

EXECUTIVE SUMMARY

Brief introduction to the WHTL proposal

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Foreword

The Management Plan for the site “Sennacherib’s Irrigation System” which is presented for inscription in the UNESCO World Heritage Tentative List has clear need of a preliminary synthetic summary in order to illustrate and justify the motivations that have led to the candidature. This is also an opportunity to detail the site’s complexity and extension and explain the methodological and design choices made by the authors of the project and supported by the Iraqi, Kurdish and International stakeholders, with the backing of the Italian Agency for Development Cooperation (AICS).

Antecedents

The present proposed UNESCO WHTL candidature is linked to the project “Land of Nineveh - Training for the enhancement of the cultural heritage of Northern Iraqi Kurdistan” entrusted by the Ministry of Foreign Affairs and International Cooperation and the Italian Agency for Development Cooperation to the University of Udine and directed by Professor Daniele Morandi Bonacossi. An essential part of the project is the study of the archaeological site of Gir-e Gomel and the network of canals built by the Assyrian king Sennacherib in around the year 700 BC.

The CNR-ITABC (National Research Council - Institute for Technologies Applied to Cultural Heritage), now the Cultural Heritage Science Institute (ISPC), is an operating partner of this project. A specific ISPC team of architects, archaeologists, surveyors and technicians led by architect Roberto Orazi, an Associated Adviser of ISPC, has had the specific task of planning the overall design of a large archaeological and environmental park or “open-air museum” in order to protect, preserve and enhance Sennacherib’s water-management system and provide the necessary graphic documentation through surveys of the monumental architectural structures and rock reliefs connected to the impressive waterworks.

The geological, hydrogeological and slope-stability studies and the project for conservation of the rock reliefs (Khinis and Maltai) were conducted thanks to the financial support of the Italian Ministry of Cultural Heritage and Activities. The graphic and photographic documentation constitutes

the basis for advancing the present World Heritage Tentative List proposal for the insertion of this important archaeological complex and its related natural landscape into the UNESCO World Heritage List.

General and specific objectives of the project

The project aims at enhancing the cultural heritage of Iraq with a view to developing and consolidating the scientific, technical and cultural potential of local staff, through training courses and work experience related to the programmes envisaged in this application.

The general objective is the conservation and enhancement of the cultural heritage of the Kurdistan Region of Iraq, thus contributing to the development of the local cultural identity that can act as a lever for the socio-economic development of the country. The specific aim of the project is the creation of national and regional institutional capacity in the management and protection of archaeological sites and museums in northern Iraqi Kurdistan, also contributing to the autonomy in these sectors of the institutions involved.

Historical notes on the region of northern Iraq

The region, which falls today within the borders of the KRG (Kurdistan Regional Government) in the far north of Iraq, has been throughout its history a natural crossroads, where different civilizations have had the opportunity to meet and exchange experiences.

The actions taken by the Assyrian kings in the core region of Assyria from the end of the second millennium, and especially between the 9th and 7th centuries BC, included the construction of long irrigation canals in order to increase agricultural production in an area that was mostly semi-arid and subject to unstable rainfall. Extensive canal networks were thus created across the Assyrian heartland, which in addition to protecting the rural economy, enabled – together with permanent or seasonal watercourses – the transportation of huge quantities of goods, including large objects. Today, the most important testimony of these initiatives is the complex of canals built by the Assyrian King Sennacherib to bring water to the land – and also to the fields and gardens of his new capital, Nineveh.

The monumental complex and the archaeological areas

As mentioned above, the archaeological complex that we want to preserve and for which we wish to create a UNESCO World Heritage Site consists of the impressive hydraulic system built by the Assyrian King Sennacherib between the years 702-681 BC, a wide-ranging complex composed of a number of archaeological areas comprising canals, aqueducts, rock reliefs, and inscriptions (Fig. 6).

Of great importance is the sculpted celebratory apparatus that accompanied the construction of the various waterways. Examples are the rock reliefs of Maltai, perhaps the best preserved, and those of Faideh – still largely hidden in a channel length covered by earth – which risk total destruction due to neglect and vandalism by cement plants and a farmstead operating only a few metres away.

Khinis (Pl. 2.d.1.1). The focal point of the celebratory sculptural programme is to be seen at Khinis, where the beginning of the main branch of the canal system derived from the River Gomel was located. Here a great relief measuring approximately 10 x 10 m represented King Sennacherib at both sides of the panel in the act of paying homage to a series of deities placed at the centre. In front of the rock relief stood a huge monolith, now lying in the water, decorated on at least two sides to mark the watershed between the Gomel and the beginning of the channel (Pl. 2.d.1.4). Along the cliff, there are twelve niches of various sizes and at different heights from the ground, portraying the sovereign. Three of these bear what is known as the Bavian inscription (the name of the small village located east of the River Gomel after which the Khinis site was also named for many years), repeated three times, in which Sennacherib lists the major points of his endeavour and the operations carried out for the construction of the canals (Pl. 2.d.1.6). At the southern end of the archaeological area, a portion of the original canal is still visible, and a short tunnel dug into the stone to pass a rock outcrop. At the northern limit, near the large rock relief, the ramp starts climbing towards the stone quarry from which the blocks were hewn, and then transported for the construction of the canal and the Jerwan Aqueduct.

All along the splendid cliff, which a few metres away from the large rock relief features a (badly damaged) panel depicting a figure on horseback, there are late antique tombs or monk's hermitages dug deeply into the beautiful natural rock face (Pl. 2.d.1.3).

Jerwan (Pl. 2.d.2.1). The system of canals, in addition to its rock reliefs, also features complex – yet little studied – hydraulic engineering works, of which the most important is the well-known aqueduct of Jerwan, an imposing structure built to allow the stone channel that brought water to Nineveh to pass over an extensive wadi, which was excavated by a team of the Oriental Institute of Chicago in 1933.

Over 280 metres long, its north side is reinforced by buttresses bearing inscriptions; the west section of the south side has in the past suffered a collapse, which has been awkwardly repaired. In the reconstruction blocks with inscriptions in cuneiform – perhaps from other monuments – were used, and assembled in a completely random way (Pl. 2.d.2.3).

The whole central part of the aqueduct, originally held up by load-bearing pillars between which the wadi water flowed, has long been used as a source of construction material. A single pillar still stands *in situ*, as well as the beginning of the false vaults under which the wadi once flowed.

Maltai (Pl. 2.d.3.1). The archaeological area of Maltai, located outside the perimeter of the Archaeological Environmental Park (Pl. 2.d.5), is home to four large rock reliefs carved on a cliff about halfway down a steep natural slope that descends towards the city of Duhok. These panels can only be reached by means of a very steep path overgrown with bushes and other vegetation. The rock reliefs are in a condition of deterioration that is less accentuated than the panels and the niches at Khinis. Their almost perennial isolation, due to the difficulty of the access route mentioned above and the state of neglect in which they were left, has led to recent episodes of serious vandalism. The whole figure of the sovereign has been removed from a panel, leaving a big gap in the figured panel, while on another panel, a large hole has been made in order to discover whether there was treasure hidden behind the relief: unfortunately this is a rather widespread belief among local people.

Bandawai (Pl. 2.d.4). The Bandawai area, also located outside the boundaries of the Archaeological Environmental Park, consists of a large valley crossed by a sizeable stream, at the beginning of which is located the small and almost completely eroded rock relief of Shiru Maliktha. The valley contains a series of archaeological remains: carved into the rock wall there are small buildings, mills and tombs that it will be possible to reach by means of a specially programmed and suitably equipped archaeological trekking path.

The place's notable tourist interest is accompanied by a strong recreational potential due to the presence of a series of small cabins used by swimmers to change their clothes. These are built with reed walls and integrated in an exceptional way into the natural panorama of the riverside. The area's recreational value is confirmed by the presence of a small restaurant. In the shade of trees and temporary awnings, visitors may eat while sitting in special tables that allow them to place their feet in the flowing water of the river.

The Archaeological Environmental Park of Sennacherib's irrigation system

The project is aimed at the conservation of cultural heritage and the strengthening of the local economy through

the creation of an Archaeological Environmental Park for the conservation of the extensive water-management system built by King Sennacherib. The project's main activities concern the documentation of archaeological and architectural remains, the enhancement of the archaeological complex, the training of local staff with regard to conservation work and archaeological investigation, the design of park infrastructures and facilities, and the drafting of a sustainable tourism plan.

A Multimedia Museum Centre located not far from Khinis (but not visible from the site) will have the task of managing the Archaeological Park and allowing visitors to visualize both Sennacherib's entire irrigation network and the individual archaeological areas, both inside and outside the park. The establishment of the archaeological environmental park aims to safeguard the cultural landscape and to offer the local population the enjoyment of all the cultural, spiritual and social benefits connected to it.

The heritage of the region, if properly protected and valued, could be a significant source of economic development through the growth of local and international tourism. Increased income through the launch of environmentally-friendly activities, such as those related to tourism and crafts and the consequent development of SMEs, might raise the level of well-being in the community with respect to both physical and psychophysical health.

Moreover, the arrival in the region of tourists from Iraq and all over the world could help Iraqi Kurdistan to pursue its economic development, leading to new and beneficial cultural exchange and the country's economic progress.

The Multimedia Museum Centre

The Multimedia Museum Centre is divided into three main areas (Pl. 5.e.3.2.b).

The *Area of Culture* is located on the Centre's northern side. It consists of a large conference hall, rooms for students and scholars, a library, GIS and website management equipment, and lastly an outdoor theatre to facilitate visitor socialization. It is hoped to set up a centre for the history of archaeological research and organize a special exhibition system to connect visually the sites located outside the Archaeological Park (Fig. 6).

The central part is occupied by a *Recreation Area* which includes the centre's entrance facilities, the ticket office, lavatories, clothing deposit, cafeteria, a large bookshop for the sale of publications and souvenirs and rooms where school children can experiment their artistic skills.

A *Functional Area* to the south includes the park administration offices, rooms for the supervision of the archaeological areas (divided between the groups assigned to the intangible areas and those assigned to the buffer zones).

This part of the Centre also contains rooms for the manage-

ment of video cameras located in isolated points of Khinis and Maltai and for the control of the laser interferometer that alerts personnel to the movement of boulders on the Khinis rock face. Nearby there are greenhouses, where the most delicate plants are grown and displayed, and which constitute a pleasant entrance to the large botanical garden.

Internal mobility

Internal mobility will be limited to several non-polluting means of locomotion: small wagons pulled by electric locomotives and the use of horses and bicycles on specific routes.

Financial sustainability of the project

Large areas of the park's territory will be dedicated to the development of the Green Economy and the formation of farms able to stimulate interest in local products to be exhibited in small villages nearby.

Other areas will be equipped with photovoltaic systems to supply the park's energy needs, and also for the production of clean energy to be placed on the market.

Methods used

Acquisition of documentation. The first phase of the methodological path consisted of the acquisition of the cartographic documentation relating to the extensive archaeological complex and its monuments. In the absence of detailed maps of the region, it was necessary to use satellite images for the collection of all the territorial and archaeological data. Pleiades images were employed for Khinis and Jerwan and World View 2 images for Maltai and Bandawai.

The documentation of reliefs, inscriptions and architectural structures was accomplished by laser scanner survey using a Faro Focus for small distances and a Zoller+Frölich Imager for larger distances, while a detailed survey of the archaeological areas was conducted by means of UAV technology and accomplished with a Swinglet drone (elevation up to 600 m) and a Phantom drone (up to 200 m).

The production of georeferenced orthophotos allowed us to define the core and buffer zone of each site and the mesh models imported in JRC Reconstructor gave the contour lines representing the sites' morphology.

Analysis of monuments and landscape. The second step in the process was to analyse the individual archaeological areas and the respective architectural and celebratory structures (rock reliefs, inscriptions) and their close relationship with the natural environment in which they were conceived.

This analysis also involved assessment of the preservation state of both the structures and the landscape and the forecasting of probable causes of further deterioration of the archaeological complex and its natural landscape. The phase also involves a critical analysis of local protection and planning instruments and the relative system for prevention.

Definition of objectives and strategies. This phase involved identifying the project's aims and delineating strategies to achieve them. In this phase, the historical and structural uniqueness of the archaeological complex to be saved and protected was focussed upon and a strategy established to create a decision-making structure, the Archaeological Environmental Park, able to represent the various different problems and take on the task of solving them through the achievement of both short-term and long-term goals.

It was also necessary to determine the aspects that characterize the social and cultural identity of the territory, to evaluate the local cultural resources and define the relative hierarchies and therefore the positioning of the different elements on the design scheme. These were the intangible areas inside the park (Khinis and Jerwan), the path and the remains of the canal, the historical evidence in the Shifka Valley, the internal mobility routes, the intangible areas outside the park, and the public display and visualization modalities of the various archaeological areas and their related landscape.

Definition of long and short-term goals. This phase comprised the definition of the objectives and operational strategies for a plan of intervention and actions to implement the general strategic directives. These constituted a hydraulic and hydrogeological study of the cliffs of Khinis and Maltai, a slope stability study of the Khinis cliff, and the definition of interventions to mitigate the inherent dangers – for both the reliefs and the tourists – in these places, in addition to a project for conservation treatment for the rock reliefs of Khinis and Maltai, the arrangement of an access path to the Maltai reliefs, and an archaeological trekking route for the historic testimonies of Bandawai.

The GIS model of the Archaeological Park

The various activities of the Archaeological Environmental Park, both the institutional ones concerning research, public information and teaching, and those related to energy supply and logistics, will be managed by means of a special information system.

The GIS model will contain in digital form all the graphics related to the Archaeological Environmental Park project, and will also form the basis of the management plan requested by UNESCO for each site belonging to the WHL.

Archaeology and landscape

The conservation of the original landscape is particularly important in the design of an open-air museum. The archaeological remains often represent the only evidence of the transformations implemented by humans on the environment and therefore may function as powerful foci for territorial redevelopment, especially when closely related to the distinctive features of the landscape which surrounds them.

This relationship between archaeology and landscape is particularly significant for sites such as Khinis, Maltai and Jerwan.

At Khinis, the choice of the canal's starting point was closely linked to the presence of the great rock wall on which the large rock relief was carved. This interpretation is supported by the fact that approximately 300 m from its beginning, the canal meets a rock outcrop that bars the way. A possible solution would have been to bypass this protrusion – but in doing so, the canal would have fallen back into the river just a few metres from the outcrop tip. If the ruler had been interested only in water management, it had been enough to start the channel 300 m further downstream, immediately after the rock outcrop, and thus avoid digging a tunnel nearly 50 m long through the stone (Pl. 2.d.1.1).

However, what mainly interested Sennacherib was the opportunity to celebrate his feat, consecrate it to the gods and hand it down to posterity through the rock reliefs and inscriptions carved in the rock.

The relationship between landscape and archaeology also involves the aqueduct at Jerwan. The imposing structure, built of squared stone blocks, joins together the two sides of a wadi separated by a wide depression, allowing Sennacherib's canal to bypass the rushing waters of the wadi.

While at Maltai the presence of cliffs along a hillside overlooking the vast plain (where Duhok is now sited) allowed the creation of an almost perfect location for leaving a "sign" of Sennacherib's achievement: four large rock reliefs in an area that is difficult to reach, but clearly visible from a long distance.

Sennacherib's "Garden of Peace"

To increase the perception of the natural landscape in which the monuments were originally immersed and to hide the visual intrusions of modern features, the boundaries of the park, the archaeological areas and the buffer zones will also be marked by the planting of trees and other vegetation to function as shielding. Not far from the Multimedia Museum Centre near Khinis a large botanical garden will be located, where it will be possible to recreate the image of the famous gardens of Sennacherib's "Palace without rivals" in Nineveh, in which the sovereign wanted to gather many different kinds of plant which came – as he himself recorded in his celebratory inscriptions – from the most remote parts of the world. Not far from these structures a large green oasis where recreational areas with fountains, watercourses, educational trails and rest areas can be found, will be dedicated to the contemplation of nature and the archaeological landscape: "*A garden in which people can gather strength and inspiration, a place for calm reflection and individual introspection; a sanctuary accessible to all, nurturing sentiments of peace, joy and healing*" (from the "Garden of forgiveness", Beirut, Lebanon).