

# Lamesley Wetlands

<b>Contract Value</b>	£3.11M	<b>Commenced</b>	Sep 2004
<b>Contract Period</b>	Phased completion	<b>Completed</b>	Oct 2005

## Features

- Major earthworks (balanced cut & fill), excavation, filling, bunds, embankments etc.
- Settlement ponds and Reed bed lagoons
- Inlet and outlet Channels, Aeration cascades, Mixing / Splitting chambers
- Wildlife amenity and viewing areas
- M & E works, pump installation, rising main and distribution pipework
- Landscaping & Access roads

## Brief Description

This site is located near the “Angel of the North” landmark south of Gateshead and. adjacent to the River Team The project, jointly funded by Northumbrian Water and the Coal Authority, followed research undertaken at Newcastle University using a trial reed bed previously constructed by Byzak. This showed that reed beds are effective for the simultaneous co-treatment of phosphate rich sewage effluent and the iron rich (ocherous) waters from mine workings.

Reed beds are specially constructed areas with a gravel medium and an impermeable base. They require little maintenance compared to other types of effluent treatment. Their effectiveness relies on the ability of reeds to absorb and transport oxygen through the stem systems to the root zone. Here it can be absorbed by the organic material and other constituents present in the sewage effluents and in “iron” rich minewaters, resulting in their purification. The combined treatment has many advantages over separate treatment of the discharges. The synergistic relationship between the two waters results in greater removal rates for all the main contaminants. The aerated nature of the pumped mine water helps promote oxidation. Suspended solids in the sewage water

also encourage iron flocs to form and precipitate. In addition, phosphate, which is generally difficult to eliminate, is removed via sorption onto iron oxyhydroxide precipitates. At Lamesley, sewage effluent comes from Birtley STW. The minewaters emanate from the former Kibblesworth coal mine.



The principal elements of the construction were major earthworks to form the ponds and wetland areas extending to approximately 8 Hectares, installation of rising main, inlet and gravity distribution pipework, cascade structures for aeration, and associated manholes and drainage structures: The ponds were lined with bentonite and covered with 400mm depth of topsoil growing medium for the 200,000 planted reeds.

The Mechanical and Electrical package involved improvement and refurbishment of the existing STW and construction of the final effluent pumping station with pump installation, valves and controls etc for supplying the wetlands. A connection to the existing mine water outfall pipeline was made.

Environmental works included construction of footpaths, viewing platforms, information boards, fencing and access roads around the wetlands area. The scheme was registered with the Considerate Constructors Scheme



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