

香港濕地公園設施的可持續發展概念

Hong Kong Wetland Park -

A Place to Demonstrate Conservation and Sustainable Practices

香港濕地公園，是亞洲首個以濕地為主題並集合教育、保育、和生態旅遊功能的設施。公園於2006年5月20日開放予公眾人士參觀。

香港濕地公園設立的原意是用作生境補償區，以彌償後海灣地區因天水圍新市鎮發展而失去的生境。在1998年，當時的漁農處（即現時漁農自然護理署）和香港旅遊協會（即現時的香港旅遊發展局）進行一個可行性研究，將這個生態補償區提升為世界級的旅遊景點，而研究結果指出有關發展可提升這個地區的生態價值，成為一個世界級的保育、教育和旅遊設施。這項計劃隨之運作，更被香港特別行政區政府指定成為千禧年基建項目之一。

香港濕地公園佔地61公頃，包括了佔地60公頃的濕地保護區和總樓面面積約10,000平方米的訪客中心。

濕地保護區擁有多種不同的生態環境，包括河溪、紅樹林、淡水沼澤、蘆葦床、泥灘和濕耕農地等。這裡是多種昆蟲、魚類、兩棲動物、爬行動物、鳥類和哺乳動物的棲身之處。濕地保護區更設有三間觀鳥屋，可讓遊客近距離觀察雀鳥。

訪客中心設有展覽廊、資源中心、放映室、禮品店、餐廳及室內遊戲區，部份設施專門用作推廣保護濕地的訊息。

Hong Kong Wetland Park (HKWP) is the first thematic recreation infrastructure incorporating function of education, conservation and ecotourism using wetlands as the main theme. It was opened to public on 20 May 2006.

The site of the Hong Kong Wetland Park was originally intended to be an ecological mitigation area (EMA) to compensate for the wetlands lost due to Tin Shui Wai new town development. In 1998, the Agriculture and Fisheries Department (now renamed as Agriculture, Fisheries and Conservation Department) and the Hong Kong Tourist Association (now renamed as Hong Kong Tourism Board), commissioned a feasibility study on expanding the EMA to a world-class wetland ecotourism attraction. The study concluded that its development will also enhance the ecological function of the EMA to a world-class conservation, education and tourism facility. It was then designated by the Government of the Hong Kong Special Administrative Region as one of the Millennium projects.

The 61-hectare HKWP comprises a 60-hectare Wetland Reserve and a 10,000 square metre visitor centre.

The Wetland Reserve is composed of diverse wetland habitats including stream, freshwater marshes, reedbed, mudflat and wet agricultural land. It is the home to a diverse population of insects, fishes, amphibians, reptiles, birds and mammals. There are three Bird Hides located in the Wetland Reserve for visitors to take a closer look at birds.

The visitor centre provides integral facilities which include exhibition galleries, resource centre, theatre, souvenir shop, café and a play area which convey wetland conservation messages.



香港濕地公園是一個世界級的旅遊景點
Hong Kong Wetland Park is a world-class wetland ecotourism attraction



公園內有一個約一萬平方米的訪客中心
The HKWP has a 10,000 square metre Visitor Centre

■ 建築及園境設計

Architectural and Landscape Design

香港濕地公園的建築設計融合了四周地貌，達至和諧的效果。香港濕地公園項目獲香港建築師學會頒發的「2005年全年建築大獎」、環保建築專業議會頒發的「2006年環保建築大獎」、香港園境師學會頒發的「2006卓越園境全場大獎」、城市土地學會2007年全球卓越獎、以及第21屆「卓越海濱」周年獎勵計劃2007年至高榮譽大獎。

The Hong Kong Wetland Park is one of the outstanding examples demonstrating the harmony of landscape and architecture. The Hong Kong Wetland Park won the Medal of the Year in the Hong Kong Institute of Architects Annual Awards 2005, the Green Building Awards 2006 - Grand Award of the Professional Green Building Council, and the Gold Medal of Landscape Design Awards 2006 - "Excellence in Landscape" of the Hong Kong Institute of Landscape Architects. Urban Land Institute's 2007 Global Awards for Excellence and 2007 Honour Award of the 21st Annual Excellence on the Waterfront Awards Programme.



香港濕地公園的建築設計融合了四周地貌

The Hong Kong Wetland Park is one of the outstanding examples to demonstrate the harmony of landscape and architecture

■ 建築物設計應用的環保概念

Green Concepts embedded in the Design

1. 建築物的綠化工程

The Green Cover of Buildings

訪客中心屋頂綠化工程及建築佈局可有效減低熱能的吸收。此外，訪客中心、票務處和濕地探索中心的外牆亦選用攀援植物作為粉飾牆壁的天然材料，營造出和諧自然的視覺效果之餘，同樣減低建築物吸收熱能。

The green roof and the orientation of the building help to reduce heat gained from direct sunshine. In addition, climbing plants are planted to cover external walls of Visitor Centre, Ticket Office and Wetland Discovery Centre. The green cover produces a harmonious visual effect to the natural environment and minimise heat gain of the buildings as well.



訪客中心屋頂的植被有助降低熱轉移值

Plantation on the roof top helps to reduce the OTTV of the Visitor Centre

2. 地源熱泵空調系統

Geothermal Heat Pump Air-Conditioning (GHP A/C) System

香港濕地公園的訪客中心利用地源熱泵空調系統，相信是本港首個採用同類型系統的项目。地源熱泵空調系統是由高密度聚乙烯管道組成，這些管道埋藏在地下50米深處，以潤黏土及水泥漿包圍。製冷過程所產生的熱能會被傳送到溫差比較穩定的泥土，達至降溫的效果。相對傳統將熱能排放至戶外散熱的系統，這個系統較為寧靜及對環境造成較少滋擾。

A Geothermal Heat Pump Air-Conditioning (GHP A/C) System is installed at the Visitor Centre. It is believed that this GHP A/C system is the first of its kind in Hong Kong. The System consists of high density polyethylene (HDPE) pipe loops buried underground at 50 metres deep and embedded in bentonite clay and cement grouting for heat exchanges with the underground soil, which is maintained at constant temperature. The heat is absorbed and dissipated into the ground when cooling is required. In comparison to the traditional heat exchange system, this keeps the surrounding environment quiet and undisturbed.



地源熱泵空調系統是由高密度聚乙烯管道組成

The GHP A/C System consists of high density polyethylene (HDPE) pipe loops



3. 採用自然光、通風及可再生能源

Natural Lighting / Ventilation and Renewable Energy

中庭和訪客中心外的洗手間安裝了天窗，充分採用了天然光線，減少電燈照明的需要，減低耗電量。

濕地探索中心的高處安裝了窗戶以達至天然通風效果。其他高能源效益及節省能源的設備包括：觀鳥屋裝置了太陽能光電板，為觀鳥屋內的風扇提供電源；訪客中心外的洗手間，裝置了風速感應器，以開動或關閉抽風系統等。

Skylights are installed at the Atrium and toilets at the outdoor to allow the use of natural light. Artificial lighting is minimised to reduce power consumption.

Natural ventilation is implemented by means of elevated window at the Wetland Discovery Centre. Other energy efficient and saving features include photovoltaic panels for oscillating fans of bird hides and the wind sensors for turning on toilet ventilation.



訪客中心的中庭設有天窗，讓自然光透入
Skylights are installed at the Atrium to allow the use of natural light



濕地保護區內觀鳥屋裝置了太陽能光電板
Photovoltaic panels are installed in bird hides for oscillating fans

4. 節約用水

Minimising Water Consumption

洗手間配備了低容量、六公升的水廁來減少沖廁的用水。

濕地保護區內的大部份淡水生境都是連繫著的，淡水透過水泵和水閘引進蘆葦過濾床。過濾後的淡水，會再次引入各個淡水生境。

6-litre water closets are used to reduce water consumption for toilet flushing.

In Wetland Reserve, all freshwater habitats are connected. By the aid of pump and gates, the freshwater is directed to various freshwater features after filtering through the reedbed.

5. 斜坡通道

Ramp Access

訪客中心內地面及一樓的展覽廊均設有斜坡通道，方便殘疾人士參觀之餘，亦減省遊客使用升降機的需要。

Circulation ramps are built throughout G/F and 1/F galleries at the visitor centre to facilitate the access of disabled visitors and minimise the use of escalator.



展覽廊的斜坡通道
Circulation ramps are built throughout the galleries

6. 選擇本地原生植物

Selection of Native Plant Species

濕地保護區種植的植物，多採用了本地原生品種，以營造與本地野外相近的環境，為本地動物提供合適的棲息地。

At the Wetland Reserve, native plant species are used extensively in landscaping work to create habitats for indigenous animal species.

7. 循環再用被棄置的物料 Reused Abandoned Materials

訪客中心和售票處南面的一道磚牆，是利用舊村屋拆卸後回收的青磚砌成，有助阻擋陽光。

此外，我們將拆卸碼頭後回收的舊防護木，放置於淡水沼澤中，作為鳥類的「踏腳木」。

從流浮山養蠔場收取被棄掉的蠔殼，造成蠔殼牆，美觀之餘亦有助阻隔太陽的直接照射，從而減低熱能的吸收。而在清拆舊警察總部大樓時留下的花崗岩磚，亦重新鋪置在入口廣場的地上，作為裝飾。

Re-used bricks from traditional village houses were used to build a brick wall on the south face of the Visitor Centre and the Ticket Office to screen the building from direct sunlight.

Old timber fenders of piers are deployed in the freshwater marshes, to serve as perching posts for birds.

Oyster shell walls are made of abandoned oyster shells collected from oyster farm in Lau Fau Shan. The oyster walls help to screen sunlight, thus reducing the effects of heat.

The granite materials from the demolished old Police Headquarter were re-used for ground paving near the Entry Plaza.



售票處外的磚牆是利用回收的青磚砌成
Reused Chinese bricks are used for building brick wall outside the ticket office



蠔殼牆的蠔殼取自流浮山的養蠔場
Oyster shells are sourced from the nearby Lau Fau Shan oyster farm

8. 再造骨料和煤灰 Recycled Aggregates and Pulverised Fuel Ash

建造過程中，總共有15,300噸再造骨料或填石用於硬填料和底層物料，另有5,600噸循環再造粗骨料用於結構混凝土中。

此外，整個項目所使用的結構混凝土含有大量循環再造骨料或煤灰，約佔結構混凝土總體積的75%。而大部分循環再用的骨料，都是從附近的回收場生產的。

In the development, a total of 15,300 tonnes of recycled aggregate or rock fill were used as sub-base, hardcore and fill materials. And a total of 5,600 tonnes of recycled coarse aggregate was used in the structural concrete.

In addition, 75% of the total amount of structural concrete contains recycled aggregate or Pulverised Fuel Ash as partial cement replacement. The majority of the recycled aggregate was generated from a nearby recycling plant.

9. 善用現有物料 Wise Use of Existing Materials

現有的售票處是由第一期訪客中心改建而成，而部份在第一期訪客中心展出的鋁片濕地動物雕塑，亦重新放置於入口廣場展出。

The existing Ticket Office was converted from the Phase I Visitor Centre. Aluminum wetland creature sculptures which have been displayed in the Visitor Centre are now being placed at the Entry Plaza.

10. 木板屏障 Shading by Timber Screens

整座建築物的遮光屏障和室外園境設施廣泛使用了來自可持續林區的木材。

Sustainable timber from identified renewable sources was used throughout the whole project as louvers to provide shading for the buildings and external landscaping work.



票務處外的遮光屏障是利用可持續林區生產的木材
Sustainable timber from identified renewable sources is used outside the Ticket Office