Life 3
Construction and Restoration Techniques

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Environment Agency
Highland Water - upstream of Ford in open forest area
Photos show extent of erosion problems
Restoration materials used on Life 3 project

- As dug Hoggin (aggregate / clay mix) - local source
  Total over 3 years - approximately 12000 tonnes (nil on year 1)

- Clay - minimal sand content - local source
  Total over 3 years - approximately 13500 tonnes

- Aggregate - local source, checked and approved for quality and colour
  Total over 3 years - 800 tonnes

- All Timber - Locally sourced Oak from New Forest - FSC scheme certified
Construction site machine choice

- Very important - impacts on project costs and work programme
- Life 3 machines supplied from the EA plant contracts on a lease, not hire basis, to satisfy EU budget rules for the project
- During project life machines were leased with operators and also on a self drive option
- The operated or self drive choice was made on a year to year basis - dependant on availability of EA Operational Delivery staff
Construction site machine choice

- Types of Machines used on Life 3 project:
  - 360* excavators - 14 tonne standard & zero tail swing
    5 tonne standard machine
  - Dumpers - tracked - Maruka MST 1500 fitted with greedy boards - 8 to 9 tonne payload (Eagle Plant Hire)
    wheeled dumpers - JCB 714 - 14 tonne payload
  - Tipper trucks - road legal - for movement of spoil from site to site - 6 wheel vehicles with 15 tonne payload
  - Material delivery tippers - 6 & 8 wheelers plus articulated tippers when site conditions allowed - Agreed delivery routes
Maruka MSV 1500 fitted with greedy boards on the sides to give an 8 to 9 ton payload and a 14 ton steel tracked excavator
5 ton rubber tracked excavator improving and reforming old meander on Dames Slough section of works prior to re-connection with main channel
Life 3 - Restoration techniques used on the project

- Re-connection of meanders at agreed levels
- Install clay plugs & in-filling of old channel
- Bed level raising using imported materials
- Timber revetment on fords used to prevent bed material movement
- Installation of woody debris but leaving in some existing features i.e. exposed root structures
- Cutting new channel where old channel line was lost - profiled to match existing
Blackensford Bottom section in open forest before restoration
Life 3 - bed raising process

- Confirm finished level & confirm estimate on amount of material required to raise bed
- Select stockpile areas & suitable access / egress routes for delivery vehicles
- Confirm daily tonnage of material for delivery to site
- Set up Health & Safety systems for process
Life 3 - bed raising process

- Select access / egress route from stockpile area to river
- Set up pumps, install clay plugs to river and pump water out & around section of bed to be raised
- Clear works area of debris, lay & compact hoggin fill material to finished level
- Install new clay plug downstream of completed section & repeat works above
Blackensford Bottom showing section after bed raising
Life 3 - Ford & crossing point construction

- Select stockpile areas & suitable access / egress routes for delivery vehicles
- Select access / egress route from stockpile area to river
- Prepare approach points and river bed (if river still flowing dam U/S & D/S and pump over)
- Set out & install support posts and horizontal revetment boards
Highland Water
Ford construction in open forest using local Oak in a revetment style on U/S and D/S sides of ford centre then in-filled with selected aggregates of different sizes to cause a mechanical lock on the material
Highland Water
Ford construction almost complete
- revetment installed and cut to final level
- centre section to be filled with aggregate and river bed level raised to final level
Life 3 - Ford & crossing point construction

- On river bed between boards install geo-fabric membrane and infill to finished level with selected aggregates
- Cut any exposed timber posts or boards to finished bed level
- Infill river bed on upstream and downstream sides of ford with Hoggin to finished design level
- Repeat process for all ford and crossing points
Highland Water - Ford in open forest post construction and bed raising
From Design to Digging
A list of project tasks and timescales based on Life 3 works for year 2005
These tasks had to be completed before we could take possession of the sites and start work on the ground
From Design to Digging
tasks and timescales based on Life 3 works for year 2005

- Initial Design stage - 2 months
From Design to Digging

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- Confirmed design and specification - 1 month
From Design to Digging

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From Design to Digging

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From Design to Digging

tasks and timescales based on Life 3 works for year 2005

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- Confirmed design and specification - 1 month
- Plant and Material selection, approval and Procurement - 1 month
- Consultation for next works phase - 1 month
- H& S plan, including EIA review, works programme & planning of fish rescue - 1 month
From Design to Digging

tasks and timescales based on Life 3 works for year 2005

<table>
<thead>
<tr>
<th>Task</th>
<th>Time</th>
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<tbody>
<tr>
<td>Initial Design stage</td>
<td>2 months</td>
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<td>H&amp; S plan, including EIA review, works programme &amp; planning of fish rescue</td>
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<tr>
<td>Take over site, site set up, safety induction's and works brief, fish rescue</td>
<td>3 days</td>
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<tr>
<td><strong>Total time - from design to dig</strong></td>
<td>6 months</td>
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