

Rehabilitation of an industrial building for new uses.

Historic industrial facilities converted into a museum.

Type of intervention

Restoration Rehabilitation / Renovation

Concerned elements on the intervention project

- 1. Foundations and underground structures
- 2. Vertical structures
- 3. Horizontal structures and vertical connections
- 4. Roof and terraces
- 5. Façade and building envelope
- 6. Finishes and completion elements
- 7. Integrate services
- 8. General strategies for building recovery

Site Water Museum, 66 Franklin Roosevelt Ave, 3602
Limassol, Cyprus

Objectives Restoration of old building and construction of new
annex to house a Museum.

Property Limassol Water Board

Designer Chief Architect Kristian Christou Architects.
Job Architect A. J. Brooks, Architect
Contractor: DYNACON

Date Project - 2003
Restoration and building works 2005 - 2007



Background to the intervention

In 2007 the first Water Museum in Cyprus was opened in Limassol. The Museum is housed on the premises of the Old Water Pumping Station which belongs to the Limassol Water Board, who initiated and financed the project. Cyprus is renowned throughout history for suffering from droughts, leading to water becoming a scarce and valued resource. For this reason the Limassol Water Board, in its role as the public organization responsible for supplying water to the wider Limassol city area, decided to create a Water Museum. The Museum would present the history of the Limassol Water Board but also serve as an educational centre for school children, to promote an awareness of the importance and value of water, and introduce subjects such as conservation and correct usage.

The process started in 2001 when the Limassol Water Board declared a public competition for proposals which prompted a large response. The entry from Kristian Christou Architects attained the highest accreditation and they were awarded this project, along with design and supervision of the renovation, landscaping and display of the old stone-built water storage cistern known as "Havouza " North of the city. This structure dates from the late 19th century and is listed as an "Ancient Monument". Here the works were carried out in cooperation with the Department of Antiquities.

Description of the building

The Water Pumping Station was built around 1930, West of the city in an area which supported mainly agricultural activity and where substantial ground-water was known to exist. The Water Pumping Station collected water from numerous wells in the area and pumped it into the Limassol Water Tower, which supplied the then small town of Limassol with fresh water.

The Pump House was a stone-built, industrial type building covering 213m², with a pitched, tiled roof supported on timber trusses.

The mechanical equipment comprises a large diesel engine which drives a large rotary pump, both of U.K. origin. Later a second, large electric motor was installed as an alternative power source.

The Pump House, in combination with the Water Tower which was built at the same time, served the water supply of the town till 1960. Afterwards they were replaced by a more modern water supply infrastructure.

The development and expansion of the city led to a main traffic thoroughfare from the city centre to the new port passing in front of the Pump House site. On the same site the Limassol Water Board built their central offices and created a large green area with tall forestry trees.

The Diagnosis of the building (values and state)

The pumping equipment and the building were of reasonably good condition considering they hadn't been used in the past 50 years.

Large windows provided adequate natural light and ventilation, a central roof-light aided the flow of air through the building and there are also large, double door openings in each of the external walls.

After the main Pump House was built ,other smaller out-buildings were added on to one side for ancillary uses. During the design of the renovation, it was deemed that these

smaller buildings were of inferior quality and design compared to the original Pump House and they were removed so as to display the main building in its original form.

The building had already been designated as a "Listed Building" and as such, the design and implementation of the renovation works were carried out in consultation with the Ministry of Interior's Department of Conservation.

Restoration and rehabilitation works

Restoration of the Existing Pumping Station Building.

The Board's wishes to create a Museum were not practicable in the existing pump house hall due to a lack of space. The architects, in consultation with a specialist exhibit designer, proposed building a new "shadow" building adjacent to the pump house on the West side, which would reflect the size and shape of the original building but would be largely transparent. This building would be dedicated to public amenities and museum exhibits and the original building and equipment would form the main exhibit.

The renovation of the original building included the following works:

Removal of all ancillary buildings, exposing the original rectangular geometry of the pump house.



Fig.1-4: © Kristian Christou Architects

Removal of the existing clay roof tiles to be reused, careful cleaning, replacing of damaged tiles with similar, grouping old tiles and new tiles to different areas of the roof.

Replacing timber joists and tiling battens which had been damaged by insect infestation and rain water leaking through broken tiles.

Repairing the existing timber trusses with specialist timber repair resins, treating with suitable insecticides and application of protection, reinforcing some members with steel straps where necessary.

Repair of wooden and metal door and window frames, replacing with similar where necessary, restoration of original timber roof-light.



Fig.5: © Kristian Christou Architects



Fig.6-7: © Kristian Christou Architects

Reopening old window and door openings that had been blocked up at later stages.



Fig.8: © Kristian Christou Architects

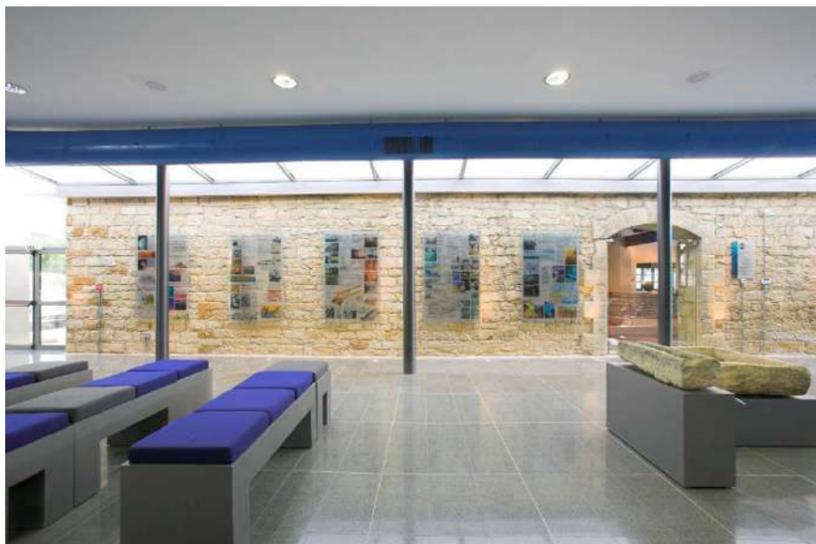


Fig.9-10: © Kristian Christou Architects

Cleaning of all external stone wall surfaces with water jet, or hand tools if necessary. Replacing damaged or eroded stones with similar. Repairing mortar joints with white cement/ lime/

stone dust mortar as existing. Replacing gray cement bonding from later repairs with white mortar.

Cleaning the mechanical equipment of machine oil deposits and additional paint using a water jet. Unpainted surfaces to be cleaned and treated with a rust converter. Cleaning of bronze and copper accessories and piping, application of protective polish. Certain parts that had been worn or damaged beyond repair were replaced with similar parts procured from local suppliers.

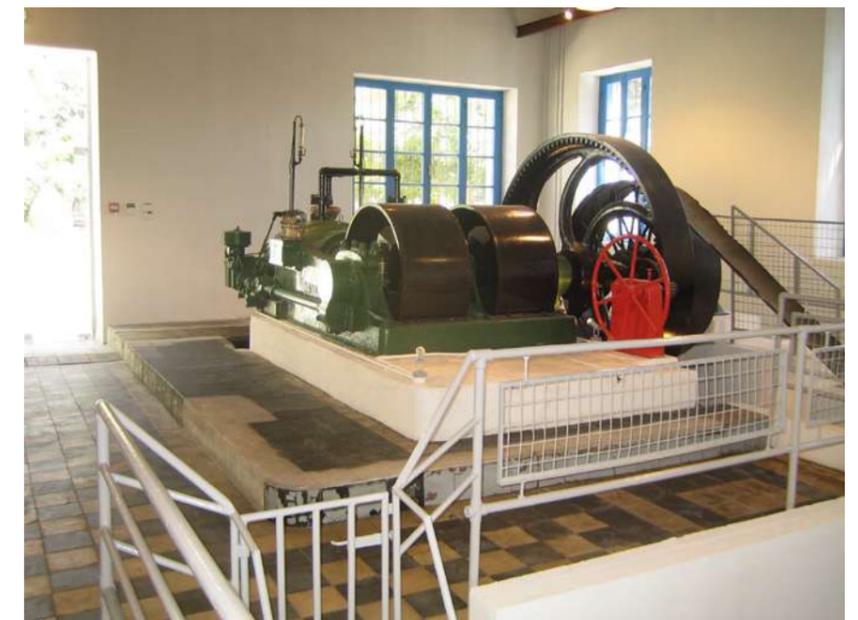


Fig.11-13: © Kristian Christou Architects



Fig.14: © Kristian Christou Architects

The floors were cleaned, restored and protected. Most of the floor consisted of traditional, decorative “French”, coloured, cement floor tiles. These were cleaned with a light grinding, the bonding was repaired with polymeric mortar and a protective, wax based sealer was applied. A similar method was used on the remaining exposed concrete floor.

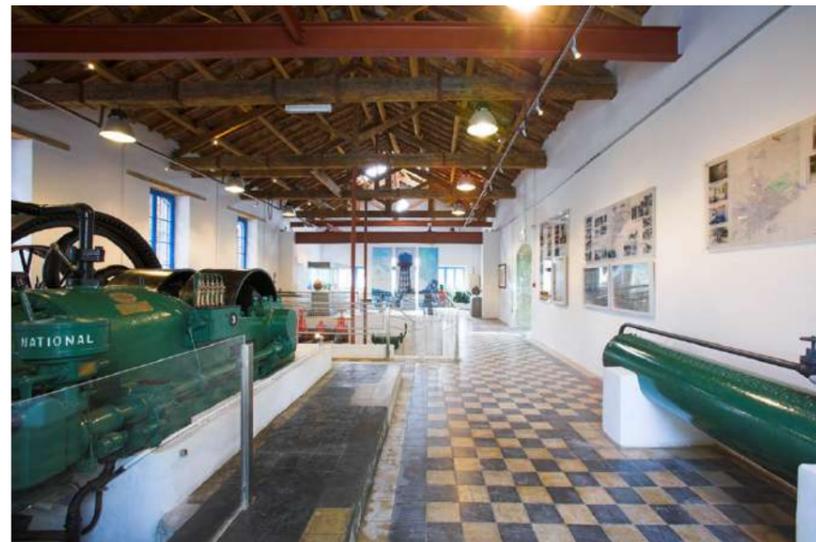


Fig.15-17: © Kristian Christou Architects

The new building for the Museum.

The new building has a similar area (223m²) to the existing Pump House, but in order to project the Pump House, the new building has a lower height and is positioned further back from the road than the Pump House.

The design goal was for the new building to be light in appearance, aesthetically modern, as transparent as possible and to be offset from the existing stone building. The offset distance is roofed over with glass to accentuate the separate entities. The new building has a steel framed structure, full height perimeter glazing, drywall interior partitions and some reinforced concrete features.



Fig.18: © Kristian Christou Architects



Fig.19: © Kristian Christou Architects

The Museum's water theme was incorporated in the architecture with special water features such as:

On the South and West glazed walls there is a feature within the roof slab that sprays water onto the glass through small jets, resulting in a continuous screen of water running down over the glass, or a "water wall". The flow is aided by the glass being installed at a slight angle from the vertical. The water is collected at the base of the glass in a channel with large exposed river stones and is fed into a decorative pool beside the Museum entrance. The pool is lined with decorative mosaic tiles of primarily light blue color. From here the water is passes through a system of filters and is pumped back to the jet system, thus recycling the same water.

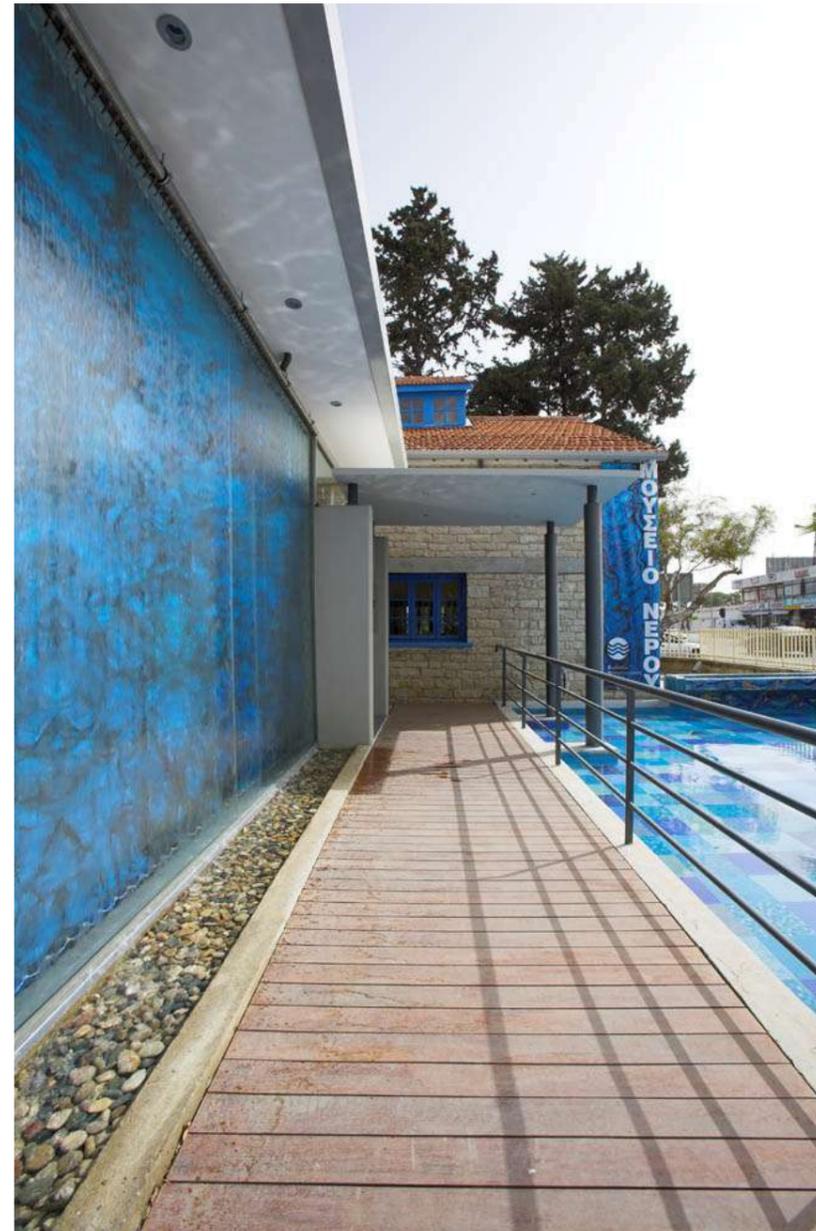


Fig.20: © Kristian Christou Architects

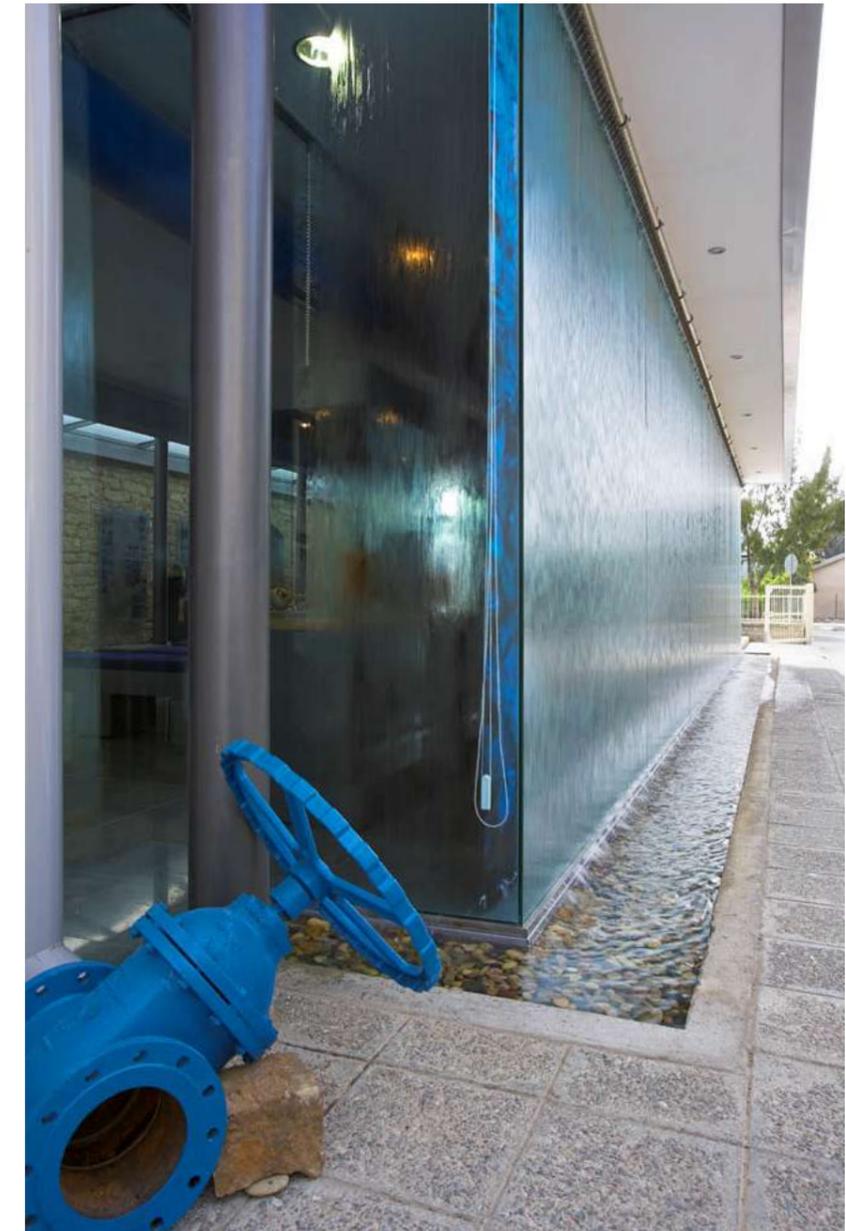


Fig.21: © Kristian Christou Architects



Fig.22: © Kristian Christou Architects

The route to the entrance of the Museum passes between the South “water” wall and the pool. This passage has been floored with exterior timber decking, evoking the traditional timber piers that still exist in the town. As a result, the visitors are introduced to the theme of water before they enter the building. It is visible on the walls and in the pool, but also audible as it drops onto the stones in the collection channel. The experience is heightened once they are inside the building and in close proximity to the walls of flowing water that surround them.

The “water wall” feature impresses both those inside the building but also passers by on the road and people visiting the nearby Water Board offices.

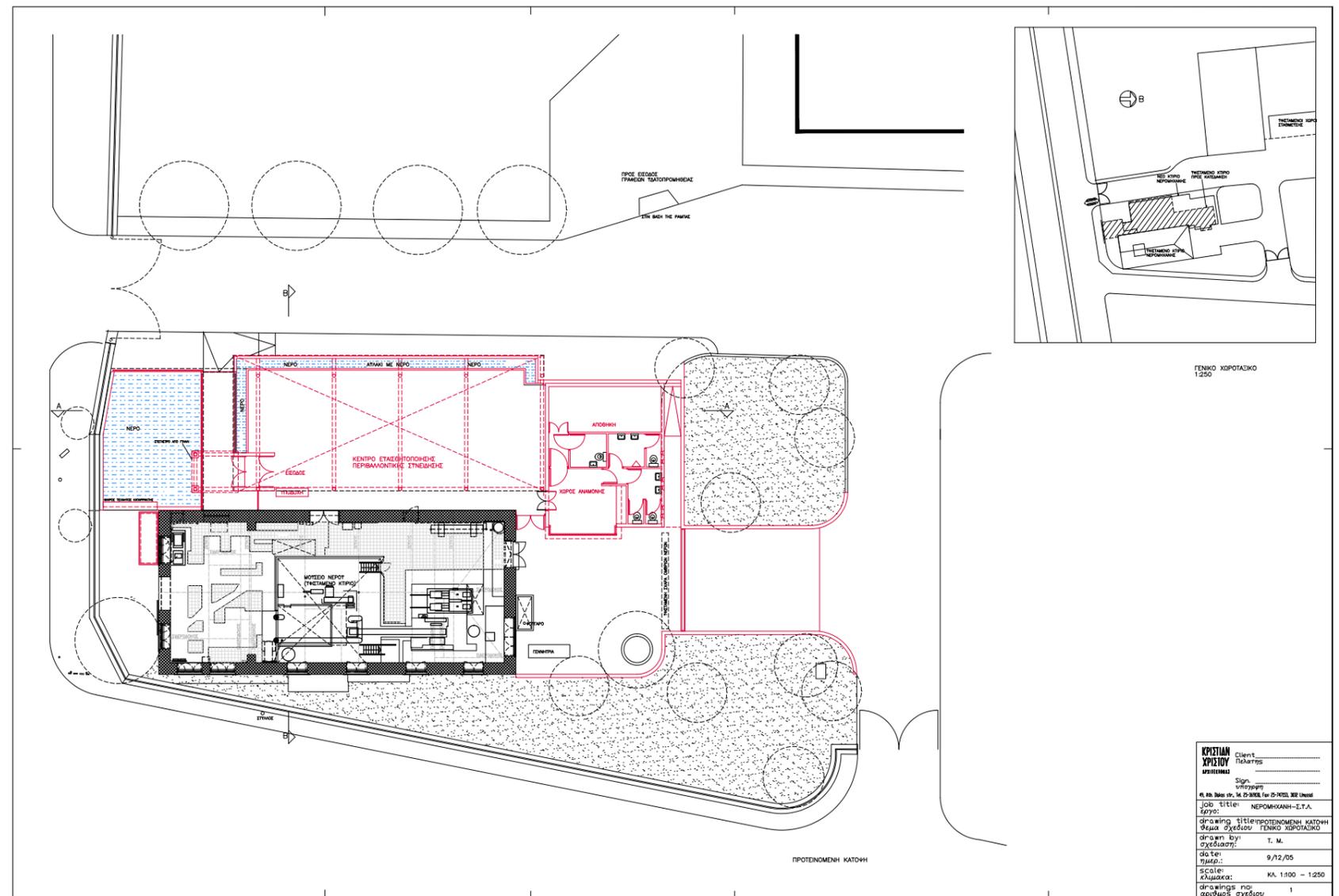


Fig.23: © Kristian Christou Architects

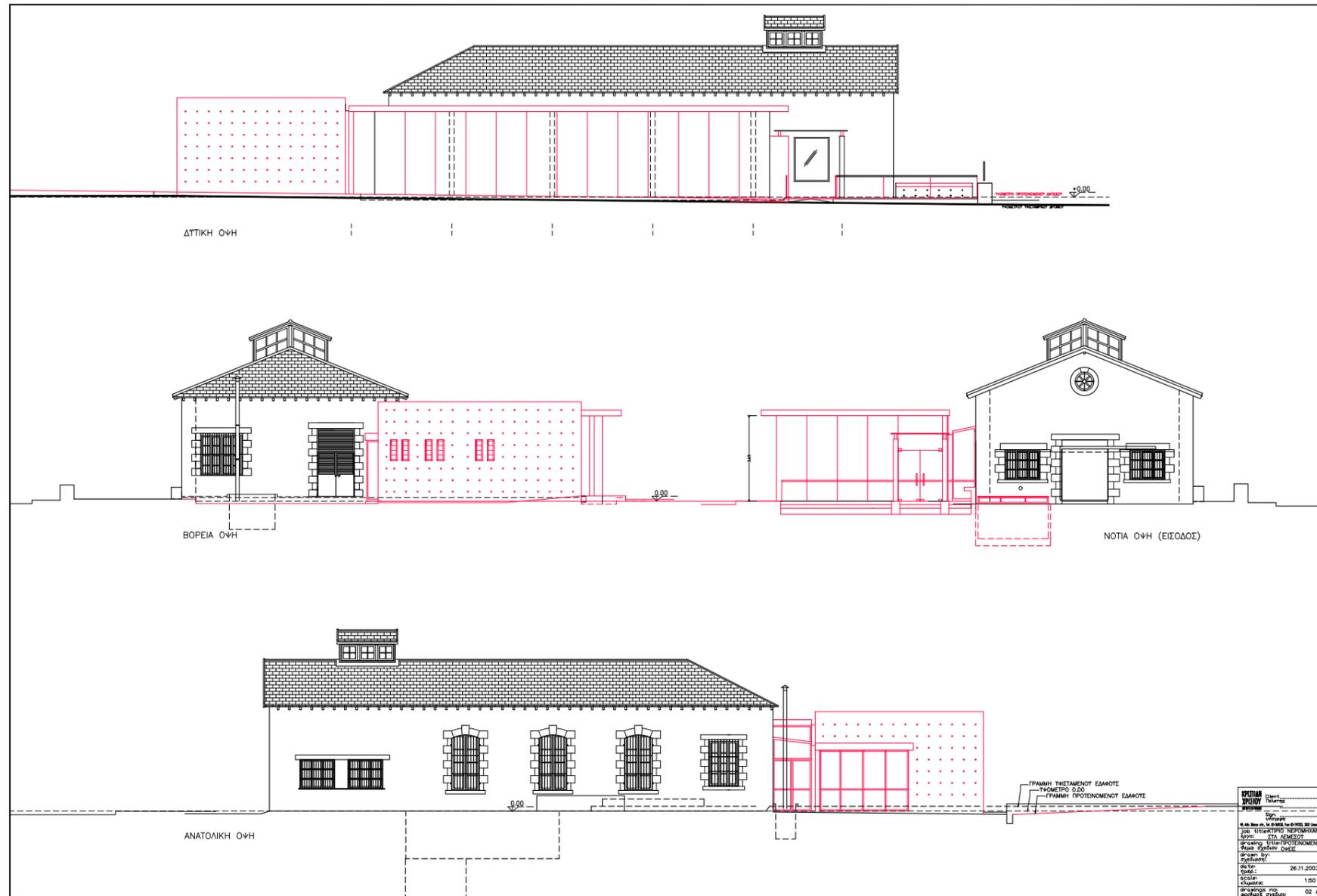


Fig.24: © Kristian Christou Architects

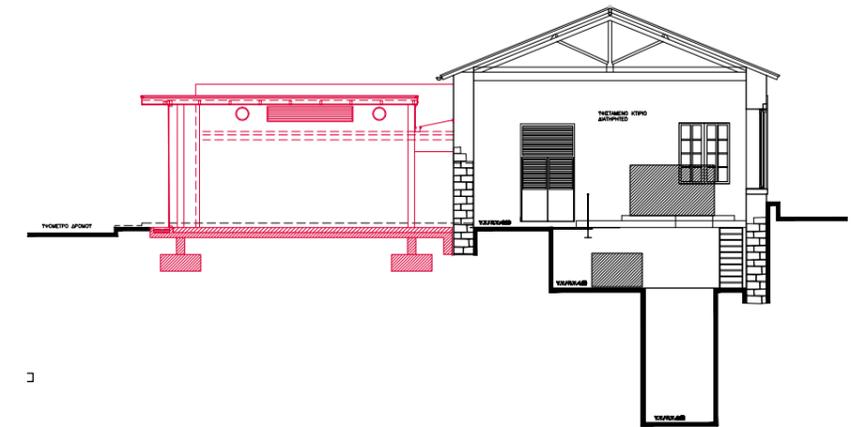


Fig.25: Section through existing Pump House and new Museum Building. © Kristian Christou Architects



Fig.26: © Kristian Christou Architects



Fig.27-28: © Kristian Christou Architects

The Museum Exhibits

The existing Pump House was entirely given over to the presentation of the mechanical and electrical equipment that was present, but also to the presentation of the infrastructure that was used to pump the water from wells in the area to the Water Tower (Water tank), and from there to the town's supply system. Some of the additional exhibits include pipe accessories from that era, tools, surveying equipment, explanatory diagrams and old photographs.

The new annex building is given over to presenting through visual and acoustic means the importance and value of water as a resource, especially for Cyprus. Other themes presented include the wide range of uses of water since antiquity to the present day. Exhibits are on show that are associated with the management of water and include tools, photographs, maps, electronic representations and other material relating to the water supply of Limassol and also the use of water throughout the ages. A large number of the exhibits were sourced from finds discovered during excavation works by the Water Board.

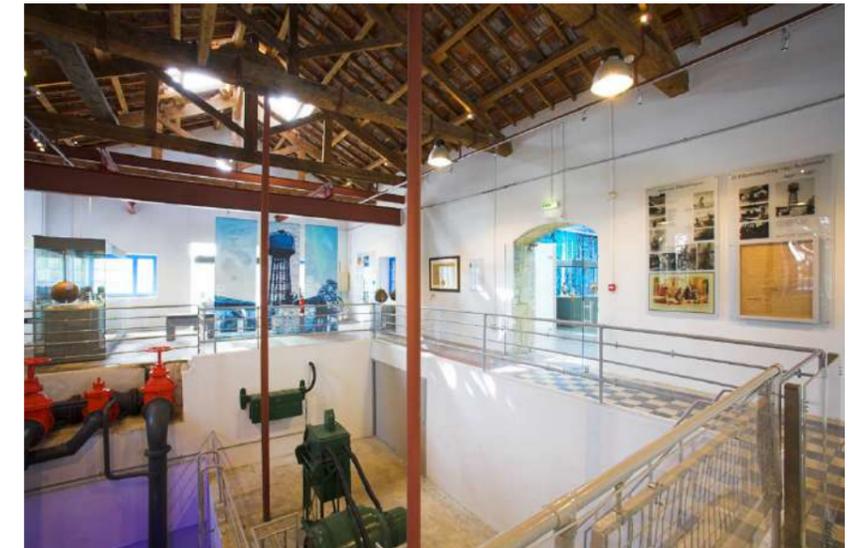


Fig.29-31: © Kristian Christou Architects

Limassol Water Tower and the Havouza storage cisterns.

In light of previous references to these two structures, below is a more detailed account.

Havouza is a twin chambered, closed, stone-built, water storage cistern. The water reached the cistern by gravity through stone channels and cast iron pipes from the spring in the Agia Irene area, and from the cistern it was piped through a network to the various public taps in the town. Here the townspeople would collect water in their containers to take home.

Havouza is listed as an Ancient Monument and belongs to the Limassol Municipality. The restoration works and landscaping of the surrounding area were carried out immediately after the Water Museum was created and was included as part of the same competition. The restoration was carried out with the cooperation of the Department of Antiquities, who partially funded the project.

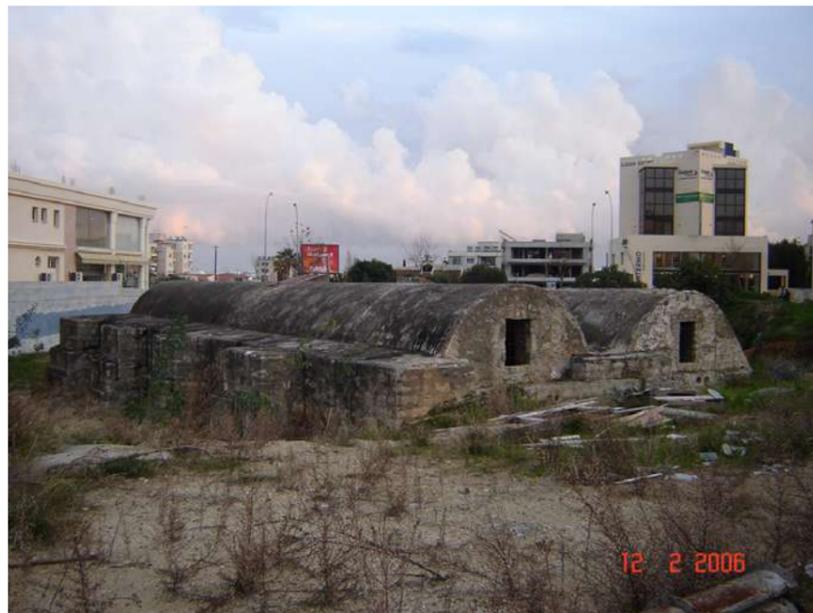
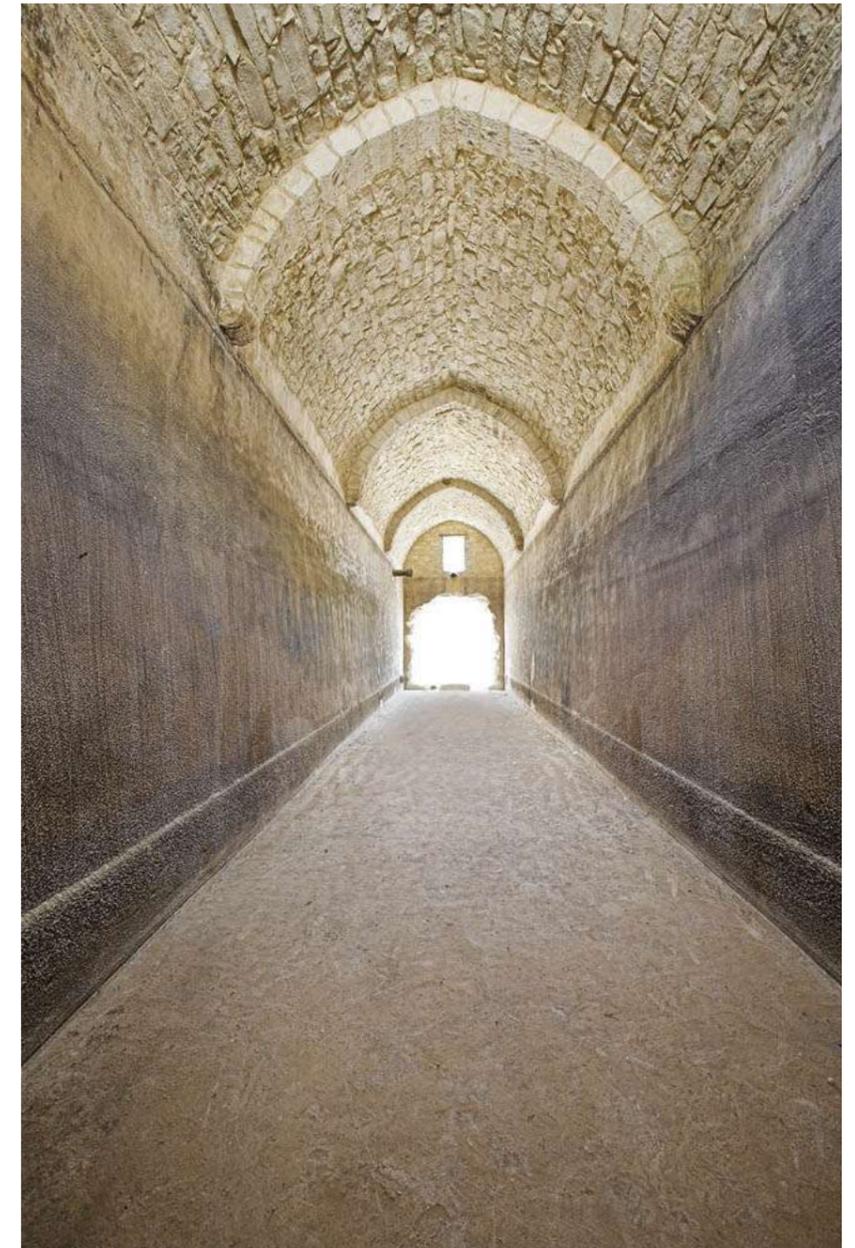


Fig.32-35: © Kristian Christou Architects



Fig.36-39: © Kristian Christou Architects

The **Limassol Water Tower** is a steel tower 43m high, supporting a large steel water tank. This tank fed the public water taps and some buildings in Limassol during the years 1930 – 1960. The water was pumped into the tank from the Pump House that has been mentioned previously, over a distance of 3km away.

It belongs to the Limassol Municipality, it is a Listed structure and stands as a monument to the technology of the time, dominating the surrounding area with its height and shape. Due to its design, the high quality of materials used and its careful construction, it still stands intact today.

The Tower's restoration and feature lighting, as well as the improvements to the surrounding area were programmed to coincide with Limassol Municipality's celebratory events for the beginning of the new Millennium in 2000.



Fig.40-41: © Kristian Christou Architects

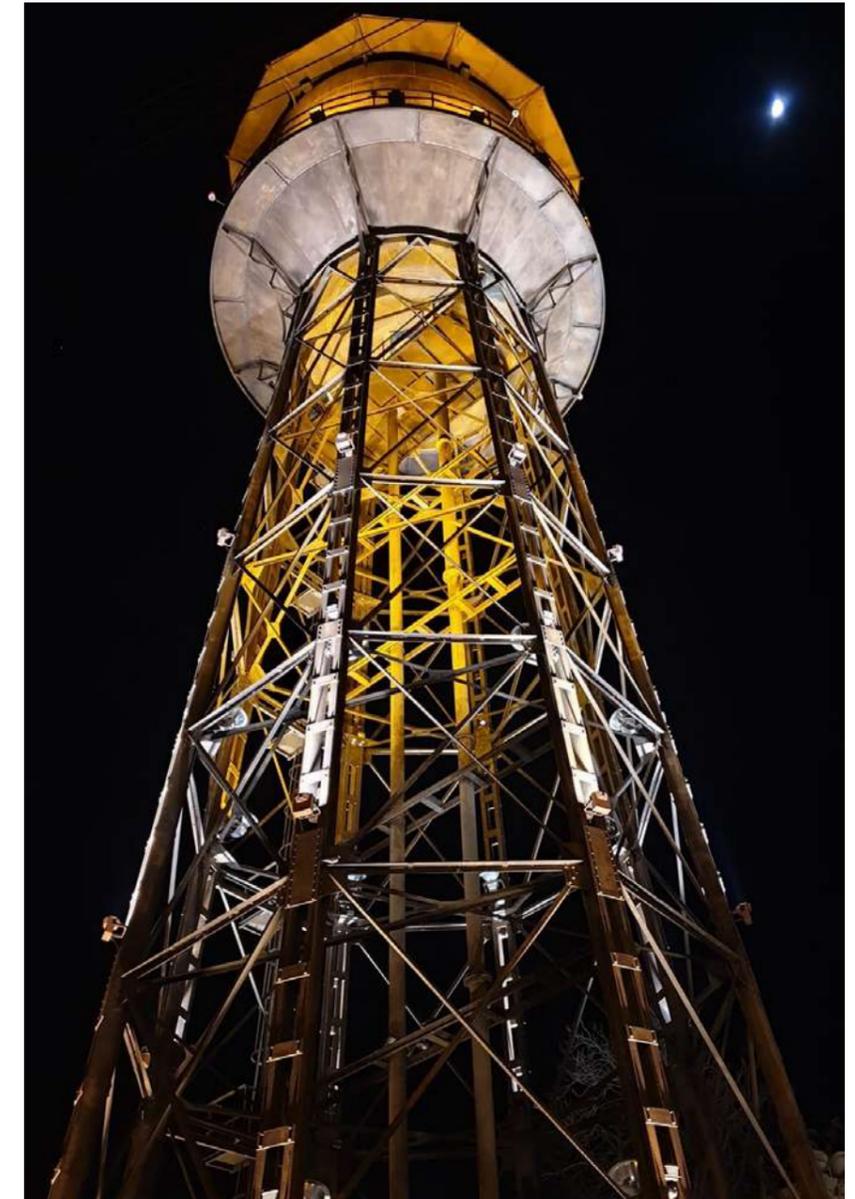


Fig.42: © Kristian Christou Architects

Climate control and Lighting.

In the new Museum building, the air conditioning is achieved through a central air handling unit positioned on the flat roof of the amenity block, concealed behind a perimeter up-stand. The air is ducted into, and out of the exhibition space through a pair of small ducts suspended just below the ceiling.

The lighting consists of general lighting with recessed fittings in the ceiling, and feature lighting which is provided for with a series of tracks and adjustable spot-lights, positioned in cooperation with the Exhibit Designer, to accentuate the various artifacts on display, the items in display cabinets, the “water wall” feature, but also allowing for low light levels to facilitate for video projection and photographic exhibitions.

Accessibility (Design for All).

Both the existing Pump House and the new Museum Building are at ground level and are thus accessible to all, without the need for special measures.

Assessment of the results

Water is an invaluable resource and is absolutely necessary for life on our planet.

The emphasizing and underlining of its value and importance is a permanent duty of State, Public Organizations and the Education System.

The above assertions become more readily understandable using visual means and interactive exhibition presentations.

For this reason, the Water Museum has proved to be popular

with people of all ages, especially schoolchildren and even the staff of the Ministry of Education.

Special school visits are frequently organized and a dedicated educational guide has been made available to accompany these groups. The Museum has also created educational games for the children.

The creation of the Water Museum came at a time when there was increased interest internationally for the restoration and re-use of large and small industries which reflect the history of technological progress and economic activities of various nations. It is also a time when people, both local and from abroad, are turning their interest to cultural tourism to learn the history and the cultural and the social development of a place.



Fig.43: © Kristian Christou Architects

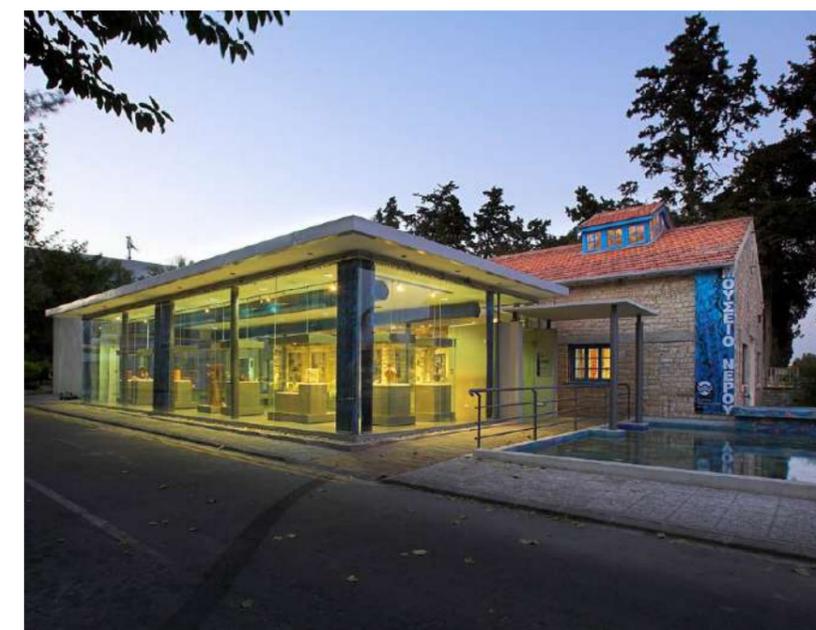


Fig.44: © Kristian Christou Architects

Apart from the important cultural role played by the Museum, it also may have the opportunity (or even the obligation) to broaden its activities by cooperating on a scientific and managerial level with the of other water services and installations in Cyprus. The Museum can and must study and exhibit older water installations - some date back to ancient times - important water tanks, wells, water tunnels, tread-mills, rainwater catchment tanks, baths, dams, water mills and other works that relate to water use.

Through the Museum, European programmes are already being utilized and in cooperation with schools in Limassol, competitions are being held for children’s essays and presentations with themes such as Water and Life, Water and the Environment, Water and the Planet Earth. In the same vein the Limassol Water Museum has established a cooperation

with the corresponding, important Museums in St Petersburg and Barcelona.

References

Kristian Christou Architects

A. J. Brooks, Architect

DYNACON

Exhibited at the Benaki Museum, Athens, 2013 – organized by the Union of Greek Architects.

Featured in “Synthesis” Magazine for Architecture and Design, Cyprus, May 2008 edition.

Featured in “Diadromos” magazine, Cyprus, April 2008 edition.

Featured in “Fileleftheros” daily newspaper, special supplement devoted to the Water Board of Limassol, May 2009.