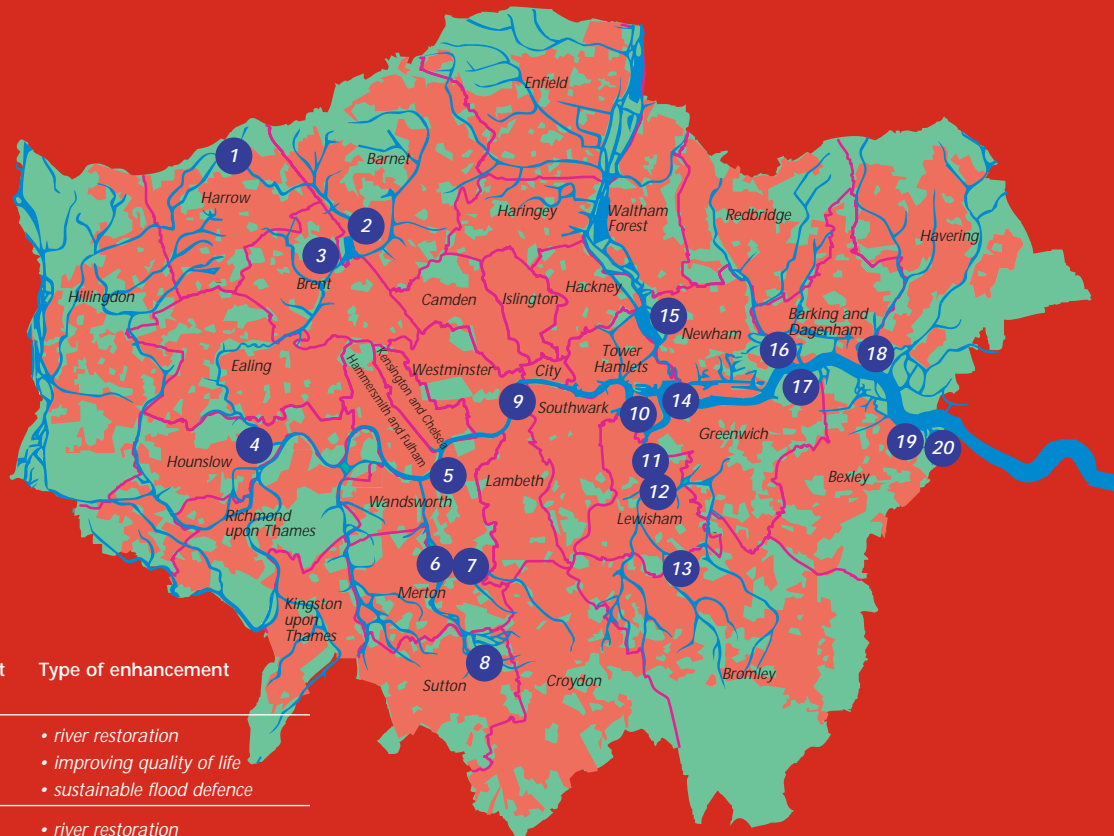


CASE STUDIES



Case study	Development type	Type of enhancement
1 RAF Stanmore, Stanmore	• residential	• river restoration • improving quality of life • sustainable flood defence
2 Brent Cross, Hendon	• retail park	• river restoration • improving quality of life • restoring land • delivering biodiversity
3 Tokyngton Park, Tokyngton	• environmental improvement	• river restoration • delivering biodiversity • improving quality of life
4 Brentford Regeneration, Brentford	• mixed	• sustainable flood defences • delivering biodiversity • improving quality of life
5 Wandsworth Riverside, Wandsworth	• mixed	• sustainable flood defences • delivering biodiversity • improving quality of life • restoring land
6 Wandle Park, Colliers Wood	• environmental improvement	• sustainable urban drainage • river restoration • sustainable flood defences • restoring land • improving quality of life
7 Priory Park, Colliers Wood	• retail park	• sustainable urban drainage • improving quality of life • sustainable flood defence • delivering biodiversity
8 Culvers Avenue, Carshalton	• residential	• sustainable urban drainage • restoring land • improving quality of life • river restoration • sustainable flood defence • delivering biodiversity
9 Tate Modern, Southwark	• art gallery	• improving quality of life • sustainable flood defence
10 Lockes Wharf, Isle of Dogs	• residential	• improving quality of life • sustainable flood defences • delivering biodiversity
11 Deptford Creek Regeneration, Deptford	• mixed	• sustainable urban drainage • improving quality of life • sustainable flood defences • delivering biodiversity

Case study	Development type	Type of enhancement
12 Brookmill Park, Lewisham	• light railway system	• improving quality of life • river restoration • sustainable flood defences • delivering biodiversity
13 Worseley Bridge Road, Bromley	• residential	• improving quality of life • river restoration • sustainable flood defences • delivering biodiversity
14 Greenwich Peninsular, Greenwich	• residential, leisure and commercial	• restoring land • improving quality of life • sustainable flood defences • delivering biodiversity
15 Leyton Relief Road, Leyton	• road scheme	• sustainable urban drainage • restoring land • sustainable flood defences • delivering biodiversity
16 Fresh Wharf Estate and Hewett's Quay, Barking	• industrial and retail	• improving quality of life • sustainable flood defences • delivering biodiversity
17 Gallions Reach Urban Village, Thamesmead	• residential	• sustainable urban drainage • restoring land • improving quality of life • river restoration • sustainable flood defences • delivering biodiversity
18 Channel Tunnel Rail Link, Dagenham	• rail scheme	• restoring land • river restoration • sustainable flood defence • delivering biodiversity
19 BICC Cables, Erith	• car park	• sustainable urban drainage • improving quality of life • delivering biodiversity
20 Morrison Pier, Erith	• mixed	• improving quality of life • sustainable flood defence

RAF Stanmore



Location RAF Stanmore, North West London
Rivers / Catchment Edgware Brook / Brent catchment
London Borough Barnet
Developer Laing Homes
Date Started / Completed Under construction
Types of Enhancement Improving Quality of Life
River Restoration Sustainable Flood Defence
Development Type Residential
Contact details Customer Services, Environment Agency, North East Area, Apollo Court, 2 Bishops Square, St Albans Road West, Hatfield, Herts. AL10 9EX.

Site History

Following the cut backs in the armed forces during the 1990's this site became surplus to military requirements and is now being developed for housing. The RAF site is crossed by the Edgware Brook near to its source within the grounds of Bentley Priory, a designated Site of Special Scientific Interest (SSSI).



Edgware Brook – currently runs in culvert beneath site

Environment Agency Interests

- surface water attenuation
- flood alleviation
- river restoration
- habitat creation

Description of Scheme

The redevelopment of this site has provided the opportunity to de-culvert 70 metres of the Edgware Brook which crosses the south west corner of the site. Extensive consultation has been undertaken with local residents to help shape the final site design and as a result the newly opened watercourse will link to Temple Pond, an existing feature within the site adjacent to the route of the Brook. The newly opened channel will be restored to a more natural state with appropriate planting and re-profiling of the banks.

A buffer zone will surround the de-culverted Brook and in order to provide additional flood storage to benefit the wider Brent catchment, an earth bund and storage pond will be incorporated adjacent to the watercourse.

Prior to the demolition of the site there had been localised flooding resulting from water overflowing from Temple Pond. Residents were concerned, so the RAF undertook to repair the existing weir structure that controls water levels within the pond. This responsibility has now been passed to the developer who has undertaken to repair the control structure within the pond and raise the banks of the pond to increase flood storage levels.



Proposed route of the Edgware Brook

There are flooding problems associated with the upper reaches of the Brent catchment and therefore it has been particularly important to manage surface water flows and runoff as part of this scheme. Increasing the amount of impermeable area within the upper reaches of the catchment could have a dramatic impact on flooding downstream. The Agency is implementing a flood alleviation scheme for this catchment which will utilise areas of open green space, such as parks, to act as flood storage areas.



Temple Pond – overflow weir

Brent Cross



Location Hendon, North West London
Rivers / Catchment River Brent / Brent catchment
London Borough Brent and Ealing
Developer Hammerson Properties
Date Started / Completed Pre construction – planning permission
Types of Enhancement Restoring Land
 Improving Quality of Life
 River Restoration
 Delivering Biodiversity
Development Type Shopping centre extension and business park
Contact details Customer Services, Environment Agency, North East Area, Apollo Court, St Albans Road West, Hatfield, Herts. AL10 9EX.

Site History

Located at the junction of the A406 and the M1, the Brent Cross centre has been a focus for shopping in the north London area for a number of years. Current constraints upon car parking and the demand for new facilities have meant that the owners of the site are looking to expand their current facilities. This has provided an opportunity to realise a number of environmental enhancements along the River Brent that flows adjacent to the site.

Environment Agency Interests

- river diversion and enhancement
- improved public access
- improve visual amenity of river corridor

Description of Scheme

Originally much of the Brent Cross site was a shallow part of the Brent Reservoir and the River Brent ran further to the south than its present course. In the late 1930's, this part of the reservoir was filled in for the construction of the North Circular Road and the river diverted along its present course. Due to concerns about flooding, the river was straightened within an oversized concrete channel in order that flood flows could be accommodated within the channel.

The proposed diversion of the river presents a number of challenges, including flood management, the possible threat of contamination, and the opportunity of an improved river corridor. The river diversion has been planned as a 'two stage' channel, to allow for times of both low and high flow, and to provide a number of improvements to the river corridor. The increased sinuosity of the new channel, made possible by its diversion to the south, will naturalise the new river corridor. A new weir will help to retain a greater depth of water and the riffles will assist in the oxygenation of the water. This will improve conditions for all forms of aquatic life, especially for fish. The provision of the riffle and weir will also allow fish migration up stream of this point.

On the northern side, the bank will be shallow and a new footpath will be set back from the river. This will enable the creation of a green corridor adjacent to the river and allow passage of wildlife along the river

edges. The banks on the northern side will grade up from the footpath and are designed to form the adjacent flood channel at times of high flows in the river. On both sides of the river, a continuous strip will be provided along the footpath, to allow the migration of animals along the dry margins of the river corridor. Wherever possible, softer forms of bank protection will be used, such as timber edging. At several locations, reed beds are to be incorporated which will soften the edges of the bank, and also provide marginal vegetation for additional habitats. A café is planned incorporating a wide terrace down to the river. Disabled access will be provided along the footpath with several ramps at strategic points being integrated within the channel diversion.



River Brent – existing channel

The whole area has been identified within Brent Unitary Development Plan as an area for future development and is linked closely to the redevelopment of the Cricklewood lands, an area that adjoins the North Circular to its southern side.



River Brent – proposed channel realignment

Tokyngton Park



Location
Tokyngton Park, Tokyngton,
North West London

Rivers / Catchment
River Brent / Brent catchment

London Borough
Brent

Developer
London Borough of Brent

Date Started / Completed
Pre construction – in design

Types of Enhancement
Improving Quality of Life

Delivery Biodiversity
River Restoration

Development Type
Environmental Improvement

Contact details
Customer Services:
Environment Agency
North East Area,
Apollo Court,
St Albans Road West,
Hatfield, Herts. AL10 9EX.

Wembley Project
London Borough of Brent,
3rd floor Brent House,
349 High Road
Wembley, HA9 6BZ



New footpath and cycleway

Site History

The London Borough of Brent is developing this scheme as one of a group of regeneration initiatives in the Wembley area, with assistance from a number of partners. Notably, these include London's Waterway Partnership (LWP), London

Development Agency (LDA), the Environment Agency and UK River Restoration Centre (RRC). LWP is funded by a number of partners whose aim is to secure environmental and social improvements for river corridors across London. As well as improving the immediate environment, this scheme has so far provided the opportunity for the local communities to influence through consultation and 'Planning for Real™', a major environmental project in their area. A package of regeneration funding is being assembled with partners across London that will enable the scheme to progress to implementation during the next two years.

Environment Agency Interests

- maintain the integrity of the flood storage area and river flood defences
- improve local environmental awareness
- restore the natural river channel
- improve public access to the river corridor

Description of Scheme

The scheme centres on the restoration of the River Brent within a heavily urbanised catchment and park setting. Currently, the site offers limited benefits in terms of local amenity, a route to employment, natural habitats and ecology. Funding has enabled the local community to become involved in the rejuvenation of their immediate environment, which will involve a remodelled river corridor. The intention is to enhance the river corridor, through partial realignment and bank reprofiling, making use of innovative but established techniques alongside traditional engineering methods to provide a stable, pleasant and safe local riverside that meets a variety of needs.

Where the River Brent emerges from its culvert at the north end of the site, new access will be provided to link the industrial estate with the enhanced riverside. This will create a linear through route for pedestrians and cyclists to public transport systems and areas of employment and retail, with the integration of appropriate lighting to create a safer environment.

An improved landscape and access regime will better integrate recreational opportunities in the park with the river as a key landscape feature, and with surrounding residential areas. Existing wildlife areas may be extended along the park, whilst the re-profiling of the riverbanks is intended to improve safety awareness and access.

The park provides temporary flood storage down stream of the Wealdstone Brook and Brent Reservoir and the project is being designed to ensure this important function is retained. The Agency is assisting in developing this project through provision of technical assistance, and as the statutory body with responsibilities for the main river, will continue to have a leading role in the implementation and onward management of the scheme.



Proposed changes to the park

Tokyngton Park – aerial view



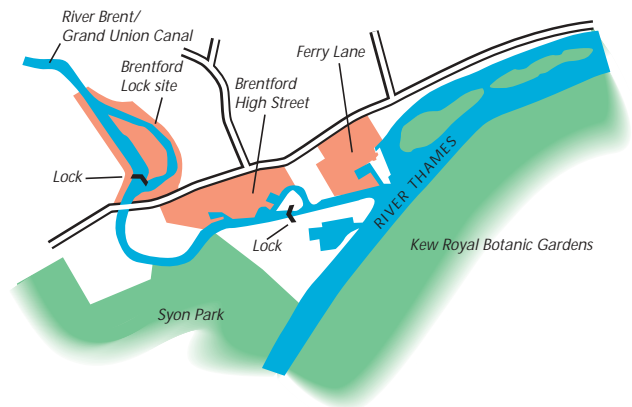
Brentford Regeneration



Location Brentford, West London
Rivers / Catchment River Brent, River Thames and Grand Union Canal / Brent and Tidal Thames catchments
London Borough Hounslow
Developer British Waterways, Charles Church, St George Plc and Rialto Homes
Date Started / Completed Pre construction – due to start on site in 2001
Types of Enhancement Improving the Quality of Life, Sustainable Flood Defences, Delivering Biodiversity
Development Type Urban regeneration, including residential and industrial development
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.

Site History

This historic area of London has suffered economic and social decline for many years. The Brentford area is the centre of a Single Regeneration Budget (SRB) project focusing on regenerating the area. The Grand Union Canal traditionally provided the main freight transport link between the Midlands and the River Thames at Brentford. The river and canal provide an ideal focus for rejuvenation of the area.



Ferry Lane – existing flood defences

Environment Agency Interests

- reviewing, maintaining and improving the flood defences
- improving public access and recreational use of the river
- creating new riparian habitat
- integrating the river into the overall regeneration plans for the area

An 'environmental balance sheet' has been used by the Agency on these schemes to ensure that any environmental losses are adequately compensated by appropriate enhancements.



Ferry Lane – tidal dock which forms part of the site

Description of Schemes

The Agency has been involved in three housing schemes within the Brentford area designed to achieve environmental, social and economic improvements.

- **Ferry Lane** – The inter tidal zone adjoining this site provides the ideal habitat for the Two Lipped Door Snail (a red data book species). As part of repairing the current flood defence walls, protecting important habitats and creating new riverside access, various ecological surveys were undertaken and an ecological master plan for the site was prepared. The scheme also took the opportunity to increase tidal flood storage.
- **Brentford High Street** – This proposed project aims to improve the current flood defences adjoining the site. Other additional benefits include increased flood storage capacity; sensitive river management to improve riparian related habitat; improved access; and new moorings.
- **Brentford Lock** – Regeneration of this site has included the creation of a wetland area, new tidal habitats, improved public access and visual amenity, and the provision of new mooring facilities for canal boats.



Brentford Lock – currently being redeveloped

Wandsworth Riverside



Location Wandsworth, South West London
Rivers / Catchment River Thames and River Wandle / Tidal Thames and Wandle catchments
London Borough Wandsworth
Developer Persimmon Homes Ltd
Date Started / Completed Pre construction – planning permission
Types of Enhancement Restoring Land
Improving Quality of Life Sustainable Flood Defences
Delivering Biodiversity Mixed development
Development Type Customer Services
Contact details Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.



Wandsworth Riverside – artists impression

Site History

This enhancement site forms part of a wider regeneration initiative being led by the London Borough of Wandsworth. The 3.9 hectare site, which was formerly owned by Shell, is strategically important being located at the mouth of the River Wandle where it meets the River Thames. The site has been vacant for the past ten years, but was only cleared of



Wandsworth Riverside – plan view

buildings four years ago. Originally the site was an island within the braided channel of the Wandle mouth and the proposal attempts to reflect this historic drainage pattern in their design. The current proposal for the site is a mixed use development including retail, offices, recreational and residential activities.

Environment Agency Interests

- creating and improving tidal habitat
- developing access to the river
- replacing and improving degraded flood defences
- improving visual amenity

Description of Scheme

Prior to the formulation of any proposals the developer prepared an ecological master plan. Identification of the environmental assets of the site allowed important

landscape, historical and ecological features to be fully reflected in the final design. The proposals involved innovative techniques including an extensive area of ‘ecological roofs’ on the affordable housing units providing high level, secure nesting and roosting opportunities for birds.

Sustainable urban drainage techniques have been incorporated across the site. Surface water drainage from roofs will be stored in holding tanks for irrigation use during the summer period. Surface water will also be channelled to surface water ponds in the ecology zone and semi public gardens. Any overflow from these areas will be taken by surface water channel to the public drains or the ecological terraces. Improved access is an important feature of the design with split level footpaths being incorporated along the Thames to separate fast tracking cyclists and



Wandle mouth – current flood defences

pedestrians from those peacefully enjoying the riverside.

The tidal flood defences at the mouth of the Wandle are currently in a poor state of repair and the project intends to retreat the current line of defence and create a new area of foreshore. Inter tidal

terraces will be created along 60 metres of the river wall at the confluence of the River Thames and Wandle. The resultant wetland will support a diverse range of plant species. This will also provide high quality habitats for invertebrates, fish, birds and bats currently not found in the vicinity. The site also provides one of the most important locations along the River Thames for wading birds. In order to minimise the threat of disturbance a number of barges will be moored within the river to offer birds an alternative roosting habitat in the immediate area.

Wandsworth Riverside – site boundary



Wandle Park



Location Wandle Park, Colliers Wood, South London
Rivers / Catchment River Wandle / Wandle catchment
London Borough Merton
Developer London Borough of Merton, Groundwork Merton and Environment Agency
Date Started / Completed 1999 / 2001
Types of Enhancement Sustainable Urban Drainage, Restoring Land, Improving Quality of Life, River Restoration
Length of Enhancement 500 metres
Development Type Environmental Improvement
Contact details Environmental Improvement Team – Flood Defences, Environment Improvements South East Area Office, Frimley Business Park, Frimley, Camberley, Surrey. GU16 5SQ

Site History

The River Wandle in Wandle Park was a silt laden concrete channel that was both physically unattractive and



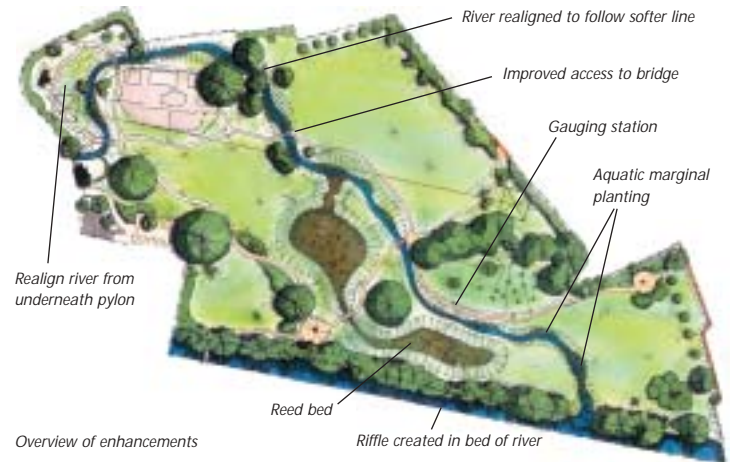
River Wandle – before restoration

potentially dangerous. The scheme was a result of a partnership between the Agency, the London Borough of Merton, The National Trust and Groundwork Merton. A variety of funding sources were utilised, including the European Life Fund,

Derelict Land Grant, Single Regeneration Budget (SRB2), Landfill Tax credits and commercial sponsorship. The scheme also involved funding from a Section 106 agreement secured as part of a development project by Sainsburys in the Colliers Wood area.

Description of Scheme

The diversion of the River Wandle carried out in the summer of 1999, was the main construction element involved in the scheme. This included a new flow gauging station, removal of the sterile concrete channel, construction of a reed bed for treating poor water quality, additional flood storage, tree surgery and footpath creation. The second phase of the scheme included the provision of play equipment, additional footpaths, new brick wall and railings to the park boundary, and the restoration of the two drinking fountains in the park.



The scheme presented a number of challenges including an area of contaminated land which required the construction of a containment cell. Retaining public access to the area during the construction process and maintaining the sewer outfall throughout also presented a number of problems.

The project was officially launched in November 1999 by a number of dignitaries, including Beverley Hughes MP, Minister for Regeneration at DETR, who confirmed Government support for this and similar projects. The site has also been visited by the River Restoration Centre and senior engineers from Israel and Venice.

Environment Agency Interests

- providing additional flood storage
- updating the gauging station and improving flood warning
- promoting fish migration
- improving public access and amenity
- the use of reed bed to trap pollutants and silts
- providing a demonstration site for urban river rehabilitation
- ensuring the scheme was implemented with the support of all parties, including residents groups



River Wandle – restored channel

The project partners have now embarked on a five-year monitoring plan to measure the success of the project.

Priory Park



Location Colliers Wood High Street, Merton, South London
Rivers / Catchment Pickle Ditch / Wandle catchment
London Borough Merton
Developer Pillar Development Limited, The National Trust and Groundwork Merton
Date Started / Completed Completed – 2000
Types of Enhancement Sustainable Urban Drainage
Improving Quality of Life Sustainable Flood Defence
Delivering Biodiversity Length of Enhancement 250 metres
Development Type Retail park
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.
Groundwork Merton 14 The Apprentice Shop, Merton Abbey Way, Watermill Way, London, SW19 2RD



Priory Park – before redevelopment

Site History

This enhancement scheme is located adjacent to the site of the former Merton Priory. Pickle Ditch follows the original line of the River Wandle prior to its diversion during the 13th century to service the mills of Merton Priory. The name is derived from the old saxon word 'pightle', which means small piece of land. The sites recorded history dates back to the 12th century when King Henry I gave Merton to his godson. It was he who subsequently founded the original mill on this site. In more recent times the sites became associated with the arts and crafts movement of the 19th century with both William Morris and Arthur Liberty locating their factories close to the site.

Environment Agency Interests

- river restoration and landscaping
- improving public access
- improving public awareness and education

Description of Scheme

This scheme involved 250 metres of channel enhancements to the Pickle Ditch, a tributary of the Wandle, as part of the development of a retail park. Unfortunately the developer, working in co-operation with Groundwork Merton, had to contend with various geo technical problems across the site, which has meant that the concrete channel forming the bed of river has had to be retained. To overcome these problems fixed planters were used within the channel using hazel faggotting to stabilise and protect in channel planting.

Aquatic plants were also taken from adjacent watercourses to ensure continuity of species within the local environment. Natural gravels were also spread across the existing bed of the river to help naturalise, as far as possible, the channel and provide additional habitat. The

site is also colonised by a rare London plant species, Narrow Leaved Water Plantain, and particular attention was taken to conserve and enhance this species.

Improvements to the river corridor include a new footpath which has been adopted as part of the Wandle Trail, and interpretative information which has been incorporated into the hard landscaping surrounding the site. A particularly interesting feature of this scheme is that the developer attempted to reflect the site's historic past in the materials, landscaping and river corridor design.

The enhancements agreed as part of this scheme were secured by a Section 106 agreement, which the Agency was involved in negotiating. Members of the probationary service (community service volunteers) carried out some of the work on the river corridor under supervision of both Agency and Groundwork staff, as well as staff from Thames21.



Pickle Ditch – restored river corridor



Innovative Interpretative Information

Culvers Avenue



Location Carshalton, South London
Rivers / Catchment River Wandle / Wandle catchment
London Borough Sutton
Developer Fairview New Homes
Date Started / Completed Completed – 1999
Types of Enhancement Sustainable Urban Drainage
Restoring Land
Improving Quality of Life
River Restoration
Sustainable Flood Defence
Delivering Biodiversity
Length of Enhancement 300 metres
Development Type Residential development
Contact details Customer Services,
Environment Agency,
South East Area Office,
10 Albert Embankment,
London, SE1 7SP.



Site History

This 6.3 hectare site lies north of Carshalton village within a predominantly residential area. The River Wandle forms the western boundary of the site and Council owned allotments about the northern boundary. Up until the late 1920's a single large riverside residence and four cottages occupied the whole site. In the 1930's the site was developed for Mullards

Limited, later known as Phillips Electronics. In the 1940's over 6,000 people were employed on the site, however, by the 1990's activity had all but ceased.

Environment Agency Interests

- improving public access
- incorporating a buffer zone
- incorporating sustainable urban drainage techniques
- improving floodplain management

Description of Scheme

The majority of the site lies within the floodplain of the River Wandle. At an early stage the Agency informed the developer that any future development would not be able to raise ground levels without providing compensatory



flood storage. The opportunity was also taken to use sustainable drainage techniques in order to control of surface water runoff from the site.

The local authority's planning brief for the site stipulated that a 15 metre buffer zone should be created along the River Wandle to enhance the existing river corridor. As part of this concept the opportunity was taken to rejuvenate the existing watercourse by re-grading the current banks and incorporating appropriate landscaping. A new watercourse was also created alongside the 'island site' which fell within the overall river corridor.



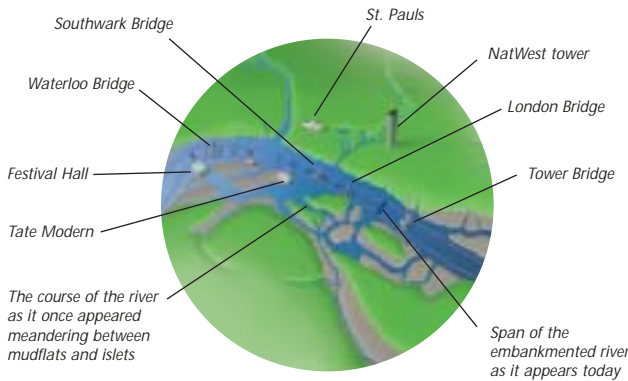
New footpaths, cycleways and bridge crossings were incorporated throughout the river corridor to increase its use by local people and to encourage local interaction. A series of meadows have also been planted to further enhance the ecological value of this revitalised river corridor.



Tate Modern



Location Southwark, Central London
Rivers / Catchment River Thames / Tidal Thames
London Borough Southwark
Developer Tate Modern and London Borough of Southwark
Date Started / Completed Completed – 2000
Types of Enhancement Improving Quality of Life
Length of Enhancement Sustainable Flood Defence
200 metres (approx.)
Development Type Art gallery
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.



Historic course of the Thames through London

Site History

This case study is located adjacent to the River Thames at the former Bankside Powerstation which has recently been converted into Tate Modern with the help of lottery funding. The power station had been closed for a number of years prior to its conversion.

The scheme falls within the area known as the 'Tate Environment' where the London Borough of Southwark have initiated a number of environmental improvement projects. This includes the riverside walk from Blackfriars Bridge to Cardinal Cap Alley. It also forms part of the Borough's Bankside Improvement Scheme which aims to provide a continuous high quality pedestrian environment along the south bank. This incorporates the new Millennium Bridge and Bankside walkway, downstream of Tate Modern between Windsor Walk and Southwark Bridge.

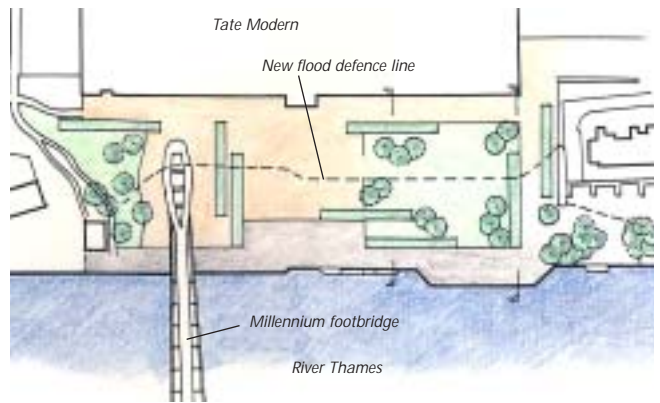
It is interesting to note that during the Roman period the Bankside area was little more than a series of marshes and islands linked to the River Thames. Since then development has reclaimed the land and narrowed the course of the original river to its present position.

Environment Agency Interests

- maintaining the integrity of the tidal flood defences
- improving public access to riverside
- improving the visual landscape of the River Thames and the Thameside environment

Description of Scheme

The Tate Environment proposals were the subject of extensive negotiations between the Environment Agency, the Borough and their consultants. As a result, the opportunity to remove the interim defences and retreat the line of the flood defence was identified and incorporated into the final design. This has opened up the views to and from the river, and enhanced the relationship of the site to the River Thames by re-profiling the riverside area and removing the top of the riverside wall.



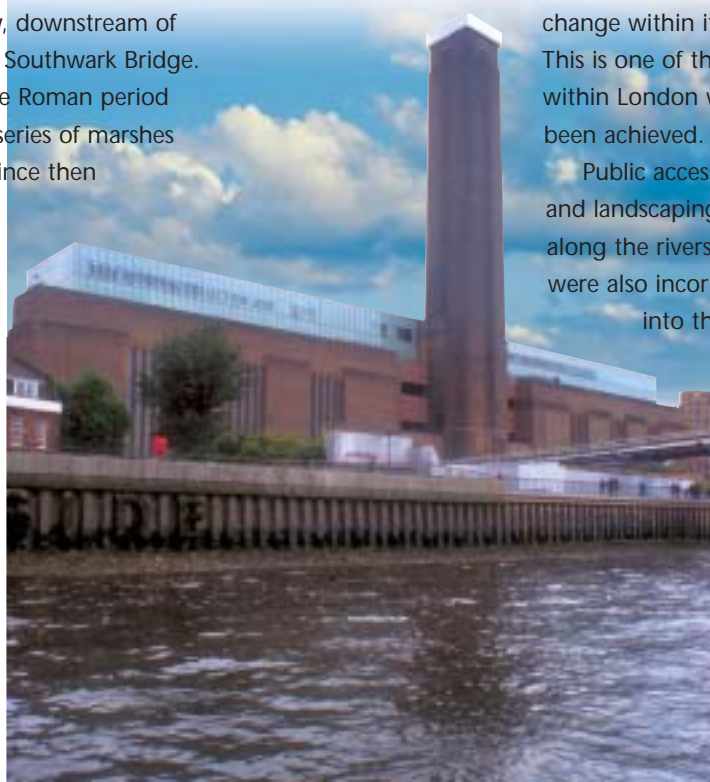
Plan view – realigned flood defence

The re-alignment of the previous flood defences has significantly reduce the maintenance required for these structures. The scheme has also reduce the risk from the future threat of increasing flood levels caused by climate

change within its design.

This is one of the few locations within London where this has been achieved.

Public access considerations and landscaping improvements along the riverside path were also incorporated into the design.



Lockes Wharf



Location Isle of Dogs, East London
Rivers / Catchment River Thames / Tidal Thames
London Borough Tower Hamlets
Developer St. George Plc
Date Started / Completed Ongoing – currently in Phase 4
Types of Enhancement Improving Quality of Life
Sustainable Flood Defences Delivering Biodiversity
Length of Enhancement 267 metres
Development Type Residential development
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.

Site History

Lockes Wharf lies on the north bank of the Thames opposite Deptford Creek. The site is currently being developed by St George Plc for housing. The old timber flood defence frontages required replacing and the Agency was keen to see this valuable riverside habitat conserved. Prior to redevelopment for housing this 3 hectares site was used as a foundry. The contamination resulting from the previous use led to a number of technical constraints when it came to replacing the tidal flood defences.

Environment Agency Interests

- repairing the flood defences
- minimising the loss of foreshore and obtain appropriate compensation
- retaining and improving ecological interests
- decontamination and remediation
- improving public access to the riverside
- retaining visual and historic amenity

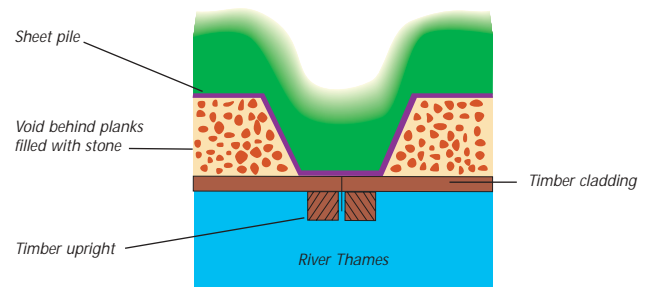


Existing and replacement flood defences

Description of Scheme

The replacement flood defences fronting the site were constructed from steel sheet piling but clad with timber boards. These were designed to be similar in appearance to the existing historic timber wall. Timber cladding has been applied elsewhere on the Thames, but this design had additional ecological value by using angular gravels poured into the voids between the boards and the sheet piling. The small spaces between the timber boards allowed the

passage of tidal water and invertebrates creating in effect a 'vertical foreshore'.



Cross section of new flood defences

Biological surveys were carried out on the old timber wall and its replacement with remarkable results. Within one year the voids in the new wall were supporting the same variety of animals as had been found behind the boards of the old wall. The actual timbers themselves did not support as many animals as before, but this is because there has been insufficient time for algal growth to form within which most invertebrates live. The wall will be surveyed again in the near future and it is likely expected to be as ecologically valuable as the previous wall.

Unfortunately contaminated material behind the flood defences made encroachment onto the foreshore unavoidable and the Agency is currently negotiating with the developer to compensate for this loss elsewhere along the Tidal Thames within London.



New flood defences under construction

Deptford Creek Regeneration



Location Deptford, South East London
Rivers / Catchment River Ravensbourne and River Thames / Ravensbourne and Tidal Thames catchments
London Borough Greenwich and Lewisham
Developer Various
Date Started / Completed Started 1996 – currently under construction
Types of Enhancement Sustainable Urban Drainage Improving Quality of Life Sustainable Flood Defences Delivering Biodiversity
Development Type Urban regeneration, including residential, industrial and recreational
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.
Lewisham Environmental Projects Coordinator, Creekside Office, 60 McMillan Street, London, SE8 3HA



- Greenwich Reach 2000
- Labans Dance Centre
- Normandy Wharf
- Transco Inlet
- Mill Wharf

Site History

Deptford Creek is a historic area of London, which has suffered from neglect and urban decline for many years. The area has been the focus of a Single Regeneration Budget (SRB) project attempting to facilitate urban regeneration over the past few years. The SRB project has brought together a number of partners including English Heritage, London Wildlife Trust, the London Boroughs of Greenwich and Lewisham, the Agency and local residents.



The regeneration of the area surrounding the creek started with the construction of the Docklands Light Railway Lewisham Link and SRB funding being secured from Government. An essential part of the project has been the involvement of local communities.



Mill Wharf – renewed flood defences

New techniques have also been pioneered for the removal of rubbish from the creek, a perennial problem found in urban rivers. In addition to the environmental improvements, the regeneration programme has also been closely involved in developing the social and community aspects of the project. Initiatives have included a floating education centre, development of a management strategy for the creek, and initiatives to improve community participation and environmental awareness. These enhancements are the first of many within this area and will hopefully provide the lead for improving the local environment in the future.

Environment Agency Interests

- objection to tidal barrier across the creek
- creation and improvement of tidal habitat
- improving public awareness and education
- developing access to the river
- replacing and improving degraded flood defences
- improving visual amenity

Description of Schemes

The Deptford Creek regeneration covers a large area from the mouth of the creek to Deptford Bridge. A number of enhancements have been initiated through the redevelopment of several different sites within the area. These include:

- *Mill Wharf, Normandy Wharf and the Waste Transfer site* – renewal of poor flood defences undertaken by the Regeneration Partnership;
- *Greenwich Reach 2000* – located at the mouth of the creek this scheme has included the preparation of an ecological master plan which led to the incorporation of ecological roof systems, and managed retreat of the flood defences within the design;
- *Transco Inlet* – this neglected slipway is to be restored into a natural beach extending to the current tidal foreshore within the creek;
- *Labans Dance Centre* – this building has included an ecological roof system as part of its innovative design and will act as a focal point for the local community within the creek when constructed.



Deptford Creek mouth – Victory Wharf (left) and Greenwich Reach 2000 (right)

Brookmill Park



Location Lewisham, South East London
Rivers / Catchment River Ravensbourne / Ravensbourne catchment
London Borough Lewisham
Developer DLR Ltd, CGL Rail and LRG Contractors
Date Started / Completed Completed – 1998
Types of Enhancement Improving Quality of Life
River Restoration
Sustainable Flood Defences
Delivering Biodiversity
Development Type Light railway system
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.

Site History

The concrete flood channel of the River Ravensbourne at Brookmill Park in Lewisham was chosen as the route of the Docklands Light Railway. The route minimise tree loss and reduced the visual impact of the railway on the park and surrounding area. The river was been diverted along a 300 metre meandering course featuring a realistic gravel bed, native landscaping on sloping river terraces and wildlife features. The standard of flood protection has been



River Ravensbourne – before restoration

increased and a waterproof membrane has been used to prevent the pollution of groundwater. An ornamental lake within the park has been reconstructed as a more natural feature. This enhancement has also become an example of good practice for surrounding developments involving the River Ravensbourne.

Environment Agency Interests

- replacing the heavily engineered flood channel by a more natural channel to provide ecological, landscape and recreational benefits
- increasing flood defence standards of service
- minimising the risk of groundwater contamination

Description of Scheme

The new channel is designed to accommodate flood flows and comprises of a 3-stage channel providing for habitat diversity, both aquatic and terrestrial. The stages include a low flow notch with a sinusoidal alignment located within a 7.5m wide gravel/rock channel, and will accommodate normal river flows. The second stage is bounded by a narrow marginal strip, which will sustain marginal plants and will be subject to frequent flooding due to high flows and the tidal influence. The higher stage widens out to create a flood meadow with grassed banks. A polypropylene membrane liner has



been laid at least 1m deep to protect the chalk aquifer beneath the river diversion.

Provision has been made for sustainable habitats for fish and invertebrates. These include the creation of a series of pools (up to 20 metres long) and riffles above the low flow notch to provide an acceptable depth of water. Large fish shelters have been provided at the mid-point of each pool. The gravel/rock bed material used will provide the voids necessary to encourage invertebrate and fish life.

The hard substrate for algae and associated invertebrates consists of stone deflectors to enhance habitat diversification. The deflectors will also create a cleansing velocity through the pools to protect the banks from erosion. Native aquatic, emergent and riverside landscaping is being undertaken using species capable of withstanding relatively hostile and variable water flows. The steeper slopes will be covered with reeds and vigorous grass species tall enough to obscure the harder engineered aspects of the scheme.



River Ravensbourne – after restoration

The creation of this river diversion has led to a slightly over engineered solution, however it has acted as a catalyst for more sensitive proposals involving the River Ravensbourne in the future. Current proposals for Seagar Distillery and Broadway Fields, for example, both include in-channel enhancements to the river.

Worseley Bridge Road



Location
Worseley Bridge Road, Bromley,
South East London

Rivers / Catchment
River Pool / Ravensbourne
catchment

London Borough
Bromley

Developer
Barratts

Date Started / Completed
Completed – 1998

Types of Enhancement
Improving Quality of Life
River Restoration
Sustainable Flood Defences
Delivering biodiversity

Length of Enhancement
200 metres

Development Type
Residential development

Contact details
Customer Services,
Environment Agency,
South East Area Office,
10 Albert Embankment,
London, SE1 7SP.

Site History

Located on the former site of Lewisham College this residential development lies within the floodplain of the River Pool, a tributary of the River Ravensbourne. The Agency was concerned that redevelopment of the site should not encroach on the floodplain or lead to an increase in water levels elsewhere. Historic flooding records indicate that the site last flooded in 1968.

Environment Agency Interests

- reducing the risk of flooding
- creation of riparian habitat
- removal of hard channel walls
- creating a pleasant environment and improving visual amenity
- improving public access to the river corridor
- developing maintenance access

Agency's satisfaction, the developer employed consultants to model the detailed extent of the actual floodplain across the site. They concluded that any development would need to provide a flood defence bund on the left hand side of the bank of the river, and that the natural flood route over Meadow Road would need to be kept clear from obstructions. Both these requirements were included within the final scheme.



An important aspect of this enhancement scheme was the integration of the river corridor within the site. Rather than alienating the river corridor this natural feature became an integral feature of the overall scheme.

Description of Scheme

This scheme involved the partial restoration of 200 metres of river channel and floodplain as part of a residential development. As well as including natural species within the landscaping scheme, a riverside walk was incorporated to allow public access to the restored river corridor. A particular feature of this scheme was the inclusion of flow deflectors in the river to restore more natural conditions within the newly created channel.

To ensure that flood defence issues were resolved to the

In channel flow detectors



Greenwich Peninsular



Location Greenwich Peninsular, London
Rivers / Catchment River Thames / Tidal Thames catchment
London Borough Greenwich
Developer British Gas and English Partnerships
Date Started / Completed Completed – 1999
Types of Enhancement Restoring Land
 Improving Quality of Life
 Sustainable Flood Defences
 Delivering Biodiversity
Development Type Residential, leisure and commercial development
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.

Site History

Fronted by the River Thames to the north and north east, this highly contaminated and largely derelict site, has been completely regenerated and provided the focus for the country's Millennium celebrations. More than 6 million people visited the exhibition, presenting a unique opportunity for the project to demonstrate a best practice model in urban environmental management.

Environment Agency Interests

- managing contaminated land from previous industrial uses
- restoring tidal defences and threat of encroachment
- promoting innovative riverbank design
- promoting access and education initiatives



Ecological park

Description of Scheme

The project presented a number of examples of innovative environmental design. These included:

- **Flood defences** – British Gas and English Partnerships worked closely with the Agency to create a best practice riverbank scheme at the Millennium site. A length of 1.24km of the existing river site frontage needed to be replaced. The design of these tidal defences incorporated a number of features: retreating a 130 metre length inland by 10 metres to create an extensive intertidal habitat; boardwalks for public access; viewing points; an area of salt marsh with a series of terraces between the site and the old flood wall; planting of newly created habitats; and the use of timber fenders to improve the appearance of the wall and provide some habitat for estuarine animals and plants.
- **Ecological park** – situated within the peninsular, the ecological park contains a freshwater lake with timber

boardwalks surrounding it. Incorporated into the park design are bat boxes, kingfisher post and nesting tunnels, floating rafts and bird hides. The Thames Path is screened from the park by a camouflaged (timber clad and tree lined) wall to minimise the disturbance to birds on the park. The Greenwich peninsular was frequently used by migrating birds prior to the construction of the Dome and the



Tiered tidal flood defences

- **Green piers** – within the tidal zone surrounding the site, a number of redundant structures were found within the river. Instead of removing these structures some have been retained and turned into ecological features. Recycled material has been added to their surface and natural succession has led to colonisation with local plant species. Using terracing techniques to create different levels, water features have also been incorporated.
- **Low-energy foodstore** – Sainsbury's have constructed a low-energy foodstore on the Greenwich Peninsular site that incorporates a wide range of new technologies. The design includes: natural lighting; reuse of heat from refrigeration systems for underfloor heating; surrounding earth mounds for insulation; a nature area with footpaths; recycling of water collected from the building's roof; and testing of renewable energy including wind turbines and solar-powered cells.



The innovative and environmentally sensitive ecological designs presented a completely new set of opportunities and constraints to be addressed by the developer, planners and ecologists. The Millennium site is a unique illustration of the new approach to ecological design that the Agency is looking to promote at other suitable sites in London.

Leyton Relief Road



Location Leyton, North East London
Rivers / Catchment Dagenham Brook / Lee catchment
London Borough Waltham Forest
Developer Highways Agency
Date Started / Completed Under construction
Types of Enhancement Sustainable Urban Drainage
Restoring Land Sustainable Urban Drainage
Delivering Biodiversity Road scheme
Development Type Road scheme
Contact details Customer Services, Environment Agency, North East Area, Apollo Court, 2 Bishops Square, St Albans Road West, Hatfield, Herts. AL10 9EX.

Site History

The development of the link road is part of the overall infrastructure improvements currently being undertaken within the Lee Valley, and is also part of the Stratford improvements. The road will link the A104 Lea Bridge Road to the A106 Ruckholt Road.



Retention pond – under construction



Retention pond – completed

have been lined to prevent any possible risk of infiltration from disturbed contaminants.

The ponds have been contoured to create marginal shelves to plant reed beds. This not only has aesthetic benefits, but also improves the water quality through root zone action. Both ponds have also been fitted with cut off valves to enable them to be closed in the event of a pollution incident on the link road.

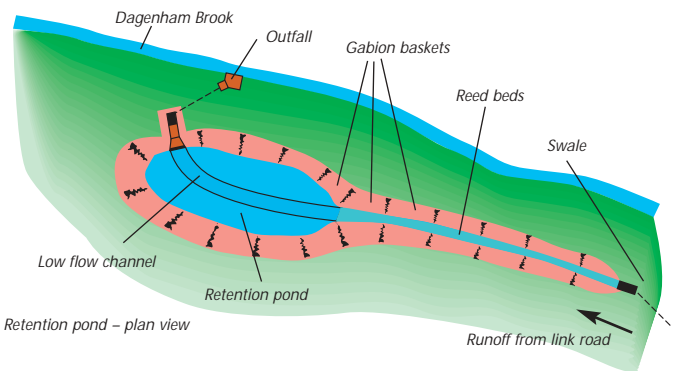
Environment Agency Interests

- Sustainable Urban Drainage Systems
- pollution prevention
- minimise risk of flooding
- habitat creation

Description of Scheme

The need to control the additional surface water runoff from this new length of road has instigated this enhancement scheme. Runoff will be managed through the use of two retention ponds. These ponds have been created as off line features from the Dagenham Brook which runs parallel to the new link road.

Within the design of the storage ponds a variety of surface water control techniques have been used. For this project retention rather than detention ponds have been used. Whilst both types of storage pond offer significant but different benefits, retention ponds hold water on a permanent basis, proving the opportunity for additional habitats. Hydrobrakes have been used in both ponds to act as a control mechanism to limit the final surface water discharge to the Dagenham Brook. The area was previously used as a railway marshalling yard which presents a potential contamination risk to the water environment during the construction stage. Consequently both ponds



Fresh Wharf Estate and Hewett's Quay



Location
 High Bridge Road, Barking, East London
Rivers / Catchment
 River Roding / Roding, Beam, and Ingrebourne catchment
London Borough
 Barking and Dagenham
Developer
 Fresh Wharf Estates
Date Started / Completed
 Ongoing
Types of Enhancement
 Improving Quality of Life
 Sustainable Flood Defences
 Delivering Biodiversity
Development Type
 Industrial and Retail units
Contact details
 Customer Services, Environment Agency, North East Area, Apollo Court, 2 Bishops Square, St Albans Road West, Hatfield, Herts. AL10 9EX.



Current situation – Fresh Wharf Estate (right) and Hewett's Quay (left)

Site History

These sites are located on opposite sides of the tidal River Roding and are two of the key areas of opportunity identified within the overall Single Regeneration Budget (SRB) for the Roding Valley area. The SRB

project has a total of 24 schemes covering physical improvements, training, child care, health provision and community development. A budget of £2.6 million and matched funding of £14 million is managed by Barking and Dagenham as the overall programme managers.

The area was traditionally used by the fishing industry, but once this had ceased the chemical and paint industry took its place leaving a legacy of contaminated land adjacent to the river. The area is currently occupied by a number of small workshops and industrial units.

Environment Agency Interests

- maintain the integrity of the tidal flood defences
- protect the tidal foreshore
- improve public access
- improve visual amenity of the river corridor

Description of Scheme

The scheme involves the redevelopment of a large industrial area predominantly on the west bank, but also extends over to the east bank, of the River Roding. The proposal will allow the area to continue to develop its current industrial use, but will also include a large retail component.

Environmental enhancements will take the form of a new 10 metre wide river corridor, including a footpath and cycleway providing new access to the river. The enhancement will include landscaping and planting of indigenous species, which will create a substantial green area in a location that is otherwise heavily urbanised and currently allows little opportunity for the public access to the river. Additional enhancements will include the partial removal of a substantial length of sheet piling on the north bank of Hand Trough Creek, which is a designated Site of

Metropolitan Importance for Nature Conservation. This will be associated with terracing of the soil behind the sheet piling to create areas for the existing reed beds to colonise whilst also protecting the adjoining foreshore.

Another important element of the scheme is the inclusion of a proposed public transport link between the site and other retail, industrial and residential areas within neighbouring Newham, to the south. These ideas have been developed through a partnership between the Agency, the developer, and the Borough in securing economic and social regeneration for the area. Opportunities for developing floating conference facilities in the river are also being considered.



Hand Trough Creek

The Agency has had a long history of involvement in the regeneration of the Town Quay area. In 1999 the Agency hosted a rubbish clearance and awareness day for the local people, which involved various educational activities for local school children. The Agency also held its Millennium festival in the local Abbey Grounds and produced an education pack for schools outlining the important environmental, social and economic role of the river within the Borough.

Barking Barrage – downstream of enhancement sites



Gallions Reach Urban Village



Location Thamesmead, South East London
Rivers / Catchment Thamesmead Canals / Marsh Dykes catchment
London Borough Greenwich
Developer Thamesmead Town and Tiffen Ltd
Date Started / Completed Completed – 2000
Types of Enhancement Sustainable Urban Drainage Restoring Land Improving Quality of Life River Restoration Sustainable Flood Defence Delivering Biodiversity
Length of Enhancement 500 metres
Development Type Residential development
Contact details Customer Services Environment Agency South East Area Office, 10 Albert Embankment, London, SE1 7SP.
Tiffen Ltd Harrow Manor Way, Thamesmead South, London. SE2 9XH



Integrated access – footpaths and cycleways

Site History

This enhancement scheme forms the eastern part of the former Woolwich Arsenal site, which dominated the area in the nineteenth century. Woolwich Arsenal continued as an important munitions factory until the end of the First World War, with its eventual closure in 1967. Following clearance of buildings, much of the site was capped with sand because of the presence of toxic substances. The site still retains a London Ecology Unit designation as a Site of Metropolitan Importance for Nature Conservation despite many changes in the ten years since its designation. Recent surveys have revealed that 193 invertebrate and 178 terrestrial species, including 5 data book species, are found upon the site. Unfortunately due to the contaminated nature of the ground, full retention of the existing habitats on site is not possible because of the need for extensive remediation.

Environment Agency Interests

- reducing the risk of flooding
- creation of wetland habitat
- reducing the risk of pollution from contaminated material
- improving visual amenity
- provision of educational and recreational facilities
- providing maintenance access for Agency staff

Description of Scheme

The newly constructed 500 metre long western section of Gallions Canal has now been completed. This new canal will eventually link up with the Twin Tumps area creating the new 1.5km long Thamesmead canal. The Agency did

not accept the initial proposal for a concrete channel, and a more natural river bank was created using geo-textiles and rock gabions. The heavy contamination of the site required innovative techniques involving the use of a wetland system to treat surface water runoff. The main contaminants found are compounds of Ammonia and these are being treated using natural gravels as a filter.



New canal – balancing recreation and ecology

The accommodation of the site's existing biodiversity was also an important consideration, with artificial habitats created specifically for Water Voles within the water treatment system. The approach to the management of waste materials arising from the redevelopment was a particularly interesting feature of this site. Contaminated material has been treated on site rather than being transported elsewhere and existing topsoil has been recycled across the remainder of the site. Footpaths and cycle paths which criss-cross the canal and fishing platforms have also been provided.

The creation of the canal is just one part of this overall project. It also includes the protection of the existing brownfield habitats, and the Thames footpath and its corridor which adjoins the site. This enhancement scheme is particularly note worthy as it demonstrates a number of innovative techniques to protect and develop brownfield habitats and manage contaminated material.

Channel Tunnel Rail Link



Location Dagenham, East London
Rivers / Catchment Gores Brook, Roding, Beam and Ingrebourne catchment
London Borough Barking and Dagenham
Developer Union Railways (North) Ltd
Date Started / Completed Under construction – started September 2000
Types of Enhancement Restoring Land
River Restoration Sustainable
Delivering Flood Defence Delivering Biodiversity
Development Type Rail scheme
Contact details Customer Services, North East Area, Apollo Court, 2 Bishops Square, St Albans Road West, Hatfield, Herts. AL10 9EX.



Culvert under construction

Site History

Gores Brook intersects the Channel Tunnel Rail Link (CTRL) at the point where the railway line from St Pancras emerges from its tunnel beneath London. To minimise the impact upon the Brook, a 700 metre diversion of the watercourse has been required by the Agency. Consent under the Channel Tunnel Rail link Act

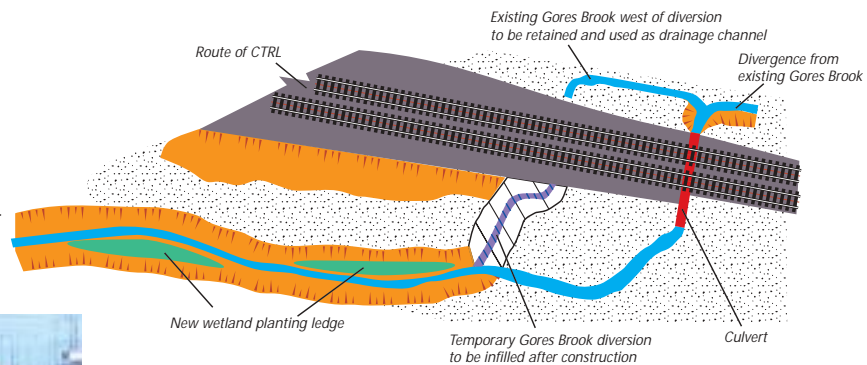
1996 was granted for this scheme in February 1999.

Environment Agency Interests

- hydraulic capacity of the channel
- channel enhancement
- contaminated land and protection of groundwater
- habitat creation

of 2001. At present, work is underway on diverting service crossings from the route prior to the start of the major works. The enhancement project is part of this preparatory work.

The project involves diverting Gores Brook as it passes under the new Channel Tunnel railway line. At this point the Brook is still under the tidal influence of the River Thames and care was required to ensure that any proposal did not increase the risk of flooding in the surrounding area. The creation of the river diversion will allow the existing channel to the west of the new culvert to be used as a drainage channel for runoff from nearby allotments, and to increase the storage capacity of the current Brook.



Dagenham Brook enhancement – plan view



Dagenham Brook – construction of realigned channel

The area surrounding the Brook is contaminated as a result of historic uses. Therefore, the new channel is to have a bentonite membrane to ensure that contaminated groundwater does not pollute the surface water of the Brook. Within the channel a marginal shelf has been created using gabion baskets to allow the planting of native species and to provide additional in-channel habitat. Natural gravels have also been used to create a natural river bed. An animal trough has been incorporated within the design of the new culvert to allow the migratory passage of local wildlife beneath the new railway line.

An Environmental Impact Assessment has been undertaken by the developer to minimise the environmental impacts of the project. This has allowed consideration of the environmental impacts during construction of the scheme. A minimum set of environmental requirements have also been agreed including a code of construction practice.

Description of Scheme

The construction of the CTRL from St Pancras to Ashford is well underway, with major construction works currently being undertaken in Kent. The overall project has been divided into a number of contracts, with the work to the north of the Thames planned to commence in the summer

BICC Cables



Location Church Manorway, Erith, South East London
Rivers / Catchment Green Level Main Dyke / Marsh Dykes catchment
London Borough Bexley
Developer BICC Cables Limited and Groundwork
Date Started / Completed Completed – 1999
Types of Enhancement Sustainable Urban Drainage Improving Quality of Life Delivering Biodiversity
Length of Enhancement 140 metres
Development Type Car Park
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.

Site History

BICC Cables Limited has been established on this site since 1882. The company provides an important source of local employment providing 650 jobs at present, and possibly 750 following further investment. The evolutionary development of the factory gave rise to site layout problems and the increasing demand for car parking facilities became a particular issue for the company. As part of creating a new car park on the site of a 2.3 hectares disused playing field the Agency required the implementation of sustainable urban drainage techniques. This was to prevent flooding and improve water quality affected by surface water runoff from the car park.

Environment Agency Interests

- creation of wetland habitat
- reducing risk of flooding
- reducing risk of pollution
- creating a more pleasant environment and visual amenity
- provision of educational facilities

Description of Scheme

A retention pond, 140 metres long and 30 metres wide, with a maximum capacity of approximately 500 cubic metres was constructed to cater for a storm with a return period of 100 years. A pumping facility into the Green Level Main Dyke was also incorporated to control water levels and avoid flooding in the surrounding area.

This permanent pool of water takes the form of a watercourse and lagoon. Extensive reed planting in the basin together with carefully chosen indigenous aquatic,

emergent and marginal species has provided a valuable habitat. An educational facility with beach access was provided for local school children. This scheme provided the opportunity to create an area of visual interest and wildlife importance, which has influenced the character of the site. Consideration is being given to the designation of the site as a local nature reserve.

Employees of the company have shown a particular interest in the scheme and some additional maintenance work has now been undertaken on the surrounding watercourses within the site. The enhancement has also received an environmental award from the London Borough of Bexley and has been used as an example of how to deal with site drainage issues within the local area.



Morrison Pier



Location Erith, South East London
Rivers / Catchment River Thames, Tidal Thames
London Borough Bexley
Developer W.M. Morrison Supermarkets Plc
Date Started / Completed 2010 / 2018
Types of Enhancement Improving Quality of Life
Sustainable Flood Defence Length of Enhancement 300 metres
Development Type Mixed use development, including supermarket
Contact details Customer Services, Environment Agency, South East Area Office, 10 Albert Embankment, London, SE1 7SP.



Morrison Pier – from police station site looking east to Corey's coal jetty 1898

Site History

Erith Deep Water Wharf terminal is located on the south bank of the River Thames downstream of the Thames Barrier. The site adjoins Erith town centre and extends for some 8.2 hectares including a pier that extends into the River Thames. It also has a substantial flood defence wall fronting the River Thames. The previous history of the site includes a range of industrial uses but it was last used as a warehouse for imported newsprint.

Environment Agency Interests

- improving public access
- improving the visual landscape and amenity
- promoting education initiatives
- protecting and improving current flood defences

Description of Scheme

The site was identified in Bexley's Unitary Development Plan for comprehensive mixed use development. The overall development includes housing, amenity, and retail uses. In outlining their brief for the site, the



developer specifically included that any proposal would re-use the deep wharf jetty with improved public access; increase the use of the river and riverside transportation; and improve the local environment through high quality design and integration of land use. In an attempt to meet

these objectives, the developer had initially proposed to use the structure of the jetty to create an online marina. However, as a result of the concerns expressed by the Agency regarding the potential impacts on the tidal Thames environment this idea was dropped.

The regeneration of the redundant pier was essential to improving the environmental quality of the whole site and to provide an amenity resource for the local population. As part of the restoration, the surface of the pier was re-clad, together with the installation of lighting and furniture. New hand railing was also added to the pier to improve safety. The developer has taken the opportunity to integrate the pier into the riverside footpath through the use of interpretative information boards and signage.

The site is located downstream of the Thames Barrier and therefore flood defence walls need to be higher than in central London to cope with surge tides and are critically important in protecting riverside land. Particular care was taken by the developer to protect the moveable flood defence wall at the land end of the pier and the tie rods supporting the main flood defence walls adjoining the site.



Interpretative information board

The redevelopment of the site was also seen as a catalyst for other redevelopment in the area including those receiving Single Regeneration Budget funding, which is currently in place within the Borough.

