Appendix 5. Case studies of urban river restoration and deculverting

A contribution to: Bradford's Becks – a Plan for the 21st Century

Adam Broadhead and David Lerner

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Aire Rivers Trust

Connecting people, places and nature

Pymmes Brook, London

Location:

Before:

After:

Benefits obtained:

- Culvert removal reduced flood risk from culvert collapse.
- £25,000 spent on additional local environmental improvements.
- Wildlife improvements.

Cost:

£1.9 million as part of total culvert renovations

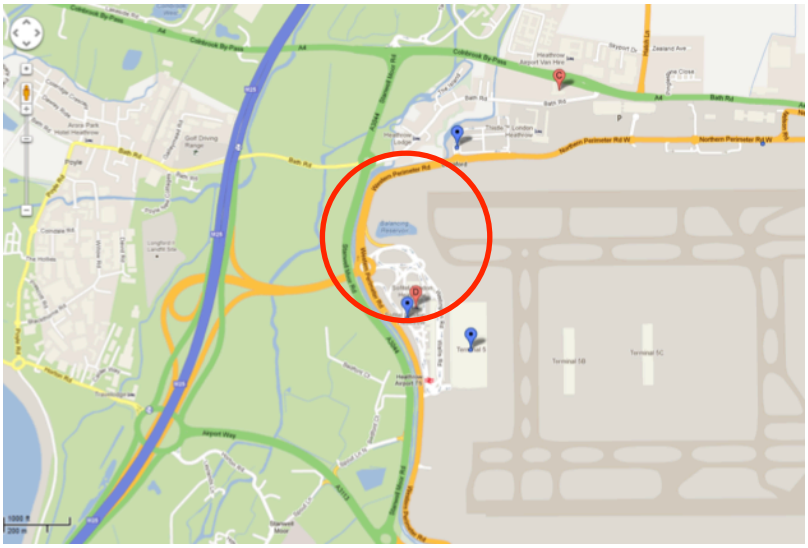
Further reading:

(CIWEM, 2007)

http://www.designforlondon.gov.uk/uploads/media/UpperLeaLandscape-projects.pdf

Twin Rivers, Heathrow

Location:



After:

Benefits obtained:

- 95% deculverted compared to 50% before.
- Improved bankside habitat for mammals.
- Improved in-channel habitat for fish and macro-invertebrates.

Cost:

£45 million

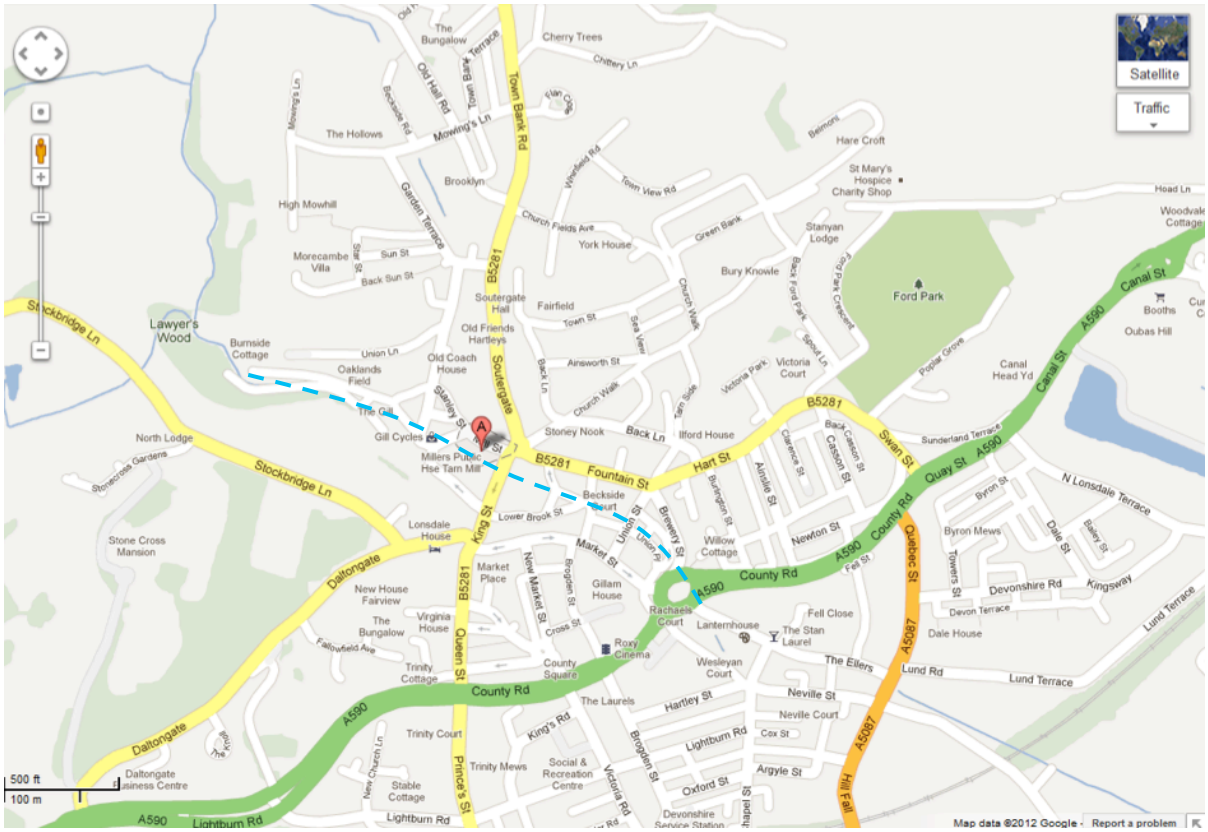
Further reading:

(CIWEM, 2007)

http://www.waterprojectsonline.com/case_studies/2007/EA%20Heathrow%20T5%20River%20Diversion%202007.pdf

Ulverston, Cumbria

Location:



Benefits obtained:	Cost if known:
• Deculverted section through town. • Kingfishers seen. • Artistic motive and inspiration.	Constructed in 1992, unknown cost.

Further reading:

(Carter, 2010)

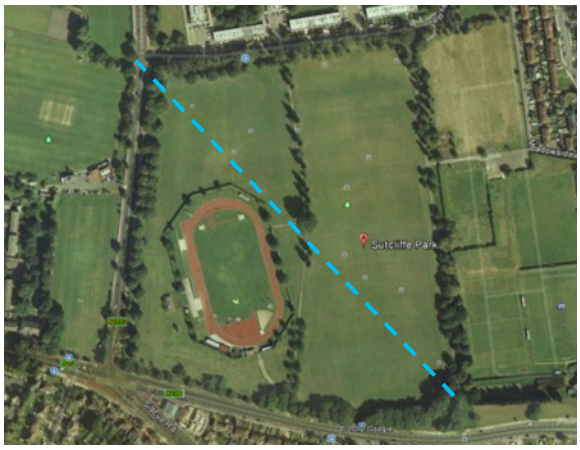
http://folk.uib.no/gsuto/ArtiklerWeb/LykkeSyse_Oestigaard/LykkeSyse_Oestigaard.pdf

http://www.ciwem.org/interviews/2008/sep/david-haley-on-the-record.aspx

Quaggy River, London

Location:

Before:



After:

Benefits obtained:

- Flood storage on Sutcliffe Park for flood alleviation.
- 73% increase in use of the park – health benefits and estimated 3 year offset costs by reduced sickness and lost working hours.
- Open watercourse, wetlands and wildflower meadows.
- Part of wider river restoration program.

Cost:

£1.1 million in 2002 at nearby Chinbrook Meadows

c. £1.60 / metre

Further reading:

http://www.qwag.org.uk/quaggy/flood.php

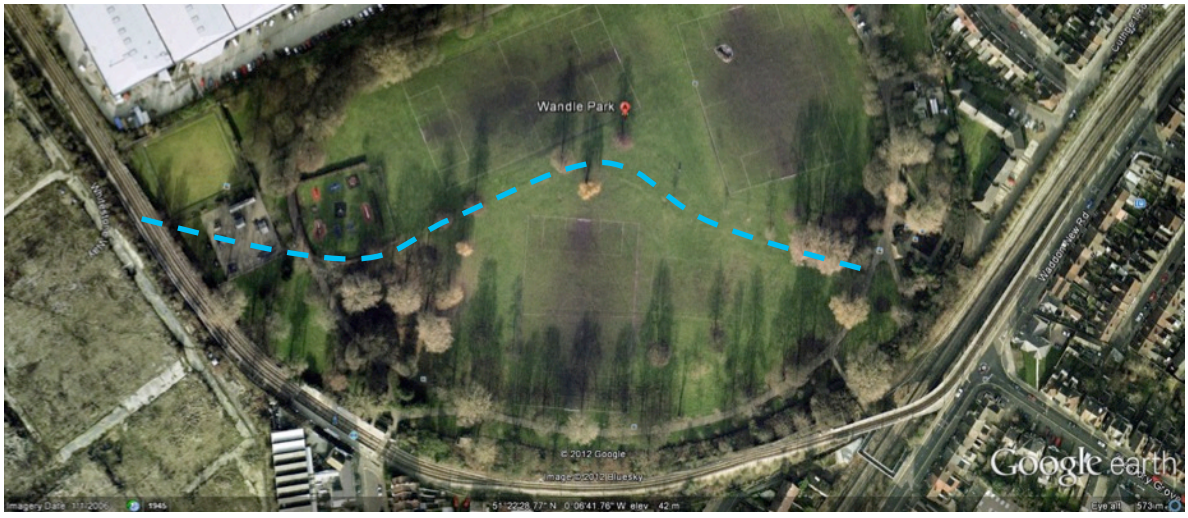
http://www.therrc.co.uk/case_studies/sutcliffe%20park.pdf

http://www.londongardenstrust.org/features/quaggy.htm

http://www.scribd.com/doc/75679498/Stream-Restoration-Case-Studies-160

River Wandle, London

Location:



Before pictures

After pictures

Benefits obtained:

- Proposed culverting in four locations a key component of Croydon regeneration plans.
- Recreation zone part of the “Wandle Trail”.

Cost:

£1 million environmental improvements as part of a nearby redevelopment site

Further reading:

http://www.thisiscroydontoday.co.uk/Exclusive-Unique-pictures-Croydon-s-River-Wandle-today/story-11365706-detail/story.html

http://www.barratthomes.co.uk/Find-a-Home/New-Developments/H3776-The-Circus-Nsq-Block-K/?mode=4&parent=H37760839&child=H37760846

http://www.croydon.gov.uk/leisure/parksandopenspaces/parksatoz/wandle/wpkhistory

http://www.e-architect.co.uk/london/croydon_regeneration_alsop.htm

http://www.urbantrout.net/rebuilding-a-river-the-wandle-in-carshalton/

http://www.ft.com/cms/s/0/7d5e2c4e-fe1c-11dd-932e-000077b07658.html#axzz1xg3obFLZ

River Ravensbourne, London

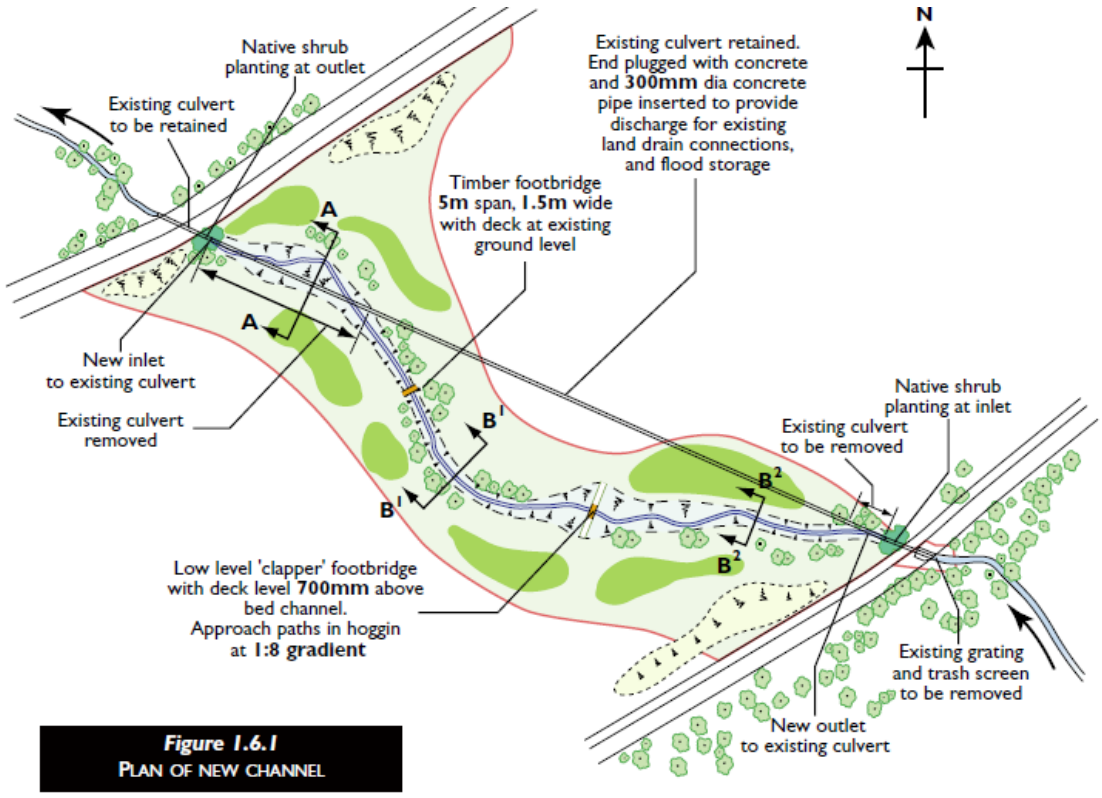


Figure 1.6.1
PLAN OF NEW CHANNEL

Before:

After:

Benefits obtained:

- More natural stream.
- Diverse in channel and bankside habitats.
- Important green corridor to upstream woods.
- Recreational facility.
- Avoided costs of culvert and trash screen maintenance, health and safety of existing culverts, increased flood storage.

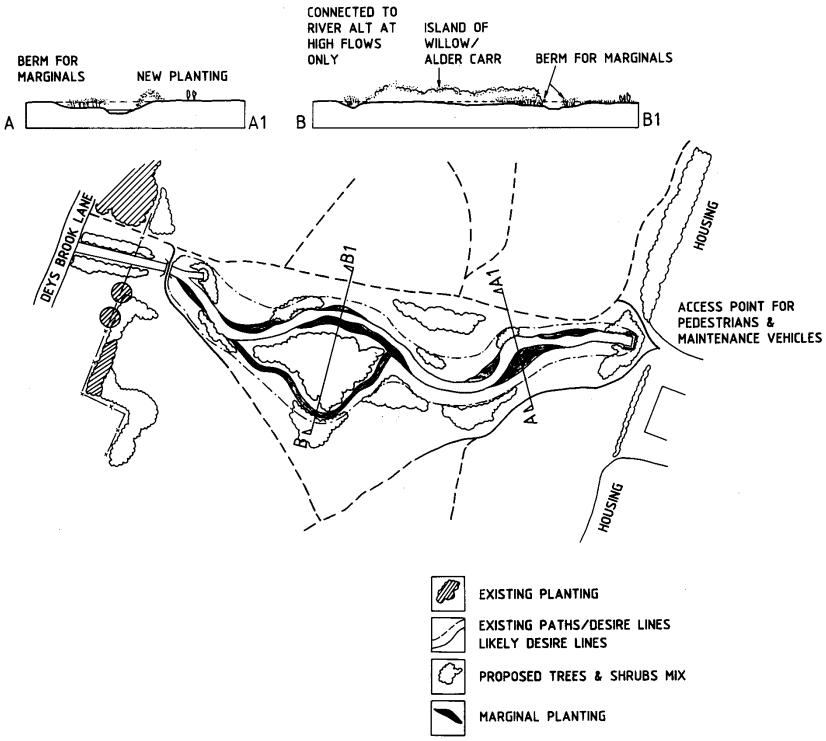
Cost if known: £127,000

Further reading:

(The River Restoration Centre, 2010)

River Alt, Merseyside

Location:



Before:

After:

Benefits obtained:

- Significant increase in range of habitats.
- Improved amenity and recreation potential.
- Increased awareness of water environment, but vandalism and litter still a problem.
- Involvement of local people and school educational benefit.
- Possible invertebrate community improvement.

Cost if known:

£25,000 design

£200,000 construction (1994-5)

Further reading:

http://www.28dayslater.co.uk/forums/showthread.php?t=71420

(Nolan and Guthrie, 1998)

River Chess, Chesham

Location:

Before:

After:

Benefits obtained:

- Proposed deculverting to improve scenery of town centre.
- As part of a making space for water approach to reducing flooding of nearby River Chess.
- Reduced culvert maintenance costs.

Cost:

Only proposals at this stage.

Further reading:

http://www.chilternvoice.co.uk/2011/06/29/urgent-repairs-needed-for-cheshams-culvert/

http://content.yudu.com/Library/A1tglx/yourCheshamissue20/resources/13.htm

Other case studies

Two excellent websites have compiled worldwide cases studies of river restoration, including many urban examples.

These are:

- www.daylighting.org.uk which focuses on deculverting project; it is managed by the Catchment Science Centre at the University of Sheffield.
- www.restorerivers.eu which has a wider remit to include all types of river restoration; it is managed by the European Centre for River Restoration.

The links below are to case studies which are urban restorations and relevant to the Bradford Beck

Braid Burn, Edinburgh

http://riverwiki.restorerivers.eu/wiki/index.php?title=Case_study%3ABraid_Burn_at_Inch_Park

Barking Creek, London Borough of Barking & Dagenham

http://riverwiki.restorerivers.eu/wiki/index.php?title=Case_study%3ABarking_Creek_near_A13

River Roding, London Boroughs of Barking & Dagenham and Newham

http://riverwiki.restorerivers.eu/wiki/index.php?title=Case_study%3ALower_River_Roding_Regeneration_Project

Mayes Brook, London Borough of Barking & Dagenham

http://riverwiki.restorerivers.eu/wiki/index.php?title=Case_study%3AMayesbrook_Climate_Change_Park_restoration_project

River Quaggy, South London

http://riverwiki.restorerivers.eu/wiki/index.php?title=Case_study%3ARiver_Quaggy-_Chinbrook_meadows

Short Heath Brook, Birmingham

http://riverwiki.restorerivers.eu/wiki/index.php?title=Case_study%3AShort_Heath_Brook_Project

Bibliography

Carter, J. (2010) 'Searching For The Molendinar: Unearthing Glasgow's Hidden Past', in Syse, K. V. L. and T. Oestigaard (*ed*) *Perceptions of Water in Britain from Early Modern Times to the Present: An Introduction*, Bergen: University of Bergen Press, 83-116.

CIWEM (2007) *De-culverting of Watercourses* (WWW), London: Chartered Institution of Water and Environmental Management. (http://www.ciwem.org/policy-and-international/policy-position-statements/de-culverting-of-watercourses.aspx; 25 October 2010).

Nolan, P. A. and N. Guthrie (1998) 'River rehabilitation in an urban environment: examples from the Mersey Basin, North West England', *Aquatic Conservation: Marine and Freshwater Ecosystems*, 8, 5, 685-700.

The River Restoration Centre (2010) *The River Restoration Manual* (WWW), Cranfield: Cranfield University Press. (http://www.therrc.co.uk/rrc_manual_pdf.php; 20/08/2011).

Note:

Map and satellite images from Google Maps and from Ordnance Survey (Edina Digimap).

All image references supplied in further reading where known.