CONVERTING A DERELICT SITE INTO AN URBAN PARK

Cameron Rashti, Project Manager, Historic Cities Support Programme, and Maher Stino, Sites International

The ever-expanding city of Cairo sits mainly on an alluvial plain atop a layer of unconsolidated sediment, transported over the millennia by the river Nile. Historic Cairo was founded in the relatively narrow floodplain valley between the Nile and a neighbouring limestone escarpment, the Moqattam Hills (150 metres above sea level), which follow a northeast-southwest course to the east of the river. Various dynasties developed subsequent urban centres, always on the eastern riverbank.

Between the alluvial plains and the Moqattam Hills rests an intermediate zone, a structural plain of sandstone, quartzite and calcareous clay. Within this plain, which stretches further to the north and to the east, several special landforms have developed, including isolated hills, elongated ridges and petrified forests, shifting sand accumulations and shallow dry drainage courses (wadis). As Cairo continues to expand along its eastern and southern edges, the city increasingly extends beyond the edge of the alluvial plain and its historic setting, into this structural plain. The Park site falls at the eastern border of the alluvial plain, overlooked by the nearby escarpments.

Since the founding of Cairo, the cyclical collapse and demolition of man-made structures have added vast amounts of debris to the overall amount of fill upon which the city rests. The large-scale deposit of such fill in physically discrete zones at the edges of the expanding city seems to have been an early practice. The cycle of building decay and demolition and subsequent removal of fill on to the heaps east of the city walls intensified after the end of the Mamluk period, i.e., the early sixteenth century.

A description by the French traveller de Thvenot mentions, as early as 1652, the heights of debris, which nearly hid the high walls surrounding the old city of Cairo. During the Ottoman era (beginning in 1517), urban growth is described as having been vigorous on the western side of Cairo, while decay was underway on the east. Maps prepared by the French Expedition at the start of the nineteenth century graphically confirm large and well-established tracts of man-made hills immediately east of the Ayyubid wall and north of the Citadel and Bab al-Wazir cemetery.
Today, the most visible zone is the Darassa site, east of the old city, with its hills running northwards, where layers up to 20 to 40 metres thick have been found, intercalated with salt and clay layers of the Nile floodplain. Thus, considerable geological and man-made environmental pressures have jointly established – over millennia, in the one case, and over centuries, in the other – the essential physical setting of what eventually became the Park site.

**Preparing the Site**

Given the request from the General Organisation of Greater Cairo Water Supply (GOGCWS) to use the site for the construction of three large drinking-water reservoirs (each 80 metres in diameter) and a pumping station prior to Park construction, site preparation was far from straightforward. Significant piling and soil works were required to construct the reservoir system, which was completed in 1996. The insertion of this water reservoir system inevitably created an additional set of constraints in terms of the risks of damage to the infrastructure.
and the necessity to provide maintenance access to the reservoir tanks and distribution lines, including a main transmission line (diameter 1.4 metres), which runs parallel to Saleh Salem Street. A set of design guidelines was eventually prepared by the reservoir authorities for areas of interface between the Park design and the reservoir system.

Many of the opportunities offered by the site derive from its neglect over the centuries as an area purposely excluded from the living urban fabric of Old Cairo. Foremost amongst these was the decision to fix the boundary of Fatimid Cairo along the eastern edge of the floodplain in this area of the valley. A massive defensive wall system, exceeding 1,300 metres in length along the eastern perimeter of the city, represented the new urban edge, later extended by the Ayyubids in the early thirteenth century. It is this wall which, de Thevenot noted, was obscured by rising mounds of rubble. Following a major programme of debris removal and master grading by the Trust, involving the excavation and offsite disposal of more than one million cubic metres of fill, the aspect of the site has been radically changed and a magnificent civic monument

An aerial view of the southern water tank in 1999 (seen from the south), being integrated into the emerging new Park topography. At the bottom, in the centre, a prototype of typical pavements, pergolas and water features of the future Park main spine.
The Master Plan of the Azhar Park displays the various landscaping approaches used, each of which responds to the characteristics of the site. The “spine” of the plan is the formal axis descending southwards from the northern hill (right) and pointing towards the Citadel. It features a sequence of formal gardens, the most elaborate of which is on the top of the central water reservoir. The spine then turns westwards into the southern lower plain of the site, which leads to the lakeside café, offering a spectacular view of the old city.

has been returned to the city. Excavation of debris to depths of 7-8 metres along the eastern face of this wall and the discovery and exposure of a buried 300-metre extension of the wall along the north have raised renewed interest in the archaeological richness of this part of Cairo. This, in turn, fostered the idea of utilising the Park project not only as public green space but also as a panoramic platform, to view and reinterpret the built heritage of Old Cairo. Large areas of the Park sit over 20 metres above the Darb al-Ahmar district, while the peaks of the Park hills exceed it by around 40 metres.

Master grading of the western half of the site from the high fixed points of hills (+74/+77 metres) and reservoir tank-tops (+66 metres) to the lowest point of the Historic Wall (+31.5 metres) has eased the steepness of the original slopes. In the process, the western Park slopes have been altered from an original 1:1 to a more practical 3:1 to 2:1 incline. Yet, even at these modified angles, they remain problematic with regard to the wall below, and design solutions have accordingly necessitated
attention to slope stability, planting, techniques, irrigation and drainage. During the concept phase, extensive tests on the physical properties of the soil led to the classification of the site fill as being very silty and compressible (gravely-silty sand found in a very loose state with a low degree of saturation), with an extremely low level of water absorbency. While variable across the site, the fill had been laid over the years without proper compaction. Under light loads and the absence of water, the fill undergoes moderate settlement; upon wetting, the fill compresses under its own weight. While the fill might repose at a 2:1 and even 1:1 slope in large areas, more than moderate loads and the introduction of water were considered capable of destabilising such slopes. For this reason, the construction of the reservoir system had to resort to deep piles down to natural sands for support of all but minor pipes. It was determined, early in the project, that all but the lightest structures would need piling support. A number of strategies were developed to overcome the inherent difficulties of the site soils to support hardscaped and planted areas. While major buildings would

On the southern plain, the spine is flanked by garden courtyards and geometric orchards in the Islamic tradition. The hills and slopes of the Park are accessible through an “organic” system of walkways with associated vegetation, shade and resting places. The northwestern slope is treated as a low maintenance dry landscape in order to stabilise the soil while minimising needs for irrigation. The three tank tops are enhanced by special features. The northern tank, for example, serves as a children's playground.
clearly require piling or raft foundation support, a technique involving the partial excavation and replacement of soil in compacted layers of “structural fill”, to depths of 2-3 metres, was found to be sufficient for support of hardscape areas. To further minimise chances of settlement, due to the infiltration of water from planted zones, an impervious barrier (consisting of a 30-50 centimetre thick stratum of clayey soil) was provided below the compacted layer. Ingredients for the structural fill could be obtained from the original fill itself. This, in turn, justified the removal of a further layer of 1-2 metres (or approximately 600,000 cubic metres) of the existing soil material in the future planted zones for replacement with a similar barrier and improved soils. Isolation of the irrigated top zone, combined with systems of controlled irrigation and below-grade drainage, will enable the planted area to operate independently of the older, underlying layers of fill. Wetting agents and mixtures of imported sand and agricultural soil will further improve the physical soil properties.
HORTICULTURAL ISSUES

Cairo and most of Egypt fall within an extremely arid climate belt, which extends westward across the North African desert. It is the river, the sustenance of much of Egypt and Cairo, that allows the Nile valley to avoid the harshness of extremely arid climates. Nevertheless, the realities of seasonal high temperatures, low humidity, scant rainfall and desert winds impose severe criteria for planting systems. A plentiful and reliable source of irrigation water is of critical importance to man-made gardens in any arid climate. The existence of a pipeline supplying water from the Nile within the adjacent Salah Salem Street, on the east of the site, was a major asset. Realising the growing pressures on available water supplies in the region, irrigation system efficiency and the goal of moderating total consumption by selective usage of dryscape plants have been set as high priorities.

Despite these climatic extremes, Egypt boasts a wide range of native plants and trees, including dry landscape and desert species. The Azhar Park project has coincided with a recent phase of significant research and development projects involving desert reclamation, the introduction and application of new irrigation techniques and the expansion of commercial farming in Egypt. While landscape architecture in Egypt is still struggling for its rightful position as a speciality apart from horticultural engineering, the level of public and private interest in and involvement with horticultural issues is significant and growing. The Park project presented a special horticultural case in which highly unusual, man-made environmental conditions were superimposed over the normal constraints found on arid climate sites. Accordingly, the task of greening the site posed unique questions and challenges to the landscape architecture and the horticultural team.

A series of chemical property tests confirmed low levels of nutrients, slight-to-high levels of alkalinity (pH values from 7.2 to 8.5), and exceedingly high levels of salinity and CaCO₃ content. Initial testing of existing soil and mixtures with various additives, carried out over several months in the early investigative phases, demonstrated that a reasonable range of plant types could survive with appropriate conditioning of the soil medium. In order to support other than solely xerophytic plant types, which can survive in drought-like conditions and tolerate highly saline soil conditions, a programme of soil improvement including additives (sand, agricultural soils, gypsum),
nutrients, and salt flushing by initial irrigation was proposed and tested on site. Planting prototypes were established on both flat and highly sloped areas to test these options. Feedback from both horticultural and prototype planted areas was an essential part of the Park’s landscape design methodology.

With approximately two-thirds of the site scheduled to be covered by plantings of various types, sources of sufficient plant stock for 210,000 to 220,000 m² of ground cover became a significant issue. Despite the presence of some commercial nurseries, a decision was taken to establish a limited on-site nursery for the above-described horticultural testing and a larger, off-site nursery for propagation of the main stock. In an important example of co-operation, the American University in Cairo (AUC) made available to the project a plot of 20 hectares in their desert agricultural research centre in South Tahrir over a multi-year period for cultivation as the Park nursery. Initiated in early 1998, the nursery had yielded most of the required species and quantities by
Nursery experiments and test planting on site have taught the team the appropriate ways of responding to the unique conditions of the Park site.

**PARK DESIGN AND SPECIAL FACILITIES**

Due to size and centrality, the Azhar Park is expected to fulfil a vital function in expanding park and green space available to the public in Greater Cairo, the population of which stood close to 16 million in 2000. It is anticipated that the Park will attract visitors from other regions as well. The total annual number of visitors is projected to reach as many as 1.5 million in the initial years.

The Park’s conceptual design as developed by the consultant, Sites International, Cairo, sought to make maximum and skilful use of the site location, elevated topography and unique vistas overlooking historic Cairo. Generously dimensioned pedestrian paths follow the contours

*Plants, pavement prototypes and Park fixtures being tested on-site.*
in most areas, allowing for comfortable circuits throughout the entire Park site. An important exception to the curvilinear path system occurs along the main promenade, off the eastern entry gate. Here a formal promenade runs along a straight but descending course from a restaurant on the northern hill, through the centre of the central water-tank top, and continues 250 metres southward on an axis with the Citadel complex to the south. This processional path measures eight metres wide and is to be flanked on both sides by two rows of royal palms and parallel side paths, with lateral niches for seating.

At an étoile, at the southern extreme of this path, the main promenade turns in a south-western direction, passing through a compartmentalised, formal garden and then to a lakeside pavilion-café overlooking a large lake. The outer zones of the plain feature an orchard (bustan) which will provide shade, a stimulating variety of flowering and fruit trees and further room to stroll. The main promenade and series of formal gardens are anchored at each end by the hilltop restaurant and lakeside pavilion, which provide internal landmarks for the Park. Water features provides an additional, traditional theme from Islamic gardens, tying
this central pathway together along its entire length. Dispersed fountains, pools and carefully confined water channels lead, ultimately, to the more informal lake configuration in the southern meadow.

The terrain in the western half of the park consists predominantly of slopes with a gradient between 3:1 and 2:1, as described above. A continuous pathway has been carved into the hillside at approximately mid-height (+55 metres) between the walkway along the Historic Wall (+35/+39 metres) and the summits of the hills (+74 metres), providing lateral access at points to the eastern half. The western hillside will be covered with flowering and succulent plants with luxuriant tones. Views from the many vantage points along the west, across these slopes and the restored historic wall to Old Cairo with its beguiling constellation of major monuments and their domes and minarets will be captivating for residents and visitors to Cairo alike.

The sensitive and purposeful integration of the recently constructed reservoir tank-tops into the surrounding Park plan has been an important design priority from the start. Consultation with engineers of the Greater

Above: Atop the southern water tank a grove of shade trees and water channels.
Below: “Sunken gardens” leading towards the lakeside café.
(Renderings by Sites International)
1. **Main entrance from Salah Salem Road.**
2. **Side entrance through rediscovered city gate in the Ayyubid wall (Bab al-Barqiyya).**
3. **Connection with Darb al-Ahmar via old city gate and Aslam Square.**
4. **Proposed community centre and Park administration in the rehabilitated Darb Shoughlan School (p. 41). This location will connect the Park and the old city, visitors being led through the internal chambers of the Ayyubid wall.**
5. **Connection towards Bab al-Wazir area, the Citadel and Sultan Hassan complex, as well as a way of entering the courtyard behind the Khayrbek Mosque (p. 40).**
6. **Hilltop restaurant with sweeping views of Cairo’s major landmarks.**
Main spine on the plateau connecting both the restaurant facility and the lakeside café.

Lakeside café with courtyards and orchards in the Islamic tradition.

Viewing platform and gardens on the southern tank top, offering a panorama of historic Cairo.

Community sports complex, for residents of the Darb al-Ahmar and local youth clubs.

Children’s playground on the northern tank top.

Preferred site of Urban Plaza now under study (see p. 13).
Organisation of General Cairo Water Supply (GOGCWS) during the design phase of both projects resulted in reinforcement of the reservoir structures to accommodate defined loads for planting and hardscape on each tank-top. With such loads and maintenance and access requirements taken into account, the Park design foresees a sitting area under trees on the south tank-top, with views out over the city. The central tank-top, in line with the main promenade, will contain a formal garden symmetrically sub-divided into a rich geometric design of landscaped zones. The northern tank-top, easily accessed from the main Park as well as from al-Azhar Street from the north, will serve as a children’s play area.

The Park vegetation will vary from succulent desert plants on the western slopes to lush, grassy meadows with shade trees, to formal gardens and, finally, to bustan-like orchard spaces. The variety of species, particularly native Egyptian plants, will aim at establishing a new benchmark for park spaces in the region.

During the course of the development of the Park, a number of important architectural features and facilities were included to cater to the needs of all types of visitors. Their design involved the search for a creative relationship between the key architectural features – the hilltop restaurant, the lakeside café, and various plazas – and the architecture of old Cairo. Eventually, this inquiry was taken to the level of a design
Axonometric view of the lakeside pavilion, designed by architect Serge Santelli.

Perspective of the lakeside café, as seen from the lake. (Rendering by Serge Santelli)
Below and opposite: The general plan and sections of the hilltop restaurant complex designed by architects Rami el-Dahan and Soheir Farid.

competition for the restaurant facilities, the outcome of which has led to the appointment of design architects for each facility, working in close co-ordination with the Park architect. In different ways, the designs of these structures are all informed by, or respond to, principles of traditional Cairene architecture.

The Hilltop Restaurant: Designed by architects Rami el-Dahan and Soheir Farid, the architecture of this building is clearly inspired by Fatimid archways. Its mostly vaulted spaces provide a traditional shell for the various dining or exhibition zones which are articulated around a central hall and include many features reminiscent of traditional Cairene architecture. The drawings show an almost symmetrical layout: the central axis, running from north to south, passes through an entrance palm court, an entry portico and a shaded sitting area (takhtaboush), before arriving at a terraced garden. From there, it continues, at a
lower level, in the Park’s main promenade, opening sweeping vistas onto the Citadel complex, one of Cairo’s landmarks. Access to the building will be via the Park main entry and along an internal access drive. A dedicated zone for car parking will be provided across from the restaurant entrance, and there will also be valet parking in the main bays off the Park entrance.

**The Lakeside Café and Pavilion:** The design of the lakeside café, prepared by architect Serge Santelli, is more abstract in its interpretation of historic Cairene architecture. It is based on a composition of highly geometric pavilions placed in different rectangular patterns. On the east side of the complex, the pavilions enclose a square palm court with a central fountain and crossing water channels inspired by classical Islamic gardens. Here, informal shaded sitting space is provided for Park visitors, who can relax and enjoy beverages without cover charges. Through an intermediate space, visitors then reach the elongated poolside café “floating” above the lake. This zone provides more formal restaurant space and is further defined by two larger, square pavilions at each end of the poolside terrace. The pavilions and adjacent rooms will have enclosing screens with intricate detail inspired from traditional *mashrabiya* panels. While providing ample shade and attractive courtyard areas, the whole complex can be considered an indoor-outdoor space. It is consistently extended by formal gardens, which are embedded in the orchard scheme covering most of the plain in the southern end of the Park.

The above facilities, forming the architectural highlights of the Park and benefiting from magnificent views, will constitute major attractions for residents of Cairo and foreign visitors alike. They will contribute to the metamorphosis of a former barren site into a lively destination point worthy of the history and the unique cultural experience of the capital of Egypt.
Plan of the Lakeside Café

Section through Garden

Section through Complex