



UNHCR
The UN Refugee Agency

DIVISION OF PROGRAMME SUPPORT AND MANAGEMENT
SHELTER AND SETTLEMENT SECTION

Settlement folio

Planned settlement chapter

Introduction

UNHCR's [Global Strategy for Settlement and Shelter](#) (2014-2018) promotes a holistic approach to settlement and shelter responses adapted to the local context in which the refugees and internally displaced persons live. The Strategy aims to bring faster, more effective and innovative settlement and shelter solutions anchoring the refugee presence within the broader context of national and local development plans, fostering an integrated social and economic way of life.

According to [UNHCR's statistics](#), approximately 3.5 million refugees reside in 420 planned settlements. This folio examines planned settlements where approximately 25% of the world's 13.6 million refugees live. The word settlement refers to the context in which refugees are sheltered and how one shelter relates to the other. A settlement addresses community needs and is thus comprehensive of socioeconomic service provision. Other settlement typologies include hosting arrangements, dispersed self settlements, renting arrangements, transit facilities and collective centers.

UNHCR's [policy on alternatives to camps](#) promotes the pursuit of alternatives to camps, whenever possible. When refugee planned settlements must be established, we will endorse an operational response encouraging 'phase-out' of planned settlements at the earliest possible opportunity.

The [master plan](#) approach to settlement planning supplements UNHCR's alternatives to camp policy. It aims at ensuring settlements are linked to the local context and refugees are firmly connected with the requirements of the host population, ideally resulting in a settlement typology which over time evolves into a sustainable fully integrated community.

Master planning involves the phases of planning, building and operating refugee settlements while enhancing positive relationships between refugees and host communities ideally leading to durable solutions and rational exit strategies.

As a step towards achieving our strategic settlement objective defined in the global strategy, the Shelter and Settlement Section (SSS) presents these settlement examples to reinforce institutional memory, provide technical reference and guide sectorial strategy.

The examples outlined in this folio are presented as a resource for UNHCR personnel to reference in order to enhance our planning and design capacity by providing case-studies against which to gauge future and existing solutions. The four settlements chosen for detailed review are:

- Ajoung Thok in South Sudan,
- Kobe & Jewi in Ethiopia
- Azraq in Jordan

These four are indicative of planned settlements established in response to post-conflict refugee crisis. They provide summaries of the significant settlement development issues from assessment to design to full implementation.

There is no 'one size fits all' solution to settlement planning. Settlements are contextual to a particular territory deriving from the structured landscape encountered.

They must consider the spatial allocation of functions while maintaining equilibrium between the needs of the population (host & refugee), the availability and allocation of resources, economic dynamics of the region, existing local development plans, the amelioration of living conditions, definition of transportation networks, recreational spaces and the provision of social services.

Physical site planners associated with the Shelter and Settlement Section reference ten key planning concepts, central to protection, around which to design a refugee settlement:

- Circulation concept
- Drainage concept
- Sanitation concept
- Settlement transformation over time concept
- Transition from emergency to protracted use
- Self-governance concept
- Host community integration concept
- Environmental concept
- Social and livelihood related considerations
- Shelter strategy

UNHCR's [digital emergency handbook](#) provides key information on minimum standards and best practice which should be referenced while developing planned settlements as part of a refugee emergency response.

Traditionally, UNHCR follows a modular approach to site planning starting with the family unit as the smallest planning 'module' and building up to larger units as follows:

Module	Structure	# persons
1 Family	1 / family	4 - 6
1 Community	16 / families	80
1 Block	16 / communities	1,250
1 Sector	4 / block	5,000
1 Settlement	4 / sector	20,000

The settlement folio is structured around reviewing the chosen settlements considering standards, principles and guidance.

Particular emphasis has been given to include into the quantitative analysis qualitative social spatial related considerations.

The notion of the settlement folios as 'best practice' is not entirely appropriate. Each individual settlement examined in the folio has lessons from which we can all learn as well as aspects not to be repeated.

The object of the exercise is to encourage a learning process through detailed study leading to more effective and holistic settlement solutions going forward.

May 2016



This publication was produced by UNHCR Shelter and Settlement Section

For more information contact:

Shelter and Settlement Section
Division of Programme Support and Management
United Nations High Commissioner
Rue de Montbrillant 94
1202 Geneva
Switzerland

HQshelter@unhcr.org
www.unhcr.org

Ajuong Thok

Project location: Unity State, South Sudan

Response: Sudan situation

Site area: 1,544 Hectares

Site population: 32,099

Site density: 120 m²/ person

Site capacity: 40,000

List of facilities: Primary schools (3)
Secondary school (1)
Child friendly centres
Feeding centres
Primary Health care centre
Food distribution centres

of shelters:

Transitional: 989

Emergency shelter: 6,090

Background:

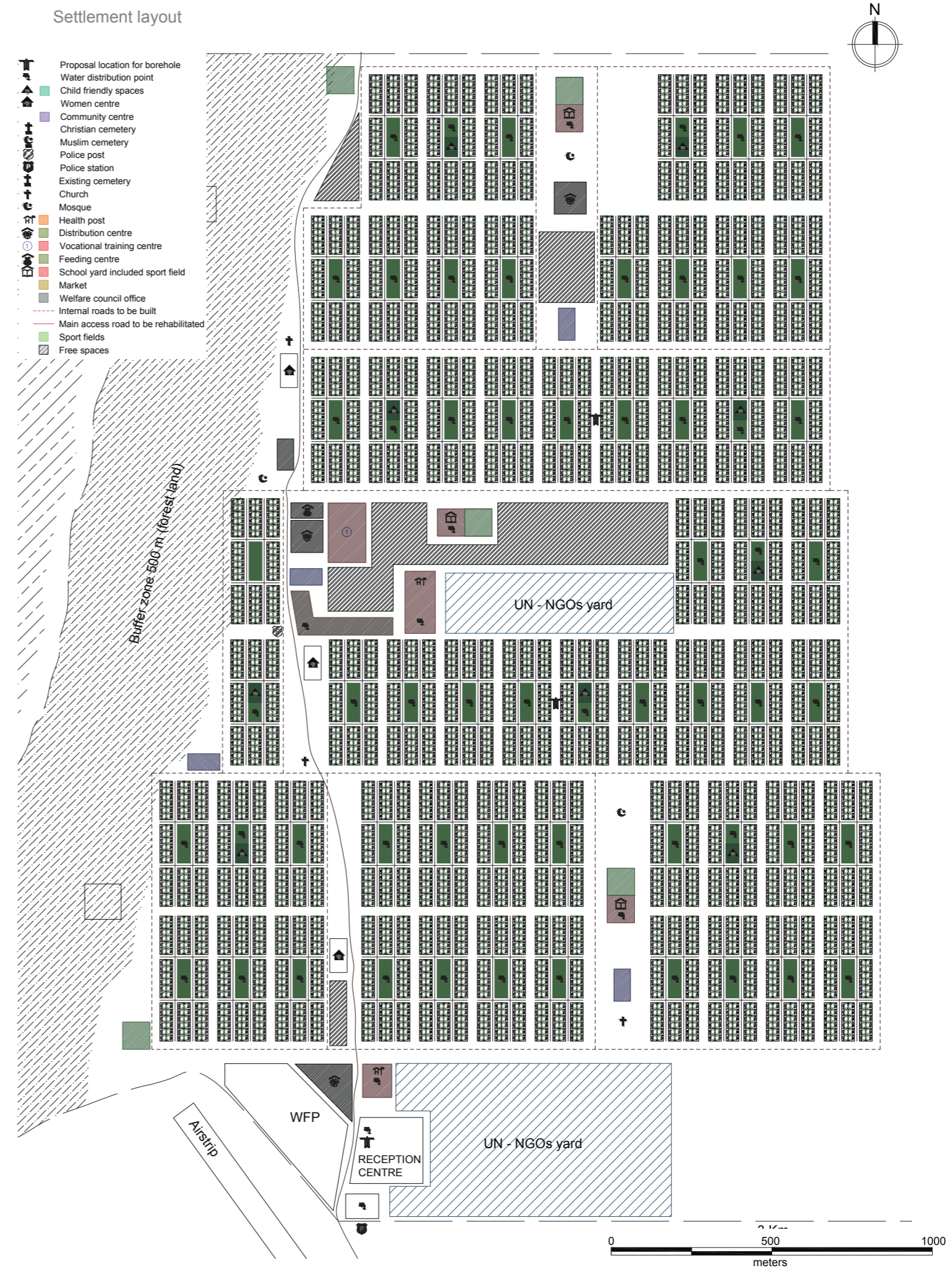
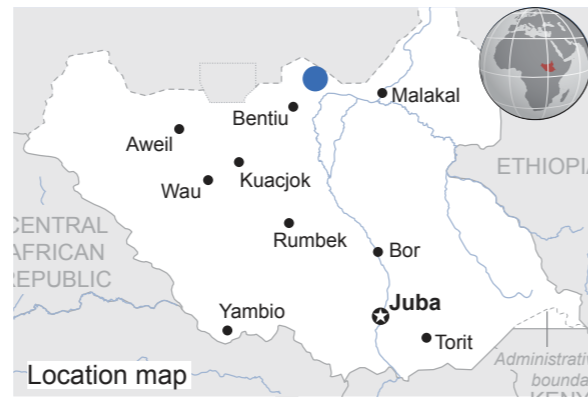
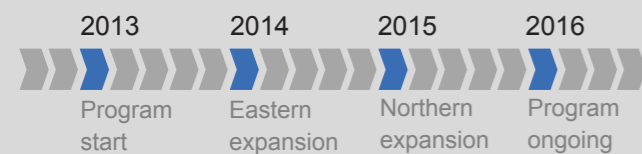
Instability in the Southern Kordofan region of South Sudan continues to cause movement of Nubian refugees into Yida at the border with the Sudan.

Previously the militarization of Yida, its proximity to a contested border point and probability of flooding prompted UNHCR to facilitate the relocation of refugees to a more appropriate location at Ajuong Thok.

Ajuong Thok was identified in March 2013 following an extensive consultative site assessment process covering 13 possible locations. The first relocation followed closely after identification and currently this settlement host a population of 32,099 persons.

Ajuong Thok is now approaching full capacity and a decision has been made by the country office to develop a further refugee settlement in the area of Pamir located 12Km from Ajuong Thok

Timeline:



Note: This drawing served as the basis for the development of Ajuong Thok settlement. Certain features were adjusted in relation to the context during the construction phase.

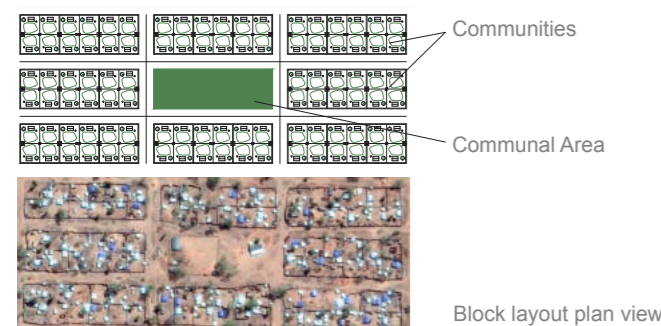
Settlement design drivers

The design strategy is based on the 'modular' zone - block - compound - plot format. The entire settlement is divided into zones with a range of 6 - 8 blocks in each zone. Each block is sub-divided into 8 compounds, and each of these compound is sub-divided into 12 plots. Each plot has a unique address and is primarily occupied by a single household or family.

Site selection: Considered criteria included, space availability; sufficient distance from the closest international border; availability of water source; reasonable terrain gradient; good soil conditions in terms of permeability and porosity and the presence of potential local materials to be used for the construction of shelter.

Topography: Ajoung Thok has a relatively flat terrain with a gentle slope of about 2%. The topography didn't affect the shelter design, which is largely favourable. Nevertheless swampy parts of the site were not used for residential purposes.

Water and sanitation: The main source of water for the camp is sub-surface and groundwater. The water is pumped from bore holes and then distributed through a piped network directly to tap stands in each block, there are 8 taps in each tap stand.



Host community: Certain facilities such as the secondary school are located at the periphery of the site and serve both refugees and the host community. In a similar manner there are water bore holes strategically located close to the site perimeter for use by both refugees and host community.

The shelter design is the product of a consultative process that took into consideration existing shelter types within the host community. Adjustments were made to ensure a more sustainable solution.

Services: Facilities have been designed to meet the demand and at best practice recommended distances.

Social and open spaces: The central area of each block is primarily reserved for social and communal infrastructure.

Settlement transformation over time: Buffer areas for future expansion had been allocated in western and northern sections of the settlement.

Services and infrastructure facilities have been build assuming needed durability over time. These are either semi-permanent or permanent type buildings.

Block layout

Block area: 58,500 m² (96 family plots). Each block consists of 8 communities.

The central area of each block is reserved for social and communal interaction. The use of these centres is defined by the needs of the occupants.

The design of road network consists of intra-zonal, intra-blocks and minor roads between compounds.

Community layout

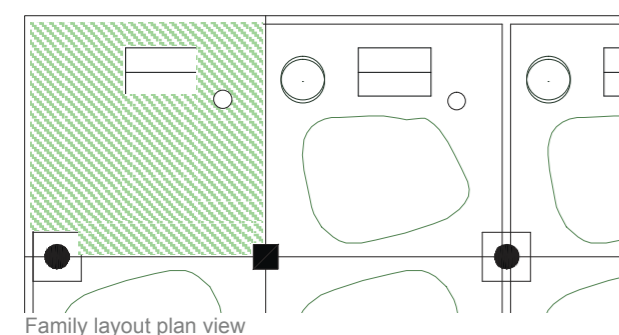
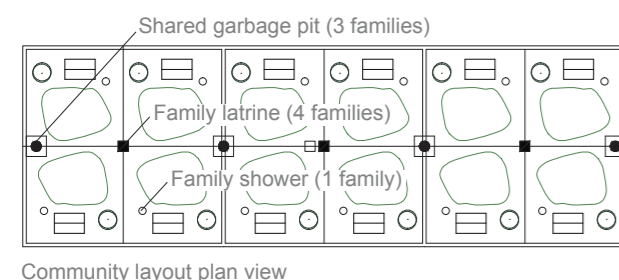
Community area: 4,800 m² (12 Family plots). The community or compound consists of 12 plots.

During the emergency phase latrines and garbage pits were shared. Households rapidly built family latrines, showers and cooking areas upon receipt of individual plots.

Plot layout

Family plot area: 400 m² (20m X 20m) Each plot will comprise a transitional shelter, a family latrine and an area for a kitchen and garden.

Plot coverage: Approximately 355m² (80%) of the plot surface will serve as open space, allow livelihood activities and/or allow for family expansion.



Specific observations

Spatial concept analysis

The prioritized critical design driver for the development of this settlement was the definition of a 400m² family plot which was presented and accepted by the authorities at the beginning of the design process.

Ajoung Thok was created out of a need to relocate refugees from nearby Yida. The site layout was the result of a consultative process which included relevant stakeholders and refugees.

Sheltering clusters (blocks) were defined and located in relation to centralize service areas at maximum distance of 1.5 Km.

Public and private spatial relationship / Hierarchy of spaces

The built environment is structured by two different scales of open spaces. The larger being centralized public service areas and the smaller being the central controlled public communal space allocated per block to provide water points and community areas.

Best practice promotes the use of a third scale and smaller transitional open space between the family plot and the road, a connective space between family shelter and public services where household level social interaction and livelihood activities take place. In Ajoung Thok this space is non-existent, greatly because Nubian refugees tend to have a high sense of privacy and they are quick to construct fences around their plots at their own expense and without UNHCR assistance.

Relationship with the surroundings

The site is located in a remote rural area 13Km from the Sudan border. The nearest town is Pariang located at approximately 43 Km. Economic integration with host community exists despite being distant from agglomerations. Physical evidence of this integration is the formation at Jamjang of a new host community settlement of 5,000 people at 3Km from the site. Agricultural land (1,200 acres) adjacent to Ajoung Thok have been recently allocated to the refugees.

What works

- Plot layout allocation as it provides: sufficient land per family plot (400m²) to include farming, household sanitation facilities and sufficient space for family expansion and/or development of livelihood related activities.
- The site is well served with maximum distances to services of 1.5Km. Communal space within the blocks are key for neighbourhood level social interaction. This space also served as transit area while shelters are being built during emergency.
- Consultations with refugees and relevant actors proved to be paramount in informing layout decisions, appropriateness and acceptance.
- Shelter design aligned with locally available materials and construction techniques familiar with the refugees.

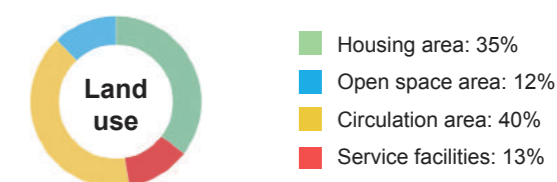


Hierarchy of spaces diagram

- Open space and service area
- Block open space and water point
- Main road network



View towards the school



Lessons learned

- Need to further ensure forest land within the site boundaries. The above will promote an environment management scheme controlled by the refugees. It will result in a better environmental integrated settlement
- Need to further ensure sensitization to support the relocation process. Ensure facilities are in place before the relocation of the refugees commences.
- Improved host community integration and use of master plan techniques is advisable.

Azraq

Project location: Jordan

Response: Syrian situation

Site area: 1,740 Hectares

Site population: 22,429

Site density: 267 m²/ person

Site capacity: 60,000

List of facilities: Hospital, 2 primary healthcare clinics, 2 schools, 1 supermarket, 2 NFI distribution sites, 1 food distribution site, 2 markets -100 shops each-, 1 mosque, 2 community centres, adolescent friendly spaces, child friendly spaces, women friendly spaces, playgrounds, 2 infant and child feeding program facility, youth centres –informal education-, warehouse area, replenishment sites.

of shelters: 10,023

Background:

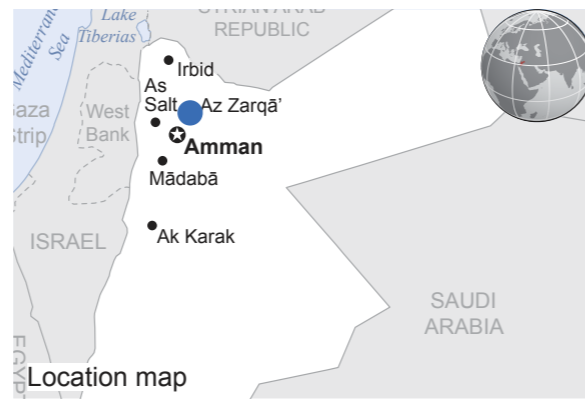
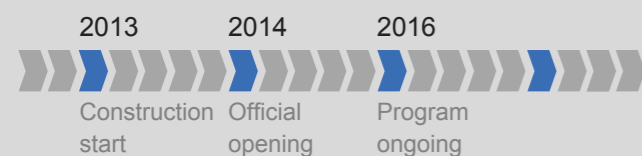
Azraq is a purpose-built settlement for Syrian refugees located in the Zarqa Governorate of Jordan.

Azraq was officially approved in March 2013 and opened in April 2014 to relieve pressure on Zaatari settlement, some 80 Km to the north-west.

In March 2013, Zaatari reached capacity with a daily influx of more than 2,500 people per day straining UNHCR's ability to accommodate additional refugees above the 75,000 people already being sheltered there. At the time, further expansion of Zaatari was considered inappropriate, space was limited and such a large settlement was having a negative effect on the host community who had limited resources to share.

Azraq comprises 8 villages, 4 villages are built, 3 are currently inhabited, 1 remains until now empty.

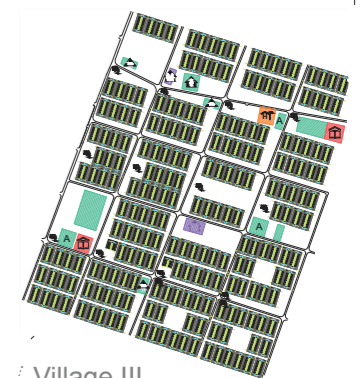
Timeline:



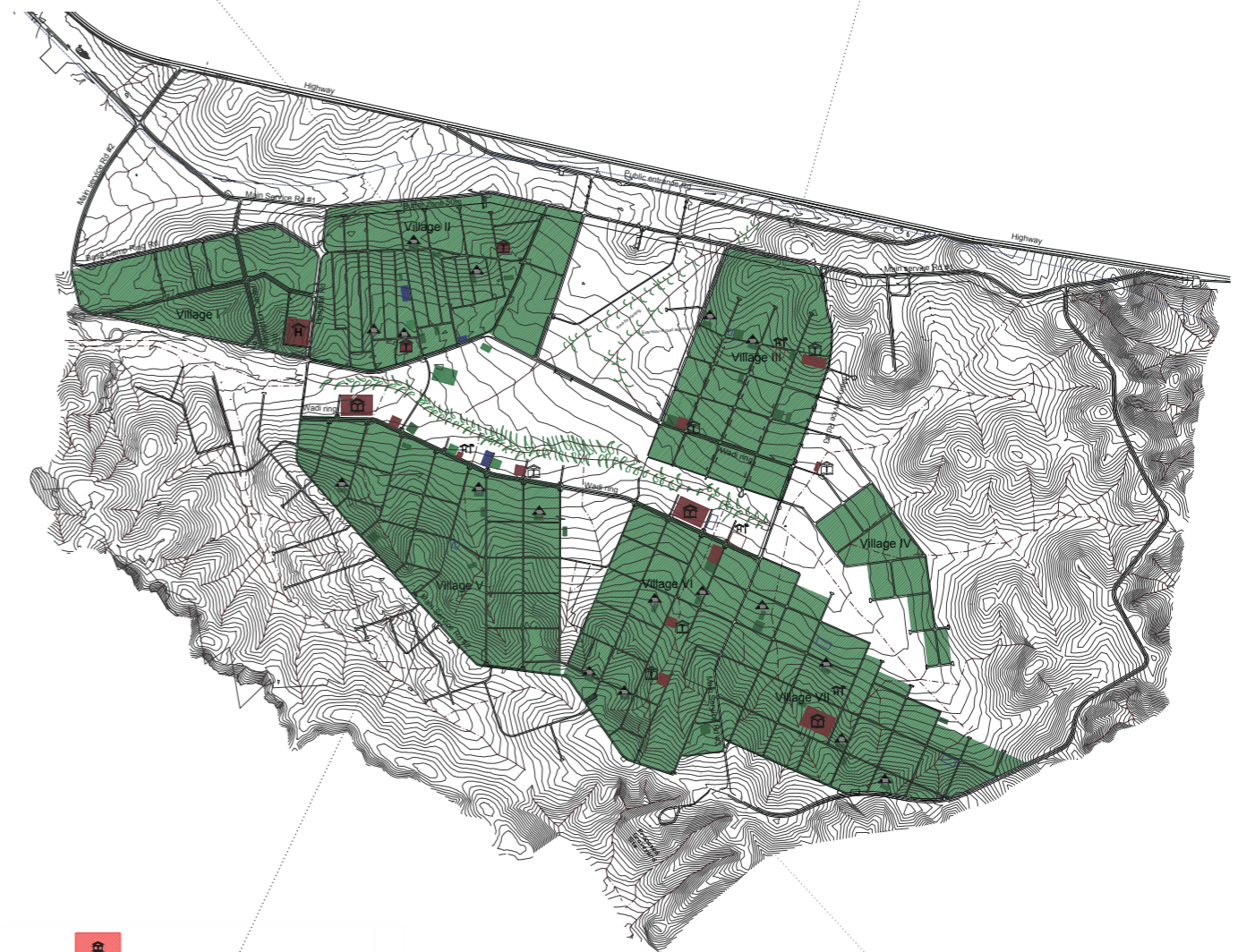
Settlement layout



Village II



Village III



Village V



Village VI

- Health post
- Hospital
- Child friendly spaces
- Informal education
- Community centre
- Playground
- Sport fields
- School

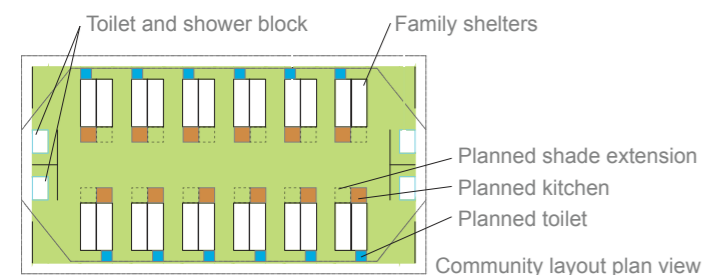
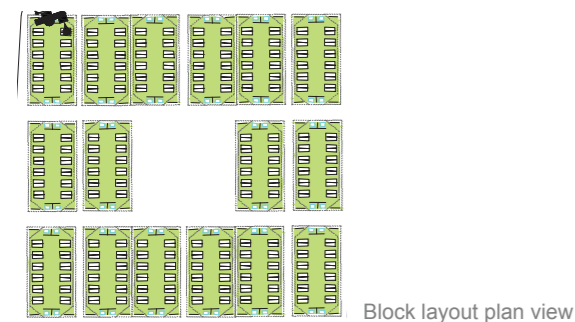
Settlement design drivers

Azraq settlement was designed to function like a city. The site is subdivided into villages, paved streets with road signs connect them. Each village accommodates 10,000 to 15,000 people and has its own community centre, primary health post, police post, women and child friendly spaces, sports grounds, and schools. The smallest planned social unit is the community plot, comprising 12 shelters sharing common water and sanitation facilities. Household level sanitation upgrade is planned overtime.

Site selection: The Jordanian authorities provided two options for the development of the site. The first was to close to Zaatari which posed concerns related to burden on host community infrastructure. The second, Azraq was chosen. The site is a former re-settlement camp from the Gulf War. Vast empty land was available in proximity to existing infrastructure such as water pipeline, power line and accessible transit road. Azraq extends for 15 Km, and is 90 Km from the Syrian border and 70 Km from Zaatari site.

Topography: Site layout locate villages on gentle slopes surrounding the main 'wadi'. Storm water drainage is ensured through catchment structures used for erosion control and tree planting.

Water and sanitation: 1 operational borehole (50m³/h) serves the settlement. It is located 2 Km from nearest village. Water is trucked to main water tanks and is supplied by gravity to each village.



Each community (12 shelters) is served with 4 communal toilet and shower blocks (2 females, 2 males).

Host community: Investments in infrastructure represents a benefit for the hosting country. The settlement is 20Km from nearest town Azraq. Local workers from the town and surrounding areas are hired for the construction and maintenance of the site. Humanitarian agencies continue to explore potential employment and business opportunities for the local community; for example when allocating the market shops to their respective owners, applications have been open to both refugees and host community; 50% of shops were assigned to people from the host community.

Services: These are provided in a decentralized manner which supports the concept of simultaneous development of all villages with the provision of tailored and accessible service packages.

Social and open spaces: On average every block consisting of 13 communities (156 shelters) has an open space of approximately 3,600m² (60mX60m). This area is intended for recreational use and for the location of water points.

Settlement transformation over time: Azraq has been conceived to be implemented by phases and according to the absorption needs. Following thorough topographical analysis the settlement has been planned to accommodate a maximum of 60,000 refugees.

Village layout

Average village area: Approx. 72Ha (15 Blocks / 2,880 shelters)

8 villages are conceived as decentralized interconnected agglomerations with local services and infrastructure. An 8m width ring road is the main circulation element within the camp. Secondary service roads provide access throughout the blocks.

Block layout

Average block area: Approx. 32,940 m² (16 communities / 192 shelters)

Commonly an average area of approximately 3,660m² (2 communities) is allocated for social services and infrastructure.

Community layout

Community plot area: 1,512m² (54m x 28m). A community plot is shared by 12 transitional shelters sharing a central space of 9m width, no family plot distinction is defined. Shelters are 6m x 4m built in steel and thermal insulating material. The community is served by 4 communal toilet and shower blocks (2 females, 2 males). The plot is expected to accommodate people belonging to one extended family, this to ensure a level of privacy within an extended

Specific observations

Spatial concept analysis

The prioritized critical design driver for the development of this settlement was the definition of interconnected decentralized and independently served villages. With particular focus on weather mitigation, land use and erosion control for such extreme and harsh desert conditions.

Public and private spatial relationship / Hierarchy of spaces

The built environment is structured by a ring road, a network of roads and a central natural riverbed.

- At settlement level the central riverbed represents a major open space towards which large scale services such as schools and hospitals are located. Longest distances from shelters to this services is approximately 1,800m.

- At village/block level there are a number of open / public spaces intended to serve as communal recreational and water point areas. There is no notion of social centres. Sufficient services have been numerically planned, their location does not seem to be driven by any particular spatial related intention.

- At household level a central space is provided per community plot for every 12 families. No private open space is provided at family level. The shelter remains the only available family private space with exception of extended families that have created their own fences which in cases included the appropriation of community toilets and shower.

The community plot concept includes in a following phase the construction of family toilet blocks and kitchen.

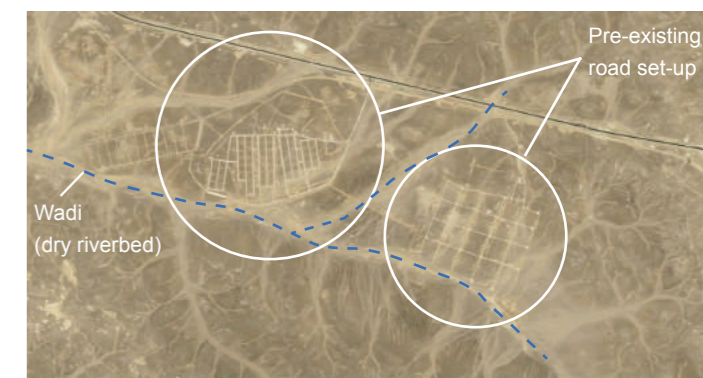
Relationship with the surroundings

The site layout takes into consideration the natural conditions of the site. Storm water and spill water harvesting systems have been designed to support erosion control in addition to tree planting within the open space left between the village and in the center riverbed.

The site is located in a remote desert area at 70Km from the nearest town. Economical integration through physical proximity with host community remains a challenge.

What works

- Azraq was afforded adequate time for planning, design and received the necessary funding and technical expertise required.
- The overall village concept approach is an innovative reference for humanitarian settlement planning. The overall planning response took care in the way the settlement relates to such fragile extreme weather and environment, in particular the definition of usable land in relation to wind, storm water and topography.
- The developed transitional shelter approach has proven appropriate and lasting in such extreme weather conditions.
- The definition and development of a contingency emergency site to absorb new influx into the settlement.
- The definition of a controlled and secure administrative and warehousing area within the settlement was a positive implemented lesson learned from Zaatari.

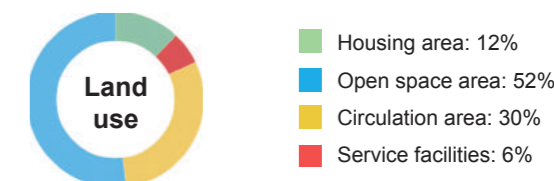


Aerial view of the site (source google earth 31/12/2004)



Settlement level (image taken during construction - 11/06/16)

Central riverbed area - - Main road network



Lessons learned

- Azraq's remoteness from any mid-size urban centre has held back refugees access to livelihoods and interaction with the local community.
- There seems to be the need for better connectivity as distances between the shelters and the services remain significant.
- The need for defining structuring social open spaces at village and block level.
- Privacy is an essential need for Syrian refugees. Added value to the site layout may be met by allowing clear definition and development of family plots overtime. The above may supports over time the promotion of household development needs.
- The settlement size necessitates significant investment in infrastructure and services.
- Time and cost limitations led to a porch / shaded area being excluded from the T shelter design.

Kobe

Project location: Dollo Ado, Ethiopia

Response: Somalia situation

Site area: 415 Hectares

Site population: 43,255

Site density: 96 m²/ person

Site capacity: 45,000

- List of facilities:**
- 2 Health centres
 - 1 Satellite clinic
 - 4 Primary schools
 - 2 secondary schools
 - Community centres (Tukuls)
 - UNHCR field office
 - 1 common market
 - 4 neighbourhood markets
 - Youth education park
 - 1 Food distribution centre
 - 1 Administrative building
 - 1 Multi-purpose hall
 - 1 police station

of shelters: 7,600

Background:

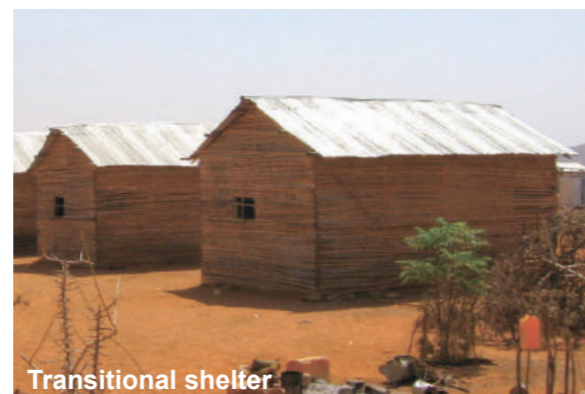
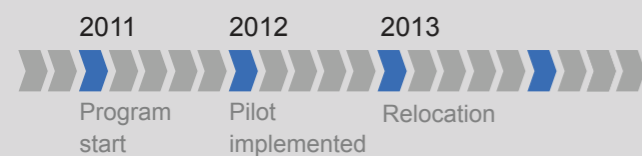
Kobe settlement in Dollo Ado was established to accommodate Somalian refugees who left their country of origin due to the 2011 resurgent of conflict compounded by severe drought.

In June 2012, an Ikea funded project provided the catalyst for a review of the camp lay-out and a new model for settlement design.

An initial consultative process with refugee representatives, host community members and partners was conducted to develop an innovative vision of a refugee settlement which promotes protection in its design and activities and enhances community engagement and self-reliance.

Several assessment and surveys were conducted to establish multi-sectoral baseline criteria. The results and data collected have been used for the development of the settlement. As a result of this process a second - improved - settlement layout was proposed and implemented.

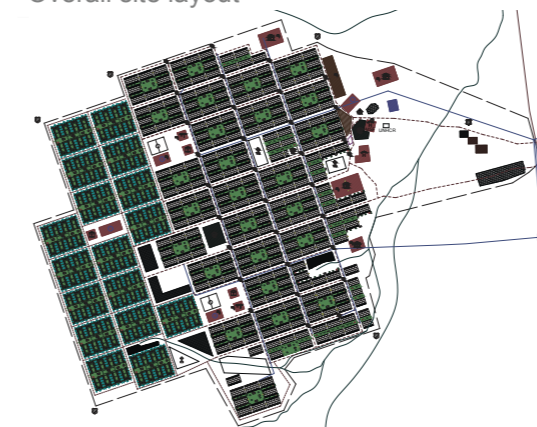
Timeline:



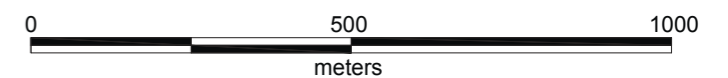
Settlement layout



Overall site layout



- Existing water distribution point (6 taps)
- New water distribution point (6 taps)
- Existing water tank (gravity system)
- New public area
- Existing school yard (NRC, ZOA, SC)
- Distribution Centre (WFP, UNHCR, ARRA)
- New market location
- Existing market
- LWF training centre
- Shelter workshops
- PWO office
- New vocational training centre
- Additional school yard
- Existing temporary health centre
- MSF
- New health post
- Existing cemetery
- Existing mosque
- Additional cemetery
- New youth centre
- New police station
- New police post
- New Kobe camp delimitation
- National marram road
- Existing water pipelines
- New internal earth roads
- Existing internal earth roads
- New satellite distribution centre
- Additional public areas (NGOs, UN, ARRA, etc)
- Host community
- Existing temporary school



Note: This drawing served as the basis for the development of Kobe settlement. Certain features were adjusted in relation to the context during the construction phase.

Settlement design drivers

A 'hybrid' mixed design settlement solution was developed in Kobe to improve the initial layout. The revised settlement layout for Kobe centred on promoting smaller living settlements within the larger site structure with the aim of improving the provision of basic services. The settlement design starts from the house plot, which is the smallest planning unit. Approximately thirteen (13) house family plots constitute a Community (or in Kobe language a Compound), several Communities establish one Block (or in Kobe a Neighbourhood) and several Blocks constitutes a Village. The biggest unit envisioned is the settlement comprising multiple villages. The use of terminology or language here was not incidental (e.g. Compound, Neighbourhood, Village) but was meant to draw attention back to the fact that the object at the centre of the spatial planning exercise is the refugees well-being.

Site selection: The site allocated by the Ethiopian government was assessed suitable for the development of the settlement, with no particular natural related hazards identified.

Topography: It is characterized by irregularly homogeneous and flat terrains with relatively gentle slopes. Despite this configuration, there are areas of gullies (erosion) inappropriate for settlement which were left as buffer zones.

Water and sanitation: Sufficient surface water from Genale river is pumped and treated to strategic water points. Household level latrines and showers exist.

Host community: The host community has a positive relationship with the refugees as they share the same facilities such as health centres and primary schools. Both communities are engaged in integrated livelihood activities (farming and common market for business).

Services: Locations of keys facilities are located in a decentralized manner to ensure harmonized accessibility from every Block (Neighbourhood). A distribution centre and health facility are located at the entry point of the settlement, less than 1Km from the main road to ensure provision of transport services. The common market is located at the periphery of the site in order to promote local integration.

Social and open spaces: The settlement allows for adequate space to prevent overcrowding, reduce the risk of fire, and allow for a level household privacy.

Settlement transformation over time: The settlement is located within a large area and despite its relative proximity to local habitat, it is likely to extend over 115 hectares. During the integration process it has been agreed that assets will belong to the host community once the site is decommissioned. This is in line with master planning principles seeking to maximise the integration of planned refugee settlements with host communities through alignment with local development plans, development of shared resources and supporting refugee access to mainstream services.

Block (neighbourhood) layout:

Block or Neighbourhood area: 39,780 m² (88 Family plots)
Each block consists of 8 Communities or Compounds

A central space has been allocated for community use, it includes the provision of water points, laundry/washing areas and multi-purpose facility.

Safe and continuous pedestrian transit has been clearly defined and separated from vehicular road network.

Community (compound) layout:

Community or Compound area: 3,750 m² (11 Family plots). The community or compound consists of 11 adjacent plots following a "U" shape layout which open towards a central social space to accommodate open and Child friendly spaces.

This space is also used to locate communal latrines, showers and garbage pits at the initial emergency phase.

Plot layout:

Family plot area: 225 m²

Each plot measures 15m x 15m. Each plot commonly comprise a transitional shelter (6m X 3m), a family latrine and an area for a kitchen and garden.

Plot coverage: Approximately 195m² (86%) of the plot surface will serve as open space, allow livelihood activities and/or allow for family expansion.

Specific observations

Spatial concept analysis

The prioritized critical design driver for the development of the new settlement layout focused in:

- (a) ensuring improved basic services for refugees are closer to their family plots while supporting longer term needs to host community;
- (b) ensuring appropriate social space at community/compound level and at block/neighbourhood level.

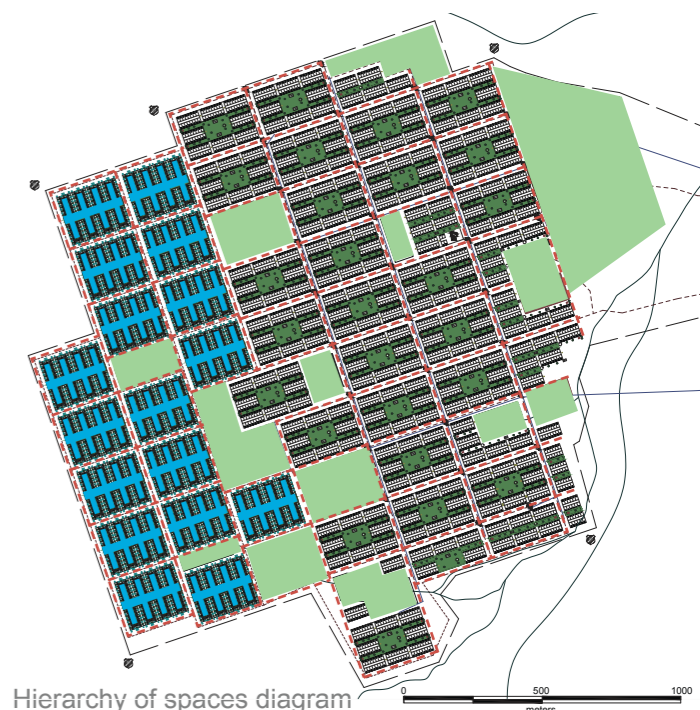
Public and private spatial relationship / Hierarchy of spaces

The built environment is structured by different scales of interconnected social open space served areas.

The provision of transitional space between private household level plot towards a community/compound public space is interpreted as a best practice spatial planning consideration.

It is expected that these controlled and defined public areas will promote social interaction between neighbours, in particular the positive development of the children.

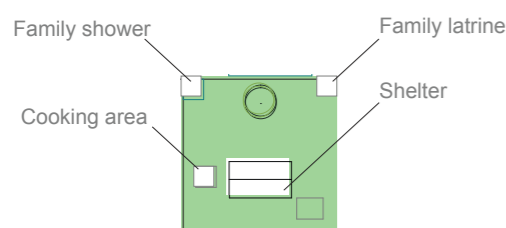
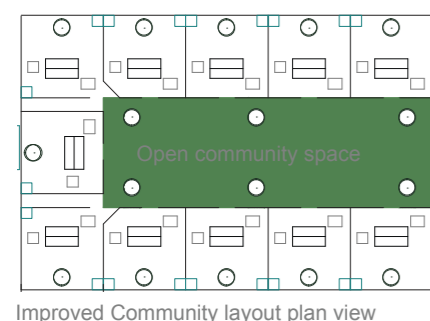
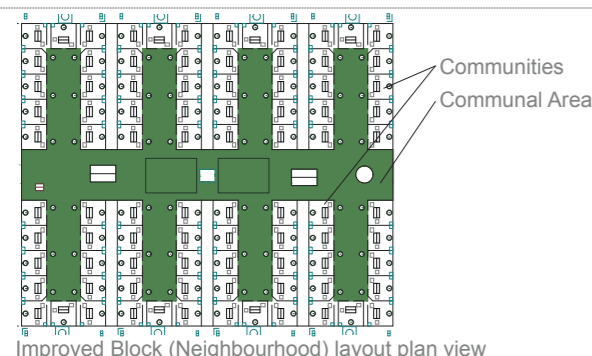
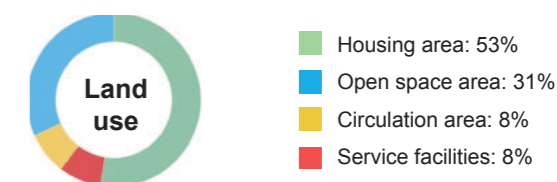
The above mentioned central areas are fully pedestrian while the front of the plot remain accessible by vehicular roads



- Block / neighbourhood open space and service area
- New community / compound open space and service area
- Main road network



Settlement view



Relationship with the surroundings

The site is located in a remote area approximately 64Km from Dollo Ado town. During the crisis other four refugees settlements (Bokolmayo, Melkadida, Hilaweyn and Buramino) were developed along the same axe of approximately 100Km.

The area is characterized by hot, dry, windy and dusty environment occupied with scarce and dispersed small settlements from the local population.

What works

- The revision of the existing settlement layout promoted an intensive consultation process with refugees, host community and the local authorities which resulted in a more appropriate and accepted settlement layout. The above proved the importance of such as process in the overall spatial planning exercise.
- Bottom-up spatial planning considerations starting the smallest planning unit (a generous family plot) and caring about social related spaces for the larger built environment scale such as community.
- The Block creates a diversity of interconnected spaces that promote social activities vital for the development and well-being of the inhabitants.

Lessons learned

- The improvement of only a few sections of the settlement poses the question about the possibilities of improvement for the initial sector. In particular given the high cost of implementation.
- The above also raises potential equity questions as the family plot area allocated to those from the initial phase is 180m² vis a vis the improved option of 225m².
- Availability of farming land for refugees remain a challenge as land is precious for the host community.
- The notion for improved host community integration exists, however, this requires strengthening to ensure the settlement is firmly linked with host population requirements eventually leading to a settlement typology which overtime evolves into a sustainable fully integrated community.

Jewi

Project location: Gambella, Ethiopia

Response: South Sudan situation

Site area: 1,800 Hectares

Site population: 48,485

Site density: 148 m²/ person

Site capacity: 50,000 persons

List of facilities: 12 Education facilities, 4 Market Areas, 10 Reception Hangars, 3 Nutrition centres, 1 Health centre, 2 Food distribution centres, 2 grinding mills, 12 water distribution points

of shelters: 11,547

Transitional: 2,482

Emergency shelter: 9,065

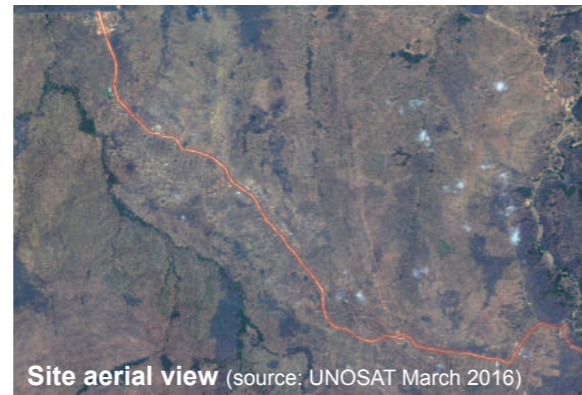
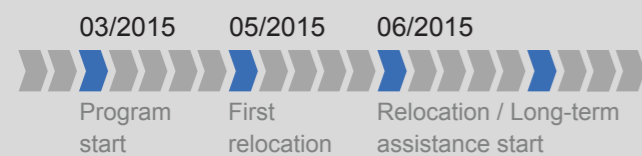
Background:

Jewi settlement in Gambella, Ethiopia was developed to support the relocation of South Sudanese refugees from the flood prone sites of Leitchour and NipNip. After the 2014 rainy season UNHCR and the Government Administration for Refugee and Returnee Affairs (ARRA) worked in identifying a suitable site for the implementation of a new flood relief settlement.

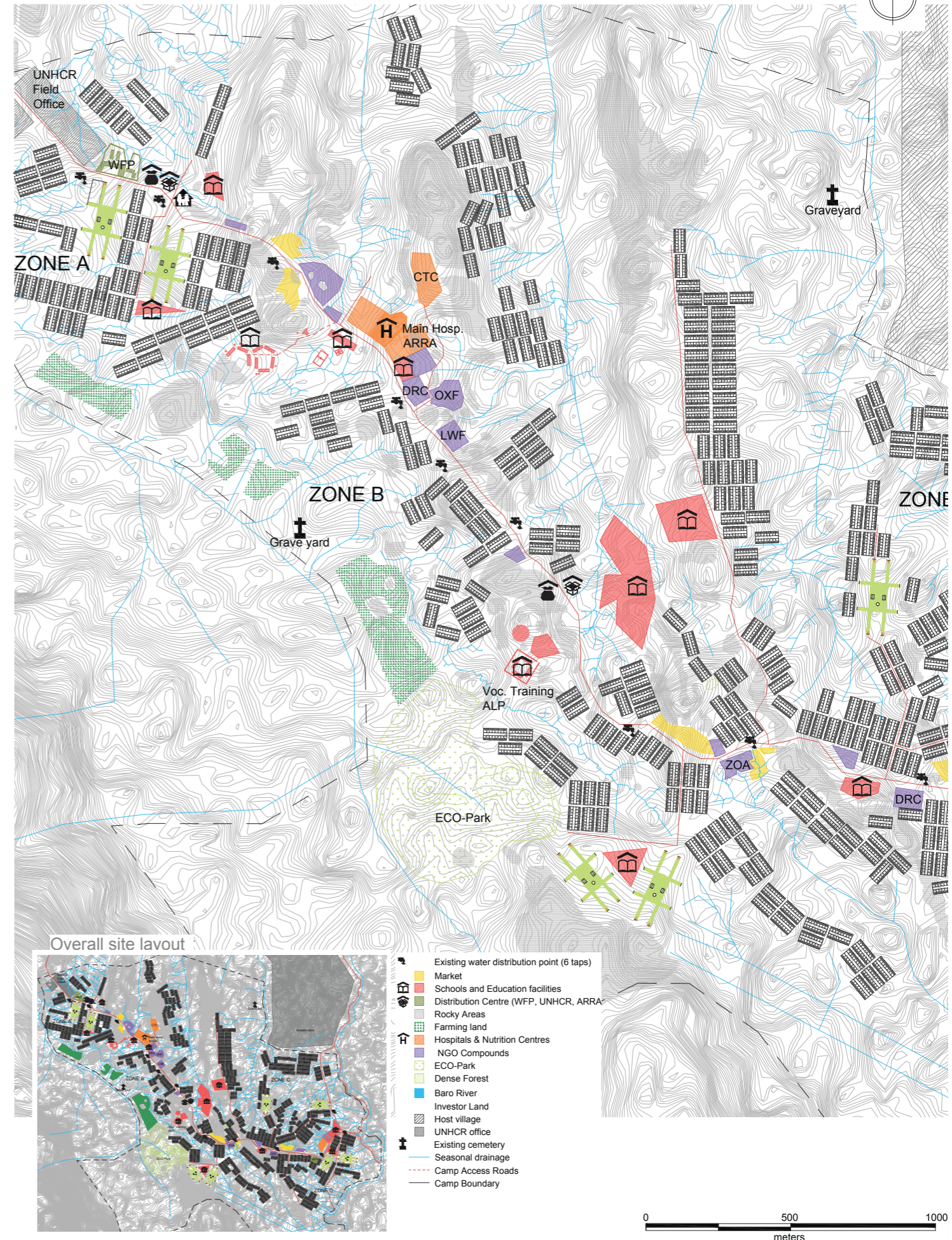
Jewi is a vast land of about 18 km². It has been subdivided in two main zones: Jewi west (6 km²) and Jewi east (12 km²). Jewi west was the first to be assessed, however it was dismissed due to scarcity of suitable land and the challenges related to access requiring substantial infrastructure investment. Jewi east is accessible by paved road. It is located at approximately 18 Km from Gambella town.

The land in Jewi is characterized by a combination of gentle hills, water courses and seasonal streams. The surveying of Jewi required intense work. The survey has been carried out covering a walked distance of approximately 185 km where 2,350 points GPS points taken.

Timeline:



Settlement layout



Note: This drawing served as the basis for the development of Jewi settlement. Certain features were adjusted in relation to the context during the construction phase.

Settlement design drivers

The design prioritized the preservation of the existing natural environment ensuring minimal destruction to trees, ground vegetation, rocks and natural streams.

The settlement is designed into units / communities of 16 plots which are clustered in average of 8 units (depending on the topography) to form larger blocks. The blocks are located within patches of areas that are suitable with the aim of minimizing the impact on the environment. The blocks were then combined into Zones. Jewi Refugee settlement currently has a total of 4 Zones.

Site selection: Initial selection considered criteria included availability of water from Baro river (2 km away), adequate clay-sandy soil type.

Topography: It includes presences of vast rocky areas, watercourses, seasonal rivers and steep ravines. Habitable suitable areas have gentle slopes ranging between 2% - 5%. The setting up of buildings required avoiding rocky areas and the watercourses.

Water and sanitation: Baro river is a year round source of water. The initial water supply was provided through water trucking. Drilling took place in several locations but these prove to have insufficient yield to meet the demand, therefore an intake was built at the river. Water is now pumped to centralized uphill tanks and then piped downstream to the different locations. Two blocks of communal latrines per community were constructed during the initial phase of the development of the site.

Family latrines are planned as longer term sanitation solution.

Host community: Jewi town is only 2 Km away from the refugee settlement. The host community benefits from employment opportunities and commercial interchange. The host community provides shelter materials such as poles, thatching for roof and clay for cladding. A market has been developed near the site main road to support these activities. Two key settlement infrastructure developments have also been extended to the host community, these include the provision of solar street lighting and construction of permanent water systems.

Services: The facilities are constructed along the main road following the natural crest for easy access to both trucks vehicles and refugees. Facilities like markets, schools, food distribution points and health centres have been distributed evenly across the settlement.

Social and open spaces: These are located in between the blocks. It should however be noted that due to the terrain and topography this was not fully achieved in all the blocks.

Settlement transformation over time: The site is sparsely populated with adequate space left between the blocks to allow for population growth within the settlement.

Specific observations

Spatial concept analysis

The prioritized critical design driver for the development of this settlement was definition of suitable pockets of land minimizing at most the impact in the environment while preserving and benefiting from local vegetation, topography and natural drainage systems of the area.

The built environment is characterized as a linear settlement structured by a 5 Km axial road.

Public and private spatial relationship / Hierarchy of spaces

The site layout benefits from a preserved and attractive natural environment. Trees and rocks serve as social areas for social interaction.

Recreational and open space associated with social infrastructure and services is accessible from the sheltering pockets (blocks and communities) through the main road.

At block level a central space is allocated for community use.

At community level an open central area serves as playground for the kids and interactions between neighbours.

At household level refugees tend to fence their plots with the aim of providing privacy. The above is particular present in households from the Nuer tribe for whom intimacy is important.

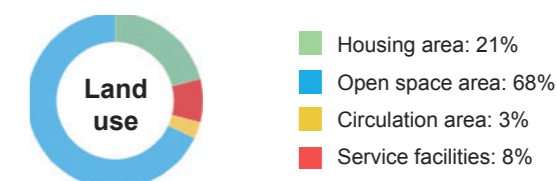


Settlement sector aerial view

○ Facilities and service areas - - - Main axial road



Settlement sector aerial view



Relationship with the surroundings

The new settlement main access is perpendicular to an existing principal paved road.

The pre-existing town of Jewi with a population of 2,000 people is located 2 Km from this intersection.

Commercial activities take place between both populations.

The new settlement represents an important source of income generating opportunities and economic integration.

What works

- The definition of an axial road aligned on the ridge of the hill minimized road and drainage construction cost while ensuring key access and connectivity within the settlement.
- Establishing an addressing and allocation system and ensuring the construction of key facilities such as health centre, food stores, water distribution points and reception centres prior to the relocation of refugees was of great importance.
- The definition of an environmental protected (natural park) area within the boundaries of the site represents a reference in the development of future settlements.

Lessons learned

- Need to further decentralized and create services and facilities to ensure increased coverage across the settlement.
- Ensure appropriate site planning capacity, tools and equipment is provided at country level.
- Jewi is a positive example where investment in human resources and local capacity through technical training resulted in the production of critical information to inform the site layout.

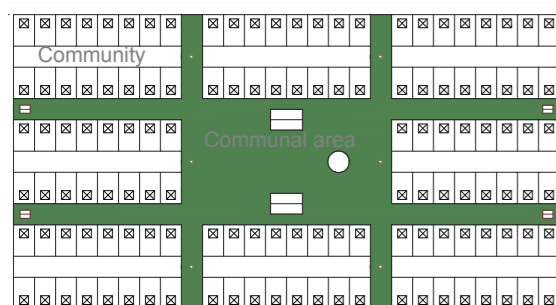
Block layout

Block area: 36,400 m² (128 Family plots)

Each block consists of 8 communities.

A central space has been assigned for the community.

5 blocks have been layout through out the settlement due to challenges with hilly topography of the site.



Block layout plan view

Community layout

Community area: 3,200 m² (16 Family plots).

The community or compound consists of 16 plots in rows of 8 with a communal space 10m wide. This area is also used to locate communal latrines, showers and garbage pits at the initial emergency phase.



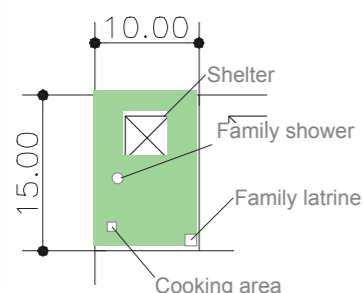
Community layout plan view

Plot layout

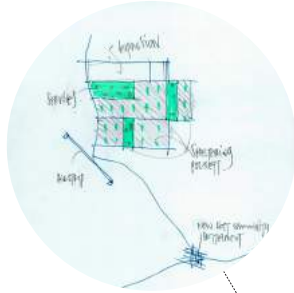
Family plot area: 150 m²

Each plot measures 10m x 15m. Each plot commonly includes a transitional shelter (4.2m X 4.2m), a family latrine and an area for a kitchen and garden.

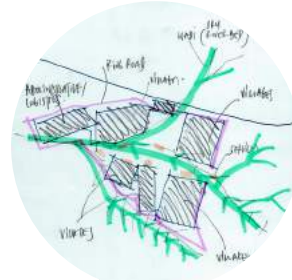
Plot coverage: Approximately 123m² (82%) of the plot surface will serve as open space, allow for livelihood activities and/or allow for family expansion.



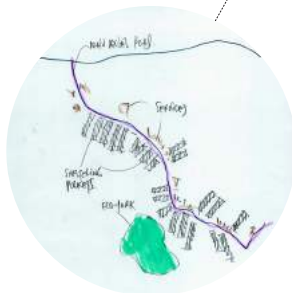
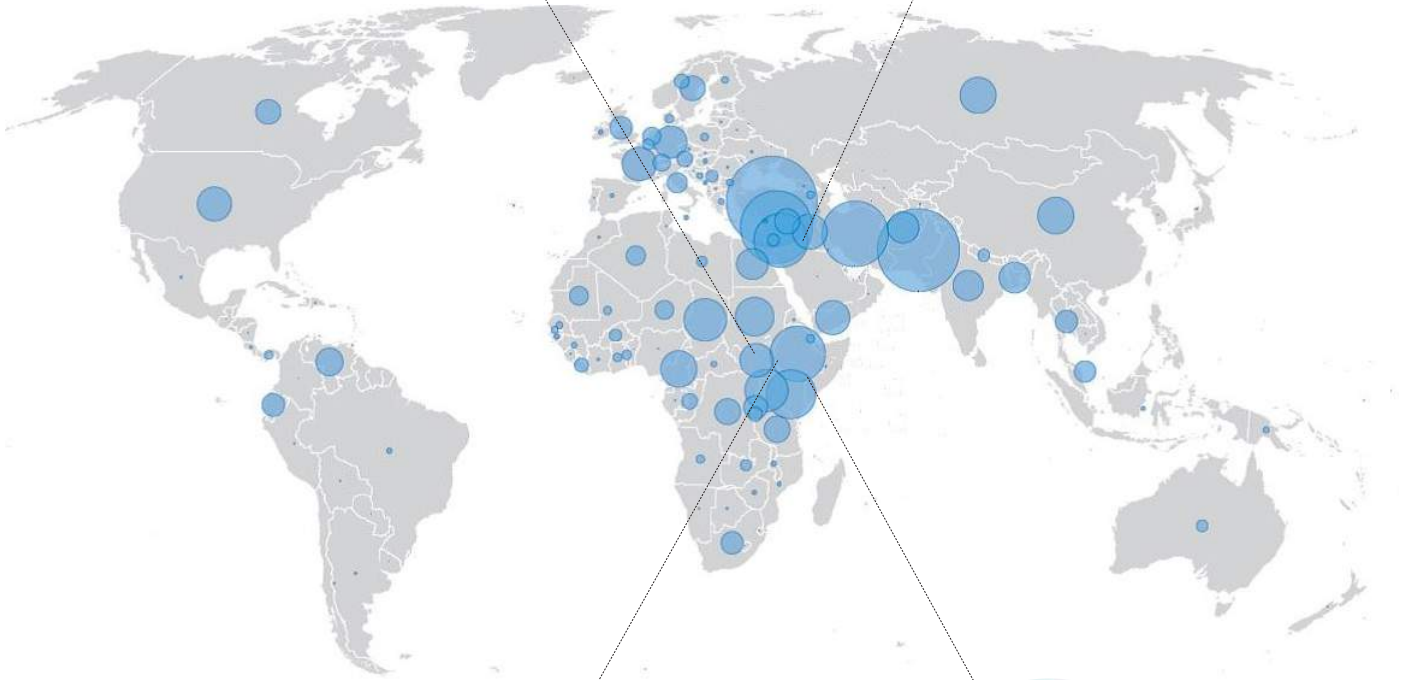
Family layout plan view



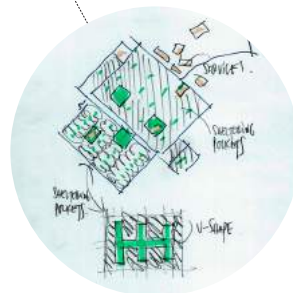
**Ajong Thok,
South Sudan**



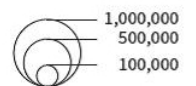
**Azraq,
Jordan**



**Jewi,
Ethiopia**



**Kobe,
Dollo Ado, Ethiopia**



Global location of refugees

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.