

## **Jal Mahal (meaning “Water Palace”)**

is a palace located in the middle of the Man Sagar Lake in Jaipur city, the capital of the state of Rajasthan, India. The palace and the lake around it were renovated and enlarged in the 18th century by Maharaja Jai Singh II of Amber.

The urban lake gets filled up during the rainy season; over the years, once the reservoir became full during rainy season, it got covered with Hyacinth. During this period only the red stoned palace became approachable by boat and through a causeway and presented a spectacle on the way to *Jaipur city from Delhi*.

The lake got polluted due to sewage flow from the Jaipur city. The palace remained uninhabited, was not maintained and hence not visited by tourists. To remove the ecological damage caused to the lake due to indiscriminate pollution from the city sewerage, restoration measures were undertaken, since 2001, after a detailed study by the Government of **Rajasthan**. But serious efforts were initiated only in 2004 through a very large restoration project undertaken through a joint-venture company called the Project Development Company Limited (*PDCOR Ltd*), Jaipur, a private enterprise (a consortium led by *KGK Group*), in association with the Government of Rajasthan, with institutional support provided by the Infrastructure Leasing & Financial Services (IL&FS), a parastatal organization of the Government of India, and the Ministry of Environment and Forests (MOE&F). The basic objective of the project is conservation and management of the lake in regard to ecological development, sustainable fisheries development, and wildlife development. The purpose of the project is also to cater to the tourist industry, because Rajasthan attracts the largest number of tourists every year; **650,000 national and 175,000** international tourists are said[by whom?] to visit the state every year. Tourism in the state of Rajasthan is generally monument-centric, particularly in Jaipur and in this context Jal Mahal has an important role.

## **HISTORY**

In the past, at the location of the lake, there was a natural depression where water used to accumulate. During 1596 AD, when there was a severe famine in this region there was consequent acute shortage of water. The then ruler of Ajmer was, therefore, motivated to build a dam to store water to overcome the severe hardships caused by the famine to the people inhabiting the region. A dam was constructed, initially using earth and quartzite, across the eastern valley between Amer hills and Amargarh hills. The dam was later converted into a stone masonry structure in the 17th century. The dam, as existing now (see picture), is about 300 metres (980 ft) long and 28.5–34.5 metres (94–113 ft) in width. It is provided with three sluice gates for release of water for irrigation of agricultural land in the down stream area. Since then, the dam, the lake and the palace in its midst have undergone several rounds of restoration under various rulers of Rajasthan but the final restoration in the 18th century is credited to Jai Singh II of Amer. During this period, a number of other historical and religious places, such

as the Amer Fort, Jaigarh Fort, Nahargarh Fort, Khilangarh Fort, Kanak Vrindavan Valley were also built in the vicinity of the lake. All these places are now linked under a tourist corridor of road net work.



### **Status of water quality**

In recent years, with urbanization of Jaipur city and areas surrounding the lake, ecological system of the lake and its vicinity area deteriorated drastically. It got silted up heavily thereby reducing the surface area of the lake. The silt deposited (estimated to be about 2.5 MCM) was contaminated with effluents (untreated sewage) from the city drainage causing intense eutrophication. The ground water around the lake was also found to be highly contaminated and created serious health hazards. The rainwater combined with sewage water flow from the city resulted in the lake water emanating foul smell. Water samples collected from the lake were tested, which clearly showed that water quality was not uniform. It was extremely poor in southeast, south and southwest caused due influent nalas. The water quality parameters of BOD and total nitrogen recorded were 20 mg/L each. BOD values indicated high level of organic matter. COD denoted a very high level of oxidisable chemicals. Nitrate and phosphate content were excessive. Coliform number was more than 500 times the normal. The Chloride content was found to be fatal to plants and fishes.

### **Hydrology**

The fresh water into the lake is seasonal during rains between July and September. This flow originates from 325 small and big streams that drain the hilly catchment of the lake. But the two municipal nalas from the Jaipur city contribute the perennial flow to the lake. The volume of water in the lake has

been assessed as 3.13 million cubic metres (MCM) at the maximum water level. During lean season, it is said to be about 0.36 MCM from October to June. The depth of water at the deepest location in the lake is recorded to be a maximum of 4.5 metres (15 ft) and a minimum of 1.5 metres (4.9 ft). In addition, the stored water was also used for irrigation on the downstream end of the lake during summer months resulting in drying up of the lake in these months.

The reserve forest area of the lake catchment has several wild life species such as Deer, Jungle cat, striped hyena, Indian Fox, Indian wild Boar and leopards.

## The flora

The lake used to be a bird watcher's paradise in the past and was a favorite ground for the Rajput kings of Jaipur for royal duck shooting parties during picnics. The lake was natural habitat for more than 150 species of local and migratory birds that included Large Flamingo, Great Crested Grebe, Pintail, Pochards, Kestrel, Coot, Redshank, Marsh Sandpiper, Ruff, Herring Gull, Red Breasted Flycatcher, Grey Wagtail, but their numbers declined with the deterioration of the lake. Now, with restoration works undertaken, the birds have started visiting the lake again, though not to the same degree as in the past. In order to attract attention to the lake's condition, a private initiative of holding an annual birding fair was started in 1997. It is reported that the common moorhen, a resident species has started breeding in large numbers at the lake. The other birds seen now are the grey heron, white browed wagtail and blue tailed bee eaters. The lake was also home for a large species of the aquatic ecosystem such as fish, insects, microorganisms and aquatic vegetation.



The flora is dictated by the subsidiary Edaphic type of dry tropical forests in the catchment; the total forest area of 9.01 square kilometres (3.48 sq mi) comprises dense forest cover of 6.45 square kilometres (2.49 sq mi) area, degraded forest of 0.95 square kilometres (0.37 sq mi) and encroachment of 1.61 square kilometres (0.62 sq mi). The dominant floral specie found in the area is Dhauk (*Anogeissus pendula*), which has lean foliage. The low vegetation cover and steep gradient of the hills causes substantial erosion and the eroded material flows into the lake. On the western side, beyond the urbanized area, the

Nahargarh hills on the western side are also denuded, which has reduced its moisture retaining capacity