Design Studio
APC Architectural Pioneering Consultants
Dar es Salaam/Zurich

Design team
Gunter Klix, partner-in-charge, Magdalena Msimbe (Project lead design & execution)
Design: John Paul Senyonyi, Irene Matafu, Kathryn Mrema. Construction: Dark Gummich, Doreen-Maria Mwanauta, Kenneth Rwezaula, Goodluck Ngoda

Client
UNICEF Somalia, Mogadishu, Puntland Ministry of Health, Garowe, Puntland State of Somalia

Start and Completion Year
2020-2023

Gross Area
3 200 m^2

Sustainable and healthy materials or systems
rock, mud

Photography
Lucas Sager

Contact and more information
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More information

Burtinle District Hospital

Hospital del districte de Burtinle
Hospital del districto de Burtinle
Burtinle, Puntland, Somalia, 2020-2023
APC. Architectural Pioneering Consultants

REPORT. Sustainable and Healthy Architecture

Burtinle Town is located in the border area of Puntland State of Somalia, approximately 7 degrees north of the equator. Having a hot desert climate with annual temperatures regularly exceeding 35°C, the hilly arid lands of the area lie at an altitude of 500m.a.s.L. The area is inhabited by several Somali clans- namely Awrtable, Cumar Maxamuud, and Gaboye. Due to its exposed location- close to both the disputed Ethiopian border line as well as the Line of Control between Somalia and Somaliland- many refugees and internally displaced people make their way to Burtinle town.

A small, government-run hospital on the present project site was found to be largely abandoned at the onset of the project. The quickly growing, and partly vulnerable town community however was in urgent need of reliable healthcare services. After having found that a previously commissioned design by far exceeded the given plot area, UNICEF and the Puntland Ministry of Health appointed APC to prepare a project design proposal based on the newly released Somalia Health Facility Design guidelines- the first such standard ever to be released for Somalia.

In an area lacking modern commodities such as water and electricity as well as rock-bottom operating budgets and maintenance capabilities, it was a key challenge of the project to be self-sufficient and prudent in the use of any possible resource.

Sustainability: COMMUNITY
Islamic religious practice and conservative social values play a strong role in daily life and the town communities' priorities. At the same time, progress in the form of modern technology and healthcare is a key priority for all members of local society. The community contributed to the project on various levels, such as connecting pathways, water pipes, and power lines. In keeping with the community's needs and UNICEFs core mission of protecting children, the design brief focusses on Emergency, Outpatient, Maternity and Neonatal Care and Operating Theatre Units. It is supported by Laboratory, Pharmacy and Administration units. Also, it includes a small Inpatient ward.

The hospital is located at the town's periphery. Nevertheless, the available area at the site is quite limited in comparison with the spatial programme. The organisational principle of the hospital compound is an interpretation of the courtyard-centred precinct typologies often seen in northern Somalia: A group of buildings, three of them new and one previously existing, encloses a welcoming and shaded central courtyard/garden. Discreet towards the surrounding desert landscape, the impenetrable perimeter wall draws a clear line between "outside" and "within", where a series of verandahs and open waiting areas seamlessly connects the shaded courtyard space with the rooms inside. Two wind towers make the building a landmark within the town context.

HEALING through HEALTHY ARCHITECTURE
From a patient's perspective, the courtyard area is the centrepiece connecting all units, but most importantly also a generously shaded healing space. Its deep verandas, the central water basin, and tree foliage allow for gathering of family in different levels of privacy, discreet segregation between male and female patients as commanded by religious practice, and a general feeling of safety and ease in an often-troubled general context.

The spatial arrangement of the two new buildings reflects the idea of standardized rooms and functional areas, which will allow the constantly rotating medical staff to be immediately familiar with the working environment when being deployed to Burtinle from other medical facilities within the country. At the same time, the general arrangement of the houses also represents the project's implementation of passive design principles: In addition to addressing the climatic conditions by harnessing air movement as well as sunlight and shading, particular attention was given to the water cycle.

Sustainability: AIR
The very hot local climate with temperatures exceeding 35°C in comparison with the strict hygienic requirements determined by the medical procedures being carried out indoors made it imperative to provide a controlled level of indoor climate to the key hospital spaces. On the other hand, an electrically powered central air conditioning system was not an option due to the limited amount and high cost of available electricity, as well as the lack of maintenance capabilities. The design therefore adopted the centuries-old principle of wind catcher systems- a natural form of air conditioning which requires no additional source of power than the wind. A tower structure captures the air flow. Wind power then propels the airstream downwards and underground, where it is cleaned of remaining dust and sand, cooled by the adjacent earth, humidified by recycled rainwater and then driven to the indoor spaces.

Minimizing the temperature increase due to the harsh sunlight, all buildings are kept in white lime wash. Roofs are double skinned and insulated. Window openings and doors are oriented towards the North and South only, and shaded with fixed shading boxes or the veranda.

Sustainabilty: WATER
Water is arguably the most crucial resource in healthcare. In an arid desert environment, it is especially precious. Nevertheless, intermittent rainfalls are not uncommon in Nugaal. Surface water is then conserved in Berkad ponds- underground structures lined with lime plaster and roofed with thatch or corrugated sheets. The large monopitch roofs of the hospital buildings feed a central Berkad pool, which is then recycled for the climate control system, the toilets, and other functions. but clean potable water to highest hygienic standards is a must for a modern medical facility- it is produced by the hospital itself through a solar PV powered reverse osmosis plant.

Sustainability: STRUCTURE
The constructive principles of the hospital buildings derive from the requirements of durability as well as local availability of materials. The rock for the simple rubblestone walls was quarried from the on-site excavations. Rough cast mud plaster as well as lime wash are the most typical Somali finish. Concrete blocks from the previously existing structures on site were reclaimed for non load-bearing walls. The false arches of the continuous veranda eliminate the need for free-spanning openings and provide a recognizable visual signature to the courtyards. In contrast, the team insisted on high quality detailing- heavy gauge window profiles, factory built soundproof doors.

Consultants
JTM Consulting Engineers, Dar es Salaam, Tanzania: Tumsifu Meena (Structural Engineering); InterConsult Ltd, Dar es Salaam, Tanzania: Matthew Shaka, Fredy Ernest, George Nyotoka (MEPF Engineers); CQS Cost Planners & Quantity Surveyors, Dar es Salaam: Josep Tango, Jackson Kilahia (Cost planner and QS), AMPC International Health Consultants, The Netherlands (appointed by client) Medical Equipment Planner; KOOR Consultants Ltd, Garowe, Puntland State of Somalia: Joseph Matheri, Mohamed Morsal Faroole (Site Engineer)