Fig. 38: The eastern part of the Nymphaeum before (above) and after (below) finishing the buttress construction works (photo by Muath Khawaj)

AMMAN: THE ROMAN NYMPHAEUM

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The Restoration and Rehabilitation Project of the Roman Nymphaeum in Amman provides an example of innovative management practice and applied methods in the revival of urban heritage and serves as an approach towards sustainable heritage preservation (also see Al Adarbeh et al. 2017 and El Khalili 2016).

The Roman period Nymphaeum in Amman, considered to be the largest monument of its kind in ancient Provincia Arabia, had suffered from different deterioration factors that has affected its state of conservation. This led to the monument being considered locally as an example of visual pollution in downtown Amman. Through a joint project with the Hamdi Mango Center for Scientific Research at the University of Jordan, the Department of Antiquities, and the Greater Amman Municipality, it was possible to preserve large areas of the site which needed urgent restoration and conservation. The project (August 2014–March 2018) has been supported by the Ambassadors Fund for Cultural Preservation at the US Embassy in Amman, Jordan.

35 workers, technicians, and experts from the fields of conservation, cultural resource management, archaeology, tourism, and architecture were involved in the project and fifty on-job field training opportunities were offered for university students from fields of conservation, cultural resource management, chemistry, biology, tourism management, architecture, and urban planning. Students were mainly from University of Jordan, Hashemite University, University of Petra, and Jordan University of Science and Technology.

Fig. 39. 3D rendered model of the Nymphaeum, showing the main façade (rendering by Adel Mutawi)

Advanced documentation for the site and surrounding area was undertaken using a 3D Laser Scanner, contributing to drawings of plans, elevations and sections used to document the monument's state of conservation. Scattered architectural fragments at the site were numbered, photographed and drawn, and reorganized and presented in the site.

A comprehensive cleaning of the whole monument was undertaken with different mechanical techniques using low pressure water pumps to remove deposits accumulated on the façade due to air pollution. Tools including small brushes were used to remove crusts and external crystalized salts, as well as any plants and fungi on the stone surface. Chemical cleaning using wet bandages was used on some parts of the monument.

Consolidation included filling the joints of stone blocks with compatible mortar. In addition, chemical consolidation and suitable polymers were used for very fragile stones. For the first time in Jordan, nanotechnology was employed in the form of nano-calcium hydroxide injected in limited amounts into the stone. This penetrates and transforms the stone into calcium carbonate, consolidating delicate internal sections of the building. Some reconstruction of missing structural elements to safeguard the existing structure was carried out which enhanced its overall interpretation and presentation.

The project successfully safeguarded the internal environment of the site including removal of non-site related structures and visual pollution, cleaning the front area of debris, landscaping and installing terraces compatible with the site which proved to be effective during winter season. The open areas and part of the basin of the Nymphaeum were covered with gravel to provide a unified look, enhance visitor circulation, and limit the possibility of vegetation growth. Preparations were made for nine fully illustrated bilingual site interpretive panels, a 3D printed reconstruction model of the Nymphaeum, and online and promotion materials. In summary, this project is a new model for downtown Amman in the way it revives and transforms urban heritage into an open public space and provides opportunities as a cultural forum.

Nymphaeum team members and partners also included Monther Jamhawi and Asma Shahaltogh (Department of Antiquities), Ramadan Abdullah (University of Jordan), Yahya Al Shawabkeh (Hashemite University), and Carlo Bianchini (University of Rome "La Sapienza").

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