The spectacular monumental ensemble of the Wazir Khan Mosque in the Walled City of Lahore was built in 1634 during the reign of the Mughal emperor Shah Jahan. Its endowment then comprised the congregational mosque, an elaborate forecourt, a serai, a hammam, a bazaar, and a special bazaar for calligraphers and bookbinders. The mosque, the calligraphers’ bazaar, and the hammam still stand, while the other elements have disappeared—victims to Lahore’s turbulent history over nearly four centuries since the original dedication. What remains is increasingly in need of care and attention.

Over a two year period starting in 2009, the Historic Cities Programme of the Aga Khan Trust for Culture, through the Aga Khan Cultural Service - Pakistan, conducted a baseline documentation of the monument and its surrounding areas. This volume contains the results of this work and presents an assessment of the organisational, technical and financial requirements for the conservation of the mosque as well as the revitalisation and enhancement of its surrounding context.

The Trust has been actively engaged with the Punjab Government in the conservation of the urban fabric of the Walled City of Lahore and, since 2007, collaborated in urban rehabilitation and infrastructure improvement efforts in the neighbourhood of the monument.
PART III: CONSERVATION AND RESTORATION: STRATEGIC CHOICES AND DEVELOPMENT OF PROPOSALS
11 A FRAMEWORK FOR FURTHER ACTION

Heritage documentation is an integral part of the conservation process and documentation of the appropriate intensity and detail is the means to arrive at an effective understanding of a given heritage element and the challenges it poses in terms of various dimensions of conservation. It is essential because it provides the data for recording condition, understanding, interpretation and action.\(^1\)

The conservation process can be seen as a four-step cycle, each step informing the next. These steps begin with (i) an evaluation of authenticity, significance and value (which includes careful documentation of the building), followed by (ii) a process of diagnosis (which involves an analysis of recorded conditions), (iii) a process of intervention—the measures which will arrest deterioration and restore value, and (iv) a process of monitoring the effects of intervention and maintaining the state in which the building was conserved. The basic premise of the conservation cycle is to understand the historic environment in order to successfully manage and conserve it.

The documentation of the Wazir Khan complex, some of which this report includes, and the resulting evaluation of its conditions have enabled the consideration of a range of problems and issues that the monumental complex faces. In order to proceed further towards a medium to long term conservation strategy for the mosque complex, several decisions are required to be made that pertain to the following broad areas of consideration.

1. Problems and issues pertaining to the neighbourhood of the mosque complex;
2. The problem of encroachments, lack of municipal control and regulation of a heritage site. This comprises at least two important aspects which need to be considered:
   a) The manner in which waqf properties have been allowed to be used as private or semi-private premises;
   b) The manner in which the present condition of occupation and use of waqf properties affect the functioning of the city in the immediate environs of the mosque, thereby affecting its setting, presentability, maintenance and upkeep.
3. Infrastructure issues:
   a) The infrastructure conditions, in particular water supply, rain water drainage and waste water disposal;
   b) Improvement of existing municipal utility services: the ways in which services improvement being carried out as part of the Pilot Urban Rehabilitation and Infrastructure Improvement Project\(^2\), will impinge on the services improvement for and within the mosque complex.
4. Issues of conservation of the mosque complex per se:
   a) The uses to which certain parts of the mosque are currently being put, including unregulated structures which have been allowed to be built against the structure of the monument;
   b) Problems and issues pertaining to the conservation work to be carried out within the limits of the mosque.
5. Issues pertaining to the institutional context of the monument and its urban environment - present and future.

These strategic issues are inter-related and must be thought of in an integrated way. Actions emanating from any strategies adopted must ensue from them in a coordinated manner. The following discussion will attempt to elaborate on these issues, to be followed later in the document with proposals for a structured strategic framework.
11.1 THE NEIGHBOURHOOD OF THE MOSQUE COMPLEX

The problems and issues pertaining to the neighbourhood context have been dealt with in the detailed discussion in Section 6. Unregulated construction near the mosque or abutting the monument is conspicuous. A general impression of the encroachments at the neighbourhood level is that they are associated with the commercial activities primarily on the northern and eastern sides of the mosque complex. The residential encroachments on the southern side are rather less visible but nevertheless have serious repercussions of damage to the structure of the mosque. Most of the buildings that abut the mosque on the south side, whether built and/or owned by the Auqaf Department or by private owners, have their wet areas (bathrooms, toilets and kitchens) adjacent to the south wall of the mosque. The poor drainage system of these wet areas has contributed greatly to the damage to the structure of the mosque. Additionally, the structural loads of several houses bear directly onto the old walls of the mosque which has resulted in structural damage, obstructed access for maintenance, and obscured the architectural features of the mosque.

The strategic issues to be dealt with here relate to:

a) The land and properties surrounding the mosque proper that formed part of the historic endowment;
b) The later period structures present on these locations and how they must be dealt with. This implies the possibility of the removal of many of these later period constructions, some of which are actually supported by the 17th century walls of the monument;
c) The fate of the jilau khana of the mosque, i.e., Chowk Wazir Khan: the current bad state and conditions of use of this important element will continue to affect the future state of upkeep and presentation of the mosque itself. As part of the Pilot Urban Rehabilitation and Infrastructure Improvement Project, Chowk Wazir Khan and the bazaar along the north façade up to the Chowk Kotwali have already been integrated in the project proposals with a primary focus on removing the encroached properties and improving the façades and public space in Chowk Wazir Khan;
d) Demolition of encroaching shops and houses and renting/reusing shops abutting the mosque and those present in Chowk Wazir Khan;
e) Access to the building fabric of the mosque proper from all sides, for its proper care and maintenance;
f) The neighboring properties on the southern side of the mosque. The conservation of Wazir Khan Mosque needs to address the emerging threats caused by the neighbourhood properties on its southern side. Six houses (Auqaf and privately owned) which were constructed later in the open space, have now obstructed and damaged the south façade and its structure. The most visible structural deformations like the leaning of the minar, settlement in the courtyard floor and hujra block have occurred on the southern side of the mosque. The project is an opportunity to stop and reverse such damaging trends and to deal appropriately with the illegal constructions which have caused permanent damage to the very fabric of the monument.

The strategic actions at the level of the neighbourhood that are indicated by the analysis contained in this report are:

i. That all later period constructions that abut the 17th century edifice must be removed to an extent that the structure of the mosque is accessible from all sides for repair and maintenance and for the proper drainage from its roofs.

ii. The properties owned by the Auqaf or by private owners which abut or are adjacent to the mosque’s southern perimeter should be removed, and their occupants accommodated.
elsewhere, thus creating more room between the mosque and residential area to implement the old right of way (ROW). Demolition of these houses should be followed by redesigning the old street between the mosque and the neighbourhood.

iii. The full weight of the current and future legislation relating to listed historic monuments must be brought to bear on the regulatory regime to be imposed on the neighbourhood of the mosque;

iv. Existing institutional arrangements must be reviewed in depth and new institutional structures established that prevent any future institutional neglect of the kind that has been visible on this prized monument over the past two centuries. The mosque and its environment should be the prime focus of the initial activities of the Authority to be established under the forthcoming Lahore Walled City Act.

v. The urban design of Chowk Wazir Khan and Kotwali Bazaar should be integrated with the conservation design of the mosque; a specific aspect to be dealt with within this context is the need to expose those parts of the façades of the mosque that are presently hidden by the raised levels of the street and the floor of the Chowk.

vi. Appropriate measures for the reduction of the intensity of traffic and its proper regulation should be taken. While this could be the result of the lowering of the floor of the Chowk, all changes in the existing pattern of movement of people and goods in the Chowk and the Kotwali Bazaar should be integrated with a comprehensive re-design of traffic in the larger neighbourhood of Delhi Gate, Yakki Gate and Sheranwala Gate.

vii. The 1990 structure of the *mazaar* and shrine of Syed Suf should be reduced to a reasonable size and an appropriate style that does not obstruct the axial view of the mosque entrance *iwan* from Chitta Gate and that does not impose upon the 17th century ensemble visually and stylistically.

viii. An appropriate design of the reconditioning of the Chowk should be prepared as part of the urban design component of the current urban rehabilitation and infrastructure design project. This could involve acquisition of certain properties which intrude into the public space of the Chowk, their demolition and the construction of new façades which are duly respectful of the grand entrance façade of the mosque.

ix. The heritage component of the Chowk itself, including Chitta Gate and Dina Nath’s Well, should be appropriately conserved, rehabilitated and presented so as to recapitulate the essence of the Chowk’s former scale and ambience. This would involve the right of way of the Chowk to be cleared, and properties that are of architectural and historic merit to be listed and appropriately conserved;

x. Recently discovered fragments of what could be the original façade of the Chowk or its later modifications are embedded deep inside modern constructions. These should be laid bare, conserved and appropriately displayed.
### 11.2 ENCROACHMENTS, LACK OF MUNICIPAL CONTROL AND REGULATION

The encroachments within and surrounding the mosque are by now recognized and the parties involved identified. These structures are of five kinds, and for each a specific strategy is recommended for adoption:

<table>
<thead>
<tr>
<th>Types of Encroachments</th>
<th>Proposed Strategy</th>
</tr>
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<tbody>
<tr>
<td>1 Structures that occupy public space in the open;</td>
<td>These include the shops on the Chowk that have come to arise on the diagonal path leading from Chitta Gate to Kotwali Gate. The removal of these shops is essential and is already being actively considered as part of the Punjab Government/World Bank financed Pilot Urban Rehabilitation and Infrastructure Improvement Project currently being undertaken.</td>
</tr>
<tr>
<td>2 Structures that have been built against the building structure of the mosque and other protected properties in the Chowk such as Dina Nath’s Well and the two gates - Chitta and Kotwali;</td>
<td>A similar strategy of removal of such unlawful constructions has been incorporated within the Pilot Urban Rehabilitation and Infrastructure Project.</td>
</tr>
<tr>
<td>3 Structures that are illegal outgrowths from the original perimeter/Right of Way (ROW) of the Chowk, i.e. property which replaced the original structures that constituted the 17th century layout of the Chowk;</td>
<td>The extent to which these structures will be either allowed to continue as at present, or be pushed back to the line designating the legal ROW (as determined by officials of the Revenue Department in February, 2010), or removed altogether up till the original ROW is contingent upon the precise urban design of the Chowk that will be approved. Options for the design have been prepared and are currently under consideration. (See illustrations on the following pages).</td>
</tr>
<tr>
<td>4 Elements that constitute a considerable degree of visual obstruction to the mosque’s entrance iwan;</td>
<td>The only structure that subscribes to this description is the Syed Suf Shrine that was built in 1990. It is proposed that ways must be found to replace it with a suitable and appropriate structure of lesser size which enables the old axial link between Chitta Gate and the main iwan of the mosque to be reinstated.</td>
</tr>
<tr>
<td>5 Encroachments constructed in the 19th and early 20th centuries but which today constitute elements of historic importance and some degree of architectural merit and which therefore justify conservation in their own right.</td>
<td>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. However, 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.</td>
</tr>
</tbody>
</table>
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Types of Encroachment in the Wazir Khan Chowk and to the North and South of the Mosque

**Legend:**

- **Type 1:** Commercial structures that occupy public space in the open.
- **Type 2:** Structures that have been built upon and against the building structure of the mosque or other protected monuments.
- **Type 3:** Structures that are illegal outgrowths from the original perimeter/BOW of the Chowk.
- **Type 4:** Religious buildings of historical origins that were rebuilt (1990) and now constitute encroachment into the three dimensional space of the Chowk (Syed Suf Shrine).
- **Type 5:** Encroachments which happened in the 19th and 20th century but which today constitute elements of cultural and artistic worth.
EXTENT OF BASE OF MAIN FAÇADE BENEATH THE CURRENT LEVEL OF THE CHOWK.

Two versions of the main façade of the mosque fronting on to Chowk Wazir Khan, showing the extent of the base of the façade currently hidden from view as a result of the rise of the floor of the Chowk in the nearly four centuries of its existence. The lower drawing also indicates the original proportions of the façade as it will be revealed if the floor of the Chowk is lowered to its original level, some 1.2 m (4 feet) below the current level.
A general view from south-east of the Wazir Khan Mosque with the restored space of its Chowk.
Plan showing the full range of interventions proposed to be made in the neighbourhood context of the Wazir Khan Mosque. Clockwise from top: a) the street surface of Kotwali Bazaar lowered to expose the north façade of the mosque, made possible by the increase in street width obtained after the removal of shops that are currently built against the north façade; b) removal of other existing buildings encroaching into the space of the Chowk or abutting the historic walls of the monument in the Chowk, or on the southern perimeter of the monument; c) removal of shops along the diagonal movement path between Chitta Gate and Kotwali Gate; d) lowering of the floor of the Chowk in front of the main entrance.
Part III: Conservation and Restoration Proposals

Chowk Wazir Khan: three views of the proposed interventions. These interventions will result in the removal of all shops squatting on the angular pathway between Chitta Gate and Kotwali Gate and the lowering of the floor of the square to its 17th century level, thus revealing the full height of the façade.

Top, left: View along the central axis with the 1990 dome of the Syed Suf Shrine in the foreground, shown in its current state.

Top, right: The view at ground level; the line of sight has been moved laterally to enable the iwan to be seen around the Syed Suf Shrine.

Left: View of the proposed new buildings on the northern flank, showing the lowered floor of the Chowk seen in relation to the traffic channel, the existing level of which has been retained.
View looking east along the northern façade of the Chowk, where new buildings are proposed to be constructed after acquiring and removing the existing buildings. Two alternatives to the proposed façade forming the northern side of the Chowk are presented, each re-interpreting the historic original with two variants of modern materials. The structure of the Dina Nath’s Well is shown at the centre-right.
View of Kotwali Bazaar looking west, showing the lowered, pedestrian part of the street with the additional space obtained by removing the illegal structures adhering to the north façade, now fully exposed at the original elevation of the street.
11.3 IMPROVEMENTS IN THE MODERN SERVICES INFRASTRUCTURE

Parallel to the conservation of the building fabric of the mosque complex, it is important that the existing services, inadequately incorporated in the past in piecemeal fashion and that have posed considerable threat to the monument’s structure and to surface decorations are improved at the highest appropriate standards. The present layout and quality of utility services serving the complex is evidence of the very ad hoc approach adopted. This has been the cause of rapid and serious deterioration of the structure, the building fabric and the surface renders and revetments.

A detailed infrastructure planning process needs to be started. It is proposed that a framework of infrastructure planning to be prepared for the mosque should be integrated with the detailed design of infrastructure currently being designed by the project design and management consultants, appointed by the Punjab Government, for the Pilot Urban Rehabilitation and Infrastructure Improvement Project.

Mechanical and electrical engineering consultants may be appointed for the design of the services for the mosque building proper. These consultants and the engineers mentioned in reference to the Pilot Project above 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.

11.4 PROPOSALS FOR INTERVENTION IN THE MOSQUE PROPER

Addressing the threats to the mosque complex is the primary objective of the proposed conservation strategy. The overall plan of action for the area of the Wazir Khan Mosque embraces the conservation of the mosque, the improvement of the adjacent open spaces and building façades, the removal of the commercial and residential encroachments and the establishment of a new, rational and well detailed system of service infrastructure.

The strategic actions recommended to be taken towards launching the conservation process of the mosque proper comprise:

a. Legal and institutional measures: implementing appropriate legal and institutional measures to clear the mosque of all illegal construction and encroachment within the ambit of the applicable existing and future legal instruments;

b. Appropriate uses: establishing a range of appropriate uses for the non-religious parts of the building originally intended for generating revenue, including those intended for supporting the livelihood of a certain class of craftsmen (calligraphers and bookbinders). These uses would be integrated with the planning for the future of the neighbourhood in which the mosque is located, and with planning for the safety and longevity of the architectural fabric of the mosque;

c. Structural consolidation: consolidating the structure of the mosque within the framework of expert structural analysis contained in this report;

d. Conservation of the building fabric: carrying out the repair of the architectural fabric not included in the works carried out under item (c);

e. Conservation of the ornamentation and surface decoration: the conservation and restoration of the surface renders and revetments, including decorations such as the kashkari work, the naqqashi work and the tazakari work on the exterior as well as in the interior of the building;

f. Services infrastructure: establishing a well-designed, modern system of service infrastructure that is properly integrated into the schema of the architectural fabric and which does not pose hazards to the building or its users;
Part III: Conservation and Restoration Proposals

PROPOSED PLANS FOR FACILITIES ON THE SOUTH SIDE
g. Display and illumination: establishing an appropriate and effective system of display 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;

h. Information and communication system: establishing the appropriate types and size of information systems, including electronic information system, to provide the public and visitors the full breadth of information that is needed to gain an adequate understanding of the historic structure;

i. On-the-job training of professionals and craftsmen: exploiting the valuable opportunity afforded by the conservation of the mosque for the training and development of conservation skills for both professionals and craftsmen, to take place as on-the-job training. The on and off restoration efforts in the past produced quite a few craftsmen in building craft techniques and it is vital to identify and use all the remaining resources generated by past restoration efforts in the current plan for its conservation. Similarly, the local residents and craftsmen already active in their fields should, by employing them in future conservation programmes at the mosque, be given an opportunity for developing their skills and increasing their awareness of heritage preservation. Designing all restoration programmes in this manner would provide a strong basis for preventive conservation in the future.

As mentioned above, a number of skills and crafts are involved, each involving programmatic, technical, quantitative and qualitative specificities.

11.4.1 BASIC PRINCIPLES CONCERNING MATERIALS AND TECHNIQUES

Certain basic principles that must be adopted before proceeding further in the conservation process must now be enunciated:

a. All materials to be used in the conservation process should be compatible with the historic materials and technologies;

b. There should be compatibility in terms of the physical and chemical properties of the material and this compatibility should be thoroughly tested out using the best available laboratory technologies;

c. No intervention should be carried out without recording the existing state of the exact location of the intervention;

d. No new materials should be used that is stronger than the historic material, except under very exceptional circumstances and only when directed by the conservation expert in charge;

e. As far as possible, interventions affecting authenticity should be reversible.

11.4.2 THE CONSOLIDATION OF THE STRUCTURE OF THE MOSQUE

This section deals mainly with the structure of the mosque complex. It includes the foundations and superstructure of the mosque’s building and minars. One of the most critical things is to find a relation between the leaning minars and crack patterns in the adjacent archways, and to find a way to stitch the large cracks in the structure without losing the surface decorations significantly.

The expert opinion related to the structure of the mosque complex is summarized as follows:

a. The brick masonry of the mosque shows cracks and deformations. This includes the tilting of the minars and its effects on the structure of the prayer chamber;

b. The digital measurement of the minars shows that the leaning is minor and less alarming than expected. The cracks in the immediate structure and the leaning of the minars have a direct relationship as a consequence of seismic processes;

c. The investigation programme carried out to discover the condition of cultural fill, soil, the dimensions of the minar foundations, and the extent of tilting support the previous paragraph;

d. The exploratory boreholes and open pits show that the stepped foundation of the minar is well rested on firm natural soil which comprises sand and sufficiently consolidated stiff clay. Therefore, no major intervention is recommended for the foundation.
e. The engineering calculations based on the geotechnical investigations proved that the static and dynamic loads of the minars are safe;

f. The engineering reinforcement should be restricted only to weak areas in the structural fabric and should be carried out by skilled craftsmen and with close cooperation between them and the consulting engineer/architectural conservator;

g. The subsidence of the southern courtyard pavilion as a whole by as much as nearly 30 cm (11.81 inches) is, however, a point of anxiety. It is likely that the foundation bearing strata at this point are seriously affected by water ingress and have resulted in bearing strata failure. The remedy for this, for now, is an immediate and urgent attention to the problem of water ingress from all sources in the southern side of the building. This urgent attention could address the issue of the removal of certain or all offending buildings. The nature of the bearing soil in this area, however, must also be ascertained as soon as possible.

For a detailed discussion please refer to the interim report on structural consolidation and conservation of the Wazir Khan Mosque in Appendices B1 and B2 at the end of this report. Two salient aspects are summarised below:

i. Foundations (Geotechnical Interventions)

This component will deal mainly with the foundation subsidence of minars and other structures and its impact on the superstructure of the building. As established by the geotechnical investigations (see Appendix C) the foundation of each minar is well rested on firm soil and therefore no major intervention is recommended for the foundations of the minars.

Except for the southern axial pavilion which exhibits serious structural deterioration, foundations of other structures have in general no major structural failure. Although there has been subsidence of structure in the southern hujra wing on both sides of the southern pavilion, this subsidence appears to have been gradual and, thanks to the resilience of the lime mortars used in the Mughal period masonry, exhibits no major structural failure. Since some areas in the courtyard of the mosque have been observed and documented to have varying degrees of subsidence, it is important to investigate the strip foundations under such structures during the conservation of the mosque. It is likely that the foundations of the remaining structures also bear on natural strata. However, as the geophysical investigations focused on the minars, this aspect was not fully explored in all parts of the monument. Serious attention therefore needs to be focussed on the structural consolidation of the southern pavilion and the southern wing of hujras.

ii. Minars

A lesser variety of issues needs to be tackled for the structural consolidation of the minars. Despite a visible tilt of the south-east and south-west minars, the overall condition of the foundation and superstructure of the minars are stable. Nevertheless, it has been established that the tilt of the minars on the south side is greater than the minars on the north side, evidence that the south side of the mosque has been subjected to an increased pressure as a result of residential encroachment on land which had previously and originally been open land.

Major clearance of residential constructions on the south of the complex and the management of water ingress from the public ablution and toilet facilities on that side are actions which are therefore critically justified.

There is also a need to channelise the rain water collecting in the projecting galleries under the chhatris in a more controlled manner, thus avoiding the water running directly on the surface of glazed tiles on all eight sides of the octagon.

11.4.3 STRUCTURAL CONSOLIDATION AND CONSERVATION OF THE BUILDING FABRIC IN GENERAL (Primary Elements)

Structural restoration at the level of building fabric (walls, flat and domed roofs, ceilings, floors etc.) involves the repairing of cracks, an extensive exercise involving traditional and modern techniques of stitching the brickwork. Large openings like archways in the prayer chamber and the main iwan are the main structural and architectural features of the structure. Cracks in the apex of these archways are a common damage pattern.

The introduction of alien materials along with traditional ones in past restoration efforts have significantly damaged the areas around the cracks. Therefore removing all incompatible materials from the old repairs is the primary task in structural consolidation.
i. External Walls

Most of the anomalies in the external walls are in the form of cracks, bulging, deteriorated masonry and the insertion of alien structural elements and concrete slabs. Structural consolidation of the damaged portions in the external walls is the most important activity for their conservation.

A larger section of external wall on the south-western side of the mosque is not even visible to inspect and monitor due to residential encroachments. The conservation programme must include the option to expose this section of walls for monitoring and for restoration. This entails that the houses which have their structural elements resting directly on the external walls should be cleared off and a buffer zone between the residential urban fabric of the city and the structure of the mosque should be created.

The whole length of external wall on the north side has been encroached upon by the shops at Level 0. This illegal process has substantially damaged the external wall by necessitating ad hoc insertion of concrete slabs that form the roofs of the shops, damaging the fabric of the historic wall. The removal of all these encroaching shops is not only crucial for the unobstructed view of the north façade but also important to restore the original fabric of the wall and to protect it in the future.

ii. Internal/Partition Walls

Structurally, the walls perpendicular to the external walls at Level 1 in the hujras and Calligraphers’ Bazaar are also taking loads of the roof and therefore, we cannot categorise them as partition walls in the usual, non-load bearing sense. Most of these walls are in good condition and need only a localised consolidation programme.

The internal walls in the shops on the eastern and northern sides at Level 0 have some major damage types. Rising damp, erosion of old mortar and the later application of cement based renders are the major problems which affect the walls. Rising damp in the walls is associated with the poor drainage system of the mosque complex. Therefore, it is very important to rectify the drainage system before working directly on the restoration of walls at Level 0. This work will include the removal of all the later applied cement based paintings and plasters, repointing with lime mortar and then rendering with lime plaster.

iii. Floors

The entire floor of the Calligraphers’ Bazaar, courtyard and the prayer chamber are made of brick. All the floors in the covered areas, except the prayer chamber, are finished with lime. The hujras, which have been used as a dumping place for junk materials, have lost a significant amount of the floor finish. As mentioned earlier these rooms should be cleaned before conservation/restoration work can commence.

At Level 0, over time, the original floors have been filled up with many layers of soil to relate the internal floor level to the gradual rise of the street-level outside. The current investigation pits in these old shops at two locations on the eastern and northern sides revealed that the original level of floor is made of lime about 1 metre below the existing level of the floor. This raised many questions related to the restoration of the original floor level. Whether the existing level of street will remain the same or should it be lowered to the old level is one of the more important considerations. The decision of lowering the level of the entire Chowk and the streets will certainly affect the design and redeployment of the infrastructure services in the area, particularly waste and storm water drainage.

Irrespective of any solution related to the old and original levels of the Chowk and the shops, the principle should be to reintroduce the original materials like lime and brick to replace the existing cemented floors in the shops at Level 0.

The courtyard floor is the single largest floor area that has been under threat for the longest time and has continued to remain in that state until this time, when it has been opened up again for extensive repairs. These repairs have been necessitated from time to time for various reasons. It is now necessary that a redesigned drainage system for the mosque should also include a comprehensive new drainage system for the courtyard. In the process of creating this new drainage system, the entire floor should be restored in a manner that removes all the visible errors and evidence of ad hoc repairs that is unfortunately visible for all to see.

The repair works recently (April, 2011) started by the Auqaf Department are yet another set of ad hoc repairs which are not likely to bear much fruit in the immediate or long term, and have meant only to placate and pacify public opinion as orchestrated by the media. It is important that the full extent of this work should be integrated with the proposals contained in this document.
The pits were dug to ascertain level of the original floor, where possible. One of these pits in the Chowk led to the discovery of what appeared to be the original floor 1.2 metres below the present surface paving.
iv. Stairs

The four staircases of the minars are in reasonably good condition. The remaining stairs on Level 1, which lead to the roof and Level 2 of the mosque, are in relatively bad condition and have lost their top coat of renders and corners. The two uncovered staircases on Level 1 in the Calligraphers’ Bazaar and the two staircases on Level 2 to approach the eastern minars are in a bad shape and need a repair programme which, in parallel to their restoration, should precisely address their protection against weather conditions. The three staircases in the central pavilions of the courtyard also need a repair programme and, again, protection against weathering conditions. The two staircases under the chhatris of the entrance iwan on the western side are in good condition and therefore, need only minor repairs. Handrails of an appropriate design should be provided at all locations.

v. Roof (Flat Roof and Domes)

The roof system of the mosque complex includes flat and domed roofing surfaces. The structural anomalies in the roofing system of the prayer chamber are directly associated with the structural deformations caused by the lateral movement of the mass of the base of the minars and the consequent movements in the mass of the prayer chamber walls. Therefore, any restoration or structural consolidation programme of the roof should not be addressed in isolation. For example the cracks in the archways of the prayer chamber run through the walls, vaulted archway, parapet, base of the dome and then extend themselves on the dome surface.

In the past, the cracks in the parapet, roof and dome have been filled with cement-based mortar and over a period of time the failure of cement-based grout has provided an access to the rain water resulting in efflorescence on the surface of frescoes inside. The most critical task during the restoration of these cracks is therefore to find a balance between the new infill material and its compatibility with the old fabric of the structure.

The rest of the flat roofs of the hujras and Calligraphers’ Bazaar are structurally sound but have lost a number of surface layers. The only critically damaged roof is the roof of the pavilion on the southern side of the courtyard which has a major crack in the centre running in an east to west direction. The entire section of the southern wall has also leaned towards the south due to this crack which also runs through the south-eastern corner of the room. These structural cracks, which in the case of the corner have resulted in the loss of a quantity of brick masonry, should be filled with lime mortar or brick laid in lime mortar. Filling of the cracks should be necessarily supported by the stitching method in which new bricks are inserted across a masonry crack. Removing some old bricks and inserting new ones is recommended in the stitching process.

Appendices B1 and B2 at the end of this report include the expert opinion related to repair of cracks.

11.4.4 CONSERVATION OF SECONDARY ELEMENTS

External Openings

Doors and windows in the mosque complex need only minor repairs. Major repair is required to the windows on the northern side of the mosque where the masonry supports for the sandstone lintels are damaged. Similarly, the small windows on the eastern façade of the mosque need repairs as the wooden frames are damaged. Missing doors on Level 2 should be replaced. The two steel doors of the eastern minars should be replaced with wooden doors.

The large openings in the prayer chamber towards the Kotwali Bazaar raises an interesting issue of how to control the dust and smoke traveling through these openings and reduce its damaging effects on the frescoes inside the prayer chamber and increase the comfort level of its users. The same issue also applies to the bare openings in the rooms on Level 2 of the mosque complex. The solution to this issue would be a quiet intervention with glass which should not be alarmingly conspicuous on the façade.

A whole scheme of design is needed for the shop openings once the encroached structures are removed from the eastern and northern façades.
11.4.5 FINISHES

This monument is covered with an extensive and intricate blanket of architectural and decorative ornamentation, profuse and endowed with artistic excellence and deep religious significations. It therefore requires careful and methodical treatment at the following levels:

- Detailed documentation and damage analysis,
- Careful analysis and the determination of values with which it originated and values which reside in the ornament at the present time,
- Organization of a programmatic approach based on in situ fact finding, laboratory analysis, and the development of sequential arrays of intervention and treatment.

In general the finishes are affected to a greater and lesser degree by the same kind of weathering and damages on account of being constituted with the same base brick, terracotta and lime mortar material. Certain finishes such as kashikari work are inherently more resilient and wear-worthy than the more fragile and porous materials (terracotta body) which support the glazes in kashikari and comprise the body (base layers of the lime plaster renders) of the other finishes such as simple plaster render or tazakari work. Exposed brickwork is another material that is relatively durable and wear-resistant due to its being embedded in fine lime mortar beds. Most floors in the exterior, and that of the prayer chamber are constituted by brick and have generally withstood the wear of four hundred years of use.

A range of damages has been identified for plaster renders, exposed mortar beds, and the stages of damage through which kashikari tile work can be observed to undergo. The last stage of such damage is of course the complete loss of plaster render or glazed tile revetment.

In many cases, however, the relevant elements exist at the stage prior to complete loss, i.e., in a state of detachment from the brick bearing surfaces. A sensitive evaluation of the causative factors (rainwater penetration, water rise due to floor washing, rain splashing, and capillarity, sub-surface efflorescence and salt crystallization) and whether and to what extent such elements can still be saved in situ is necessary during the conservation process.

The ultimate aim of the conservation process is to keep a balance between the restoration of old surfaces and centuries-old "as found" state of the building. The purpose should not be a "new look" for the monument but rather the conservation process should aim at enhancing the charm and character of surface finishes even while working with the fact that they have been slowly deteriorating.

i. Kashikari

The most predominant feature of the exterior of the mosque is its kashikari work, known for its richness and the range of its artistic and technical breadth. Any repair and conservation work that is to commence as a result of the present work will address the urgent need to arrest the deterioration of this work and to establish a permanent and long term mechanism for continuous conservation and maintenance.

The existing and remaining stock of kashikari displays different types of damage forms and their causes. Age, orientation and exposure to the sun and climate, chemical composition, and the combined effects of rainwater penetration, salt crystallization, and atmospheric pollution all contribute to the damage patterns of the tile work. The old kashikari work on the northern, external façade of the prayer chamber shows different and more extensive damage than surfaces with a more southerly exposure. While this damage exemplifies, on the one hand, the conditions created by the greater amounts of rainwater that saturates the buildings' exterior on the northern side for longer stretches of time, and the consequent vulnerability to biofilm and bacterial action, on the other hand it also exhibits the nature of the damage caused by the intense atmospheric chemical pollution from the traffic in Kotwali Bazaar.

Keeping in view the above factors, it is important to propose a variety of restoration schemes for the conservation of kashikari. The hard glazed surface of the tiles resists well the extreme weather conditions as compared with the lime mortars and other porous materials. The real challenge seems to be the application of different approaches in restoring the different degrees of damage that the glazed tile work has suffered.

The most vibrant examples of the oldest extant and the most fragile examples of deteriorated tiles are to be found on the minars.
and comprise varying degrees of tile deterioration. It is here that the entire range of subtle distinctions in weathering forms can be observed and recorded. Based on the observations made, some decisions could be made for the approaches to be adopted. As a principle strategy it would seem important that older pieces of tile which are in an acceptable state of preserve are conserved, and the temptation to replace such tile with new work, or to otherwise match them to new work should be avoided. Tiles should be replaced as part of an ongoing process of monitoring and decision making. A possible progression of priorities in replacing/conserving and protecting tile work could be as follows:

1. Complete loss of tiles with base mortar: (high priority)
2. Falling away of tiles from the base mortar: (high priority)
3. Break out of terracotta due to spalling and pitting of the terracotta body after the earlier loss of glaze: (high priority)
4. Exfoliation of glaze and biscuit: (medium priority)
5. Exfoliation of glaze only: (low priority)
6. No exfoliation of glaze—intact tile.

It would seem that a programme of tile replacement should be pertinent to only the first three of the six categories of damage. However, this could also depend on how valid the justification of the replacement is on grounds of evidence and authenticity. This may depend upon whether the authenticity of the replacement is supported by extant evidence or by comparison with extant work. Where the authenticity is weak or is non-existent, then tile replacement will not be justified and it is best to not to take recourse to reconstruction and complete replacement of tile. Such cases might be dealt with by closing up the edge of the undeteriorated part of the tile panel with plaster renders, or where absolutely required, using blank tiles (glazed or unglazed, as suited) to complete the panel.

The following other measures are also strongly recommended to be followed in the conservation of glazed tile:

- Establish compatibility of new base lime mortars with the old and firm sections of kashikari;
- New work should be carefully designed in juxtaposition with existing tile work so as not to contrast strongly with the extant tile, and blend in with the historic ambience of the extant work.
- Loose and disintegrated sections should be strengthened and reattached by appropriate grouting techniques in order to save the extant sections in juxtaposition.

ii. Pilot Glazed Ceramic Tile Production Facility and a Pilot Restoration Project

This project would use local and international expertise in traditional ceramic tile technology to set up a pilot facility for producing glazed ceramic tileware on scientific lines. The aim is to expand operations for restoration work on the monument in areas identified for this purpose. Local experts and craftsmen engaged previously on the restoration of glazed tiles would be identified and involved in the process.

iii. Fresco Work

Technical expertise of the highest caliber will be required for this purpose. An international consultant with experience in historic fresco work in this part of the world is proposed to be engaged.

The main tasks for this consultant would be as follows:

a. Undertake a preliminary investigation into the condition of the frescoes in the mosque and produce a report indicating (i) condition; (ii) issues of restoration; (iii) potential for restoration; and (iv) strategy for restoration.

b. Identify an area of interior frescoes to be taken up as a pilot restoration project; indicate the technical objectives to be achieved and the end goal of the restoration work.

c. Undertake the work so identified, if approved and authorized, and to oversee the pilot restoration project until completion. This partial restoration project, if successful, could result in further expansion.

iv. Establishing a Field Laboratory for Material Science

This laboratory will enable the conservators to analyse both old and new materials and bring scientific rigour to the conservation process. The targeted investigations relate to analysis of the material fabric of the monument including (i) material forming the architectural fabric; (ii) chemical composition and physical properties of the glazed tile revetments; (iii) composition and physical properties of other wall renders, including decorative renders; and (iv) chemical analysis of the various layers of frescoes on the walls.
11.5 ISSUES PERTAINING TO THE INSTITUTIONAL CONTEXT OF THE MONUMENT AND ITS URBAN ENVIRONMENT - PRESENT AND FUTURE

This aspect of the project for the conservation of this monument must be dealt with realism and forthrightness. An examination of the institutional context which is required to provide the technical services for protecting and preserving monuments in the province of Punjab reveals the following urgent needs:

a. The prioritization of our cultural identity and our heritage above certain other priorities.
b. Organizational efficiency and greater operational and technical rigour.
c. Advanced training of staff in the public sector agencies involved at all levels and for their exposure to best practice field contexts in other countries, at the least other countries of the greater Asian region.
d. Greater autonomy for professionals in decision-making in the field of heritage care;
e. Higher standards of professional rigour and work ethics.

11.5.1 NEW PROJECT ADMINISTRATIVE FRAMEWORK

The care and conservation of a monument such as the Wazir Khan Mosque at the required levels of quality would necessitate that the above needs are fulfilled. Since this is not possible immediately, an effective and autonomous organizational framework for the conservation of the mosque may be developed. This would draw on the best available professional services from international and national not-for-profit and civil society organizations engaged in urban and monument conservation, as well as from government agencies.

The new organizational set-up would:

a. Have the limited purpose of overseeing and administering the conservation project; and of ensuring that the project provides training opportunities to the relevant personnel in the concerned public sector agencies;
b. Contain representatives of donor agencies, of the Government of the Punjab and of the Aga Khan Trust for Culture;
c. Be mandated by a notification to be issued by the Government, which will transfer the operational control of the project to the new organization;
d. Be funded to the necessary degree from the following sources:
i. The Government of Pakistan;
ii. The Government of the Punjab;
iii. Multi-national and/or bilateral donors;
iv. The Pakistani corporate sector;
v. The Pakistani civil society sector;
vi. International organizations such as the Getty Foundation, the World Monument Fund, etc.

11.5.2 COORDINATION WITH ONGOING URBAN REHABILITATION AND INFRASTRUCTURE WORKS

The Pilot Urban Rehabilitation and Infrastructure Improvement Project is soon to be implemented, with extremely important ramifications for the conservation of the Wazir Khan Mosque. Some of these are:

a. Shops which were built onto the main façade of the monument on its north will be removed as a result of the Pilot Project.
b. The roads around the mosque and the floor of Wazir Khan Chowk have risen to as much as 1.2 metres from their original level over the centuries. In order to expose the façades of the mosque fully, the surface of the street to the north of the mosque and the floor of the courtyard will be lowered to their original levels.
c. The area of the Chowk will be cleared of encroachments in open public space (not encroachments which are outgrowths of buildings forming the perimeter of the Chowk).

d. New underground electrical, telecom, water supply and storm water drainage infrastructure will be built.

e. The gas distribution network may be re-ordered.

f. The sewerage system may be modified to one extent or the other.

It is extremely important that these impacts of the Pilot Project on the Wazir Khan Mosque and its vicinity are taken on board and coordinated with the conservation process of the mosque, as proposed in the previous pages.

11.5.3 THE FUTURE ADMINISTRATION OF THE MOSQUE AND ITS ENVIRONS

The jurisdiction of the Lahore Walled City Authority to be set up under the Lahore Walled City Bill, 2011, to be enacted by the Punjab Assembly shortly, is essentially that of a local government, exercising full municipal control of the Walled City and its heritage assets. Although the trusteeship of the Wazir Khan Mosque will continue to vest in the Auqaf Department, its enlistment under the heritage register to be maintained by the Authority, and the exercise of technical control of heritage vested in it will necessitate new administrative regimes to be established.

The future of the mosque will depend eventually on the effectiveness of such control and administrative regimes, which will have to be meticulously thought through before they are applied.

During conservation, it is extremely important that the members of the present mosque committee are fully integrated with the decision making process, and that they be treated as a community based organization which is the vehicle for community support and participation during the conservation process.

When the conservation process is complete the mosque committee is expected to continue with its present functions. However, the precise manner in which they are to work and link administratively with the new administrative framework of the Walled City will need to be defined.
ENDNOTES


2. This project comprises the Cultural Heritage Component (CHC) of the Punjab Municipal Services Improvement Project, funded by the World Bank. The CHC was included specifically for the Lahore Walled City to establish best practices in the area of urban rehabilitation and for possible replication in other historic cores of Pakistan.

3. At the time of the publication of this report, this Act had been presented to the Punjab Assembly and awaits approval.

4. REDM survey with total station provided an accurate (± 3 mm) sectional detail of the minar which enables us to calculate the tilt of the minars in CAD format.