3.4 Radical re-design from uniform, straight channel to a sinuous, multi-channel river

**RIVER ALT**

**LOCATION** – Knowlesley, Liverpool, Merseyside SJ 435927

**DATE OF CONSTRUCTION** – 1996

**LENGTH** – 140m

**COST** – £40,000

**DESCRIPTION**

The River Alt is a small (1.5-2m wide), low energy (1:1000) urban river. In the past the river has been re-sectioned, straightened and over-deepened. The rehabilitated section runs through an area of public open space having been previously realigned to follow the road edge, close to a housing estate. Improved water quality has resulted in fish returning to some parts of the system in recent years, but further improvements in wildlife value had been limited by the poor quality of the river habitat.

Consultation with local authorities, community groups and local schools took place during the design and construction phases. Options for rehabilitation were constrained by existing planning permissions on part of the site and the existence of a wildflower meadow. The provision of public access was a very important element in the design.

The river flows beside a road and was constrained within a trapezoidal channel. Dense bankside growth often hid the small watercourse. An existing footpath on the left bank was set back from the river. A result of disposal of excavated material from the original construction of the course, the immediate bank was at a higher level than the surrounding land, effectively shielding the river from view.

As the river course moved away from the roadside, it presented the opportunity to create a wide (up to...
**DESIGN**

The 1.5 metre 30 degree banks were excavated back on either side of the existing course, creating up to a 30m width of ‘floodplain’. This work was carried out over 140m. The ‘floodplain’ comprises a ‘main’ channel and several braided channels separated by marginal berms. In order to achieve a matrix of channels, standing water and damp areas, interspersed by trees and shrubs, ground levels needed to vary. Due to the uncertainties of ground condition and in order to work with the natural conditions as much as possible, this was supervised on-site to avoid over-specification on the design drawings, and to allow for adjustments as necessary.

Bed levels were calculated from existing levels, constrained by a bridge at both ends and an outfall half way along the scheme. Fortuitously the bed level corresponded to a clay layer, making a good guide for the contractors. Working in the wet also provided a good guide to relative levels.

The existing channel was narrowed to form the deeper of the braids. The new ‘main’ course was about 25% larger and deeper than the braided channels to encourage the majority of low-flows along this

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**Trees, shrubs and marginal plant species**

<table>
<thead>
<tr>
<th>Trees at 2m centres</th>
<th>Shrubs at 1m centres</th>
<th>Marginals at ~ 4/m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>White willow</td>
<td>Common osier</td>
<td>Purple loosestrife</td>
</tr>
<tr>
<td>Ash</td>
<td>Goat willow</td>
<td>Yellow flag</td>
</tr>
<tr>
<td>Oak</td>
<td>Hawthorn</td>
<td>Water flag</td>
</tr>
<tr>
<td>Alder</td>
<td>Blackthorn</td>
<td>Common club-rush</td>
</tr>
<tr>
<td>Gean</td>
<td>Hazel</td>
<td>Common reed</td>
</tr>
<tr>
<td>Bird cherry</td>
<td>Dog rose</td>
<td>Water mint</td>
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<tr>
<td>Eating apple varieties</td>
<td>Honeysuckle</td>
<td>Gypsy wort</td>
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<tr>
<td></td>
<td>Dogwood</td>
<td>Water forget-me-not</td>
</tr>
<tr>
<td></td>
<td>Bramble</td>
<td>Brooklime</td>
</tr>
</tbody>
</table>

Trees and shrubs all 1+1 bare root transplants 600-900mm, ratio of 2:1 shrubs to trees. Random species groups of 3-5 trees and 5-7 shrubs.
These techniques are developed to suit site specific criteria and may not apply to other locations.
SUBSEQUENT PERFORMANCE 1996 – 2001

The planting has been successful, with the exception of some of the shrubs on the riverbank which were removed.

Though only indicative at this stage, on at least two occasions there has been a whole water quality class improvement between upstream and downstream on the site. Though not physically well suited to most fish, the number of sticklebacks has increased markedly.

Anecdotal evidence suggests that people are happy with the scheme. However, there is also evidence that some people were expecting something different. A short study is due in 2001 looking at the public response to the scheme.

When creating a wide, shallow and braided channel it is important to recognise the likely increase in urban rubbish deposited after flood events. If not properly managed this can seriously affect the success of the overall project, particularly from the public’s viewpoint.

Contact:

A good diverse vegetation structure has developed along and between the channel threads.