



CITY LEVEL PROJECTS

WATER & HERITAGE

Rejuvenation of Baoli Precincts





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Delhi Urban Art Commission

The Delhi Urban Art Commission was set up by an Act of Parliament in 1973 to “advise the Government of India in the matter of preserving, developing and maintaining the aesthetic quality of urban and environmental design within Delhi and to provide advice and guidance to any local body in respect of any project of building operations or engineering operations or any development proposal which affects or is likely to affect the skyline or the aesthetic quality of the surroundings or any public amenity provided therein”.



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Preface



The city of Delhi, capital of this vast land of diversities, is a city laden with layers of history, a place where civilizations have lived, prospered and perished over centuries. The modern city today, built over and around a rich tapestry of heritage, presents an opportunity at every turn, to allow for co-existence of the past, present and the future. In order to understand this multidimensional urban spectrum and attempt to plan the future, various city level studies have been initiated by the DUAC. I hope that these studies will help the planners of modern day Delhi to carefully articulate urban space, structure, form and environment and sensitively address future requirements.

I convey my thanks to all the Consultants and Members of the Commission who have tirelessly worked on this research project to bring out this document. I also take this opportunity to place on record my sincere appreciation of the efforts of Secretary and other staff of DUAC for providing the necessary administrative support to make this happen.

I fondly hope that the authorities of the local, state and national government take these studies seriously and implement, in right earnest, the suggestions given herein.

January, 2018

Sd/-
Prof. Dr. P.S.N. Rao
Chairman, DUAC

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Summary

Delhi receives between 6,11,750 mm average rainfall but most of it goes down the drain. Rapid urbanisation, rampant concretisation of open areas and rising population have together prevented the rainwater from seeping to the ground. Extreme groundwater extraction has already depleted the water table across the city.

The city has around 15 structurally surviving baolis/ stepwells. These little known, presently less popular architectural marvels have been used for centuries to store and draw underground water for daily needs.

Presently these baolis are in a state of neglect. They have been used to dump waste, carry polluted water or have dried up. One of the key factors contributing to the present state of Baolis is the lack of knowledge about their presence, location, architectural relevance and use.

With the swarming population to cater to, these baolis should be revived. Some of them would need cleaning up of waste, restoration or even the revival of its source by rain water harvesting or other measures.

1.1 Water and its Significance

Water has been a crucial resource. It has shaped civilisations. Ever since history man has been harvesting, storing and channelling water for his survival. Kings have known to leave behind their palaces and shift capitals due to the lack of water: Fatehpur Sikri and Tughlaqabad are good examples. Gradually man learnt to move water into the cities.

This ability to move water on a mass scale has been both a blessing and a curse for modern civilizations. It has allowed cities to grow to unimaginable size. From reservoirs and aqueducts to pressurized pipe systems and simple rain barrels, humans have spent countless centuries perfecting the science of collecting, storing and transporting one of our most precious resources: water. The need to tap ground water, store rain water and to make it accessible to the human population has led to the construction of several tanks, wells & stepwells. These are one of the most fascinating and aesthetically pleasing examples.

The ancient stepwells of India, which are, as the name implies, man-made wells or ponds that are equipped with steps that lead down to the water table. Numerous tanks & Baolis/ stepwells were commissioned by the ruling clans in which water was collected mainly during the rainy season and was then used throughout the year by the people in the neighbourhood.

Historians say that there were over a hundred baolis in Delhi towards the start of the 20th century, at least one baoli in each of the medieval settlement of Delhi, many boast more than one. Today only about 10-15 baolis have survived urbanization. Many baolis were lost or filled in completely due to large scale construction. Apart from the bigger baolis like Agrasen ki baoli or Rajon ki baoli, etc., there were many small baolis from the Tughlaq, Lodi and Mughal times.

1.2 Aims & Objectives

In the present day scenario, the Baolis of Delhi have reduced to being relics of the bygone era with no relevance in terms of functionality.

Aim

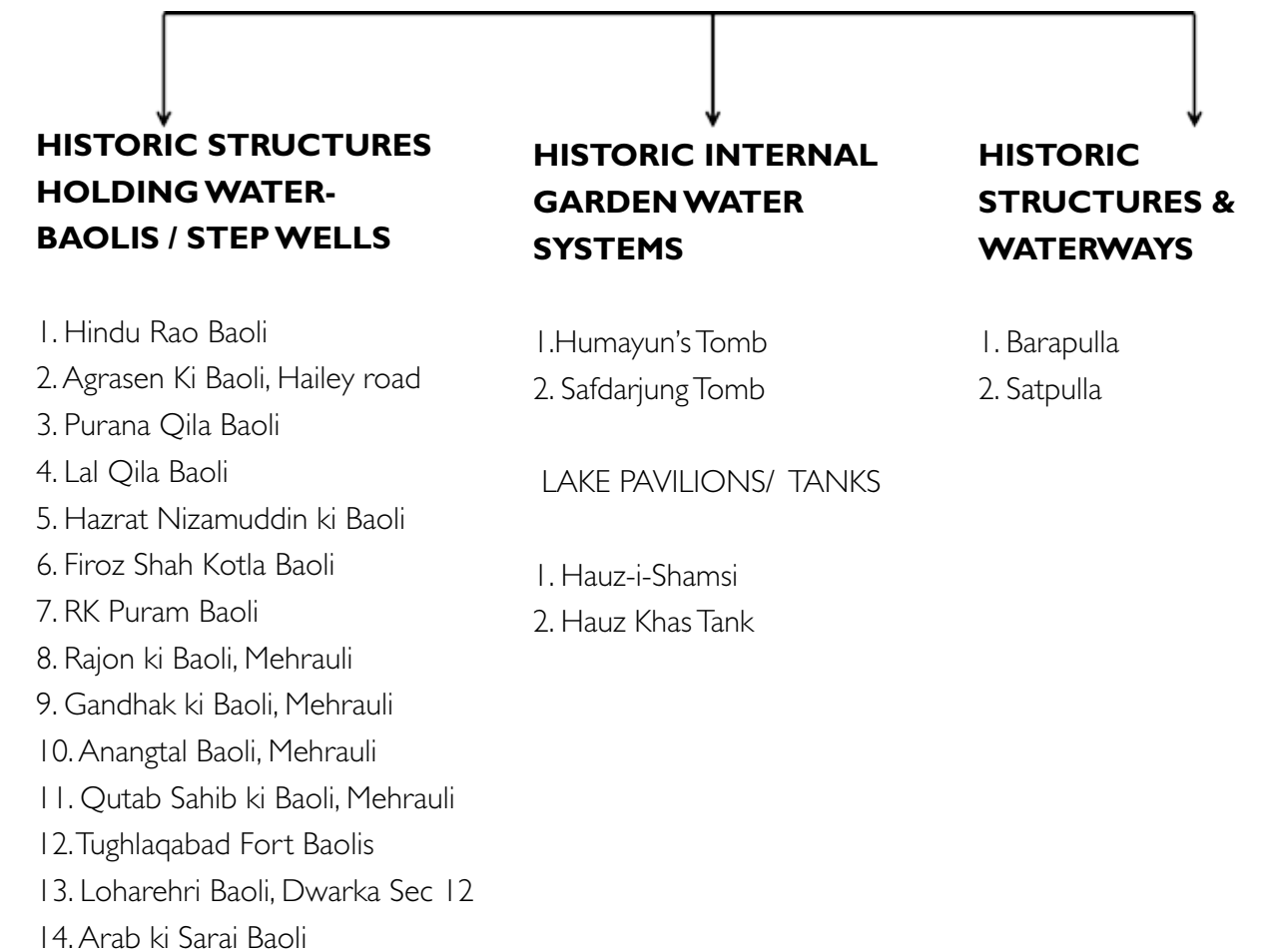
Document the few existing baolis of Delhi in order to analyse the present condition of the structure, the water system and its precincts.

Suggestive Guidelines for Rejuvenation of Baoli precincts and integration with the urban fabric.

Objectives

- Creating public awareness about the historic and architectural relevance of these baolis in order to save these baolis from urban pressure, deterioration and neglect.
- Rejuvenating the baoli precincts and creating safe spaces.
- Reviving these water systems so as to recharge the ground water.

1.3 Classification of Historic Structures Associated with Water





2. Historic Structures Holding Water: The Baolis

- Introduction
- Evolution
- Source of water
- Traditional knowledge System: Construction of Stepwells
- Baolis- space for social gathering
- Typology
- Architecture of the Baolis
- Baolis today
- Causes of deterioration- Present Scenario
- Restoration
- Existing Baolis of Delhi- Timeline

2.1 Introduction

Baolis or Stepwells are wells or ponds in which the water may be reached by descending a set of steps. They may be covered and protected and are often of architectural significance.

They are most common in arid north-western India due to scarcity of water. The construction may be utilitarian, but sometimes includes significant architectural embellishments. All forms of the stepwell are examples of the many types of storage and irrigation tanks that were developed in India, mainly to cope with seasonal fluctuations in water availability. A basic difference between stepwells on the one hand, and tanks and wells on the other, was to make it easier for people to reach the ground water, and to maintain and manage the well. At places, separate Baolis were constructed for drinking & bathing purposes. They were often constructed close to mosques and temples. People washed and bathed before prayers. Some hindu ceremonies were performed at the baolis by women who prayed and made their offerings here. Some baolis were designed only for the purpose of water storage, others to provide shelter to travellers & caravans in the dry seasons when the water level receded. These baolis were designed with rooms on the higher floors with a colonnaded veranda.

2.2 Evolution:

Rudimentary stepwells first appeared in India between the 2nd and 4th centuries A.D. born of necessity in a capricious climate zone bone-dry for most of the year followed by torrential monsoon rains for many weeks. It was essential to guarantee a year-round water-supply for drinking, bathing, irrigation and washing, particularly in the arid states where the water table could be inconveniently buried ten-stories or more underground. Over the centuries, stepwell construction evolved so that by the 11th century they were astoundingly complex feats of engineering, architecture, and art. By the 19th-century, several thousand stepwells in varying degrees of grandeur are estimated to have been built throughout India, in cities, villages, and eventually also in private gardens where they're known as "retreat wells". But stepwells also proliferated along crucial, remote trade routes where travellers and pilgrims could park their animals and take shelter in covered arcades. Once Muslim rulers began to dominate in India (dates differ depending on the area) stepwells shifted in their design both structurally and decoratively. Hindu builders used trabeated (or post and lintel) construction with corbel domes, Muslims introduced the arch and "true" dome. Hindu artists carved sculptures and friezes packed with deities, humans, and animals while Islam forbade depictions of any creatures at all. Under the British Raj, stepwells were deemed unhygienic breeding grounds for disease and parasites and were consequently barricaded, filled in, or otherwise destroyed.

2.3 Source of Water

These step wells are generally dependent on the recharge from the aquifer or nearby surface water sources viz. village ponds, streams, canals and in some cases nearby rivers. The location of these ancient wells found to be unique in the sense that even during dry period of the year most of these wells have water in them, highlighting the ancient wisdom of craftsmen in those days. Most of these wells are part of phreatic aquifers of various formations such as alluvial, basaltic, phyllite etc

2.4 Traditional Knowledge System: Construction of Stepwells

Construction of stepwells involved not just the sinking of a typical deep cylinder from which water could be hauled, but the careful placement of an adjacent, stone-lined "trench" that, once a long staircase and side ledges were embedded, allowed access to the ever-fluctuating water level which flowed through an opening in the well cylinder.

In dry seasons, every step – which could number over a hundred - had to be negotiated to reach the bottom story. But during rainy seasons, a parallel function kicked in and the trench transformed into a large cistern, filling to capacity and submerging the steps sometimes to the surface. This ingenious system for water preservation continued for a millennium.

In many wells covered "pavilions" punctuated each successive level, accessed by narrow ledges as the water level rose, and providing vital shade while also buttressing walls against the intense pressure.

For this same reason, most stepwells gradually narrow from the surface to the lowest tier underground, where the temperature is refreshingly cool. By building down into the earth rather than the expected "up", a sort of reverse architecture was created and, since many stepwells have little presence above the surface other than a low masonry wall, a sudden encounter with one of these vertiginous, man-made chasms generates both a sense of utter surprise and total dislocation. Once inside, the telescoping views, towering pavilions, and the powerful play of light and shadow are equally disorienting.

The builders of the stepwell employed their most skilled artisans in the erection of this monument. The practice of digging wells in memory of the dead king was a widely prevalent tradition in the ancient times described in the inscriptions. The construction of stepwells follows a unique ingenious method. A well upto the depth of a man's height is dug. Then a circular wooden platform made of non decaying Semal wood, is lowered into the well. A brick wall is erected around the well upwards from the bottom. While the brick wall hardens, further digging is done under the wooden platform, and when the digging is upto a depth of a man, the wooden platform is lowered again. In this method of construction, the veneer becomes thicker and the well becomes narrower as the depth increases. This is done till the water is reached. To counteract the forces on the three quarters of the circumference of the stepwell, buttresses were built on both sides of the staircases behind the veneer.

2.5 Baolis- Space for Social Gathering:

Considering that fetching water was (and is still) assigned to women, the stepwells would have provided a reprieve in otherwise regimented lives, and gathering down in the village baoli was surely an important social activity.

2.6 Typology:

Stepwells fall into categories based on their scale, layout, materials, and shape: they can be rectangular, circular, or even L-shaped, can be built from masonry, rubble or brick, and have as many as four separate entrances. But no two are identical and - whether simple and utilitarian, or complex and ornamented - each has a unique character.

Based on the Architectural form, the stepwells in Delhi can be broadly classified as:

- a. Stepwells with straight stepped corridor and a single entrance: This typology of stepwells is characterized by a single entrance. These stepwells have lateral stairs which reduce the length of the corridor and help in reaching the lower levels more quickly.
- b. L-shaped Stepwells : It has an L shaped plan and the stepped corridor turns at right angles. This is the
- c. Circular Stepwells: Baoli at Firoz Shah Kotla is the only baoli in Delhi with a circular form.
- d. Stepwells with Two Straight Stepped Entrances: Baoli at Red Fort

Much depends on where, when, and by whom they were commissioned, with Hindu structures functioning as bona-fide subterranean temples, replete with carved images of the male and female deities to whom the stepwells were dedicated.

These sculptures formed a spiritual backdrop for ritual bathing, prayers and offerings that played an important role in many Hindu stepwells.

2.7 Threats to Baolis - Urban Pressure:

The primary causes of deterioration of this stepwell are:

- a. The flooding and piling up of debris in the well
- b. Collapse of structures
- c. The silting process which causes precipitations on the original stone structures
- d. Weathering of stone due to the underground microclimate



Rectangular baoli with single entrance, Rajon ki Baoli, Mehrauli



Circular baoli at Firoz Shah Kotla Fort
IMAGE SOURCE: <http://www.inditales.com>



L-Shaped baoli, Arab ki sarai

e. Encroachment:

In various situations, the encroachment is so pervasive that it prevents the penetration of sunlight into the water tank (penetration of light upto 50 feet is a prerequisite to keep the water free from biologically harmful algae and bacteria).

Most of the baolis like the one near Nizamuddin ki dargah, Gandhak ki baoli & Hindu Rao hospital Baoli have construction towering over the edges of the baoli walls. Some of the new constructions even share walls with these historic structures. Neglect, Garbage dumping and sewer flow from the surrounding development has further deteriorated the baolis.

f. Pressure on resources:

Increasing demand of water and lowering of water levels have made the wells defunct.

g. Rapid construction & increase in paved areas:

Rapid increase in paved areas and construction has reduced the soft/ green area for percolation of rain water which used to recharge the water table. This has led to the drying up of wells.

h. Ownership:

Baolis in the states of Gujrat & Rajasthan are owned and maintained by the community. The sense of ownership has kept the Baolis alive. Whereas in Delhi, these structures lie under MCD or NDMC limits, their structure is either restored by ASI or by INTACH and gets fenced off and the locals do not associate with it.

i. Lack of Information & the resources available:

This lost heritage finds vague mention on Government and tourism websites, they are usually mentioned in blogs which might not be a reliable source of information.

2.8 Reasons for the Degradation of Baolis - Present Scenario:

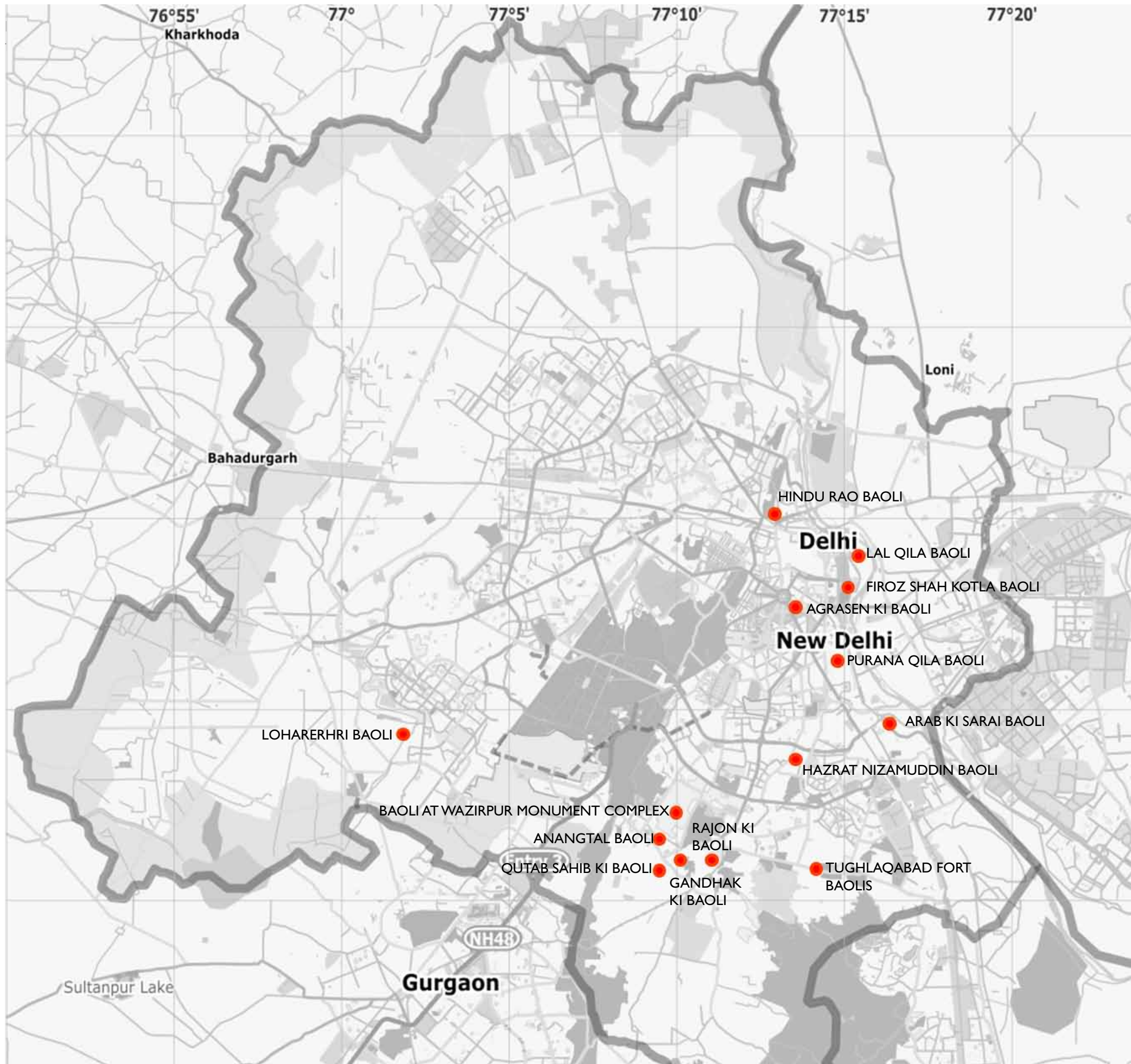
As for the current state of stepwells, a hand-full are in relatively decent condition, particularly those few where tourists might materialize. But for most, the prevailing condition is simply deplorable due to a host of reasons.

Stepwells were quite common in India until the British arrived and had a lot of them closed down due to unsanitary conditions.

“Modern” substitutes like village taps, plumbing, and water tanks also eliminated the physical need for stepwells, if not the social and spiritual aspects. As obsolescence set in, stepwells were ignored by their communities, became garbage dumps and latrines, while others were repurposed as storage areas, mined for their stone, or just left to decay.

Depleted water-tables from unregulated pumping have caused many of the wells to dry up, and when water is present, it's generally afloat with garbage or grown over with plant-life from lack of attention.

2.9 Existing Baolis of Delhi - Timeline



Delhi had about 100 or more Baolis, of which only about 15 have survived. Many were lost over the years, while some were discovered, preserved and restored.

10TH CENTURY

- Anangtal Baoli

12TH CENTURY

- Qutab Sahib ki Baoli

13TH CENTURY

- Gandhak-ki-Baoli
- Firoz Shah Kotla Baoli
- Tughlaqabad Fort Baolis
- Hindu Rao Baoli
- Nizamuddin ki Baoli

14TH-15TH CENTURY

- Agrasen ki Baoli
- Wazirpur Monument Complex, RK Puram Sec 5
- Purana Qila Baoli
- Lal Qila Baoli

16TH CENTURY

- Rajon ki Baoli
- Loharheri Baoli
- Arab ki Sarai Baoli



3. The Existing Baolis of Delhi : Mapping & Analysis

- Anangtal Baoli, Mehrauli
- Qutab Sahib ki Baoli, Mehrauli
- Gandhak ki Baoli, Mehrauli
- Firoz Shah Kotla Baoli
- Tughlaqabad Fort Baolis
- Hindu Rao Baoli
- Hazrat Nizamuddin ki Baoli
- Agrasen Ki Baoli, Hailey Road
- Baoli at Wazirpur Monument Complex, R. K. Puram Sector V
- Purana Qila Baoli
- Lal Qila Baoli
- Rajon ki Baoli, Mehrauli
- Loharehri Baoli, Dwarka Sec 12
- Arab ki Sarai Baoli

3.1 Anangtal Baoli

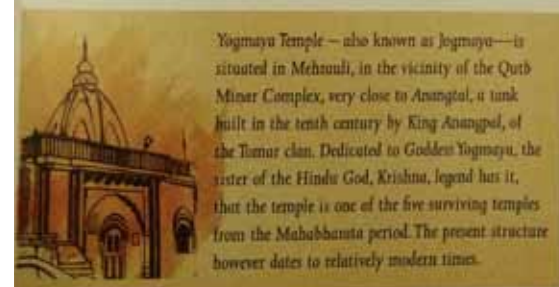
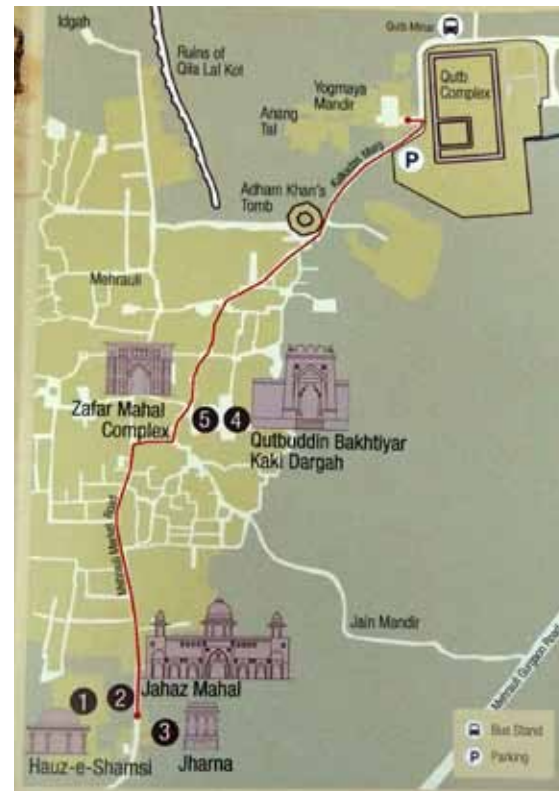


1. LOCATION:

Behind Jog Maya temple, Mehrauli

2. HISTORICAL BACKGROUND:

- Anangtal is the oldest Baoli in Delhi, and according to a few historical sources, located in Mehrauli which was also known as Yoginipura. Anang Tal literally means reservoir provided by Anang Pal of the House of Tomar.
- It was constructed in the 10th century AD, under the reign of Anangpal Tomar the Second, the great-grandfather of the illustrious Prithviraj Chauhan. Legend has it that the king commissioned the construction of many such baolis, big and small, all over his kingdom, at the behest of his favourite courtesan whose family of meagre means died of thirst and impoverishment.
- Apparently, the queens would hold an annual event for alms-giving next to the baoli, at the behest of the king. This is all that is known about the baoli that has escaped the notice of several plans for renovation and preservation, and lies beyond the purview of the Mehrauli Archaeological Park.



Yogmaya Temple — also known as Jogmaya — is situated in Mehrauli, in the vicinity of the Qutub Minar Complex, very close to Anangtal, a tank built in the tenth century by King Anangpal, of the Tomar clan. Dedicated to Goddess Yogmaya, the sister of the Hindu God, Krishna, legend has it, that the temple is one of the five surviving temples from the Mahabhanata period. The present structure however dates to relatively modern times.

IMAGE SOURCE: Delhi heritage brochures by intach

3. ACCESS:

The Baoli is accessed through the garbage heaps behind the Jog maya temple.

4. PRESENT SITUATION:

- Over the years the baoli has got buried under the layers of soil and dense vegetation has cropped over it.
- The baoli finds a vague mention on travel sites and unpublished reports.
- There is an absence of any access routes to the baoli.
- There are no signage indicating the existence of any such structure and the locals are unaware.

5. RECOMMENDATIONS:

- Over the years the baoli got buried under layers of earth and a thick jungle. There are no traces of Baoli. Through 3d scans, the structure has to be located and excavated out.
- Restoration of the structure
- Recharge of aquifer
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed at places in the campus and approach roads.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.

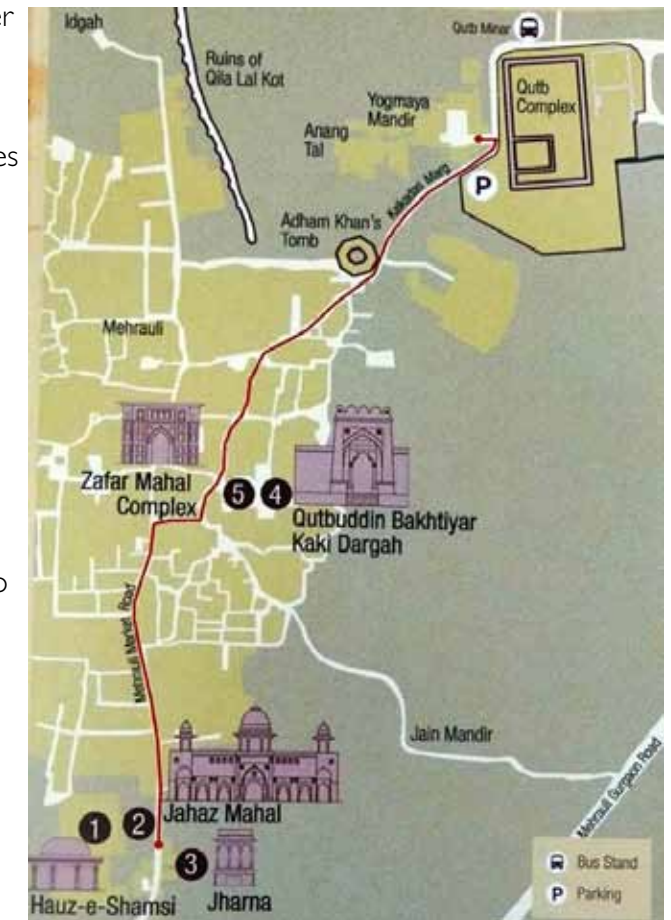


IMAGE SOURCE: Delhi heritage brochures by intach



IMAGE SOURCE: BehtarDilli Blog - WordPress.com

3.2 Qutub Sahib Ki Baoli

1. LOCATION:

The Baoli is located within the complex of the Qutubudin Bakhtiyari Kaki ki Dargah in the Mehrauli village and about 400m from the Adham Khan. The approach to the Qutub Ki Baoli is in Mehrauli near Main Mehrauli Bus Stand, it is 1 and 1/5 km from Adam Khan's tomb and near Gandhak Ki Baoli.

2. HISTORICAL BACKGROUND:

•The Baoli was constructed by Iltutmish in 12th century A.D. for the Qutubuddin Bakhtiyar Kaki. & is named after Qutb Sahib who had held high esteem and has been highly regarded for centuries, as he was the disciple and spiritual successor of Khwaja Mu'inu'd Din Chishti of Ajmer. (<http://delhi.gov.in>)

The dargah has many other structures like the assembly house, robe chamber, mosque, drum house tanks and several imposing gates. The Baoli covers an approximate area of 377 sqm and a depth of about 23m. It is constructed of the quartzite stones with lime mortar.



IMAGE SOURCE: BehtarDilli Blog - WordPress.com

3. ACCESS:

The Baoli is accessed through the wuzu area of the Dargah leading to an open terrace. There are graves located on this level from where the steps lead to the lower level to access the Baoli.

4. REVIVAL OF QUTUB SAHIB KI BAOLI

The aim of project is to conserve the architectural glory as well the various significance associated with the historic Baoli so that it is preserved for future generation. De-silting and restoration of Qutub Ki Baoli will also entail to the continued original use of the Baoli with the adjacent dargah.

5. PRESENT SITUATION:

Currently the baoli, is covered on all sides and is hardly visible. Though referred to as sacred by the visitors of the dargah, but still used as a dump bin.

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Restoration of the structure: The structure of the baoli is in a state of distress
- Removal of encroachments: There is an immense pressure on the Baoli walls due to encroachment from the adjoining houses which share a common wall with the baoli. The encroachment should be removed so that it does not damage the walls further.
- The baoli lies just behind the dargah which restricts the entry, it should be made accessible to the general public
- The baoli should be cleaned from the garbage and the sewerage accumulated and no further dumping should be allowed. Sewer from the adjacent buildings should not drain into the baoli.
- Public awareness: Creating awareness through Heritage walks and documentations would also generate a sense of importance of the baoli within the neighborhood. This would prevent the disuse of the structure.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed at places near the Mehrauli Archeological Park and approach roads.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.
- The baoli walls are adorned with arches, it should be illuminated. (SOURCE:WWW.INDIA.GOV.IN)

3.3 Gandhak Ki Baoli: Mehrauli Archeological Park



LOCATION:

Mehrauli Archeological Park

2. HISTORICAL BACKGROUND:

In the book The Delhi That No-one Know, Ronald Vivian (RV) Smith describes the origins of Gandhak Ki Baoli.

- Gandhak Ki Baoli was constructed during the reign of Sultan Samshuddin Iltutmish (1296 – 1316) and legend has it during a visit to Sufi saint Hazarat Qutubuddin Bakhtiyar Kaki Iltutmish found that the Mehrauli area suffered from acute water shortage and the saint was not able to have regular baths. This led to the construction of the step well, which came to be known as Gandhak Ki Baoli.
- As the name Gandhak implies, the water in the step well has sulphur content and hence smells of sulphur fumes, and the water is said to have curative quality.
- It has a simple plan with five stages or floors at each stage, in taper down fashion, with steps leading to the water surface at the lowest level. The stairway here is about 40 metres (130 ft) long and 12 metres (39 ft) wide. On each floor there are ornate pillared passages.



3. ACCESS:

- The step well can be accessed by walking through the Mehrauli archeological trail. It is located at the edge of the Archeological park
- The baoli is fenced and locked off.

4. STATUS:

protected monument by the Archaeological Survey of India (ASI)

5. RESTORATION:

- Over the centuries the step well got silted up and recently ASI initiated action to do de silting.
- The de silting operations carried out by ASI in 2004–05 has resulted in recuperation of the water in the well to a depth of 40 feet (12 m)..

6. PRESENT SITUATION:

- The monument lies in a dilapidated state, in need for conservation & public awareness.
- It collects water in the lower levels during the monsoons.
- Debris lies in the topmost section of the steps, making it .
- The water is also filthy & the moss makes the stones slippery.
- The baoli has not remained untouched by the urbanization pressure exerted by an ever expanding congested neighbourhood and while its periphery has been wedged in by high iron railings, the entire area around has been engulfed by thickly populated residences and shanties

7. RECOMMENDATIONS:

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Removal of encroachments:The baoli sits in a tight urban fabric with construction coming up right upto the walls of the baoli.Tea stalls, cycle repair shops etc. are cropping up on the edges.
- The baoli should be cleaned from the garbage and the sewerage accumulated and no further dumping should be allowed
- Improving access to the baoli:A narrow congested road leads to the baoli. It can also be accessed from the rear side of the Mehrauli Archeological Park through a dirty, garbage dumped trail. Defined access to the structure will invite more visitors.



The Rainfed Baoli is used by the locals

IMAGE SOURCE:Pixelated Memories



Baoli during lean period

IMAGE SOURCE:
https://en.wikipedia.org/wiki/Baolis_of_Mehrauli

- Public awareness: Creating awareness through Heritage walks and documentations would also generate a sense of importance of the baoli within the neighborhood.This would prevent the disuse of the structure.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed at places in the Mehrauli Archeological Park and approach roads.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.

**3.4 Firoz Shah Kotla Baoli**

IMAGE SOURCE:Delhi heritage brochures by INTACH



IMAGE SOURCE:<http://yamunariverproject.org>

1. LOCATION:

Firoz Shah Kotla Fort

2. HISTORICAL BACKGROUND:

Firoz Shah Kotla baoli was built as a part of the fortress by Firoz Shah Tughlaq. This Baoli served as a summer retreat for the Royalties where they spent time cooling off and bathing in the water of this well. The circular baoli with a triangular base lies towards the north western side of the Ashokan Pillar and in the heart of a large garden constructed in the form of subterranean apartments and a large underground canal built on its eastern side through which the water runs into the well. This does not have steps leading all the way to the water level, instead a complex pulley system with pipes and channels are there. The circular structure with rooms has often been referred to as a summer retreat for the nobility.

3. STATUS

It is under ASI protection.

4. ACCESS:

The baoli can be accessed through the lawns of Firoz Shah Kotla fort.. Like all the other ASI protected baolis, this too is fenced off and remains inaccessible to the public.

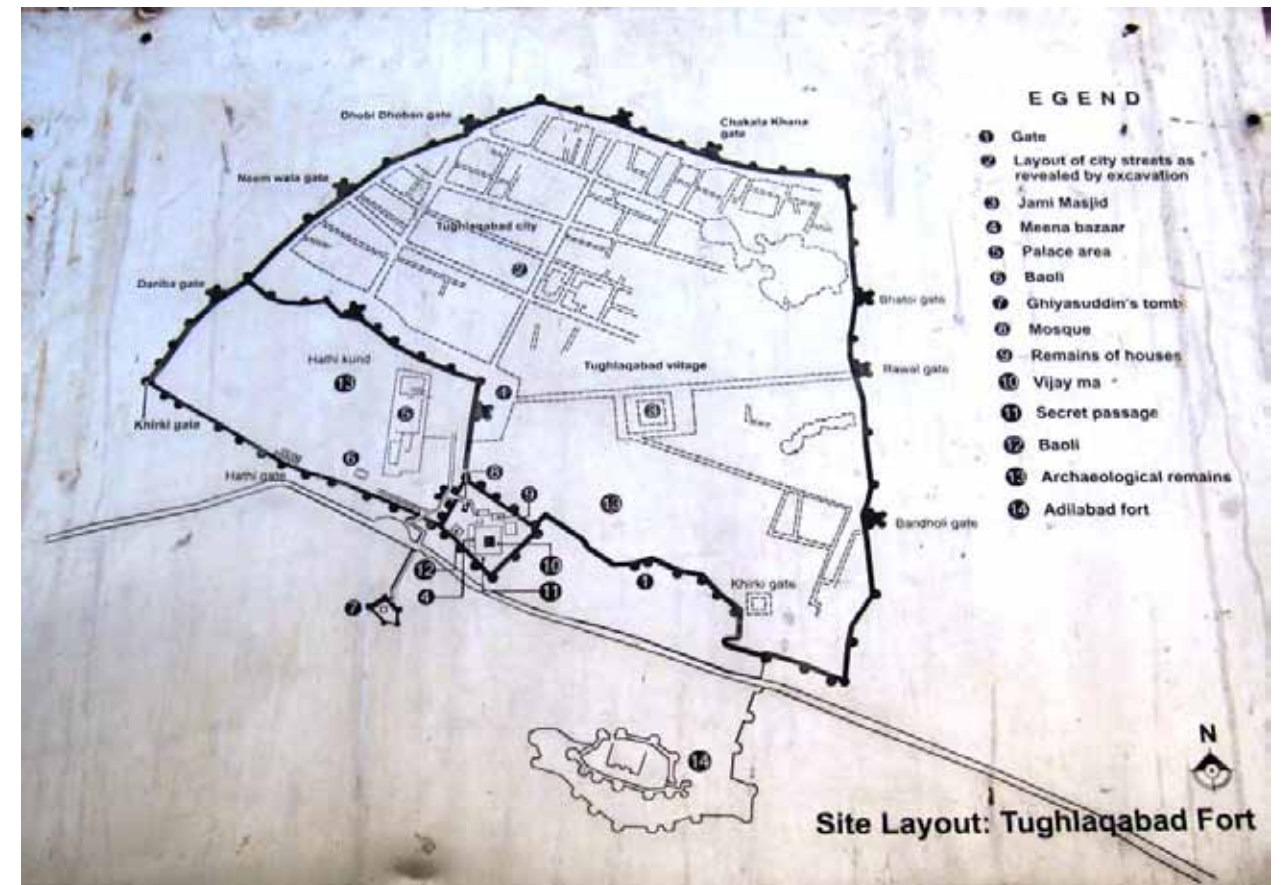
5. RECOMMENDATIONS:

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- The baoli has a superstructure with arches, it should be illuminated
- Being the only circular Baoli, it could be opened up for public access while being manned and could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.



IMAGES SOURCE:
<https://www.google.com/culturalinstitute/beta/exhibit>

3.5 Tughlaqabad Fort Baolis



1. LOCATION:

Tughlaqabad Fort

2. HISTORICAL BACKGROUND:

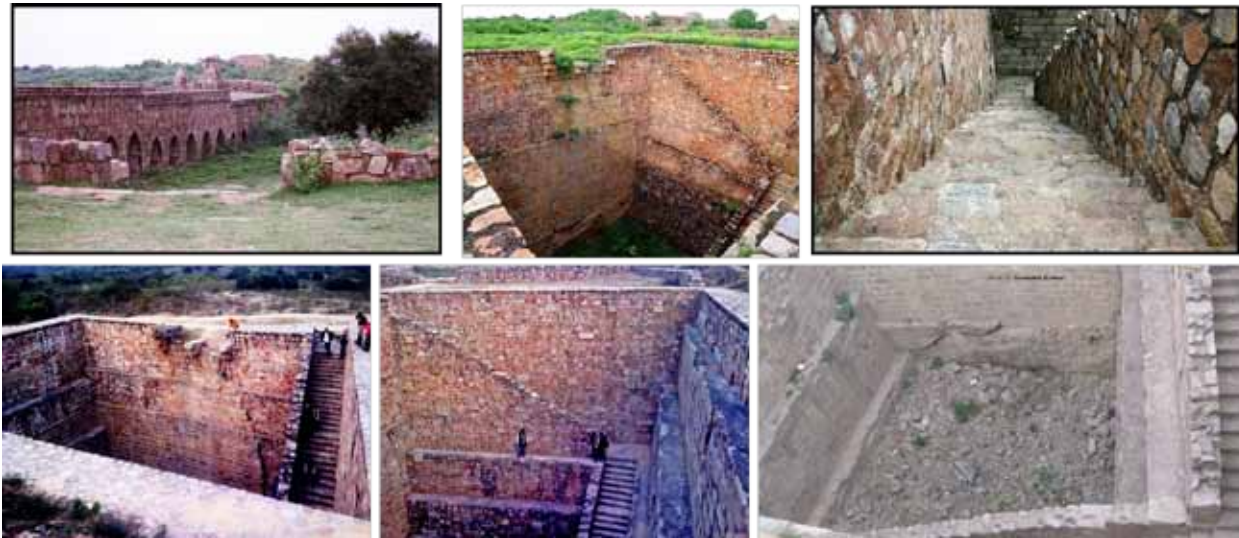
- A fort built by Ghiyas-ud-din Tughlaq, in 1321 AD has its ruins left on a hillock in the southern portion of Delhi. Stretching across 6.5 kms, it lends its name to the Tughlaqabad residential-commercial area. Ghiyas-ud-din was the founder of the Tughlaq Dynasty who established the fifth historic city of Delhi.
- Out of the 13 Baolis which were constructed in the 14th century on the order of Ghazi Malik, only 2 survive till date in the fort. The remaining baolis have died; some ruins still lie in the background of the rural villages but it is strictly prohibited for the locals.
- The existing two baolis are situated on either side of the fort. There is no specific trail to reach the Baolis and the fort is surrounded by dense forest on both sides of it.

3. STATUS

Closer to the outer wall is a baoli that has been excavated and restored by ASI. It is reported to have yielded red sandstone slabs with Arabic inscriptions.

This Baoli is a deep dry ruin, which is not accessible anymore due to its deteriorating condition. It was built in such a manner, adjoining to the queens changing rooms that it can still be spotted from the top, only as a blotch placed in between the thick foliage. The dried Baoli is one of the deepest ones whose end point is not visible due to the wild growth and vegetation found on all four sides, hovering over it along with its boundless depth. The four stonewalls forming the Baoli is not clearly visible in this case.

TEXT SOURCE: <http://www.sodelhi.com>

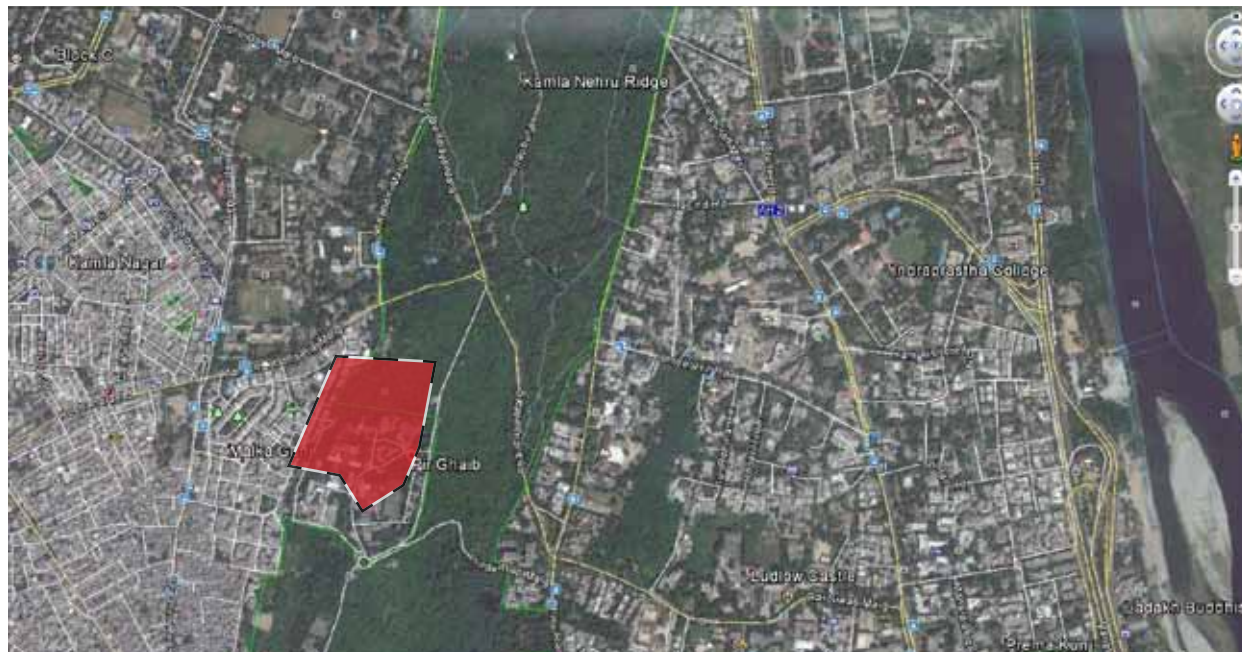


IMAGES SOURCE:
<http://www.sodelhi.com/forts-monuments/tughlaqabad-fort-baolis-tughlaqabad-new-delhi>
 Panoramio - Photos by Surendra Kumar
 TEXT SOURCE: <http://www.sodelhi.com>

4. RECOMMENDATIONS:

- Restoration of the structure: The Baoli lies in an isolated area and is in ruins. The structure to be restored so as to allow access to the baolis.
- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Missing trails connecting the baolis with the other structures of the fort to be revived with Signage and seatings to ensure a safe experience to the visitors.
- The precincts to be cleared of vegetative overgrowth.
- Visitor centre and with provisions for information and safety to be provided in the precincts

3.6 Baoli at Hindu Rao



I. LOCATION:

Radiology and Imaging Department , Hindu Rao Hospital, Hindu Rao Marg, off Rajpur Marg, Civil Lines (immediately adjacent to western entrance to Hindu Rao Hospital) ordered a guard to be posted here permanently.



2. HISTORICAL BACKGROUND:

Tughlaq-era baoli, was built by Feroz Shah Tughlaq in 1354. It was the only source of water for the British officers and soldiers during the revolt of 1857. Afraid that the Indian sepoys in the British army might poison the water, British officer Major Kerrines ordered a guard to be posted here permanently.

3. STATUS:

Being listed by ASI, it also graded as Archaeological Value A in “Delhi The Built Heritage: A Listing” by the Indian National Trust for Art and Cultural Heritage (INTACH). The blue-board declaring its status is missing.



4. ACCESS:

- The Baoli has been fenced and locked making it inaccessible.
- A fence has been built on top of the historic wall of the “baoli.



5. SURROUNDING/ EDGES:

Flanked by the Radiology & Imaging Dept. of Hindu Rao Hospital on two sides & roads on the other sides

6. PRESENT CONDITION:

- A 200-metre tunnel was discovered leading from the north wall of the baoli having ventilation shafts and doorways, but the purpose for which it was built is not known.
- Almost completely covered under a mini-jungle, its features are lost in the green leaves of the pipal tree growing in the middle.



Portions of the facade have also collapsed over the years, though the structure still has striking architectural features



The structure is deteriorating & is in a state of neglect.



The water reservoirs and remains of drains, etc., were intended for supplying water to the Kushk-i-Shikar or jahan-Numa palace of Firoz Shah.



Accumulated stagnant water & the vegetative outgrowth is further decaying the baoli

7. RECOMMENDATIONS:

- Restoration of the structure: The structure of the baoli is in a state of distress; with the broken steps and edges, it becomes inaccessible.
- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- The Baoli should be rendered free of all the vegetative overgrowth so that it does not damage the structure.

- Sewer from the adjacent buildings should not drain into the baoli.
- All the Services pipes running from inside the baoli should be rerouted.
- The baoli should be cleaned from the garbage and the sewerage accumulated and no further dumping should be allowed.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed at places in the campus and approach roads.
- Removal of encroachments.
- The baoli has a superstructure with arches, it should be illuminated so that it is visible during the night.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.

3.7 Hazrat Nizamuddin Baoli**1. LOCATION:**

The baoli is situated in Nizamuddin west attached to the Hazrat Nizamuddin dargah.

2. HISTORICAL BACKGROUND:

- It is over 160 feet deep, built in 1321-22.
- At the time when Ghiyas-ud-din had commissioned work on his massive fortress-citadel that was to be known as Tughlaqabad after his dynasty's nomenclature, labourers and masons were already absorbed in the construction of Hazrat Nizamuddin's baoli.



•The sultan decreed that all workers would henceforth work only on the construction of his fortress and not take any other projects till it was completed. Out of respect & adoration for the saint, the devout workers began working on the fortress during the day and on the baoli during the night. Enraged, Ghiyas-ud-din banned the sale of oil for lighting the lamps – Sheikh Nizamuddin overcame this obstacle by blessing the baoli’s water and asking his workers to light their lamps with it – miraculously, the lamps lit up with ordinary water.

3. STATUS:

The baoli is an ASI protected monument..

4 ACCESS:

Three sides of the baoli are surrounded by walls and one side has a flight of stairs leading to the water:

The side which has the stairs has a gate which is locked from time to time during the day to prevent overcrowding the baoli.



Old Images & sketches of the Baoli
Image Source: Pixelated Memories - Hazrat Nizamuddin Baoli in 1858 from Illustrated London News

5. THREATS:

- The Baoli sits in a tight urban settlement with buildings around encroaching right up to the edges.
- Several historic structures around the baoli are lost since they have been modified and occupied due to the increasing urban pressure in the area.
- Sewage water from the surrounding houses and the wuzu water drains into the baoli polluting its water:
- Several pilgrims believe that the water is pure n has healing power drink the polluted water of the baoli.
- Though the baoli remains locked most time of the day, children from the neighbourhood areas have been seen diving and bathing into the baoli.

6. RESTORATION:

Recently, the Aga Khan Trust for Culture (AKTC) restored much of the baoli to its original state with LASER SCAN TECHNOLOGY & EXHAUSTIVE GROUND PENETRATING RADAR SURVEY.



Old Images & sketches of the Baoli
Image Source: Pixelated Memories

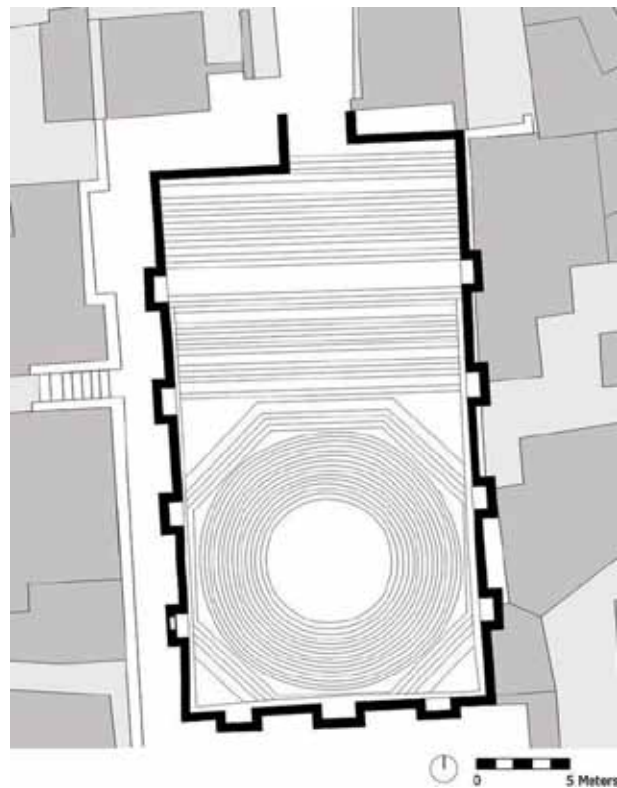
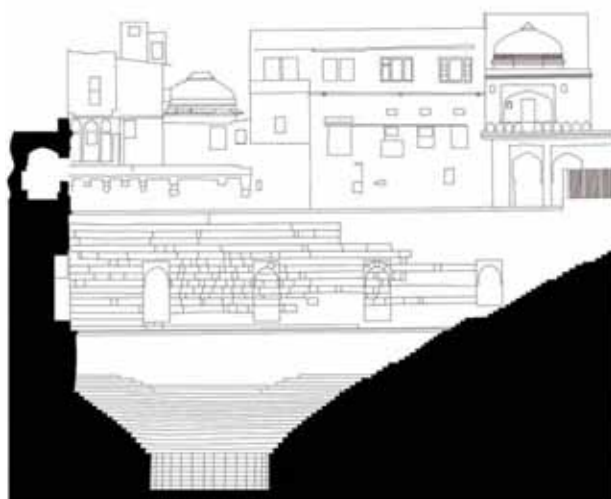


The Baoli stays locked most of the time. The locals & the pilgrims are allowed access inside



The process involved –

- Emptying the tank of its water in order to pump out the sewage & toxic sludge to improve the water quality,
- Relaying leaking sewage lines, rebuilding the collapsed portions,
- Restoration of the arched windows and addition of jaalis (stone lattice screens) on the windows,
- Clearing of the passageways connecting the Dargah and the baoli
- A forgotten passage has also been discovered – it supposedly connects Hazrat Nizamuddin's tomb with the baoli and was used exclusively by the saint and his close associates.
- The underground fountain has also been discovered.
- The rectangular tank is lined with grey Delhi quartzite stone (each stone fragment was X-rayed from multiple directions to spot any voids behind the wall); The gaps where portions of the walls had collapsed or caved in have been filled;
- Passageways connecting the baoli to the Dargah are no longer unkempt, but faced with white plaster and marble that add luster and a certain degree of respect to the once-dilapidated structures (though they are still brimming with beggars who sit/lie against the walls or roam around asking for alms and food). Conservation effort is now focussed on the western facade where in addition to planned conservation works of Gogabai Tomb, Chini ka Burj, alterations to a residential structure are being carried out to restore the arcade seen in archival images.
- Pir Khwaja Ahmed Nizami Syed Bukhari, Sajjadahnashin and Muttawalli, Dargah Hazrat Nizamuddin kindly agreed to push back his residential building standing atop the Baoli by 3 feet – the required space to reconstruct the arcade.



Documentation of the Baoli during the restoration process

Source: Nizamuddin Urban Renewal Initiative
www.nizamuddinrenewal.org/

The AKTC has born relocation costs for shifting several families to alternate housing sites (being provided by the Municipal Corporation of Delhi) and is even paying for their upkeep

Action Taken

Approvals for the major renovations were sought and received from the National Monument Authority, Archaeological Survey of India and the South Delhi Municipal Corporation.

In order to achieve the objectives of seeking three feet depth on the Baoli side, the structure required to be completely dismantled. This was required to be done carefully as several abutting structures were resting on this structure.

Next Steps

Rebuilding of the structure with a facade that does not disfigure the historic character.

Reconstruction of the Baoli arcade and conservation of the Chini ka Burj

Conservation of Gogabai's Tomb



The well of the Baoli during cleaning up



Various images of the Baoli

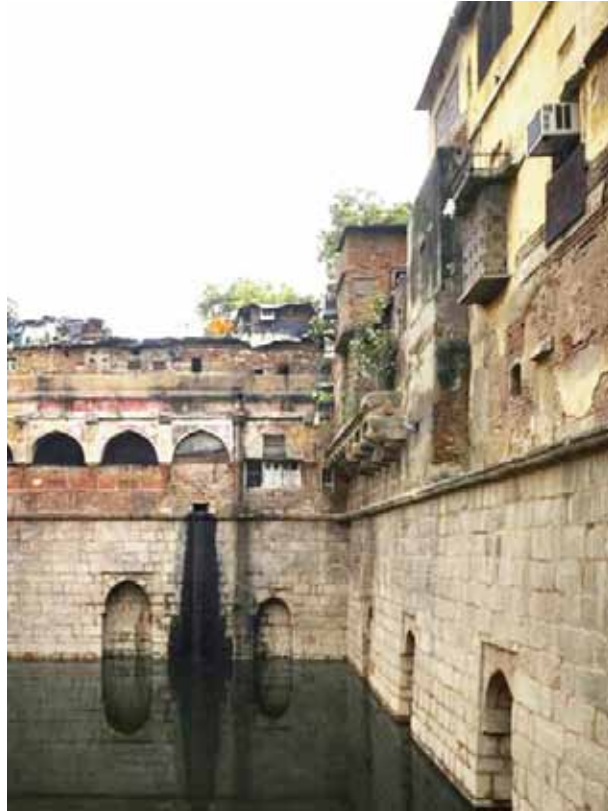


7. PRESENT SITUATION:

- The tombs and the rest of the remaining terrace portion have been severely encroached upon and badly need attention.
- The plaster has mostly disappeared from the walls exposing the bricks and rubble.
- The ornamentation work has also been lost, arches have been filled in with bricks to close them off and make rooms out of tombs.
- Some new construction is also taking place as balconies are being added.
- During the rainy season, there is enough water in the baoli to hide most or its entire stairs while the summers reduce the water level as the temperature rises.

8. RECOMMENDATIONS:

- Recharge of aquifer: Revival and cleaning of the water body on regular basis would activate the baoli and its precincts.
- The baoli should be easily accessible to the general public and not only the pilgrims. Access route to the baoli should be defined since the area is very congested and narrow lanes lead to the water body.
- The baoli should be cleaned from the garbage and the sewerage accumulated and no further dumping should be allowed. Sewer from the adjacent buildings should not drain into the baoli.
- Public awareness: Creating awareness through Heritage walks and documentations would also generate a sense of importance of the baoli within the neighbourhood. This would prevent the disuse of the structure.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed on the approach roads.
- The baoli walls are adorned with arches, it should be illuminated



Water from WUZU and sewer water from the surroundings draining into the baoli



The structures surrounding the baoli are in a state of distress though revival of the old structures and removal of encroachments is still in process

3.8 Agrasen Ki Baoli**1. LOCATION:**

The 14th Century Baoli is located on Hailey lane off Hailey road.

2. HISTORICAL BACKGROUND:

It is not certain who built this step-well, Agrasen ki Baoli, though some credit a king called Agrasen. The Agrasen ki Baoli, named after Raja Agrasen of the Mahabharata, is believed to have been built during the 10th century BC and rebuilt in 14th-century by the Agrawal community which traces its origin to Maharaja Agrasen.

The structure does find mention in the 12th-century Sanskrit work "Pasanahacariu", penned by an Agarawal poet Vibudh Shridhar who resided in Delhi during the reign of the Tomar king Anangpal III (ruled AD 1151-80).

An old map dated 1868 at the National Archives of India in New Delhi, made by British officials, records the now-famous baoli's name as 'Oojer Sain's Bowlee.' The map shows another 'boli to the immediate north-west of Agrasen Ki Baoli. It seems to have disappeared during the urban expansion after 1911, when the capital of India shifted from Calcutta to New Delhi.

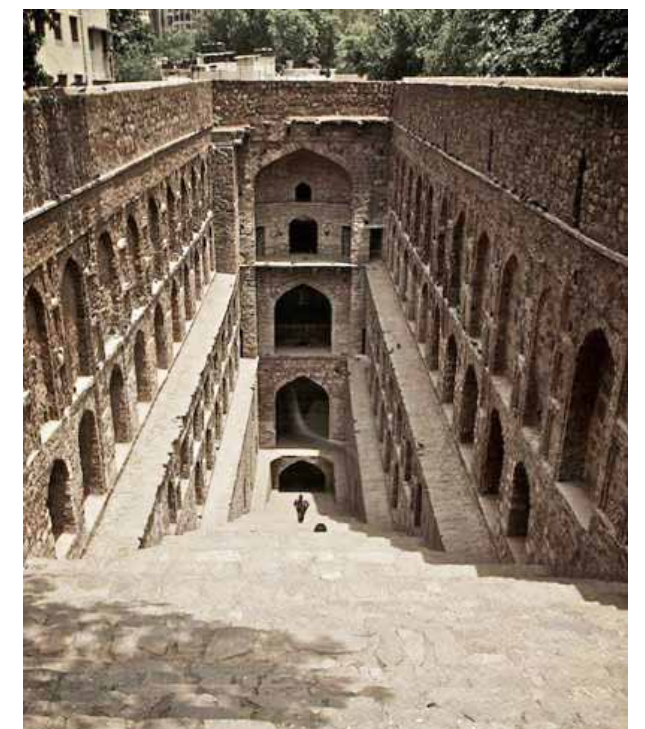
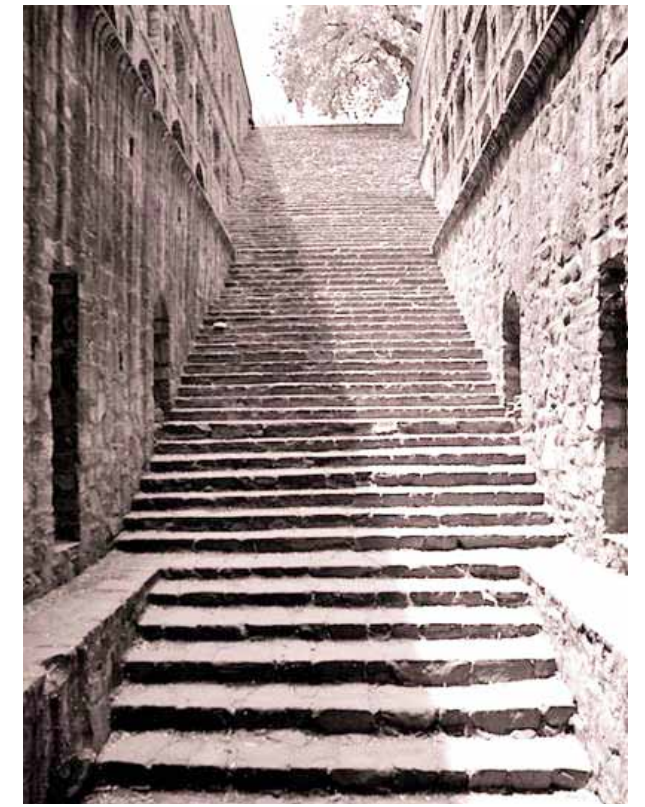
3. STATUS

It is under ASI protection.

4. ARCHITECTURE:

According to Archaeological Survey of India (ASI), Agrasen Ki Baoli measures 58.52 metres x 13.71 meters at ground level.

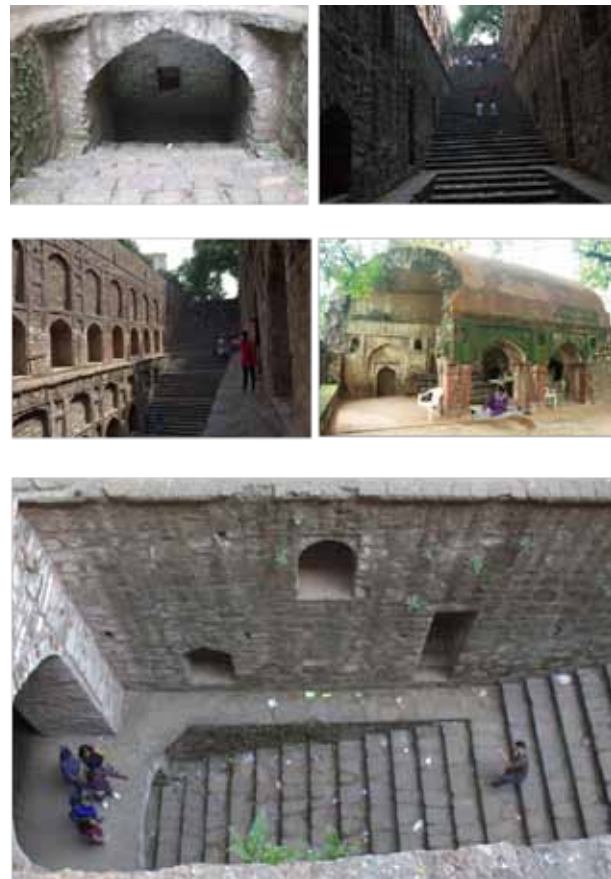
It has been constructed by putting together uneven stone units, usually called 'rubble masonry.' The monument is divided into four levels with a flight of 108 steep steps leading down to the well. The steps are flanked by thick walls on both the sides with two series of arched niches at the first and second levels.



Various images of the Baoli

Each series of niches are divided into two levels — the top level is a shallow ‘false niche’ which seems to be there more for the purpose of design. However, the lower niche is deep and can easily fit two people, serving as a meeting place and providing relief from the heat. There are passages and rooms inside the baoli, which are now locked and inaccessible.

At the northern end of the baoli is a circular well measuring 7.8 meters in diameter. It is covered by iron grills at the top and is connected to the baoli through a shaft. In the past, as the water rose in the well, it would fill the baoli from the bottom to the top level. On the west corner of Agrasen Ki Baoli, above the flight of stairs, is a small mosque. A portion of the roof had fallen off a long time back. Old photos and records have always shown the mosque as we see it today.



Various images of the Baoli

The four pillars made of red sandstone, which support the roof, stand out against the general design of the mosque. The columns, ‘quite unusually’, are carved with Buddhist-chaitya motifs (a chaitya is a Buddhist shrine). The spandrels (the space between the arch and the rectangular enclosure) are decorated with ‘stucco medallions’ (the medallion is made of stucco, a material which is applied wet and hardens into a dense solid when it dries up).

5. ACCESS

The Baoli can be accessed from the by lanes of Hailey road. The structure is fenced and gated, its manned by security guards and is frequently visited.

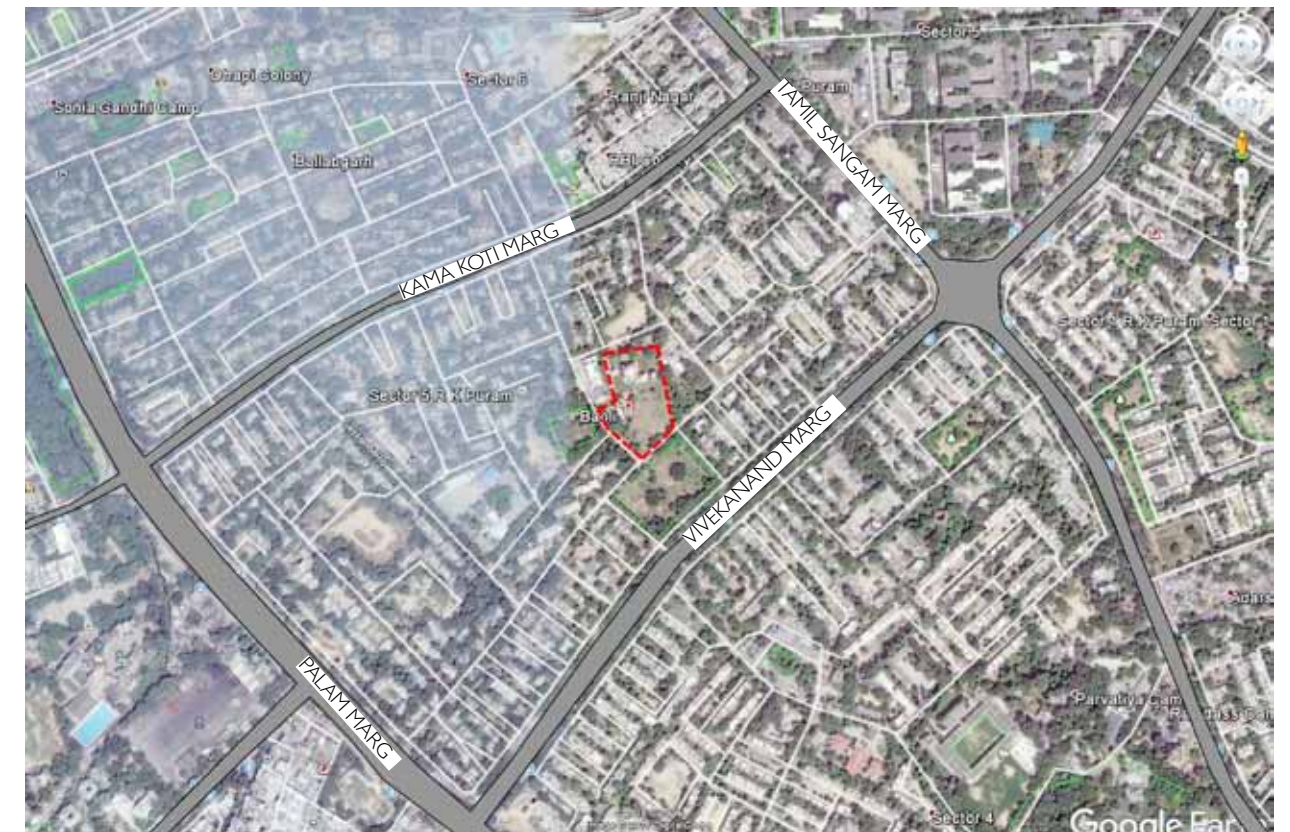
6. SURROUNDINGS/ EDGES

Even though it can be reached easily, Agrasen Ki Baoli remains hidden among the tall buildings, residential societies and bungalows on the periphery of Connaught Place. Photos from the 1920s show vast expanse of open land around the baoli.

7. RECOMMENDATIONS:

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure. Signage indicating the presence and location of the baoli should be installed at places in the campus and approach roads.
- The baoli has a superstructure with arches, it should be illuminated so that it is visible during the night.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts

3.9 Baoli at Wazirpur Monument Complex, R.K. Puram, Sector 5



Map Showing Location of the the Monument Complex at RK Puram, Sector 5 and its approach roads
Base Map Source: Google Earth

I. LOCATION:

Wazirpur Monument Complex,
R.K. Puram Sector– 5, Delhi



Map Showing the Monument Complex at RK Puram, Sector 5and its surroundings
Base Map Source: Google Earth

2. HISTORICAL BACKGROUND:

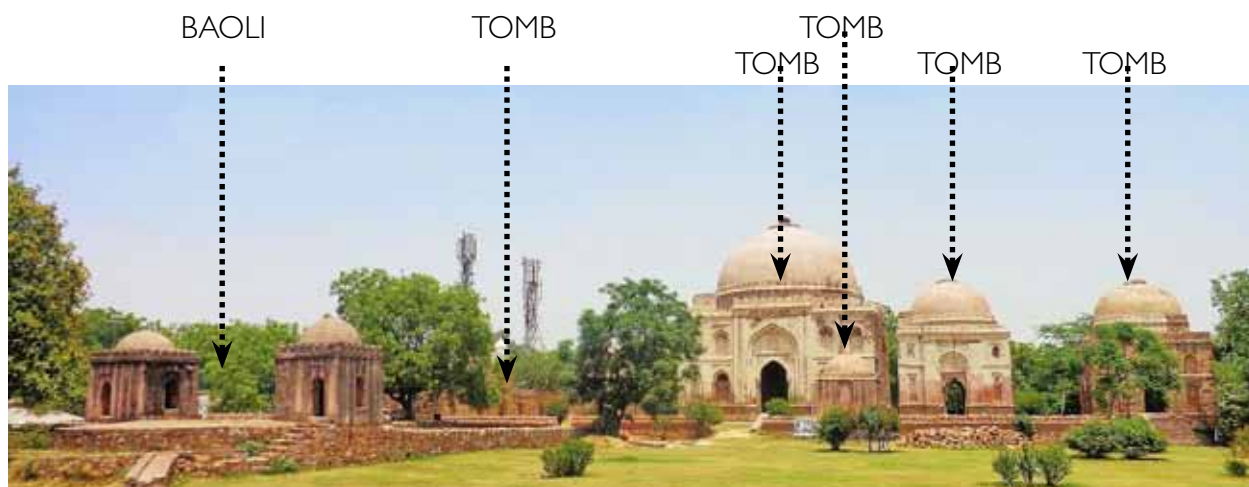
The Monument complex, a congregation of Lodhi-era (AD 1451-1526) rubble-built structures

3. MONUMENT COMPLEX:

Nestled in an extremely small green space that barely defines the boundaries till which the medieval monuments spread out, consists of a cluster of five tombs the identity of whose occupants is unknown, one wall mosque ("qiblas"), a stepwell ("baoli"), a well and two grave platform.

4. STATUS:

Listed by ASI



Images of the site explaining the components of the monument complex
Image Source: <http://pixels-memories.blogspot.in/2014/07/wazirpur-monument-complex-rk-puram.html>



Images of the site explaining the components of the monument complex



Various images of the Qibla- the wall mosque

5. THE MONUMENT COMPLEX:

The smaller mosque is located on a high platform just near the baoli. There is a cenotaph and on one side there is a wall looking towards the west. The western wall is basically the wall mosque facing which the devotees used to offer prayers and it has five "mihrabs" on it, the central one being the largest one.

The walls have signs of colourful design and adorned with calligraphy although much of it has decayed now. The wall is flanked by small bastions and sidewalls although the minarets on the four corners of the mosque as well as the southern wall have collapsed. There are also a couple of graves on an elevated platform and as usual, we are not sure who lies beneath.

source: <http://www.sodelhi.com/forts-monuments/rk-puram-sector-5-baoli-and-wall-mosque-new-delhi>



Images of the site explaining the components of the monument complex



Various images of the monument complex



Steps leading to the Baoli



Water channel emerging from the Baoli

- The shallow baoli, the simplest and smallest seen in Delhi, is a fairly uncomplicated structure and possesses a domed turret on each of the two corners where it emerges from the ground.
- A staircase leads down to the tank level which is filled up with garbage, plastic bottles, polythene and wrappers as well as rubble and construction debris, but incidentally there is not a drop of water.
- Stone-built water channels emerge from the baoli and end mid-stride in the middle of the lawn.

6. RECOMMENDATIONS:

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Removal of encroachments: Removing the squatter settlement, jhuggi and other encroachments around the baoli.
- The monument complex to be made accessible physically and visually with a transparent boundary wall and access gates facing the road.
- The complex to be integrated with the central green in the foreground and linking the greens with pedestrian circulation.
- Strengthening the pedestrian circulation within the complex.
- Signage indicating the name, status and historical relevance of the baoli and other components of the complex like the Tombs, Qibla and well should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed at places in the campus and approach roads.
- The tombs in the complex are visible from the peripheral roads surrounding the sector. These could be illuminated so that people driving by are aware of the historic complex in the vicinity.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.
- Photo walks and public awareness programs can be carried out to bring in people.

3.10 Purana Qila Baoli

1. LOCATION:

Purana Qila.

2. HISTORICAL BACKGROUND:

The fort believed to be the capital of the Pandavas, 5000 years ago, re built by the Afghan king Sher Shah Suri, was perhaps the site of Indraprastha. The fort has three arched gateways and the Bada Darwaza (Big Gate) facing the west, which is the main entry gate, leads directly to the Baoli. The step-well is well placed between the single-domed Qila-i-Kuhna Mosque and the double-storeyed octagonal tower called Sher Mandal

3. STATUS

It is under ASI protection.

4. ARCHITECTURE

Ascending down to 22 metres this stepwell was an important source of water. It could have been the only source.

Since the fort stood on an elevation, the well had to be dug deeper. The structure is designed on the lowest contoured level. A narrow flight of steep 89 steps, separated by 8 landings and going down to a depth of 22 meters, gave way for access to the ground water. The structure was built to keep the water covered and to minimize its evaporation.

Built in sandstone, the position of each landing is marked by recessed niches on side walls. A series of gradually receding arches of various sizes form the roof. The stone is used only as a cladding material in the baoli. It is fenced from all sides and is kept locked 24x7, keeping in mind the safety of people as well as the structure

5. RECOMMENDATIONS:

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- The Baoli is tightly fenced off, with fencing installed right upto the parapet walls of the structure. Though it is being done for security reasons, it limits the visual plane and restricts visual accessibility. The Baoli to be enclosed including a certain width of peripheral area.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.



Various images of the fenced & inaccessible Purana Qila Baoli

3.11 Lal Qila Baoli

1. LOCATION:

Inside the Red Fort Complex in Shahjahanabad.

2. HISTORICAL BACKGROUND:

It is believed that the baoli dates back to Tughlaq-era. Some historians concede that it might have also been used by the inhabitants of Salimgarh Fort that pre-dates the Red Fort and was integrated with the Red Fort itself as a garrison by Shahjahan. Shahjahan extensively renovated the baoli to suit his fine tastes. It is an accepted fact that Red Fort was built on the ruins of earlier city, hence, there are many chances of its existence prior of construction of Red Fort.

The British when they occupied the fort converted the chambers into jail rooms. Officers P.K. Sehgal, Shah Nawaz Khan & G.S. Dhillon – the heroes of the Indian National Army (INA) were incarcerated here in 1945-46 during the course of their trial. After the British left, the baoli came under the control of Indian Army and then the CRPF. It was allowed to be reclaimed by vegetation and weeds and put to use as a dump yard.

3. STATUS

Archaeological Survey of India (ASI) took it from the CRPF in 2002 and restored it.

ASI dismantled the toilets and other additions built within the baoli by the British. A 2002 Times of India report noted that it would be converted into a tourist-cum-cultural spot, honouring the heroes of the INA and the freedom struggle.



Images of Lal Qila Baoli

Image source: :Delhi Heritage Walks with Sohail Hashmi - WordPress.com

4. ARCHITECTURE

It has a distinct structure with stairs from two sides at 90 degree capping at the circular water pit bounded by the rectangular ledges. The stairs of the baoli are slightly elongated as compared to other making it easier and comfortable to access.



Images of Lal Qila Baoli

Image source: :Delhi Heritage Walks with Sohail Hashmi - WordPress.com

5. ACCESS

Entry is prohibited on the context that it is heavily snake infested.

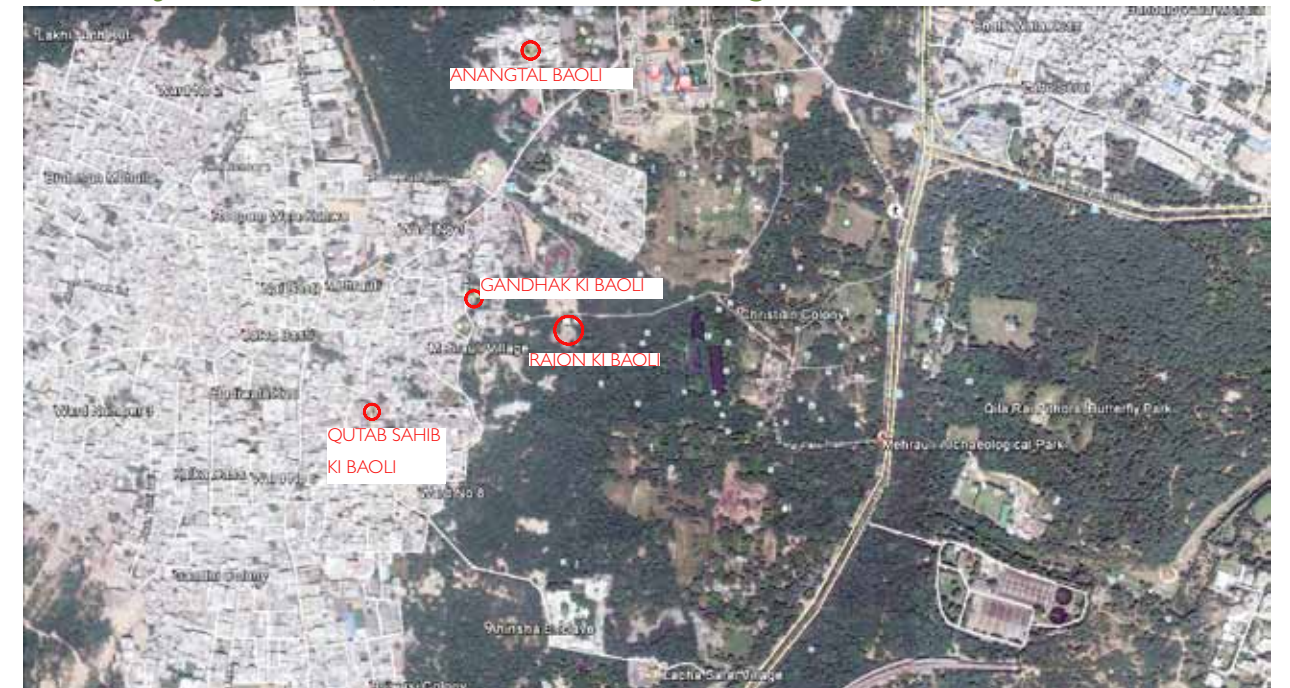
6. RECOMMENDATIONS:

- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed at places in the campus and approach roads.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.



Images of Lal Qila Baoli

3.12 Rajon Ki Baoli, Mehrauli Archeological Park



Map Showing Location of the Baolis in Mehrauli Base Map Source: Google Earth

1. LOCATION:

Mehrauli Archeological Park

2. HISTORICAL BACKGROUND:

The Rajon ki Baoli is a relic of the last pre-Mughal dynasty, the Lodhis. It is believed to have been built by Daulat Khan in the time of Sikander Lodhi. It is said to have been used for some time

by Raj Mistri (masons). Pluralised, that is how the structure got its name. Since most of the structure is subterranean, only the topmost storey is visible above the ground.

3. ACCESS:

The step well can be accessed by walking through the Mehrauli archeological trail. Deep steps lead down to the water from the North, while the East and West sides are enclosed by high walls with narrow sides that include a platform to walk on. The rectangular shaped building consists of a deep well shaft that can be accessed through the large staircase. An open niche in the south wall acts as a passage and joins the well to the water tank.



It has a series of steps forming four stages, each in descending size, with floors at each stage, leading to the water level from the surrounding ground level



The Baoli during rains



The Baoli during dry seasons

4. STATUS:

The step well of Rajon Ki Baoli has been restored in the early 2000 by the Indian National Trust for Art and Cultural Heritage (INTACH) with the assistance of the Archaeological Survey of India (ASI).

5. RESTORATION:

Over the centuries the well got silted up. It has since been de silted. The Archaeological Survey of India has carried out de silting operations of the well which was silted to a depth of 20 feet (6.1 m), during 2004–05. As a result, the water level had risen by 20 ft. and 60 steps in the well.

6. PRESENT SITUATION:

Though the baoli is well maintained the water in the Rajon Ki Baoli has long dried up and has come to be known as the sukha baoli or the dry well. Even in the height of monsoon one can only find traces of black greasy water at the very bottom.



Covered corridor with arched opening to provide shade & shelter enclose the Baoli



There are rooms at each floor which once provided a cool resting place for people

7. SURROUNDINGS:

The Baoli sits in a dense vegetative setting facing a tomb.

8. RECOMMENDATIONS:

1. Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
2. Since the Archeological park is frequented by people, seating spaces and utility services to be provided so as to ensure maintenance of the area.
3. Signage indicating the presence and location of the baoli should be integrated with the Qutab tourist circuit to draw in more people.

3.13 Loharehri Baoli, Dwarka, Sector 12

1. LOCATION:

Located in a barren stretch of land between a residential society and a private school on Azad Hind Fauj Marg, Sector 12, Dwarka

2. HISTORICAL BACKGROUND:

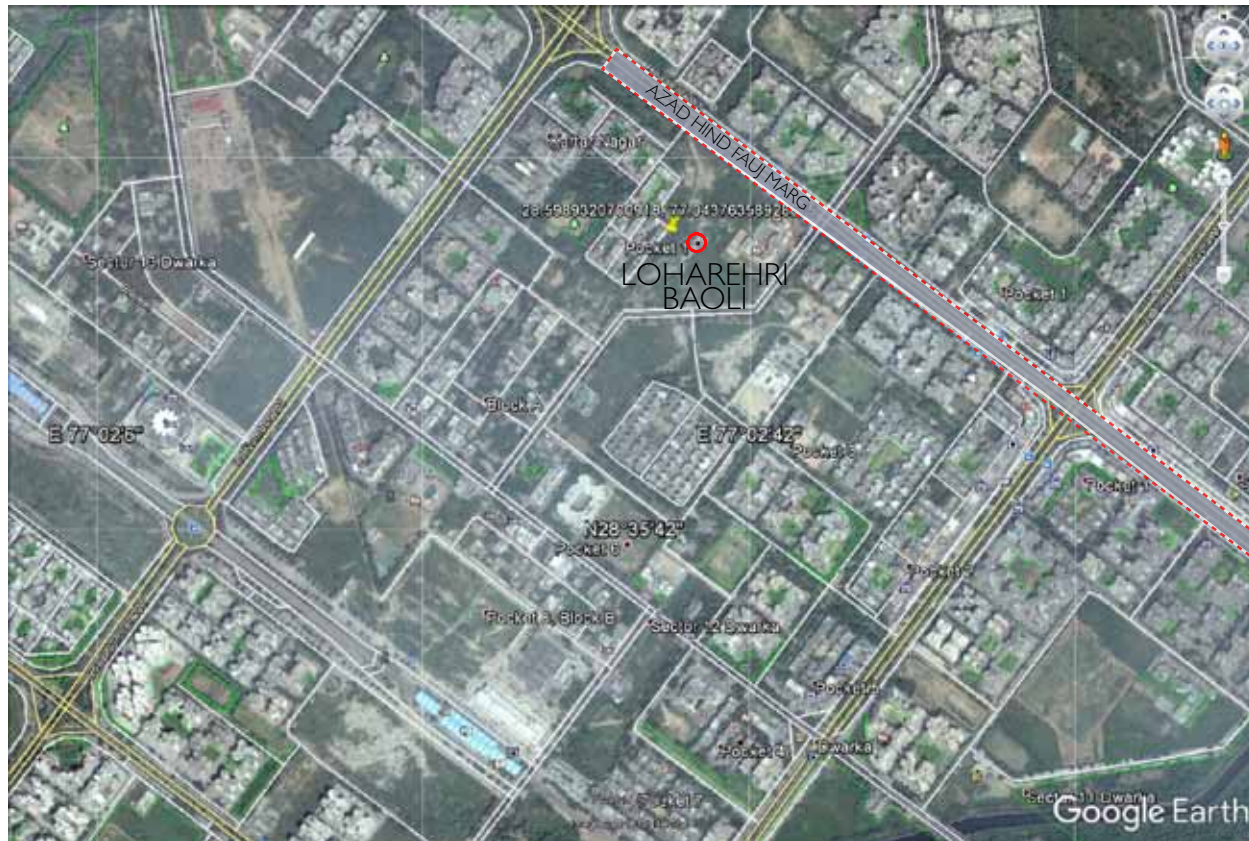
It was constructed for the residents of Loharehri village by the Sultans of the Lodi Dynasty in the early 16th century. Dwarka now stands where the Loharehri village once stood "Loharheri Baoli" deriving from the contiguous presence of a small settlement of iron smiths ("lohar") whose hydrological and congregational requirements the tiny edifice was to fulfil.

3. ACCESS:

Accessed via a narrow wicket-gate puncturing the high walls enveloping the towering Gangotri Apartments whose peripheries adjoins.

4. STATUS:

The baoli has been restored by INTACH Delhi Chapter.



Map Showing Location of the Loharehri baoli and its surroundings
Base Map Source: Google Earth

The INTACH plan includes landscaping the surroundings, scientific conservation, chemical cleaning and preservation, developing a cultural notice board, signage and illuminating the monument

5. ARCHITECTURE

The structure shows typical Lodi era architecture with prominent arches along the steps and a well at the end of the baoli. The stepwell is constructed using rubble masonry, common in monuments of that period. Along the steps, two levels of arches are clearly visible



The Baoli sits in a vacant land enclosed by a toe wall marking the plot



The fenced Baoli is an isolated entity on the site

5. PRESENT SITUATION:

- The baoli has been extensively restored and maintained
- This three-tiered baoli exists within a vast vacant land.
- The water level has receded leaving the well dry.
- Baoli being an unadorned, rubble masonry-built underground monument is unfailingly easy to miss even from the immediate vicinity.



Garbage dumping outside the fenced Baoli



Garbage dumping and squatter settlement in the vacant area around the Baoli



Vacant area around the Baoli

- The baoli remains fenced off and due to lack of maintenance weeds have started to crop up on the structure which if not taken care of, will eventually deteriorate the baoli.

- There is no signage indicating the presence of a baoli on the abutting roads. Due to lack of information and maintenance, the squatters have started settling around the vacant site.



Damaged signage board displaying the plan, section and information about the site

- The stepwell is constructed using rubble masonry, common in monuments of that period. Along the steps, two levels of arches are clearly visible



Pictures of the baoli before & after restoration

image source <http://exploreheritage.in/rediscovering-heritage-dwarka-baoli/>

6. RECOMMENDATIONS:

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- The Baoli should be rendered free of all the vegetative overgrowth so that it does not damage the structure.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed on the approach roads.
- The baoli sits in an isolated barren area. The empty land to be developed to as to invite people. Photowalks and open gallery could be developed to create public awareness and interest.
- Removal of encroachments: Squatter settlement has started cropping on the barren land.
- Public awareness: Creating awareness through Heritage walks and documentations would also generate a sense of importance of the baoli within the neighbourhood. This would prevent the disuse of the structure.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.

3.14 Arab Sarai Ki Baoli



Map Showing Location of the Arab ki Sarai baoli and its placement in the Humayun's Tomb Complex
Base Map Source: Google Earth

I. LOCATION:

The baoli is situated in Nizamuddin area and can be accessed from the humayun's tomb complex.



Map Showing Location of the Arab ki Sarai baoli and its various components
Base Map Source: Google Earth



Site pictures of the baoli

2. HISTORICAL BACKGROUND

This sarai is supposed to have been built by Haji Begum for three hundred Arab mullahs (priests) whom she had brought from Mecca, hence the name Arab Sarai. A baradari (pavilion) occupies the centre of the eastern wall and a hammam (bath chamber) in the centre of northern wall. Arab-ki-sarai baoli is among the several smaller monuments surrounding Humayun's Tomb.

This L-shaped baoli was built to quench the thirst of the over 300 Persian artisans who stayed in while constructing Arab-ki-sarai.

3. STATUS

Being a part of the Humayun's tomb complex, it has been declared "World Heritage Site".

It is under ASI protection.



Arches on the wall of the well



The baoli's well



Steps leading to the baoli

4. PRESENT SITUATION :

- The L Shaped baoli has a narrow row of steps descending to the water.
- The structure as well as the Sarai are in ruins and though the area sits in the recently restored and visited Humayun's Tomb complex, it is an isolated site.
- The is water in the baoli though the source is unknown.
- The workers and the maintenance staff consider the water clean and use it for washing.

5. RECOMMENDATIONS:

- Restoration of the structure: The structure of the baoli is in a state of distress; with the broken steps and edges, it becomes inaccessible.
- The Baoli should be rendered free of all the vegetative overgrowth so that it does not damage the structure.
- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Signage indicating the name, status and historical relevance of the baoli should be installed outside the structure.
- Signage indicating the presence and location of the baoli should be installed at places in the campus and approach roads.
- The baoli has a superstructure with arches, it should be illuminated.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.

Baoli	Anang Tal Baoli, Yogmaya temple, Mehrauli	Qutab Sahib ki Baoli Mehrauli	Gandak-ki-Baoli, Mehrauli Archeological Park	Firoz Shah Kotla Baoli, Firoz Shah Kotla Fort	Tughlaqabad Fort Baolis
Age	10th Century	12th century	13th century	13th century	13th century
Physical Access	None	<ul style="list-style-type: none"> •Can be accessed through the Bakhtiyar Kaki Dargah. •Has limited access on fridays during festivals and for women 	Lies on the edges of the Mehrauli Archeological Park, it is physically well accessible as per location but stays fenced off	Lies in the Firoz shah kotla fort premises. <ul style="list-style-type: none"> •It is physically well accessible as per location but stays fenced off 	<ul style="list-style-type: none"> •Lies in the Tughlaqabad fort premises. •There is no organised access to the baolis other than the kutchra trail.
Visual Access	None	None	Well accessible	Well accessible	None
Signages	None	None	Signage present outside the baoli indicating the name and status.	Signage present outside the baoli indicating the name and status.	None
Resources Available	Vaguely mentioned in blogs & travel articles online	<ul style="list-style-type: none"> •Vaguely mentioned •Is known to the locals 	Mentioned extensively in books, online and is well known	Mentioned in books, online	Vaguely mentioned in blogs & travel articles online
Significance	Oldest baoli in Delhi	<ul style="list-style-type: none"> •The baoli gets less frequently visited. •The garbage from the surroundings gets dumped here inspite of being associated with the dargah. 	<ul style="list-style-type: none"> •Extensively visited --It is a part of Mehrauli Archeological Heritage walks 	It is the only CIRCULAR baoli in Delhi and is a part of one of the most visited tourist spot but since it is fenced off, it is a less popular baoli	<ul style="list-style-type: none"> •Historic baolis, get rarely frequented.
Threats	It is buried under dense vegetation & with no information available; the baoli will be probably lost.	Neglect, lack of information and encroachment	Encroachment: the construction around the baoli has cropped up right upto the edges diminishing the physical presence of the baoli	The baoli is fenced off , the structure is degrading	<ul style="list-style-type: none"> •The baolis and the premises are in ruins. •The place stays deserted even during the day inducing unsafe environment.
Potential for development	The baoli sits in an open vegetative land with dense trees. The structure needs to be revived and the surroundings could be developed to invite people.	the baoli can be revived and made accessible with minimum intervention . Since the baoli is associated with the dargah it could become a part of the heritage and religious circuit.	Access to the baoli could be defined and developed to allow easy circulation.	The baoli could be opened up for heritage awareness.	<ul style="list-style-type: none"> •The baolis and the premises to be revived structurally. •The pedestrian access to the baolis should be established with signage and lighting so as to ensure safe environment to the visitors.

Baoli	Hindu Rao Baoli, Malka Ganj	Nizamuddin ki Baoli	Agrasen ki Baoli Hailey Road	Wazirpur Monument Complex, RK Puram Sec 5	Purana Qila Baoli
Age	13th Century	13th century	14th century	14th century	14th century
Physical Access	Accessible from the internal campus road but stays fenced off.	Is easily accessible but stays fenced off. Only pilgrims and locals are allowed to visit the structure	Sits in a quiet area on Hailey road. It is well accessible.	Easily accessible, Sits in a residential green.	The baoli sits in the Purana Qila complex, it is easily accessible but stays fenced off.
Visual Access	Well accessible	Well accessible	Well accessible	The dome of the complex is visible from the surroundings	Well accessible
Signages	Signage marking the baoli is present outside the structure but no other information, name or status is available	Signage present outside the baoli indicating the name and status.	Signage present outside the baoli indicating the name and status.	Signage with information about the baoli are absent.	Signage present outside the baoli indicating the name and status.
Resources Available	Vaguely mentioned in blogs & travel articles online	It is a well known baoli and has been extensively published.	Mentioned extensively in books, online and is well known	Vaguely mentioned in blogs & travel articles online	Mentioned in books, online and is known
Significance	The rectangular baoli covers a huge area, it has L- Shaped staircase leading to the water	•The stepwell is visited by pilgrims and tourists..	It is one of the most popular baoli, mostly frequented by college students	The baoli is a part of a monument complex, visited by the people from the surrounding residences	It is a part of one of the most visited tourist spot but since it is fenced off, making it less popular
Threats	The hospital discharges sewer into the baoli, sewer pipes run across the structure, it is in a state of neglect with vegetation growing into the baoli deteriorating the structure	Neglect and encroachment	•Lack of maintenance •Dried up water source	A primary school, some squatter settlement and dhalao have begun to encroach into the monument complex. This has affected the random rubble enclosure walls	The Baoli is not visible since its tightly fenced off. It gets easy neglected.
Potential for development	It is a huge baoli with a grand superstructure. The structure needs restoration with edges and access	The baoli can be revived and made accessible with minimum intervention . Since the baoli is associated with the dargah it could become a part of the heritage and religious circuit.	Access to the baoli could be defined and developed to allow easy circulation.	The baoli sits in a lavish, well maintained complex, with a huge green area and could be developed to attract more locals and tourists	The baoli could be opened up for heritage awareness.

Baoli	Lal Qila Baoli	Rajon ki Baoli, Mehrauli Archeological Park	Loharheri Baoli, Dwarka Sec 12	Arab ki Sarai Baoli
Age	14th Century	16th century	16th century	16th century
Physical Access	Lies in the Red Fort. Is easily accessible but lies in an isolated corner less frequented by visitors.	Lies in the Mehrauli Archeological Park, it is well accessible	Lies at the edges of a residential campus, physically well accessible but stays fenced off	It can be accessed from the Humayun's Tomb complex
Visual Access	None	Well accessible	Well accessible	None
Signages	Signage marking the baoli is present outside the structure but no other information, name or status is available	Signage present outside the baoli indicating the name and status.	Signage present inside the baoli fence indicating the name and status	There are no signage marking the presence of the Baoli
Resources Available	Mentioned in books, online	Mentioned extensively in books, online and is well known	Recently revived by INTACH, the baoli has been published in newspapers and the information is available online	It is one of the least known baoli even to the locals and the guides.
Significance	It is a huge rectangular baoli with access from two sides	It is a grand well preserved baoli, easy accessible.	The baoli had deteriorated completely and was buried under loads of earth and plantation over the years. It has been recently revived by INTACH	It is one of a L- Shaped baoli
Threats	The baoli inspite of being a part of the red fort gets widely neglected from the visitors since it sits in an isolated corner with insufficient signage marking its location.	•Lack of maintenance •Dried up water source	Even after its revival, the baoli does not get maintained, vegetative growth has already begun in the structure.	Lack of information about the baoli and deterioration of the structure
Potential for development	Signage marking the location of the baoli can be installed to create awareness.	The information about the baoli should be integrated in the Qutub tourist circuit so as to bring in more visitors.	The baoli has a large open space in the foreground which could be developed to invite people which will also facilitate its maintenance.	Arab ki Sarai as a whole could be revived along with the Baoli. It has a large green space for gathering which could encourage photo walks and cultural festivals which will also facilitate its maintenance.



4. Strategy for Rejuvenation of Baoli Precincts

- The Timeline
- The Landuse
- The Location
- The Surroundings
- The Edges
- Green/ open space structure in the neighborhood
- Site levels
- Existing planting survey
- Design strategies
- Design proposal
- Area Details
- Story board/ Photo panels

4.1 Wazirpur Monument Complex, R.K. Puram, Sector 5 - Timeline

10TH CENTURY

- Anangtal Baoli

12TH CENTURY

- Qutab Sahib ki Baoli

13TH CENTURY

- Gandhak-ki-Baoli
- Firoz Shah Kotla Baoli
- Tughlaqabad Fort Baolis
- Hindu Rao Baoli
- Nizamuddin ki Baoli

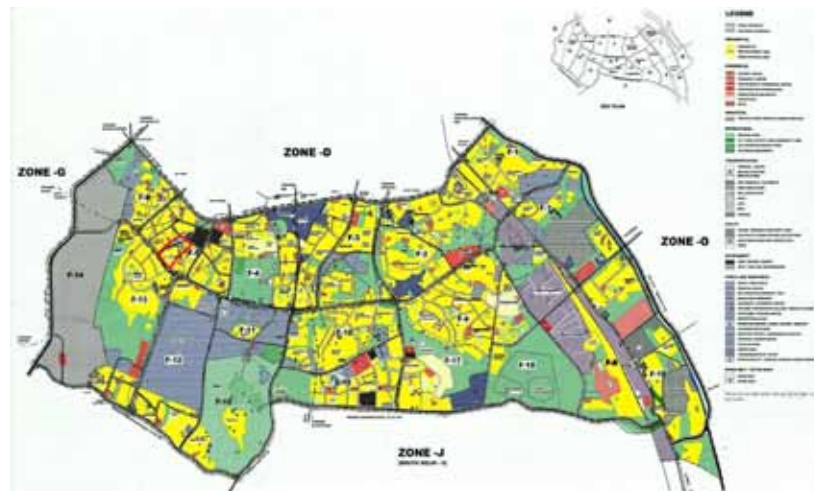
16TH CENTURY

- Rajon ki Baoli
- Loharheri Baoli
- Arab ki Sarai Baoli

14TH-15TH CENTURY

- Agrasen ki Baoli
- Wazirpur Monument Complex, RK Puram Sec 5**
- Purana Qila Baoli
- Lal Qila Baoli

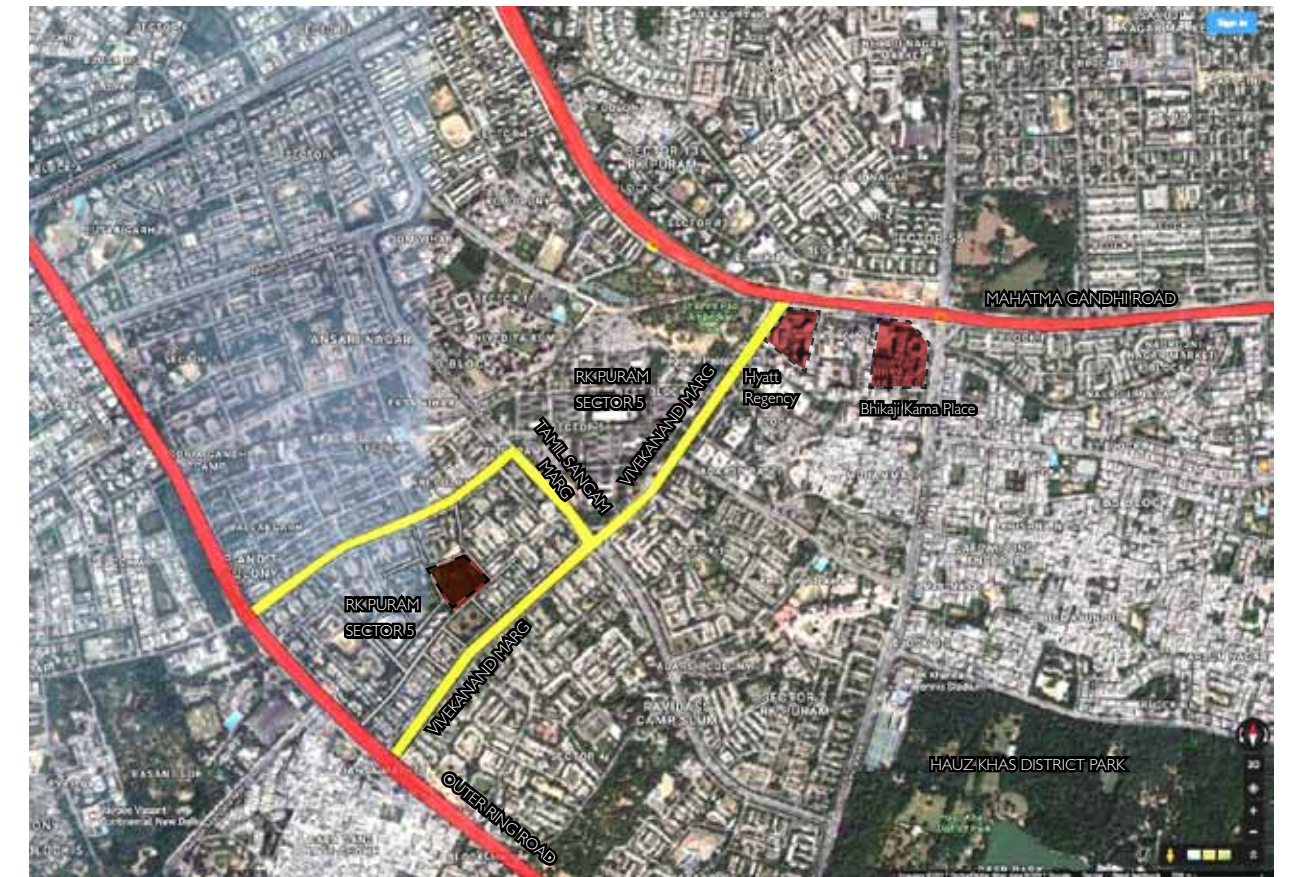
4.2 The Landuse



The monument complex sits in a residential area in RK Puram Sector 5.



4.3 The Location



Map Showing Connectivity of RK Puram, sector 5 with major roads
Base Map Source: Google Earth



Map Showing the immediate surroundings of RK Puram, sector 5
Base Map Source: Google Earth

The Site is located in the heart of the residential area flanked by roads. It is easily accessible. It is demarcated as public green and is used by the locals as a park.

4.4 The Surroundings



Map indicating the location of the Monument complex in RK Puram, sector 5
Base Map Source: Google Earth

The residential development and the Neighbourhood park form the immediate surroundings to the Monument Complex.



RK Puram, sector 5
Base Map Source: Google Earth

1. THE LOCATION

Wazirpur Monument Complex,
R.K. Puram Sector- 5, Delhi

2. HISTORICAL BACKGROUND:

The Monument complex, a congregation of Lodhi-era (AD 1451-1526) rubble-built structures

3. MONUMENT COMPLEX:

•Nestled in an extremely small green space that barely defines the boundaries till which the medieval monuments spread out, consists of a cluster of five tombs the identity of whose occupants is unknown, one wall mosque ("qiblas"), a stepwell ("baoli"), a separate well and two grave platforms. SOURCE: PIXELATED MEMORIES



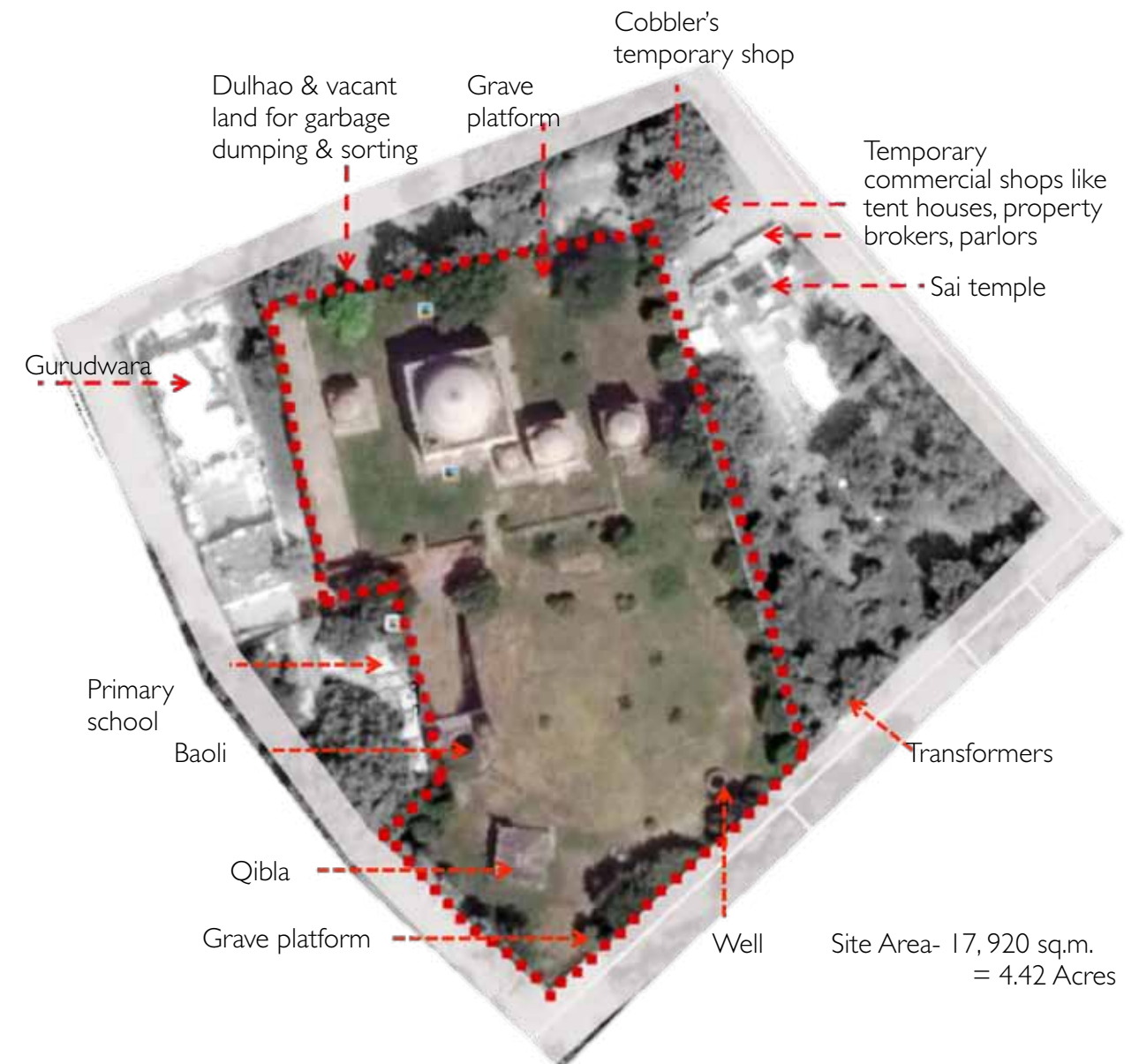
Temporary commercial shops



View of Sai temple with temporary commercial shops in the foreground



Transformers at the edge of the monument complex



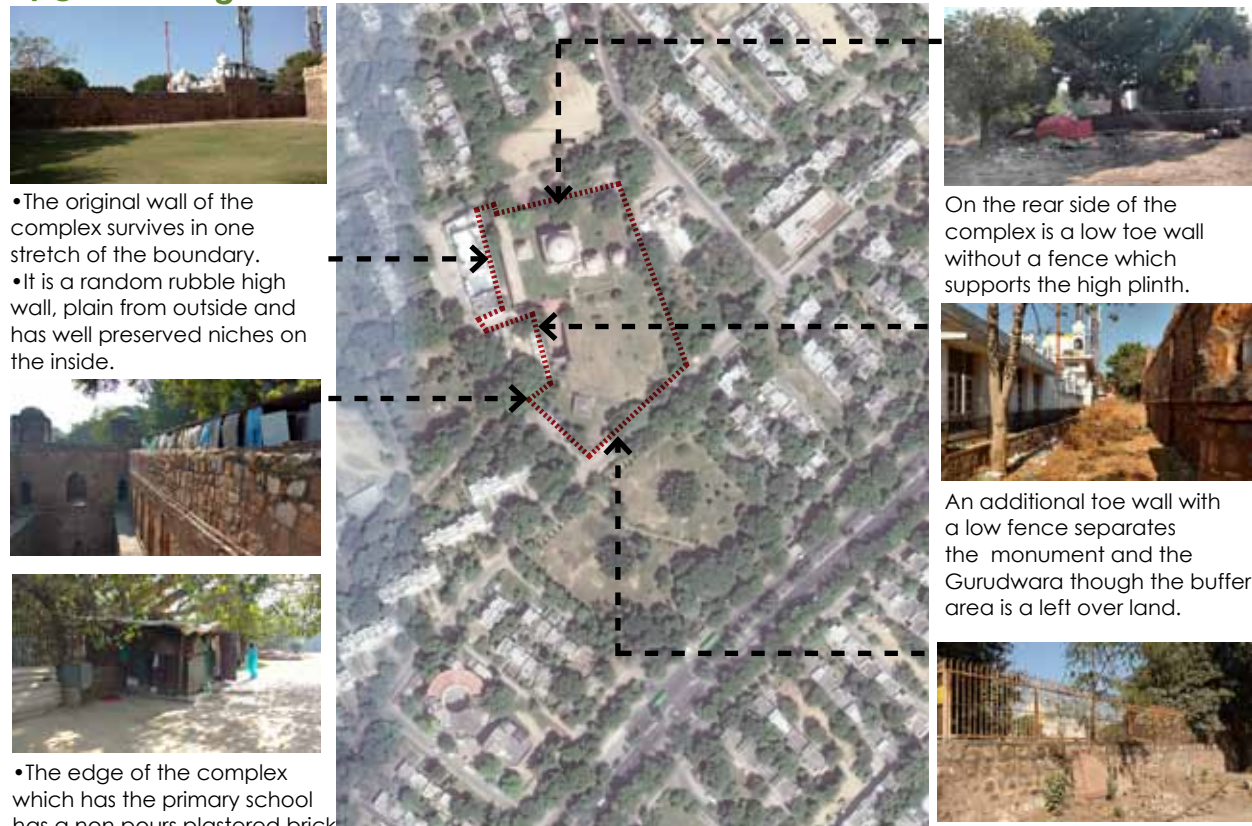
•Stepping through the iron gate, one can either first head towards the rubble-built baoli and the smaller qibla, or climb up the stairs to examine the tomb cluster – the two sets are on either side of the pathway that demarcates the area.

4. STATUS:

Listed by ASI



4.5 The Edges



- The original wall of the complex survives in one stretch of the boundary.
- It is a random rubble high wall, plain from outside and has well preserved niches on the inside.

- The edge of the complex which has the primary school has a non pours plastered brick wall obstructing the view of the monuments
- The primary school has encroached the baoli right upto its walls with no buffer and the plastic sheets which form the temporary walls of the school are visible from inside the complex.

- The complex is Enclosed by a rubble wall with a fence above it on three sides.
- The entry to the complex is hardly visible.
- A stone signage outside the boundary wall mentions the wall mosque (qibla) inside.

4.6 Green/Open Space Structure in the Neighborhood



4.7 The Access



- The entry to the monument complex is not prominent and visually monumental as the complex itself hence remains under rated and hides the monuments within its walls.

ACCESS:
The Monument complex is accessible from the Vivekananda Marg. The entry to the complex is through the local road of the sector 5 residential area

- The Monument is accessed through a side entry along the Gurudwara; the entry is hardly visible.
- It is a narrow lane sandwiched between the Gurudwara and the primary school which opens up into the huge complex.

4.8 Site Levels



- The site is at a higher elevation than the rest of the surroundings by approximately 300mm.
- The four tombs are enclosed with a toe wall, rest on a upper plinth which is graded to slope the surface water into the baoli.
- The lower plinth slopes towards the wells.



Localised slopes created on the site to drain surface water



The isolated tomb is accessed by lower plinth but by climbing 9 steps. Its plinth level matches that of the upper plinth



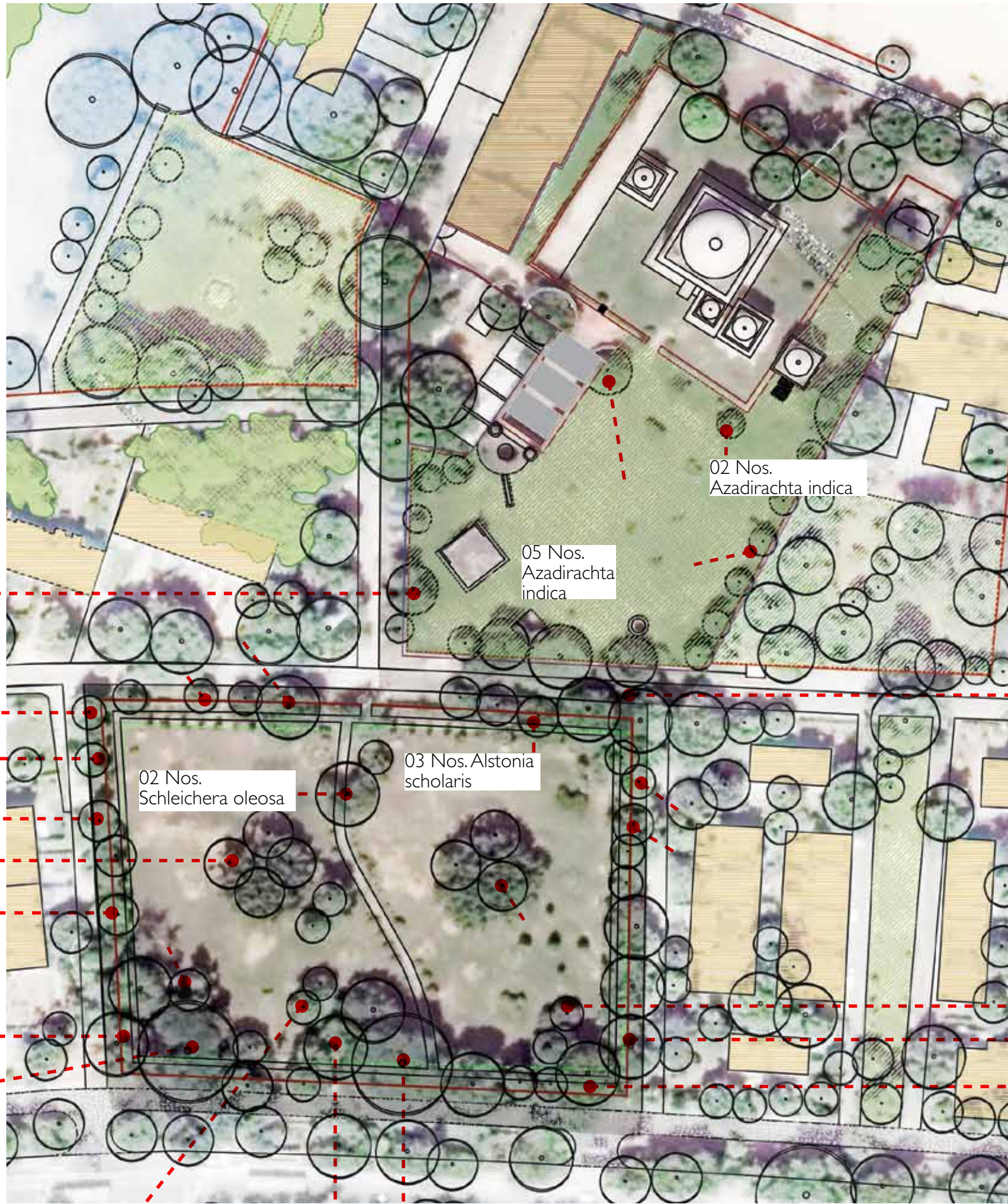
The tombs on the upper plinth are enclosed by a stone rubble retaining wall.



Rear view of the upper plinth's stone rubble retaining wall.

4.9 Existing Planting Survey

- 01 Nos. Syzygium cumini
- 01 Nos. Syzygium cumini
- 02 Nos. Ficus benjamina
- 02 No. Polyalthia Longifolia
- 01 No. Ficus benjamina
- 02 No. Polyalthia Longifolia
- 04 Nos. Mimusops elengi
- 01 Nos. Syzygium cumini
- 01 No. Albizia lebeck
- 02 Nos. Alstonia scholaris
- 01 No. Ficus benghalensis



- 04 Nos. Alstonia scholaris
- 02 Nos. Syzygium cumini
- 01 No. Ficus benghalensis



The Campus is lush green with a lot of mature trees



Young Alstonia scholaris trees lining the boundary wall

- 04 Nos. Azadirachta indica
- 02 Nos. Alstonia scholaris
- 03 Nos. Alstonia scholaris
- 03 Nos. Mimusops elengi
- 04 Nos. Albizia lebeck
- 03 Nos. Azadirachta indica
- 02 Nos. Alstonia scholaris

The periphery of the complex is densely planted with young Alstonia scholaris filling in the gaps of the mature plantation

- The Complex is dotted with a large number of mature trees of Azadirachta indica(Neem), Ficus religiosa (pipal)
- Flowering shrubs, seasonal plants, palms and various shrubs have been planted randomly on the site.
- The complex has a well maintained and regularly watered lawn.



Azadirachta indica near the baoli



Morus alba



Azadirachta indica at the edge of the upper plinth



Punica granatum frame the entry to the upper plinth



Ficus religiosa



Hibiscus rosa-sinensis, Celosia argentea randomly planted in patches



Dense plantation around the Baoli



Lush green monument complex

4.10 Design Strategies

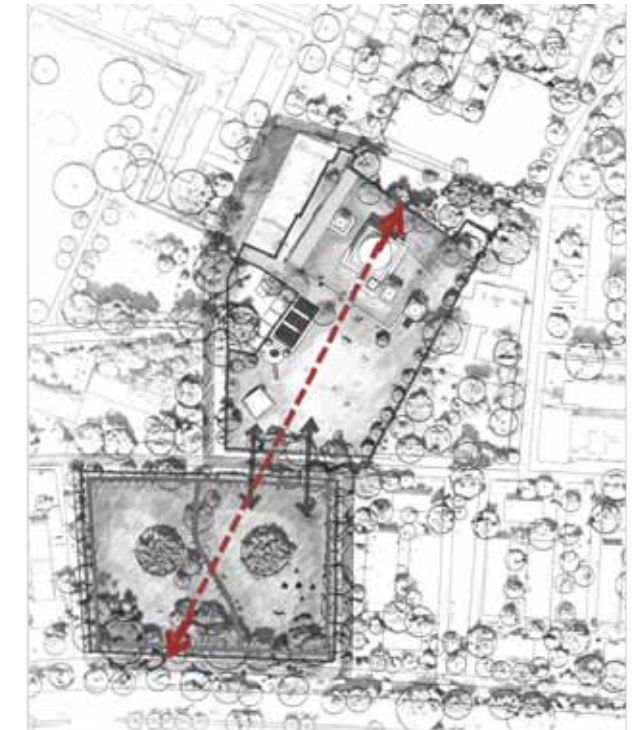
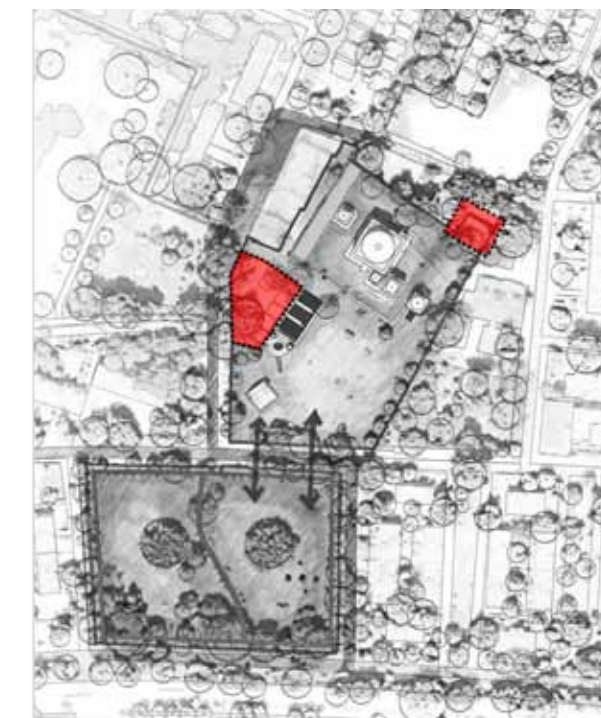


CONNECTING THE FRAGMENTED GREENS

To create visitor experience and creating foreground to appreciate & enhance the historic structures.

Removing the stretch of secondary road between the monument complex and the neighbourhood park in order to connect the two greens does not affect the vehicular circulation.

REMOVING ENCROACHMENTS



STRENGTHENING THE VISUAL AXIS

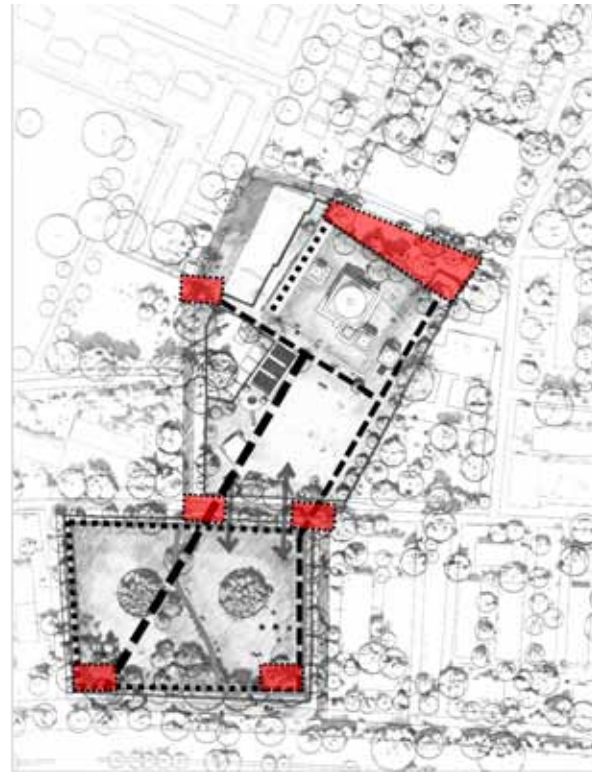
Paved circulation and planting to strengthen the Physical & visual axis of the tomb.

ESTABLISHING PEDESTRIAN LINKAGES THROUGH THE GREEN

Enabling circulation through the green spaces rather than road.

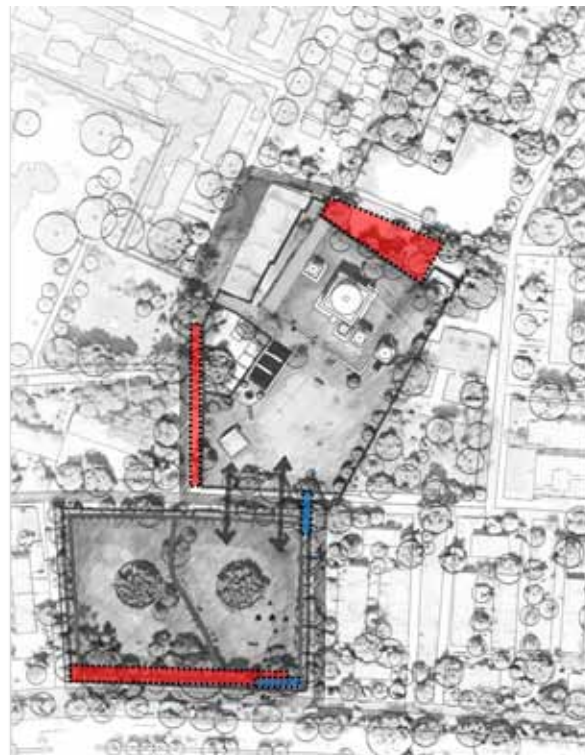


Design Strategies



REINFORCING THE ACCESS POINTS

Bringing access to the complex closer to the road.



PROVISION FOR PARKING, SIGNAGE & AMENITIES

- Space for Signage
- Space for Space for Parking & amenities

4.11 Design Proposal

- Existing Historic wall
- Shrub planting to buffer the Gurudwara
- Entry/Exit Plaza
- Flower garden with bands of flowering shrubs and paving
- Space for Parking
- Lawn space provides foreground to appreciate the Monument Complex
- Entry/Exit Plaza
- Existing Park
- Pedestrian and Visual axis
- Paved plazas mark the entry to the large integrated greens

Paved plazas mark the entry to the large integrated greens. These plazas open up the monuments not only to the neighbourhood but to the city as a whole by providing access from the main road



Design Proposal - View

Flower garden with bands of flowering shrubs and paving

Shrub planting to buffer the Gurudwara

Planting beds

Plaza as a foreground to view and appreciate the tombs

Existing Historic wall

Entry/Exit Plaza



Lawn

Shaded plaza with seating

Pedestrian and Visual axis

Existing park

Paved plazas mark the entry to the large integrated greens

Space for Parking

Entry/Exit Plaza

Design Proposal-Circulation



PLAZAS

The Plazas mark the Entry/ Exit to the site and access to the monuments. These wide paved areas have space for seating and are shaded with trees.



PRIMARY CIRCULATION

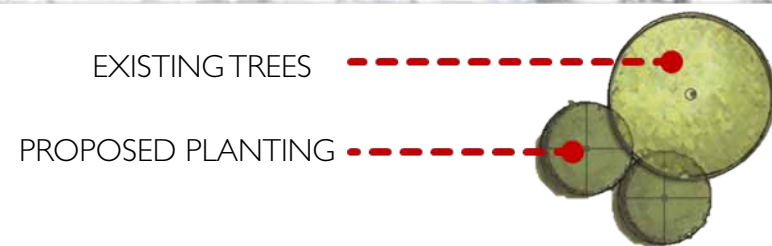
This 4.0 m wide pathway form the Primary circulation connecting the park & the monument complex and also marks the visual axis to the tomb.



SECONDARY CIRCULATION

This 2.5m wide pathway facilitates circulation in the complex.

Design Proposal - Planting



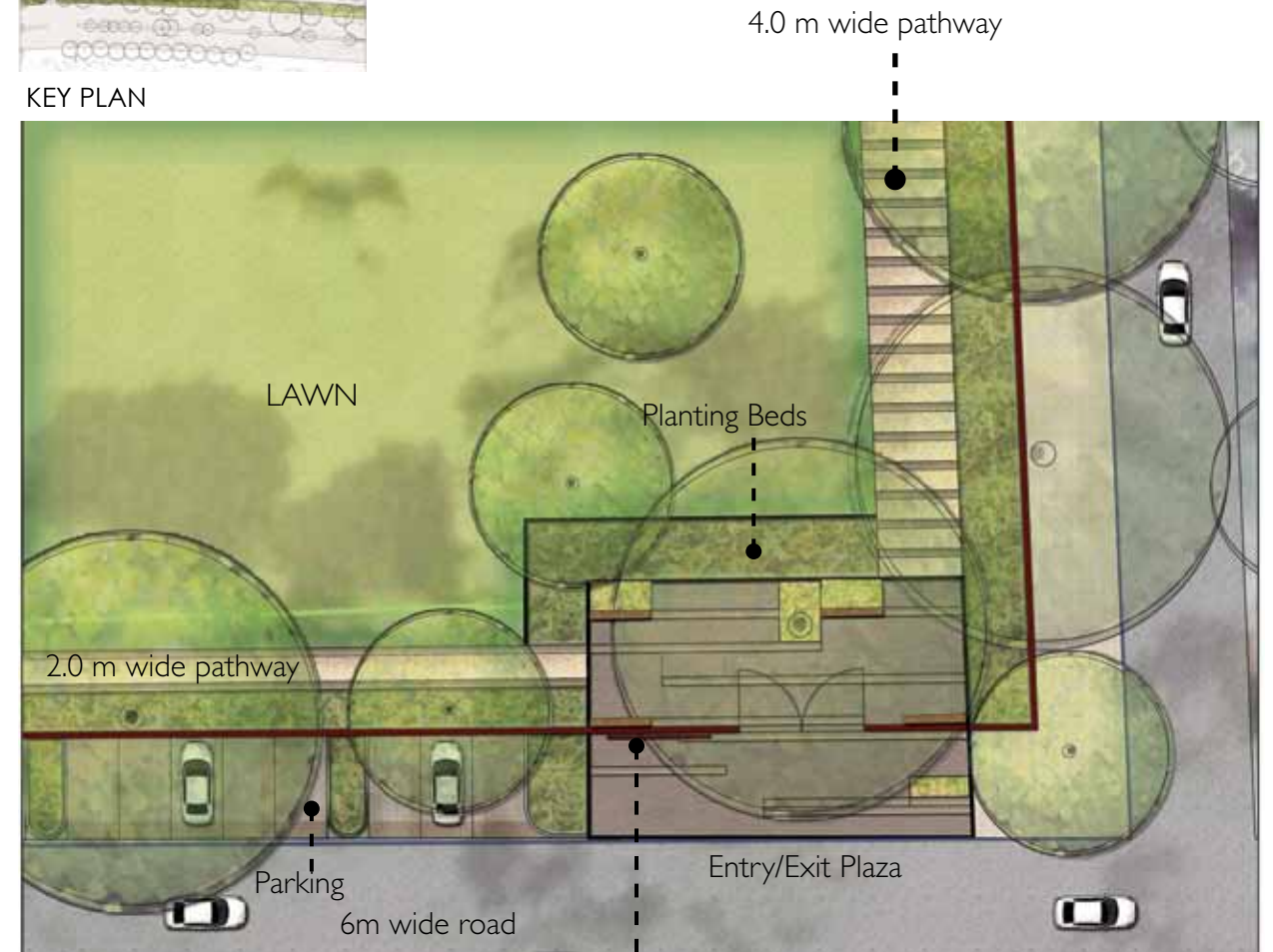
Area Details



KEY PLAN

ENTRY/EXIT PLAZA

- Paved plazas mark the entry to the large integrated greens. These plazas open up the monuments not only to the neighbourhood but to the city as a whole by providing access from the main road.
- These plazas are wide paved spaces shaded with trees to receive visitors



PLAN-ENTRY/EXIT PLAZA

Signage wall



ELEVATION-ENTRY/EXIT PLAZA

Signage wall



KEY PLAN

- The Existing well has been cordoned off with plantation for safety concerns.
- The opening of the well to be fixed with recessed metal screen to avoid accidents.



PLAN-ENTRY/EXIT PLAZA

Tree shaded plaza with benches
Planting beds
2.0m wide pathway



KEY PLAN

A linear flower garden with paving bands to access the garden. It has tree shaded seating areas for the visitors to appreciate the monument complex and the garden as well.

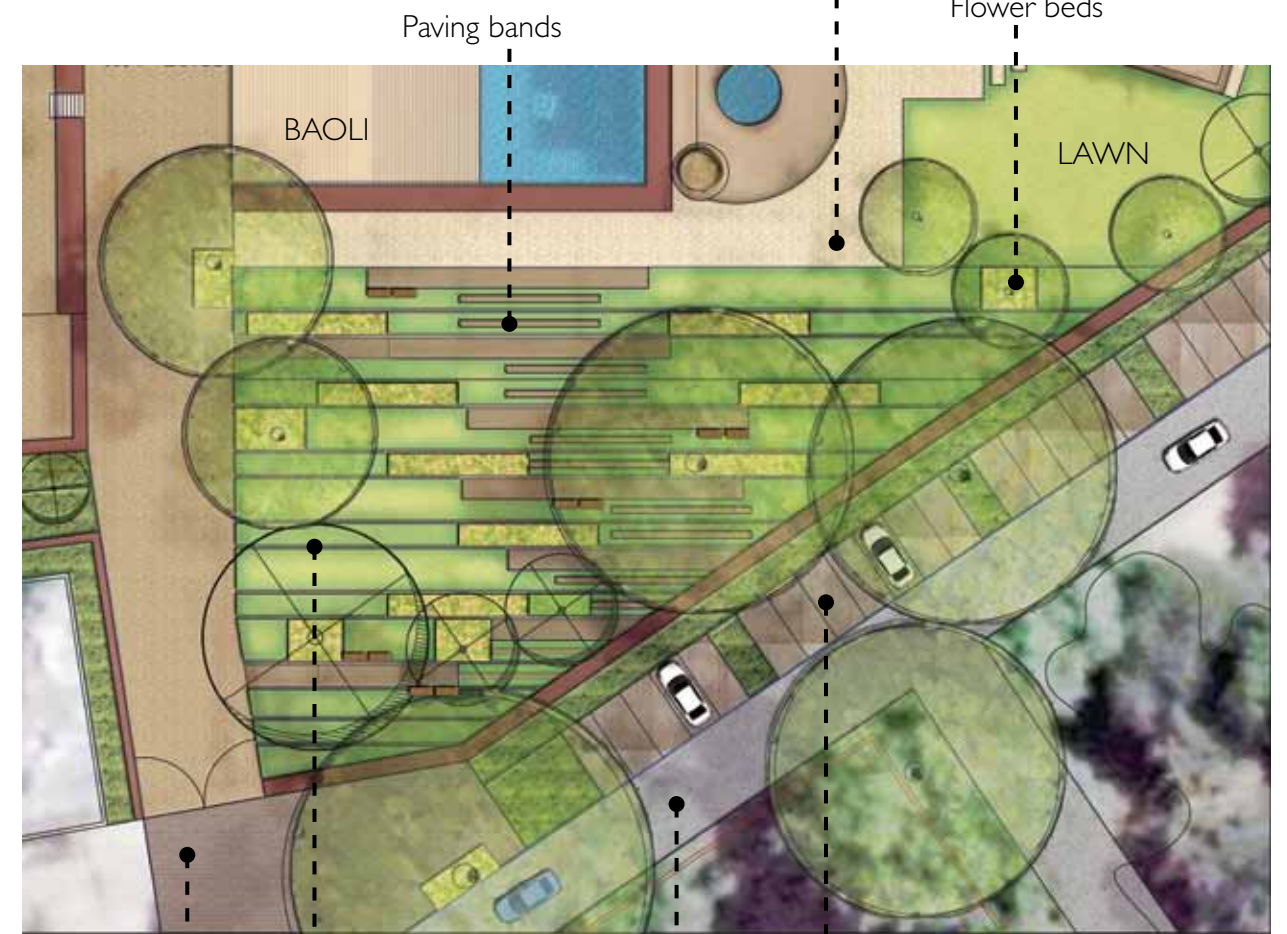


Reference images

The Encroachment by a temporary primary school to be removed.

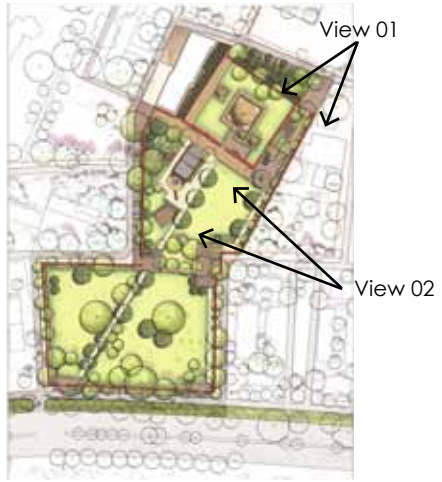
Paving around the Baoli would render emphasis to the lost structure.

Paving around the baoli



PLAN-LINEAR FLOWER GARDEN

Stone bands
6.0m wide road
Entry/Exit Plaza
Parking



KEY PLAN



VIEW 01-Entry/ Exit Plaza



VIEW 02- Lawns to appreciate the Monument Complex



KEY PLAN



VIEW 03- Entry/ Exit Plaza- Pedestrian & Visual Axis to the monument



VIEW 04- Linear flower garden

4.12 Story Boards/Photo Panels



- Storey boards to be installed under tree shaded areas so that the visitors could read about the monument complex, its history and significance, its sighting & architectural style.
- Proper signages and way finding would help the passersby locate the complex.

SUMMARY OF DESIGN PROPOSAL:

- Recharge of aquifer: Revival of the water body would activate the baoli and its precincts.
- Removal of encroachments: Removing the squatter settlement, jhuggi and other encroachments around the baoli.
- The monument complex to be made accessible physically and visually with a transparent boundary wall and access gates facing the road.
- The complex to be integrated with the central green in the foreground and linking the greens with pedestrian circulation.
- Strengthening the pedestrian circulation within the complex.
- Signage indicating the name, status and historical relevance of the baoli and other components of the complex like the Tombs, Qibla and well should be installed outside the structure.

- Signage indicating the presence and location of the baoli should be installed at places in the campus and approach roads.
- The tombs in the complex are visible from the peripheral roads surrounding the sector. These could be illuminated so that people driving by are aware of the historic complex in the vicinity.
- The Baoli could be integrated with the Heritage trail and can be frequented by historians, tourists and heritage enthusiasts during heritage walks.
- Photowalks and public awareness programs can be carried out to bring in people.



5. Conclusions

- Revival & restoration practices in other parts of the country
- General guidelines for the rejuvenation of Baoli Precincts in Delhi

5.1 Revival & Restoration Practices in Other Parts of India

Stepwells are the one some of the least documented architectural structures in India. They were seen scattered all over India, mostly in forts or temple complexes, trade routes but many have been destroyed and forgotten. These were built by Kings and Rulers either to provide water security to the people during droughts or as private bathing and leisure areas. There are often dug deep, cut into the ground water aquifers, collected and stored rainwater. Steps led people to the surface of the water whatever the level may be. These structures often served as meeting places where people gathered for leisure as these places were cooler (because of the accumulated water) than the harsh arid landscape where they were usually built in. Few of these structures have been documented and fewer are conserved. In this age of water scarcity it is structures like these that can provide us with the much needed an inspiration to conserve water. (<http://www.arcgis.com>)

The growing urgency for water conservation has spearheaded a few recent efforts to de-silt and “reactivate” a few wells in Delhi and Gujarat in the hopes that they might once again collect and store water. The crucial factor in reviving the baolis of the city lies in the replenishment of groundwater levels,” says R M Bhardawaj, senior scientist of the Central Pollution Control Board (CPCB).

*** Global Heritage Fund and its NGO partners Prince Claus Fund and Gram Bharati Samiti** have carried out an investigation on how to address threats to the Stepwells of Rajasthan, India.

Funded by an initial grant, restoration was carried out on 5 Stepwells:

1. Bagichiwali Baoli, Bhanpur,
2. Banjaron ki Baoli, Thali,
3. Bohraji ki Baoli, Khawarani,
4. Meeno ki Baoli, Sarjoli,
5. Balaji ki Baoli, Bhanpur

Key conservation highlights:

- Cleaning out debris that has accumulated over decades, digging within the well’s mouth.
- Created public health facilities for men and women in the surrounding settlement.
- The overflow of the village’s water tank has been set up to move through an underground tube in order to recharge the Stepwell during non-monsoon season.
- The Stepwell has been cleaned out, cracks in the walls have been filled, and the structure’s surfaces have been painted over under the direction of a local artist, who reintroduced traditional folk motifs such as musicians, which symbolize festivity.
- A central part of the restoration process was the participation of local villagers – women, in particular. A women’s committee was formed to look after the newly restored Stepwell to ensure its upkeep.

* The Archaeological Survey of India

- Cleaning & de silting the Baolis so that water sources in these step wells to “open up” followed by masonry repairs.
- Implementing the concept of Rain water harvesting to revive the rain fed baolis
- For ASI however the focus has always been on maintaining or conserving the stone structures and not saving these baolis as ‘water bodies’.
- The ASI has started putting up rainwater harvesting pits in its green lawns at eight monuments, including at Red Fort, Safdarjung Tomb and Qutub Minar.
- De-silting and restoration of the stepwell at Rani ki Vav, Patan.

The following structural works were undertaken by the Archaeological Survey of India:

- Construction of the fallen retaining wall,
- Resetting of the out of plumb parts of the side walls and
- Other conservation measures.

• In 1963, the debris accumulated in the passage leading to the shaft of the well was removed, exposing a part of the side walls. The dislodged stones were reset upto a height of 11 m. In 1969, loose sculptures and the stones lying inside the well were removed after in situ documentation. The dilapidated side walls were set right and their sculptures fixed in position. In 1973, the missing ashlar masonry was rebuilt with stone matching the original stone used in the Vav.

Due to flooding of the well by rain water, conservation works had to be discontinued.

Again conservation works were resumed in 1977. The de silting of the well and resetting of side walls which were out of plumb was commenced. The work of exposing hidden structures was continued. The dressing and carving of the stone for the missing portions was undertaken. The missing portion of the northern side wall and terrace platform were restored.

The damaged and worn out stone flooring of the 1st and 2nd pavilions was removed and replaced with fresh Dhrangadhra stone matching the original property. The cracks that developed due to earthquake in the front walls and open joints were grouted.

* One such baoli restored by the **Aga Khan Trust for Culture (AKTC)** was built in the 14th century in Hazrat Nizamuddin Basti, a medieval village in Delhi named after Sufi saint, Hazrat Nizamuddin Auliya. In 2008, parts of the baoli walls collapsed due to sewage water seeping into the structure and the local residents using it as a rubbish dump. The pool was drained and the rubbish, garbage and sludge that had accumulated over the past 700 years was removed to reach the foundation of the baoli some 80 feet below ground level. While the water in the baoli is still not potable, it can be used for cleaning and agriculture.

* Diwan Singh, an activist with nonprofit **Natural Heritage First**, says that even though many baolis in Delhi are surrounded by buildings, the wells can still be recharged. “Catchment area management is the key. In the small areas of land between the baolis and buildings, rainwater harvesting pits could be built to divert rainwater away from the storm drains,” he says. “Once in the pit, water will percolate through the soil and recharge the nearby baoli, allowing modern development and ancient structures to coexist side by side.”

* Project: Conservation of Step wells (vav) and tanks (talao/ tanks) at various locations at Gujarat, India 2007-2013, Client: **Directorate of Archaeology, Government of Gujarat**

- Step-wells included in the project are:
- Conservation and Restoration of Step-well at Davad, Idar
- Conservation and Restoration of Nagarani Vav at Khedchandrani, Himmatnagar
- Conservation, Restoration, and Development of Ambapur Vav at Ambapur, Gandhinagar
- Conservation, Restoration and Development of Khan Talao – Dholka
- Conservation, Restoration and Development of Vanjhari Vav at Modasa, Sabarkantha
- Conservation, Restoration and Development of Vav and Kund at Gambhirpur, Idar
- Step-well at Hampur, Dhrangadhra, Surendranagar
- Chowmukhi Vav, Chobari, Chotila, Surendranagar
- Ancient Lake, Ten Talao, Dabhoi, Vadodara
- Vidhyadhar Vav, Sevasi, Vadodara, Vadodara

Project Tasks:

- Preparation of Conservation management plan
- Detailed photo and architectural documentation
- Landscape development plan as per the requirement of the project
- Detailed visitor movement plan, signage’s creating / supplementing of visitor facilities and public amenities if required
- Detailed budgeting and estimation of work defined
- Phasing of project implementation
- Detailed structural drawings for new structures proposed if required
- Setting up information/display centre to exhibit loose sculptures and ornamental architectural elements
- Sorting of debris for loose sculptures and ornamental architectural elements for re-use
- Dismantling of existing, damaged, and out of plumb portions of the structure and resetting in accordance with original structure

SOURCE: people for heritage concern

5.2 General Guidelines for the Rejuvenation of the Baoli Precincts

The baolis are repositories of traditional techniques and represent an inherent understanding of the land, its terrain and the water systems. They symbolise a mode in which our ancestors established ways of preserving water for the driest days of the year.

They represent a unique building typology in terms of the structural and architectural systems. With the advent of modern technology for water supply, water harvesting and storage, baolis are not constructed any more Baolis of Bundi-INTACH

RESTORATION OF STRUCTURE

Ageing, efflorescence, encroachment, poor maintenance & neglect and urban pressure are the major reasons contributing to the deterioration of the baolis. It should be restored and rendered stable and safe to facilitate visitors. The precincts should be clear of all the vegetative growth and the access should be defined before making it accessible to the public.

REVIVAL OF THE WATER BODY

- Reviving the water body would strengthen the conservation and rejuvenation of the space as a whole. This can be achieved by community participation in the digging and cleaning the well of years of accumulation of garbage and silt.
- If the aquifer has dried and no underground source of water is available, the water body can be recharged by the means of Rain water harvesting. The well of the Baoli to be linked with the Rain water harvesting system, integrating with the surrounding water systems. This would in turn replenish the water table of the area.
- The water from these baolis can be used for watering the parks in the vicinity.
- It should be made sure that the baoli is not used for washing of clothes and bathing.

AVAILABILITY OF RESOURCES

- The information of the age and historic relevance of the baoli should be available on the authority/ government website.
- Delhi tourist maps with the existing baolis marked and a brief information about each one of them should be available with tourism department and tourist help desks.

DEVELOPING THE BAOLI PRECINCTS AS A PUBLIC SPACE

- If the baoli sits in a green or lawn space, the setting to be developed with proper signage, defined entry, tree shaded seating spaces and utility.
- The precincts to be free from all the encroachments.

PHYSICAL ACCESS

- The baoli precincts should have unhindered access so that it is accessible to everyone though it could be locked and manned during night.
- Providing necessary pathways & ramps for circulation & accessibility.

SIGNAGES

- Well labelled and informative signage should be provided to facilitate visitor's approach to the Baoli and access within the complex.
- Story boards explaining the historical relevance of the structure, its purpose, architectural details should be installed to arouse visitor interest.

SAFETY/ SECURITY

- Illumination: The precincts should be well lit during the night so that the people driving by are aware of the presence of a historic structure.
- Barriers/Railings/Handrails: The boundary wall enclosing the precincts should be porous i.e. a low toe wall with railings so that the site remains secure but is visually accessible at the same time.
- Railings should not be very prominent and should not hinder the view.
- The sites should be physically accessible to all and handrails could be provided wherever feasible.
- The water body should have a safety barrier so as to avoid mishaps.

CREATING AWARENESS AMONGST COMMUNITY & TOURISTS

- Awareness programs in the form of workshops, photo canvas display, talks can be organized so as to sensitize the locals and the tourists of the invaluable assets.
- Identifying and including the baolis in the heritage walks so attract the heritage enthusiasts. This will also encourage their regular maintenance and management

INVOLVING THE LOCALS IN THE RESTORATION & MAINTENANCE PROCESS

- Once the locals know about the baoli, a sense of ownership can be induced. This would help them associate with the space, it could become a community gathering space. The community would in turn maintain and safe guard it rather than dumping waste.
- Weekly/monthly community fairs, exhibitions, food stalls in the baoli precincts would invite locals and people from nearby localities to visit the place.

VISUAL ACCESS

- Clearing the sight lines to the baolis of encroachment (if the site allows).
- Since the baolis do not have a superstructure more than a parapet wall, the baoli precincts should have a Porous edge so that it does not get cordoned off.
- Enhancing the visual quality of the precincts will improve the visitor experience.

6. Annexure

A. Ancient Monuments and Archaeological Sites and Remains Act – 2010 (Salient Features)

1. The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 hereinafter referred to as the Amendment Act has been enacted to amend the Ancient monuments and Archaeological Sites and Remains Act, 1958 and to make provision for validation of certain actions taken by the Central Government under the said Act.

2. The limits of prohibited area and regulated area around the monuments, archaeological sites and remains declared by the Central Government as protected have been specified in the principal Act as 100 m and 200 m, respectively. The limits so fixed may be further extended on the basis of gradation and classification of the monuments, archaeological sites and remains to be done by the National Monument Authority, which is to be constituted by the Central Government by virtue of the Amendment in the principal Act.

3. The Authority shall have a full time Chairperson and five full time and five part-time members having proven experience and expertise from the fields of archaeology, town and country planning, architecture, heritage, conservation architecture or law with a tenure of three years.

4. Henceforth, no permission for construction of any public projects or any other nature shall be granted in the prohibited areas of the protected monument and protected area. However, permission for repair and renovation could be granted by the Competent Authority, to be specified by the Central Government, on the recommendation of the National Monument Authority, subject to condition that the building or structure is pre-1992 or permission for construction or reconstruction of such building or structure had been granted by the Archaeological Survey of India.

5. The Amendment Act defines 'construction' which means any erection of a structure or a building, including any addition or extension thereto either vertically or horizontally, but does not include, any re-construction, repair and renovation of any existing structure or building, or construction, maintenance and cleansing of drains and drainage works and of public latrines, urinals and similar conveniences, or the construction and maintenance of works meant for providing supply of water for public, or the construction or maintenance, extension, management for supply and distribution of electricity to the public; or provision for similar faculties for publicity. [Section 2(dc)] Similarly, 'reconstruction' has also been defined as any erection of a structure or building to its pre-existing structure, having the same horizontal or vertical limits. [Section 2 (k)] To avoid any ambiguity in interpretation, the Act has defined the term 'repair' and 'renovation' which means alteration to a pre-existing structure or building, but shall not include 'construction' or 'reconstruction'. [Section 2 (m)]

6. There is also a provision in the Act to further extend the prohibited area beyond 100 meters having regard to the classification of any protected monument or protected area on the recommendation of 'National Monument Authority' by the Central Government. [Section 2 (ha)]

and 20A] With this definition, the prohibited area has extent not only horizontally but also vertically and covers even below the surface.

7. The regulated area, according to the Amendment Act means every area, beginning at the limit of prohibited area in respect of every ancient monument and archaeological site and remains, extending to a distance of 200 hundred meters in all directions. This 200 meters regulated area could further be extended having regard to the classification of any protected monument or protected area on the recommendation of 'National Monument Authority' by the Central Government. [Section 2(l) and 20B] With this definition, the regulated area has extent not only horizontally but also vertically and covers even below the surface.

8. The Act provides for undertaking survey of all prohibited areas and regulated areas by the ASI for the purpose of preparing detailed site plans within a time limit to be specified by the Central Government. Responsibility has also been given to the ASI to identify all construction of whatever nature made on and after 16th June, 1992 in all prohibited and regulated areas and to submit a report from time to time to the Central Government. The ASI has been given authority under the Act to call for information from the local bodies and other authorities.

9. The Amendment Act provides that none other than an archaeological officer can carry out any construction in any prohibited area. This provision means that no construction activity can be taken up in the prohibited areas of the protected monuments and protected areas. The authority for undertaking construction activities in the prohibited area has been given to the archaeological officer keeping in view the requirements to enhance the visitors experience, which may require erection of structures like toilets, sculpture shed, museum, interpretations centre, publication counter, ticket book office, water kiosk, small cafeteria, etc.

10. The Act provides that no permission, including carrying out any public work or project essential to the public or other constructions, shall be granted in any prohibited area on and after the date on which the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act 2010 comes into force. After the enforcement of the Act, 2010, public work or project essential to the public or other constructions cannot be carried out in the prohibited area. This provision, however, does not include cleansing of drains and drainage works and of public latrines, urinals and similar conveniences, or, the construction and maintenance of works meant for providing for supply of water for public, or the construction or the maintenance, extension, management for supply and distribution of electricity to the public or provision for similar facilities for public [Section 2(l) and 20B]. This provision has barred all construction activities in the prohibited area to be taken up by all public bodies even if the purpose is related to public works or project essential to the public. There is no provision for grant of any relaxation in this regard by any authority.

11. Any person, who owns any building or structure, which existed in a prohibited area before the 16th day of June, 1992, or, which had been subsequently constructed with the approval of Director General and desires to carry out any repair or renovation of such building or structure, may make

an application to the Competent Authority for carrying out such repair or renovation, as the case may be [Section 20C(1)] After the enforcement of the Amendment Act, no owner or possessor of any building or structure or land falling in the prohibited area could be permitted for undertaking any construction or reconstruction. He may, however, undertake repair or renovation of the building or structure which existed prior to 16th June, 1992 or which had been constructed on the basis of permission granted by the Director General.

12. The Act provides for carrying out construction or re-construction or repair or renovation of such building or structure on such land, as the case may be, by any person, who owns or possesses any building or structure or land in any regulated area. The owner or possessor of any building or structure or land may make an application to the Competent Authority for carrying out construction or re-construction or repair or renovation, as the case may be. [Section 20C(2)]

13. The permission for construction granted by the ASI after the 16th day of June, 1992 but ending before the date on which the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act 2010 has come into force, in the regulated area in respect of such protected monument, shall be deemed to have been validly granted in accordance with the provision of this Act [Section 20B]. As per this provision the constructions carried out by any person in the regulated area without obtaining prior permission from the Director General is illegal and not valid.

14. The permissions for construction granted by the ASI after the 16th day of June, 1992 but ending before the date on which the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, in the prohibited area on the basis of the recommendation of the Expert Advisory Committee, shall be deemed to have been validly granted in accordance with the provisions of this Act [Section 20A(3)].

15. The Act, however, provides that the permission for construction or re-construction of any building or structure granted in any prohibited area subsequent to the completion of construction or re-construction of any building or structure. [Section 20A(3)]. This provision has not validated the permissions granted by the Director General ex-post-facto, which means that the buildings and structures so constructed un-authorizedly but regularized later would be treated as unauthorized and illegal.

16. The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 provides that the Central Government may specify, by notification in the official Gazette, an officer not below the rank of Director of the Competent Authority to perform functions under the Act. The Central Government has the powers to specify different Competent Authorities for the purpose of Sections 20C, 20D and 20E. [Section 2(db)]

17. Henceforth, the authority to receive application for grant of permission for construction, reconstruction, repair or renovation in the prohibited areas or regulated areas has been vested with the Competent Authority, who shall be specified by the Central Government through a

Gazette notification to discharge his functions as defined in the Act.

18. The applications for grant of permission for repair or renovation of buildings or structures which existed in a prohibited area before 16th of June 1992, or which had been subsequently constructed with the approval of Director General may be made to the Competent Authority by the owner or the possessor in such manner as may be prescribed (as per the rule to be notified). [Section 20D(1)]

19. The applications for grant of permission for construction or reconstruction or repair or renovation of any building or structure or land in a regulated area may be made to the Competent Authority by the owner or the possessor in such manner as may be prescribed (as per the rules to be notified). [Section 20D(1)]

20. The Competent Authority shall forward the applications so received within 15 days to the National Monument Authority to consider and intimate impact of such construction (including the impact of large scale development project, public project and project essential to the public) in accordance with heritage bye-laws to be framed for the concerned protected monument or protected area. [Section 20D (2)]

21. The Central Government may prescribe the category of applications in respect of which the permission may be granted under sub section 20D(2) and the applications which shall be referred to the National Monument Authority for recommendations. [Section 20D (2)]

22. The National Monument Authority shall intimate within two months after the receipt of the application to the Competent Authority impact of such construction (including the large scale development project, public project and project essential to the public). [Section 20D (3)]

23. The Competent Authority shall either grant permission or convey refusal to the applicant within one month of receipt of the recommendation of the National Monument Authority. [Section 20D (4)]

24. The recommendation of the National Monument Authority shall be final. [Section 20D(5)]

25. In case of refusal of the permission, the Competent Authority shall by order in writing and after giving an opportunity to the concerned person intimate such refusal within three months from the date of receipt of application to the applicant, the Central Government and the National Monument Authority. [Section 20D (6)]

26. The Competent Authority is empowered to refer the permission so granted for carrying out of repair or renovation work or reconstruction of building or construction of National Monument Authority, in case, it is found that such repair or renovation or reconstruction or construction is likely to cause an adverse impact on the preservation, safety, security or access to the monument considerably for recommendation, and if so, recommended by the Authority, the Competent

Authority may withdraw the permission granted. [Section 20D (7)]

27. The proviso to Section 20D (7) authorizes the Competent Authority, in exceptional circumstances and with the approval of the National Monument Authority, to consider grant of permission for repair/renovation/construction/reconstruction, etc., even before the heritage bye-laws are approved /notified. [Section 20D (7)]

28. The Central Government or the Director General shall have to exhibit on website all the permissions granted or refused [Section 20D(8)]

29. The Competent Authority in consultation with the Indian National Trust For Art and Cultural Heritage or such other expert heritage bodies, as may be notified by the Central Government, shall prepare heritage bye-laws in respect of each protected monument and protected area. [Section 20E(1)]

30. The heritage bye-laws shall specify heritage controls such as elevation, façade, drainage system, road and service infrastructure (including electric poles, water and sewer pipelines) in addition to such matters as may be prescribed (to be detailed out in the rules to be framed). [Section 20E (2)]

31. The Central Government shall specify, by rules (to be framed), the manner of preparation of detailed site plans in respect of each protected monument or protected area, or prohibited area or regulated area, the time within which such heritage bye-laws shall be prepared and particulars to be included in each such heritage bye-laws. [Section 20E (3)]

32. The preparation of heritage bye-laws in respect of each protected monument or protected area shall be governed by the ground conditions and nature of the monument for which it has been found essential to undertake detailed documentation of the protected area, prohibited area and regulated area in each case.

33. The Competent Authority has been authorized to appoint experts or consultants for preparation of detailed site plans and heritage bye-laws. [Section 20E (4)]

34. The heritage bye-laws which shall eventually be prepared by the Competent Authority with the help of outside experts and consultants shall be got approved by the National Monument Authority, which is proposed to have the Chairperson and members of excellence in the relevant areas like archaeology, country and town planning, architecture, conservation architecture or law. [Section 20E (5)]

35. The heritage bye-laws in respect of each protected monument or protected area shall be laid on the table of each House of Parliament. [Section 20E (6)] The heritage bye-laws therefore shall have to be published in the Official Gazette to make them available to public.

36. The heritage bye-laws shall be exhibited by the Competent Authority on the website after

tabling the same in each House of Parliament. [Section 20E (7)] This provision has been made to make the system transparent and to avoid any undue inconvenience or harassment to the public.

37. Penalty under section 30 of the Principal Act has been enhanced from three months to two years and fine of rupees five thousand to one lakh or with both in respect of violation subsection (1) WHOEVER –

- (i) Destroys, removes, inquires, alters, defaces, imperils or misuse a protected monument, or
- (ii) Being the owner or occupier of a protected monument, contravenes an order made under sub-section (1) of section 9 or under sub-section (1) of section 10, or
- (iii) Removes from a protected monument any sculpture, carving, image, bas-relief, inscription, or other like object, or
- (iv) Does any act in contravention of sub-section (1) of section 19, shall be punishable with imprisonment which may extend to two years, or with fine which may extend to one lakh rupees, or with both, Similar to sub-section (1) the penalty for violation of sub-section (2) of section 30 has also been enhanced.

(2) Any person who moves any antiquity in contravention of a notification issued under sub-section (1) of section 25 shall be punishable with imprisonment which may extend to two years or with fine which may extend to one lakh rupees or with both; and the court conviction a person of any such contravention may by order direct such person to restore the antiquity to the place from which it was moved.

38. In respect of unauthorized constructions in the prohibited and regulated area of the protected monument and protected area, the penalty has been incorporated now by the Amendment Act. The penalty provision is as under –

- (i) Whoever raises, on and after the date on which the Ancient Monuments and Archaeological sites and Remains (Amendment and Validation) Act 2010, any construction in the prohibited area, shall be punishable with imprisonment not exceeding two years or with fine which may extend to one lakh rupees or with both. [Section 30A]
- (ii) Whoever raises, on and after the date on which the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, any construction in the regulated area without previous permission of the competent authority or in contravention of the permission granted by the competent authority, shall be punishable with imprisonment not exceeding two years or with fine which may extend to one lakh rupees or with both. [Section 30B]
- (iii) If any officer of the central Government enters into or acquiesces in any agreement to do, abstains from doing, permits, conceals or connives at any act or thing whereby any construction or reconstruction takes place in a prohibited area or regulated area, shall be punishable with imprisonment for a term which may extend to three years or with fine, or both [Section 30C]

39. The penalty has been enhanced to ensure that it acts a deterrent and none dares to indulge in unauthorized and illegal activities as per the Act. Provision for severe punishment has also been made for the officers of the Central Government who are found indulged in any act which is illegal or unauthorized as per the Act. This will make sure that the Central Government officers discharge

their functions with utmost sincerity and as per the Act.

40. The Director General of the Archaeological Survey of India has been made responsible to conduct a survey or cause survey to be conducted in respect of all prohibited area regulated areas of the protected monuments and protected areas for the purpose of preparing detailed site plans within a period which may be specified by the central government. A report on the survey to be conducted shall be submitted by the Director General to the Central Government and the Authority. [Section 35A(1) and (2)]

This exercise is essential to document the existing ground conditions in the prohibited areas and regulated areas so that it is easy to find out if some one has undertaken construction activities without obtaining permission from the Competent Authority. The preparation of detailed site plans in respect of each protected monument or protected area is also essential for preparation of heritage bye-laws. The Director General has to complete exercise within a time to be specified by the Central Government.

41. Responsibility has been entrusted upon the Director General of the Archaeological Survey of India to identify or cause to be identified, all construction (of whatever nature) made on and after the 16th day of June, 1992 in all prohibited areas and regulated areas and, thereafter, submit from time to time a report in respect thereof to the Central Government. [Section 35B(1)] Although, the Circles of the ASI may have some data on unauthorized constructions carried out in the prohibited and regulated areas of protected monuments and sites, this may not be correct and many omissions could be there because of lack of proper mechanism and manpower infrastructure. This is a major exercise which may involve a lot of interaction with Panchayats, Municipalities, Development authorities, revenue authorities and various Central and State Government departments to find out the details of constructions carried out in the prohibited and regulated areas of the protected monuments and protected areas without approval of the Director General.

42. The Director General, Archaeological Survey of India has been given powers to call for information from the local bodies and other authorities for identification of all constructions made on and after 16th June, 1992 in all prohibited areas and regulated areas. [Section 35B(2)] This provision makes it mandatory for the local bodies and other authorities to share the details on unauthorized constructions carried out by the individuals and public bodies in the prohibited and regulated areas of the monuments and sites after the issue of the notification dated 16th June, 1992 in the Official Gazette.

43. As per section 12 of the Amendment Act, the permissions granted by the Archaeological Survey of India between 16th June, 1992 and the enforcement of the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 for construction or re-construction or repair or renovation except those granted ex-post-facto after the completion of the structure or building in the prohibited areas and regulated areas of the protected of the protected monuments and protected areas have been held as valid and not challengeable in any court, tribunal or other authority. Any rule, order or notification made under the Ancient monuments and Archaeological Sites and Remains Act, 1958 for carrying out any repair, renovation

or construction work or undertaking any public work or public project before the commencement of the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 shall also not be challengeable in any court, tribunal or other authority.

B. HOW TO LIGHT MONUMENTS

B.1 Photometric requirements

When illuminating a monument, it is preferable to install the lighting equipment close to it. This will enable the “wall washing” effect (like on building façades) to be created, providing contrasts and shadows that will perfectly reveal the shapes and the volume of the monument.

In addition, placing small floodlights close to the monument will make it easier to control any potential problems of glare for pedestrians or drivers moving around. Generally, narrow beam floodlights are used for small monuments.

When the monument can be seen from all directions, a minimum of three orientations (ideally every 120°) is necessary for the complete illumination. When it is not possible to install the floodlights close to the monument, the illumination design is more difficult due to the control of glare. Narrow beam floodlights must be accurately oriented, avoiding critical directions for vehicle drivers nearby.

The vertical illuminance level to be achieved on the monument depends on several parameters, the most important being the material (brightness, dirtiness) and brightness of the surroundings. The average vertical illuminance level can range from 0 to 30 lux (for clear material in a relatively dark environment) up to 300 lux (for darker material located in bright surroundings).

B.2 Light sources

To show the natural colours of the monument by night, the only possibility is to use white light. The white LED light source is ideally adapted to this type of illumination.

In addition, the compact nature of this source and its associated floodlights provide interesting possibilities for this kind of solution.

Accent lighting to highlight particular details of a building is easy to achieve. When high power is necessary (very large distance to illuminate), the use of a high output flux LED fixture is now possible.

If coloured lighting is desired, the best choice is clearly the use of LEDs. Indeed, the efficacy of saturated colours given by the different types of LEDs (or their RGB combination) is much higher than metal halide lamps associated with coloured filters. All the light sources have the same colour temperature. Unwanted differences in colours show a very bad and disappointing result.

B.3 Floodlights

In most situations, floodlights will be used to illuminate monuments. The floodlights are equipped with LEDs and can have different shapes, depending on the illumination needs. Circular or rectangular design for different light distributions, linear modules for wall washing effects, etc. The chosen floodlights should have a high tightness degree (IP 66), to maintain the initial photometric performance throughout the lifetime of the installation.

B.4 Installation layout

To create a wall wash lighting on a monuments, different options exist: floodlights can be recessed into the ground, fixed onto the ground, on the monument structure, on small poles, et When located at a larger distance from the monument, on poles or on surrounding buildings, narrow beam floodlights are ideal.

SOURCE: <http://www.schreder.com/zh/learningcentre/howtolight/how-to-light-monuments>

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दिल्ली नगर कला आयोग

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