

Sustainable Heritage Preservation Methodologies Adopted at Al-Baha Region in Saudi Arabia

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Abstract

Due to the negative impact of civilization on the local community in the Kingdom of Saudi Arabia, the urban heritage sites of the Kingdom have been subjected to numerous demolition and extinction operations. Recently, the concept of urban preservation has evolved beyond simply restoring and improving heritage sites to encompass preserving heritage within the framework of sustainable development. This approach promotes a long-term balance between protecting the environment and achieving economic and social development. This research aims to evaluate the preservation methodologies and policies applied in three significant case studies in the city of Al-Baha in the Kingdom of Saudi Arabia. The criteria will assess their success in recovering their positive aspects. These three local case studies provide compelling evidence that sustainable development aspects are crucial in advancing toward successful heritage preservation goals. The research employs an inductive methodology to evaluate valuable heritage preservation aspects and propose measures that can be implemented in preservation projects across various regions of Saudi Arabia. In conclusion, the research offers several recommendations that consider promising and appropriate conservation management policies that can be applied in similar projects within the Kingdom of Saudi Arabia.

Keywords: Sustainable development, urban heritage, preservation methodologies, sustainable preservation concepts, preservation management

1. INTRODUCTION

The Kingdom of Saudi Arabia possesses a unique urban and architectural heritage that represents its memory, cultural depth, and distinctiveness of its local culture, reflecting the depth of positive interaction with its environment. However, it is now faced with complex problems, including the negative impact of modernization and globalization on natural heritage sites.

According to this viewpoint, the Kingdom, represented by the Commission for Tourism and National Heritage, has made a lot of effort in developing and adopting strategies and policies for preserving and rehabilitating heritage areas through a comprehensive preservation vision to revive these heritage areas in a balanced manner, in a way that contributes to sustainable development achievement, and reduces negative environmental, social, and cultural impacts, while used as a tool to preserve the environment and highlight the cultural dimension.

In this context, the plans of the General Authority for Tourism and National Heritage have adopted a preservation program linked to the Kingdom's Vision 2030 in preserving Saudi cultural and historical heritage (Vision of the Kingdom of Saudi Arabia 2030, 2016), as a general framework to mainstream sustainability and its pillars. From this standpoint, this paper highlights three local preservation experiences in the city of Al-Baha, through official bodies within the framework based on social, economic, and environmental implications.

The preservation strategies and policies applied in these case studies were analyzed and evaluated to test the extent of their success in preserving heritage while considering the social, material, social, cultural, and environmental aspects of the local community. These experiences can be beneficial at the level of sustainable urban preservation projects. The research concludes with some effective recommendations to achieve more sustainable preservation strategies for this valuable area Within the framework of sustainable development aspects.

2. THE PURPOSE OF RESEARCH

The purpose of this research is to evaluate the applied urban heritage preservation strategies and policies in three valuable case studies at the city of Al-Baha in the Kingdom of Saudi Arabia. This is achieved through the following three sub-objectives:

- Identify the heritage preservation Concepts, heritage management and the most important heritage preservation policies.
- Clarify the relationship between urban heritage preservation and sustainable development.
- Evaluate three urban and architectural preservation case studies as follow:
 - Rehabilitation of the heritage The Ain village.
 - Preserving the heritage Al-Dhafeer village.
 - Restoration and reuse of Bin Raqoush Palace.

The author participated in the heritage preservation projects in the Al-Baha region through Al-Baha University, College of Engineering, Department of Architecture and Scientific Research Department in the years 2012 - 2018.

3. THE RESEARCH METHODOLOGY

This research uses an inductive methodology with different phases, which are sequenced as follows:

- First part: Theoretical analysis of heritage concepts including the management of heritage sites, the most important heritage preservation policies, and its sustainable developments.
- Second Part: Descriptive and analytical study of three heritage preservation case studies in Saudi Arabia.
- Third Part: Discussion of outcomes, conclusion, and the comparison analysis findings are discussed to be implemented in sustainable heritage preservation projects at KSA.

4. THE HERITAGE

4.1. Definition of Heritage

Heritage is a feature belonging to the culture of a particular society, such as traditions, languages, or buildings, that were created in the past and still have historical importance (UNESCO, 2011). Heritage is a keystone of our culture that plays an important role in our politics, society, business, and worldview. It informs, influences, and inspires public debate and policy both directly and indirectly. A local heritage project can be much more than just preserving and protecting artifacts of the past. An important part of the Heritage Organization's work is to encourage local communities to take responsibility for and participate in the development and conservation of their heritage.

4.2. Types of Heritage

- Tangible heritage

"Tangible" heritage, split into two groups: movable and immovable heritage. Immovable heritage includes buildings, residential projects, or other historic places and monuments. Moveable heritage includes books, documents, and other artifacts (UNESCO, 2011).

- Intangible heritage

"Intangible heritage" consists of non-physical aspects of a particular culture, more often maintained by social customs during a specific period in history. The concept includes ways and means of behavior in a society. These include social values and traditions, customs and practices (Xi Zhao , Ehsan Elahi , Fushuai Wang , Hu Xing , Zainab Khalid, 2024)

- Natural heritage

"Natural heritage" is also an important part of a society's heritage, encompassing the countryside and natural environment, including flora and fauna, scientifically known as biodiversity, as well as geological elements, Heritage can also include cultural landscapes. (Abou Leila. Mohamed, Al-Barqawi, Wadih, 2017).

5. HERITAGE MANAGMENT

Heritage management includes preserving and protecting its main elements and components, in addition to developing legislation, rules, and regulations, following many preservation work policies and plans, and setting technical specifications for heritage facilities and specifications for preserving traditional architecture. The management aims to protect and

preserve, or when necessary, reduce exposure to danger, or demolish, or present the site to the public. The heritage preservation must be carried out by local and international standards, laws, and conventions. International conditions and standards must be followed in choosing the function of reusing heritage (VENICE CHARTER, 1964), as well as for establishing any activity, exhibition, or commercial activity, or educational, or restoration or rehabilitation...etc.

The concept of heritage management, (Abou Leila. Mohamed, Al-Barqawi, Wadih, 2020). as stated in some statements and reports issued by UNESCO, can include several aspects, the most important of which are:

- Managing preservation, protection and restoration works.
- Managing visitors and rehabilitating the site for tourism.
- Managing research and studies on the site.
- Staff management and qualification.
- Legal administration.
- Technical management (works, security, maintenance and reception).
- Administrative organization.
- Managing urban revival and renewal projects
- Financial management

5.1. Urban Heritage Management Methodology

The heritage management methodology relies on many elements, such as documenting and recording heritage sites, evaluating them, and identifying the human and natural risks they face. The integrated protection policy relies on many means and methods, such as laws and legislation supporting the protection of urban heritage, whether international or national legislation, as well as multiple scientific methods that work to educate society about the values and importance of heritage (Maria Luz Endere , Nahir Meline Cantar , María Laura Zulaica , 2024).

Government agencies have a role in educating the public about the importance of preserving heritage by holding international conferences and encouraging citizens to participate in them.

5.2. Heritage Management Plan

The management plan for urban heritage sites and landmarks is based mainly on the basic principle of protecting and preserving these sites, and prepare it, as a resource for cultural tourism development (UNESCO World Heritage Centre, 2019). Urban heritage management requires work on two main axes that form the basis of the strategic plan: the theoretical axis and the practical axis (Kabila Hmood, 2019).

The theoretical axis is the systems and structures management concerned with heritage, while the practical axis is the strategic plan for managing urban heritage sites, and depends on (field survey, analysis, evaluation, implementation plan, and preparing heritage sites for tourism. (Amira Elbahy , Sherif sheta, Mohanad Fouda, 2024). The following Figure 1 shows a managing heritage proposal plan.

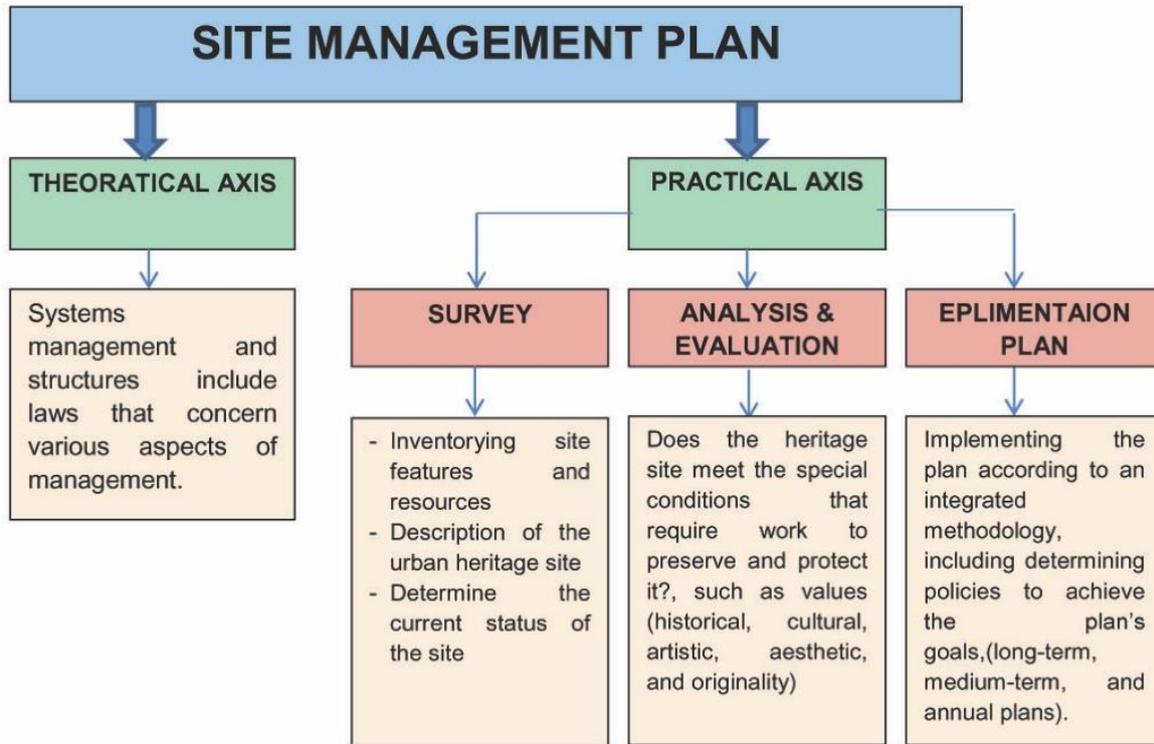


Figure 1. Shows the management heritage plan (Author, 2024)

6. TYPES OF PRESREVATION

6.1. Urban Preservation

It means preserving the urban heritage fabric, such as heritage building formations, urban spaces of a heritage nature or what is known as heritage environments, public squares, and natural landscape sites, to ensure its effectiveness and continuity (Abu Bakr H.M., Amer A. Ali, and Al-Musawi H. A, 2018).

6.2. Architectural Preservation

It is the process of protecting, maintaining and repairing architectural structures and objects with distinct historical, cultural, or visual characteristics, in an effort to remove the distortion that has occurred as a result of the urban environment changing at an astonishing speed, with the aim of improving the quality of urban life and restoring the balance between nature and the city (Abou Leila Mohamed, Al-Barqawi, Wadih, 2020).

Therefore, preservation in general, whether urban or architectural, means preserving ancient values in the built heritage environment, such as preserving social and historical values of importance to the city and society and then continuing the operations carried out on them as a means of sustainability (Wafaa. L, Atallah & Al-Fakhry, 2019).

Moreover, preserving heritage promotes sustainable development. The conservation of historical buildings supports eco-friendly practices by extending the lifespan of existing infrastructure rather than demolishing and reconstructing new ones from scratch.

7. LEVELS OF URBAN HERITAGE PRESERVATION

There are many levels of urban heritage preservation depending on the size, type and importance of the urban heritage (Alexander Leontyev, Huerta Santiago, Sergey Sementsov, 2021), and they can be classified urban and architectural as follows:

- Preserving heritage items: This is usually done through museums to preserve archaeological pieces and items after restoring them and treating them in a scientific manner that ensures their survival and safety.
- Preserving a single building: such as restoration and renovation of heritage buildings and converting them into museums or tourist attractions.
- Preserving a group of buildings: If there is a group of adjacent heritage buildings, they are preserved as a complete group, and the heritage value of the group shows the importance of each unit.
- Preserving the heritage corridor: If there are groups of heritage buildings on both sides of the corridor or road.
- Preserving a complete heritage area: If there is a complete area representing the urban heritage, including heritage buildings and corridors.
- Preservation at the regional level: It is planned at the regional or state level includes previous levels of preservation and is integrated with the preservation of other heritage areas or corridors.
- Preservation at the international level: This includes preserving examples of urban heritage as an example of human development in general, and international authorities such as UNESCO usually participate in it (Kabila Hmood, 2019).

8. HERITAGE PRESERVATION POLICIES

Urban heritage preservation policies have evolved from the traditional approach that relies on urban structural preservation aspect to sustainable urban heritage rehabilitation, which means comprehensive preservation of urban heritage through social and economic dimensions analysis and their impact on the environment (Lai, L.W.C.; Lorne, F.T., 2019).

Based on this logic, the concept of preserving heritage areas has shifted from being 2006the current generation, to areas closely linked to the social and economic fabric.

The modern concept of preserving urban heritage seeks to establish the principle of community awareness by the importance of heritage areas protection, not only for their cultural value but also for their participation in the social and economic development of the population. The following Figure 2 shows a proposal for heritage preservation policies developed from previous studies (Abdo Safaa, 1999).

Approaches to dealing with heritage may vary from one society to another according to the circumstances surrounding it and its current state. Policies and means of dealing with heritage sites must be characterized by a great deal of flexibility so that they can find preservation-appropriate solutions (Afewerk Hailegiorgis Abebe, Melles Madda Gatisso, 2023).

The most important of these policies are the following:

- **Protection:** Reducing or preventing factors of environmental and urban deterioration.
- **Maintenance:** It is the process of repair and regular care of the building.
- **Restoration:** This means the use of all structural means that ensure the heritage urban elements' prolongation, through structural reinforcement, completion of deteriorated construction parts, and repainting using the same original building materials or similar materials (Isis M. Eldin, Abdo Fahd, 2010).
- **Reconstruction:** This method includes rebuilding heritage urban elements in a way that resembles their previous condition. Therefore, this method can be used in historical areas that have lost their main features because of severe urban deterioration (Naji M. Najdi, 2010).
- **Renovate:** This method includes the use of modern building materials, which contributes to restoring heritage urban elements to their original state or to a state close to their condition at the time of their construction.
- **Revitalization:** This means adding life to the heritage area and linking it to the existing social and economic fabric by adding elements and activating activities that previously existed (Jabr Nahid., 2009).
- **Reuse:** It is a method of preserving an old building by reusing it either with the same old function or with a new function that keeps up with the requirements of the times.
- **Upgrading:** This method includes improving the level of the heritage area by adding elements and activities that were not previously present in a way that is compatible with of the modern era requirements.
- **Rehabilitation:** This means reusing heritage urban elements in the same previous function or converting their use to another function that is compatible with the time requirements and preserves their heritage value (Saadeh I. M, 2009).
- **Strengthening:** it is defined as adhesives or reinforcing materials to the building fabric to strengthen it and ensure its durability and safety.
- **Copying:** making an identical copy of the building or similar to it, and is often for a museum purpose, but this trend appears more clearly in works of art.
- **Development:** A set of procedures related to the development of buildings and areas of heritage value to suit the growth of functional needs.
- **Modernization:** This is to repair and renew housing, facilities, roads, and services. Renovation work may include opening new streets, converting existing streets into pedestrian walkways, or changing the direction of traffic on streets (Kabila Hmood, 2023).

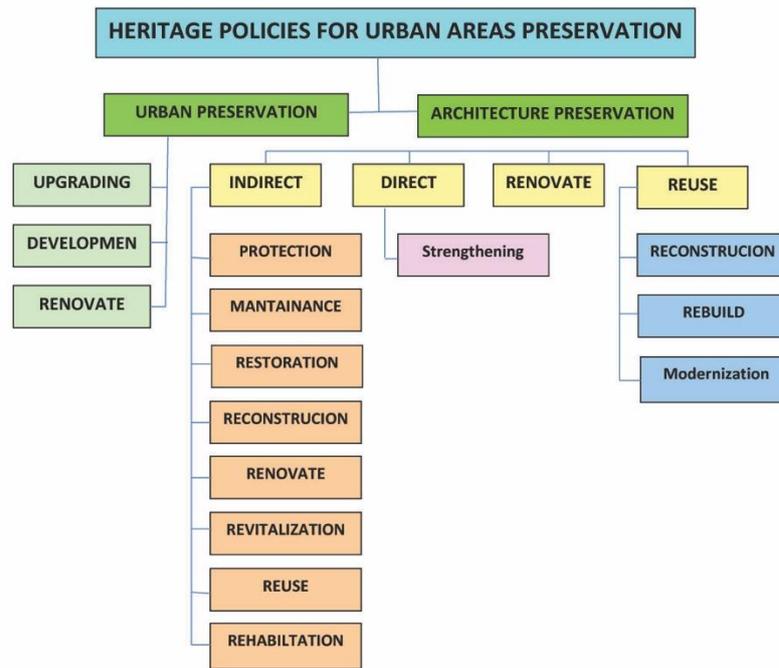


Figure 2. Shows a proposal for heritage preservation policies developed from previous studies (Author, 2024)

9. URBAN HERITAGE PRESERVATION AND SUSTAINABLE DEVELOPMENT

Sustainable development is defined as “development that meets the needs of the present without compromising capacity” for future generations to meet their own needs. (ICOMOS, 2021).

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Obviously, the main goal of sustainable development is to meet human needs and achieve a long-term balance between preserving human resources, protecting the environment, and achieving economic and social development (Shehata, A.M,2022).

From this standpoint, governments and heritage management organizations such as ICOMOS have developed programs aimed at providing more adaptive preservation solutions for historical Sites and development (Lerario, A, 2022), explain the possibility of harnessing heritage to achieve sustainable development (Francesca, N, 2017), therefore, Preserving heritage can lead to sustainable development through integration between three main pillars: environmental, economic and social aspects (UNESCO World Heritage Centre, 2019) as shown in Figure 3. It will be discussed as follows.

9.1. Environmental Pillar

Environmental sustainability aims to provide more adaptive solutions for the preservation of artifacts, architecture and landscapes considering climate change, as well as developing programs that investigate the risks to which archaeological monuments are exposed due to extreme climate events (Abdullah S. Yawer, Ali F. Bakr, Amira A. Fathi., 2022).

9.2. Economic Pillar

This axis depends on the heritage preservation ability to achieve economic development, therefore, recycling products and using renewable energy are essential aspects of developing the economic pillar, this could be also achieved by providing more job opportunities (Badawy. S, Shehata A.M, 2018).

9.3. Social Pillar

Social sustainability is the capacity of a society or social system to maintain an acceptable level of social well-being through time (Rami Alshawabkeh, Mwfeq AlHaddad, A'kif al_fugara, Mai Arar, Raghad Alhammad, Mohammad alshraah, Motaz alhamouri, 2023), the main goal of heritage preservation is how to restore historic areas and preserve them as habitable areas where residents can enjoy the benefits of social activities.

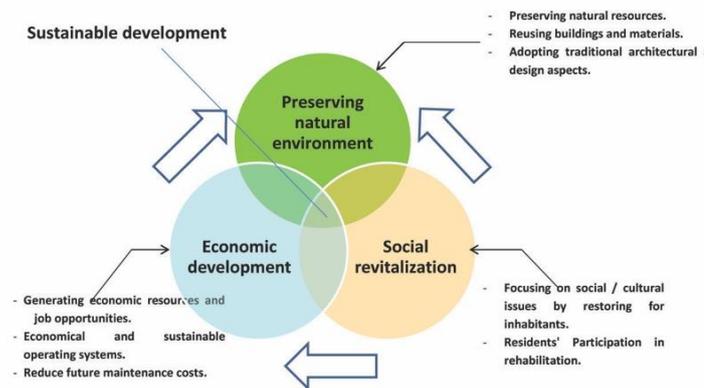


Figure 3. Shows the heritage preservation using the concept of three pillar of sustainability (Author, 2024)

10. THE KINGDOM'S EFFORTS TO PRESERVE URBAN HERITAGE

Rehabilitate heritage projects in the Kingdom are considered among the most important projects emphasized by the Kingdom's comprehensive vision (Vision of the Kingdom of Saudi Arabia 2030), for their important role in preserving the Saudi cultural and historical heritage, in addition to preserving the national identity, for social, cultural and economic development.

The General Authority for Tourism and National Heritage since its establishment in the Kingdom has developed a strategy that is in line with the Kingdom's vision and sustainable development plans (mazzetto, Silvia, 2022). The strategy includes the sustainable rehabilitation of heritage areas within the framework of preserving the natural environment and achieving social value and economic return, in a manner consistent with the preservation of the surrounding environment with all its elements, as approved, a program that combines preservation, rehabilitation, and sustainable development. This program aims to achieve the following policies:

- **Preserve** natural resources and rich urban heritage and ways to revive them.
- **Develop** a comprehensive assessment of patterns and prepare urban design guidelines.
- **Involve** municipalities in the heritage preservation program.
- **Raise** awareness of the importance of urban heritage through various media.
- **Participate** of residents in rehabilitation processes and provide them with job opportunities.

11. THE HERITAGE REHABILITATION PROJECT AT AL-AIN VILLAGE

11. 1. Al- Ain Village Location

It is located in the southwest of the city of Al-Baha, 24 km across the King Fahd Aqaba in Al-Baha (Aqabat Al-Baha - Al-Makhwah). It is on the left side for those staying in Al-Makhwah

Governorate in the Tehama region. It is about 20 km north of the village (Al-Makhwah), and 7 km south next to Wadi Dhibhara. The village is lower than the city of Al-Baha and slightly higher than Al-Makhwah Governorate, as shown in Figure 4.

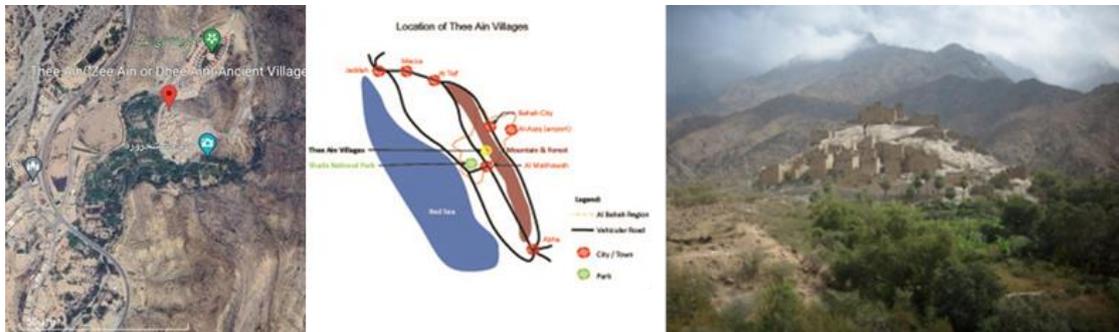


Figure 4. Shows the location of the heritage over the hill (Google Earth, 2024)

11. 2. The Village Planning Characteristics

The location of the old village was chosen on a high place for defensive purposes and to monitor the farms easy. The village consists of a group of stone houses in the form of fortresses that appear in graduated formations on the mountainside (MINISTRY OF TOURISM, 2010).

The houses are built from stones taken from the same environment and roofed with juniper trees and covered with clay that clogs the pores. Their balconies are decorated with alabaster stones and decorated with triangles shapes.

Urban deterioration began in the heritage village of The Ain as a result of natural factors, the passage of time, and poor maintenance operations. What increased the manifestations of deterioration was the lack of societal awareness among the people of the value of heritage, especially in the period preceding the year 1424 AH, which caused erosion in the foundations of buildings, cracks in the walls, and the collapse of roofs.

The Figure 5 shows the pattern of the old buildings and the new suburb.

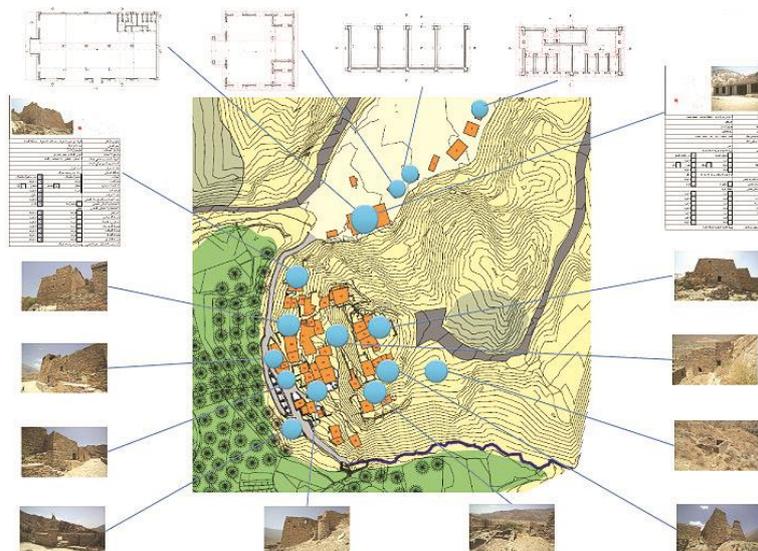


Figure 5. Perceptual map of the heritage village of All Ain
(General Authority for Tourism and National Heritage)

11.3. The Rehabilitation Strategy

This project was developed by the Saudi Commission for Tourism and National Heritage as part of the rehabilitation programs for heritage villages in the Kingdom, and many agencies participated in implementing the project program.

Due to the village's historical and touristic importance and its cultural aspects, comprehensive strategies and policies have been implemented to preserve the village's heritage to achieve sustainability while preserving the social, economic and environmental aspects of the local community (Ministry of Tourism, 2010).

The participation of the local community had an effective role in reviving the village, and different conservation policies were used depending on the condition and value of the heritage building, as some of it was restored and reused, and new buildings compatible with the environmental style were constructed.

The Project Goals:

- Involving the people in rehabilitating the village and developing it sustainably.
- Restore and rehabilitate the heritage buildings.
- Transforming the village into a tourist attraction area.
- Reviving traditional crafts and industries.
- Encouraging investors to create job opportunities.
- Reuse of abandoned buildings.
- Creating celebrations and festival public spaces.

11.4. Alternatives Proposed Strategy

Three alternative plans have been proposed, and they aim, in their entirety, to strengthen weak services and provide them with tourism services. This requires careful intervention to preserve ancient heritage buildings and their surrounding environment.

11.4.1. Access Point to The Site

Considering the importance of the access point to the heritage village, sufficient service activities have been created at this point such as a tourist service center, a café, a restaurant, and local product shops. A parking area was also developed next to these services, and another group of service buildings was proposed, such as an environmental lodge and a health club, considering the floodwater through this square and treating it within the proposed design, benefitting from this water and collecting it in tanks to irrigate the surrounding gardens. A lot of landscape elements are also proposed such as shades, and light units.

Pedestrian paths will be designed to connect the access point to all parts of the village from its various sides, all the way to the eastern farms and the source of the water spring, and to the highest point in the village, where the village buildings will be rehabilitated.

11.4.2. The Approved Rehabilitation Proposal

One of the most important alternative proposed strategies is to rehabilitate and reuse some old buildings as a museum, tourist hotels, restaurants, and café, as shown in Figure 6. Some service items are proposed such as Eco lodge at the arrival point, Tourism Information

Center, a Chairlifts station, an amphitheater, shops, cafe, and restaurant, including reusing some old buildings as a small museum, as shown in Figure 7.

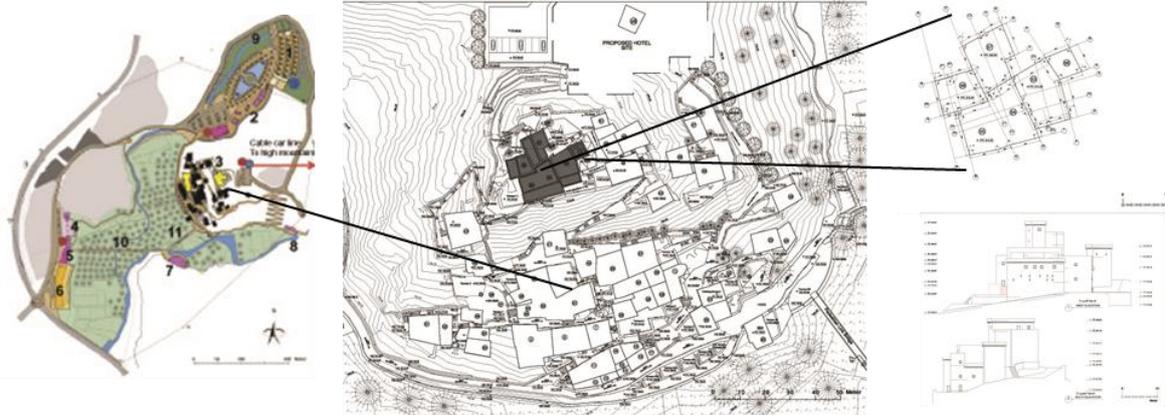


Figure 6. A restoration and reuse proposal for some old houses.
 (General Authority for Tourism and National Heritage, 2024)

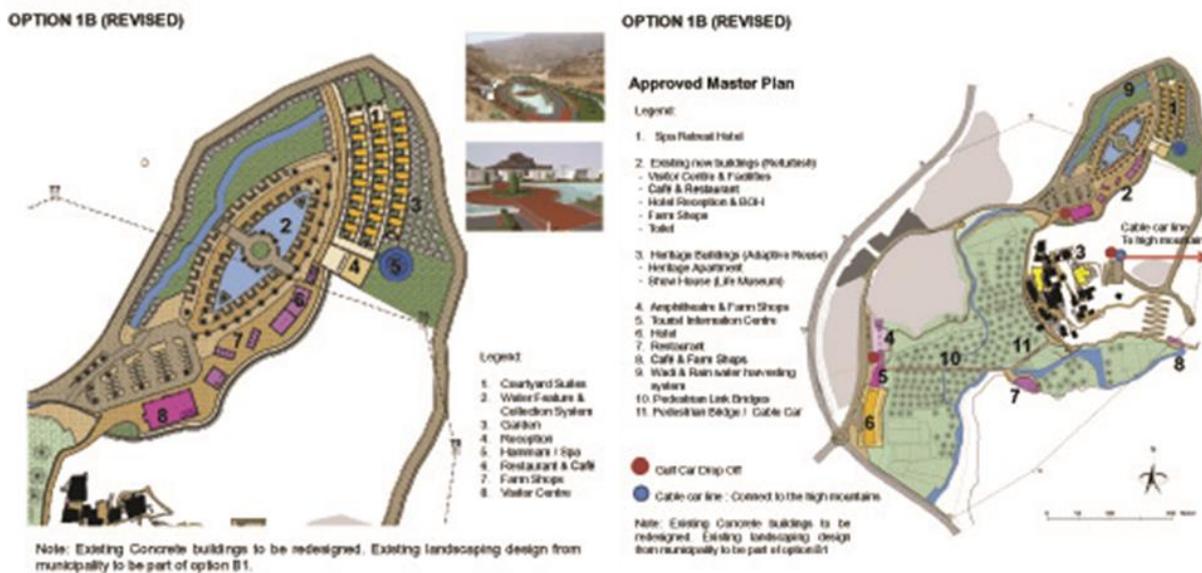


Figure 7. The approved rehabilitation plan.
 (General Authority for Tourism and National Heritage, 2024)

11.5. Proposed New Constructions

Some new constructions were also proposed such as an eco-hotel and a health club that take the same architectural language and ancient construction technology, considering the climate aspect, and using alternative energy, as shown in Figure 8.



Figure 8. Proposed hotel suites south of the village on graded levels and overlooking the crops.
(General Authority for Tourism and National Heritage, 2024)

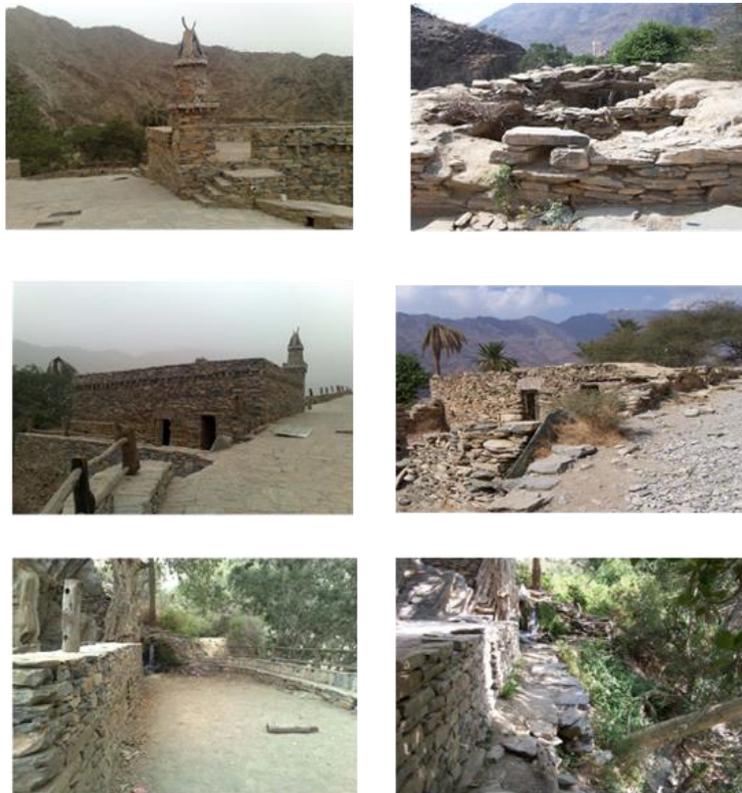


Figure 9. Before and after restoration operations)
(General Authority for Tourism and National Heritage, 2024)

11.6. The Stages of The Ain Village Rehabilitation Project

The First Stage

Included the village architectural documentation and surveying, all study plans were completed to restore its buildings, in addition to reusing some buildings to be compatible with its local identity as shown in Figure 9.

The Second Stage

Restoration work included the pedestrian leading from the entrance to the village up to the top of the plateau, as well as the restoration of some residential buildings, and the village mosque as shown in Figure 8. In addition to protecting the existing buildings' elements and preserving their safety from collapse, also the operations to strengthen foundations dismantle and re-install ceilings, treat cracks, and collapsed walls, and repaving the corridor leading to the water spring using the same old tiles.

The Third Stage

Some new concrete buildings have been constructed, such as shops, cafes, and an office building, but finished with stone to take on the character of the old buildings. The village landscape at the access point was also completed, creating a parking area with seating canopies for visitors, in the shape of an eye, as a symbol of the village's name.

A rehabilitation proposal to develop some old buildings in the village and reuse them economically and touristically to become a handicrafts museum, in addition to a proposal to add hotel suites for families east of the parking area and a health club (this stage is still under implementation as of writing this paper).

Recently, the village has experienced prosperity; it was nominated to be listed in the UNESCO World Organization.

The local community is currently working side by side with the Authority to activate an urgent requirement program for visitors and to restore life in the village, where many festivals are being developed to motivate farmers and attract tourists.

12. THE PRESERVATION PROJECT OF AL-DAFEER VILLAGE

12.1. Urban Planning and Design of Houses in The Village

The urban planning of the old village is simple and homogeneous characterized, it also respects the architectural and material characteristics of the heritage buildings. The urban planning pattern reflected the security aspects in the past, as buildings were constructed cohesively, as shown in Figure 10.

The design of the traditional houses consists of a set of common walls. The traditional house consists of two floors; the ground floor is used for livestock and warehouses. The first floor is designed for living and receiving guests. There is also a place to store crops and foodstuffs. The second floor contains a kitchen.

A primitive design stair was designed to be outside the house. The variety of design windows reflects the resident financial and social level. Planning of some important houses includes a multi-story fort in the middle for a defense purpose.

Local stones are used to construct the traditional houses, as load-bearing walls construct system, while the roofs of houses are made of tree trunks, and covered with tree leaves, then a layer of clay as finishing (Tarek, M., 2012).

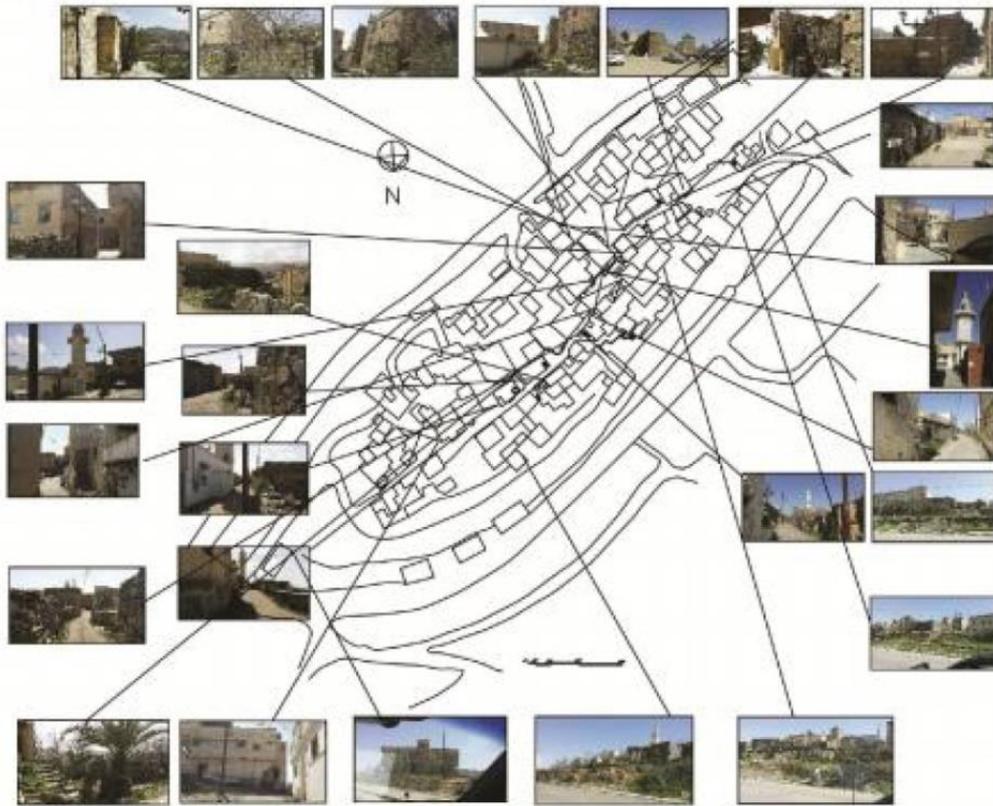


Figure 10. Shows the perceptual map of the village of Al-Dhafeer (Author, 2024)

12.2. The Current Situation of The Old Village

Due to the economic growth and increased revenues in the country, new ways of living emerged. Some residents were encouraged to add another concrete store over their old buildings, which led to partially or completely collapsing. New expansions were made north and south of the old village. The situation of the old village has become very critical, as many of the existing buildings have become almost rubble. Restoration efforts have been in vain, for several reasons. The most important of which is assigning restoration projects to non-specialized contractors. The random restoration of some buildings in the village led to incomplete restoration operations as shown in Figure 11. Some negatives are documented as follow:

- Using Random types of pedestrian paving stones.
- Long distances between different circulation elements, especially between pedestrians and vehicles.
- Random and discordant restoration treatments of the old building facades overlooking the squares.
- Random distribution of landscape elements such as flower boxes, and lighting units.



Figure 11. The random buildings and spaces restoration (Author, 2024)

12.3. Adopting Strategies and Policies to Revive and Preserve The Heritage of Al-Dhafeer Village

This project proposal was adopted by the Deanship of Scientific Research, Department of Architecture, Al-Baha University, KSA, as a research project for the Author and other participants.

A comprehensive strategy has been proposed for preserving heritage to achieve sustainable development while maintaining the social, economic, and environmental aspects bringing together many preservation policies, such as rehabilitating the old village and involving the local community in rehabilitation processes to achieve sustainable results, as well as restoring and reusing the old emirate building located in the village as a heritage museum, in addition to restoration and reconstruction operations some dilapidated buildings.

The basic planning depends on improving access within the village through the main longitudinal pedestrian corridor in the village. It is proposed to improve existing spaces and revive the important buildings located on this path, such as the old consulate Building. Preserving also the pedestrian area will Achieve economic income for the local community by establishing new activities (Tarek, M., 2020), as shown in Figure 12.



Figure 12. The proposed strategy after and before rehabilitating operations (Author, 2024)

The following operations are recommended along this path:

- The longitudinal pedestrian path of Al Dhafer village, extending longitudinally from northeast to southwest, was determined to be the scope of the preservation study.
- Recommending preservation and conservation solutions as follows:
- Exclude and remove all random and inappropriate elements.
- Carefully choose flooring materials and furniture, including lighting fixtures and flower boxes, In addition to rehabilitation.
- Reviving some abandoned residential buildings and constructing new facilities.
- Restore and reuse the old, neglected consulate building (Al Emarah) as a museum of traditional crafts as shown in Figures 13, 14, 15.

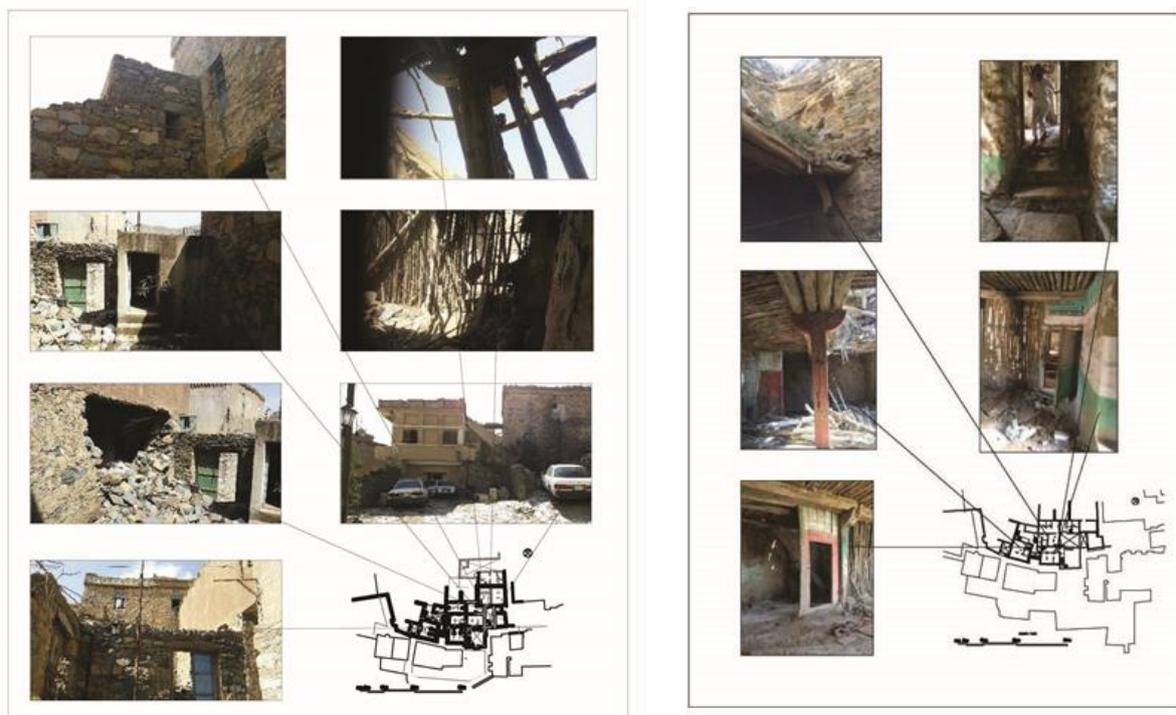


Figure 13. A visual documentation of Al Emarah building from inside and outside (Author, 2024)

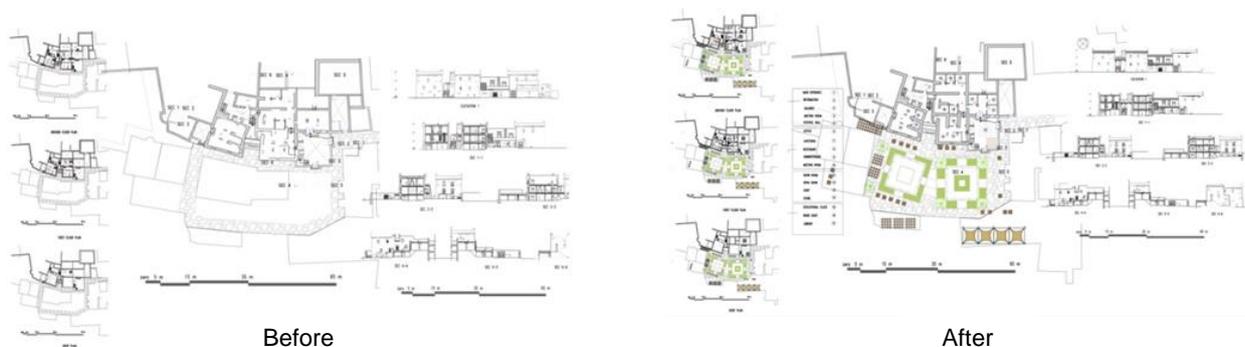


Figure 14. A proposal to reuse Al Emarah before and after (Author, 2024)



perception perspective of the Emarah and the surrounding spaces after the rehabilitation



perception perspective of the Emarah before the rehabilitation

Figure 15. Perception perspective of the Emarah before and after the rehabilitation (Author, 2024)

12.4. Construction Techniques Proposed

The structural system used in Al Dhafer village relies on load-bearing walls. This technique is applied in almost all other heritage villages. In many cases, therefore, the new materials proposal must be largely compatible with existing materials (Al Sayyid Hassan, Al Rafi'i Y.M., 2010).

Problems with the old construct stones have also been documented, such as the trees' decay and weeds among them, being accidentally exposed to fire, and being covered with cement mortar, paints, and stains as shown in Figure 16.

Techniques can be implemented to treat the mentioned problems:

- Cleaning the stones from dust, by using water and sometimes vapor is recommended.
- Cleaning the stones by following dry methods using simple tools like a chisel and hammer, sand spray pumps may be used in case of fire-exposed stones.
- Chemicals or detergents may be used to remove surface stains.



Trees and Herbs between the stones



Stones come under fire



The condition of the doors



Paints and stains on the stones



Cement mortar cover the stones



inclination at pivot shafts

Figure 16. The problems that have been detected in the stones (Author, 2024)

12.5. Handicrafts Proposed Center

New activities and buildings have been proposed, such as the craft design center inspired by the old village character, aiming to provide new opportunities for residents, as shown in Figure 17.

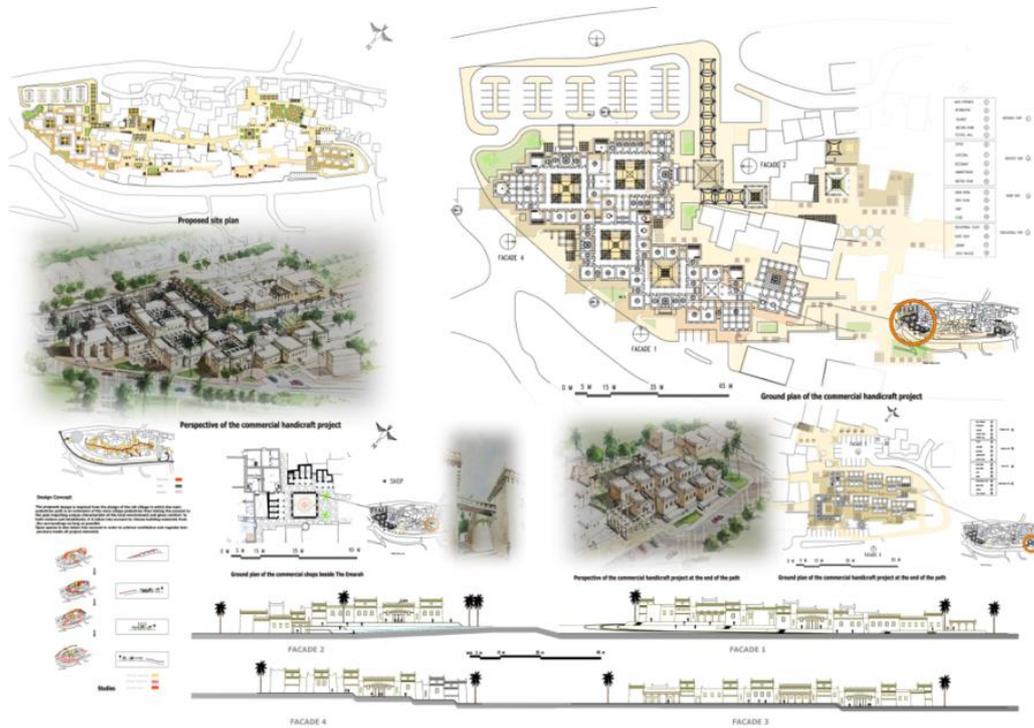


Figure 17. The proposed commercial handicraft project (Author, 2024)

13. RESTORE AND REUSE THE BEN RAQOUSH PALACE

13.1. Palace Location

Qasr Bin Raqoush is located in the village of Bani Sar, north of the city of Al-Baha, as shown in Figure 18. It is an integrated residential system consisting of several houses for family residence, a guest house, and a large council called (Zahran) surrounded by farms, in addition a mosque, a school, a prison, and horse stables.



Figure 18. General location of Qasr Bin Raqoush currently (Google Earth, 2024)

13.2. The Palace Design

The first western construction phase of the palace was built in 1249 A.H. This part contains a lot of constructions such as the old council, an arms depot, a library, a supply store, sleeping quarters, and family sitting areas, in addition to the Al Shami House, the mosque, the kitchen, servants' dormitories, and a water well. The second phase was constructed in 1358 A.H. and included the Eastern Hospitality House, the Wasit House, and the Reformatory. The palace buildings were documented before restoration operations by the Author as shown in Figure 19.

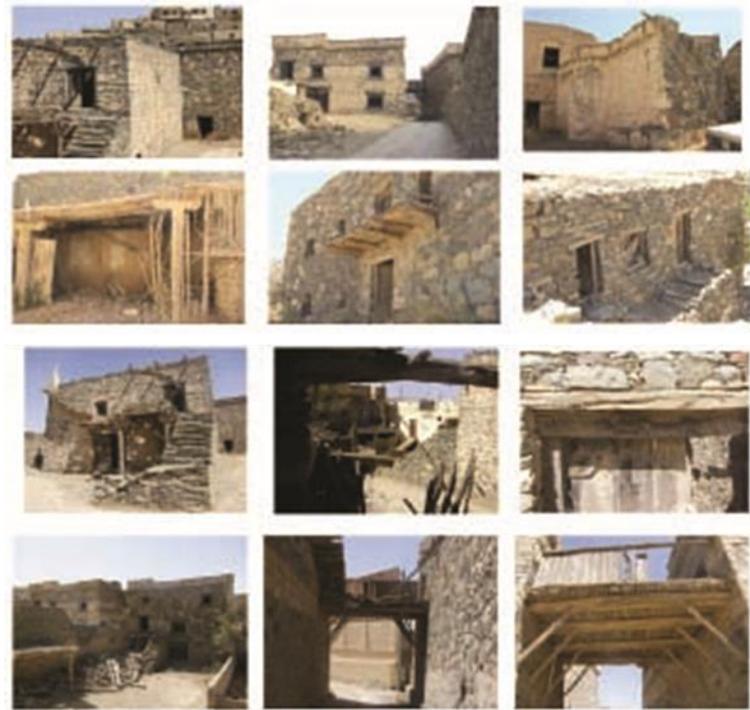


Figure 19. Documenting Bin Raqoush palace before the restoration and reusing project.
(Author, 2024)

13.3. Restoration and Reusing Proposal at Bin Raqoush Palace

The project was assigned to the General Authority for Tourism and National Heritage to restore Ben Raqoush Palace.

The proposed restoration approach is based on the following concepts:

- Participation of all the various engineering, archaeological, and economic specialties when developing the restoration methodology
- Supporting partnerships with local society to achieve heritage sustainability with its various elements.
- Reusing the palace as a cultural and historical center to be compatible with its historical and artistic status and using the other parts as heritage lodges.
- Highlighting the heritage collection value of the palace.
- Reviving touristic local festivals and establishing new activities as craftsmen shops.

13.4. Project Plan Stages

The First Stage

An architectural survey and documentation were carried out, and all plans were completed to rehabilitate and employ it in accordance with its architectural elements and local identity.

The Second Stage

Restoration work for the “Palace Guests Building” was completed, which included protecting existing building elements from collapse, in addition to strengthening foundations, dismantling and reassembling roofs, creating facades, treating cracks, and rebuilding cracked and collapsed walls.

The Third Stage

The palace has been upgraded and developed economically, touristically and culturally, becoming one of the prominent landmarks in the region.

A historical educational exhibition was held in the attached school, and other parts of it were reused as traditional crafts shop to raise the economic income of the population and provide job opportunities, as shown in Figure 20.

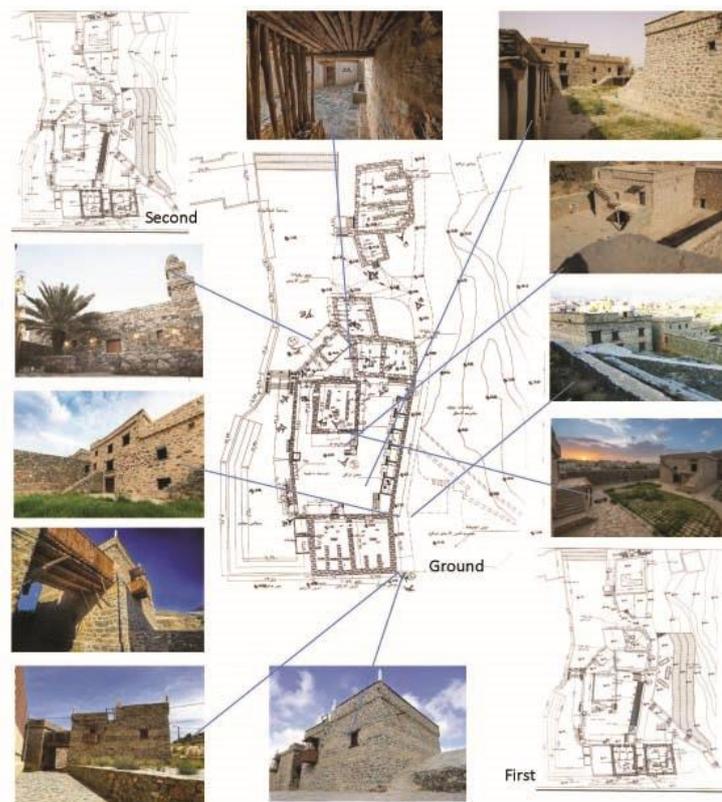


Figure 19. Documenting Bin Raqoush palace before the restoration and reusing project (Author, 2024)

14. POSITIVE STRENGTHS AND NEGATIVE WEAKNESSES

Some positive strengths and negative weaknesses could be concluded, as shown in Table 1.

Table1. A summary of the most important positive strengths and negative weaknesses in preservation experiments (Author, 2024)

The project	positive strengths	Negative weaknesses
<p>Heritage rehabilitation village of The Ain village</p> <p>The methodology followed:</p> <p>The project was developed by the General Authority for Tourism and National Heritage.</p> <p>A comprehensive development policy was followed to serve society's contemporary needs and requirements while conserving the ancient and integrating it into the conservation process. The social and economic level of the population was also developed, some heritage buildings were restored and reused, and new elements installed compatible with the environmental pattern.</p> <ul style="list-style-type: none"> - Developing buildings, cultural and recreational activities with the same old construction methods and providing parking. -Infrastructure and facilities have been prepared and developed. -Construction rules have been put in place for developed areas, and a management system has been established to preserves the village's ecosystem. 	<p><u>Environmental sustainability aspects:</u></p> <ul style="list-style-type: none"> -Using various preservation policies depending on the condition and value of the heritage building. -Urban rehabilitation operations preserved the village farms, achieving environmental sustainability. -The village has become a tourist attraction, where heritage values merge with the natural environment. -Taking into account the local character in some new buildings implementation. -Use traditional architectural techniques as a construction, and restoration proposal. -Paying attention to the urban fabric is one of the successful factors in upgrading heritage areas. <p><u>Economic sustainability aspects:</u></p> <ul style="list-style-type: none"> -Achieving economic income for the local community through festivals and selling agricultural products. -Attracting tourists and providing job opportunities for villagers in project services. -Create job opportunities for local community members in the project services. <p><u>Social sustainability aspects:</u></p> <ul style="list-style-type: none"> -Educating the local community about the importance of heritage preservation. -Encouraging the local community to attend tourism workshops of the Tourism Authority. -Preserving the identity of the heritage village by establishing cooperative associations from the local community that communicate with government institutions. 	<p><u>Environmental sustainability aspects:</u></p> <ul style="list-style-type: none"> -continued resident migration due to the lack of services and facilities and the difficulty of preparing the infrastructure. -Imitating the old construction method, creating new concrete buildings covered with stones. <p><u>Economic sustainability aspects:</u></p> <ul style="list-style-type: none"> -The difficulty of providing modern equipment inside buildings, the high cost of regular maintenance, and the structural risks of the dilapidated buildings. -Lack of development budget approved compared to the other heritage villages and urban heritage sites in the Kingdom. -Restoration operations were delayed and work stopped several times. <p><u>Social sustainability aspects:</u></p> <ul style="list-style-type: none"> - Lack of coordination between the participation Authorities led to some problems and a long period of implementation. -Lack of interest and coordination in the rehabilitation project among the local community as a result of most of them migrating outside the village.
<p>Heritage Preserving village of Al-Dhafeer</p> <p>The methodology followed:</p> <p>The first project: assigned to a non-specialized contractor in architectural preservation work.</p> <p>Restoration and maintenance work was carried out without an</p>	<p>The university project proposal was based on achieving the following positives:</p> <p><u>Environmental sustainability aspects:</u></p> <ul style="list-style-type: none"> -Achieve sustainable heritage preservation while considering the social, physical, cultural, and environmental aspects. -Achieve Comprehensive sustainable development by providing consultation 	<p>The project assigned to a non-specialized contractor caused the following negatives:</p> <p><u>Environmental sustainability aspects:</u></p> <ul style="list-style-type: none"> -Lack of vision for heritage preservation legislation. -Failure to seek assistance from restoration experts. -Lack of understanding of the ancient construction methods

<p>actual study of the village's conditions, which led to the distortion and loss of the village's architectural and historical features.</p> <p>The second project: an adopted proposal by the researcher to achieve a comprehensive heritage preservation methodology was adopted while maintaining the sustainable pillars, environmental, social, and economical.</p> <p>Proposal to restore and rehabilitate the valuable old buildings, such as the old consulate building as a traditional crafts museum.</p> <p>Proposing new buildings, compatible with the surrounding village environment, to develop the social and economic.</p>	<p>and research cooperation from scientific preservation authorities.</p> <ul style="list-style-type: none"> -Develop a Comprehensive restoration work to preserve the village's character and attract the residents' interest. - Using modern restoration technics proposal can contribute to extending the building's life without affecting its traditional originality. - Improving public and surrounding services, such as drinking water, disinfection, and household waste collection. -Preserving archaeological monuments and heritage elements, especially through restoration, reuse of materials, and valorization and reuse of monuments. <p><u>Economic sustainability aspects:</u></p> <ul style="list-style-type: none"> -Proposing new commercial activities can contribute economic income to the local community and provide job opportunities for youth. -Monitoring and directing economic activities so that the village maintains activities appropriate to its nature. -Encouraging the holding of exhibitions, cultural festivals, and scientific meetings that consolidate cultural identity. -Material and technical support must be provided to residents of historical buildings by providing financial loans and awareness-raising necessary for restoration work. <p><u>Social sustainability aspects:</u></p> <p>Preserving social relations and handicrafts within the historical area itself and keeping the area in a state of balance.</p> <ul style="list-style-type: none"> -Qualifying cadres of students and specialists in rehabilitation and preservation work, supervised by a committee composed of professors from the university's College of Engineering specializing in this field. -It is proposed to coordinate efforts between all official authorities concerned with heritage preservation and universities to develop work on preservation projects. -Residents of historical areas must be involved in restoration and preservation work in historical areas to increase awareness of the value of these areas. 	<ul style="list-style-type: none"> -Negative treatments, poor and random details that do not meet the standard of the village's unique character. -Individual works carried out by homeowners in the old city are far from proper planning and correct restoration specifications <p><u>Economic sustainability aspects:</u></p> <ul style="list-style-type: none"> -The difference between the sponsors and the party managing the project, in addition to other administrative and material influences, led to the project not being completed. -Lack of an approved development budget Failure of use of modern equipment specialized in restoration operations and structural risks of dilapidated buildings. <p><u>Social sustainability aspects:</u></p> <ul style="list-style-type: none"> -The residents are not aware enough of the preservation of heritage continuously. -Failure to involve people in the rehabilitation and development of villages -Failure to preserve social relations and handicrafts within the historical region itself
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	-Secretariats, agencies, and municipalities must be involved in urban heritage preservation programs.	
<p>Restoration and reuse the historic Bin Raqouch Palace</p> <p>The methodology followed:</p> <p>The project was developed by the General Authority for Tourism and National Heritage.</p> <p>The preservation plan methodology was adopted, which included restoring the palace and reusing it using local materials and methods, strengthening the palace from the inside and outside, and rebuilding dilapidated areas. The palace was also rehabilitated as a cultural and historical center under the supervision of the Saudi Commission for Tourism and National Heritage.</p>	<p><u>Environmental sustainability aspects:</u></p> <p>-Integrating heritage values and achieve balance with natural environment</p> <p>-Emphasis on using the available traditional materials and the local building techniques.</p> <p>-Choosing the appropriate restoration techniques to achieve originality as possible.</p> <p><u>Economic sustainability aspects:</u></p> <p>-Providing financial and technical support for restoration operations</p> <p>-Achieving economic income for the local community through festivals and selling handicraft products.</p> <p>-Providing job opportunities for the people of the villages adjacent to the palace in the project services.</p> <p><u>Social sustainability aspects:</u></p> <p>-Success in Strengthening partnership with all local community segments , in addition promoting the cultural heritage with its various components</p> <p>-Educating the local community about the importance of preserving heritage and attending tourism workshops affiliated with the Tourism Authority</p>	<p><u>Environmental sustainability aspects:</u></p> <p>-Lack of specialized local labor.</p> <p>-Lack of attention to the environmental site, causing a state of environmental imbalance.</p> <p><u>Economic sustainability aspects:</u></p> <p>-Failure to improve the population level of the region and lack of economic returns.</p> <p>-Restoration operations were delayed several times because of the lack of coordination between the owner and the implementing agencies.</p> <p><u>Social sustainability aspects:</u></p> <p>-Failure to involve people in rehabilitating and developing villages.</p>

15. RESULTS

This paper highlighted three local case studies in Al Bahah city in the Kingdom of Saudi Arabia at different scales, where preservation methodologies were applied through formal frameworks, and ended in different stages.

The first case study: The heritage rehabilitation village project of The Ain

The project highlights many cultural values, architectural treatments, and achievement of local character in some proposed new buildings.

One of the most important reasons for the success of this experiment is the integration of the environmental, social, and economic dimensions to achieve sustainable development.

The project has become a good tool for sustainable tourism that integrates heritage values and achieves natural environment compatibility. It also contributed to achieving a good economic income for the local community through some activities such as festivals and agricultural products that create resident job opportunities.

The applied heritage methodology has shown the importance of Involving the local authorities, local community and different interest groups is in achieving sustainable results in the rehabilitation project.

Despite the restoration efforts, there are some drawbacks, such as a lack of coordination between the parties concerned, restoration operations being delayed several times, and the continued migration of residents because of the lack of services and facilities in the project and the high cost of regular maintenance.

The second case study: The Heritage preservation project of Al-Dhafeer village

This project proposal was adopted by the Deanship of Scientific Research, Department of Architecture, Al-Baha University, KSA, as a research project for the Author and other participants.

A comprehensive strategy has been proposed for preserving heritage to achieve sustainable development. It brings together many preservation policies, such as rehabilitating the old village and involving the local community in rehabilitation processes to achieve sustainable results, as well as restoring and reusing the old emirate building located in the village as a heritage museum, in addition to restoration and reconstruction operations some dilapidated buildings.

The purpose of this research project is to provide a sustainable approach to preserving the heritage village, so it is expected to be preserved in a way that is beneficial to the environment, society, and culture and has a good economic return.

Many negatives were observed in the project submitted by the municipality as a result of a lack of strategy preservation vision, in addition, the project was assigned to nonspecialized contractors, such as poor treatments, and random details that did not meet the standard of the village's character.

The third case study: The Restoration and reuse project of Bin Raqouch Palace.

The restoration and reuse of the palace are considered one of the most successful preservation projects in the Al-Baha region, as it interactively combines many different preservation policies, such as the restoration and reuse of the old palace as a cultural and historical center, and a place for holding popular festivals, it also includes some local activities such as handicrafts tools.

On one hand the project succeeded in achieving integration between the surrounding environment and the palace, highlighting the culture of the local community through celebrations and festivals, and on the other hand, there is no significant economic return due to the project's dependence on local tourism.

16. CONCLUSION AND RECOMMENDATIONS

Heritage sites represent one of the most important economic, touristic, and educational resources that must be preserved through a comprehensive and integrated plan that deals with urban, administrative, and environmental problems.

Therefore, when documenting heritage sites to invest in, there must be clear and comprehensive preservation visions, to prevent them from falling apart.

The comprehensive strategic vision concerned with heritage preservation and urban renewal can lead to protecting cultural resources and achieving sustainable development.

The sustainability of heritage sites is only a step and a stage paving the way for investment operations. Therefore, the research concluded with several recommendations as follows:

- Urban heritage preservation policies must be consistent with the general strategic objectives of the Tourism and Heritage Authority; these programs should be integrated with social, economic, cultural and environmental objectives at the national level.
- Future preservation policies should be planned to ensure the continuity of their role with heritage areas over time.
- Involving local authorities and the local community is crucial and important for successful heritage preservation and achieving sustainable results.
- Reusing heritage buildings to serve the community as one of the preserving heritage policies, brings direct economic benefits, and leads to community project sustainability.
- Necessary programs should be conducted to develop awareness of the importance of these heritage areas and involve residents in committees to follow up on development, revival and maintenance processes.
- Maintenance, organization and restoration of any heritage area should be implemented in accordance with the principles and standards of preservation based on available documentation and detailed analytical studies.
- Establishing integrated institutions is critical to making faster progress toward sustainable heritage preservation. A continuous cooperation between these institutions should exist, in all stages of work, starting from the initial analysis until the final stages of implementation.
- Improving and developing educational curricula, especially university curricula, and encouraging scientific research in the field of heritage preservation.
- Organizing Workshops concerned with heritage preservation principles and techniques is critical to offer qualified local human cadres to preserve heritage.
- Enable heritage investment and take into account aspects of heritage site management to achieve sustainability.
- Encouraging tourism festivals establishment, supporting productive families, selling craft and agricultural products, and investing in facilities, achieves economic returns, and helps in heritage preservation success.
- Heritage preservation development in the Kingdom must include the pillars of sustainable development, which is the environmental, social and economic pillar for achieving sustainable heritage preservation.
- Successful urban heritage management plans need integration between preservation theoretical and practical aspects.
 - There should be a continuous community evaluation of preservation projects in the Kingdom to ensure the continued sustainable development achievement.
- Increasing efforts should be exerted to develop the quality of the local community as the current sustainable development goals.

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All figures in the article are produced by the author in declared year, unless stated otherwise.

Conflict of Interest Statement

There is no potential conflict of interest in this article.

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- Residential project at Suez City – two first Award, and two second Award - Egypt.
- Residential building of women union at United Arab of Emirate. – First Award
- Residential building at Libya. – First Award
- Saudi House Building (International competition)- Third Award - Saudi Arabia.