

Mapping attributes and managing heritage sites: the case of the Old Town of Ghadames-Libya

Attributes and
heritage sites

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Received 17 November 2023

Revised 1 February 2024

5 February 2024

Accepted 5 February 2024

Abstract

Purpose – This paper introduces a methodology to identify, analyse and represent heritage site attributes, emphasizing their impact on value, authenticity, integrity and management, with a case study on Ghadames, Libya. Inscribed in 1986 and moved to the In-Danger List in 2016 due to conflict, this work seeks to update the site's attributes and values for improved management.

Design/methodology/approach – This methodology, focusing on Ghadames, leverages recent heritage management advancements to monitor conflict-induced changes, aiming to enhance decision-making through a detailed analysis of the site's natural and cultural attributes.

Findings – Our findings highlight the need for systematic and holistic assessments of heritage site attributes and values, crucial for managing sites of both local and global significance. This approach is a key to understanding their identity, guiding interpretation, management and preserving cultural significance.

Research limitations/implications – Developed for Ghadames, the methodology requires adaptation for other sites, underscoring the importance of identifying core tangible and intangible attributes that define a site's uniqueness.

Practical implications – Our developed methodology offers a replicable framework that can be modified by local heritage professionals to map attributes and assess the direct and indirect impact of conflict on heritage sites.

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This paper is a part of the “Managing Libyan Cultural Heritage” project, MaLiCH, funded by the International Alliance for the Protection of Heritage in Conflict Areas (ALIPH). We would like to extend our heartfelt appreciation to the Department of Antiquities in Libya (DoA), led by Dr Mohamed Fallos, for their unwavering support. Our gratitude also goes to the dedicated efforts of Mrs Feryal Sharfeddin, Mr Ziad Siala and the Ghadames City Development and Protection Authority (GCPDA). We offer special thanks to Mr Ahmed Altohami and the entire team from the wider community in Ghadames for their contributions. Additionally, we warmly remember our late colleague, Eng Ali Mohamed Berbash, and acknowledge his invaluable input into this work.



Journal of Cultural Heritage
Management and Sustainable
Development
Emerald Publishing Limited
2044-1266

DOI 10.1108/JCHMSD-11-2023-0186

Originality/value – The detailed assessment provides a foundation for crafting informed policies and effective management strategies. It specifically targets minimizing the adverse effects of conflict on heritage sites' attributes. This effort is instrumental in preparing the necessary documentation to support the delisting of these sites from the UNESCO World Heritage Site In-Danger List, promoting their preservation and recovery.

Keywords World Heritage Sites, Post-conflict, Heritage management, Local values, Mapping attributes, Old Town of Ghadames

Paper type Case study

Introduction

The attributes and values of a heritage site are the key method for identifying authenticity and integrity. They underpin the management plan, whether the site has a formal designation or not. Properties inscribed on the World Heritage (WH) List must be of Outstanding Universal Value (OUV), meeting at least one of the ten selection criteria. The Statement of Outstanding Universal Value (SOUV) includes a description of the attributes and values that meet the criteria. These have changed over time, and retrospective statements of OUV are made against the criteria in operation when inscribed with the OUV remaining protected. Heritage values, however, are not static. They change according to advancements in the field or other factors, such as man-made or climate crises. The understanding of values has implications for the understanding of OUV in the WH system (Khalaf, 2018) and is especially important when carrying out our assessments in a WH context.

To understand a property's OUV, it is crucial to recognise the criteria justifying its value at the time of its nomination. These are defined in the Operational Guidelines for the Implementation of the World Heritage Convention (OG). The OG has been improved and expanded over time and so has the definition of the criteria. At the Special Expert Meeting held in Kazan in 2005, it was acknowledged that OUV, "like all values is attributed by people and through human appreciation" (Jokilehto, 2008, p. 69). Once a property is inscribed on the WH List, however, its OUV becomes "a snapshot taken at a given moment" (Araoz, 2011, p. 58), where "the wording of the justification would reflect the format proposed in the criterion at the time of inscription" (Jokilehto, 2008, p. 38). According to the OG, any changes to the value of a property inscribed under specific criteria will lead to a new nomination by the state party. A WH property may have other values that need to be considered, for instance, those that underpin national and local heritage designations and/or values held by indigenous peoples and associated communities. These may be formally designated or informally recognized.

During the last few decades, the criteria for defining significance have been broadened beyond the scale of the monument and the site to include the wider cultural and natural landscape. For instance, Criterion V for the inscription of WH Sites as stated in the 1972 WH Convention focused on archaeological sites, rural settlements and urban areas that are vulnerable to irreversible change. Subsequently, several social and cultural themes have been referred to, such as "expressions of society" and "creative responses", which include architectural or urban design and cultural landscapes. Reference is also made to "utilising natural resources", such as agriculture, "movement of peoples", transportation and trade (Jokilehto, 2008, p. 31).

The Old Town of Ghadames in Libya was inscribed on the WH List in 1986 according to Criterion V (Table 1). The property was placed on the In-Danger List in 2016 as a result of the armed conflict of 2011. Since then, the State Party in Libya – the Department of Antiquities (DoA) – has been working on updating the official documents to produce the Retrospective Outstanding Universal Values (ROUV) and conservation reports.

A key challenge is to update the OUV following the modifications made to Criterion V. This requires an expanded definition of the property, which includes the settlement's relationship to the environment and the wider cultural landscape. The Old Town of Ghadames demonstrates a very particular form of human interaction with its context, which can be explained as an "expression of society", "creative responses" and/or "utilising natural resources". The currently inscribed property boundary, however, includes only the built environment, while the oasis and the wider natural landscape are located within the buffer zone. In response, a new proposal to modify the boundaries of the buffer zone and the property boundary has been prepared by the State Party of Libya [1].

Cultural heritage incorporates tangible and intangible elements, from buildings of globally recognised aesthetic and/or historic value to places or important practices to a particular community or group (Gruber, 2023) [2]. In addition, in accordance with the OG, [3] each WH property should have a buffer zone surrounding the property for the purpose of effective protection. This has complementary legal and/or customary restrictions placed on its use and development. The OUV includes attributes that are part of both the core and buffer zones of the property. The scale and use of the site play a major role in assessing these values. Continuously inhabited historic towns need to be understood in terms of continuity and change, with population increase or decrease having a major impact on their attributes and values. This calls for quite a different approach from that required for remote archaeological sites, for example.

The pressures on the landscape in and around WHS will continue to mount, with around half of the world's population living in urban areas and significant growth in urbanisation being projected over the coming decades. As a result, heritage conservation has broadened its scope to include the wider historic landscape, including both its tangible and intangible aspects. Sites such as the Old Town of Ghadames, however, face many local and global challenges that make its management a complex task. Challenges include changing demography, the impact of climate change, their indirect impact of armed conflict since 2011, maintaining or losing traditional knowledge and skills and the lack and variability of funding and opportunities for capacity building.

Cultural heritage may have contested meanings, which in turn will affect the OUV and its associated attributes. Stakeholders, from local communities to international experts, may prioritise different types of heritage, moments in time or groups. It is important to understand, therefore, local and national perspectives within the context of sociocultural change. In the case of the Old Town of Ghadames, social values were rooted in the urban fabric through the neighbourhoods that belong to each of the seven clans (Eldblom *et al.*, 1968). It is also reflected, however, in the palm groves that belonged to each family but are collectively managed and watered. The inclusion of these areas as part of a new buffer zone was an important step forward in broadening the OUV, even if such a process is one of negotiation about what different people think is significant.

Updates	Criterion V
1984	be an outstanding example of a traditional human settlement, which is representative of a culture, especially when it has become vulnerable under the impact of irreversible change
1994	be an outstanding example of a traditional human settlement or land-use which is representative of a culture (or cultures), especially when it has become vulnerable under the impact of irreversible change; or
2005	be an outstanding example of a traditional human settlement, land-use or sea-use which is representative of a culture (or cultures) or human interaction with the environment, especially when it has become vulnerable under the impact of irreversible change

Source(s): Created by the authors

Table 1.
Criterion V was applied during the inscription of Ghadames in 1986, and subsequent alterations were made in 1994 and 2005, leading up to the most recent Operational Guidelines (OG) revision in 2021

OUV defines a WH property and is established at the time of inscription. It is reflected in a range of attributes that need to be protected to sustain the OUV (ICOMOS, 2011, p. 1). A management plan for a WH property is based on a deep and excellent understanding of the significance of the OUV, its attributes, context and the related stakeholders and rights holders. It should be anchored in planning arrangements at national, regional and local levels (ICOMOS, 2011). A management plan, therefore, could be used as a mechanism to assess the impact of changes to the OUV and associated attributes.

There are many ways of assessing values and the impact on them, some legal and/or technical, whether conservation reports or other official documents. A management plan covers all issues affecting the site, some of which may not be planning matters and reflects the advice cited in UNESCO's OG. Developing a management plan is participatory, involving all interested parties, including those responsible for managing, owning or administering the site and will involve public consultation at key stages. It should, however, be underpinned by a proper understanding of the significance of the site and focus on the protection of the OUV, its authenticity and its integrity, alongside sustainable community strategies as appropriate (UNESCO, 2020). "Taking into account the emotional connection between human beings and their environment, and their sense of place, it is fundamental to guarantee an urban environmental quality of living to contribute to the economic success of a city and to its social and cultural vitality" (Vienna Memorandum No. 16). It is, therefore, imperative to develop tools that link the quality of life of the local community with its social and cultural vitality while sustaining its values.

This paper develops a methodology that applies a theoretical framework to synthesise concepts related to the heritage values and attributes of a WH property. This work has been carried out by the "Managing Libya's Cultural Heritage" project (MaLiCH) in collaboration with the Ghadames City Promotion and Development Authority (GCPDA), the Libyan Department of Antiquities (DoA) and expert groups from UNESCO and ICOMOS [4]. The framework has been developed collaboratively with the Libyan State Party and other partners to remove a WHS from the In-Danger List by submitting a Retrospective Outstanding Universal Value report (RSOUV), the State of Conservation report (SoC) and a Desired State of Conservation for the Removal of Properties from the List of World Heritage in Danger (DSOCR).

It is notable that there are few instances of similar and accessible experiences available for comparison to the case at Ghadames. There are 23 sites in the Arab region on the UNESCO In-Danger List. Reviewing the available documentation for these sites shows a disparity in the accessibility of the reporting. While countries like Yemen, Egypt and Iraq have yet to submit updates, Syria and the State of Palestine have developed newer "*state of conservation*" reports, which include cultural significance and propose corrective measures [5]. A clearly defined methodology for revising site attributes and values, especially in assessing the impacts of conflict, natural disasters or climate crises, seems to be absent.

Several sites on the In-Danger List are facing similar threats from conflict and subsequent neglect – especially those predominantly built from mud brick – which present opportunities for shared learning and collaboration. This includes important sites in Mali, such as the Old Towns of Djenné and Timbuktu. Additionally, the Historic City of Zabid, the Walled City of Shibam and the Old City of Sana'a in Yemen, all share comparable challenges. Exchanging experiences and conservation strategies among these sites could be highly beneficial, offering insights and potential solutions to common issues they face.

The methodology developed in the context of Ghadames utilises various research methods, including desktop surveys, making use of primary and secondary data and working groups. It develops an understanding of the attributes and values of WHS in general and the Old Town of Ghadames in particular. The methodology responds to the needs of heritage sites by considering them as discrete entities and evaluating changes to their

attributes, which make up the OUV and other local values, in a systematic and coherent way. Although this tool was developed in the context of the Old Town of Ghadames, it has wider applications as an iterative process in heritage management beyond WHS. It can be used to assess and reassess the attributes and values of any given site as part of an integrated management planning system that includes documentation, analysis, assessment and response. Following this approach, the tool starts with documenting the attributes of the site, analysing and assessing them against the OUV and significance and planning for appropriate responses such as action plans for specific interventions, policy upgrades or community engagement workshops.

The approach integrates data collection, analysis and response within the larger framework of cultural heritage management. It focuses on the role of education and awareness-raising to promote knowledge, appreciation and respect for cultural diversity. At the same time, it engages with capacity building, questions of local ownership and leadership in heritage guardianship and the involvement of partners and the local community in the decision-making process. Ghadames is a good case study. The DoA is the official state party and responsible for the site's management. It manages the archaeological sites and museums across the town, while the GCPDA is the local authority that carries out the management of the WHS. One challenge, therefore, is coordinating between these two partners along with other local actors while also recognising that assessing values and attributes is a cyclical process like all other management activities.

Attributes and heritage sites

Historical overview of the Old City of Ghadames

The Old Town of Ghadames is a traditional settlement located in an oasis in the desert near Libya's western border with Algeria and Tunisia (Figure 1). It is a unique place; it is the oldest of the pre-Saharan cities, entirely built using locally sourced materials such as mud bricks and palm trees and perfectly adapted to the harsh environment.



Figure 1.
Google Earth map
shows the location of
Ghadames in
southern Libya

Source(s): Retrieved January 24 (2024)

The layout of the Old Town is roughly circular. Around its perimeter, the outer walls of the houses around its perimeter are thickened to create an external fortification for the town (Figure 2). Ghadames has played a key role in the cultural and economic life of the region as an important and peaceful hub for caravan trade belonging to the trans-Saharan network.

The town has a long history. From pre-history to the present day, it has been a point of interchange between major cultures and religions. In the late first millennium BCE, it was occupied by indigenous peoples called the Phazanii, who interacted with the Garamantes, a neighbouring tribe and the Romans, who called it Cydamus. Archaeological remains in stone, including Roman-period defences and the largest mausolea in the region, attest to the wealth and status of the early occupants. Its importance continued through the Byzantine period, with evidence of Christian basilicas and trading agreements with Byzantium. The subsequent Islamic history saw interactions with Tuareg, Amazigh and Berber groups, Ottoman control and visits by European explorers from the 19th century onward. Ghadames played a role in the Second World War and continues to bear the scars of that conflict. Throughout, however, it has developed and maintained its own customs and practices as well as an invaluable manuscript tradition attesting to its history and management.

The city's architecture and society have been shaped by the environment, which remains central to its unique character and continuous survival. Within the property, the mediaeval traditions of mud architecture and handicrafts survive intact. The outstanding dwellings, mostly built over two to three storeys, are adapted to the desert climate, creating cool and



Figure 2.
Aerial view of the Old Town of Ghadames in southern Libya, located near the Tunisian and Algerian borders within an oasis and palm grove

Note(s): This image showcases the Ain Alfaras Basin at the heart of the town, complemented by a traditional irrigation system and surrounded by distinctive mud brick houses

Source(s): Ghadames City Promotion and Development Authority GCPDA (2020)

comfortable interiors. They cluster together along irregular, covered streets, offering meeting places for men and children, while women move freely via the terraces above. The urban part is surrounded by gardens and palm groves, which provide sustenance and further protection against the elements. These are watered by the main oasis, with channels running under the city. The complex balance between natural, urban and architectural features within this ecological system reflects the city's adaptations but also makes it increasingly vulnerable to changes to the water supply, humidity, temperature, agriculture, built environment and population size. The water supply, for example, has been subject to constant change throughout its history due to environmental conditions. This has had a major impact on urban expansion, resulting in the digging of new wells and irrigation canals.

One of the main challenges is preserving these unique characteristics against the backdrop of socioeconomic change and associated demands for development. Since the mid-1970s, a new town has been built next to the historic one, which has resulted in depopulation, less frequent maintenance and a decrease in skilled craftspeople using traditional techniques. Conservation should be a key policy in city planning and management to maintain the authenticity and integrity of the Old Town (UNESCO, W., 2005).

Ghadames was inscribed as a World Heritage Site in 1998 under criterion (V). It was described as one of the oldest and most celebrated Saharan cities, called the "Pearl of the Desert" (Jawharat al-Sahara). The town has a regional and historical importance as part of a large adobe corridor extending across the Sahara Desert from the Atlantic states of Morocco, Mauritania and Senegal to the Arabian Gulf states and beyond (Abufayed *et al.*, 2011). It was placed on the List of World Heritage Sites in Danger in 2016 with four other Libyan WHSs because of the conflict that has affected the country and threatened its heritage. Since 2020, the Libyan State Party and GCPDA have been actively involved in a series of meetings with the World Heritage Centre and ICOMOS, aiming to remove the property from this list by producing the necessary documentation, including the DSOCR.

The MaLiCH project has supported these efforts by collecting relevant data, including assessing value and significance, the direct and indirect impact of the conflict on the site and proposing corrective measures. As a result of the work of all involved, a ROUV has been finalised and a proposal for boundary modification has been submitted to the World Heritage Centre for review. When moving from collecting data to analysing it and submitting responses, the project developed a methodology that links attributes, their value and condition to proposing interventions based on their significance and risk. This underpins the DSOCR and is presented here.

Methodology for collecting data and assessing value

The methodology presented here is focused on collecting and assessing attributes and values for WHS. It is concerned with sustaining OUV alongside other local values. It considers the protection and management of WHS in relation to a series of key concepts in the field of cultural heritage conservation that are directly and indirectly affected by conflict: attributes, values, cultural significance, the impact of conflict, authenticity, integrity, condition assessment, corrective measures and priority of interventions. These will be discussed in relation to the Old Town of Ghadames, but the process is replicable elsewhere, accepting adjustments to meet the specific local context [6].

Of primary importance is the mapping and assessment of attributes and values, which involves identifying and grouping those most relevant to the OUV. This begins with desktop research, including the consultation of historic maps and photographs, historical records and archives, foreign missions' documents and data collected during fieldwork, local and international research and UNESCO reports and documents. Additional data was collected from social media platforms, such as groups on Facebook, to understand local responses to

the history and culture of the town and give a voice to a wider range of communities. The work commenced in May 2020 during the global pandemic and the associated travel restrictions, leading to online consultations via Zoom, supported by our Ghadames partners. We engaged historians, experts in traditional crafts and techniques and young people active on social media, such as Facebook groups, which focus on the Old Town's history and heritage. The initial pilot assessment took place in summer 2020, followed by the creation of the first assessment table in discussion with UNESCO and ICOMOS experts. Numerous online meetings with international experts, Libya's DOA and Ghadames stakeholders (via the GCPDA) helped refine the table, establishing a clear connection between each attribute and the conflict's impacts. Had the pandemic not occurred, we would have included a wider public consultation in Ghadames.

According to the requirements of the WHC, the attributes should be considered from different perspectives: historical, artistic and scientific. Each will have associated values that develop or deepen them (Jokilehto, 2008, p. 7). The main attributes of the Old Town relate to its unique setting, such as the use of mud brick for architectural elements, the design of the urban fabric in response to the arid desert environment or the traditional water system feeding the surrounding palm groves and further shielding the town from the climate. Each attribute can contribute to more than one value simultaneously. For instance, the use of palm trees in traditional houses relates to both architectural and environmental values.

Cultural significance is a key concept that captures "the multiple values ascribed to objects, buildings, or landscapes or properties" (Avrami, 2000, p. 7), essentially acting as a "synthesis" of values (Kalman and Létourneau, 2020). The Burra Charter defines it as "Aesthetic, historic, scientific, social, or spiritual value for past, present, or future generations" (Article 1.2). The Burra Charter extends the values recognised in the Venice Charter and the WHC, and we adopted a wider approach to include the social. We also accept the dynamic nature of values and their variability according to those involved and their own backgrounds and interests (Kalman and Létourneau, 2020, p. 178).

OUV, however, is usually a static entity defined when a WH property is inscribed on the WH List. It cannot be changed without a re-nomination and the full evaluation process (ICOMOS, 2011, p. 7). The work at the Old Town created a list of attributes, including some that are not exclusively part of the OUV and are not necessarily located within the boundaries of the property. A RSOUV was required for the 2021 submission to UNESCO, so it was important to link this document to attributes identified at that time (see Table 2). With this approach, the value of the heritage attributes was assessed in relation to the WHS's statutory designation alongside any changes, especially those that gave the property its OUV. In addition, the cause of change was identified along with its scale, severity and impact. Of particular importance were associations with the conflict or environment; for example, the Ain Al-Faras Basin, one of the main attributes, may have suffered due to reduced funding and water shortages.

Impact takes several different forms, whether direct and indirect, cumulative, temporary and permanent, reversible or irreversible, visual, physical, social, cultural and economic (ICOMOS, 2011, p. 8). In this methodology, impacts are bound to the specific characteristics and context of the studied property. The Old Town was placed on the In-Danger List in 2016, so the DSCOCR needed to account for the direct and indirect impacts of the conflict on the property's OUV, attributes, authenticity and integrity. Associated impacts were included, therefore, such as shortages of funding and resources, lack of regular maintenance and depopulation as well as parallel ones such as climate change. The assessment sought, therefore, to recognise and analyse the impact of conflict on and environmental threats to heritage values.

Mapping and assessing attributes and values, therefore, are key to producing the OUV or, in this case, the RSOUV and DSCOCR. They not only offer a clear understanding of what has

S. No.	Attributes	Possible Values	Included Zone	Associated tangible	Pre-			GIS	Figures	Investigation			Ref.	Evaluation related to Conflict Matters				Notes
					Critical	Poor	Sound			Desktop	Interview	Field		F	C	V	T	
1	Atiq mosque: the first mosque was built in the town.	Historical , Cultural	Prope rty zone	--			•	Layer of Religious Id 1326	Fig. 1	•			[4]	0	1	2	3	
5	Traditional Crafts: Handmade weaved fabric, Colored ornamentation, and brass pots, broidery, shoemaking,	Cultural	Prope rty zone	Houses, Ghadames museum			•	--		•				4	1	1	6	
6	Decorations of the house especially in the lowest floors and incised & painted decorative patterns	Cultural architectural	Prope rty zone	Houses		•		--		•	•			3	2	2	7	
7	Pottery	Cultural	Prope rty zone	Houses, Ghadames museum		•		--		•			[11]	1	2	1	4	
8	Carpentry of the Palm trunks specially for main doors	Cultural architectural	Prope rty zone	Main gates of Houses		•		--		•	•			4	2	2	8	
9	Annual Dates festival (مهرجان التمر)	Cultural	Prope rty zone	Squares, streets, Associated churches /	•			--		•				2	3	1	6	

F: Frequency of indirect Impact C: Pre 2011 conditions of the attribute's points V: Expression of the attributes to SOUV T: Total received points for each attribute

Source(s): Created by the authors

Table 2.
Section of the table used to identify attributes, their value, condition and possible direct and indirect impact of the conflict

been inscribed on the list and why it has an OUV but also give direction to site managers by indicating which of the property's attributes need to be maintained to sustain its OUV. The OUV becomes an essential reference point for monitoring, periodic reporting, or reactive monitoring. It can be used to remove sites from the In-Danger List, such as Bethlehem's Church of the Nativity after high-quality restorations to its roof, exterior facades, mosaics and doors or even delete their WH status, as in the case of Liverpool due to the irreversible loss of attributes conveying the OUV.

Data collection

The process starts with identifying pre-existing knowledge and, by association, lacunae. It then proceeds to unpack the SOUV to understand why the property is considered exceptional (the values) and the elements that convey the OUV (the attributes). These elements can be physical qualities, relate to material fabric and other tangible features. They can also be intangible aspects such as processes, social arrangements or cultural practices as well as associations and relationships that are reflected in the physical elements of the property. Other heritage values/attributes recognised through other local, national or international designations are also documented.

They are compiled in a table linking the attributes (tangible or intangible) to the relevant values (see Table 2). Their spatial distribution is documented in terms of the inscribed boundary of the property, the (proposed) buffer zone or the wider landscape. A crucial step is connecting the intangible attributes to the physical features that embody them. For instance, in the Old Town, the human interaction with the environment that is part of Criterion V is embodied within the traditional water system, the use of palm trees and traditional building techniques in the construction of the mud-brick houses. This requires a careful understanding of the historical development of the property and its context.

A geographic information system (GIS) was used to map and manage the data, linking relevant documents, plans, illustrations and photographs. Locating the attributes physically enables the identification of clusters, whether inside or outside the property boundary. Spatial distribution is crucial to informing the boundary of the property, its buffer zone and

other management actions, especially when preparing the DSOCR. Not all attributes are manifested in a tangible way, which offers a further challenge.

The next step is to identify conditions and risks. This was scored in terms of three degrees, ranging from critical, poor and sound. Such quantification accounts for threat and vulnerability, which can be set against impact to produce a statement of condition for each attribute of the OUV, whether tangible or intangible, and result in a set of proposed actions. The choice of using a three-tier scale – critical, poor and sound – for assessing condition and risk is particularly suited to this specific case, which exhibits less variation in condition across different attributes. This limited variability makes a more concise scale not only appropriate but also more effective. We also recorded the sources of information available to help guide the next steps for assessment or highlight areas where new data needs to be gathered. Finally, the overall condition of attributes in terms of their priority is measured against three main criteria that combine their physical condition and their significance: frequency of the indirect impact of the conflict, the pre-conflict condition and the attribute's expression of OUV.

Classifying attributes

The mapping and categorising of the attributes produced a dataset that informed the following objectives: to update the set of attributes and values for the WHS, to understand the condition and threats to those attributes and finally, to update or produce the RSOUV, property boundaries, conservation reports, the management plan and the DSOCR. Our analysis of the OUV indicated that it could be expressed in a total of 53 attributes, of which twelve are intangible (Table 2). They comprise the “baseline data” against which impact is measured in terms of direct or indirect factors and, depending on severity and priority, form the basis for an intervention plan.

Ascribing values to cultural heritage is challenging (Mason and Avrami, 2002) because of the necessity of being comprehensive when there may be diversity of opinion as well as a complex and long history to respect. At Ghadames, the demographic shift away from the Old Town has changed the perception of and connection to that heritage, whether strengthening it in some cases or weakening it in others. Describing and elaborating the attributes, therefore, was a collaborative effort involving consultation with various groups and sources so that the various local perspectives could be balanced with other interests and pre-existing documentation, such as academic writing on the history of the city and its region [7]. The task was made more difficult because of the political situation in Libya and the global COVID-19 pandemic, which prevented travel and the organisation of events.

The next step is using the list to inform the management of the property. To achieve this, an evaluation system was developed that could guide decision-making.

The evaluation system

The table of attributes summarises the impact and change to the OUV. Each attribute is linked to its individual or collective heritage value based on both qualitative and quantitative evaluation. The method identifies how the attribute contributes to the OUV and then the level to which it is at risk based on the current condition, the impact of conflict and pre-existing issues. Using a points system, it is possible to see those attributes that are at greatest risk and, in turn, require immediate attention in order to sustain the OUV. Using and reusing, this statistical exercise enables a plan of action to be devised and linked to a prioritised timeframe (see column 10 “Evaluation” in Table 2). Cumulatively, the scores anticipate the overall threat to the OUV and thus to World Heritage status.

Pre-conflict. This parameter defines the condition of each attribute prior to the start of the conflict in 2011. The condition was assessed using the available images and reports produced

at local, national and international levels. The outcome was the baseline against which subsequent impacts were evaluated. A three-point scale was used, defined as follows:

- (1) *Critical condition*: active deterioration to the point of being either nonfunctional or significantly damaged (more than 70%). These were assigned three points.
- (2) *Poor condition*: constituent parts showing deficiencies (between 50–70%) in their use due to degradation and decay or incompatible and harmful modifications (e.g. application of cement to building surfaces for tangible attributes or not following traditional building techniques). These were assigned two points.
- (3) *Sound condition*: lower levels of damage (less than 50%) and remaining in fair operational state. Those attributes were assigned one point.

The scoring can be seen in [Table 3](#). When analysed together, it shows that 43% of attributes are highlighted as critical, 36% are bad and 21% are in a sound condition ([Figure 3](#)).

The impact of conflict. The Old Town of Ghadames has not been directly impacted by the conflict since 2011. This has been agreed upon following extensive meetings between UNESCO, ICOMOS, GCPDA and other stakeholders. The impacts are indirect, resulting from reduced budgets and a shortage of local craftsmen and building materials, which have affected the regular maintenance of mud-brick houses and the overall management of the site.

The architecture of the Old Town is fragile, being made of mud brick, which requires constant maintenance, and the site is experiencing the very serious consequences of climate change. Separating such threats from those posed by armed conflict is difficult, but the key impact remains the reductions in state funding, which then exacerbate the challenges facing the WHS. The armed conflict, therefore, has influenced the following challenges ([Table 4](#)):

At the next level of analysis, each of these challenges can be associated with a series of attributes ([Table 5](#)). By giving each association a point, it is possible to see how many have been impacted and the degree to which each attribute is at risk. The higher the score, the greater the impact of armed conflict. In addition, it is possible to see that 79% of the attributes are affected by at least one challenge, while the remaining 21% have not been impacted by any ([Figure 4](#)).

Attributes and the site's OUV. The evaluation was based on the attributes that contribute to the OUV of the property found in both the boundary and the buffer zones. Criterion V, under which the Old Town of Ghadames was inscribed, specifies attributes and what they express. In the 2005 version of the OG, Criterion V ([Jokilehto, 2008](#)), the importance of “human interaction with the environment” was highlighted. Our analysis, therefore, assessed three main values: historical, social-cultural and artistic. Under artistic values, we further differentiated the environmental, architectural and urban. Categorising the attributes according to these values ([Figure 5](#)).

Few attributes were associated with all three categories, reflecting their significance to the property's OUV (see [Table 6](#) Error: Reference source not found). In those cases, they received three points, with those representing two categories receiving two points and then one having one point. With this scoring system completed, the attributes can be reorganised according to the number of values they relate to ([Table 6](#)).

Using attributes to inform site management

The evaluation system allows a site manager and their team to prioritise interventions systematically based on their significance, condition and risk. Accepting that there may be disagreement about the different values, their meaning and their uses, it is important to mitigate any possible impact on the site's management and interpretation. Consultation is therefore required, which includes various stakeholders, whether public, private or civil

Attributes																										
Conditions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Critical			3					3	3	3	3	2	3			3							3		3	3
Poor	2					2	2	2														2			2	
Sound	1			1										1	1		1	1	1	1	1		1			
Total points	1	2	3	1	1	2	2	2	3	3	3	2	3	1	1	3	1	1	1	1	1	2	1	3	2	3

Attributes																											
Conditions	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Critical	3	3	3	3	3	3	3		3				3					3	3			3				3	
Poor								2			2	2			2	2				2	2			2	2	2	
Sound							1			1				1			1			1				1			
Total points	3	3	3	3	3	3	1	2	3	1	2	2	3	1	2	2	1	3	3	1	2	3	2	1	2	2	3

Source(s): Created by the authors

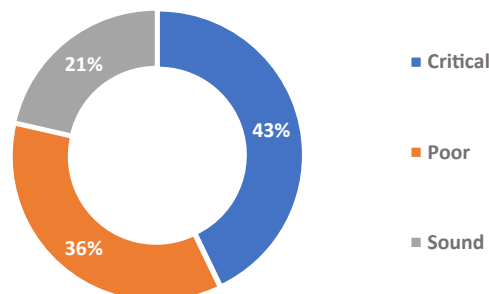
societies, residents and users. This bottom-up approach to assessment ensures a greater range of values are identified and improves engagement with and understanding of heritage assets.

With agreed values in place, the points system can be used to create three levels of priority for intervention:

- (1) Immediate intervention: those attributes with between 10 and 14 points.
- (2) Short-term intervention: those attributes receiving from 6 to 9 points.
- (3) Medium-term intervention: those attributes having 2–5 points.

The system identifies those attributes that are critical and in need of immediate intervention as well as those that are not a direct threat and could be part of a long-term intervention plan (Table 7). The maximum number of points that any one attribute can receive is 14. In such a case, an attribute would appear in all eight matters, have been in critical condition prior to 2011 and be expressive of the property's OUV. The minimum would be 2. Here the attribute would not have been affected during the years of conflict, was in sound condition prior to 2011 and expresses only one of the three value fields of the OUV.

Based on the impact of these challenges on the attributes, Figure 6 outlines the number of interventions, based on the degree of urgency, as a percentage. This shows that 13% of the values need immediate intervention to maintain the OUV of the property, while 45 and 42% of these values require short- and medium-term interventions, based on a timeline of 1–2 years or 5 years.



Source(s): Created by the authors

Figure 3.
The overall condition
of attributes pre-
conflict

Number	Type of challenge
Challenge 1	Maintenance of 80% of the roofs and upper corridors of the old Town houses
Challenge 2	Maintenance of the Al Faras basin, which is a major feature of the property
Challenge 3	Maintenance of external walls for houses damaged by rain and wind
Challenge 4	Rehabilitating some of the old houses is going to fall in addition to (5) of the city's historic palaces
Challenge 5	Maintenance of squares and main streets of the city
Challenge 6	Digging 5 productive agricultural wells to revive the palm groves surrounding the city, which are part of the property
Challenge 7	Maintenance of 18 linear kilometres of traditional irrigation channels for farms
Challenge 8	Maintenance of 36 linear kilometres of fences for the main lanes of farms

Source(s): Created by the authors

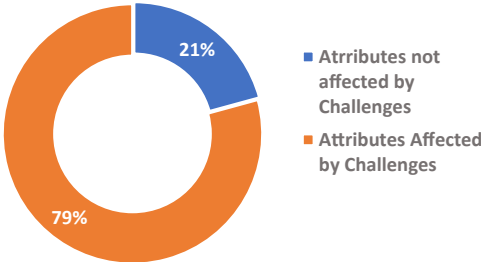
Table 4.
The main challenges
caused by the conflict
(direct and indirect) on
urban level

Attributes																											
Challenges related to conflict																											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		
Challenges related to conflict																											
Challenge 1			1	1	1	1	1							1	1						1						
Challenge 2			1	1	1	1	1		1	1				1		1		1				1	1		1		
Challenge 3			1						1	1	1			1		1			1				1				
Challenge 4		1							1		1			1		1					1						
Challenge 5			1	1	1	1	1																				
Challenge 6			1				1								1	1		1		1	1						
Challenge 7								1														1	1	1	1		
Challenge 8				1			1																				
Total points	0	0	1	6	4	3	1	4	2	3	2	2	0	0	2	5	2	0	2	0	2	5	2	3	1	2	
Challenges related to conflict																											
Challenge 1	1	1	1	1	1	1													1	1	1						
Challenge 2	1	1	1	1	1	1	1	1	1				1						1	1	1						
Challenge 3	1	1	1	1	1	1	1	1	1		1								1	1	1		1		1		
Challenge 4	1	1	1	1	1	1	1	1			1								1	1	1		1		1		
Challenge 5			1	1	1	1								1		1	1		1	1							
Challenge 6	1	1	1	1	1	1					1								1	1	1						
Challenge 7						1			1	1	1																
Challenge 8														1													
Total points	5	5	5	6	6	5	2	3	3	1	1	3	0	2	1	0	1	1	0	6	3	0	4	2	0		
Source(s): Created by the authors																											

To align with the Desired State of Conservation for Removal (DSOCR) and facilitate the site's removal from the in-danger list, corrective measures were proposed. These measures were informed by the analysis and considered the current circumstances in Libya, notably the scarcity of financial resources, physical materials and local capacity. Collaborative discussions among the Ghadames Cultural Preservation and Development Authority (GCPDA), the Department of Antiquities (DoA) and various expert groups were integral during the DSO CR document preparation. In this context, [Table 8](#) provides a summary of one of the main challenges facing the management system and its impact on the site's attributes. This includes the consequences of the discontinuation of the annual budget due to the conflict, leading to a lack of regular maintenance and accelerated deterioration exacerbated by climate conditions.

In this study, we first mapped the impact of conflict at the urban level, as depicted in [Table 4](#), which outlines the eight main challenges. We then examined the challenges to the management system, highlighted in [Table 8](#), which shows the budgetary constraints impeding regular maintenance work. An essential step in developing the Desired State of Conservation for Removal (DSOCR) is to chart the relationship between each attribute and the corresponding corrective measure. This framework links the threats arising from the conflict to the Outstanding Universal Value (OUV), the proposed corrective actions, the anticipated outcomes, methods for verifying these outcomes, their current status (whether completed or not) and the timeframe for implementing these measures.

Accordingly, it becomes necessary to prioritise these proposed actions, aligning them with the level of urgency (as per the three-tier scale), significance and extent of deterioration related to each attribute. For the purposes of this paper, we are focusing in detail on the attributes most impacted by the discontinuation of the budget (as detailed in [Table 8](#)). We will specifically address one of the deteriorations experienced by the Old Town since the onset of the conflict, which is primarily located on the rooftops and alleyways (referred to as Challenge 1 in [Table 5](#)). The next table trials this assessment



Source(s): Created by the authors

Figure 4.
The percentages of the affected attributes by the main eight challenges that are linked directly and indirectly to the conflict

Value (Criteria v)		Attributes
Historical		[1], [2], [9], [10], [36], [37], [38], [39], [40], [56], [44], [45], [51], [52], [53]
Socio-cultural		[1], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [21], [24], [25], [33], [34], [35], [36], [37], [38], [40], [41], [42], [44], [45], [46], [47], [48], [50]
Artistic	Environmental	[16], [17], [18], [19], [20], [21], [22], [23], [24], [25], [26], [27], [30], [31], [32], [35], [48], [49]
	Urban	[10], [11], [12], [13], [14], [16], [17], [18], [19], [20], [21], [22], [23], [24], [35], [40], [43], [52]
	Architectural	[4], [6], [8], [13], [27], [28], [29], [30], [31], [32], [33], [47], [48], [49]

Source(s): Created by the authors

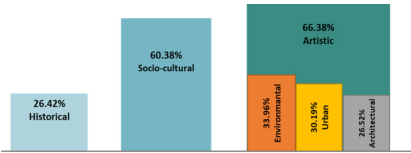


Figure 5.
The attributes grouped according to the values which contribute to the OUV of the Old Town of Ghadames

Table 6.
Attributes organised
according to the
number of values they
represent

Values		Common in 3 Values						Common in 2 Values														Common in 1 Value															
		36	10	40	16	28	48	1	37	38	44	45	52	24	25	4	6	8	33	47	11	12	13	14	34	35	17	21	26	20	22	27	30	31	32	49	
Artistic	Historical	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Socio-cultural	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
	Environmental	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
	Urban	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	
	Architectural						*								*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		

Source(s): Created by the authors

Attributes																																																					
Total Points	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Frequency	0	0	1	6	4	3	1	4	2	3	2	2	0	2	5	2	0	2	0	2	5	2	3	1	2	5	5	5	6	6	5	2	3	3	1	1	3	0	2	1	0	1	1	0	6	3	0	4	2	0			
Conditions	1	2	3	1	1	2	2	3	3	2	3	1	3	1	1	1	1	1	1	1	2	1	3	2	3	3	3	3	3	3	1	2	3	1	2	3	1	2	3	1	2	1	3	3	1	2	3	2	1	2	3		
Values	2	1	1	2	1	2	1	3	2	2	2	3	2	2	1	3	2	2	2	3	2	1	2	2	1	2	1	1	2	2	2	2	2	2	2	2	1	3	1	1	2	1	2	2	1	3	2	1	1	2	1		
Received Points	3	3	5	9	6	7	4	8	6	9	7	6	5	3	4	11	5	3	5	3	6	9	4	8	5	6	10	9	9	10	11	11	8	6	8	6	5	7	4	5	4	2	6	6	2	10	12	7	2	7	6	4	
Prioritization																																																					

Immediate 10-14

Short term 6-9

Medium term 2-5

Note(s): Intervention urgency is color-coded: RED for immediate action (scores 10–14), YELLOW for short-term attention (scores 6–9) and BLUE for medium-term intervention (scores 2–5)

Source(s): Created by the authors

Table 7. Attributes prioritised according to condition, frequency of damage and associated values

before applying it to the rest of the data (Table 9). In this table, A1 refers to the impact caused by the scarcity of financial resources and A.2 to the shortage of human resources and capacity building programmes.

The assessment will be utilized to conduct a cross-examination of the impacts posed by eight identified challenges on the urban fabric, as illustrated in Table 5. This examination will be carried out in relation to the consequences arising from financial limitations, shortages in human resources and the absence of capacity-building programmes. By applying the final scores to *Priority of Intervention* (POI), we are able to establish a hierarchy of interventions in descending order based on their urgency. On this scale, a higher score signifies a pressing need for immediate action. Table 10, adhering to this rubric, methodically lists the required interventions in order of urgency. It is important to note that in this framework, a score of 1 is specifically allocated to scenarios that necessitate immediate intervention.

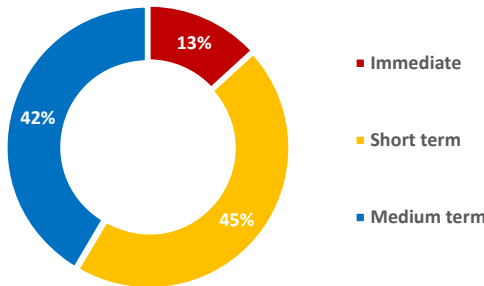
Conclusions

This paper critically examines the current methods used to assess the values and attributes of World Heritage Sites (WHS), using the Old Town of Ghadames as a case study. It points out that while the focus has traditionally been on the site’s Outstanding Universal Value (OUV), significant aspects like the historical impact of the Second World War, the colonial era and the perspectives (vistas and views) from and to the property boundaries have been neglected. The study advocates for the inclusion of these often-overlooked elements in future evaluations, along with addressing the challenges posed by changes in use and climate change. Incorporating these considerations could necessitate revising the boundaries of the buffer and property boundary.

The study recommends a broader approach to the assessment of values and attributes when it comes to urban heritage, which includes current social, cultural and economic elements.

The methodology presented in this paper is notably adaptable and holds potential for application across various historic cities and archaeological sites. It necessitates tailoring to each site’s complex mix of attributes and values. Despite its advantages, it is crucial to recognise that a few components are site-specific. When facing a wide range of issues, such as deterioration, threats or historical significance, a more nuanced approach may be required to fully encompass the conditions present. Thus, while providing a robust framework, this methodology should be considered a starting point rather than a one-size-fits-all solution. Adapting it for future use involves detailed examination and adjustment based on each site’s unique characteristics, possibly extending the assessment scale (i.e. a five-tier scale instead of

Figure 6. Prioritised proposed actions based on the point-based system that links the impact of conflict on the attributes, its degree of severity and the number of attributes associated with each threat



Source(s): Created by the authors

Impact of the conflict (direct/indirect)	Affected attributes
1. The discontinuation of the Libyan state's annual budget has led to	
1.1. Continued deterioration of 15 sites which were damaged by heavy rains in December 2017	4,5,6,8,13,15,16,17,21,22,25,26,27,28,29,30,31,32,33,39,47,48,49
1.2 Inability to rehabilitate six houses damaged during heavy rains in March 2017	4,5,6,7,8,13,15,16,17,21,22,25,26,27,28,29,30,31,32,33,39,47,48,49
1.3 General impacts to the key attributes contributing to the property's OUV	4,5,6,7,8,13,15,16,17,21,22,25,26,27,28,29,30,31,32,33,39,47,48,49
1.3.1 Increased number of houses which are in danger of collapse	23, 24, 25, 26, 32,36, 37, 38, 41, 45
1.3.2 Issues affecting main urban features	
1.3.2.1 Ain Al Faras spring and associated irrigation channels	23,24,25,26,32,37,38,41
1.3.2.2 Orchards and agricultural wells	1, 3, 4, 10, 12, 16, 17, 22, 27, 28,34, 35, 39, 47, 48, 49, 51,52
1.3.2.3 Urban fabric for the property	
1.3.2.4 Streets and squares	8, 9, 10, 11, 12, 13, 14, 19, 20, 21, 22, 27, 28, 30, 32, 35, 47
Source(s): Created by the authors	

Attributes and heritage sites

Table 8.
Presents a detailed analysis of the indirect impacts of conflict, specifically focusing on how the cessation of the annual budget has adversely affected the site's attributes

Impact of conflict (Management System)				Challenge 1 (Urban Level)																		Received points	Prioritizing /Rank					
A.1. A.1.1. The discontinuation of the Libyan state's annual budget	A.1.1.1. Sites Damaged by rain December 2017			NO.	4	5	6	8	15	16	22	27	28	29	30	31	32	33	47	48	49	151	1					
				P.	9	6	7	8	4	11	9	10	9	9	10	11	11	8	10	12	7	151						
				I.P.	2	2	2	2	1	3	2	3	2	2	3	3	3	2	3	3	2	Total points						
				P.O.I	18	12	14	16	4	33	18	30	18	18	30	33	33	16	30	36	14	373						
	A.1.1.2. Houses damaged by rain March 2017			NO.	4	5	6	8	15	16	22	27	28	29	30	31	32	33	47	48	49	points	1					
				P.	9	6	7	8	4	11	9	10	9	9	10	11	11	8	10	12	7	151						
				I.P.	2	2	2	2	1	3	2	3	2	2	3	3	3	2	3	3	2	Total points						
				P.O.I	18	12	14	16	4	33	18	30	18	18	30	33	33	16	30	36	14	373						
	A.1.3. Damage to Key Attributes OUV		A.1.3.2. Impact on Urban features	A.1.3.1. Houses			NO.	4	5	6	8	15	16	22	27	28	29	30	31	32	33	47	48	49	Received points	1		
							P.	9	6	7	8	4	11	9	10	9	9	10	11	11	8	10	12	7	151			
							I.P.	2	2	2	2	1	3	2	3	2	2	3	3	3	2	3	3	2	Total points			
							P.O.I	18	12	14	16	4	33	18	30	18	18	30	33	33	16	30	36	14	373			
				A.1.3.2.1. Ain Alfaras			NO.	32																points	5			
							P.	11																		11		
							I.P.	3																		Total points		
							P.O.I	33																		33		
				A.1.3.2.2. Orchards Palm			NO.	32																points	6			
							P.	11																		11		
							I.P.	3																		Total points		
							P.O.I	33																		33		
			A.1.3.2.3. Urban Fabric			NO.	4	16	22	27	28	47	48	49	51									points	2			
						P.	9	11	9	10	9	10	12	7	7											84		
						I.P.	2	3	2	3	2	3	3	2	2											Total points		
						P.O.I	18	33	18	30	18	30	36	14	14											211		
						A.1.3.2.4. Streets			NO.	8	22	27	28	30	32	47										points	3	
									P.	8	9	10	9	10	11	10												67
									I.P.	2	2	3	2	3	3	3												Total points
P.O.I									16	18	30	18	30	33	30											175		
A.2. human resources	A.2.4. Shortage of human resources	A.2.4.2. Capacity Building (documentation, traditional building techniques..etc).			NO.	4	5	6	8	28	31	32	33	47							points	4						
P.	9				6	7	8	9	11	11	8	10									79							
I.P.	2				2	2	2	2	3	3	2	3									Total points							
P.O.I	18				12	14	16	18	33	33	16	30									190							
Ration of attributes related to each matter covered with all actions %				100 % of attributes																								

Table 9. Showcases an assessment of how Challenge 1 (maintenance of roofs, as detailed in Table 4) impacts the listed attributes

Note(s): It relates these impacts to DSOCR framework detailing the main damage caused by the discontinuation of the budget. Each attribute is evaluated based on its frequency (P) and the priority for intervention (IP), resulting in a final score (P.O.I) for each. The higher the score in the assessment, the greater the urgency for intervention

Source(s): Created by the authors

three), integrating specific factors like natural disasters or tweaking evaluation criteria to ensure thorough and precise evaluations.

Highlighting the importance of leveraging diverse data sources, the research presents a comprehensive methodology for assessing a site's attributes and values as well as understanding urban heritage and its main challenges. This systematic approach aids in formulating effective management plans and offers an opportunity for reassessing World Heritage Sites listed on the In-Danger List, especially those impacted by conflict. By updating their attributes and values, this methodology not only addresses immediate conservation and management challenges and possible corrective measures but also facilitates a detailed re-evaluation of the site's attributes during post-conflict. Consequently, it ensures that conservation strategies accurately reflect the site's current conditions, enhancing management practices to support both immediate needs and the long-term plans of site management.

Priority of Intervention	Action	Challenge No
1	Immediate interventions to the fifteen sites affected by heavy rains in December 2017	A.1.1
1	Immediate interventions to the six houses damaged by heavy rains in March 2017	A.1.2.
1	Immediate consolidation work to severely damaged houses that are in danger of collapse	A.1.3.1
2	Rehabilitation to the Urban fabric of the property	A.1.3.2.3
3	Rehabilitation of the main streets and public squares	A.1.3.2.
4	Capacity building: traditional crafts & building techniques, documentation & manuscripts.	A.2.4.2.
5	Rehabilitation work on Ain Al-Faras spring and associated irrigation channels	A.1.3.2.1
6	Maintaining the orchards and agricultural wells.	A.1.3.2.

Source(s): Created by the authors

Table 10.
Actions prioritised in response to each of the challenges (1–8), which have had either a direct or indirect impact on the attributes

Notes

1. This proposal is part of the ongoing collaborative work by Ghadames City Promotion and Development Authority (GCPDA), and the Libyan Department of Antiquates (DoA) supported by ICOMOS and UNESCO experts to create the DSOCR report, corrective measures and timeframe.
2. Article 1 of the UNESCO Convention on Cultural and Natural Heritage: <https://whc.unesco.org/en/conventiontext> Article 2(1) of the UNESCO Convention on Intangible Cultural Heritage: <https://ich.unesco.org/en/convention> (accessed June 2023)
3. United Nations Educational, Scientific and Cultural Organization. Operational Guidelines for the Implementation of the World Heritage Convention, 2021: <https://whc.unesco.org/en/guidelines/> (accessed June 2023)
4. Malich project is a collaborative project between King's College London, Libyan Department of Antiquities DoA, Nile Palace NGO, Ghadames City Promotion and Development Authority (GCPDA), Permanent Libyan Delegation to UNESCO in Paris (PLD) and the Society for Libyan Studies in UK (SLS). Funded by ALIPH foundation since March 2020 <https://malichproject.wordpress.com/about/>
5. UNESCO, List of World Heritage in Danger, <https://whc.unesco.org/en/danger/>, accessed in January 2024.
6. The MaLiCH project is undertaking the same work at the WHS of Lepcis Magna and Sabratha.
7. During the data collection phase (2020–22), several online meetings were conducted with heritage professionals from the GCPDA and DoA as well as local individuals from Ghadames with interests in its history, culture and heritage and experts from ICOMOS and UNESCO. The online technical meeting in November 2020 <https://whc.unesco.org/en/news/2217>

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