



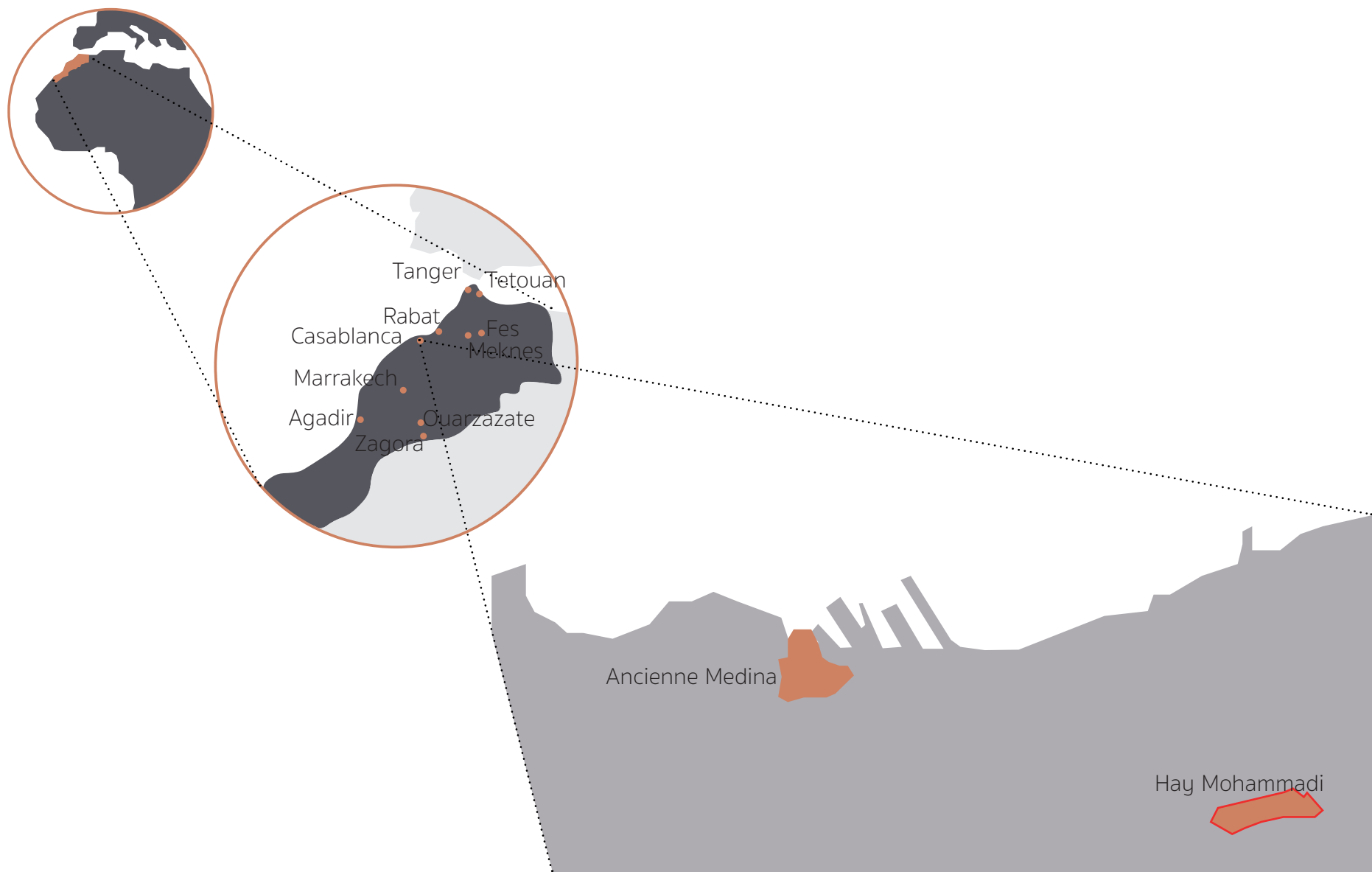
RESEARCH



# COURTYARD HOUSE 8X8

The courtyard house 8x8 is designed by the french architect Michel Ecochard who was the urban director of the Morocco Department of Urban Planning from 1946 to 1952. His team find a solution for the housing shortage in a Morocco where rural territories were being abandoned in favor of the major industrialized cities. This was mostly the areas in the city Casablanca.

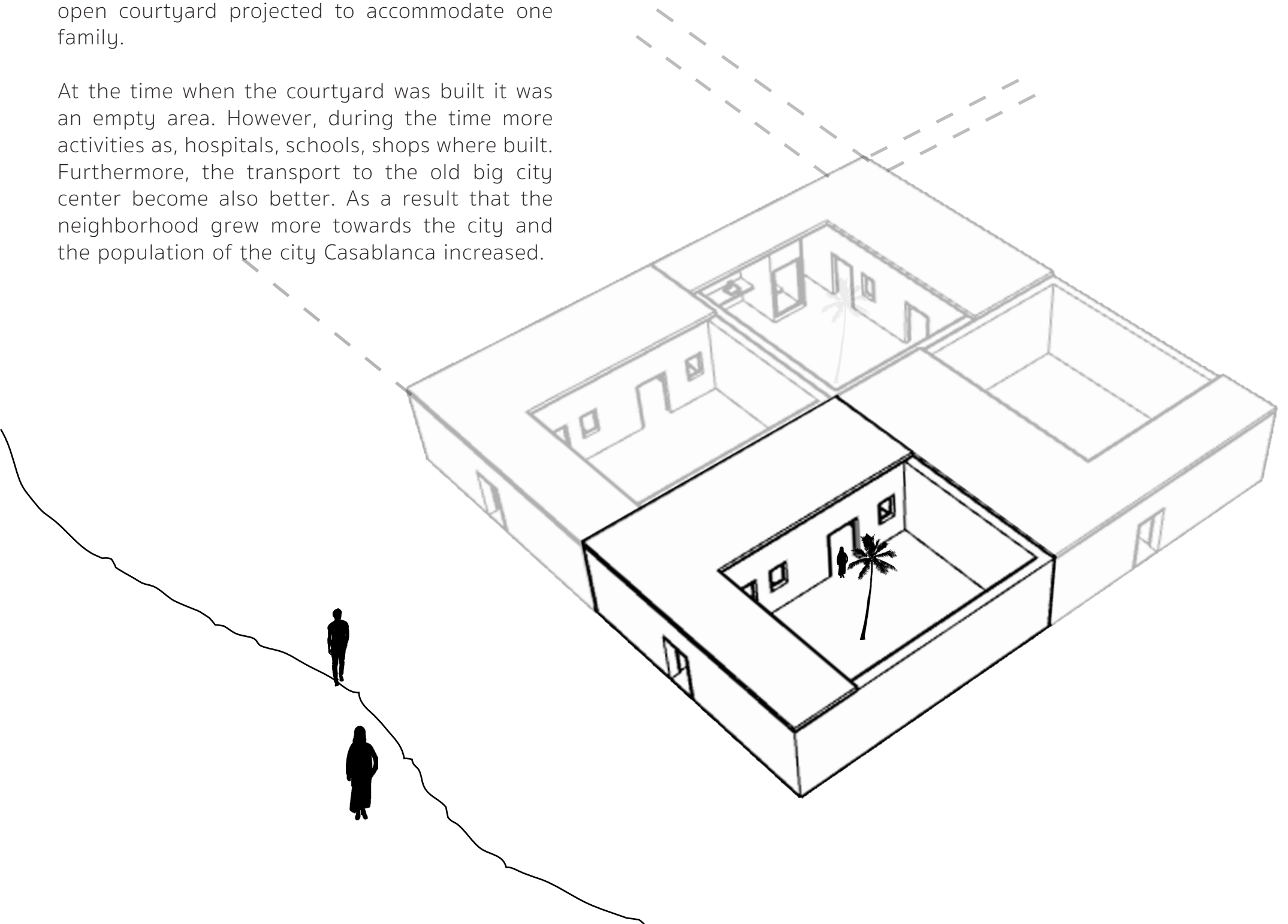
The project is placed in the neighborhood (hay) Mohammadi which is the port city in western Morocco, its about 25 km Northeast of Casablanca.



# SITUATION

The courtyard house is one of the Riad houses which are placed in the neighbourhood Hay Mohammadi in Casablanca in 1950s'. This was an upcoming Neighbourhood especially for the Labors which came for rural surrounded areas. At the time, Hay Mohammadi was at the edges of the city Casablanca. It was the place of the north Africa's oldest and once largest slum. Each plot of 8x8 would replace the slum dwellings with a standard two-room home arranged around an open courtyard projected to accommodate one family.

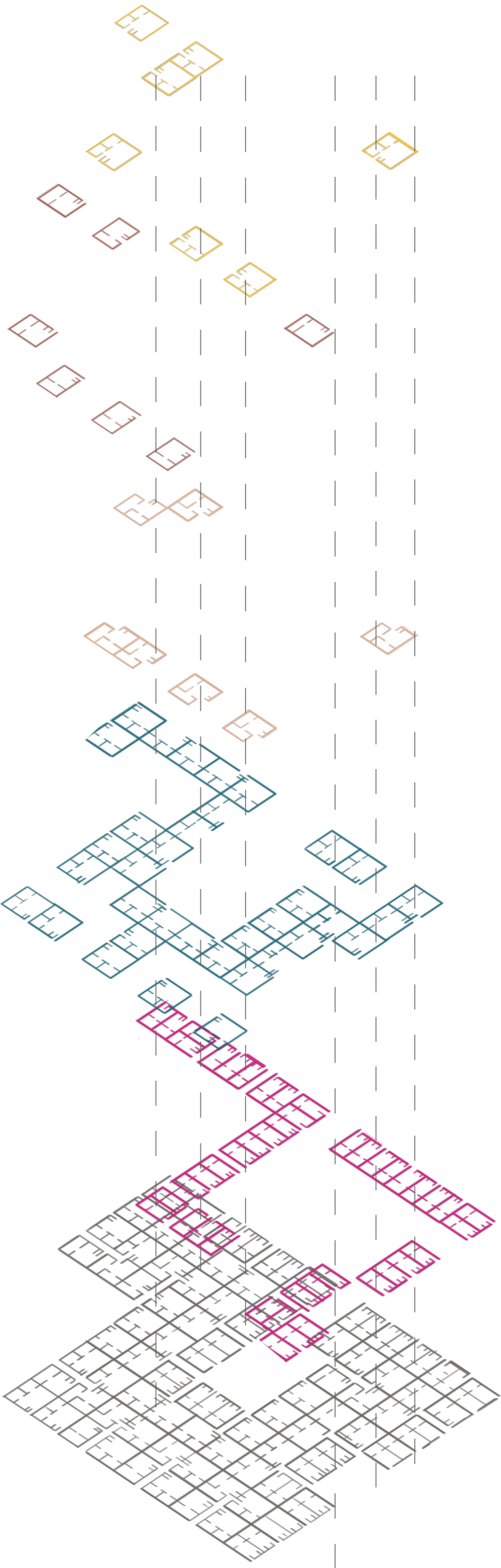
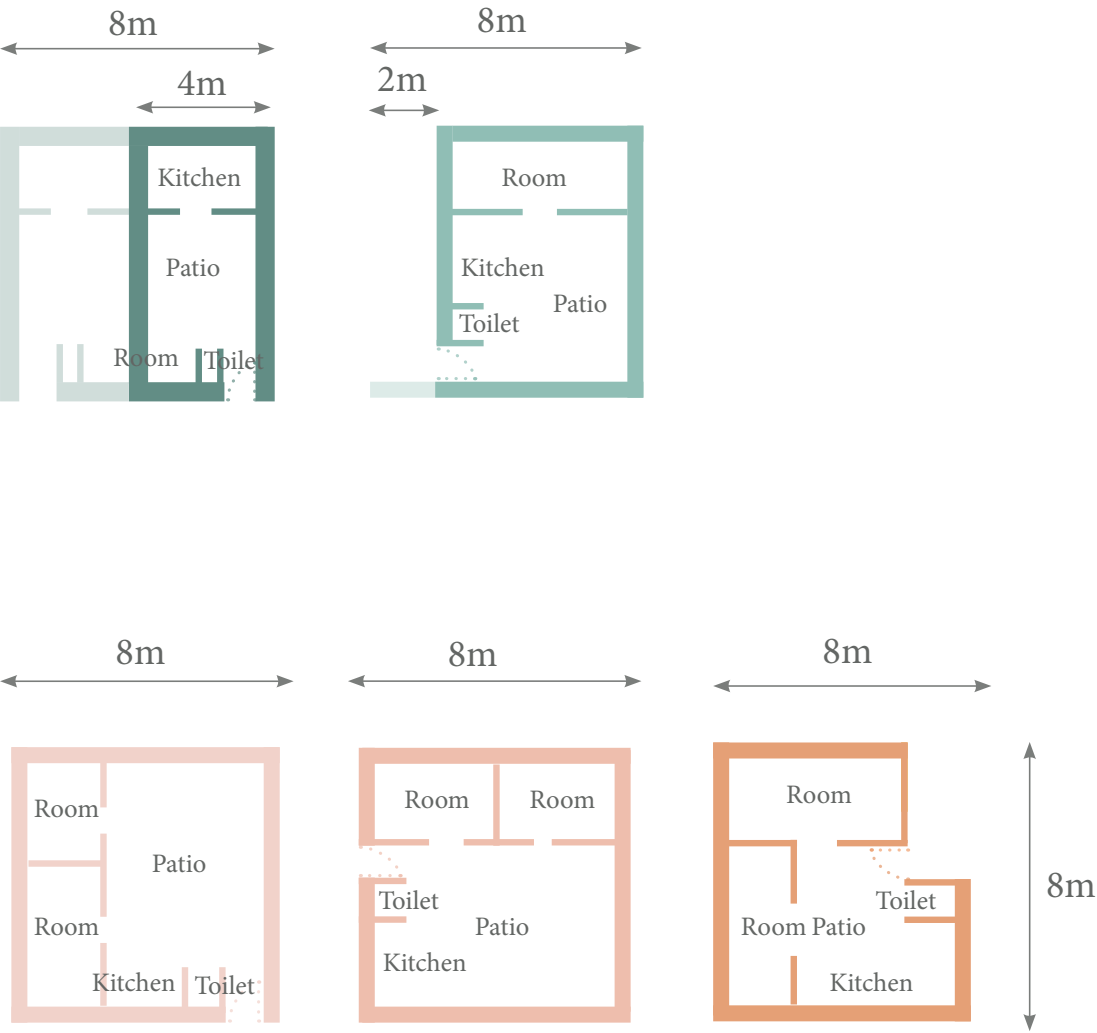
At the time when the courtyard was built it was an empty area. However, during the time more activities as, hospitals, schools, shops where built. Furthermore, the transport to the old big city center become also better. As a result that the neighborhood grew more towards the city and the population of the city Casablanca increased.



# CONFIGURATION & USE

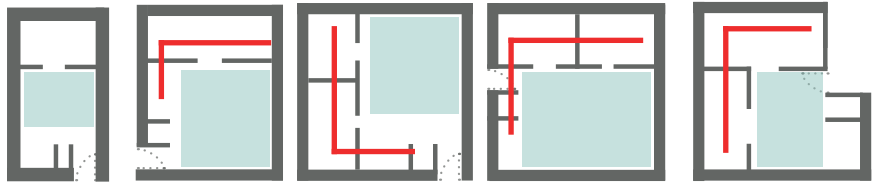
In the plan design of Ecochard are different typologies which are placed in an 8x8 grid. All the riad's are placed on the ground level without upper floors. The axonometric shows an overview of the five different Riad types in the area.

All those typologies are made in the grid of 8x8m and have a height of 2,8m. The typologies are divided into patios with one,two or three rooms. The smaller patios are divided into the 8x8m grid. This ensures that designing can still be done within the grid.



# CONFIGURATION & USE

The roof which made the closed places in the Riad is in a L-shape. The L-shape is used in several ways in this project. The open space in the riad also known as the courtyard is the open space, where different activities happens.

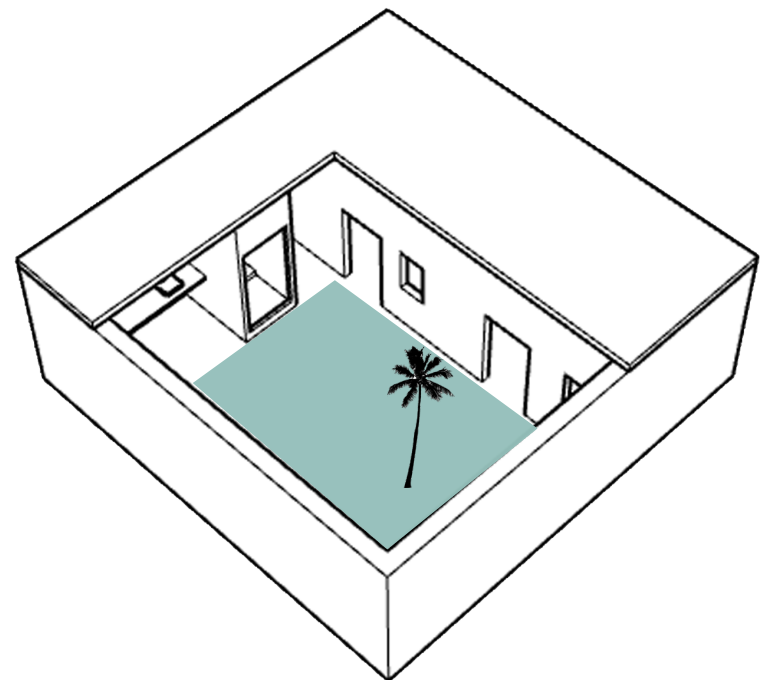
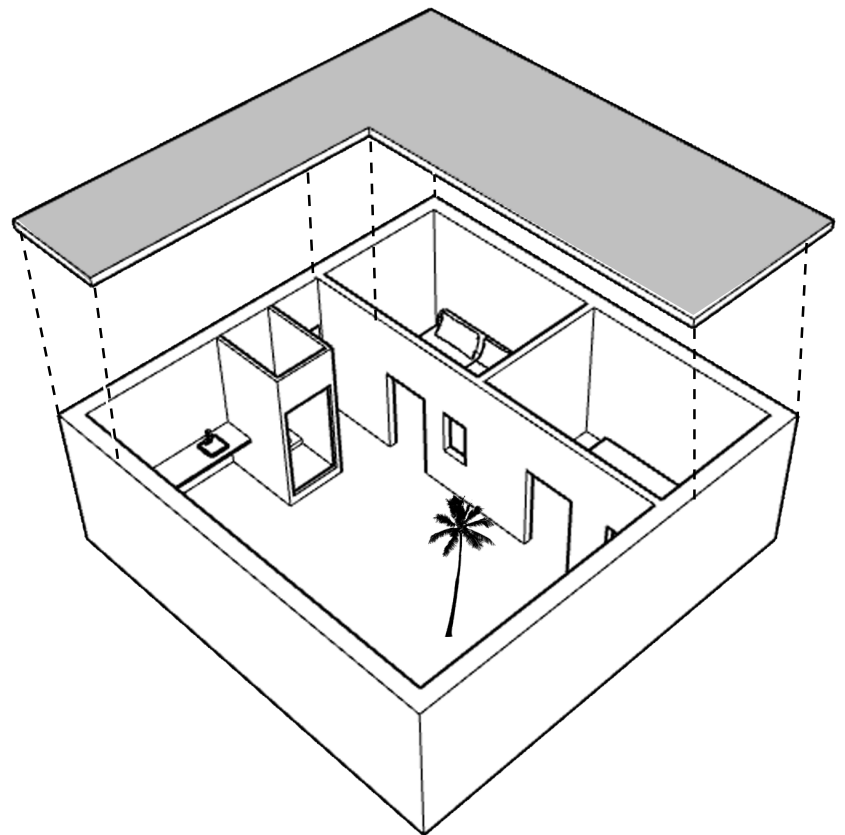
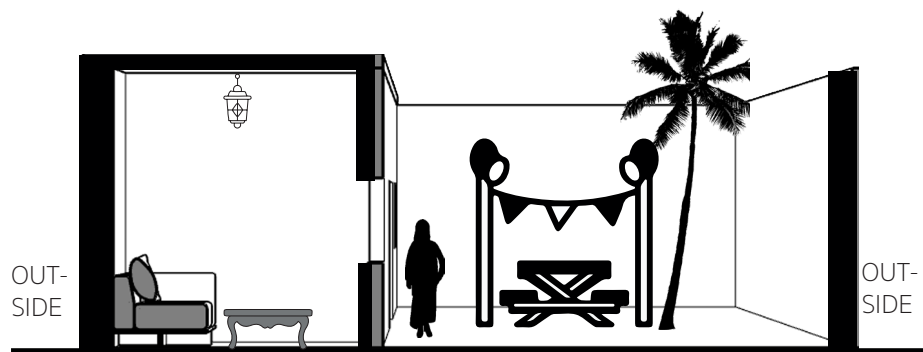


## Activities

For a lot of people is the washing machine a luxury. Hence, the woman are used to do the wash by the hand. This is mostly done in the patio.



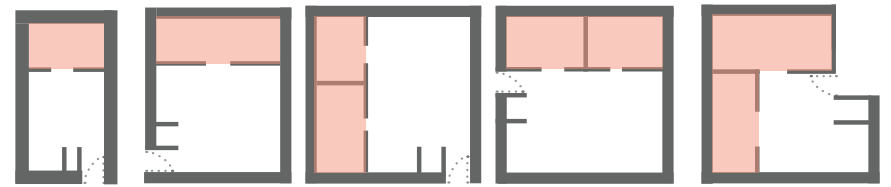
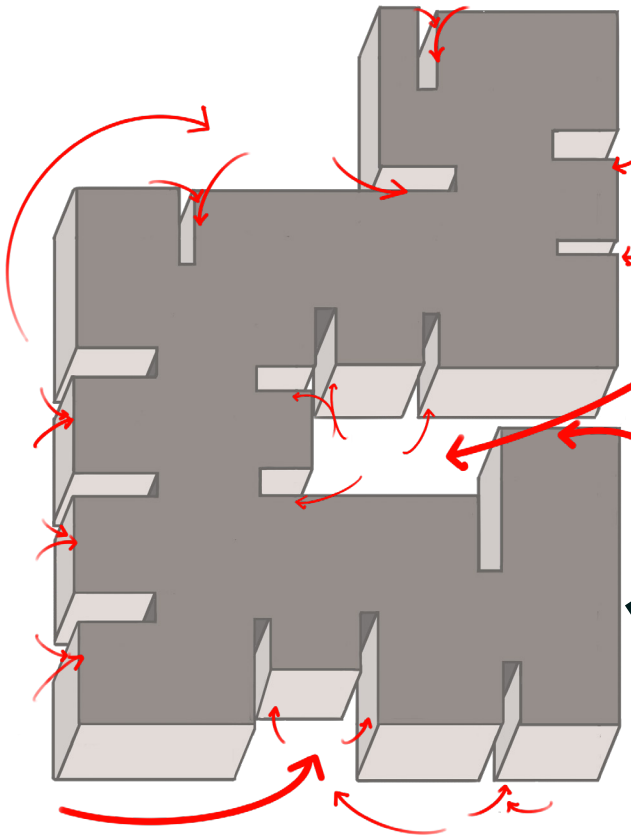
During family events, for example births and religious feasts the families prefer to organize it in their own homes. Mostly, they choose the largest and coolest place in the house, which is the courtyard. Furthermore, it has also to do with the privacy. The center is the semi-public place of the house where everyone is welcome.





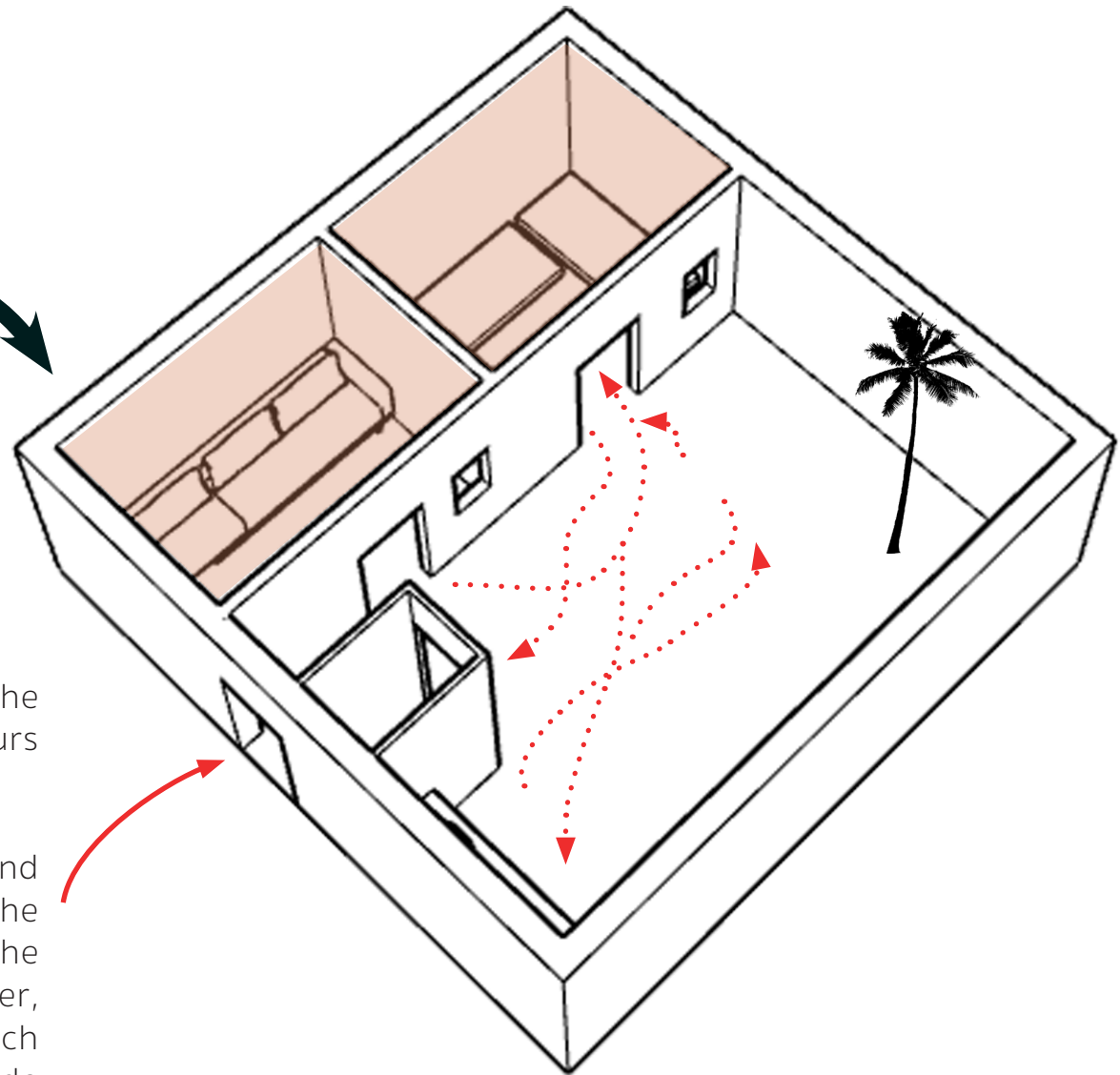
# ROUTING & FUNCTIONALITY

The courtyard house is in the building block as shown here. The house is reached long streets and narrow dead-end streets.



The routing in the house is simple to understand. In the house there are no hallways present. The routing occurs through the central area (courtyard) of the house.

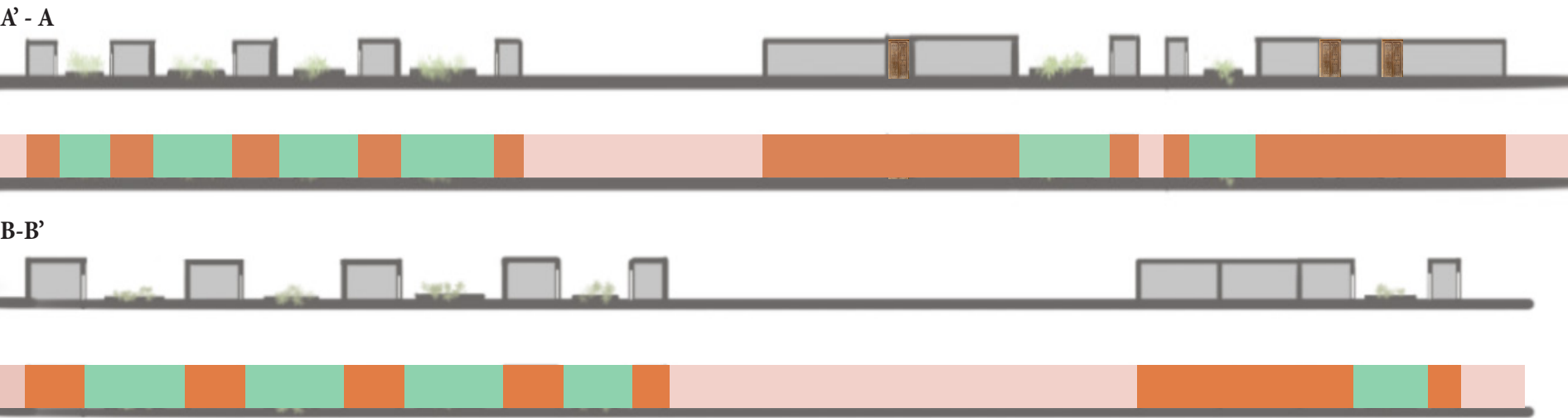
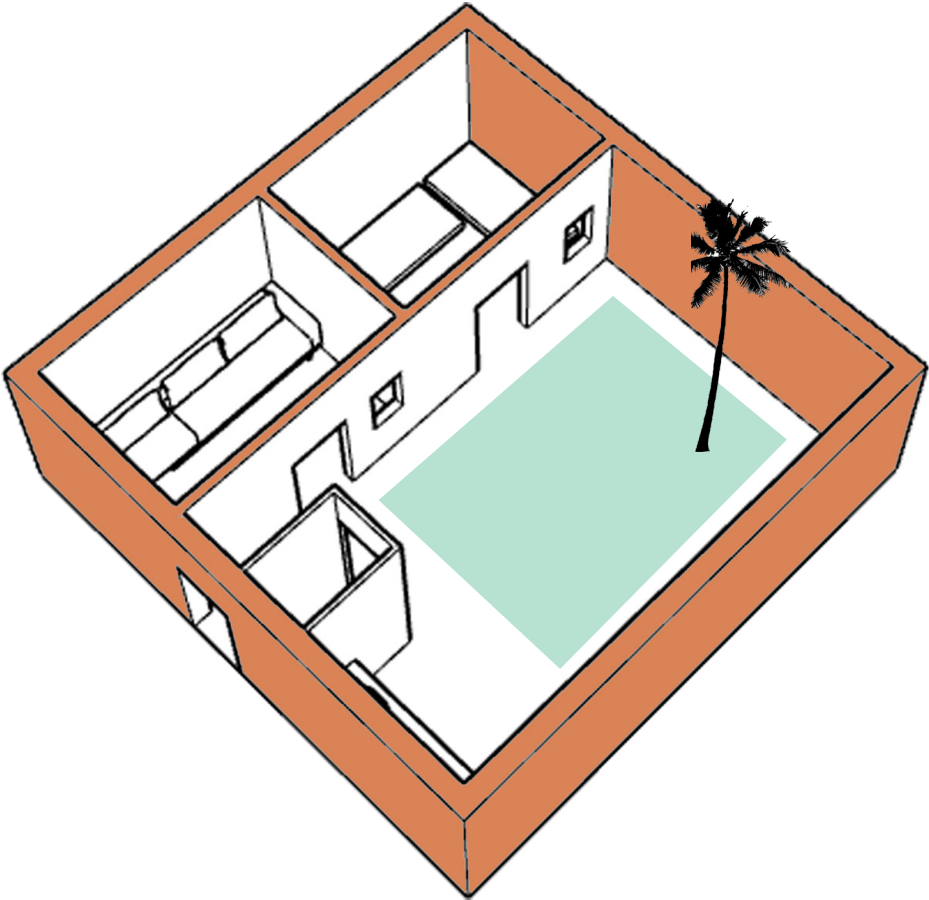
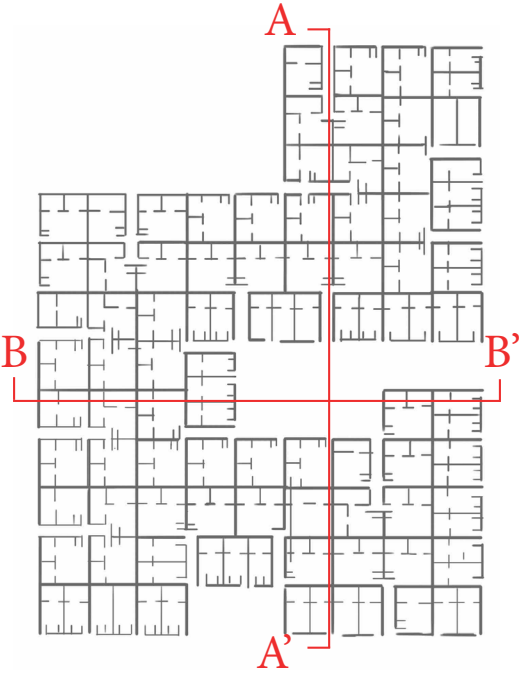
The rooms of the house are always rectangular and multifunctional. This is done to accommodate visitors. The advantage of the function flexibility of the rooms is that the livingrooms, always can be used as bedrooms. Moreover, the woman and male are sitting mostly separate from each other. This mostly happens when the men's are from outside the family. By having flexible rooms, one room can be used for the male and the other for the female.



# PRIVATE AND PUBLIC

The private and public space at the site plot is shown in the sections. There is a hard line between private and public. You can notice this because there are no windows placed on the external facades. the disadvantage is that there is no direct connection to the surrounding area.

The windows of the rooms are connected with the central courtyard of the house. This central place is a semi-open space.

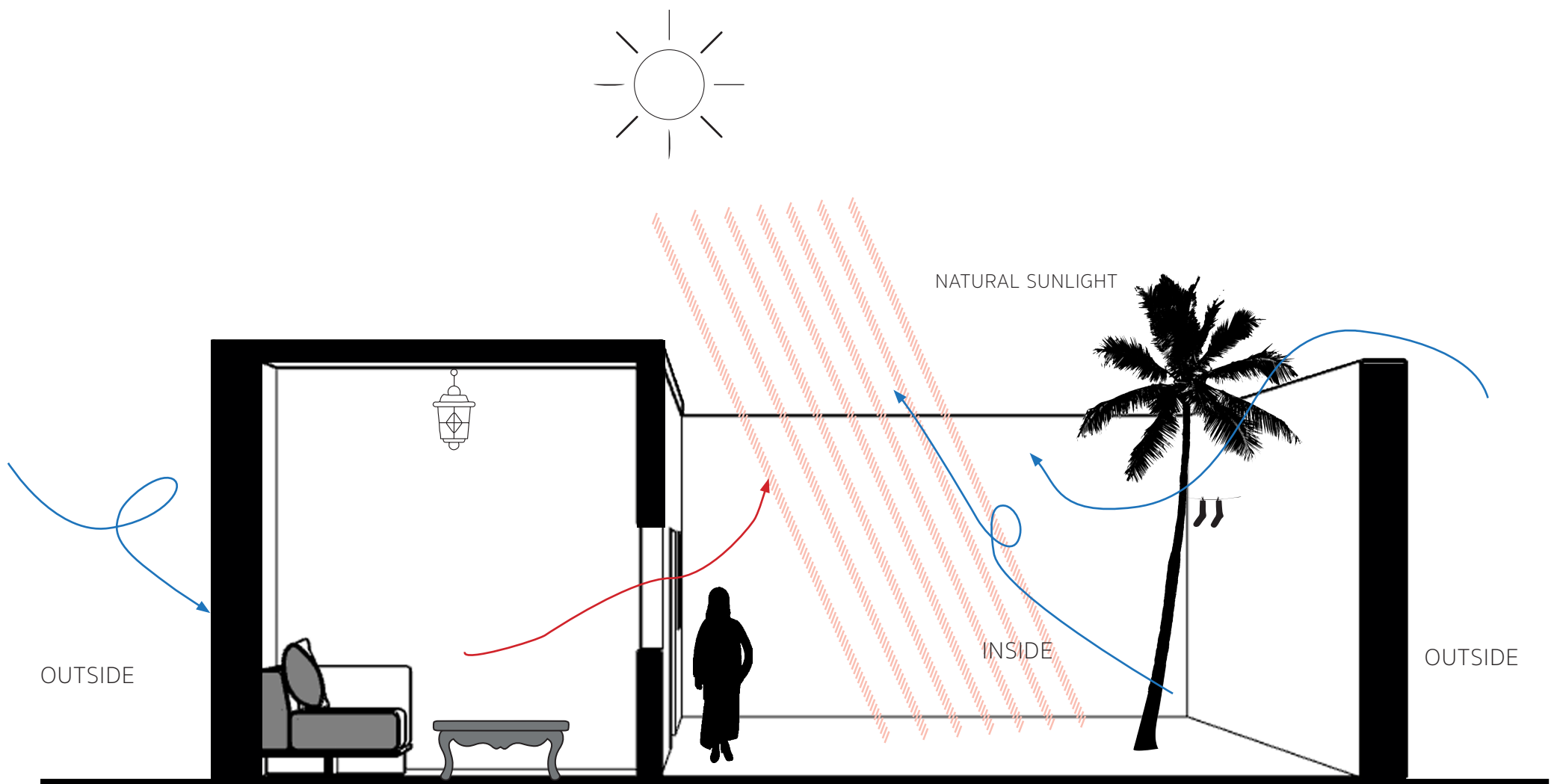




# CLIMATE

The climate is regulated by the patio in the building. The rooms have no openings to the exterior. As a result, the rooms are frequently closed and not much sunlight enters, which creates an agreeable area in summer. During the winter the patio warms up.

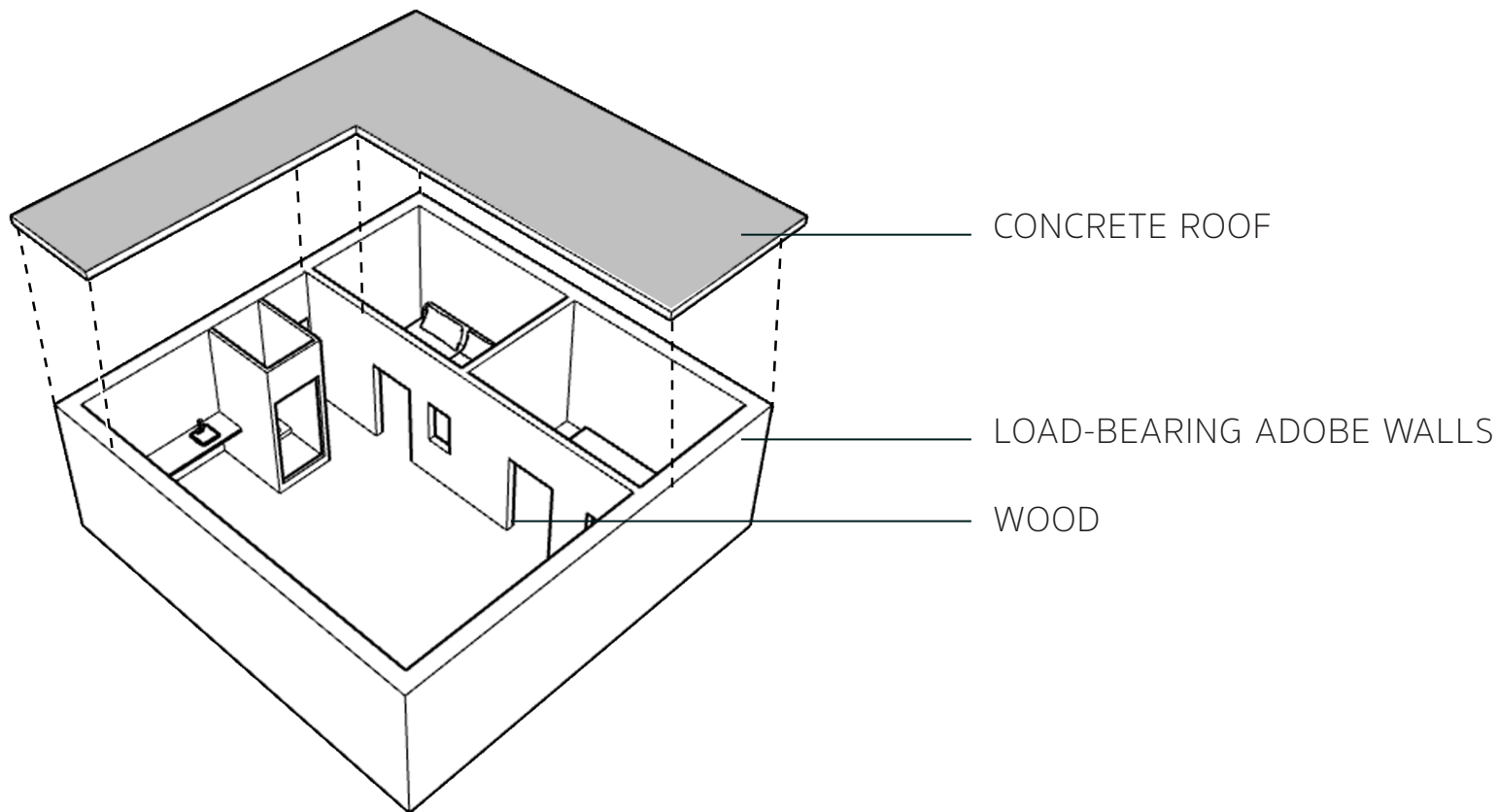
The rooms surrounding this patio do not take the orientation of the North in mind.



CLIMATE ADVANTAGES OF RIAD

# CONSTRUCTION & MATERIALS

The construction of the houses was carried out on site. Loam blocks were used and bricked together. At the site location, the grid 8x8 was marked out, this made it easy for the builders to build.



Doors and windows in the building consist of wood. The windows have no glass. Instead of glass the used wooden shutters. Moreover, some of the areas don't have doors but curtains. As a result there is always wind blowing in.

Nowadays, the building exist with a floor above. The space above the open patio is covered to allow for the expansion of other floors. Upper floors give more rooms and this is a needed for when the familie grows. The blank white walls are replaced by colorful window shutters and networks of clothelines now.



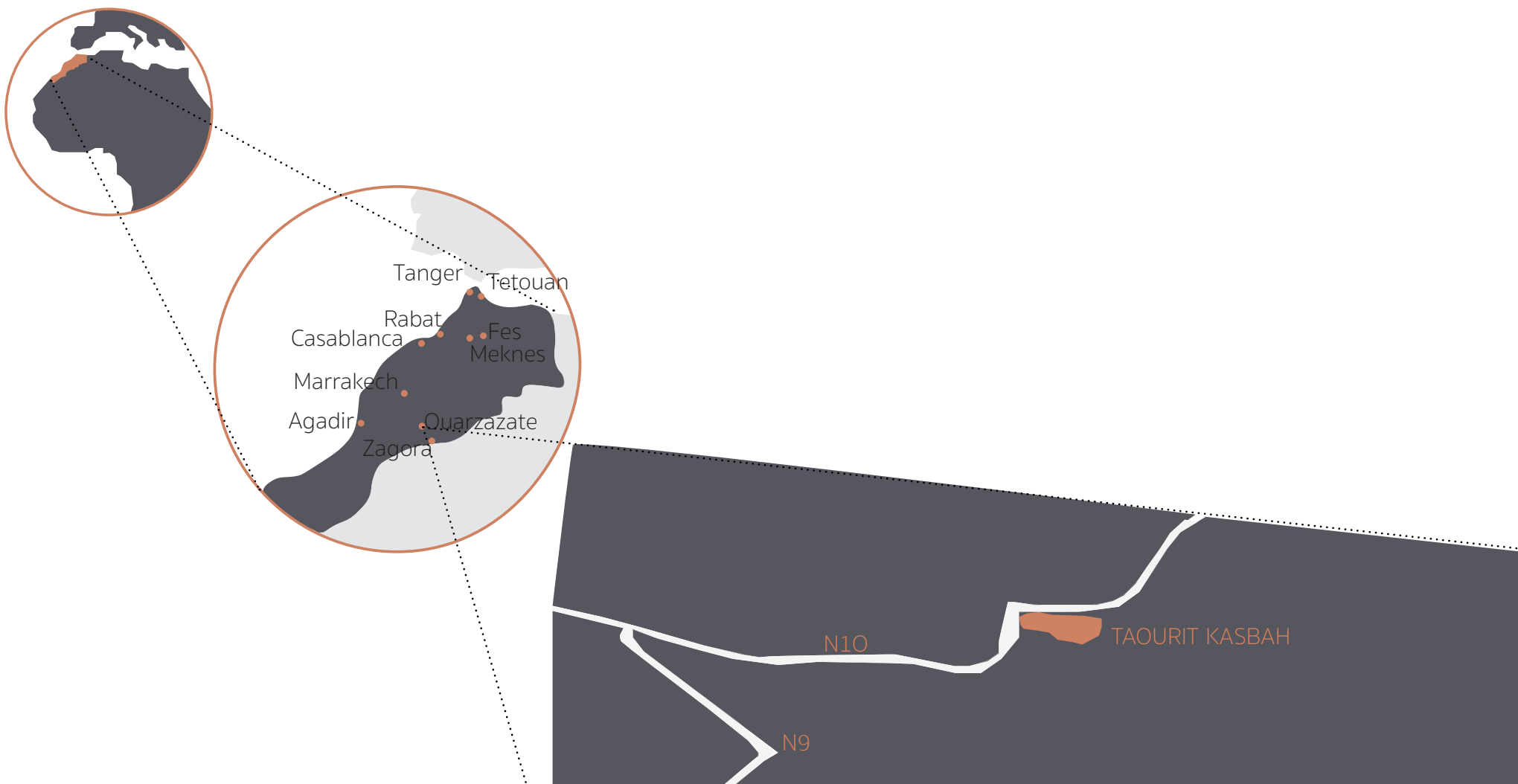




# TAOURIT KASBAH

The kasbah or the fortified house was built for the ruling family. However, due to their decayed and abandoned state, these sites are becoming increasingly threatened and many are in danger of disappearing. This is partly due to changes in the economic and social structures on which they were originally based.

The ksar of Taourirt, an iconic earthen village and true oasis, dates back the 17th century. Strategically located at the crossroads of several trans-Saharan trade routes, it is now part of the modern city of Ouarzazate. The kasbah is classified as a national heritage site in 1954, where it was originally one of the residences of the Glaoui, a powerful family of chiefs who ruled the region in the late 19th and early 20th centuries. It is a nationally recognised symbol of Amazigh culture. The word “Amazigh” refers to the descendants of the peoples present in North Africa before the Arab conquest, better known as Berbers. The term Amazighs is preferred today by this cultural group.



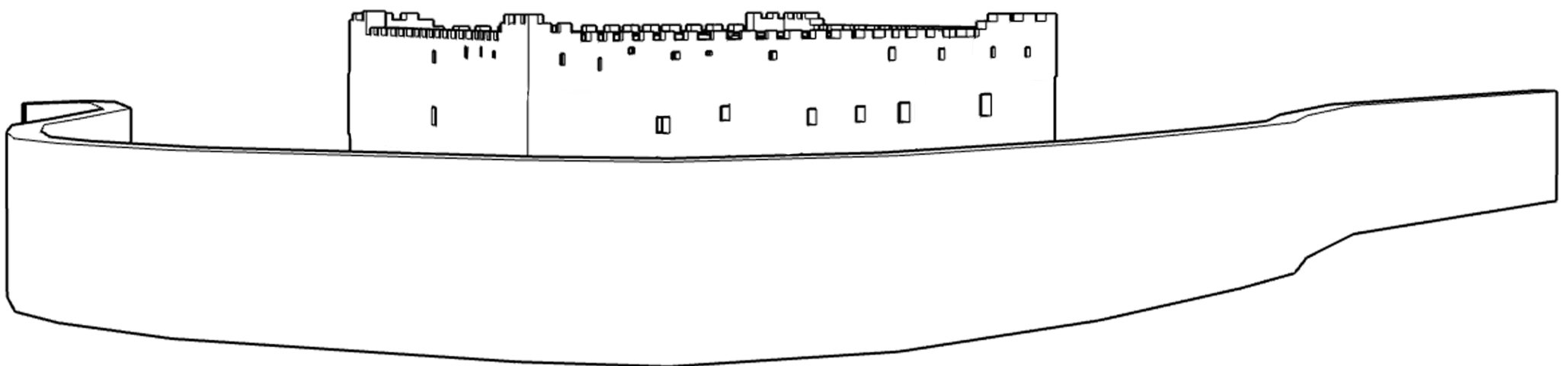
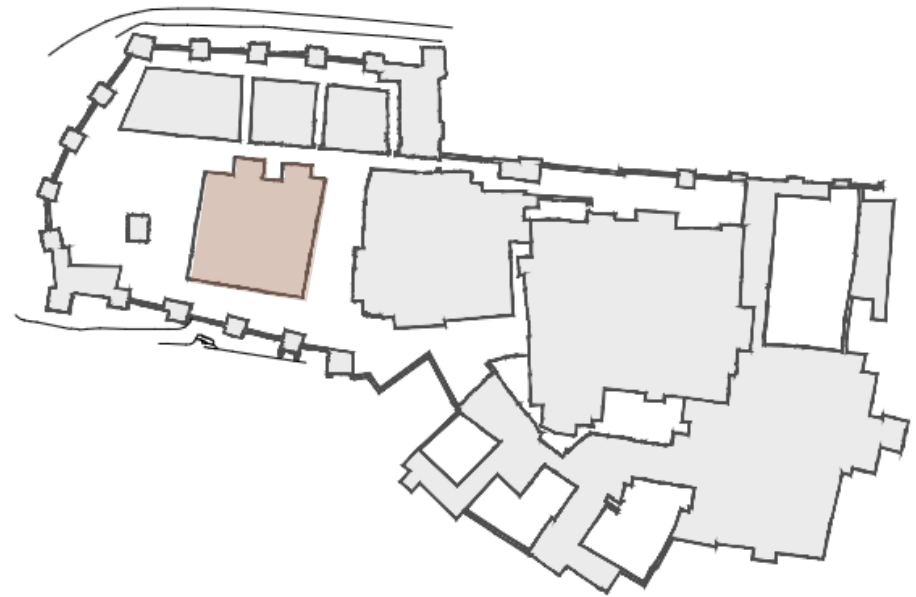
# SITUATION

The kasbah is placed in the city ourzazate. This city is also seen as the door to the dessert. It is a great oasis of the region. The first in the south of the Atlas. The villages is formed out of red patches.

Nowadays, is the city mostly used for the film industry as a film location.

The taourit Kasbah consist of different kasbah's situated between walls. Outside the walls is the dessert.

The kasbah analyzed is shown in the figure. It has an impressive construction of buildings rising above a large group of buildings. The location, setting and position of the village in the landscape testify to the prosperity and power that the Glaoui family enjoyed at its height in Taourirt

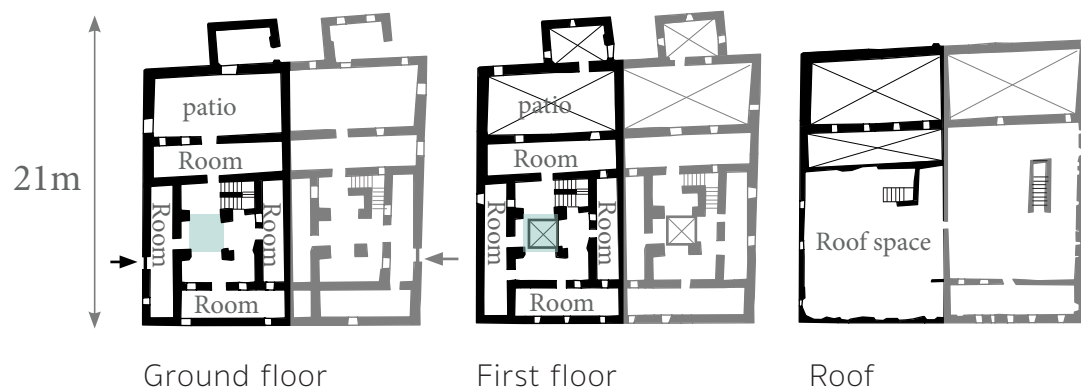




# CONFIGURATION & USE

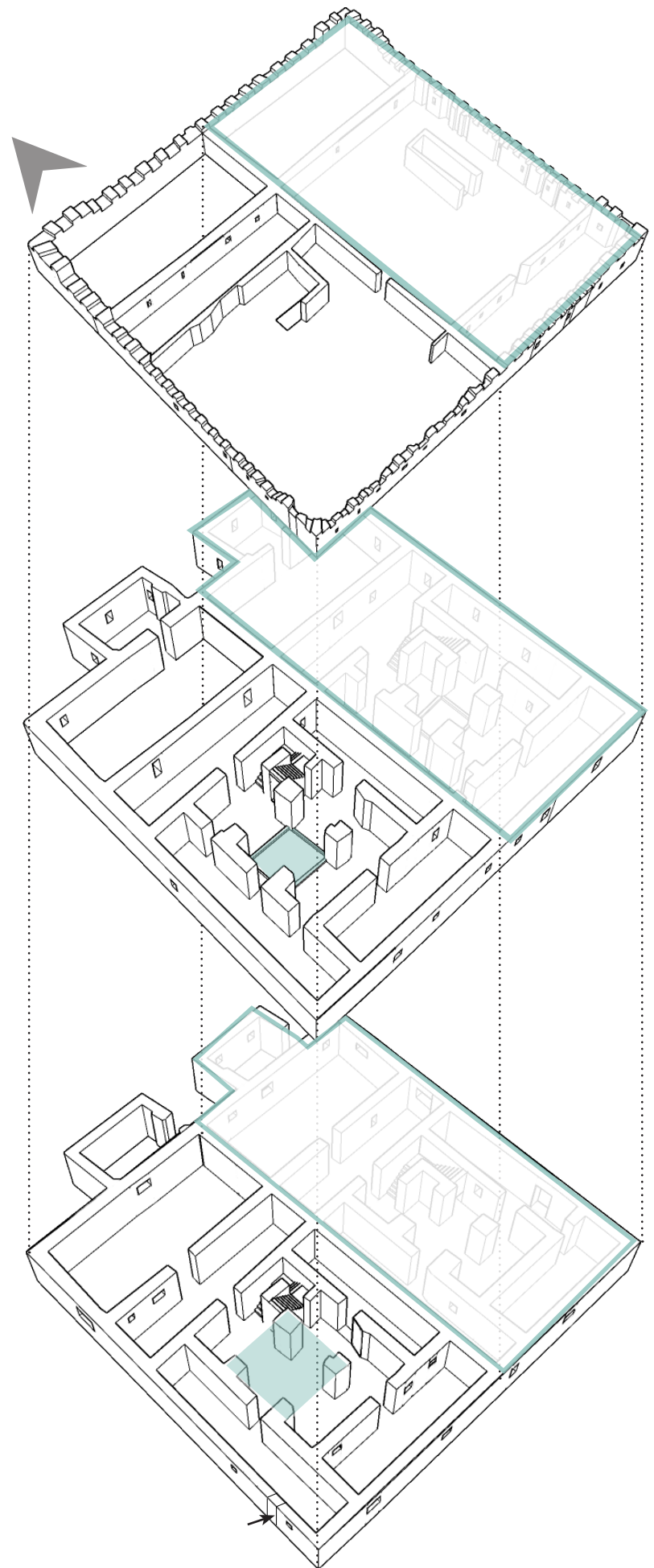
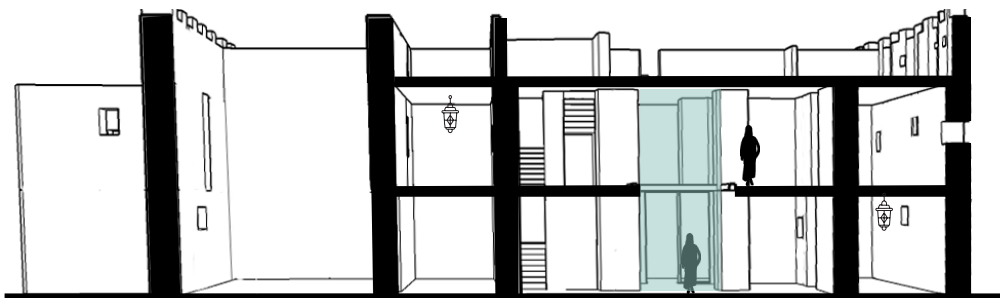
In between the walls are different kasbah typologies. The kasbah in this case is a semi-detached kasbah. The setup and structure of the different kasbah's stays the same.

The kasbah has a center surrounded with rectangular rooms. The center is connected with the upper floors and is closed at the roof. The rooms have windows at each side. The windows are mostly small and placed instinctively. The entrance of the houses are not at the same orientation. They are at opposites of each other. At the corner of the buildings are open spaces without a roof. This place has double height and has a climatological function.



## Activities

The living activities are mostly in the kasbah or between the external walls. The kasbah had next to living function also the function for the military base. The rooms are multifunctional.



# ROUTING & FUNCTIONALITY

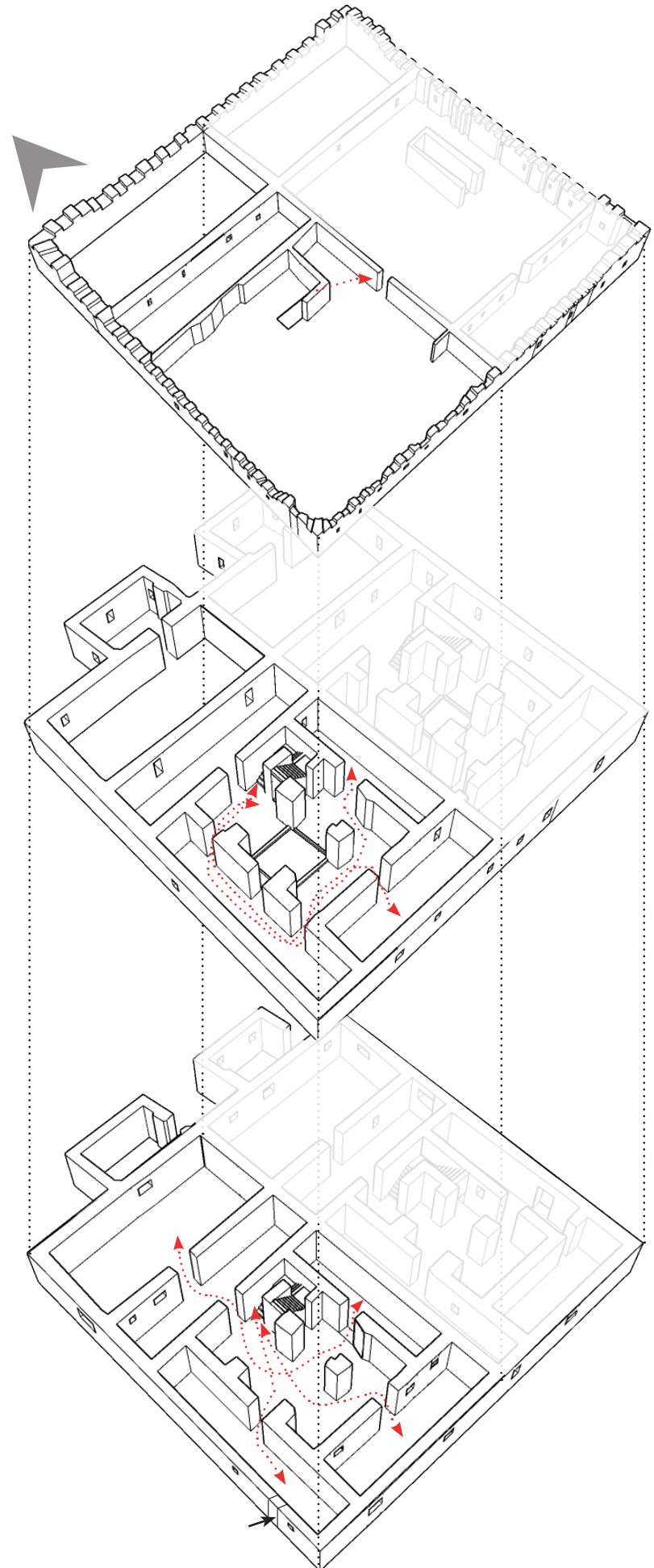
The entrance to the building can be reached after you pass through the wall. The wall keeps all strangers and enemies out of the safe area. Within the walls are several kasbahs. The entrance of these Kasbahs are not located on the same side.

Inside the Kasbah, the routing is around the central point. The rooms are also situated around the central point.

The rooms of the house are always rectangular and multifunctional.



First entrance is through the doors of the walls.

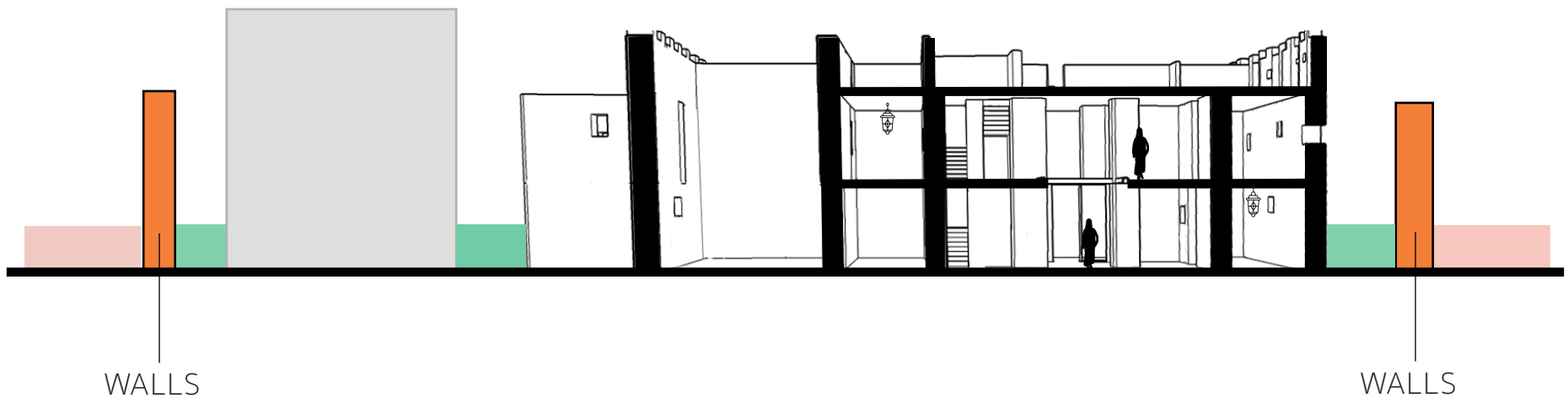


# PRIVATE AND PUBLIC

Private and public spaces are separate with a hard line which is translated physically by a wall. This wall is surround over the whole kasbah areas. In the wall are some little openings.

Inside the wall are some semi-public spaces around the kasbah. Outside the wall is the open public space which is the dessert.

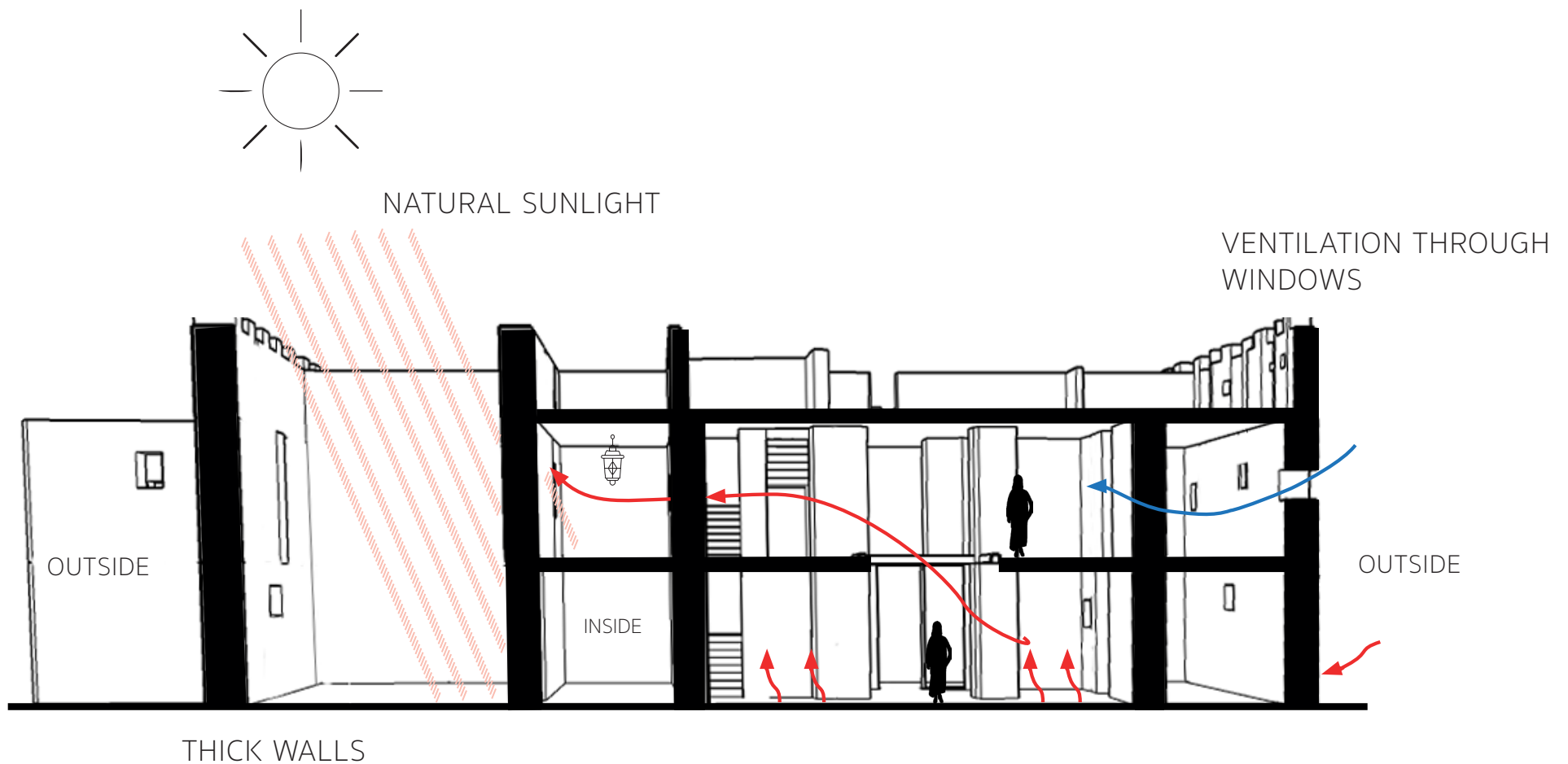
The other buildings in the walls are also Kasbah buildings and some of them are built as an riad. Some of the buildings in the site plan have the function of a hammam while other rooms functioned only for the children or for male relatives.



# CLIMATE

The climate is regulated by the open space in the center and the high thick walls. The walls are thick and keep the sun radiation out. This makes it cool inside the building. At the external walls of the kabsah are small windows. These windows are small and used for natural ventilation.

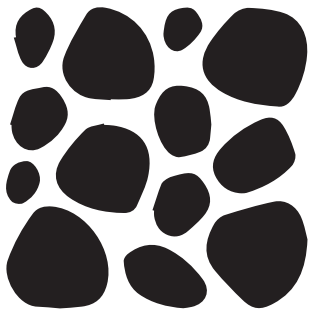
Most of the rooms have windows on both sides. As a result, the ventilation circulation is arranged.



CLIMATE ADVANTAGES OF KASBAH

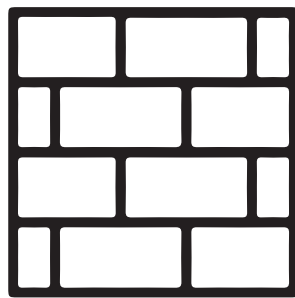
# CONSTRUCTION & MATERIALS

The Kasbah of Tourirt were built in different time with different architectural forms and functions. However, the technique and material that they used are common to the most traditional buildings in the region. They built in different steps.



1) FOUNDATION

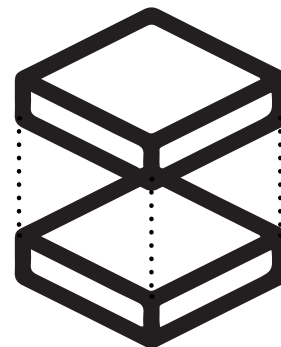
The foundations are made of large stones and the corners of the walls are often reinforced with short pieces of wood.



2) SUPPORTING WALLS

They used the pisé technique for the supporting walls. It is a method of building walls in raw earth, compacted in a formwork in successive layers using a pestle (or dame, pisor, pisor).

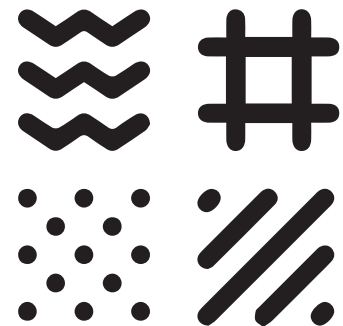
In Taourirt, walls built this way are generally 60 to 80 cm thick.



3) UPPER FLOORS AND TOWERS

Adobe, or mud brick, is usually used for the upper floors of the towers and for the parapets of the structures where decorative surfaces and windows often appear.

Adobe is also used to build small dividing walls, stairs and columns in the buildings.



4) DECORATIVE ELEMENTS

Decorative elements such as arches, niches and traditional Amazigh motifs are made of bricks and then covered with an earthen plaster.

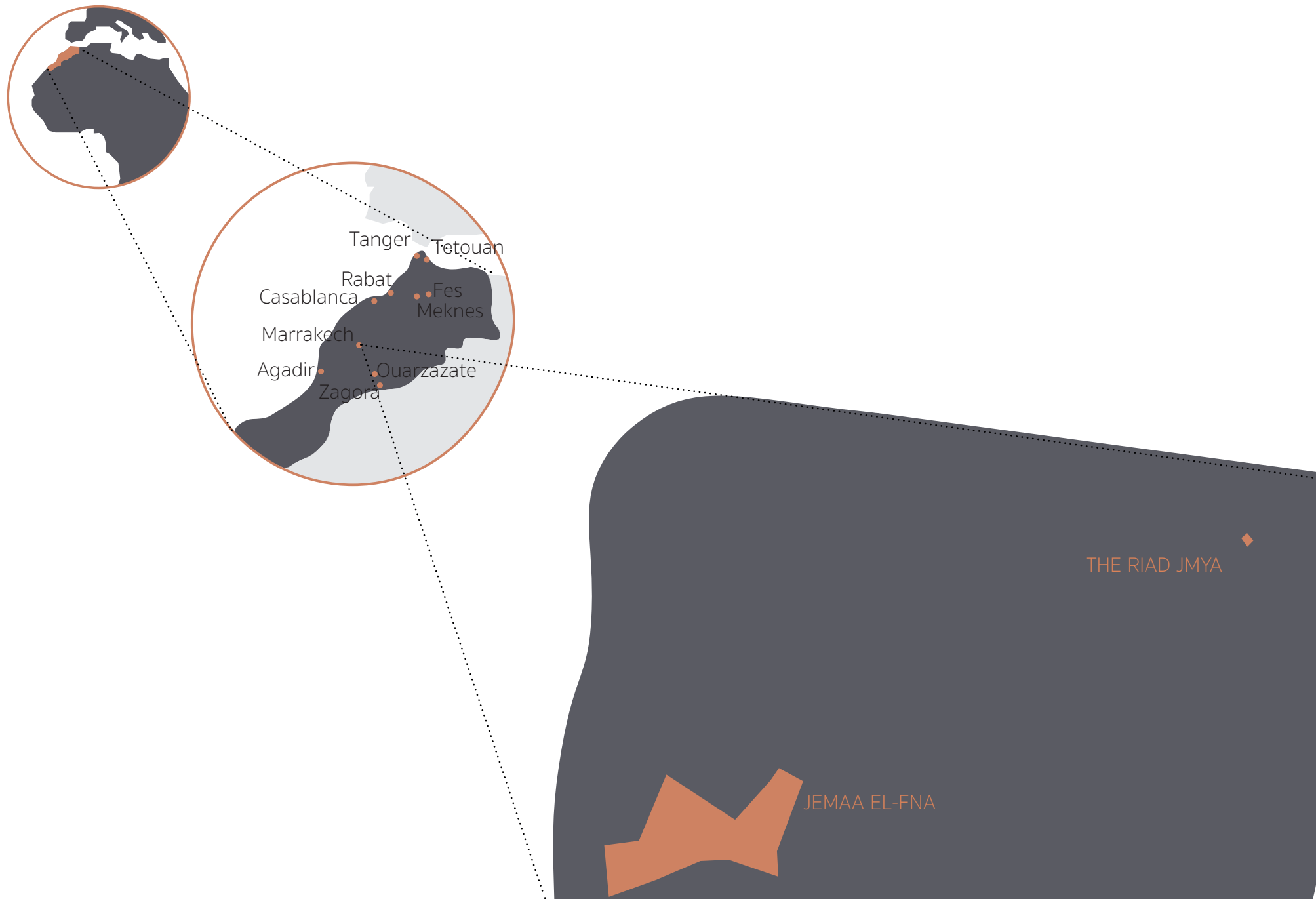






# THE RIAD JMYA

The riad is a traditional riad which was built for a traditional moroccain familiiy in the city Marrakech. The structure of the design shows that the building was built for more generations of a family. Nowadays, this riad has a hotel function with breakfast.



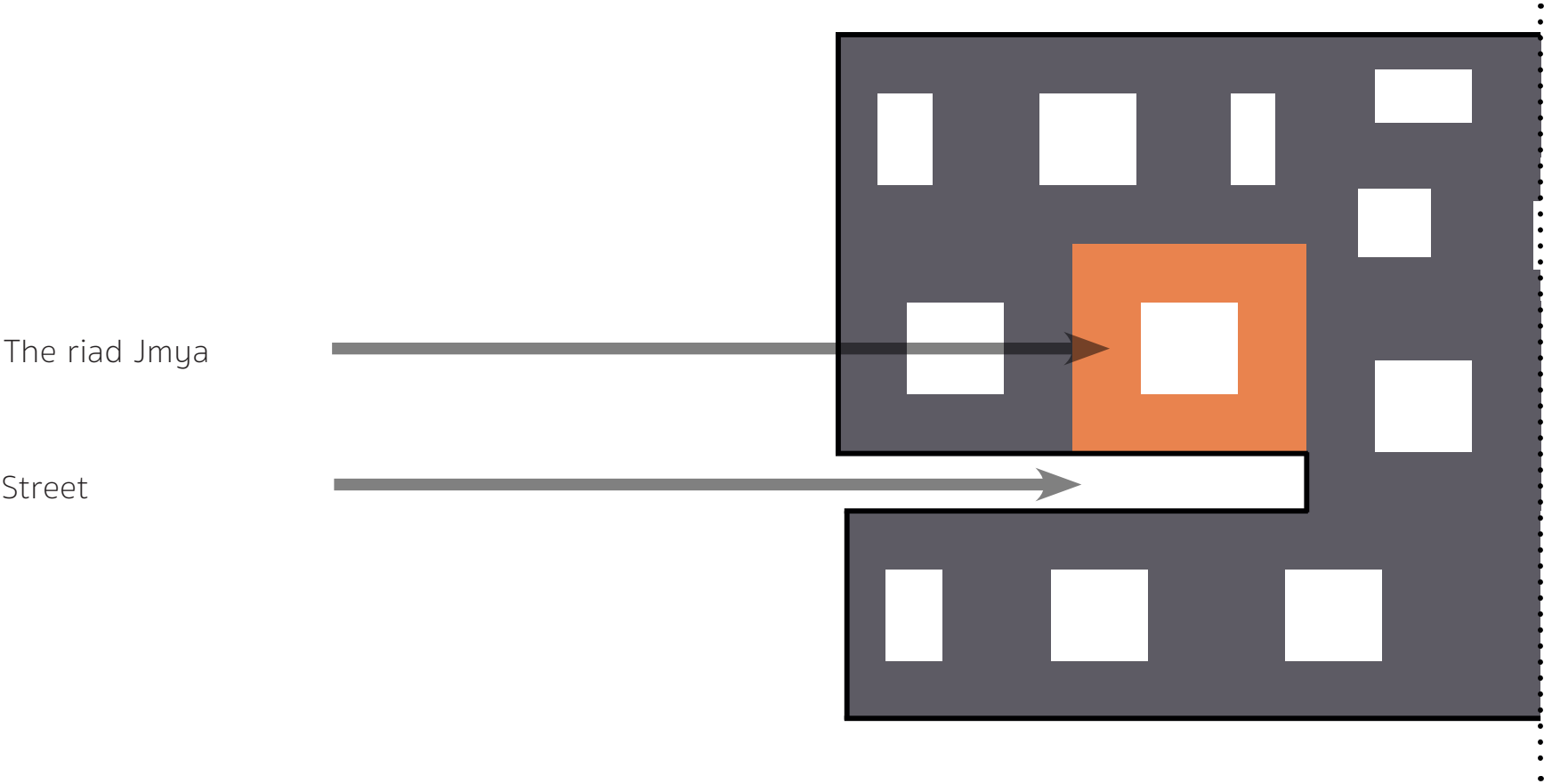
# SITUATION

The riad Jmya is located in a very quiet street (derb) in the medina of Marrakech, between the medersa Ben Youssef and the Ben Salah mosque. It is close to the souks, a traditional North African market catering both for the common daily needs of the locals, and for the tourist trade.

It is also not so far from the Jemaa el Fna square. On one sides of the square are hotels gardens, cafe terraces, and narrow streets that lead into the alleys of the medina quarter. The other side leads to the souks.

The neighborhoud of the riad jmah consist of more riads. The riads are built against each other.

The schematic illustration shows how the riad is positioned.

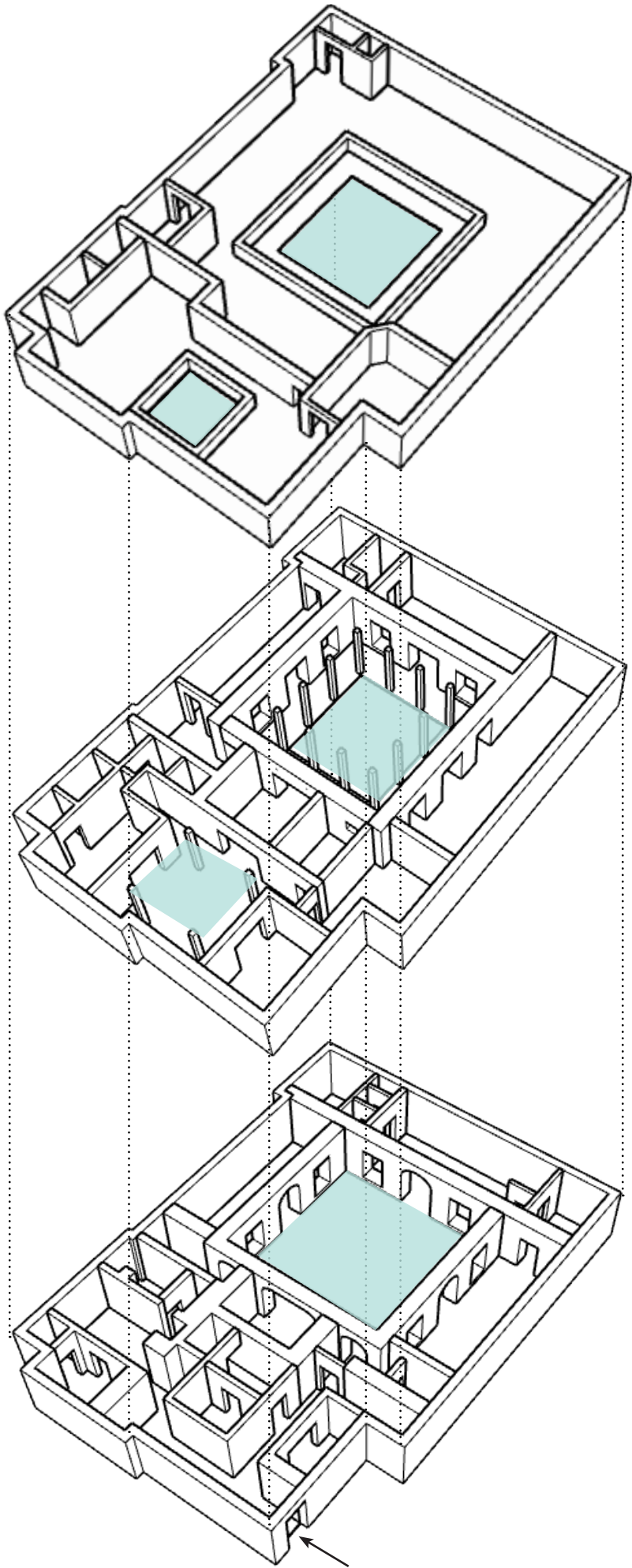
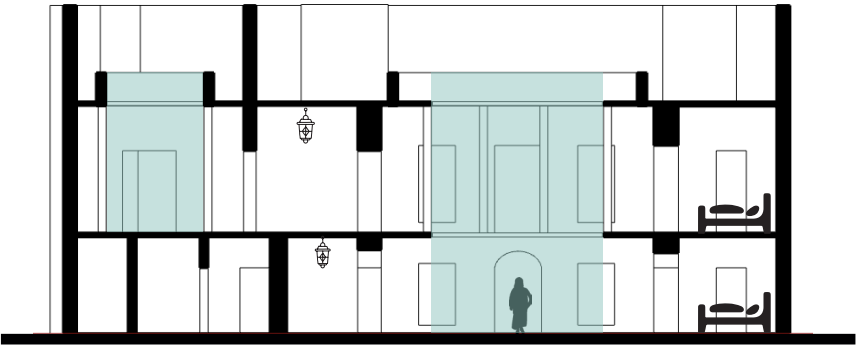
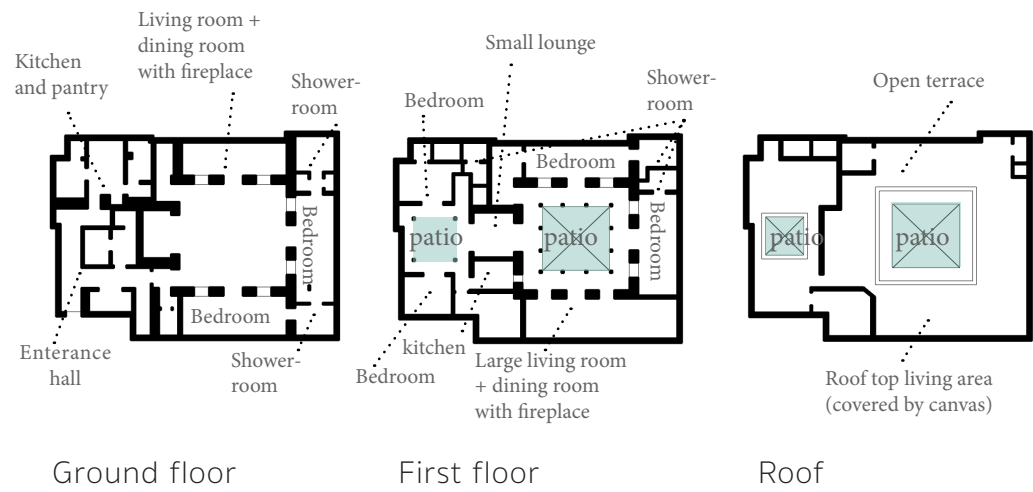


# CONFIGURATION & USE

The riad has a courtyard surrounded with rectangular rooms. The center is connected with the upper floors and has an open roof.

Nowadays, it is used as a hotel where every room has a bathroom. These bathroom were later built during the function change. In the traditional situation, locals went to a hammam to clean themselves thoroughly once a week.

The rooms has only windows at the inner side of the building, where the view is to the patio. Having windows at the inner side of the building gives the opportunity to build the other building directly to each other.

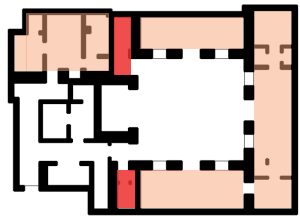


# ROUTING & FUNCTIONALITY

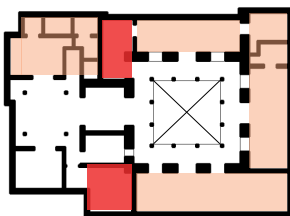
The building has one entrance in a dead-end street. The door is big and decorated by hand. The door is the only element that strangers see from the outside. Once inside, the riad has his own character. It looks like you are inside but it also give feeling of outside.

The upper floors are reachable by the stairs in the corners. In the riad are the stairs are not publicly present, because the patio is the important element.

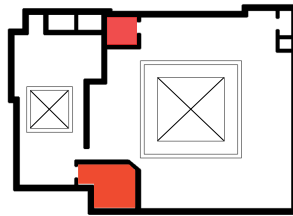
The routing in the house is around the patio, which is in the center of the building.



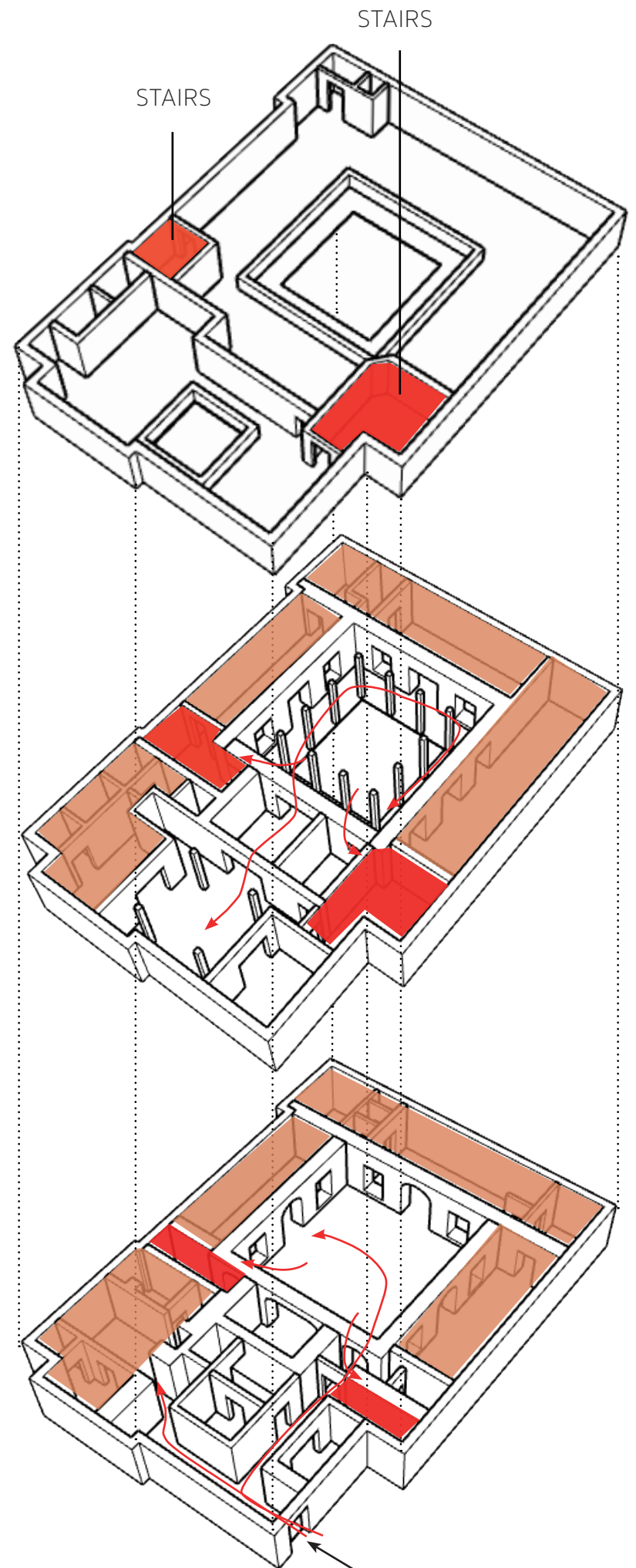
Ground floor



First floor



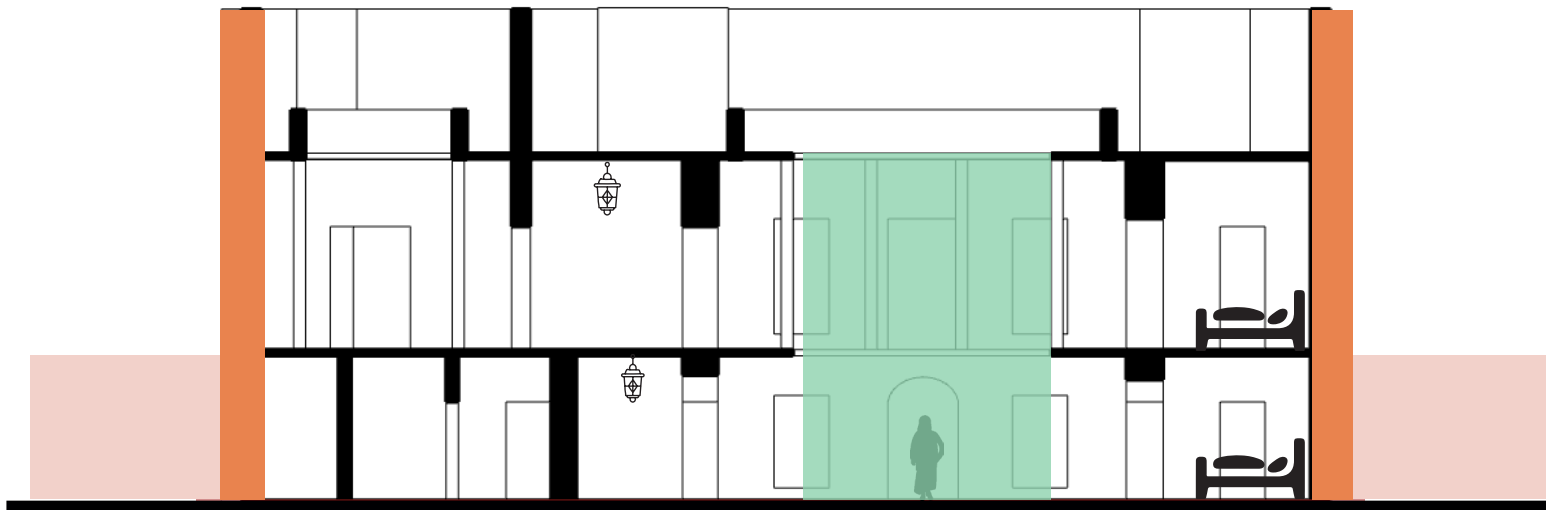
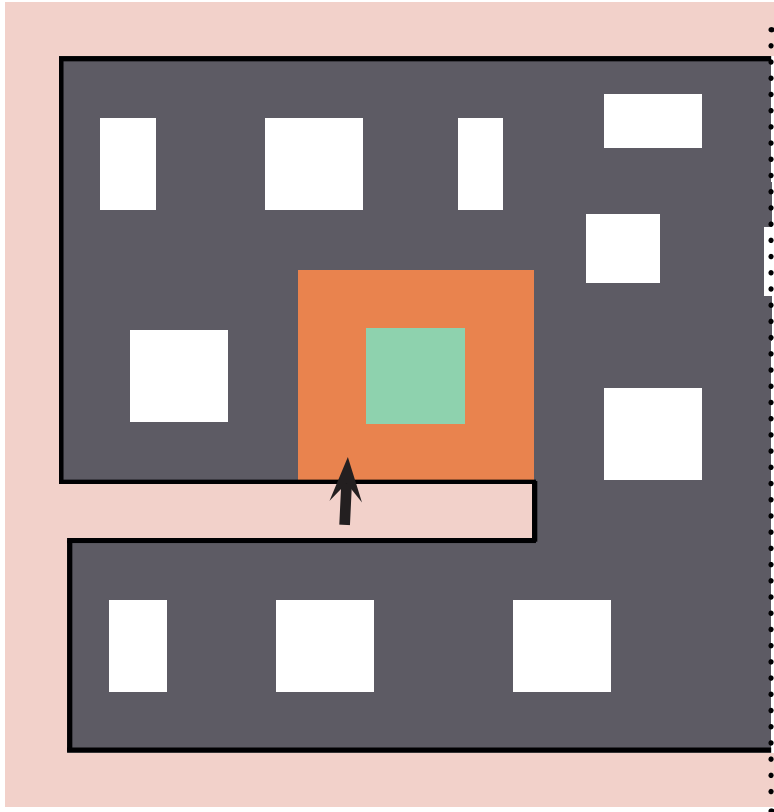
Roof



# PRIVATE AND PUBLIC

Private and public spaces are separated with a hard line. It is only possible to view and come into the private space when the door is open. At the exterior walls there are no windows.

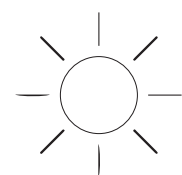
Inside the riad there are windows around the courtyard. This courtyard is the public space for the residents.



# CLIMATE

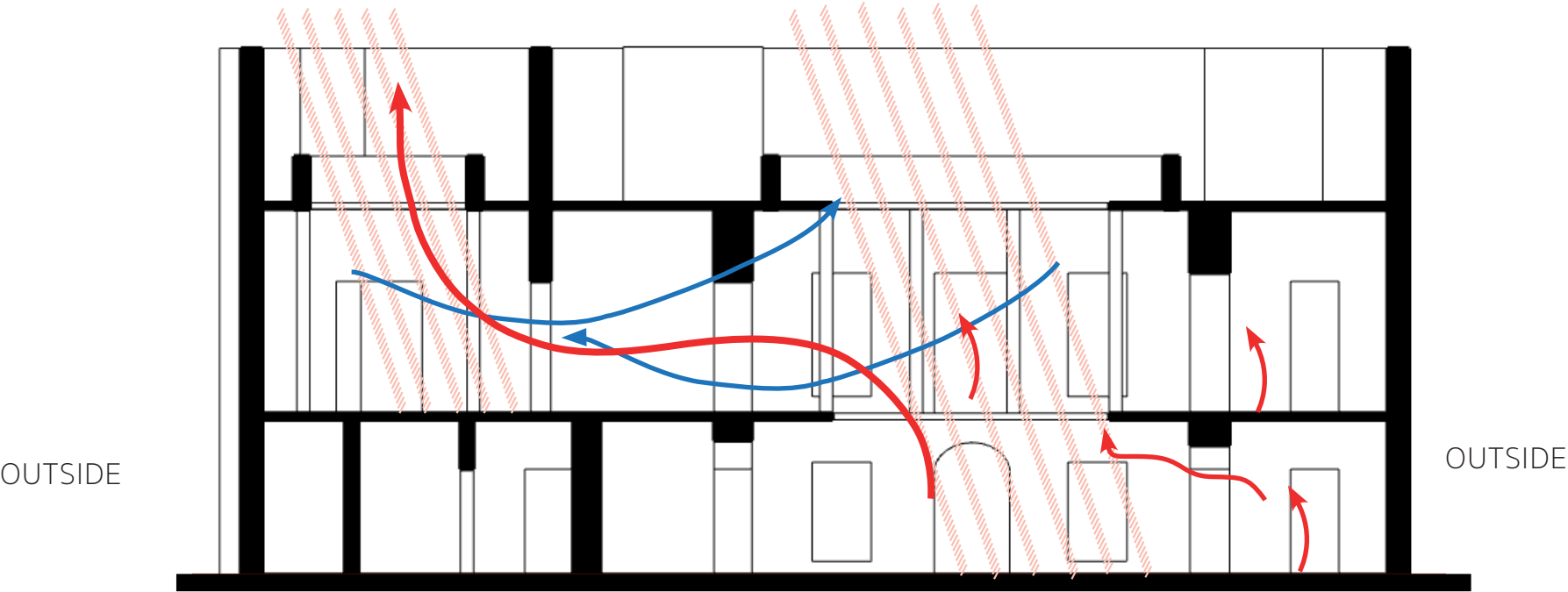
The climate is regulated by the courtyard in the building. The rooms have no openings to the exterior.

As a result, the rooms are frequently closed and not much sunlight enters, which creates an agreeable area in summer. During the winter the patio warms up.



NATURAL SUNLIGHT

NATURAL SUNLIGHT



CLIMATE ADVANTAGES OF RIAD

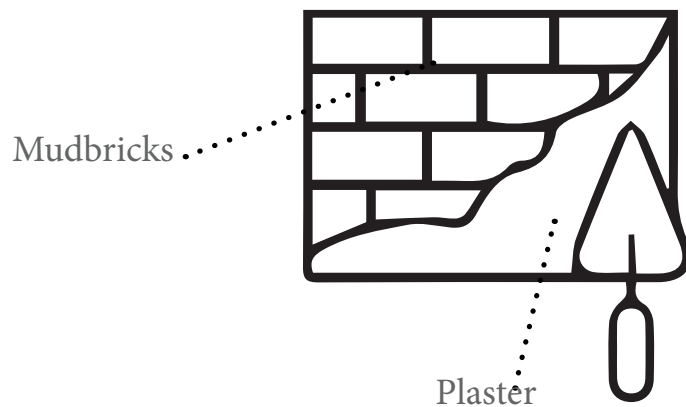


# CONSTRUCTION AND MATERIALS

The riad are made of local mudbricks covered with other materials for decoration. The floors and walls are covered with traditional, colourful mosaics. This type of mosaic has been brought back to Morocco by Muslims from Spain, where they were popular especially in the fourteenth century.

The wooden doors and windows are crafted and ornamented by hand.

For finishing the walls, tadelakt is often used. It is a waterproof plaster in lime especially suitable for damp areas such as bathrooms and showers. Furthermore it has also a high decorative value.



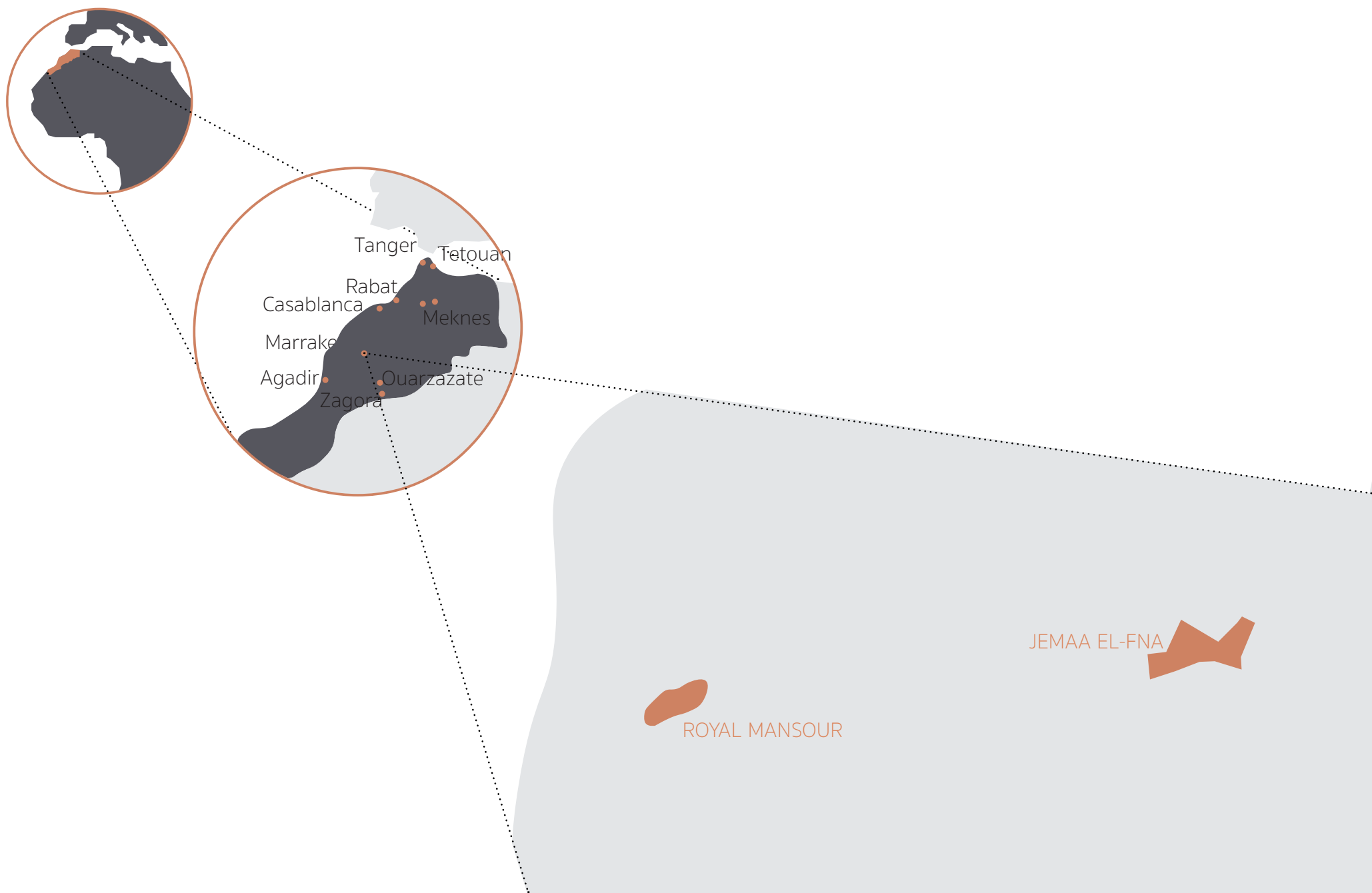






# THE ROYAL MANSOUR

The riad of the Royal Mansour is built in 2010 by the OBMI firm. The Royal Mansour is an accumulation of multiple buildings which was built in 2010. The buildings consist of different functions. Namely hospitality, sport and hotel. The analysis is focused on one of the hotels of the Royal Mansour. Each of the 53 riad is a hotel for people that can effort luxury. Guests will feel like they are living in their own riad.

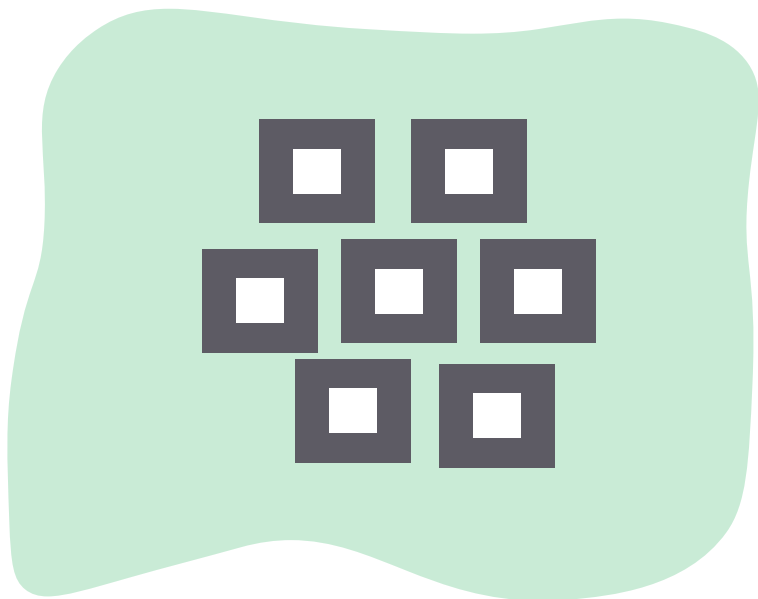


# SITUATION

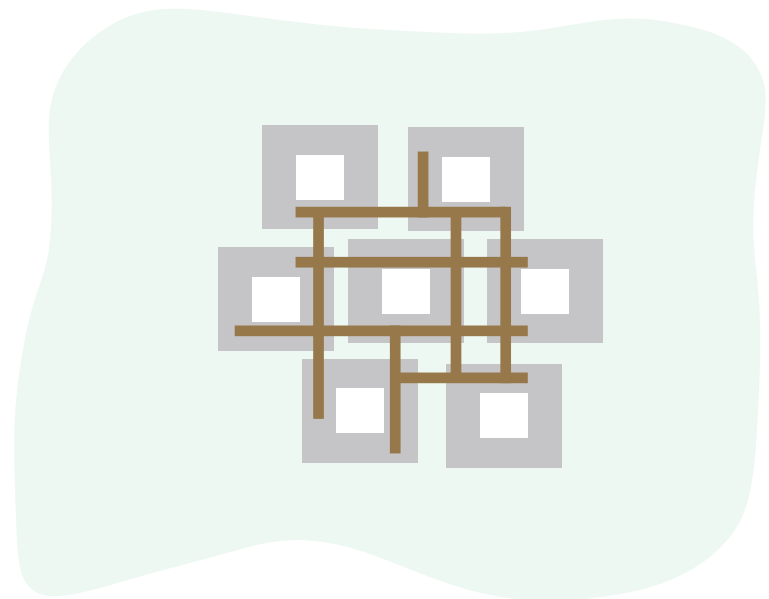
The royal mansour hotel is situated in a private terrain of the Medina with flowers and lots of greenery. There is the perfect balance between traditional and opulent Moroccan architecture.

Behind the doors of and imposing gates is the breathtaking tiled portico with a sunken fountain that ebbs and flows.

The Royal Mansour's private riads are built around a courtyard and each riad contains a private roof terrace, solarium, fireplace and dining room with views over the medina.



At ground level, the riads are not built right up against each other so that windows could also be developed in the facade.



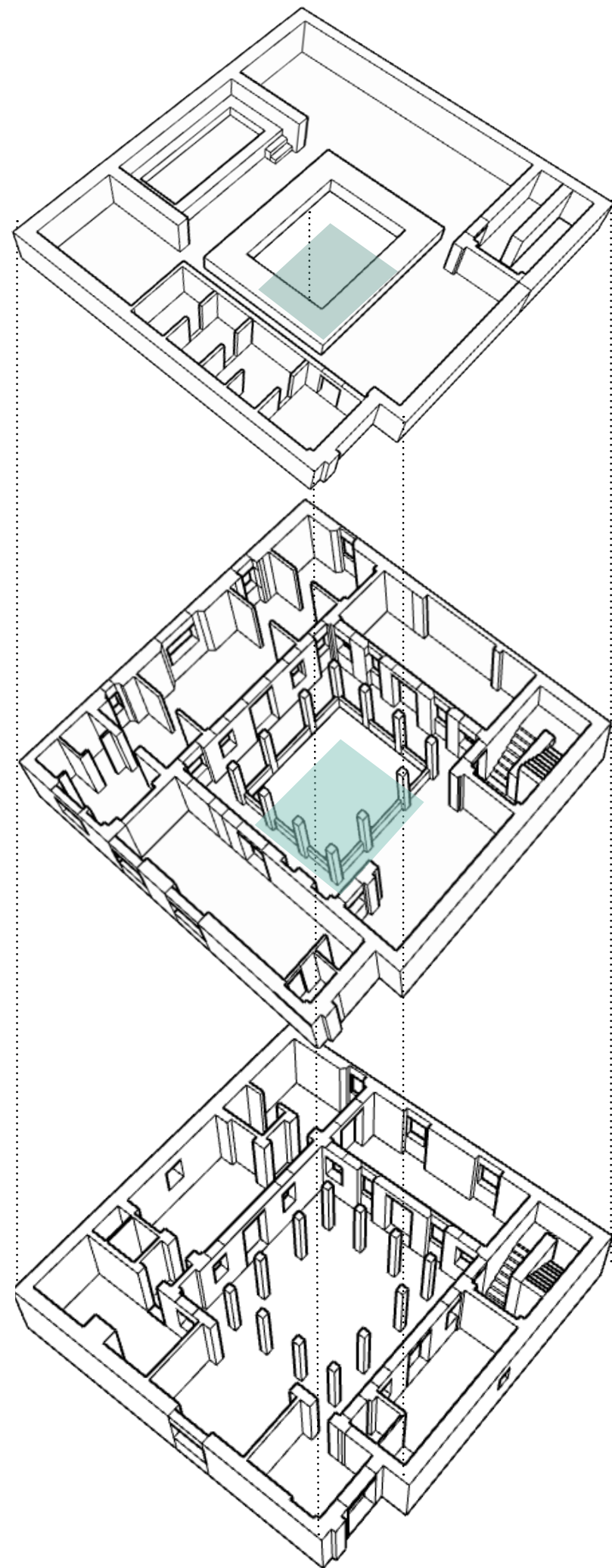
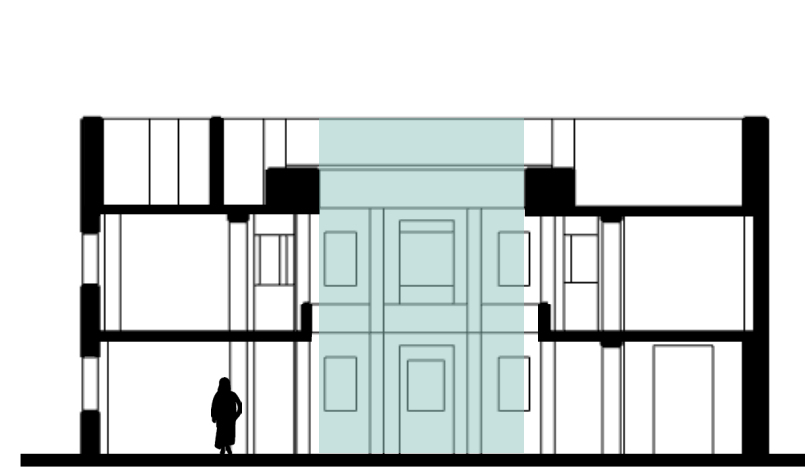
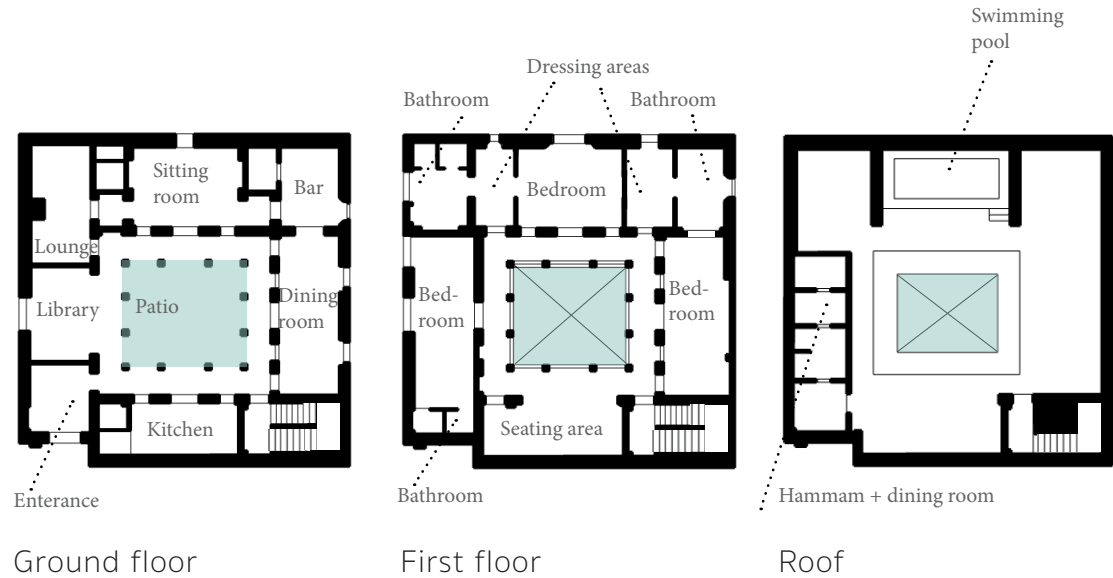
Unique architectural design created a labyrinthine of underground tunnels to each of the riads, accessible only by staff, guaranteeing the utmost privacy, discretion and seclusion satisfying the property's high profile guests.

# CONFIGURATION & USE

The riad has an patio surrounded with rectangular rooms. The center is connected with the upper floors and has an open roof. From the roof you can look at the luxurious patio that is decorated.

The rooms are rectangular. The plans are designed to local standards by the architect. However, the rooms have directly a bathroom in each room. The bathrooms are not shared.

The rooms has windows at both sides, the view is to the courtyrad and to the outside area.

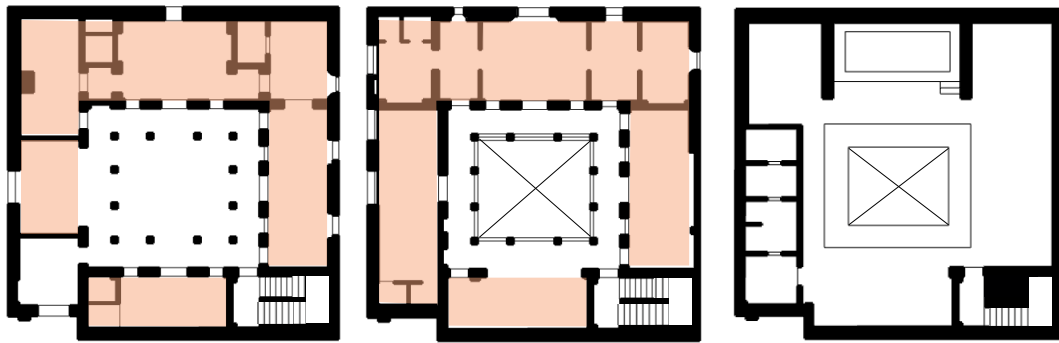


# ROUTING & FUNCTIONALITY

Each Riad has his own entrance in the private area of the hotel. The routing for the hotel guest are above the ground. For the hotel employees is it in the tunnels under the ground.

Every room in the riad has its own functionality. In this case is the functionality defined by the architect. However, the shape of the rooms betrays the possibility of changing the functions.

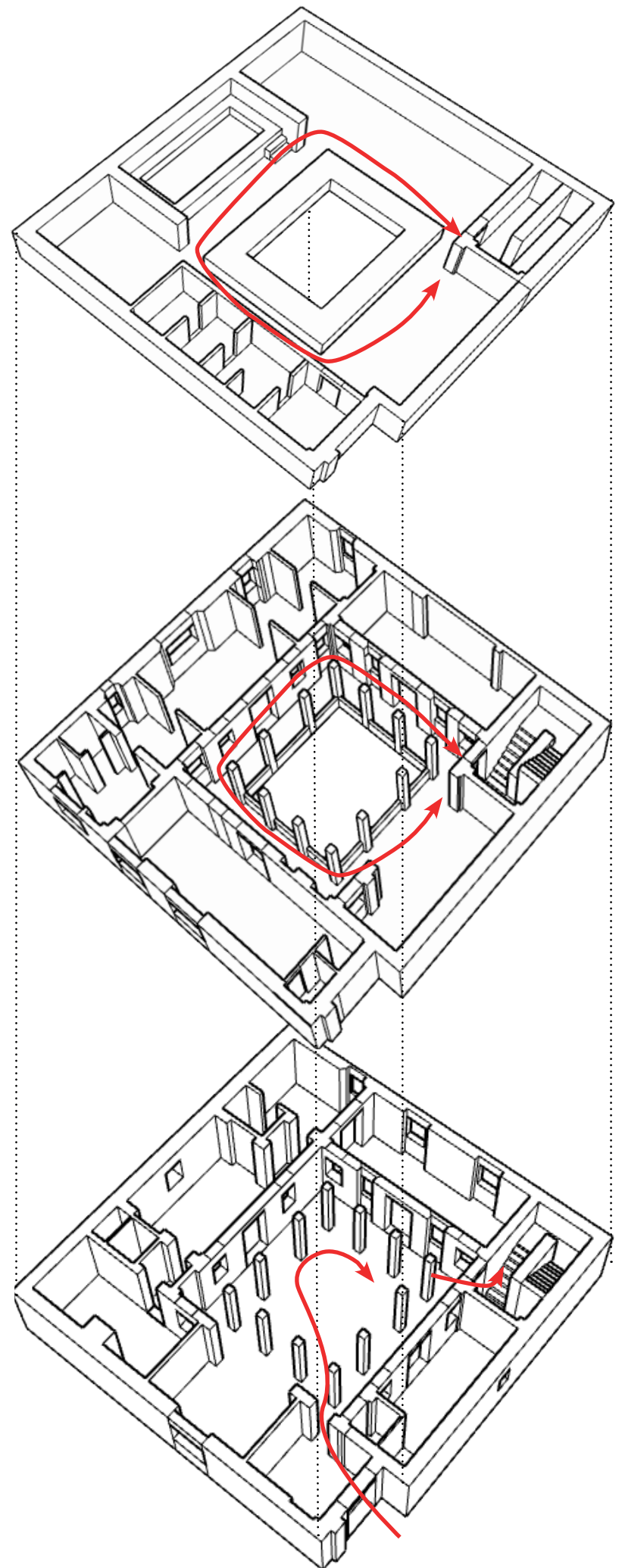
The routing in every riad is around the center.



Ground floor

First floor

Roof

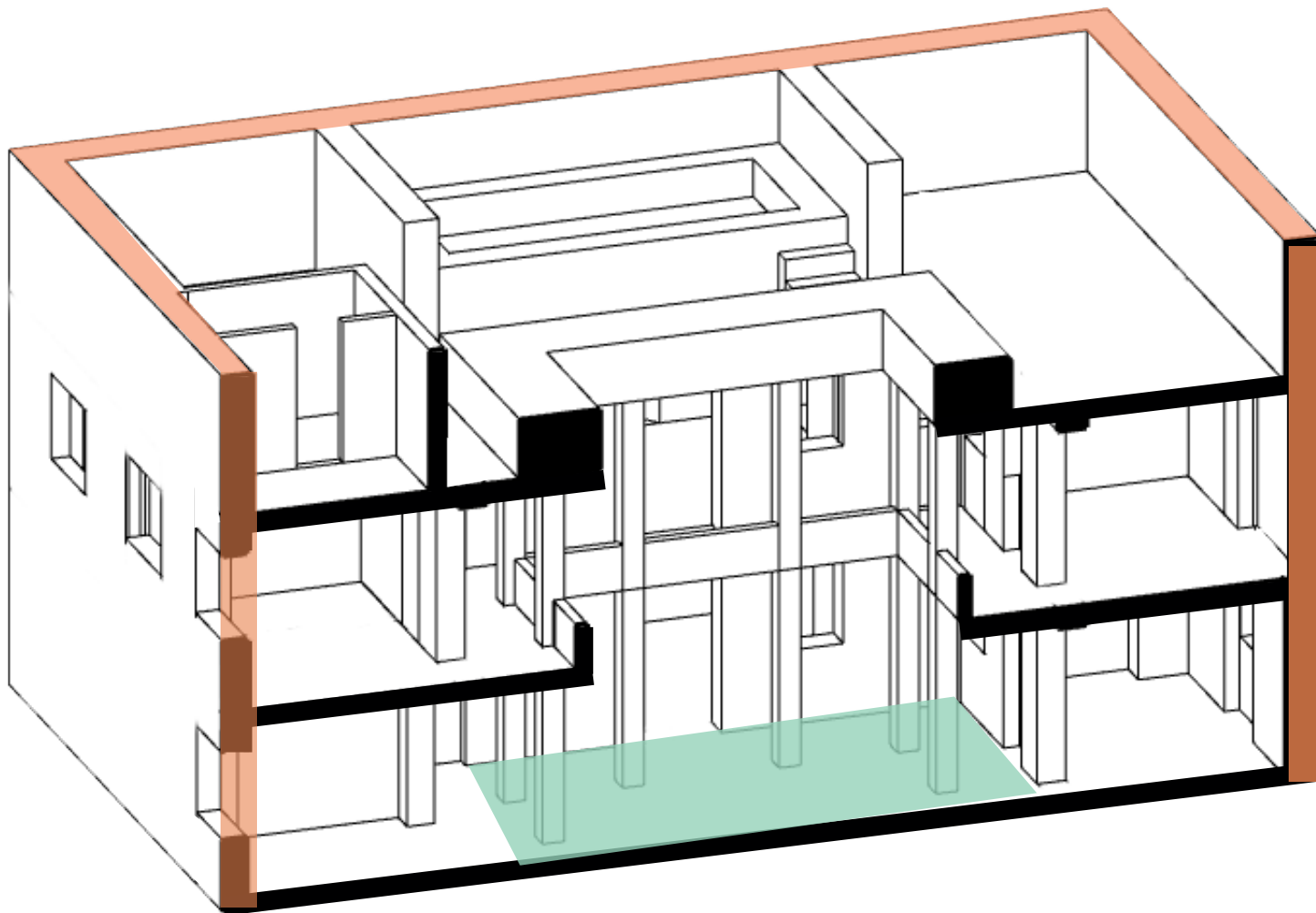




# PRIVATE AND PUBLIC

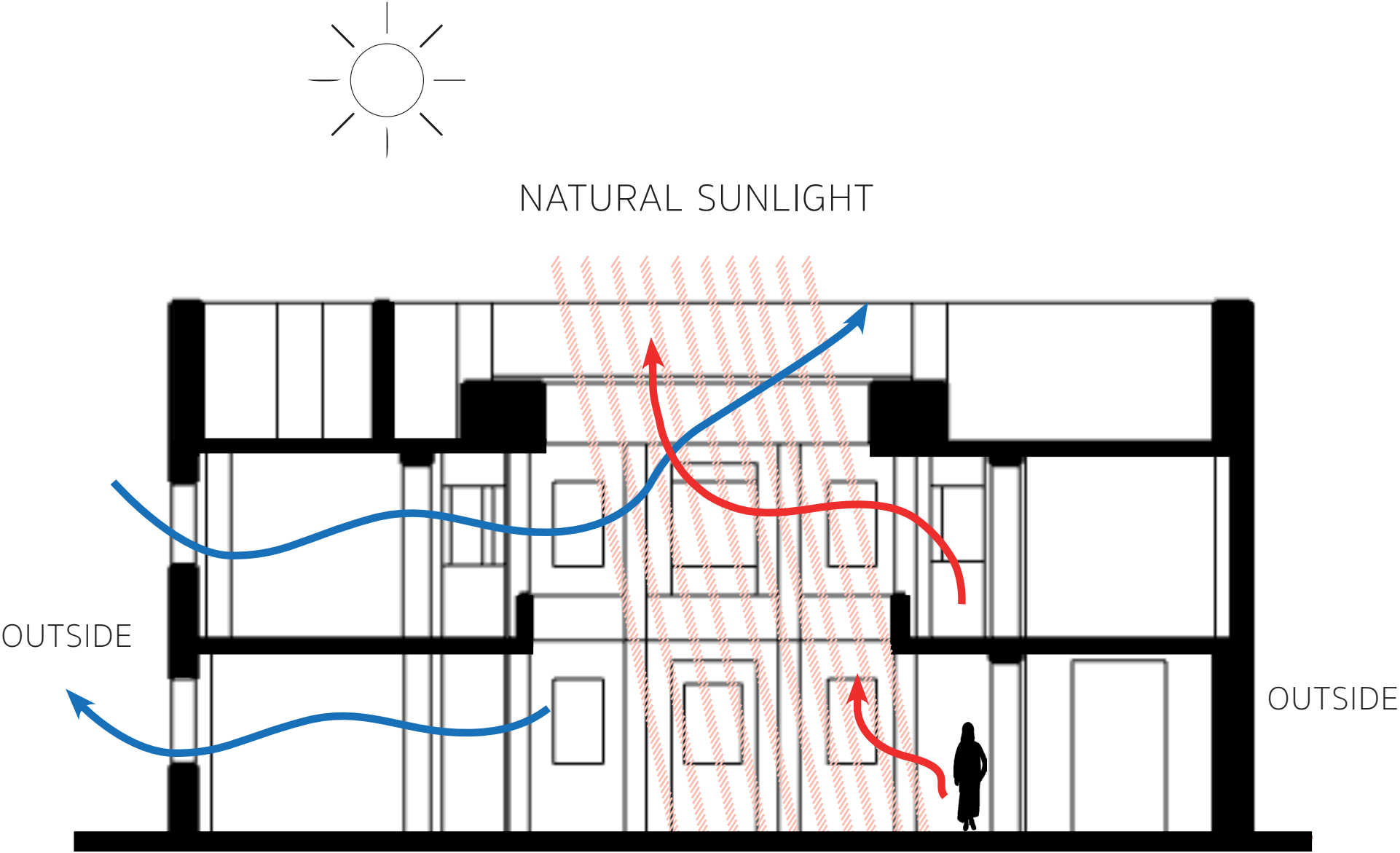
The riad has a courtyard surrounded with rectangular rooms.  
The hotels are standing in an private area, as a result that  
the outer facade has windows.

Inside the riad is private.



# CLIMATE

The climate is regulated by the patio's in the building. The rooms have openings at each side. Furthermore, the hotels having also air conditioning. §



CLIMATE ADVANTAGES OF RIAD

# CONSTRUCTION & MATERIALS

It is not known what materials the building's construction is made of. Given it is owned by the royal family, it will be as luxurious as built as possible. It is built in three years by 1,200 craftsmen. The hotel is made of marble and has a lot of details.



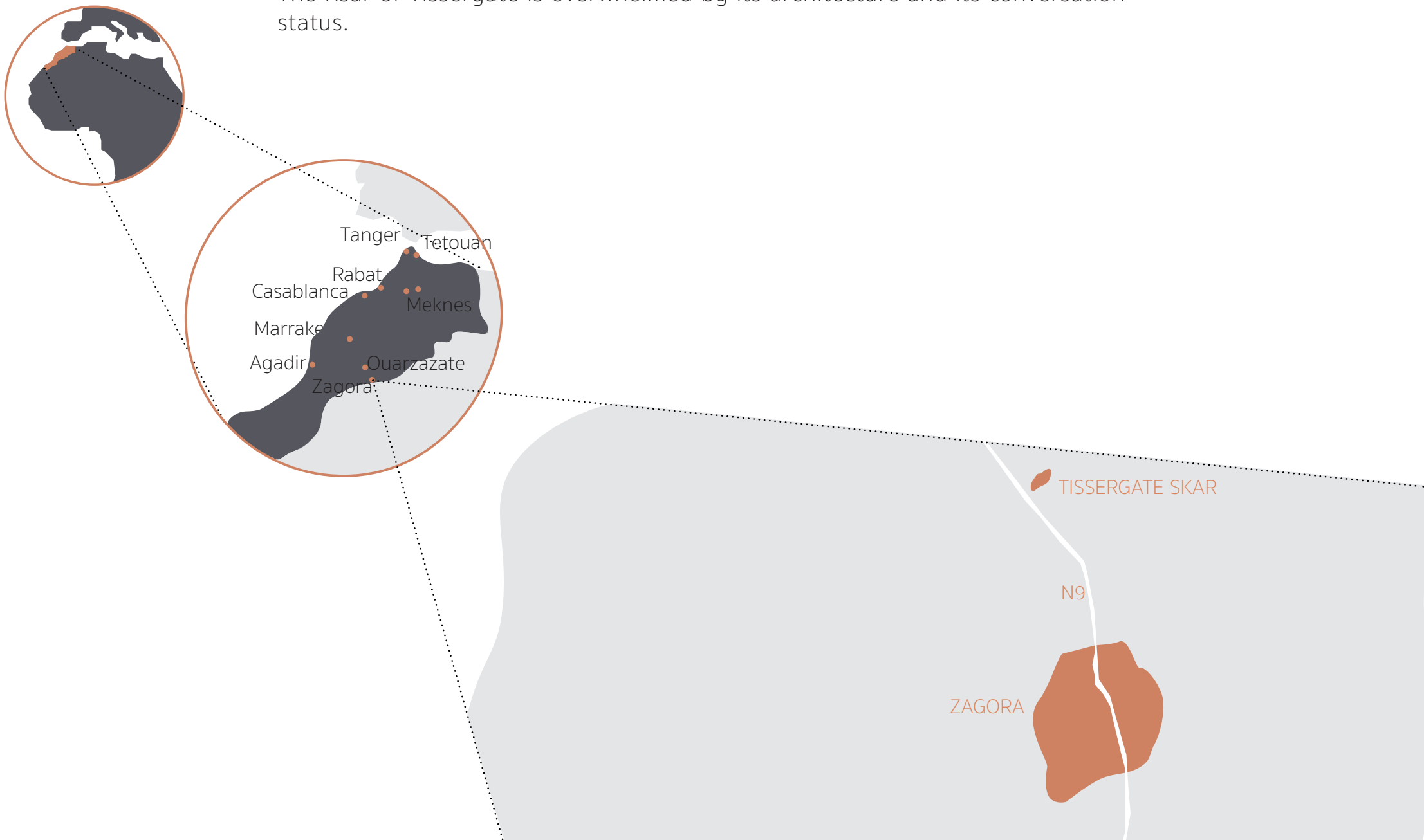




# TISSERGATE KSAR

The Ksar in Tissergate is located in the Draâ valley which is built 500 years ago. The Ksar is located 8 km from Zagora which can be found on the road to Ouarzazate.

The Ksar of Tissergate is overwhelmed by its architecture and its conservation status.



# SITUATION

The houses are built against each other and surrounded by a wall that marks the boundary of the plot. Since the buildings are not built at the same height, different streets and tunnels are created. For example, the first floor is built as a bridge on the road. Underneath, is dark tunnel that protects from heat and sand storms. The inhabitants can easily walk from one building to another during a sandstorm.



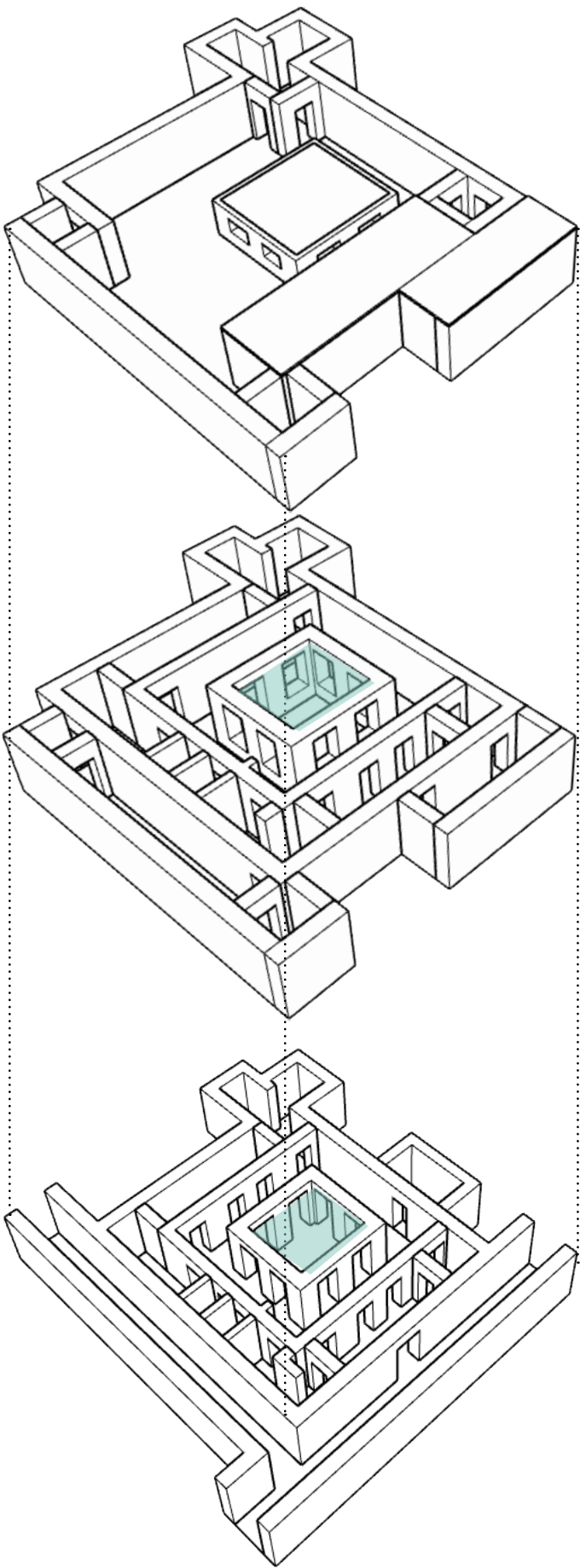
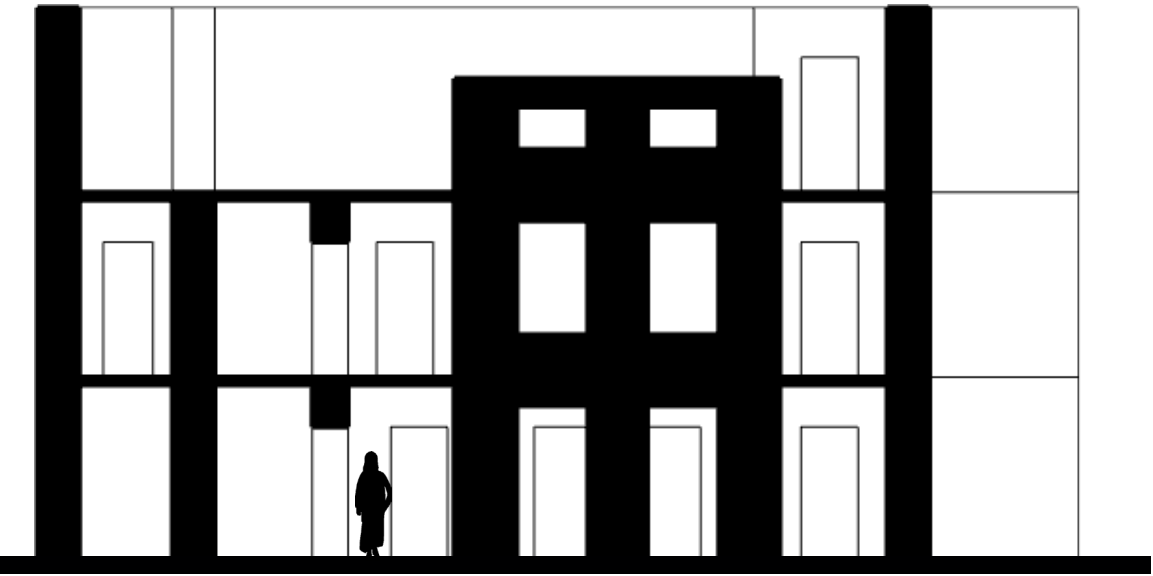
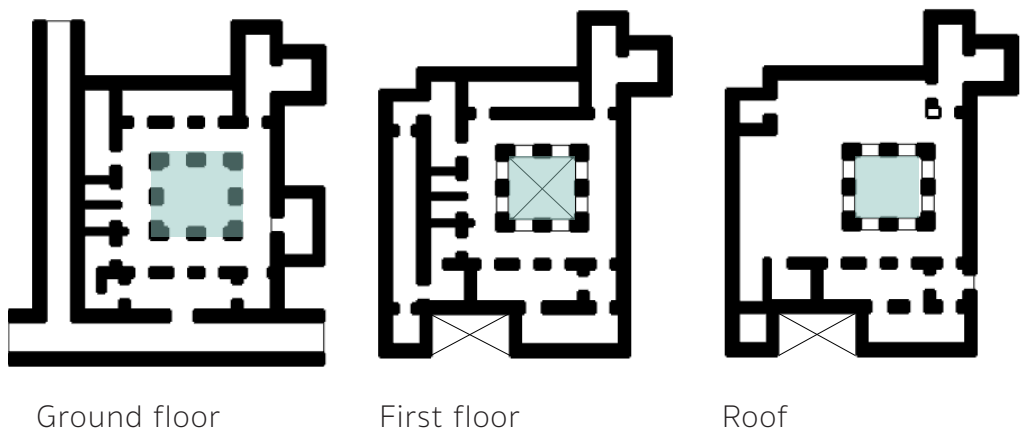
Figuur X. Schematic overview of how the buildings are constructed within the walls.



# CONFIGURATION & USE

In between the walls are different kasbah typologies characterized for the pre-desert climate. One of the typologies will be explained below. The building can be reached by a tunnel. The use of the patio and a compact urban aggregation, represents an effective response to hard weather conditions, due to the reduction of the external surfaces and to the function of the patio as a source of light and ventilation. The patio is double height, surrounded by rectangular rooms and on the top has it openings.

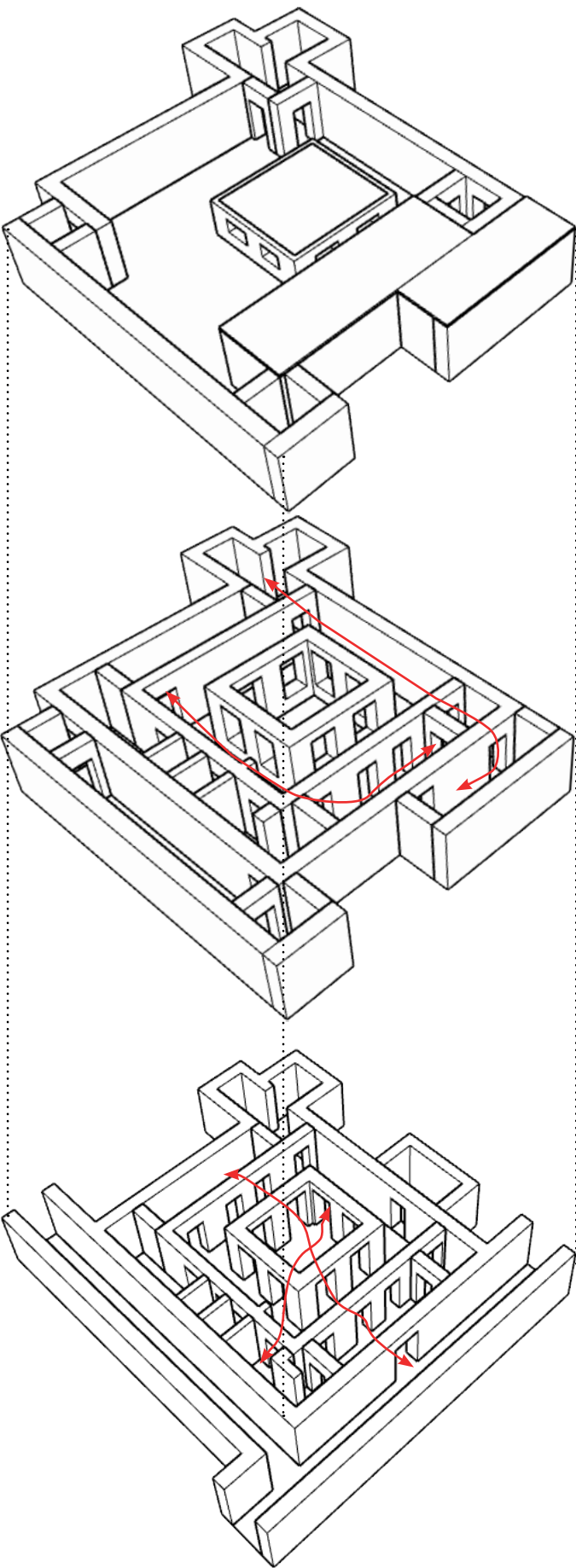
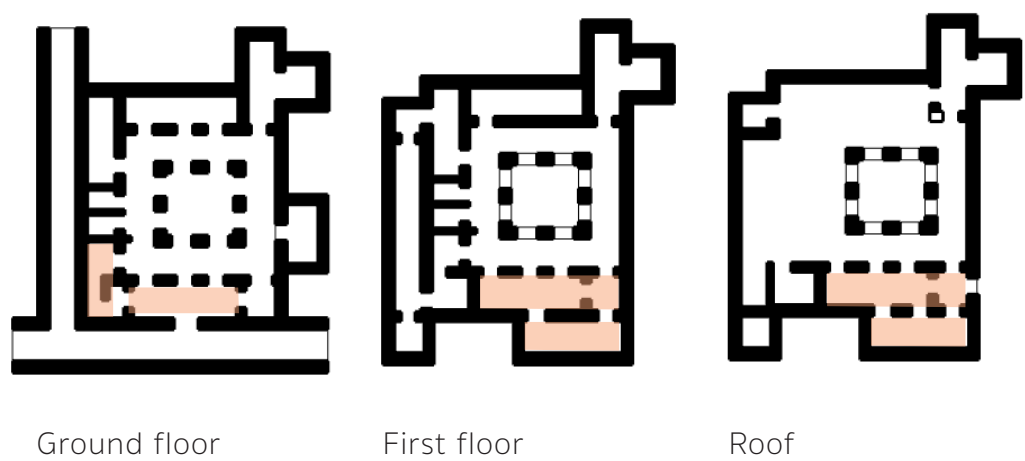
Furthermore, the tunnel has some opening to ensure light.



# ROUTING & FUNCTIONALITY

The building is not easily accessible, as access is through tunnels. Around the patio are rectangular spaces that serve for the multifunctionality of the building.

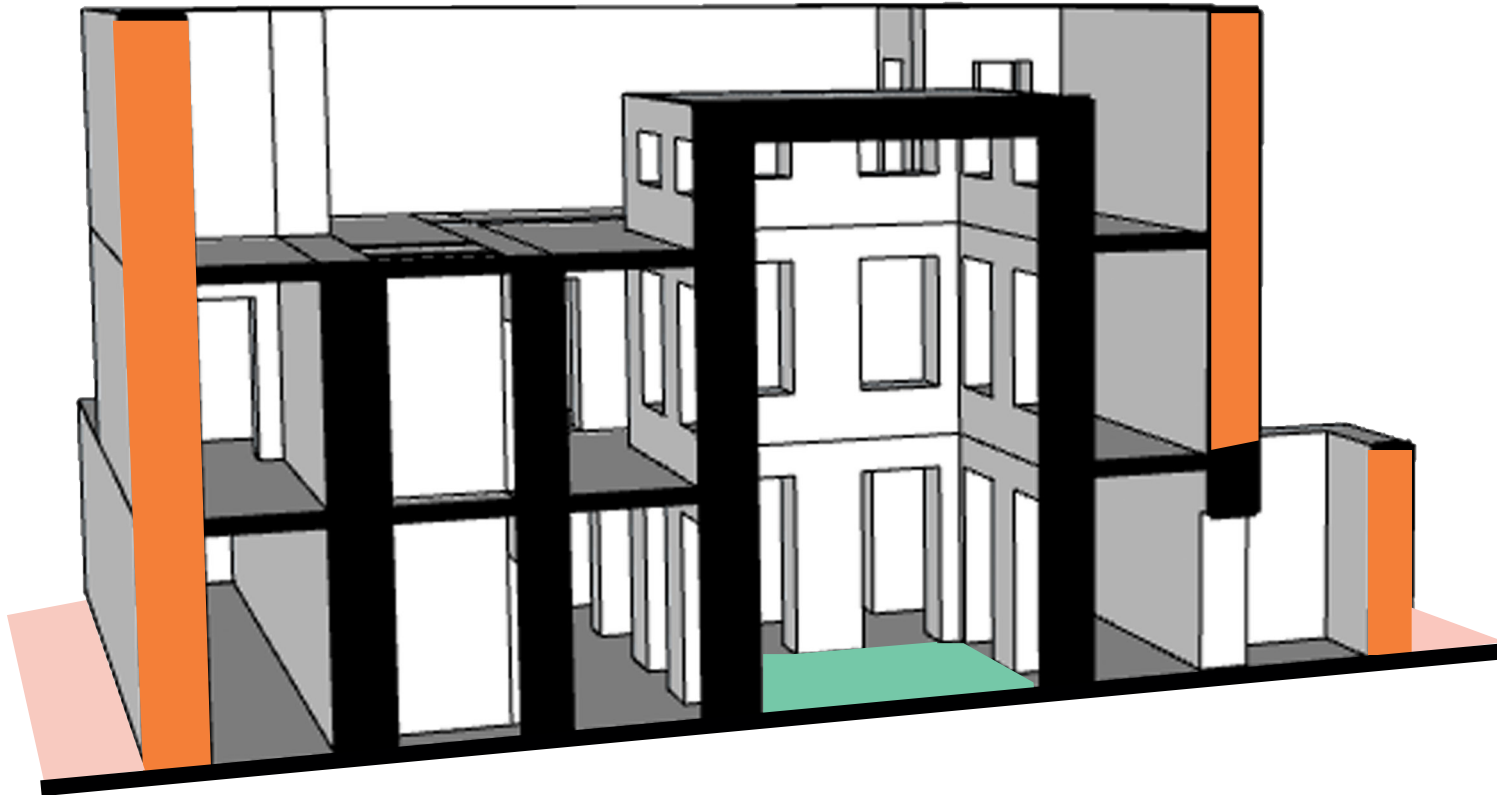
The routing to and from the spaces is through the central point of the building.



# PRIVATE AND PUBLIC

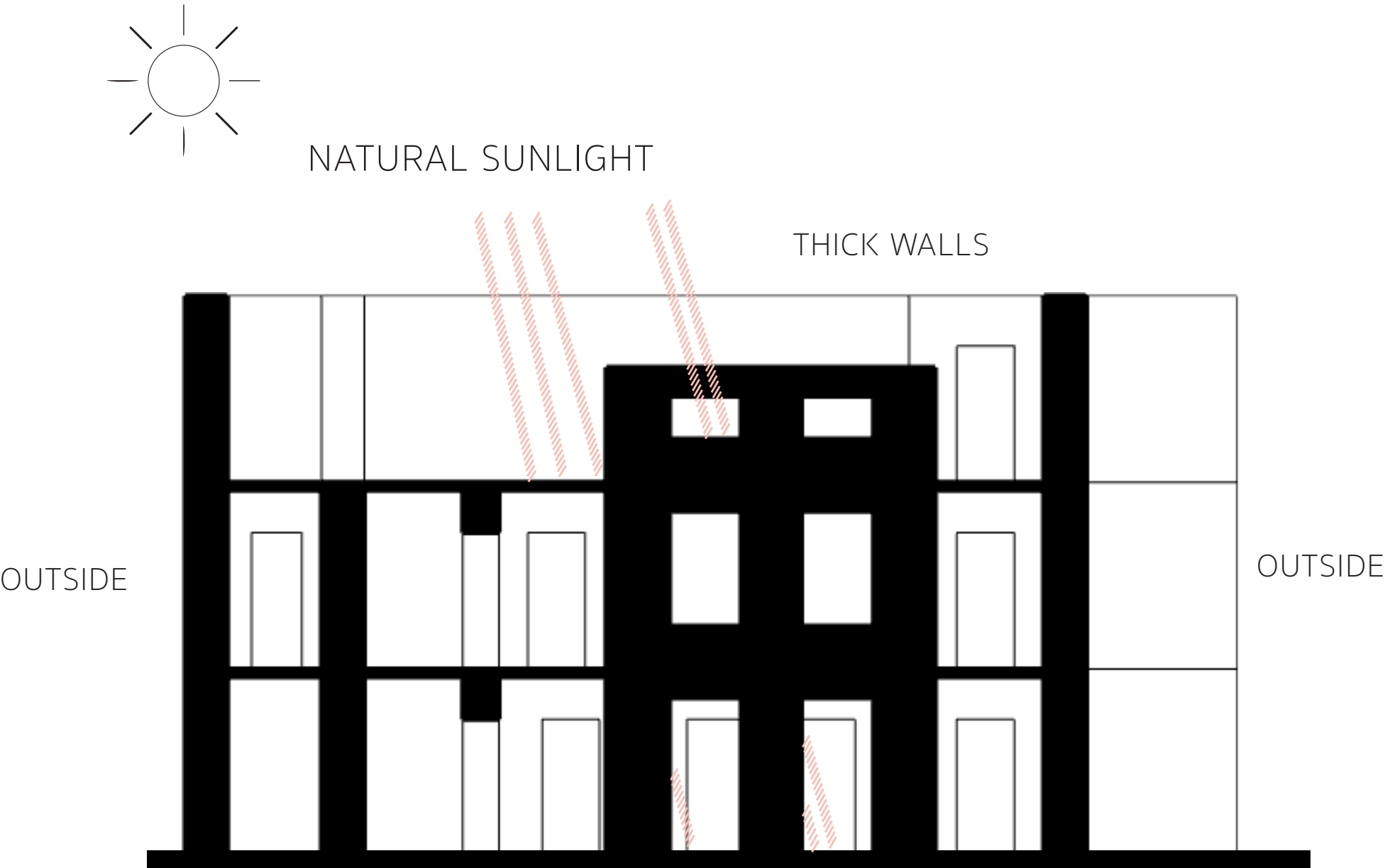
The kasbah is private and stands in a private area in between the walls. An outsider has to pass through the gates of the wall first.

The tunnel is semi-private and used by the people of the houses.



# CLIMATE

The patio in the kasbah limits the direct insulation of the ground floor and it guaranties the indirect lighting for all the facing rooms. Due to the climate, the patio has the function of a chimney, it pulls the warm air which give the rooms cooling and a pleasant ventilation.



CLIMATE ADVANTAGES OF KASBAH

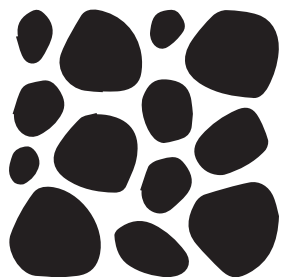
# CONSTRUCTION & MATERIALS

Generally is the building built out of stone with various height. The walls have thicknesses of 40, 50 and 60 cm and can shirk to the upper floors.

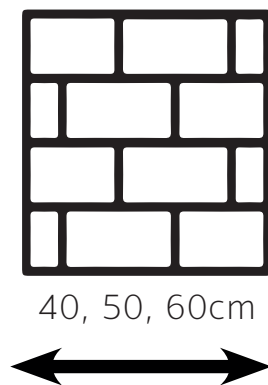
The rammed earth masonry is used for the walls of the lower floors and for the partitionwalls. The holes and the joints between the rammed earth blocks are weak point in the masonry and favourite channels for the water infiltration. Hence, the cracks in the walls are mainly located close to them.

The wood from the date plam is the only wooden material which is used for the doors, windows and horizontal structure of the floors. Because of the low mechanical performances are the beams 4m.

This size become a module for any building's construction.



Stone



Wood from  
date palm

My project Fatima is a community center with hostels included which is a part of the Graduation studio Explore Lab 35.

In this reflection, I will explain the outcomes of my research and design process and how I approached the assignment in various developments that influenced both the process and the final result.

In my graduation plan, I described my fascination from my experience in Morocco. I observed a shift in the architecture towards a more Western Style, characterized by different materials, openings and technical solutions. In my opinion is this “new” architecture often lacked a strong connection to Morocco’s architectural traditions, environmental considerations, and climatic factors. I believe that every architectural tradition holds valuable wisdom and knowledge. Imitating of foreign architectural style of other countries does not always fit in the local area, because of the needs and behaviors of the population. Thus, I became interested in the following research question:

“To what extent it is possible to modernize a traditional building style?”

#### **Starting point:**

To understand traditional Architecture I started by analyzing the most common typology’s in Morocco. The Riad and Kasbah buildings are one of the oldest architectural typologies. Nowadays, most of those Riad’s has courtyards which plays a significant role in the Moroccan architecture. It serves as a private outdoor space that facilitate natural light, ventilation and for social interaction.

On the other hand, Kasbahs, also known as fortresses, are symbolically linked to defense and are often located at the country’s borders. You can find those Kasbahs mostly at the country borders. It is a gathering place for locals, serving as a center for trade, commerce, and community activities.

Through a comprehensive plan analyses method, I could understand the typologies in different layers as, situation, configuration & use, routing & functionality, private & public, climate, construction and materials. The conclusions of the analyses became the foundation for my design.

#### **During design the design process:**

During the design process I made some design guidelines. The guidelines are the set-up of a reaction of the conclusion from the plan analyzes. As an architect, I aimed to incorporate movement into traditional buildings:

1. **Blurring the boundaries:** The design should create a subtle transition between public and private spaces.
2. **Sustainability:** Leveraging the sustainability solutions inherent in traditional architecture.
3. **Circulation:** The routing in the building should go through the courtyard
4. **Local Materials:** Using local materials whenever possible to preserve the authenticity of the design.



5. Courtyard integration: Enhancing the connection between rooms and the central courtyard, making it an integral part of the living experience.

During the design process, I made two trips to Morocco and stayed in different riads/hostels. This experience provided invaluable insights and helped me better understand my project and the buildings. It also allowed me to align the design on a site with the ambition to be more sustainable. Hence, I selected the city Tamesna-rabat as the location for this project.

### **Methodology**

Initially, I did not realize the significance of understanding typologies through plan analysis. However, I soon recognized the similarities and repetitions in the different buildings. In the beginning I found it hard to design without a site. Later on, I came to understand that a clear core concept is essential before contextualizing it. This experience was for me a growth.

### **Academic value**

I think it is important to look and understand the traditional style of a country. In this case, I gained deep insights Morocco's architecture and where the underlying idea comes from. Architects has the responsibility to respect and enhance architectural styles, ensuring their continued evolution.

### **The design**

I am very proud of the result of my design. The design shows that it is possible to develop the traditional typology of Morocco by respecting the culture and traditions. The design is still recognizable as a Moroccan traditional building. However, while using the plan analyzing method for this case the researcher will see a shift.

Passers-by, can catch glimpses of the courtyard through the light openings in the facades. Furthermore, you can observe the traditional buildings by seeing the decorative panels. In addition to its aesthetic purpose, this decoration also serves a climatic function. The courtyard itself incorporates a water element, which brings tranquility and has been extended to the ground floor rooms to enhance the connection with the courtyard. This element also hints at the interconnectedness of the courtyards, which may only be discovered by a discerning researcher, signaling a shift from the traditional courtyards.

### **Overall reflection**

The challenging in this project is to think as an architect instead of a building technology student. I started designing to solve problems, while I forget to think about the emotional aspects of the design. Through the time and experience I learned to look in a different way. Over time and through experience, I evolved my perspective. Consequently, during the design process, I frequently questioned whether I would personally choose to stay in this hostel and what unique qualities my design brought to the table compared to the exciting design. These reflections, coupled with the established design guidelines, informed and influenced the decision-making process at every level of design.