offset
	ISMB 350 I-Section 9	9 units of 2.8 m 25.2 m	<p>The steel is almost 90% reused and around 7% recycled. This helps in drastically reducing the material cost and increasing the energy efficiency.</p> <p>To be reused entirely for future steel frame structures</p>		RS. 36,500
	ISMB 200 Box section 6	6 units of 4.8 m + 3m + 1.5m 33.3 m			RS. 48,500
	ISMB 350 I-Section ~ 6	6 units of 4.8 m - 3m 25.8 m			RS. 37,500
	ISMB 350 I-Section 1	2.8m * 1 2.8 m			RS. 4000

	 <div>Hollow Clay Brick Jaali</div> <div>0.2 thk. 0.15 thk. 0.1 thk.</div>	<div>0.2 thk. Jaali Area= 3.45 sqm 0.7 cum</div> <div>0.15 thk. Jaali Area= 1.71 sqm 0.25 cum</div> <div>0.1 thk. Jaali Area= 4.5 sqm 0.45 cum</div>	To be recycled as new clay jaali or blocks/bricks	Kesarjan Building Centre	RS. 495	
	 <div>Hollow Core Slabs</div> <div>5m * 1m * 0.12m</div>	<div>Length of ~ 84.4 m per home 4.22 cum of waste concrete Aggregate from total waste</div> <div>50% of concrete in hollow core slabs 4.22 cum 70% of concrete can be recovered 2.95 cum 65% of aggregate from total waste 2.75 cum</div>		UrbanAAC Ahmedabad	RS. 830 RS. 1650 RS. 1350	
	Recycled Clay Brick 0.1 m thick	29.8 sqm 3 cum	Full bricks to be resold at lower cost for temporary/ low cost construction; Brickbats to be reused as fill in foundation/road construction; Brick rubble to be recycled into new bricks/ blocks	Kesarjan Building Centre		
	Recycled Clay Brick 0.15 m thick	25.2 sqm 3.8 cum				
	Recycled Clay Brick 0.2 m thick	14.2 sqm 2.85 cum				
Total Brick Recovery						
Full Brick954 bricksRs. 2385						
Brickbats4648 brickbatsRs. 4650						
Brick Rubble2.9 cumRs. 715						
Total ~ Cost Offset					Rs. 1,39,465	