EXTRA ORDINARY ISSUE

REGISTERED No. L-7532

The Punjab Gazette

PUBLISHED BY AUTHORITY

LAHOR TUESDAY OCTOBER 10, 2023

GOVERNMENT OF THE PUNJAB
LAW AND PARLIAMENTARY AFFAIRS DEPARTMENT

NOTIFICATION
(164 of 2023)

10 OCTOBER 2023

Notification No.DG/WCLA/2023/87, dated 18.08.2023 issued by the Walled City of Lahore Authority, Government of the Punjab, is hereby published in the Punjab Gazette (Extraordinary) for general information:

"WALLED CITY OF LAHORE AUTHOIRTY
Government of the Punjab

Dated: 18th August 2023

NOTIFICATION

No. DG/WCLA/2023/87 In exercise of the power conferred under section 15 of the Walled City of Lahore Act, 2012 (XXXVI of 2012), the Walled City of Lahore Authority, after the approval of Government of the Punjab, is pleased to notify the Master Conservation and Re-Development Plan (**Annex-A**), with immediate effect.

DIRECTOR GENERAL
WALLED CITY OF LAHORE AUTHORITY"

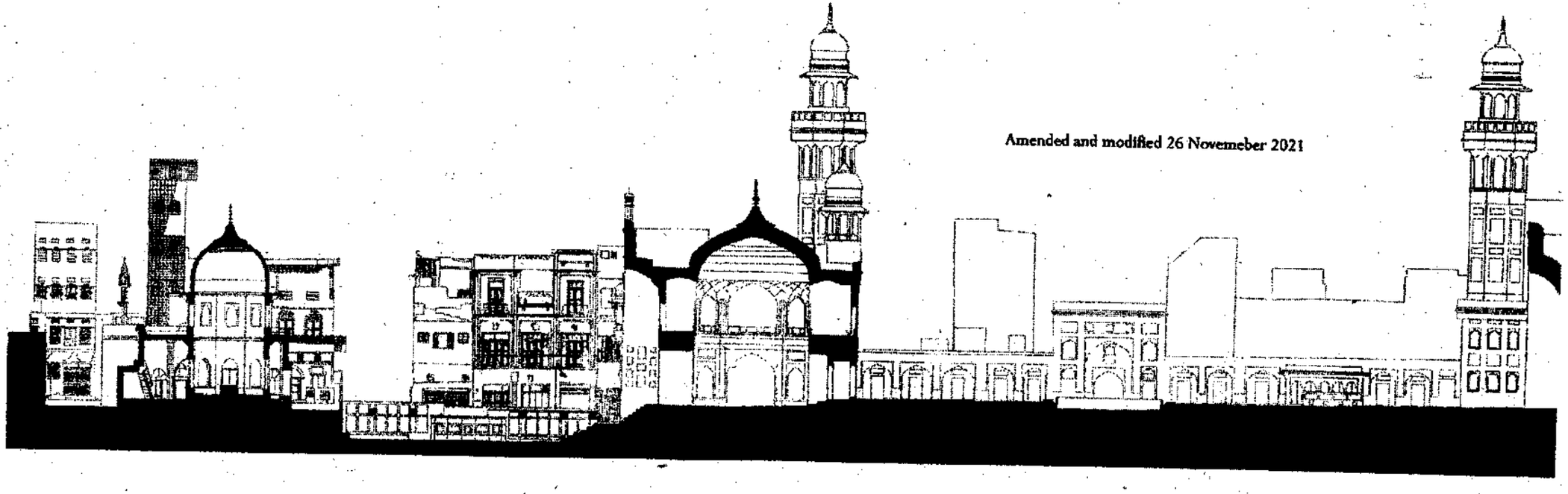
(AHMAD ALI KAMBOH)
SECRETARY
Government of the Punjab
Law and Parliamentary Affairs Department

WALLED CITY OF LAHORE

MASTER CONSERVATION AND RE-DEVELOPMENT PLAN

GOVERNMENT OF PUNJAB
WALLED CITY OF LAHORE AUTHORITY

AGA KHAN TRUST FOR CULTURE
AGA KHAN CULTURAL SERVICE-PAKISTAN



Amended and modified 26 Novemeber 2021

FINAL DRAFT

WALLED CITY OF LAHORE

MASTER CONSERVATION AND RE-DEVELOPMENT PLAN

Amended and modified 26 November 2021

AGA KHAN TRUST FOR CULTURE
AGA KHAN CULTURAL SERVICE PAKISTAN

"The cultural heritage of each is the cultural heritage of all."

THE VENICE CHARTER, 1964

"A society's values, attitudes and social conventions (in tandem with the constraints of the natural environment) give form and content to specific urban structures, as it were, and thus imbue them with meaning. Having become an animated entity, the urban fabric in turn inspires and conditions human behaviour by sustaining the underlying nonphysical contents. Historic cities are therefore not static structures. Their inner values and qualities are predicated on the fact that they are able to reflect and support the identity-building processes that are vital for strengthening civic society."

UNESCO WORLD HERITAGE CENTRE, MANAGING H[illegible]

"The Historic Urban Landscape is the urban area understood as a historic layering of cultural and natural values, extending beyond the notion of 'historic centre' or 'ensemble' to include the broader urban context and its geographical setting."

UNESCO GENERAL CONFERENCE, RECOMMEND[illegible]

EXECUTIVE SUMMARY

1. OVERVIEW

This planning document aims at fulfilling the requirements of Section 15 of the Walled City of Lahore (WCL) Act, 2012, for a Master Conservation and Re-development Plan (MCRP) for the Walled City. It was prepared by a group of professionals belonging to the Walled City of Lahore Authority (WCLA), the Aga Khan Trust for Culture (AKTC) and their Pakistani affiliate the Aga Khan Cultural Service – Pakistan (AKCS-P).

- The Walled City of Lahore Act, 2012 is referred here onwards as "the Act";
- The Walled City of Lahore Authority (WCLA) was established in December 2012 under Section 3 of the Act, and is headed by a Director General.
- The Act defines the Walled City's heritage not as individual buildings but an integral whole comprising its "architectural, archaeological, monumental, historic, artistic, aesthetic, cultural or social (legacy), elements (and) features of a building and building fabric, groups of buildings and structures, urban fabric, urban open space, public areas, public crossings or public passages, and the environment of the Walled City and includes intangible heritage". This implies a recognition of the vastly expanded notions of the built heritage that today prevail in heritage practice across the world as compared with how "heritage" was understood in the early 20th century. The passage of the Act, a first in South Asia, also recognizes the status of the Walled City as a prime example of a surviving pre-industrial urbanism of South Asia.

1.1. Background

1.1.1. The Walled City comprises a little over 3 square kilometres of land, into which are packed some 22,000 individual parcels of land, and some 130 linear kilometres of bazaars, streets, lanes and cul de sacs. Until 1947 the city had remained more or less intact, with its internal dynamic holding steadily to historic ways of building and the historic land use, and to maintaining its urban and cultural character. The riots of 1947 resulted in the loss of some 12% of its urban fabric to arson and looting.

1.1.2. In 2012 the Punjab Assembly enacted the Walled City of Lahore Act. As required by the Act, WCLA was created the same year. The Act was enacted as a response to the issues of urban management and heritage care that have been endemic in the Walled City. It requires the preparation of the MCRP with the following five components:

- A land use and zoning plan,
- A plan for (the) Conservation of (the) heritage of the Walled City,
- A plan for development, improvement and maintenance of municipal services;
- A plan for development, improvement and maintenance of public passages, urban open spaces, public areas; and
- A plan for development of enterprise and economic activities.

1.1.3. This document presents the first four of the above five components of the MCRP. These plans have been prepared in three distinct parts:

- The Land Use and Zoning Plan;
- The Conservation Plan;
  (The plan for "development, improvement and maintenance of public passages, urban open spaces, anid public areas" has been included in the Conservation Plan as part of Area Conservation and Development Schemes), and as guideline design proposals for the Circular Road which forms the Walled City's perimeter);
- A plan for improvement and maintenance of municipal utility service infrastructure.
- The fifth component required by the Act—the "plan for development of enterprise and economic" activities—is currently being addressed by an external consultant engaged by WCLA.

1.2. Existing conditions in the Walled City of Lahore are symptomatic of past lack of planning, lack of land use regulations, lack of protection of the urban fabric as heritage, lack of enforcement of laws, and the impact of inadequate planning in the city of Lahore at large. These causative factors result in the following:

1.2.1. Continued pressure on land partly induced by external pressures, the role of speculative forces, and the tearing down of historic *mohallas*

The main problems faced by the Walled City relate to land and land management. Land in the Walled City is under intense pressure owing to several external factors. These factors arise from historical and macro-economic causes and from the failure to relocate the urban transportation functions entrenched in the vicinity of the Walled City that have led to the development of regional markets within the historic core.

The commercial sector has expanded in an unregulated manner for several decades at the cost of the historic urban fabric. Causative factors include inadequate land use and building control, the absence of an inventory of the heritage assets of the Walled City, and before the enactment of the WCL Act (2012), the legal and administrative mechanisms to safeguard these assets.

1.2.2. The external factors referred to in the previous paragraphs include:

a. Macro-economic issues: unemployment creates small entrepreneurs - from growing numbers of street vendors to new businesses looking for small shops for ownership or rentals, with mostly expatriate remittance resources.
b. Weak policies and measures, or their absence, for bringing informal commercial activities within the formal sector tax loop.
c. Threatened by formal sector administrative lapses and inadequate regulative frameworks, commerce in the informal sector produces strong

interest groups and trade associations.

d. The wholesale traders and real-estate developers who operate through powerful syndicates and associations exercise unfettered political power and influence.

1.2.3. Trades related to manufacturing (of shoes and luggage, using synthetic materials) create disproportionate amounts of solid refuse inappropriate for the tightly packed residential neighbourhoods. Chemicals and synthetic glues used in this trade results in health hazard to the resident population, a significant proportion of which is subject to forced inhalations of the synthetic glue vapour, recognized by world health authorities as harmful for health, especially among the youth.

1.2.4. Socio-economic conditions of the residents of the Walled City continue to deteriorate

Beginning with the 1947 refugees, the Walled City has provided a convenient place for the poorest immigrants from the countryside and other provinces to settle. There has been significant net emigration of the resident population from the Walled City to other areas of Lahore. A concurrent fragmentation of the social and cultural structures that accounted for the special qualities of the Walled City has consequently occurred. Development projects that have taken place in the past have addressed this aspect of the situation but not with the vigour which it deserves, even though community organizations and associations which could serve as the vehicle for social rehabilitation and economic uplift exist at the micro-level, often coterminous with the smallest elements of the urban morphology.

1.2.5. The social and cultural ethos of the Walled City has suffered immensely from:

- Loss of plurality of the local intelligentsia and other cultural assets, leading to cultural impoverishment;
- Rising poverty levels, leaving little income for leisure and recreation;
- Unhygienic residential and civic environment, open drains, over-spilling sewage, uncovered food sold on the streets.

1.2.6. Access to the Walled City, its cognizable visual image, the Circular Gardens and the encroaching markets

The Walled City exists behind a wall of encroachments, haphazard construction and disorderly signs and infrastructure elements, particularly on its eastern and southern sides. At the same time, and in part due to the intensity of commerce that happens on the Circular Road, traffic along this artery is chaotic and without any sense of order and management. This makes access to the Walled City difficult and unpleasant. One of the prime assets of the Walled City is its Circular Garden—a space separating and defining the edge of the Walled City from the surrounding city. Unfortunately, almost the entire perimeter of the Circular Garden on the south and the east of the Walled City is encroached upon by small shops, large businesses and public sector constructions. Despite a clear urban edge, the Walled City is difficult

to discern as one enters the Circular Road because of the prevailing disorder and noise, including "visual noise". In addition, well-organized parking facilities near the gates do not exist.

1.2.7. Threats to the historic urban fabric and the historic building stock and the lack of a policy of continued rehabilitation

Despite the recent experience of carrying out a pilot urban rehabilitation (Shahi Guzargah) project in the Walled City, a long-term commitment on the part of the government is lacking to replicate such projects so as to encompass the remaining areas of the Walled City. The pace at which its urban fabric is deteriorating is such that the needed financial and human resources to counteract upon these trends need to be made available with the utmost priority.

1.2.8. Intrusion of new, alien building types

There is marked and recognizable correlation between regional wholesale and retail commerce, and those who carry out commerce from within the building type known as a "plaza". The intrusiveness of this very distinct single use building type in the traditional environments of the Walled City has been responsible for a massive change of the heritage character of the historic core.

1.2.9. Rehabilitation of the historic building stock

WCLA lacks a programme to conserve and rehabilitate the historic homes with the wholehearted support of the Government. Apart from the improvement / rehabilitation of infrastructure, street and façade, as demonstrated in the Shahi Guzargah project, an important aspect of the conservation of the historic urban fabric is the conservation, consolidation and protection of the historic building stock. Most of this concerns private residences or residential properties. The experience of the UNESCO award winning Gali Surjan Singh project has been that to an extent the owners of these homes, poor as they are, are willing to share the cost of the conservation and rehabilitation of their homes. There has been some government funding made available to WCLA from which some 15 historic buildings have been saved from collapse. This funding is being continued. To take the protection being afforded to such buildings to the next level, funding for the conservation of the historic building stock has to be increased by an order of magnitude. While the major initiative must come from the Government, funding for their complete conservation and rehabilitation of these buildings may be augmented by bilateral donors, corporate social responsibility funding, multi-lateral agency contributions, and owner equity participation.

1.2.10. New construction and insertions into the fabric of the Walled City

A major problem identified has been that of how new buildings are built in complete disregard to form, height, stylistic and typological

features appropriate to the historical, environmental and sensory context of the Walled City. Some aspects of the new Building Regulations aim to regulate this aspect of new construction in the Walled City. However, the promulgation and enforcement of the regulation is still an issue as WCLA lacks the necessary technical, enforcement and judicial and penal resources.

1.2.11. Infrastructure conditions

There are issues with almost all aspects of the infrastructure at the primary, secondary and tertiary (distribution) levels. The main issues exist in relation to the primary infrastructure for both water supply (number of tube wells), sewerage (open drains in most of the Walled City), storm water drainage (absence of an independent trunk network overload the waste water sewers and open drains), and electricity (under-capacity grid stations).

At the secondary and distribution level the existing conditions (except in areas which have been upgraded under the Shahi Guzargah project) are well near chaotic, and represent an ad hoc, unplanned and reactive manner of approach to service provision on the part of the utility companies / agencies. This is particularly true of electricity and telephone. Additionally, loss of pressure in the water supply system results in consumers installing online private centrifugal pumps. These, and the corroded old pipes, some as old as 150 years, result in negative pressures in the system and the resultant contamination of water. Most of the waste water removal system comprises open drains, or open drains covered over with concrete slabs. This results in the mixing of surface runoff with sewage effluent, and in the disposal of solid waste through the system. As a result, clogging and sewage flooding in the streets is common.

1.2.12. Traffic conditions in and around the Walled City appear to arise from:

- The nature of the commerce prevailing in the Walled City and the related presence of the goods forwarding agencies on its perimeter.
- Modal mixture of a large range including large trucks (mainly on the Circular Road); small trucks, mini-trucks, cars, bullock carts, animal-driven carts, hand carts, and porters.
- Vastly increased numbers of vehicles, in particular motor cycles (which can penetrate the narrow streets of the Walled City with ease). The increase in the number of vehicles is associated with not only the residents of the Walled City, but with visitors, shop owners, workers and shoppers who enter the Walled City on a daily basis.
- The number of cars owned by businessmen which arrive at the Walled City everyday cannot be parked properly even along its perimeter.
- Ill trained and badly mannered operators of vehicles.

Some adjustment in the quantum of traffic and improvement in traffic behavior has been caused by the introduction of certain types of controls on traffic in the Delhi Cloth Bazaar up to Chowk Fatehpuri, with the major amount of cloth market goods being trans-shipped to the businesses

from the northern peripheral road on hand carts or small motorized vehicles. However, this arrangement needs to be systematized. A major issue is the lack of data on the admixture of different traffic modes and the pedestrian traffic, their origins and destinations, hours of flows, capacity of the roadways etc. Surveys need to be carried out and existing arrangements reviewed and evaluated.

2. THE INSTITUTIONAL CONTEXT

2.1. With a much larger set of responsibilities, WCLA has replaced the project management unit (PMU) which had been established in 2006 to manage the USD 5 million Cultural Heritage Component (intended for the Walled City) of the World Bank's Punjab Municipal Services Improvement Project (PMSIP). WCLA completed that heritage component, called the Pilot Urban Rehabilitation and Infrastructure Improvement Project (or the Shahi Guzargah project), within two years of its establishment. WCLA has continued certain parts of the project with funding from the Punjab Government and has been responsible for several other aspects of the Walled City. These include monument conservation (Shahi Hammam, Masjid Wazir Khan) and urban open space rehabilitation (Chowk Wazir Khan). Technical assistance for this has been provided by AKTC, and funds for the monument conservation by bilateral donors. WCLA has also taken the first ever measures to establish facilities for visitors to the Walled City. In addition, from 2014, WCLA has also shouldered the task of managing the World Heritage Site of the Lahore Fort, making several large project initiatives.

2.2. The WCL Act (2012) is Pakistan's first heritage-specific municipal governance legislation. Chapter 2 of the Act mandated the creation of the Walled City of Lahore Authority (WCLA), headed by a Director General, to regulate and develop the Walled City while preserving and protecting its heritage. To this end, the Act has invested the Authority with sweeping planning and executive powers, while defining a broad planning framework to be prepared for the historic core.

2.3. The Act charges WCLA with a wide array of functions and invests powers in it to:

- Implement and execute planning instruments, and prepare and execute schemes;
- Identify, assess and authenticate heritage value;
- Conserve the as defined heritage of the Walled City and conserve and upgrade its environment;
- Establish, maintain and periodically revise planning controls and building regulations;
- Regulate the transfer of property;
- Preserve and promote culture;
- Develop and maintain urban open space;
- Regulate the use of public places, urban open spaces, public crossings or public passages for purposes of public communication, ceremonies, or ritual events;
- Prepare, implement and enforce schemes for environmental improvements, urban renewal, solid waste disposal, transportation and traffic,

health and education facilities;

- Maintain the record of heritage properties;
- Cause studies, surveys, technical researches to be made or contribute towards the cost of any such studies, surveys, technical researches;
- Issue interim development order for proceeding with the conservation and structural consolidation of a building under imminent threat of structural damage of any nature; and
- Perform other functions as are incidental to the above functions or as the Government may assign to the Authority for purposes of the Act.

2.4. However, the necessary executive, police and judicial resources and inter-departmental flows of information to fulfill certain key functions have not been available to WCLA and consequently it has been difficult for the authority to fulfil the regulatory and enforcement aspects of its responsibilities and to make the maximum possible use of the functions and powers vested in WCLA by the Act.

2.5. At the same time, the Government is considering increasing WCLA's jurisdiction to other historic cities in the Punjab, and also to create a new agency under WCLA to assume responsibility for Greater Iqbal Park and the Lahore Fort-Badshahi Masjid complex. The new responsibilities will increase the burden of delivery of professional services that rests with WCLA. It is proposed that the professional capacity within WCLA be doubled, in addition to specialized training provided to its staff. Such training would comprise overseas education for selected staff members, and training of WCLA staff with existing partners who provide technical assistance.

2.6. The MCRP also proposes certain organizational changes and decision-making flows within WCLA with respect to managing the heritage environment in the Walled City more effective and transparent.

3. STRATEGIES AND POLICIES

Before going on to spell out the substantive aspects of the various planning components, the MCRP identifies an array of strategies and policies that would provide a policy framework for the plan components. A set of main goals to be achieved is identified:

3.1. The overarching goal is that the Walled City's distinct character and identity must be cherished and preserved.

3.1.1. External pressures and the threats they impose on the Walled City must be mitigated.

3.1.2. Negative developments should be identified and contained.

3.1.3. To the world outside its perimeter, the Walled City must be visually presented as a clearly seen historic asset, which is well cared for and has

a special place in the hearts and minds of Lahore's citizens.

3.1.4. The quality of life and key aspects of human development of the residents of the Walled City must be improved.

3.1.5. Mechanisms and processes must be created to protect the heritage of the Walled City in a sustained and sustainable manner.

3.1.6. Towards this end, strong regulatory frameworks should be created and the means of enforcing them obtained and applied.

3.1.7. Historic precincts and monuments must be revalorized.

3.1.8. Traffic conditions within the Walled City should be calmed and disciplined and related issues resolved.

3.1.9. Suitable conditions must be created for tourism to play its role in the economic future of the Walled City.

3.2. Each of these goals represents a strategic framework of actions spread over several dimensions of policy affecting the Walled City. They also reflect the need for strategic resources. A conceptual understanding of urban conservation as an all-embracing strategy needs to be attained. Such a strategy would be supported at the highest levels of executive power and would include the economic uplift of the resident population through tourism. This should be supported by a continuous stream of funding from the Government; rapid recruitment and enlargement of in-house specialized skills and professional staff at WCLA; full participation of communities at the level of mohallas, galis and kuchas, and of individuals and involvement of practitioners of conservation in the relevant architectural and engineering professions.

3.2.1. Some of the strategies are commonly understood as high priority initial actions in a conservation process: inventories and listing--updating and maintaining a record of the heritage assets of the Walled City; creating the Heritage Properties Register as mandated by the Act, identifying and establishing Zones of Special Value and establishing an accurate cadastral data base of properties and property ownership information.

3.2.2. A major strategic move relates to issues of access to and visibility of the Walled City from its peripheral access system. Policies need to be focused on improving the visibility of the Walled City, parking around and within the historic core, traffic management on the Circular Road, and ensuring a sustainable future for the Circular Garden.

3.2.3. Strategies designed for improving traffic intersect with those that apply to land use. The strategic goal of turning large parts of the Walled City into pedestrian only areas is related to lessening the intensity of multi-modal traffic, and with policies for creating multi-storey motorcycle

parking at strategic locations, car parking on the perimeter of the Walled City, limiting delivery vehicles and services to operate only at night and limiting all vehicles except emergency vehicles to the absolute minimum.

3.3. Weakening linkages between external pressures and certain economic processes within the Walled City

The external factors and pressures outlined above make the Walled City attractive to economic activities too large and intense for its wellbeing, and are inappropriate from the points of view of human health and residence. The strategic response to address this will include eliminating the linkage between transportation and wholesale trade over the medium term by phasing out the use of the Circular Road as a trucking terminus, devising traffic engineering / management plans that facilitate the movement of multi-modal traffic in the areas immediately surrounding the Walled City, and that create appropriate amounts of parking along the Circular Road. Certain roads in the vicinity of the Walled City require widening urgently. Strategies could be integrated with land use and building control that begin to weaken the hold of large scale economic enterprises. Stopping forthwith the construction of commercial "plazas" and other single use buildings inside the Walled City is a related policy, as is imposing graded municipal taxes and license fees etc., on all economic enterprises in the Walled City.

3.4. A strategic way forward for conservation in the Walled City

3.4.1. The WCL Act recognizes all of the Walled City of Lahore as heritage, hence its special status as a legislation created specifically for the conservation and protection of the Walled City. The Act defines "heritage" and "urban heritage" in terms widely accepted today.

3.4.2. Several strategic goals can be enunciated to fulfil the requirements of the Act for conservation, planning, development, management and regulation, of the heritage assets of the Walled City. Among these goals would be (i) the reinstatement of the status of the Walled City as a cultural zone of value in Lahore, (ii) the conservation and rehabilitation of the entire Walled City, not just individual buildings and monuments, but townscapes and the historic urban landscape as well, (iii) the deference even new buildings should pay to the Walled City's historic and cultural values, (iv) the conservation of all buildings in the Walled City which are under the ownership or trusteeship of various government agencies, (v) the regulation of the urban fabric, i.e., land use and building construction, according to a new regulatory framework specific to the Walled City, (vi) the rationalization and regulation of traffic (vii) implementation of programmes of infrastructure improvement together with the conservation and rehabilitation of the physical form of the Walled City, and (viii) the establishment of a cadre of human resource (conservation architects and engineers, planners, craftsmen, building trades, contractors and other workmen) in the public and private sectors who specialize in architectural and urban conservation.

3.4.3. To attain these goals, the strategy for conservation in the Walled City should make the maximum possible use of the powers vested in the Authority by the Act. A general policy should be adopted that makes all heritage properties (whether owned by the public sector or privately

owned) legally available to WCLA for purposes of conservation and integration into urban development projects.[1]

3.4.4. The advantages, experience and principles inherent in the planning and design work carried out over the previous ten years since should be fully exploited and the implementation of pending and ongoing projects should be rapidly completed.[2] All historic residential properties should be pro-actively conserved, rehabilitated and modernized with the financial participation of the owners, in line with work already carried out. The development of human resources and technical skills in the public or the private sector in the above fields should be promoted.

3.4.5. For re-instituting and strengthening the values inherent in the Walled City, the Act's provisions for the creation of a Register of Heritage Properties and a notified list of Zones of Special Value should be implemented as planning overlays where attention and resources are relatively more focused, and the Heritage Conservation Board created under Section 9 of the Act should play a strong, professional role, as ordained by the Act.

3.4.6. Social mobilization should be based on involving communities in the Walled City when working in their physical spaces and participation that lets communities lead their own development should be promoted.

3.4.7. Eminent domain and the public interest should be the primary criteria for the protection of and interventions in sites of very high value, such as the World Heritage Site and its buffer zones.

3.5. The Walled City of Lahore Conservation Project

3.5.1. As a policy stating clearly the Government's deep and abiding interest in the preservation and continuity of the Walled City, it is recommended that its conservation should be treated as a continuous and approved project (to be named the "Walled City of Lahore Conservation Project"). The Walled City of Lahore Conservation Project (WCLCP) would be the physical manifestation of the requirements of the Act, to be presented as a series of 5 year progressions. Annual grants should be made for the implementation of WCLCP as part of the Government's Annual Development Plan. Each specific project contract under WCLCP should be tendered out after approval of the contract documents and drawings by the WCLA Board.

[1] Under this policy the regulatory functions and powers of WCLA should apply to [illegible] properties owned by other government agencies and agencies that act as trustees of [illegible] including properties protected under the Antiquities Act 1975 and the Punjab Special Premises (Preservation) Act 1985. In all conservation related matters WCLA should be delegated [illegible] properties for carrying out conservation operations whether through [illegible] changes / amendments to existing statutes. Such statutory changes / amendments should [illegible] of planning without compromising rights of ownership or trusteeship of [illegible] properties in the Walled City subservient to WCLA in so far as the conservation [illegible] and the later management of how those properties have been maintained and [illegible] conservation and rehabilitation.

[2] For example the proposed parking and market project outside Delhi Gate and the [illegible] of the Shahi Guzargah Face Project

3.5.2. The larger and all-encompassing WCLCP project should follow the framework, guidelines and examples including the Area Conservation and Development Projects (discussed in Part IV), and heritage conservation in general elaborated elsewhere in this document.

3.5.3. Financial arrangements: There should be three channels of funding for the implementation of the MCRP:

a. Direct Funding from Government into the WCLA fund for implementing the Area Conservation and Development Schemes.
b. Conservation-specific funds for implementing the heritage conservation component of the MCRP.

These funds will be aimed at the conservation of principal or secondary monumental heritage listed on the Register of Heritage Properties. They will be channeled from a variety of sources:

- The Federal and Provincial Governments
- Corporate Social Responsibility funds
- Funding from bilateral donors
- Financing from multi-lateral agencies
- Owner equity

c. Funds for historic building stock rehabilitation will be aimed at private properties on the Register of Heritage Properties and older privately owned building stock--an important aspect of group value and the historic urban fabric. Grant funding, subsidized loans and other forms of subsidies will need to be provided, to be coupled with owner equity participation. The funds will flow through a Conservation Subsidy Trust Fund, with the same type of sources as for Conservation-specific Funds.

3.6. Strategy for improving the quality of life in the Walled City

3.6.1. The social sector strategy for the Walled City's citizens would give particular attention to spheres of culture, education, health, parks and recreation and other aspects of sustainable livability. It should have for its objectives a more balanced mix of income groups residing in the Walled City, would pay attention to early childhood development / primary and secondary education including assistance to small schools being operated by local residents. Public sector schools would be improved, both in terms of facilities and the quality of teaching, marketable technical skills would increase among the unemployed and under-employed youth under this Strategy. Cultural forms, institutions and festivals would be revived, a vibrant intangible heritage would be revitalized. Residents especially women and young children would have access to green space and recreational facilities, home-based women workers would be facilitated. Reduction of the pressure on physical space caused by the expanding regional markets in the Walled City would be an important objective.

3.6.2. To achieve these objectives, several initiatives are proposed to be taken up or to be strengthened further:

a. Conservation as development: The conservation process in the Walled City should be thought of as an integral part of social and economic development. This is exemplified in the vocational training programme for youth undertaken in parts of the Walled City after 2008, where conservation of the built heritage was being carried at the same time. Within this development oriented framework, a special place should be given new economic activities related to increasing numbers of national and international tourists.

b. Health: As exemplified by a certain component of the Shahi Guzargah project, community health improvement programmes should be integrated with conservation and social development work in the Walled City. Chronic diseases (hepatitis, tuberculosis, asthma and other pulmonary disorders etc.) should be addressed. The quality of potable water is of key concern and adequate provisions should be made to reduce the risk of waterborne illnesses. Shoe manufacturing has a direct and negative environmental impact and the impact of such activities on the resident communities need to be addressed.

c. Education: Existing public sector schools should be upgraded considerably. The distribution of public sector schools does not conform to the demographic profile of the school going age population. The shortage of schools at the middle and high school levels should be rectified. More sites for building and equipping schools should be created within or in close proximity to the Walled City, taking care that more space in the Circular Gardens is not taken over by the construction of new schools. Private sector initiatives at the pre-school and early childhood level need to be supported financially and technically by Government or private-sector partners. Moreover, the youth of the Walled City should be given special attention by education programmes of the Punjab Government.

3.7. Strategy to regulate changes and transformations in the built environment

The strategic aim of conserving the distinct identity and character of the Walled City is related to achieving rigorous policies of land use control and the control of building construction.

3.7.1. Land use plan & building regulations

The promulgation of the Land Use and Zoning Plan mandated by the Act, framed in deference to traditional land use patterns, should begin moving the Walled City towards conformity with its historical antecedents. Apart from re-instating residential use that has been lost, the land use plan should make possible the presence of mixed land use in zones like bazaars and thoroughfares. Certain types of land use that militate against common interest, and the health and well-being of the resident population should be immediately prohibited.

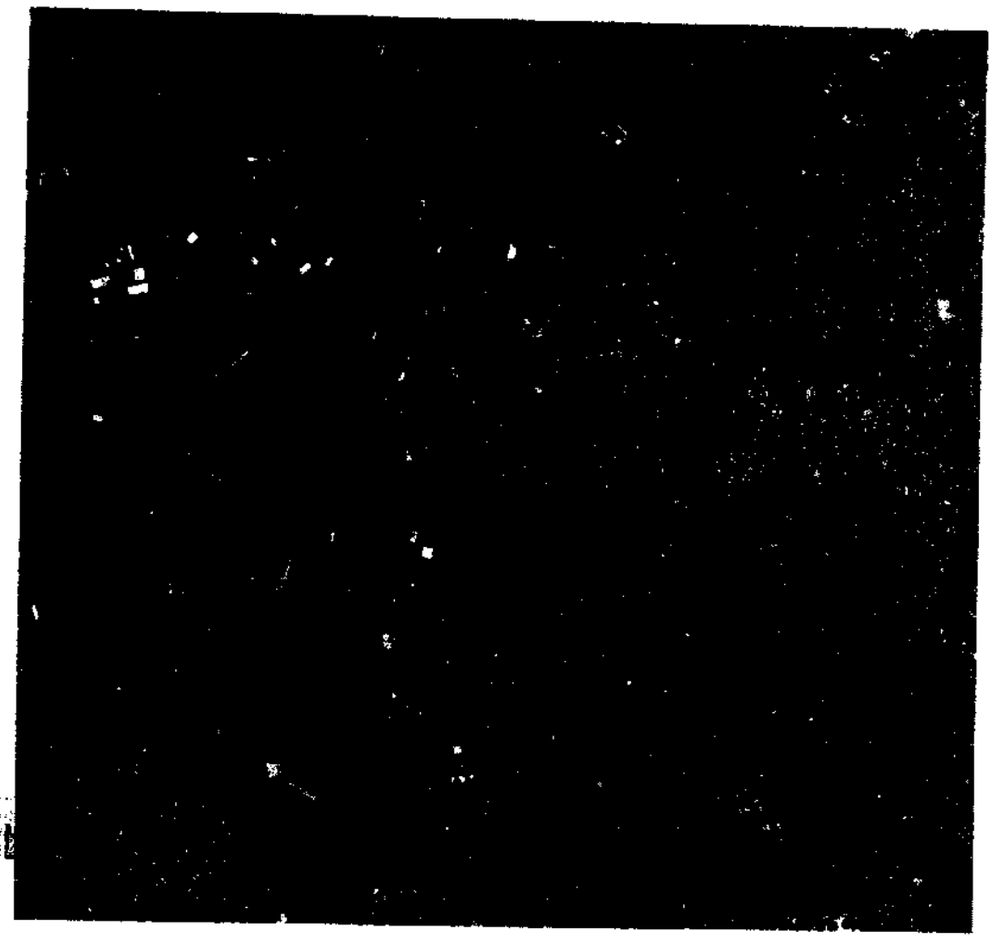
4.7.8. Lastly the Conservation Plan also makes specific conceptual proposals for urban and traffic design on the Circular Road, and for the rehabilitation of the Circular Garden.

5 THE INFRASTRUCTURE AND MUNICIPAL SERVICES PLAN

Appendix 2 (General Conditions of Utility Services) and Appendix 3 (Infrastructure Solutions and Design Criteria) describe the "plan for development, improvement and maintenance of municipal services" required under Section 15 (3) (iii) of the Act. This Plan was developed in 2010 as the " Integrated Infrastructure Conceptual Design" (IICD) and brings together the schematic design of 7 utilities services in 7 development phases covering WCLA's jurisdictional territory. These phases of development are the basis of the Area Conservation and Development Schemes.

Both Appendix 2 and Appendix 3 are summarized versions of the findings of the IICD, and have been included here for the purpose of providing a ready reference. For a complete technical review of the IICD the reader is referred to the 3 volume IICD report:

AURECON & Aga Khan Cultural Service-Pakistan
Lahore Walled City Project: Integrated Infrastructure Conceptual Design
Final Report
Volume 1: Integrated Infrastructure Planning
Volume 2: Conceptual Design Drawings
Volume 3: Design Guidelines



THE WALLED CITY OF LAHORE

INTRODUCTION

Lahore is Pakistan's second largest city with a population of at least seven million people.[1] As the cultural capital of Punjab province, the city has long held rich traditions of intellectual and literary ferment, and has a remarkable historic urban fabric as well as monumental sites and individual buildings that reflect a dynamic and multicultural past. For centuries Lahore remained one of South Asia's major cultural centres. It has been the bulwark of resistance to the waves of Central Asian invaders that overran the rich plains of the Punjab numerous times over the course of the millennia. Lahore's built environment as it stands today is thus a manifestation of the myriad layers of influences and exchanges – cultural, political and social - that have taken place over the passage of time.

Lahore has two major complexes of monuments on the World Heritage List, with a few on the tentative World Heritage List. It has dozens of other smaller monuments not the least lacking in historicity, artistic merit and charm. And most of all, it has retained the cultural centre of its origins, its "walled" city - a dense urban fabric studded with some spectacular monuments and hundreds of ordinary yet architecturally important buildings that together create a unique landscape.

Situated in the north-western periphery of the metropolis, the Walled City of Lahore contains tightly packed buildings and narrow alleyways, and for the city's denizens and visitors alike remains one of the most popular destinations as a source for the city's origins and architectural diversity. The Walled City is home to the Lahore Fort (Shahi Qila), a 20-hectare Mughal royal precinct that has been on the World Heritage List (along with the Shalimar Garden) since 1981; as well as to other landmark sites of equal importance that include the Badshahi Mosque, the Wazir Khan Mosque and Wazir Khan Hammam.

In celebrating both the Walled City's historic and cultural significance, the authorities have from time to time implemented development projects in the historic quarters. Notwithstanding such past initiatives, the Punjab Government has directed efforts since 2005/06 to address issues of planning for urban conservation and regeneration, including improved standards for the provision of services infrastructure. A key milestone was achieved in 2012 by the Punjab Assembly in the enactment of the Walled City of Lahore (WCL) Act, which has resulted in the establishment of the Walled City of Lahore Authority (WCLA) under the Local Government and Community Development Department of the Punjab Government. A first of its kind in Punjab (and Pakistan for that matter) in terms of urban heritage conservation, the Act has defined the perimeters/boundaries of the historic settlement and laid the grounds for the requisite institutional frameworks to manage/govern special heritage zones.

The Act further has in addition mandated the preparation of a Master Conservation and Re-development Plan (MCRP) with the following components:

- *a land use and zoning plan;*
- *a plan for conservation of heritage of Walled City;*
- *a plan for development, improvement and maintenance of municipal services;*

[1] [illegible] estimated at nearly 12 million inhabitants are to be overwhelmed by the [illegible]

- *a plan for development, improvement and maintenance of public passages, urban open spaces, public areas; and*
- *a plan for development of enterprise and economic activities.*

The following overarching goals of the MCRP are derived from Section 15.(2) of the WCL Act.

- *To protect the territorial integrity of the Walled City;*
- *To protect, conserve and re-valorize the architectural and urban heritage of the Walled City;*
- *To revive the character and special place qualities of distinct places and neighbourhoods, the hierarchy of neighbourhoods and the historic urban form;*
- *To protect and enhance the quality of architectural assets;*
- *To protect, conserve historic open spaces and places of historic significance.*

Implicit in the above is the recognition that an uplift in the quality of life of the residents of the Walled City should be achieved by means of the improvement of the services infrastructure, of the residents' levels of education and marketable skills, and by creating means of livelihood that are in accord, and not in conflict, with the goals listed above.

The parameters outlined above not only encapsulate the sensitive nature of the Walled City as a historic urban district but also reflect the challenges in finding a balance between the provision of services to facilitate contemporary modes of living on one hand; and respecting the character and place-significance of the Walled City's urban heritage on the other. Any modest attempt at a holistic vision for the future of the Walled City should then, at the very least, try to protect the cultural and aesthetic values inherent in the historic urban footprint and its unique townscape that contributes to Lahore's rich identity. By virtue of its long history and heritage assets this identity matches those of other great historical centres of the Muslim world – Cairo, Delhi, Isfahan, Samarkand.

The Walled City is a tiny fraction (one tenth of one percent) of the aerial spread of metropolitan Lahore, which today spans an area of some 2,300 square kilometres. Yet the old city is arguably one of the most densely populated localities known, where some 22,000 individual land holdings struggle for space within an area close to three square kilometres. Much of the Walled City's 150,000 or so residents are left with little or no choice today but to share ever shrinking public spaces, and what remains of an ageing and fragile building stock. The Master Conservation and Re-Development Plan (MCRP) represents the future of the Walled City as a living heritage city in its entirety. As such it includes various dimensions of a municipal development and management plan. In addition to these, it presents key aspects of the management and conservation of the Walled City as a historic urban fabric, and the individual components that constitute that historic fabric.

The objective of the MCRP, firstly, and as required by the WCL Act, is to provide regulatory frameworks for certain aspects of the functions of WCLA

to manage the territory of the Walled City, in particular to regulate the purposes for which its land is being used. Related to this is the management of the historic assets of the Walled City which include its essential footprint and the basic structure of the historic urbanism, including the individual monuments and ordinary buildings, and the network of streets, passageways and open spaces which comprise it. Many of these urban and architectural elements of the urban fabric are of historic and artistic value. In addition, the MCRP has the objective of preparing an integrated plan to develop the infrastructure of the Walled City in a phased and rational manner, with guidelines as to the standards at which this infrastructure is to be developed.

These planning outputs are arrived at by a process which (i) appraises the Walled City in its present condition, and identifies the principal problems and issues that are to be addressed by the planning process; (ii) presents a range of strategies addressing the problems and policies for the Government to consider—strategies which could form the basis of new policies and concrete interventions, and (iii) puts forward a set of proposals for the conservation and municipal management of the Walled City. Moreover, this document is informed by the recent experiences gained in the Walled City from the design and implementation of the Pilot Urban Rehabilitation and Infrastructure Improvement Project (also known as the Shahi Guzargah project), the first phase of which was jointly funded by the Punjab Government (GoPunjab) and the World Bank (WB), with technical assistance provided by the Aga Khan Trust for Culture (AKTC). These experiences have provided invaluable insights in regard to the fine-grain social, economic and physical realities that prevail in the Walled City.

This document contains four sections. Part I provides a historical background and the current context of the Walled City of Lahore. Part II discusses the institutional framework pertaining to the Walled City. Part III outlines strategies and policies to broadly address the myriad challenges facing the historic urban core. Part IV contains a set of proposals for urban conservation and management of historic assets in the Walled City.

The WCL Act further requires the development of an economic enterprises plan for the Walled City. As of the last quarter of 2016, WCLA commissioned a preliminary study to examine the nature of existing commercial entities in the Walled City. Additional steps are underway to arrive at a draft plan which would be available for review by the Heritage Conservation Board. The present document is therefore limited to a discussion of issues outlined in parts I through IV.

VIEW OF THE LAHORE FORT FROM ALAMGIRI GATE

1. HISTORICAL BACKGROUND

1.1. An urban nucleus situated in the northwest of greater Lahore, like many other such cities the Walled City began as a small and fortified village on the bank of a river—in this case the eastern bank of the Ravi. Over the last five centuries or so, the river has progressively moved away further to the west and, as a result of dykes built in the 18th century and thereafter, now flows along its meandering plain at a distance of some two kilometres from the edge of the city. The Walled City comprises a tight mass of close to 22,000 land holdings collected together in an area of a little under three square kilometres. The Circular Garden and the Circular Road, both established in the early 20th century, during the colonial period, form the outer perimeter. Although no longer a fortified settlement, the urbanism retains in its name the reference to the walls; in Urdu and Punjabi this historic core is also referred to as Androon Shehr (the "city within").

1.2. The Walled City's origins date back several centuries[1] prior to its associations with Muslim invasions and dynasties. However, the city's regional importance and much of its historic built form evolved during the Mughal period (1525-1729). During emperor Akbar's reign (1556-1605), a period of relative stability resulted in the expansion of the city to accommodate a growing population while achieving the status of a provincial capital. It was then that the settlement was expanded and fortified on all sides. The city also developed the identity of a Mughal garden city with its fort, *havelis* and suburbs, the latter of which developed around garden palaces and mansions. 16th century accounts of Lahore highlight its importance similar to the likes of places such as Agra. The city's prominence grew further during emperor Shahjahan's time (1628-1658).

1.3. Towards the end of the Mughal era, 18th century Lahore sustained frequent invasions by armies from the east and northwest. Barring the period when Ranjit Singh made Lahore the capital (1799-1839), the city was by and large subjected to various warring armies and factions, and successive attacks weakened its defenses. During the Sikh period, the city walls were repaired and maintained. A 14-metre wide moat was established on the outer perimeter of the city and an external defense wall erected on the periphery of the moat formed the outer boundary. After Ranjit Singh's death, subsequent battles and the inroads of the East India Company had already begun to destroy the city.

1 If not millennium. Archaeology has not yet verified Lahore's claim to being [illegible] only [illegible] site [illegible] the only archaeological investigations [illegible] out in 1998) date the settlement at the site of the Lahore Fort to a [illegible] inside of the last millenium C.E. Pakistan Archaeology, No. 1. Karachi: Government of Pakistan, 1964, pp. 55-56.

1.4. Colonial rule in Punjab was established in 1849, following the two Anglo-Sikh wars (1845-46, 1848-49), when the British gained control over all Sikh territories including Lahore. Historical references to this period reflect the decayed state of the city's surroundings. As the last major Indian city to come under British rule, Lahore sustained its reputation of strategic importance under the colonial administration.[2] At this time, a major intervention in the Walled City comprised the demolition of the city's outer walls, the filling up of the moat and the establishment of the Circular Garden as well as the reduction in the height of the inner walls (1859-1864).[3] The parts of the wall from the Sikh period are to be found around the citadel whereas the city walls from the Mughal period are only defined by the city's current perimeter along the open drains which function as receptacles for the city's sewage and other waste. The Walled City, however, is still accessed through thirteen passageways and the names of the gates continue to be used. Some of the gates, such as the Delhi Gate and the Lohari Gate, which were already in a state of disrepair were rebuilt by the colonial admnistration in a more elaborate manner.[4] With the exception of the Roshnai Gate, which is to be found between the Lahore Fort and the Badshahi Mosque, none of the other gated structures from the Mughal period remain.

1.5. The second half of the 19th century marks Lahofe's transformation into a colonial city when much of modern Lahore was grafted onto the ruined gardens and suburban footprints of past centuries. As the capital of Punjab, a province which was a key agricultural and revenue resource for the colonial administration, urban dynamics in 19th century Lahore were closely linked to the expansion of the railways including the establishment of the North Western Railway headquarters as well as various railway workshops and residential colonies in the city. The colonial city mushroomed in the suburbs around the Walled City where the railway lines, the station and the workshops, the Civil Lines and the Cantonment functioned strategic zones and "nodal points". A long-term impact of the railways was a steady increase in the population of Lahore.[5]

1.6. For almost a hundred years since the annexation of Punjab in 1849, the Walled City continued to exist alongside colonial Lahore as its "indigenous other".[6] A dynamic social body comprising predominantly Muslims, Hindus and Sikhs matched the historic core's complex built form. In 1947, the Walled City suffered widespread

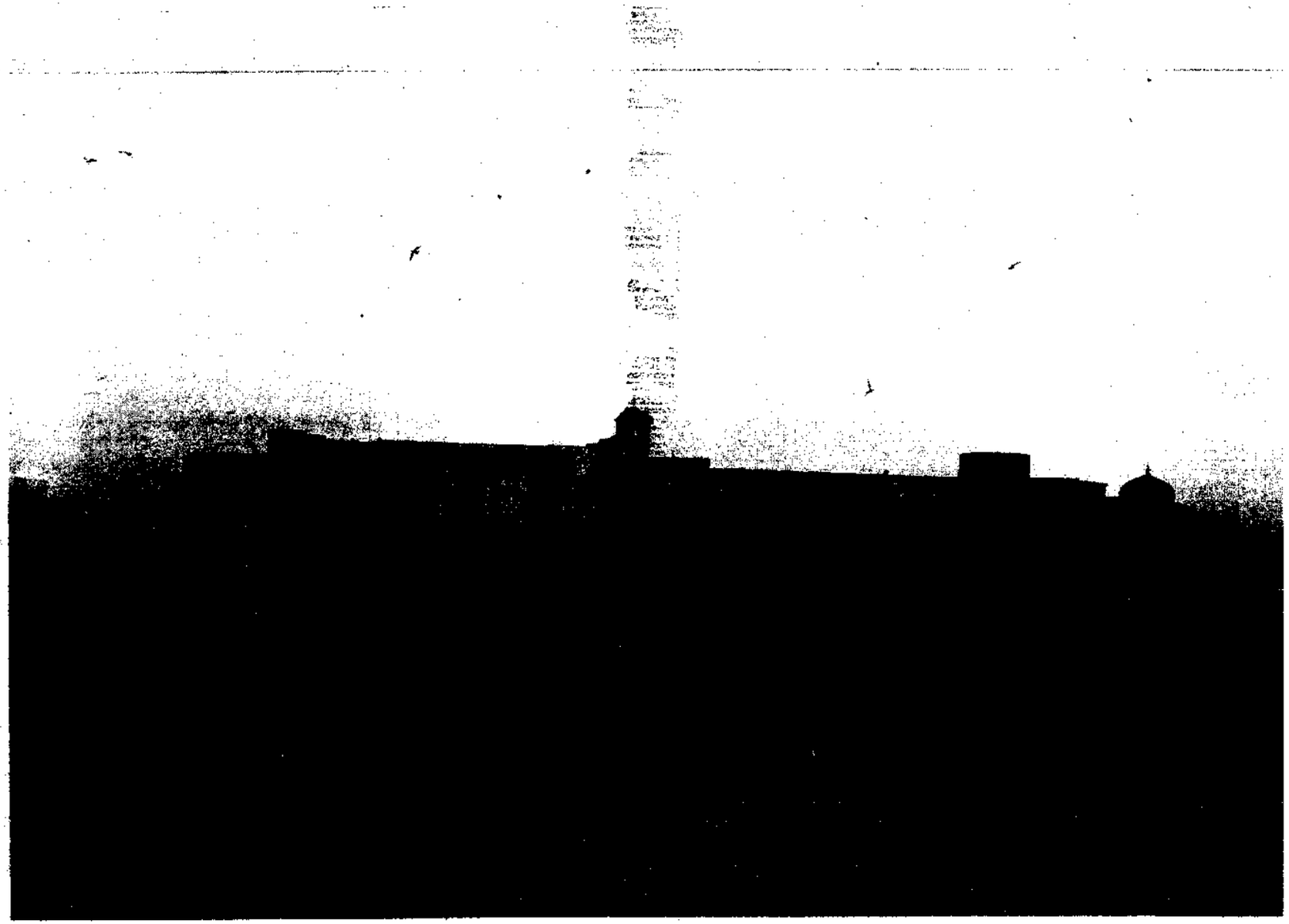
2 Shirazi 2007
3 The demolition of the walls was part of the larger [illegible] settlements particularly after 1857. The remainder of these walls was later destroyed in 1864.
4 Other gates which were re-built [illegible] the last having been demolished in recent memory
5 Kenrick
6 Daechsel 2004

to manage the territory of the Walled City, in particular to regulate the purposes for which its land is being used. Related to this is the management of the historic assets of the Walled City which include its essential footprint and the basic structure of the historic urbanism, including the individual monuments and ordinary buildings, and the network of streets, passageways and open spaces which comprise it. Many of these urban and architectural elements of the urban fabric are of historic and artistic value. In addition, the MCRP has the objective of preparing an integrated plan to develop the infrastructure of the Walled City in a phased and rational manner, with guidelines as to the standards at which this infrastructure is to be developed.

These planning outputs are arrived at by a process which (i) appraises the Walled City in its present condition, and identifies the principal problems and issues that are to be addressed by the planning process; (ii) presents a range of strategies addressing the problems and policies for the Government to consider—strategies which could form the basis of new policies and concrete interventions, and (iii) puts forward a set of proposals for the conservation and municipal management of the Walled City. Moreover, this document is informed by the recent experiences gained in the Walled City from the design and implementation of the Pilot Urban Rehabilitation and Infrastructure Improvement Project (also known as the Shahi Guzargah project), the first phase of which was jointly funded by the Punjab Government (GoPunjab) and the World Bank (WB), with technical assistance provided by the Aga Khan Trust for Culture (AKTC). These experiences have provided invaluable insights in regard to the fine-grain social, economic and physical realities that prevail in the Walled City.

This document contains four sections. Part I provides a historical background and the current context of the Walled City of Lahore. Part II discusses the institutional framework pertaining to the Walled City. Part III outlines strategies and policies to broadly address the myriad challenges facing the historic urban core. Part IV contains a set of proposals for urban conservation and management of historic assets in the Walled City.

The WCL Act further requires the development of an economic enterprises plan for the Walled City. As of the last quarter of 2016, WCLA commissioned a preliminary study to examine the nature of existing commercial entities in the Walled City. Additional steps are underway to arrive at a draft plan which would be available for review by the Heritage Conservation Board. The present document is therefore limited to a discussion of issues outlined in parts I through IV.



VIEW OF THE LAHORE FORT FROM ALAMGIRI GATE

1. HISTORICAL BACKGROUND

1.1. An urban nucleus situated in the northwest of greater Lahore, like many other such cities the Walled City began as a small and fortified village on the bank of a river—in this case the eastern bank of the Ravi. Over the last five centuries or so, the river has progressively moved away further to the west and, as a result of dykes built in the 18th century and thereafter, now flows along its meandering plain at a distance of some two kilometres from the edge of the city. The Walled City comprises a tight mass of close to 22,000 land holdings collected together in an area of a little under three square kilometres. The Circular Garden and the Circular Road, both established in the early 20th century, during the colonial period, form the outer perimeter. Although no longer a fortified settlement, the urbanism retains in its name the reference to the walls; in Urdu and Punjabi this historic core is also referred to as Androon Shehr (the "city within").

1.2. The Walled City's origins date back several centuries[1] prior to its associations with Muslim invasions and dynasties. However, the city's regional importance and much of its historic built form evolved during the Mughal period (1525-1729). During emperor Akbar's reign (1556-1605), a period of relative stability resulted in the expansion of the city to accommodate a growing population while achieving the status of a provincial capital. It was then that the settlement was expanded and fortified on all sides. The city also developed the identity of a Mughal garden city with its fort, *havelis* and suburbs, the latter of which developed around garden palaces and mansions. 16th century accounts of Lahore highlight its importance similar to the likes of places such as Agra. The city's prominence grew further during emperor Shahjahan's time (1628-1658).

1.3. Towards the end of the Mughal era, 18th century Lahore sustained frequent invasions by armies from the east and northwest. Barring the period when Ranjit Singh made Lahore the capital (1799-1839), the city was by and large subjected to various warring armies and factions, and successive attacks weakened its defenses. During the Sikh period, the city walls were repaired and maintained. A 14-metre wide moat was established on the outer perimeter of the city and an external defense wall erected on the periphery of the moat formed the outer boundary. After Ranjit Singh's death, subsequent battles and the inroads of the East India Company had already begun to destroy the city.

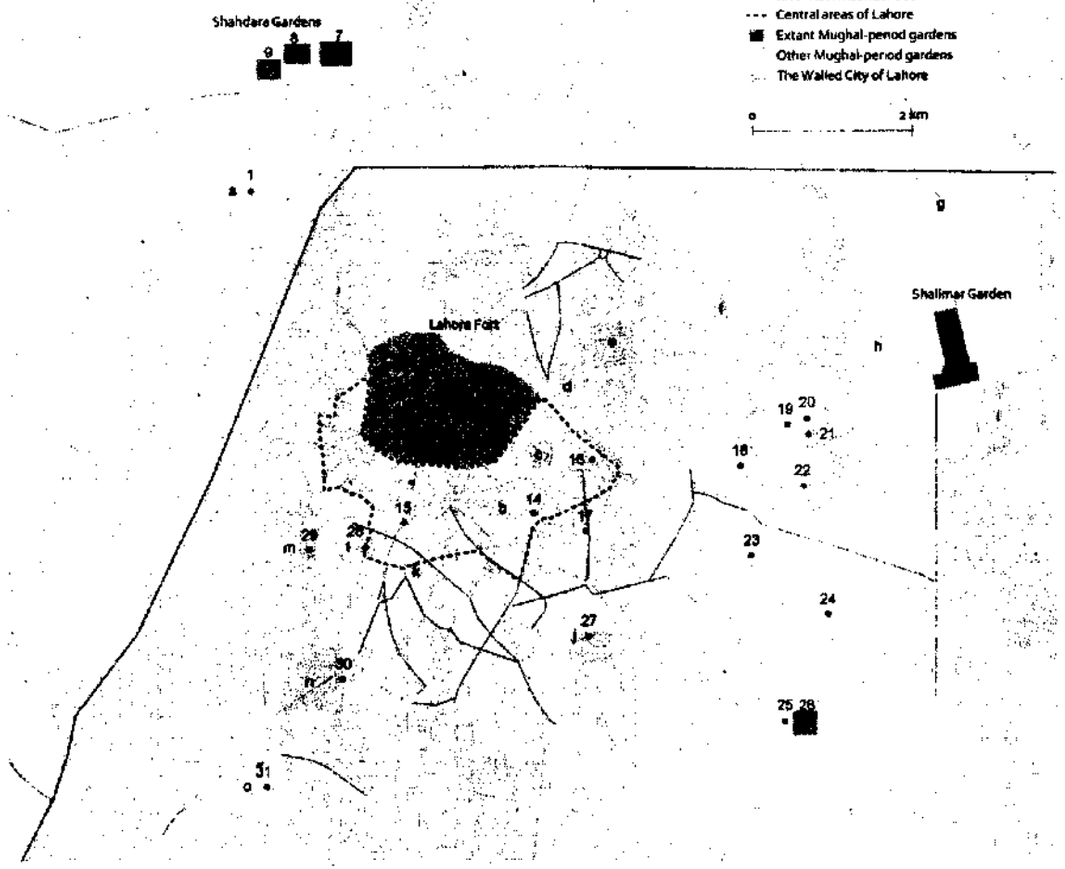
1 If not millennium. Archaeology has not yet verified Lahore's claim of being [illegible] and the only archaeological investigations [illegible] in 1968) date the settlement at the site of the Lahore Fort [illegible] to the middle of the last millennium. Cf. Pakistan Archaeology [illegible] Karachi, Government of Pakistan, 1964, pp. 55-56.

1.4. Colonial rule in Punjab was established in 1849, following the two Anglo-Sikh wars (1845-46, 1848-49), when the British gained control over all Sikh territories including Lahore. Historical references to this period reflect the decayed state of the city's surroundings. As the last major Indian city to come under British rule, Lahore sustained its reputation of strategic importance under the colonial administration.[2] At this time, a major intervention in the Walled City comprised the demolition of the city's outer walls, the filling up of the moat and the establishment of the Circular Garden as well as the reduction in the height of the inner walls (1859-1864).[3] The parts of the wall from the Sikh period are to be found around the citadel whereas the city walls from the Mughal period are only defined by the city's current perimeter along the open drains which function as receptacles for the city's sewage and other waste. The Walled City, however, is still accessed through thirteen passageways and the names of the gates continue to be used. Some of the gates, such as the Delhi Gate and the Lohari Gate, which were already in a state of disrepair were rebuilt by the colonial admnistration in a more elaborate manner.[4] With the exception of the Roshnai Gate, which is to be found between the Lahore Fort and the Badshahi Mosque, none of the other gated structures from the Mughal period remain.

1.5. The second half of the 19th century marks Lahore's transformation into a colonial city when much of modern Lahore was grafted onto the ruined gardens and suburban footprints of past centuries. As the capital of Punjab, a province which was a key agricultural and revenue resource for the colonial administration, urban dynamics in 19th century Lahore were closely linked to the expansion of the railways including the establishment of the North Western Railway headquarters as well as various railway workshops and residential colonies in the city. The colonial city mushroomed in the suburbs around the Walled City where the railway lines, the station and the workshops, the Civil Lines and the Cantonment functioned strategic zones and "nodal points". A long-term impact of the railways was a steady increase in the population of Lahore.[5]

1.6. For almost a hundred years since the annexation of Punjab in 1849, the Walled City continued to exist alongside colonial Lahore as its "indigenous other".[6] A dynamic social body comprising predominantly Muslims, Hindus and Sikhs matched the historic core's complex built form. In 1947, the Walled City suffered widespread

2. Stamp 2007
3. The demolition of the walls was part of the larger [illegible] of Lahore's fortifications, particularly after 1857. The remainder of these walls was either destroyed in 1864.
4. Other gates which were rebuilt [illegible] the last having been demolished in recent memory.
5. Kennedy
6. Dalrymple 2004



Mughal-period monuments:

1 Baradari of Kamran
2 Lahore Fort
3 Badshahi Mosque
4 Maryam Zamani Mosque
5 Wazir Khan Mosque
6 Wazir Khan Hammam
7 Mausoleum of Jahangir, and Bagh-e-Dilkusha
8 Mausoleum of Asif Khan, and garden
9 Mausoleum of Noor Jahan, and garden
10 Masjid Mohammad Saleh Kamboh
11 Masjid Kharasian
12 Unchi Masjid
13 Sonehri Masjid
14 Mausoleum of Sheikh Musa Ahangar
15 Mausoleum of Sheikh Abdur Razaeq Maki (Neela Gumbad)
16 Masjid Dai Angah
17 Mausoleum of Mohammad Saleh Kamboh
18 Buddhu ka Awa
19 Mausoleum of Hazrat Khwaja Mahmud
20 Mausoleum of Sharf-un-nissa Begum
21 Gulabi Bagh Gateway and Dai Angah's Mausoleum
22 Mausoleum of Ali Mardan Khan
23 Mausoleum of Nusrat Khan
24 Mausoleum of Zafar Jan Kokaltash
25 Shrine-mausoleum of Mian Mir
26 Mausoleum of Nadir Begum
27 Tomb of Mohammad Qasim (now embedded within the Governor's House)
28 Baradari of the garden of Wazir Khan
29 "Anarkali" tomb
30 The Chauburji Gateway
31 The Nawankot monument

Known Mughal-period gardens which no longer exist:

a. Bagh-e-Mirza Kamran
b. Zain Khan's garden
c. Navlakha Bagh
d. Bagh-i-Faiz Bakhsh
e. Bagh-e-Pervez
f. Bagh Bilawal Shah
g. Bagh-Mian Khan
h. Bagh-e-Mahabat Khan
i. Angoori Bagh
j. Bagh-Rauza-e-Mohammad Khan
k. Bagh-Rauza-e-Shah Chiragh
l. Bagh-e-Wazir Khan
m. Bagh-e-Anarkali
n. Bagh-Jahan Ara (Chowburji Garden)
o. Nawakot Bagh

FIG. 1 MUGHAL PERIOD MONUMENTS AND GARDENS

destruction. In 1952, the enactment of the Punjab Development of Damaged Areas Act paved the way to clear up those destroyed areas of the city.

2. PHYSICAL FORM

2.1. The physical origins of Lahore have yet to be ascertained. The authors of the monograph The Walled City of Lahore,[7] first published in 1993, identify two sites, which could be the primordial sites of the city's origin. The first site is the Langa Mandi area, the highest in the Walled City, and its expansion to its west towards Tibbi Mohalla, while the second constitutes the roughly triangular area near the southern limits of present day Walled City, and which comprises Mohalla Maulian. This reasoning was based mainly on a reading of the terrain elevations of the old city, and of its physical form and topographical features, including the annular rings formed by the street network of the city. This theory is also supported by other attending factors and features in the Walled City such as the old course of the river, which had moved away westward around the time of Akbar's accession, and the eastward expansion of the city during his reign, but has not been borne out by any archaeological investigations. The growth rings of the city as represented by the pattern of the development of the main streets in the Walled City lend support to ideas that the 11th century Ghaznavid city might have grown rapidly. This notion is also supported by the location of the burial places of notaries (such as the grave of Malik Ayyaz, Mahmud's governor of Lahore) and Sufis (such as the grave-shrine of the 14th century Syed Muhammad Ishaq Gazruni that were traditionally always located outside the city walls). Akbar's brick fortifications resulted in an expanded city further eastward, beyond present day Shah Alami and Rang Mahal, and Lahore's historic core has stayed in this form since it was first attained in the mid 16th century. Lahore's growth thereafter was marked by gardens and garden suburbs that extended beyond the city walls into the surrounding areas.

2.2. Today the gazetted[8] area under WCLA's jurisdiction includes the built-up area of the Walled City, the Circular Garden, the area extended to the outer perimeter of the Circular Road, the Lahore Fort, Hazuri Bagh and Badshahi Mosque, and the area now called Greater Iqbal Park, resulting in a total expanse of approximately 3.4 square kilometres. Within the perimeter of the Walled City's built-up area are tightly packed a total of 130 odd kilometres of circulation corridors - *bazaars*, *galis* (passageways) and *koochas* (cul-de-sac). In these winding and often narrow streets, the juxtaposition of older buildings (built prior to 1947 and going back to the late Mughal era) with modern and other present day material culture, as well as with modern life itself

7. [illegible] Environmental Planning and Architectural Consultants. *The Walled City of Lahore*. Lahore: [illegible] Limited Publishers, 1993.
8. Walled City of Lahore Act, 2012.

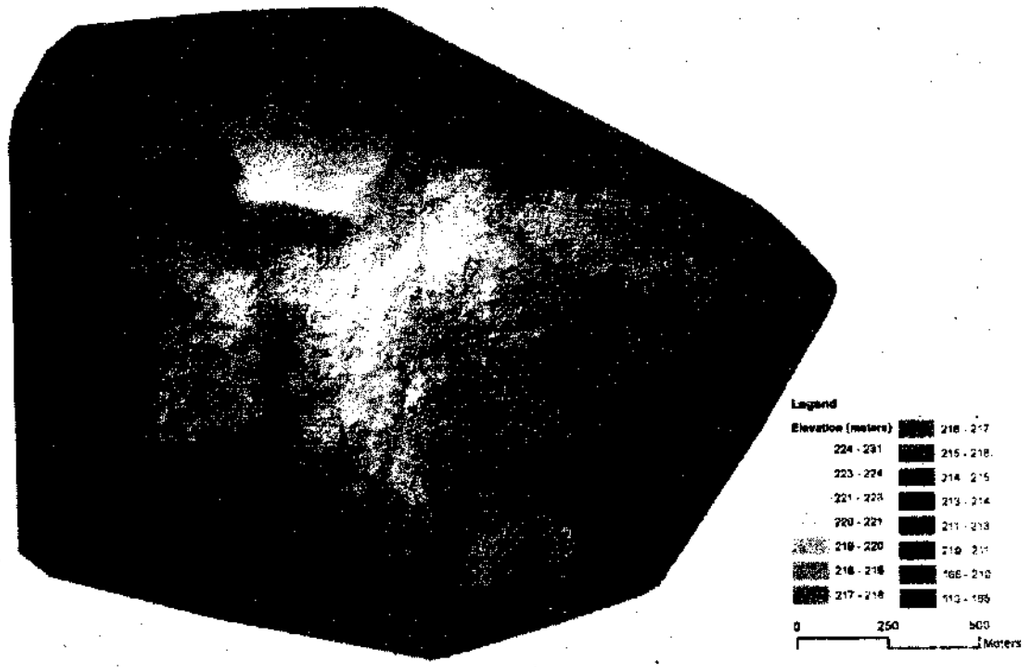


FIG. 2 ELEVATION PROFILE OF THE WALLED CITY OF LAHORE BASED ON TOPOGRAPHIC SURVEY

creates a surprisingly over-powering and rich sensory ambience, making for powerful townscape effects with a considerable potential for cleaning up and rehabilitating to an orderly appearance.

2.3. There are close to 22,000 individual parcels of land packed within the Walled City, with some two-thirds of the building stock constituting residential buildings. Most buildings in the residential areas subscribe generally to traditional heights and densities although some changes appear to have taken place in their typological characteristics over time. Broadly speaking, residential land use in the Walled City has encouraged the continuity of traditional building and urban form, even if sophisticated traditional lifestyles have tended to disappear.

2.4. Large residential buildings that have not been turned into smaller tenements for the very poor are very few. Where owners themselves reside in these buildings, the tenants are a source of additional income. The very large *havelis* lent themselves to being re-used for educational purposes early on in the British era. The haveli of Naunihal Singh, built in the middle of the 19th century was converted into a girls' high school and continues to function as such to this day. The Government College University was started (1863) in the haveli of Raja Dhyan Singh within the Walled City. The Chuna Mandi Haveli[9] complex of Jamadar Khushal Singh, another courtier of Ranjit Singh, lent itself to use as a girls' college much later.

3. POPULATION

3.1. Prior to the arrival of the British, a century of strife and political turbulence had shrunk back a Mughal city of about 500,000 people to less than 100,000 behind the crumbling city walls of the old city. In the 1850s, the Walled City accommodated almost all of Lahore's population. During British rule, a new colonial Lahore flourished in the ruined areas which were once garden suburbs outside the Walled City where many of the nobility lived; the city within continued its existence parallel with the colonial other under a semblance of modern municipal government with a relatively higher population. Thereafter, the Walled City has been steadily losing population. The 1993 "Walled City of Lahore" report demonstrated that certain parts of the old city "already showed accelerated decline", and that "population emigration is related to a shift in non-residential activities."[10] The present estimates of residential population are therefore also a measure of how non-residential land use has expanded in the Walled City.

9 Government Chuna Mandi College [illegible]

10 Pakistan Environmental Planning [illegible] *The Walled City of Lahore* Lahore Lahore Development Authority 1993

3.2. So rapid have the demographic changes been in the Walled City that it is perhaps arguable that any but a small fraction of its inhabitants are long-term residents. Of the approximately 150,000 inhabitants, this minority resides primarily in the extant residential enclaves unaffected by commercial development. Substantial numbers of new arrivals to the Walled City following the events of 1947 began a pattern that appears to have increased. The rate of the overall population decline referred to earlier could also mean that these new arrivals have been displacing the older longer-term residents. Areas that were predominantly populated by Hindus and Sikhs before 1947, in particular in the central and west-central part of the historic core, have seen substantial influxes of new arrivals. Most of these are likely to have come from elsewhere in the Punjab, but there have also been inflows of people from other parts of the country in recent times.

3.3. Census enumerations for 1972, 1981, 1998 and 2017 substantiate an overall downward trend in the resident population. As of 1972 the Walled City's population was 244,000, which had declined by 29 per cent to 189,760 persons in 1981. By 1998 the population declined by a further 15.4 percent to 160, 734, and this trend has continued with the 2017 census reflecting another decline to 156, 044 persons, and the Walled City's population in 2017 is significantly less than two thirds that of the 1972 figures. In other words, while greater Lahore has experienced population growth over the same 45 year period, population decline has been characteristic of the Walled City even though it remains a densely populated area.

3.4. The exodus of residents over the passage of time from the Walled City might be accounted for by a number of factors:

3.4.1. Social and economic mobility: from 1947 onwards, the Walled City accommodated refugee population, followed by wave upon wave of migrant labour that has flocked to Lahore in search of jobs. Each layer of immigrants has found succour in the Walled City, has risen up the income ladder, and has then moved out, as the Walled City itself went into a seemingly inexorable deterioration of living conditions and prestige.

3.4.2. The rapidly growing commercialization and the concomitant change of land use from residential to non-residential use and the consequent loss of living accommodation.

3.4.3. Rising property values related to commercialization and aggressive purchases by businesses of residential properties to make room for non-residential uses such as retail and warehousing space.

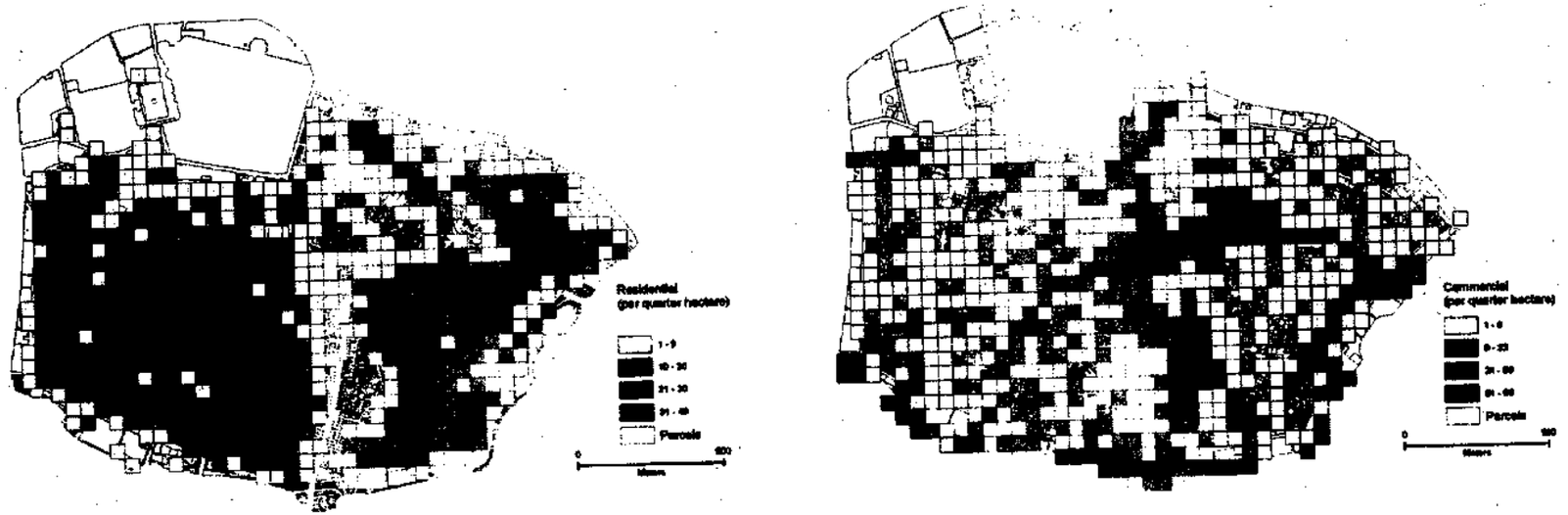


FIG. 3 LAND PARCELS DEDICATED TO (LEFT) RESIDENTIAL AND (RIGHT) COMMERCIAL LAND USES PER QUARTER HECTARE

3.4.4. A lack of civic amenities in the Walled City making it a progressively less desirable place to live. This has happened despite successive attempts at improving infrastructure through the period 1978 to 1992 under a number of World Bank funded urban development projects. (It is useful to mention here that in these projects infrastructure standards had been tied to affordability rates of the beneficiaries, and were therefore unable to meet performance criteria).

3.4.5. The pull factor of the larger city, as more and more tracts of land are developed to accommodate low-density housing. Associated with this are trends in social mobility with a colonial period history that value homes derivative of the colonial bungalow residential model.

3.4.6. Owing to difficult access conditions, most people who would have been part of of the resident population of the Walled City now live in lower middle class adjunct settlements in newer developments of Lahore.

3.5. The Walled City attracts a daytime population of approximately 100,000 persons owing to the concentration of businesses within it. While increasing the demand for infrastructure services on a diurnal basis, this influx of population creates difficulty in access to the Walled City and movement within it.

3.6. Findings from a baseline socio-economic household survey conducted in 2009-10 in the Walled City indicate that the average family size in the Walled City was about six persons, and the median age was 22 years. This is more or less congruent with the national statistic on household size and age. Prevailing occupations among the residents of the Walled City were found generally restricted to the informal sector where sources of income entailed private, self and / or daily wage employment. Roughly a third of the population was enrolled in some form of educational institution. Of these, children enrolled in primary education constituted the greatest proportion (approximately a third). The overall average monthly household income in the Walled City was approximately PKR 19,500; and household income varied from as little as PKR 6,500 to PKR 41,000. Low-income households faced considerable difficulty in accumulating savings over time and a far greater proportion incurred debts. These conditions are likely to still prevail.

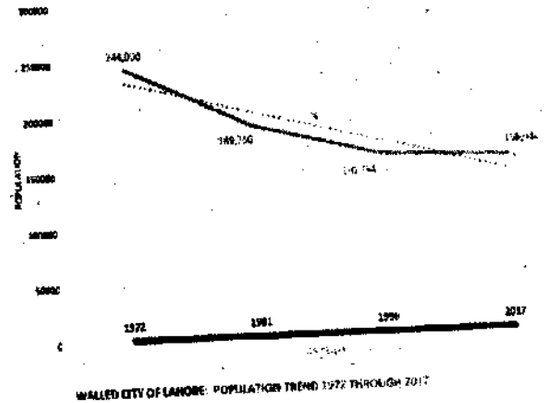
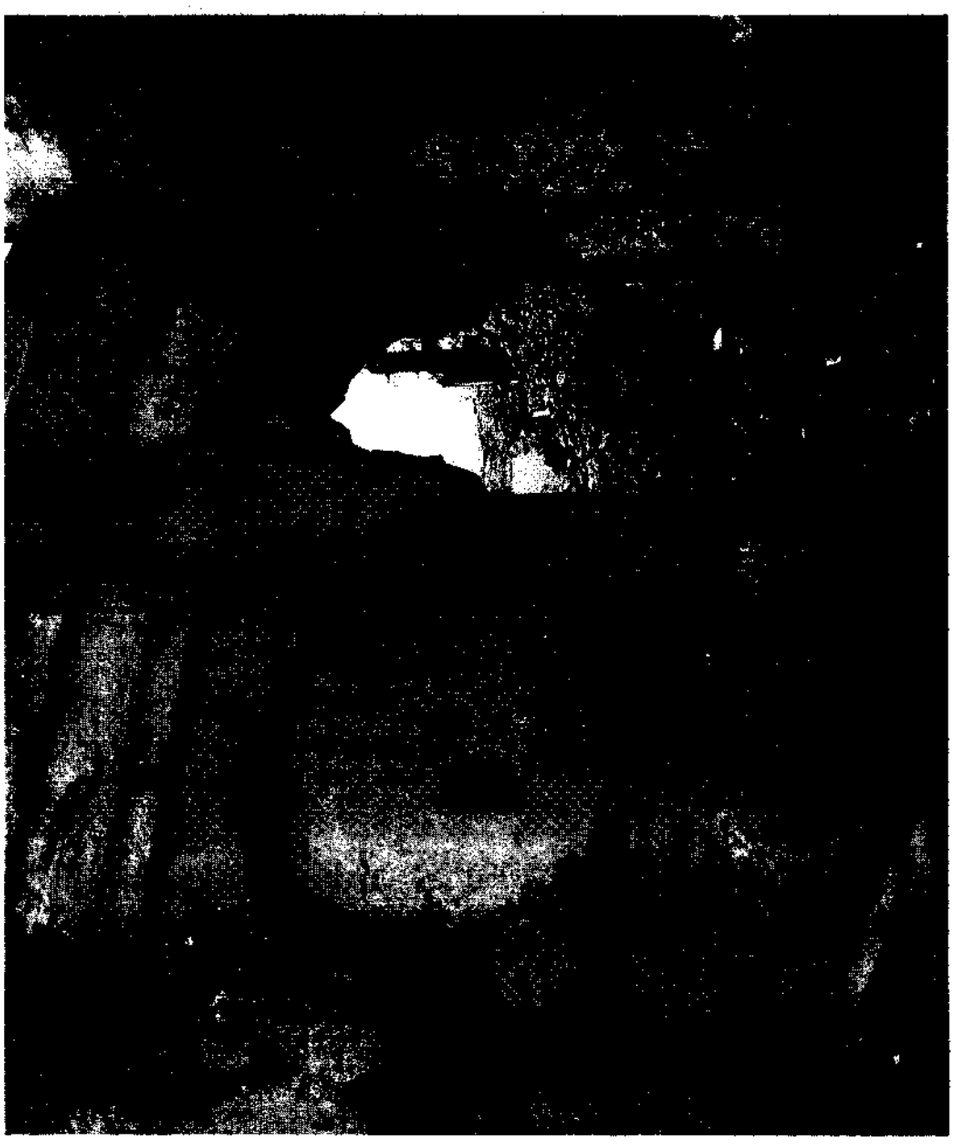


FIG. 4 POPULATION TREND 1972 THROUGH 2017

HISTORIC BUILDING STOCK OF ARCHITECTURAL VALUE IN THE WALLED CITY

HISTORIC BUILDING STOCK OF ARCHITECTURAL VALUE IN THE WALLED CITY

STREETSCAPE OR BUILDINGS IN ADVANCED STATE OF STRESS OR RUIN



HAVELI OF RAJA DHYAN SINGH, OFF SYED MITHHA BAZAAR, CONDITION OF RUINS

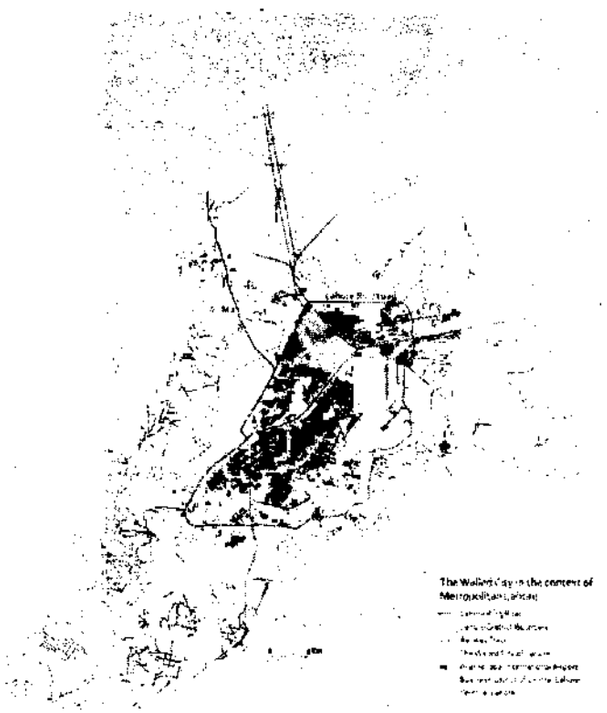


FIG. 5 WALLED CITY IN THE CONTEXT OF METROPOLITAN LAHORE

4. THE PRESENT URBAN CONTEXT

4.1. Regional dynamics & economic activities

4.1.1. Greater Lahore measures close to 1,700 square kilometres. A considerable part of its aerial spread is occupied by middle, upper middle, and upper-income households that comprise a small fraction of the total urban population. On the other hand, a majority of the city's population consists of lower income residents who occupy a significantly smaller portion of Lahore's total area, and who occupy concentrated masses of poorly serviced built fabric. In this Lahore would be an archetypal city of the developing world, with a continuing tendency to attract migrants who supply cheap labour to the city's industrial, commercial and service needs. While Lahore's suburban development continues to take shape southwards and increasingly caters to low-density gated residential communities, the Walled City is now a part of the business hub of central Lahore, and has a quasi-regional, national and in some respects even international reach. Transportation enterprises on the perimeter of the Walled City comprise goods forwarding agencies and related storage, together with a medley of transportation modes—trucks, busses, lorries, pick-up vans, rickshaws, animal driven vehicles, human-driven push carts and porters etc. These are found in mutual dependence with the densely packed commercial enterprises within the Walled City—dependence which enables a diverse range of complementary small-scale industries, workshops, and related services that provide daily wage or short-term employment to a substantial number of people living in the Walled City or in the nearby localities.

4.1.2. The growth of key transport related activities surrounding the Walled City and the commercial enterprises that are located within have to a great extent blurred the boundaries between the historic core (otherwise determined by the outer perimeter of the Circular Garden) and its surrounding areas. In the late 1980s, the area west of Brandreth Road and south of Delhi Gate served as a freight terminus, having started off as the Crown Bus Adda nearby in the 1920s. In recent years, however, the trucking terminus has expanded to include all of the northern, eastern and southern perimeters of the Walled City where trucks are parked to facilitate the unloading / loading of goods throughout the night. The goods forwarding businesses are generally concentrated along the city's eastern periphery on either sides of the Circular Road stretching clockwise from Masti Gate in the north to Shah Alami Gate in the south. Between Shah Alami and Akbari, they are to be found in close proximity to and within the Circular Garden.[1] The close nexus between the

[1] Of late more concentrations of goods [illegible] at the junction of the Circular Road. This could have a positive contribution

various transport agencies and the new, predominantly wholesale, markets within the Walled City appear to correlate with the growth of storage / warehouse facilities, which the freight agencies as well as the traders maintain. This correlation is associated with considerable and tragic loss of the historic urban fabric in the Walled City.

4.1.3. In 1988, warehousing was identified as the "most intrusive" commercial feature This observation is just as relevant today. Warehouses, varying in size from single-room storage (usually the ground floors in residential buildings or the basement and top floors in commercial buildings) to multi-storied buildings are to be found along the Circular Garden, the Circular Road and along the main thoroughfares in the Walled City as well as deep within its residential areas. Manufacturing too dominates parts of the Walled City and generally tends to occupy basements and ground floors within older buildings. Various types of goods are produced - the most prevalent being leather and synthetic shoes, although certain locations also produce leather and synthetic luggage.[12] The term "shoe market" in effect refers collectively to the wholesale market for raw material, the manufacturing outlets that are dispersed across the commercial and residential localities in the Walled City, and warehouses and retail outlets in Moti Bazaar as well as the wholesale market for finished goods in Masti Gate area nearby Shoe manufacturing activities are concentrated as far north as Masti Gate and as far south as Mohalla Maulian near Lohari Gate. Markets specializing in ancillary items are to be found in Gumti Bazaar, Gujjar Gali as well as the bazaar near Lohari Gate. A significant and extremely intrusive, polluting and damaging result of the various types of commercial activities is the vastly increased amount of effluent generated in comparison with that produced by ordinary domestic activities, as well as the all-pervading odour of synthetic glues in certain residential areas. Other manufacturing activities occur to a limited extent, and generally involve the assembly or finishing of products.

4.1.4. Retail bazaars line nearly all the major thoroughfares on both sides. As in many other historic cities, the names used for some of these bazaars and certain neighbourhoods and lanes often refer to merchandise, occupations or professional services. Some of the latter might have once dominated the area but that are no longer present. Retailing is not only the most visible aspect of the economy of the Walled City, but it is also the sector on which most people depend for their livelihoods either directly or indirectly. Services come in second place.

the development of new access roads [illegible]

12 This activity was also taken note of [illegible]

4.1.5. In the west of the Walled City, the indigenous clinicians and their medical outlets were located in Bazaar Hakeeman, where they were dominant in the 19th and early 20th century but they appear to have branched out to other parts of Lahore during the colonial period, before being replaced by modern allopathic medicine. In the 19th century this part of old Lahore was where homes of the nobles belonging to Ranjit Singh's court were preponderant, and it seems to have continued to appeal to writers, intellectuals and other famous personalities into the 20th century. Allama Muhammad Iqbal's student lodgings are located further down the main street towards Bhatti Gate. In economic terms, this part of the city does not appear to have a clear dominant sector, but there are already instrusive signs of the expansion of shoe manufacturing in this locality as well.

4.1.6 In contrast, the south-central part of the Walled City offers, in addition to the retail sector, an abundance of services. Food and beverages are particularly present. Close to Lohari is also a market (a large encroachment in the Circular Gardens) for opticians and lens makers. The area just outside Lohari Gate has also been the traditional venue of shops making and selling fresh flower garlands. Shah Alami itself, further east, has over the years become a hub for wholesale trading. This bazaar is the result of government rebuilding in the area of, and surrounding, the old Machhi Hatta Bazaar that burnt down in 1947. With its now heavily congested double carriageway, Shah Alami serves as the central vehicular access street into the heart of the Walled City. Outlets for electrical appliances, marble shops and shoe markets, other large objects of domestic use such as steel trunks, stainless steel utensils, crockery, appliances etc., dominate the shops fronting onto the main bazaar road.

4.1.7. The establishment of wholesale outlets in this part of the Walled City has over the years continued at a constant pace and the commercial sector has encroached into the adjacent areas – stretching as far as Mochi Gate in the east, at the expense of the local residents. The northern part of Shah Alami provides services and retail stores, including medical services in Wachowali (or Doctors') Bazaar and retail of jewellery and bangles. Where Shah Alami changes into Dabbi Bazaar, a range of crockery, kitchenware, threads and needle shops and beauty salons are concentrated. From here the jewellery street of Soha Bazaar (covered by an elaborate shelter built by the local businesses) strikes out south-westwards, while on the east are streets occupied by Kasehra Bazaar (market for metalwork) and the Baan Bazaar, which specializes in cots, *charpoys* and the material (*ban* or *van*, and more recently synthetic strings and ropes) to create the woven net that covers this traditional furniture.

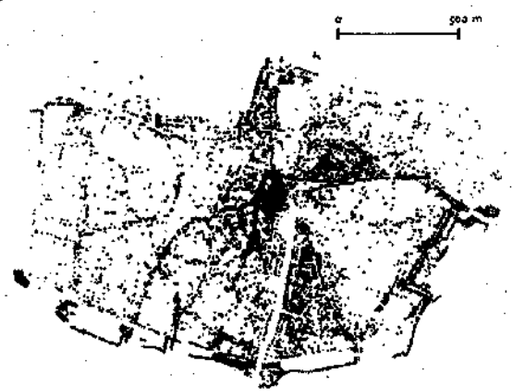


FIG. 6 RETAIL/WHOLESALE COMMERCE

4.1.8. The southeastern localities of the Walled City have a relatively more residential character. Its main bazaar (between Mochi Gate and Akbari Gate) sells traditional items for celebrations. Commerce is still relatively small scale, and the demolition of older buildings and their conversion into large plazas is less intense. The bazaar to be found in Mochi Gate was also the centre of the making and selling of paper kites before the ban on kite-flying imposed in 2007. In the eastern quarters of the Walled City, in the areas north and south of the Delhi Gate thoroughfare is a mix of residential mohallas with retail outlets on the main streets. Located close to the Wazir Khan Mosque are two market complexes that were established in the 1950s and 1960s in those residential areas and bazaars that prior to 1947 were occupied by Hindus and Sikhs, and which were attacked and put to flame during the Partition riots. The first of these market complexes, Azam Cloth Market, comprises numerous cloth shops, and is a growing, cancerous agglomeration of shops and newer building typologies - "plazas" involving underground storage and small retail shops on floors above. The second is the Pakistan Cloth Market, which also consists of relatively small shops but is a singular and massive architectural statement of curvilinear form, covered with a shabby grey plaster render, and a major aberration of the urban form of the Walled City. Both these markets exemplify the piecemeal replacement of older building stock that has been going on for at least three decades with single use building forms. The result in both cases has been a complete erasure of the historic urban footprint in certain areas.

4.1.9. There are other locations of commerce in the Walled City that are historically significant and culturally important in character. These are Akbari Mandi located close to Delhi Gate, and Chowk Jhanda in the southwest of the Walled City. Both of these locations were traditional grain markets and are characterized by extremely busy, yet culturally interesting business activities of a traditional nature, which stock and retail grain, spices, dry fruit, in all forms. These locations are historically continuous and are therefore important cultural assets of the Walled City. This scenario of business activities is interspersed everywhere by food outlets, grocers, shops for tools and hardware, as well as kitchen and household items.

4.2. Access to the Walled City & its visibility - Two entirely different aspects of the problem of access to, and arrival at, the Walled City:

4.2.1. The first is the practical difficulty of the chaotic and heavy traffic, the time it takes to reach the Walled City, and the difficulty of finding adequate parking space. Public transport has also been an issue by its absence, except for rickshaws and the highly dangerous and polluting *qingis*

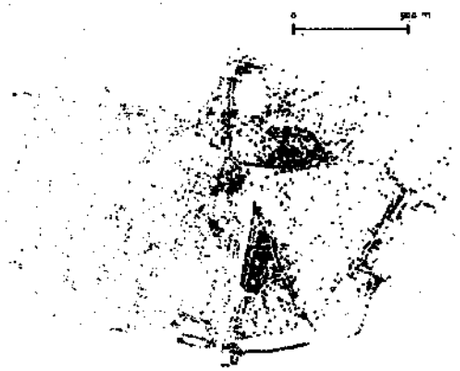


FIG. 7 WAREHOUSING MANUFACTURING AS LAND USE

FIG. 8 TRAFFIC STRESS ON THE STREET NETWORK IN THE WALLED CITY

TRAFFIC CONDITIONS AROUND THE WALLED CITY

PART I | THE CONTEXT | 55

Although road widths on the Circular Road are in general adequate, their capacity is severely curtailed by unlawful occupation of the road width by shopkeepers and merchandise using road space, haphazard and irrational parking, the mix of all kinds of motorized and non motorized modes of transportation, and inadequate regulation of and discipline in traffic behaviour. The only exception to the adequate road widths is the narrow road segment between the Lahore Railway Station area and the Ek Moria Bridge. This road has a severe constriction and as a result traffic is snarled all hours of the day and the evening. In addition, traffic chaos is generally caused by:

- The mix of heavy and light, motorized and non-motorized traffic (the latter including hand cart and pedestrian traffic);
- The motor cycle as a traffic element unprecedented in its mobility and maneuverability, and in sheer numbers over the last decade;
- The above made worse by poor traffic sense, no lane discipline or turn signaling and a paucity of traffic education and manners.

4.2.2. The second aspect is one of visual clutter and disorder one finds circumferentially around the Walled City—the result of accumulations of municipal neglect, inadequate engineering practices, and a general lack of visual literacy and good design. Although the perimeter of the Walled City is not in itself particularly orderly, the urban density of the Walled City presents itself as a distinct compact mass visible particularly on its western and northern sides. Except for this relatively uncluttered exposure, the Walled City and its surrounding Circular Garden is completely obscured by structures of all types of mass and shape.

4.3. Utility services

4.3.1. Until 2006, the overriding principle for undertaking infrastructure projects in the Walled City has generally been characterized by the absence of the recognition of the historic urban fabric as a collectivity of land parcels, properties and open spaces of "heritage value"; and engineering standards were lowered to the level of a slum upgrading operation. The accompanying lack of adequate planning for how this heritage could be impacted has manifested itself in an over extended and decrepit service distribution network, with the exception of those areas where the Pilot Urban Rehabilitation and Infrastructure Improvement Project (the Shahi Guzargah project) has been implemented.

4.3.2. In the late 1970s, the Walled City was included in the planning and urban upgrading project titled "Lahore Urban Development and Traffic Study" (Phase-1: 1977-1980). In the mid 1980s, Phase 2, known as the Punjab Urban Development Program, (PUDP, 1986-1990) was initiated. As a result of both these interventions, the Walled City underwent a major shift from previous standards of service provision. On the whole, it comprised raising the street levels, the covering of open drains, the provision of gas supply and laying water supply pipes above ground etc. The introduction of certain services for the first time, such as gas supply, induced the demand for specific alterations to dwellings. The addition of flush toilets, extra washing / cooking facilities and so on also resulted in the conversion of buildings to facilitate independent tenements. Standards of infrastructure services were delivered under these projects to what people could afford to pay for, and at the macro level the quality of sub-standard services significantly compromised the wellbeing of the residents. Streets and alleyways across the Walled City could not escape the stench, dampness and rodent infestation that resulted ultimately. Simultaneously, ongoing substandard alterations to the building structures at the micro level also caused long-term damage.

4.3.3. In 2009, a situation analysis was conducted in the Walled City as part of an infrastructure planning exercise appropriate for the historic core. The main observations for utilities were:

a. Water supply: Water and Sanitation Agency (WASA) is responsible for the provision of drinking water in Lahore. Groundwater is the only source of water supply, which is depleting faster than the rate of replenishment. The distribution network in the Walled City comprises tube wells located in various parts of the Circular Garden and the only overhead reservoir - the Pani Wala Talaab, which was constructed in the 1880s is still functional. Key problems associated with water supply are a lack of maintenance of the distribution channels and storage, no treatment of water at source, motor pumps that are illegally installed on the public mains and significant sewage effluent penetration.

b. Waste water: WASA is also responsible for wastewater drainage in the city. The system consists of masonry/ pre-cast concrete channels (both closed and open) and concrete pipes that are recipients of all types of effluent in addition to storm water, sewage, industrial waste and solid waste.

c. Storm water: As such there are no provisions for storm water management. On the other hand, a well-designed storm water system could help replenish the groundwater aquifer. Risks associated with storm water entail flooding during excessive rains and water contamination.

d. Electricity power supply: Lahore Electric Supply Company Limited (LESCO) provides power supply to the Walled City from three grid stations. These stations are running at full capacity and are overloaded. The transformers pose numerous risks due to their lack of maintenance in addition to them being located in densely populated areas within the Walled City. Exposed cables are further mounted on poles and buildings in an ad hoc manner. At night, insufficient street lighting impedes safety for residents.

e. Gas supply: The gas supply network in the Walled City is relatively new. It was introduced in the early 1990s and Sui Northern Gas Pipeline Limited (SNGPL) is the service provider. The network comprises high density polyethylene (HDPE) pipes laid underground with consumer connections made through rising mains in galvanized iron (G.I.) pipes. The G.I. mains are provided with regulators and consumer meters. Beyond the consumer meters, the supply lines to buildings (or house lines) are laid overhead on building façades or on ground surfaces. Until fairly recently, regulations did not allow for the laying of gas mains in streets which were less than five feet wide. Consequently, in those areas where WCLA has not yet undertaken infrastructure upgrading, gas supply reaches houses through private house lines with the connections and meters installed at the mouth of the street. This management lends itself to the installation of a group of consumer meters in a haphazard manner and the exposed house lines running along the street surface.

f. Fire hazards: Provisions for addressing fire hazards are inadequate. The very narrow street widths in most parts of the Walled City further make it difficult for fire trucks to reach within a reasonable distance of a fire event.

5. CHANGE, DEVELOPMENT & LAND USE

5.1. The land use situation in the Walled City has traditionally been dictated to a considerable degree by a laissez-faire mentality and historical precedence. Add to this the persistence of traditional building type and form, and the urbanscape they gave rise to. This "glue" held the city together under the municipal management of the colonial government before Independence. Evidence points to a Victorian focus on hygiene, "conservancy" and the removal of night soil, the supply of piped water to the Walled City, and ultimately the introduction of electricity by the 1930s. While these interventions caused at least one calamitous disaster,[13] the Walled City retained its essential historical structure until the summer of 1947.

13 In 1881, the newly built water reservoir on the highest point in the Walled City collapsed, inundating the entire city with a massive flood and innumerable buildings were destroyed. The reservoir was quickly rebuilt, and functions to this day.

5.2. The Walled City was a large very dense residential neighbourhood until 1947, in which the commerce took place at street level in the principal bazaars. The trauma of the Partition Riots that befell the Walled City in 1947 brought about the destruction of some 12% of the Walled City's built fabric and resulted in the first important changes in land use. These came about with the Shah Alam Market scheme prepared by the Lahore Improvement Trust under the provisions of the Punjab Development of Damaged Areas Act (1952). The creation of the Shah Alami Bazaar as a replacement for the Machhi Hatta Bazaar would have necessitated the acquisition of a considerable amount of the damaged areas cleared on both sides—land upon which would have existed thousands of historic homes and numerous traditional *mohallas*.

5.3. In 1953, a new cloth market was created in the damaged areas south of the Rarra Telian area, and north of the Kashmiri Bazaar. The year before, a grave inter-sectarian strife in the Punjab resulted in the declaration of martial law and curfew, and the removal of shops from the Chowk Wazir Khan to this damaged area. Named after General Azam Khan, the martial law administrator, the Azam Cloth Market was inaugurated by him in March 1953.[14] While the Shah Alam Bazaar was established with a definite mixed use urban form and building type in mind, the Azam Cloth Market, which began as a mere shed, began to give rise to a different urban form as it drew strength from the rising textile industry in nearby Faisalabad (then called Lyallpur). This new urban form resembled the traditional, tightly woven bazaars and seemed to fit in nicely with the traditional ambience of the city. In time, however, the spatial needs of the market changed as it transformed itself from essentially retail into a wholesale market, with the consequent necessity for large amounts of warehousing space.

5.4. Azam Cloth Market today is a gated area locked up at night. Together with the Pakistan Cloth Market the gated area stretches over an area of four hectares where there is no residential land use, and which creates a huge dead space at night in the middle of the Walled City. The potential this has for night-time crime might be enormous and needs to be explored further.

5.5. The traders in these wholesale markets in the Walled City mainly belong to that large class of informal sector entrepreneurs who have traditionally been relatively untouched by the fiscal and revenue gathering function of the state. The tightly packed, difficult to access traditional environments, together with tacit or explicit arrangements with government functionaries and politicians appear to provide these businesses with relative protection from various forms of taxation and law enforcement, and promotes cohesion and collective power. These factors provide the incentive to conduct business in these specialized commercial zones within the

14 Charles Messenger. 2013. Reader's Guide to Military History, Routledge, New York & Oxford.

Walled City, even if the businessmen need to commute every day to and from their business in the Walled City as much as 25 to 30 kilometres from where many of them reside.

5.6. At a certain point in time the necessity of more secure space for warehousing for these businesses created the need for sub-ground basement and upper storeys. The consequent densification of the commercial land use has brought about building typologies into the Walled City that are alien to its historic urban form, and consequently have altered the latter in unacceptable ways. The new building typologies are commonly referred to as the "plaza" type. Typically, they necessitate the occupation of larger parcels of land, and where these are not easy to find, the amalgamation of several residential properties to form a new parcel for the plaza to be built upon. Thus in the manner in which the wholesale cloth markets entrench themselves and with the construction of "plazas", there is a force at play which is by its very nature responsible for ever larger pieces of the historical residential urban fabric of the Walled City to disappear. Currently even the Shah Alam Market and the areas around it have been transformed into single use warehousing and retail, with no residential land use left any longer.

5.7. The regional markets are associated with the daily influx of traders, vendors, hawkers, porters, temporary / migrant labour and shoppers. Although the markets provide a flexible source of employment for the largely under-privileged residential population in and around the Walled City, the rupturing of prevailing social networks makes it difficult for the residents to continue living in the Walled City. The possibility to relocate elsewhere in the lower-density suburbs of Lahore is all the more appealing.

5.8. Commercialization is characterized by the forced conversion of land use, and the absence of regulative regimes controlling building construction and land use; and by the fact that the forces to be regulated and governed have become too strong to be dealt with except with unprecedented political will and power, with the traders representing a dominant and well-organized interest group. Economic gains made in the Walled City are not necessarily re-invested in its betterment and upkeep; they are rather used for bringing even more land under occupation for commercial purposes. A great preponderance of the major market players does not even reside in the Walled City.

5.9. The commercial developments described above has gradually accompanied new ways of using urban public and private space, and the introduction of new types of buildings that have had no precedence in the Walled City. Beginning with the Shah Alami Bazaar large, ever-expanding tracts of the Walled City's central area have

been converted into purely commercial districts. As described above, in many cases, commercial buildings have storage space in basements. Built completely outside any regulative constraint, most of these basements tend to have multiple levels and some extend into the public right of way, at times making it difficult, if not impossible, to lay new infrastructure below the streets. New buildings have also been built that rise to twice or three times the average three or four storey height of traditional buildings. Such tall buildings have warehousing space built into their upper storeys.

5.10. Shah Alami along with Azam and Pakistan cloth markets are examples of how new building forms have re-shaped urban form in the Walled City. Changing street patterns are perhaps the most visible manifestations of the ways in which the morphology of the historic core is drastically altered to suit functional requirements motivated primarily by economic gains. Wholesale markets such as the Azam and Pakistan cloth markets and those located in the Shah Alami area constitute an urban form not only at odds with the historic urban architecture but which also dictate the use of public and private spaces in specific ways incompatible with the traditional urban fabric.

5.11. The acceleration of widespread demolition of the older building stock happens most in areas that lie closer to such markets. Owing to significant price differentials between the residential and commercial land parcels, the conversion of the former into higher-density commercial buildings is lucrative for both real estate agents and traders – the dominant economic force. The commercial plazas also tend to be of higher density of use, occupying more floor area for commerce, than the traditional building stock and cover larger parcels of land compared with the smaller footprint of older residential buildings, accounting in parts for the reduction of the residential capacity of the Walled City. The spatial expanse of the markets thus involves considerable intrusion into the residential localities and commercial outlets continue to be constructed at times occupying and blocking entire sections of public passageways.

5.12. The social ramifications of commercialization are multifarious. Within the Walled City, the most poignant and sad impact of these trends is the degradation and degeneration of robust residential communities. Degradation of residential quality of life is also caused by a lack of social and civic amenities; urban hazards compounded by certain economic activities, low levels of municipal services (except in areas recently upgraded), and unacceptable traffic and circulation conditions even for pedestrians. To this must be added the loss of the historic charm and evocative qualities of the historic environment with the decay of the historic building stock and the inadequate capacity of owners and occupants to maintain the same.

FIG. 9A HISTORIC NEIGHBOURHOODS DESTROYED IN 1947 (RECONSTRUCTED FROM SALVAGED 1907 CADASTRAL SURVEYS)

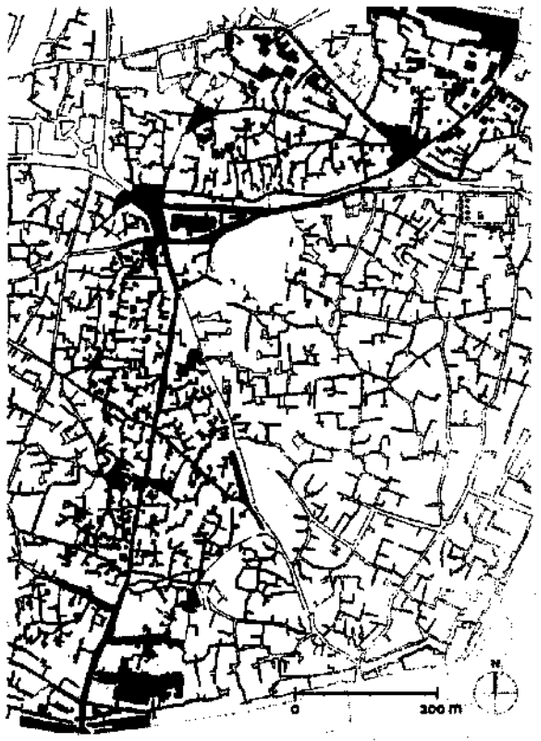
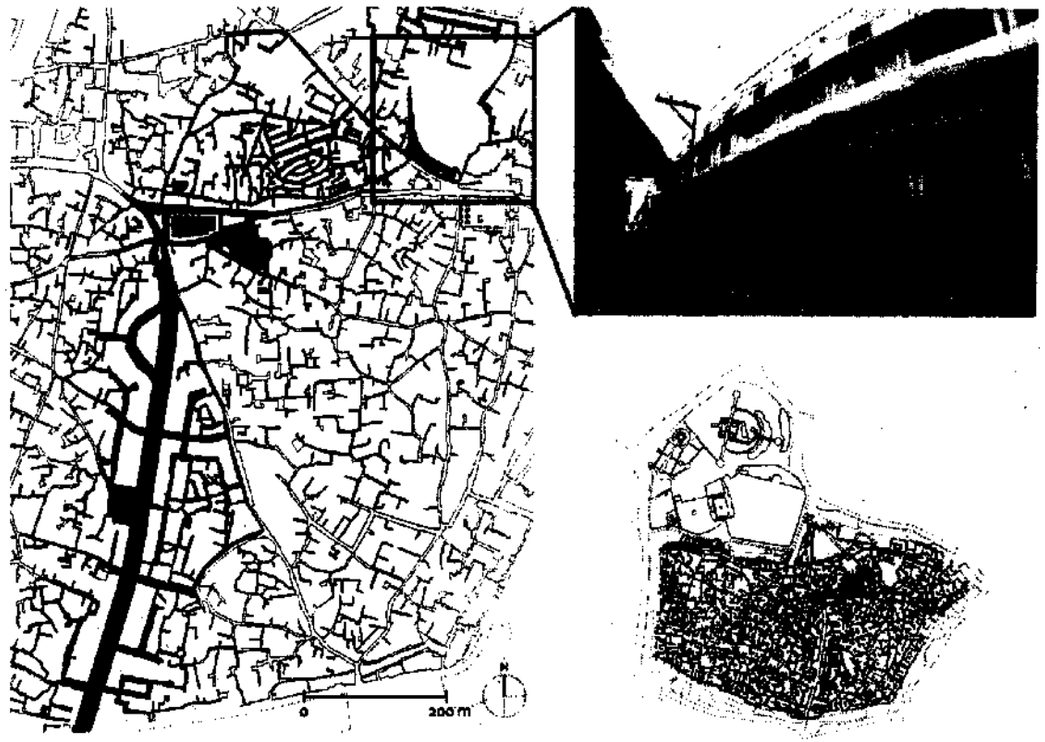


FIG. 9B REBUILT FORM OF NEIGHBOURHOODS DESTROYED IN 1947

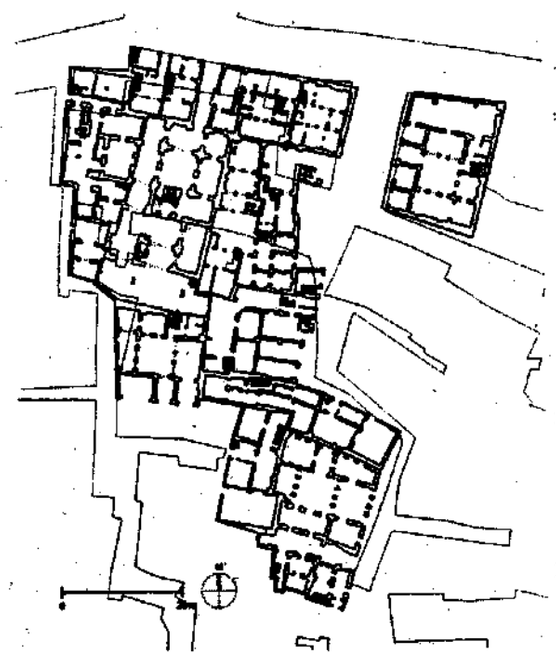


CHANGES IN THE HISTORIC URBAN FOOTPRINT

FIG. 10 AN EXAMPLE OF THE IMPACT OF LARGESCALE COMMERCIALIZATION ON THE HISTORIC FOOTPRINT

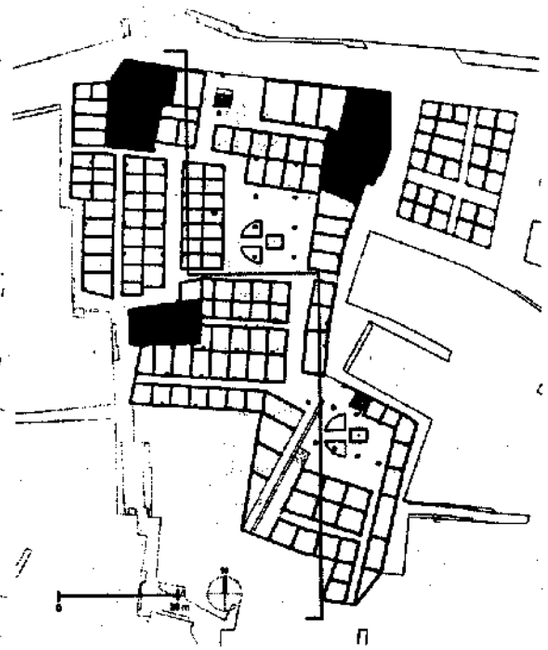
Reconstructed plan of historic residential neighborhood demolished in 2008-2009

FAR: 3.48
Residential population = 119

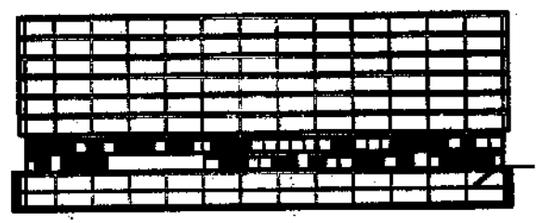


Approximation of plan of new multi-storey "plaza" built after 2009

FAR: 9.13
Residential population = 0



Section through demolished residential neighbourhood



Section through large "PLAZA" replacing the traditional residential neighbourhood

6. SWOT ANALYSIS

STRENGTHS	WEAKNESSES	OPPORTUNITIES	THREATS
A compact and clearly identifiable urbanism with world class heritage sites. Continued cultural role of the Walled City important for the citizens of Pakistan and south Asia. Considerable historic architecture still intact at the mohalla / neighbourhood level. Potential for rehabilitation of older urban fabric and open spaces such as the Circular Garden Greater Iqbal Park in close proximity to the north of the Walled City is also remarkably large in terms of open space per unit population.	No particular goals defined for the Walled City in the planning framework for Greater Lahore, exemplified by the Integrated Master Plan for Lahore—2021, resulting in the Walled City being delinked from strategic thinking at the metropolitan level. The continued presence of inter-regional transportation activity contiguous to the Walled City creates functional linkages which are dangerous for the Walled City's survival. Consequently posterity is unlikely to continue retaining the Walled City as a major heritage asset for the citizenry of Lahore.	The passing of the Walled City of Lahore Act, 2012 and the subsequent creation of the Walled City of Lahore Authority (WCLA) present a historic opportunity to safeguard, protect and improve the historic built environment. The establishment of a Heritage Conservation Board manned with technical professionals creates an enabling environment to discuss broader objectives, concepts and solutions pertaining to the Walled City as a living heritage.	Human resource, technical and financial resource gaps in WCLA can severely derail the advantages accruing from the WCL Act, 2012. Delay in enforcement of new Building Regulations and the enforcement of a land use regime has already unleashed a torrent of building demolition, particularly of the historic building stock in the Walled City. Lack of experience of major local engineering firms in heritage and its rejuvenation design requires time to establish benchmarks and standards.
Rich intangible heritage: living traditions of cuisine and roadside eating. A zestful citizenry with traditions of hospitality. Safe cohesive neighbourhoods still intact in places where residential landuse remains prominent. The resident population is dynamic and forthcoming with a strong sense of identity and belonging associated with the Walled City.	Rising poverty levels depress capacity for graciousness. Fragmented neighbourhood coherence in areas with advancing commercial presence, low incomes and health issues. Infrastructure and urban services in dilapidated condition in most areas. Piecemeal measures inadequate. Lack of regulation concerning open / public spaces resulting in encroachments. In areas under strong commercialization pressures residential neighbourhood cohesion is breaking down rapidly.	Punjab Government beginning to recognize the significance of conservation as a catalyst for urban regeneration in inner city areas. Greater interest in public sector inter-departmental collaboration and public-private partnership frameworks. Current interest of the government and development opportunities in urban Punjab, with help from international and bilateral sources available.	Opportunity might be bypassed if heritage issues are not built into future development programmes and projects. Lack of adherence to a broader policy framework based on a recognition of the role of cultural assets as catalysts for growth and development might hamper any initiatives in this regard. Political opportunism and mercantile greed might derail the entire conservation project for the Walled City in exchange for shortsighted gains for a few.
The Walled City and surrounding areas are major contributors to the city economy, through metropolitan scale commerce, as well as the regional economy. Recently upgraded spaces and conserved monuments in the Walled City present a potential to introduce new types of commerce more sensitive to the heritage of the Walled City.	Historic fabric is overwhelmed by ongoing commercialization; heritage sites continue to face pressure through a lack of appropriate maintenance and management plans. Remaining architectural assets prone to loss through commercial pressure. Traditional culture conflicts with contemporary life, posing strategic and design challenges. Environmentally unsafe and unhygienic conditions prevail within the Walled City. Cultural activities are inclined to move out of the Walled City. Profits generated in the Walled City are spent elsewhere, at the expense of cultural identity, national pride and cultural richness, leaving poor people to live in squalor.	Growing civil society consciousness of the Walled City's heritage values and how it could be safeguarded. Civil society actively participating as overseers of cultural heritage and drawing attention to the impact of development projects on historic sites.	With a few exceptions, civil society-government relations are weak. Failure to tap into the potential of the civil society to work as a partner might impede the successes already being obtained from the new legal framework. The failure to develop a vibrant, heritage sensitive civil society within the Walled City can also seriously affect the successful outcome of initiatives undertaken over the course of the past decade.
Improved institutional frameworks now in place to address Walled City specific concerns and how tourism can be facilitated as well as managed in a sustainable manner. Local authorities increasingly inclined to undertake integrated project development to improve tourist experience across the Walled City.	The role of domestic tourism not acknowledged as a long term and sustainable base. Adequate tourism related facilities does not yet exist, even for popular heritage sites such as the Lahore Fort.	Youth from the Walled City present opportunities to be incorporated into urban regeneration projects through specialised and on-the-job training programs in spatial documentation and community development expertise; a potential human resource base to be tapped into for sustaining ongoing development interventions.	Lack of a proactive policy to strengthen the capacity of local residents including the youth and women in the Walled city is likely to erode the effects of present regeneration efforts in the long run.

PART II | THE INSTITUTIONAL CONTEXT

1. BACKGROUND

1.1. In 2006 the World Bank assigned a sum of USD 5.00 million for urban heritage in the Punjab, in particular for infrastructure improvement, some monument conservation, and for improvement in the socio-economic environment of the Walled City. This assistance was included in a larger USD 50.00 million loan for the improvement of municipal infrastructure and governance in numerous smaller cities in the Punjab.

1.2. Initially, the interventions in the Walled City of Lahore was limited to a system of bazaars that connected Delhi Gate in the east of the Walled City to the Lahore Fort—a "royal" route putatively adopted by the Mughal emperors for entry into the Walled City, traversing its northern parts, and consequently into the palaces in the Lahore Fort. The project to be undertaken was conceived as a pilot project to act as a precedent for other interventions in the Walled City. A project management unit with the title, "Sustainable Development of the Walled City of Lahore Project" (SDWCLP) was established.

1.3. In June 2007, a Public-Private Partnership (PPP) Framework Agreement was executed between the Punjab Government and AKTC-AKCSP, who thereafter established an office in Lahore for the express purpose of providing self-funded technical assistance to the project.

1.4. At the commencement of the pilot project, SDWCLP overcame resistance on the part of some of the stakeholders, mainly the bazaar traders, by virtue of adroit social mobilization and social extension among the local communities in the Walled City of Lahore.

1.5. A Strategic Plan by AKTC and a series of planning activities that were conducted at the scale of the entire Walled City preceded actual project preparation. As a part of these planning activities, baseline data was gathered and included (i) a detailed topographic survey of the Walled City; (ii) a "plot and building" survey for some 22,000 land parcels; (iii) a quality of life survey of some 8% of the households resident in the Walled City; and (iv) a water quality survey. A comprehensive plan for infrastructure upgrading specific to the Walled City was prepared in 2009-2010 by a foreign consultancy group after consultation with various utility agencies.

1.6. The preparation of the Shahi Guzargah Pilot Project followed these activities. However, in view of the very special nature of the project and specific conditions in the Walled City progress remained and it was only after 2010 that it picked up pace. In 2011, the first stage of the pilot initiative was contracted out.

1.7. While the World Bank initially provided financial assistance for the pilot project, the Punjab Government provided the remaining funds towards project completion and continues to support interventions in the Walled City.

1.8. The Punjab Government has paid attention to stakeholder participation and acquiescence, social mobilization, compensation and resettlement for negatively affected parties where applicable.

2. LEGISLATION - 2011 and 2012

2.1. In 2011, the Punjab Government took a major step in preparing and moving the Walled City of Lahore Bill and the following year the Punjab Assembly enacted the Walled City of Lahore Act of 2012 (WCL Act, 2012).

2.2. The Walled City of Lahore Authority

The WCL Act (2012) is Pakistan's first heritage-specific municipal governance legislation. Chapter 2 of the Act mandated the creation of the Walled City of Lahore Authority (WCLA), headed by a Director General, to regulate and develop the Walled City while preserving and protecting its heritage. To this end, the Act has invested the Authority with sweeping planning and executive powers, while defining a broad planning framework to be prepared for the Walled City.

3. FUNCTIONS AND POWERS OF WCLA

3.1. The functions of the Authority are defined in Section 7 of the Act, as generally to implement and execute planning instruments, and prepare and execute schemes; identify, assess and authenticate heritage value; conserve the as defined heritage of the Walled City and conserve and upgrade its environment; establish, maintain and periodically revise planning controls and building regulations; regulate the transfer of property; preserve and promote culture; develop and maintain urban open space; regulate the use of public places, urban open spaces, public crossings or public passages for purposes of public communication, ceremonies, or ritual events; prepare, implement and enforce schemes for environmental improvements, urban renewal, solid waste disposal, transportation and traffic, health and education facilities; maintain the record of heritage properties; cause studies, surveys, technical researches to be made or contribute towards the cost of any such studies, surveys, technical researches; issue interim development order for proceeding with the conservation and structural con-

6.3. The first one is typified by the above example—the case of a single applicant for a single project involving (i) demolition, (ii) erection of a new building and/or (iii) conservation of a historic building. In this case, the review by a formally instituted DESIGN & HERITAGE COMMITTEE should be made a compulsory link in the approval process. In the case where a Heritage Property is involved or is affected, consultations should be made with the Heritage Conservation Board and the Board's approval should be solicited.

6.4. The second decision-making process is exemplified by larger projects involving groups of buildings, neighbourhood upgrading, urban infrastructure upgrading, conservation of entire mohallas, re-development of cleared areas from where existing occupants have been removed and resettled, and where new land use is being introduced. Such projects are exemplified by the Shahi Guzargah project. Similar projects now being planned, or the project that might arise were the Rim Market, with its high heritage value context, to be removed and relocated as planned would warrant the same intensive scrutiny. Such projects could also include improvement of traffic on the Circular Road, and the associated transport engineering, urban design and landscaping components of such projects, including those relating to the removal of encroachments and illegal constructions.

6.4.1. In the process of project conception and project preparation the expense of such a project would also necessitate discussions with and coordination with outside agencies, such as line agencies, consultants or technical partners.

6.4.2. It is recommended that all such projects should be reviewed, through all their stages from conception to implementation, by a high-powered technical committee to be named, "PLANNING & DESIGN COORDINATION COMMITTEE." Deliberations of this committee, should be overseen by the Heritage Conservation Board and all decisions should be approved by the Board.Each case before the Design and Heritage Committee or the Planning and Design Coordination Committee should also be subjected to the "field of vision test".

6.5. The advantage of such committees is that they would (i) formalize the workings of the departments, (ii) make them open to outside resources that may be co-opted as the situation demands, and (iii) create greater transparency.

6.6. The Authority may wish to examine other such situations in its operational spectrum and create similar committees for any Directorate which would be conceiving projects or scrutinizing proposals and applications

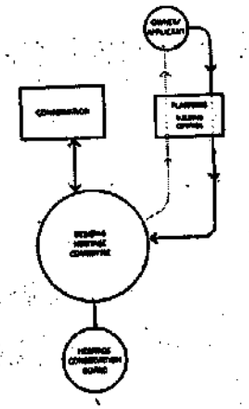


FIG. 11 APPLICATION FOR A SINGLE PROJECT

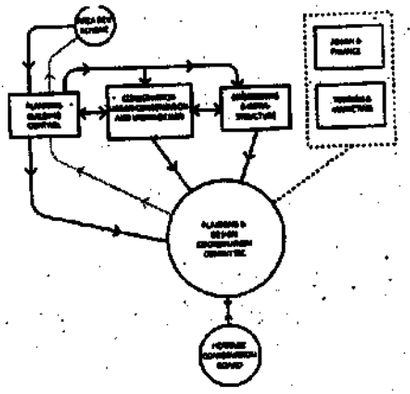


FIG. 12 APPLICATIONS FOR COMPLEX URBAN DESIGN, URBAN CONSERVATION AND REDEVELOPMENT PROJECTS

from outside or private parties.

7. RECOMMENDATIONS FOR IMMEDIATE ACTIONS TO BE CARRIED OUT BY WCLA AND TO BE SUPPORTED BY THE GOVERNMENT

Certain critical activities that need to be carried out have acquired urgency and must be implemented expeditiously. These activities are related to the proper administration of the Walled City, land and land use control, heritage listing, heritage protection and conservation, the monitoring and steering of change and transformation and the carrying out of development activity. They are listed in Table 3 with the appropriate priority indicated against them, and are briefly discussed in the following.

7.1. Land and Property Ownership Inventory

7.1.1. The first of these activities is the acquisition of land parcel, ownership and valuation data—land and property title, identity and address of the owner, and the relevant data from the agencies responsible for valuation and taxation. This data exists in disparate agencies such as the

- Registrar of Land and Properties;
- The Punjab Revenue Department;
- The record of the erstwhile Settlement Department;
- Lahore Development Authority (and the Lahore Improvement Trust);
- The Metropolitan Corporation of Lahore, etc.,
- The Evacuee Trust Properties Board
- The Punjab Department of Auqaf

It may be stated that owing to the multifarious agencies whose records as well as interests often intersect, the ownership record has been interfered with and it has been reported in the case of many properties in the Walled City, ownership documents are spurious and forged.

7.1.2. For WCLA to proceed with its legally mandated functions, the existing property ownership and land record must be assembled from all these agencies and integrated in WCLA, and be made a digitally accessed

database called the Land and Property Ownership Inventory.

WCLA has a Land Record and Property Transfer (LRPT) sub-directorate under the Deputy Directorate of Planning. Under this unit, efforts have been made to collect and collate the above referred data. The HR involved in this effort needs to be elevated both in numbers and capacity, so that this work can be brought to a speedy conclusion.

7.2. Land parcel verification and boundary updates

7.2.1. Except for cadastral maps prepared by the British colonial government in 1907 and updated thereafter, accurate property parcel information does not exist. An LDA topographical survey carried out in 1986 has approximate parcel information which is not in accordance with the actual situation wherever this has been subjected to a test. Moreover there have been numerous cases of property amalgamation.

7.2.2. The AKTC topographical survey carried out between 2007 and 2010 is an accurate land survey. But it too does not contain land parcel information.[1] For the purpose of using the Plot and Building data base (please see 6.3 below) for planning purposes, the (approximate) LDA land parcel information has been used in conjunction with the AKTC survey. However this is not a substitute for acquiring accurate land surveys of individual property parcels for purposes of regulating land ownership, land use and building control. It is therefore necessary that WCLA immediate launch a plot by plot survey for accurately recording the geometry and land area of each individual property parcel.

7.3. Updating the "plot and building information"

7.3.1. The Plot and Building survey carried out in the 2008 through 2010 collected attribute data on land use, building age, condition and height, architectural merit, occupational densities, etc. Linked on a GIS platform to the LDA parcel map referred above, the data collected yielded useful analyses which assisted in laying out a preliminary planning framework for the Walled City.

7.3.2. However, a considerable amount of changes—physical, cadastral, and land use related—have happened

[1] Property / bridges are marked out.

over the last decade. Property parcels have been amalgamated and in cases large sections of the Walled City have been demolished and rebuilt. The plot and building data is now nearly a decade old. In order to properly implement the planning and urban management prerogatives of WCLA, this data must be updated on an urgent basis.

7.3.3. The questionnaire used for the 2008-2010 survey should also be modified and the actual data collection methodology should be upgraded. In this respect it is necessary to train the survey team in the following very important aspects:

Architectural merit: The identification of buildings of architectural merit is an important aspect of the survey process, inasmuch as personnel trained in the technical and aesthetic aspects and further groomed to carry out the survey should be enrolled for this purpose. Many buildings in the Walled City of marked architectural qualities can be missed out of reckoning because of the fact that they may be old and dilapidated, or that their exterior may be covered with modern surface rendering such as plaster, paint or glazed tile. It is important to keep as an objective that the true essence of a historic building must be quickly arrived at. In many cases merely the presence of the old pre-British brick construction (given away by the size of the brick) is enough to warrant the building's inclusion in a list of protected buildings. In addition certain building types, such as tavelas, katras etc. are now rare in the Walled City and have enough uniqueness value to be listed as having architectural merit. The same is true for large havelis and mansions, many of which bear noticeable architectural qualities in addition to their uniqueness as a building type that is becoming extinct.

Structural conditions: The team of surveyors should contain a number of civil engineers dedicated to assessing the structural condition of buildings and listing them by the degree of structural risk they face. As in the previous case these engineers should be trained for the specific purpose of the surveys, should be well versed in traditional construction methods and materials, and in the special characteristics of the foundation soil in the Walled City.

7.4. Identification, listing and notification of Heritage Properties

Under Section 23 of the Act, buildings of heritage value must be identified and listed on a Register of Heritage Properties. In order to optimize and expedite this process, the act of identifying heritage properties should be made a sub-component of the Plot and Building Survey. It could be the part of the Plot and Build-

multi-storey motorcycle parking at strategic locations. Limit delivery vehicles and services to operate only at night. Limit all vehicles except emergency vehicles to the absolute minimum. Create parking areas outside and along the Walled City.

2. REDUCING EXTERNAL PRESSURES ON THE WALLED CITY

The strategy to reduce external pressures comprises two policy components. Firstly, a planning focus should be created for the Central Areas of Lahore of which the Walled City is a part, and secondly policies should be adopted at the scale of the Walled City and its immediate context to weaken the strong linkages that have developed between transportation and wholesale functions in the Walled City. This strategy can only be achieved by the full support of the Punjab Government and by bringing to bear the full regulatory and enforcement powers given to WCLA by the Act. The following paragraphs expand on these two sets of policies

2.1. Planning in the Central Areas

2.1.1. The Walled City's future is bound with that of Central Lahore and beyond that with Greater Lahore. It is therefore necessary to link policies at the scale of Greater Lahore, on one hand, with policies at the scale of the Central Areas and the Walled City on the other. In order to approach the problems of the immediate urban context of the Walled City effectively, it is therefore imperative to adopt a firm and proactive policy to prepare a comprehensive Central Areas Plan, duly integrated with policies for Greater Lahore. This measure requires urgent attention and related planning activity should be undertaken immediately.

2.1.2. Despite the stresses induced by high land values and low planning and development priorities significant amounts of land in the Central Area are underutilized, occupied by low productivity activities such as warehousing, car mechanics, defunct industrial units, and other non-descript uses, and point to the possibility of greater optimality of land utilization.

2.1.3. The Central Area Plan should be nested in planning for Metropolitan Lahore with Central Lahore as a specific zone where positive impacts are sought. It should aim to reduce the pressures on land, traffic congestion, the building stock, and improve infrastructure services. This can be done by adopting an integrated approach with the following objectives:

a) To define a new role for historical zones it contains (the Walled City, Mozang, Ichra, etc.);

b) To articulate a new urban future for Central Lahore integrating its historic and urban values;

c) To reinforce and strengthen the institutional architectural assets of the Central Areas, and to promote its potential to contain upper income, residential areas of medium to high density.

d) To improve access and traffic conditions in the Central Areas and around the Walled City, including major downtown road improvement / development.

e) To conserve and rehabilitate important monuments and streetscapes in the Central Areas.

f) To create a new land use framework that will aim at relocating certain city wide central functions at appropriate locations in Greater Lahore. (These central functions would include railway and rapid transit nodes, regional and national trucking termini, terminal nodes for regional and national bus transport etc.).

(Thus it is possible to think of developing a new railway station that is more central to the needs of the vast southerly expanse of Greater Lahore, rather than continue to depend on the Lahore Railway Station which was built a 150 years ago. Several transportation nodes can be thought of that exploit proximity to the Ring Road, and to other nodes of goods transportation such as the dry port and the airport.)

g) To create opportunities for upper income higher density residential development in Central Lahore

h) To cast the Central Area Plan within the framework of a revised Integrated Master Plan for Greater Lahore. This, while providing opportunities to relocate the above stated essential metropolitan functions away from the Central Area, should create new areas of opportunity for commerce, and related lower income support population, sited within emerging new centres of population within Greater Lahore.

i) To facilitate the decentralization of peripheral workplace locations for business, industry, and transport related activities and to create local satellite centres well accessed by the new inter-regional highways and other transport infrastructure.

(A key aspect that requires some consideration in developing the Central Areas Plan pertains to land occupation and densities. There is a disproportionate amount of land in Greater Lahore that contains low-density residential areas for upper middle and upper income households. On the other hand, the Central Areas of Lahore constitute a very small area of land (some 20.4 square kilometres) that, except for certain areas like the Mall Road and other colonial period legacies, is burdened with poorly serviced high population density residential areas. It also continues to fulfil the demands for space, infrastructure and buildings for economic activities (commerce and industry) as well as institutional / public sector departments for the entire metropolitan context (1,700 square kilometres) and beyond. The consequences of this anomaly are visible in dereliction and decay.)

2.2. Weakening linkages between external pressures and certain economic processes within the Walled City

2.2.1. The external factors and pressures outlined earlier result in making the Walled City attractive to economic activities which are of too large a scale for the well being of the Walled City, and are inappropriate from the points of view of human health and residence in the high density environment of the Walled City. The strategic response to address this will include the following moves:

a) Over the long term, remove the dependence of regional and national trucking on their current business location on Circular Road by enabling the establishment of alternate trucking termini at appropriate locations in metropolitan Lahore; in combination with the preceding, over the medium to long term, weaken the linkage between regional transportation and wholesale trade by rigorous application of the Land Use and Zoning Plan and the WCLA building regulations.

b) Devising traffic engineering / management plans that facilitate the movement of multi-modal traffic in the areas immediately surrounding the Walled City, and that create appropriate amounts of parking along the Circular Road.

c) Roads that require major re-design and widening immediately are the Ek Moria Bridge to the Lahore Railway Station road segment east of the Walled City, and the Data Darbar road segment southwest of the Walled City.

d) Relocating or removing all activities from around and within the Walled City that impinge negatively on the

historic core by the sheer scale at which these activities, such as regional wholesale and warehousing and goods forwarding and trucking operate.

e) Stopping forthwith the construction of commercial "plazas" and other single use buildings inside the Walled City, which have large numbers of business establishments under the same roof.

f) Imposing taxes and license fees etc., under a graded system on all economic enterprises in the Walled City in accordance with the type and scale of the economic activity.

3. A STRATEGIC WAY FORWARD FOR CONSERVATION IN THE WALLED CITY

3.1. The WCL Act recognizes all of the Walled City as heritage, hence its special status as a legislation created specifically for the conservation and protection of the Walled City. The Act defines "heritage" and "urban heritage" in terms widely accepted today.

3.2. The objectives of a strategy to fulfill the requirements of the Act for conservation, planning, development, management and regulation, of the heritage assets of the Walled City would be:

3.2.1. To reinstate the status of the Walled City as a cultural zone of high value in Lahore.

3.2.2. To conserve and rehabilitate the entire Walled City, not just individual buildings and monuments. This means that conservation should include the protection and enhancement of townscapes and the historic urban landscape. Even new buildings to be built in the Walled City should defer to its historic and cultural values and should add to and augment those values.

3.2.3. To conserve all buildings in the Walled City which are under the ownership or trusteeship of various government agencies.

3.2.4. To regulate the urban fabric of the Walled City across the board.

3.2.5. To implement programmes of infrastructure improvement together with the conservation and rehabilitation of the physical form of the City

multi-storey motorcycle parking at strategic locations. Limit delivery vehicles and services to operate only at night. Limit all vehicles except emergency vehicles to the absolute minimum. Create parking areas outside and along the Walled City.

2. REDUCING EXTERNAL PRESSURES ON THE WALLED CITY

The strategy to reduce external pressures comprises two policy components. Firstly, a planning focus should be created for the Central Areas of Lahore of which the Walled City is a part, and secondly policies should be adopted at the scale of the Walled City and its immediate context to weaken the strong linkages that have developed between transportation and wholesale functions in the Walled City. This strategy can only be achieved by the full support of the Punjab Government and by bringing to bear the full regulatory and enforcement powers given to WCLA by the Act. The following paragraphs expand on these two sets of policies

2.1. Planning in the Central Areas

2.1.1. The Walled City's future is bound with that of Central Lahore and beyond that with Greater Lahore. It is therefore necessary to link policies at the scale of Greater Lahore, on one hand, with policies at the scale of the Central Areas and the Walled City on the other. In order to approach the problems of the immediate urban context of the Walled City effectively, it is therefore imperative to adopt a firm and proactive policy to prepare a comprehensive Central Areas Plan, duly integrated with policies for Greater Lahore. This measure requires urgent attention and related planning activity should be undertaken immediately.

2.1.2. Despite the stresses induced by high land values and low planning and development priorities significant amounts of land in the Central Area are underutilized, occupied by low productivity activities such as warehousing, car mechanics, defunct industrial units, and other non-descript uses, and point to the possibility of greater optimality of land utilization.

2.1.3. The Central Area Plan should be nested in planning for Metropolitan Lahore with Central Lahore as a specific zone where positive impacts are sought. It should aim to reduce the pressures on land, traffic congestion, the building stock, and improve infrastructure services. This can be done by adopting an integrated approach with the following objectives:

a) To define a new role for historical zones it contains (the Walled City, Mozang, Ichra, etc.);

b) To articulate a new urban future for Central Lahore integrating its historic and urban values;

c) To reinforce and strengthen the institutional architectural assets of the Central Areas, and to promote its potential to contain upper income, residential areas of medium to high density.

d) To improve access and traffic conditions in the Central Areas and around the Walled City, including major downtown road improvement / development.

e) To conserve and rehabilitate important monuments and streetscapes in the Central Areas.

f) To create a new land use framework that will aim at relocating certain city wide central functions at appropriate locations in Greater Lahore. (These central functions would include railway and rapid transit nodes, regional and national trucking termini, terminal nodes for regional and national bus transport etc.).

(Thus it is possible to think of developing a new railway station that is more central to the needs of the vast southerly expanse of Greater Lahore, rather than continue to depend on the Lahore Railway Station which was built a 150 years ago. Several transportation nodes can be thought of that exploit proximity to the Ring Road, and to other nodes of goods transportation such as the dry port and the airport.)

g) To create opportunities for upper income higher density residential development in Central Lahore

h) To cast the Central Area Plan within the framework of a revised Integrated Master Plan for Greater Lahore. This, while providing opportunities to relocate the above stated essential metropolitan functions away from the Central Area, should create new areas of opportunity for commerce, and related lower income support population, sited within emerging new centres of population within Greater Lahore.

i) To facilitate the decentralization of peripheral workplace locations for business, industry, and transport related activities and to create local satellite centres well accessed by the new inter-regional highways and other transport infrastructure.

(A key aspect that requires some consideration in developing the Central Areas Plan pertains to land occupation and densities. There is a disproportionate amount of land in Greater Lahore that contains low-density residential areas for upper middle and upper income households. On the other hand, the Central Areas of Lahore constitute a very small area of land (some 20.4 square kilometres) that, except for certain areas like the Mall Road and other colonial period legacies, is burdened with poorly serviced high population density residential areas. It also continues to fulfil the demands for space, infrastructure and buildings for economic activities (commerce and industry) as well as institutional / public sector departments for the entire metropolitan context (1,700 square kilometres) and beyond. The consequences of this anomaly are visible in dereliction and decay.)

2.2. Weakening linkages between external pressures and certain economic processes within the Walled City

2.2.1. The external factors and pressures outlined earlier result in making the Walled City attractive to economic activities which are of too large a scale for the well being of the Walled City, and are inappropriate from the points of view of human health and residence in the high density environment of the Walled City. The strategic response to address this will include the following moves:

a) Over the long term, remove the dependence of regional and national trucking on their current business location on Circular Road by enabling the establishment of alternate trucking termini at appropriate locations in metropolitan Lahore; in combination with the preceding, over the medium to long term, weaken the linkage between regional transportation and wholesale trade by rigorous application of the Land Use and Zoning Plan and the WCLA building regulations.

b) Devising traffic engineering / management plans that facilitate the movement of multi-modal traffic in the areas immediately surrounding the Walled City, and that create appropriate amounts of parking along the Circular Road.

c) Roads that require major re-design and widening immediately are the Ek Moria Bridge to the Lahore Railway Station road segment east of the Walled City, and the Data Darbar road segment southwest of the Walled City.

d) Relocating or removing all activities from around and within the Walled City that impinge negatively on the

historic core by the sheer scale at which these activities, such as regional wholesale and warehousing and goods forwarding and trucking operate.

e) Stopping forthwith the construction of commercial "plazas" and other single use buildings inside the Walled City, which have large numbers of business establishments under the same roof.

f) Imposing taxes and license fees etc., under a graded system on all economic enterprises in the Walled City in accordance with the type and scale of the economic activity.

3. A STRATEGIC WAY FORWARD FOR CONSERVATION IN THE WALLED CITY

3.1. The WCL Act recognizes all of the Walled City as heritage, hence its special status as a legislation created specifically for the conservation and protection of the Walled City. The Act defines "heritage" and "urban heritage" in terms widely accepted today.

3.2. The objectives of a strategy to fulfill the requirements of the Act for conservation, planning, development, management and regulation, of the heritage assets of the Walled City would be:

3.2.1. To reinstate the status of the Walled City as a cultural zone of high value in Lahore.

3.2.2. To conserve and rehabilitate the entire Walled City, not just individual buildings and monuments. This means that conservation should include the protection and enhancement of townscapes and the historic urban landscape. Even new buildings to be built in the Walled City should defer to its historic and cultural values and should add to and augment those values.

3.2.3. To conserve all buildings in the Walled City which are under the ownership or trusteeship of various government agencies.

3.2.4. To regulate the urban fabric of the Walled City across the board.

3.2.5. To implement programmes of infrastructure improvement together with the conservation and rehabilitation of the physical form of the City.

3.2.6. To regulate land use and building construction according to a new regulatory framework specific to the Walled City.

3.2.7. To rationalize and regulate traffic.

3.2.8. Through the actual process of the conservation of the Walled City, raise a cadre of human resource (conservation architects and engineers, craftsmen, building trades and other workmen) in the public and private sectors who specialize in architectural and urban conservation.

3.3. To attain these goals, the strategy for conservation in the Walled City should:

3.3.1. Make the maximum possible use of the functions and powers vested in the Authority by the Walled City of Lahore Act, 2012.

3.3.2. Adopt a general policy that makes all heritage properties (whether owned by the public sector or privately owned) legally available to WCLA for purposes of conservation and integration into urban development projects.

(Under this policy, the regulatory functions and powers of WCLA should apply to owners of all property, including properties owned by other government agencies, and agencies that act as trustees of certain properties, including properties protected under the Antiquities Act, 1975 and the Punjab Special Premises (Preservation) Act, 1985. In all conservation related matters WCLA should be delivered possession of such properties for carrying out conservation operations, whether through administrative orders, or changes / amendments to existing statutes. Such statutory changes / amendments should be made with the intention of rendering, without compromising rights of ownership or trusteeship, all overlapping realms of authority over properties in the Walled City subservient to WCLA in so far as the conservation of these properties is concerned, and the later management of how these properties have been transformed and enhanced through conservation and rehabilitation.)

3.3.3. Exploit fully the advantages, experience and principles inherent in the planning and design work carried out over the previous ten years since the beginning of the Punjab Municipal Services Improvement Project, and

rapidly complete the implementation of pending and ongoing projects.[1]

3.3.4. Adopt a policy for pro-actively conserving, rehabilitation and modernizing all historic residential properties with the financial participation of the owners.

3.3.5. Historic residential buildings in the Walled City should be rehabilitated on the lines of the work carried out in the buildings in Gali Surjan Singh and Kucha Charkh Garan, with the financial participation of owners. This is possible only if the communities recognize and acknowledge the presence within WCLA and in the private sector, of expert conservation architects, architectural conservators, engineers, field workers of different disciplines of the building trades.

3.3.6. Human Resources: Promote the development of technical skills in the public or the private sector. These skills will be vested in:

a) Conservation architects, urban designers.

b) Conservation engineers and utilities engineers specialized in working in historic urban environments.

c) Architectural conservators, carpenters, masons, plumbers and electricians, and contractors specialized in working with historic buildings.

3.3.7. Enhance and strengthen human resources in the WCLA Conservation and Planning Directorate.

3.3.8. Revalorizing the Walled City

a) The notified Zones of Special Value should be seen as planning overlays, where greater effort has to be expended in preserving the heritage qualities of the urban fabric.

b) The properties listed and notified in the Register of Historic Properties should be conserved under a well-planned and properly funded programme.

1 For example, the parking and market project outside Delhi Gate and the remaining components of the Bhati Guzargah Pilot Project.

3.3.9. The Heritage Conservation Board should play a strong, professional role, as ordained by the Act.

3.3.10. Social mobilization should be based on involving communities in the Walled City when working in their physical spaces. In other words, develop a degree of participation that lets communities lead their own development, while depending on WCLA for assistance on technical matters for which they do not possess knowhow. Implicit in this is a recognition that the Walled City comprises numerous small communities—residential communities, communities of business, etc.

3.3.11. Eminent domain: Eminent domain and the public interest should be the primary criteria for the protection of and interventions in sites of very high value, such as the World Heritage Site and its buffer zones.

4. WALLED CITY OF LAHORE CONSERVATION PROJECT

4.1. It is recommended that the government should recognize the conservation of the Walled City of Lahore as a continuous and approved project (to be named the "Walled City of Lahore Conservation Project"), with WCLA as the planning and implementation agency. The Walled City of Lahore Conservation Project (WCLCP) would be the physical manifestation of the requirements of the Act. It should be presented as a series of 5 year progressions on a programme of implementation. Annual grants should be made for the implementation of WCLCP as part of the Government's Annual Development Plan. Each specific project contract under WCLCP should be tendered out after approval of the contract documents and drawings by the Government.

4.1.1. Through this process the need for the justification of specific smaller projects on PC-I proformas should be eliminated removing the uncertainties which would weigh on the progress of the conservation and development of the Walled City. PC-I proposals for those projects not originally presented for approval as part of the WCLCP could be required to be submitted as exceptions.

4.1.2. The larger and subsuming WCLCP project should follow the framework, guidelines and examples including the Area Conservation and Development projects (discussed in Part IV), and heritage conservation in general, which have been provided and elaborated in this document. Detailed designs for implementation should be prepared as and when needed, subject to monitoring and review as necessary by the Heritage Conservation Board, the Department of Local Government and Community Development and the Planning and Development Department.

4.2. Financial arrangements: There should be three channels of funding for the implementation of the Master Conservation and Re-Development Plan:

4.2.1. Direct Funding from Government into the WCLA fund for implementing the Area Conservation and Development Schemes.

4.2.2. Conservation specific funds for implementing the heritage conservation component of the MCRP

These funds will be aimed at the conservation of principal or secondary monumental heritage listed on the Register of Heritage Properties. They will be channeled from a variety of sources:

- The Federal and Provincial Governments
- Corporate Social Responsibility funds
- Funding from bilateral donors
- Financing from multi-lateral agencies
- Owner equity

4.2.3. A third form of funding will be aimed at private properties on the Register of Heritage Properties and older privately owned building stock which is an important aspect of group value and the historic urban fabric. In both cases grant funding, subsidized loans and other forms of subsidies will need to be provided, to be coupled with owner equity participation. Such funding should flow from a CONSERVATION SUBSIDY TRUST FUND, whose sources could be the same as for Conservation-specific funds. Owner equity participation should be encouraged, but in many cases 100 per cent grant funding might be provided as suggested in the Act.

5. STRATEGY FOR IMPROVING THE QUALITY OF LIFE IN THE WALLED CITY

5.1. A social sector strategy for the Walled City's citizens is required to change the status quo into a more positive state of affairs. Such a strategy would give particular attention to spheres of culture, education, health, parks and recreation and other aspects of sustainable liveability.

5.2. The strategic objectives comprise:

PART IV | URBAN CONSERVATION

OVERVIEW

Conservation in the Walled City will involve several planning and implementation overlays corresponding to:

- Heritage protection, conservation and care.
- Urban and municipal management, enforcement of the Act and other related regulative instruments such as the MCRP, the new Land Use and Zoning Plan, building regulations, and special regulatory provisions for Heritage Properties.
- Undertaking phase wise urban upgrading, infrastructure development and conservation and rehabilitation of the urban fabric.
- Notifying "Zones of Special Value" and establishing for them special, more intense regulations and guidelines for land use, building construction, urban design and urban infill.
- Mobilization of the communities within the Walled City, building heritage awareness, and creating social and economic development through tourism, skill development and raised income levels.

Heritage Protection and Conservation

In establishing the Walled City of Lahore Authority (WCLA), the Walled City of Lahore Act (2012) imposes an unprecedented set of responsibilities on the organization to effectively undertake its urban governance and management functions. The Act mandates WCLA with the management and organization of the Walled City of Lahore in two rather distinct ways: firstly, the Act vests broad prerogatives in WCLA to be the protector and guardian of its heritage (which is defined comprehensively), to prepare conservation and re-development plans and to implement and execute them; and to prepare and implement schemes and projects in the Walled City.

Conservation as Urban Management

On the other hand, WCLA's mandate also involves running a historic city efficiently and effectively in the ordinary sense, with all that municipal administration entails: maintaining a healthy city well-served with utility services, ensuring that the residents live and work in a secure environment, carrying out law enforcement, raising municipal funds through various means, exercising land use and building control, regulating property and land ownership and transfer, and exercising an extent of judicial powers with punitive provisions. In many instances these two distinct spheres of activity—municipal governance and heritage conservation—overlap and merge. Yet they also often conflict. It is in

these areas of functional overlap that the most complex and difficult-to-deal-with situations arise.

It is also to be remembered that until very recently the Walled City has seen insufficient official oversight for almost three quarters of a century. This has resulted in chains of causes and effects that are difficult if not impossible, in some areas, to disentangle and reverse.

Powers of the Walled City of Lahore Authority: The Act provides WCLA with a broad range of powers to exercise its functions beginning with the following all-encompassing words: "The Authority shall have all powers necessary to perform its functions under the Act."[1]

The paragraphs following the above quote proceed to describe the Authority's powers more fully, i.e., they describe powers to:

- Enforce the provisions of the Act, and the Rules and Regulation (Section 8 (2) (xv));
- Undertake any work and incur any expenditure to implement the MCRP and projects and schemes under the MCRP (Section 8 (2) (i));
- Provide civic utilities and municipal services (Section 8 (2) (i));
- Regulate building construction and grant permits for demolitions and reconstruction (Section 8 (2) (iii));
- Regulate trade, calling and occupation (Section 8 (2) (iv);
- Remove encroachments (Section 8 (2) (v));
- Provide social and economic betterment (Section 8 (2) (viii));
- Mobilize the communities living in the Walled City to alleviate poverty and in furtherance of the Authority's functions (Section 8 (2) (viii));
- Evict illegal occupants (Section 8 (2) (ix));
- Exercise such other powers that the Government may assign (Section 8 (2) (xviii)).
- Carry out several other actions described in Section 8 that could be described under the normal functions of a civic and municipal agency.

Planning Approach: The approach of the MCRP is to follow the planning requirements of the Act and the strategic framework developed in Part III; and to propose the creation of conditions that mitigate the aspects of the status quo unacceptable under the provisions of the Act, consequently allowing WCLA to bring about desirable changes in the

[1] WCLA Act (2012), Chapter III, Powers and Functions of the Authority, Section 8.

present conditions.

Therefore, in accordance with Section 15 (3) of the Act, the MCRP includes:

a. A new Land Use and Zoning Plan designed for re-establishing a land use regime similar to the way land in the Walled City was traditionally used, and for bringing to a halt the unfettered expansion of wholesale markets and plazas. Under the new Land Use and Zoning Plan, the Building Regulations which support it, and other regulative regimes, the Walled City's physical transformations will be made consistent with its history and traditions and the new regulative framework will control the built form of the city, its open spaces and street system, and, additionally, will make possible new standards of street design and traffic circulation.

b. Proposals under a Conservation Plan for a comprehensive heritage conservation programme which aims to fulfil the requirements of Section 15 (3) (ii) of the Act, and which provides for the protection of cultural heritage and the advancement of social and economic development. This conservation programme is also aimed at fulfilling the requirement under Section 15 (3) (iv) that calls for "a plan for development, improvement and maintenance of public passages, urban open spaces, public areas";[2]

c. Proposals for a well-planned infrastructure development, a healthy city with the added benefit of an ordered physical environment with high technical and aesthetic standards of infrastructure. Infrastructure related proposals seek to fulfill the requirements of the Act under Section 15 (3) (ii) for the preparation of "a plan for development, improvement and maintenance of municipal services". Infrastructure related aspects as well of "public passages, urban open spaces and public areas" are dealt with under these proposals.

2 The Act includes public open areas and passages [illegible] the term 'heritage' which is defined as 'architectural, archaeological [illegible] historic, aesthetic, cultural or social aspects [illegible] building, group of buildings, structure, building fabric, urban fabric, urban [illegible] public area, public crossings or public passages [illegible] city and includes intangible heritage' (emphases added).

1. THE LAND USE AND ZONING PLAN

1.1. Regulating land use is an essential part of managing cities. Land use planning and regulation ascribe value to different parts of a city and help bring order and predictability to society. What happens on urban land also affects the economic processes of a city, and its political and cultural life, as much as a city's ecological balance, and its "livability". Moreover, land use in a city is fundamentally related to the land use conditions prevalent in its surroundings. In all these aspects, the condition of the Walled City of Lahore differs markedly from what it was a century ago. The MCRP, and indeed the WCL Act, 2012 have come to be because the Walled City has been under threat for more than half a century now. In addition to what was lost in the 1947 riots, a very significant portion of the Walled City's historic fabric has been lost to predatory commercialization. Yet with all the changes that have taken place, there are certain residual qualities that define the Walled City as a heritage asset that have survived to this day.

1.2. It is one of the primary objectives of the Land Use and Zoning Plan to protect these heritage qualities. The heritage values in the Walled City and the urban structure they constitute are contained in a range of physical elements and the activities they make possible. These physical elements are:

1.2.1. The individual historical land parcels and the traditional buildings that stand on them;

1.2.2. The typological families these buildings represent and how typology, volumetric harmony, and architectural style and detailing help make a coherent and attractive urban fabric.

1.2.3. The network of streets and open spaces that have evolved in a centuries old process of access, land division, throughways and cul-de-sacs;

1.2.4. The security of the resulting neighbourhoods which have long provided habitat for the people of old Lahore.

1.3. In addition the Land Use and Zoning Plan strives to protect the human social, cultural and economic processes and structures that these environments have promoted and nurtured for centuries, and the material and intangible culture that this has resulted in.

A PERSPECTIVE ON LAND USE IN THE WALLED CITY

Land use planning in the accepted, modern sense is related to zoning, aimed to divide a city in large homogenous territories having a consistent function, and enabling regulation and control of the way it is used. Zoning came to arise in the west with industrialization, functionalism and the coming together of many different human sciences. Above all it is associated with functional efficiency and the economic advantage to be derived. It is the exercise of an objective thought process and results in the separation of what were seen as incompatible urban land uses from each other: residential from non-residential, retail from wholesale, commercial from non-commercial, industrial from non-industrial, lower income from upper income, organized from the informal, etc. etc. This segregation of functions follows the rationale of economic determinism, planning and "conscious social action".

Land use in the Walled City, on the other hand, was historically not the product of the thinking of planners, but of an organic process based on custom and tradition. The British left the Walled City's traditional urban fabric and urban functions quite alone, albeit imposing on it a modicum of modern municipal self-governance. But the Walled City became only one part of the larger jurisdiction of the new municipal government of colonial Lahore. In the post-Independence period, the Walled City has been subject to administrative and planning decisions emanating in greater Lahore, and unintentionally resulting in new functions, new architectural types, the coming about of new de-facto commercial zoning, and new manufacturing trends which are quasi-industrial in their scale and impact. Left to itself, this new type of land use has resulted in irreplaceable loss of the Walled City's traditions and heritage.

In contrast to the modern city, the historic organization of the Walled City of Lahore was the product of a chain of self-regulating transformations, letting the Walled City to adapt itself to the process of land division, parcellation, and through countless small decisions on the part of the affected people, the formation of hierarchies of access to the land parcels created. Main thoroughfares and bazaars were linked to smaller neighbourhood and specialized bazaars and in turn with residential lanes serving neighbourhoods of increasing safety and quietness. The generation of the resulting urban form represented collective values embedded in the symbolic, customary, and conventional field of tradition. This organization of land and buildings and the means of access to them is marked principally by two spheres of control: the public and the private. The private domain is restricted to the sanctity of the private property and one's home. The public domain, while relatively free of private control, was itself organized according to a hierarchy of movement channels increasing in security and privacy, and diminishing in their reach - from the most public thoroughfares and bazaars, to the most private gali or koocha. In history these transformations are systemic and self-regulating, and are characterized by the depth to which the public domain and its associated land use is allowed to penetrate into the residential mohallas. Commerce, craft production, retail and wholesale of food and produce, were embedded within this organic matrix and conditioned by it in many conscious and un-selfconscious decisions as well as precedence fixed the location of certain public functions of the city: religious, political, economic/commercial etc. represented by the mosque/temple, the fortified sanctuaries of the ruling class, the defensive walls and the entrance gates, the mandi and the bazaar, centres of craft production, the small neighbourhood shop, etc. In all this the Walled City is a traditional, historic South Asian city, akin to Islamic cities of the Middle East and North Africa, which share many of the above qualities. These characteristics today have collectively become our urban heritage, its social and cultural moorings represented by the tangible and intangible expressions of a historic way of life, still alive in some instances.

As part of a strategy of conservation, land use must adhere to this understanding of the urban heritage. As a means of achieving appropriate land use and the resulting urban form, land use planning is inextricably linked to the new WCLA building regulations and controls, which are intended to promote building types derived from the tradition. Such building types would promote land use in keeping with the inherent nature of the Walled city, and would bring about greater coherence in urban form and character.

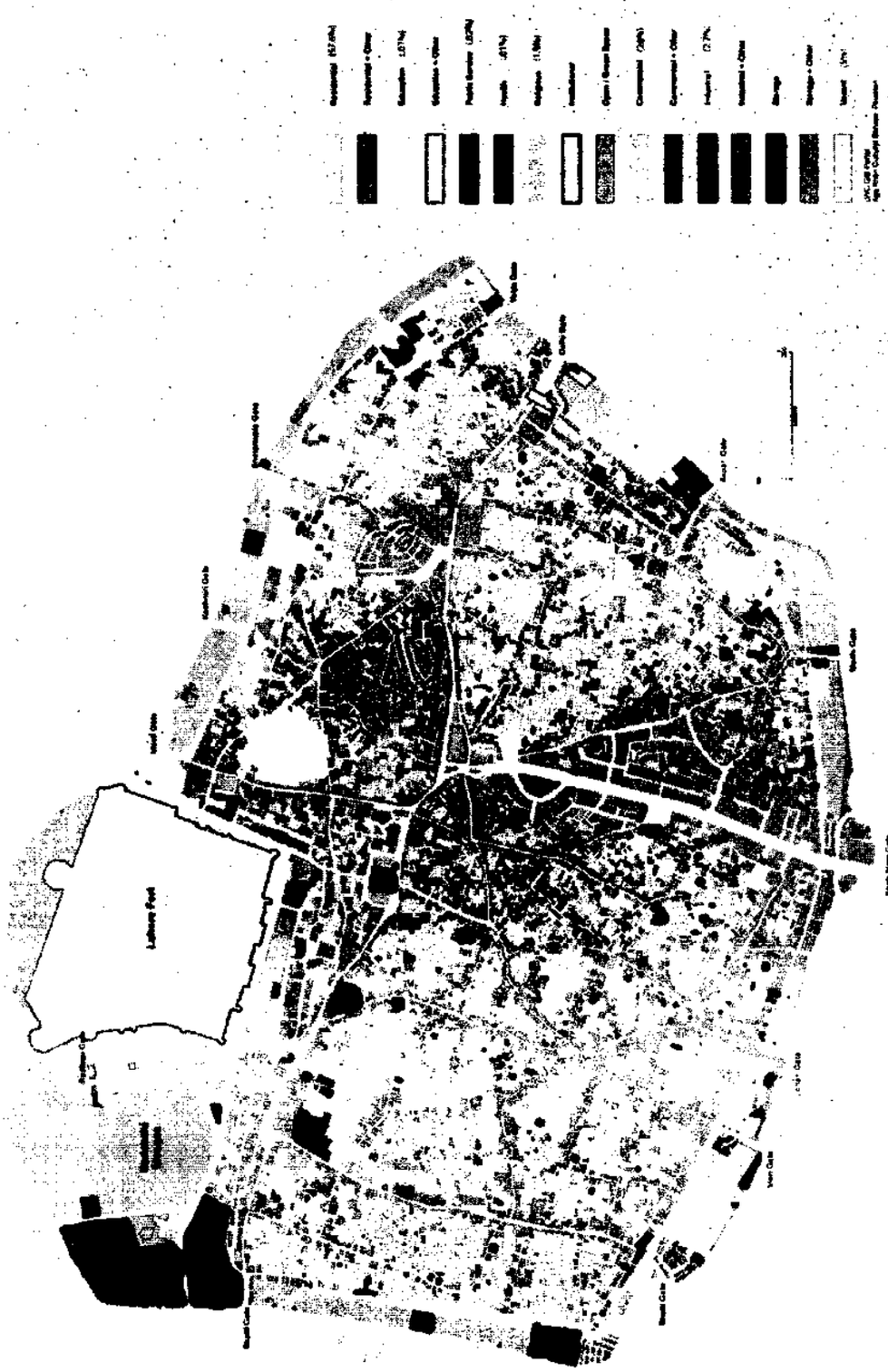


FIG. 14 LAND USE IN 2011

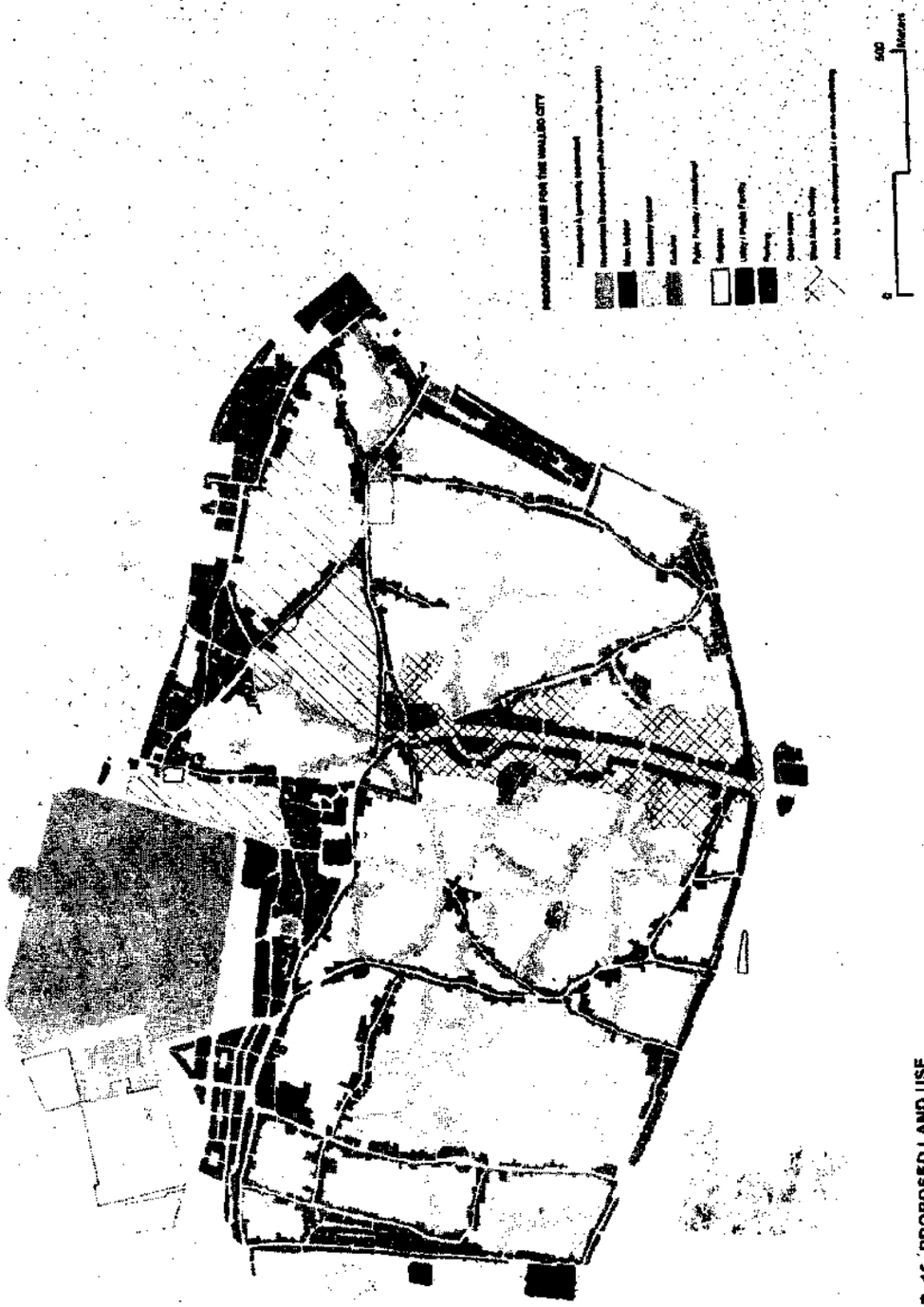


FIG. 15 PROPOSED LAND USE

1.4. As described in Part I, all these assets have been under a very real threat for decades in an administrative context which could be described at the least as inadequately regulated, and at the most as lawless. The threat has been imposed by uncontrolled commerce, which deals in commodities of an industrial age (textiles) and which has a scale completely out of proportion to what the urban fabric of the Walled City can bear. In addition, a somewhat different nature of threat has been imposed by 21st century manufacturing, that of shoes, which has the character of a cottage craft but which has the volume of production of a whole industry. It has pervaded much of the western half of the Walled City by breaking itself down into piece work carried out under conditions of great hazard to the workers. It has all the hallmarks of extensive scale with massive amounts of solid waste, as well as extensive soluble and evaporated chemical pollutants. The unchecked expansion of this industry into Walled City's *mohallas* and the traditional buildings in which these commercial and manufacturing activities are performed has continued to destroy whatever has been left of the historic fabric.

1.5. The proposed Land Use and Zoning Plan is but one of the several instruments which can be used to stop this phenomenon, and over the long term reverse it. Others include the powers provided to WCLA by the Act to protect the common interest (health, clean air and water, human rights, including the right to heritage) and take action against (i) activities that are noxious and injurious to human health, (ii) the construction of buildings without permit (iii) constructions that defy zoning or building regulations, and land use that is injurious to the Walled City's heritage. Still others include rules and regulations framed to control illegal occupation of public or private property, its demolition and the change in urban form that this brings about.

1.6. The Land Use and Zoning Plan mandated by the Act has, therefore, the following objectives:

1.6.1. To conserve the traditional patterns of land use and the traditional urban fabric.

1.6.2 To re-instate the traditional land use wherever "non-conforming" rights (please see 1.10 below) have not accrued to present users.

1.6.3. To restore residential life and a healthy admixture of income groups residing within the Walled City.

1.6.4. To create buffer zones between the traditional *mohallas* and the advancing edges of commercialization, and to ultimately stop and reverse the latter to the extent possible.

this database for planning purposes in the Walled City. However, a number of aspects require urgent attention if the proposed Land Use and Zoning Plan is to be implemented effectively:

a. The 1985 LDA parcel boundary geometries are not accurate.
b. In addition, parcel boundaries have changed, amalgamated or subdivided over time.
c. In some cases, land parcels have been assigned property numbers arbitrarily.

1.13.3. Important note 3: The land use plan is also subject to the proper maintenance by the Authority of the record of owners and occupants of properties in the Walled City in accordance with Section 36 of the WCL Act, 2012. The following records would be pertinent in this respect:

a. Property records maintained by the Excise and Taxation Department.
b. The records maintained by LDA in respect of the Shah Alami development scheme; and
c. The registration of properties held by the office of the Sub-Registrar, Ravi Town.

1.13.4. Important note 4: A property listed in the Register of Heritage Properties may be allowed a land use other than its original purpose, as in the interest of its protection and sustainability it may be adapted to a new use. The decision of the Heritage Conservation Board will be final in all matters arising out of such situations.

1.13.5. Prohibited land use: Certain types of land use shall be prohibited as per Schedule LU-PR of the Land Use and Zoning Plan.

1.13.6. Non-conforming land use: Land use which continues from a date prior to the date of notification of the LU Plan, but does not conform with the notified land use for a land parcel on which such land use exists, is allowed to continue as "non-conforming" land use if the land and the structures containing the said use is legitimately owned and if the buildings existing on the land have been built per existing law when they were first constructed. However, non-conforming land use status shall cease to exist if any one of the following conditions were found to exist:

a. The land use in question is not lawful under previous legal or administrative regimes.
b. The building standing on the property is listed in the Register of Heritage Properties.

c. The land or property title is missing or found to be fraudulent;
d. The owner is unable to produce a valid building plan sanctioned by the competent authority at the time of the construction of the building;
e. The building does not conform to the building regulations prevailing at the time it was built;
f. The non-conforming land use is found abandoned for more than one year.
g. The ownership has been transferred to another owner.
h. The building is found to be dangerous or at the risk of collapsing;
i. The building has already collapsed.
j. The Government exercises eminent domain in the interest of the community and acquires or alters a property;
k. The Government exercises a common interest ordinance or enactment, and rules or regulation other than land use and zoning regulations, for the enhancement of quality of life, for protecting health, for protecting the urban heritage, and for protecting the natural or cultural environment within and around the Walled City.

2. PLAN FOR CONSERVATION OF THE HERITAGE OF THE WALLED CITY (THE CONSERVATION PLAN)

From the Walled City of Lahore Act, 2012:

"HERITAGE means architectural, archaeological, monumental, historic, artistic, aesthetic, cultural or social aspects, reflections, elements, features of a building, group of buildings, structure, building fabric, urban fabric, urban open space, public area, public crossings or public passage and environment of the Walled City and includes intangible heritage"

"HERITAGE VALUE includes architectural, archaeological, monumental, historic, artistic, aesthetic, cultural or social value, age value and commemorative value, use value, place value"

"URBAN FABRIC includes monuments, ordinary buildings, streets, urban open spaces, urban patterns defined by land parcels and streets, street pavement, elements of utility infrastructure, street furniture, signage, and public facilities".

2.1. Conservation in the Walled City

If the above definitions from the Act are considered, then conservation in the Walled City aims at quite a lot more than what is ordinarily perceived. In this connection, the reader is invited to refer to the broader objectives of the MCRP defined in Part I. However, even within a narrower definition of conserving the heritage as a pre-industrial historic urbanism, the Walled City of Lahore presents itself as a heritage artefact in its entirety, incorporating the sum total of all its heritage elements. The latter need to be conserved and rehabilitated in their own right with the concepts, methods, procedures and techniques that are appropriate to each one of them.

2.2. The plan for Development, Improvement and Maintenance of Public Passages, Urban Open Spaces and Public Areas;

The requirements of the plan in respect of the public passages, urban open spaces and public areas are subsumed within the definition, under of "heritage of the Walled City", as including "urban open space, public area, public crossings or public passage", and are therefore provided for and subsumed under the Plan for the Conservation of the Heritage of the Walled City.

2.3. Conservation Norms

2.3.1. The conservation of the heritage of the Walled City must also defer to the international charters, conventions and recommendations that have informed and guided conservation the world over from the beginning of the second half of the 20th century to the present day. These numerous conventions and charters have themselves evolved over time. From the Venice Charter of 1964 to the UNESCO Recommendations on the Historic Urban Landscape of 2011, these norms represent a journey of philosophical development and the widening of the intellectual understanding of the word "heritage" and "conservation". None of these charters, conventions and recommendations supersedes a previous one. Rather each document is recognized as valid as when it was first drawn up, and provides additional conceptual, theoretical and practical guidelines and tools to accommodate developing notions of heritage—from a monument looked at in positivistic and objective terms in the 1960's to historic cities and historic urban and rural contexts, "cultural landscapes", and the "historic urban landscape", among other aspects of the heritage, in an ever widening compass of scope and depth, human engagement and understanding of what a historic city's

heritage represents.

2.3.2. One of these charters, the ICOMOS[4] Nara Document on Authenticity provides guidelines on the question of the variations across the world of national, cultural and ethnic contexts, how these contexts can shape the definition of the "authentic" and the "sources" of cultural information. But the search for and the representation of the authentic becomes the common bond for all humanity and its culture.

2.3.3. The Conservation Plan endorses the principle that in all future deliberations and executive decision-making on the Walled City of Lahore's heritage, as defined by the Act, the guidelines contained in the following documents, and any further deliberations thereof, must be consulted and followed to the extent possible:

- International charter for the conservation and restoration of monuments and sites (The Venice Charter), 1964
- UN Convention concerning the Protection of the World Cultural and Natural Heritage (1972)
- Charter for the Conservation of Historic Towns and Urban Areas 1987
- The Nara Document on Authenticity (1994)
- The Stockholm Declaration on the Right to Cultural Heritage as part of Human Rights (1998)
- Charter on the Built Vernacular Heritage (1999)
- Xi'an Declaration on the Conservation of the Setting of Heritage Structures, sites and areas (2005)
- The UN Recommendation on the Historic Cultural Landscape (2011)

2.4. Objectives of the Conservation Plan for the Walled City

This plan intends to fulfill the requirements of Section 15, (3) (ii) of the Act—"a plan for (the) conservation of (the) heritage of (the) Walled City", which calls for conservation as an activity aimed at the protection, care, and conservation of elements of the heritage closely associated with the urban fabric - urban open spaces, streets, groups of buildings, individual buildings and other objects which complete the physical and sensory qualities of this historic city.

2.4.1. The objectives of the Conservation Plan in respect of these elements of the urban heritage would thus be:

[4] International Council on Monuments and Sites

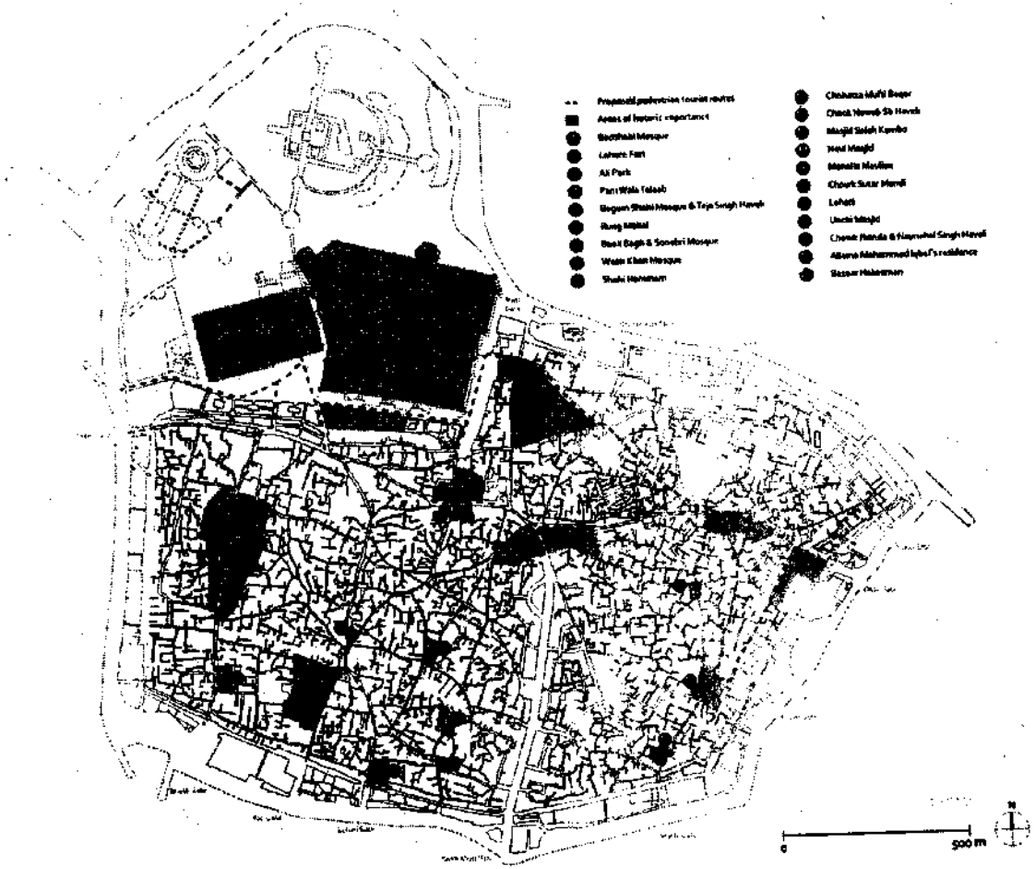


FIG. 17 PROPOSED PEDESTRIAN VISITOR ROUTES SEEN IN RELATION TO PRINCIPAL MONUMENTAL SITES

ZONE OF SPECIAL VALUE 1 - THE LAHORE FORT & ITS ENVIRONS

INTRODUCTION

This Zone of Special Value (ZSV 1) comprises approximately 57 hectares of the area of the Walled City and contains the following precincts and areas:

- The Greater Iqbal Park, including Minar-e-Pakistan,
- The territory of the Lahore Fort—which was inscribed by UNESCO as a World Heritage Site in 1981,
- The Hazuri Bagh and the Badshahi Mosque,
- The Samadh of Ranjit Singh; and of Guru Arjun,
- The Begum Shahi (Maryam Zamani) Mosque and its immediate urban context;
- The surrounding areas of Fort Road, Ali Park, and the Food Street, including the Lady Willingdon Hospital and other institutional sites; and
- Certain portions of the Walled City's urban fabric.

All these areas are included within the territorial jurisdiction of the Walled City of Lahore Authority (vide the Schedule to the Walled City of Lahore Act of 2012).

ZSV 1 is bounded by the Greater Iqbal Park in the north, on the east by the part of Fort Road which abuts the Government Middle School for Girls, Masti Gate and the Masti Gate Police Station), by the outer edge of the area comprising the Rim Market, some residential areas (which exist on occupied *shamilaat/nazul* land); in the south-east and by the farther edge of Gali Sher Pahlwan and Gali Shahya Pahlwan. It is bounded in the south by Kucha Shahbaz Khan (running parallel to Ali Park Road), and by the Shiekhupurian Bazaar (which runs east-west from Chowk Nau Gazi Baba to Main Ravi Road), and on the west by the Main Ravi Road.

The zone further comprises a proposed buffer zone around the World Heritage site of the Lahore Fort. (As defined by UNESCO, a buffer zone is part of a World Heritage Site, although it need not contain any Outstanding Universal Value (OUV) itself.

In the context of the recently completed Greater Iqbal Park, the Punjab Government has been deliberating on giving the area of this Zone of Special Value a new status, and proposals are being considered to create either a new "agency" under the Walled City of Lahore Authority, or a new authority in contradistinction to it.

RECOMMENDATIONS FOR HERITAGE ELEMENTS

In view of the extremely high national and international importance of this zone, it is recommended that the following organizational and administrative changes be brought about.

WORLD HERITAGE LIST: Within this ZSV, the World Heritage status hitherto restricted to the Lahore Fort should in future be expanded to include Hazuri Bagh, the Badshahi Mosque and the precincts of the Sikh crematory shrines of Guru Arjun and Ranjit Singh as well as a buffer zone which will be part of the World Heritage Site. Together with this buffer zone, the new World Heritage Site will be territorially congruent with this Zone of Special Value.

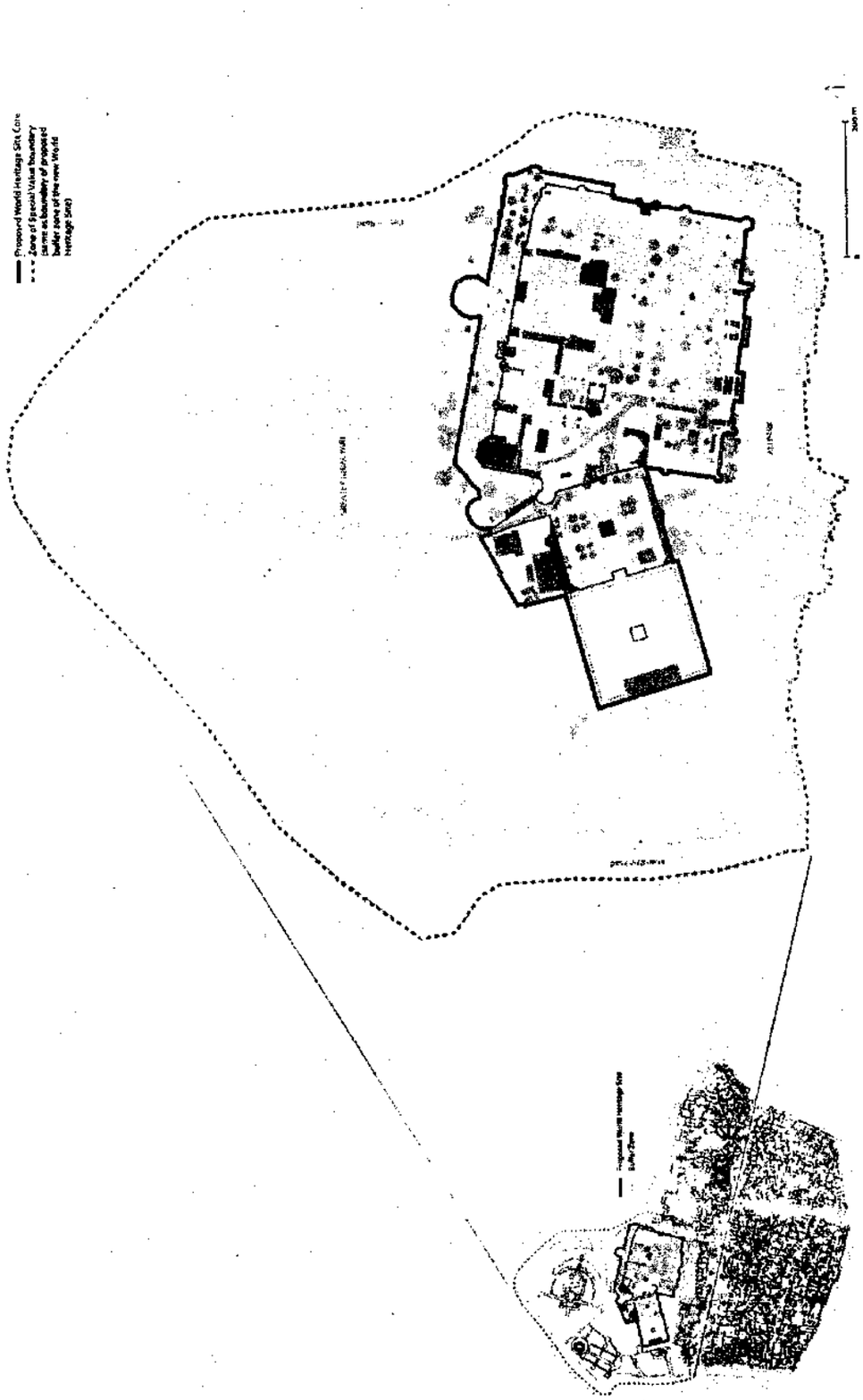


FIG. 18 PROPOSED REVISED WORLD HERITAGE SITE (AFTER DELINKING FROM SHALIMAR GARDEN)

APPLICATION TO CHANGE THE STATUS OF A WORLD HERITAGE SITE: A case should be moved with the World Heritage Committee of the UNESCO to put the above-mentioned recommendation into effect, and to separate the Shalimar Gardens from the Lahore Fort; the former to continue as a World Heritage Site in its own right. This would result in Lahore having two World Heritage Sites instead of the formerly single World Heritage Site (jointly comprised by the Shalimar Gardens and the Lahore Fort). Since this change of status will constitute "significant modifications to the boundaries" of an existing World Heritage Site, an application should be presented to the World Heritage Committee on the appropriate documentation format. This application will be in the form of a proposal for a new nomination and it will be necessary to complete the appropriate documents accordingly.[1]

ORGANIZATIONAL RECOMMENDATIONS

a) The zone is already within the territorial jurisdiction of WCLA,[1] even though the elements contained within it are under full or partial control of several other agencies acting under other enactments. These are shown in Table A.

b) In view of the reported deliberations of the Punjab Government on the administrative structure that should be brought into being for the care, maintenance and protection of the monuments and parks, the following recommendations are made for alternative administrative scenarios:

ALTERNATIVE A: An administrative directorate is created with WCLA within the present framework of the Walled City of Lahore Act, 2012.
ALTERNATIVE B: A "Heritage Zone Management Agency" be established as an extension of WCLA with enhanced powers than an ordinary directorate of the Authority.

c) In the case of either alternative, WCLA will play the role of a coordinating agency tying up the present conflicting roles of the various agencies at play in the zone and turning them into complementary and supportive roles. WCLA will also support the new agency with the professional and administrative resources available to it in addition to those to be provided to the new agency in its own right.

SURVEYS

PLOT AND BUILDING DATA SURVEY UPDATE

The plot and building data for this zone collected in 2008 has not been updated.

PHYSICAL SURVEYS

- The topographic survey of the urban context of the Lahore Fort was carried out by the AKCSP in 2008 and 2009.
- A topographic survey of the Lahore Fort and the Hazuri Bagh was carried out in November, and December, 2016.

[1] UNESCO World Heritage Centre. Operational Guidelines for the Implementation of the World Heritage Convention. Annex 5: Format for the Nomination of Properties for Inscription on the World Heritage List. Paris: World Heritage Centre, 2019.

AGENCY	ELEMENTS OF SIGNIFICANCE	AGENCY & FUNCTION	LEGISLATION
Walled City of Lahore Authority	Greater Iqbal Park; Lahore Fort; Hazuri Bagh; Roshnai Gate; Minar-e-Pakistan; Badshahi Mosque; and all land and urban areas within the zone; and the Walled City of Lahore in its entirety	Heritage protection and management	The Walled City of Lahore Act, 2012
Federal Department of Archaeology and Museums	Lahore Fort; Hazuri Bagh; Roshnai Gate; Minar-e-Pakistan	Former Owner; state party representative for the World Heritage Site	The Antiquities Act, 1975
Punjab Archaeology Department		Owner	
Punjab Archaeology Department	Lahore Fort Badshahi Mosque; Sabir Shah Wali shrine	Conservation	Punjab Special Premises (Preservation) Act, 1975
Evacuee Trust Property Board	Samadhis of Guru Arjun Singh and Ranjit Singh and related properties	Management & disposal	Evacuee Trust Property (Management & Disposal) Act, 1975, The Antiquities Act, 1975
Parks and Horticultural Authority	Greater Iqbal Park; Minar-e-Pakistan	Owner; maintenance	Parks & Horticultural Authority Act, 2012
Auqaf & Religious Affairs Department	Badshahi Mosque; Mausoleum of Allama Iqbal; Maryam Zamani Mosque; other mausolea	Trustee; maintenance	Punjab Waqf Properties Ordinance, 1979
Punjab Heritage Foundation	All listed and unlisted heritage in the province.	Punjab Heritage Fund	The Punjab Heritage Foundation Act, 2005

TABLE 6: AGENCIES RESPONSIBLE FOR THE COMPONENTS OF ZSV 1

OTHER INQUIRIES

- The Master Plan for Lahore Fort, 2006 has been examined.
- Archival inquiries were also conducted recently in the Department of Archaeology archives.
- References have also been made to the UNESCO WH Committee documentation on the Lahore Fort.

EXISTING CONDITIONS

The following description of existing conditions in this ZSV refers to the context of the monuments and the conditions prevailing within and at the edges of the proposed buffer zone. Where appropriate, these descriptions also contain recommendations and proposals.

DESCRIPTION OF THE ZONE

The zone is an assemblage of (a) roads and accessways, (b) the World Heritage Site of the Lahore Fort and other monuments described below; (c) parks and other green spaces associated with the monuments; (d) certain parts of the Walled City's urban fabric; and (e) parts of the urban fabric which need to undergo major re-development and transformation.

ACCESS

The zone is accessed from several directions:

a) In the north from the new North Circular Road;

b) In the east from:
- The Circular Road and Fort Road East;
- From the Shahi Guzargah, past Begum Shahi (Maryam Zamani) Mosque
- From the road connecting Langa Mandi Bazaar with the Fort Road East.

c) In the south from:
- Bhatti Gate Bazaar / Bazaar Hakeeman
- Fort Road South

d) In the west from:
- Taxali Gate and Neewa Chait Ram
- Fort Road as it intersects Ravi Road
- Main Ravi Road

It is to be noted that the section of the old Circular Road that passed along the northern edge of the Lahore Fort does not exist any longer. Heavy traffic that used to ply on this former road is now re-routed along a major new artery on the northern edge of Greater Iqbal Park, in a new curving alignment. This alignment circumscribes the land of the old Iqbal Park and the Minar-e-Pakistan Park, which have been combined to form the new Greater Iqbal Park, with its own parking zones and pedestrian pathways. As a consequence, the old vehicular entrance into the Lahore Fort precinct, and into the Hazuri Bagh and the Sikh funereal sites does not exist any longer, except when vehicles are allowed to be driven on the paved paths intended for pedestrians. This usually happens for VIP's and other privileged persons when they are to be driven to Hazuri Bagh /

THE LAHORE FORT & ITS ENVIRONS

FIG. 19 POINTS OF ACCESS TO ZONE OF SPECIAL VALUE 1

Badshahi Mosque or through the Postern Gate into the Lahore Fort. A part of the old Minar-e-Pakistan site on the monument's northwest has been bifurcated by the new road. Towards the end of the Rim Market on the south-eastern corner of the Fort property, Fort road swings west and runs along the British period grand stands to its north and Ali Park to its south. It then continues through the area of Neewa Chait Ram (the northern perimeter of Hira Mandi) and exits the Walled City area between Montmorency College of Dentistry and Lady Willingdon Hospital, some 120 metres north of the Taxali Gate. Here it can only take a left turn, as a result of the new traffic arrangements on the Ravi Road. The road from Tarranum Cinema Chowk runs through the Sheikhupuria Bazaar to exit the Walled City area at Taxali Gate. The zone is then bounded on its western edge by the Ravi Road. In the north, the zone includes the entire area of the Greater Iqbal Park, re-developed by the Parks and Horticulture Authority (PHA) and recently inaugurated by the Prime Minister.

MONUMENTS AND OTHER ELEMENTS OF VALUE

There are numerous buildings and elements of historical and architectural value that are the reason for the inscription of the Lahore Fort on the World Heritage List, and while the OUV of these buildings and other elements are undeniable, these buildings are contained behind the fortification walls of the Fort, and cannot be experienced from the larger ZSV itself. The buildings and places within the bounds of the Lahore Fort are best described in a document dedicated to them. This section will therefore restrict itself to a discussion of the following buildings that are visible and experienced from outside the precinct of the Lahore Fort:

a) Badshahi Mosque is the most imposing building of value in this group. The opinion of the members of the World Heritage Committee visiting missions[2] can be easily reciprocated and it can be stated that this monument has several OUVs. These OUV's will be an essential part of the document which will propose the Badshahi Mosque to be inscribed on the World Heritage List.

b) Minar-e-Pakistan

c) Hazuri Bagh - the architectural ensemble including:
   - Roshnai Gate, the last remaining Mughal period city gate in Lahore.
   - The Hazuri Bagh pavilion, built by Maharaja Ranjit Singh.
   - The Alamgiri Gate, built along with Hazuri Bagh and the Badshahi Mosque.
   - The southern gate of Hazuri Bagh, which leads to the western localities of the Walled City.
   - The eastern façade of the entrance pavilion and the eastern enclosure wall of the Badshahi Mosque.
   - The mausoleum of Allama Muhammad Iqbal and other graves in Hazuri Bagh.
   - The enclosure wall and caravanserai cells of the Hazuri Bagh.

d) Other significant buildings and features related to the Lahore Fort and Badshahi Mosque include:
   - The Sikh funerary complex (Samadh of Ranjit Singh and Guru Arjun Singh).

[2] These missions took place in 2003, 2005 and 2009.

- The fortification wall of the Lahore Fort and the southern wall of the Hazuri Bagh.
- The remains of the 19th century outer fortifications built under Ranjit Singh.
- The recently restored Samadhi of Bhai Wasti Ram.
- The *mazaar* of Sabir Shah Wali, on the south-eastern corner of the Lady Willingdon Hospital campus;
- The *mazaar* of Sher Shah Wali on the north-western corner of the outer fortifications of the Lahore Fort.

e) Begum Shahi Mosque, also known as the Maryam Zamani Mosque built in 1611 in the reign of emperor Jehangir, occupies a special location in the access system to this zone. This site requires immediate rescue from the crushing pressure of the Rim Market and the shoe trade in this part of the Walled City.

PARKS AND OTHER GREEN SPACES ASSOCIATED WITH THE MONUMENTS

There are three types of green areas:

a) Spaces between monuments and the right of way of the surrounding roads

This first type comprises interstitial green verges between the hard edges of the monuments and the edges of the road rights of way. These are fenced in and maintained by the keepers of the respective monuments. The green areas between the outer fortification of the Lahore Fort and its outer property line are fenced-in with a metal fence. These spaces are maintained by the Fort's horticultural staff, and are kept in unremarkable condition. In addition to these are similar green spaces outside the building perimeter of the Badshahi Mosque.

In the case of both the Fort and the Badshahi Mosque, such spaces that were formerly within the precincts of these monuments on their northern side are now part of the Greater Iqbal Park.

The landscaped zone between Lady Willingdon Hospital and the Badshahi Mosque on the latter's west: This landscaped zone (largely a turfed area) on the west of the mosque is relatively well-maintained and though abutting on the monument, appears not to pose any threat to it from landscaping and irrigation etc., as it slopes away sharply from it.

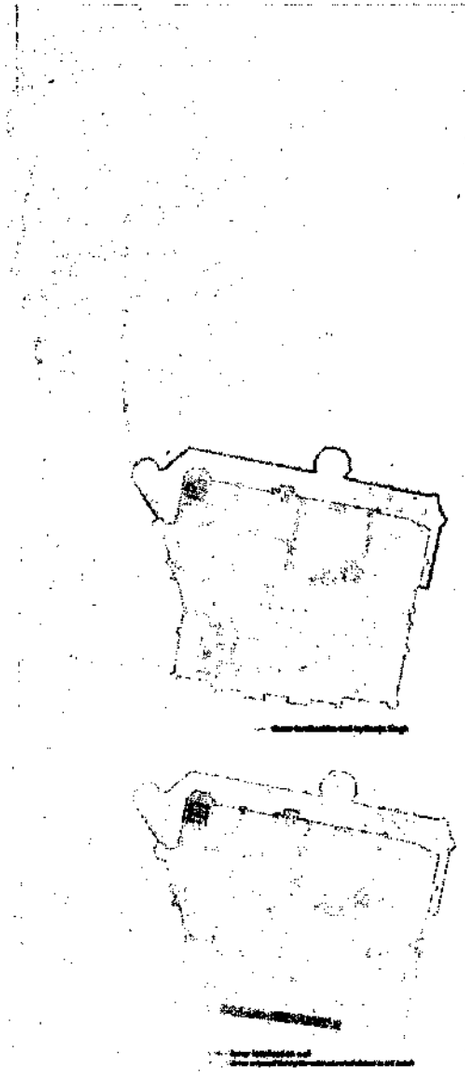
b) Green areas within the monumental precincts

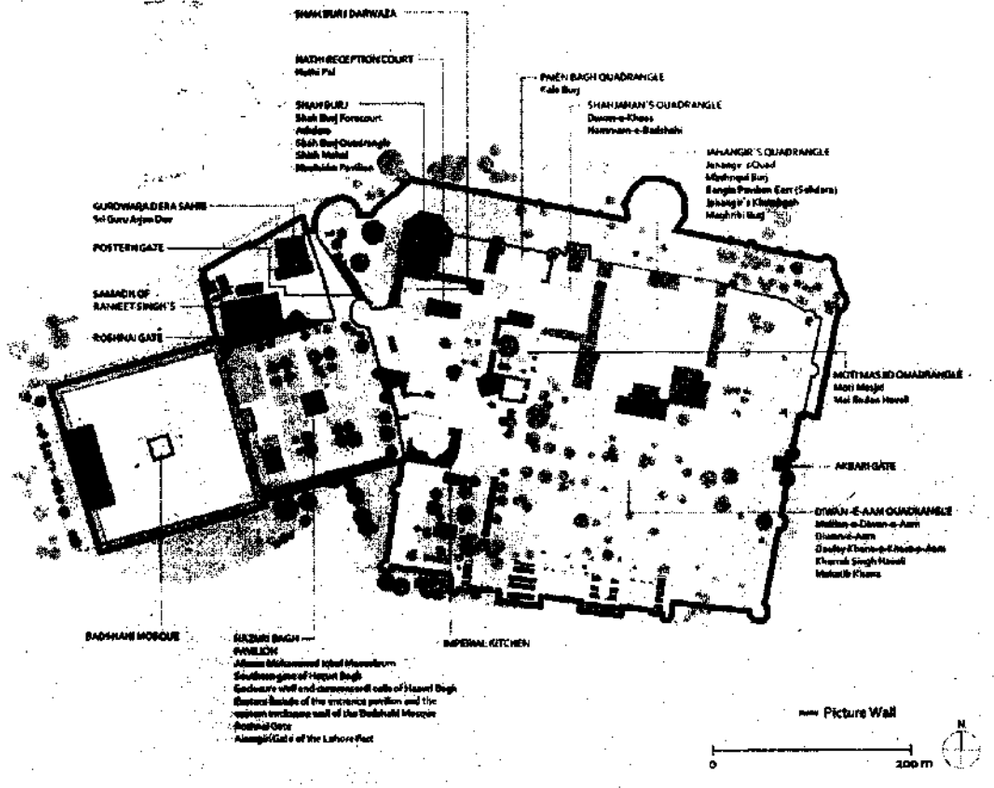
The second type comprises green spaces that are enclosed within the monumental complex. These include:

- Hazuri Bagh, which is the device whereby the western wall of the Lahore Fort was realigned in 1683 to a new axis (corresponding to the Qibla axis) created at the

ZONE OF SPECIAL VALUE 1

FIG. 20 INDIVIDUAL MONUMENTS IN THE COMPLEX





ACCESS INTO THE FORT COMPLEX

LEFT: ROSHNAI GATE (VIEW FROM THE NORTH, SHOWING SAMADHI OF RANJIT SINGH BUILT AGAINST PART OF THE GATE STRUCTURE).
TOP & BOTTOM: ALAMGIRI AND AKBARI GATES PROVIDE ACCESS INTO THE FORT COMPLEX

ZONE OF SPECIAL VALUE 1

FIG. 21 GREEN AREAS IN THE ZONE OF SPECIAL VALUE

founding of the Badshahi Mosque. On this axis from east to west are the Alamgiri Gate; the Hazuri Bagh space itself with its central pavilion; and the entrance steps and entrance pavilion of the great mosque itself.

- Since it is a four-quartered Chahar Bagh in the best traditions of Mughal architecture, it has a secondary axis perpendicular to the Qibla axis which has Roshnai Gate to its north, and a smaller entrance gate to the south.

- Other formal gardens within the monumental complex such as the Diwan-e-Aam of the Lahore Fort, of the Jehangiri quadrangle, the green quadrangle of the Pakistan Institute of Archaeological Training and Research (PIATR), the "moat" below the Picture Wall and other miscellaneous patches of green in the Fort.

The future of these landscaped areas is integral to the overall conservation programme for the monumental complex.

c) Organized urban parks

The third type comprises organized parks or otherwise enclosed spaces outside the monuments. Their present status/condition is described here along with proposals for future use:

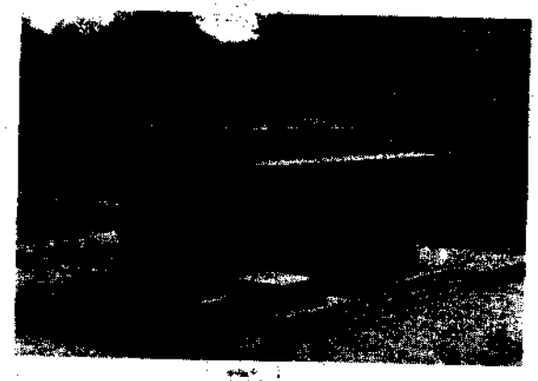
- Greater Iqbal Park: This park is located on the north of Lahore Fort and was completed and inaugurated by the Prime Minister in 2016. As a large community park, it will serve as a buffer from public pressure so long as no entry is provided to the monuments from this access route. The immediate impact on the monumental complex of exhaust emanations of vehicles is mitigated by the removal of the old Circular Road segment immediately to the north of the complex, and by the building of the new road circling the park on its north, keeping heavy traffic at some distance from the monument.

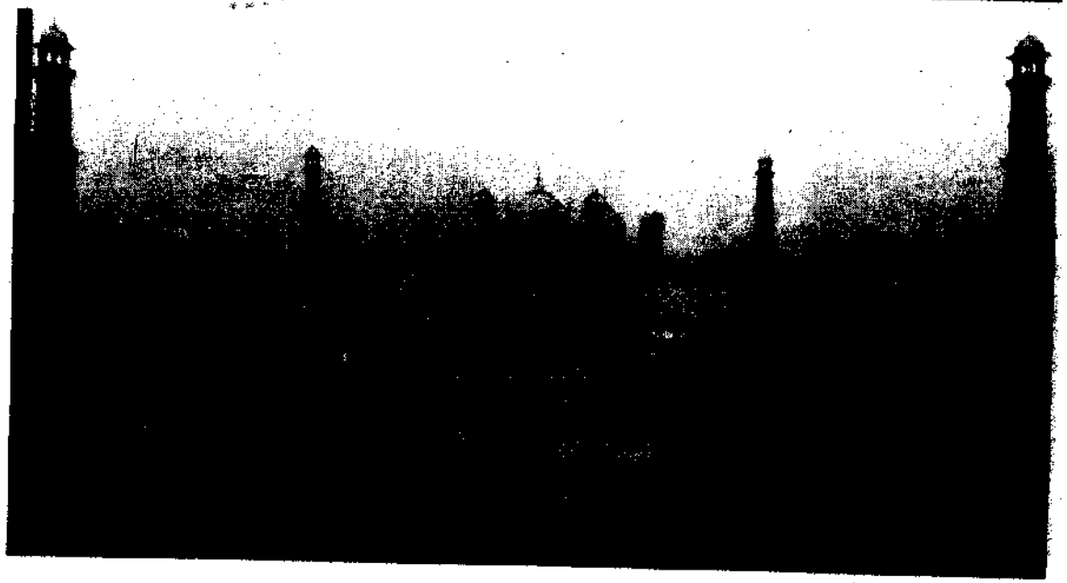
- Ali Park: This is a public park that provides the main buffer for the monument on its southern side. Its redevelopment and landscaping should be part of a larger programme of the rehabilitation and improvement of the southern part of the ZSV.

THE WALLED CITY'S URBAN FABRIC INCLUDED IN THE ZONE

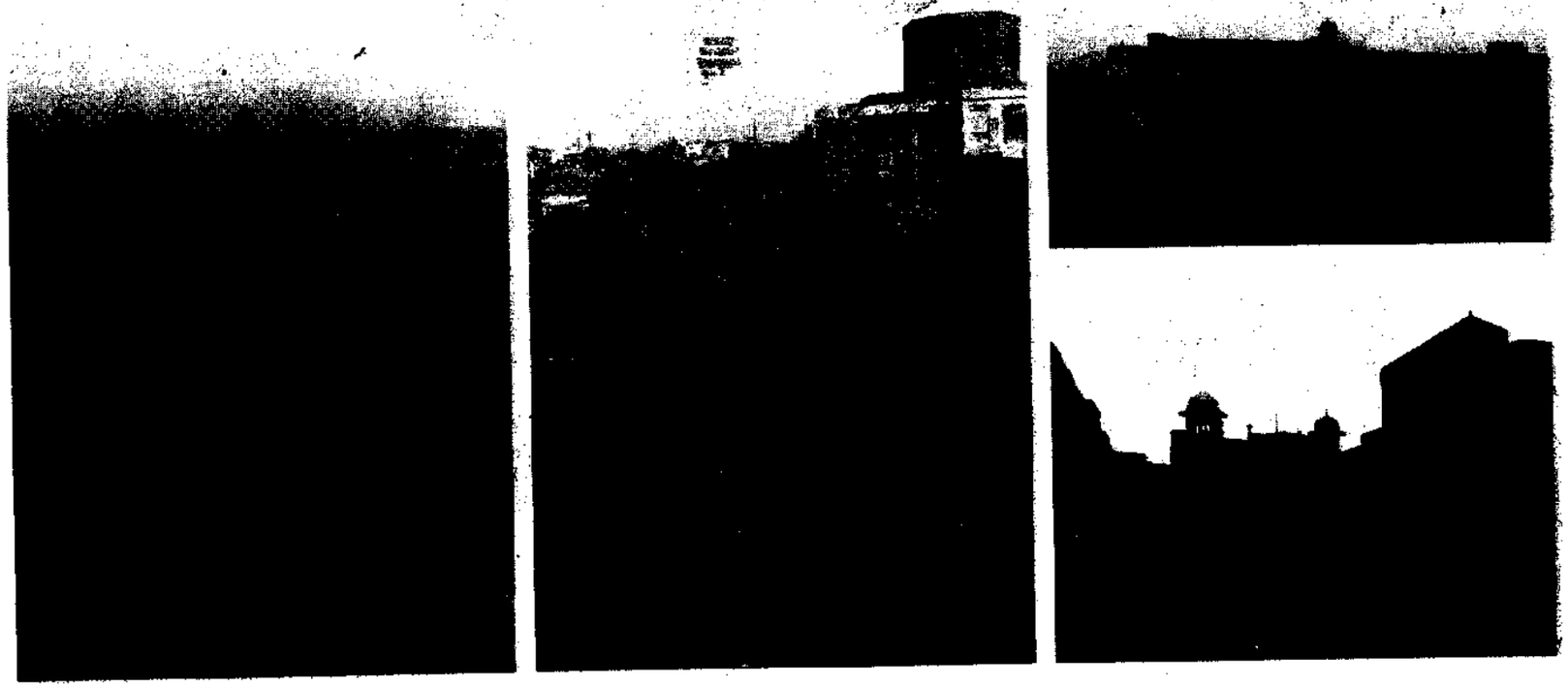
A part of the urban fabric of the Walled City has been included in this ZSV as well as in the proposed buffer zone. As a general recommendation, all blocks of the urban fabric included in the ZSV should be rehabilitated with particular emphasis on how the façades looking towards the monumental core are treated. Flamboyant paint and decorative elements in the name of historical appropriateness and for commercial exploitation of this vantage should be avoided, and emphasis should be placed on the monuments. The urban fabric included in this ZSV includes several building groups in the Hira Mandi area. A part of this has been referred to as "the triangle", the northern and eastern edge of which has been converted into a "food street" in recent years. This re-development has had unfortunate visual impacts in the environment of the staid and graceful Badshahi Mosque. In future, the "triangle" would need to be treated carefully, and conserved and recycled with care, vision and architectural competence.

FROM TOP LEFT:MAUSOLEUM OF MOHAMMAD IQBAL; SAMADH OF MAHARAJA RANJIT SINGH AND VIEW OF THE BADSHAHI MASJID FROM THE EAST

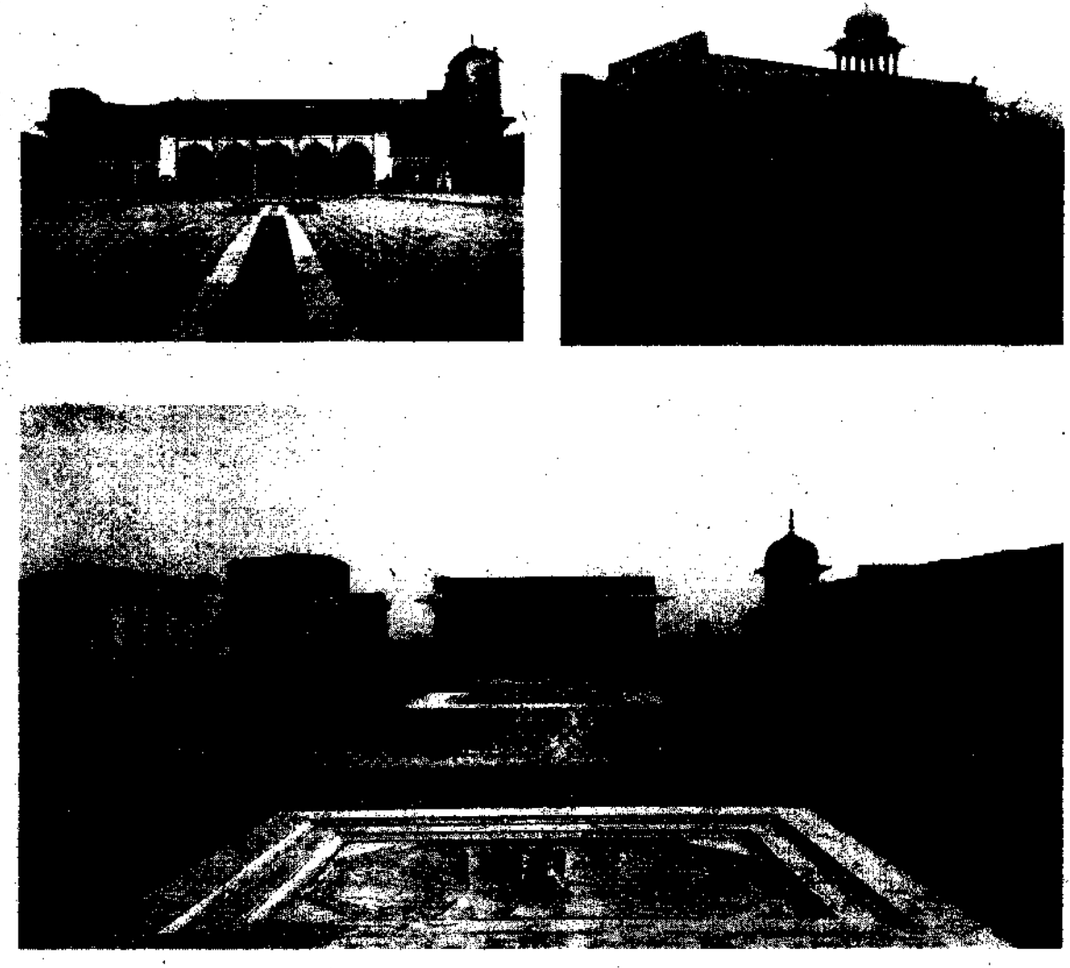




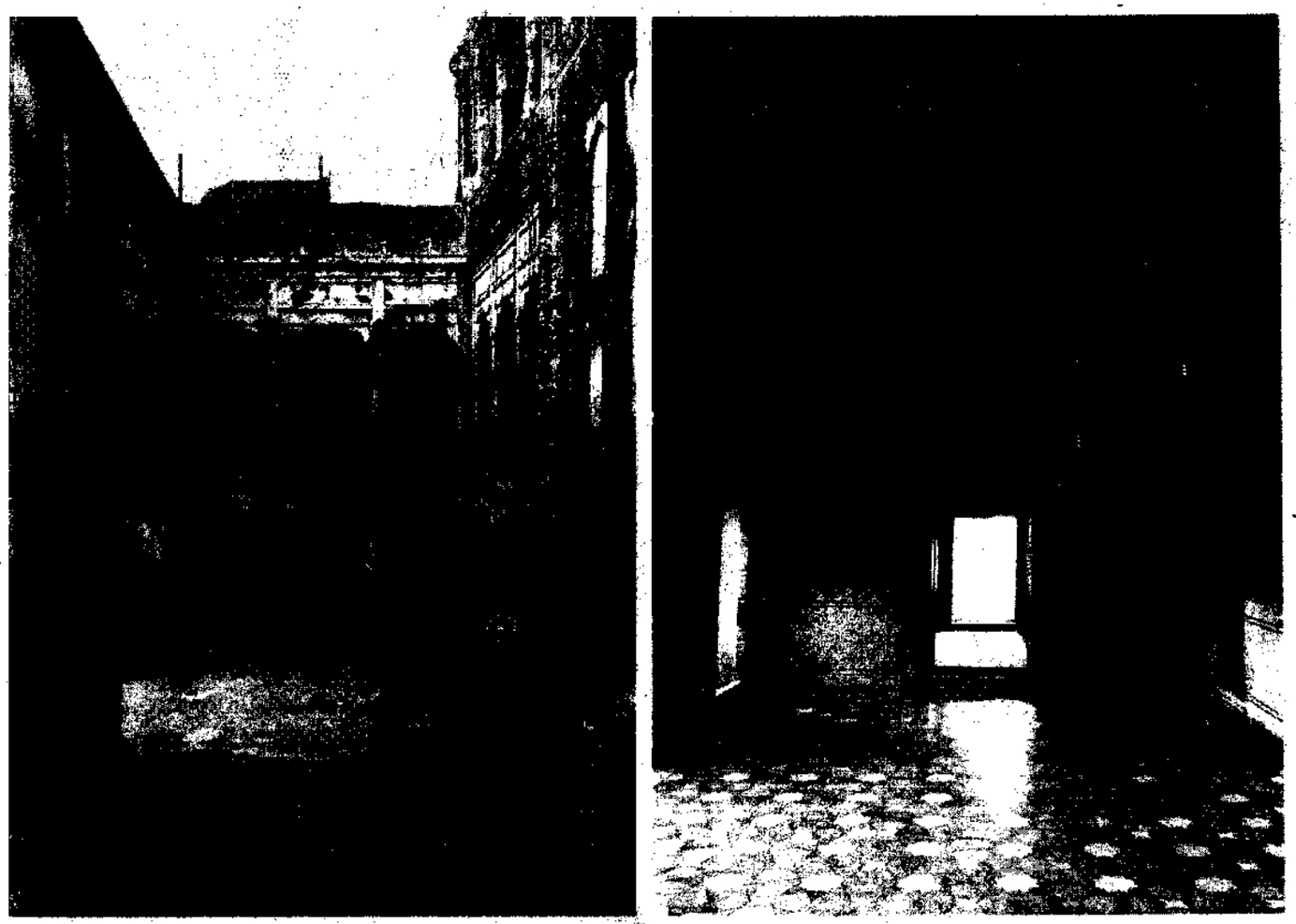
LEFT: THE MOAT - THE SPACE BETWEEN THE OUTER FORTIFICATIONS AND THE ORIGINAL APRON WALL OF THE FORT (THE PICTURE WALL, MIDDLE PHOTOGRAPH); UPPER RIGHT: UNTENDED SPACE BETWEEN THE HAZURI BAGH AND THE INNER FORTIFICATION; LOWER RIGHT: THE ACCESS WAY FROM THE THE DIWAN-E-AAM TO THE ALAMGIRI GATE.



MONUMENTS WITHIN THE LAHORE FORT: FROM TOP LEFT CLOCKWISE, THE SHEESH MAHAL, DAULAT KHANA-E-KHAS O AAM & THE DIWAN-E-KHAAS



HATHHI POL (LEFT) AND SHEESH MAHAL (RIGHT)



Further to the south of Hira Mandi are the Ooncha Chait Ram and beyond that the Shiekhupuria Bazaar. The latter is still the only place in the Walled City where traditional shoes crafted in rural Punjab are sold. As a bazaar with history and place-value this is a fitting place to be included in the zone.

Rehabilitation of residential buildings: South of the "triangle", on the other side of the Fort Road in the area known as Neewa Chait Ram, are several residential buildings organized around small squares. These buildings were built in the first half of the 20th century in a local derivative of art deco and represent considerable potential value. The residential buildings in Neeva Chait Ram are good candidates for being rehabilitated and their value restored/enhanced to recover some of their period value.

Opportunities for insertions and new buildings: On the south-east corner of the "triangle", a building purchased by a hotel entrepreneur in 2005 to construct a new hotel lies abandoned, half in ruin due to failed sheet piling operations. This site provides an excellent opportunity to resurrect the fabric of this part of the area south of the Fort.

URBAN ELEMENTS OF POTENTIAL VALUE - ALI PARK AND ENVIRONS

a) The properties situated to the south of Ali Park and the perimeter road onto which they front sit on a shelf of land some 1.5 metres above the park. The edge of the zone runs along the southern side of this block of buildings east to west until Chowk Nau Gaza Peer (also known as the Tarannum Cinema Chowk). These properties face the southern edge of the Lahore Fort and look down into Ali Park.

b) A comprehensive programme for rehabilitating these buildings into upgraded residences should be initiated with the owners, with the ultimate objective of presenting a quality of a well-kept and economically healthy urban appearance.

c) The PTCL building built in the middle of Ali Park should be acquired and a use in keeping with the purposes of the park should be assigned to it, after suitable architectural and functional modifications.

d) On the eastern edge of the park, the campus for the school for special needs children (Government Special Education Center) should be rehabilitated under a special grant from the Punjab Government and should be turned into a model facility. Its buildings should be rehabilitated and its grounds properly landscaped.

e) Beyond this on the east is the Lahore Fort grid station. It has been proposed in the past that this facility be put under ground, as should the HT and MT cables associated with it. This would enable the removal of all pylons that currently exist on the north-eastern, eastern and south-eastern side of the World Heritage Site.

f) At the eastern end of this block of land and east of the grid station are two other elements of special value and note. The first is the shrine of Nathe Shah and Shabeh Shah, and the second is the historic ikhara of Khalifa Boota (known these days as the Ikhara of Shahia Pahalwan). Both nestle under a cluster of old trees. These are surrounded on their eastern and southern side by recent commercial and residential structures. These latter structures should be acquired and removed, and the entire area should be landscaped appropriately continuing onto the Rim Market area (see below).

OPPORTUNITIES FOR CREATING NEW URBAN ELEMENTS OF VALUE - RIM MARKET

a) The single largest opportunity of this genre lies in the future of the Rim Market. To the east of the Lahore Fort, the Fort Road branches off from the north Circular Road at Masti Gate to run alongside the eastern extents of the Lahore Fort. At this point, there is an old Girls' School and the Masti Gate Police Station the rear property line of which abuts onto the road on its eastern side. The rest of the land on this side is a larger area measuring some 1.5 hectares. This was once communal ("*shamilaat/ nazul*") land which is the property of the government. It has been called the "*maidan-e-nakhaas*"[3] and is said to have been where horses were traditionally sold to the city's nobility and rulers, and where once the only important buildings were that of the Begum Shahi (Maryam Zamani) Mosque and the *haveli* of Asaf Jah, purported to have existed where the Chuna Mandi havelis now stand. On this land, some traders who specialized in vehicle wheel rims were settled in 1958 when they were removed from near the Lahore Railway Station.[4] The area has grown into what is known as the Rim Market which has completely engulfed the mosque. The market has a well-established linkage with the nearby automotive spare parts market, the Badami Bagh bus terminus and the trucking activity around the Walled City.

b) The Lahore Fort Master Plan contains a proposal for a landscaped component as part of the multi-use re-development of the Rim Market area. The proposal warrants extremely sensitive development criteria and care must be taken in the design and implementation of this area development scheme. This is a large area in the context of the Walled City and will without doubt create the necessary forecourt of utility, urban aesthetic and the appropriate kind of commerce in the proposed eastern access leading up to the Lahore Fort via the Akbari Gate.

c) There have been proposals to develop the land to be vacated by the Rim Market into a multi-use area containing parking for visitors, a specialty crafts and boutique market, and a boutique hotel. Additional parking could be developed to the north of the Begum Shahi Mosque, the eastern parts of the Greater Iqbal Park as well as on land currently empty along the Circular Road.

d) WCLA is currenly intending moving a proposal to remove the present businesses of the Rim Market, and to develop the space vacated. A proposal for the conservation of the Begum Shahi Mosque has also been prepared.

NOTE ON THE OPENING OF THE EASTERN (AKBARI) GATE OF THE LAHORE FORT

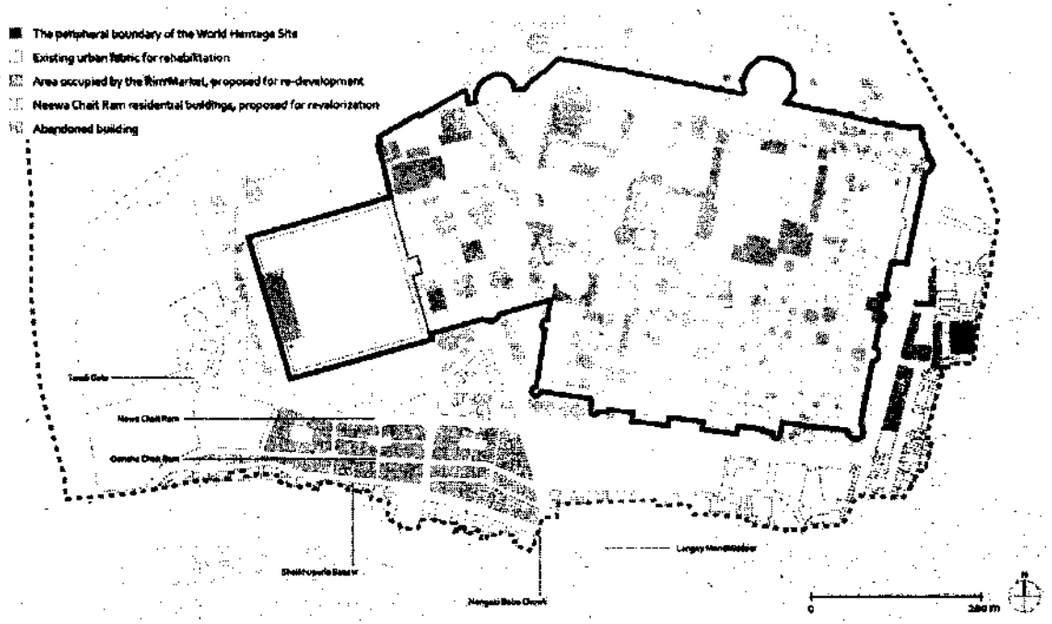
The proposed opening of the eastern gate of the Lahore Fort, after nearly 170 years will once again connect the Walled City to the restricted precincts of the Lahore Fort. For the people of Lahore a deep cultural memory will have been re-invoked. The space between the city and the Fort will be reanimated with modern facilities. The importance of competent and sensitive handling of design in this endeavor is to be underscored.

With the opening of the eastern gate of the Lahore Fort, access to the Badshahi Mosque and the Lahore Fort will be available at three points. The first of this is the old northern entrance into Hazuri Bagh. The Hazuri Bagh is now available only to those who have entered the Greater Iqbal Park, which is a pedestrian-only zone. The remaining two accesses are where people can bring cars where adequate parking could be developed. These locations are at the Rim Market (in its future avatar) and at the entrance into the Food

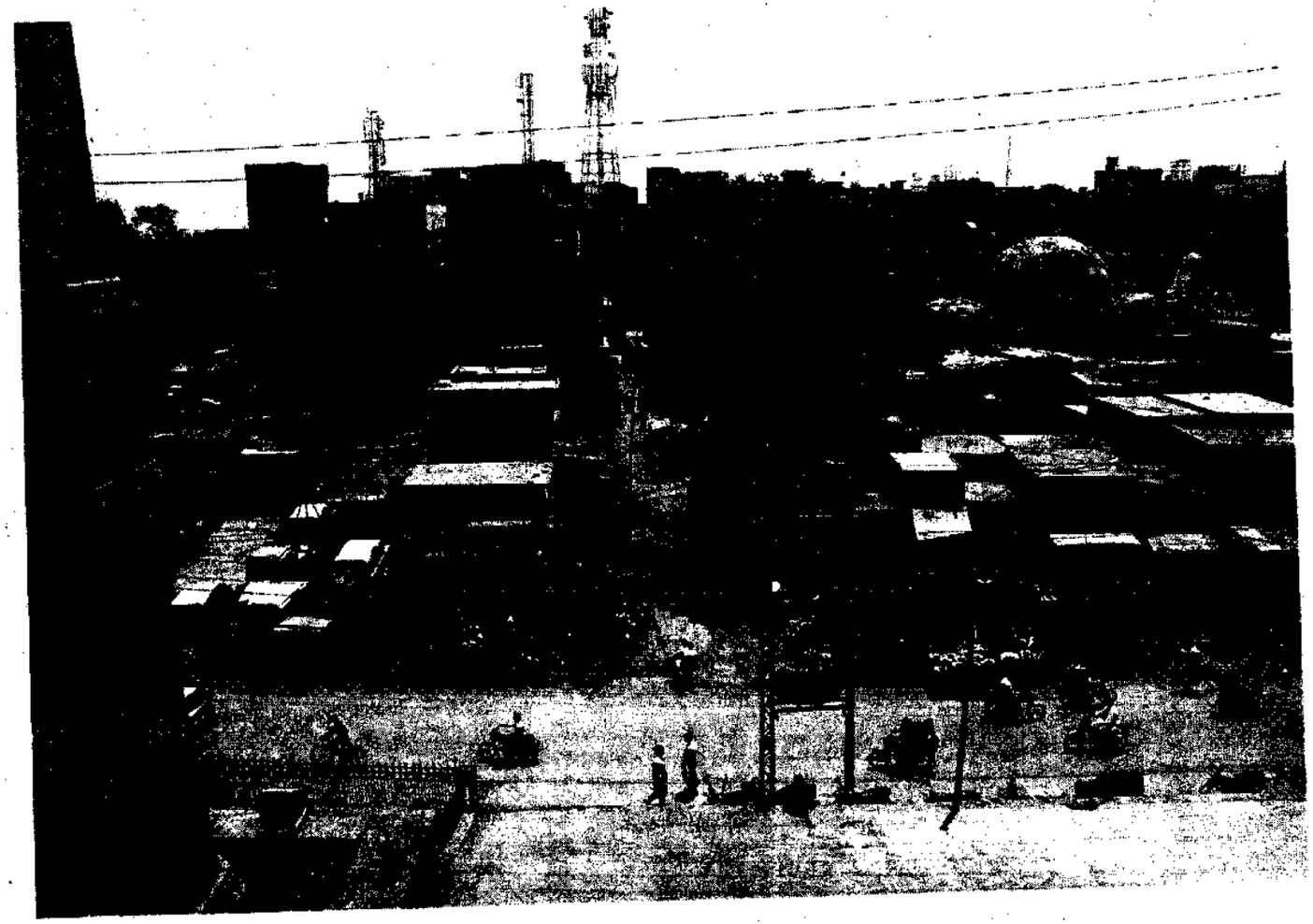
3 Muhammad Saleh Kamboh, *Amal-e-Saleh*, [illegible] *Lahore: Its History, Architectural Remains and Antiquities*, Lahore, 1990

4 "Estimating the GDP of the Rim Market [illegible] [illegible] by Lahore Chamber of Commerce & Industry, page 10.

FIG. 22 SECTIONS OF THE WALLED CITY OF LAHORE'S URBAN FABRIC INCLUDED IN THIS ZONES OF SPECIAL VALUE



VIEW EAST FROM THE EASTERN (AKBARI) GATE OF THE LAHORE FORT, SHOWING THE MARYAM ZAMANI MOSQUE ENGULFED BY THE RIM MARKET



Street (the southern entrance to the Hazuri Bagh).

The opening of the Eastern (Akbari) Gate of the fort has several implications. As mentioned above, it will reconnect the people of the Walled City once more to conform with the historic relationship of the governed and the seat of power, as the Eastern Gate is the terminal point on the historic path between the Delhi Gate and the Lahore Fort - the so called Shahi Guzargah - which has been at the core of recent investments in the Walled City.
Within the Fort precinct, the admittance of people to the eastern gate will create new possibilities, and new challenges, for the administration and organization of the visitor circuit. A graded admission fee for three circuits could be proposed as a preliminary response to these challenges. The following possible circuits are indicative only, and may be used as guidelines:

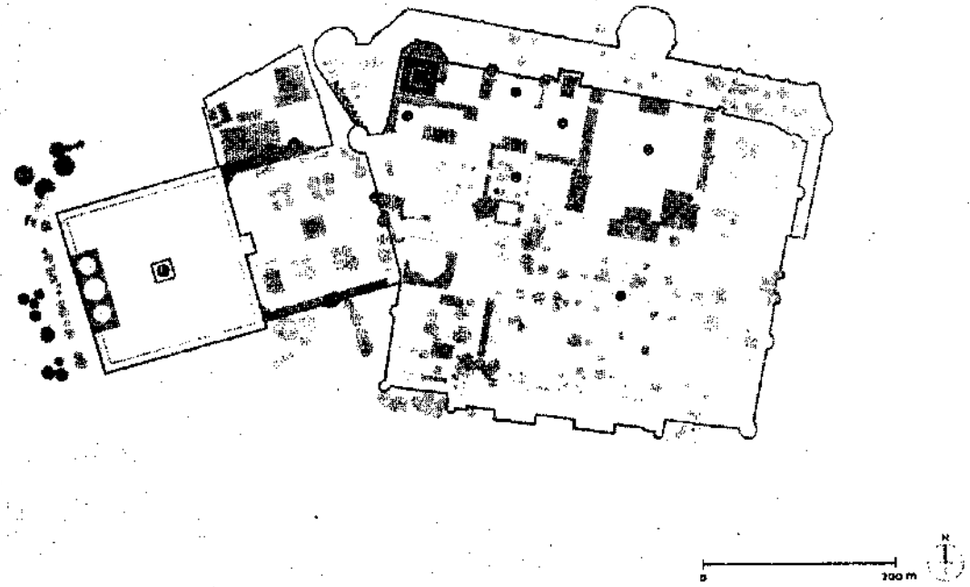
The first circuit would be a low cost access to walk through the Diwan-e-Aam maidan, experience the Diwan-e-Aam itself, and then to walk out of the Alamgiri Gate to a surprise revelation of the full splendour of the Hazuri Bagh and the magnificence of the Badshahi Mosque.

The second circuit would be routed through Jahangir's quadrangle, Bari Khwabgah, and Diwan-e-Khas and returned through the Makatib Khana to the Diwan e Aam maidan to continue onwards to the Hazuri Bagh.

The third circuit would have visitors turn north immediately after entering the Akbari Gate (eastern entrance) and following a new route to the "moat" below the apron wall of the Fort (the Picture Wall). Visitors would then walk westward along the Picture Wall and around the Shahi Burj, to enter through the Hathii Pol, then up the Hathi stairs to the Shish Mahal and the Summer Palace Museum, then through Diwan-e-Khas, Jahangir's Quadrangle, Makatib Khana, Moti Masjid and onto the Alamgiri Gate (in the west) and the Hazuri Bagh.

All three proposed circuits would have access to the Moti Masjid.

FIG. 23 PROPOSED FIRST TIER (LOWEST LEVEL) VISITOR CIRCUIT



- DIWAN-E-AAM QUADRANGLE
  Maidan-e-Diwan-e-Aam
  Diwan-e-Aam
  Daulay Khana-e-Khass-o-Aam
  Kharrak Singh Haveli
  Maktab Khana
- MOTI MASJID QUADRANGLE
  Moti Masjid
  Mai Jindan Haveli
- JAHANGIR'S QUADRANGLE
  Jahangir's Quaid
  Mashriqui Burj
  Bangla Pavilion East (Sehdara)
  Jahangir's Khwabgah
  Maghribi Burj
- SHAHJAHAN'S QUADRANGLE
  Diwan-e-Khaas
  Hammam-e-Badshahi
- PAIEN BAGH QUADRANGLE
  Kala Burj
- HATHI RECEPTION COURT
  Hathi Pol
- SHAH BURJ
  Shah Burj Forecourt
  Athdara
  Shah Burj Quadrangle
  Shish Mahal
  Naulakha Pavilion
- SHAH BURJ DARWAZA
- IMPERIAL KITCHEN
- HAZURI BAGH PAVILION
  Allama Muhammad Iqbal Mausoleum
  Southern gate of Hazuri Bagh
  Enclosure wall and caravanserai cells of Hazuri Bagh
  Eastern facade of the entrance pavilion and the eastern enclosure wall of the Badshahi Mosque
  Roshnai Gate
  Alamgiri Gate of the Lahore Fort
- BADSHAHI MOSQUE
- GURDWARA DERA SAHIB
  Sri Guru Arjan Dev
- SAMADH OF RANJIT SINGH
- ROSHNAI GATE
- POSTERN GATE
- AKBARI GATE

ZONE OF SPECIAL VALUE 1

FIG. 24 PROPOSED SECOND TIER VISITOR CIRCUIT

- DIWAN -E-AAM QUADRANGLE
  - Maidan-e-Diwan-e-Aam
  - Diwan-e-Aam
  - Daulay Khane-e-Khass-o-Aam
  - Kharrak Singh Haveli
  - Maktab Khana
- MOTI MASJID QUADRANGLE
  - Moti Masjid
  - Mai Jindan Haveli
- JAHANGIR'S QUADRANGLE
  - Jahangir's Quaid
  - Mashriqui Burj
  - Bangla Pavilion East (Sehdara)
  - Jahangir's Khwabgah
  - Maghribi Burj
- SHAHJAHAN'S QUADRANGLE
  - Diwan-e-Khaas
  - Hammam-e-Badshahi
- PAIEN BAGH QUADRANGLE
  - Kala Burj
- HATHI RECEPTION COURT
  - Hathi Pol
- SHAH BURJ
  - Shah Burj Forecourt
  - Athdara
  - Shah Burj Quadrangle
  - Shish Mahal
  - Naulakha Pavilion
- SHAH BURJ DARWAZA
- IMPERIAL KITCHEN
- HAZURI BAGH PAVILION
  - Allama Muhammad Iqbal Mausoleum
  - Southern gate of Hazuri Bagh
  - Enclosure wall and caravanserai cells of Hazuri Bagh
  - Eastern facade of the entrance pavilion and the eastern enclosure wall of the Badshahi Mosque
  - Roshnai Gate
  - Alamgiri Gate of the Lahore Fort
- BADSHAHI MOSQUE
- GURDWARA DERA SAHIB
  - Sri Guru Arjan Dev
- SAMADH OF RANJIT SINGH'S
- ROSHNAI GATE
- POSTERN GATE
- AKBARI GATE

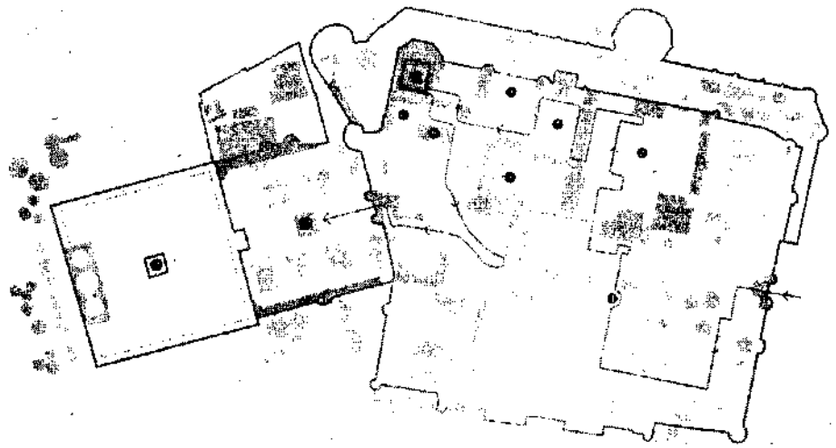
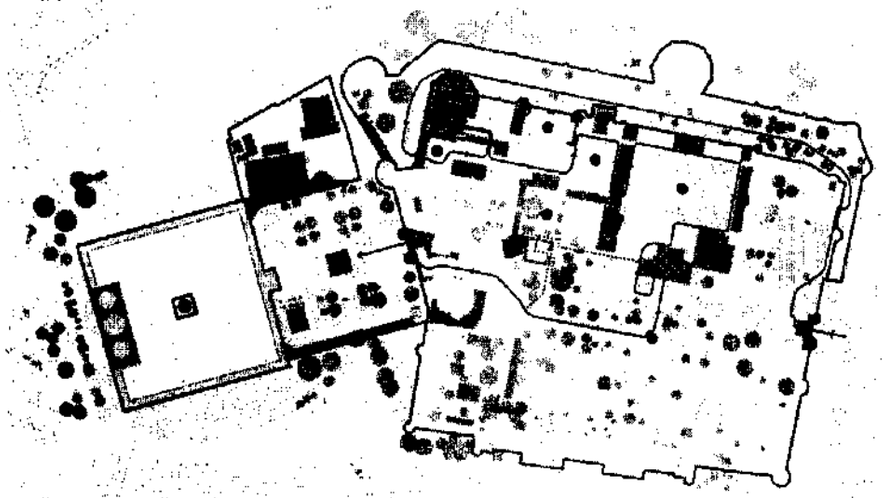
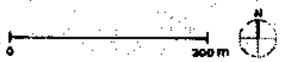


FIG. 25 PROPOSED HIGHEST TIER VISITOR CIRCUIT

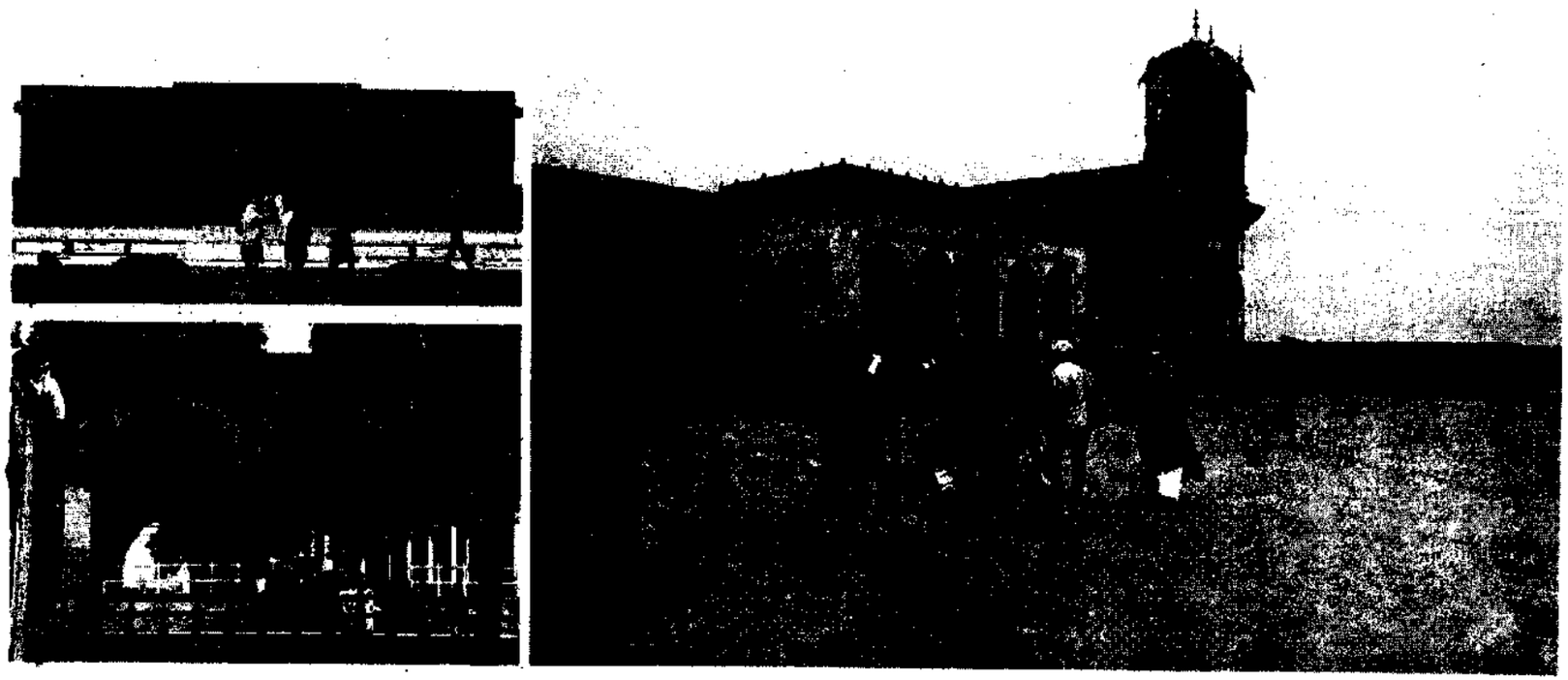




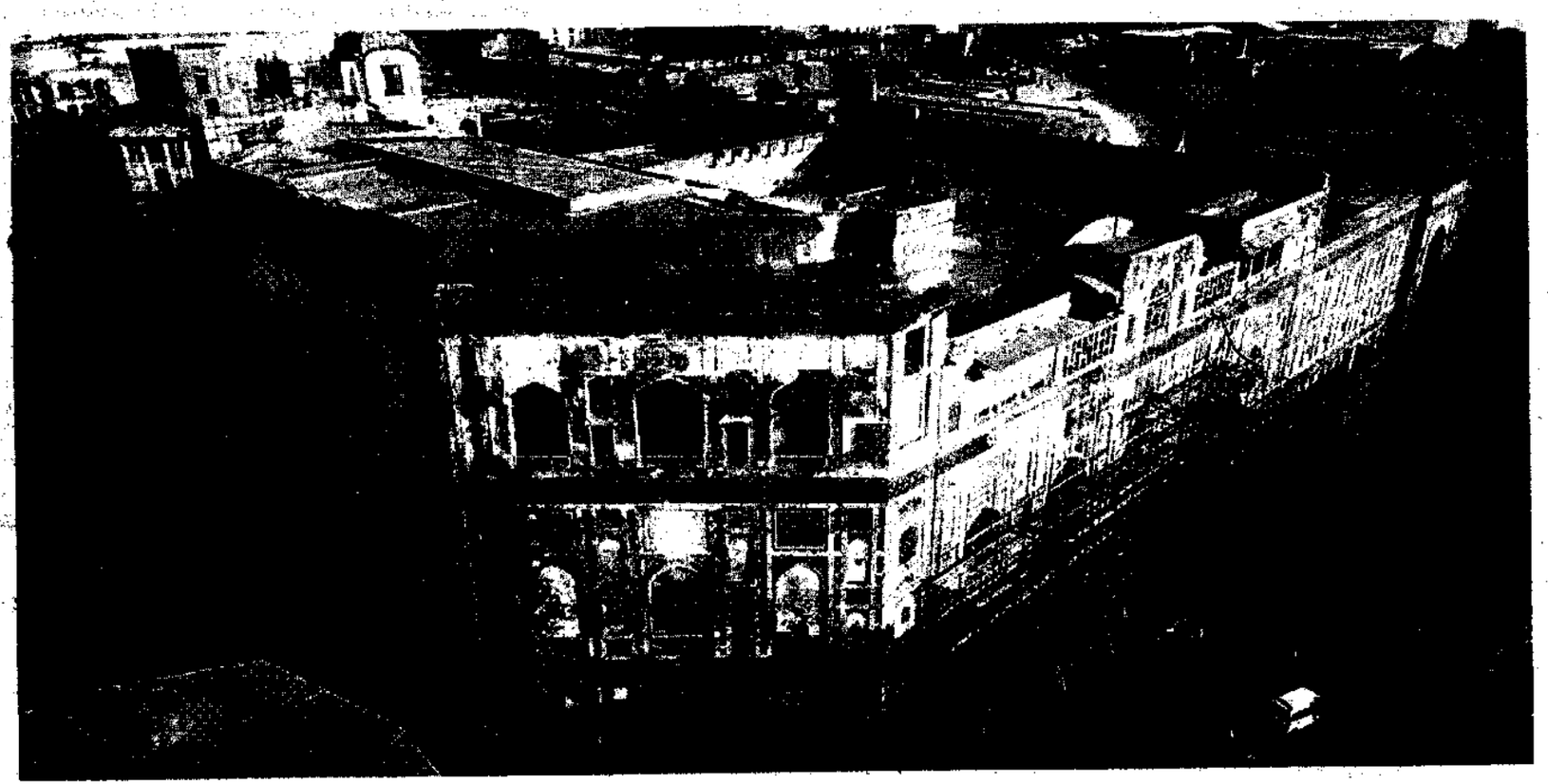
- DIWAN-E-AAM QUADRANGLE
  Meidan-e-Diwan-e-Aam
  Diwan-e-Aam
  Daulay Khane-e-Khass-o-Aam
  Kharak Singh Haveli
  Maktab Khane
- MOTI MASJID QUADRANGLE
  Moti Masjid
  Mai Jindan Haveli
- JAHANGIR'S QUADRANGLE
  Jahangir's Quaid
  Mashriqui Burj
  Bangla Pavilion East (Sehdara)
  Jahangir's Khwabgah
  Maghribi Burj
- SHAHJAHAN'S QUADRANGLE
  Diwan-e-Khass
  Hammam-e-Badshahi
- PAIEN BAGH QUADRANGLE
  Kala Burj
- HATHI RECEPTION COURT
  Hathi Pol
- SHAH BURJ
  Shah Burj Forecourt
  Athdara
  Shah Burj Quadrangle
  Shish Mahal
  Naulakha Pavilion
- SHAH BURJ DARWAZA
- IMPERIAL KITCHEN
- HAZURI BAGH PAVILION
  Allama Muhammad Iqbal Mausoleum
  Southern gate of Hazuri Bagh
  Enclosure wall and caravansarai cells of Hazuri Bagh
  Eastern facade of the entrance pavilion and the eastern enclosure wall of the Badshahi Mosque
  Roshnai Gate
  Alamgiri Gate of the Lahore Fort
- BADSHAHI MOSQUE
- GURDWARA DERA SAHIB
  Sri Guru Arjan Dev
- SAMADH OF RANJIT SINGH'S
- ROSHNAI GATE
- POSTERN GATE
- AKBARI GATE

ZONE OF SPECIAL VALUE 1

VISITORS AT THE FORT



THE PICTURE WALL



INTRODUCTION

This zone covers an area of approximately 3.5 hectares. It is located in the western part of the Walled City, stretching from the north of the Bhatti Gate Bazaar and leading upto Chowk Tibbi. The place-name Bazaar Hakeeman reflects the many medical practitioners who lived and worked here during the 19th century; and it is also famous for being the residence of many Muslim nobles and ministers of the court of Maharaja Ranjit Singh. The most famous is the family of the Faqir Syeds - Faqir Syed Aziz-ud-din was the prime minister of Maharaja Ranjit Singh at one point, and the family still has a branch (led currently by Faqir Syed Saifuddin) living in the ancestral haveli—the Faqir Khana. In the late 19th and earlier 20th centuries, the area was also known for the family of Syed Maratib Ali which resided here. In the late 20th century, Syed Babar Ali has been the notable personality associated with this family. He has established Naqsh, a school of traditional calligraphy and miniature painting, and an embroidery school for women. Like most parts of the Walled City, this zone will become part of a larger conservation and infrastructure development project, similar to the one carried out in the Delhi Gate Bazaar, with the limits of the overall project area determined according to the project phasing discussed in Part IV.

RECOMMENDATIONS

The western localities of the Walled City have over the passage of time retained their residential character in terms of the traditional building typologies that are to be found and the ways in which buildings are configured with respect to one another to form a unique urban ensemble. Care must be taken not to disrupt this urban feature.

ORGANIZATIONAL RECOMMENDATIONS

This zone lies within the territorial limits of WCLA as outlined in Schedule 1 of the WCL Act (2012). WCLA is presently undertaking project planning and preparation for this zone and it is recommended that the necessary technical and human resources be in place to carry the work forward. In addition, WCLA should facilitate greater communication between the technical and the social mobilization wings and between the WCLA personnel on the ground and project stakeholders and beneficiaries to ensure a stable workflow. Local administrative representatives should be brought on board to understand the nature and scope of work involved.

SURVEYS

PLOT AND BUILDING SURVEY

The plot and building data for this zone was initially collected as part of the Walled City of Lahore Plot and Building Survey of 2008 which AKCS-P carried out in 2008. As of 2016, WCLA conducted a fresh door-to-door survey within the Bazaar Hakeeman zone to update the information for a total of 356 properties. It is strongly recommended that similar updates be carried out for the remaining areas of the Walled City; and sufficient training be provided to the survey team, comprising at least one architect, one civil engineer and an urban planner.

PHYSICAL SURVEYS

The basis of all physical surveys carried out is the complete topographical survey of the Walled City carried out in 2008-2009 by AKCS-P, which carries comprehensive information in regard to (i) shape and form of the street network; (ii) infrastructure lines and alignments and visible features, (iii) property markers (iv) projections and street level encroachments (*tharras*, toilets etc.) from the properties flanking the street.

In the present instance, two kinds of surveys have been undertaken: ground floor plan documentation of every building within the zone, and 3-D scanner surveys of all exteriors of three areas of potential value.

GROUND FLOOR DOCUMENTATION: This was carried out in all of the land parcels with buildings on them, between June and November of 2016. The exercise was conducted using manual measurements and triangulation for 225 properties and EDM Total Station on the remaining 100. The ground floor survey has brought several kinds of useful information to light, which include (i) the correct shape of each land parcel, (ii) the typology of the architecture (including older typologies hiding behind new and remodeled facades; (iii) details of the use the building was being put to; and (iv) the location of vacant plots and ruined structures. Data of this kind will inform the future course of action with respect to individual buildings, groups of buildings, as well as open spaces and squares located within the zone.

3D SCANNING: AKCS-P carried out this survey in selective areas within the zone with the aim to present an example for documenting urban areas in the context of the Walled City. The field survey was conducted over a period of about ten days and covered an area of 4,686 sq. metres of urban square (Moti Tibba and Mohalla Joggian) and 333 metres in street length from Moti Tibba to Bazaar Hakeeman. The resulting point cloud data was used to generate the following types of information at a relatively faster pace when compared with more conventional means of building documentation:

- Plans through street sections
- Sections through streets and façades
- Existing façade elevations of buildings
- Urban design concepts

The lessons learned from this pilot exercise will inform how urban spaces and buildings are recorded and analysed with the aim to develop façade improvement and other conservation intensive proposals for this zone as well as other parts of the Walled City.

OTHER INQUIRIES

Miscellaneous inquiries were made with respect to ongoing activities such as construction projects, ruined or abandoned properties, local government representations etc.

EXISTING CONDITIONS

DESCRIPTION OF THE ZONE

The following *mohallas* / neighbourhoods are to be found in Zone 5D:

- Abu Bakar Street
- Bazaar-e-Hakeeman
- Bhola Peer Ke Gali
- Chora Khu/Mohalla

FIG. 27 PARTIAL VIEW OF GROUND FLOOR DOCUMENTATION IN BAZAAR HAKEEMAN ZONE OF SPECIAL VALUE

ELEMENTS OF GROUP VALUE: Several groups of properties in various parts of the zone have been identified which lend character to the urban townscape.

POTENTIAL VALUE – CANDIDATES FOR CONSERVATION / REHABILITATION

BUILDINGS: Structures that fall into this category bear evidence of considerable former architectural value, by virtue of the remains on the façade or by an examination of the internal conditions of the structure, and which have been overlaid with modern plaster render and other surface revetment such as modern glazed ceramic tiles.

URBAN ELEMENTS: There are open squares and entire street segments which once rehabilitated would significantly enhance the sensory and aesthetic value of the zone. These opportunities comprise the repair and rehabilitation of structurally deteriorated older buildings as well as the construction of new structures on empty plots which represent "tooth-gap" condition on the street or square.

INSERTIONS AND NEW BUILDINGS: Several ruined buildings / derelict sites / empty parcels of land present opportunities for re-building and testing out the requisite skills for this purpose.

NEW URBAN ELEMENTS: New urban elements: In a similar manner, several opportunities present themselves where the zone and areas immediately adjacent to it can be transformed into well-conceived urban design and landscaping projects. Some of these opportunities are.

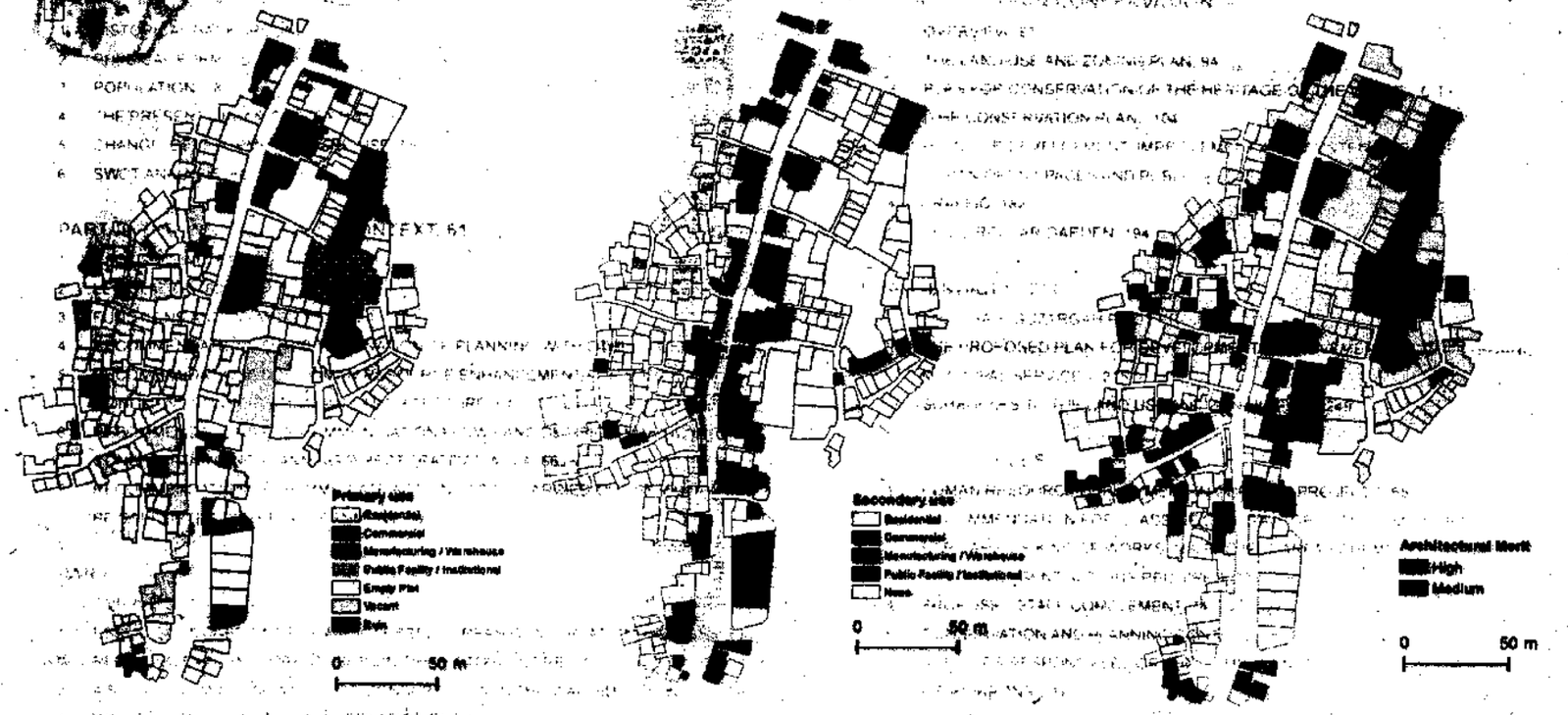
a) Creation of an underground parking garage at Chowk Tibbi on land owned by the Police Department.
b) Landscaping and urban design of Chowk Moti Tibba, with carefully planned car parking.
c) Conversion of empty and/or abandoned properties into small landscaped squares or children's play-lots managed by the community.

DESIGN GUIDELINES OF STREETS AND OPEN AREAS

This section illustrates design guidelines with respect to two urban elements in Zone 5D. The first example shows a stretch of the passageway leading into Mohalla Joggian from Bazaar Hakeeman, and the second illustrates proposals developed for Chowk Moti Tibba. In both cases, documentation of the streetscape was carried out with 3D Scanning (Leica Scanstation P30 Laser Scanner). Architectural drawings (plans / sections / elevation) of the existing condition of building façades were then generated from the point cloud data.

In Mohalla Joggian, a new façade sympathetic to the elements of group value among the buildings fronting the small square is proposed for a building that is being reconstructed by its owner. Group value was enhanced by using fenestration and information about façade delineation from existing buildings. A similar analytical approach was used to develop designs for Chowk Moti Tibba. In view of the relatively larger size of the square and its location along a key thoroughfare, additional features such as parking spaces and walkways are introduced.

FIG. 5.1 (THIS AND FACING PAGE) EXISTING SITUATION IN BAZAAR HAKEEMAN



BAZAAR HAKEEMAN

FIG. 29 REHABILITATION OF CHOWK MOTI TIBBA IN ZSV 5D. CLOCKWISE FROM TOP LEFT: EXISTING SITUATION; SECTION THROUGH PROPOSED REHABILITATED CHOWK; PLAN OF REHABILITATED CHOWK; PERSPECTIVE VIEW OF REHABILITATED CHOWK

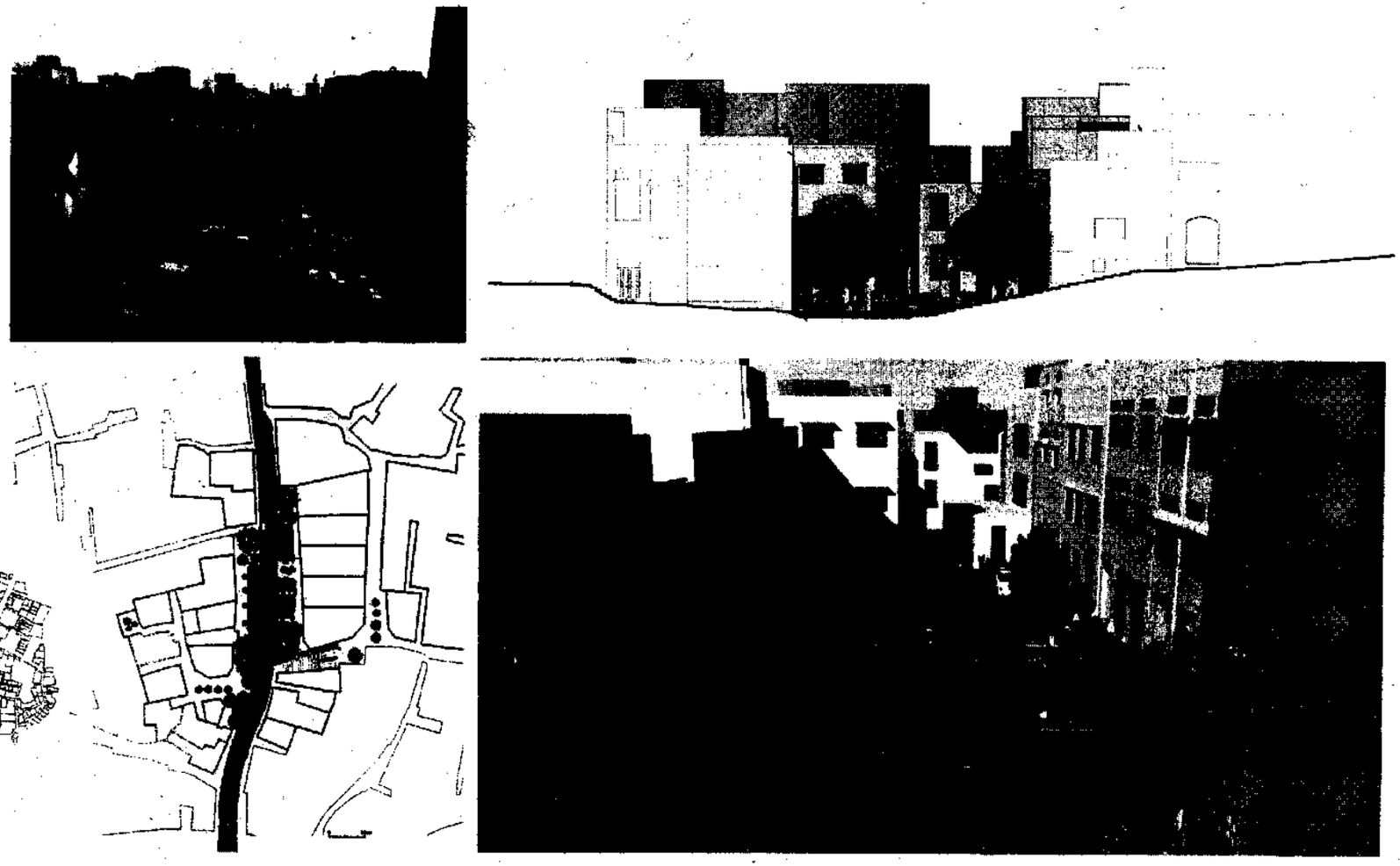


FIG. 30 TYPOLOGICAL SERIES OF BUILDINGS IN THIS ZONE

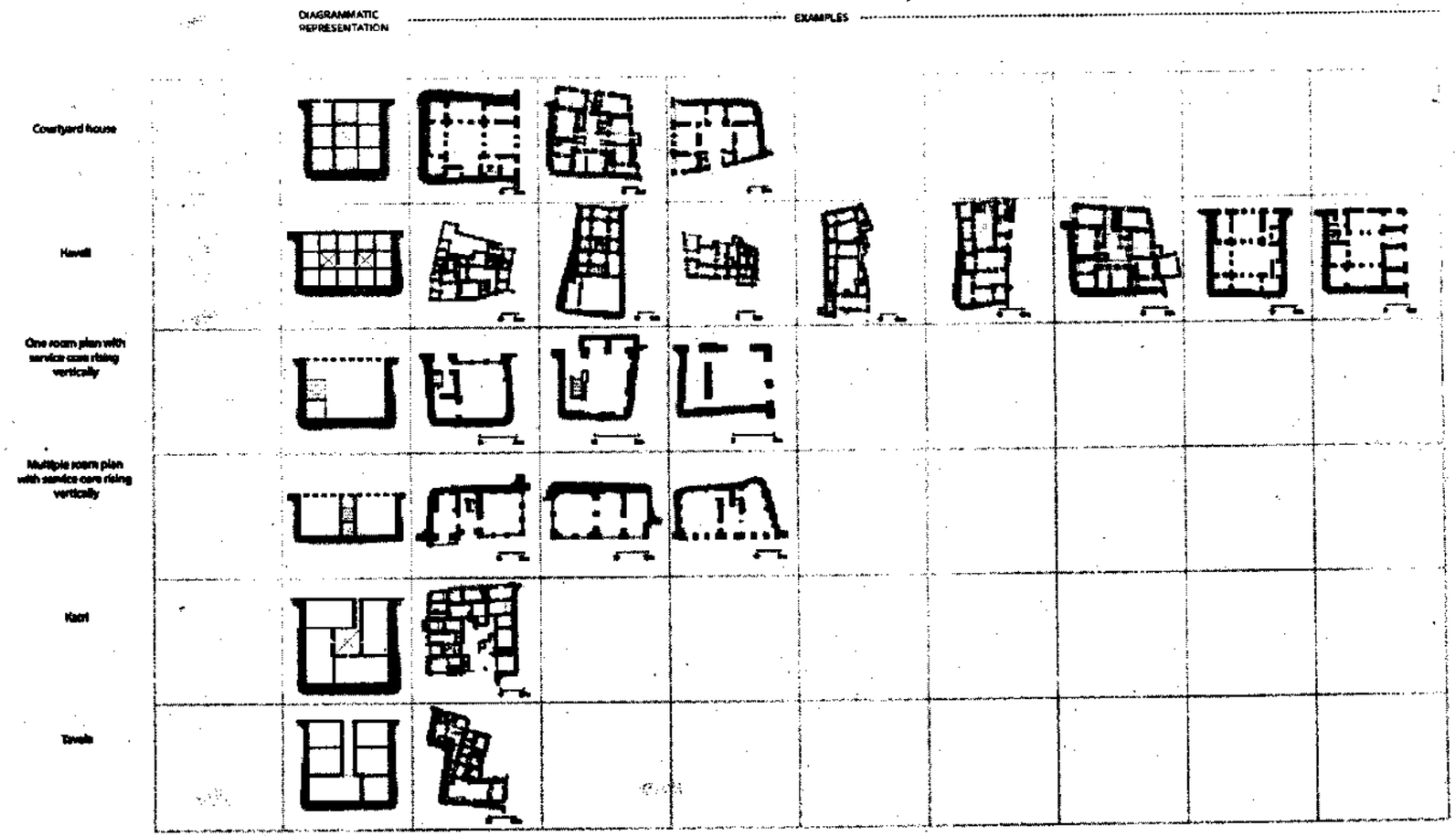
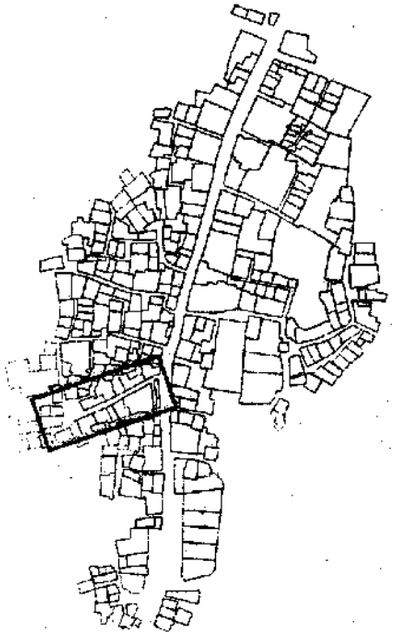
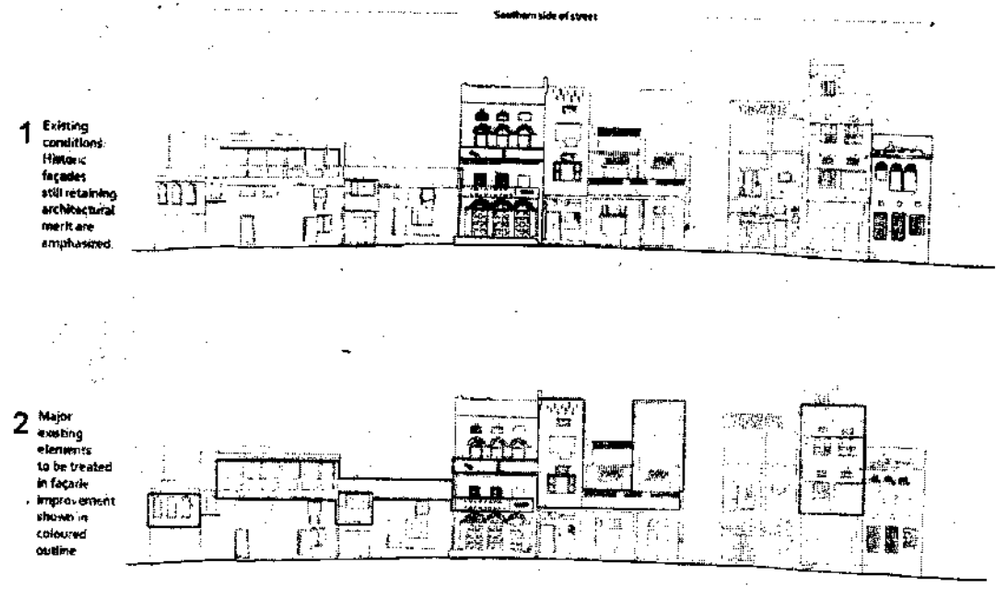


FIG. 31 MOHALLA JOGGIAN / CHOWK JOGGIAN:
DOCUMENTATION, ANALYSIS AND RE-INTERPRETATION OF THE URBAN HERITAGE





BAZAAR HAKEEMAN

FIG. 32 STREET FACADE DEVELOPMENT AND CONTROL IN MOHALLA JOGGIAN

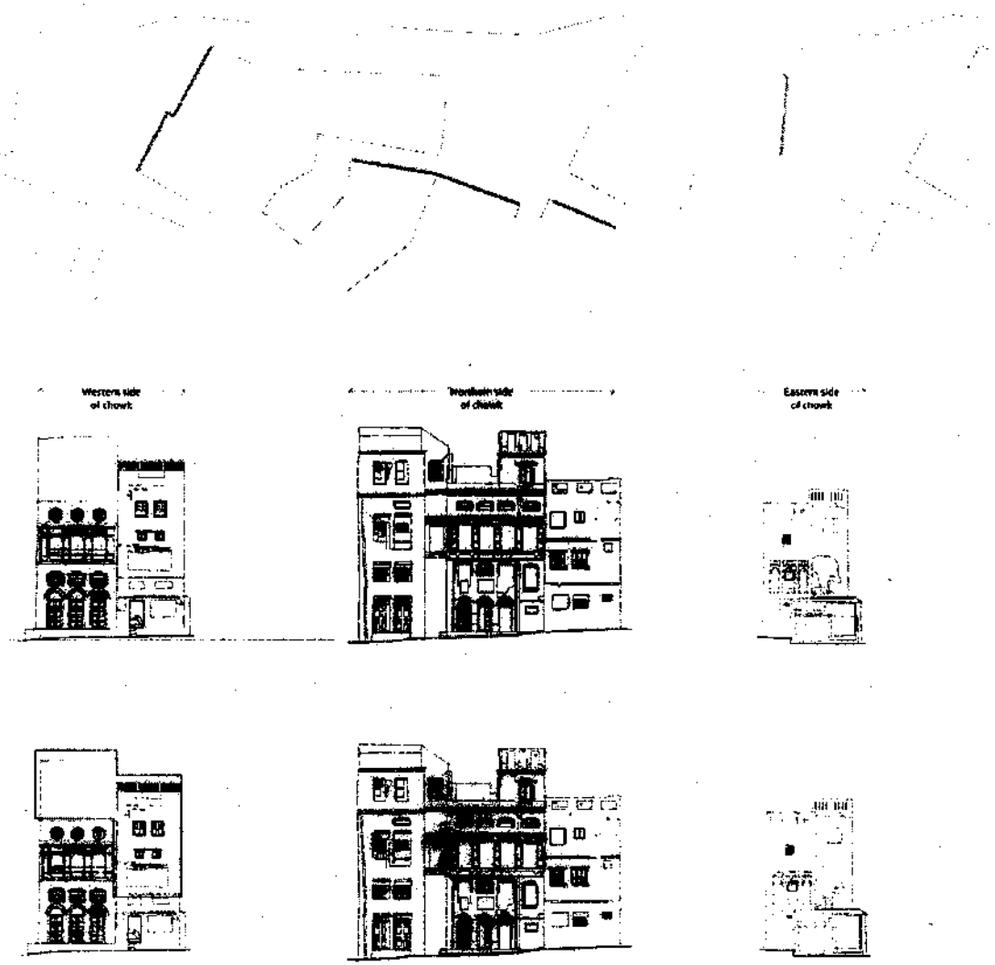
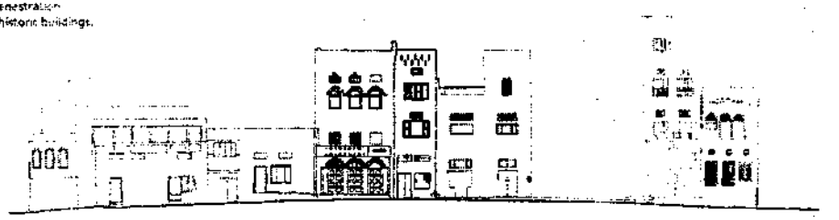


FIG. 33 STREET FACADE DEVELOPMENT AND CONTROL IN MOHALLA JOGGIAN

3

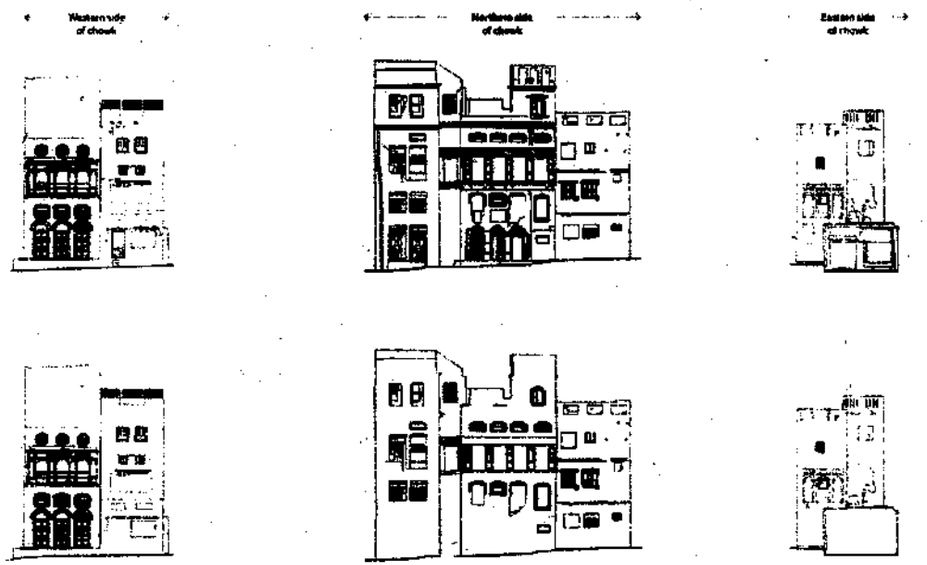
3 & 4 Doors and fenestration patterns in historic buildings.

4



BAZAAR HAKEEMAN

FIG. 34 STREET FACADE DEVELOPMENT AND CONTROL IN MOHALLA JOGGIAN



ZONE OF SPECIAL VALUE (V)

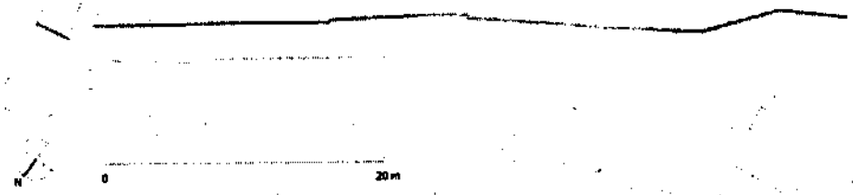
MOHALLA JOGGIAN

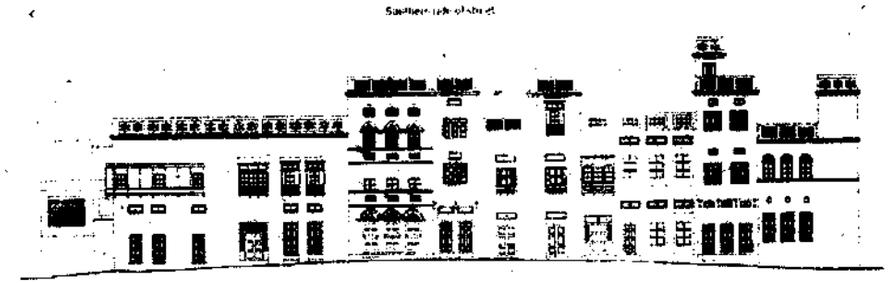
BAZAAR HAKEEMAN

FIG. 36 STREET FACADE DEVELOPMENT AND CONTROL IN MEDIA

ZONE OF SPECIAL VALUE 5D

FIG. 37 STREET FACADE DEVELOPMENT AND CONTROL IN MOHALLA JOGGIAN

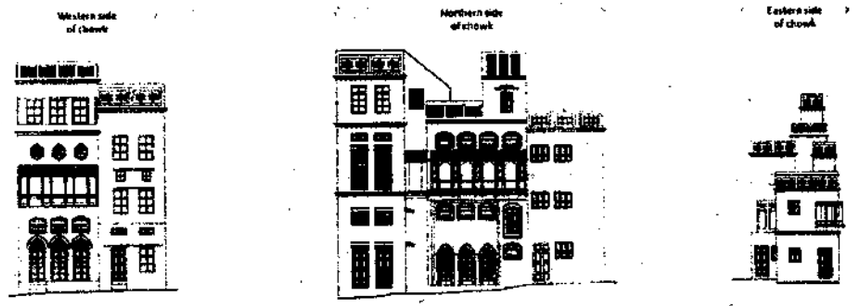




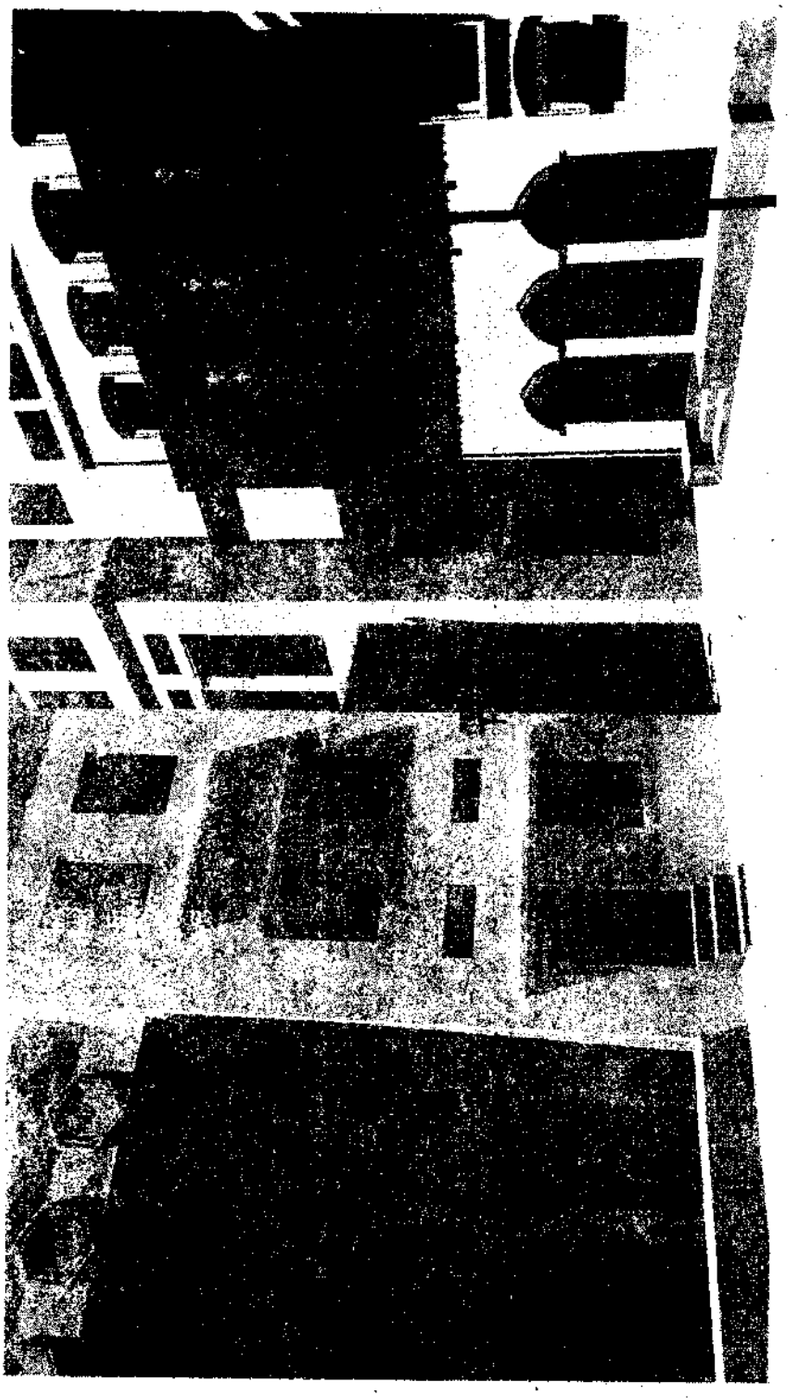
8 Proposed façade treatment for southern side and square.

BAZAAR HAKEEMAN

FIG. 38 STREET FACADE DEVELOPMENT AND CONTROL IN MOHALLA JOGGIAN



ZONE OF SPECIAL VALUE 5D



BAZAAR HAKEEMAN

2.5.6. Area Conservation and Development Schemes

At its broadest, the Conservation Plan for the Walled City envisages a sequence of some six large integrated projects, called "Area Conservation and Development Schemes", which will combine heritage conservation with infrastructure development. They consist of large portions of the urban fabric of the Walled City for which integrated conservation projects will be designed and implemented. In other words, these projects will have infrastructure as well as urban and building conservation carried out in an integrated manner along with planning for circulation and traffic. The schemes will replicate the principles and experience of the Shahi Guzargah Pilot Project, and comprise the following several components:

a. Infrastructure development

The schemes are based on the phasing of infrastructure development in the Walled City prepared as part of the "Conceptual Integrated Infrastructure Design" completed in 2010.[5] Under this design, which has been incorporated in this document to fulfil the requirements of the Act, the delimitation of the phases of the development of infrastructure in the Walled City was based on a combined consideration of (i) the gravity fed fields of drainage of sewerage and rainwater and (ii) considerations of how water supply, electricity, telecommunication and natural gas distribution networks are, or likely to be, organized in the Walled City. To arrive at the design framework, the context of service delivery for seven key urban utilities was thoroughly appraised and analyzed. These services are water supply, waste water disposal, storm water disposal, electricity, telecommunication, natural gas and cable television services. It is recommended that the same project phases be adopted as Project Areas for the Conservation Project.

The phasing described above has constituted an opportunity to explore how conservation planning, design and development could be integrated with infrastructure development. This proposition was tested in and was exemplified by the Shahi Guzargah project, which set the pace for a programme for conservation and rehabilitation of the urban heritage integrated with infrastructure improvement, upgrading and / or replacement. Consequently, the urban rehabilitation and value re-instatement carried out in this project has set a precedent for all subsequent developments to be carried out in the Walled City integrated projects.

5. This was part of a comprehensive, integrated infrastructure development plan prepared by an international consortium of engineers, in dialogue with WAPDA, LESCO, WASA, PTCL, SNGPL and the project management unit SDWCLP under the Planning and Development Department, Government of Punjab. Please refer to the three volume report AURECON/Aga Khan Cultural Service-Pakistan, "Walled City of Lahore Project, Conceptual Integrated Infrastructure Plan", 20 April 2010.

The preparation of detailed technical design of infrastructure should therefore be based on the framework outlined in the "Conceptual Integrated Infrastructure Design for the Walled City of Lahore" referred above, in addition to any improvements in the design standards employed in the Shahi Guzargah Pilot Project, where these improvements are found necessary.

b. Rehabilitation of the urban fabric

The urban fabric comprises land and individual buildings, and the accessways and circulation paths, roads and streets which connect them. The rehabilitation of this complex multi-faceted entity comprises the rehabilitation of the street surfaces (integrated with the below street infrastructure); the rehabilitation of the facades of the bazaars and streets (as elements of the public realm as the are required to have the robustness to carry distribution elements of the infrastructure such as cables and pipes.

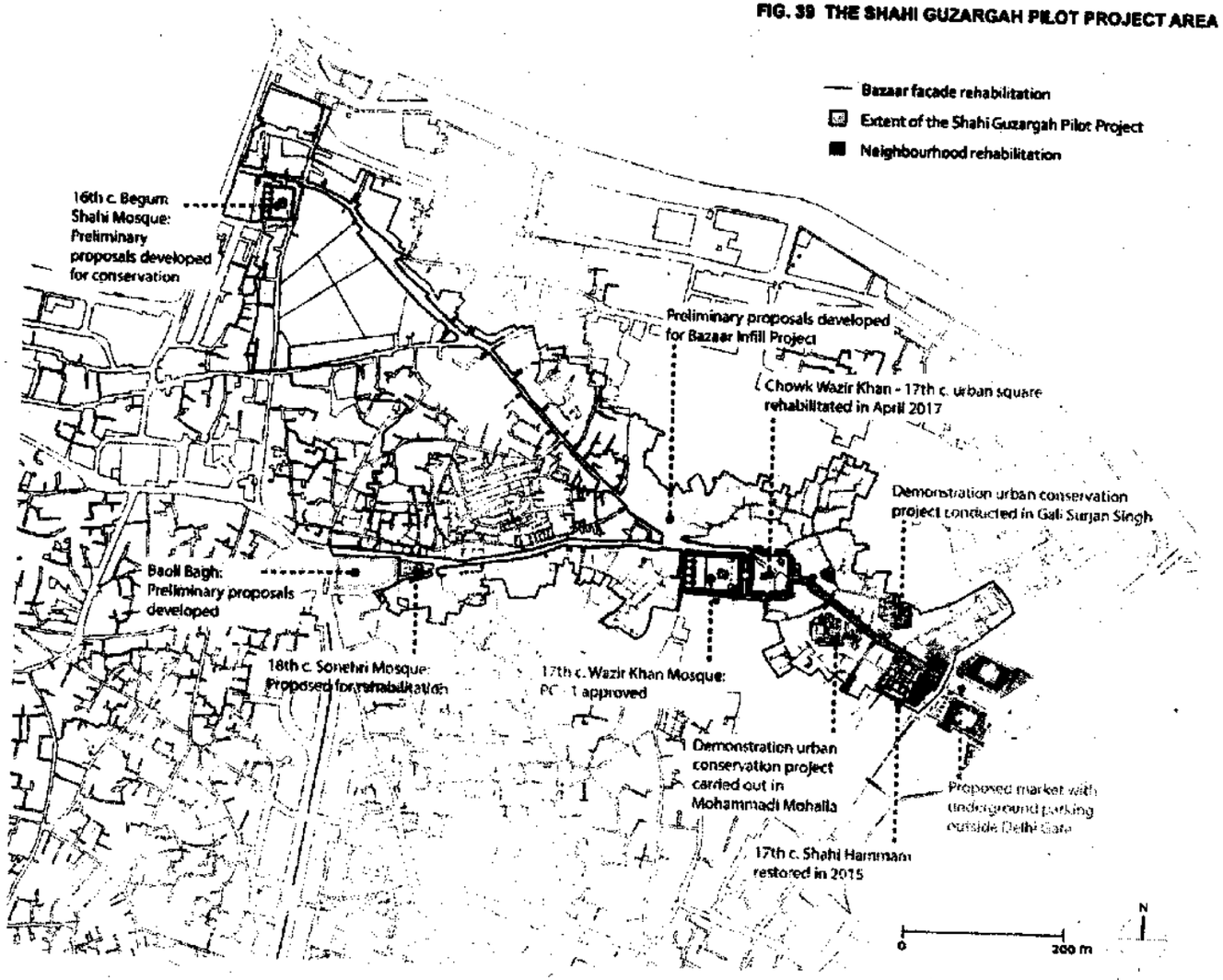
c. Heritage conservation in an Area Conservation and Development Scheme may include the conservation of individual monuments as well as historic buildings, and the rehabilitation of their immediate urban context. The identification of the heritage components in the scheme should follow the hierarchy of heritage elements outlined below where each higher order element subsumes every element in a lower order in the list:

   i. Any Zone of Special Value which overlies the Area Conservation and Development Scheme,
   ii. Individual instances of elements of townscapes and historic urban landscapes of present or potential high value.
   iii. Instances of more than one building forming a "group value", and
   iv. Instances of individual monuments and buildings of architectural merit and historic value, including older, non-listed buildings built prior to 1947.

d. Each heritage element listed above should be subjected to the following procedure:

   i. Zone of Special Value: The contents of the Technical File created for the zone of special value should be examined and elements of relevance to the Project Area should be filtered out and included in the Project Area Scheme; detailed designs for interventions should be prepared for such elements.
   ii. Individual instances of elements of high value townscapes and historic urban landscapes outside of

FIG. 39 THE SHAHI GUZARGAH PILOT PROJECT AREA



VIEW OF THE DELHI GATE BAZAAR FROM THE DELHI GATE
BEFORE (TOP) AND AFTER (BOTTOM) REHABILITATION WORK WAS CARRIED OUT

THE 17TH C. SHAHI (WAZIR KHAN) HAMMAM
BEFORE (TOP) AND AFTER (BOTTOM) CONSERVATION

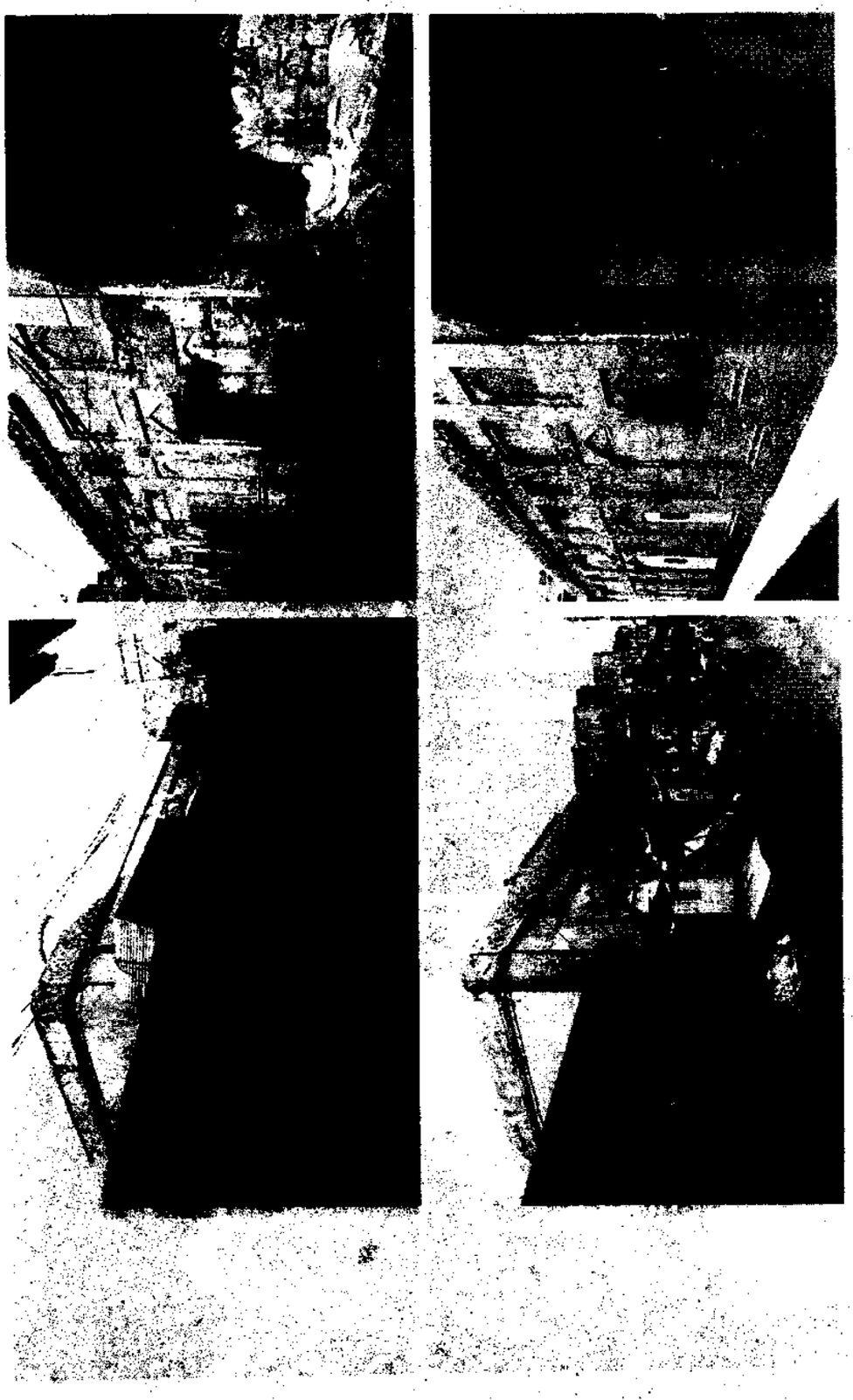
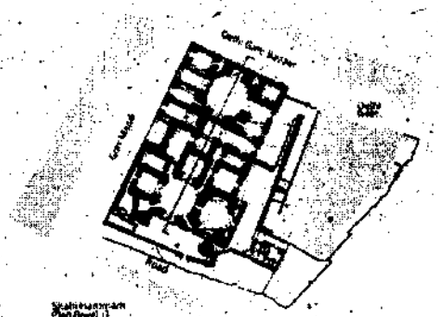
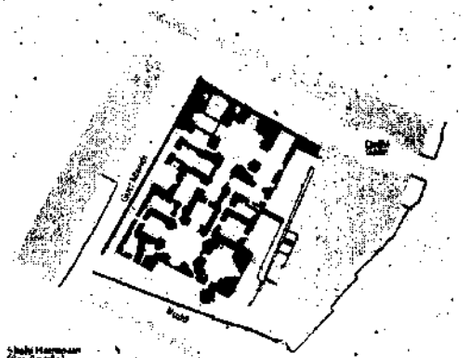


FIG. 40 DOCUMENTATION OF THE SHAHI HAMMAM

Shahi Hammam
Section AA
(Before Excavations)



Shahi Hammam
Section AA
(After Excavations)



PILOT URBAN REHABILITATION: GALI SURJAN SINGH STREET FACADE
BEFORE (LEFT) AND AFTER (RIGHT) UPGRADING

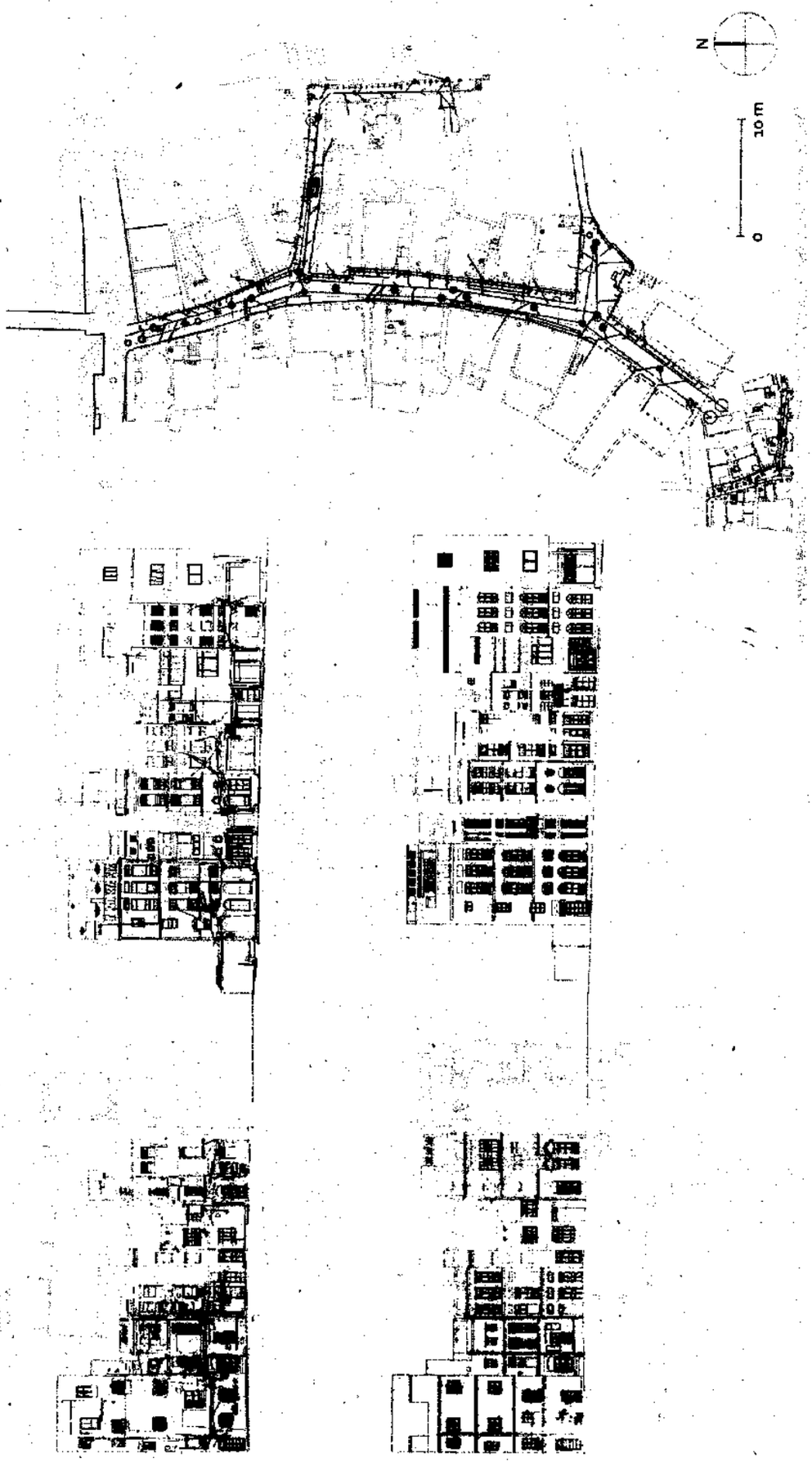


FIG. 4.6 @DOCUMENTATION OF KUCHA CHARKH QARAN
BEFORE AND AFTER FACADE IMPROVEMENT AND UPGRADING OF INFRASTRUCTURE

FIG. 42 PLANS, SECTION AND ELEVATION OF A HISTORIC HOME IN GALI SURJAN SINGH
(SHOWING MINIMUM QUALITY AND NECESSARY CONSTRUCTION DETAIL)

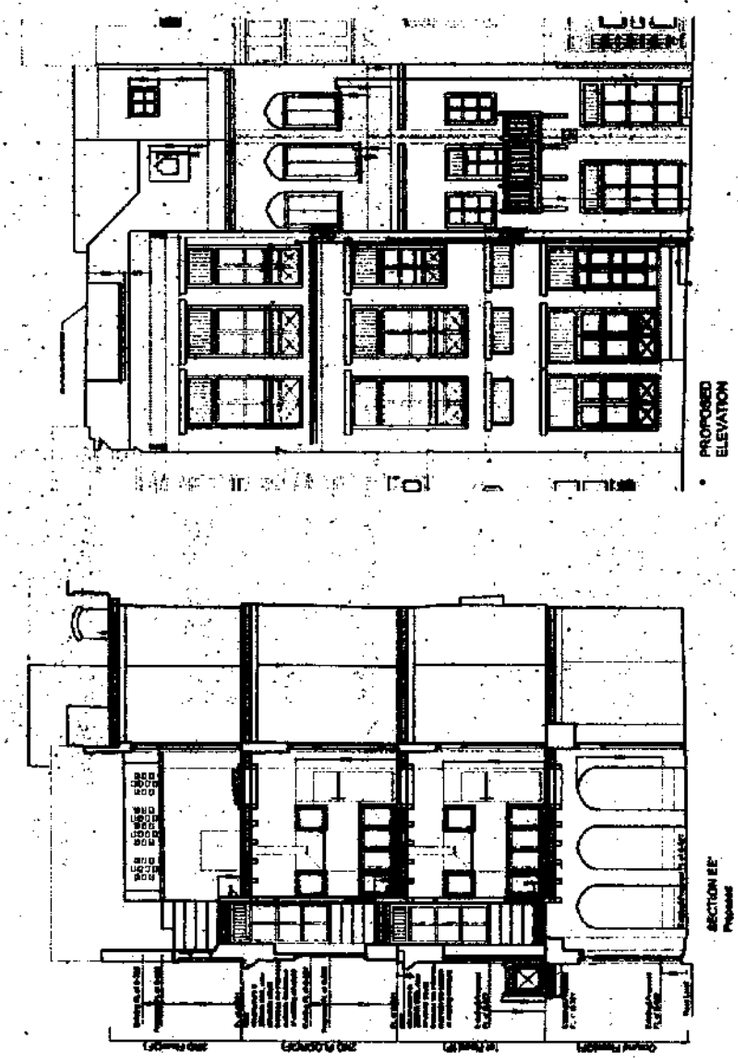
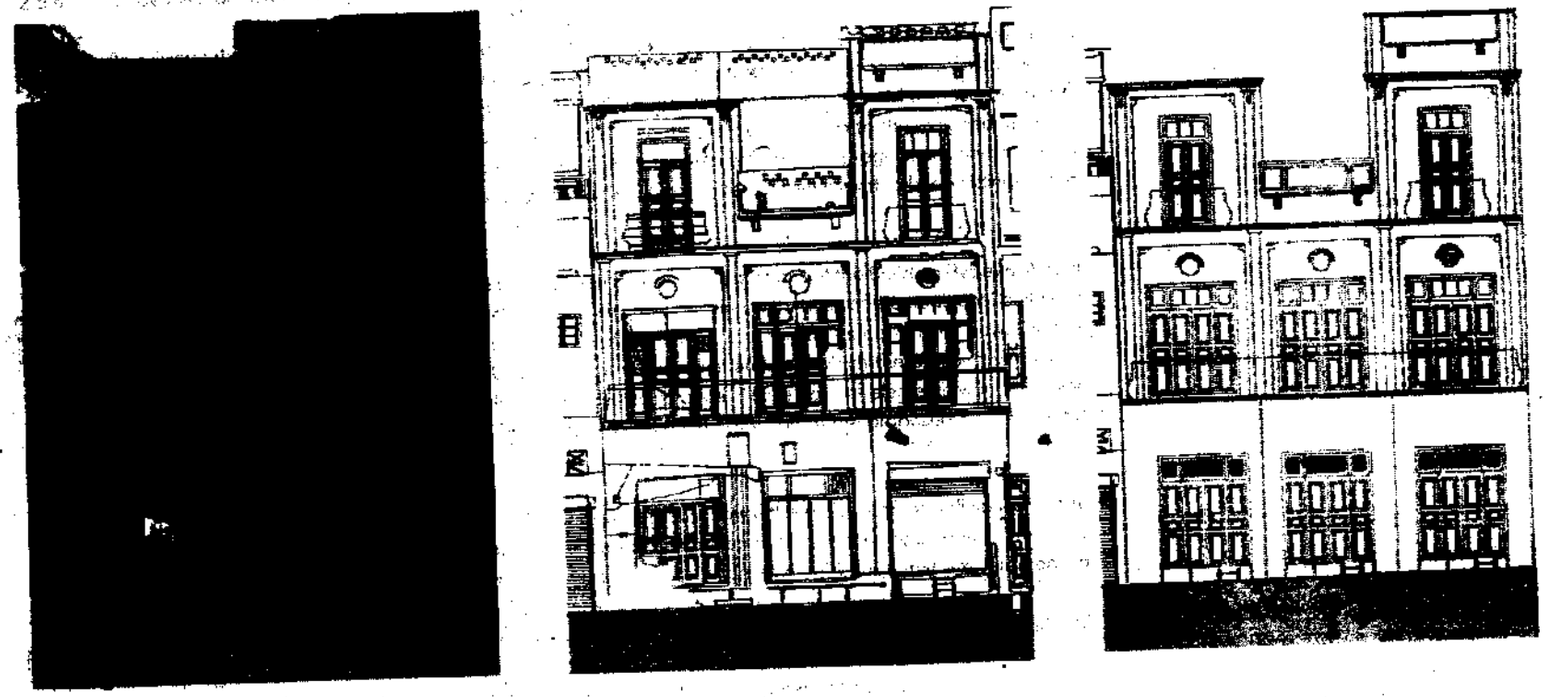


FIG. 43 DOCUMENTATION AND PROPOSALS OF A HISTORIC BUILDING IN CHOWK WAZIR KHAN



zones of special value: the procedure should generally follow that outlined for zones of special value.

iii. Buildings forming group value and instances of individual buildings of high architectural merit and historic value;

iv. Instances of individual buildings of high architectural merit and historic value; and

v. For the urban conservation and rehabilitation of elements at no iii. and iv. above, where these are not included in a zone of special value, they should be subjected to a thorough documentation and design documentation and working drawings prepared. Detailed proposals should be prepared with the consultation of the owners as to the future use of the properties in question, and necessary design interventions made to bring the buildings upto to contemporary standards of safety and services design.

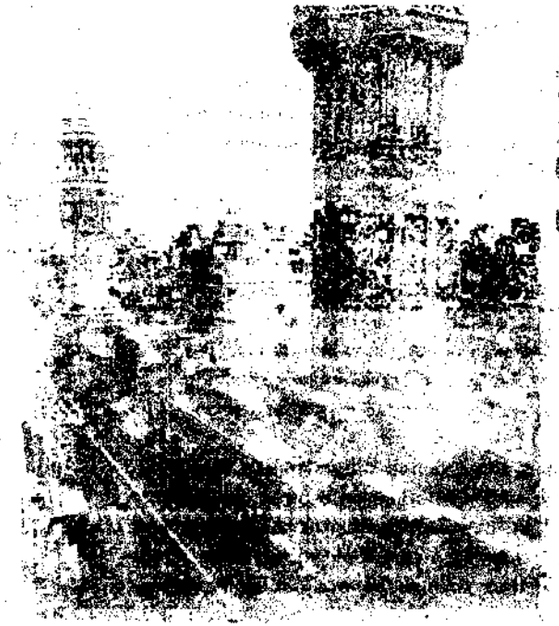
vi. Any application concerning permission for conservation, alteration, erection or demolition (or concerning any matter relating to the land use) of properties listed below must be approved by the Heritage Conservation Board:

a) Heritage Properties;
b) Properties forming group value or properties possessing architectural merit and/or historic value; and
c) All properties within the field of vision, or 50 metres (whichever is greater) of properties mentioned at a) and b) above.

vii. Construction drawings, Bills of Quantities and contract documentation: This stage of the project preparation should be commenced only after the following key parameters of the project have been completed:

a) Agreed architectural design
b) Conservation design
c) Outline specifications
d) Approval of an application for a building permit (sanctioned plans) or WCUAs approval on an outline proposal including the above.

viii. Implementation: The implementation of a scheme should be carried out by qualified contractors or by specialized agencies. It is recommended that the preferences shown in Table 2 should be made



numbers of quality conservation architects and conservation-trained workmen available in the public and private sectors.

The urgently needed conservation and care of historic properties in the Walled City and the modernization of utility services within these buildings, therefore depends on the creation on a sustainable basis of a pool of quality conservation architects and conservation-trained workmen available in the public and private sectors.

WCLA has already identified buildings of high risk and has been undertaking measures to stabilize immediate structural problems to prevent imminent collapse. In certain cases WCLA may have to resort to demolish a building if it is beyond economical structural consolidation and restoration of the structure. In case the demolition of temporary structural supports should be undertaken. Complete documentation of the building and the following steps should be taken:

i. It should be the subject of comprehensive conservation and modernization of its internal services.
ii. Its surrounding environment should be revalorized to enhance its inherent value.
iii. A dialogue should be established with the owners / trustees as to its potential use, and such use should be made an integral part of the programme for conservation and re-valorisation.
iv. The building should be put on a priority list of conservation in the Walled City.

2.5.8. Guidelines for new buildings inserted into the urban fabric

As a living urbanism, the Walled City provides opportunities for new buildings to be inserted into derelict and abandoned sites, or land parcels with fully or partially collapsed structures that need to be reconstructed *ab initio*. In such instances, the decision to introduce insertions into the urban fabric should respect the overall guidelines outlined in the Technical File for each ZSVs (where applicable), conform to the assigned land use of the parcel in which the new infill will be located, follow the requisite building regulations and maintain consistency in terms of material used, stylistic attributes, and typological similarities with other buildings in the vicinity.

Adherence to and strict enforcement of the built-up area and height restrictions of the Building Byelaws should result in conformity of the volumetric characteristics of any new building with those of the traditional buildings in the Walled City context. Further regulation and enforcement of certain features do remain, however, the designs for which are expected to be produced by the professional architect which the prospective builder of a new building in the Walled City would be required to engage. These control elements would include accordance of the proposed building with buildings within the field of vision of the proposed building or 50 metres whichever is greater in respect of:

a. Historical traditions of openings in the walls for doors and windows, the proportion of wall space on the façade they would occupy and the proportional patterns and distribution of such openings;
b. Architectural elements such as wall projections, cornices and ornamental bands that are featured on buildings in the vicinity of the proposed buildings
c. Building materials and finishes used on the facades of historic buildings in the vicinity of the proposed building.
d. Typology or interpretations of traditional typology to meet contemporary needs.

In all such instances the sanction of proposals for construction should be granted after detailed examination of the proposals, and if necessary after any needed suggestions and guidelines have been provided to the owner by the Directorate of Conservation, WCLA and accepted by the owner. The final sanction will be made after the application in its final state is presented to and approved by either the WCLA's Design and Heritage Committee, or for larger projects, the Planning and Urban Design Committee.

It may stated that the above restrictions should not constitute a bar on the use of modern materials and methods of construction if the same are used with sensitivity, taste, attention to detail and general professional competence.

2.6. Technical capacity

2.6.1. Heritage conservation is an activity requiring a considerable amount of knowledge and skill in the following fields:

a. Basic professional architectural and engineering education, with a strong bias towards architectural design;
b. The history of architecture and the history of vernacular architecture of the northern South Asian region.
c. Building construction and specialization, whether through education or experience, in historical building and construction practices and in the use of historic building materials in the South Asian region.
d. Conservation science, including modern practices related to material science, physical and chemical properties of building materials, laboratory analysis of building materials, and the ability to reconstitute the physical and chemical properties of historic building materials and to substitute them with compatible modern materials.
e. Conservation related structural engineering with specialization in the behavior of historic structural systems.
f. Modern and up to date conservation theory and practice.
g. Skills relating to computer based documentation of historic properties, photography related to conservation documentation.
h. Ability to produce graphic, photographic and written archival materials, including reports and publications.

2.6.2. Within WCLA: The Government should increase the number of technical positions in WCLA's Con-

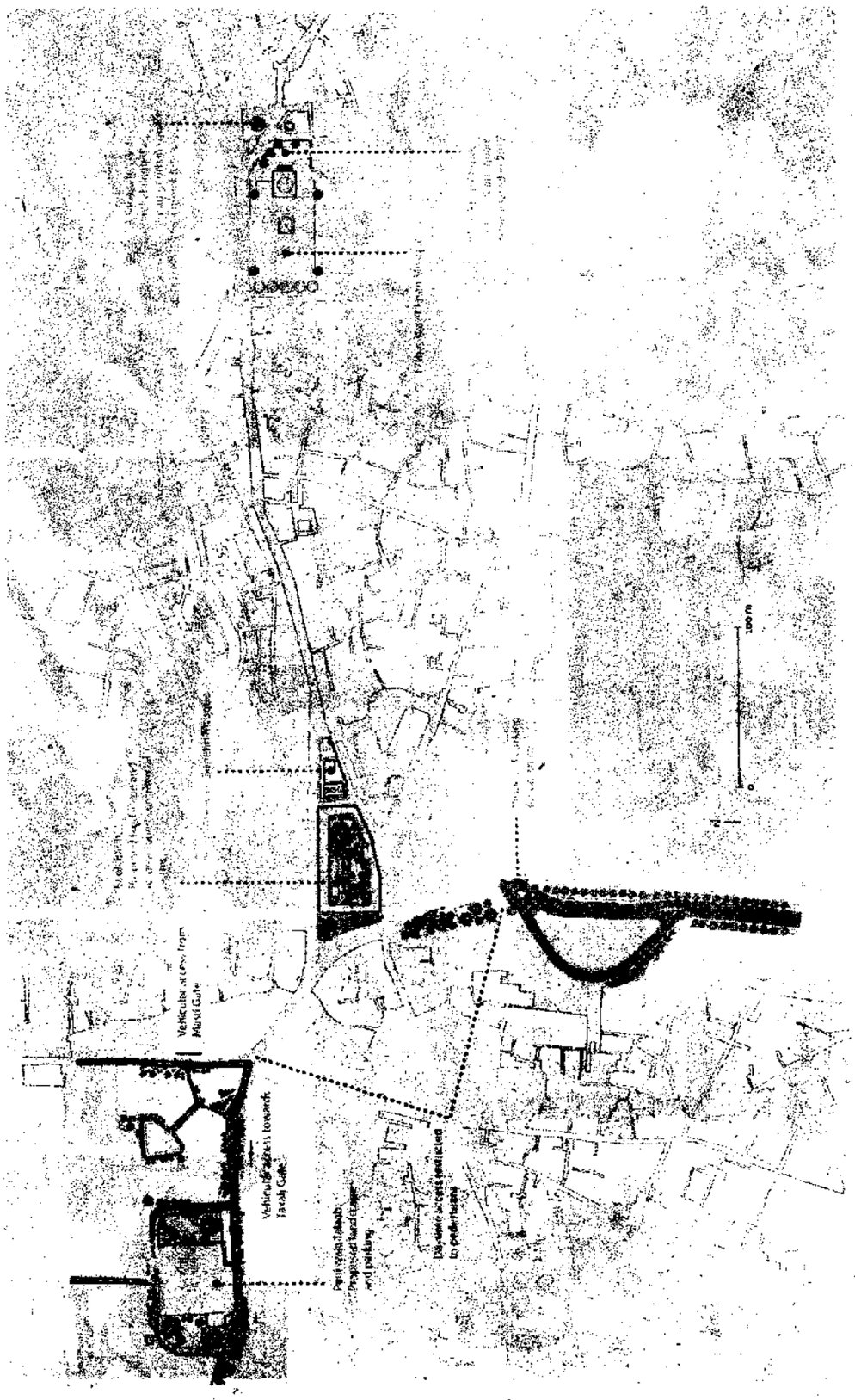
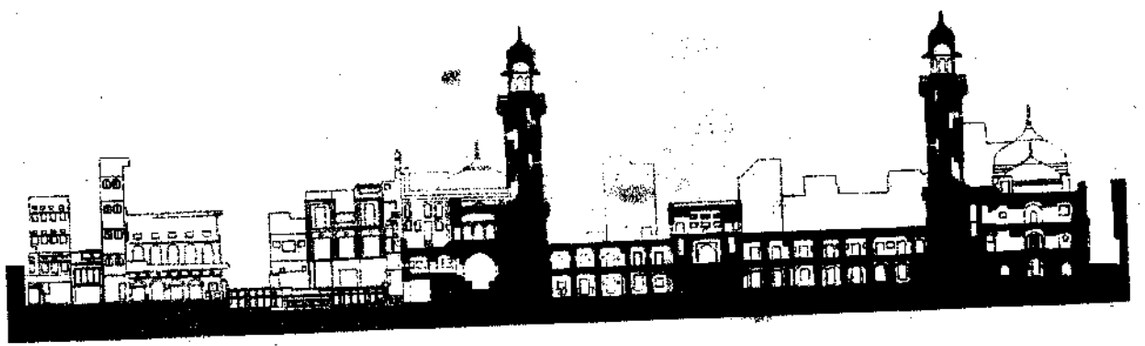


FIG. 44 (PROPOSED REHABILITATION OF CERTAIN PUBLIC OPEN SPACES AND STREETS

CHOWK WAZIR KHAN BEFORE AND AFTER ITS RECENTLY IMPLEMENTED REHABILITATION WORK

FIG. 45 DOCUMENTATION OF CHOWK WAZIR KHAN AND ITS URBAN CONTEXT



Section (looking south) illustrates Chowk Wazir Khan and its urban context after rehabilitation.

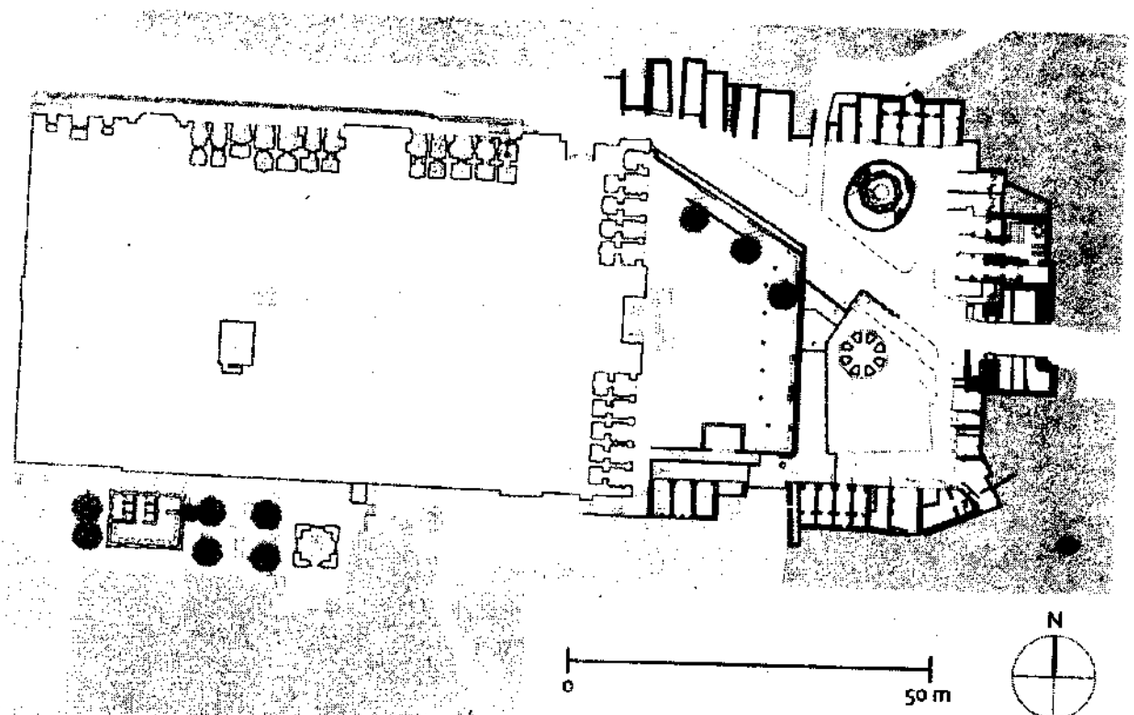
0 32 m

Section (looking south) illustrates Chowk Wazir Khan and its urban context before rehabilitation

0 32 m

FIG. 46 WAZIR KHAN MOSQUE PLANS

BELOW RIGHT, PLAN SHOWING EXPANSE OF THE LOWERED CHOWK, SHOPS BUILT INTO THE NORTHERN AND EASTERN SIDES OF THE BUILDING. ALSO SHOWN ARE PROPOSED CHANGES ON THE SOUTHERN SIDE OF THE MOSQUE.



BELOW: PLAN SHOWING EXISTING CONDITIONS AT COURTYARD LEVEL & GROWTH OF CONSTRUCTIONS ABUTTING THE SOUTH WALL.

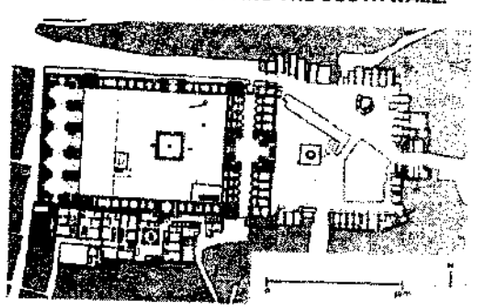
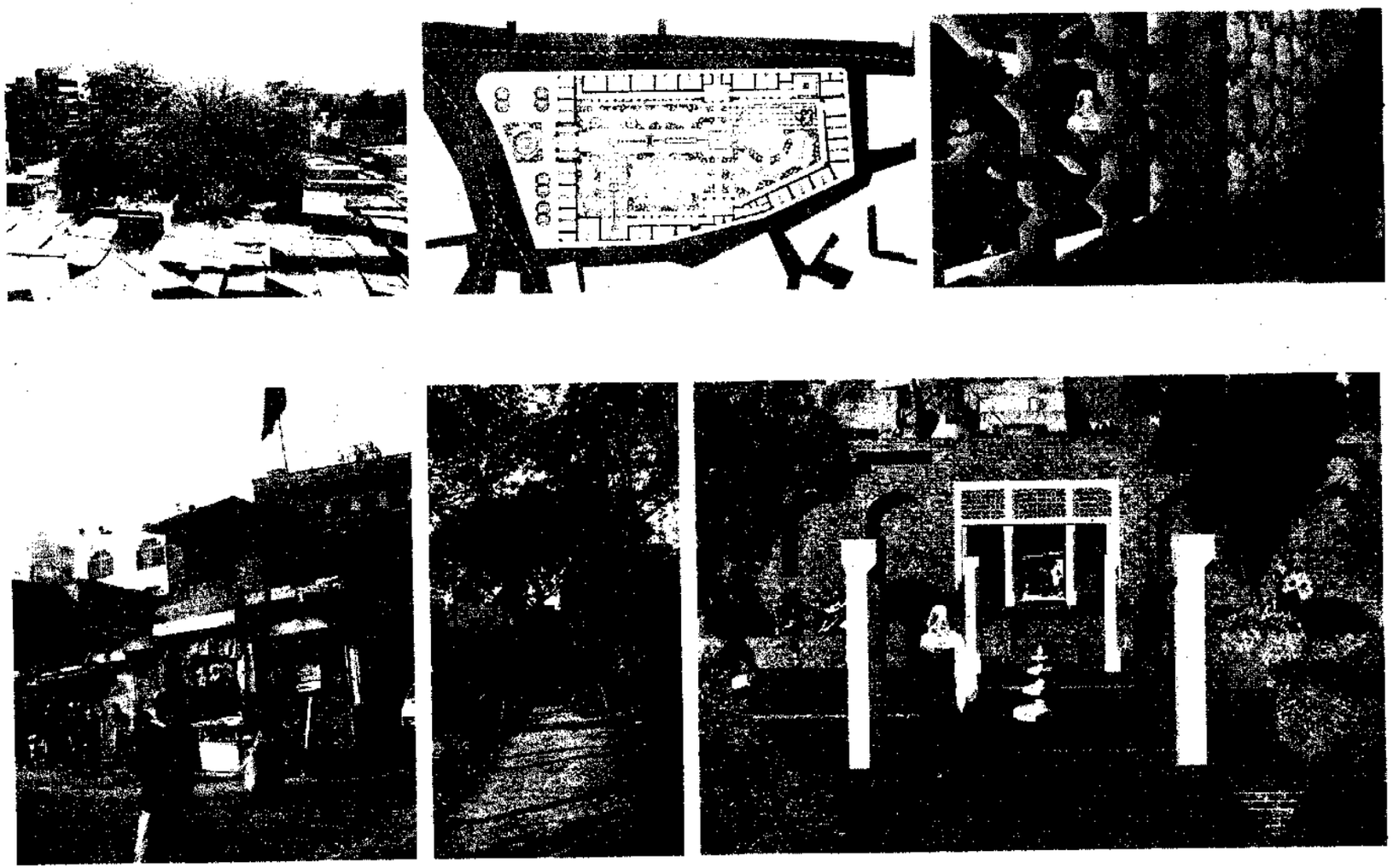


FIG. 47 EXISTING CONDITION OF THE BAOLI BAGH & PROPOSED REHABILITATION



servation and Planning Directorate by adding new positions and by optimizing and changing the nomenclature of the existing approved posts. The objective of this should be for WCLA to commence conservation of Heritage Properties and the urban fabric and training skilled labour and a technical work force.

2.6.3. Technical capacity in the private sector: The government should aim to establish a cadre of at least 10 firms of specialist conservation architects who could measure up to criteria of expertise and experience to be established by WCLA; and a cadre of at least 20 class B and Class C contractors' firms in the private sector with skills in conservation, repairs and maintenance of Heritage Properties.

3. PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF PUBLIC PASSAGES, URBAN OPEN SPACES AND PUBLIC AREAS

3.1. There are over 130 km of streets, passageways, and urban open spaces packed into the built-up area of the Walled City of Lahore. These figures do not include the green open spaces that comprise the Circular Garden. According to the Act, "passageways and public open spaces" require their own "plan". In this respect, the following recommendations are outlined:

3.1.1. The basic structure of roads, bazaars and the street system in the Walled City should not change.

3.1.2. All streets and open spaces should be paved and / or landscaped accordingly to high quality and competent professional design.

3.1.3. Illegal occupations of the public right of way should be removed where *tharas* and other building projections not in accord with building regulations intrude into the public right of way and reduce its carrying capacity.

3.1.4. Unsightly infrastructure elements such as transformers, telephone boxes, tangles of the wire-scape, open drains; above ground water supply pipes should be removed, and replaced with elements conforming to new standards of infrastructure and urban design already demonstrated in the Shahi Guzargah Project.

4 TRAFFIC

4.1. The context of traffic around the Walled City: access, visibility, parking, traffic engineering on the Circular Road, and the future of the Circular Garden.

4.1.1. There are two entirely different aspects to the problem of access and arrival at the Walled City. The first is the practical difficulty of the chaotic and heavy traffic, the time it takes to reach the Walled City, and the difficulty of finding adequate parking space. Public transport has also been an issue by its absence, except for rickshaws and the highly dangerous and polluting Qinqis.

4.1.2. Although road widths on the Circular Road are in general adequate, their capacity is severely curtailed by unlawful occupation of the road width by shopkeepers, haphazard and irrational parking and inadequate regulation of and discipline in traffic behaviour. The only exception to the adequate road widths is the stretch of road between the Railway Station area and the Ek Moria Bridge. This road has a severe constriction and as a result traffic is snarled all hours of the day and the evening. This stretch of the road is a prime candidate for road widening.

4.2. Traffic chaos is caused by:

4.2.1. The mix of heavy and light, motorized and non-motorized traffic (the latter including hand cart and pedestrian traffic);

4.2.2. The motor cycle as a traffic element unprecedented in its mobility and maneuverability, and in sheer numbers over the last decade;

4.2.3. The above made worse by poor traffic sense, no lane discipline, no turn signalling and a paucity of traffic education, manners or courtesy.

4.3. The second aspect is one of visual clutter and disorder one finds circumferentially around the Walled City—the result of accumulations of municipal neglect, inadequate engineering practices, and a general lack of visual literacy and good design. Although the perimeter of the Walled City itself is not in itself particularly orderly, yet the urban density of the Walled City presents itself as a compact mass visible distinctly, particularly on its

western and parts of its northern sides. Except for this relatively uncluttered exposure, the Walled City and its surrounding Circular Garden is completely obscured by construction of all kind of mass and shape.

4.4 In 2008, the Traffic Engineering & Transport Planning Agency (TEPA) carried out a traffic study around the Walled City.. Several types of traffic data were collected. These included (a) screenline volume, (b) junction turning count, (c) vehicular and pedestrian journey time, (d) public transport, (e) freight transport, (f) parking, (g) Lahore Walled City cordon count, and (h) the Badami Bagh Bus Terminus. Passengers, pedestrians and motorists were also interviewed as part of the above surveys to elicit their origin/destination, trip purpose etc.

4.5. In April 2008, AKTC commissioned Ove Arup & Partners Hong Kong Ltd (Arup) to conduct an independent review of the survey results. The following sections summarize the analysis of the review with the objective to propose suitable traffic and transport improvement measures for the Walled City. The recommendations should be further investigated in separate topical studies for carrying out designs and the evaluation of viability. Some of the recommended measures involve changes in policies, and the Government should assess issues such as practicality of implementation based on their resources and also acceptance of the local population.

4.5 1. Road hierarchy system

a. The Circular Road can be classified as a primary distributor road that forms the major network of the urban area, and it should have high capacity junctions. Frontage access should be limited as far as possible and pedestrian facilities are recommended to be segregated. A 24-hour stopping restriction should also be imposed.

b. The Circular Road can meet the above requirements in terms of its function in the road network. However, from site observations, parking and stopping are out of control. Jaywalking of pedestrians is observed, and no physical barriers are installed to curb the crossing of pedestrians at undesirable locations.

c. It is thus recommended that the Punjab Government formulate a road hierarchy system, and consider suitable restrictions to be imposed for different types of roads in the hierarchy. This assists the roads to perform their intended roles in the network of road hierarchy and remove undesirable activities that could undermine the operation performance of the roads.

4.5.2. General infrastructure provisions and improvements

a. Grade separation of road links and junctions

i. Prior to the study, it was recommended as part of the Master Plan of the Iqbal Park and Minto Park to depress the section of the Circular Road neighbouring these two parks. The depressed road could then be decked over to provide pedestrian linkage connecting the parks and the Walled City. Roadside stopping and parking would also be eliminated which enhances traffic speed and reduces delay. Based on the screenline volume survey, the peak hour flows at the two directions were about 3,800 and 3,200 pcu/ hour, which can be adequately accommodated by a dual three-lane carriageway. Therefore, from a traffic engineering point of view, the scheme would be feasible, and with reasonable room for future growth of traffic. At the same time, the proposed scheme would have contributed to providing a more pleasant environment for visitors of the parks and the Walled City. Later iterations of this concept involved the complete removal of this road and the traffic moved to circumnavigate the Iqbal Park area. As of 2016, as part of a new Greater Iqbal Park development, this later idea has been realized and has resulted in the realignment of the Circular Road to skirt along the northern edge of the park, eliminating the old road entirely from its location.

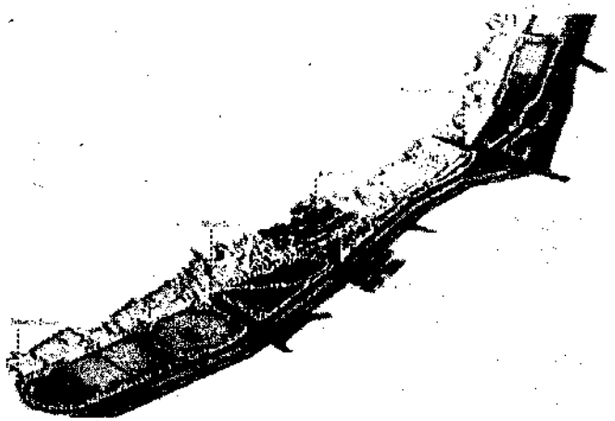


FIG. 48 VIEW OF POSSIBLE SUB-GRADE TRAFFIC INTERVENTIONS ALONG THE SOUTHERN CIRCULAR ROAD

ii. The above concept, depressing certain sections of the road, however, can be extended to other junctions along the Circular Road While it may not be necessary to fully depress or elevate the Circular Road, grade-separating certain movements at busy junctions can undoubtedly enhance the performance of the junctions. Grade separation by means of depressed roads may be appropriate for movements with demand of close to or even exceed the capacity of one traffic lane (about 1,600pcu/hour). Grade separation is most useful for alleviating busy straight-ahead or right-turning movements at junctions.

iii. Flyovers and elevated roads are to be avoided as means of grade separation as they would block views of the Walled City and important gates such as Lohari Gate and Delhi Gate, and of the Circular Garden, particular after encroachments have been removed from in front of the Garden

b. Erection of railings along roadside footpaths

Jaywalking by pedestrians on carriageway not only cause safety concerns but also lead to cautious motorists driving more slowly, thus undermining the thoroughfare of Circular Road. In this connection, railings are recommended to curb jaywalking and uncontrolled crossing of pedestrians. Railings should not be used at designated road crossings or where picking up/dropping off are permitted.

c. Provision of grade-separated pedestrian facilities

i. Grade separated separated pedestrian facilities like footbridges have been installed in certain locations, but except for where they have been installed in conjunction with the Rapid Bus Transport project, these footbridges are not very popular and remain unused. Subways could be introduced but would fall prey to disrepair and vandalism if not properly designed and if proper security for their use (such as surveillance, lighting and cleanliness) is not provided. In all future signaling design the time lapses for pedestrians should only be removed where such facilities are being planned.

ii. Other alternatives could be grade level crossings in conjunction with grade-separated vehicle underpasses, and grade level pedestrian signalling. These would not only improve safety of pedestrians, but also help remove pedestrian crossing activities from road junctions.

d. Railings along footpaths at grade separation

In addition to the physical construction of such facilities, railings along the footpaths can be installed to prevent unintended pedestrian crossing. In the planning of these grade-separated facilities, accessibility of users should be given careful considerations. Ramps should be constructed in addition to staircases to permit people with push-carts to use these facilities. Subways should be well lit for both safety and security concerns.

4.6. Traffic management and control strategy

4.6.1. Imposition of parking and stopping restrictions

a. As the Circular Road is a major road in Lahore, unnecessary roadside parking and stopping creates friction to through traffic and is not desirable. It is thus recommended to investigate the feasibility of banning parking and stopping activities at roadside. Land availability should be studied to identify suitable sites to re-provide designated car parking and goods loading/unloading. Lay-bys should be provided for stops of public transport vehicles. If adequate land is available, lay-bys can be extended to form service lanes where picking up/dropping off of public transport and private modes can be integrated. (Please see the AKCSP-designed parking laybye facilities for the north Circular Road and similar proposals for east and south-east Circular Road).

b. The service lanes should be wide enough for vehicles to overtake stopped vehicles. The ultimate aim of all the aforesaid is to remove roadside friction to relieve traffic congestion and improve traffic speed along the Circular Road. To provide service lanes on both sides of a dual three-lane carriageway, a typical width of about 45m would be required, and the feasibility should be substantiated by an investigation on land status.

c. If the prohibition of stopping and parking along Circular Road is considered feasible and is implemented, proper education and enforcement should also be executed.

d. To compensate the removal of kerb-side parking, open car parks or multi-storey parking complexes should be provided. The D-Point Parking Plaza is a successful example as reflected by its high utilization rate. On the Circular Road proper and near heritage gate structures multi-storey parking complexes should be designed below grade (please see design for the market/parking facility in front of Delhi Gate). They

may be further integrated with good grade separated loading/unloading for small trucks and on the outer perimeter of the Circular Road.

4.6.2. Optimization of traffic signals

Traffic signals should be optimized to allocate the green times among different traffic movements. Various signal time plans should be devised to best suit the prevailing traffic conditions at different periods of the day. This can be incorporated in the city-wide area traffic control system study being implemented by the Lahore Transport Department.

4.6.3. Exclusive traffic lanes for selected vehicle classes

The traffic stream may be smoothened by allocating dedicated traffic lanes to certain class of traffic. Exclusive lane for light vehicles such as pedal cycles and motorcycles may be considered. However, it must also be appreciated that exclusive traffic lanes are only efficient when junctions do not exist for a relatively long distance, otherwise weaving could become more severe at junction approach, as the vehicles try and get into the correct lanes for turning movements.

4.6.4. Freight transport management

a. The conditions of freight transport on Circular Road described by Arup in 2008 might still prevail for the most part. Since 2008, however, there has been spontaneous growth of container handling facilities along Multan Road at several places. The incidence of very large or articulated trucks on Circular Road has correspondingly diminished. Smaller intermediate size trans-shipment trucks, and pickup trucks, which bring merchandise from the container handling facilities to the Walled City and to Bundreth Road are now more common. They are seen parked along the eastern Circular Road during daytime, occupying a considerable amount of road space.

b. Since Bundreth Road and associated areas will continue to rely heavily on freight and goods transport, this trend is likely to continue indefinitely in the future, even if goods transport needs of wholesale cloth markets within the Walled City were to diminish in the intermediate term.

c. If all structures having to do with goods transportation and other encroachments on the Circular Road

abutting the Circular Garden are to be removed, a certain amount of grade separated goods loading and unloading platforms should be provided on the eastern and southern sides of the Circular road on its side away from the Circular Garden.

d. The above is predicated on the recommendation that the Circular Road should cease to remain the trucking freight terminus for Lahore as a whole. Consequently, it is recommended that sites should be found along the ring road and near the motorway exists near Lahore for inter-city freight transportation and new trucking termini created. Goods forwarding agency headquarters should thereafter moved to the new sites. These steps will reduce the pressure of freight trucks and freight transportation from the Circular Road by an order of magnitude.

4.7. Traffic in the Walled City

4.7.1. The circulation ways in the Walled City correspond to the following classifications:

a. Type 1: Large bazaars with 2-lane double carriageways (the Shah Alami bazaar is the only road in the Walled city subscribing to this description).

b. Type 2: Large bazaar with RoWs ranging from 5 metres to 15 metres - bazaars corresponding to this type are the:

- Delhi Gate bazaar;
- Kotwali bazaar
- Kashmiri bazaar
- Dibbi bazaar
- Yaki Gate passageway upto Sheranwala Gate;
- Bhatti Gate bazaar from Bhatti Gate to Tibbi Thana;
- Fort Road and Fort road link to Chowk Nau Gaza Peer (partly smaller than 5 m RoW)
- Fort Road east
- Main Hira Mandi bazaar
- Langa Mandi bazaar from Hira Mandi Moti bazaar area
- Akbari Mandi bazaar from Chowk Nawab Sahib to Tank bazaar

- Akbari Gate area
- Gumti bazaar from Pani Wala Talaab to Lohari Mandi bazaar extension.
- Mochi Gate to Masjid Saleh Kamboh
- Saudagaran bazaar from Mochi Gate to Chowk Rang Mahal
- Chowk Nawab Sahib to Tawela Nawab Sahib/Noor Gali.
- Lohari Gate bazaar
- Chowk Bukhari to Papar Mandi via Chowk Matti
- Chowk Bukhari to Lohari Mandi bazaar via Chowk Jhanda.
- Said Mitha bazaar.
- Nawa bazaar

c. Type 3: Smaller bazaars and passageways with widths from 3 to 5 metres, of these the more important ones from a traffic point of view are:

- Mori Gate bazaar
- Ooncha and Neewan Chait Ram
- Sheikupurja bazaar
- Moti bazaar
- Lohari Mandi bazaar to Soha Bazaar
- Siriyon Wala bazaar
- Mochi Gate bazaar to Chowk Nawab Sahib.
- Azam Cloth Market/Choona Mandi bazaar/.Rarra Telian area.
- Bazaar Wacho Wali

d. Type 4: Smaller passageways of between 2 and 3 metres wide;

e. Type 5: Galis and kuchas of between 1 and 2 metres wide

f. Type 6: Galis and kuchas of upto 1 metre wide.

4.7.2. It may be mentioned that Type 4, 5 and 6 streets are variable in width and have random constrictions and widening.

4.7.3. A qualitative survey was carried out on traffic conditions in the Walled City in the summer of 2016. Shah Alami bazaar is the only road structure in the Walled City specifically designed for modern vehicles. However, the conditions of daytime traffic in this bazaar are almost as bad as traffic elsewhere in the Walled City. Most of the chaotic conditions are created by a combination of factors chief among which are modal mix and hours of loading / unloading:

a. The traffic modes are so multifarious that only a listing can account for them
b. Pedestrians (general pedestrian traffic)
c. Pedestrians (porters) carrying large bundles of goods
d. Pedestrians pulling or pushing hand carts
e. Bicycles
f. Motor cycles (most frequent)
g. Rickshaws and Qinqis (frequent)
h. Reras and the occasional tonga (horse driven), donkey carts and donkey flatbed carts.
i. Bullock flatbed carts,
j. Cars
k. Small vans (frequent).
l. Large vans and small trucks
m. Large trucks

4.7.4. Hours of loading and unloading:

a. Unlike on the main circular road where truck loading and unloading is allowed during night hours, there is no such control within the Walled City. In Shah Alami, vans and small trucks are loaded and unloaded at all hours of the day, and delivery and dispatch from the warehouses of the regional markets too happen mostly during the day.

b. Goods unloaded during the night on the Circular Road are carried into the Walled City on bullock carts, small vans and handcarts during the day. These conflict with the daytime circulation needs of pedestrians, rickshaws *qinqis* and motorcycles.

c. Up to the present time there is a certain type of traffic mix closely associated with the regional wholesale

and retail markets with large warehousing needs. During the daytime, this is characteristic of the press of pedestrians and motorcycles conflicting with hand carts and individual porters. With the controls on modal mix at the Delhi Gate entrance, the traffic emerging from these markets is more and more likely to exit the Walled City on roads and streets with larger RoW's. These are generally to be found in the western part of the Walled City close to the Fort and Taxali gate and of course the Shah Alam Gate area through the Shah Alami Bazaar

4.8. Regulation of traffic in the Walled City

4.8.1. Traffic in the Walled City should be regulated according to the following proposals.

a. Motorized traffic should be restricted only to Type 1 and Type 2 roads and passageways, except when these are designated pedestrianized streets, and except in the case of emergency vehicles

b. No motorized traffic except motor cycle traffic should be allowed in streets marked Type 2 and type 3. Motor cycle traffic should be supplemented with (multi-story, if possible) parking facilities at the inner ends of all W2 streets.

c. Delivery vehicles to be allowed in Type 1 and Type 2 streets only between 11:00 PM and 07.00 AM.

d. Bulk movement of goods on porter backs and on hand carts should also be allowed during the above hours.

e. A system of slowing down and regulating motor cycle traffic to follow a steady stream leaving pedestrians relatively undisturbed should be designed. This should be accompanied by an education and traffic behavior campaign specially focused on motorcycles

f. No motor cycle traffic should be allowed on streets marked Type 4, 5 and 6

g. A peripheral below ground parking system for cars servicing the Walled City should be designed and implemented in conjunction with the landscaping design for the Circular Garden.

h. Residents should not be allowed to park their cars in the Walled City for more than 1 hour except in the

peripheral parking garages mentioned in (1.6.6) above, or any other designated place in the Walled City.

4.8.2 Feasibility studies should be carried out for establishing multi story motorcycle parking containing individual/private lockers in appropriate and opportune parts of the city. Roadside retail activities and uncontrolled parking are observed throughout the streets and alleys in the Walled City. The residual width of the footways are narrowed by such occurrences, and thus longer walking times were recorded in the pedestrian journey time surveys during the noon and evening peaks when more commercial activities take place.

4.8.3. In the short to medium term, designated parking areas should be identified to reduce roadside parking. Multi-storey car parks like the D-Point Parking Plaza should be constructed for those motorists who park their vehicles along the streets and alleys. The parking locations should be carefully chosen to ensure that motorists can conveniently access to their destination point, or else the car parks would not be effective in reducing roadside parking. For wider corridors and at prominent locations like the gateways of the Walled City, proper footpaths should be constructed to delineate the passageway for vehicles and pedestrians.

4.8.4. According to the assessment method set out in the Highway Capacity Manual of U.S.A. and concepts developed by Dr. J. J. Fruin, the Level of Service (LOS) conditions of a pedestrian passageway can be ranked in six levels, from the best of "A" down to the worst of "F". In general, LOS C is desirable for most designs at streets with dominant "living" pedestrian activities. At Lohari Gate, which was the busiest gateway, LOS of "B" can be achieved by providing 2m footpaths on both sides of the gate (with the assumption of 0.5m dead space on each side of the footpath).

4.8.5. WCLA may also consider segregating pedestrian and vehicular traffic. Certain streets inside the Walled City could be pedestrianized throughout. In this case, traffic will be diverted to other routes where conditions are likely to worsen. It would be necessary for a traffic impact assessment to be conducted to conclude the technical viability.

4.9. Improvement of public transport termini and stops

4.9.1. In the periphery of the Walled City, public transport termini were identified at Bhatti, Yadgar, Data Darbar, Lohari Gate and Badami Bagh.

4.9.2. Badami Bagh is the one of the most important and busiest bus terminus in Lahore from where buses are dispatched to various destinations over Pakistan. Based on the Badami Bagh Bus Terminus Survey, about 500 vehicles enter/exit from the bus terminus in the peak hour. Among those routes terminating at Badami Bagh, 14 routes circulate along the Circular Road. As revealed by the Circular Road public transport surveys, over 10 routes terminate at Data Darbar, Yadgar, Bhati and Lohari each serves as terminal for 3 – 5 routes running on Circular Road.

4.9.3. In conjunction with the recommendations of regulating public transport services, the Authority should review the number of services to terminate at each of these public transport termini. Designs should be upgraded, with proper bays designated for different routes. Double bays should be allowed where vehicle overtaking is anticipated. Clear signage with route numbers, origins and destinations should be erected to assist way finding. Space for lining up should be adequate for the waiting passengers to queue in an orderly manner.

4.9.4. Subject to the availability of land, a public transport terminus is recommended near the Bhatti metro bus station. This promotes modal coordination, encourages the use of the metro bus system, reduces the quantity of road-based public transport and increases the efficiency of the usage of road space. This new terminus can also extend to serve the routes terminating at the existing Bhatti terminus.

5. THE CIRCULAR GARDEN

5.1. The Circular Garden, although identified as a single ZSV, is broken into several segments by the access ways at each "gate" into the Walled City. Except for the segments forming the city's edge on the northern Circular Road, the rest of the Circular Garden is heavily encrusted with encroachments (by both the public and private sectors) at the entry points to the gates.

5.2. It is proposed that a systematic process of shifting entities from these locations should be started, on a section-by-section basis. In certain sections, the road width of the Circular Road is wide enough (as much as 50 or more metres) to warrant an efficient design to relocate shops from their present locations so as to expose the Circular

Garden. This is particularly the case for the section of the Circular Road between Mochi Gate and Shah Alam Gate.

5.3. In other sections of the Circular Road, a programme of identifying and selecting specific types of encroachments and other structures for demolition should be commenced. This should be carried out in conjunction with how traffic in these sections of the Circular Road could be improved, while revealing views of the Circular Garden from the road.

5.4 Any traffic engineering solutions in the Circular Road should be integrated with the landscaping programme of the Circular Gardens.

FIG. 49 ENCROACHMENTS CHARACTERISTIC OF THE EXISTING SITUATION ON CIRCULAR ROAD BETWEEN SHAH ALAMI AND MOCHI GATE

FIG. 50 PROPOSED INTERVENTIONS INCLUDE SIGNIFICANT LANDSCAPING AND REINSTATEMENT OF GREEN SPACES

FIG. 61 PROPOSED RE-DESIGN AND TRAFFIC ENGINEERING ON CIRCULAR ROAD (NORTHERN, EASTERN AND SOUTH-EASTERN SECTIONS), SHOWING AREAS OF OPEN AND UNDERGROUND PARKING

FIG. 62 TRAFFIC ENGINEERING AND RE-DESIGN OF NORTH CIRCULAR ROAD, SHOWING LAYOUT OF PARKING ZONES
AN ENLARGED DETAIL IS SHOWN ON THE OPPOSITE PAGE

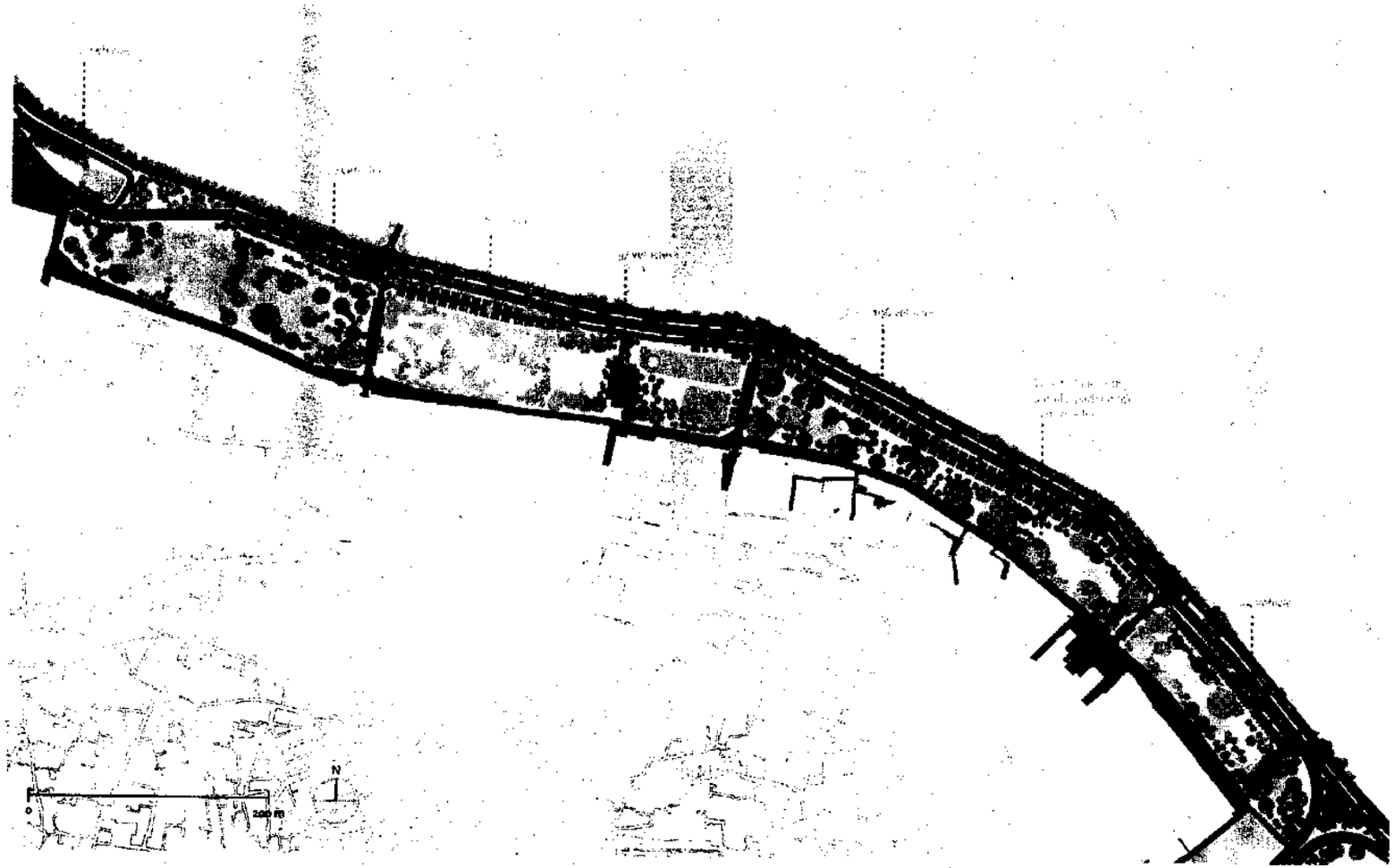


FIG. 83 DETAIL OF PROPOSED SERVICE LANE & PARKING AREA NEAR SHARIF HOSPITAL NORTH CIRCULAR ROAD

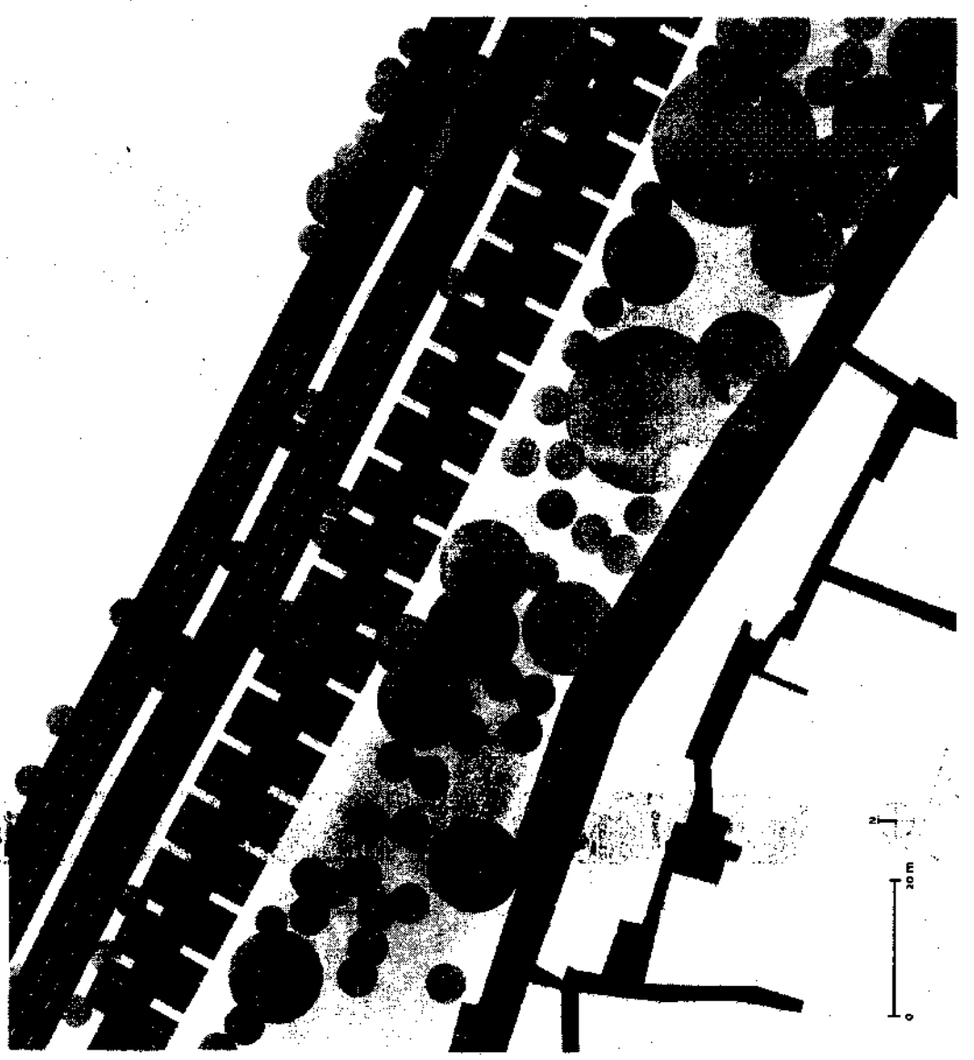
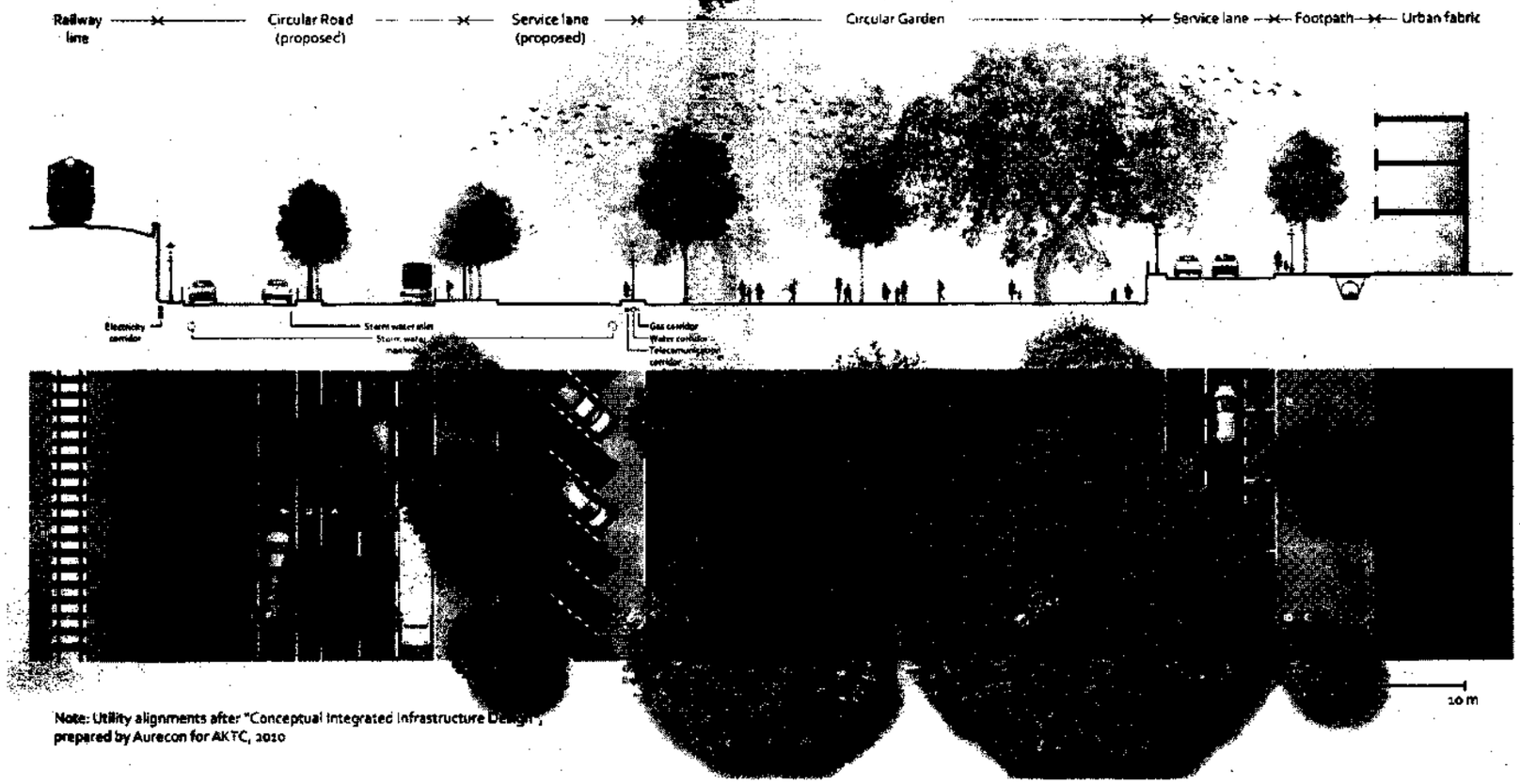
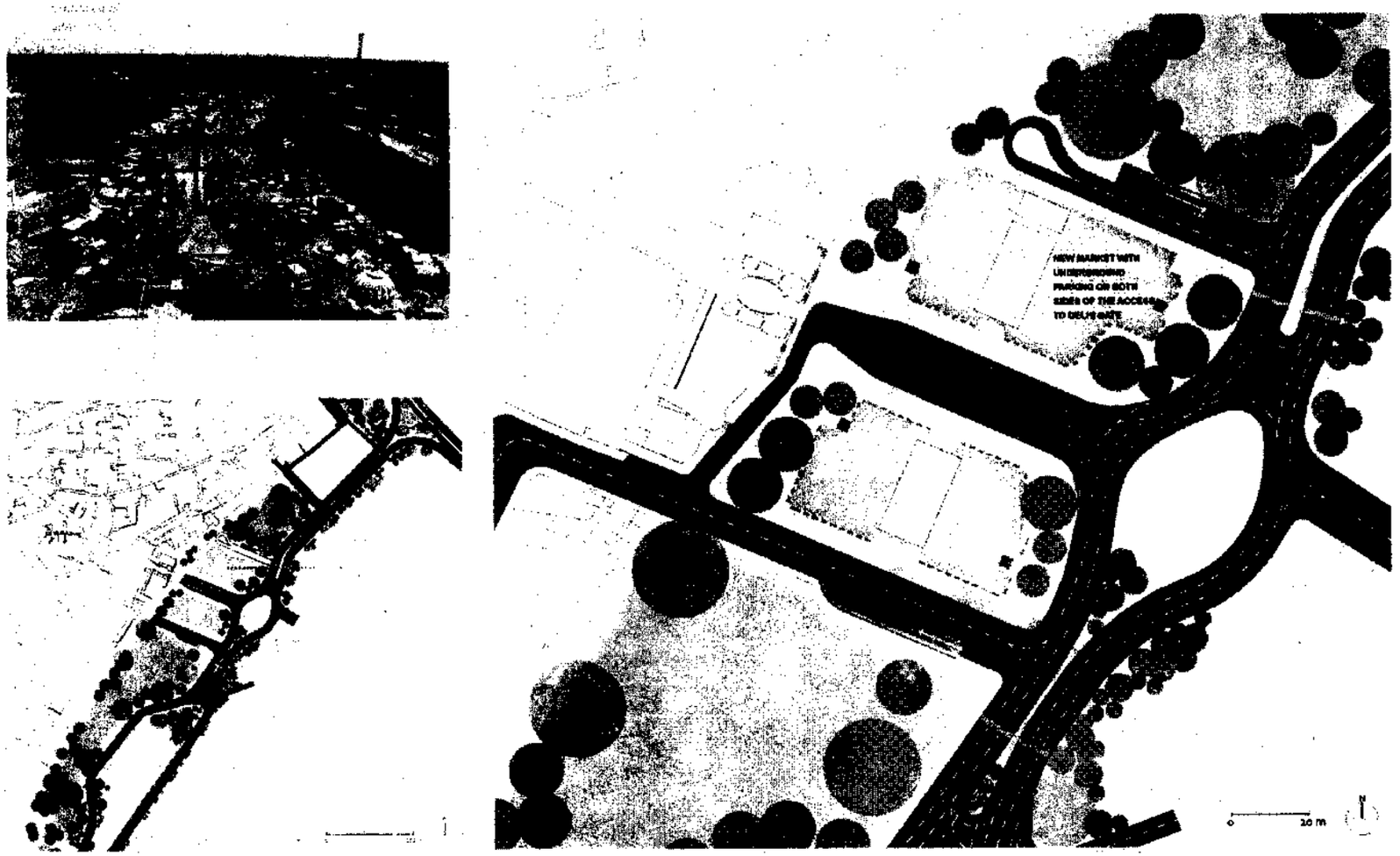


FIG. 64 SECTION SHOWING TRAFFIC ENGINEERING AND RE-DESIGN OF NORTH CIRCULAR ROAD



Note: Utility alignments after "Conceptual Integrated Infrastructure Design" prepared by Aurecon for AKTC, 2010

FIG. 55 TRAFFIC ENGINEERING AND ROAD IMPROVEMENT ALONG EASTERN CIRCULAR ROAD
ALSO SHOWN IS THE NEW MARKET WITH UNDERGROUND PARKING OUTSIDE DELHI GATE



PRESENT CONDITIONS OUTSIDE THE DELHI GATE

FIG. 56 NEW MARKET AND UNDERGROUND PARKING
PROPOSED PROJECT OUTSIDE DELHI GATE ON EAST CIRCULAR ROAD

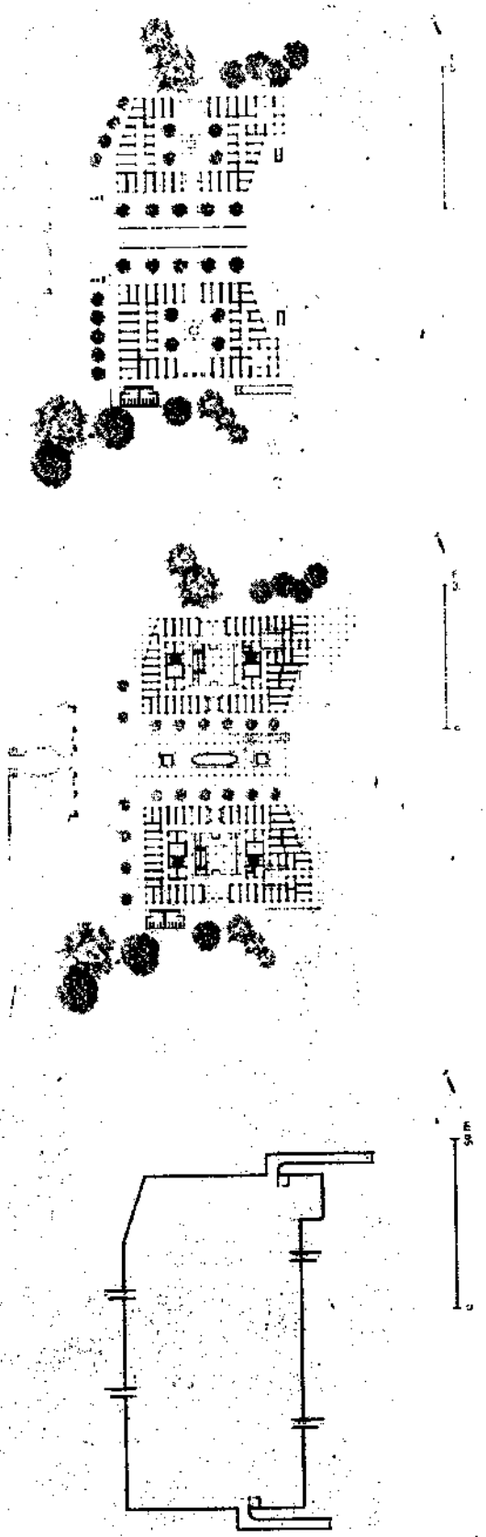
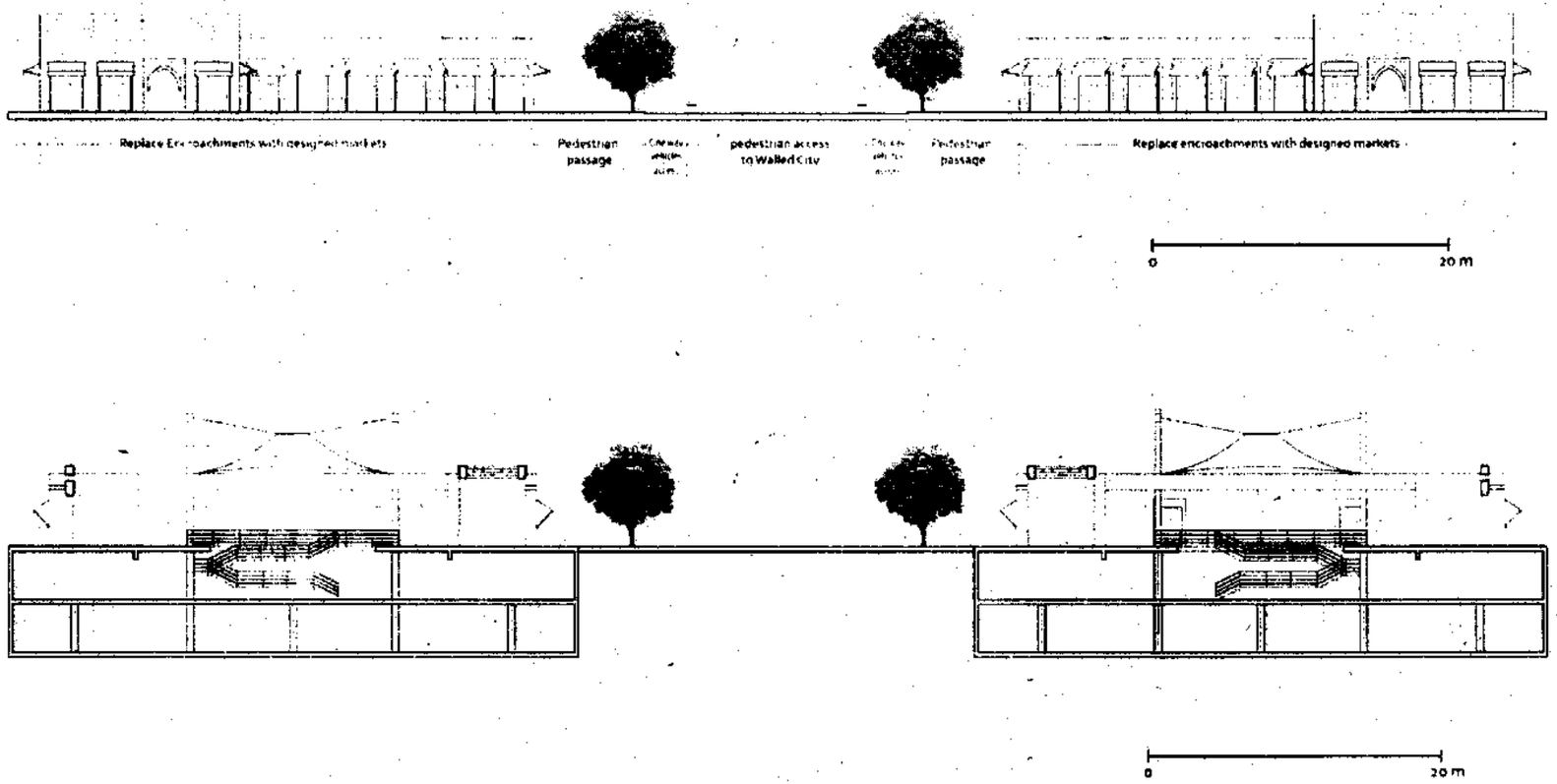


FIG. 67 NEW MARKET AND UNDERGROUND PARKING
PROPOSED PROJECT OUTSIDE DELHI GATE ON EAST CIRCULAR ROAD, ELEVATION & SECTION



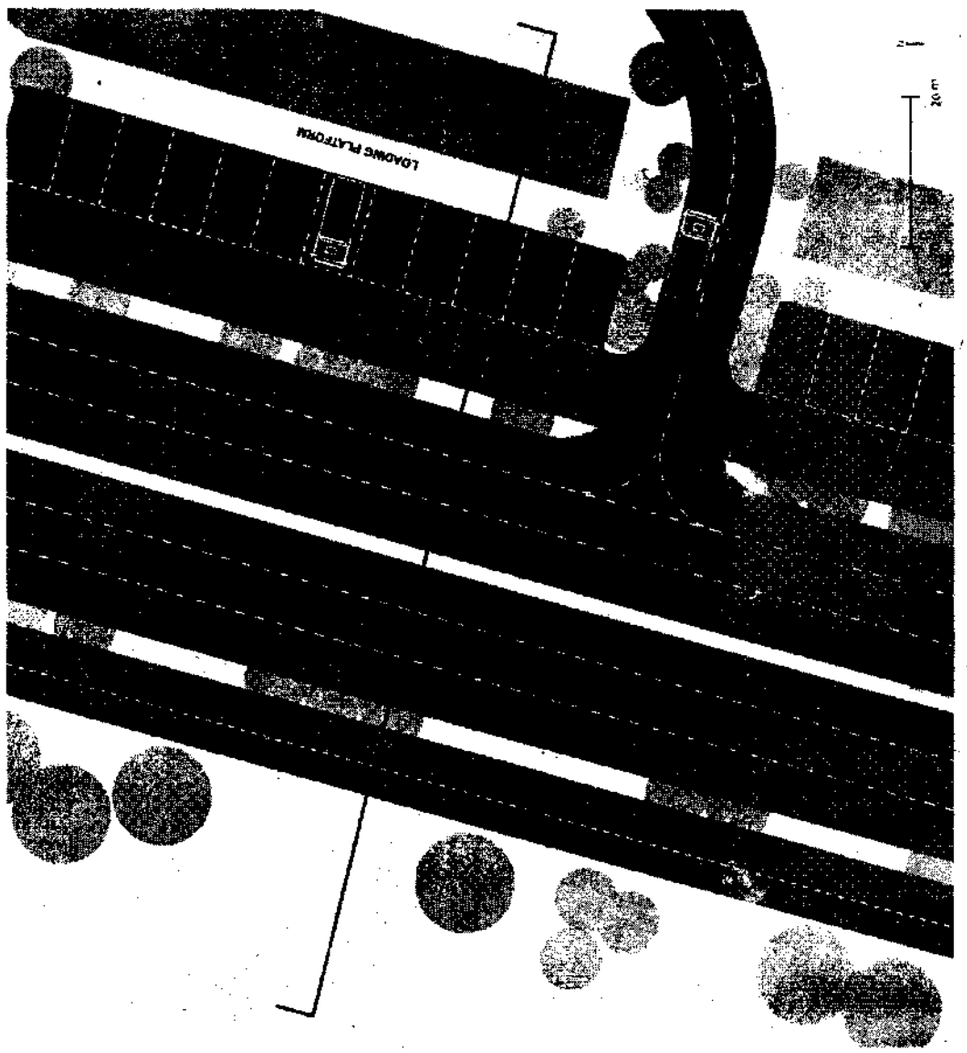
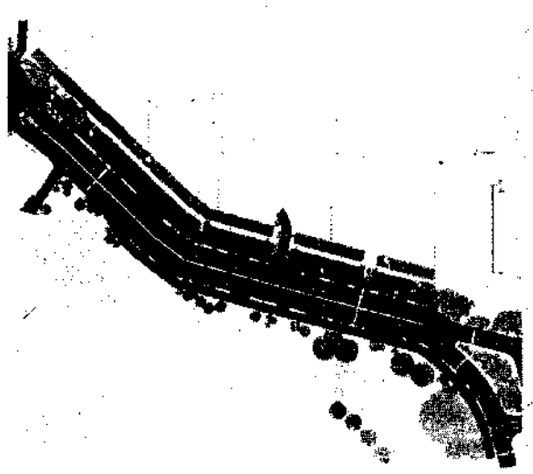


FIG. 58 SECTION OF EASTERN CIRCULAR ROAD OPPOSITE AKBARI GATE SHOWING PROPOSED SMALL TRUCK LOADING / UNLOADING DOCKS TO SERVICE EXISTING BUSINESSES OUTSIDE THE WALLED CITY



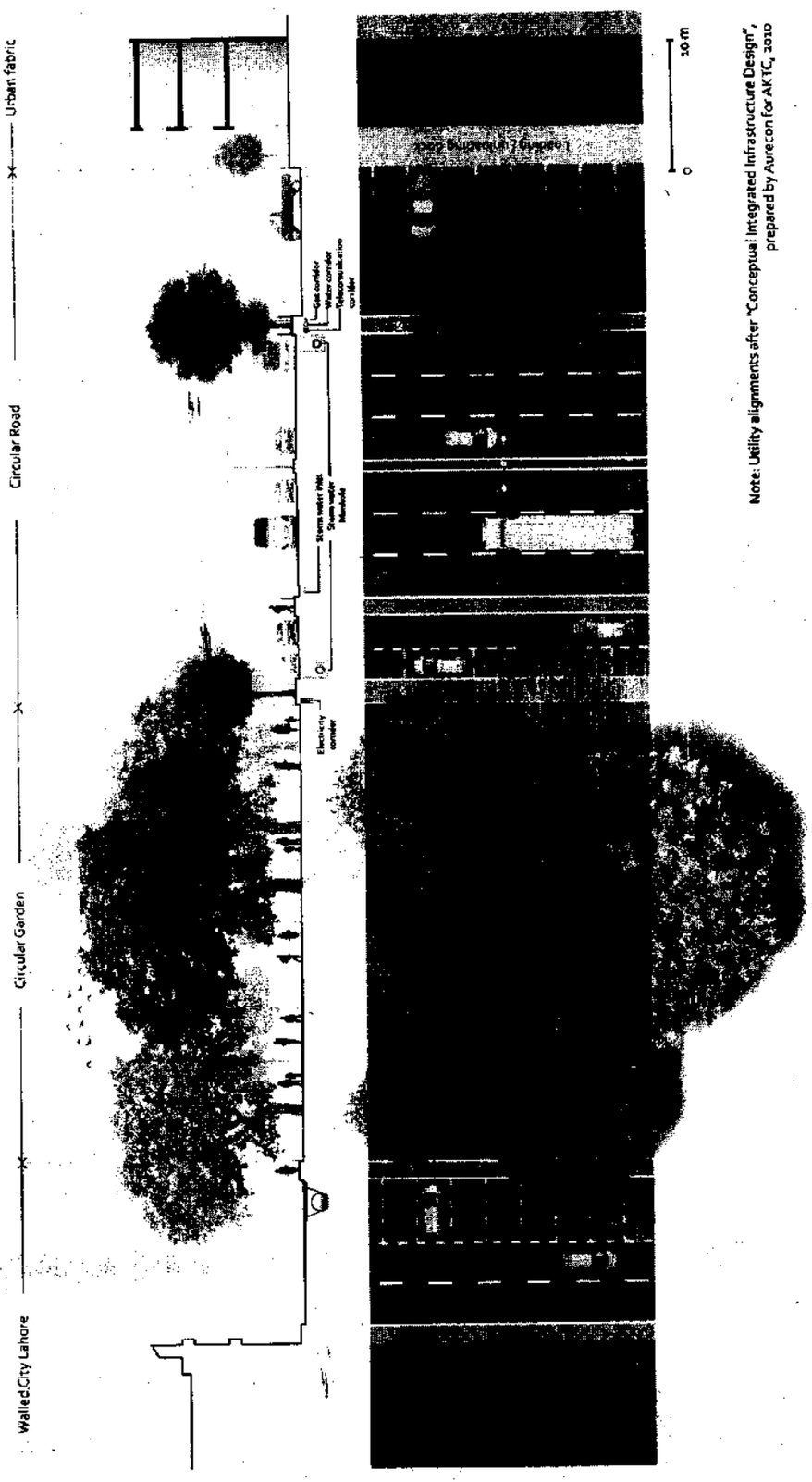
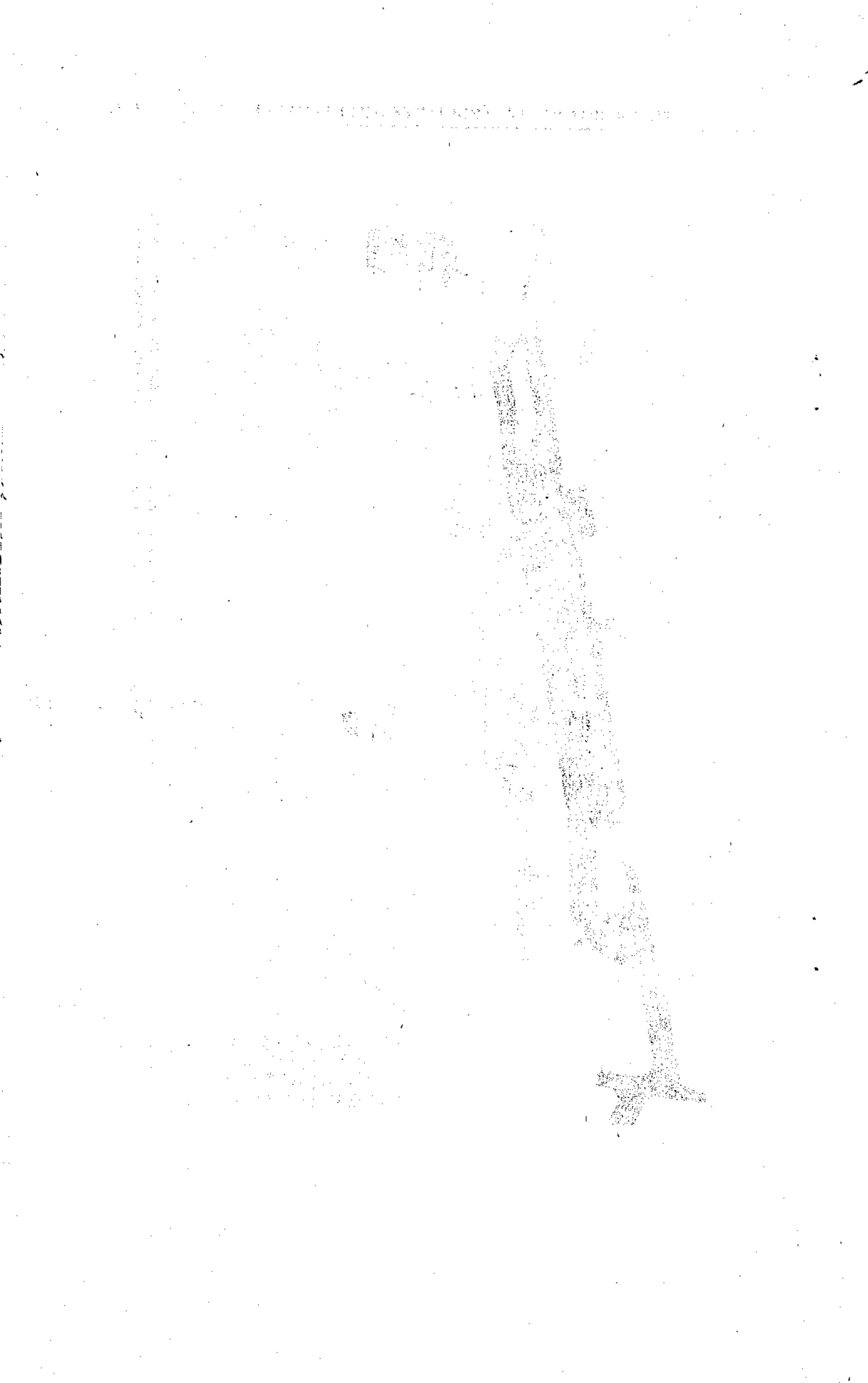
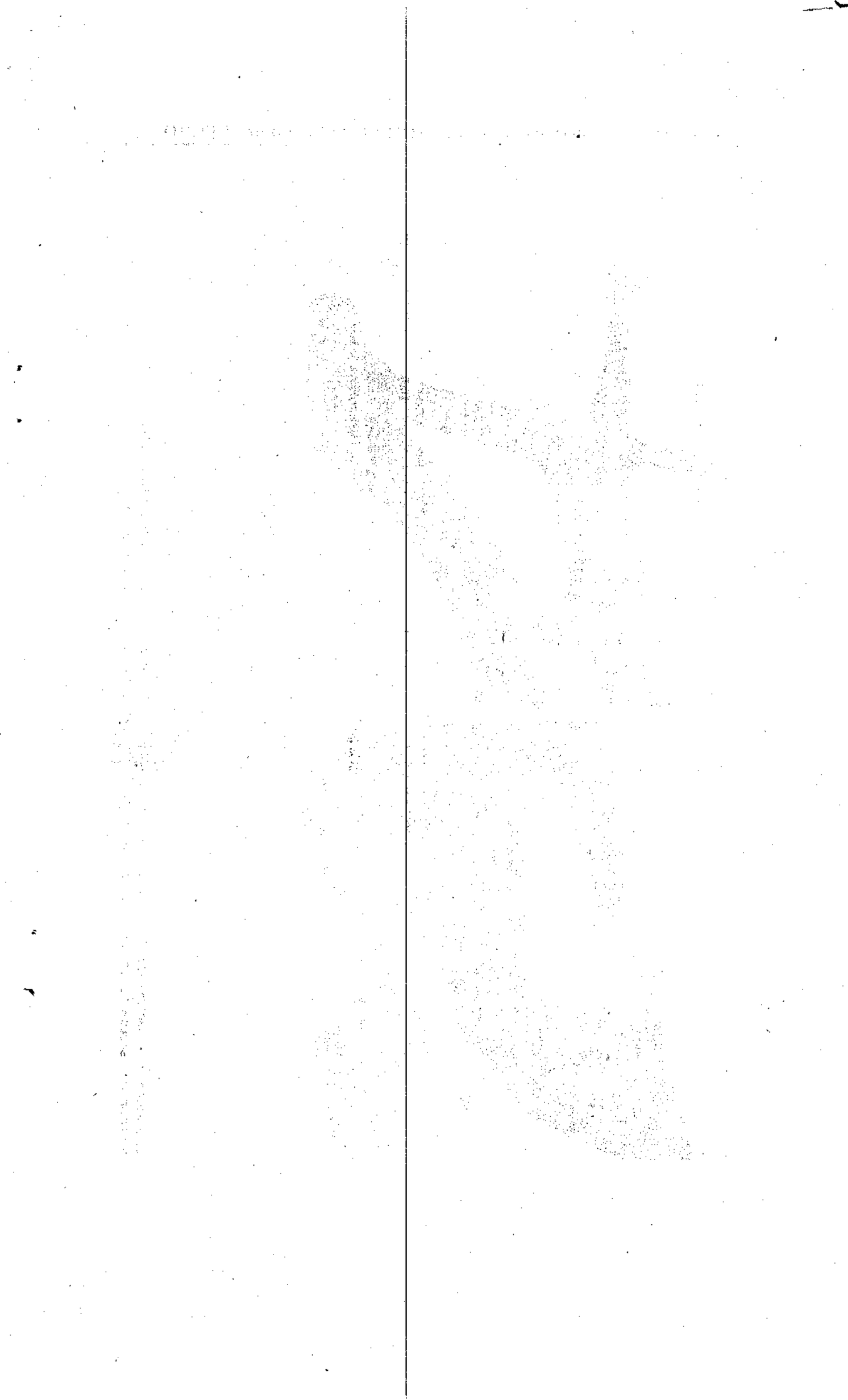


FIG. 59 SECTION SHOWING TRAFFIC ENGINEERING AND RE-DESIGN OF EAST CIRCULAR ROAD





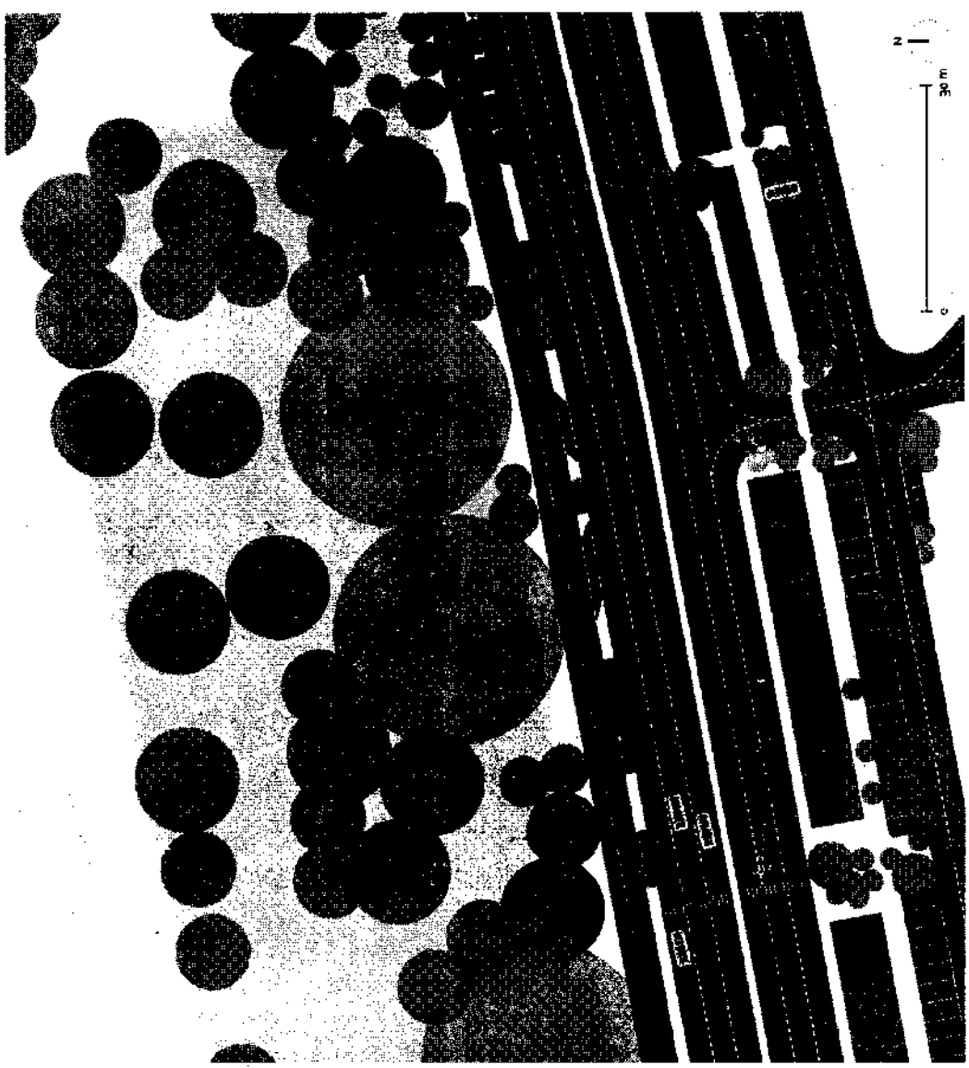
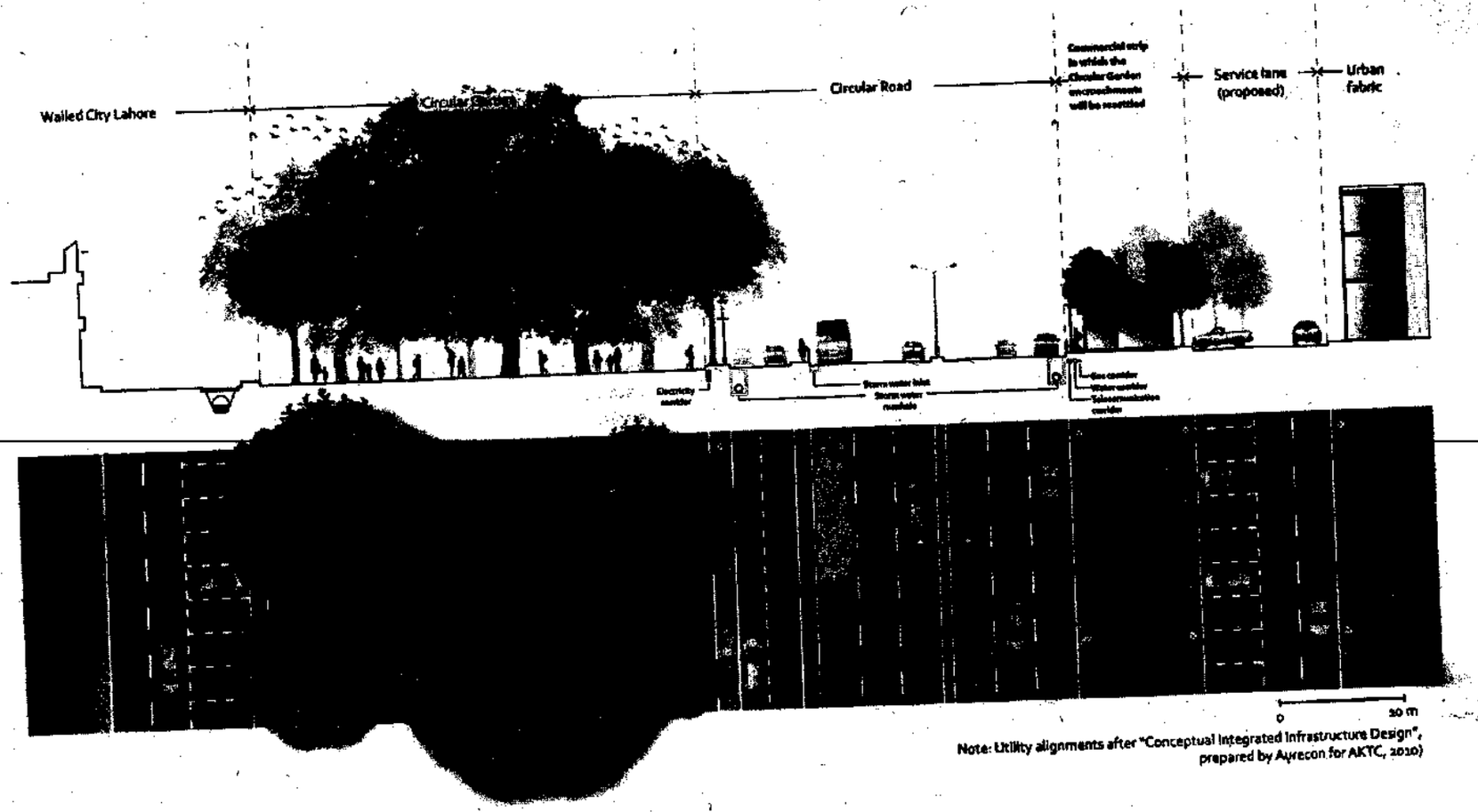


FIG. 62 PROPOSED RE-DESIGN OF THE RIGHT OF WAY ALONG SOUTH-EAST CIRCULAR ROAD. DETAIL OF CIRCULAR GARDEN AFTER REMOVAL OF ENCROACHMENT. OPPOSITE PAGE, SECTION THROUGH THIS PART OF CIRCULAR ROAD



Note: Utility alignments after "Conceptual Integrated Infrastructure Design", prepared by Aykrecon for AKTC, 2010)

APPENDIX I: THE SHAHI GUZARGAH PILOT PROJECT

1. COMPONENTS OF THE PILOT PROJECT

This project broadly included community mobilization, establishing key baseline data, infrastructure design and improvements, the documentation and rehabilitation of street façades, removal of encroachments, street surface improvements, and provisions for fire hydrants, street lighting and street furniture. Mohalla demonstration projects carried out in two residential neighbourhoods established the design standards and operational knowhow for the larger project.

Community mobilization, extension services and community participation: Working in the bazaar and in the mohallasresulted ipso facto in working with the people who inhabit these elements of the urban form. This contingency was thrown into sharp relief when the initiation of the project was associated with certain coercive aspects of the antiquities law relating to monuments, raising imminent danger to the trader communities, and protests broke out as a consequence. In the residential neighbourhoods, the urban spaces and access system is so tightly controlled by the residents that it was impossible to even broach the project without interacting with the residents and with resident community organizations. Such contingencies 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 exists to this day in WCLA.

Inventory of heritage: Parallel to project preparation, AKTC:AKCSP carried out a topographical survey of the Walled City and as part of the planning activities, established other baseline data. One of these was the Plot and Building survey which inventoried the nature, condition, heritage value, occupation and land use etc., characteristics of all land parcels and buildings in the Walled City. A spatial database was generated to identify the location of land parcels with respect to attribute data, and this has formed the basis of the future WCLA GIS system. The inventory of heritage value contained in this database helped steer conservation efforts in the project, and to identify Zones of Special Value across the Walled City.

Infrastructure design and improvements: A major consultancy was awarded for detailed infrastructure design of the pilot project area. The principal elements of the infrastructure design were based largely on design guidelines contained in the AURECON report. Trunk infrastructure in the main spine street system was implemented by contractors, as was the distribution infrastructure network in the residential zones. The water supply system was integrated with the forward planning for water supply at the scale of the Walled City and the replacement of the existing water supply distribution network has resulted in a drastic improvement in the water supply pressure. Electric pumps in-

stalled on public mains have disappeared as a result. A new separate storm water drainage system was introduced. The electricity and telephone distribution network was organized with aerial bundled cables attached to building façades in an ordered manner respecting the architectural features of the buildings.

Architectural services for urban design and urban rehabilitation: AKTC-AKCSP provided guidance to the consultants engaged for the infrastructure aspects of the project through the expertise of conservation architects, technicians and building trades. In future, such services will need to be replicated within WCLA.

Gali rehabilitation demonstration project: Before the appointment of the contractor for the larger pilot project, AKTC-AKCSP designed and carried out a demonstration project for tertiary distribution networks of the infrastructure and urban fabric rehabilitation in Gali Surjan Singh and Kucha Charkh Garan, two small residential lanes off Delhi Gate Bazaar in the project area. This 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, the standards to which historic residential buildings could be conserved etc. Of particular importance was the fact that the new standards were there for the communities and contractors involved to see and physically experience.

Documentation of street façades, design and implementation: In the project area, street façades were meticulously documented and designs prepared for their improvement. They were then rehabilitated according to a façade improvement programme. This and the removal of the unsightly wire-scape were responsible for dramatically improved visual environments.

Encroachments: A significant component of the pilot project was the removal of establishments that were illegally located on public right of way or had extended shops to occupy a portion of the street. 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.

Street surface improvements: All street surfaces were repaved. The design of the pavement integrated the surface appurtenances (e.g., manhole covers), of infrastructure work.

Fire hydrants, street lighting and street furniture: A total of 15 new fire hydrants were added to the project area.

APPENDIX I: THE SHAHI GUZARGAH PILOT PROJECT

Street lighting was designed and implemented with lighting fixtures either attached to the façades or pole mounted.

Landscaping: 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.

2. LESSONS LEARNT FROM THE IMPLEMENTATION OF THE SHAHI GUZARGAH PROJECT

1. The fit between the size of the project and the competence and organizational abilities of contractors

Although the project is large in scope, only the trunk infrastructure part of it and related heavy interventions lend themselves to be carried out by a large contracting firm. In this case, such a firm was not able to efficaciously deal with the finer and detailed parts of the work that was carried out at the level of individual buildings or in the small residential streets. The work in the narrow and tiny streets and the fine-grain details can only be implemented by a number of smaller contractors who have greater flexibility and acumen and who are liable to profit and contribute to project success by virtue of the competition generated among several concurrent contracting parties.

2. Project management expertise needs to be augmented

The project was a highly complex and multi-faceted architectural-engineering project, and the level of expertise and management skills brought to bear on it on the part of both WCLA and the contractor could be improved.

3. Not enough attention was paid to integrating the design of urban ensembles and group value

For example Chowk Wazir Khan, as an urban space integrally related to the project, was dealt with only at the most basic level. It has only recently been addressed as a separate project. Similarly, the large open space commanded by the entrance to the Chuna Mandi Haveli was an opportunity lost as a result of not having been integrated at the project preparation scale. As a consequence, the private properties on the north of this space have been rebuilt by their owners without any regard to the importance of this space, and detailing of the infrastructure element was done only at the very last moment.

4. No elements of potential value addressed

In an environment as chronically unattended to as the Walled City's, it is sometimes possible to identify locations which, given the appropriate treatment, might yield great value from an urban design and open space improvement point of view. A case in point is the Kotwali Chowk, which was able to be attended to only after the project was completed.

A similar case in point is the area in front of the Pakistan Cloth Market, the site of a former motorcycle stand, for which a project for the completion of the bazaar frontage (and an infill building) was prepared, but never implemented. It should be a point of policy to identify and prioritize such potential high-value sites as early as possible in the project preparation stage, and all attendant social, community, property ownership and infrastructure and urban design related issues resolved and integrated into the overall project plan and its implementation.

5. Integrating utilities with urban design

In the past, WAPDA's / LESCO's standard practice for locating step down transformers has been extremely arbitrary. Quite frequently these utility elements have been mounted on poles and pylons in front of prized monuments and other culturally important sites. In Package I of the Pilot Project, sites had been identified for locating the transformers within buildings specially constructed for this purpose. Sites had been identified and designs and construction drawings had been prepared for these buildings. However, except in one case, these buildings were never constructed and the new pad mounted transformers were located in open air, on often hastily constructed and mis-aligned concrete mounting pads. One of the reasons for this was the difficulty of acquiring the land owing to very high land prices, and the difficult process of negotiating the acquisition price. Yet, in the event, there were sizeable savings in the architectural and conservation aspects of the project cost.

The main conclusion to be drawn from this is that priority was not accorded to urban design and the visual environment and urban aesthetics aspects of the project. On the contrary only the engineering and infrastructure aspects were prioritized. In the future Area Conservation and Development Schemes should avoid these unbalanced priorities. The project should be put together in the most comprehensive manner possible, and all costs relating to these situations of interface between urban design and project engineering, including land and building costs, should be integrated into the cost parameters of the project. The visual and urban aesthetics of a project should be given an "essential" status and should be accorded the same priority as the most critical engineering considerations.

APPENDIX II: THE PROPOSED PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF MUNICIPAL SERVICES

This appendix is the part of the MCRP that is meant to fulfil the requirement of the Act for the preparation of a "plan for development, improvement and maintenance of municipal services". It contains two sections: the first describes general conditions of utility services in the Walled City, and the second, titled Infrastructure Solutions and Design Criteria provides key parameters of the design for the development of municipal infrastrcuture. Both these sections are based on the Integrated Infrastructure Conceptual Design prepared in 2010, and which is introduced in the following paragraph. In 2009, AKTC-AKCSP commissioned the international consulting firm AURECON to prepare an Integrated Conceptual Infrastructure Design for the Walled City, which was completed in 2010. The public and private sector utility companies and agencies of Lahore were consulted during data collection. The result is a three volume plan titled the Integrated Infrastructure Conceptual Design. It is proposed that this Design, already used in the design and implementation of the Shahi Guzargah Project, may be accepted as fulfilling the above requirement of the Act.

The description of the state of the utility infrastructure follows refers to conditions prior to the implementation of the Pilot Urban Rehabilitation and Infrastructure Improvement Project (the Shahi Guzargah project) in certain parts of the Walled City. The first part of this project (Package I) was carried out between Delhi Gate and Chowk Kotwali, and it was completed in 2014. Package 2 is underway while work is scheduled to commence in 2017 on Packages 3 and 4. Many of the infrastructure shortcomings described below have been addressed in the Shahi Guzargah project, and will, it is hoped be addressed in other areas of the Walled City where projects similar to the Shahi Guzargah projects are being planned for implementation. The description, nevertheless, is applicable to the Walled City in general.

THE GENERAL CONDITION OF UTILITY SERVICES IN THE WALLED CITY

1. WATER SUPPLY

The Walled City is supplied with water from 16 to 20 tube wells. Tube wells that are no longer in use tend to be abandoned while new ones are developed. The water distribution system in the Walled City is not interlinked with the rest of Lahore. Borehole logs indicate that water is abstracted from a number of semi-confined aquifers delineated by clay layers. On average, the pumps operate for about 20 hours per day. While some of the tube wells have standby generators, most do not, and as a result, cannot supply water during load shedding.

According to WASA, the water table in Lahore is dropping at a rate of 6' (1.83m) per year. Under the Walled City,

the rate may be 4' (1.22m) per year. Both figures are alarming in the absence of any strategy for replenishment.

Storage reservoirs: There are two reservoirs in the Walled City. The Pani Wala Talaab is an elevated tank with a capacity of 1 million gallons. It is situated at Langa Mandi, the highest point of the Walled City. It was constructed in the 1870s as part of the water supply system to the city. It consists of four separate steel compartments on top of 18' (5.5m) high brick columns. The roof of the structure shows signs of collapse and will need to be repaired.

The Pani Wala Talaab is supplied with water from five tube wells (operating 24hrs per day) that are situated in the vicinity of the Masti Gate. The reservoir is filled three times a day and during this time, the distribution network to the Walled City is closed manually. The distribution system is only open between 4:00 to 8:00, 13:00 to 15:00 and 17:00 to 20:00, that is, for 9 hours per day. According to WASA, the water level in this reservoir rises at between 8" and 9" (200 to 230mm) per hour during the filling cycle. Assuming that all 5 tube wells operate, the average production per TW is between 0.54 cusec and 0.61 cusec (between 15.3 and 17.3 l/s). The second reservoir is a 100,000 gallon underground concrete tank situated at the Masti Gate. This reservoir was never commissioned due to the fact that water extracted from the tube wells is immediately absorbed into the Walled City's water supply network owing to excess demand.

Pressure: Many consumers have installed water pumps to draw directly from the public mains to pump into privately owned elevated header tanks situated on the upper floors of the buildings. This is a poor practice since it tends to create negative pressure in the pipe that can suck impurities into the line and hence contaminate the water. An acceptable system (and some households use this system) is for the household to have a tank on the ground floor that is filled from the mains and then a pump is used to lift the water to the upper tank. These systems are operated manually. Currently these private pumps are essential for two reasons, namely:

- Many of the upper floors of the residential buildings are above the Langa Mandi reservoir and so would never receive water due to insufficient water pressure in the water reticulation network, and
- To a certain extent it makes the household independent of the daily opening of water from the Pani Wala Talaab supplying efficient pressure in the mains as it provides the household with access to water even when the mains are not supplying water.

Fire Fighting: There is one Fire Fighting Station in the Walled City, equipped with one water lorry of 550 gallons capacity carrying a booster pump of 250 PSI delivery head, ten rolls of 100 ft long 2.5" canvas pipes with 5" male/

APPENDIX II: THE PROPOSED PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF MUNICIPAL SERVICES

female couplings and related equipment. Jet nozzles of ½" diameter size with brass fittings (branch, couplings and so forth) are used for fire fighting operations. The station, is located near the Pani Wala Talaab, and services the entire Walled City. A crew of five firemen, including the lorry driver, is deployed during each of the three shifts of 8 hours per day. In the event of a severe fire emergency, fire fighting staff and lorries from Rescue 1122 in the metropolitan area are called to help.

Hydrants: WASA has installed 8 fire hydrants having two outlets of 2.5" couplings and one of a bigger size, but these hydrants have not been used. Single hydrants are located near the old Ali Park TW, near the tube wells at Lohari Gate, Akbari Gate, Yakki Gate, Texali Gate, near Chomala Fasil Road, near Bhatti Gate in Fasil Road and near Fowara Chowk in Shah Alami.

The fire fighting lorries for the Walled City are get water from the four elevated piped water kiosks installed by WASA at Badami Bagh intersection just north of the Walled City, near the Government High School quite far south of the Walled City, near the Bhatti Gate in the south west corner and near Shah Alami TW. The water filling kiosk at the Pani Wala Talaab lies disconnected and out of order. Other than these arrangements no fire hydrants are installed in the Walled City. Commercial areas are more vulnerable to fire incidents.

Water Conservation: Public standpipes and house connections are very often poorly maintained and connected to the mains and as a result water gushes from the connections. Considerable volumes of water flow in the drains in the main thoroughfares.

Pipe Material: The initial (1870s) pipe network distribution system consisted of cast iron pipes. The network has been upgraded and improved at various stages and under various authorities including the Lahore Improvement Trust and WASA. The current system consists of both ductile iron (DI) and asbestos or fibre cement below ground and hot dipped galvanised steel pipes above ground. No flow measurement meters are used in the Walled City.

Billing of consumers: All water consumers are charged a flat monthly rate for water. It appears that commercial and industrial users are charged a fixed monthly rate based on the type and size of industry. Residential consumers are charged based on the floor area of the property. Meters are not used to measure water usage and hence the charge for water is not proportional to the amount of water used.

2. WASTE WATER

The existing sewerage system is a combined system and this does not fit into WASA's long-term aim of separating the systems and treating the sewage flows. In addition, the state of repair of the combined drain varies from street to street with the cover of some sections very badly corroded. In some cases, the concrete covers are disintegrated. This is an ongoing problem evident from the numerous sections reflect repair work. The open drain also collects large quantities of solid waste, so much so that the screens at the pumpstation are clogged. The liquid flow velocity in the drains is not sufficient to keep the solids in suspension and so grit settles out and clogs the drain. From time to time the grit is manually removed from the drain. Sewage is also exposed to flies and rodents. This has implications for public health.

Historically, wastewater has been collected together with the storm water in a combined system. In built-up areas, this stream was collected in an open lined drain that eventually ended up untreated in the Ravi River.

The topographical development of the Walled City has depended on fallen debris with each phase of its growth. This has shaped its highest point in the city centre, helping the outward gravitation of drainage to the Ravi River and later the circular moat built around the city and which still functions as the main drainage channel.

In the 1990s, portions of the open drain system in the narrow streets and alleys were converted into a covered concrete drain. Whilst this work was being undertaken some of the buildings developed cracks which were attributed to settlement caused by water percolating into the substrata.

Presently, this combined stream of waste and storm water is collected at the boundary of the Walled City an open concrete and brick-lined drain. On the southern side of the Walled City, the open drain starts at Delhi Gate and flows to a pump station, situated in the Circular Garden, close to the Bhatti Gate, further southwest of the Walled City. This open drain contains a substantial amount of solid waste that blocks the screening mechanism at the pump station. The flow velocity in the drain is not sufficient to scour or keep solids in suspension. The pump station lifts the liquid and it is eventually discharged untreated into the Ravi River. On the northern side of the Walled City, a collector drain starting at the Masti Gate flows east to the northeast corner of the Walled City (just north of Yakki Gate) where it then joins the Greater Lahore drainage system. Another drain starts on the northwest corner of the Walled City (just north of Azadi Chowk) and flows east to join the Greater Lahore system via the Siddique Pura Drain.

APPENDIX II: THE PROPOSED PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF MUNICIPAL SERVICES

The system of dykes or bunds built on the northern and western side of Lahore against the annual monsoon floods inundating the city, has functioned efficiently for the last two or three decades. However, as a consequence, all storm water and waste water has to be pumped across the bunds into the rivers.

3. STORM WATER DISPOSAL

The first Punjab Urban Development Project, in the late 1990s, sought to implement improved standards for primary and secondary sewerage infrastructure. This resulted in upgrades to a small section of Walled City which primarily involved the addition of concrete covers to the drains. This project also reconditioned the existing drains prior to covering them, which resulted in most of the primary street levels within this area being raised, sometimes above the ground floor levels of the adjacent dwellings. This initial project did not include the provision of trunk sewerage to this area. The second Punjab Urban Development Project saw the extension of this system to a sizeable part of Walled City and the addition of trunk sewerage. On completion of the two projects around one third of the Walled City was left without trunk sewerage and as such relies on the open network. This remains a key issue especially during the rainy season when the level in these open drains rises considerably. The small streets and surrounding homes, many of which are below street level, are particularly susceptible to flooding especially considering the high risk of blockage associated with the solid waste also entering this network.

In a few areas within the Walled City, the existing surface combined sewer drains have been covered over with concrete slabs leaving no provision for the collection of storm water. In many cases, the concrete covers have been smashed to provide small holes for storm water to enter the system. Unfortunately, this practice is not sustainable as the downstream system then loses capacity to cater for sewerage during rainfall events.

Due to the monsoonal nature of the storms in Lahore, the combined sewer is frequently inundated and the Circular Garden acts as retention pond allowing for storm water, water with sewerage, to pond until it can naturally disperse via infiltration and evaporation.

The combined sewer system currently in place will, over time, become increasingly inefficient, particularly with the introduction of a sewerage treatment system. Typically, the combined sewer system in the Walled City is 33% larger than that which is required to address the average dry weather flow. This is necessary to enable storm water runoff to also be accommodated in the system during storm events. Overflow from a combined sewer system associated directly with intense storm events can cause significant public health issues for the local community.

This, coupled with the inefficiencies associated with having to size a wastewater treatment facility to cater for the potential additional flows coming from storm water runoff, means that the separation of these two streams is essential for the future development of the Walled City.

4. ELECTRICITY

Electrical Network – HV: The Walled City is currently serviced by three major 132/11kV grid-stations. The Lahore Fort, Bhatti Gate and Mochi Gate substations are connected to the greater Lahore transmission network in a ring-type arrangement. These 132/11kV substations are fed from the Ravi, Bund Road and New Kot Lakhpat 220kV substations. A dual-circuit ring configuration is used to achieve high redundancy within the network. The Walled City substations are in fair condition, using a combination of outdoor air-insulated and indoor gas insulated equipment.

These three grid stations are heavily loaded, as they also service large areas of urban areas surrounding the Walled City. A fourth 132/11kV substation is required to continue uninterrupted services to the Walled City. To combat this capacity/demand issue, a fourth grid station was to be located at Sheranwala Gate, on the northern edge of the Walled City. This project was previously on hold due to site location issues. Moreover work, which recommenced in 2011, has now remained halted for several years.

Due to the dense nature of the Walled City, most of the trunk services connections between the major grid stations do not enter the Walled City, but are instead routed adjacent along the Circular Road. This reduces the need for large services corridors throughout the Walled City.

Electrical Network – MV/LV: In comparison to the well-maintained HV electricity network, the MV and LV networks that supply the Walled City do not appear to have been systematically designed to any standards or maintained in a manageable manner. The MV Network (11kV) cables that are networked throughout the Walled City are generally overhead cables that hang from whatever structures are available, including buildings/posts/rooftops without any suitable method or acceptable fixings and insulators. This results in a network of cables that appears unmanageable and unsafe and the sheer volume of cables is the most detrimental factor to the aesthetics of the Walled City. These cables include bare conductors within arms reach of pedestrians and with bare unprotected cable joints creating safety concerns.

APPENDIX II: THE PROPOSED PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF MUNICIPAL SERVICES

The 11kV/400V transformers that are used in the area are pole mounted oil-cooled transformers. As per the cabling, the transformers appear to be located wherever room is available, including on buildings, above shops and above the middle of walkways. This poses safety and access issues for operation and maintenance of the transformers. Earthing is also performed in an unmanaged manner. In very busy areas, clusters of transformers dominate public spaces. These clusters are groups of low capacity transformers, sometimes just 25kVA. Street-side stalls are set up under the shade of transformer clusters, with some vendors cooking underneath electrical equipment. Elsewhere, transformers are placed on the ground, with live exposed 11Kv cables within arms length of pedestrians, posing potential safety issues. These issues illustrate how the network appears to have been constructed on an as required basis with minimal planning and design techniques. The cluster-type arrangement of pole-mounted transformers seems to indicate an unplanned, "as needed" solution of installing capacity within the network.

The LV Network (400V) has not been designed systematically. Evidence of a reactive approach to requirements is illustrated by the large congestion of overhead cables and small transformers. Maintenance on the LV network is inadequate, with large rubbish deposits collected on transformers, and miscellaneous objects suspended from overhead cables. Also, cables are not labelled, making it difficult to trace a circuit. Tracing the LV network is generally difficult, and suitable safety devices such as circuit breaker protection including earth leakage, is not provided on the LV side of the transformers and LV network prior to entering the buildings.

Given LESCO's current design guideline that requires 400V cables to be no longer than 800ft, or 240m, the coverage area is limited to radius of 240m around a transformer, therefore resulting in a higher number of transformers.

Consumer Interface: The majority of electricity meters are older electromechanical meters in poor condition, with minimal newer solid-state meters in some places. The accuracy of these old meters could be resulting in billing errors and load reviews. In addition the meters do not contain any tampering security tag devices as used internationally. As a result, LESCO installs meters in the streets on the outside wall of the building, so that ground personnel can identify illegal connections.

Street Lighting: The street lighting infrastructure in the Walled City is very limited. Most are simple fluorescent tubes connected to any low voltage cable that is available. The street lamp is controlled by a simple switch, hanging off the fitting itself. Therefore, it is up to residents to turn on street lamps on a fitting-by-fitting basis. Most lamps are non-operational. No metering of the street lighting exists.

Current Improvement Plans: LESCO have indicated that the HV supply to the Walled City is running almost at capacity. This will have major implications if not addressed. A reduction of service, such as rolling blackouts, may be necessary if the load continues to increase to above 95% of the grid station ratings.

To combat the growing demand in the area, LESCO have plans to increase the capacity at the Bhatti Gate Grid Station. This will be done by upgrading Transformer-1 to a 40MVA Power Transformer. This would result in the maximum loading percentage to be 65%, which is more acceptable. LESCO are currently constructing a new substation located opposite Sheranwala Gate on Circular Road. In contrast to LESCO Transmission Department (HV), the LESCO Distribution Department (MV/LV) does not seem to have any plans to upgrade their network.

5. TELECOMMUNICATIONS

The condition of the existing telecommunications infrastructure reflect the need for a major upgrade. The site seems to have grown without any thoughtful planning or control documentation, with services installed on an ad-hoc basis.

The telecommunications services in the Walled City comprise landline telephone services, mobile telephone service and television services. Most of the dwellings are provided by each of these services. Very few dwellings have computers and internet services are not obvious.

The Walled City is serviced by the Shahalami Exchange, which is adjacent to the Walled City. As the primary provider, PTCL have the most extensive telecommunications network running through the Walled City. Other mobile communications providers have equipment installed within the Walled City, which appear to be base stations linked via satellite.

PTCL have installed underground fibre optic cabling to nodes around the Walled City, however they are not buried within a specific telecommunications corridor. Copper pairs lead to most dwellings for telephone services from these nodes. The copper cabling is interwoven around the electricity cables of the Walled City, and appears to have been installed on an unmanaged basis. In addition to PTCL, a number of third party cable providers have installed their own television cables in the area. This has created a maze of unidentifiable cables throughout the Walled City.

INFRASTRUCTURE SOLUTIONS AND DESIGN CRITERIA

The following has been extracted from the report Integrated Infrastructure Conceptual Design, Vol. 1, Integrated Infrastructure Planning, by Aurecon, commissioned by AKTC-AKCSP in 2010. It has been edited and some parts have been omitted. For detailed reference of the subject, the reader is advised to refer to the three volume series Conceptual Integrated Infrastructure Design for the Walled City of Lahore, prepared in 2011 by Aurecon. What is presented in the following pages is not a detailed engineering design, and the report by Aurecon referred here is a conceptual design, which provides an overarching technical basis for planning and undertaking infrastructure development in the Walled City. For each project phase mentioned in the following, a detailed engineering design would have to be prepared by a qualified engineering firm, referred to as the project design and management consultants.

A brief survey of the infrastructure conditions prevailing in the Walled City were provided in Chapter 1 and in sections 4.1 through 4.8 in Chapter 4. The importance of specific design principals, proposals and criteria that address the unique needs of the infrastructure requirements for the Walled City of Lahore are critical to any sustainable development initiatives. The city is alive with existing utilities and population habits making infrastructure solutions all the more challenging.

The proposed solutions and concept design criteria are provided in this part of the MCRP for each essential service sector. These outline proposals and design criteria were developed over a period of months in 2010 and incorporate the outcome of discussions with key stakeholders and authorities as well as some insights from the site visits and desktop research. As such these are guidelines a[illegible]ended to inform a sustainable solution for specific projects and to prompt the application of challenging and innovative solutions where appropriate. These sections should not be read without reference to Section 1.4 of the Aurecon report, which highlights issues that are still in need of resolution going forward.

1. WATER

The aim of the water supply and distribution system is to provide consumers with convenient, reliable and safe access to water. In order to achieve this, the system must be adequate both in terms of volume and pressure. The system components, options available and the sizing for the overall water supply system are outlined below.

Agreed design criteria with respect to water supply pertain to the following:

Per Capita Consumption

In Pakistan, it is commonly held that the supply authority should endeavour to supply in the region of 80 gallons (or 360 litres) per person per day. This figure is at the high end of per capita water use if one compares it to the water uses in other countries, especially since Pakistan does not have abundant water resources.

In discussions with WASA, it was established that a study had been carried out in the Walled City of Lahore, which indicated water use of 50 gallons (230 litres) per person per day and water losses of 30%. This figure is acceptable but probably still on the high side. Given the experience and the depth of knowledge of the WASA officials, it was agreed that this would be used in the design of the water supply and sewers. The implications of using this figure and later finding that people use less are discussed below:

- On the water supply side, it will result in a system, which is bigger than is really needed. Some capital expenditure might be wasted but the consumers will experience a better service, namely higher pressures and more assured supply. Other than the additional cost of the system the benefits are positive.

- On the sewerage side, the impact is more complicated: The sewers are designed to ensure a self-cleaning / scouring velocity at least once a day at the calculated peak dry weather flow. Thus the engineer determines the size and the slope of the pipe and the specified pipe is installed to the grades calculated. If it transpires that the flow is less than the calculated figure then the pipe will run less full (a positive benefit as it allows for more uncertainties etc.) but it will also flow at a lower velocity.

- At the sewage treatment works (where implemented) some of the processes will be affected in a number of ways. Some of the units are sized to treat volume and so these will be over-designed and others are designed to cope with load. It will often be found that at the start of the rains, the sewers will be washed clean (even without a combined system one can expect ingress in wet weather) and this accumulated load will arrive at the sewage works, potentially overloading the grit, screening and BOD (Biochemical Oxygen Demand) treatment capacities.

- On this basis, the per capita water consumption on the maximum demand day (a wash day in summer) would be something in the order of 150 litres per day. This needs to be converted from the maximum

demand day to the average daily demand. Knowing the maximum daily demand to average daily demand ratio of 1.5 (WASA), results in an average daily demand of 100 litres per capita.

- In the light of recent realizations regarding imminent water scarcity in the entire region, WASA is in the process of reviewing its standards for water consumption. When the new standards are finalized and adopted, the same would be applicable to the Walled City area.

Water Meters

Coupled to the per capita water use is the practice of whether or not to use water meters. It is understood that it is WASA's policy (since 1999) that when a new consumer is provided with a connection, it is fitted with a water meter. At present there are no water meters in the Walled City. It is recommended that water meters should be fitted to the supply of all consumers so that the actual consumption is paid for, reducing wastage. This will have a beneficial effect on running costs and also help lower the decline in the level of the water table. It will also make it possible to establish how much "unaccounted for" water (or wastage) there is and, knowing this, it will be possible to take the next step in reducing this wastage. The old adage of "to meter is to knew" is more relevant than ever.

The actual per capita water use can readily be established as can the various peak factors (maximum day and peak hour). WCLA has installed water meters in Package 1 of the Shahi Guzargah project area but WASA is yet to be taken on board to charge those consumers on the basis of water consumed. For all future development work in the Walled City, it is recommended that water meters be installed.

Disinfection

Two surveys have been conducted - the results of the first survey were published in October 2008, while the second survey results were made available in November 2009. Both surveys show that the water source is polluted to some degree.

At present the water from the TWs is supposed to be disinfected by injecting sodium hypochlorite into the rising main. The water is then delivered into the distribution system. As there are about 21 TWs, this is a considerable task both in getting the dose correct, the contact time correct and also the sheer logistics of keeping so many

It has been decided that locating elevated reservoirs within the Walled City is not possible because of both the lack of space and the fact that they will distract from the historic appeal that this project is trying to preserve. Locating the elevated reservoirs in the Circular Garden, while space is available, will have an even larger adverse visual impact as the towers will be visible from all angles and will of necessity be much higher than the surrounding buildings as the Circular Garden is the lowest point in the Walled City.

Using pumps to pressurize the system can be achieved in a number of ways but the simpler the control of the system the better. The options are discussed below:

a. The simplest system is to have one large duty pump and a smaller jockey pump (to take care of the low flows) that are switched on and off manually at each reservoir. The switching on and off can be based on the time of day or on the flow reading on the meter or on the pressure in the system. The pumps could also be switched off for a period at very low flows during which the existing Pani Wala Talaab may be used.

b. The above can also be done automatically so that operator intervention is not required. Thus for example, if the system is based on flow, then the switch from one pump to the other would be triggered automatically from the flow meter signal.

c. The above systems can be repeated using a number of pumps. Thus the system could use two, three or four duty pumps that could either be manually or automatically switched on.

d. A further option, and the more sophisticated one, is to operate the whole system using variable speed drives (VSDs) so that the pump(s) at each reservoir will speed up and slow down to maintain a pressure at a point in the zone network, if not at the pump(s). This is achieved by installing a pressure transducer and selecting the pressure set point. The pressure signal is then transmitted to the pump that is programmed to react accordingly.

e. It must be noted that whichever water supply and pumping option is chosen, its reliability on undisrupted power supply is crucial. It is advised that an agreement be reached between WASA and LESCO to ensure an undisrupted electrical supply to all essential bulk infrastructure such as the TWs and bulk supply reservoirs.

dosing points supplied and functioning.

The infrastructure implementation plan for the Walled City recommends that in future the output from the TWs should be collected at balancing reservoirs and dosed with disinfectant as it enters the reservoir. This will make control of the disinfection easier as there will be fewer reservoirs than TWs and it will control the contact time of the disinfectant to ensure inactivation of the bacteria. Regular sampling at the outlet of the reservoir should be done and a history built up. The aim should be to comply with World Health Guidelines. The TW should then only supply the balancing reservoirs at a rate to satisfy the average consumption on the maximum day instead of supplying at the peak hour on the maximum day. More TWs will most likely have to be drilled.

Supply Footprint

The extent of the water supply needs to be discussed because the water supply for the Walled City may be interlinked with the adjacent areas of the city. It has been confirmed by WASA officials that the valves on these pipelines that exit the Walled City have been closed and that it is not the intention to supply water to the outside areas via the Walled City. It is recommended that these pipes should be physically dug up, the pipe broken and end caps be placed on the pipes so that it is not possible for water to inadvertently leak through these connections.

Reservoir Storage

The Pani Wala Talaab (Lange Mandi reservoir) in the new arrangement is neither the correct size nor at the correct height to be used as an elevated reservoir providing the necessary pressure for the Walled City. Typically one would need a volume equal to 2 hours of the peak hour flow. Its current capacity is only equal to 30 minutes. In addition, it provides approximately only half the pressure required.

It is proposed that the Walled City be divided into four zones for water supply. This will entail four supply points comprising an underground reservoir and pump station for each zone. The average daily demand in each zone is between 10,606m³ and 21,354m³ per day.WASA recommends a reservoir storage capacity of 4 to 6 hours of the maximum day requirement. Using the WASA factors for maximum day and peak hour of 1.5 and 1.7 respectively, to calculate the maximum daily demand and then applying the 4 to 6 hour storage rule, the reservoir sizes range between 9 335m³ and 18 242m³.

APPENDIX II: THE PROPOSED PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF MUNICIPAL SERVICES

The Pani Wala Talaab can still be used to provide the system with reduced pressure if the pumps are off for a short period. This may apply to the early hours of the morning when the take-off from the network reduces to such an extent that it is not worth running the pumps. It must, however, be noted that when this reservoir is used the operating pressures of some of the fire hydrants depending on their proximity to the reservoir will not be adequate.

There cannot be many steel or even concrete reservoirs in the world that have been in use for 140 years. It is in need of repairs and it is recommended that a detailed assessment be undertaken and renovations made so that the life of the structure is extended.

Water sourcing: The current practice of abstracting water from tube wells sunk deep into the underlying aquifer appears to be the only feasible option available for the WCL. It is a tried and tested system in Pakistan and the operating authority has the necessary skills to develop, manage and operate such a system.

Of concern is the fact that the water table is reported to be declining. In other words, water abstraction is taking place faster than replenishment as this water resource is being "mined". This is not a sustainable practice. The water resources of the nation should be established in a scientific manner and then the water use tailored to match what is available. This entails determining the yield from all the river basins and also quantifying the recharge of the aquifers. To a large extent this concern applies nationally and not merely to the Walled City. For this reason, the problem has to be addressed from a far broader prospective than the Walled City so that a solution for future requirements can be found.

In order to ensure adequate TW capacity, it is recommended that the proven output of the TWs be approximately 10% more than the demand figure calculated so that factors such as declining capacity, breakdowns and maintenance can be accommodated. This 10% factor has not been incorporated in the calculations in this report but is advised to be incorporated during the detailed design.

Water pressure: In principle there are two approaches that can be used to provide the necessary pressure for the system, namely to provide elevated bulk reservoirs or to provide underground bulk storage with booster pumps. It was agreed with WASA that a terminal water pressure of 20Psi (1.4 Bar) must be maintained outside each house connection at ground level.

2. WATER CONSERVATION

A number of initiatives are required to reduce water wastage. These include:

- Replacing old (leaking) pipes as the various areas are rehabilitated.
- Installing meters at all consumer take-off points and then charging the consumer according to the amount of water used. The water consumption charge should be on a sliding scale so that above average use is penalised.
- Installing meters at the tube wells, the reservoir intakes and the distribution pumps so that supply patterns can be established.
- Actively and methodically correlating the water drawn from the TWs with the amount metered at the consumer-end of the system.
- Raising awareness regarding water wastage. A system of reporting and fixing of all leaks in the public system should be put in place with the aim to reduce the unpaid for water to about 15% of the water extracted from the tube wells.
- Providing a free service to homeowners where a plumber visits the house and fixes any leaks and drips. Such a system will probably pay for itself in reduced operating costs.

In addition to the above measures to reduce wastage, a modern waste water treatment works can be constructed to provide irrigation water for the parks and gardens associated with the Walled City.

3. WATER SUPPLY RESERVOIR ZONING

Currently the entire water distribution system in the Walled City is interconnected with most of the TWs feeding directly into the distribution system. This has been allowed for continuity of supply even when some of the TWs are offline.

It is proposed that with the new system, the Walled City be divided into four separate water supply zones. These zones should have the facility to be interlinked by opening isolation valves so that if difficulties are experienced in one zone it can be cross-fed from others. This will also enhance fire-fighting capabilities.

The existing network has its main arteries radiating out from the 4500m³ elevated reservoir at Langa Mandi. The

proposed four reservoir zones have been demarcated to use these arteries as far as possible.

A hydraulic analysis was done based on the four reservoir zones. Each zone was modelled separately and a model was done with all the zones connected based on a rough estimation of demand junction locations.

4. WASTE WATER

Design Principles: One of the central aspects of the infrastructure design proposal is the separation of the two drainage systems, namely sewage and storm water, and this will be accomplished as the various areas within the Walled City are redeveloped. The challenge will be to continue the separation process outside the Walled City.

It is understood that seven waste water treatment works have been planned for Lahore and that two are currently being designed. Thus one of WASA's objectives is being realised. The problem of the collapsing combined sewer will be reduced and eliminated as the various areas of the Walled City are rehabilitated.

Replacing the open drain with a piped system will mitigate the issue of solid waste in the sewer. An open drain is liable to terrific abuse. Solid waste cannot get into a system of pipes and manholes that easily and any person tampering with manholes will soon be noticed. Blockages will be kept close to the source where residents use their sewers for disposal of solid waste and they will learn to cease this practice. The new system will drastically reduce the exposure of sewage and this will improve health aspects.

The new system should be designed to be self-scouring so that settling of solids associated with sewage is eliminated. Unfortunately, the existing drains will still accumulate grit because it will still need to conduct storm water and the gradients are inadequate.

Pipe material comparison: Factors that should be considered in the selection of pipe materials for drainage, water and sewer reticulation piping systems are the availability of pipe in required sizes, strengths, etc., availability of fittings, connections, and adapters, ease of handling and installation, physical strength, flow characteristics or friction coefficient, joint water tightness and ease of installation, and resistance to acids, alkalis, high temperature or corrosive wastes, and corrosive soils. In preparing design proposals the pros and cons of the two commonly used alternatives—Unplasticized polyvinyl chloride plastic (UPVC) and High-density polyethylene (HDPE)—were examined (please refer to main Auecom report for the discussion of these alternatives).

APPENDIX II: THE PROPOSED PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF MUNICIPAL SERVICES

Design Criteria: The various design parameters that the engineer requires to design the sewer system are discussed below and this is then followed by a description of the actual system envisaged.

WASA Criteria: WASA has set out comprehensive guidelines for the design of sanitary sewers. However, after discussions held in the workshop hosted by AKCSP in November 2009, a general consensus was achieved for special design criteria relevant to the Walled City. Resulting from these discussions, it was felt that general consensus was achieved.

(A summary of design parameters for the sewers including pipe materials and pipe sizes for various contingencies, and examples of good and bad practice has been presented in the main Arecon report, Vol. 1, section 4.2.2.)

Proposed Waste Water Collection: The overall waste water system is shown in the accompanying drawing. In general, the sewage flows by gravity towards the perimeter of the Walled City and is collected in an open to air gravity sewer (bad nai) that runs around the perimeter of the Walled City just behind the Circular Garden. The aim of the design has been to provide self-cleansing sewers, as this cannot be compromised. If this results in the sewer pipe becoming too deep, then a pump station has been allowed for but, in general, pump stations have been avoided. Another point to note is that the sewer design does not cater for areas outside the Walled City.

Basically there are two catchments in the Walled City. The first area is in the north of the Walled City incorporating the Masti Gate, Kashmiri Gate and Sheranwala Gate zones. The areas drain by gravity towards the northern boundary of the Walled City. Once the sewer pipe exits the Walled City it enters the gravity sewer and flows towards the east where the proposed sewer lift pump station No. 1 will be located (near Yakki Gate). This lift station will lift the sewage into the gravity sewer that runs from the Delhi Gate around to the existing Bhatti Gate pump station.

The remainder of the Walled City which consists of Akbari west and east, Delhi west and east, Mochi, Shah Alami north, west and east, Lohari north and south, Bhatti, Fort south and Tawali zones drain through their respective primary sewer line networks to the boundary of the Walled City and connect to the main gravity sewer (the bad nai mentioned above). This main gravity sewer line collects all the tributary sewer lines and also the sewage from the sewer lift station No. 1 and runs alongside the Circular Road around the Walled City to the existing Bhatti pump station. The exact position of the lift station in the Circular Garden will need to be finalised on site so as to avoid as much of the existing infrastructure as possible.

The capacity of the existing Bhatti pump station is not known. Verbal communications, which have to be confirmed, reveal that each of the four pumps can deliver 25 cubic feet per second (0,708m³/s). Regardless of this, the pump station should be capable of pumping the peak wet weather flow and have at least one similar pump as a standby. In the case of the Bhatti Pump Station, the calculated peak wet weather flow is 2,36m³/sec. With three pumps running the capacity would be 2.12m³/sec. Given the uncertainties, this may be considered close enough to the theoretical required capacity but the actually capacities of the pumps should be confirmed before a decision is taken on this pump station. Once separate sewers systems have been built, the existing screens can be removed, as they will serve no purpose.

Proposed pumping stations: WASA has a comprehensive set of design guidelines for sewage pump stations. Essentially, the station preferred is a dry well/wet well type. The pumps are the vertical, centrifugal non-clog type, suitable for installation in the dry well with the motor located above on a separate floor (preferably above possible flood level). These stations are suitable for large installations and as combined sewers are the order of the day in Pakistan, it is uncommon to find a small installation.

This type of installation, while still common, has to a large extent been replaced in current design practice. For small installations submersible or self-priming pumps are commonly used. For larger installations also submersible or self-priming pumps are often used.

Given the advances in pump technology, it is recommended that self-priming pumps be used in Pakistan. (A comparison between submersible pumps versus self-priming pumps is provided in the main AURECON report, vol. 1 sections 4.2.5 and 4.2.6, as well as technical aspects, and installation and operation procedures are discussed and a complete set of requirements for operator safety, alarms, and emergency measures).

Construction issues: For the sewerage system, the following aspects will need to be addressed during construction: The new gravity sewer pipes proposed in teh Aurecon report may not be necessary if the actiones described below are taken.

The sewage that drains out the Masti Gate area (and anywhere else on the northern side of the Walled City) should be connected to the combined drain on the edge of the Circular Road. In this way it will not be necessary to construct the lift station at Yakki Gate.

Waste water treatment should be mandatory to conserve and save the environment. According to effluent standard (PEQS 2012), the waster water after treatment should have a minimum of 80 mg/l of BOD. Afterwards the treated waste water can be disposed of into the water body or can be re-used for agricultural purposes.

APPENDIX II: THE PROPOSED PLAN FOR DEVELOPMENT, IMPROVEMENT AND MAINTENANCE OF MUNICIPAL SERVICES

5. IRRIGATION WATER

Given that irrigation water does not have to meet the drinking water standard, it is feasible to treat the sewage generated to meet the irrigation water standards. Comparable standards for irrigation of parks and golf courses where public access is permitted are provided as a guide and the process to achieve these quality guidelines are discussed in the main report.

6. STORM WATER

Proposals & Design Principals: The principal issue when implementing changes to the existing drainage system in the Walled City is the essential separation of sewage and storm water. A closed sewage system should be implemented which excludes storm water, although if the current infrastructure is to be utilised in any way then it will be difficult to exclude runoff from entering the system entirely and as such a nominal additional capacity should be allowed.

A secondary issue is the presence of solid waste in the drainage system. It is important to implement a system to prevent solid waste from entering the proposed drainage system to ensure maximum capacity is available to cater for design storm events and thus minimise flood risk in the Walled City. Special solid waste grids which are self cleaning during high storm events but maintained (the frequency of which can be dependent on the time of year) as part of a stipulated maintenance and prevention plan must be implemented at all overland flow inlets especially at the perimeter pipe culvert inlets.

Once the storm water is separated from the sewage then sustainable practices that aim to attenuate runoff within the Walled City and perimeter gardens should be implemented in order to manage surface water during design storm events. Referring to the WASA storm drainage document, the ideal solution would be to design an internal underground system that can cater for a 2-year design storm – design storm constrained by available space in internal road ways and developed residential areas - connecting to an external outfall storm water pipe culvert which can cater for a 5-year storm and as such, the viability of such a solution was investigated during the concept design period.

The Walled City has been divided into several sub-catchment areas based on the topography of the site. The pipelines collecting the runoff generated from these catchment areas have been designed taking into consid-

eration a Time of Concentration of thirty minutes and a 1:2 year return storm. The rainfall intensity has been extracted from the rainfall intensity-duration curves for Lahore (based on data from 1948-2017). Due to the high intensity of the monsoon rains, even the 2-year storm requires large pipe diameters. Due to the narrow road corridors available within the Walled City very careful planning must be given to this option to ensure its feasibility and implementation in this specific case.

In response to this, the design team investigated used the option of working backwards by utilizing the existing space available and selecting pipe sizes based on the restricted space available. This would result in the system being implemented to capture as much runoff as possible but with no specific design storm assumed. Therefore, in the event of a 2-year storm intensity (which has a probability of occurring once every 2 years), the underground system would exceed capacity in those areas where pipe sizes are too small and the excess water would continue as surface runoff to lower lying areas, possibly entering the system downstream before flowing into the proposed detention ponds and/or escaping the city limits.

The runoff collected in the piped system would be conveyed to the perimeter of the Walled City and either be drained into the Circular Garden where open space is available or, alternatively, be discharged into the existing Circular Road drainage system (particularly where significant encroachment into the garden has occurred). Where the outfall is into the garden, the necessary headwalls and protection should be designed to eliminate scour. The philosophy would be to have as many outlet points as possible around the perimeter of the Walled City to reduce flows at these points. The runoff in these open space areas (Circular Garden) would then be encouraged to infiltrate the earth by means of large soakage pits, which can be installed. These soakage pits are proposed in line with the existing designs being utilised elsewhere in the Lahore area.

Three large soakage pits have already been installed in implementing urban design projects in Shahi Hammam and Chowk Wazir Khan area.

As an interim measure, flooding on the perimeter of the Walled City in isolated residential areas should be avoided by diverting storm water runoff to the nearby Circular Garden where there are no soakage pits or by diverting the runoff to the Circular Road where it might be connected to the existing combined sewer system outside the Walled City. The long-term solution would be to free up more space on the perimeter of the Walled City by increasing the Circular Garden size and allowing more soakage pits to be installed.

The overall strategy for the Walled City should be to convey the water as quickly as possible to the open space

areas on the perimeter of the Walled City. This should be achieved by a combination of the following:

- An underground drainage network to collect and convey minor storm events and nuisance runoff
- A well-designed series of overland flow paths capable of conveying overland flow away from the city and into the surrounding open space.

It is proposed that specific areas be developed within the Circular Garden to receive the flows from the underground system and overland flow paths. These detention areas will likely be inundated with storm water during the rainy season but unlike the existing system, the storm water will not be mixed with sewerage and the open space areas will have soakage pits to accelerate infiltration.

With significant storm events, the open space areas in the Circular Garden will most likely collect storm water from surrounding areas as well. This needs to be considered in any design solution. However, it is noted that this falls under the wider issue of drainage management and flood mitigation for Lahore.

In support of this overarching framework, the intensity of the runoff can be further managed through the incorporation of elements of practice described in the main Aurecon Report, Vol. 1.

The downstream systems surrounding the Walled City include combined sewer systems and as such, while the system may be separated within the Walled City, the collector system may not be for some time to come. The benefits of taking this opportunity to separate these systems however far outweigh the disadvantages.

Recommended design criteria for (acquifer recharge)

It is understood that a design standard for storm water infrastructure development for the wider Lahore area is currently being developed. The following design criteria may be applied in the Walled City if the concept of aquifer recharge, which was being contemplated by WASA in 2010, is to be implemented:

In order to set out appropriate design criteria for storm water design it is essential that one firstly understands the key issues to be addressed in storm water management, namely quality and quantity, and their inherent impact on one another. One must recognise the importance of not only managing large storm events, of which the key risk is flooding, but also managing smaller storm events, of which the key risk is pollution.

Groundwater recharge: It is important to recognise that the development of naturally pervious surfaces alters the natural hydrologic cycle by discharging runoff directly into rivers or streams rather than allowing it to infiltrate. The long-term impact of this is being recognised more and more and the need to counteract the negative impact of this additional runoff should be at the forefront of any design solution. The Walled City has been developed sporadically over many years and now consists of mostly impervious urban surfaces which generate runoff at a rate and quantity that would have far exceeded its natural state.

That said, natural infiltration is a fundamental part of the hydrologic cycle in that the water generally infiltrates to join groundwater flows which provide a recharge source for rivers and streams in dry months when precipitation is low. It is likely that the development of the Walled City over time has significantly increased the amount of runoff flowing directly into rivers / streams, resulting in increased flooding during rain events and depleted base groundwater flows in dry months.

The runoff from impervious surfaces also tends to be warmer as a result of passing over surfaces which have a tendency to absorb heat. This results in a significantly warmer runoff than the natural groundwater inflow would have been in the natural cycle.

- The Walled City is experiencing a shortage in groundwater as a result of significant extraction rates coupled with the lack of natural infiltration as the main means of replenishment. The combined sewage / storm water collection system also means that opportunities for recharge are minimal at present.
- The purpose of these design criteria is to encourage recharge to replicate the original hydrologic cycle, thereby reducing overland flow and flooding and also recharging groundwater levels in the depleted aquifers below.

The strategy should be to maximise the amount of water entering the aquifer, and with the availability of suitable open space in the Circular Garden and Iqbal Park, this figure will more than likely be significantly higher. Localised soil conditions and the infiltration rate will also have an influence on the quantity of water that could be retained on the site of the Walled City, and this needs to be investigated and considered by the detailed designer of the final solution.

All devices shall be designed to drain within 48 hours from the end of the storm bearing in mind that this is highly dependent on the infiltration rates and capacity of the proposed soakage pits. French drains can also be

utilised in the Circular Garden to facilitate infiltration and minimise surface ponding.

Recharge should not be restricted to one area but should be distributed to multiple areas throughout the Walled City.

Percolation tests should be carried out where significant infiltration basins are proposed to ensure that the design assumption above is appropriate.

Areas that present high potential pollutant loads should be excluded from the catchment and should not be considered as appropriate locations for infiltration devices. These may include (but are not limited to):

- Fuelling facilities or storage areas;
- Service and maintenance facilities;
- Commercial car parks with high trip generations;
- Commercial nurseries;
- Industrial facilities (including rooftops of industrial facilities);
- Areas associated with the handling of hazardous materials; and
- Electrical Infrastructure facilities.

Pre-treatment: It is essential to include a pre-treatment device on most storm water devices to ensure that the system does not fail due to blockage. Typically, this pre-treatment device will trap sand and sediments as they can cause blockages over time as the sediments build up and block infiltration.

The key issue when designing pre-treatment devices is the balance between size and maintenance frequency. It was noted during the initial site visit that most of the surfaces in the Walled City were paved, and aside from sedimentation asscciated with industrial waste (which would be addressed as part of a solid waste management strategy) it would usually be reasonable to assume low sedimentation rates. That said, there are significant issues with sedimentation in the Walled City which are mainly due to poor maintenance practices. Collection devices should be capable of adopting an annual maintenance period with proper maintenance regimes in place

Broad design criteria (main Aurecon report, vol. 1, Section 4.4.2.3, p.91) should be adopted for devices for pre-treatment for all storm water infiltration devices.

Peak runoff flow control: Best practice storm water management for new developments across the world typically calls for post-development peak discharges to be controlled and restricted to the equivalent pre-development peak discharge rates. This is to minimize the significant increase in volume, velocity and flow rates associated with storm water leaving developed, typically impervious, areas.

In the case of the Walled City, the status quo can be considered the worst case scenario and as such the proposed storm water management plan should, wherever possible, attempt to reduce peak discharge rates by aiming to control runoff across a variety of storm events using a number of methods available.

- The Walled City peak-discharge rate should aim to be comparable with the natural site discharge rate for 24-hour, 1-year, 2-year, 5-year, 10-year, and 25-year storms.
- Hydrographs should be utilised for the comparison of the nominal adopted peak and the post peak conditions to demonstrate the storage requirements

Historically, the Walled City combined sewer network has provided some capacity in the collection of storm water and this has been directed to the pump station. In current proposals, this water will now almost exclusively end up in the Circular Garden meaning the amount of runoff in the garden will likely increase. Designers should give key consideration to this and ensure adequate services are provided to cater for this flow.

Overland flow into the Circular Garden and soak-aways (soak pits or gharkis) or ground water recharge systems must be designed for storm events greater than a 1:5 year storm. By virtue of the gradients on the site any additional waters which cannot be accommodated in the internal network, to be designed to accommodate a 1:2 year storm, and perimeter underground pipe culvert, to be designed for a 1:5 year storm, will end up in the Circular Garden.

Encroachments: It is important that areas where significant encroachment has occurred are managed to prevent significant flooding. It is advisable that these areas of encroachment are reclaimed as open spaces as this practice is in line with international best practice that nowadays focuses on flood plain reclamation as a key measure in flood mitigation.

7. WATER QUALITY

A key issue in urban areas is the pollution of the rain water run-off. As land use increases, pollutant deposits on surfaces also increase. These pollutants are then washed off by the rains and other forms of runoff, increasing the pollutant load into receiving waterways.

As stated above, the strategy is to maximise the amount of water entering the aquifer, and with the availability of suitable open space in the Circular Garden and Iqbal Park, this figure will more than likely be higher. Where soakage pits are used to aid infiltration into the aquifers, the design of these pits should incorporate sufficient infiltration so as to act as a filter of pollutants. Should designs propose direct outlet to drainage systems, other than combined sewers, then adequate treatment devices should be incorporated into the system prior to outfall.

Detention basins: As suggested in the previous section, the open space areas around the perimeter of the Walled City make an ideal location for detention basins which can be made to accommodate and incorporate natural plants to mimic the natural environment. Identifying catchment areas and developing clearly defined overland flow paths to convey water into detention basins located within these open space areas provides an ideal foundation on which to support the overall storm water management plan.

Detention basins which attempt to mimic natural conditions offer a number of solutions over alternate detention basins (such as concrete structures), in that they encourage infiltration; provide primary treatment to water discharge, and the natural vegetation cools the discharge and slows down storm velocities. Detention basins are also visually more attractive, especially when adjacent to residential areas; and typically low maintenance dependent on intended alternate uses.

As a minimum, the following design standards should apply:

- The basin should be located so as to utilise natural high and low points on the site;
- The basin size should consider the amount of inflow, allowable outflow, existing soil conditions, freeboard requirements and secondary uses;
- The basin should be located far enough down into the watershed so as to most efficiently reduce the peak flow by intercepting the greatest number of tributaries before discharging into the receiving waterway.

In the case of WCL, these basins will be located on the perimeter and will capture the runoff just prior to its outlet;

- The basin should be easily accessible for maintenance;
- If areas within the catchment do not pass through alternate pre-treatment devices then inlets into the basin should incorporate sediment traps to avoid siltation of the area over a prolonged period of time;
- The basins should be landscaped such as to minimize the maximum depth of water standing after a 48 hour period or provide the required facilities as deemed necessary by any relevant health and safety legislation (ie. fencing, safety devices, depth indicators, etc); and
- The slopes of the detention basin shall be appropriate for the full-time land use associated with that particular open space. Where possible these slopes should be gradual.

Construction issues: In order to construct the new storm water and sewer mains, the old combined one will need to be removed. This will cause significant issues with regards to the temporary provision of these services during the construction period. The issues associated with the drainage systems have already been presented in Section 4.2 (of the Aurecon report) but the following points with respect the storm water system need to be highlighted:

- Once the existing system is removed, overland flow paths will need to be provided and kept clear wherever possible to ensure that excess runoff escapes via roads and alleyways and isn't allowed to inundate houses;
- Access will need to be maintained for dwellings and businesses throughout the construction period; and
- During the construction, a plan should be developed to manage significant storm events that may occur. This plan could include provision for emergency pumps or sandbags to be utilised to ensure properties are not flooded.

(The issues have been successfully resolved during the implementation of Package 1 and 2).

8. ELECTRICITY

Design loadings and design criteria: Please refer to section 4.5.1 and Appendix D of the main Aurecon report for a detailed discussion for future design loading and design criteria.

Proposed Solutions: HV network: A major improvement that needs to occur to the High Voltage network which supplies the Walled City is an increase in the capacity. The upgrade of Transformer 1 at Bhatti Gate station will assist in this regard As indicated by LESCO Transmission, the Sheranwala Gate substation is required to supply the Walled City, and this should alleviate any service disruptions. Another option to combat the supply issue would be to increase the capacity at each existing substation, however this is not a simple task, as incoming feeder cables and ratings of auxiliary equipment may also need to be upgraded.

Another upgrade that could occur is the placing of the 132kV cable from Fort Substation to Ravi Substation underground. This circuit currently runs down a section of Fort Road, the iconic road that divides the city from the UNESCO World Heritage Site. Once again, this would not be a simple task and would require extensive design and works to complete, but would significantly enhance the aesthetics of this historic area.

Due to the age of Fort Grid Station, this substation should be programmed for an upgrade. During this upgrade, an increase in supply capacity should also be undertaken.

Sheranwala Grid Station Design: This grid station was planned by WAPDA/LESCO to gradually relieve the Fort Road grid station. It has however been delayed and its future remains undecided. Due to increase in power demand and exhaustion of capacity at the Bhatti Gate, Mochi Gate and Fort Road stations, the proposal for the Sheranwala grid station may have to be revised as early as possible.

Decommissioning of Fort Grid Station: As an alternative arrangement, the capacity of Sheranwala Gate substation could be increased to accommodate the current load of Fort Grid Station. By installing a third transformer at the Sheranwala site, and rerouting the Fort grid station feeders to Sheranwala, the Fort substation site could be decommissioned. A small indoor switchroom would still be required at the Fort substation site in order to maintain continuity in the 132kV network, however the majority of the site could be turned into developable land.

The Sheranwala Gate grid station has been designed to accommodate three transformers, with two being initially installed. Therefore, a third transformer could be installed in the "future" allocated location. If the current design is kept, however, there would be no designated room for future expansion, and any increase in capacity would need to be done by upgrading the transformers.

The Lahore Electrical Network Ring diagram (received from LESCO) shows that Sheranwala Gate Grid Station is proposed to be fed from the same ring as Fort Grid Station. This implies that the addition of a third transformer at Sheranwala, together with the decommissioning of Fort Grid Station should not pose any capacity issues with the main supply cables from Ravi 220kV Substation.

Fort Substation is situated in a prime location, directly opposite the Lahore Fort. This area, if vacated by LESCO, could be turned into a park, plaza or another type of public space.

Fort Substation currently feeds areas west of the Walled City, and therefore some extensions using cable joints will be required to maintain supply. Alternate arrangements could also be sought to connect these areas to other substations outside the Walled City.

MV/LV network: Due to the state of the existing infrastructure, and the lack of useful documentation that LESCO has available, minor upgrades to the current network would be difficult to plan and would not achieve a desirable and safe result. The issues relating to the MV/LV network are so significant that the preferred solution to solving the MV/LV issues in the Walled City would be a complete overhaul of the current installation. This would include:

- New 11kV network, with cables buried underground within utility corridors, where practical.
- New 11kV/400V transformers, either on the ground or in buildings.
- New 400V distribution network.
- New electronic meters at each dwelling.

This infrastructure should be designed without regard to the existing infrastructure, with an energisation and changeover methodology to ensure minimal downtime of services.

By identifying the load centres in the Walled City, strategic sites can be identified to locate larger ground mounted package transformers, to eradicate the clusters of small pole-mounted transformers currently used.

Some areas in the Walled City contain many low rated (40kVA) transformers, which together take up a considerable amount of space. In the redesigned network, these transformers will be replaced by a single higher rated transformer. These larger transformers would be enclosed outdoor packaged units which contain the LV main switchboard for circuit protection of the outgoing circuits and provide suitable protection of all the systems and ensure no exposed live parts.

During discussions with LESCO, it was noted that larger transformers may pose installation and maintenance issues for LESCO, due to the narrow width of some streets in the Walled City. Where possible, larger transformers (1000kVA) will be used. However in the heart of the city, where access may pose a problem, 630kVA transformers could be utilised. The determination of transformer sizes and locations will have to be done during the detailed design by analyzing the loadings of each block.

Consolidating the amount of transformers also reduces the number of 11kV cables. The large quantity of smaller-capacity cables running from the main grid stations to the small transformers will be replaced by a smaller quantity of larger-capacity cables feeding new distribution transformers. Consolidating the number of cables will also reduce the area needed within the right of way for reticulation. This will avoid running a number of 11kV circuits to the one location and would make it simpler to achieve a ring main solution which would assist in maintenance and redundancy.

The minimum distance that a 400V feeder can radiate from the source transformer will be increased to 400m, using higher capacity cables carrying a nominal 200A. This increase will not only reduce the number of transformers required, but also reduce the number of cables around the Walled City.

Where possible, the 11kV cables will only be reticulated adjacent to roads with larger cross-sections in order to provide them with a suitable underground service corridor. The electricity supply would therefore be stepped down at points along larger roads, for reticulation at 400V through the narrow alleyways. This acts to keep the utility cross-section as tight as possible within narrower streets.

Where necessary, the 11kV cables may need to be buried within the same corridor as the 400V cables. This should be done using a vertical clearance.

Manholes should be configured such that access to the 400V and 11kV lines can be gained. The 11kV network should be designed with future increases in demand in mind, such that the need for additional 11kV cables in future is kept to a minimum.

An agreement was also made during the Second Mission that LESCO would allow PTCL to run fibre optic cables within the LESCO 400V underground corridor. Electric fields around power cables do not pose any interference risk to fibre optics (unlike copper cables), which allows for the sharing of corridors to occur. This arrangement

would only work if a Sole Provider agreement with PTCL is reached. This arrangement is discussed further in the Telecommunications Report.

Since the four grid stations supplying the Walled City are all located on its outer edge, the Circular Garden could also be used to reticulate 11kV underground cables. The Circular Garden is ideal for use as a major services corridor, due to its cross-sectional area and location around the perimeter of the City. In addition the major streets such as Shahalami Road inside the Walled City would be utilised to reticulate these MV cables.

The Walled City demand has been shared between the four grid stations that will serve it in the future. This includes Sheranwala Gate Grid Station, which will take some of the load off Fort Grid Station. Feeders have been distributed between the grid stations keeping in mind their location, and nearby trunk services corridors.

Individual house connections will be taken from the 400V radial feeds via underground fuse pits, as shown in Typical Detail Drawing 105379/TYP/02. Fuse pits will be located at every four dwellings, with LV cables running from the fuse pit to two plots on either side of the road. The fuse pits will be installed with 1m slack in cables, allowing for maintenance access to the plot connections. Underground fuse pits can be small, with the access pit cover being around 400x400mm.

It is also proposed that new electronic meters be installed at each dwelling. This will act as the interface point between the new distribution network and the existing wiring within each dwelling. LESCO have already installed some new electronic meters, as was evident during the site inspection. The new meters should be AMR Meters, which are read remotely, and have anti-tampering devices installed. It was proposed that LESCO install these meters inside the dwellings, since they are remotely readable and access is not regularly needed.However, LESCO have indicated that illegal tampering would occur if meters were installed indoors.

The benefits of complete redesign would be:

- Greater efficiency, via the consolidation of Transformer numbers – larger transformers can be designed to take advantage of higher diversity between plots, thereby reducing the required installed capacity.
- The drastic improvement of aesthetics - The new 11kV/400V network would incorporate underground cables, where space is available within the utility corridors. Burying the 11kV cables on all wider roads will drastically improve the appearance of the City. The removal of the clusters of transformers will also assist

in aesthetics.

- Improved safety to residents – Underground cables will create a much safer environment for inhabitants. New, larger, packaged transformers will eliminate the currently exposed cables, reducing the risk of shock.
- Reduced risk of blackouts – Concealed transformers and underground cables would serve to reduce the amount of potential physical damage to equipment, hence reducing the risk of incidental blackouts.
- Ease of maintenance – The new equipment will be labelled with design drawings to enable circuits to be traced. Equipment will be located in accessible locations to aid in achieving regular maintenance.

The new transformers to be installed should be within the range of 500-1500kVA capacity dependent on the load diversity within the area and the distance the LV network needs to cover. Packaged padmount transformers of this size are quite common, and preferably in more dense locations around the Walled City, transformers should be located on the ground floor of certain buildings, to supply the surrounding neighbourhood.

Some alleyways are far too narrow to be able to fit all services underground. Water, waste water and gas services should take priority in these instances, forcing the electrical reticulation above ground. In these cases, aerial bundled cables will be attached to building facades, with fused tap-offs at each dwelling. This solution will only be implemented where necessary, and can be done in a much neater, safer and more orderly way.

The recommended solution for power reticulation in the alleyways, which are too narrow for underground cables, is aerial bundled cables, twisted and mounted onto building facades. This solution is comparatively easily mounted, and looks neat. A further prototype solution may be used within narrower alleyways, with the power cables running only on one side of the alley, and tap-offs run to the ground and underneath the footway to supply the buildings on the opposite side.

9. STREET LIGHTING

The majority of the streets within the Walled City are too narrow for vehicles and need only accommodate for pedestrian / bicycle traffic. The requirements for pedestrian lighting are to provide a safe environment for the residents. This is best achieved by the use of a white light solution of either metal halide, fluorescent or LED. It is proposed that within narrow alleyways, a neater approach to the existing fluorescent tube installations be adopted. Fluorescent fittings can be mounted to the side of buildings of small alleyways, to provide light to passing pedestrians. They should not hang precariously from electricity cables, but be neatly mounted

on buildings with concealed power supply cables. On larger roads and public spaces, pole lighting may be required, with larger Metal Halide luminaires. Control of the luminaires should be undertaken by the use of PE cells and timelocks to ensure the lights onlyilluminate during hours of darkness.

10. TELECOMMUNICATIONS

Proposed solutions: Data infrastructure: In order to curtail the installation of above-ground network cables by third-party providers, a series of underground ducts should be installed within the utility cross sections. It is proposed that twelve ducts will be installed within the large trunk routes across the Walled City, 6 ducts within secondary routes, and 2 ducts in all other roads / alleyways.

The telecommunications ducts would be installed and owned by the municipal authority in control of the Walled City, and rented out to service providers. The Authority would then control access into pits for maintenance, so that third party providers cannot disturb other provider's services.

If necessary, segregated manholes could be installed such that access could be gained to certain ducts only by the correct service provider.

The network of ducts will be directly buried within the telecommunications corridor. The ducts will either be buried in sand, or embedded in concrete under major road junctions. It is proposed that duct warning tape is installed 150mm above the ducts, to act as a warning sign for contractors digging through underground services. This option was recommended during the second mission to Lahore, and was approved by PTCL.

Due to the nature in which data is transmitted along fibre optics, fibres can be laid within the same utility corridor as most other services, including power. PTCL have indicated that they would accept laying fibre optics within the same utility corridor as LESCO, provided sufficient access is maintained. It is recommended that PTCL use this corridor to replace their existing copper primary network with optical fibres.

The number of ducts that run down each street will depend on the density of services and size of the street. Ducts can also be stacked, to increase the capacity within a certain cross-section.

Construction issues: It is worth noting that during infrastructure re-development, the cables of third party service providers will need to be relocated. It may be difficult to determine which service provider each cable belongs to, and plan how these cables will be rerouted through the underground duct network.

The disruption of services may also pose issues for the current residents of the Walled City. Some residents may have paid for a subscription service from a cable television provider, which may be rendered unusable during the construction period. Provisions for a replacement service, or compensation, may need to be investigated. In addition, the number of illegal services will be cut which means residents will not have access to these services.

Phasing Consideration for Pilot Project: As with the electrical infrastructure, the telecommunications infrastructure does not necessarily follow the zones indicated by the wet services. Considering that the PTCL exchange that supplies the Walled City is located south of the city, it would be beneficial to install the duct network along Circular Road from the Delhi Gate to Shah Alami Road. This will ensure that the communications network for the Pilot Project area can be entirely contained underground. All ducts for the ultimate solution should be laid in Circular Road, as these ducts can sit empty until they are required.

The duct network running down Shah Alami Road should also be constructed, since this route is the shortest between Masti Zone 4 and the PTCL exchange. This will also give a second entry/exit point for trunk telecommunications into the Pilot Project area. Since only the duct network is being installed, and the service providers are responsible for pulling their own cables / fibres, the duct network can theoretically stop on the boundary of the Pilot Project area, with the exception of the two entry/exit points. This method may lead to some PTCL cables being longer than they should be; therefore it is recommended that the cut-off points for the duct network be based on actual site conditions.

Costs for Implementing Improvements to the Telecommunications Infrastructure: The municipality should be able to recoup some of the installation costs from various telecommunications providers through duct rental charges.

11. GAS

It was indicated that SNGPL does not reticulate gas pipelines through alleyways less than 1.5m or 5ft. This gives rise to banks of gas meters in one location.

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, though 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.

Proposed Improvements: The only improvement that is currently suggested for the gas network would be 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. This can be done in a number of ways:

- The regulations limiting the reticulation of gas pipelines through narrow alleyways could be relaxed, in order to better distribute the meters closer to dwellings. This could also reduce the amount of above ground pipe work, depending on the space available within the Right of Way.
- In larger buildings, gas meters could be concealed within the buildings, inside dedicated gas meter cabinets. This solution removes the meters and pipelines away from the public's view.
- In corridors less than 1.5m or 5ft wide, will not be allowed for gas pipelines and electricity cables to be installed underground simultaneously. Electrical cables must be installed above ground on the building facades. Following SNGPL's guidelines, private lines are proposed to be laid undergound from these points to individual consumers.
- Existing gas house connections installed in corridors less than 1.5m wide and running on the road surface must be installed underground using PE pipes according to the proposed specifications.
- Banks of existing gas meters at corridor entrances must be removed and a uniform type of meter must be installed at each house or business in conjunction with the house connections also to be provided at each property.

The SNGPL indicated their willingness to contribute to the Walled City project via consideration and possible approval of a gas specification applicable to the Walled City only.

APPENDIX III: SCHEDULES TO THE LAND USE AND ZONING PLAN

SCHEDULE LU-PR: Schedule of Prohibited Land Uses	
The following land uses shall be prohibited within the limits of the Walled City of Lahore.	
1.	All businesses not registered with the Walled City of Lahore Authority.
2.	All business or economic activities which involve the storage and use of, or which produce as waste, the substances included in Annex I and Annex II of the Basel Convention, 1992.
3.	All economic activities which result in the production of industrial waste, including all steps in the manufacture and the packaging of shoes.
4.	All activities which involve the production or storage of chemicals, fireworks, gunpowder, and explosives.
5.	Businesses involving the sale or purchase of arms and ammunition.
6.	All warehousing / storage which exceeds the square footage per shop or business registered with the Walled City of Lahore Authority specified in the Land Use Schedules below.
7	All land use which is in violation of the approved Land Use and Zoning Plan and which does not enjoy the status of non-conforming land use, as defined in paragraph 1.10.5 of the Land Use and Zoning Plan.
8	All land use in which more than three businesses or shops, including shops which are separated by a passageway internal to the building, grouped contiguous to each-other in a single land holding.
9	All land uses operating in buildings or premises which are not in accord with the Walled City of Lahore Authority Building Byelaws.
10.	Land use which involves the installation and operation of industrial machinery which is liable to endanger the structural stability of the building structure, or the building structure on other land holdings.
NOTE 1.	The above prohibitions shall apply to all Land Use Schedules of the MCRP listed below, and shall also apply to the amendments thereof, as well as to Schedules and other relevant documents that may be notified at a later date.
NOTE 2.	On any matter arising out of the above listed prohibitions, the decision of the Director General, WCLA shall be final.

SCHEDULE LU-MBPT: Permitted land use in MAIN BAZAARS	
LU-MBPT 1	TYPES OF BUSINESSES PERMITTED: ALL RETAIL BUSINESSES AND SERVICES EXCEPT THOSE PROHIBITED UNDER SCHEDULE LU-PR
NOTE 1.	The permitted use shall only operate on the ground floor & a mezzanine floor.
NOTE 2.	The permitted use shall not occupy more than 400 square feet per premises per business/shop/service on ground floor and not more than 200 square feet on the mezzanine floor.
NOTE 3.	All storage related to the business shall take place on the premises, or if on an upper floor of the same building, shall not occupy more than 120 square feet on that floor.
NOTE 4.	No more than three businesses dealing in the same type of merchandise/business ecosystem shall be allowed in a building where commercial activity is permitted.
NOTE 5.	Land use prohibited under SCHEDULE LU-PR will not be permissible.
NOTE 6.	Permitted use will commence only after being duly sanctioned by the Authority.

APPENDIX III: SCHEDULES TO THE LAND USE AND ZONING PLAN

SCHEDULE LU-MBPS: Permissible land use in GRAIN BAZAARS	
LU-MBPS1	Residential
LU-MBPS2	Hotels and guest houses with guest accommodation not exceeding 20 rooms.
LU-MBPS3	Restaurants and eateries
LU-MBPS4	Business offices
LU-MBPS5	Craft ateliers
LU-MBPS6	Professional ateliers and offices including doctor's and dentist's clinics
LU-MBPS7	Convention halls and auditoriums with seating not exceeding 150 persons.
LU-MBPS8	Libraries and bookshops
LU-MBPS9	Mosques and other religious buildings, only on designated plots approved by the Authority.
NOTE 1.	The permissible use shall operate on the ground floor & upper floors.
NOTE 2.	Land use prohibited under SCHEDULE LU-PR will not be permissible.
NOTE 3.	Permissible use will commence only after being duly sanctioned by the Authority.

SCHEDULE LU-SBPT: Permitted land use in SECONDARY BAZAARS	
LU-SBPT1	RESIDENTIAL: PERMITTED ON ALL FLOORS.
LU-SBPT2	ALL RETAILS BUSINESSES AND SERVICES EXCEPT THOSE PROHIBITED UNDER SCHEDULE LU-PR PERMITTED ON GROUND FLOOR and MEZZANINE FLOOR ONLY.
NOTE 1.	The permitted use shall operate on floors stated against each permitted use.
NOTE 2.	Land use LU-SBPT2 (retail businesses and services) shall not occupy more than 250 square feet per premises per business/shop/service on ground floor and not more than 150 square feet on the mezzanine floor.
NOTE 3.	All storage related to business enterprises shall take place on the business premises, or if on an upper floor, shall not occupy more than 120 square feet on that floor.
NOTE 4.	No more than three businesses dealing in the same type of merchandize/business occupation shall be allowed in a building where commercial activity is permitted.
NOTE 5.	Land use prohibited under SCHEDULE LU-PR will not be permissible.
NOTE 6.	Permitted use will commence only after being duly sanctioned by the Authority.

APPENDIX III: SCHEDULES TO THE LAND USE AND ZONING PLAN

SCHEDULE LU-SBPS: Permissible land use in SECONDARY BAZAARS	
LU-SBPS1	Hotels and guest houses with guest accommodation not exceeding 20 rooms.
LU-SBPS2	Restaurants and eateries
LU-SBPS3	Business offices
LU-SBPS4	Craft ateliers
LU-SBPS5	Professional ateliers and offices including doctor's and dentist's clinics
LU-SBPS6	Convention halls and auditoriums with seating not exceeding 150 persons.
LU-SBPS7	Libraries and bookshops
LU-SBPS8	Mosques and other religious buildings, only on designated plots approved by the Authority.
LU-SBPS9	Club, institute and meeting rooms.
LU-SBPS10	Salons
NOTE 1.	The permissible use shall operate on the ground floor & upper floors.
NOTE 2.	Land use prohibited under SCHEDULE LU-PR will not be permissible.
NOTE 3.	Permissible use will commence only after being duly sanctioned by the Authority.

SCHEDULE LU-RB: Permitted land use in RESIDENTIAL B ZONES	
LU-RB1	RESIDENTIAL SINGLE FAMILY
LU-RBn	RESIDENTIAL, MULTI FAMILY
NOTE 1.	Each type of land use shall be assigned to a specific land holding by the Authority and shall remain exclusive to that land holding unless re-assigned by the Authority.
NOTE 2.	Land use prohibited under SCHEDULE LU-PR will not be permitted.
NOTE 3.	The land use assigned to a specific land holding shall commence only after a commencement certificate is duly issued by the Authority.

APPENDIX III: SCHEDULES TO THE LAND USE AND ZONING PLAN

SCHEDULE LU-RBPS: Permissible non-residential land use in RESIDENTIAL B ZONES		
LU-RBPS1	Repair shop such as cell phones / electronics / computers	100 sq. feet*
LU-RBPS2	Day care centre for infants and toddlers	400 sq. feet
LU-RBPS3	Pre-school centre	600 sq. feet
LU-RBPS4	Home professional office	200 sq. feet
LU-RBPS5	Neighbourhood general merchant (paper, notebook, toiletries, phone charge cards, other domestic articles)	150 sq. feet
LU-RBPS6	Piecework stitching, embroidery piecework etc.	200 sq. feet
LU-RBPS7	Repair shop, bicycles	150 sq. feet
LU-RBPS8	Fresh vegetable shop	60 sq. feet
LU-RBPS9	Tea shop	150 sq. feet
LU-RBPS10	Paan shop	60 sq. feet
NOTE 1.	The permissible use shall operate on the ground floor & upper floors.	
NOTE 2.	Land use prohibited under SCHEDULE LU-PR will not be permissible.	
NOTE 3.	Permissible use will commence only after being duly sanctioned by the Authority.	

** Maximum allowable internal floor area, incl. bathrooms and toilets.*

SCHEDULE LU-RB: Permitted land use in RESIDENTIAL A ZONES	
LU-RA1	RESIDENTIAL SINGLE FAMILY
LU-RA2	RESIDENTIAL MULTI FAMILY
NOTE 1	Each type of land use shall be assigned to a specific land holding by the Authority and shall remain exclusive to that land holding unless reassigned by the Authority.
NOTE 2	Land use prohibited under SCHEDULE LU-PR will not be permitted.
NOTE 3	The land use assigned to a specific land holding shall commence only after a commencement certificate is duly issued by the Authority.

APPENDIX III: SCHEDULES TO THE LAND USE AND ZONING PLAN

SCHEDULE LU-RBPS: Permissible non-residential land use in RESIDENTIAL A ZONES		
LU-RAPS1	Day care centre for infants and toddlers	400 sq. feet*
LU-RAPS2	Pre-school centre	600 sq. feet
LU-RAPS3	Home professional office	200 sq. feet
LU-RAPS4	Piecework stitching, embroidery piecework etc.	200 sq. feet
LU-RAPS5	Salon	250 sq. feet
NOTE 1.	The permissible use shall operate on the ground floor.	
NOTE 2.	There shall no more than one business in each property holding.	
NOTE 3.	Permissible use will commence only after being duly sanctioned by the Authority.	

* Maximum allowable internal floor area, incl. bathrooms and toilets.

LIST OF FIGURES

Fig. 42	Plans, section and elevation of a historic home in GaliSurjan Singh: (showing minimum quality and necessary construction detail)
Fig. 43	Documentation and proposals of a historic building in Chowk Wazir Khan
Fig. 44	Proposed rehabilitation of certain public open spaces and streets
Fig. 45	Documentation of Chowk Wazir Khan and its urban context
Fig. 46	Wazir Khan Mosque: plans
Fig. 47	Existing condition of the Baoli Bagh & proposed rehabilitation
Fig. 48	View of possible sub-grade traffic interventions along the southern Circular Road
Fig. 49	Encroachments characteristic of the existing situation on Circular Road between Shah Alamland Mochi Gate
Fig. 50	Proposed interventions include significant landscaping and reinstatement of green spaces
Fig. 51	Proposed re-design and traffic engineering on circular road: (northern, eastern and south-eastern sections), showing areas of open and underground parking
Fig. 52	Traffic engineering and re-design of north circular road, showing layout of parking zones, an enlarged detail is shown on the opposite page
Fig. 53	Detail of proposed service lane & parking area near Sharif Hospital, North Circular Road
Fig. 54	Section showing traffic engineering and re-design of North Circular Road
Fig. 55	Traffic engineering and road improvement along East Circular Road. Also shown is the new market with underground parking outside delhi gate
Fig. 56	New market and underground parking: proposed project outside Delhi Gate on East Circular Road
Fig. 57	New market and underground parking: proposed project outside delhi gate on East Circular Road, elevation & section
Fig.58	Section of East Circular Road opposite Akbari Gate showing proposed small truck loading / unloading docks to service existing businesses outside the walled city
Fig. 59	Section showing traffic engineering and re-design of east circular road
Fig.60	Proposed re-design of the right of way along South-East Circular Road, resulting in Circular Road encroachments to be moved to the other side of the circular road
Fig.61	Detail of proposed re-design of the right of way along South-East Circular Road. Left, western end of this segment of Circular Road, near Shah Alami intersection. Right, Circular Road intersection with Brandreth Road
Fig.62	Proposed re-design of the right of way along South-East Circular Road. Detail of Circular Garden after removal of encroachment. Opposite page, section through this part of Circular Road