Sinderland Brook

1.8km of river and floodplain restoration integrated into a new housing development

After many years of planning the restoration of Sinderland Brook and its floodplain construction started in July 2004. Kevin Skinner & Nick Haycock (Haycock Associates Limited) report on the objectives of this novel project and its progress to date.

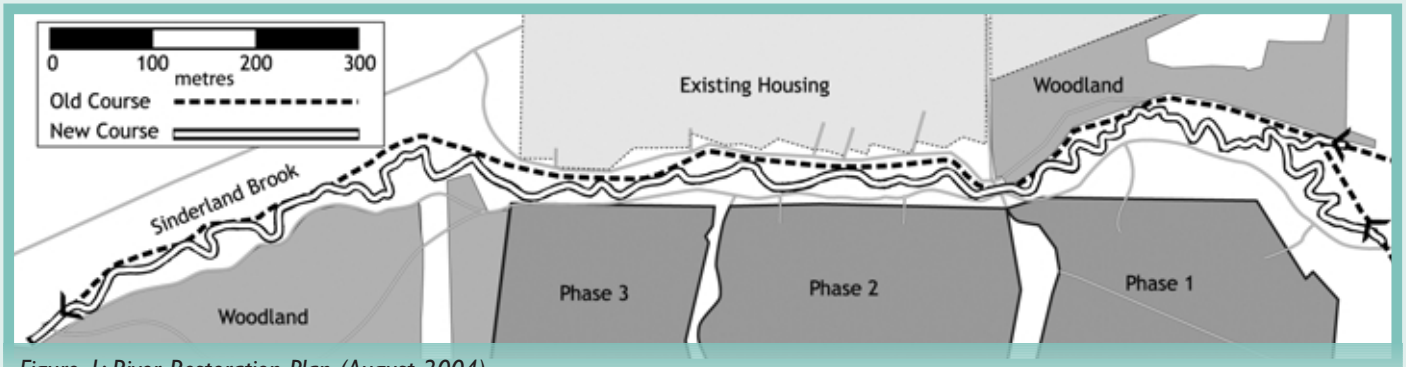

Figure 1: River Restoration Plan (August 2004)

Background

Sinderland Brook near Broadheath, Altrincham, was channelised in the late 1960s by the local water authority. In the late 1990s a proposal was put forward by the National Trust to restore 1.8km of the brook, and its floodplain. This was to support the sale of a block of 28 hectares of land for housing development adjacent to the brook. The money raised by the sale will provide endowment funds for vital maintenance and restoration work for the rest of the Dunham Massey Estate. This was envisaged when the estate was bequeathed to the National Trust.

In addition to the restoration scheme, well connected greenways and wildlife corridors as part of the Sustainable Urban Drainage System (SUDS) will be incorporated into the Taylor Woodrow (Bryant Homes)/ Redrow housing development. The two developers have been supportive of the scheme from the onset. At the far west of the development 7 hectares of community woodland will also be planted forming further conservation and recreational benefits to the area. This article will highlight the benefits of the scheme in addition to the construction progress of the river and floodplain restoration (see Figure 1) as well as the wildlife corridors to date (Winter 2004). The National Trust has largely funded the restoration work but additional money has come from Defra and the Environment Agency.

River and floodplain in restoration

The restoration of Sinderland Brook and its floodplain will have a multitude of benefits. One of the main objectives is to transform the existing channelised watercourse, which possesses only a limited floodplain, to a diverse meandering river. Accompanying the river restoration is the creation of a new valley form at a lower elevation that ranges from 30-60m wide. The newly constructed river will be between 30-50% narrower than the current channelised brook to enable more frequent interaction between the river and its floodplain. This will help restore the functioning of the river with deposition of fine sediment expected to occur on the floodplain in higher flow events. The geomorphological design of the river is broadly based on the historical channel form with the floodplain design being based on downstream reference reaches. No bank protection work will be used over the length of the restored reach. This will enable the river to freely adjust its planform and will thus be sustainable in the long-term. Intervention will only occur if erosion threatens the limits of the extended floodplain or serious instability is identified.

The creation of a new wide floodplain will have significant flood protection benefits. Currently, there is a rapid response to any rainfall event since the upstream drainage area of around 3km^2 is largely runoff from Altrincham. The construction of the new valley will provide a large increase in floodplain storage area that

Plate 1: Newly cut channel and floodplain

will cause a reduction in the flood pulse. This will also dramatically increase flood protection to the existing properties (currently Q35 raised to +Q70) while providing a very high level of protection for the new housing development (Q100 + 20%). Uniquely, the National Trust has adopted higher flood protection standards than Policy Planning Guidance (PPG25) to allow for climate change predications based in UKCIP-2 model.

A further key benefit is to the habitat. The physically diverse channel and riparian corridor will provide new and varied habitats to Sinderland Brook that previously had not existed in its former channelised state. This should benefit fish, invertebrates, mammals and birds. A key objective is to provide suitable habitat for nesting kingfishers.

Finally, the restoration work will provide significant aesthetic and recreational benefits for the local public. The area is already used for this purpose and the opening up of a large area of land will provide a valuable resource.

Sustainable Urban Drainage System

A wildlife corridor will be developed between Phase 1 and 2 of the housing development as part of the Sustainable Urban Drainage System (SUDS). The inclusion of urban attenuation ponds locally to the development will also enable a degree of groundwater regulation on the site and further extend the use of infiltration attenuation techniques within the built environment. A series of open swales will be developed to channel surface runoff into the riparian corridor of the newly restored river. This corridor will have a beneficial role in habitat creation in its own right particularly following selective planting in this area.

Progress to date

River and floodplain

During the summer of 2004 construction of the first (upstream) phase of the scheme proceeded intermittently. Bad weather hampered progress and thus only 420m of channel and floodplain have been constructed to date (Plates 1-2). Work will resume in April 2005 and will be completed by October 2005.

Plate 2: Current channelised course and extent of construction (October 2004)

No connection has yet to been made between the old channelised course and the newly restored channel (Plate 2). This should provide the opportunity for vegetation to grow in the new valley form prior to connection later this year.

SUDS

The work on the wildlife corridor was undertaken between October and December 2004. The bulk of the dig has now been completed with only the confluence of the wildlife corridor into the floodplain of the river restoration scheme remaining to be cut. This will be performed early in the construction phase in 2005.

Summary

The novel approach used for the restoration of the river and floodplain of Sinderland Brook could be used in other areas where housing to date has not been considered. The scheme will provide geomorphological, flood defence, ecological and recreational benefits and thus a truly integrative approach has been adopted.

Acknowledged Partners

The development partnership comprises The National Trust, Redrow Homes, Taylor Woodrow (Bryant). The rivers consultant team has been Haycock Associates Ltd., Mouchel-Parkman (Wigan) and TEP (Warrington).

Further information:
http://www.stamfordbrook.co.uk/
http://www.haycock-associates.co.uk

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60m corridor soil stripped (August 2004)

Corridor excavated and low flow channel form established. Note current brook is not connected. (October 2004)