

# Life cycle and lifetime:

## sustainability strategies for buildings suitable through user's ageing

Claudia Ferrara Carunchio

### DESCRIPTION

The aging process remodels the interaction between individual and space, since biological and physiological decline, intrinsic to this process, modifies the physical environment perception and the way users respond to its stimuli. Space, therefore, can become inadequate to user as it ages; the elderly, then, commonly undergo to situations that compromise their physical safety or stop doing some of the activities of daily living (ADLs), which, in the long term, intensifies the loss of functional capacity. A build environment designed according to elderly's needs is essential to keep the user's independence and autonomy through the ageing process, favoring the active ageing, especially concerning the residential space, where most of the ADLs are performed.

The global trends of population ageing show the vastness of this issue. In Brazil, the currently elderly population is around 29,1 million people; in 2030, this number is expected to be 42,1 million, almost 20% of the total population. Considering this scenario, it is

primordial to keep in mind the environmental impact of providing adequate houses for the elderly. Many initiatives focus on the design of new buildings; even though it presents adequate performance requirements for the elderly, it is an impracticable solution in economic and environmental terms, considering the high demand and the fast increase of the elderly population.

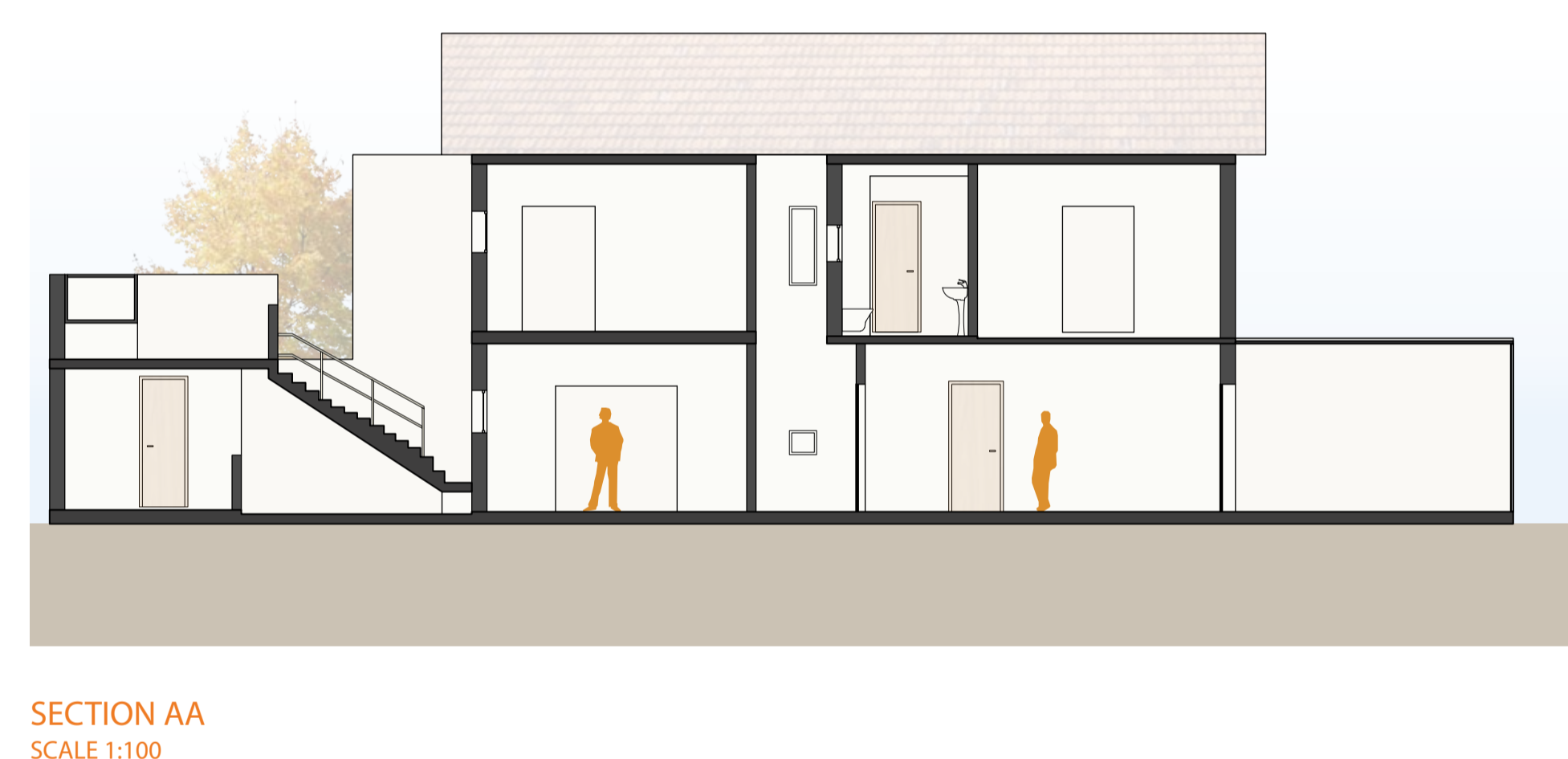
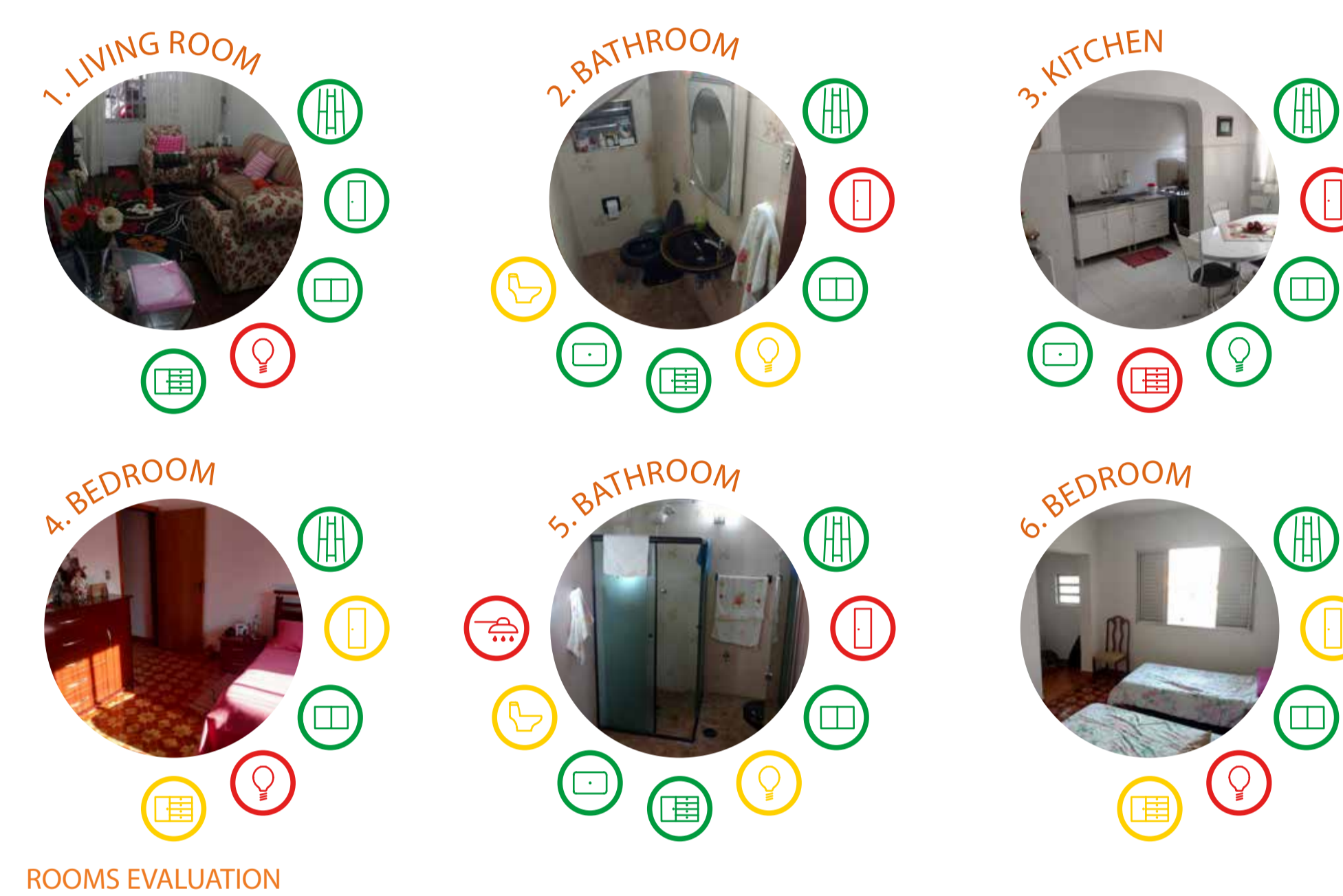
Seeking for alternatives that focus on re-designing the existing space, this project has been developed as a case study, aiming to create a method for adaptation of the residence in which the elderly already reside. As civil construction generates huge environmental impacts, it is indispensable to think about the lifecycle of buildings, not only in terms of its extensiveness, but also concerning about ways to utilize this entire cycle indeed. Therefore, the possibility of adapt houses according the changes of the dwellers needs through its life time is a matter of sustainability, beyond being a way to preserve the existing urban landscape.

### LOCATION

District of Campo Belo, São Paulo, SP, Brazil



### EXISTING BUILDING



### CASE STUDY INFO

#### REQUIRED AREA SCHEME

- Required area for circulation according to the Brazilian accessibility standard (ABNT NBR 9050: 2015)
- Required area for furniture and equipment appropriate use according to PANERO and ZELNIK.

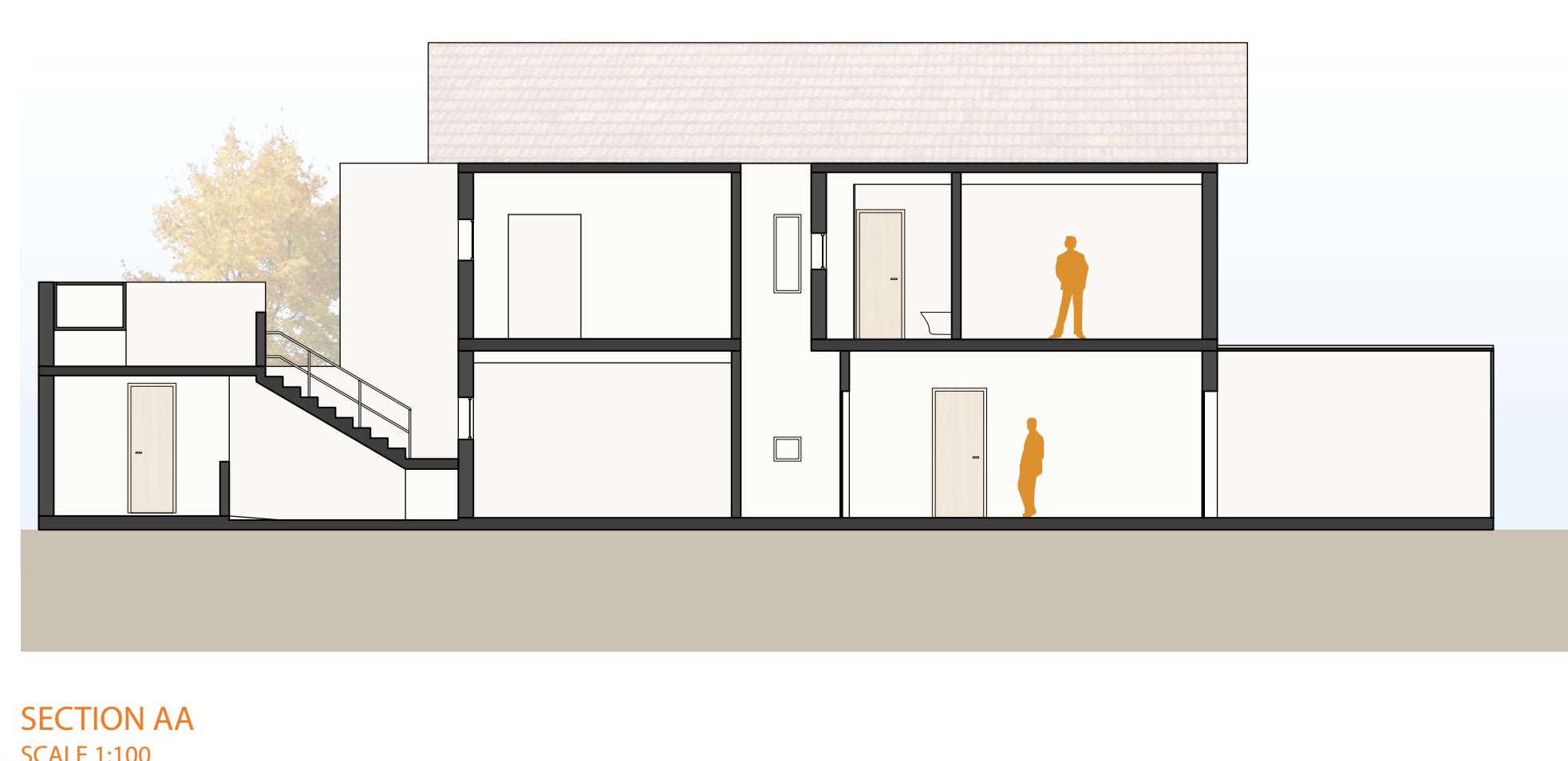
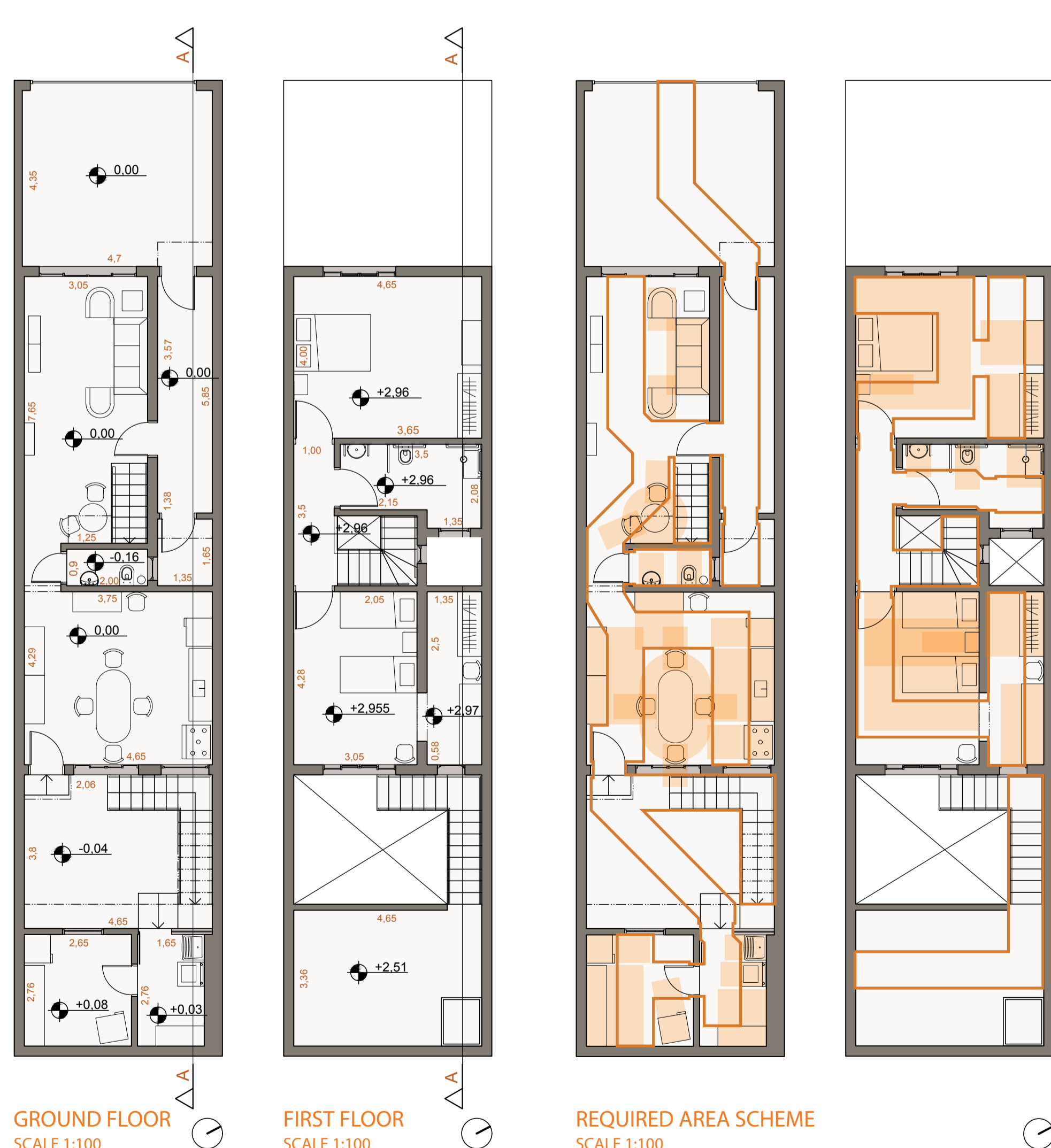
#### ROOMS EVALUATION

- |                         |  |  |               |
|-------------------------|--|--|---------------|
| Floor covering          |  |  | Furniture     |
| Door                    |  |  | Sink          |
| Window                  |  |  | Sanitary vase |
| Electric system & Light |  |  | Shower area   |
- Adequate - there is no risk or discomfort to the user in performing activities of daily living (ADLs) autonomously  
■ Inadequate - but there is no great risk to the user in performing activities of daily living (ADLs) autonomously  
■ Inadequate - there are risks or it is impossible for the user to perform activities of daily living (ADLs) autonomously

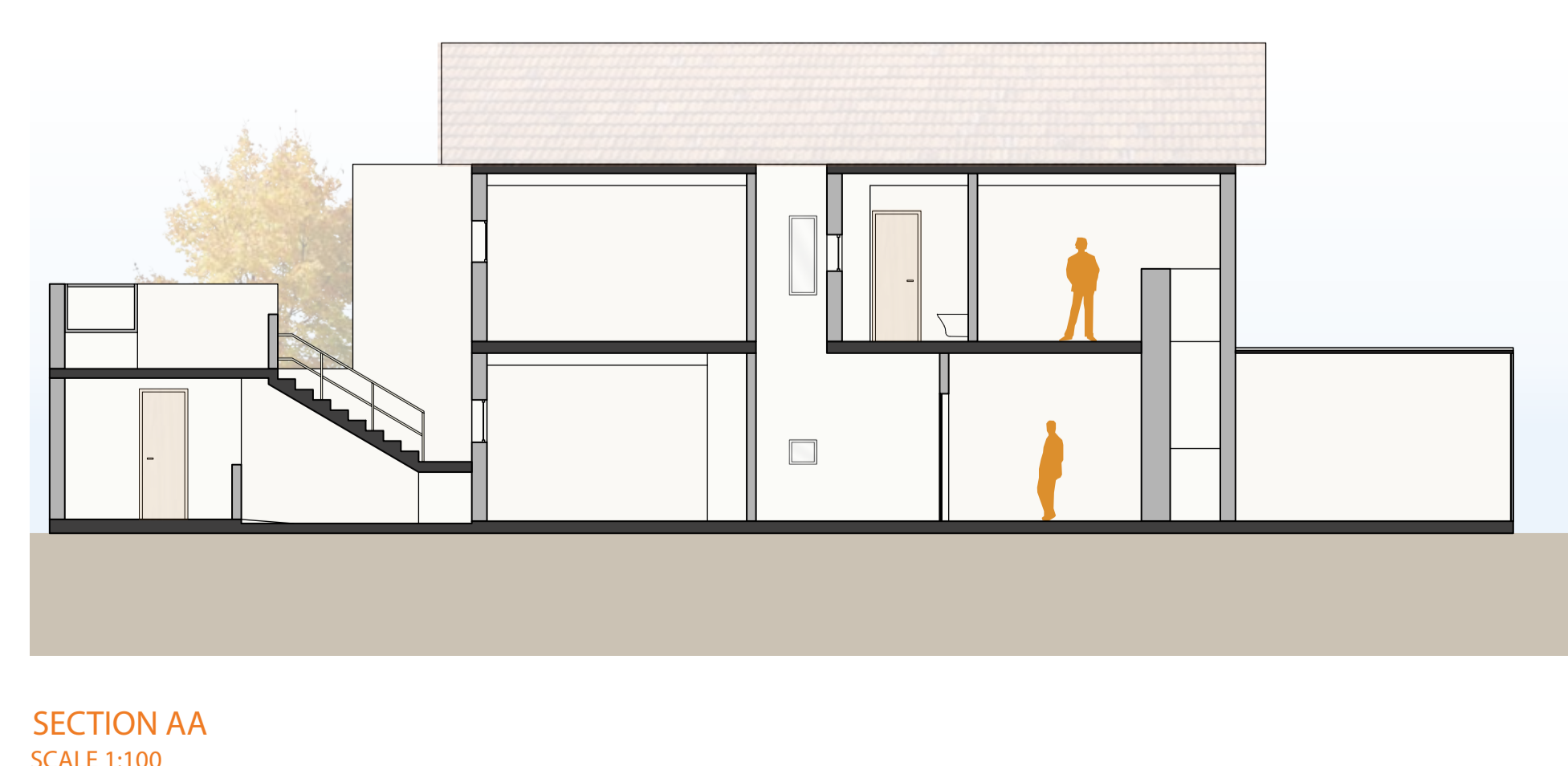
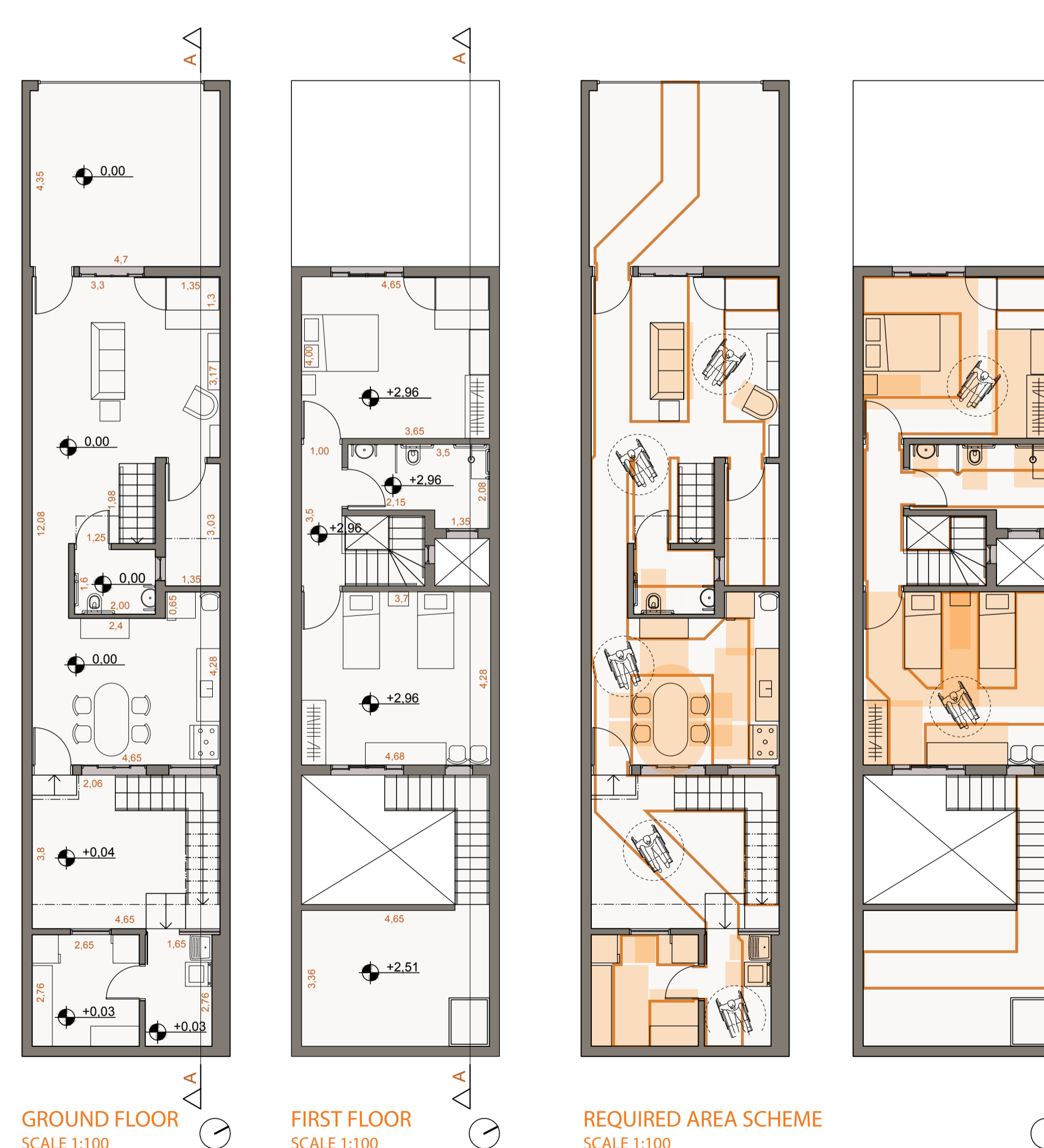
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The case study was preceded by a research about ageing process according to biological and physiological aspects, considering anthropometrical, neurological, muscular and sensory alterations, and the way this changes affect the building environment use. Based on this, performance requirements and criteria for housing spaces suitable for an elderly user were evaluated. For the case study, it was chosen a common residential type in the city of São Paulo. The first step was to evaluate the existing space, furniture and equipment according to the dweller's needs, analyzing the different components of each room of the house. Then, some intervention proposals were developed, as the two showed. In the first one, there were made low cost changes to guarantee the safety and comfort in the tasks performance, considering the resident's current conditions of health and mobility. In the second, the aim was to make the residence completely accessible, including its upper floor.

### FIRST PROPOSAL



### SECOND PROPOSAL



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