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Identification of management & conservation issues in built heritage (a case study of Zar Dheri Buddhist complex District Mansehra, Khyber Pakhtunkhwa, Pakistan)

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Abstract

Zar Dheri Buddhist complex is one of the few sites systematically explored and scientifically excavated by professional archaeologists. The site is located to the right side of Shinkiari-Tambah road, a link road starting from the Karakuram Highway leading to Dadar and beyond. The site was for the first time documented by H. Hargreaves in 1922 (Hargreaves, 1923). It was later on excavated by the Tokyo National Museum Archaeological Mission (hereafter TNMAM) to Pakistan from 1995-99 in collaboration with the Department of Archaeology and Museums (henceforth DOAM), Government of Pakistan. These field investigations at the site revealed some remarkable discoveries including 146 stone sculptures/architectural elements, coins and ceramics. But the most important discovery revealed at the site was the exceptional cruciform stupa with flight of steps provided on each cardinal side (Yoshihide, 2011). This stupa has recently been declared as the earliest of all the cruciform stupas yet discovered from the entire South Asia (Hameed, 2018). But despite of its rich archaeological and historical potential, the site is constantly losing its authenticity due to natural disaster and human vandalism. The present study therefore aims to highlight the management issues and device mechanism to minimize the threats to the site.

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Introduction

Mansehra, an important district of Khyber Pakhtunkhwa is located on the ancient Silk Road. It lies between 34° 14' and 35° 10' N latitudes and 72° 49' and 74° 08' E longitude and about 3682 feet altitude (*Imperial Gazetteer of India, Provincial Series, North West Frontier Province* 1991; Watson, 1907). It covers an area of 4579 square kilometers with Kohistan and Batagram to its north, Shangla and Buner Districts to its southwest, District Swat to its west and Abbottabad & Haripur districts to its south (Hameed, 2012). Located at the junction of the ancient trade routes, Mansehra has been receiving and transmitting cultural flows from all directions. The archaeological explorations in the region recently conducted by Hazara University have unfolded hundreds of archaeological sites and monuments dated from the protohistoric to the colonial era. The most extensive number of the explored sites is assigned to the Buddhist era based on the structural remains and other surface collections. Many of these sites specially those of the Buddhist era, due to their archaeological richness have been plundered by the antiquarians. While the remainders are at the verge of collapse due to modern constructions and agricultural activities. One such site is Zar Dheri (Fig. 1-2) located to the northeast of Shinkiari, a small town on the Karakorum Highway in District Mansehra.

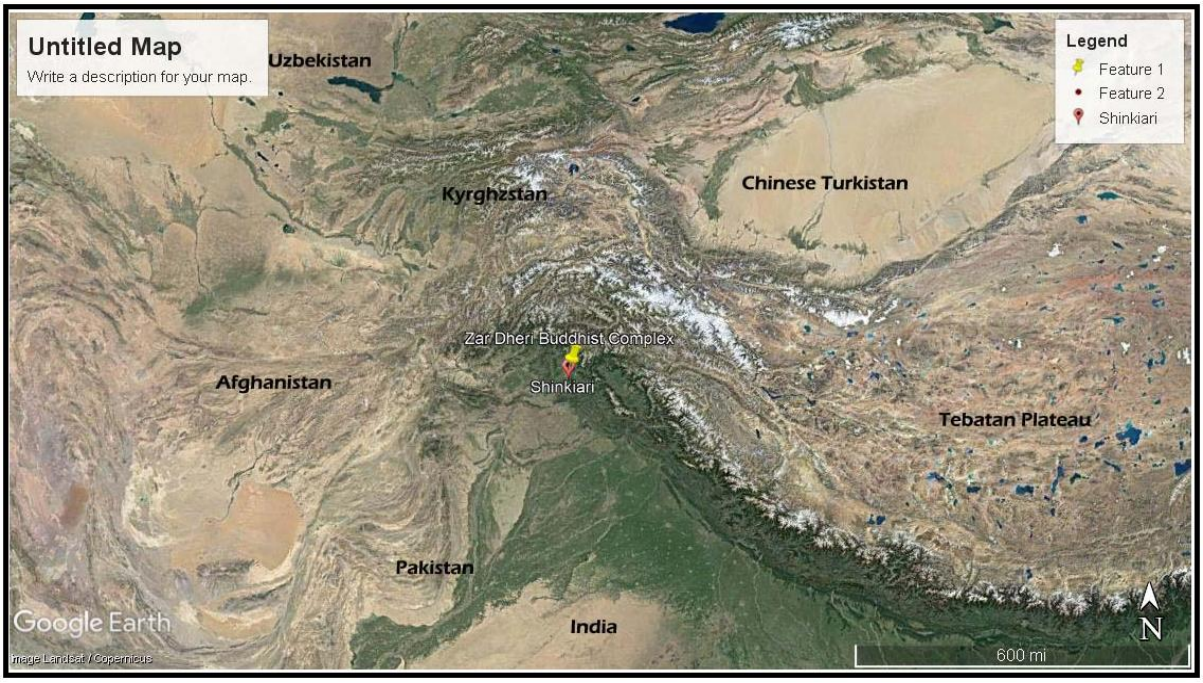

Fig. 1. Google Map Showing the Zar Dheri Buddhist Complex.

The site was for the first time documented by H. Hargreaves, the then Superintendent, Archaeological Survey of India in 1922. In his report Hargreaves has given a detailed note on the site with special reference to the stupa (Hargreaves 1923). In 1995, the TNMAM initiated the first scientific excavation in collaboration with the DOAM, Govt. Pakistan that continued till 1999. These intensive field investigations at Zar Dheri unearthed valuable artefacts and noteworthy architectural remains. The artefacts unearthed at the site include stone sculptures/architectural elements, coins, iron nails/door fittings and ceramics that are now exhibited in the Peshawar Museum. But the structural remains exposed during the excavations were not conserved and promoted for sustainable tourism rather these important architectural remains including the earliest cruciform stupa, were refilled after the completion of the excavation project. Even the concern Department (i.e. DOAM) did not bother to demarcate the boundaries of the site and stop further encroachment. This provided an opportunity to the owners to resume their agricultural activities as well as new construction at the site. With the result, the site is being covered with modern buildings.

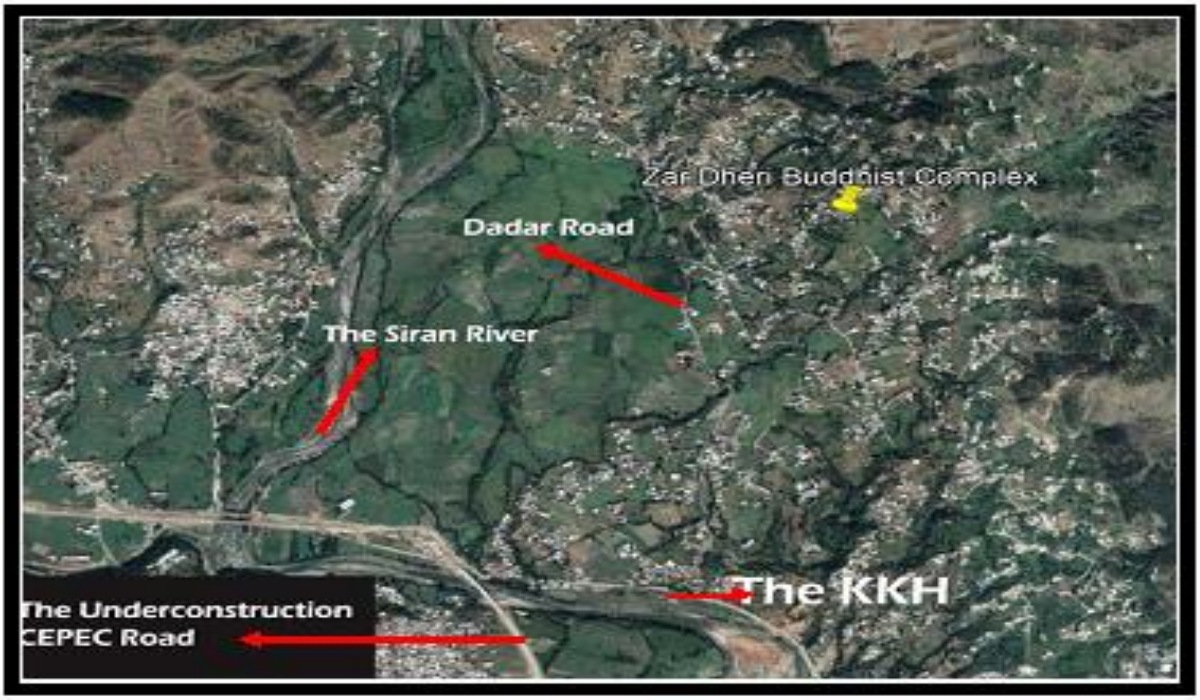

Fig. 2. Map Showing the Location of Zar Dheri Site.

Apart from the human vandalism there are other natural factor that equally play their role to the impairment the site. Proper conservation and preservation of heritage site is not possible without identifying the issues and threats to that site. The research under-discussion is the first initiative in this regard. The main aims of the present research are:

To investigate and identify the major threats to Zar Dheri Buddhist Complex.

To evaluate the level of various threats to the site.

To devise a management plan for the site to minimize the threats.

Fig. 3. Damage Caused Mosses.

A Review of Earlier Research on Zar Dheri Buddhist Complex

The Buddhist complex of Zar Dheri is one of the few sites in Mansehra that were systematically explored and excavated by professional archaeologists. It comprises an exceptional cruciform stupa and monastery (Yoshihide, 2011: Fig. 7). H. Hargreaves, the then superintendent, Archaeological Survey of India has the credit to document the site during his visit to Mansehra in 1922. In 1923, Hargreaves published his findings with illustrations in the Annual Report of *the Archaeological Survey of India* (Hargreaves, 1923).

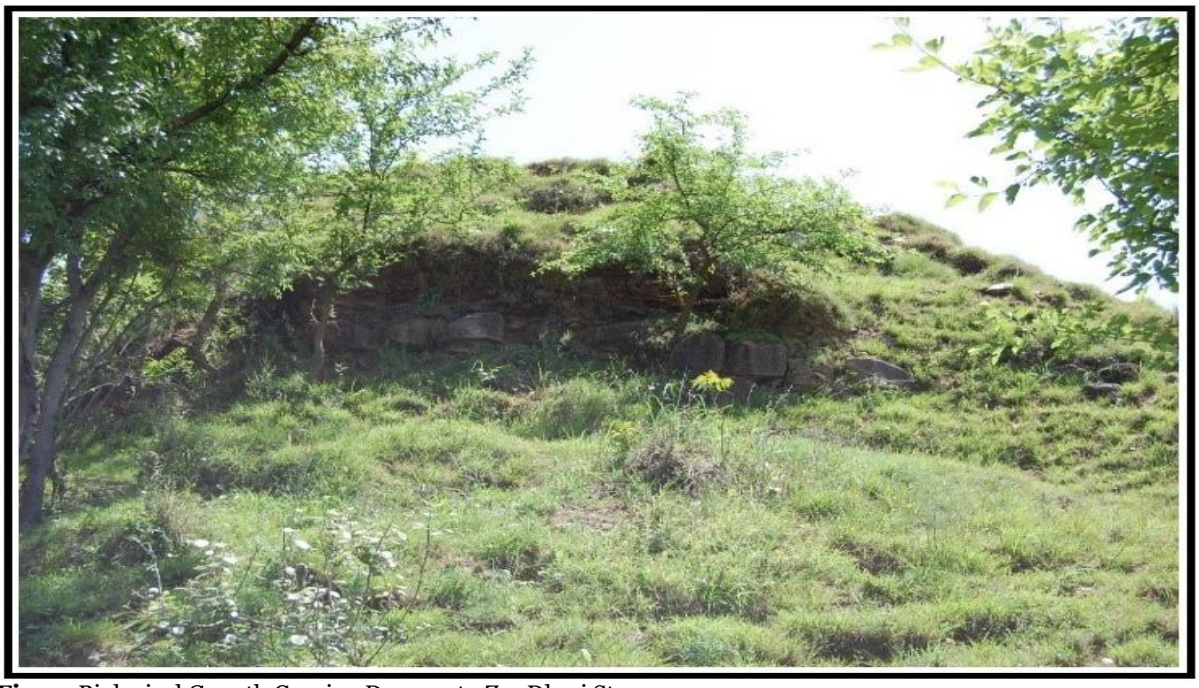

Fig. 4. Biological Growth Causing Damage to Zar Dheri Stupa.

A.D.H. Bivar, a famous numismatist, has published an article on the gold relic casket, which was exhibited in the Indian Art Exhibition organized by Messrs Spink and sons in London from May 24 to June 25, 1978. In his article, Hargreaves considers Zar Dheri to be the possible provenance for the gold relic model (Bivar 1996). Abdul Azeem in his article has discussed the stone sculptures from Zar Dheri. He has compared Zar Dheri sculptures with those reported from Gandhara and Udiyana based on their stylistic features. His analysis shows that many of the sculptures are comparable with those reported from Butkara I (Swat) (Azeem 2002). Koizumi Yoshihide in his article titled "The Finds from Zar Dheri" has given an overview of the archaeological excavation at the site with special reference to the artefacts and architectural remains unearthed at the site. Based on the Kharoshti *Aksharas* and numismatic evidences the author has placed Zar Dheri to the 2nd century CE (Yoshihide, 2009). Descriptions of the site have also been given by other scholars including Saif ur Rahman Dar and Abdul Hameed (Dar, 2006; Hameed, 2012). But the most comprehensive report on Zar Dheri complex has recently published by the Japanese (Yoshihide, 2011).

Summary of the excavations carried out in six seasons

Excavation in 1994

According to Excavation report of the Tokyo National Museum Archaeological Mission to Pakistan, In 1994, the field work was focused on the distribution of archaeological sites in the Hazara Division, which had been reported since 1992, conforming the content of Hargreaves report of 1922-23 about the measurement of the stupa, they took rough measurement and conduct a field survey of the entire site. In addition, they also discovered many other sites including Sirkap located to the east of Zar Dheri, Zaro Dheri,

and Bedadi to the south of Zar Dheri complex.

Excavation in 1995

On the basis of the 1994 survey result, this year they planned to excavate the Zar Dheri site and this year they excavated the main stupa, the principal structure of the stupa and its vicinity, and dug trenches that crossed at the location of the main stupa and extended to edge of the stupa area.

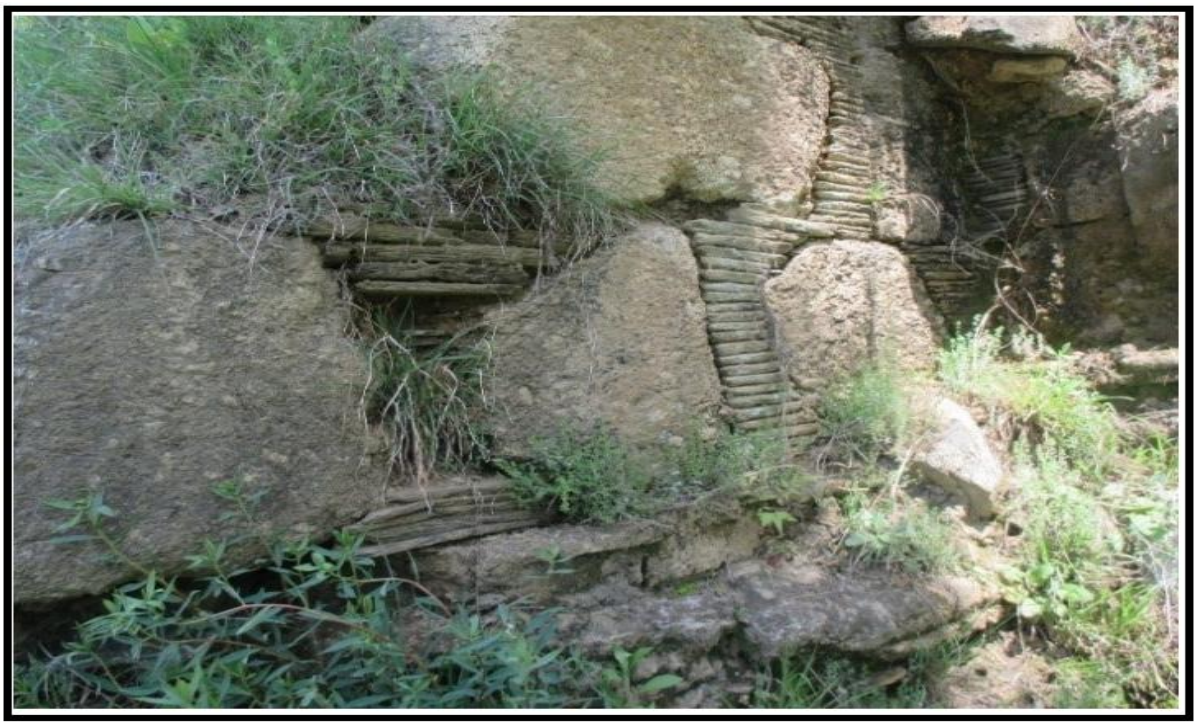

Fig. 5. Closer View of Biological Growth at Zar Dheri on Main Stupa.

Excavation in 1996

The third season field investigation at Zar Dheri was carried out on the western part of the stupa area with the aim to expose the remaining part of the main stupa.

Three major structural remains were exposed during this season. But due to their dilapidated conditions, these structures could not be recognized. The major cause of damage to these unknown structures was, the illegal digging at the site by the antiquity dealers carried out before the systematic documentation of the site by Hargreaves.

Excavation in 1997

The chief aim of the excavation conducted in 1997 was to make an accurate floor plan of the main stupa. For this purpose, excavation was carried out at the southeastern side of the main stupa, which seemed to have been well preserved and clarified the condition of the stupa plinth and foundation. The shape of the pilaster decorating the wall plan of the plinth was examined during the process of excavation. This season excavation also unearthed south grand staircase on the south side of the principal stupa, which was considered to be the front entrance of the temple.

Excavation in 1998

The fifth season field investigation was focused on monastery area of Zar Dheri. The monastery area of Zar Dheri consisted of a monastic quadrangle on the east side and other building on the west side.

Excavation in 1999

This sixth season work was also focused on the monastery area. This time, the main aims were to further expose the row of monks' cells and know about the size of the bath, all discovered during the previous season work at the site.

Fig. 7. Biological Growth on the Southwestern side of the Main Stupa at Zar Dheri.

During the process of excavation, a total of 146 sculptures and architectural fragment were unearthed from the monk's cell no 16.

Major Structure Exposed During the Excavation

Main stupa

The main stupa was exposed in the center of the square court. The stupa is cruciform in shape very similar those at Bhamala and Rawak (Hameed, 2017). The cruciform shape stupas are very rare in and outside the Gandhara region. Those discovered from Gandhara region include the Main Stupa A at Bhamala (Taxila), the stupa at Tahkal Bala and Shah-ji-ki-Dheri (Peshawar), The Stupa at Sahri Bahlol (Mardan) and stupa model from Sheikhan Dheri (Charsadda) now displayed in Sir Sahibzada Abdul Qayyum Museum of Archaeology and Ethnology University of Peshawar. While those found from the surrounding regions include; the Parihasanpur and Harwan stupas (Kashmir), the stupa at Tapa Sardar near Ghazni (Afghanistan), the stupa at Adzehna Tepe in Tajikistan, the main Stupa of Rawak in Chinese Turkistan, the stupa at Paharpur (Bangladesh) and building 42 at Sanchi (India) (Hameed, 2018: Fig. 11).

The principal stupa at Zar Dheri has a square plinth provided with four stairs. The stupa is constructed of dressed stones in diaper masonry. According to Fitzsimmon, the emergence of cross planned stupa was the result of development of design in Taxila without borrowing the idea from outside (Fitzsimmon, 2001). He has further classified the cross planned stupa into two groups.

The first group comprises of those reported from Pakistan and Afghanistan which retain the strong presence of square body at the heart of the design. Another is the example in other areas which have three protruding corners between each staircase.

The protrusion is equivalent to plinth not an addition, stupa in Tapa Sardar is divided into two according to their shape. Early example retains square core in their shape, which later ones moved towards a radiated circle (Excavation report of the Tokyo National Museum Archaeological Mission to Pakistan: 392). The stupa at Zar Dheri along with other associated structures was refilled after excavation presently only the dome covered with thick bushes is visible. While Abdul Hameed in his PhD dissertation has reclassified the cruciform stupas reported in and outside the Gandhara region. He has also established chronology of the cross planned stupas by declaring

the Zar Dheri Stupa to be the earliest (Hameed, 2018).

While Yoshihide in his report has compared Zar Dheri stupa with that of Bhamala. According to him both these stupas have the following shared features:

Both are cruciform in shape and are provided with flights of steps one at each cardinal point. However, the forms of stairs at the two sites are slightly different.

At Zar Dheri, the stairs are wide near the base and narrow as they reach to the top of the plinth. At Bhamāla, the stairs become a little wider as they rise toward the plinth. There is a landing platform half way up the stairs, at which point they continue upwards supported by vertical masonry walls.

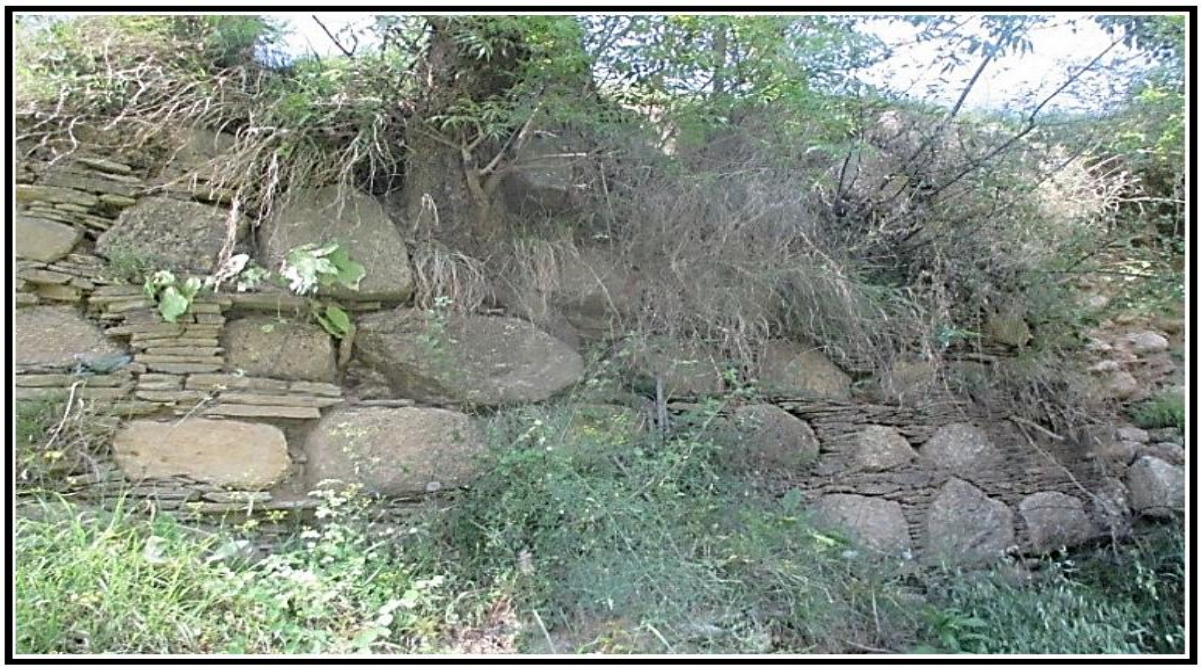

Fig. 7. Roots of the Trees penetrating in the wall and causing damage.

Upon reaching the foundation of the plinth, stucco Buddhas in seated position were placed. On the south-eastern corner, at the joint of the salient edge and the plinth, a *Parinirvaṇa* statue of Buddha in stucco was placed on the plinth and sides of the stairs of the Main Stupa A at Bhamala.

At Zar Dheri there are pilasters attached to the plinth and stone elements having very simple and highly abstract forms (derived from a lion seat or vegetal motif).

At Bhamāla, a pair of lions was found at the east and west stairs and a pair of elephants was on the south and north. As far as stairs and the plinth are concerned, the stupa at Bhamāla shows a more complex and elaborate design as compared to that of Zar Dheri Stupa.

At Zar Dheri, all the structures, including the monastery, show diaper masonry, while at Bhamāla the structures show semi-ashlar masonry (Yoshihide, 2011; Hameed 2018).

The Monastic Complex

The excavation conducted at the site revealed the monastic complex comprising of monk's cell courtyard and corridor measuring 85 meters in length east-west and 52 (meters) in width in north- south.

All the structure in the monastery is were made of stone in diaper masonry. Iron door fifing's reported during the excavation show the existence of the wooden door (Yoshihide, 2011).

Fig. 8. Under construction House built in the Monastery area.

Current Status of the site

The research team conducted a comprehensive survey of the site to investigate the various management/conservation issues. During the field investigation it was noticed that the important heritage site being exposed to the natural threats and human vandalism is constantly losing its originality. As mentioned earlier that the site had partially been damaged by the local antiquarians even before it was systematically documented and published. But the most severe issues to the site have been raised after the excavations. Refilling of the site has given opportunity to the local community to resume agricultural and construction activities at the site. The major management issues identified during the present survey are discuss as under:

Climatic Change

The exposed structures are unfavorably affected from changing natural environment and climatic condition. "Climate can be defined as the whole atmospheric events such as rainfall, temperature, wind, pressure and humidity that cause certain damages on the monumental buildings for years". The historical and cultural assets of nations are the values assigning the power, richness and identity of them (Barr, 2006). Each historical building and cultural value is an expression of accumulation and a bridge from past to present (Colette, 2007). The climatic change is one of the factors of constant damage to Zar Dheri site (Fig. 3). The climate is warm and temperate in Mansehra. The rainfall in Mansehra is significant, with precipitation even during the driest month. The average annual temperature in Mansehra is 18.5 °C. In a year, the average rainfall is 1445 mm. Monsoon season is from middle and late June to October. The rains provide a welcome relief from the scorching summer heat and the whole state is covered with greens and waterfalls are at their best. Winters are pleasant with low temperatures and less humidity (Gul *et al.*, 2016).

Water and humidity

Humidity is one of the most harmful factors against every construction materials including stone. Limestone dissolves by the effects of rain water and carbon dioxide. Additionally, the acid rains threatening stones are carried by rain water whose capillary rise inside the building have harmful effects on the construction materials (Tiano, 2002). The soil between groundwater level and earth surface holds water by capillarity where this event is called as

"surface water" or "capillary water" that cannot be removed by using any drainage system. The humidity rising up, can also cause serious damages to the structure. At the same time, the salts hold by the building itself can result in florescence and some other effects damaging the chemical and physical structures of the walls (Tiano, 1998).

Uncontrolled growth of vegetation

Due to the humid environment the growth of weeds, grass and lower plant are the major problems at Zar Dheri Buddhist complex. The site is not regularly maintained has become colonized by biological organisms (Fig. 4-6) such as mosses, algae and similar. Biological growth on buildings and structures can be expected to increase with rising temperatures and rainfall. Algae, lichens and moss do not necessarily damage (Tiano, 2002) the site, but they retain the damp and can therefore help to create moisture-related damage such as rot and frost expansion (Fusey and Hyvert, 1966). More vegetation around buildings creates more humidity and it slow down the drying-out of the outer skin of the stone wall, thus leading to the growth of fungi and algae. Not only timber buildings, but also brick and concrete can be affected by decomposition caused by biological growth, primarily through plant roots growing into and expanding cracks in the wall (Fig. 7). Increased biological growth affects not only site, but also whole cultural environments and landscapes (Kaslegard, 2010). In general, the biological weathering takes place due to the plants, animals, fungus, algae, bacteria, lichen etc. In nature, more than one process takes place and it is difficult to verify the main causes of the weathering. But the biological growth is widely present in Zar Dheri site.

Fig. 9. Garbage thrown by the Local Community.

Mosses

It is a group of plants which do not having a vascular system and are known as non vascular plants. They are found in wet and moist and shady places on walls, tree trunks and on wet surfaces. The species of riccia, marchantia, funaria, polytrichum etc are found. Alternation of generation occurs in them the sporophyte bears gametophyte and then gametophyte bears the sporophyte again (Kaslegard, 2010). They do not have a true leaves and stem also having rhizoids due to which they absorbs water from the ground.

Their leaves are usually photosynthetic, green having chlorophyll, smaller and greenish in color. The mosses are present in covered & uncovered area, need the clearness operation at Zar Dheri to remove the mosses and other types of biological growth (Farooq

et al., 2015).

Natural disasters

Among the natural disasters, earthquake is one of the most destructive one that has constantly been causing damage to Zar Dheri. The crakes already occurred in the exposed walls at Zar Dheri are enlarged due to the earthquake and its aftershocks with the result, the stone structures fall on regular bases.

Land sliding

Land sliding are often triggered by a specific weather situation, more frequent rain increases in the number of land sliding and of mound slides. With the increase in humidity there is a pressure on clay, which can in turn increase the incidence of land slide that was notices at some parts of main stupa at Zar Dheri.

Rain water

Water damage is a depressingly regular occurrence in heritage building. It can result from natural occurrence, technological hazards, or mechanical failures. The rain water containing the acidic properties distracts the stone structure of stupa specially the pilasters made of Kanjur stone. People also used the monastery site as sewage water storage which also has the harmful effect to the rooms at the monastery area.

Apart from the natural hazards, the heritage site ofZar Dheri is also facing human vandalism. The major human threats identified during the field work are discussed as under:

Lack of awareness

lack of knowledge about cultural heritage values is one of the most destructive threats to the site.Very few people of the local community know about the value of this Buddisht complex. This lack of awareness has resulted misuse of the site by the local community. It was noticed during the field survey that the stone block of the northern steps of the principal stupa had been taken out by one of the owners of the site and used in the modern construction in 2013. Due to the lack of knowladge the community does not own the site as a valueable asset rather would like to use it for other purposes i.e, cultivation and new construction etc. Presently, except the main stupa, the remaning site is either being used for agriculture or being covered with modern houses. The new construction has resulted sever damage to the site as most of the old material i.e stone blocks are being reused. The remaing structures are in the process of decay due to deep plouging and plantation. Wheat and maiz are the major crops being cultivated on and around the site. The use of animals waste and fertilizar also resulted irrepairable damage to the small objects as well as the structure. Roots of the trees have causes irremediable damge to the wall structure. Due to the cultivation by the tractor vibration produced with which the joints of the stone walls are being disturbed and displaced from their original position.

Urbanization

With the increase in population at an alarming rate, new buildings (Fig. 8) are being constructed on and around Zar Dheri. The newly constructed buildings on one hand, are constantly covering the anceint remains, on the other hand, the dressed blocks of the stupa and monastic eatablishment are being pulled out and reused by the local community. With the result the entire is losing its original shape and disappearing.

Material thefting

Material thefting is yet another threat to the site. The site was partially looted by the illegal diggers before the discovery and systematic excavation carried out by the Tokyo National Museums Archaeological Mission to Pakistan in collaboration with the Department of Archaeology and Museums Govt of Pakistan from 1995 to 1999. The gold relic casket according to Bivar most probably have been found from Zar Dheri.

Drainage system

The drainage lines of most of the newly constructed houses passe from the middle of the site. Local people reside on the site use the site for their sewerage water

storage that create problem for in the site. Water pollution is an undesirable change that is contaminated with harmful subsatance. It is one of the major issues noticed during the field visit.

Use the site as meadows

Different species of grass like hurbs, sherbs and other types of plant grow on the site during different seasons that attract the domesticated animals like goats, sheeps and cows and buffellows. No railing or protection wall has been provided to the site to stop these animals. Due to grazing of animals many of the wall structures are being disturbed. Furthermore, the wastes left by animals resulting of growing more herbs and shrubs at the site.

Waste material of the crops burnt on site

Fire is the rapid oxidation of a material in the chemical process of the combustion, releasing heat, light and various reaction products slower oxidative processes. At the Zar Dheri site, the waste material of the crops are being burnt along the structural walls. This has caused breakdown of the stone structures and the colour of the stone changes due to black soot. Domastic wastes material also is another issues, the local people of the local community throw their garbage (Fig. 9) on the site, which is causing biological growth at the site.

In summary, the Buddhist complex of Zar Dheri has been facing irremediable natural and human threats for the last 10 decades. Proper attention is needed to protect this important religious centre. In this connection, a comprehensive management plan is required to minimize the existing threats and protect the site from further damage.

Proposed management plan

Lack of management is also one of the most important management issues. Although the site has been declared as a protected site but no management plan has yet ben prepared for its conservation, preservation, protection and promotion for heritage tourism. Propoer demarcation of the site by the concerned department will help to stop encrochment and misuse of the site. Implemention of the antiqutity laws will also ensure the prtotection of the site from further destruction.

After the detailed documenttion and demaration the enchrochment and altration made by the local community need to be removed on urgent bases. This possible only if all the stakeholders (i.e. the DOAM, Governement of Khyber Pakhtunkhwa, the local community and the Ministery of Culture and Torism) are taken on borad. The owners of the site may be compansated and rehabilitaed.

In the next step, a permanet fense should be installed aound the site to protect the same from animals as well as human vandalism. Site watchmen may be deputed to lookafter and safegaurd the site on regular basis.

The exposed structural remains need to be properly conserved by the professionals to stup further damage to the site. The biological growth at the site may be stop by removing the herbs and shrubs on regular basis.

The sructural remains including the exceptional stupa and the monastery may be revealed and conserved. Futhers excavatins at the site may lead to more discoveries and help to understnd the chronology of the site.

After extensive excavations and conservation the site may be promoted for sustainable tourism.

Conclusion

Cultural heritage sites are the most important tools being used for sustainable tourism in many of the countries.

The archaeological sites and monuments have the potentials to attract both national and international tourists due to their historical, artistic and architectural significance. Cultural Heritage often reduces leisure opportunities of short-term domestic economic development for long-term benefits.

Pakistan is one of the few countries of the world, blessed with rich cultural and archaeological heritage. But many of the important heritage sites have disappeared. While the remaining are losing their originality due to poor management plan. Zar Dheri is one of the endangered sites constantly its authenticity due to natural threats and human vandalism.

The major natural threats identified during the present research include wild growth, climatic change/humidity, earthquake, rain water and patina. While those of human include encroachment, misuse and urbanization. The proposed management plan may help not only minimize the threats but also to preserve and promote the site for sustainable tourism.

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