Site Description (Ordnance Survey Grid Ref: SD 3426 3527)
Marton Mere was formed at the end of the last Ice Age as frozen ground collapsed and a large, deep depression filled with water. The Mere has been greatly affected by historical drainage and reclamation and used as a refuse tip until 1972. The site was designated a SSSI in 1974 and became a Local Nature Reserve in 1991. It is an important breeding site for wetland birds.

Bathymetric Survey
A water depth survey (bathymetry) was done at the pond in November 2008. Depth and location data were placed in a GIS to produce the map (Fig 2.). A maximum water depth of 4.15 m was measured in the approximate centre of the pond. The central deep area is the site of the quarterly water sampling and depth profile measurements.

A full size version is available from the OPAL website.

Depth Profiles
Measurements taken by probes at every 0.5m depth show how the water body changes through the year (right). In the winter, stronger winds mix the depths of Marton Mere. In the summer, less wind, warmer temperatures and biological production at the surface results in less oxygen below 3m depth. This seasonal change in deep ponds and lakes is known as 'stratification'.

Plant Survey Summary – August 2008
A total of 42 species of plants were found at Marton Mere with 31 emergent and 11 aquatic submerged and floating leaved species. The abundance of floating leaved and submerged plant species was very high. A number of species were frequent with the fennel leaved pondweed (Potamogeton pectinatus) forming dense beds around the edge of the lake and the stonewort (Nitella spp.) occurring in the deeper water. The yellow water lily (Nuphar lutea) was also common. There was also a relatively high occurrence of filamentous algae which formed relatively dense mats. The submerged and floating leaved plants show that Marton Mere is in relatively good condition.
Zooplankton

The zooplankton fauna of Marton Mere sampled on the 15th August 2008 is fairly typical of a lake which is relatively nutrient enriched with a depth greater than 3 m. All the species recorded were planktonic. Large bodied species, such as the water flea *Daphnia (right)* were absent. The relatively large abundance of the small cladoceran *Bosmina longirostris* suggests that fish grazing pressure is quite high, as this species tends to be abundant where zooplanktivorous fish are numerous. In addition, pelagic rotifers, such as *Pompholox sulcata* and *Keratella cochlearis* were abundant, these species are characteristic of high nutrient waters. We collect samples of zooplankton from Marton Mere quarterly to see what seasonal variation there is and what affect water chemistry may have on zooplankton.

Water Chemistry

Water samples collected quarterly in 2008/9 have been analysed in the laboratory for a range of physical, chemical and biological measurements. Gathering data over the period of the OPAL project will show us how the water in the pond changes over the year and the overall quality of the water. Some of the measurements are seen in Fig. 5, right. Suspended Solids is a measure of the total amount of material floating in the water; Phosphorus is a key nutrient that can affect water quality if there is too much; Chlorophyll is the pigment in green plants and here shows how algae (phytoplankton) in the water differs seasonally. We are also measuring levels of some metals and organic pollutants; here mercury levels can be seen to vary through the year, most probably due to biological uptake by organisms.

More data is available from the OPAL website.