2007 On Site Review Report

2953.ALG

by Mashary al-Naim

Tafilelte Tajdite

Ghardaia, Algeria

Architect
Ahmed Nouh & Local Craftsmen

Client
SCI Amidoul

Design
1997

Completed
2001

Tafilelte Tajdite
Ghardaia, Algeria

I. Introduction

The M'Zab valley is in the northern part of the Algerian Sahara, some 600 kilometres from the capital Algiers. It lies 500 metres above sea level, on a rocky plateau that is crossed by dry river beds. In this valley, the cultivation of the palm grove is vital for the survival of the population and the ecosystem as a whole, so settlements are built on rocky outcrops, leaving the most fertile land for cultivation. The five historic fortified cities (ksour) in the valley – known collectively as the pentapolis of M'Zab – were inscribed on the UNESCO List of World Heritage Sites in 1982.

The industrialisation of the Sahara and the expansion of the oil industry have boosted the economy of the valley. The proximity of two major oil fields, at Hassi Messaoud (240 kilometres away) and Hassi Rmel (40 kilometres), has resulted in an influx of large numbers of workers, making Ghardaia a transit centre. The housing crisis that characterises the whole country is consequently even more acute in this region. This project is an attempt to solve the eternal dilemma of how to preserve authenticity while introducing new amenities. It aims to create a new town that evokes the traditional image yet responds to ever-changing contemporary needs and provides the necessary modern conveniences.

II. Contextual Information

A. Historical background

The people who first settled the M'Zab valley belonged to a schismatic sect of Islam that appeared in the sixth century under the Caliph Ali. Persecuted, these dissidents moved from Iraq to North Africa, where they split into two tendencies –Sufism and Ibadism. By the ninth century the Ibadites had converted three-quarters of the Maghreb to their doctrine. However, they were fiercely fought by the Caliphates and were forced to retreat to the city of Tahert (North of Algeria), then to Ouargla and Sedrata. Even then they found no peace, as Sedrata was on a trading route and it began to attract the envy of the scattered nomadic tribes. To escape continuing persecution, a core group of Ibadites finally moved to the remote area of the M'Zab, a harsh environment away from the trading routes. There they founded El Attef in 1012, Bounoura in 1046, Ghardaia in 1048, Beni Isguen in 1347 and Melika in 1350. Lying outside the valley, but Ibadite settlements nonetheless, are the cities of Guerrara and Berriane, which were founded in 1630 and 1688 respectively after internal conflicts that led to the exclusion of rival groups.

From the time of its settlement in the tenth century up to the fourteenth century, the M'Zab valley seems to have been inhabited only by Ibadites. In the late fourteenth century, the Ibadites began to accept people in their cities who did not share the same religious beliefs.

Although the Turkish occupation of Algeria was restricted to the north, the Mzabites were forced to pay annual taxes to the Turkish Governor. The Turks were followed by the French,

who arrived in the south only 20 years after conquering Algiers in 1830. In 1853, a convention ratifying French rule was passed and the Mzabites agreed to pay annual taxes in return for the preservation of their now limited autonomy. In 1882 a new administrative structure was imposed and French military bases were built.

In traditional Ibadite society all aspects of life are governed by Islamic law. The city is dominated by the mosque, which symbolises this government; the sheikh is a religious leader, as is the cadi, the Shari'a judge. Public morals are strictly controlled by azzaba (clergymen). The family has a patriarchal structure and is ruled by its eldest member.

The achira is the basic administrative unit, based on clan affiliations. It has its own budget and owns land and other properties or waqf. These properties can be used equally by all members of the achira but can neither be transferred nor sold. Each achira elects a representative (mokkadem) – usually the eldest male member – to speak for it at the community assembly or djemaa. Each year, the mokaddem have the right to elect the hakem, the holder of executive power. The hakem's duty is to establish order and promote the well-being of the community.

An achira may belong to one of two different soff, which may be compared to political parties. Depending on its views and opinions, an achira can change from one soff to the other, but there is no individual choice. Thus the basic rule in social organisation is that individuals have to obey and act according to the will of the extended family. Each of these soff is represented at the community assembly.

B. Climatic conditions

The valley of M'Zab is characterised by a harsh desert climate. There are drastic variations in temperature between winter and summer, as well as from day to night. A high on a July day may be 44°C, a low 25°C.

It seldom rains in the M'Zab, but irregular downpours sometimes cause rivers and streams to flood. The maximum rainfall, in a good year, is 120.5 millimetres; the minimum is 20 millimetres, with an average of twelve rainy days a year.

Relative humidity, which is of great importance for human comfort, fluctuates with the temperature, being around 70 per cent from October to February and 50 per cent from March to September. In the winter the prevailing northwest wind may bring rain. In the summer the winds come mainly from the northeast and are very dry, especially the Sirocco. Sand storms occur during the months of March, April and May.

Since the wadi (small rivers) of the region are dry most of the time, the Mzabites have established an extensive and ingenious irrigation system. Underground galleries, which are fed by sporadic floods, run downhill so that they drain the humidity of the soil on their way, and supply an average of 1,000 wells.

C. Local architectural character

The plateau of M'Zab extends 30 kilometres in an east-west direction from Daya ben Dahua to El Attef and covers an area of 4,000 square kilometres. The traditional ksour still dominate the valley, despite the growth of many new developments.

Remote and inaccessible in the past, the valley now lies on the major road to the Sahara desert, forming a kind of crossroads between the north and the remote south. The oil and gas fields further south have contributed to its growth even further.

Originally people lived in the ksar (singular of ksour) in the winter and in a palm grove in the summer. Today four different zones of settlement can be identified:

- Ksour – traditional settlements with a tight-knit structure
- New extension zones – these are strongly tied to the ksour as they contain common urban elements and shared public facilities such as sports halls and schools
- 'Jardin l'annexe' –a mainly European residential quarter which is also the administrative centre
- ZHUN (Zones d'Habitation Urbaine Nouvelle) – newly planned residential areas, characterised by a high concentration of subsidised housing

There are certain regulations governing construction within the ksar, relating mainly to the height of the building and the orientation of the external openings, which are limited to doorways and the occasional small window. These rules are guided mainly by the concern to protect privacy and ensure that no house blocks its neighbour's light.

Another rule is that nothing in the external appearance of the house should show the wealth of the occupant. This absence of external decoration means that no house contrasts strongly with its surroundings. Architecturally, the street is enlivened only by the colour of the walls and their play of light and shade.

Inside the towns, circulation is via a network of lanes that are partially covered and accessible only to pedestrians. Depending on the topography, these lanes are often quite tortuous and steep, and flights of stairs are very common.

Usually the footprint of a house does not exceed 100 square metres. However, the houses are built over two storeys, gaining in height the space it is not possible to occupy on plan. The height limit of seven or nine metres is determined by the need for privacy as well as climatic considerations. Indeed, because the only source of light in the house is from the courtyard, it is important that no house prevents its neighbours from getting their share of sunlight.

The entrance is bent and remains open most of the time to allow cross-ventilation. Near the entrance, away from the family area, is a room in which male visitors are received. The entrance leads to the most important space of the house, the westeddar (meaning 'middle of the house'). The courtyard is open to the sky through a 1.5 x 1.5 metre section known as the shebbek.

The habitable rooms are organised round the courtyard. They are usually multifunctional depending on the family's requirements.

The first floor is organised around a central open space (ikomar), with a toilet/ablutions room next to it and sometimes a small kitchen for winter use. The stairs leading to the roof occupy a corner of the central space. During the day the roof is reserved exclusively for women, who use it for domestic activities as well as a circulation system to reach neighbouring houses. In the summer, the whole family uses the roof for sleeping.

III. Programme

The project is situated on Aamoud hill in the Moumou neighbourhood of Beni-Isgen in the district of Ghardaia.

Before the design began, a dedicated team of specialists worked for several months to define the main causes of present housing crisis. This study led to a pragmatic approach to the problem.

The main goal of the project is to give low-income families access to decent, sustainable housing that responds to their needs and to the harsh climatic conditions.

Other objectives in the short- and medium-term were to:

- Conceive a 'ksourian' urban environment integrating modern facilities (including cars) and nearby green spaces
- Reestablish a satisfactory level of social cohesion, where the citizen is involved in the management of the city
- Provide a variety of housing options (in terms of both quality and quantity) that take into consideration the users' personal tastes, the size of the family and their lifestyle
- Reduce construction costs to DA 8,500 (USD 120) per square metre, allowing the average housing unit to be sold for around three times the average yearly income

Achieve a level of bioclimatic comfort in the various internal and external spaces

Many constraints had also to be taken into consideration:

- The strong attachment of the inhabitants to the ksar and its ancestral structures
- The restricted budget
- The shortage of suitable plots in the traditional urban areas

These constraints were overcome through different means:

- Presence of a dynamic leader
- Availability of local construction materials
- Access to qualified manpower
- Professional expertise and high-quality management
- Access to start-up resources and funds

- Encouragement of the Algerian government
- Existence of a significant and growing demand for housing

IV. Description

A. Project data

The proverb ‘one man can’t build a house on his own but ten men can build ten houses together’ formed the basis for research into methods of group working that would gather the joint efforts of the maximum number of inhabitants.

The project was inspired by the structure of the traditional settlements, which are designed for community living while respecting the family structure. It balanced a precise knowledge of the aspirations and needs of the inhabitants with an awareness of the existing potentials as well as the budgetary restrictions.

B. Evolution of design concepts

The main concept was the construction of a new town on a non-arable land, allowing for the preservation of the oasis and the surroundings of the old ksar. Many other concepts had to be reviewed and evolved as the project progressed. Hence it was very important to:

- Optimise the use of local resources (construction materials, manpower)
- Involve the future inhabitant in the conception of the project, in the choice of his house, and in the management of public spaces
- Set up a technical team to supervise, monitor and test the work under construction
- Conform to strict rational standards

The urban and architectural concepts were derived from the traditional ksar:

- A very dense urban network
- Interlaced and narrow streets
- Introverted house forms
- Adaptation to the natural landscape
- Limited construction height
- Reduced housing cost

In this project, the decision to use natural stone jointed with lime mortar can be explained by the advantage gained in terms of durability. Generally, these stone structures can last more than 150 years.

An outline of the five main challenges – and the proposed solutions – was used as a reference document to guide the project:

Challenge: Attachment of the inhabitants to the old ksar
Solutions: Choice of an appropriate site; attractive and affordable house prices

Indicators: Distance less than 1 kilometre from the ksar; cost of housing less than three times average yearly income

Challenge: Matching housing to the inhabitants' needs
Solutions: Adoption of traditional style; construction of prototype houses (to pinpoint what works and doesn't work)
Indicators: No unsatisfied occupants

Challenge: Loss of the social environment present in the old ksar
Solutions: Programming collective activities for the site; reducing the distance between the houses and the associated spaces; integrating different social strata within the same street; encouraging the formation of associations and charitable groups
Indicators: Periodic social activities maintained throughout the year (at the rate of at least one activity per month); reduced number of conflicts between neighbours

Challenge: Creating an architecture inspired by the local 'M'Zab' style
Solutions: Compact and high-density construction on hills; respect for the values of the traditional housing
Indicators: Unified housing model; functional equilibrium; connection between the different elements of the project

Challenge: Adapting the new ksar to the Sahara environment
Solutions: Bioclimatic comfort; shading circulation paths from the sun; protection against sandstorms; creation of green spaces
Indicator: Energy-saving

Naima Chabbi-Chemrouk
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Cartagena
Algiers
Málaga
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Marbella
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Mostaganem
Relizane
Mohammadia
Ain Temouchent
Ghazaouet
Sidi-Bel-Abbes
Tlemcen
Oujda
Khemis Miliana
Bordj-Bou-Arreridj
Tizi-Ouzou
Jijel
Skikda
Annaba
Setif
Constantine
Souk-Ahras
Beja
Bizerte
Tunis
Sousse
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Touggourt
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Tunisia
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Atlantic Ocean
Casablanca
Jadida
Marrakech
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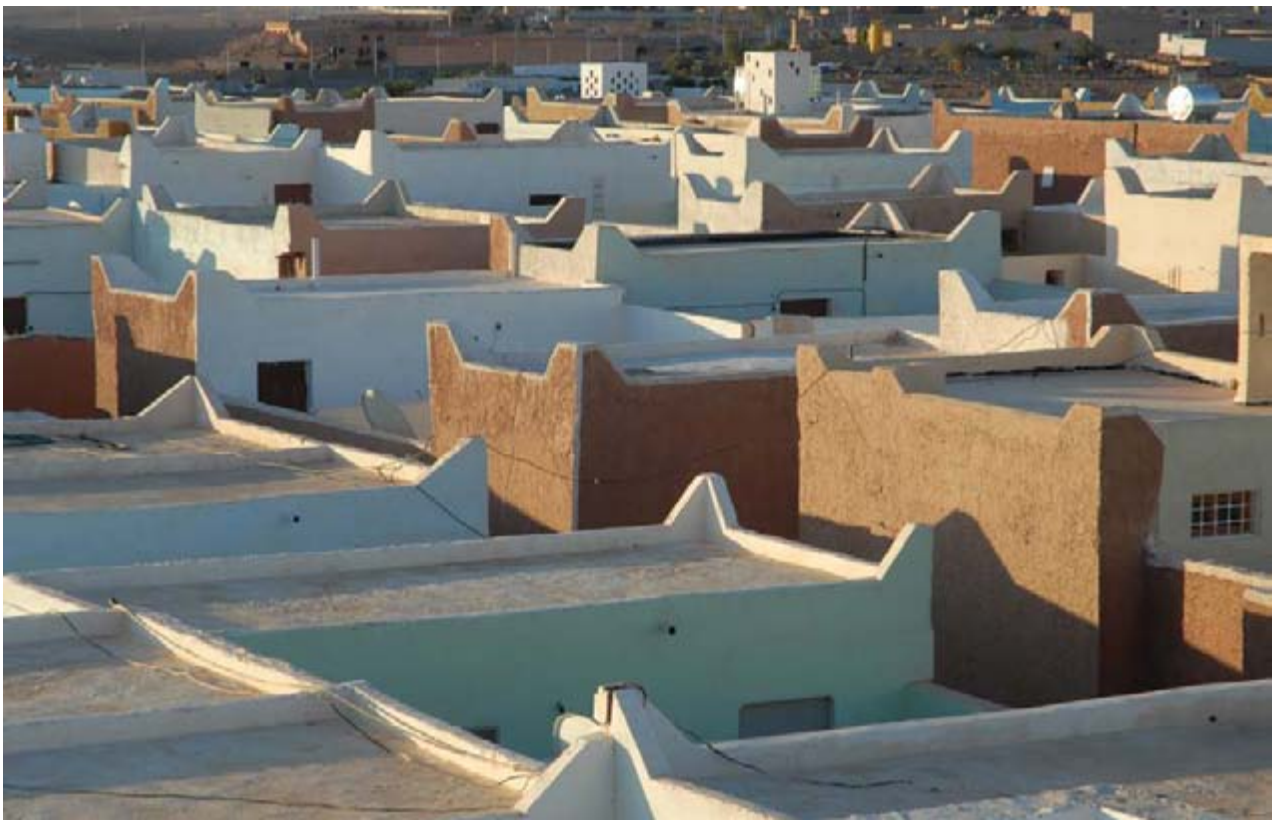
Algeria
Golea
Timimoun
Algeria
In Salah

Site plan

Typical dwelling plans, sections and elevations.

Approach view.

The wall of the new city protects it from sandstorms.



Roofs of the city.

Narrow intersecting streets in a compact urban tissue.

Exteriors of the buildings are made of lime, sand and concrete, only needing care every five years at little cost.

Night view of a typical facade.

One of the main aims is to preserve green areas around the city.

Inside the city, small streets provides shade and calm.

Light plays through the balcony parapet.

Master bedroom.

Coloured decorations on limed wall.

Dining area.