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A Policy for the Conservation of Bara Katra in the Old Dhaka Industrial Area

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Abstract

A medieval caravanserai called "Bara Katra" has been found in ancient Dhaka, Bangladesh. The historic monument Bara Katra's momentous cultural identity is a hallmark of Dhaka, still standing today and crying for proper conservation attention. It stands for social value, artistic beauty, emotional value, and the architectural history of Bangladesh. The history of the old Dhaka, both industrial and architectural, has become better known. In addition to the various state efforts, populous stakeholders in Bangladesh have come forward with concern for the preservation and restoration of monuments and historic sites. The initiatives have been designed to conserve Bangladesh's ancient heritage and culture for future generations. The artifact Bara Katra, which was the most magnificent architecture during the Mughal era, is deteriorating and has experienced numerous unintended adjustments over the years. The majority of the building's components have been demolished, except its southern wing. As a response, it requires special attention to take the necessary actions to preserve its heritage and cultural value for the civilization that values its legacy and cares about future concerns. Due to Old Dhaka's extensive ancient narrative, there are many opportunities to promote cultural tourism and tourist attractions in this neighborhood. This paper aims to demonstrate a conservation management plan technique with potential recommendations for Bara Katra, including necessary measures and adaptive reuse. The management policy likewise involves collaboration with the relevant authorities for conservation.

Keywords

Conservation Management Plan 1, Bara Katra 2, Heritage 3, Historic Buildings 4, and Legislation 5.

1. Introduction

Old Dhaka, commonly referred to as Puran Dhaka, is a district of Dhaka, Bangladesh, with an extensive legacy of architecture that spans several millennia and an interesting architectural fusion of Bengali, colonial, and Mughal architecture. This ancient city was one of South Asia's largest cities during the Mughal era and was known as Jahangirnagar. The city had historically served as a hub for economic activity, trade, and cultural backgrounds, drawing in merchants, academics, and artists from all across the region. The city was known for its great palaces, masjids, and gardens during the Mughal period; many of them still stand today. Lalbagh's fortress, Ahsan Manzil, and the Star Mosque are some of the more famous examples. During the British colonial period, Old Dhaka underwent significant changes, with many new buildings constructed in a style that combined European and Bengali elements. In areas like Farashganj or Armanitola, for instance, some large old warehouses and factories remain to be seen. Several public buildings, such as the Sadarghat River Port, the Armenian Church, and Curzon Hall, were also built by the British and are some of the most famous buildings of the period. It stresses the use of traditional materials like timber, wood, bamboo, and thatch while being characterized by detailed carving and ornamental designs referred to as the Bengali style. Old Dhaka, too, is famous for its winding alleys and colorful markets, which give a distinctive character to the district. In the last several years, many of Old Dhaka's buildings have been damaged, but there are efforts underway to clean up and protect its historic architecture. Many historical relics were developed during the Mughal era in old Dhaka, including Bara Katra, an iconic relic among some of the historical remnants (Shaikh and Mowla 2009). It was created by a prosperous businessman by the name of Haji Mohammad Mohsin in the late 18th century, and the East India Company initially utilized it as a center for commerce. At one time, the most magnificent

edifice in Dhaka was Bara Katra. It is located next to Chawk Bazar, which is Dhaka's oldest bazaar and has significant historical and cultural significance. This historic monument is in a state of decay due to rapid urbanization and a lack of awareness or conservation initiatives. Given the uncontrolled and insensitive development surrounding the historic sites, there has been an adverse impact on the urban fabric, resulting in the area losing its identity and roots. This paper focuses on the analysis of Bara Katra and its integration into the urban fabric of Dhaka, which will show the way for historic artifacts to have similar integration into the city fabric for our identity and posterity. This study mainly suggested the corresponding comprehensive conservation management policies, plans, and guidelines for the integration of Bara Katra. A proposal has also been rendered by carefully analyzing the problems and simultaneously considering the opportunities.

1.1 Objectives

The main aim and rationality of this study are to provide schematic solutions that could prevent the architectural heritage from destruction and also provide policy and planning through conservation and management. The objectives of the proposed conservation strategies, steps, and guidelines for managing and developing a Conservation Management Plan (CMP) of the historical and architectural monument that measures some degree of intervention for the artifact are to document the tangible and intangible heritage (customs, rituals, and beliefs) and to conserve heritage sites to maintain their integrity and authenticity. Integrating the object into the urban fabric by providing proper access and visual exposure would help people appreciate this historic landmark and the allure it once held. The article's objective is to investigate new concerns, investigate future development prospects, and create sustainable conservation management plans and policies for historical and architectural sites.

2. Literature Review

2.1 Location

The archaeological and historical legacy of the Mughals is Bara Katra, one of the most ancient structures in Dhaka, the capital of independent Bangladesh [Bara Katra, Lonely Planet]. It is located near the north bank of the Buriganga River in Chauk Bazaar's southern section. Chauk Bazaar, which is close to Bara Katra, was created as the core business district during the Mughal era (Taifoor 1956). Murshid Kuli Khan constructed the Chawk, as per Charles D'Oyly (1823), around 1114 A.H. (1702A.D). Bara Katra is a heritage structure designated by the Department of Archaeology in Bangladesh, owning numbers 14, 15, 16, 17, 18, 19, 31, 32, 32/1, 33, 34, 38, 39, 40, 40/a, 40/b, 40/c, 41, 41/2, 41/a, Chawk Bazar, Old Dhaka, Bangladesh (Hossain 2006). The structure of the building follows the Central Asian Mughal Caravan Sarai structural archetype, and it is designed by Monarch Mughals (Ahmed 1980). Mir Abul Qasim, the leading member of Mughal Prince Shah Shuja, the second son of Emperor Shah Jahan, constructed Bara Katra around 1644 and 1646 A.D. (Asher and Catherine 1984). Although Shah Shuja intended for it to be his home, he instead donated it to Mir Abul Qasim (Ahmed 1980). Now Bara Katra building is a "WAQF" (endowment) asset that is owned by the state and is managed by the Ministry of Religious Affairs. It is dedicated to God (Hossain 2006). The Ministry's General Department of Archeology is in charge of the site's general safeguarding and management. The South and the West wing are occupied by Jamiatul Husainia Ashraful Ulum-Madrasa (institute for Islamic studies) and Mosque, the East wing is occupied by shops and warehouses, and the North wing and central enclosed space is filled with different unplanned settlements. Over 2000 people stay at the property (Hossain 2006).

2.2 Responsible Authorities

Bara Katra is already declared a protected historic monument by the Department of Archaeology, Bangladesh which prepares and publishes some survey drawings. RAJUK-Literally the Capital Development Authority of the Government of Bangladesh – is a Bangladeshi public agency responsible for coordinating urban development in Dhaka, Bangladesh, and City Corporation is Responsible to provide municipal services. In 1958 Department of Archaeology demarcated property lines to acquire Bara Katra but no further steps were taken. The area to be acquired by the structure is 57,8,70 square feet which have been shown below in “Figure 2”. Areas to be acquired are those areas that are currently illegally occupied. These illegal structures should be demolished as part of the restoration and conservation process of the artifact.

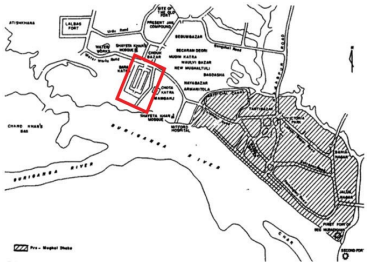


Figure 1. Map showing the demarcation between Pre-Mughal and Mughal, Dacca with Bara Katra (Source: Department of Archaeology, Bangladesh)

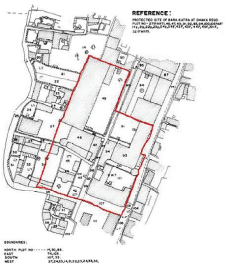


Figure 2. The area to be acquired shown in red of artifact Bara Katra, 1958. (Source: Department of Archaeology; Reference- Mouza Shahar Dacca, map 1912-1915)

2.3 Site Description

The center, as well as one of the oldest cities in Bangladesh, is Dhaka, historically named Dacca in English. Old Dhaka is a word used to describe the over 400-year-old ancient old city of Dhaka (Chowdhury 2012). Since 1610, it has served as the Mughal Capital's hub. Due to its significance in terms of administration, commerce, and infrastructure, Dhaka rose to prominence as the capital of Bangladesh and an influential city throughout the Mughal era (Dani 1962). in the early 18th century, Mughal magnificence started to decline after the Nawab of Bangladesh relocated the capital from Dhaka to Murshidabad, and it subsequently ended as a result. Dhaka was chosen in 1947 to be the District of East Bengal's state capital within Pakistan. In 1971, when Bangladesh became an independent state, Dhaka was chosen as its capital. Among the most prominent historical remnants of the Mughal period in old Dhaka is Bara Katra, a majestic structure of vast scale that was built during the Mughal era. The Arabic word Katra or Katra, which denotes palladian structure, may have been the source of the English name "Katra". It has been referred to as a "Caravan (Karwan) Sarai" or simply a "Sarai" in Arabic and Persian literature. Typically, a Karwan Sarai has a courtyard. The courtyard would be enclosed by an arched veranda, and beyond the veranda would lie the chambers where people passing by sought refuge when traveling from one location to another. The Bara Katra was regarded as a magnificent structure during the time of the Bengali Mughal Dynasty. After the Capital was moved from Dhaka, Bara Katra was no longer useful. It was here that the Nayeb-E-Amir of Dhaka resided till the Kuthi was moved to Nimtoli in 1765 A.D. (Hossain 2006). According to an inscription composed by Sad ud-Din Muhammad Shirazi in 1646 A.D, "Abul Qasim al-Husaini at-Tabtaba as-Simnani, built this edifice, endowing it with twenty-two shops, attached to it, on the rightful and lawful condition that the officials in charge of the endowment would expend the income derived from them upon the repairs of the building and upon the poor and that they should not take any rent from any deserving person alighting therein, so that the pious act may reflect upon the monarch in this world and that they should not act contrariwise, or else they would be called to account on the Day of Retribution" (Hasan 1980). Based on the archival documents that have been preserved in stone, "Abul Qasim constructed this structure and added 22 stores in 1055 Hijrah to obtain the blessing of Almighty Allah" (1646). The inscription on that stone reads, "Here the impoverished passersby may rest freely." Overall, the edifice is made of mortar brick and has intricate layouts for residing and comfort. D'Oyly wrote in 1823 about the Bara Katra as, "The most luxurious, beautiful and huge building in the center of Dhaka but local poor people had occupied the building". In the 19th century, Orientalist James Atkinson illustrated the building of Bara Katra as "an astonishing pile of grand and gorgeous architecture (Bara Katra, South View)". All the features of Bara Katra are decorated as per Imperial Mughal Architecture. The architecture of the building follows the traditional pattern of the caravanserai of Central Asia. According to Rennel's Map (1779)" Bara Katra appears to have consisted of an open quadrangular courtyard, enclosed by four wings with arcaded rooms and there are 22 rooms in each wing (Ahmed 1980). In the northern and southern wings, two gateways were constructed which were used as the main entrance. The southern wing is 223 feet prolonged and fronted on the Buriganga River (Begum 2012). The middle structure of the southern wing was planned on a grand scale and consisted of a lofty three-storied central archway framed within a projected rectangular bay (Ahmed 1980). The remaining part on either side was covered by two-storied and ended at the corners with octagonal hollow towers three stories (Ahmed 1980). Two-storied structures have small arched entrances below and residential rooms with window openings towards the river above. The main gateway structure is prominently projected and a high-arched alcove rises to the top of the second storey, and above the apex of the alcove opens the windows of the third storey (Begum 2012). A chamber and verandah can be found on the third floor, which was likely only intended for distinguished guests. Plastered panels depicting a variety of forms, such as four-centered, cusped, horse-shoe, and flat arches, are used to embellish the underneath of the alcove and the wall surrounding the spandrels. The 27 feet 3-inch-diameter octagonal domed chamber is entered from the

southern archway, which also connects to a guardroom. The ceiling is beautifully plastered and embellished with ornate foliage motifs and net patterns. There are also remnants of the original color application. To distinguish the two levels, the monuments surrounding the entryway were historically adorned with rows of blind pertaining. Long corridors with barrel vaults are accessible from the ground floor's secondary arched openings. On either side of the main gateway are five-domed rooms on the ground level, while the top story has dwelling rooms connected by a continuous passageway (Begum 2012). The corner void tower's lined decoration is apparent on the facades of the two lower tiers, while the top level has window openings. From the courtyard, two flights of stairs ascend to the second level, one on either side of the entranceway. The residences and stores ringed the structure's courtyard over all four edges. Identical to the southern side, the northern wing's gateway was less ornate (Asher and Catherine 1984). The length of the west and east wings, each with a single story, was roughly 230 feet (Begum 2012).

2.3.1 Historic Photographic Documentations

In this study paper, the authors research the status of Bara Katra from historic photographic documentation as shown below in "Figures 3 to 10":

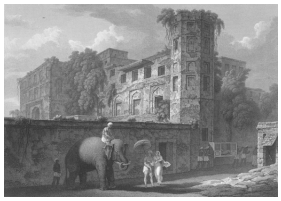


Figure 3. South gate, Bara Katra by Charles D'Oyly,

Figure 4. Ruin of northern gate by Charles D'Oyly,

Figure 5. South Wing from the Court Yard in 1870 A.D.

Figure 6. Entrance Gateway of the South wing in 1906

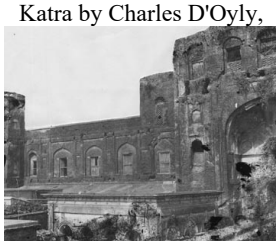


Figure 7. South wing in 1930 A. D

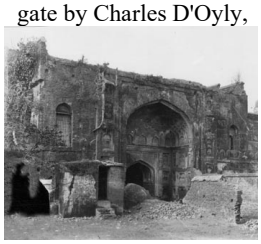


Figure 8. South wing from courtyard in 1950 A. D

Figure 9. Entrance, the south wing in 1964 A. D

Figure 10. Bara Katra in 1969 A. D

(Source: British Library)

3. Methods

Through interviews and historical evaluation, a qualitative research methodology is used to collect the research data. To comprehend the historical and architectural facts about the significance of the Mughal great constructions, a review of the literature has been conducted. In this review, the theoretical portion was built. The identification of historical interventions and fabric components has been done through document study. Architectural surveys, numerical information analysis, such as infrastructure analysis, and small-scale on-site investigations are all part of documentary research. Bara Katra's architectural preservation has a pressing need for documentation, yet there is a lack of literature, old photos, and other records. More importantly, there is no evidence of a complete architectural evaluation that provides detailed blueprints for the north wing. The study's sources of data include the Rennel map, the Department of Archaeology's incomplete survey drawings, historical accounts, Charles Doyle's sketches of Dhaka, and a few other ancient photographs. A field assessment has been conducted at the investigation site to discover more about its history and future. A photographic study has also been completed to chronicle the property's current situation as well as the historic Mughal monument's overall condition. The groundwork for the field inquiry was laid by these empirical surveys. Based on the existing ruin, authentic documentation with thorough drawings and photos, and archaeological (historical) data, a proposal for policy and planning on the conservation and management of Bara Katra has been made. Finally, suggestions have been made based on the findings of this study.

4. Data Collection

4.1 Morphological Analysis and their Virtual Reconstruction

When we need to study or break down the structure or overall form of a product into its various constituent shapes, we frequently employ the morphological analysis method. 'The following morphological study of Bara Katra is

illustrated by extant drawings "Figure 11", conceptual sketches "Figures 12 to 14", a riverside elevation of the south wing "Figure 15", elevation of the north wing "Figure 16", and a virtual reconstruction model "Figures 17 to 18":

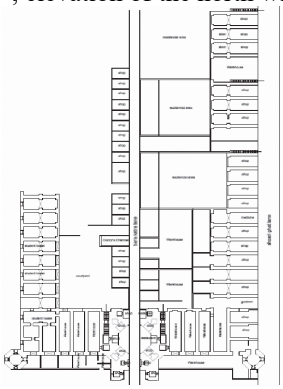


Figure 11. Existing ground floor plan of Bara Katra. (Source: Department of Archaeology, Bangladesh).

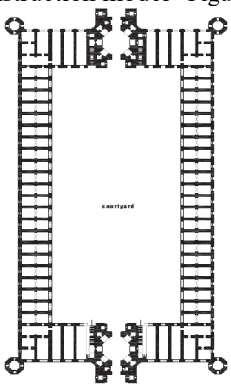


Figure 12. Drawing of the ground floor of Bara Katra (Source: Department of Archaeology, Bangladesh)

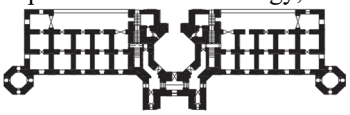


Figure 13. Drawing of first-floor plan of Bara Katra (Source: Department of Archaeology, Bangladesh)

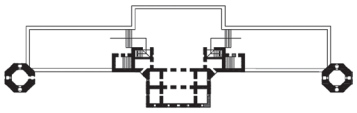


Figure 14. Drawing of second-floor plan of Bara Katra (Source: Department of Archaeology, Bangladesh)

Figure 15. Elevation of the south wing by author, (Reference: Archaeology Department, Bangladesh, 1981)

Figure 16. Elevation of the north by author, (Reference: Archaeology Department, Bangladesh, 1981)

4.2 Present Condition of Bara Katra

Different part of the property is now in a different form of submission. The south and west wing is a Waqf property and the rest of the part is possessed and controlled by different parties for different use (shops, residences, and warehouse). So, the whole property is a synthesis of a different form of submission. Except for the Southern wing with the gateway and some portion of the east wing, all other parts of Bara Katra have almost disappeared, which is shown in "Figures 17 to 18". The wings with entrance on the north side have completely disappeared (Hassan 1958) but the southern wings still exist as a ruin with some alternation ruin. The eastern and western wings are either demolished or altered in a manner that makes it beyond recognition of its historic past. Though the building has got small openings of traditional Mughal-style entrances ample natural lighting was ensured by windows but on the ground floor and staircases most of the openings are sealed off which prevents the usual penetration of light (Mowla and Shaikh 2013). Moreover, there are several damages to the wall, roof, floor, and staircases can be seen that need proper initiatives for repair and improvement.

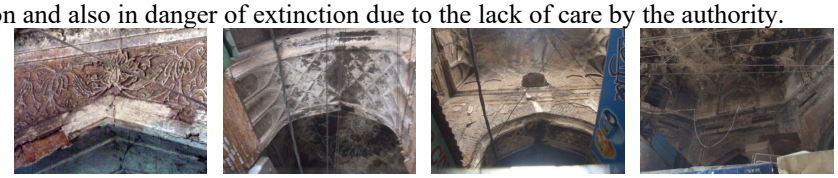
Figure 17. Southern gateway of Bara Katra views from the riverside (Source: Author 2018)

Figure 18. Southern gateway of Bara Katra views from the inner courtyard side (Source: Author 2018)

4.3 Decorative Condition of the Surviving Building

Decoration work on plaster at outer wall is partly present but the internal decoration of domes at the top of the octagonal tower and entrance is still intact "Figures 19 to 22". Different colors have been used in doors, windows, and wall surfaces recently without considering original parches or schemes (Mowla and Shaikh 2013). Bara Katra is

enlisted as the national antiquities of Bangladesh. But decorative with all conditions of this Mughal edifice is in a deplorable condition and also in danger of extinction due to the lack of care by the authority.



Figures 19-22. Decorative features of the southern gateway of Bara Katra are still intact (Source: Author).

4.4 Uncontrolled Development and Condition of the Site

It should be noted that the present condition of Caravanserai is in dilapidated condition. Most of the structure are already been destroyed. Only the southern gateway marks it present. One of the major constraints of getting back the property to the archeological department is the complex ownership pattern. The remaining south and almost destroyed west wings are used as Mosque and Madrasa (religious institution). The central, which used to be the courtyard space, is occupied by informal settlements. The rest of the ruin is occupied by shops, residences, and warehouses (Mowla and Shaikh 2013). Currently, Bara Katra is still in use. But the way the artifact is being used is very unsympathetic and hazardous to the building's physical and visual existence. Unaware of the value of the building, the users are frequently demolishing the walls to build new structures "Figure 23". They also add new floors ignoring the building morphology and structural safety "Figure 24". In the entrance hall, there are so many incompatible additions of shops of different categories that impede the visual quality "Figure 25".

Figure 23. Razing wall By Madrasha (Mowla and Shaikh 2013)

Figure 24. Southern gate from the inner side (Source: Author 2018)

Figure 25. Southern gate (Source: Author 2018)

Figure 26. Madrasa on the west side of Bara Katra (Source: Author 2018)

Figure 27. Newly built structures (Source: Author 2018)

Figure 28. Illegal warehouse in the eastern wing of Bara Katra (Mowla 2013)

The present use of Bara Katra and surrounding areas is a great threat to physical and visual existence. The physical footprints of Bara Katra can still be seen but the plots are used by newly constructed pucca or semi- pacca constructions which are obviously illegal as it is a large waqf property. There are traces of walls and foundations of the east and west wings standing with the newly built residences (colonial structure) in the east "Figure 26" and the madrasa on the west side "Figure 27". Open courts and the ground floor of Bara Katra are occupied by incompatible functions "Figure 28". The addition of newly built toilets and ablution spaces on the terrace of the first floor has been made. Some tin-shaded structures are also added on the terrace of the second floor (Shaikh and Mowla 2009). The present state of Bara Katra is in a serious identity crisis due to new settlements within and adjacent to the sites. The dense settlements inside the court "Figure 31" and around the artifacts have resulted in visual obstacles "Figure 29". The visual obstacles are more prominent in all the gateways "Figure 30". Inadequate space around the structure restricts proper lighting and ventilation (Mowla and Shaikh 2013). The narrow road network doesn't permit vehicular access. The narrow streets known as "Bara Katra Lane" have run through the gateways, created by the remaining ruins "Figure 32". The open-to-sky space enclosed by the structure is almost occupied by newly built structures that are mostly used as residences, shops, and warehouses. The riverbank has now moved away from the structure that once uses to touch the river water. Moreover, landfilling in the area has set the ground level above the plinth of the existing ruin (Hossain 2006).

Figure 30. Invisible South wing

Figure 29. The situation of the south wing due to the dense settlements (Hossain 2006)

(Source: Author 2018)

Figure 31. The inner courtyard and the southern wing (Hossain 2006)

Figure 32. Main and sub lane close to the inner court of Bara Katra (Source: Author 2010)

4.5 Material Investigations

The upper layer of the soil up to 10' to 12' deep is hard and reddish but the second layer is blackish and not as hard as the upper layer. The next two layers of sand and clay alter the number of times but hard rock is found at 400' depth (Hossain 2006). It has a masonry foundation that is wide and deep enough. These structures of the Mughal period were structurally over-designed that ensure structural safety (Hossain 2006). Small bricks from local clay were used in the Mughal buildings of this area. Shell lime mixed with brick dust in a 1:1 ratio is to get used as mortar. A mixture of coarse brick dust and shell lime in a 1:1 ratio was spread over the uneven brick surface and rammed by bamboo sticks then lime water was dispersed over this 1.5" to 2" thick layer. A mixture of sand and fine brick dust in 1:9 ratios was mixed with a lime In1:1 ratio for another 1/8" thick layer. Shell was burned and meshed into powder and kept wet to get a paste that was strained and mixed with blue pigment to achieve bright white color. But an unidentified material was also used to achieve adhesive quality. This ultimate product was used over the plaster inside instead of color. For the Floor, a Mixture of brick chips, brick dust, and lime in a 6:3:1 ratio was laid over the clay tiles set on the rafter (2"x2" with a 10" gap between two rafters) and placed over wooden beams then it was rammed. The finishing layer was laid over the first layer with the addition of garlic, molasses, tamarinds, and betel nut to the mixture to make it damp-proof. The finishing layer was well-rammed to make it highly watertight (Hossain 2006).

5 Damage Survey

5.1 Floor: The finishing layer is removed from most of the floor surface and the new repair works failed to maintain the slope to drain the rainwater.

5.2 Staircases: The two major stairs leading to the 2nd floor from the ground floor are severely damaged "Figure 33". The eastern one is reconstructed but the western one is standing with a damaged surface.

5.3 Roofs: Prominent cracks move from one end to another through the center of the barrel vault. The open end of this vault takes an archway form which displays the depth of the continuous crack bisecting the whole vault roof. Water leakage is found on the vaulted roof of the first floor of the east side "Figure 35". Moreover, dampness is a common problem in most of the vault and flat roof "Figure 34".

Figure 33. Damaged stair (Hossain 2006)

Figure 34. Damp on the southern gate (Source: Author 2018)

Figure 35. Water leakage at the vaulted roof of the east side (Hossain 2006)

5.4 Wall: Most of the original plaster has come out and, in many cases, traces of different layers of original plaster is exposed. In some places, the original plaster is still there with hair cracks and termite attacks. Both the internal "Figure 37" and external "Figure 35" wall has deteriorated to the extent that the bricks are coming out cracks are also found on these load-bearing walls, especially at the points where arches rest. The presence of vegetation is found on outer walls, resulting in cracks through their spreading roots "Figure 36". Efflorescence is identified from the traces of crystallized forms on the wall surface. Some internal walls are newly plastered over the old ones.

Figure 35. Damage of plaster on the southern gate (Source: author 2010)

Figure 36. Vegetation Southern gate (Source: author 2010)

Figure 37. The original plaster has been removed inner wall (Source: Author 2018)

5.5 Major Structural Damage: Between the entrance and the octagonal turret at the east a prominent crack seems to bisect the entire southern wing "Figure 41". The crack is clear in elevation and on both sides of the slabs "Figure 39". The crack is now filled up with cement mortar "Figure 38 and 40" (Hossain 2006).

Figure 38. Major crack on floor

Figure 39. Crack inside

Figure 40. Major crack on wall

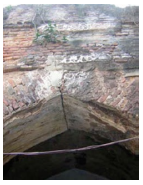


Figure 41. Crack on arch

(Source: Hossain 2006)

5.6 Door and Window

The old door and windows that are considered original are found in poor condition "Figures 42 to 46". Color, polish, and most of the iron grills have disappeared. Rust in iron and deterioration of wooden surface is a common feature. Alternations are made but there is a similarity between the old and new ones (Hossain, 2006).

Figure 42. Existing door

Figure 43. Existing old door

Figure 44. Newly painted door

Figure 45. Window from inside

Figure 46. Window from outside

(Source: Hossain 2006)

5.7 Electrical Services: Electrical services are provided without any proper planning "Figure 47" and by surface wiring (Hossain 2006).

5.8 Excess Moisture: A trace of huge moisture on the floor and wall "Figure 48" at the ground floor indicates capillary action. Though dampness and moisture are a common problem for old buildings in tropical climates the excessive presence of moisture and dampness in most of the floors and walls shows a serious lack of maintenance.

5.9 Rainwater Disposal and Drainage System: The finishing layer of floor is removed from most of the floor surface and the new repair works failed to maintain the slope to drain off the rainwater. Rainwater accumulates on the terrace and roof due to the lack of proper slopes to drain off the water "Figure 49". As toilets and ambulation spaces are

recently located on the terrace of the second floor and the sewerage line is drawn to the west side for disposal to the main line which also causes off problems (Hossain 2006).

Figure 47. Application of electric fan inside the dome (Hossain 2006)

Figure 48. Excess moisture on the inside wall (Hossain 2006)

Figure 49. Corner octagonal turret of (Source: Author 2010)

6. Identified Causes of Decay

- Crack: liner breaks are visible on surfaces, walls, and roofs
- Open Joint: separation of joints between adjacent bricks leads to linear gaps
- Fill: block the area where the original is missing
- Erosion: change in the texture of plaster due to weathering, leaching, wearing down, etc
- Damage: loss of the natural succession or unity of a surface includes mechanical damage due to the expansion of dowels
- Loss of original materials: defacement of the wall surface by human hand, including graffiti, manmade abrasion, etc
- Efflorescence: recrystallization of salt on the surface of a structure, usually appearing
- Bio-growth: small microorganisms of various colors and forms, living or dead, such as fungi, algae, lichens, mosses, or bacteria
- Deposit and Deposit Soiling: droppings of substances from a bird or bat. Dirt and dust mixed with smoke, grime, greasy substances, and carbonaceous particles, including general settlement of dust and dirt
- Discoloration: alteration of surface characteristics by a localized color
- Water stains: visible water stains on a plaster surface
- Insect Hives: hives of different insects, including termites
- Vegetation: vegetation growth of trees, shrubs, and weeds in the masonry, terraces, and base of the building
- Resting Place: animals, birds, and bats rest in the interior of the structures
- Vandalism: graffiti marks, damage caused to the surface due to mishandling, misuse
- Materials Use: cement-based materials are used for repair work, filling joints and voids, etc
- Fixture and fittings: electrical installation for illumination of structure hanging and exposed wires, iron girders, bars, etc. fixed on the structure
- Inlay work: loss of plaster for inlay work
- Plaster loss: an area where the fine top layer of the plaster is lost, thereby exposing the rougher layer underneath
- Stucco loss: loss in decorative stucco work
- Paint loss: loss of paint or superficial lacunae on a painted surface
- Climatic issues: seasonal temperature variation, excessive humidity, excessive rainfall, and groundwater moisture
- Natural disasters: earthquakes, floods
- Man-made causes: lack of maintenance, purposeful alternation, traffic vibration, lack of security precautions, encroachment (SAMBOR 2017), (Kerr 2004).

7. Historic Building Analysis and Issues

It is critical to approach full documentation of the created fabric in stages. Multiple holdings and occupation circumstances in the past and, to some extent, in the present have had an impact on the structural quality. Various factions occupied the buildings at different moments in time. They are unable to interact properly with one another or comprehend the issues at hand. Incompatible reuses will benefit. New settlements have sprung up on and around the sites, and repairs have been carried out with inadequate materials. In historic areas, utilization, borders, spatial layout, and internal architectural challenges with outdoor space conversion have all been issues. The open space is now being used much differently than it was originally intended. The vast majority of the land was used for homes and businesses. Individuals, businesses, and small manufacturers have taken up residence along the limits, endangering the brick wall that surrounds Bara Katra. Due to a lack of boundaries, dense habitation inside the court and around the relics, the addition of new gradients and levels, and other factors that together have led to a full loss of the original layout's

distinguishing design principles and aesthetics, the original layout has been destroyed. Similarly, the absence of old buildings like walls, arcades, pavilions, and gateways has changed the nature of every place. The periodic architecture was eliminated. The demolition of neighboring walls has destroyed the perception of the building's original scale. In the face of destruction, the southern and northern gateways that were vital components of all areas have completely vanished. New road networks have been erected all across the site, fracturing and physically dividing locations. There are no plans for the historic route on the webpage. Several areas are prone to flooding as a result of shifted slopes caused by trash accumulation. The drainage system, which would have been required for all layouts, has nearly vanished.

7.1 Site Revitalization and Management: Analysis and Issues

7.1.1 Management

There are multiple organizations that have a role in the management and maintenance of this site. Department of Archeology, Bangladesh under the Ministry of Cultural Affairs is the main implemental authority and has managerial responsibility for the protection and maintenance of this site. Other managerial authority is "RAJUK" and "Dhaka City Corporation." The decision-makers are those who are intricately involved in developing the CMP, in both the early planning and implementation stages. In Planning, managerial authority are responsible for Proper showcasing of monuments, Resolving parking issues and access. Optimizing visitor and community movement to the site and Providing infrastructure like a bookshop, and souvenir shop also their duty. In Management and Maintenance, they are responsible for Capacity building of the authorial staff and expanding the scope of activities in terms of cultural events, exhibitions, crafts workshops, seminars, academic exchange, and research. In Coordination with other Stakeholders, they are responsible for Coordinating as per needs and requirements with the other Government Agencies.

7.1.2 Stakeholders

Due to Bara Katra's significance and extra local relevance as a national cultural and historical emblem, both local, national, and international authorities will need to take action based on how frequently and heavily they rely on the site. Travelers, tour operators, business owners, and retailers collectively represent the majority of the stakeholders. Local communities, residents, committees, and civil society organizations collectively constitute the secondary stakeholders. The Bangladeshi government and its several ministries, such as the Ministry of Communication, as well as international normative bodies, conservation and development organizations, expert groups, and educational institutions, constitute the tertiary stakeholders.

7.1.3 Site Interpretation and Educational Outreach

Site interpretation and educational outreach will not be developed for the communication of the values of the Bara Katra to visitors, and for the promotion and facilitation of educational activities. There are no digital and print publications, and signage installed to communicate the significance of the site to the visitor.

7.1.4 Engineering Services

The site's public health and sanitation services are in appalling shape. Water supply and sewage facilities will therefore be urgently needed. It is necessary to do a thorough analysis of the site's drainage system, including its design, general terrain, water reservoirs, and water filtering devices. Due to change, degradation of terrace slopes, and broken spouts, the drainage from the buildings is insufficient in some areas, causing dampness on facades and ceiling levels. It is essential to conduct a thorough and in-depth analysis of the structures, particularly the network of catch basins and the routing of the underground pipelines. Numerous natural risk factors, including the likelihood of an earthquake, lightning strike, or fire, have been found as a result of surveys and investigations. It is possible for there to be lightning and strong winds together. Brick buildings are prone to shifting and instability in the wind. Other threats are caused by people, such as vandalism and theft, which call for extra safety precautions. The location lacks the necessary emergency planning and response procedures for the safety and security of visitors as well as the building's historic property. There is a significant risk from weathering, pollution, and climate change. Inappropriate use puts archaeological sites at great risk.

7.2 Emergency Conservation Issues

The analysis of the preliminary case history covers all aspects of the condition and materials which comprises investigations into static problems, construction materials, and the state of deterioration and into climatic, geological, and environmental conditions, whose right actions have not yet been taken. Emergency consolidation is an essential preliminary phase and can have a determining effect on the success of the overall intervention. Emergency

interventions help to keep highly endangered pieces in place, in order to prevent total loss. All emergency conservation activities like cleaning, removal of biologically harmful material, waterproofing, and washes need to be immediately planned and implemented.

8. Results and Discussion

8.1 Conservation Management Policies and Guidelines

This section is to be providing a logical approach to making decisions and guidance on a consistent basis about all aspects of the historical cultural environment. Some conservation principles have been initially considered to achieve consistency in the approach regarding the historical and architectural monument of Bara Katra. Extend the necessary protection through the establishment of laws and decrees which will increase public interest and be able to support future generations. Contributions to the sustainability of heritage sites can be made by everyone. So, understanding and learning about the values of the heritage site by the concerned citizens are essential for making policies and guidelines. Any part of the historical environment should be considered to have value. Understanding the fabric and the components of the historical environment is important for conservation management. The degree of understanding and the associated values can determine the protection. Conservation of Bara Katra will be achieved only when the community will participate. Because any changes in the historical environment happen by natural processes or people. Action taken to counter the harmful effects of natural changes or minimize the risk of change should be timely and quick. Decisions concerning intervention, conservation, and restoration must be reasonable, and consistent. The application of appropriate expertise in the decision-making process is vital. Conflicts in the decision-making process must be minimized by seeking the least harmful intrusive means. Records of decisions and their cumulative outcome concerning intervention (including archaeological), conservation, and restoration need to be maintained (SAMBOR 2017). Regular evaluation of the effects of all actions and their responses should be used to shape future policies and decisions. An acknowledgment of cultural and natural heritage values must be considered in parallel thus creating a bonded relationship between all stakeholders. Beyond heritage designators and in the wider context of total environmental management and spatial planning, an understanding of the cultural heritage value for each stakeholder should be the basis of sound decisions now and in the future with the understanding that the cultural-historical environment is a resource that should be sustained for the benefit of all in both the present and future. In addition to expressing the seven general principles, there are several specific principles that are extremely important to include A multi-disciplinary approach is needed for the conservation, reinforcement, and restoration of architectural, feature, and archaeological cultural heritage. Organizational intervention requires research and analysis of the peculiarity of heritage structures following steps: analysis, diagnosis, and control. These steps must correspond to the condition survey, the identification of the causes of damage and decay, the choice of the measures to remedy these issues, and the control of the achievement of the intervention. Before taking any decision on structural intervention, it is indispensable to first determine the causes of damage and then to evaluate the present level of structural safety. Each intervention should as far as possible, respect the original concept, construction techniques, and historical value of the structure and the historical evidence that it proves (AnakKayana et al. 2013) Replacement of missing or decayed parts must integrate harmoniously with the whole but the distinguishing qualities of the structure and its environment have to be derived from its original form and any significant subsequent changes should not be destroyed so that the restoration does not prove to be false by archaeological or historical evidence. The characteristics of materials used in restoration work and their compatibility with existing materials should be fully established. This compatibility must include long-term effects. Dismantling and reassembly should only be undertaken when required by the nature of the materials and structure and/or when conservation by other means is more damaging.

8.2 Conservation Strategies of the Historic Fabric

The conservation management policy guidelines included some strategic objectives to guide future decision-making and action, to ensure the protection of the outstanding universal value of the Bara Katra, and to address the opportunities and challenges currently faced by the site. The area of Bara Katra including the embellishments of the buildings is an extremely vulnerable condition for physical and visual existence. If the conservation management is not taken just now then building materials will be decayed after a while from the effects of erosion, pollution, and the dense settlements inside the court and around the artifacts. From the archaeological perspective, the building is susceptible to erosion resulting from processes of repair and renewal, replacement, building activity, and other interventions for research purposes. The heritage structure needs to be periodically monitored, inspected, and reviewed through the implementation of a program. Major and modest preservation projects could be completed within this program. The main implementation of the proposed modifications should be considered. After taking into account the importance of the architecture and conducting thorough research into its heritage, progress, and construction

equipment, routine maintenance and small repairs, adjustments linked with large-scale projects, etc., should be carried out. Historic materials must not be removed or removed as little as possible. Any new work must be done with the proper materials, building methods, and, whenever possible, irreversible designs. For the background of the fabric as well as prospective construction references, complete records of all works with important features must be maintained. A lot of people moving about will be bad for the ancient architecture. The capacity factor of the various components of the current building must also be determined.

8.3 Existing Policies and Proposals for the Development of the Bara Katra

To mention a few, the Monuments Act of 1968, the Municipal Construction Code of 2006, and the Bangladesh National Building Code (BNBC) call for the government to intervene and set up a permanent commission to conserve historic places including Bara Katra. For the preservation and restoration of historic structures, the Institute of Architects Bangladesh (IAB) has put up several suggestions. The formation of Cultural Heritage Council should be formed that would involve relevant public and private bodies, who would formulate policies and programs for conservation and this would ensure governmental and private enterprises' participation. Opportunities would be developed to train professionals and craftsmen in building conservation and planning. The preparation of an inventory of buildings and sites with architectural significance. Creation of local awareness by providing on-site information at heritage sites to generate awareness about the significance of the architectural heritage of the country. The existing legislation to be reviewed for allowing the above recommendations to be supported and implemented. The Ministry of Cultural Affairs Department of Archaeology has a significant impact on maintaining this historic structure and heritage. Before this ordinance's 1976 amendment, the 1968 Antiquity Act was adhered to. The ordinance specifies the object or site would be declared antiquity if its age is at least above 100 years old. The Department of Archaeology would start the work when it possessed ion about antiquity. The entire project would be financed by the government. If the Department of Archaeology does not possess antiquity and the owner desires to conserve the building, he has to follow the set of guidelines of the department. The foremost suggestion is shifting the market areas and trading zones to the other side of the Bara Katra. This would enable the area to be free from traffic and human congestion but it would be tough to transfer or rehabilitate. Installation of sufficient sewerage and drainage facilities would prevent the water table from rising further and creating more structural damage. Heritage buildings of the Bara Katra can be conserved practically so that the capital spent for renovation can be obtained back and simultaneously the building would get proper use. Heritage buildings can be used as museums, galleries, cultural centers, and educational institutes like libraries and training institutes. The purpose of the planning policies and guidelines has to be increased through a strong process of public participation. A cogent strategy will be devised for the implementation of planning policies and supplemental instructions with all the responsible organizations to promote uniformity. Encourage regular evaluation of planning policies and procedures among all relevant entities, and put in place collaborative partnerships for enhancing and modifying the strategies and policies. Despite using conservation techniques to preserve the building of the monument, it is difficult to change the harmful effects on the environment on account of an observatory cum monitoring system that can be taken accordingly. Undertake photographic documentation annually and A long-term conservation strategy has to be taken where destruction is overseen for a lot of reasons and takes a long period for the effect to the visible. Low-level pollution mechanisms must be identified on a priority basis. Sitting and catering spaces, toilets, and other facilities for visitor comfort need to be appropriately located, designed and maintained. The current situation and facilities which have a negative impact on the historic building or disturb the visual qualities of the Bara Katra are recommended to be carefully removed. Additionally, The main roads to connect with the Bara Katra have been closed due to the strangely illegal settlement establishment, and as long as the roads are alive, additional small vehicles and pedestrian access have created a very uncomfortable environment. It is recommended that the access be improved, and movement and vehicle communication facilities with the building have to be organized for visitors. Furthermore, any archeological study can be organized, established, and carried out using management techniques. The main objectives of this study are to establish a procedure for implementing evaluation and instruments, in addition, in addition to giving rules, principles, and recommendations in a general style to assist in the reduction of side impacts.

9. Comprehensive Cultural Heritage Conservation Management Plan for Bara Katra

As part of the detailed conservation plan raised the proposed program for the conservation of historical buildings with respect to the values of building with documentation and status assessment for religious and decorative surfaces. Therefore, the historical building conservation plan describes a preservation method for building and decoration features. Risk assessment is another important component of conservation planning and its implementation.

9.1 Conservation Methodology for Civil Works

In order to offer a proper conservation plan for the historically constructed fabric of the site, all the buildings and features were researched, surveyed, and documented to determine their values. The classification of values is briefly described below:

9.1.1 Historical and Architectural Value

Historical value relates to the connection with the past fabric of the place or people. If the monument is associated with a famous person or event, its historical value has increased. The building structure of Bara Katra is historic evidence of the Mughal rule in Old Dhaka. One of the two written inscriptions found in the building declares that the foundation was laid by its builder Abul Qasim in 1644 A.D. Architectural value is related to art and aesthetics and in most cases engaged in decoration, detailing, and craftsmanship. The combination of architectural innovativeness, design quality, craftsmanship, rarity, construction materials, and completeness provide the value of Bara Katra. The building was planned on a grand scale following the traditional pattern of Central Asian *Caravanserai* and it was embellished with all the features of the *Imperial Mughal style*. The coordination of different elements through iterations is the skill of the architect who had succeeded in producing a glorious sense of composition from this simple plan of *Caravanserai*. The selection of materials and decoration application with color and texture reflects the royal aesthetic sense. The representative government of the town has high regard for historical buildings and values the presence of Mughal traces in the area (Kerr 2004).

9.1.2 Associational and Educational Value

Bara Katra's historical and metaphorical significance fosters a profound sense of community identity. The structure is significant from an anthropological standpoint and has been standing for more than three centuries. Therefore, the building has already been designated as a preserved historic monument by Bangladesh's archaeological department.
The educational value of a building is determined by the overall significance of the site and how it can be used in the multi-layered history of the site. The artifact is important for research and study of the history, architecture, politics, archaeology, and urban design of the city.

9.1.3 Documentary and Functional Value

The edifice is a Katra-type Mughal structure that was used as a caravanserai in Bangladesh and is thought toward being ancient and greater. It has acquired great historical significance for enhancing Bangladesh's architectural history. The building is still in use. Though the building used to serve as a *Caravanserai* and 22 rooms of it as shop now it is used as a mosque and madrasa and the ground floor is occupied by shops. So, the structure is still important as a functional one.

9.1.4 Social and Economic Value

The social structure of the area is highly related to the historic development of the city. So, the building has an immense impact on the local society. The building can drag a huge number of tourists and can earn currencies as it can play a vital role to raise the area as a tourist spot as there are other historic buildings around it.

9.1.5 Urban Scape and Locational Value

The artifact is significant as it represents an important structure of the historic Mughal city development process here. The structure has got profound relation with other important structures, urban spaces and road network developed during the Mughal and the colonial period (Mowla 1990). Locational value has been determined by the location of the building and features about visitor movement. Buildings and features of Bara Katra that are currently situated in key visitor areas, as well as that may be accessible to visitors in the future have a higher locational value.

9.1.6 Artistic/Aesthetic Value

Artistic and aesthetic values are related to the sensational perceptions which arise from the monument and environment. Bara Katra and its decorations are a symbol of wonder, inspiration, or surprise.

9.2 Conservation Maintenance Plan

There is a need to unite the owners, users, and actors on a common platform to generate collective action to conserve the heritage building. Active participation of the community and different actors may be ensure designing a community-based program. The trustee board may be strengthened including adequate number of representatives from different actors' communities' unity to plan active role with unique responsibility on a wide scale within a legal framework. To remove the newly built settlements rehabilitation program may be considered. Tourism may be

promoted for adaptive reuse to revitalize the economic base Micro-credit loans and a capacity building may be considered in this regard (Hossain 2006). Any maintenance interventions must be carried out by the Department of Archaeology and approved by the trustee board. For technical assistance, a conservation consultant can be included on the trustee board or the maintenance committee. Preventive maintenance must be prioritized as a strategy, and emergency maintenance procedures must be followed. Routine housekeeping and periodic maintenance, as recommended by professionals, should be considered. The rooms on the ground floor may be rented to stores, with the trustee board selecting the tenant. The upper floor could be used as a student dormitory, in which case tourists' access could be restricted. Community participation and public awareness efforts may be used to protect and conserve heritage assets. Facilities should be open to researchers, study groups, journalists, and other visitors. It's possible that some of the stores' sales revenues will go toward maintenance. Donations from both domestic and foreign sources might be used to raise the initial investment funds. Financial assistance may be available from the government's Department of Archaeology. The money made from visitors and tourists may also be used for upkeep. It is recommended that certain illegal buildings/ features/ settlements can be demolished in order to recover and recreate the monument according to the 1644 A.D. original plan. Before undertaking demolition, the building must be thoroughly documented and feasibility studies conducted.

9.3 Classification of Proposed Conservation Plans

It is recommended that the plan of conservation in the Bara Katra be classified into the following four categories:

9.3.1 Immediate Work

The list of urgent tasks suggested by the expert committee for the Minister of Cultural Affairs is included in this category. It will first be necessary to conduct a detailed analysis of its history and excellence using library and archive research. Using historical data from Bara Katra, the entire property boundary must be drawn, along with sufficient paperwork. All illegal structures must be removed in order to return the land to its original morphology, and the enclosed courtyard must be left unoccupied. Repairs can be done to protect the monument from the major structural damage that divides the southern wing through a prominent crack between the entrance and octagonal arches at the east. Consolidation may be required for repair work at the foundation level. Repair work can also be carried out for damaged structural components such as load-bearing brick walls that are partly destroyed due to weak brick bonding. Arches, and vault roofs that are damaged by leakage and could collapse may be repaired (Kerr 2004).

9.3.2 Urgent Work

Structures that need urgent repairs to stabilize them fall into this category of structures. All biological growth including vegetation and termites that cause active deterioration on outer walls should be destroyed. All the temporary and permanent extensions like the toilet, bathroom, and ablution space on the first and second floors should be removed. Proper drainage systems in and around the building may be developed. To stop capillary action abstraction of water should be reduced and ground subsidence should be controlled. A damp proofing course may be carried out at the plinth level and wall surface. Restriction on further live load and traffic vibration should be introduced. Restoration work should be done on the staircase that is highly damaged. Broken parts of the building especially the stair at the terrace of the 2nd floor, parapets walls should be restored. Restoration of east and west wings should be carried out based on existing ruin, drawings and documentation, and archaeological evidence.

9.3.3 Necessary Work

The work comprises buildings and features in need of conservation work to protect, preserve, and/or enhance their value. Necessary repair work to recover details on plaster at the outer and inner walls should be carefully handled. Proper finishing work on the floor and stairs based on the special technical method followed in the Mughal period should be carried out. Restoration of door and windows with proper details should be done and all the recent addition and changes should be substituted by original typology. For proper access to urban services like water supply, sanitation, waste management, garbage disposal, drainage, and electricity the existing set-up should be scaled up. Electrical wiring, fittings like switch sockets, fans, and lights should be properly checked and replaced for safety.

9.3.4 Desirable Work

It refers to work that is not time-sensitive, though if undertaken would enhance the experience of the site. Vehicular and pedestrian entry into the site with a parking facility may be considered. Existing road network with Buriganga River may be developed to ensure easy access for the visitors using the river route. Existing road network should be developed to integrate the artifacts with urban fabric (Hossain 2006). Surrounding the artifact, height restriction zone may be introduced to control new structures that are out of proportion or incompatible in character with the scale of

the heritage building. Traffic vibration and air pollution can also be controlled in a similar way (Kerr 2004).

9.4 Conservation Methodology for decorative surfaces

A technical approach, backed by scientific studies, must be adopted for the conservation of decorative features, and the work is managed by a single department. Appropriate cleaning and maintenance procedures have to be devised for the cleaning of decorative surfaces, especially in routine maintenance, which must be carried out by trained conservators only. Crafts persons can be engaged in restoration work. All interventions must be recorded in detail. Visitor movement must be regulated in key areas. The appropriateness and correct positioning of features in the buildings is essential and should be done on the basis of further art historical studies. All work must be monitored at regular intervals to check for losses. All extant work in the building must be documented in order to record their current state as of date. It is recommended that additional protective measures can be explored to contain the settlement of grime/tarry matter/dust/dirt on the decorative surfaces. Investigations and scientific tests that must be undertaken for a better understanding of the site and which should form part of the conservation planning are all recorded Major cracks must be monitored at regular intervals. The presence of dowels beneath each of the cracks must be investigated to rule out the possibility of their corrosion/expansion. The presence of soluble salts must be investigated in order to eliminate the possibility of salt-action being wholly or partially responsible for exfoliating brick surfaces. A policy decision consistent with conservation norms and ethics must be taken based on strong scientific data and historical evidence for the reconstruction of decorative features, including replacing decorative features and filling losses with a material similar to the original.

9.5 Historic Landscape Conservation

Recommended landscape conservation strategies for managing a Conservation Management Plan (CMP) of this historical and architectural monument have to be measured in some degrees of intervention which are briefly defined in the following:

9.5.1 Prevention and Mitigation

The building's routine maintenance and monitoring systems must incorporate risk assessment, prevention, and mitigation strategies. By controlling and reducing the environment's risk factors and halting the activity of dangerous agents, historical and cultural properties can be safeguarded. The goal in choosing which building characteristics should be preserved is to preserve any details that are historically accurate and aid in understanding the site's many layers of history. Where appropriate, keep the current water supply system in working order; if more water is needed, add to it. Retain elements that would aid in site interpretation, such as the ancient boundary walls that aid in spatial comprehension. reveal and preserve the underlying structures of the various spatial boundaries.

9.5.2 Preservation

Conserving an artifact entail taking the necessary efforts to safeguard its present composition, authenticity, and pieces (Weeks and Grimmer 1995). Conservation is critical for Bara Katra's domain's initial defense and stabilization. Instead of major repair and construction work, ongoing preservation and reconstruction of historical parts and details should be carried out to maintain the historic structure's aesthetic integrity. Understanding, searching for, and securing historical items and site aspects are all part of protecting Bara Katra. Stabilize, guard, conserve, or repair decaying historic objects, materials, and qualities as a first step. Energy efficiency, accessibility enhancements, limited deliberate repair of seriously damaged historic features, and adherence to health and safety laws are all significances.

9.5.3 Restoration

It is common for elements and components to be restored and reintegrated, and this practice is based on consideration of the initial elements, historical evidence, original concept, and genuine documentation (Weeks and Grimmer 1995). It is possible to keep and maintain items and features that are specific to the restoration era. The work necessary to consolidate, stabilize, and conserve materials and features from the restoration phase must be clearly identified and carefully documented through close scrutiny. Before they are altered or deleted, materials, features, spaces, and finishes can all be documented. Restoration components that are deteriorating must be repaired rather than replaced. Using original paperwork and archaeological data, the north, south, east, and western wings of Bara Katra can be recreated in an appropriate manner. The substitution of missing components should be justified by both tangible and textual evidence. There will be no fake sense of heritage created by incorporating speculative qualities or elements from all other structures. Recreate the limits as imprints for the entire campus and as buildings if documentation exists to provide a realistic picture of the space as it previously was. The goal of restoring the local character must be to restore the floorspace. Because modern tourists like to travel along historic routes, these paths should be

preserved. The water channel profiles must be restored because they are an important aesthetic aspect of the space. Additionally, Restore the original ground levels.

9.5.4 Reconstruction

Restoration is the act of recreating a non-surviving place, terrain, structure, construction, or material's layout, attributes, and details through new construction in order to replicate how it appeared during a particular era and in its original location (Weeks and Grimmer 1995). The design of any reconstruction must be considered based upon a full understanding of the kinds of accurate documentation and authentic historic evidence. Conjectural documented drawings and features should be prepared with the help of existing documented drawings of Bara Katra so that a false sense of history is not created. The choice between “traditional” and "innovative” reconstruction should be determined on a case-by-case basis which have to be related with authentic documentation with detailed drawings, photographs and archaeological evidence that are most compatible with heritage values and consistent with the need for safety and durability, as well as be consistent with its maintenance. A precise reconstruction using as few assumptions as feasible must be employed to depict lost or non-surviving components of the property when recorded and physical data are available. In the instance of Bara Katra, detailed archaeological research can be used to examine the features of a setting, construction, artefact, or structure that are essential to a precise reproduction. It might be possible to reconstruct the lost doorway, gate, and walls to look like their surviving counterparts. One of the suggested regeneration activities may be the ceremonial opening and closing of gates. Instead, of relying on speculative designs, reconstruction must be based on real historical qualities and components that are substantiated by physical or written facts. The boundary walls need to be repaired in some spots. The floor space must be rebuilt using materials suited for the site's historicity. For direct visitor mobility, the old paths must be reconstructed, and the unique character must be returned. To make the site easier to interpret, the features must be rebuilt.

9.5.5 Elimination

The aim of removing various aspects from building spaces is to get rid of everything that interferes with spatial perception. Any anyone exploiting Bara Katra land illegally must be removed. All illegal constructions must be demolished in order to partially restore the site's spatial character. Road networks must be eliminated wherever they are splitting up the once-open landscapes. Any intrusive modern structures must be eliminated in order to establish the new historic bounds.

9.5.6 Consolidation

Consolidation is the physical addition or application of adhesive or supportive materials into the actual fabric of cultural property that should be considered in fabricates to ensure continued durability and structural integrity. The places may have more access points added. It is simple to include new signage to help people understand the rooms when furniture designs contribute to improving the experience of various regions. The trash container needs to be placed in the middle of the space. Install an efficient surface drainage system with the proper gradients and redo the soil grading without damaging the archaeology of the site. The installation of subsurface services needs to be done in a way that protects the archaeology of the location. An understated and delicate form of landscaping should be adopted, one that uses a ground cover to aid in site knowledge without erasing the archaeology.

9.5.7 Site Rehabilitations

Repairing, altering, and adding to a structure to enable sustainable use while keeping any components or characteristics that communicate its historical, cultural, or aesthetic qualities is known as rehabilitation (Weeks and Grimmer 1995). The first and second floors of Bara Katra are used by the Islamic studies institute Jamiatul Husainia Ashraful Ulum-Madrasa for dorms and other purposes, while the ground floor is home to a number of shops and warehouses. Throughout the Bengali era, this item operated as a caravanserai. Therefore, we strongly suggest that the structure be used for its original purpose once again. In order to justify actual use and expand tourism amenities in old Dhaka, the building should be repaired and converted into a "rest house," which should be built in line with particular laws.

9.5.8 Role of Stakeholders

effectively modernizing the area in terms of signage, infrastructure, and better commodities access, it is possible to alter the landscape and management system of a historic location. A rehabilitation plan will benefit tour firms since it can organize larger tourist numbers and better infrastructure. The revitalization plan includes a number of tasks and activities, including welcoming visitors, returning to the area to take part in fresh initiatives, and learning about new facets while preserving ongoing conservation efforts. The tourist amenities, signage, facilities, and interpretive strategy reflect the diverse visitor flow patterns. promoting the improvement of tourist attractions A visitor facilitation

center provides visitors with access to restrooms, drinking water, first aid supplies, a cloakroom, information kiosks, site publication materials, a speedy ticketing area, security systems, and other amenities. A tourism hub site must have alternate entrances and exits, an information system and signage, a tourism hub, parking, amenities outside the building, a visitor facilitation center, family recreation areas, trash cans, cafes, and souvenir shops, among other amenities.

9.5.9 Site Interpretation Strategy and Educational Outreach

The cultural heritage site's interpretation and educational outreach program can increase public awareness and comprehension of the location. It is necessary to develop a long-term strategy for promoting and facilitating educational activities, as well as for teaching tourists about the values of Bara Katra. The site's layers of history can only be properly understood and appreciated through excellent interpretation. This strategy calls for specific procedures and activities as well as interpretive signage that informs visitors of the location's importance and architectural value. In addition to printed maps, guidebooks, and educational materials, tours may incorporate sound and light performances, historical videos, cultural art events and displays, lectures, seminars, exhibitions, symposiums, and partner activities. It should be necessary to attend camps and seminars on heritage awareness and conservation, followed by national and worldwide research and publication. It is necessary to provide handouts and perform training sessions for all parties involved, including the village council, staff, and security. Having the right paperwork is crucial when the Photographic and Documentary Archive.

9.5.10 A Planning for Buffer Zone Developing

Attain effectively shield Mughal structures from dangers like traffic vibration, noise pollution, air pollution, water pollution, and others, a buffer zone must be constructed. All conflicting elements may be eliminated right away and the buffer zone may be redrawn. For Bara Katra to be rebuilt and the buffer zone to be effectively controlled, more land would be required. The study suggests restoring the missing portion and northern entryway, as well as obtaining extra property to govern the buffer zone surrounding Bara Katra. A project is being suggested in the buffer zone to create a high-quality environment for the building by encouraging the highest standards and taking into account the building's historical context for the benefit of the environment and development of the historic buffer region “Figure 50 to 51”. Maintain connections to the surrounding area's visual, historic, and functional elements, such as the open spaces, greenery, and historical structures and landscapes that surround the buildings and their buffer.

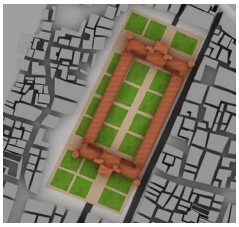


Figure 50. Land acquisition proposal and computer simulation for effective buffer area and reconstruction of missing part of Bara Katra (Mowla and Shaikh 2013).

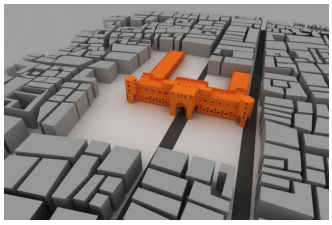


Figure 51. Computer simulation of the existing situation after removing incompatible structures in and around Bara Katra by the Department of Archaeology (Mowla and Shaikh 2013).

The building of Bara Katra had substantial open spaces, which are now mostly encroached upon by newly built informal settlements. These settlements create obstacles to the visibility and access to the historic artifacts. Recovering the open spaces is needed to ensure proper access and visual exposure.

9.5.11 Traffic Control

The Mughal fabric's twisting and small streets, uneven crossings, and lack of parking places are unsuited for the modern mechanical traffic system because the old urban context was designed for pedestrian mobility. The transportation system should be planned to link the new city to the outlying areas, reducing the amount of traffic brought on by commercial activity. To enhance cultural tourism, little routes for heritage walks could be created inside the current structure. The only vehicles allowed in the site's core are walkers, a few light cars, and a few heavy vehicles. Parking around the perimeter, off the ring road, with loops leading to the center of the property, may be taken into consideration.

10. Integrated Risk Management Plan

To identify all risk factors and their impact on different legacy components, an integrated approach is needed. By addressing the root causes, this strategy ensures the effectiveness and sustainability of risk management initiatives. It is necessary to identify both natural and man-made risks, and chosen risk management strategies will be tested as needed based on the present environment. The three most immediate natural hazards are fire, lightning, and severe rain. Strong winds, high temperatures, air pollution, plants, and microorganisms are the gradually rising natural dangers. Human-caused dangers include those brought on by terrorism, vandalism, theft, insensitive design, and development activities on the property and nearby.

10.1 Impact on Heritage Components

Due to many factors, including negligence, unsuitable use of land or structures, or poor historical interventions, the aforementioned potential dangers may negatively affect some cultural components. substantial rainfall Due to poor drainage and the steady erosion of the initial slope, a substantial risk is created. Potential archaeological sites are put in jeopardy by surface water runoff, which also threatens the initial rains, which could overflow during heavy downpours and obliterate the archaeological subsoil (Feilden et al. 1993). Brick surface erosion and exfoliation are more likely when there are strong winds and high temperatures. Air pollution is a factor in the danger of soot and blackening deposits damaging built fabric. Airborne pollutants provide a risk for corrosion as well. The trigger of the fire is the risk of causing damage to historical structures The reason for the water intrusion Due to staining, the development of flora and germs, efflorescence, and exfoliation in the plaster surface, the historic fabric, in particular the ornamental elements and finishes on plaster and brick surfaces, deteriorates even more. In addition, Roof leaks or rising ground humidity caused by neglect, improper construction methods, unsuitable slopes, or insufficient water and sewage infrastructure. Historic fabric brick surfaces are very prone to slow erosion and are exposed to harsh temperatures, increasing the risk of damage (Feilden et al. 1993). Increased visitor activity and transportation endanger a potential archaeological site. The aesthetic integrity of the area and potential archaeological sites are jeopardized due to mismatched light poles and utility configurations. Buildings are at risk of collapsing during earthquakes, high winds, and floods, and all features are at risk of being lost. Another big issue is the loss of the original design and arrangement of the space as a result of previous renovations.

10.2 Emergency Preparedness and Response Plan

During an emergency, emergency personnel such as the fire department, ambulances, and police vans require quick and easy access. It is recommended that emergency supplies for putting out fires and combating potential crime or terrorist activity be installed in strategic locations throughout the property. Signage along the intended evacuation route and emergency exits from buildings is advised. This route should also include emergency services and supplies such as first aid. Important emergency information should be available in the tourist facilitation center and at specific areas throughout the site. A small dispensary within the Bara Katra is designed to give quick first aid during an emergency. Special anti-theft and anti-vandalism security systems should be deployed. Temporary storage areas for recovered heritage pieces should be established. An 'Emergency Management Team (EMT)' will be formed to ensure effective coordination during an emergency. Local staff, fire, police, hospitals, municipalities, and other emergency contact information should be posted in strategic positions across the site for quick reference.

9. Recommendations

During the archeological inquiry stage, study designs might be created using previously documented drawings and authentic historical facts from Bara Katra. Tourist attractions such as lodging, dining, shopping, and entertainment might all be incorporated into Bara Katra's adaptive reuse. A Heritage Trust Fund could be formed to provide grants for the repair of structures on the State and/or National Registers of Historic Places. National advertising campaigns can be used to raise public awareness of the importance of heritage assets. The Transfer of Development Rights (TDR) mechanism permits legal ownership to be transferred from one territory to another. In order to give Bara Katra its right aesthetic and physical focus, the surrounding structures' height, scale, and volume should be maintained to a minimum. A connecting road might be redesigned to incorporate historical artifacts with contemporary buildings and the Buriganga River. It could be possible to provide amenities, relaxing off-site parking spots, and facilities for connecting the historical items. A team composed of designers, anthropologists, coordinators, archaeologists, and members of the local community and government should initiate and oversee the project. It must be thoroughly examined as soon as feasible. A monitoring and assessment strategy should be prepared in addition to an action and implementation plan. Initiatives combining public knowledge and community involvement could be launched to preserve and repair historical artifacts.

Conclusion

Bara Katra is the heart of the significant Chawk Bazar of old Dhaka, an area of special cultural value and significance. As a reflection of Mughal architecture, this unique building has undoubtedly made a profound contribution to the socio-cultural history and heritage of Bangladesh, which has created a strong and glorious image of the past. Currently, this historic monument in old Dhaka is trying to survive in the face of rapid development of the city, immoral use and negligence. In order to attain sustainable development of this site, an implementing conservation management plan (CMP) and a decision must be taken to conserve and manage the artifact, that is holistic approaches to revitalization of Bara Katra that consider social, economic and cultural revitalization with physical revitalization together be developed. In this context, the authors proposed a comprehensive contextual action plan with management policies for the architectural conservation of the historical building with respect to the values of the building with documentation and assessment.

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Biography

Rabaya Nusrath Niva works as an architect, teacher, and active researcher. She had attended numerous international conferences and published her research papers in internationally renowned journals. She is an active member of the DoA, GoB's 4th Industrial Revolution Committee. She was awarded the 2nd position in the "Humdard University Complex" design competition with Ehsan Khan Architects Ltd. and an Honorable Mention in the Open Architectural Design Competition for the Design of a Centenary Monument Celebrating 100 Years of the University of Dhaka and the Golden Jubilee of Bangladesh's Independence at the Mall Area, University of Dhaka (DU), on December 4, 2021. Her B.Arch final thesis was chosen for the National Urban Forum (NUF) Exhibition in 2011 at Bangabandhu Sammelan Kendra (BSK) in Dhaka, Bangladesh, and was published in a national magazine. Her thesis was chosen as the best student project for the Commonwealth Architecture Awards (CAA) Exhibition in 2013 at the Bangladesh National Museum (BNM), Dhaka, Bangladesh, and was published in the CAA book. She has done extensive research on urban issues, housing issues for old Dhaka, conservation plans for historic buildings, housing, theories of settlements and their criticisms, housing for gender issues, housing for the third gender, sustainable architecture, climate, multisensory architecture, interactive technology in architecture, etc. Now she is working on human settlements for resilient communities, creating various configurations of spatial configuration, and exploring how these concerns operate in modern urban phenomena. Her research focuses on how resilient communities handle various social, political, and economic problems.