

**THE AKTC INITIATIVE
IN LAHORE (2007-12)**







CRAFTING A STRATEGIC PLAN FOR THE WALLED CITY

MASOOD KHAN, CAMERON RASHTI, FRANCESCO SIRAVO

When the Aga Khan Trust for Culture (AKTC) first began its collaboration with the government of Punjab in 2007, it could proceed in several directions. The promotion of a new 'Preliminary Strategic Framework' plan for the Walled City of Lahore could face the same risks and probable predicaments as previous planning documents for the historic core. Meticulously planned urban redevelopment proposals in the past had tried to reconcile two overriding objectives: preventing the loss of the area's economic vitality to severe environmental and socio-economic problems, and safeguarding the area's built heritage. Success on one front might spell failure on the other.

The 1988 'Conservation Plan' for the Walled City of Lahore' walked a careful line between these two pressures, while acknowledging the dependence of its success on the skilful resolution of higher-level urban issues that impact the Walled City and the outlying Central Area of Lahore,² as well as other areas located within Lahore's metropolitan territory. In 2007 the interdependency of these three levels of urban planning remained as critical as before, with the Walled City having lost more original fabric and experienced more intense economic pressure as a result of the expanding Central Area and Greater Lahore metropolitan system.

Two problems noted by the 1988 plan – the "lack of a socially responsible community" and administrative neglect – retained high strategic importance in any proposed method of response. While the first may still have remained worthy of action, the second was met through the creation of a project management unit called Sustainable Development of the Walled City of Lahore Project (SDWCLP) and later the establishment of the Walled City of Lahore Authority (WCLA)³ by the government of Punjab. This was a major step towards addressing the serious urban dilemmas the Walled City faces. With the new institutional apparatus in place, and through a partnership framework⁴ approach encouraging the participation of international development agencies, public stakeholders and the private sector, a balanced, consensual approach to the planning process for the Walled City was needed. This called for issues and opportunities to be outlined in a multi-stage process, allowing proposals to be prepared in increasingly local, detailed and spatially specific formats as the broader principles were gradually established.

For this reason, and due to an emphasis on a discrete group of project initiatives that could set the urban regeneration process in motion, a report titled "A Preliminary Strategic Framework" for the urban regeneration of the Walled City was completed in early 2008.⁵ This report was a high-level strategic plan. It was not a conservation plan, a master plan, or a development plan – all of which are vital aspects of any



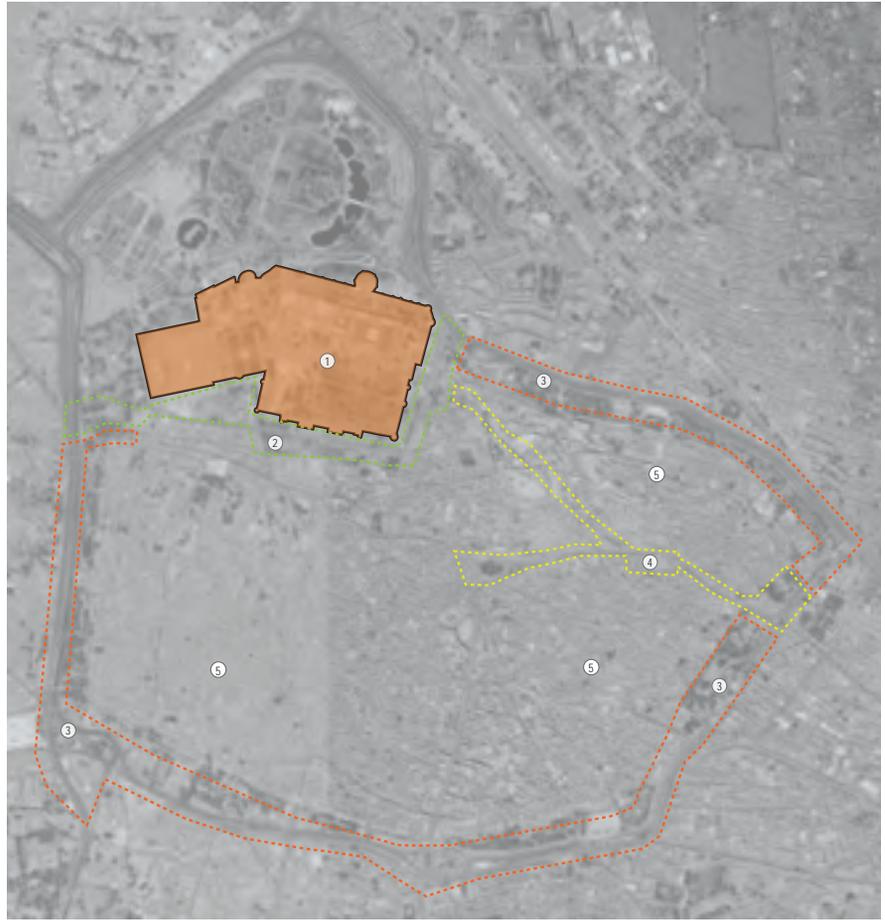
Preceding pages, entering the Walled City through Delhi Gate at night.

Opposite page, a spice shop in Akbari Mandi.

Above, selling freshly prepared *pakoras* at a traditional food outlet.

Key areas of interest in the Walled City of Lahore.

- ① **Monumental Complex of Lahore Fort**
Establish interpretative spaces and a visitor circuit in Lahore Fort
- ② **Fort Road Priority Area**
Remodel and landscape Fort Road and adjacent Ali Park
- ③ **Circular Garden and Circular Road**
Reclaim Circular Garden
- ④ **Shahi Guzargah**
Improve the Shahi Guzargah
- ⑤ **Priority Residential Area**
Rehabilitate priority residential enclaves



300 m

Structural work in an older home taken up for rehabilitation.



urban rehabilitation agenda for historic centres, but none of which typically retains a general, or non-specialized, holistic vision of problems and opportunities. The ‘Strategic Framework’ redefined the relevant urban challenges and proposed benchmarks for necessary change with account taken of experience in other historic metropolitan areas, and shared findings from an analytical process, identifying hierarchies of issues. The analysis led to the formulation of a hierarchy of responses, some architectural, some engineering, some related to community redevelopment, some entrepreneurial and some institutional, all of which appeared necessary to launch the urban regeneration process on sound bearings.

This proposition implicitly endorsed the view that planning cannot be unitary and centralized in approach with all relevant data factored in from the start, but that it allowed for key planning principles and initiatives to be agreed upon, and for these initiatives to be further guided in their implementation by feedback from targeted sites, as well as further data and planning information received during the detailing phase of projects. Important initiatives would be implemented only after such results were received and final proposals drawn.

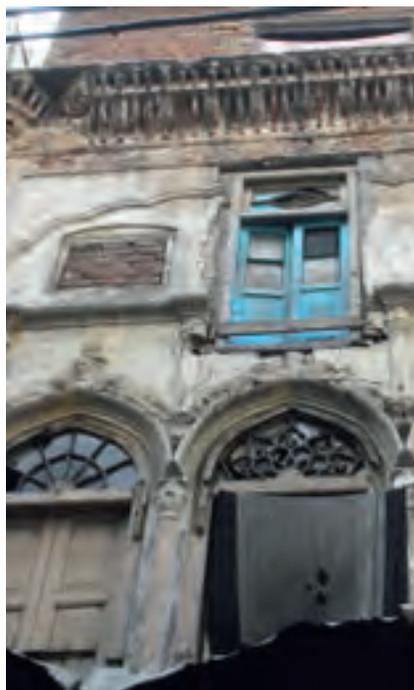
The objectives or meta-issues identified in the 2008 ‘Preliminary Strategic Framework’ and the initial responses offered were:

1. *Preventing the further erosion of the Walled City's original building stock*

It was ascertained that since the preparation of an inventory of 2,800 significant historic buildings in 1988, of which 1,400 were considered worthy of immediate protection, by 2008 a significant percentage of historic structures had been lost to further urban degradation. Loss of this remaining heritage could lead to the Walled City becoming a mere footprint in all but a few isolated spots, such as the Fort. The 'Strategic Framework' underlined that a 'tipping point' lurks not too far off on the horizon. The plan therefore retained a strong emphasis – as with past plans – on preventing such a catastrophic outcome. Proposed strategies would mitigate external metropolitan pressures, redefine land uses, contain/deflect vehicular traffic, reclaim public open space for enjoyment by residents and visitors, and re-inforce the remaining residential use through building rehabilitation.

2. *Spatial reallocation of economic functions without impacting economic diversity*

Already in 1988, wholesale market functions had exerted an unacceptable pressure on the historic structure of the Walled City. These functions had strengthened since then and gained additional economic power from their specialized activities, many of which are unsuitable for the area. This process still continues. The 2008 'Strategic Framework' looked at opportunities to resolve this problem through public and private remedial actions in specific sectors of activity. Proposed strategies included intervening in critical adjoining urban districts to create meaningful ensembles and promoting/introducing retail activities compatible with tourism. If the Walled City is to be a credible, attractive, cultural centre, a process of replacement and substitution of semi-industrial/intensive retail and wholesale activities with more service and tourist-oriented functions needed to be firmly established.



Significant facades in the Walled City.



View of Circular Garden.

3. Tapping heritage as a catalyst for rehabilitation

While the Walled City is by definition the end result to date of a series of development events spanning several centuries, with an extraordinary inventory of monuments and urban spaces, it could not be said in 2008 that that heritage had been a dominant factor in determining the course of the city's urban agenda. For half a century, the Walled City had been in a situation of relative 'disinvestment' with more objectionable uses supplanting earlier ones that had greater urban value. While item 1 (above) sought to prevent further urban-heritage loss, item 3 of the 'Strategic Framework' plan stressed the creative use of heritage assets as anchors of a more effective tourism and civil society strategy tied to the area's rich history. Of potential interest and benefit to the public and private sectors alike, the Walled City needed to highlight and present its heritage to its best advantage, as do other historic cities. Proposed strategies included preserving and enhancing the Walled City's cultural and built heritage assets and encouraging private investment in tourism infrastructure.

4. Assisting the resident communities within the Walled City to participate in and benefit from the area's new development

The urban revitalization of the Walled City must not leave residents behind as change takes place. The Walled City needs its communities to be the direct actors and beneficiaries of transformation so that they can, in turn, be its long-term custodians and guarantors. Historic cities without residents are akin to outdoor museums. In a short span of time, they become lifeless and consumed by their



Redefining prevailing land uses in the Walled City.

- Cultural Precincts
- Residential
- Commercial
- Institutional
- Religious
- Public Green Space
- ① Restored monuments and well-managed cultural assets
- ② Improved traditional housing
- ③ Higher quality commerce set in a pedestrian environment
- ④ Improved public services and facilities
- ⑤ Reclaimed and enhanced green spaces



Priority areas earmarked for detailed planning along Circular Garden.

- ⋯ Circular Garden - Priority 1 Area
- ⋯ Circular Garden - Priority 2 Area
- ⋯ Circular Garden - Priority 3 Area
- Monumental Complex (Lahore Fort and Badshahi Mosque)
- Existing Green Spaces
- Encroachments (Public and Private)

- Existing Gates
- ① Kashmiri Gate
- ② Sheranwala Gate
- ③ Delhi Gate
- ④ Lohari Gate
- ⑤ Bhatti Gate
- Demolished Gates
- ① Masti Gate
- ② Yakki Gate
- ③ Akbari Gate
- ④ Mochi Gate
- ⑤ Shah Alami Gate
- ⑥ Mori Gate
- ⑦ Taxali Gate
- Monumental Complex Gates
- ① Roshnai Gate
- ② Alamgiri Gate
- ③ Hathi Pol
- ④ Hazuri Bagh Gate
- ⑤ Akbari Gate

⌚ 300 m

Proposed network of principal open spaces, pedestrian movement and visitor trails in the Walled City.

- Principal Public Spaces
- Visitor Trails
- - - Pedestrian Movement
- ① Connect the Iqbal (Minto) Park as a forecourt to LWC
- ② Reclaim the Circular Garden as a public ring park within easy access from the city mohallas
- ③ Create a pedestrian promenade around the south and east edge of the Fort
- ④ Establish four visitor routes connecting the principal monuments and commercial areas



Heritage buildings and sites in the Walled City.

- Architectural Heritage
- Streetscapes and other elements of interest
- Gates
- ① Lahore Fort: implement the UNESCO recommendations for the restoration, presentation and management of the monument
- ② Major City Monuments: apply international restoration standards and give priority to landmarks located in the Shahi Guzargah
- ③ Significant Buildings and Historic Houses: impose moratorium on demolition and implement rescue programme



300 m



Aerial view of Lahore Fort.

artificial sameness and uniformity. Ignored communities, alienated from meaningful relations with their traditional neighbourhoods, become indifferent pawns in an urban process fully propped up from external sources, only for urban squalor to eventually re-emerge. The 'Strategic Framework' recognized that authenticity in urban preservation requires more than adherence to the original construction techniques; retaining a sense of the traditional cultural ethos in living communities is essential to ensuring authenticity in a historic area, and to preserving its unique attributes and significance. By providing roles for the community in the process of urban rehabilitation, certain fundamental goals can be achieved, including meeting human development needs, raising incomes and generating job opportunities.

5. *Advancing priority environmental upgrade proposals in coordination with the Central and Greater Lahore areas*

In parallel with community participation, environmental standards must be raised/ established (as the case may be) to make the area competitive with other cultural centres in Lahore. The strategic report focused on a discrete set of environmental upgrade packages, which dealt with urban infrastructure, transportation, public squares and parks, pedestrian systems, and better connections between monuments and their immediate surroundings. The Walled City's regeneration would depend, to a large extent, on its capacity to master the present environmental issues, thus attracting potential visitors from outside the Walled City. In this regard, the 'Strategic Framework' report recognized that, without the establishment of a stronger, voluntary interaction between visitors and residents of Greater Lahore with the Walled City, it was unlikely that Lahore's historic core will succeed in escaping the present downward spiral of urban decay. The Walled City's municipal





Preceding pages, gathering for Friday prayers in the Wazir Khan Mosque.

Right, location of the principal markets and bazaars in the Walled City earmarked for improvement.

— Linear Bazaars and Key Markets
Areas earmarked for improvement

■ Other Market Areas
Earmarked for improvement

- Strategic Issues and Actions
- Reduce encroachment
 - Lessen footprint of wholesale and retail sectors
 - Deepen engagement with local community
 - Increase variety of products on offer
 - Improve quality of products



Identification of potential heritage zones adjacent to the Walled City.

- Monumental Complex of Lahore Fort and Badshahi Mosque
- Lahore Walled City Historic District and Greater Iqbal Park
- Potential Historic Area

Sites of importance:

- ① Christian Cemetery
- ② Data Darbar
- ③ Central Model School
- ④ District Courts
- ⑤ GC University
- ⑥ Delhi Muslim Hotel
- ⑦ Neela Gumbad
- ⑧ Anarkali Tomb
- ⑨ Anarkali Bazaar
- ⑩ Urdu Bazaar
- ⑪ Mayo Hospital and King Edward Medical College
- ⑫ Lakshmi Chowk
- ⑬ Islamia College Railway Road
- ⑭ Railway Station
- ⑮ Railway Road



300 m



infrastructure and services badly needed enhancements, with due consideration for its linkages with Greater Lahore.

Aerial view from north of the Badshahi Mosque, part of Lahore Fort and the Walled City.

While the 2008 'Strategic Framework' report did not provide ready plans to meet all the urban challenges and opportunities found in the Walled City, it envisioned a continuing advocacy role on the part of the new project development and administrative framework and potential members of a future 'Public-Private Partnership' endeavour. Some of the issues highlighted above required further deliberation, review of possible responses, and feasibility analyses of specific future actions and implementation programmes.

1 PEPAC (Pakistan Environmental Planning and Architectural Consultants), *Conservation Plan for the Walled City of Lahore*, Lahore, 1988, vols. 1 and 2.

2 Defined as the metropolitan zones immediately adjacent to the Walled City and having a historic developmental relationship to the latter.

3 Required to be established by the 'Walled City of Lahore Act' of 2012.

4 A 'Public-Private Partnership Framework Agreement' was put in place between the government of Punjab and AKTC in mid-2007, complementing already existing programmes for Municipal Services Improvement Projects in Punjab with the World Bank.

5 Aga Khan Trust for Culture/Aga Khan Cultural Service-Pakistan, *The Lahore Walled City, A Preliminary Strategic Framework*, Geneva/Lahore, 2008.



DOCUMENTATION OF THE WALLED CITY

MASOOD KHAN, FATIMAH KHAN

When the Aga Khan Trust for Culture (AKTC) and its local affiliate the Aga Khan Cultural Service-Pakistan (AKCS-P) began work in Lahore in 2007, a matter of immediate concern was the collection of cartographic data and surveys of the Walled City. A special assignment was tasked by the World Bank staff in Islamabad for the collection of all relevant data that existed on the Walled City. Maps, reports, planning documents from the past, documents pertaining to contracts awarded in the past for infrastructure development in the Walled City, and books were collected. A repository of this information was created in the project management unit and is today a part of the Walled City of Lahore Authority (WCLA) office. Subsequently, AKCS-P carried out their own research in the Punjab Public Library and in the Punjab Archives, unearthing certain interesting documents and facts.

There has been a significant absence of adequate cartographic material from the period after 1947. Except for the plane-table survey carried out by the Lahore Development Authority (LDA) in 1986, there has been no serious attempt to establish a cadastral database of land holdings in the Walled City. In 1986–88 PEPAC (Pakistan Environmental Planning and Architectural Consultants) had used paper *masaweels* obtained from the Lahore municipal corporation which were tabloid-sized part-plans of the Walled City to a 1:240 scale (1 inch = 20 feet) prepared in 1945, but by 2007 these were lost, alleged to have been destroyed in a fire incident in the district registrar's office. However, the World Bank-sponsored collection of documentary data mentioned above did discover an extremely weathered and damaged cloth-bound survey of the Walled City prepared in 1907. This was to a 1:480 scale (1 inch = 40 feet), and was promptly photographed. It was particularly useful in synthesizing those parts of the Walled City that had been damaged in the 1947 riots.

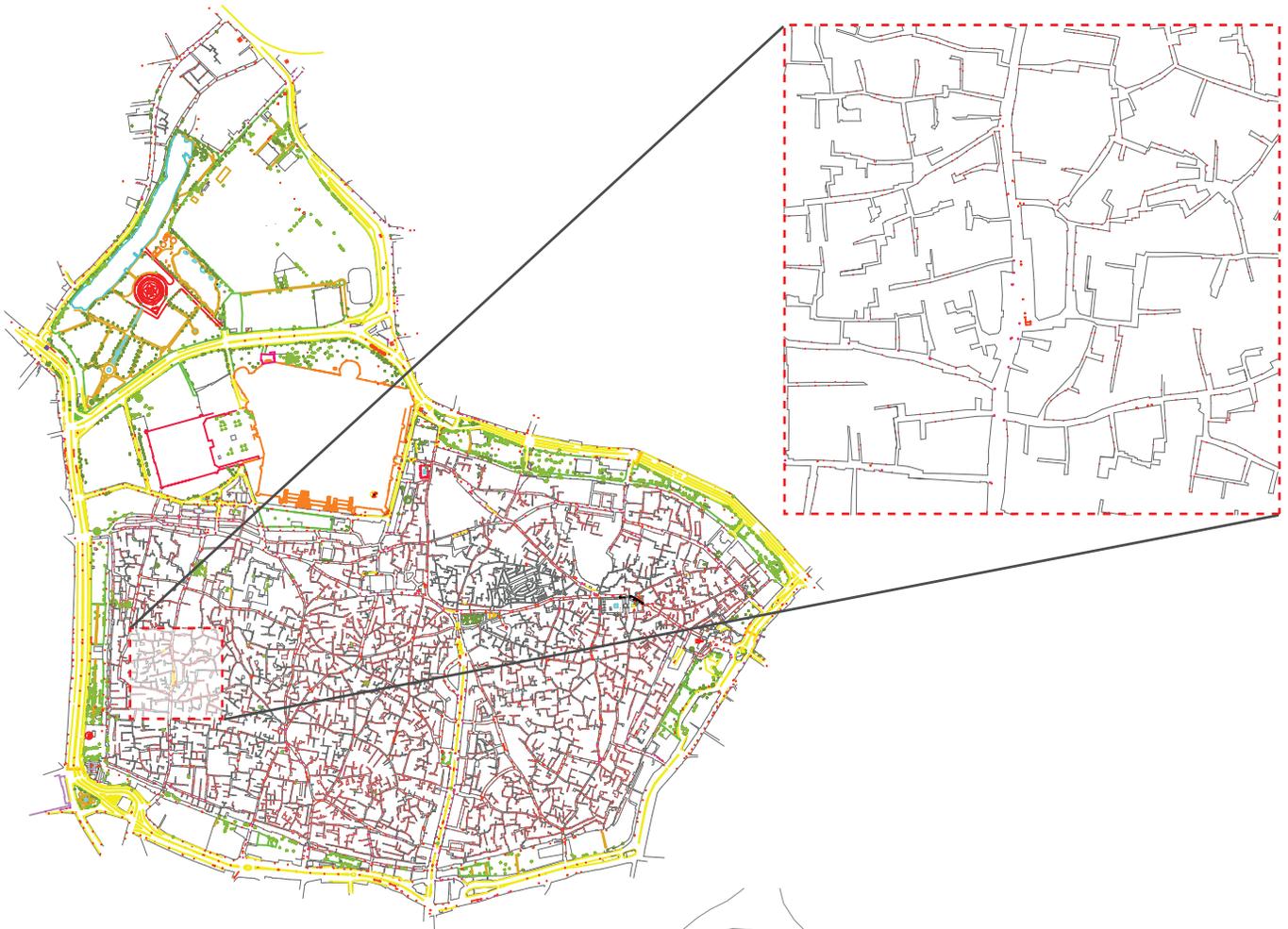
PLOT AND BUILDING SURVEY

In the autumn of 2007 a plot and building survey was begun in the Walled City. The aim of this survey was to create a comprehensive baseline database of land parcels. Over a period of eighteen months, a team of young architects and engineers surveyed and photographed close to 22,000 land parcels. At the time, paper forms were used in the field to record several characteristics including existing land use, presumed original usage, approximate period of construction, architectural merit, building typology, structural condition, the number of storeys, and encroachments onto the public right of way. Property ownership and whether single or multiple families occupied buildings were also recorded. A separate data entry and data cleaning team



Opposite page, view through Chitta Gate, the axial entrance into the Wazir Khan Chowk. Shops currently occupy the gate.

Above, EDM topographic surveying of the Walled City.



Above, topographic survey of the Walled City.

Below, proposed pedestrian visitor routes seen in relation to principal monumental sites.

- Proposed pedestrian tourist routes
- Areas of historic importance
- 1 Badshahi Mosque
- 2 Lahore Fort
- 3 Ali Park
- 4 Pani Wala Talaab
- 5 Begum Shahi/Maryam Zamani Mosque & Teja Singh Haveli
- 6 Rung Mahal
- 7 Baoli Bagh & Sunehri Mosque
- 8 Wazir Khan Mosque
- 9 Shahi Hammam
- 10 Chohatta Mufti Baqar
- 11 Chock Nawab Sb Haveli
- 12 Masjid Saleh Kamboh
- 13 Nevi Masjid
- 14 Mohalla Maulian
- 15 Chowk Sootar Mandi
- 16 Lohari
- 17 Unchi Masjid
- 18 Chowk Jhanda & Naunehal Singh Haveli
- 19 Allama Mohammad Iqbal's residence
- 20 Bazaar-e-Hakeeman



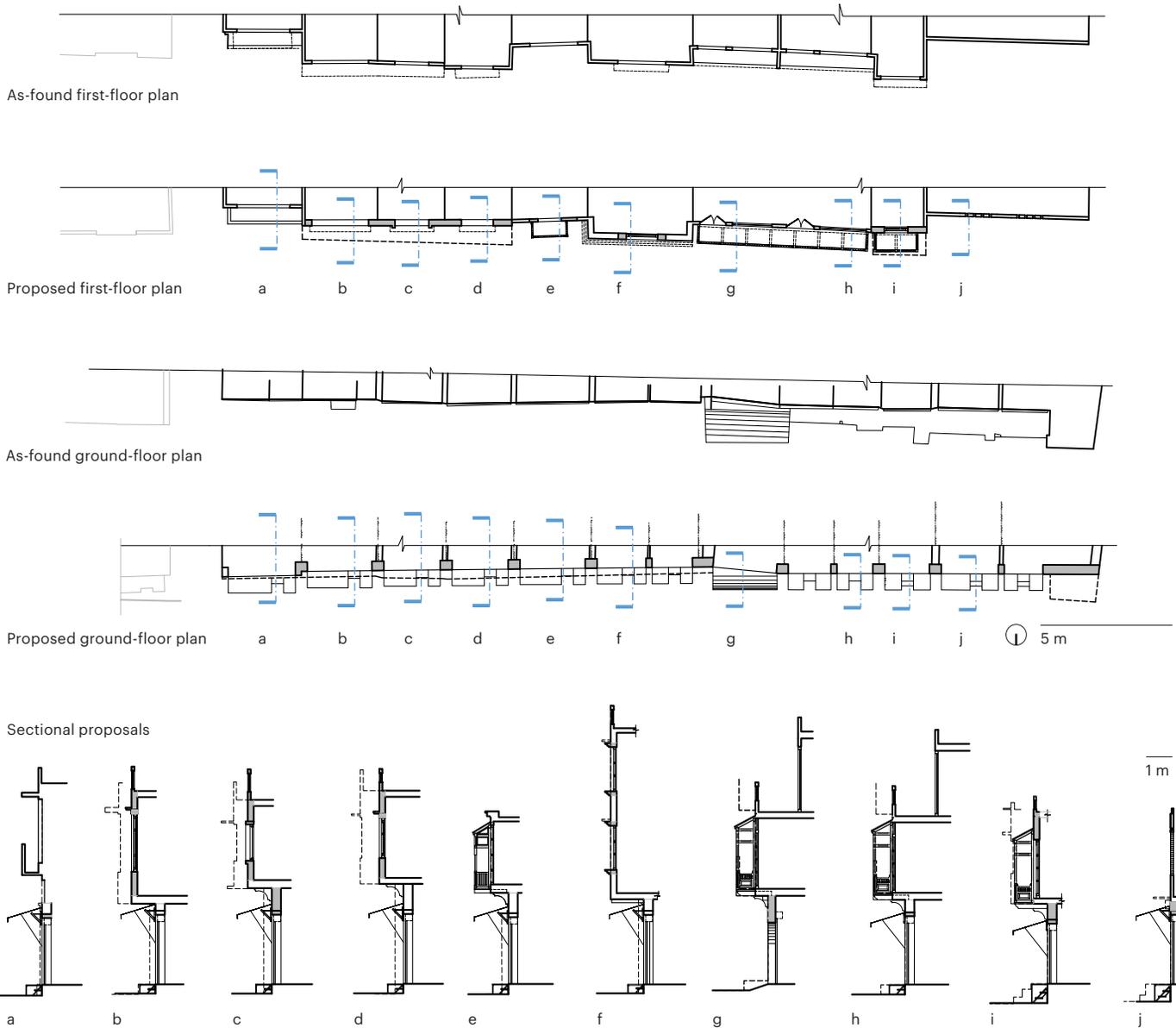


complemented field data collection, along with on-site verification. Data entry took place simultaneously via a customized online data entry form. Data on each land parcel along with their photographs could be retrieved with a unique identification number based on the property numbering system created by the British-period municipality in Lahore, and which is still in use.

Delhi Gate Bazaar, part of the Shahi Guzargah after completion of the pilot project.

THE TOPOGRAPHIC SURVEY OF THE WALLED CITY

At the same time, to create an up-to-date record of the Walled City in its current condition, a topographic survey was initiated using state-of-the-art electronic distance measuring (EDM) instruments. This resulted in a survey of ± 3 -millimetre accuracy providing data on land elevation profile, street rights of way and encroachments (mainly street-level and upper-floor projections into the right of way), length occupied by each property on the street, utility lines and appurtenances (manholes, poles,



Facade improvement in the Delhi Gate Bazaar, part of the Shahi Guzargah. As-found and proposed ground-floor and first-floor plans, and sectional proposals for specific buildings.

transformers) of electricity, water supply, sewerage and open drains, telecom and natural gas, as well as data on the toponymy of the Walled City. This topographic survey was completed in 2010 and is based on a CAD platform and scalable at different scales. Due to constraints of time and lack of necessary administrative arrangements, it was not possible to record the geometric properties of individual parcels of land. Data for these was obtained from the older plane-table survey carried out by the LDA, in 1986, and incorporated into the topographic survey.

In view of the high density of daytime traffic, the survey was carried out between the hours of 22:00 and 07:00. Security staff of the Sustainable Development of the Walled City of Lahore Project (SDWCLP; the predecessor of the WCLA) accompanied the joint surveyors' team, which averaged between six and ten people.



LAND USE AND OTHER ANALYTICAL MAPS

Data from the plot and building and topographic surveys were transferred to a GIS platform to produce a series of analytical maps describing the existing land-use conditions in the Walled City, as well as differential land use by type and scale of commerce or production. Other permutations of the conditions in the Walled City as recorded in the plot and building survey were also represented cartographically. These included the spatial distribution of the architectural merit of individual buildings, analysis of structural and infrastructure conditions and so on. The AKTC team was also able to use this database for the identification of twenty-four Zones of Special Value (ZSVs) in the Walled City as required by the ‘Walled City of Lahore Act’ of 2012. These twenty-four zones are divided into six main groups.

The GIS platform also allowed the database to be used for the integrated design of utility infrastructure carried out by AKTC consultants. This ‘conceptual’ design of infrastructure used the topographic survey as well as the plot and building database to generate several important methodological interpretations: for example, an elevation profile of the Walled City, the delineation of several watersheds in the Walled City which enable gravity-based disposal of rainwater and sewerage, the calculation of utility demand based on present and future land use and occupational densities, the distribution of high-, medium- and low-tension distribution network for electricity, the telecom network and the natural gas network, all of which were projected in an integrated framework of development in six different phases spread over a twenty-year time frame.

THE SHAHI GUZARGAH PILOT PROJECT AND THE DEMONSTRATION PROJECT

The Shahi Guzargah pilot project began mainly as an infrastructure project, but became an urban conservation and rehabilitation project. A principal component of this was the rehabilitation of the much-mutilated bazaar and street facades. To create

Delhi Gate Bazaar. Documentation of as-found condition of shops (above), as well as proposed improvements (below).

an in-depth understanding of the nature of historic urban fabric conservation, a demonstration project for the fine-grain conservation of the urban fabric was devised. The demonstration project was used to generate the necessary methodological and technical precedence for the main and much larger pilot rehabilitation project.

The demonstration project comprised two distinct pieces of the urban fabric located on opposite sides of Delhi Gate Bazaar. These included a relatively lower-income resident population where very few of the buildings that had not been already reconstructed were in a robust condition. The first one was on the northern side and consisted of Gali Surjan Singh and its cul-de-sac offshoot, Koocha Charkh Garan. This involved a total of twenty-six buildings accommodating thirty-two households. The second part of the demonstration project was Mohammadi Mohalla, which contained thirty-three buildings and some eighty families living in abject conditions in dilapidated structures. In both these streets the infrastructure was failing, a condition that was representative of the Walled City as a whole. Architects from SDWCLP and AKCS-P carried out house-to-house documentation of the two components of the demonstration project. Initially this was done with hand-measured triangulation. At this stage, young unemployed people from the neighbourhood were taught how to hand measure buildings and use a computer to transcribe the hand measurement to a CAD platform. In the process, the young residents of these mohallas became computer literate, and eventually became economically productive members of their households, some even joining the WCLA and AKCS-P as regular employees.

EDM instruments were added later to augment this documentation for creating cross sections of the buildings. For documenting the external facades, orthorectification photography and EDM measurement were used to create CAD drawings. However, the extreme distortions in the photographs due to the narrow width of the streets and lanes (at times just 1.2 metres wide) restricted this to a combination of methods, such as hand measurement of facade elements from scaffolding that had been erected.

Most aspects of the experience gained in documentation in the demonstration project were applied to the larger Shahi Guzargah pilot project. A particular challenge was the documentation of the bazaar facades. Here, as well as in the small lanes,



Above, work being carried out on the modest historic homes in Koocha Charkh Garan.

Right, the urban fabric of Gali Surjan Singh, Koocha Charkh Garan and Mohammadi Mohalla shown in the context of nearby streets and the Delhi Gate Bazaar.





power lines were a major hazard. Scaffoldings were erected where hand measurement had to be carried out. The scaffolding pipes were fitted with rubber sleeves to protect the survey teams and the workers from possible electrocution. In the event, the detail at which the documentation was carried out also helped record the inadequate technical and visual qualities of the utility infrastructure.

The survey of bazaar facades was carried out in the early morning hours before the shops opened at about 10:00 by a team of eight architects using photographic recordings and electronic distance measuring (EDM) instruments. Facades on both sides of the bazaar measuring 1,544 linear metres were documented. The documentation not only covered the as-found state of buildings along the bazaar but also formed the basis for developing subsequent design proposals for the streetscape as a whole, which was carried out in collaboration with the property and business owners and other stakeholders. The survey and the documentation of homes, facades and such-like created excellent opportunities for interacting with the communities who lived in and used the buildings and the public spaces, in particular as the exercise could be linked to an immediate objective – that of the larger project which was programmed to start at the end of the survey. This created confidence in the citizens and merchants of the Walled City and helped reduce the chronic scepticism that prevailed among them. This methodology of working with the stakeholders continues, as the

One of the large *havelis* in the Walled City which can profit by the expertise generated by work in Gali Surjan Singh and Koocha Charkh Garan.



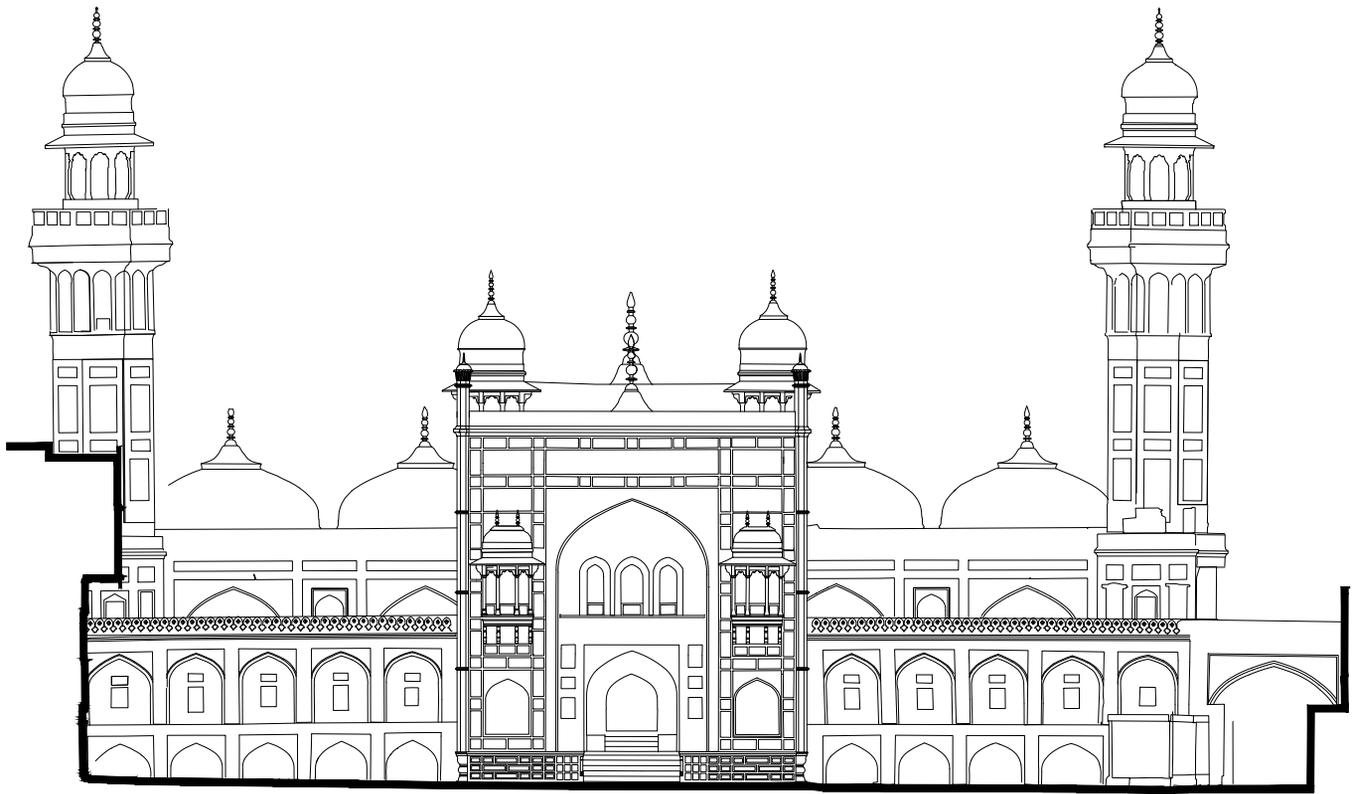
Above, recording 3D documentation with an EDM total station.

Opposite page, the Wazir Khan Mosque. Above, documentation of the eastern facade (as-found condition). Below, monitoring and documentation of the tilt in the vertical alignment of the minarets.

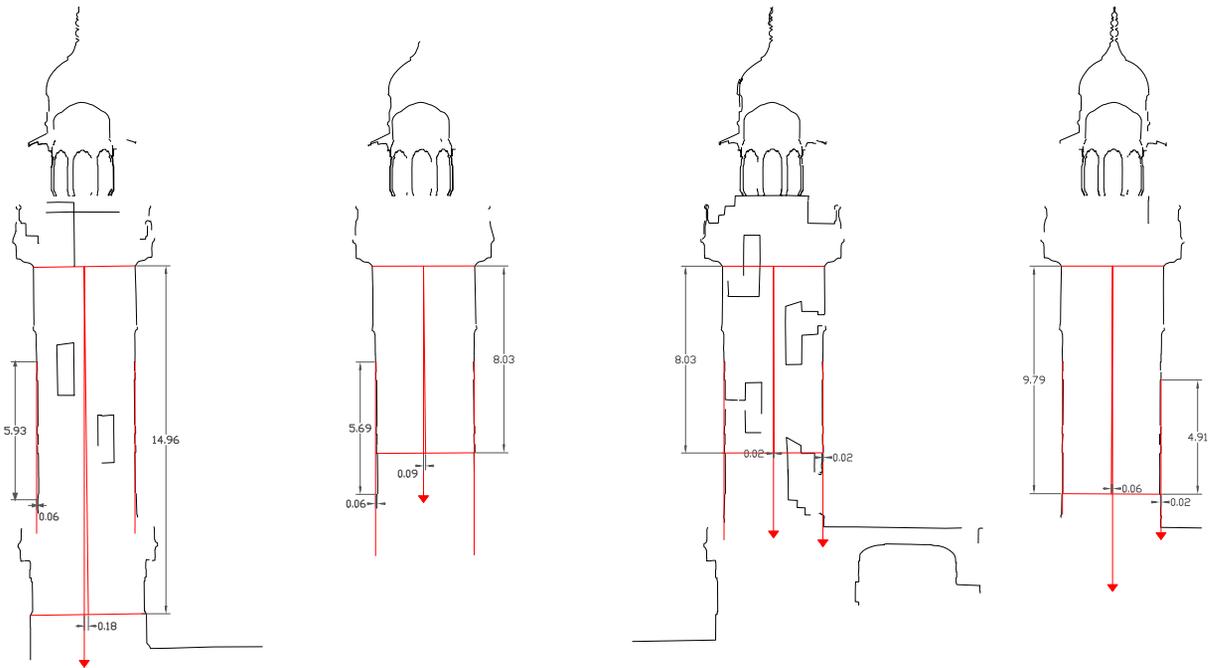
experience of the pilot project documentation has been applied to the WCLA's new Bhatti to Taxali Gate project, which will cover a distinct second phase of infrastructure development and urban rehabilitation in the Walled City.

The GIS platform mentioned above was also used to identify and represent Zones of Special Value, required by the 'Walled City of Lahore Act', 2012. Intensive documentation was also undertaken for one of the twenty-one zones for inclusion in the 'Master Conservation and Redevelopment Plan' (MCRP) and is described further on in this volume (see pp. 152–175).

Expert documentation has also been carried out on monuments. A particular instance is the documentation produced for the Wazir Khan Mosque, published by AKCS-P in 2012, of which some illustrations are included in the chapter devoted to that monument (see pp. 190–209). Following this, intensive documentation was carried out for the Shahi Hammam, and at Lahore Fort as well, and became the basis for the new 2018 conservation master plan for Lahore Fort and its buffer zone.



4 m



4 m



MAPPING A SOCIO-ECONOMIC BASELINE FOR THE WALLED CITY

JURJEN VAN DER TAS, FATIMAH KHAN

In spite of its declining population over the past few decades, the Walled City remains a densely populated area with up to 650 residents per hectare. There are nearly 25,000 households with an average household size of six people. The decline in population affects the Walled City at a time when the overall population in the metropolitan area continues to rise. Lahore's population stood at 6.3 million in 1998 whereas at present it is about 11.1 million, which indicates a growth of almost 76% over the past two decades or an average of 3.8% per year. The Walled City's population stood at 160,734 in 1998 and is currently 156,044. This indicates a decline of 3% over the past twenty years. Between the 1981 and 1998 censuses, the decline was much sharper at 15%. The influx of a transient population from the surrounding localities and rural areas, who come to the city in search of low-skilled employment, may partially explain the lower percentage of population decline in the past two decades.

Although Punjabi is the predominant language in the Walled City, the ethnic and social composition of the population is varied. Over the past decade the presence of Pashtuns has become increasingly more pronounced. The Pashtun population is mainly linked with specific trades. Notwithstanding the traditional identities associated with the Walled City, a relatively significant portion of the population lives below the poverty line. The population of the Walled City is relatively young, with close to half below the age of twenty-two. Primary school children constitute a significant proportion of those enrolled in educational institutions. Except for a few cases, schools in the Walled City tend to be in congested neighbourhoods and lack facilities such as playgrounds. In a number of cases, classrooms are significantly overcrowded. Occupations among residents are likely to be associated with self or daily wage employment in the commercial enterprises that are concentrated inside the Walled City. Most households are indebted to varying degrees and are at times in need of having to borrow money to meet daily or medical expenses. Women who are engaged in income-generating activities do so primarily from their home-base.

Many households do not have access to adequate sanitary facilities. A survey to ascertain the quality of potable water was carried out in 2008. Water samples were collected from public and private taps and from tube wells that supplied water to the Walled City. Over 95% of the samples showed alarmingly high levels of microbiological content. At the time, the average per capita consumption of water was thirteen litres per day. Water scarcity is further exacerbated by frequent or extended power cuts. As a result, residents have come to rely on private online water pumps that syphon off water from public mains – thus intensifying the overall shortage in the

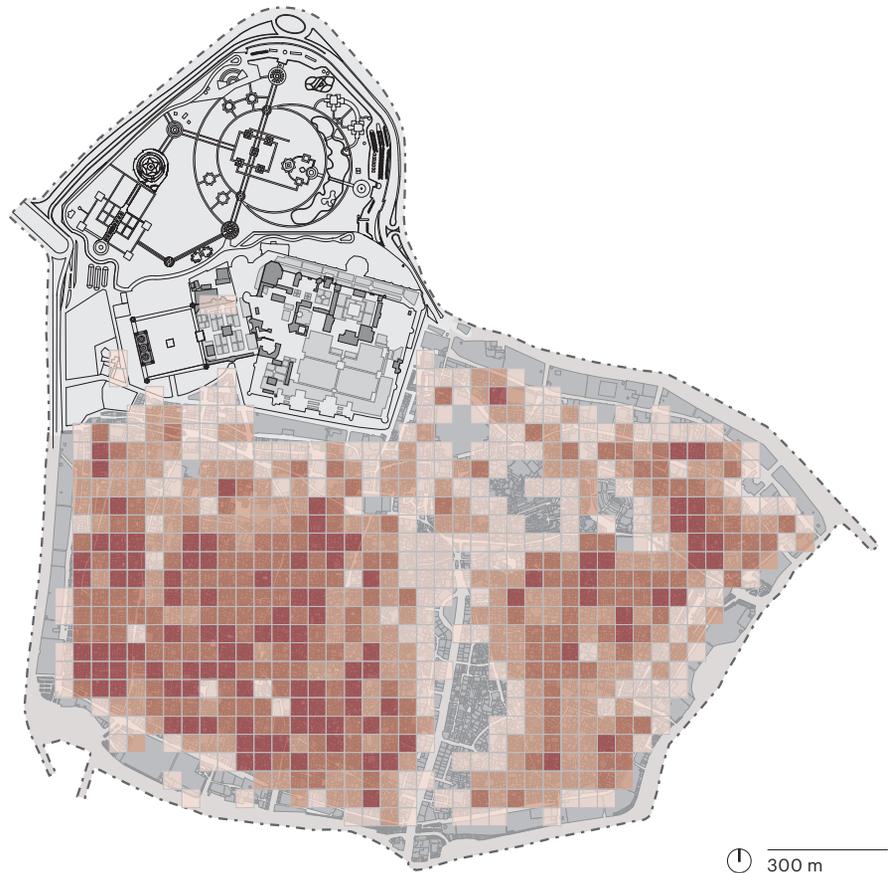


Opposite page, the Naunehal Singh Haveli inside Mori Gate has housed the Victoria Girls High School since 1887.

Above, one of the *dalaans* of the haveli has been adapted into a classroom.

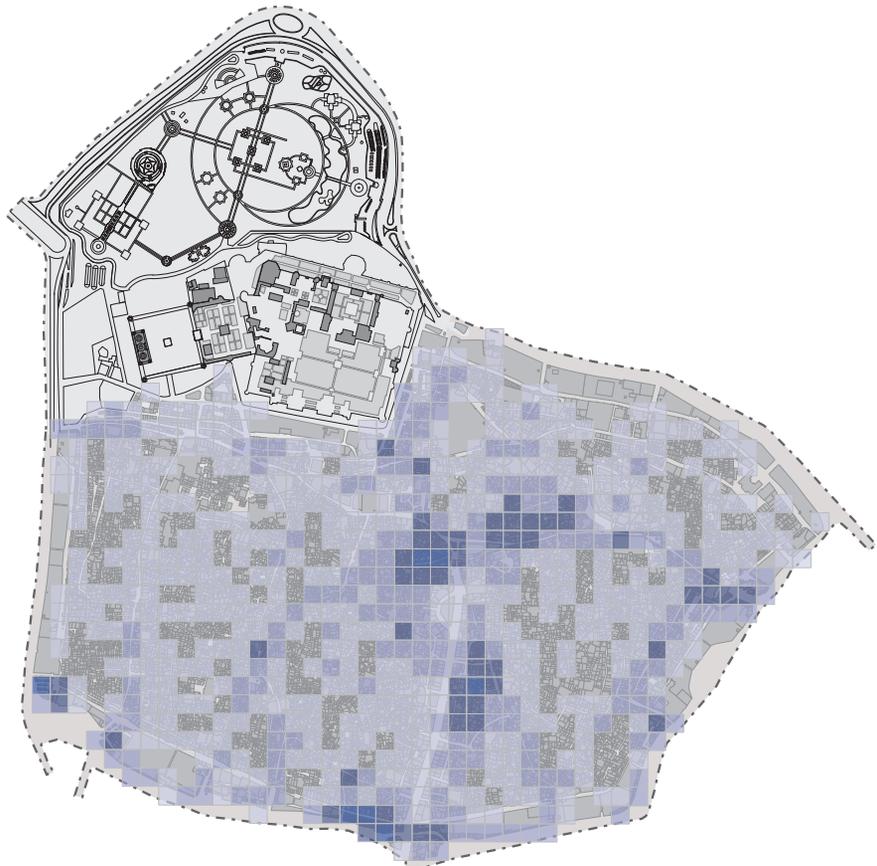
Concentration of residential buildings per quarter hectare in the Walled City.

- 1-9
- 10-20
- 21-30
- 31-49



Commercial land use per quarter hectare in the Walled City.

- 1-8
- 9-23
- 24-50
- 51-98





water supply network. Anecdotal evidence suggests that, as soon as financial means permit relocation, households tend to move out of the Walled City in search of better living conditions elsewhere in Lahore. Only in those areas of the Walled City that have undergone a radical overhaul of urban service provisions, such as the kind undertaken in the Delhi Gate Bazaar area and the residential mohallas around it as part of the Pilot Urban Rehabilitation and Infrastructure Improvement Project, have living conditions improved.

Socio-economic conditions in the historic core are better understood if seen in relation to the presence of commercial markets that are situated in or around the Walled City. These provide a flexible source of employment for the underprivileged population that does not have access to good-quality education or better-paid employment opportunities. Some examples include the wholesale shoe and cloth markets, all of which have regional or even national importance. Since shoes are primarily manufactured by hand, labour constitutes an important factor of production –

The Delhi Gate Bazaar at night.







Preceding pages, the Vaan Mandi in the Walled City. An artisan weaving the base of a *charpai*.

Above, an enterprise specializing in traditional men's shoes.

readily available in the Walled City from low-income populations. Training in this activity starts from a young age. For those not from Lahore, it is common for a group of people engaged in the same profession to share accommodation in the Walled City in order to be close to the workplace. Whereas raw materials for shoes are likely to be sold wholesale in Shah Alami, the assembly of different parts of a shoe takes place in the basements or ground floors of dwellings or within older houses or *havelis*. Low capital investments and a relatively high mark-up, as well as access to regional transportation networks, contribute to the widespread presence of shoe manufacturing in the Walled City.

The Azam and Pakistan cloth markets were established in the 1950s and 1960s in parts of the Walled City that were destroyed in 1947. Both markets are examples of state-induced commercialization of the Walled City. Both markets have grown significantly over time and have eaten into the historic residential fabric. Preliminary inferences from existing land use in the Walled City suggest a positive correlation

between increasingly commercialized land parcels, through the expansion of specialized markets, and the loss of the residential population historically associated with the Walled City. Out-migration is likely to be higher in localities that are near Shah Alami or the Azam and Pakistan cloth markets as well as Moti Bazaar.

The presence of transportation services and facilities, such as goods-forwarding agencies and long-haul trucks, lorries, pick-up vans and so on, sustains a diverse range of activities that complement the predominant trades. The truck terminus stretches along the northern, eastern and southern fringe of Circular Garden and Circular Road, where lorries are parked all night for the unloading and loading of goods. Together, the commerce and transportation activities constitute a sizeable presence in terms of the land parcels occupied, thus obliterating the boundary between the historic core and its immediate vicinity. Transportation-related services and wholesale markets have driven an increase in the number of warehouses inside the Walled City. These vary in size from single rooms within residential buildings, usually the ground floor, to multi-storey buildings. In 1988 warehousing was identified as the most pervasive activity in the Walled City. Its sustained growth over time has affected the ability of residents to negotiate the use of both public and semi-private spaces daily. Owing to significant price differentials between residential and commercial land parcels, it is worthwhile for traders to acquire and amalgamate traditional residential structures with small footprints and convert these into higher-density buildings that accommodate wholesale activities and storage of goods. Plazas are further constructed in a manner that takes on entire sections of streets, thereby blocking passageways into residential cul-de-sacs.

The traders represent a dominant and well-organized interest group that dictates the nature of the land use in the Walled City where economic gains can be made. However, such gains do not necessarily contribute to the well-being of the residents. The concentration of specific activities in otherwise densely populated neighbourhoods negatively impacts the environment through the production of industrial effluent and other types of waste. In this context shoe manufacturing is a prime example of an urban hazard. The consequent disturbance of a relatively cohesive social network makes it difficult for residents to continue living in the historic core and the possibility to relocate in the lower-density suburbs of Lahore seems more appealing.



Above, artisans working on embroidered women's apparel.

Below, a metal workshop in the Walled City.

Left, homes in the Walled City are increasingly occupied by young, low-income families.



INTEGRATED CONSERVATION AND INFRASTRUCTURE DEVELOPMENT: SOLUTIONS AND DESIGN CRITERIA

DEON PRETORIUS

In November 2008 the Aga Khan Cultural Service-Pakistan (AKCS-P) commissioned Aurecon to carry out a city-wide conceptual design for infrastructure development in the Walled City of Lahore. A twenty-year development programme was developed in April 2010 in consultation with the public and private sector utility agencies in Lahore. This phased programme incorporated sector-wide and spatially integrated development of water supply, waste-water disposal, storm-water drainage, electricity, telecommunication and natural gas infrastructures, based on defined technical criteria and the topographic and historic characteristics of the ancient city. AKTC had already prepared a 'Preliminary Strategic Framework' plan in 2008 that stressed "the need to upgrade and enhance the Walled City of Lahore's municipal infrastructure services with due account of linkages to Greater Lahore." An inception visit to Lahore, further surveys, and a desk-top study of available data enabled an analysis of the existing situation and the identification of several critical conditions.

The city was found to be alive with existing utilities and population habits, making infrastructure solutions quite challenging. The water supply infrastructure was in poor condition. Strategies to address the shortfall, wastage and contamination of potable water were urgently required. Groundwater was the source of supply in Lahore, and of concern was the installation of new tube wells in areas where extensive effluent pollution was taking place. No dedicated sewage collection system existed in Greater Lahore, with the drainage network of open and partially covered surface channels, and piped networks only in certain locations, used for all effluent, storm water and industrial waste. This had resulted in extensive and profound impact on the natural environment, in particular in the severely contaminated Ravi River. The absence of any form of sewage treatment was alarming for a city the size of Lahore. In addition, the drainage channels in Lahore had become the dumping ground for solid waste. Given the high risk of disease under these conditions, it was essential to ensure that effluent is separated from the storm-water system at source and conveyed to a treatment facility in a dedicated sewerage network.

Electricity was supplied to the Walled City from three grid stations located in close proximity. High-tension cables (11kV cables and conductors) and 440V distribution cables were exposed. Sheathed cables hung on metal brackets fixed to poles, buildings and historic monuments. The low voltage and distribution network were symptomatic of the lack of good practice and indifference to engineering codes. The electrical infrastructure posed a serious safety risk.

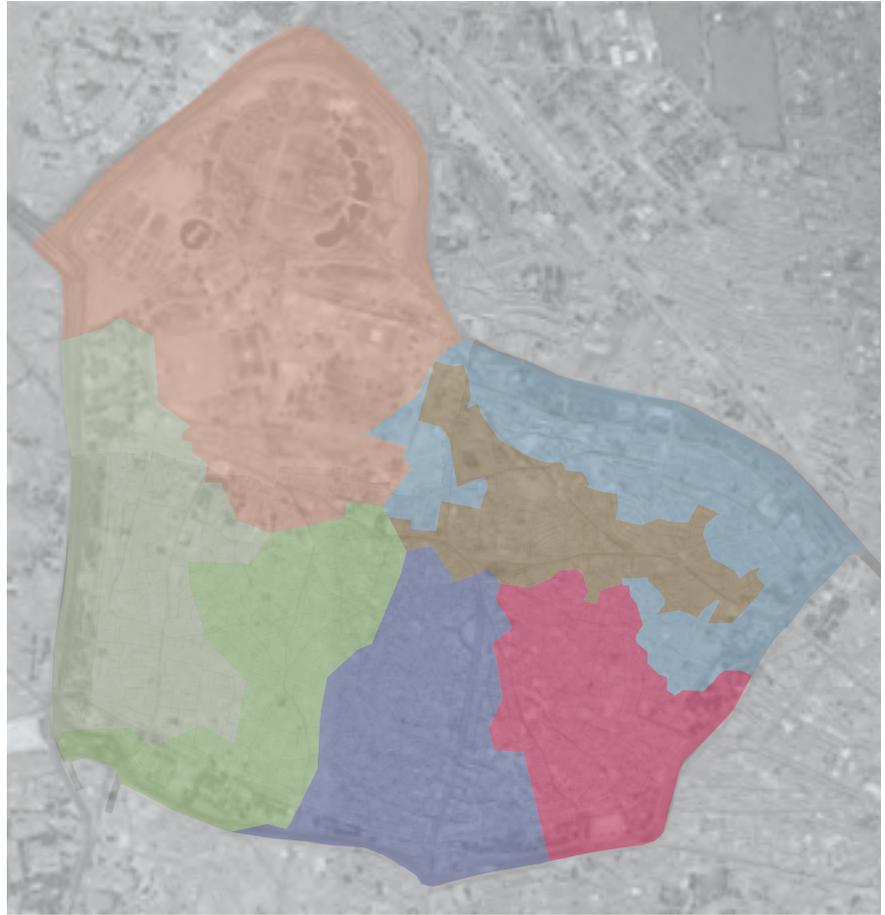


Opposite page, open sewers running alongside houses still prevail in parts of the Walled City, but, as in the Shahi Guzargah project, they are to be replaced by closed sewers under the infrastructure improvement plan.

Above, solid-waste removal at the Bhatti Gate sewage pumping facility.

Infrastructure development: proposed phasing plan for the Walled City.

- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Phase 5
- Phase 6
- Pilot Project



Infrastructure planning zones.

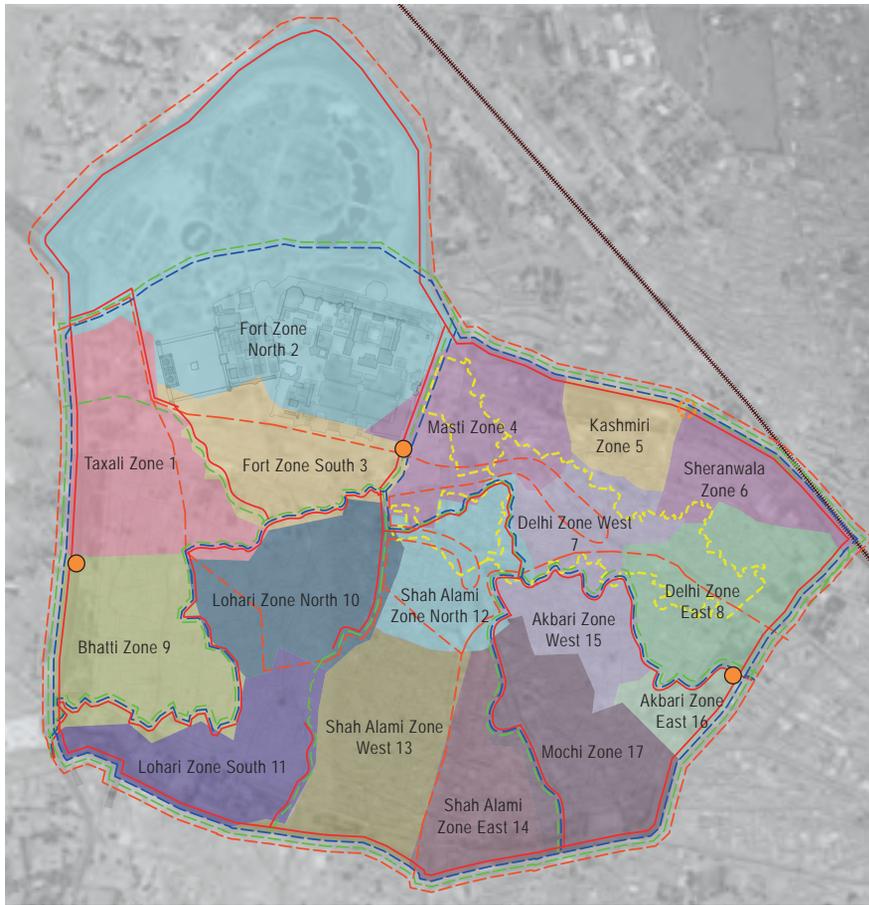
- Major Watersheds
- Demarcated Watershed Sub-zone
- Pilot Project

Watershed Zones

- Taxali Zone 1
- Fort Zone North 2
- Fort Zone South 3
- Masti Zone 4
- Kashmiri Zone 5
- Sheranwala Zone 6
- Delhi Zone West 7
- Delhi Zone East 8
- Bhatti Zone 9
- Lohari Zone North 10
- Lohari Zone South 11
- Shah Alami Zone North 12
- Shah Alami Zone West 13
- Shah Alami Zone East 14
- Akbari Zone West 15
- Akbari Zone East 16
- Mochi Zone 17



200 m



Utility zones impact on phasing plan.

- Pilot Project Boundary
- Electric Grid Station
- Electric Grid Station (to be inaugurated)
- LWC Proposed Phasing
- Waterways / Canals
- Railway Line
- Electricity Sub Station Zones
- Water Reservoir Zones
- Sewage and Storm-Water Zones
- Taxali Zone 1
- Fort Zone North 2
- Fort Zone South 3
- Mastli Zone 4
- Kashmiri Zone 5
- Sheranwala Zone 6
- Delhi Zone West 7
- Delhi Zone East 8
- Bhatti Zone 9
- Lohari Zone North 10
- Lohari Zone South 11
- Shah Alami Zone North 12
- Shah Alami Zone West 13
- Shah Alami Zone East 14
- Akbari Zone West 15
- Akbari Zone East 16
- Mochi Zone 17

200 m

The existing gas supply network was yet another layer of disorder and complexity. Gas distribution lines were underground with regulators and bunched consumer meters on building facades at the entrance to narrow alleyways or tenements, from where long runs of exposed metal pipes fed individual domestic connections. An integrated approach to the service corridors was required.

The solutions and conceptual design criteria proposed for each essential service sector – the result of discussions with stakeholders and authorities – are summarized below. These guidelines are intended to inform a sustainable solution for specific projects and to prompt the application of challenging and innovative solutions where appropriate. Importantly, for details and elaboration, the reader is referred to the Aurecon report,¹ which also highlights issues that are still in need of resolution going forward.

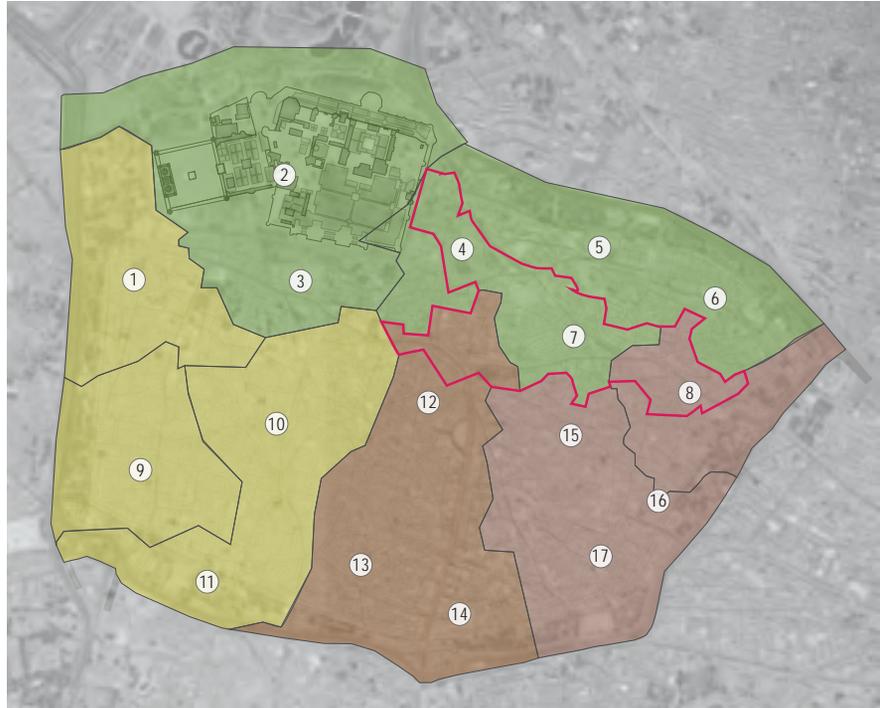
WATER

PER CAPITA CONSUMPTION

The agreed design criteria with respect to water supply pertain to several elements, one of which is per capita consumption. A common prevalent standard at the time was that the supply authority should endeavour to supply in the region of 360 litres per person per day. However, as this figure is at the high end of per capita water use compared to other countries, officials of the Water and Sanitation Authority (WASA) confirmed that water use of 230 litres per person per day was acceptable.

Proposed water supply reservoir zones in the Walled City.

- Pilot Project Area
 - ① Taxali Zone
 - ② Fort Zone North
 - ③ Fort Zone South
 - ④ Mastli Zone
 - ⑤ Kashmiri Zone
 - ⑥ Sheranwala Zone
 - ⑦ Delhi Zone
 - ⑧ Delhi Zone East
 - ⑨ Bhatti Zone
 - ⑩ Lohari Zone North
 - ⑪ Lohari Zone South
 - ⑫ Shah Alami Zone North
 - ⑬ Shah Alami Zone West
 - ⑭ Shah Alami Zone East
 - ⑮ Akbari Zone West
 - ⑯ Akbari Zone East
 - ⑰ Mochi Zone
-
- LWC Water Zone 1
 - LWC Water Zone 2
 - LWC Water Zone 3
 - LWC Water Zone 4



200 m

MEASUREMENT

Coupled to consumption rates is the practice of measurement, that is, whether or not to install water meters. It was understood that, contrary to WASA’s policy, there were no water meters in the Walled City in 2009. Water meters installed for every consumer would mean that actual consumption could be paid for by the user which will contribute to reducing wastage running costs and the decline in the level of the groundwater source. The quantity of ‘unaccounted for’ water, the actual per capita water use and the various peak factors (maximum day and peak hour) can be established. The old adage of ‘to measure is to know’ is truly relevant in the Walled City. The WCLA has installed meters in the Shahi Guzargah project, and is likely to continue the practice in other projects.

DISINFECTION

Surveys of water quality indicated that the supplied water was polluted. At the time of investigations, the water from the tube wells was supposed to be disinfected by injecting sodium hypochlorite into the rising main. Getting the dose and contact time correct, and the sheer logistics of supply to the dosing points at the twenty-one existing tube wells, seemed a daunting task. The plan recommended that water be treated with disinfectant at the point of collection, or entry point, at the reservoirs. As there would be fewer reservoirs than tube wells, disinfection will be easier, with better control established over the contact time of the disinfectant to ensure inactivation of bacteria. Regular sampling at the outlet of the reservoir would be possible and a history of readings would facilitate comparison with the World Health Guidelines.

RESERVOIR STORAGE

The British-period Pani Wala Talaab reservoir is neither the correct size nor has the correct elevation to provide the required pressure. Typically, a volume equal to two hours of the peak hour flow is recommended while current capacity is only equal to about thirty minutes. It was proposed that the Walled City be divided into four zones

for water supply, each served by an underground reservoir and pump station. The average daily demand in each zone was between 10,606 cubic metres and 21,354 cubic metres per day. Using the WASA factors for maximum day and peak hour of 1.5 and 1.7 respectively, calculating the maximum daily demand and then applying WASA's storage rule of four to six hours of the maximum day requirement, the reservoir sizes ranged between 9,335 cubic metres and 18,242 cubic metres.

WATER SOURCE

The practice of abstracting water from tube wells sunk deep into the aquifer appears to be the only feasible option available for the Walled City. Other options for water sourcing would involve planning at a national or provincial level.

WATER PRESSURE

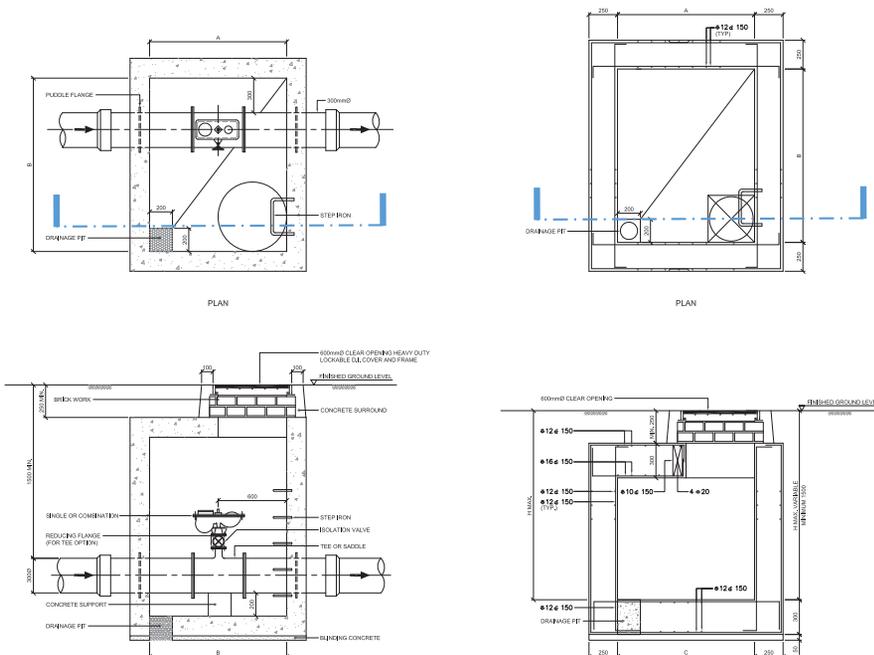
It was agreed with WASA that a terminal water pressure of 20 psi (1.4 Bar) be maintained outside each house connection at ground level. For the necessary system pressure, a system of underground bulk storage with booster pumps was recommended. Locating elevated reservoirs within the Walled City is not possible because of both the lack of space and the fact that they will detract from the Walled City's historic urban fabric.

WATER CONSERVATION

The initiatives required to reduce water wastage include replacing old (leaking) pipes, installing consumer meters, charging the consumer according to the amount of water used, installing meters at the tube wells, the reservoir intakes and the distribution pumps so that supply patterns can be established, and actively and methodically correlating the water drawn from the tube wells with the amount metered at the



Above, current practice of installing online centrifugal pumps to boost pressure. Water leakage is endemic in the Walled City.



Left, details of water supply air valve chambers.



Above and photo on opposite page, sub-standard infrastructure 'upgrading' carried out in projects three decades ago.

Opposite page, above, design guidelines for drop manholes and other details.

consumer-end of the system. A system of reporting and fixing of all leaks in the public system was recommended with the aim of reducing the unpaid for water to about fifteen per cent of the water extracted from the tube wells. Public awareness regarding consumption and wastage will contribute to an informed community and ownership of the scarce resource.

WASTE WATER

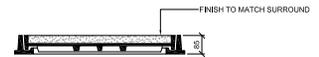
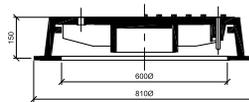
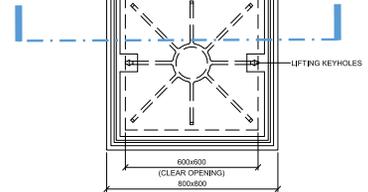
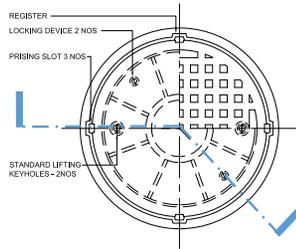
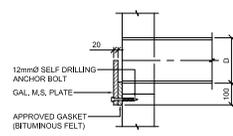
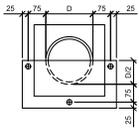
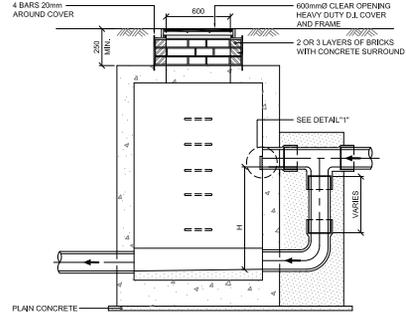
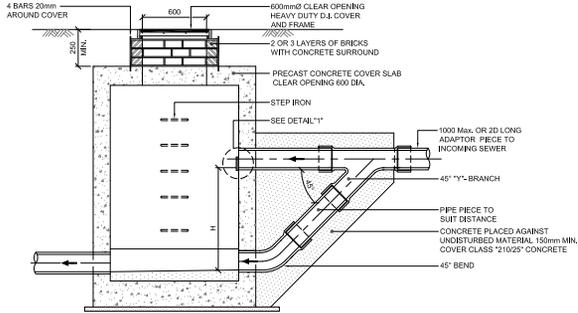
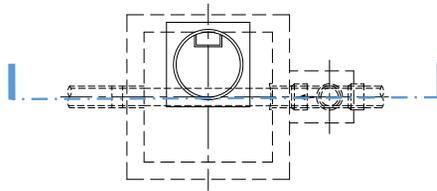
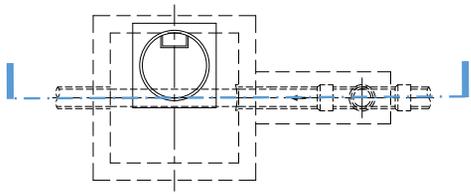
DESIGN PRINCIPLES

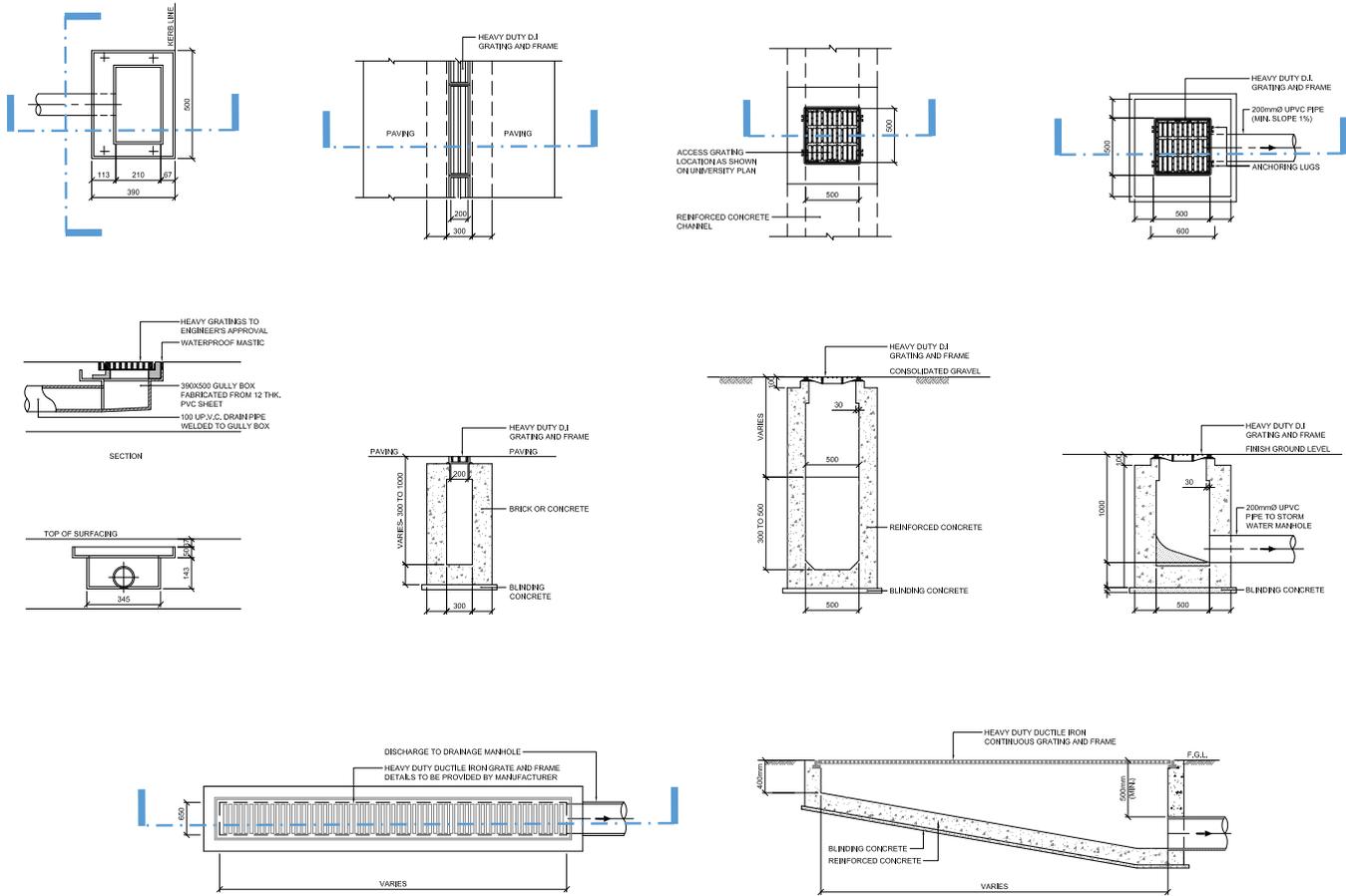
A central feature of the infrastructure design proposal is the separation of the sewage and storm-water drainage systems. This has already been accomplished in the Shahi Guzargah project and will be applied in other projects in the Walled City.

Replacing the open drains with a modern self-scouring piped system will mitigate the issue of solid waste in the waste-water sewers. The new system drastically reduces the exposure to sewage with consequent health benefits.

DESIGN CRITERIA

WASA has comprehensive guidelines for the design of sanitary sewers. However, after discussions held in the technical workshop hosted by AKCS-P in November 2009, a general consensus was achieved for special design criteria relevant to the Walled City. These criteria involve the use of self-cleansing sewers without compromise and were used universally in the Shahi Guzargah project. In general, the sewage flows by





Storm-water gully sections and interceptor drain details.

gravity pipelines towards the perimeter of the Walled City and is collected in an open-to-air gravity sewer (*bad rao*) that runs around the perimeter of the Walled City just behind Circular Garden.

STORM WATER

DESIGN PRINCIPLES AND PROPOSALS

The separation of sewage and storm water as a principal issue has been discussed here. However, a nominal additional capacity in the waste-water sewers was recommended to cater for some storm-water run-off entering the system. Self-cleaning solid-waste grids, to keep solid waste out of the system, were proposed. To reduce blockages downstream, pre-treatment traps at storm-water egresses to capture sand and sediment before entry to open watercourses were provided.

To manage surface rainwater during storm events, an internal underground system was proposed that can cater for a two-year design storm connecting to an external outfall storm-water pipe culvert which can cater for a five-year storm, based on WASA drainage standards.

The Walled City was divided into several sub-catchment areas based on the topography of the site. The pipelines from these catchment areas were designed for a time of concentration of thirty minutes, a once-in-a-two-year return storm, and peak monsoon rainfall. At narrow road corridors, it was recommended that catchment



pipes be sized based on space available, with any excess allowed to remain as surface run-off, possibly entering the system downstream. The run-off collected in the piped system would be drained into the spacious perimeter Circular Garden, and be encouraged to infiltrate by means of large detention areas and soakage pits, the latter in line with the existing designs being utilized elsewhere in Lahore.

The water table is reported to be declining fast, and water 'mining' is taking place faster than aquifer replenishment. Lahore-wide shortage in groundwater is the result of significant extraction rates coupled with loss of infiltration as more and more perviously pervious ground surface is developed. The purpose of these design criteria is to encourage recharge to replicate the original hydrologic cycle, thereby reducing overland flow and flooding and also to recharge groundwater levels in the depleted aquifers below. Percolation tests at infiltration basins should be carried out to ensure that design assumptions are appropriate while areas that present high potential-pollutant loads should be excluded.

ELECTRICITY

HIGH-VOLTAGE NETWORK

A major improvement needed in the high-voltage network was an increase in capacity. The upgrades of Transformer 1 at Bhatti Gate station and the placing of the 132kV cable from Fort grid station to Ravi substation underground will contribute to this end.

Examples of ad hoc and non-compliant electricity distribution systems in the Walled City.

This circuit currently runs down a section of Fort Road, the iconic road that divides the city from the UNESCO World Heritage Site. As recommended, the Fort Road grid station has already undergone an upgrade. Also, the Sheranwala grid station planned by WAPDA/LESCO to gradually relieve the Fort grid station is now in an advanced state of completion.

MEDIUM-VOLTAGE/LOW-VOLTAGE NETWORK

The problems faced by this network are so numerous that the preferred solution to solving them and achieving a desirable and safe result would be a complete overhaul of the current installations. This would include a new 11kV network, with allowances made for future demands, buried underground within utility corridors, with new 11kV/400V transformers, either on the ground or in buildings, a new 400V distribution network, and new remotely read AMR electronic meters at consumer connections, all designed with an energization and changeover methodology to ensure minimal downtime of services. Some areas in the Walled City still contain many low-rated (40kVA) transformers, which together take up a considerable amount of space. In the redesigned network, already demonstrated in the Shahi Guzargah project, these transformers will be replaced by single higher-rated, enclosed, packaged transformer units (1000kVA or 630kVA), which contain the LV main switchboard for circuit protection of the outgoing circuits, provide suitable protection of all the systems and ensure no exposed live parts.

Consolidating the number of transformers reduces the number of 11kV cables and the area needed within the right of way for reticulation, while increasing the length of 400V feeders from the source transformer using higher capacity 200A cables. The recommended solution for power reticulation in the extremely narrow alleyways is aerial bundled cables, mounted onto building facades.

STREET LIGHTING

The majority of the streets within the Walled City are too narrow for vehicles and need only accommodate pedestrian/bicycle traffic. The requirements for pedestrian lighting are to provide a safe environment for residents. Fittings can be mounted to the side of buildings in small alleyways, to provide light to passing pedestrians, with concealed power supply cables. On larger roads and public spaces, pole lighting may be required, with larger luminaires, controlled by PE cells and time locks to ensure illumination during hours of darkness.



Above, telecommunication and cell-phone towers are usually placed in an ad hoc manner with negative impact on the historic environment.

Right and opposite page, newly installed gas meters as opposed to older gas meters installed with little consideration for order or safety.





TELECOMMUNICATIONS

To minimize a multitude of third-party providers installing above-ground network cables, a series of underground ducts should be installed and owned by the WCLA. These should be buried in the telecom corridors within utility cross-sections and rented out to service providers. Large trunk routes across the Walled City should carry twelve ducts; secondary routes should have six ducts, and two ducts in all other roads/alleyways. Due to the nature of data transmission along optical fibres, these can be laid within the same utility corridor as most other services, including power.

GAS

It was indicated that SNGPL does not reticulate gas pipelines through alleyways less than 1.5 metres in width. This gives rise to banks of gas meters in single locations, usually at the entrance to the alleyways.

The SNGPL restriction on alleyway reticulation also gives rise to gas pipelines (downstream from the meter) being reticulated at ground level next to water pipes, through narrow alleyways and in close proximity to electric cables. Limited comment can be made about the state or adequacy of the underground gas reticulation network due to access constraints.

The only improvement suggested for the gas network is the concealing of unsightly gas meters, removing electric cables to a safe distance and putting all pipelines underground, including unsightly house connections running above ground.

¹ AureconGroup, Aga Khan Cultural Service-Pakistan, *Lahore Walled City Project: Integrated Infrastructure Concept Design*, 3 vols., 2010.



THE SHAHI GUZARGAH PILOT PROJECT AND AREA DEVELOPMENT PLAN

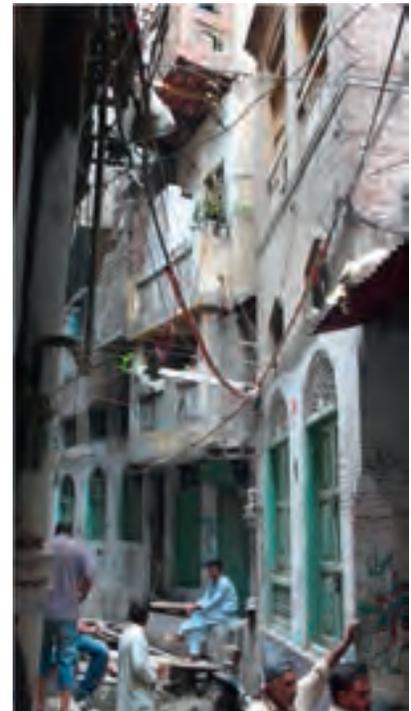
MASOOD KHAN, MARYAM RABI

In 2006 the World Bank signed a loan agreement with the governments of Pakistan and Punjab for the Punjab Municipal Services Improvement Project, which included a heritage component specifically intended for the Walled City. Subsequently, a project management unit, the predecessor to the present Walled City of Lahore Authority (WCLA), was established for the implementation of a pilot project.

The following year, 2007, the government of Punjab and the Aga Khan Trust for Culture (AKTC) signed a 'Public-Private Partnership' agreement to jointly pursue heritage-sensitive planning and development objectives, including a pilot urban conservation and infrastructure improvement project partially funded by the World Bank. Consequently, an office of AKTC and its local affiliate the Aga Khan Culture Service-Pakistan (AKCS-P) was established in Lahore. AKTC and the World Bank also signed a 'Memorandum of Understanding', which provided a framework for mutual collaboration on the pilot project, launched the same year.

The area of 23.5 hectares earmarked in the north-eastern quadrant of the Walled City for the pilot project had a bazaar spine known as the Shahi Guzargah, the purported ceremonial royal way from Delhi Gate in the east to the eastern gate of the royal palaces in Lahore Fort. Accordingly the project came to be known as the Shahi Guzargah project (see the maps on p. 389). The aim of the project was to develop methods for urban-heritage conservation and to demonstrate its benefits through the productive reuse of cultural assets. Lessons learned through this initiative were to serve as a reference for urban conservation in the Walled City at large. The area of the project comprised nine per cent of the Walled City's total area and was designed to include as many historic properties as possible along the route to Lahore Fort. The collaboration arrangements described here enabled AKTC to provide both technical and financial assistance for the project. As envisaged, today the project has been subsumed in a Walled City-wide framework of integrated area development.

At the larger scale, the objective of the pilot project was to transform and enhance the historic environment with the aim of achieving a healthy, economically improved and socially dynamic human context. Infrastructure development involved raising quantitative and qualitative performance to sustainable levels by adopting alternate and improved design standards. In preparation for the Shahi Guzargah project, AKTC carried out a Walled City-wide design for the integrated development of utility infrastructure. AKTC hired international consultants for this purpose and an 'Integrated Infrastructure Concept Design' as described on pp. 124–135 was carried out. This design and planning initiative produced a five-phase plan for the integrated



Opposite page, view of Gali Surjan Singh after completion of the Mohalla demonstration project in 2010.

Above, as-found condition of Gali Surjan Singh in 2008.



Looking in the direction of Delhi Gate from the bazaar along Shahi Guzargah.

development of primary and distribution infrastructure for waste-water disposal, separate storm-water disposal, electricity, telecom and natural gas, and the cross-sectional design of streets of various dimensions through which these services were to be delivered. Trunk infrastructure for water supply, upgraded a few decades earlier, was not included but water supply distribution infrastructure was to be replaced in all tertiary lanes and streets. The design framework developed was used as the basis for detailed design in the Shahi Guzargah project and has now been approved as the framework for infrastructure development in the rest of the Walled City.

COMPONENTS OF THE PILOT PROJECT

The Shahi Guzargah project broadly included community mobilization, establishing key baseline data, infrastructure design and improvement, the documentation and rehabilitation of street facades, removal of encroachments, street surface improvements, and provisions for fire hydrants, street lighting and street furniture. A number



The spatial limits of the World Bank-funded Pilot Urban Rehabilitation and Infrastructure Improvement Project (the Shahi Guzargah Project).

- Commercial
- Education
- Health
- Industrial
- Heritage
- Park
- Public Service
- Religious
- Residential
- Storage
- Utility/Infrastructure
- Vacant

100 m



Technical design for water supply and the storm-water drainage system in several lanes in the Delhi Gate neighbourhood.

- Existing Water Main Line
- Proposed Water Main Line
- Proposed Water Supply Line
- Water Supply Connection
- Sluice Valve
- Fire Hydrant
- Proposed Drain
- Proposed Sewer Line
- Main Sewer Line
- Existing Gas Line

9 m



Above, topographical survey in progress.

Right, one of numerous meetings with stakeholders and members of the community.





of properties of significant architectural and historic value were conserved. Mohalla demonstration projects carried out in two residential neighbourhoods established the design standards and operational know-how for infrastructure distribution in the narrow lanes which constituted a large portion of the larger project.

Working in the bazaar and in the mohallas resulted *ipso facto* in working with the people who inhabit these urban areas. This inherent condition was thrown into sharp relief when certain decisions of the superior courts upon the initiation of the project threatened to enforce the sixty-one-metre zone of protection around listed monuments. These decisions posed imminent consequences to the interests of the trader communities, and protests broke out as a consequence. Drawing on the well-known community mobilization expertise of the AKDN network, the project management unit was able to bring the protesting trading communities on board, and such disturbances have not occurred again. In the residential neighbourhoods, the urban spaces and access system are so tightly controlled by the residents that it was impossible to even broach the project without interacting with the residents and community organizations. Such conditions created the need for an organized institutional presence for social advocacy and mobilization on the part of the Punjab government. The Social Mobilization Unit that was established in 2007 still exists in the WCLA.

Parallel to project preparation, AKTC/AKCS-P carried out a topographical survey of the entire Walled City and, as part of the planning activities, established other baseline data (see the two chapters on pp. 106–123).

The principal elements of the infrastructure design were based on design guidelines contained in the 2010 'Integrated Infrastructure Concept Design' mentioned above. Trunk infrastructure in the main spine street system as well as the distribution infrastructure network in the residential zones was implemented by contractors. The water supply system was integrated with the forward planning for water supply at the

Left, the historic home conservation project: finishing up with protective oil coatings.

Right, infrastructure upgrading in Gali Surjan Singh, part of the Mohalla demonstration project.



Mock-ups of the proposed infrastructure details were created and discussed with stakeholders – the utility companies and the community.

Above, aerial bundled cables as a viable solution for electricity distribution network.

Below, mock-ups of the new, sealed sewerage and storm-water drainage systems.

Opposite page, trunk infrastructure re-development being carried out in one of the principal thoroughfares. Installation of utilities along the Shahi Guzargah trail.

scale of the Walled City. The replacement of the existing water supply distribution network has resulted in a dramatic improvement in the water pressure, and contamination related to pressure losses and ageing pipes has been eliminated. Domestic electric centrifugal pumps installed on supply connections have disappeared as a result. A new separate storm-water drainage system was introduced to cater for peak flash discharges of storm water during monsoon rains. The electricity and telephone distribution networks were organized with aerial bundled cables attached to building facades in an ordered manner respecting the architectural features of the buildings. All street surfaces were repaved. The design of the pavement was carried out integrally with that of surface appurtenances (for example, manholes and manhole covers). A total of fifteen new fire hydrants were added to the project area. Street lighting was designed and implemented with lighting fixtures either attached to the facades or pole mounted.

AKTC/AKCS-P provided guidance to the infrastructure design consultants through the expertise of conservation architects, technicians and master building trades craftsmen. Currently, the capacity for providing such services has been replicated within the WCLA, and is expected to be augmented further.

In the project area, street facades were meticulously documented and designs prepared for their improvement. They were then rehabilitated according to a facade improvement programme carefully negotiated with building owners, occupants and tenants, shop owners, and other stakeholders. Facade improvement comprised removal of unsightly, recent, reinforced-concrete projections and structural components, and inappropriate interventions such as still joists inserted into the soft load-bearing brick walls. The removal of unsightly wiring after the new infrastructure was installed created a dramatically improved visual environment.

The project area did not contain sites for green landscaping. However, a programme for upgrading and rehabilitating urban open spaces was initiated and is being continued, along with the conservation of monuments in the pilot project area.

A significant component of the pilot project was the removal of establishments that were illegally located on the public right of way or shops that had been extended to occupy a portion of the street. The WCLA's Social Mobilization Unit carried out extended negotiations with the aid of a specialist resettlement and environmental impact consultant appointed by the World Bank, rates of compensation were negotiated and the affected shops were removed and owners compensated accordingly.

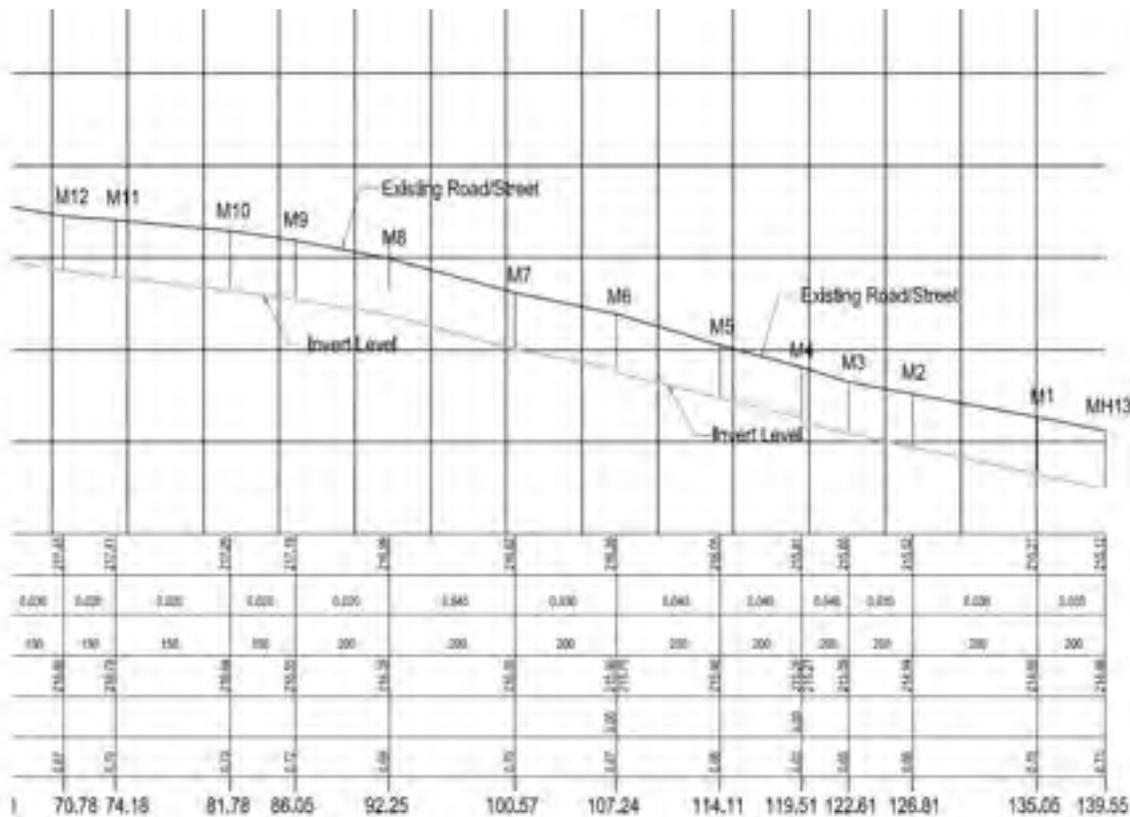
Before the appointment of the contractor for the larger pilot project, AKTC/AKCS-P designed and carried out a demonstration project for tertiary distribution networks of the infrastructure and urban fabric rehabilitation in Gali Surjan Singh (and its offshoot cul-de-sac Koocha Charkh Garan) and Mohammadi Mohalla, two small residential lanes off Delhi Gate Bazaar in the project area. This project was implemented by AKTC's own field supervisory staff and workmen. The demonstration project in turn set the standards for community mobilization and social extension services, the implementation of infrastructure in the residential neighbourhoods and their street systems, including street surfaces, and the standards to which historic residential buildings could be conserved. Of particular importance was the fact that the new standards were implemented after detailed review by the communities affected.

HISTORIC URBAN FABRIC CONSERVATION AND REHABILITATION

The conservation of the fine-grained residential urban fabric of the pilot project area became the single most important component of the project, addressing individual buildings and their street facades, the characteristic historic patterns of the streets



Example of detailed shop drawings prior to commencement of site interventions.





and paths, and the various infrastructure elements, including street lighting and other public facilities.

Residential buildings in the Walled City are subject to a common range of problems. Structural decay is endemic and caused by age as well as by water seeping into the superstructure due to the poor quality of plumbing, and by failing foundations as a result of poor drainage and water supply infrastructure. The improvement of private houses was paramount to the achievement of the basic objective of the pilot project.

The detailed design of infrastructure elements in the small lanes as well as in the main bazaar streets was carried out on a street-by-street and facade-by-facade basis. In the narrower lanes, the distribution lines for electricity and telecommunication as well as service connections to individual properties were surface-mounted on the facades and could only be installed once the facades were structurally consolidated in order to bear the stresses of the physical mounting of the infrastructure. In some cases, interventions could not be restricted to the house facade and entailed engaging with the way the interior spaces of a house were used and altering them. In other words, this involved working in the context of an eroded distinction between the upgrading of distribution infrastructure and house connections on the one hand, and intervention in private property on the other. Nevertheless, working on the facades made it possible for a close relationship to be developed between the owner-occupant and the implementing agency and elicited homeowners' desire to make their own investments in home repairs. The government of Punjab and the World Bank agreed to work under the principle that facade rehabilitation of individual properties and the mounting of infrastructure components on the facades was an investment in the public realm.

Urban fabric rehabilitation contributes in several ways to the improvement of the lives of the people who live in the Walled City. Given the widespread unemployment and underemployment prevalent here, working with the active participation of the

Koocha Charkh Garan – before and after the rehabilitation project.

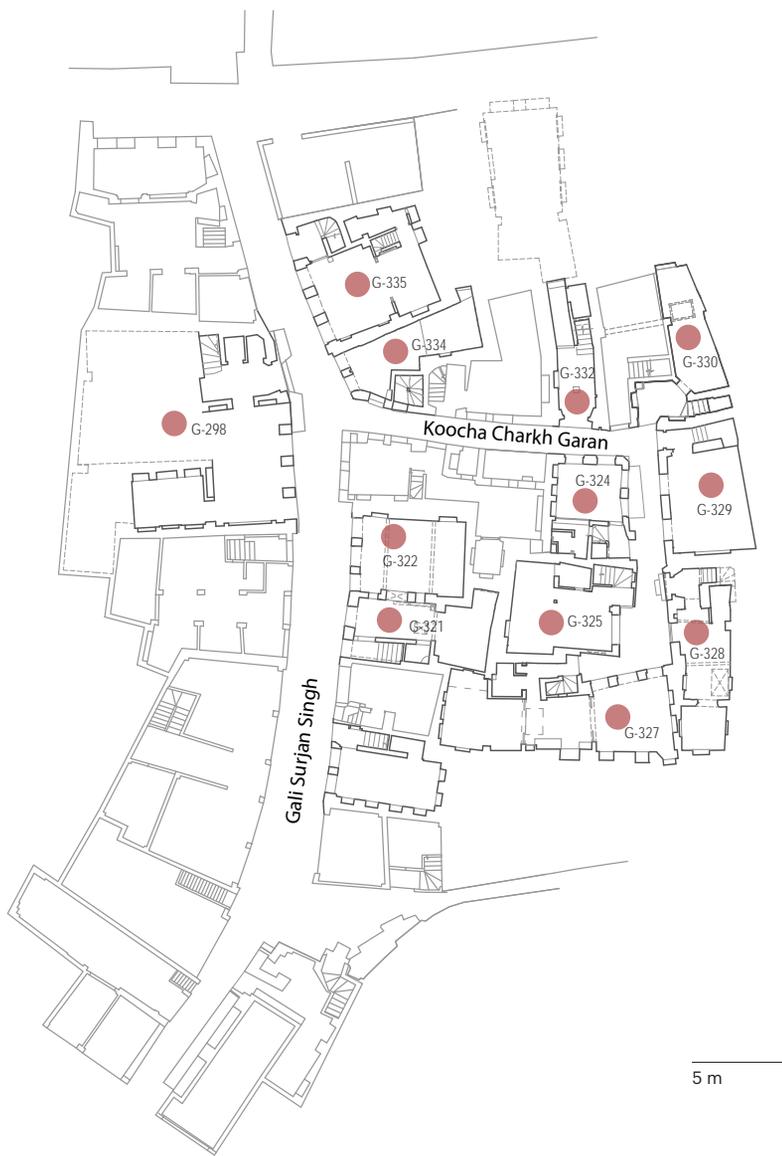


Installation of a below-grade, multi-inlet sewer collector.

communities of the Walled City neighbourhoods provided opportunities for younger residents to be gainfully employed. The youth especially benefitted from exposure to new vocations in the building industry and the project demonstrated that given adequate training they can acquire skills that promise higher income levels.

MOHALLA DEMONSTRATION PROJECT - GALI SURJAN SINGH AND KOOCHA CHARKH GARAN

The Mohalla demonstration project constituted a part of the neighbourhood rehabilitation component of the Shahi Guzargah project. It was restricted to the residential locality comprising Gali Surjan Singh and Koocha Charkh Garan situated north of Delhi Gate Bazaar, and the neighbourhood known as Mohammadi Mohalla in the south of the bazaar. While funding for Gali Surjan Singh and Koocha Charkh Garan was provided entirely by AKTC/AKCS-P, Mohammadi Mohalla was a part of the larger World Bank-financed pilot project. The purpose of this initiative was to test the proposed urban rehabilitation and infrastructure improvement interventions as well as finalize the design concepts and construction methodologies prior to the launch of the larger Shahi Guzargah project. Additionally, these sub-projects demonstrated the social and environmental as well as visual impacts of urban rehabilitation in the context of the Walled City as a collectivity of heritage sites. They showed that the quality of life can be significantly improved by altering the built environment in a sensitive manner and in collaboration with the primary stakeholders – the residents.



Above, historic homes that were conserved and rehabilitated as part of the Mohalla demonstration project.

● Historic homes conserved and rehabilitated

Below, a new sewer being laid in one of the secondary bazaar lanes.





Existing elevation



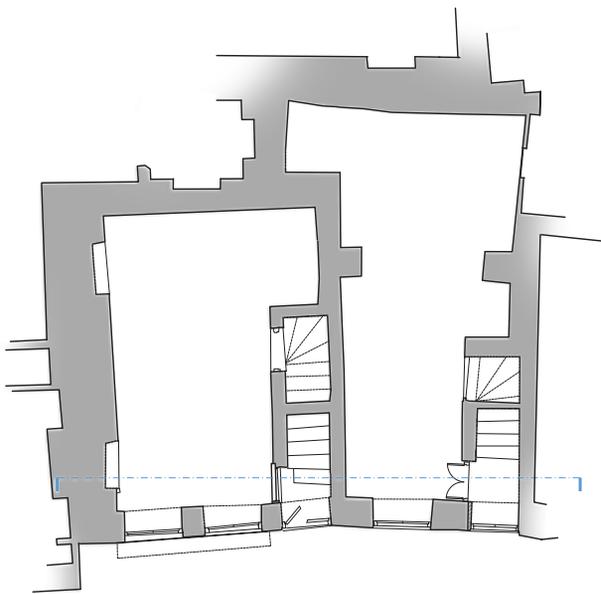
Proposed elevation

8 m

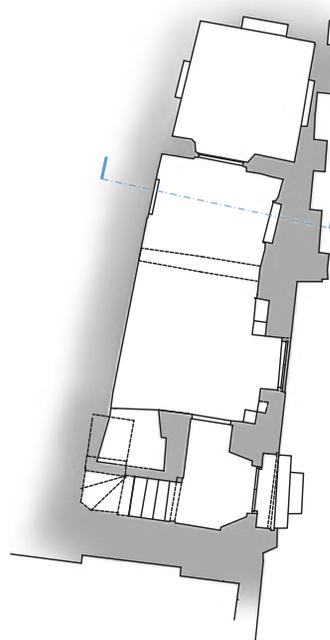
Existing and proposed elevation of buildings in Koocha Charkh Garan.

Detailed design guidelines were prepared and coordinated with utility agencies for both Gali Surjan Singh and Mohammadi Mohalla. Following a detailed assessment of the existing situation and the pilot conservation of a single historic house in 2008, physical work commenced in Gali Surjan Singh and Koocha Charkh Garan in December 2009. The project served close to 150 residents distributed across twenty-six households, most of whom were homeowners. The Mohalla demonstration project included twenty-three buildings, eighteen of which were over a hundred years old. Gali Surjan Singh consisted of an admixture of old and recently constructed houses and commercial outlets, while Koocha Charkh Garan (a cul-de-sac offshoot of Gali Surjan Singh) contained mostly old residential buildings that had been drastically altered over time. The total covered floor area of the buildings ranged from a minimum of 71 square metres to a maximum of 445 square metres. The project comprised infrastructure upgrading, building stock rehabilitation and home improvement.

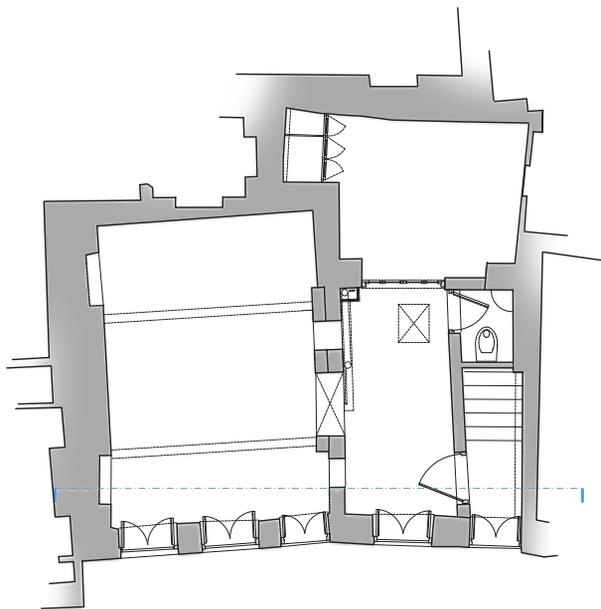
The infrastructure upgrading included provisions for improved waste and storm-water disposal (a sealed sanitary network), improved solid-waste disposal and sub-surface layout of gas pipes, and infrastructure mounted on the facades of the building. The building stock rehabilitation and home improvement component addressed organizational and design issues within the internal spaces of houses and included, to varying degrees, structural repairs and consolidation, replacement of dilapidated and/or dysfunctional installations, and non-structural architectural intervention and finishes, for all of which negotiations were carried out directly with the homeowners and occupants. Intervening at the micro-level of the individual dwelling unit was essential to demonstrate to homeowners the ways in which their premises could be improved. It also demonstrated how tasks were to be prioritized according to degree of severity. The conservation of a single historic home completed by March 2009 generated substantial interest among the remaining homeowners and residents, who began requesting that similar work be done on their homes.



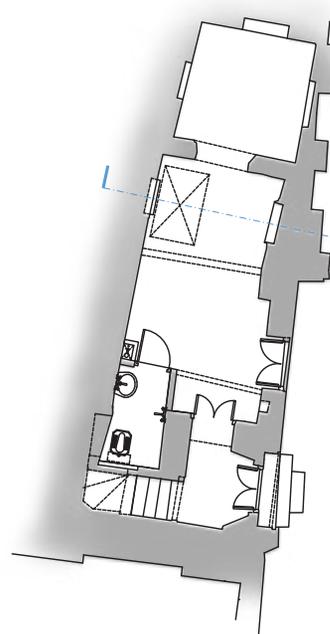
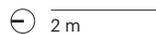
As-found ground-floor plan house G-321-22



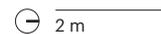
As-found ground-floor plan house G-328



Proposed ground-floor plan house G-321-22



Proposed ground-floor plan house G-328



The German Ministry for Foreign Affairs provided the necessary financial support for the conservation of historic homes over a two-year period and complemented AKCS-P's efforts in infrastructure upgrading and facade consolidation at the scale of the mohalla. Since it was understood that the rehabilitation of private dwellings could not be sustained at a large scale or in the long run simply with external funds, the nature of the proposed physical work was discussed with the applicants at great length and owners' financial participation negotiated on a case-to-case basis. Agreements were finalized with sixteen families residing in thirteen historic homes. In order to be in a position to sustain the efforts of rehabilitating private buildings, homeowners' contribution was encouraged and, at the end of the project, owner equity ranged between five and fifteen per cent for specific houses. The demonstration project generated immense interest among owners of historic buildings in the Walled City.

As-found (above) and proposed (below) ground-floor plans of houses G-321-22 and G-328 in Gali Surjan Singh and Koocha Charkh Garan respectively.