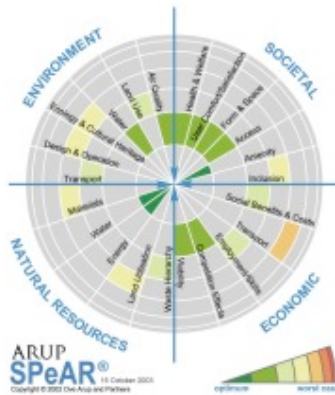




Water Cube: Sustainability

Water conservation a major focus

The Water Cube will be a model of sustainability thanks to Arup's preliminary sustainability assessment of the innovative design concept.



The SPeAR® assessment for the Beijing Water Cube

Arup Sustainability utilised its patented [SPeAR®](#) tool to assess the successful integration of four key concerns in the Development Design Report, namely economic, social, environmental and issues relating to natural resources.

The principal objective for Arup Sustainability was to deliver a range of sustainable features into the design concept for the Beijing Water Cube while focussing on the whole lifecycle and to identify the scope for continual improvement of sustainability.

Central to the design philosophy that underpins the Water Cube is the core objective of water conservation, more specifically, the design of water efficient systems. Water in Northern China is a valuable commodity and Beijing currently lacks a reliable water resource to meet existing and projected demand requirements.

A combination of poor water availability, high utilisation levels, pollution, evapo-transpiration, and unreliable climatic factors all contribute to the inherent need to develop water efficient systems that maximise reuse and recycling opportunities.

Arup proposed the reuse and recycling of 80% of water harvested from the roof catchment areas, pool backwash systems and overland flows, by incorporating water sensitive urban design principles into the Water Cube. Principally, the design seeks to reduce the reliance and pressures on local receiving waters, district water supply system and the sewerage system.

The Giant Greenhouse

The Water Cube is designed to act as a greenhouse. This allows high levels of natural daylight into the building and, as swimming pools are predominantly heating driven,

allows the scheme to harness the power of the sun to passively heat the building and pool water. It is estimated that this sustainable concept has the power to reduce the energy consumption of the leisure pool hall by 30 per cent.

Energy – It's also a smart building

Aquatics centres require a lot of heating, but by cladding the building in high tech [ETFE](#) cushions, it will be a very efficient green house. Twenty per cent of the solar energy falling on the building is trapped within the building and is used to heat the pools and the interior area.

By cladding the building in high tech ETFE cushions, the Centre will be well lit during the day, with appropriate levels of internal daylight, visual connection and visual comfort. Up to 55 per cent savings on lighting energy use can be achieved in the Leisure Pool Hall, with smaller savings expected in other areas.

To reduce the energy consumption of the Centre, the design has incorporated many energy recovery systems, like heat recovery from warm exhaust air for warming up the cold outside air (fresh air supply).

This smart building was designed to have the ability to create a comfortable environment where you want and when you want it.

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