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Identification of Threats and Review of the Existing Structures of Wah Gardens for the Prioritization of Treatment Recommendations

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Abstract

Wah Gardens' historic fabric and physical environment including their cultural setting, buildings, water landscaped gardens, and artistic creations reflect the rich cultural heritage of the Mughal period. Wah Gardens that once depicted the prospects of regality and magnificence lie in ruins presently due to the climatic conditions, negligence of the concerned authorities and anthropogenic vandalism. These cultural assets are the physical evidence of the past. They carry a distinct and unforgettable image in the life of residents that needs to be preserved for future generations to give them their own sense of place and identity. The objective of this research is to identify the threats faced by this marvellous heritage site and review the condition of the heritage structures in order to preserve this cultural heritage resource for the future. Condition assessment and review was carried out to record the existing situation of the buildings as well as the surrounding landscape in order to develop appropriate recommendations for reviving the essence of this vibrant cultural heritage site. The prioritization of recommendations was formulated according to the condition assessment of the Wah Gardens.

Keywords: conservation, heritage, Mughal, Wah Cantt, Wah Gardens

Introduction

Wah Gardens, previously known as Bagh-e-Hasan Abdal, were a place of pleasure and camping for the Mughal emperors. The first building in the garden was erected by Raja Maan Singh during the years 1581-1586 (Alexander, [1909](#)). Wah Gardens when built were included in the Hasan Abdal premises but due to administrative changes, these gardens are now the zenith of the city of Wah Cantt. The modern city of Wah Cantt has received much attention after the establishment of Pakistan Ordinance Factories in 1951, when the name Wah was changed to Wah Cantonment or Wah Cantt. The city of Wah Cantt is full of greenery and is surrounded by mountains from all sides depicting the view of a valley. The research demonstrates the current context of the Wah Gardens and highlights the challenging threats to this heritage site.

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Research Methodology

The data was gathered through qualitative research methodology and it comprised textual and visual analysis supplemented further by interviews conducted for the current research work. The data was collected using several field observations and condition assessment surveys of the Wah Gardens of the Mughal era. Qualitative interviews of the management, professionals and custodians were conducted regarding the history, previous conservation details and the role played by the Department of Archaeology with reference to the selected heritage site. The data was compiled through books, articles, websites and journals in order to further strengthen it. Guidelines were taken from international charters and case studies to formulate recommendations for the selected heritage site.

Literature Review

Location

Wah Gardens are located in the military city of Wah, Punjab, Pakistan about 50km to the north-west of the twin cities of Rawalpindi and Islamabad. The city of Wah is situated near the ancient city of Taxila which contains a Buddhist monastery and has acquired the status of a UNESCO world heritage site. The adjacent city to Wah Cantt is Hasan Abdal, which further connects with the city of Attock. The Wah Gardens of the Mughal period are surrounded by:

- Tamra Nalla to the north
- Mountains to the south
- Developed city of Wah Cantt to the east
- Cultivated land to the west

Figure 1

Location of Wah Gardens (Source: Google map)

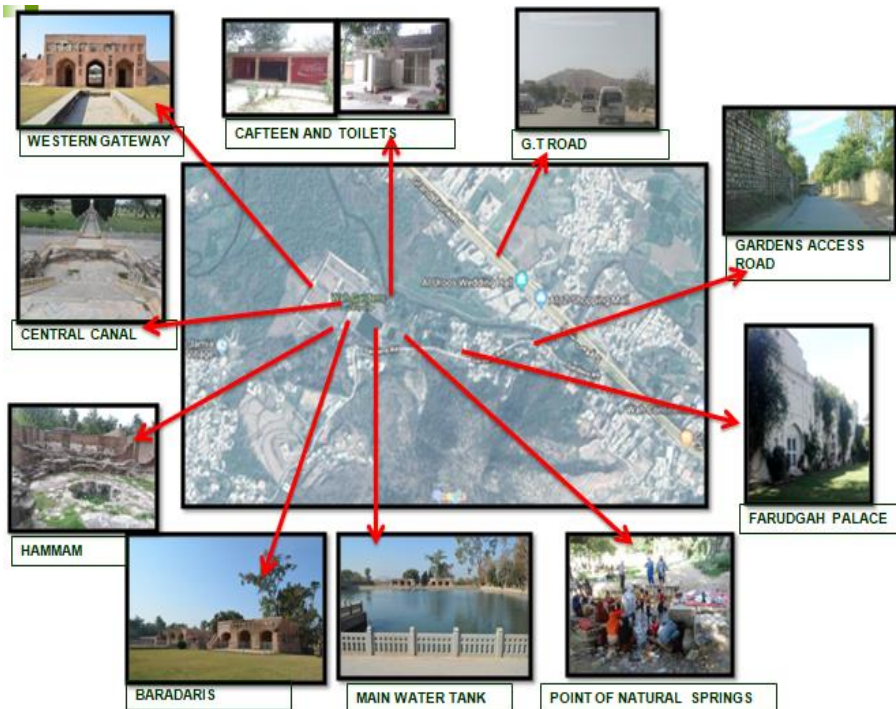


Architectural Characteristics of Wah Gardens

Wah Gardens, the 16th century complex consisting of gardens, pavilions, water tanks and natural springs make up the best tourist spot of the city of Wah Cantt. The pleasant climate and the scenic beauty of the natural surroundings make them among the prominent gardens of the Mughal period. Saleh Kamboh, while appreciating the beauty of the gardens described them as ‘Gulistan-i-Irum’ or ‘paradise gardens’ (Rajput, 2015). These are historic gardens where the best utilization of natural elements and their synthesis with the architectural elements can be seen. Their planning was done with full precision. The architectural elements in the complex show a sense of connectivity with the flowing water channels and symbolically project the idea of the Islamic paradise garden.

Figure 2

Map locates the different features of Wah Gardens

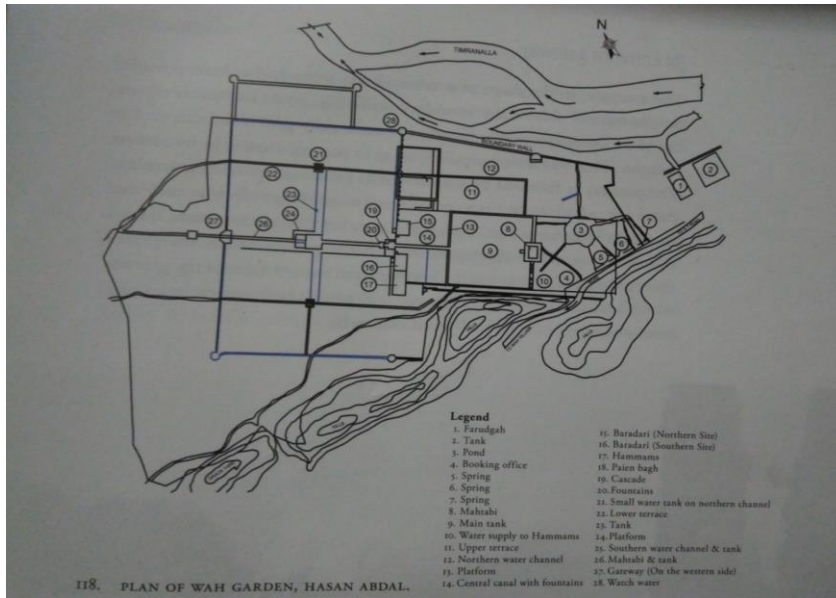


The continuous flow of water from the natural springs is a blessing of Allah Almighty and it fulfils the needs of the people of the surrounding areas. Wah Gardens have a diverse flora and fauna and various types of trees, plants and flowers can be seen in the gardens. Different types of birds and insects fly on the

fruit trees and flowers; the most prominent trees among the fruit bearing trees are the loquat trees. The main water tank is filled with a number of fish species and the most prominent kind found among them is the ‘Masheer’. The area acquired by the government in 1976 was 157 kanal. However, it appears that originally the area covered by the gardens was much more, as structural remains are found lying scattered on its northern side. Wah Gardens were originally designed as a three terraced garden like the Shalamar Gardens of Lahore (Shaikh, [2015](#)).

Figure 3

Plan of Wah Gardens



Source: Muslim architecture aspects in Pakistan

Entrance

The original monumental arched gateway of the gardens is on the western side of the boundary wall. The exterior of the gate shows an octagonal structure as the facade is chamfered from both sides with the addition of alcoves. The walls of the square rooms in the western gate are provided with rectangular niches. Both square rooms along with the central arched entrance open into the garden, provided with slightly muqarnas details where terraces of floral and geometric patterns can be seen. The gateway is provided with a staircase on both its left and right sides that leads to the roof top. The entrance is a brick built structure plastered with lime mortar, both externally and internally (Shaikh, [2015](#)).

Figure 4

The Existing Muqarnas Details and Fresco Work from the Mughal Times Have Almost Vanished



Figure 5

The Existing Condition of the Western Gate After the Conservation Work Done by the Department of Archaeology, Pakistan



Farudgah Palace

The Farudgah palace is a momentous feature of the Wah Gardens as a number of Mughal emperors and other known personalities stayed there. Farudgah is located in the eastern part of the Wah Gardens and it has been closed for visitors since it became the private property of Hayat Khan's family in the British era. A barrier wall was created between the Farudgah palace and other parts of the Wah

Gardens. The palace consists of a large hall with adjacent rooms. The entrance way has been replaced by modern glazed doors. The interior of the palace was once decorated with fresco paintings and the exterior shows sunken panels of different shapes and sizes. The palace also has a large water pond on its eastern side (Khan, [1992](#)).

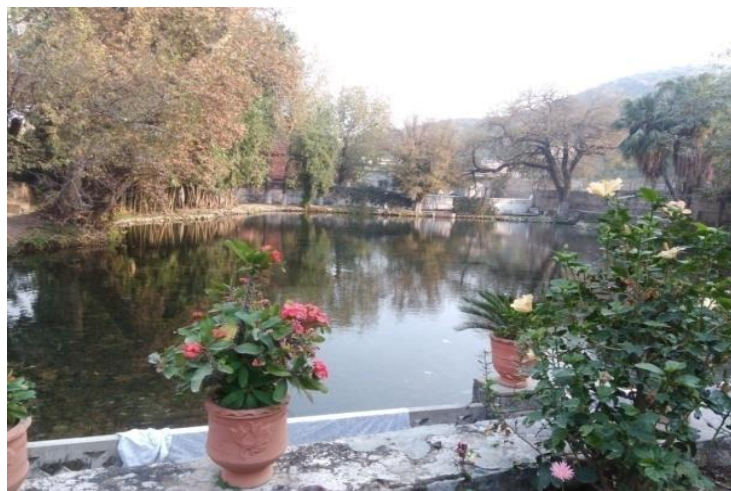
Figure 6

Eastern Facade of the Farudgah Palace



Figure 7

Existing Condition of the Water Pond in Front of the Farudgah Palace



Baradaris

The middle terrace is the focus point of the Wah Gardens where two baradaris are present on its western edge. The central canal equally divides the baradaris. Much of the baradaris is conserved by the Department of Archaeology due to the damage caused by several means. Both baradaris are identical to each other and are built of bricks, whereas the finishing is provided by thick lime mortar. Each baradari consists of three square rooms measuring 13 feet, 6 inches (Shaikh, [2015](#)).

Figure 8

Existing Condition of Baradaris in Second Terrace



The ceiling of the baradaris is decorated with honey comb pattern intended to create a constellation of stars. Most ornamental details have vanished, although the traces of stucco detail work is still visible and forms vegetal and floral patterns along with aftaba, vases, bottles etc. The flooring was done in tessellation pattern in sang-e-khattu, sang-e-musa and marble.

Figure 9

Ornamental Details of Baradaris



Two staircases were provided with both baradaris on their sides facing the central canal which have been restored by the Department of Archaeology. The structural remains of the baradari built by Raja Maan Singh are present in between the two baradaris.

Figure 10

Structural Remains of Raja Maan Singh's Baradari



Main Water Tank

As one enters the Wah Gardens from the present gate, one can see the sparkling main water tank. The tank is almost a square measuring 214×220 feet; its original construction was of lime-plastered bricks (Khan, [1996](#)).

Figure 11

Main Water Tank Fenced with Grey Sand Stone Jali Work



The main water tank is surrounded from all sides with jalis made of stone slab which were discovered during the excavation of the tank. The tank has seven arches on its eastern side that provide access to the incoming current of water from natural springs. Only one arch is blind out of the seven arches. The tank consists of a platform and mahtabi on its eastern end, while the western side provides connection to a central canal for the flow of water. The tank has a depth of 5'-3" at the eastern side and 5'-9" at the western side while maintaining the slope to let the water flow with speed (Khan, [1996](#)).

Figure 12

(a) Mahtabi Adjacent to Main Water Tank (b) Overview of the Water Tank (c) Point of Natural Springs (d) Water Pond Beyond the Main Water Tank



(a)



(b)



(c)



(d)

Central Water Canal

Central Canal

The central canal of the Wah Gardens lies in between the two baradaris between the middle and lower terrace. Most Mughal gardens have a central canal as their common feature. The central canal is linked with the main water tank on its western side from where it issues the water. The canal has a total of 12 fountains in the middle terrace. They were connected in the past with terracotta pipes running under the principle of gravity and some of them were discovered during the excavation work.

Figure 13

Central Canal Facing the Main Water Tank



Figure 14

Central Canal Along with Adjacent Baradaris



Figure 15

(A) Chevron Pattern Built in Sang-E-Abri and Sang-E-Khattu, (B) The Ornamental Pattern at the Corner of the Tank Within the Central Canal



(a)



(b)

The water from the main tank enters the central canal, flows over the cascade and fills up a small tank having a fountain at its centre. The corners of the tank are stylised with ornamental patterns. From here, the water again flows over another cascade and enters another tank which also has a fountain in it. This fountain is embedded in an eight petal flower base and is constructed in sang-e-khattu. Beyond the stone bridge, the central canal is built in a chevron pattern with sang-e-abri and sang-e-khattu including the cascade. The central canal is aligned by tall cypress trees in the lower terrace planted in the early 20th century

Turkish Bath

Adjacent to the baradaris in the middle terrace lies the hammam or the Turkish Bath. The hammam consists of an arrangement of rooms and halls of different sizes and shapes including square, rectangle, octagonal and oblong shapes. It consists of the following architectural elements: apodyterium (changing room), alipterium (oil room), calidarium (hot bath) consisting of two wings, sudatorium (steam room), tepidarium (warm room), frigidarium (cold bath) and sets of latrines.

Figure 16

Existing Condition of the Hammam and the Geometric Patterns on its Floor



The extraordinary thickness of the walls of the rooms and halls help maintain the inner temperature of the hammam. As recorded by Moorcraft and Trebeck (1971) the rooms once had low heighted domed ceilings with central skylight. The floor of the hammam was built in sang-e-musa, sang-e-khattu and sang-e-abri enhancing its characteristics. The interior of the hammam was decorated with vegetal and floral motifs and fresco paintings added beauty to the hammam walls (Rajput, 2015).

Figure 17

(a) Terraces of Ornamental Details on the Southern Wall of the Hammam, (b) Passage for the Supply of Water to the Hammam



(a)

(b)

Ladies' Garden

In between the middle and lower terrace on the northern side of the complex lies the Paen Bagh or Ladies' Garden provided by a screen wall built in stones. This place has water channels running across the arched gateway. The main water channel makes its way from the northern wall of the main water tank, from where it divides further into three water channels and adjoins again in a single water channel as it enters the lower terrace.

Figure 18

(a) Paen Bagh in the Middle Terrace with the Remains of Screen Wall (b) The Arched Way of Paen Bagh



(a)

(b)

Boundary Walls

Wah Gardens were enclosed by a boundary wall on their three sides; the southern part of the gardens had a natural barrier in the form of a hill. The Department of Archaeology provided the garden with an external boundary wall to mark the boundary and to save it from nearby encroachments. As been mentioned by Moorcraft and Trebeck (1971), Wah Gardens cover an area of a quarter of a mile in length and half a mile in breadth. The boundary wall consists of gateways and turrets, constructed of bricks and plastered.

The turrets on the northern side of the garden are small rooms with an arched access. The turret on the south-western wall is also a single storey structure with arched openings and niches provided in the room. The other southern turret is a double storey structure with a staircase leading to the roof. It has two rooms, one on the ground level and the other is just above the staircase with an arched opening. It is also provided by niches. The ceiling of the room is built in low heighted dome style. In the centre of the room a small octagonal basin is present.

Figure 19

(a) Turret in the South-East Part of the 3rd Terrace (b) Turret in the South-West Part of the 3rd Terrace (c) Turret in the North-East Part of the 3rd Terrace (d) Turret in the North-West Part of the 3rd Terrace (e) Boundary Wall of Wah Gardens



(a)

(b)

(c)



(d)



(e)

Results and Discussion

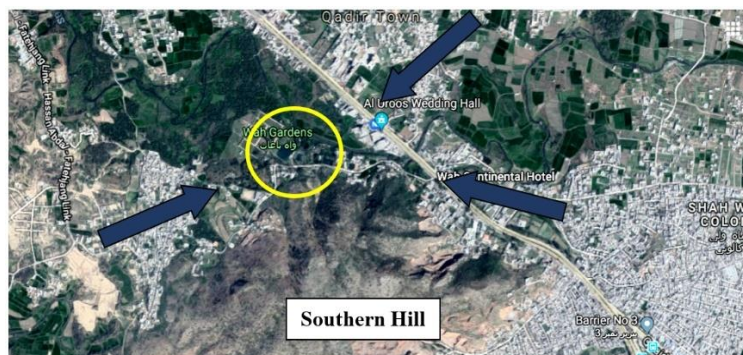
The Wah Gardens heritage site has been documented in this research and analytical studies with textural reference have been conducted to strengthen the visual survey and observations made during the field survey. Thoroughly studied literature formulated the basis for the identification of threats and the review of the existing situation. Below is the description of all documented threats.

Urban Sprawl

Currently, a major threat to Wah Gardens is the urban sprawl. The continuous spread of residential and commercial encroachment towards the Wah Gardens is an alarming situation for the heritage site. The urban sprawl is not only spoiling the aesthetic character of the area but also causing changes in the environmental and weather conditions of the city of Wah Cantt and Wah Gardens. The north-west side is still covered with thick vegetation but this land is the private property of the Khans of the village Wah and remains under threat, as in future it could be used for residential or commercial development, thereby changing the surrounding context of the site (Ali, [2018](#)).

Figure 20

Arrows Indicating the Movement of Residential and Commercial Encroachment Towards the Garden



Illegal Constructions

The southern hill that once was the part of the gardens has stopped the residential and commercial encroachments towards the gardens in this direction, although a cluster of buildings could be seen on the opposite side. However, a number of illegal constructions can be seen on this hill and their number is increasing rapidly. Fig. 21 shows some of the illegal constructions on the southern hill.

Figure 21

Illegal Constructions on the Southern Hill

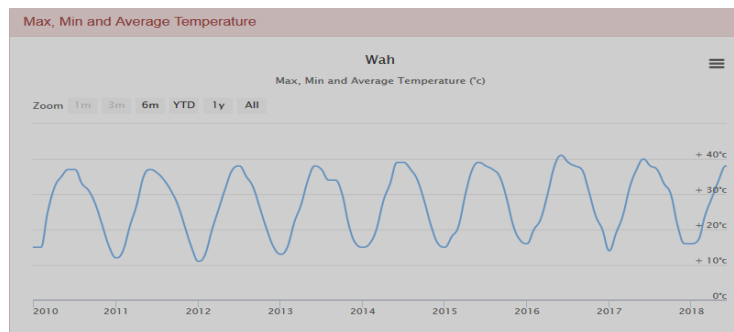


Weather Change

Global warming is a threatening phenomenon worldwide. The region of Wah Cantt has also experienced changes in its weather and climatic conditions (World Weather Online, [2018](#)). The following graph demonstrates the change in temperature during the years 2010-2018.

Figure 22

Temperature Graph for the City of Wah Cantt (World Weather Online, [2018](#))



Natural Disasters

Wah Gardens are present in a region that is prone to a number of natural disasters such as earthquakes, as well as wind and rain storms. Fig. 23 shows a fallen tree which fell due to a recent storm in the area. Heavy rain has caused an ample amount of damage to the built structures in the Wah Gardens. As mentioned earlier, the baradaris were badly damaged during the early 19th century and were later restored by the Department of Archaeology in 2014. Continuous penetration of rain water is causing the structures to disintegrate. The built structures are prone to several cracks and seepage (ICOMOS, [1965](#)).

Figure 23

Tree Fallen due to Storm



Figure 24

Cracks in the Baradaris



Unscientific Means of Conservation

The Department of Archaeology, during the conservation project of 2014-2017, adopted unscientific means for the conservation of Wah Gardens. Material testing was not performed. NDT (non-destructive testing) is an important part of the conservation process, where a small amount of material is tested under several circumstances before its application to the heritage site in order to achieve successful results (ICOMOS, [1965](#)).

Inappropriate Materials

The original material for plaster was lime and the colour of the structures was beige white (Khan, [1992](#)). During the conservation project of 2014, red surkhi, chopped jute, grey cement and unslaked lime was used for lime terracing which totally changed the colour of the baradaris, western gate and the turrets (ICOMOS, [1965](#)).

Figure 25

Before and After, Condition of the Western Gate



Figure 26

Before and After, Condition of Baradaris (Western Façade)



Compact Roadside Parking

The absence of a proper space for parking vehicles causes traffic disturbance as the same road is used to access the Wah village and the adjacent areas. Due to a huge number of visitors in the summer season, the southern wall is used for parking purpose. The parking area is also not covered and protected against severe weather conditions (ICOMOS, [1982](#)).

Figure 27

Parking Condition at Wah Gardens



Maintenance and Security

Wah Gardens are susceptible to security and maintenance threats as only a total of five staff members are dedicated to Wah Gardens (Gohar, [2018](#)). Security cameras are not monitored at all times. During most of the visits to the garden by the researcher(s), no security guard was available. The gardens cover an area of more than 157 canal and only two gardeners and sweepers are available for the maintenance of the area. Non-availability of guards near the built structures causes human vandalism. Moreover, people could be seen climbing the ancient structures to buy edibles not available inside the gardens and leaving garbage everywhere, thus spoiling the beauty of Wah Gardens (ICOMOS, [1982](#)).

Figure 28

Boy Climbing the Structure to Sell the Goods



Figure 29

Garbage Disposal Spoiling the Beauty of Wah Gardens











The following table contains further assessments of Wah Gardens done on International Florence Charter on Historic Gardens (ICOMOS, [1982](#)), International Charter for the Conservation and Restoration of Monuments and Sites (ICOMOS, [1965](#); [1999](#)).





Recommendations




Table 1

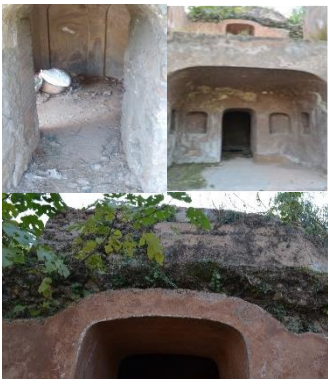



Threat Assessment of Wah Gardens

Site Location	Elements	Field Observation	Assessment
1 st Terrace	Farudgah Palace		Private property well preserved and maintained with the addition of modern doors. Not open for the visitors.
	Eastern Water Pond		Crystal clear water from the natural springs maintaining the historic context. Not open for the visitors.

2 nd Terrace	Entrance and Exit	 	<p>A single entrance and exit gate creating problems for the visitors.</p> <p>Posting of banners on the garden gate and walls.</p>
	Main Water Tank		<p>Polluted main water tank.</p>
	Baradaris	  	<p>Unscientific means of conservation. Fenced and closed for the visitors.</p> <p>Retention of rain water causing botanical decay. The structure's surface is leaving the ground.</p> <p>Removal of the original plaster and ornamental details from the interior of the baradaris.</p>

2 nd Terrace	Hammam		Closed for the visitors.
	Paen Bagh (Ladies' Garden)		Used only by the ladies in the past but now open for all.
	Toilets		There is only one toilet open for the visitors (both males and females). The other remains closed. Poor maintenance.
	Canteen		Remained closed throughout my visit to the site. Moreover, the structure is not in harmony with the historic garden. There is only one drinking water access in the 2 nd terrace.

<p>2nd Terrace</p>	<p>Water channels of 2nd terrace</p>		<p>Not maintained and filled with many obstacles and garbage.</p>
	<p>Landscape</p>		<p>The landscape of 2nd terrace is well maintained but few areas still need attention.</p> <p>The benches provided by the department in the middle terrace are not suitable for sitting as they are covered with bird waste.</p>
	<p>Central Water Canal</p>		<p>Remained dry throughout my visit to the garden.</p> <p>The fountains are broken and not operational due to the collapse of water storage tank.</p>

3 rd Terrace	Turrets		Structures are prone to human vandalism, animal excreta, several cracks and seepage due to rain water retention. Growth of wild vegetation on the structures. Garbage inside the turrets.
	Landscape		The southeast side of the 3 rd terrace is not maintained and covered with wild plantation.
	Western Gate		The use of inappropriate materials remains a threat for the original muqarnas details. Western gate is prone to human vandalism as the walls are covered with writings.
3 rd Terrace	Water Channels		The water channel in the 3 rd terrace located on the southern side is filled with algae as water remains stagnant during summer.

Specifying the Boundaries

A distance of 200m should be maintained from the heritage site of the new constructions according to the guidelines in order to maintain its original surrounding context. Residential or commercial structures should remain outside the marked area. The department needs to reconsider the external boundary as it is not fulfilling the said requirement.

Acquisition of the Surrounding Land

In order to control the rapid development around the Wah Gardens, the Department of Architecture should take legal steps for the acquisition of the surrounding green land in order to maintain the surrounding landscape of the garden, as a prime attraction of the place is its natural environment.

Environmental Control

Maintaining the surrounding landscape of the gardens will result in environmental control that is needed badly as the major attraction of the Wah Gardens is the surrounding greenery and natural beauty. Removal of greenery has to be penalized with heavy fines and only single storey structures should be allowed outside the marked boundaries.

Action against Illegal Construction

Action against the built structures around the Wah Gardens and on the southern hill is badly needed as the number of built structures is increasing rapidly and they are spoiling the aesthetics of the area. Heavy fine along with the demolishing of the structures is required so in future it remains safe. The continuous supply of water from natural springs requires the limiting of development around the complex and a lesson should be learnt from the plight of the Katas Raj Temple, where unplanned and unstudied construction resulted in the extinction of water.

Planning against Natural Disasters

There is no possibility of the prevention of natural disasters, although timely planning and maintenance could secure the Wah Gardens from further damage. A planning team should be formed to meet the appropriate needs.

Maintaining Wah Gardens' Originality

The initiative by the government and the Department of Archaeology to take back the Farudgah Palace from the Hayat family and to make it a part of the Wah Gardens as in the times of the Mughals is of utmost importance. It will alternatively

open ways for tourist activities and will also make the masses aware of their heritage, as most of the people are not aware of the history of Farudgah Palace.

The original methods and materials are proposed to be used for the conservation of the architectural features of the gardens. The previous conservation of the gardens needs consideration as it lacked authenticity. Thereof, plaster should be removed and the original lime plaster should be applied after proper study and material testing so the building context remains the same.

Defining Proper Entrance and Exit

The entrance and exit points are causing problems for the visitors. The right side staircase should be used for entrance and the one on the left side for exit. It will ease visitor circulation.

Allocation of Parking Area

Visitors face a lot of disturbance in the congested road side parking. During summer season, the visitors are double in number as compared to the winter season and require more area to park their vehicles. The area in front of the Wah Gardens should be utilized for that purpose, so the gardens may accommodate more visitors. Construction needs to be done keeping in view a futuristic approach as the number of visitors will be increased further in the future. The already constructed structures in the marked area should be cleared and proper parking ought to be planned along with the green belts.

Provision of Tourist Facilities

A heritage site lacking tourism facilities cannot flourish and cannot become an attractive tourist spot. There is a need to identify spaces for tourist facilities. A small prayer area should be developed in harmony with the Wah Gardens adjacent to the present canteen. The present garden office adjacent to the hammam is should be removed and relocated in the parking area. The planning of the parking area needs attention as elements such as the heritage shop, restaurant, research centre and Wah Gardens' office should be converted into parking space. Designing the tourist circulation in a way that enforces them to pass through these elements will result in the economic development of the site. The research centre containing all the data regarding different aspects of Wah Gardens will facilitate the students, architects, landscape designers, tourists and researchers.

The southern hill was a part of the complex in the past; the provision of amenities without disturbing the green land would encourage the visitors for hiking.

Harmonized Structures

The current tourist facilities such as the canteen, toilets and the few that have been recommended should be in harmony with the Wah Gardens. The red coloured coca cola advertisement on the canteen wall spoils the aesthetics of the Wah Gardens. Proper planning and an expert designer team is required for this purpose.

Traffic Flow

Smooth traffic flow is required on the garden road. A large number of visitors to the area may result in traffic congestion, so the width of the road needs to be increased. Currently, it is a two-way road and linked with the Wah village. The road should be provided with speed controllers along the garden premises and it will contribute in providing comfortable and secure visiting conditions.

Signage for Visitor Amenities

Signage amenities facilitate the visitors. They should be present both within the garden to ease the visitors and around the garden to attract the visitors to the site. Grand Trunk road and Motorway are important road networks and they should be decorated with relevant information regarding the tourist / heritage spots. Likewise, promoting and mentioning of the Wah Gardens at the surrounding tourist spots in Taxila and Hassan Abdal will urge the visitors from those sites to visit the gardens as well.

The entrance already provides general information about the Wah Gardens but it should also demonstrate its overall plan. The signage facility needs to be designed within the Wah Gardens to facilitate tourist circulation.

Staff Appointment

The three terraced Wah Gardens require a number of staff members for their maintenance, protection and promotion. An aesthetically pleasing atmosphere is required for the visitors. For the conservation of the architectural features, skilled craftsmen, architects, designers, technicians and engineers are required. Assigning security guards at the entrance gate and near the various structures like the baradaris, water tanks and western gate would save them from human interventions. Regular maintenance of the Wah Gardens is required, so more sweepers and gardeners are suggested to be appointed for this purpose.

Training of Curators

In order to evolve the heritage site, all the care takers of the gardens are required to be trained by professionals through different workshops and lectures. They

should have awareness about heritage protection, national and international guidelines. The Department of Archaeology is required to monitor whether the staff is fulfilling their duties or not.

Removal of Banners

Immediate action should be taken by the Department of Archaeology to remove banners from the garden walls and gates. Punishment and heavy fines need to be imposed to save the Wah Gardens from further damage in the future.

Fence Removal for Visitors

The fence present around the baradaris and the hammam in the 2nd terrace should be removed and the structures are should be open with security precautions for the visitors as they want to know about their heritage.

Cleaning Water Tanks and Water Channels

The water coming from the natural springs is fresh, clear, clean and without any impurities. Indeed, the visitors spoil the aesthetics of the water tanks and water channels by throwing garbage in them. The water tanks and channels should be cleaned properly with fines imposed for human interventions.

Landscaping

The 3rd terrace of the Wah Gardens was a fruit garden (Rajput, [2015](#)). It should be restored to its original condition. During the spring season, flower plants should be planted, especially roses and marigold plants, for increasing the aesthetic value of the Wah Gardens. The present Chinar trees are about to fall due to being hollow from the inside. Initiative ought to be taken in the future against termite attack to save other plants and trees.

Action against Human Vandalism

The only way to stop human interventions is to plan an effective security system. The security cameras present around the complex should be monitored all the time. The security guards ought to be present around the structures and in the Wah Gardens to impose fine on the spot. This would secure the Wah Gardens from the damage caused by tourists.

Restoration of Fountains

The fountains present in the central canal should be restored to bring back the gardens to their original aesthetic settings. The broken terracotta pipes should be replaced by PPR pipes. The water storage tank adjacent to the hammam that was

demolished needs to be restored, so the fountains could work under the principle of gravity and without the involvement of electric pumps. The prime goal for the restoration of the historic gardens is to maintain their originality by every means. A successful example is the Villa de'Este, where the hydraulic system is still running. The restoration of the water tank will also result in the removal of algae from the southern water channels in the 3rd terrace during the summer. The speedy water flow from the storage tank under the principle of gravity will prevent the water from becoming stagnant.

Conclusion

Wah Gardens, the selected heritage site, exhibited a critical condition due to many observed factors such as climatic conditions, negligence of the authorities and human vandalism, all documented in the current research. The identification of threats and the review of the existing condition revealed the urgent need of a conservation plan along with the prioritization of recommendations. The first and foremost remedial measure is the examination of the surrounding areas of this particular heritage site. Such measures also require the creation of a buffer zone for the immediate protection of this cultural asset and to ensure the integrity and originality of the heritage site. This action should be parallel to the immediate structural consolidation of the existing structures within the gardens, as the top priority is the safety of individuals visiting the site. Afterwards, the architectural and historical significance of the gardens should be maintained with the preparation of suitable short and long term plans.

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