

## Meades Water Gardens Regeneration Project

### A Case Study

The R. Chess is one of eight classic dip slope chalk streams that flow through the Chilterns Area of Outstanding Natural Beauty. The river rises from springs in and around Chesham in Buckinghamshire and flows south eastwards for 18km to where it joins the R. Colne at Rickmansworth. In common with the majority of the UK's chalk streams, the R. Chess has been heavily modified by human activity over time. One such affected stretch, the Meades Water Gardens in Chesham, has been the focus of a recent restoration project led by the Chilterns Chalk Streams Project (CCSP).

#### Site history

The Meades Water Gardens are an important urban green space within 150m of Chesham Town Centre. The site is situated on the route of the Chess Valley Walk and is frequently used by the public. The Gardens were created in the 1970s, on the site of a mill pond that provided water for Amy Mill, which made flour – Chesham's main medieval industry. The first record of Amy (Amen) Mill in the local parish registers dates to 1616.



Amy Mill H circa 1930. Photo: S.Freese (From the collections of Buckinghamshire County Museum).

In the 19<sup>th</sup> Century, the mill was run by the Rose family until they installed an innovative steam driven mill on the other side of Amersham Road. Amy Mill stopped running c.1860 and the only visible reminder today is the old sluice gate. The mill house was demolished in 1970 to make way for the roundabout at the bottom of Amersham Hill.

The mill pond was substantially re-engineered between 1883 & 1900 to create watercress beds, with the river running in a separate channel, around them. Watercress growing was an important Chilterns-wide industry in the 19<sup>th</sup> & early 20<sup>th</sup> Centuries. Watercress grown at this site supplied London market (local residents claim that watercress from this site was supplied to the Peninsula & Oriental shipping company). Some years after production of watercress at the site ceased, the land was donated to the town by the Garrett-Pegge family. In 1979, Chesham Town Council re-landscaped the area to create formal water gardens, digging out the watercress beds and river channel to form two ornamental ponds, held back by weirs.

It was soon found, however, that the ponds began to silt rapidly accumulated in the ponds, decreasing their wildlife and aesthetic value. Lack of tree management reduced light levels in the gardens and the area became unwelcoming to the public and a focus for anti-social behaviour.

Restoration of the gardens was first mooted in the early 1990's but little progress was made until a local community partnership 'Impress the Chess', was set up, to improve the condition of the river in Chesham, in 2004. Due to the sensitivity of the site and the number of stakeholders involved, an extensive period of public consultation was required. With public backing received in 2005, for the restoration of a chalk stream channel in the gardens along with tree management, fencing and path improvements, work began on preparing a detailed plan for the work required. In early 2006 the CCSP, working with the Town Council, began the fund-raising process.

The objective of the regeneration project was to bring the site back into management, to create a more sustainable, natural river channel and to improve the gardens both for wildlife and people and to regenerate a valuable urban green space.



Upper pool looking upstream before work started, Jan 2007 *Photo: A Beechey (CCB).*



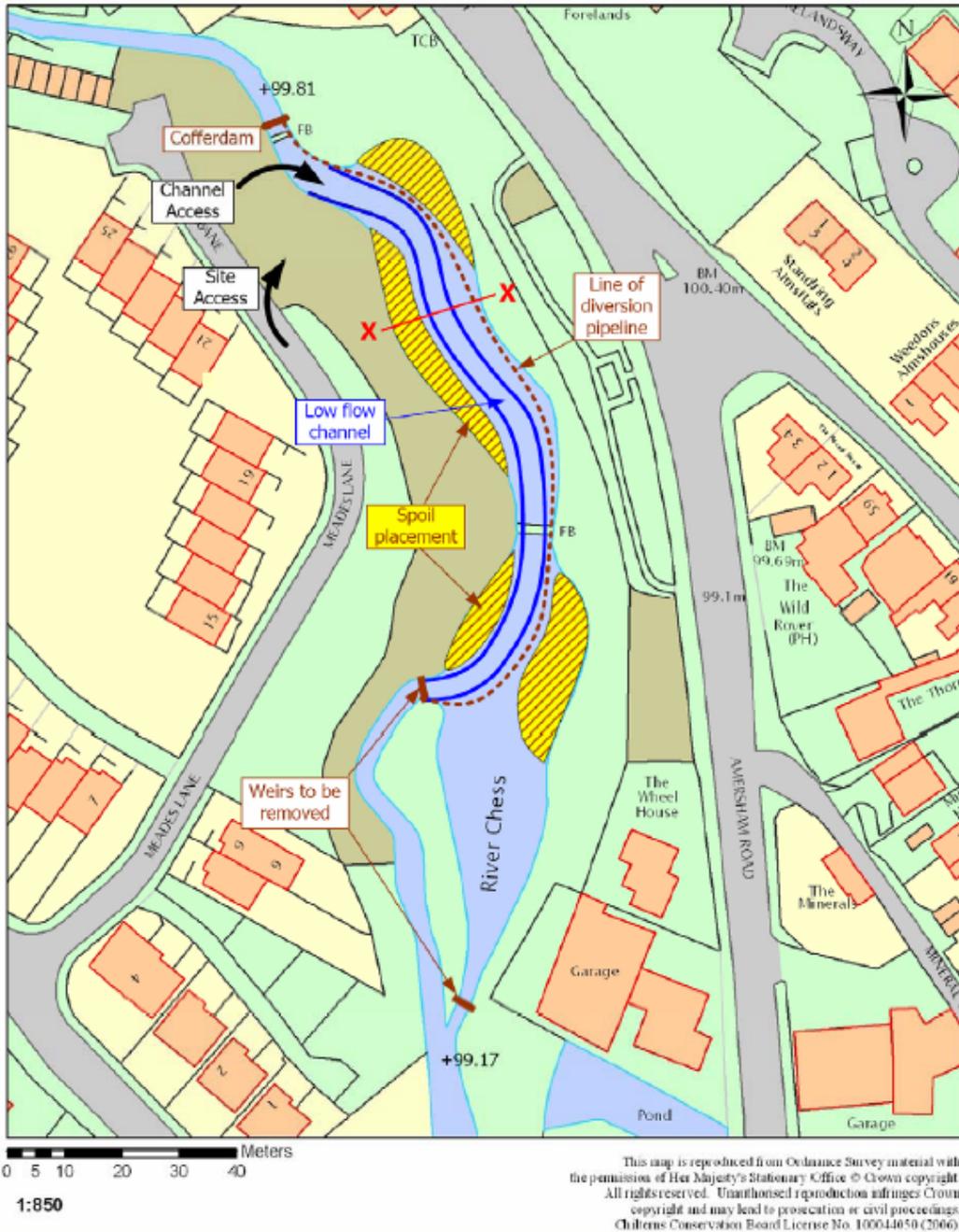
Lower pool looking downstream before work started, Jan 2007 *Photo: A Beechey (CCB).*

Due to the size of the project and the time required to develop the river restoration plan, work was split into three phases. The first phase involved carrying out an extensive programme of tree management. Working with the Chiltern Woodlands Project, a schedule of tree work was developed to improve the amount of light reaching the river and to remove dead and diseased trees. With funding in place by August and the necessary permissions obtained (part of the site is covered by a tree preservation order), the tree work was carried out in March 2007.



Meades Water Gardens: (top) before and (above) after tree work - March 2007

Alongside the development of a tree management schedule, the CCSP officer with the assistance of the River Restoration Centre (RRC) and the Environment Agency developed a plan for the restoration of the river (for details of the plan, please see the accompanying RRC document). Following receipt of Land Drainage Consent, work on the river was scheduled for the winter of 2007/8. The work was put out to tender in November and the successful contractor Willowbank Services Ltd appointed.



Plan of Meades Water Gardens site showing proposed restoration (note river flows in a southerly direction).

The river restoration work began in February 2008 and was completed in two weeks. During this time a footpath closure was put in place and the site fenced.

1. Work began with the removal of the two weirs, which had been used to retain water in the ponds, to allow the site to drain.



Lower weir removed



Construction of the coffer dam and flow diversion pipeline.

2. A temporary dam was built at the top of the site and river flow was piped around the working area. With increasing groundwater levels it was necessary to use up to three pipes to divert river flow around the site. In addition, because of springs on the site, a pump was required to drain water from the working area. The outflow from the pump was put through a series of screens to minimise silt input into the river downstream of the site.

3. Working from the upstream end of the site a new channel was dug through the accumulated silt following the line of preferential flow. Excavated silt was distributed around the site within the boundary of old ponds to avoid costly removal from site.



Newly dug channel through upper pond.



4. Working from the upstream end of the site, Nicospan, with posts at 0.5m intervals was installed to provide support to the new channel sides and to ensure separation of the silt from the gravel infill.

5. Unsorted gravel sourced locally, was imported into the new channel to for the new river bed. As a measure to prevent signal crayfish from cutting through the Nicospan, a strip of fine mesh chicken wire was stapled to the posts, before final levelling of the gravel bed. With only 60cm level difference between top and bottom of the site, careful levelling work was required by the contractor to ensure that a gradient was maintained throughout the restored length.



New channel being created, with flow diverted around front of the island.

6. With work substantially complete in the upper half of the site, work moved to the lower pool. With the headwaters of the Chess having suffered from low flows in recent years, it was decided not to create two channels but to concentrate flow in one, which would link with the existing course behind the island.

7. The channel through the lower pool was completed by joining it to the newly completed section upstream. The flow diversion was then removed. The left bank was consolidated by scraping silt from the area immediately south of the new channel to create a pond area. A low lying bund was installed in place of the weir at the front of the island to help retain water within wetland area but to allow water to flow out into the river channel in the event of high flows.



Newly created left bank with completed channel (right) and wetland area (left).



Restored river channel seen shortly after completion – Feb '08

Following completion of the river restoration attention turned to phase three of the project, which involved laying new paths, relaying the footbridge walkways, fencing and the installation of an interpretation board to explain the work that was carried out. Work was completed in June 2008 in time for the gardens to be opened by the

Mayor of Chesham on 11<sup>th</sup> July.

Colonisation of the site by wildlife, post restoration, has been rapid. With the river being re-energised by removal of the weirs, *Ranunculus* has been able to colonise the new channel and marginal vegetation has swiftly become established on the new banks, softening the channel edges. The more open nature of the gardens and refurbished paths has resulted in an increase in visitor numbers. The project has improved a valuable urban green space for both people and wildlife and serves as a case study for how local community partnerships can bring about real improvement to rivers in urban areas.



One year on: view of the restored river, looking upstream from the lower footbridge - April '09.



View downstream to lower footbridge – April '09



View from Red Lion St. Entrance (note path work incomplete) – Jan '09.

The upper R. Chess has historically supported a self-sustaining wild brown trout population until the mid 1990's when drought caused the river to dry up through the town. Because of the number of impassable weirs in the town, a legacy of milling and modification of the river for ornamental purposes, trout are unable to re-colonise the headwaters of the river, which includes the Meades Water Gardens. With the increasing frequency of droughts and the over-

abstracted nature of the catchment (a further severe drought occurred in 2005/2006) leading to more regular drying events, the Environment Agency are not considering re-seeding the trout population.

The Impress the Chess (ITC) initiative is seeking the removal or bypass of all weirs in Chesham to enable the free passage of fish up into the headwaters and to improve habitat. The initiative, working with its partners has already bypassed one major weir and removed two smaller ones. However, an impassable weir at Lord's Mill remains. Unfortunately, this weir cannot be removed and its bypass channel cannot be modified to enable fish to move around it. ITC is looking into the feasibility of installing a fish pass at this location.



Pupils from Waterside School and Julia Bradbury from BBC's Countryfile programme release brown trout fry into the river at the Meades Water Gardens – June '09.

While this work is being carried out ITC working with the Chilterns Chalk Streams Project has set up and run a Trout in the Classroom project at a local school to educate pupils about their local river and life cycle of brown trout.

### Site management and monitoring

The main objective of the project was to restore a more sustainable, naturally functioning river and to improve the quality of this valuable urban green space. The Chalk Streams Project working with the Town Council, has developed a management plan for the gardens to ensure its future upkeep and to ensure best practise in riparian management is adopted.

Unfortunately, prior to the regeneration project, there had been no monitoring of the Meades Water Gardens site. Environment Agency biological and chemical survey points are much further down the catchment. In addition, in the two years leading up to commencement of the project, the river had been dry. These two factors have made scientific evaluation of the success of the project in biological terms, impossible. Post project, the Chesham Environment Group (CEG) have carried out a survey of the wetland areas and a botanical survey of the site. Additionally, CEG plan to survey the site on a regular basis as part of a wider R. Chess River Fly Monitoring Scheme, which is currently being set up.

### Project costs

As has been previously mentioned, the project was split into three phases over an 18 month period. Additional information requested by the Environment Agency to enable a successful Land Drainage Consent application meant that the stream work was delayed. The delay resulted in a major rescheduling of the project. The completion of fencing, paths and bridge refurbishment, all being dependent on the stream work being complete, were pushed back to a third phase. To mitigate for any escalation in costs resulting from the delay, materials that could be purchased, such as the interpretation board and footbridge materials, were bought during phase 1 and stored by the Town Council. Some increasing in costs was incurred however, particularly with the path and stream work. The higher than anticipated cost of the stream work was due partly to the tender bids being higher than the RRC's indicative costs and to the much higher than anticipated groundwater levels, which necessitated the use of a pump to remove spring flow from the working site.

The finances for the project are shown below (note that costs for Project Officer and Town Council staff time are not included in the figures below).

Income	Grant (£)
Environment Agency	3,083.00
Chalk Streams Project	11,000.00
Sustainable Development Fund (Chilterns Conservation Board)	7,597.00
Veolia Environmental Trust	25,000.00
Chiltern District Council	9,000.00
Bucks County Council	2,000.00
Chesham Town Council	3,900.00
<b>Total</b>	<b>61,580.00</b>

Expenditure	Phase 1 (£)	Phase 2 (£)	Phase 3 (£)
Levels survey & sediment analysis	3,083.00		
Fence work	1,696.00		
Tree management	7,850.00		
RRC report		2,475.00	
Stream work		32,806.00	
materials for Bridge	1052.00		
Paths			10,500.00
Interpretation	618.00	1,500.00	
<b>Phase Total</b>	<b>14,299.00</b>	<b>36,781.00</b>	<b>10,500.00</b>
		<b>Total cost</b>	<b>61,580.00</b>

The regeneration of the Meades Water Gardens would not have been possible without the support of the following partners:



& the Chesham Environment Group & Rotary Club of Chesham for their valuable volunteer contribution

If you would like any further information on the Meades Water Gardens scheme or the Chilterns Chalk Streams Project, contact: Allen Beechey, Tel. 01844 355502 or email: [abeechey@chilternsaonb.org](mailto:abeechey@chilternsaonb.org)