Conservation works commenced with the collapse of a large portion, almost 200 sq feet of the Baoli wall in July 2008 and the severe buckling of another similar area.

As a first step the water from the Baoli was drained out to understand the extent and nature of collapse and structural stress in the standing portion. This was followed by a structural analysis by a team of international structural engineers.

The Baoli was documented using state-of-art technology such as High Definition Survey with 3D Leica Laser Scanners. Stone by stone details were documented using the scanner.

The wall section was derived using GPRs at a few locations of the eastern wall. The section shows the thickness of the filling materials behind the stone wall.

**Investigations carried out at Baoli**
- Impact echo test
- Ground Penetrating Radar Survey
- Geo technical studies to check the quality of the soil
- Lime mortar testing

**Ground Penetrating Radar Survey** was used to document the condition/deformation in the structure and the hidden layers beneath the wall surface respectively; both systems were used for the first time in India for Conservation purpose.
CONSERVATION WORKS

Conservation works on the collapsed portion could commence in December 2008, once the studies and demolition of the overhead structure were completed. During this period temporary shoring was installed to prevent further collapse and safeguard the visitors using the passage to the Dargah.

RECONSTRUCTION OF THE COLLAPSED WALL

The collapsed portion was rebuilt and portions of the Baoli dismantled prior to rebuilding using traditional building materials and building techniques. Works were carried out from sunrise to sunset for over four months to rebuild this small collapsed portion.

Masonry Stones which had fallen in the Baoli and were buried in the sludge were manually collected washed and dressed again before reuse in the masonry. Masonry Stones were dressed on site using hand tools. Stone masons reconstruct the top layer of the Baoli wall. Stone members joined together using copper dowels. Ashlar masonry wall fixed with the back fill using stone slabs. Heavy stones were lifted by cranes to the wall height for repair works, February 2009. Evening stones were provided on structurally weak arches and wall for safe working conditions. The collapsed stone masonry was reconstructed following the existing profile and original construction technique.
Conservation works required the removal of a 2-3 cm thick epoxy layer applied to the Baoli in 2002 by the Delhi Jal Board. This treatment used for concrete tanks was inappropriate for the historic structure and accelerated decay. This was carefully and painstakingly removed by master stone craftsmen using traditional tools.

Following the rebuilding of the collapsed portion and the removal of epoxy, the entire wall surface was re-pointed with lime mortar and grouted to fill up the underlying voids.

A water quality test of the stagnant Baoli water before reconstruction revealed very high levels of *E. coli* indicating sewage contamination. The ground water sources as well as the well water were retested post reconstruction and it was found that the water quality had considerably improved with a drastic reduction in *E. Coli* levels.
During conservation works a passage leading from the Dargah to the Baoli, possibly used by the saint, Hazrat Nizamuddin Auliya was discovered. Works are now ongoing to remove rubble filled in this passage and carry out required repairs to the vaulted roof of this passage – portions of which have collapsed.
The Baoli built by the revered Sufi Saint Hazrat Nizamuddin Auliya in the years 1321-22 A.D is one of the earliest surviving step-wells in Delhi and one of very few structures built under the patronage of the saint himself. Several historical legends link the construction of the Baoli to the Saint and his disciple Roshan Chirag Dilli.

The Baoli has a unique plan with a circular well, 80 feet below the adjoining ground level, contained within the structure itself. It is also the only step-well in Delhi to still contain water fed by several underground springs.
STAKEHOLDER MEETINGS AND COMMUNITY DISCUSSION

LEARNING FROM LOCAL WISDOM

- The Baoli is an integral part of the Basti and to the pilgrimage for visitors to the Dargah.
- In addition to scientific studies, conservation works were preceded with several community consultations with the Dargah Committee.
- This was especially important as local community knowledge was required to better understand the structure and access to the Baoli would be limited for the duration of conservation works.

ENSURING SAFE ACCESS FOR ALL

- One of the access to the Dargah, (from the passage along the Baoli) used by hundreds daily, had to be discontinued for almost three weeks as collapsed portions were rebuilt.
- As part of conservation works, the water from the Wuzu area – draining into the Baoli was re-routed in a complex procedure that required a pumping station to be installed in the narrow lanes leading to the Dargah.
- Similarly over 100 meters of sewer lines found to be leaking into the Baoli were replaced at a depth of 7-8 feet on the adjoining lanes.

For the 21 families occupying the terrace of the baoli, alternate plots are being provided by MCD with AKTC bearing the costs of the relocation.

Further as part of the rehabilitation process we would be working with these affected families to ensure smooth transition to a new area and an improvement of living standards for these families.

The families have consented to be relocated.

REHABILITATING ‘AT RISK’ FAMILIES

- The house immediately over the collapsed portion of the Baoli was demolished with mutual consent and as part of the project an alternate dwelling unit built for the owner.

For the 21 families occupying the terrace of the baoli, alternate plots are being provided by MCD with AKTC bearing the costs of the relocation.

Further as part of the rehabilitation process we would be working with these affected families to ensure smooth transition to a new area and an improvement of living standards for these families.

The families have consented to be relocated.