

River Tat Restoration Scheme

Installation of woody debris, berms, pools and glides

Tributary and Main River: River Tat, River Wensum

County: Norfolk

Project start date: May 2013

Project end date: August 2013

Length: 2260m

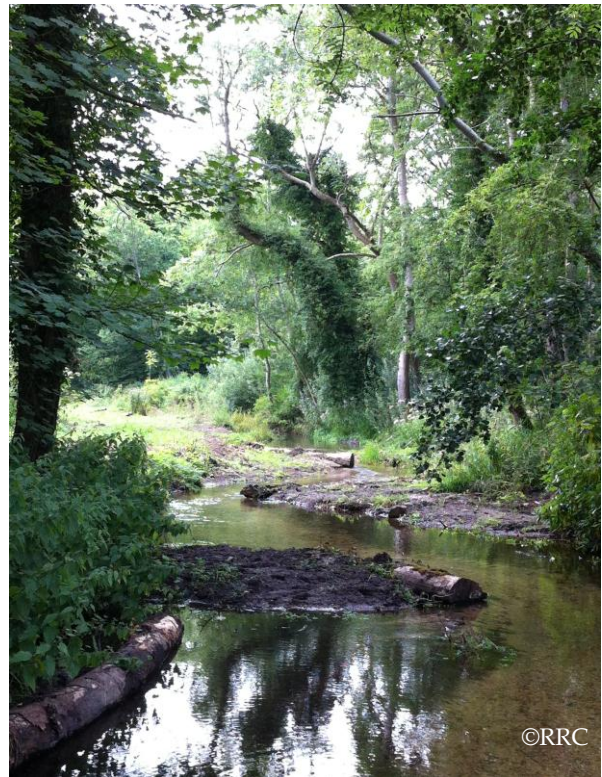
Cost: £87,200

Grid reference: TF 85044 28814 (Upstream)
TF 86701 27978 (Downstream)

Site background and objectives

The River Tat is a tributary of the River Wensum and forms part of the River Wensum Site of Special Scientific Interest. The planform and channel geometry has historically been subjected to significant modification including diversions, straightening, widening and the construction of an online lake system.

The aim of the restoration work was to 'kick start' natural morphological processes throughout the reach.



Newly installed berms, increasing sinuosity and significantly reducing the width of the channel in places – August 2013

Design and Implementation

A design report was written for the site which outlined the range of restoration measures that could be used. However, the design was extremely flexible and the location of different features was determined by a combination of expert judgement and working with existing channel features. On the ground works were delivered by an experienced Environment Agency Field Services team who have become skilled at delivering this type of restoration work.

In locations where a gravel bed was present, albeit beneath a layer of sand/silt because of the homogeneous character of the water course, gravel glides have been restored by re-distributing the bed material to form glide-pool sequences. The water velocity has been increased by narrowing the channel, using features such as earth berms and woody debris, resulting in a clean gravel bed. Deep pools have been dug to introduce variations in bed levels, providing flow diversity and creating resting areas for fish.

A key restoration measure has been the installation of Large Woody Debris (LWD). Reducing tree cover in heavily shaded areas, by selective coppicing, provides a sustainable source of material. This also allows light onto the river, promoting marginal vegetation to establish. LWD has introduced flow diversity, helping keep the gravels free from silt and providing overhead cover for fish.



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Site won woody debris installed to create flow and habitat diversity. Pool upstream and glide downstream – August 2013



Narrowing the channel has re-suspended silt and sand deposits to expose the underlying gravels – August 2013

Where excavator access was restricted, installation of these features was completed by hand. Fish refuges have been created by re-connecting floodplain drainage ditches to the river.

On the downstream section the river bifurcates. This is not considered to be a natural multi-channel arrangement but likely to be the point where a new channel would have fed water into a lake created in the early part of the 19th century. The original course is now an Internal Drainage Board (IDB) drain and the lower part has been subjected to a regular maintenance regime. After careful consideration it was decided to retain and restore both channels since this option offered the greatest ecological benefit.

Subsequent performance – RRC's views (2013)

In-channel works were only completed the day before the RRC visited and so little comment can be made about the overall success of the scheme. However, early signs are positive. Trout were using the newly dug pools as resting areas, and the in-channel works completed in May 2013 are already blending well into the river and surrounding area. In the lower reaches vegetation has begun to re-establish despite the relatively short time since works were completed. Monitoring will be carried out by the Environment Agency to determine the impact of the works on the ecology of the river.

Although undertaking works during the summer presents additional environmental risks, it is worth considering as the vegetation has a chance to establish before the majority of high flow events take place. This can have the effect of stabilising newly created features, such as berms, making them more resilient to



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flood flows. Traditional restoration schemes have tended to take place between late August through to March to avoid the main coarse fish spawning and bird breeding seasons. Works commenced earlier in the year and this has necessitated a carefully planned and stringent programme of ecological mitigation measures.

Acknowledgement of Project Partners

Natural England and Water Management Alliance



Channel narrowed with earth berms, and steep bank re-graded to encourage development of marginal plant species – August 2013



Installation of earth berm, capped with translocated bankside vegetation, to narrow channel and increase sinuosity – August 2013



Channel narrowing using oak bough with soil infill on downstream side – June 2013



Redistribution of gravel and insertion of woody debris to enhance flow diversity – August 2013



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