

## **Caja de Agua**

*Reasearch Seminar Graduation Studio*  
*AR3AO10 | 2017/ 2017*

*Tutors*  
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*In 1940 Lima was home to more than half a million people. The city expanded towards the Pacific Ocean swallowing wide green areas and haciendas. In 1970 the borders of the city were reaching former distant cities which were absorbed by the growing capital.*

*At the beginning of the 20th century Lima went through a process of **urban renewal**, industrialization and more rapid expansion.*

*An **extraordinary migration** movement from the country side to Lima started.*



1535



1935



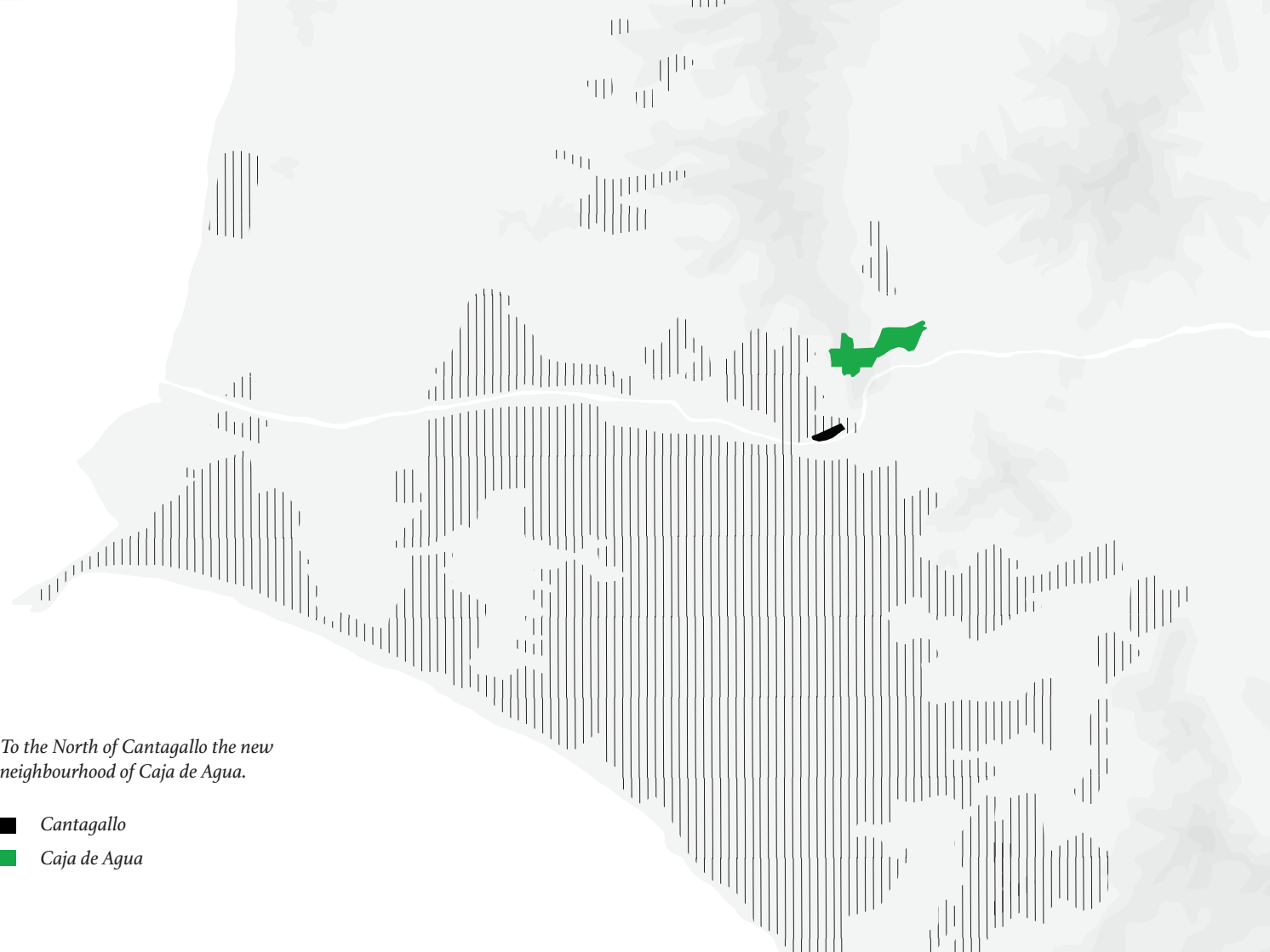
1970

*Immigrants hoping to find a better future in the capital were at first confined to **slums**. This led to large-scale land invasions which gave rise to the proliferation of shanty towns, known as **barriadas**.*

*In order to solve this issue, in **1961** the Peruvian government passed the Law **13517**, which allowed existing **barriadas** to be officially recognized.*

*New **barriadas**, meanwhile, were to be replaced. One of the first projects completed was the test case of **Caja de Agua**.*

*A new neighbourhood of **1,612** units was designed as the new home for residents of **Cantagallo**, a nearby **barriada** that with its precarious shacks and lack of services, that had some of the **worst living conditions in Lima**.*



*To the North of Cantagallo the new  
neighbourhood of Caja de Agua.*

- Cantagallo
- Caja de Agua



## Cantagallo

*Total area | 120'270 sqm*  
*Built area | 75'600 sqm | 63%*



*Inhabitants | 10'250*  
*Built area/ inhabitant | 6.7 sqm*



*Total area/ inhabitant | 11 sqm*

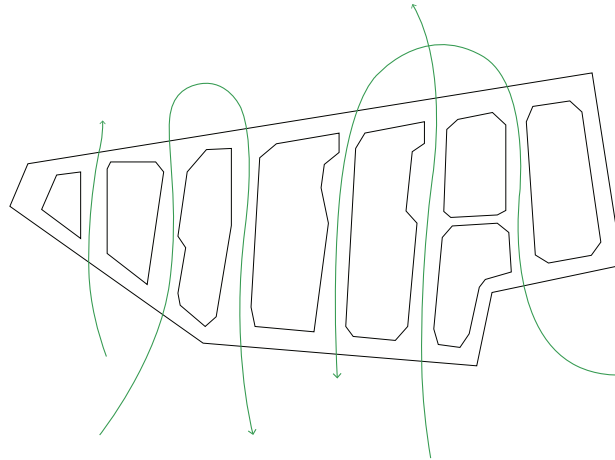




## Clusters

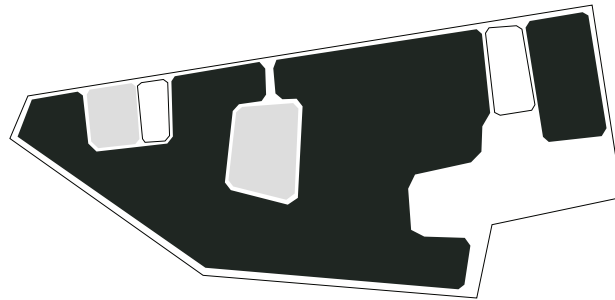
*Barriadas were characterised by high density neighbourhoods of informal settlements.*





### **Crossing movements**

*The compact clusters stretch from North to South, influencing the porosity of the Barriada.*



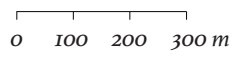
### Activities

*On the opposite of the dense residential areas, empty areas are dedicated to the sport camps, important as gathering points.*

- Residence
- Sport camp / recreation
- Market



Cantagallo ———  
Caja de Agua - - - -





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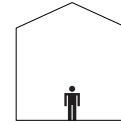


## Caja de Agua

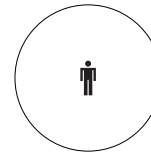
Total area | 948'823 sqm  
Built area | 462'832 sqm | 48%

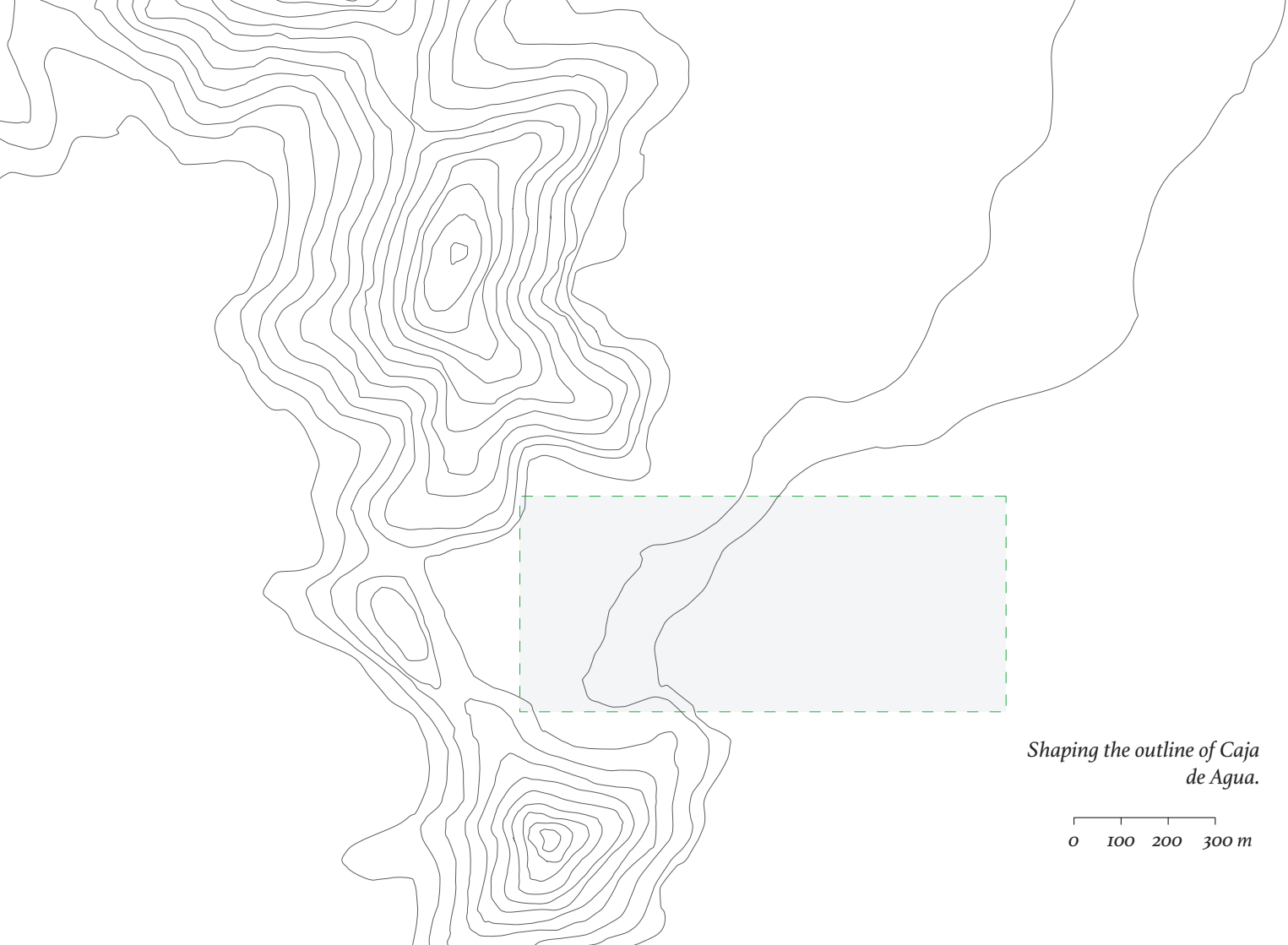


Inhabitants | 16'898  
Built area/ inhabitant | 27.4 sqm

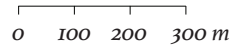


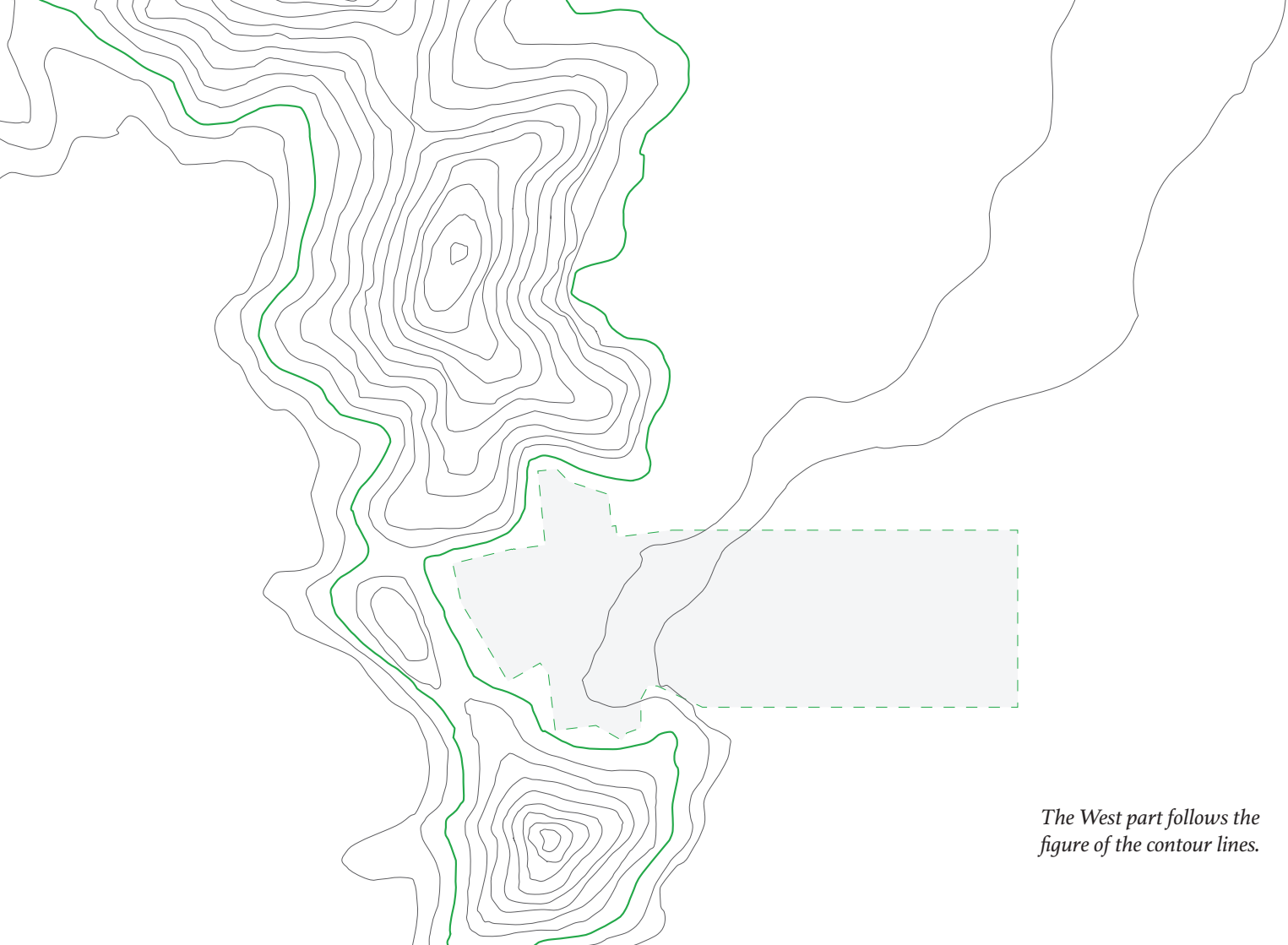
Total area/ inhabitant | 56.2 sqm





*Shaping the outline of Caja de Agua.*

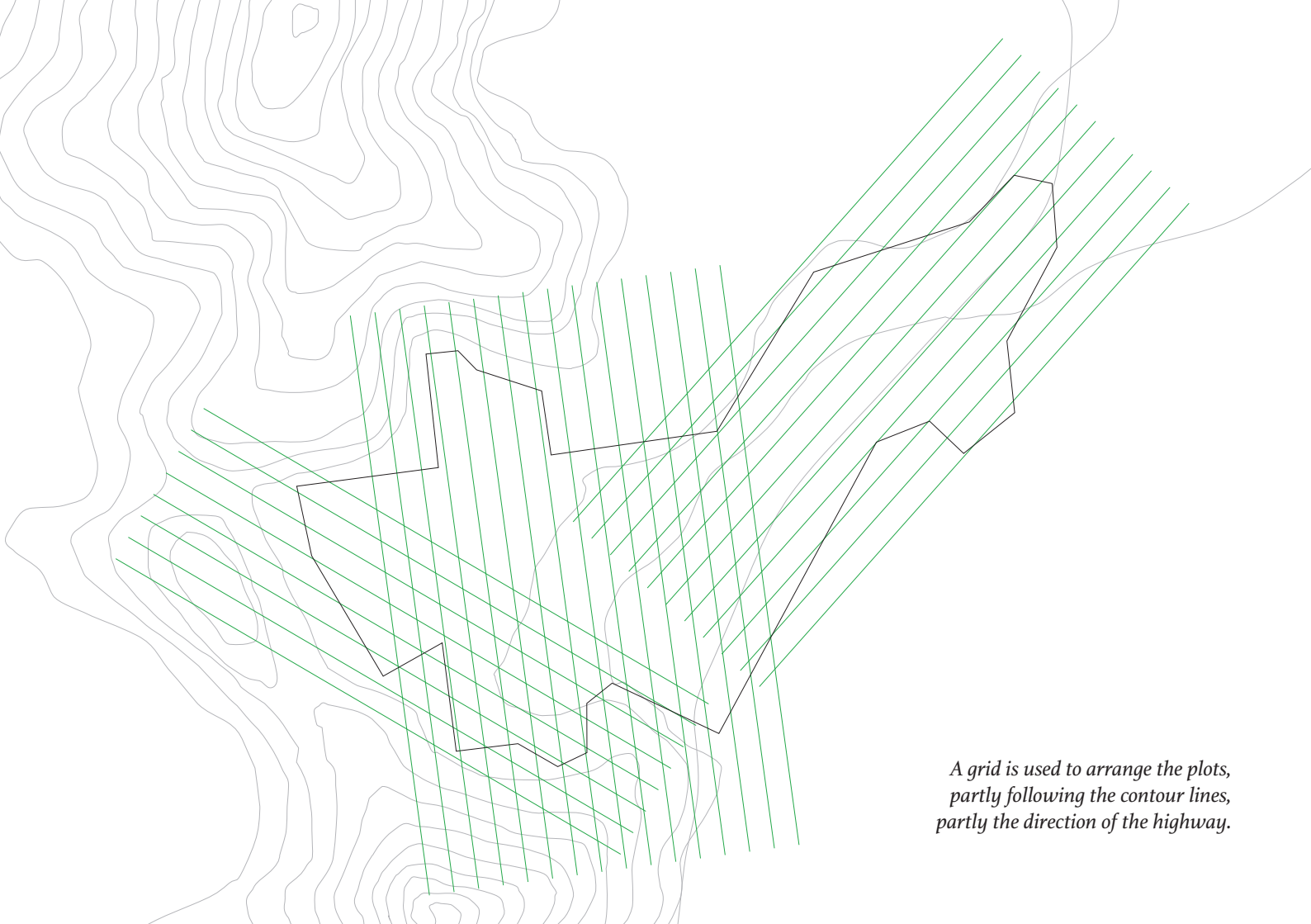




*The West part follows the figure of the contour lines.*

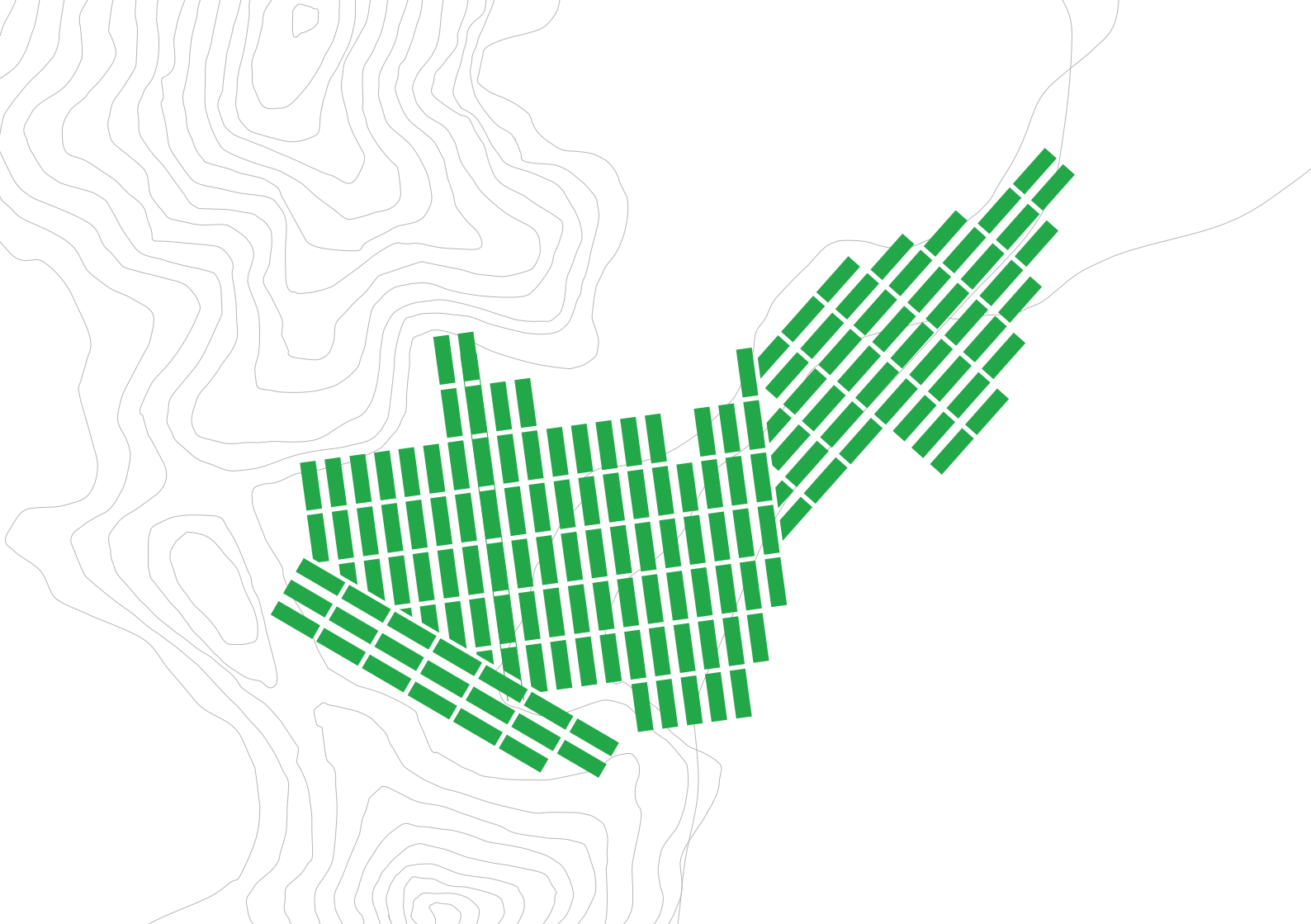


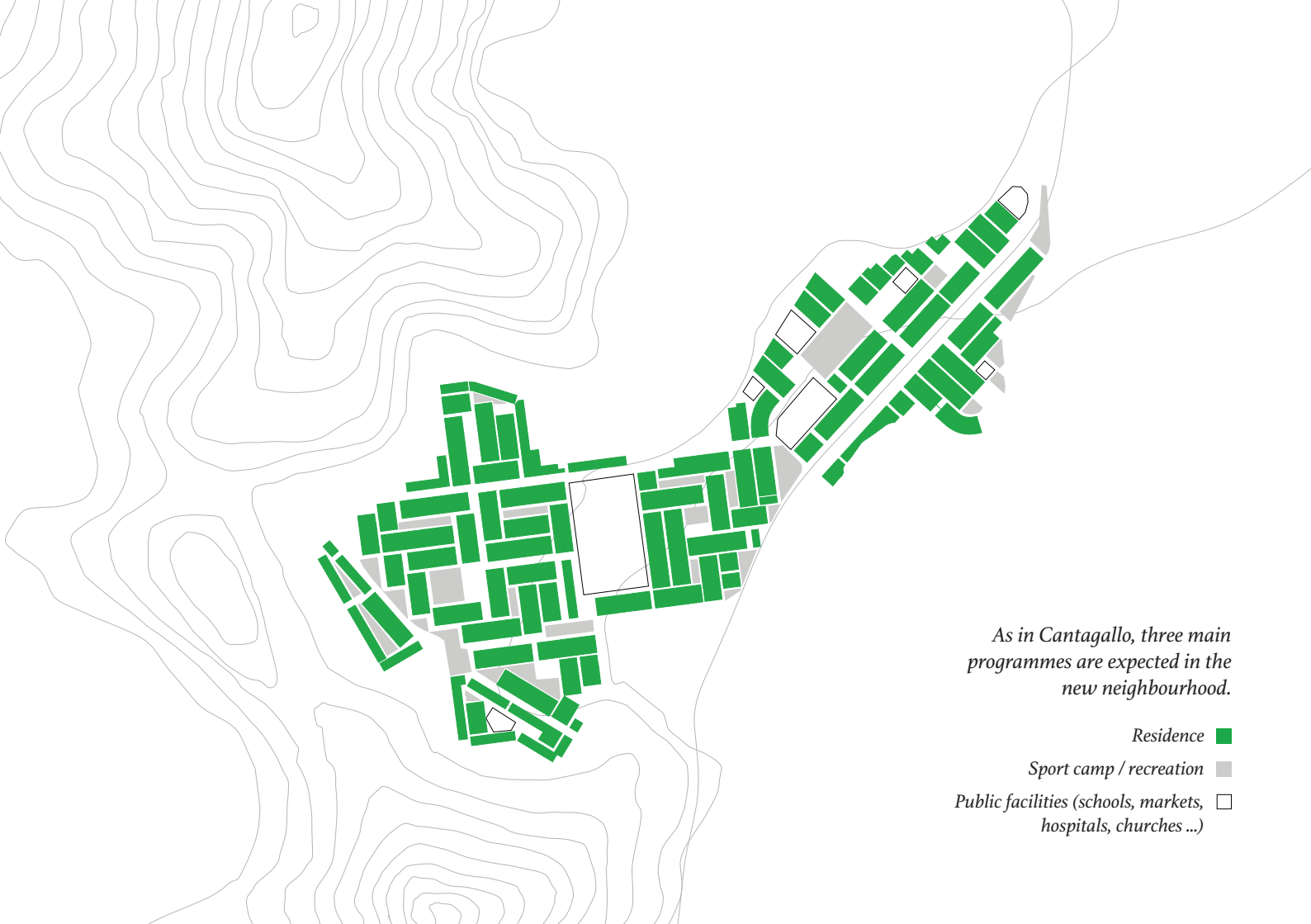
*The highway pointing to North-East determines the shape of the second part of the site.*



*A grid is used to arrange the plots, partly following the contour lines, partly the direction of the highway.*



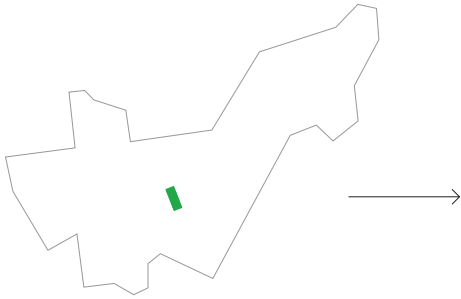




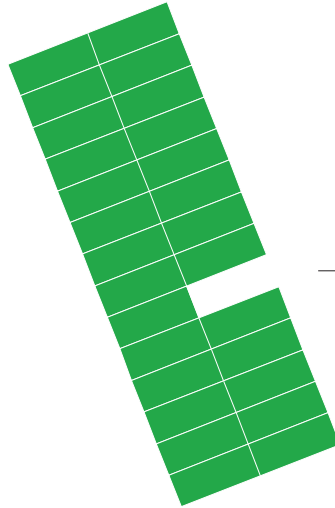
*As in Cantagallo, three main programmes are expected in the new neighbourhood.*

- Residence ■
- Sport camp / recreation ■
- Public facilities (schools, markets, hospitals, churches ...)

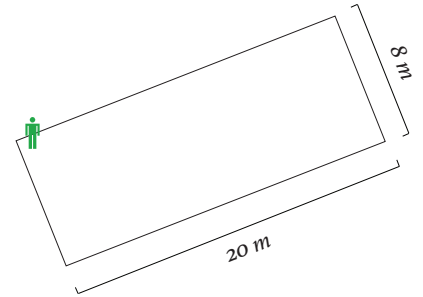
*zoom 1x*



*4x*

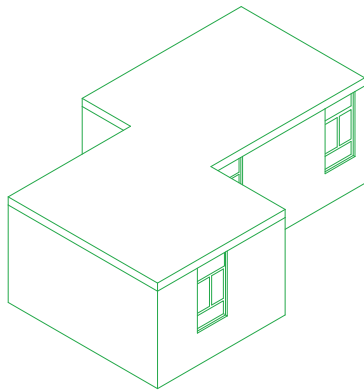


*40x*



*The smallest unit of the project is the 8x20 meters plot multiplied on the whole surface of Caja de Agua.*

*The basic **nucleus** at Caja de Agua built on an 8x20 meters lot. It consisted of a **one-story structure** on a concrete foundation, built with limestone bricks and organized around a central hallway linking two bedrooms on one side with a kitchen and bathroom on the other.*



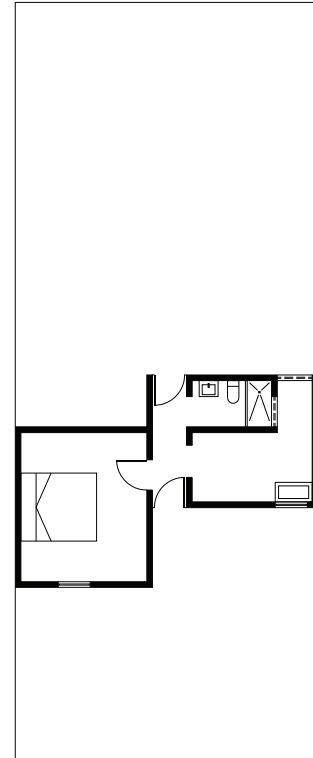
**Nucleo 1**

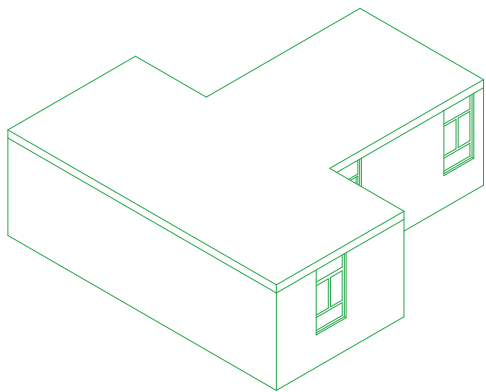
*surface | 31.5 m<sup>2</sup>*

*families | 1*

*kitchen + bathroom + bedroom*

*1:200*





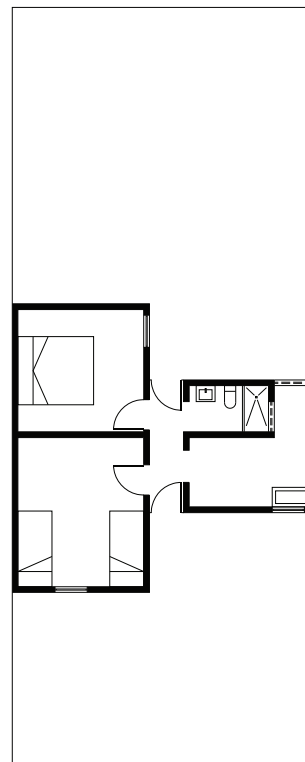
**Nucleo 2**

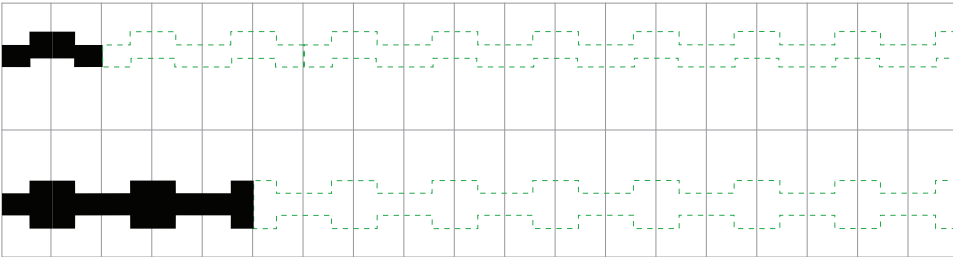
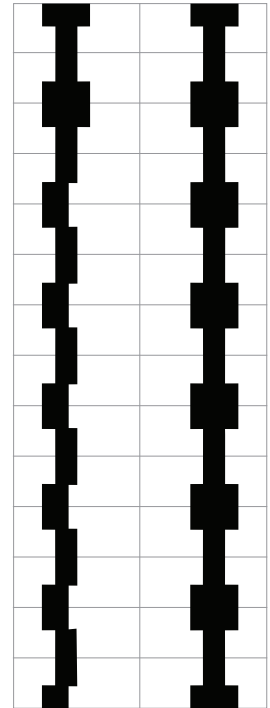
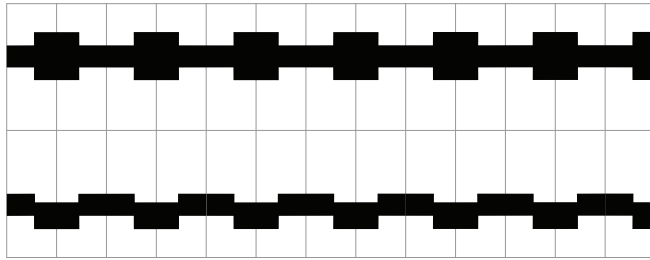
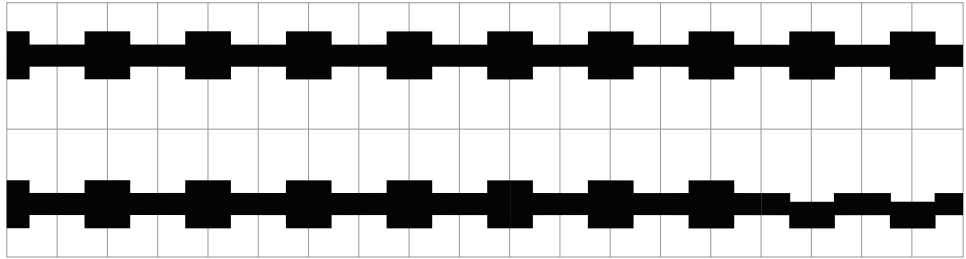
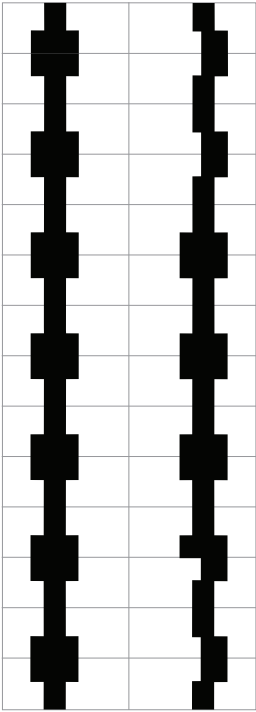
*surface | 43.75 m<sup>2</sup>*

*families | 1*

*kitchen + bathroom + bedroom x2*

*1:200*

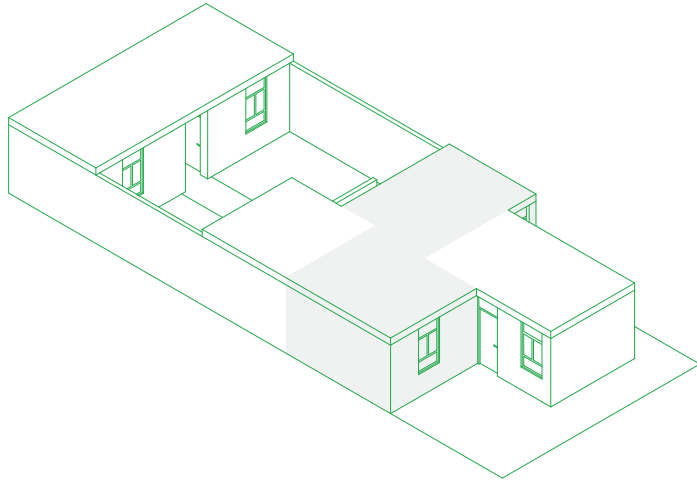




*The **contract** the residents signed with the bank stipulated that under penalty of law they were to “complete the house in the inextensible period of ten years”, with a list of specific rooms, “which must be in permanent materials and **under the supervision of the Junta**”.*

*The expansion plan provided by the Junta was tailored specifically to a **nuclear-family expectation**, providing for two more bedrooms and a living room.*





### Proposed plan

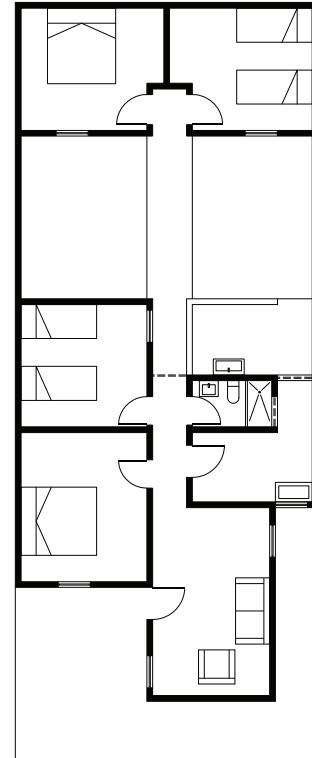
*surface | 96.4 m<sup>2</sup>*

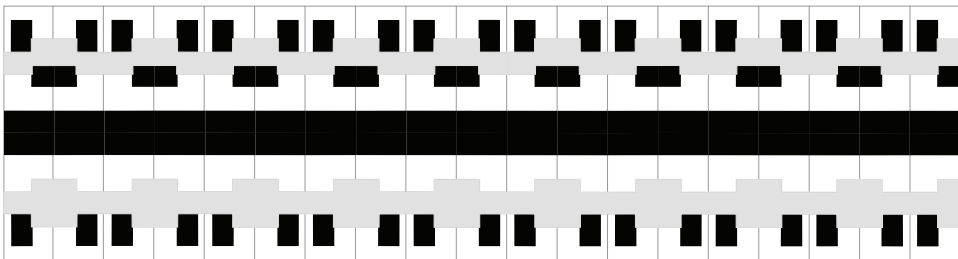
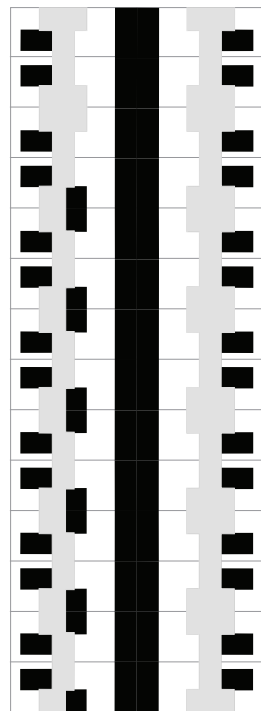
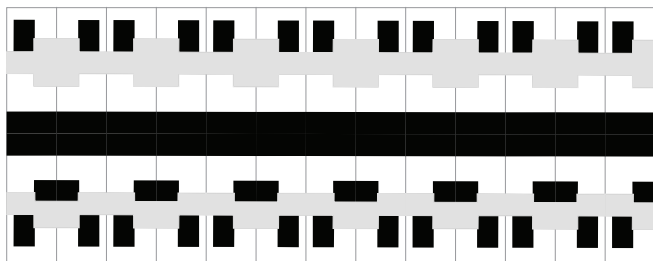
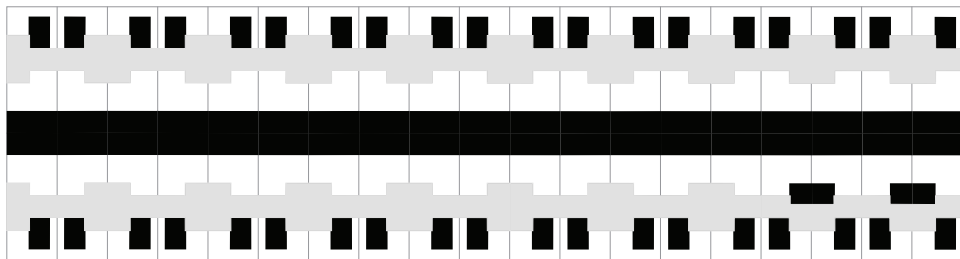
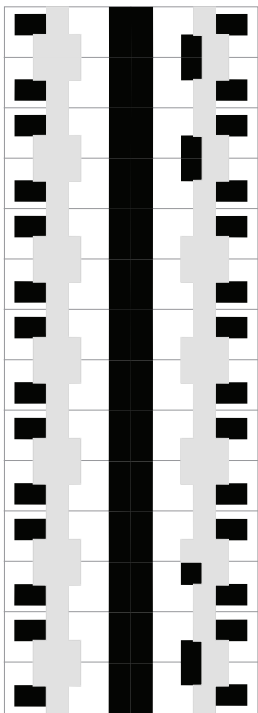
*families | 1*

*kitchen + bathroom +*

*bedroom x4 + dining room + patio*

*1:200*





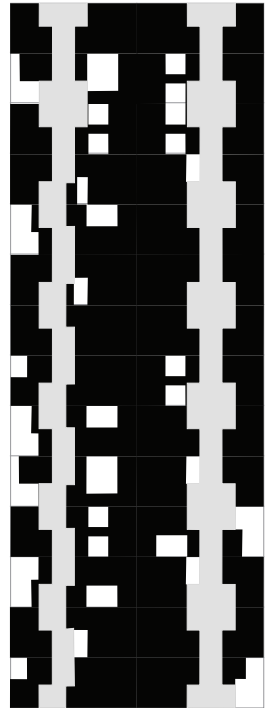
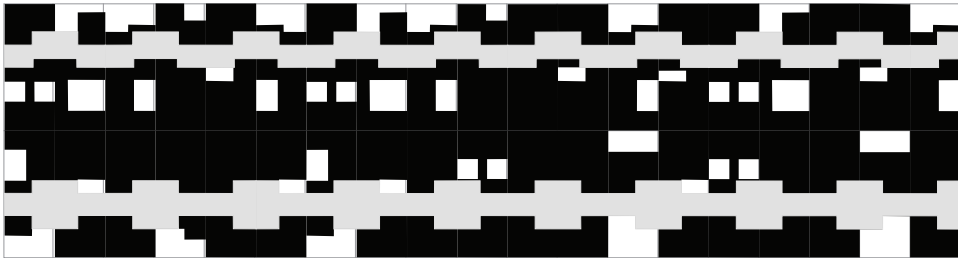
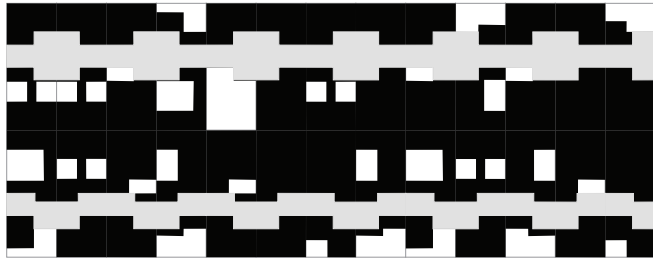
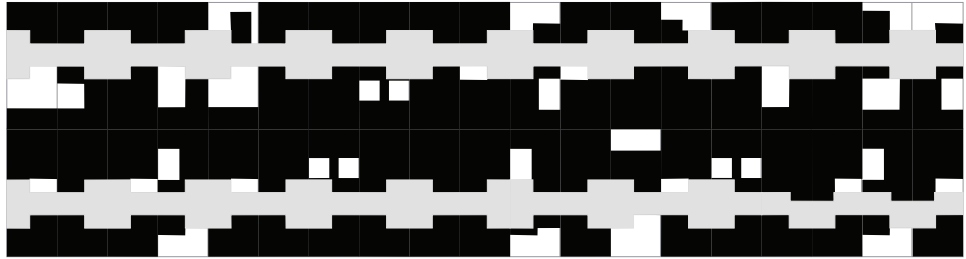
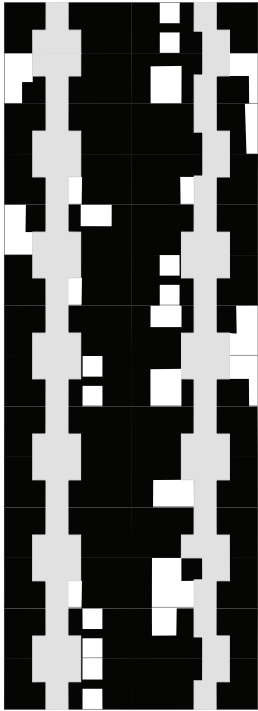
*While the official plan for expansion provides for a well-lit and well-ventilated home the design hardly follows from the original nucleus.*

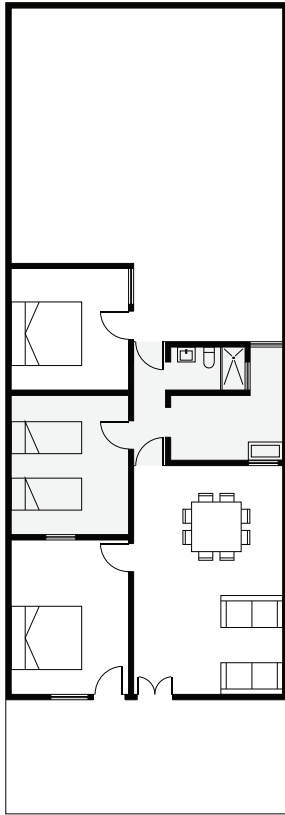
*Since there was **no underlying logical grid** to the block construction and no half-filled or partially complete areas for growth, there was **no clear framework** for expansion.*

*Moreover, with a military coup shortly following the completion of the project and the dissolution of the housing agency, **the rules were actually never enforced.***

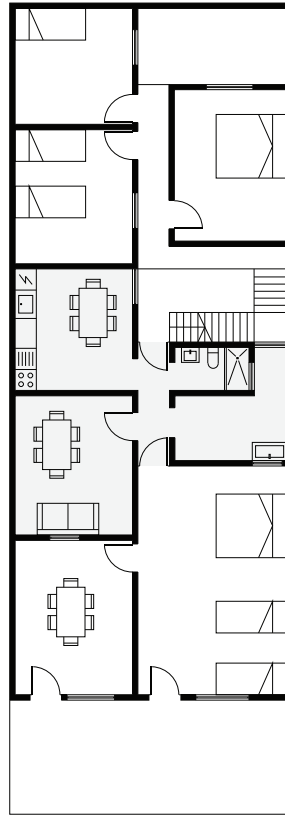
■ *Built environment (as found in 1970)*

■ *Original nuclei*

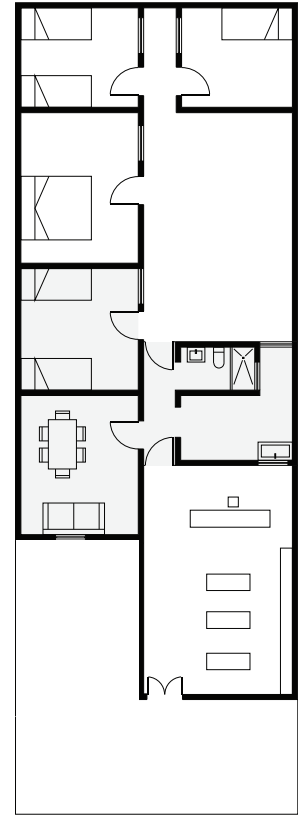




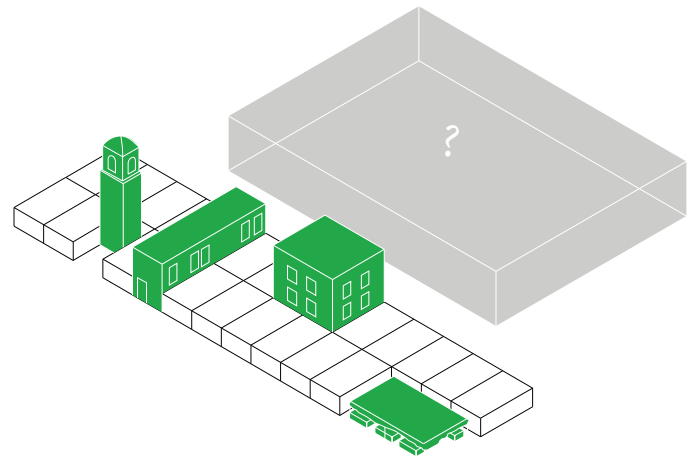
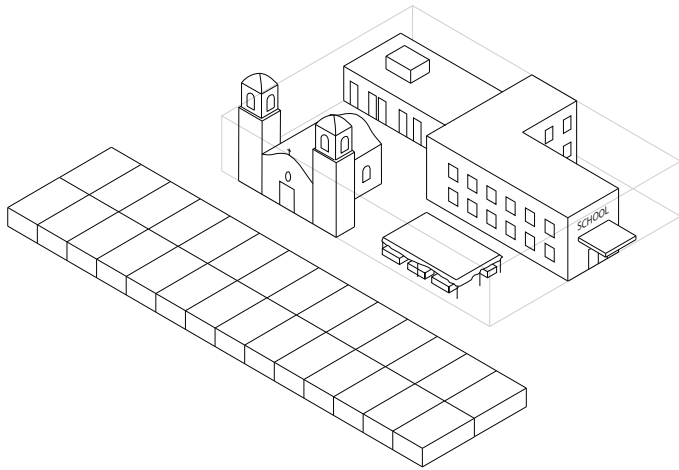
*Nucleo 1*  
 \*creation of a huge hall on the back  
 of the lot.  
 1:200



*Nucleo 2*  
 \*addition of several rooms, bedrooms  
 and a second level.

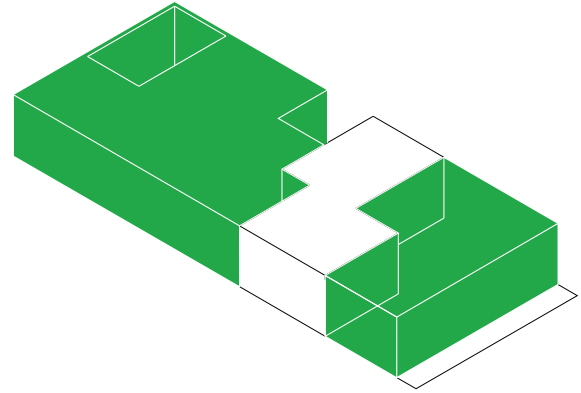
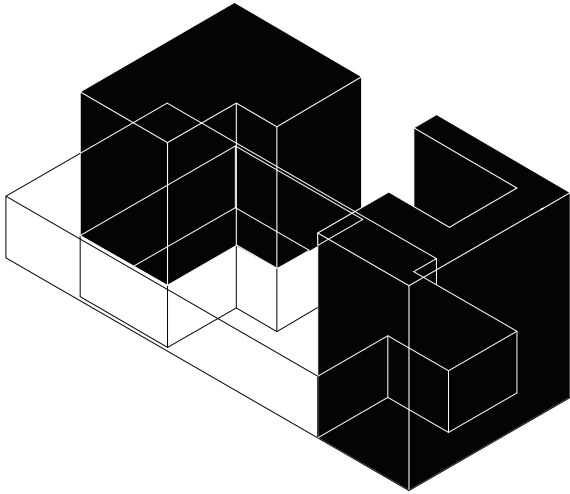


*Nucleo 2*  
 \*opening of a shop on the front of the  
 house.



## Diversity

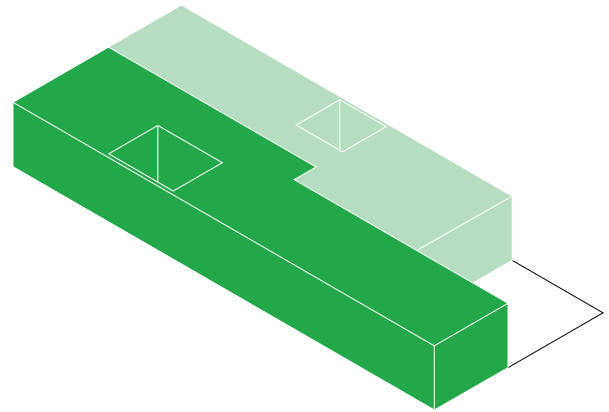
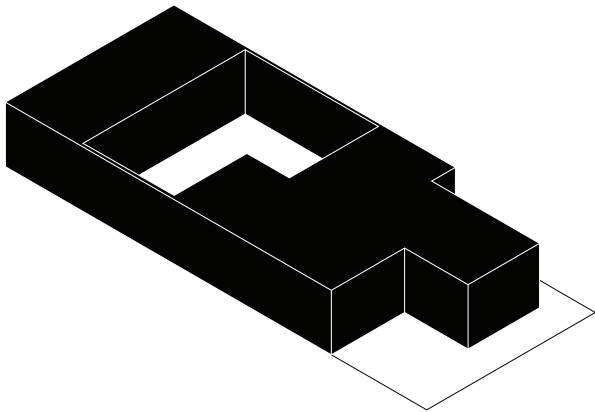
*Most of the public programs in the project were never realized. Hence a number of schools, markets and shops popped up into the residential neighbourhoods.*



### Extension

*The surface let free in the suggested plan  
represented a big part of the lot.*

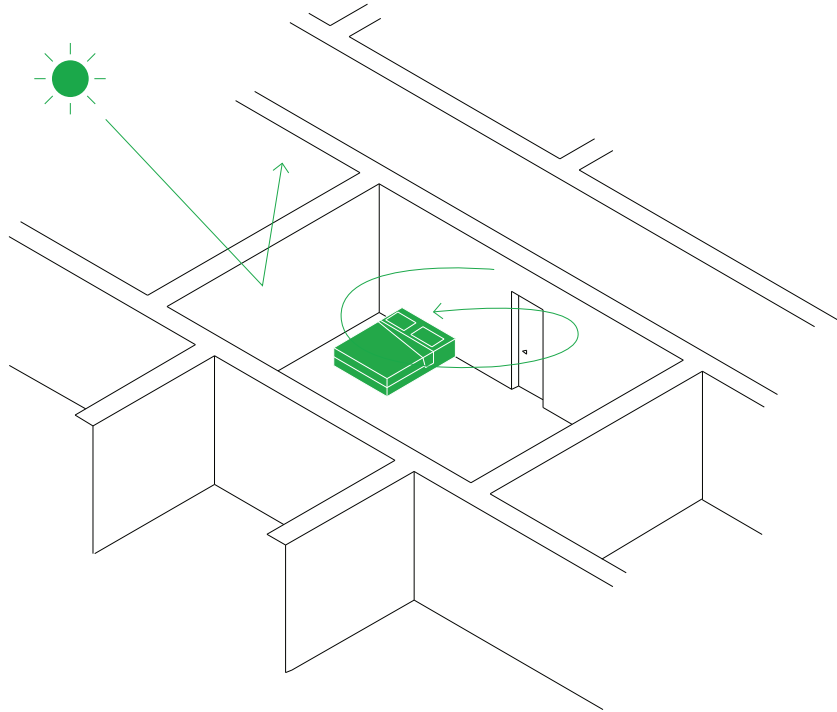
*The expansions made by the residents  
tended to cover as much surface as possible*



### Division

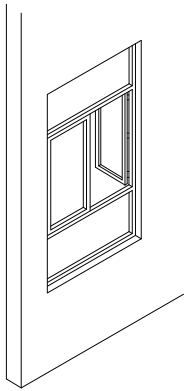
*The 8 meters width of the lots gave the possibility to the residents to divide the building in two sectors which then developed in two different houses.*



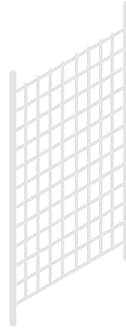


### **Ventilation issues**

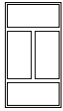
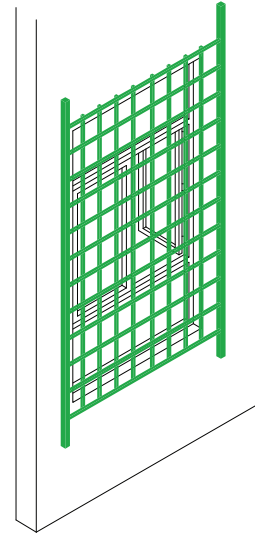
*The tendency to occupy the most part of the lot with new rooms made air circulation and lighting nearly impossible in some rooms.*



+

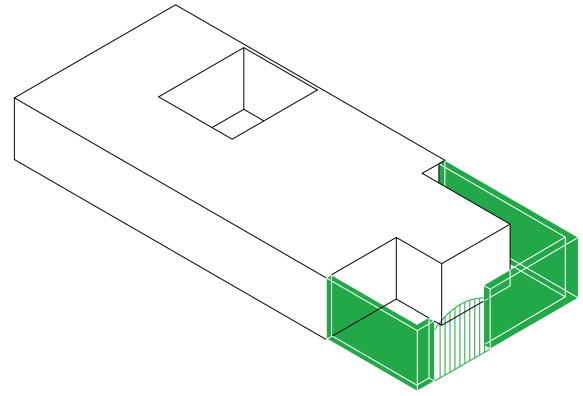
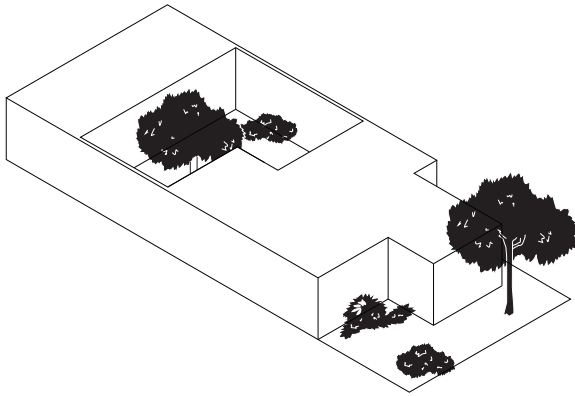


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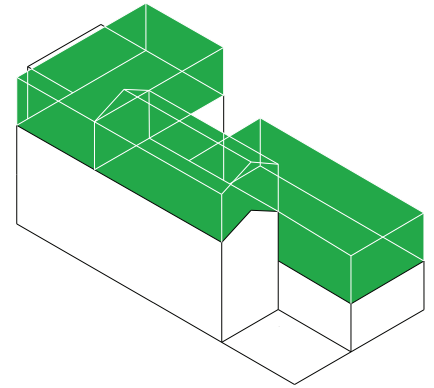
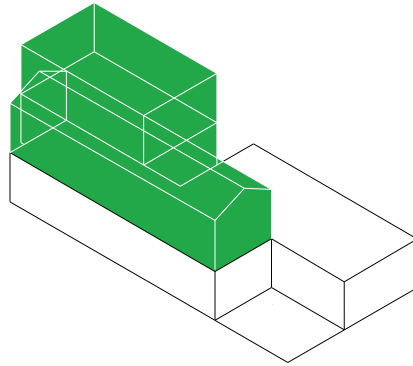
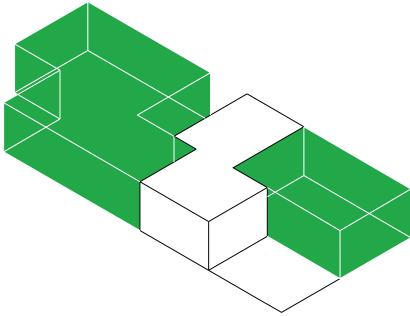
### Protection

*Both because of a need of privacy and because of fear of burglary, most of the large openings were fenced since the very first years after the completion.*



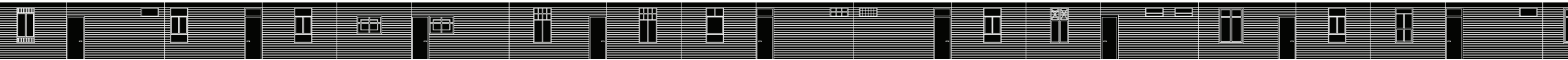
### Protection

*Despite the project envisioned a new garden city in Lima, front yards were soon fenced to protect the property from the street.*



### **Block over block**

*No plan was made for a vertical expansion of the nuclei. Nonetheless families added levels depending on their needs, till an height of 3 or 4 floors.*





*The project never reached the planned completion of the houses. Diverse reasons made impossible to control the the inhabitants through the process of expansion.*

*Nevertheless what we can find now is, under a more general point of view, a success of spontaneity and **diversification**.*

*The original **Nuclei** have disappeared under stratified layers of new building elements added through the years and generations.*

*The monotonous streetscape envisioned by the architects is now filled with an infinity of **variations** coming directly from the inhabitants needs.*

