



CONSERVATION OF THE
WAZIR KHAN MOSQUE
LAHORE

PRELIMINARY REPORT ON
CONDITION AND RISK ASSESSMENT



AGA KHAN TRUST FOR CULTURE
AGA KHAN CULTURAL SERVICE - PAKISTAN

PREFACE

The Walled City of Lahore is one of the most important historic cities in the subcontinent. Although much altered by recent development, it still retains considerable original character and heritage elements. Within the confines of the city are a number of important monuments, many of which are in urgent need of conservation.

With support from the World Bank (2006), the Punjab Government has recently begun implementation of an important new initiative to rehabilitate a part of the city's urban fabric and to improve its infrastructure while linking many monuments along a historic route starting from Delhi Gate and culminating at the royal palace in the Lahore Fort. This is likely to have been the path frequently used by Mughal royalty to approach the palace fort. The urban rehabilitation (or area development) project is being complemented by the projected conservation of a few key monuments that are part of this historic route. Of these, one of the most significant is the Wazir Khan Mosque. This large mosque was built in 1634 (1044 AH) and is one of the finest mosques of the city.

From 2007, under a partnership with the Punjab Government, the Aga Khan Trust for Culture (AKTC), through their Historic Cities Programme and its Pakistani affiliate, the Aga Khan Cultural Service - Pakistan (AKCSP), have been providing technical assistance in the design and implementation of this area development project. AKTC technical assistance includes detailed documentation of baseline conditions as a necessary first step in the conservation of the Wazir Khan Mosque, as well as planning assistance towards the re-organization of the historic urban open space (Chowk Wazir Khan) in front of the mosque following the removal of commercial encroachments within the immediate proximity of the monument's principal façade. The initiative includes the rehabilitation of the surrounding urban fabric and Chowk Wazir Khan. It extends to Chowk Kotwali, on the north-western corner of the mosque. The objective is to improve the quality of the urban environment for both residents and visitors, relocate unsightly infrastructure underground and return the mosque as faithfully to its original urban setting as possible. The J.M. Kaplan Fund has provided funds for initial documentation and analysis of the monument fabric.

A programme for the conservation of the mosque is being evolved and will be implemented over several stages. In the first stage, which the present report describes, structural and architectural investigations were initiated in April of 2009. Geotechnical investigations of the foundation structure, necessitated by the noticeable inclination of the four *minars* of the mosque have revealed that the bearing soil strata are sound. A detailed electronic documentation of the building has been carried out and is being used to analyze the damage and to assess the quantum of structural interventions and conservation measures. The structural damage that has occurred will be rectified by repair and stitching together of the masonry fabric. Careful monitoring of the behaviour of the building will be mandated thereafter. Pilot restoration initiatives on the various kinds of surface decorations will be carried out first, before expanding these to a larger scale.

A substantial range of interventions must be made in the immediate urban environment of the mosque, in order to ensure that the mosque is not subject again to the adverse treatment it has suffered over the last two odd hundred years. The neighbourhood interventions being proposed include the clearing away of accretions built on the face of the building in order to ensure that it can be maintained. They also include major infrastructure works.

This document presents a brief account of the history of the mosque complex and a description of its key qualities, as exposed in a process of meticulous documentation of its architectural fabric carried out by AKCSP. It also presents an analysis of the major issues faced by the monumental complex in its survival and onward passage to future generations. A plan for the conservation of the mosque is presented as well as a preliminary estimate of the costs to be incurred in the launching of a conservation programme that may last several years.

We hope that going through this report will evoke interest and civic concern and will persuade individuals and groups, both within the country and outside it, to take active interest in the conservation of this priceless monumental heritage of Pakistan and to support that process with moral and material assistance.

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EXECUTIVE SUMMARY

1. HISTORICAL BACKGROUND

The Wazir Khan Mosque was built in 1634-35 AD (1044-45 AH), by Hakim 'Ali ud din* a governor of the Punjab in the early part of the reign of the Mughal emperor Shah Jahan. It was built on the remains of an old Sufi complex and the Sufi grave sites associated with it. The monument is protected under the federal Antiquities Act, and under the Punjab Special Premises Preservation Act. The responsibility for its conservation vests in the Punjab Archaeology Department. A mosque management committee looks after its day to day affairs. The mosque is a part of an urban ensemble put under an endowment established in 1641 whose trusteeship now vests in the Punjab Auqaf Department.

The Wazir Khan Mosque sat astride the historic route that the Mughal nobility would traverse as they entered the city and made way to the royal residence in the Lahore Fort. According to the *waqf* document as reproduced in Abdul Latif Lahori's book on Lahore's history (1892), the ensemble contained in addition to the mosque itself, a bazaar meant specifically for calligraphers and book-binders. Additional shops were built into the body of the monument meant to sustain it, and according to the document, the *waqf* included a *serai*, a *hammam*, several wells and pieces of open land. No specific mention has been made of the Wazir Khan Chowk, and from a comparative review of other Mughal period *serais*, the Chowk lends itself to the interpretation of having been a small *serai*, indeed possibly the one mentioned in the *waqf* deed.

This urban ensemble today includes the Wazir Khan Chowk, and its entrance from the east, the Chitta Gate, and other smaller monuments in the Chowk such as Dina Nath's Well and the shrine of Syed Suf. Both these smaller monuments were built in the mid nineteenth century. Syed Suf's Shrine comprised a dome almost identical to that over the Dina Nath Well, and partially obstructed the axial view of the mosque from Chitta Gate. With the enlargement of the shrine in 1990, and the doubling of the size of its dome, this view is now completely obstructed.

The shops built into the body of the mosque face the street-level on the eastern side onto the Chowk and the Kotwali Bazaar on the north. As the street-level has risen over four centuries, the shops are now lower than the street-level and new shops have been built against the historic structure along the Kotwali Bazaar. In addition houses that similarly abut the monument and actually rest on its historic wall have been built on the southern side, on land which was part of the historic endowment.

As described in this report in further detail, the mosque itself comprises a prayer chamber and a large courtyard. The latter is surrounded on its northern, southern and eastern sides with 28 *hujras* and two pavilions facing each other across the width of the courtyard. There are four *minars* marking the four corners of the courtyard. An important feature of the entrance system of the mosque is the Calligraphers' Bazaar that crosses the axis of entrance at a right angle, and is marked at this crossing with a large *dewhri* and a dome atop the same.

The mosque complex, in the form that it has survived, still has a singular outstanding attribute that places it in the frontline of the major monuments of the world - the exuberant architectural decorations that embellish its exterior and interior surfaces. In essence these are of two kinds - exterior surface decorations which are chiefly in the form of glazed ceramic tile murals; and interior decorations in the form of *naqqashi* wall painting - a semi-dry form of fresco (painting on fine lime plaster renders). Both these forms of embellishment have integral calligraphic components drawing on the Quran and the Hadith.

* In this report we have followed Abdullah Chaghatai (1975) quoting *Zakhira-tu'l Khawanin* of Shaykh Farid Bhakkari; the name is also recorded as Aleemuddin, or 'Ilmuddin in other sources which Chaghatai prefers not to follow.

2. DOCUMENTATION AND DAMAGE ANALYSIS

The definition of the range of problems and issues faced by the conservation and rehabilitation effort and the damage analysis contained in this report ensues from a comprehensive documentation of the monument carried out by a small technical team from AKTC-AKCSP. This documentation was carried out using laser electronic measurement and photo-orthorectification technologies coupled together, resulting in very accurate coverage of the mosque's present conditions. The documentation was carried out at a high standard of compliance with the relevant international legal and technical requirements, as embodied in the United Nations convention signed and ratified by Pakistan, and other relevant international charters.

The condition of the mosque as documented reflects decades of indifferent management, lack of technical and financial resources and the resulting inadequate conservation and upkeep. Moreover, the condition of the mosque has a direct relationship with the loss of municipal regulatory functions in the urban context in which this historic monument exists. This situation must be reversed if the mosque is not to deteriorate to an extent that its conservation becomes an impossible goal to achieve.

The existing conditions pertaining to the monumental complex can be described under several general groups of information, ranging from the overall context of the monument complex to a detailed analysis of the various forms of weathering and damage that the monument has sustained.

The Neighbourhood Context:

The neighbourhood of the mosque comprises the Chowk Wazir Khan, certain smaller protected buildings, and buildings not protected under any law but of a certain heritage value.

The neighbourhood context is one of:

- a. buildings and activities encroaching illegally on public space;
- b. buildings built unlawfully against the body of the monument and even bearing on the monument for structural support;

- c. the undesirable state of the neighbourhood utility infrastructure in particular as the latter affects the monument itself; and
- d. the inimical nature of the land use and commercial activities happening around the mosque and within those parts of its premises that open outwards into the neighbourhood.

The chief victims of this situation are:

- a. the mosque building itself; access to large parts of its structure is eliminated because of the abutting buildings, and by the indifferent manner it is served with utility infrastructure;
- b. the Chowk Wazir Khan, a precisely designed urban open space, which is now lost to the encroachments stated above and to a host of inimical activities taking place in it (inappropriate steel fabrication, parking, unnecessary construction and reconstruction around other historic elements etc.);
- c. the citizenry who are deprived the full spiritual and aesthetic benefit of a high value monument from a religious as well as urban, architectural and art historical points of view.

The Condition of the Mosque Itself:

Apart from the effects of neglect and lack of maintenance and upkeep, the mosque suffers from several instances of structural failure. These are manifested in the leaning out of the four *minars*, in the resultant structural cracks induced in the structure of the prayer chamber, in cracks caused by subsidence of the southern flank of the courtyard due to water ingress from badly sited and maintained ablution and toilet facilities, and from the prevention of the egress of water from roof tops, particularly because of the houses built against and on top of the southern wall of the monument. These latter structural problems have also infested the buildings constituting the Calligraphers' Bazaar that bound the courtyard on its eastern flank.

In addition to the electronic documentation mentioned above, Dr. Fritz Wenzel, a senior structural engineer from the University of Karlsruhe with a long history of working with historic monuments in Europe and in Islamic countries has provided advice on the structural aspects of the mosque, and provided guidelines on investigations which were carried out on the geophysical aspects of the foundations of the mosque complex, with particular focus on the *minars* and the causes of their leaning outward. The resulting reports are attached at Appendices B1, B2 and C.

On the basis of the geophysical engineers' report, the structural analysis carried out by Dr. Wenzel describes the inclination of the *minars* to be within safe limits and attributes the visible inclination to the effect of seismic factors. The recommendation with respect to the structural issues suggests a methodology of "engineering reinforcement restricted to local strengthening of weak areas", continuous monitoring of movement by measuring cracks, and the planning and execution of local structural measures prior to the restoration process to be undertaken for surface elements and finishes.

Apart from the structural issues of the *minars*, on which the geophysical investigations and Dr. Wenzel's work focused, there are several instances of structural failure in the smaller buildings and the floor of the courtyard chiefly to do with soil conditions in the upper most strata (reaching down to about 6 to 7 metres depth) which are saturated with water from leaking infrastructure elements within or close to the monument. As a result, the south-eastern part of the courtyard floor, opened up for repairs by the Punjab Archaeology Department in April 2011, had subsided. Major subsidence is found in the buildings flanking the courtyard on the southern side.

Structural problems apart, the fabric of the building suffers from endemic failure of maintenance, from unfriendly use, from the manner in which elements of the utility infrastructure have been introduced, and from the effect of weathering decay. These are also reflected in numerous aspects that have to do with poor understanding of historic materials and the fact that repairs and interventions carried out have for at least three decades not been informed by a complete understanding of the historic materials that constitute the built fabric of the monument.

3. A FRAMEWORK FOR FURTHER ACTION

Strategic considerations for dealing with the array of problems and issues and a set of recommendations based on these have been proposed in Part III of the report. Four broad areas of consideration have been found relevant:

- a. Problems and issues generally pertaining to the neighbourhood of the mosque complex;
- b. Encroachment on public space, illegal construction, and the resulting lack of municipal control and regulation of a heritage site. This comprises at least two important aspects which need to be considered - the manner in which *waqf* properties have been allowed to be used as private or semi-private premises, as well as the manner in which lack of municipal control affects the functioning of the city in the immediate environs of the mosque;
- c. Infrastructure issues;
- d. Issues of conservation of the mosque complex per se.

The recommendations for how this project is to be proceeded with reflect the above considerations.

- A. At the level of the neighbourhood the recommendations are as follows:
 - i. All later period constructions that abut the 17th century edifice should be removed to enable access for conservation activities from all sides. In particular, the properties owned by the Auqaf or by private owners, which have been erected against the monument on its southern side, should be removed and their occupants accommodated elsewhere;
 - ii. The full weight of current and future legislation relating to listed historic monuments must be brought to bear in a new regulatory regime to be imposed on the neighbourhood context;
 - iii. Existing institutional arrangements must be reviewed in depth, and new institutional structures should be established;

- iv. The urban design and rehabilitation of Chowk Wazir Khan should be integrated with the conservation design of the mosque;
- v. Appropriate measures should be taken to reduce the intensity of traffic and to regulate it in the vicinity of the monument;
- vi. The 1990 structure of the *mazaar* and shrine of Syed Suf should be reduced to an appropriate size and style in order not to obstruct the axial view of the mosque entrance from Chitta Gate;
- vii. The design of the Chowk prepared as part of the urban design components of the World Bank funded Pilot Urban Rehabilitation and Infrastructure Improvement project should be considered for full implementation;
- viii. The heritage component of the Chowk itself, including Chitta Gate, and Dina Nath's Well should be appropriately conserved, rehabilitated and presented;
- ix. Recently discovered fragments of what could be the original façade of the Chowk or its later modifications are embedded deep inside modern construction. These should be laid bare, conserved and appropriately displayed.

B. Recommendations to address various kinds of unregulated structures and uses affecting the quality of the urban environment:

- i. Structures in the Chowk Wazir Khan which occupy public space in the open should be removed, including the shops on the diagonal path from Chitta Gate to Kotwali Gate. This is already being actively considered as part of the Government of Punjab Pilot Urban Rehabilitation and Infrastructure Improvement Project.
- ii. Structures that have been erected against the monument's structure as well as built against or into the structures of Dina Nath's Well, Syed Suf Shrine, Chitta Gate and Kotwali Gate, should also be removed.
- iii. Structures which have over time replaced the 17th century perimeter of the Chowk should at the very least be pushed back to the original perimeter as some of them intrude as much as 3.5 metres into the public space. The extent to

which these structures will be either allowed to continue as at present, or be pushed back, or removed altogether up to the original ROW is contingent upon the precise urban design of the Chowk. It has been assumed in this report that these structures will be replaced by new structures that will recapitulate the original form of the Chowk.

- iv. 19th and 20th century buildings which today constitute elements of historic importance and some degree of architectural merit should be conserved, if necessary after purchase and evacuation. These buildings would justify conservation in their own right. There are two properties that fit this description: H-1088 and H-687. Both these properties will lend value to the Chowk and the mosque if properly conserved, integrated into the design of the Chowk, and displayed. If not acquired outright under eminent domain, this may meet with resistance from the owners of other properties which are not being conserved or whose properties will be altered to one extent or another in order to bring them into the parameters of the law. This issue will need to be addressed and mitigated.

C. Recommendations to improve the modern services infrastructure are as follows:

- i. The existing utility services, inadequately incorporated in the past in a piecemeal fashion and that have posed considerable threat to the structure and to the surface decorations, should be upgraded to the highest standards;
- ii. A detailed infrastructure planning process should be started. This new infrastructure development plan should be integrated within the larger detailed design of infrastructure currently being undertaken by the Punjab Government for the Pilot Urban Rehabilitation and Infrastructure Improvement Project.
- iii. Mechanical and electrical engineering consultants may be appointed for the design of the infrastructure and utility services of the monumental complex. These consultants will work in a fully coordinated manner with AKTC-AKCSP and move the conservation programme forward in full integration with the structural consolidation and architectural conservation of the monumental complex.

- D. Proposals for structural and architectural interventions in the monument proper include:
- i. In view of the need for organizational, human, technical and financial resources and the degree of collective responsibility and oversight necessary for the conservation of this important national monument and its urban neighbourhood, a high powered institutional framework based on public-private partnership principles should be created. This would make the best use of the resources that are currently available as well as those to be procured in the future through sustained capacity building measures;
 - ii. Appropriate legal and institutional measures are taken to clear the mosque of all illegal construction and encroachment. It may be kept in mind that a substantial financial outlay will be required for the purchase and demolition of those structures built against the body of the monument which have a history of half a century or more;
 - iii. For those parts of the complex that are not used for religious purposes and that were originally intended for generating revenue including those elements intended for supporting the livelihood of a certain class of craftsmen (calligraphers and bookbinders), a range of appropriate uses should be established. The proposed uses should not only be sensitive to the architectural fabric of the mosque but be integrated with the planning for the future of the neighbourhood surrounding the mosque;
 - iv. Necessary activities for the consolidation of the structure of the mosque should be commenced;
 - v. In conjunction with structural consolidation, the repair of the architectural fabric should also be commenced;
 - vi. The conservation and restoration of the ornamentation and surface decoration of the mosque in the interior as well as the exterior of the building should be commenced. For this purpose a portion of the ornamented part of the monument should be selected to start the conservation on a pilot scale, which could then be expanded on an accelerated schedule. It may be mentioned here that the detailed analysis of the damage to surface decoration of the mosque is still a slow, laborious ongoing process. It must be continued until all parts of the tile revetment and the interior

frescoes have been documented. The interior frescoes have not been documented as yet. For both types of surface ornamentation and renders (tile mosaics and frescoes), it is proposed to undertake pilot conservation projects. The reason is that only through investigative and research processes aimed at developing, deploying and testing the appropriate materials and techniques can an effective and reliable conservation programme be undertaken.

- vii. A well-designed, modern system of services infrastructure that is properly integrated into the schema of the architectural fabric and which does not pose hazards to the monument or its users, should be established. This should also include a modern public address system that should replace the existing technology of horn loudspeakers strapped on to the mosque;
- viii. An appropriate and effective system of display should be designed and implemented including setting the building in its historic context, and exploiting the full potential of the magnificent architecture and its decorative features by effectively illuminating it at night;
- ix. An appropriate information system should be established to provide the public and visitors the full breadth of information that is needed to gain an adequate understanding of the historic structure;
- x. The valuable opportunity afforded by the conservation of the mosque for on-the-job training and development of conservation skills for both professionals and craftsmen should be fully exploited;
- xi. All restoration programmes should be designed and carried out in such a way as to provide a strong basis for preventive conservation in the future.

The recommendations in Part III of the report also contain sections specifying the manner in which work should proceed with respect to the consolidation of the mosque's structure. This is dealt with under the sub-sections on the foundations and the *minars*, primary elements (external and internal walls, floors, stairs, roofs and domes) of the building fabric in general as well as the secondary elements and finishes (*tazakari*, *kashikari* and *naqqashi*).

4. PROVISIONAL COST ESTIMATES

Based on the documentation, investigations, analyses and recommendations contained in this report, a preliminary cost estimate has been arrived at. The present cost estimate relates to the actions to be undertaken for the following items of work:

- a. Removal of the affects of neglect and indifferent repairs and management that the mosque has had to endure both at the level of the neighbourhood environment and at the level of the monument itself;
- b. Structural consolidation of the monument including addressing those processes which have resulted in structural damage;
- c. Repairs to the essential architectural fabric of the monument;
- d. Undertaking a complete design of all infrastructure elements and implementing the same; and
- e. Undertaking repairs to surface renders and decorations in coordination with the pilot tile mosaic conservation and fresco conservation programmes. Notional amounts for the continuation of the conservation of surface renders and decorative revetments beyond the pilot projects have been included and identified separately.

The estimate is intended to be used as a framework for arranging funds for the conservation programme. This would include the administrative and financial approvals, as well as the planning and execution of the overall conservation programme, which may take as much as five years of full blooded project activity. The estimate also includes certain major expenditure to be incurred for the rehabilitation of Wazir Khan Chowk.

Item	Description	PKR, million	USD, million
1	Acquisition of Property	139.55	1.64
2	Rehabilitation of the Neighbourhood Context	59.80	0.70
3	Conservation and Rehabilitation of the Monumental Complex	369.69	4.35
3.1	<i>Primary Elements</i>	18.73	
3.2	<i>Secondary Elements</i>	71.90	
3.3	<i>Installations</i>	3.84	
3.4	<i>Conservation of Surface Ornaments and Revetments</i>	212.93	
3.5	<i>Infrastructure</i>	55.88	
3.6	<i>Field Material Science Laboratory</i>	6.42	
	Total	569.04	6.69

At this stage, a total fund of Rs. 569.04 million (USD 6.69 million), is estimated to carry out the activities envisaged over a period of between three to five years. This amount includes Rs. 200.21 (USD 2.36 million) worth of work on *kashikari*, *naqqashi* and *tazakari* that will be continued on after the pilot stage, and Rs. 139.55 million (USD 1.64 million) for acquisition of property for demolition and clearance.

The cost estimate has been divided into three parts:

Item 1 (Rs. 139.55 million) covers **acquisitions of property** to clear the mosque and the Chowk of all encumbrances and encroachments that have arisen from at least a couple of hundred years of indifference and neglect.

Item 2 pertains to the actual **rehabilitation of the neighbourhood context**, which is estimated to cost Rs. 59.80 million.

Item 3, worth a total of Rs. 369.69 million of the estimated cost, covers the **conservation of the Wazir Khan Mosque** monument itself. This estimate includes the cost of the setting up of a **field material science laboratory** which is likely to benefit the agencies and individual conservation projects for other monuments to be undertaken in the medium term future in Lahore and beyond. In addition it includes the cost of a glazed tile production facility and the cost of pilot conservation projects for two important aspects of the decorative schema of the monument—glazed tile mosaic work (*kashikari*) and wall treatment/painting on both wet and semi-dry lime plaster renders (*tazakari* and *naqqashi*).

