THE MID RIVER CRANE

Aquatic Refuge Identification Plan

Researched and written by Tom White (Conservation Officer)
for the London Wildlife Trust in April 2014

Thanks to Chris Slack (Senior Ecologist, London Borough of Hounslow) for his excellent knowledge of sites and potential river enhancement options along the river corridor in Hounslow.

Thanks to the other Crane Valley Partnership Members who attended the backwater site meeting in April 2014 to discuss and share ideas: Allison Shipley (Green Spaces Officer, London Borough of Hillingdon), Neale Hider (Biodiversity Officer, Environment Agency)

Thanks to Andy Willmore (London Wildlife Trust West London Regional Manager) for his support during the report writing process.

Contents

Background

Aquatic Refuges

Aquatic refuges are physical places within a river corridor that allow populations of aquatic organisms to persist during times of disturbance. Disturbances experienced by the River Crane include sudden increases in flow and river levels, minor flooding, and pollution events. The organisms harboured in a refuge are able re-colonise the main river when the disturbance has passed.

Importance of Aquatic Refuges for heavily modified water bodies

Anthropogenic alterations to the flow regime and floodplain connectivity of lowland rivers have been observed to have detrimental impacts on fish populations (Bolland, 2008). The River Crane is a heavily modified water body with poor connectivity to its floodplain. In unmodified lowland rivers, floods are characterized by lateral expansion onto floodplains resulting in high levels of habitat heterogeneity, essential for fish refuge, spawning, nursery and feeding (Bolland, 2008).

Cowx & Gerdeaux (2004) suggested the necessity of recreating functional habitats for spawning, feeding, nursery (growth) and resting (self protection) on heavily modified river channels. Recreating these types of habitats involves softening levees and reconnecting secondary channels (backwaters) and isolated oxbows (Lusk et al., 2001, 2003). Such restoration efforts may only be necessary in limited reaches of a river corridor to maintain the biodiversity of a fishery (Cowx & Welcomme, 1998).

Aim of this report

This report aims to assess feasibility of creating aquatic refuge areas along the mid-Crane (between Crane Park and Cranford Park) in order to create functional habitats for coarse fish spawning, feeding, nursery and resting. Some sites may also have the potential for habitat enhancements for water voles and aquatic invertebrates. Sites are ordered via location, downstream to upstream.

References:

Bolland, J.D. (2008). Factors affecting the dispersal of coarse fish. Thesis submitted for the degree of doctor of philosophy. The University of Hull.

Cowx, I.G. & Gerdeaux, D. (2004). The effects of fisheries management practices on freshwater ecosystems, Fisheries Management and Ecology 11, 145-152.

Cowx, I.G. & Welcome, R.L. (1998). Rehabilitation of Rivers for Fish. Oxford: Fishing News Books, Blackwell Science, 260 pp.

Lusk, S., Halacka, K. & Luskova, V. (2003) Rehabilitation the floodplain of the lower River Dyje for fish. River Reseach and Applications. 19, 281-288

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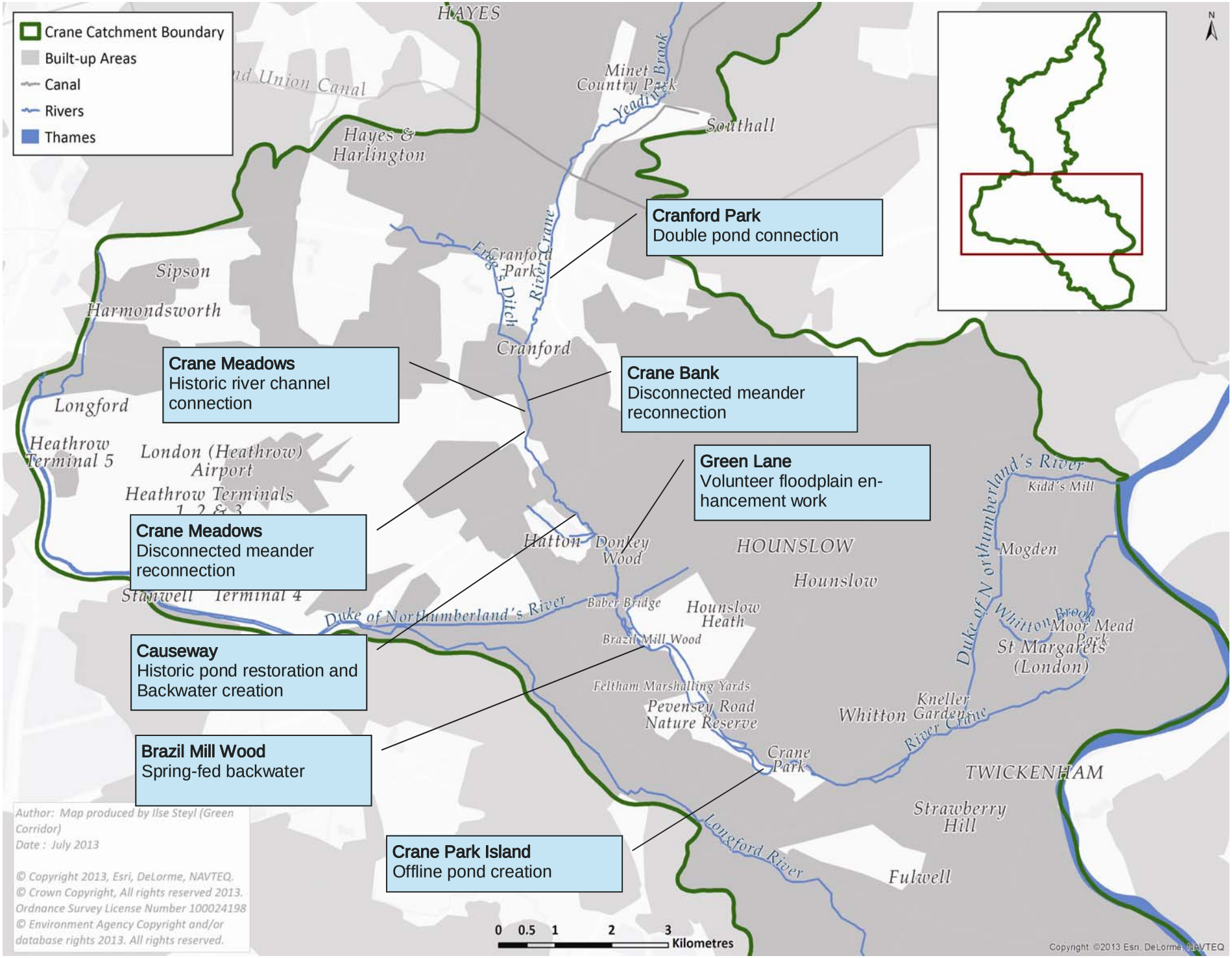
Project Site Map



Crane Park Island (Three Offline Ponds): TQ 12781 72831

The centre of Crane Park Island is inaccessible to the public. The area is wet underfoot for most of the year and is limited in management options due to the proliferation of Himalayan Balsam during summer months. A desire of Crane Park Island's long standing volunteer and steering group member, Ian McKinnon, is to transform the centre of Crane Park Island into a wetland area, providing a home for aquatic invertebrates and their terrestrial forms, amphibians and water voles.

Crane Park Island in flood

Crane Park Island forms part of the floodplain of the River Crane and is known to flood during wet winter months. Flood events, such as the one pictured, will provide connectivity between the wetland area and the main river during these times of year, allowing some, although seasonally limited, ingress/egress of aquatic life.

The island is a suitable location for the creation of ponds as they will hold water all year round. Ponds with built up banks could also increase the area water vole habitat available for colonisation in Crane Park.

Arial impression of the three ponds

Impression of largest pond

A series of three ponds could be created to complement the two existing ponds and reed bed already present on the island.

Pond 1 = 35m³
Pond 2 = 25m³
Pond 3 = 120m³

The earth excavated can be bunded around the perimeter of the ponds, creating steep banks suitable for colonisation by water voles and negating the costly process of having to dispose of materials off site. A D1 exemption must be obtained for this.

The ponds must also be excavated in summer time when the ground is firm enough to facilitate heavy machinery on site.

Scope of Works

Contractor

- Creation of 35m2 pond with excavated materials bunded around perimeter
- Clear and dredge 25m2 pond and use materials to form perimeter bunds
- Creation of 120m2 open pond, 1m deep

London Wildlife Trust

- Site management
- Volunteer management.

Volunteers

- Pond enhancement:
  - Introduction of riparian/marginal plant life.
- Maintenance and monitoring of pond.
  - Aquatic invertebrate monitoring
  - Visits throughout the year to ensure ponds are functioning correctly.
  - Removal of leaves and organic detritus

Exemptions and Consents Required

- Environment Agency Flood Defence Consent
- D1 Exemption: Depositing waste from dredging inland waters
  More Info: https://www.gov.uk/waste-exemptions-disposing-of-waste
- U1 Exemption:
  More Info: https://www.gov.uk/waste-exemptions-using-waste#U1

Access

- Access to the site is available through Crane Park (Whitton side, LB Richmond)

Contractor Quote for works on Crane Park Island

1	Transfer of resources from Crane Park 2 and set up mess hut - Mobilise amphibious excavator	1	Item	£3,519.36	£3,519.36
2	Silt mitigation measures by placing sedimats at strategic points near inlet feeds.	1	Item	£1,267.89	£1,267.89
3	Creation of 35m2 pond with excavated materials bunded around perimeter	1	Item	£799.89	£799.89
4	Reduce dig over existing reed-bed and disposal of arisings onto adjacent berm 300m2 x 300mm deep - re-handle	1	Item	£1,199.84	£1,199.84
5	Clear and dredge 25m2 pond and use materials to form perimeter bunds	1	Item	£479.93	£479.93
6	Creation of 1200m2 open pond, 1000m deep	1,200	m3	£13.33	£15,996.00
	Main Summary				**£23,262.91**

Brazil Mill Woods (Spring fed Backwater): TQ 11373 74122

Site and Project Overview

(see map for reference numbers)

1. Spring fed streams

Brazil Mill Woods contains a number of spring fed streams. Wet ground and slowly flowing water can be observed close to the springs source all year round. A gravel bed can be found under approximately 30cm of silt and organic debris.

This area could be desilted and cleared of scrub to improve flow from the stream to a new back water. This source of fresh water will ensure that the backwater does not dry out or experience adverse water quality parameters during hot months when main river levels are low.

2. Wet silted channel

The spring fed stream (1) flows into a wet, silted channel (2) that runs adjacent to the river. The channel appears to have been deeper and more open historically and would have had a gravel bed. Today it is encroached by woodland and scrub and filled with organic debris and silt.

This channel can be excavated and thinned of trees in order to form a backwater wetland area that is served by the spring fed stream (1) and main river (6) at high flows.

3. Outlet stream

The wet silted channel (2) flows into an outlet stream (3) that is connected to the river. The outlet stream slopes towards the river with silt covering it's gravel bed.

The outlet stream must be graded to reduce its gradient and improve connectivity with the main river.

4. Outlet Stream Enhancement

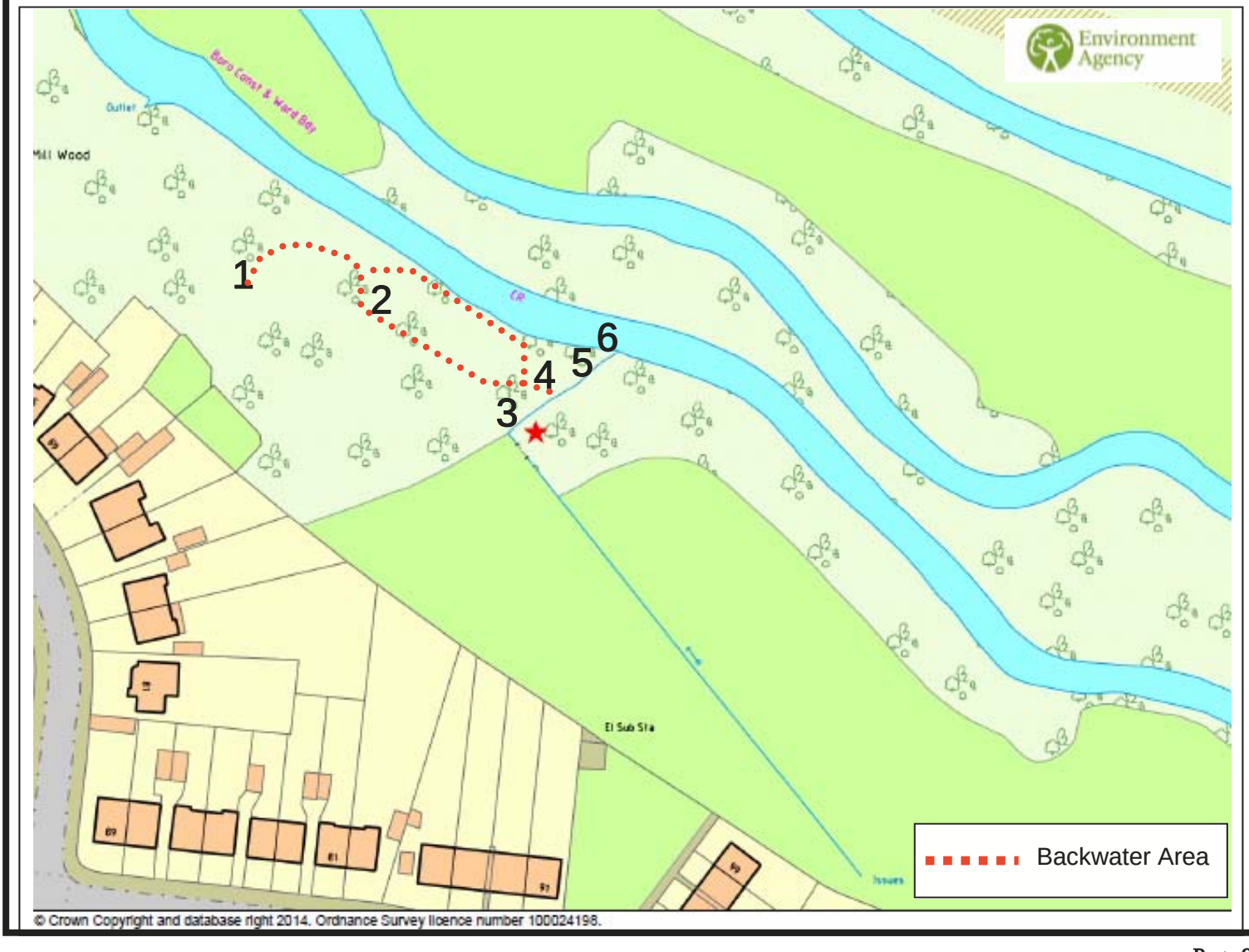
As well as grading the outlet stream, the point where the backwater meets the outlet channel (3) must be moved further down the outlet stream towards the main river (4). This will improve connectivity between the main river (6) and backwater wetland area (2).

5. Footbridge over outlet stream

A sleeper bridge passes over the outlet stream and is part of the main footpath that runs through Brazil Mill Wood. The bridge is worn and possibly in need of repairs. The bridge could be replaced to enhance public access and the aesthetic appeal of the site after works are completed.

6. Confluence with main river

The confluence of the outlet stream and main river is already in existence and can be viewed from the footbridge. This area can be enhanced inline with the rest of the outlet stream when it is desilted and regraded.



Backwater Measurements

Backwater	Parameters	Area (m²)
Sec 1 (spring to first bend)	9.5 X 3.5	33.25 m²
Sec 2 (first bend to inlet/outlet stream)	70 X 4	280 m²
Total backwater area		**313.25 m²**

Outlet Stream	
Outlet Stream length	20 m²
Outlet Stream width (Top, Bottom)	2 m², 1 m²
Outlet Stream (depth top of bank to bed)	1m²

Scope of Works

Contractor

- Desilting of channel running adjacent to main river.
- Silt analysis to determine onsite disposal (D1 exemption)
- Excavation of new pond (backwater wetland area)
- Regrading of outlet stream
- Provision of bridge to cross outlet stream.

London Wildlife Trust Project Officer

- Site management during contractor works.
- Volunteer Management during enhancement & maintenance works

Volunteers

- Backwater enhancement:
  - Introduction of riparian/marginal plant life.
- Maintenance and monitoring of backwater.
  - Aquatic invertebrate monitoring.
  - Visits throughout the year to ensure backwater functioning correctly.
  - Removal of leaves and organic detritus.

Exemptions and Consents Required

- Environment Agency Flood Defence Consent
- D1 Exemption: Depositing waste from dredging inland waters
  More Info: https://www.gov.uk/waste-exemptions-disposing-of-waste
- U1 Exemption. More Info: https://www.gov.uk/waste-exemptions-using-waste#U1

Site Access

- Site access can be arranged through LB Hounslow.
- The site can be accessed from Staines Road, Feltham, TW14 near Baber Bridge.
- The track that runs through the site from Staines Road has an 8ft clearance for vehicle access.
- Vehicle weight limit must be clarified for access.

Contractor Quote for works at Brazil Mill Wood

Reference	Description	Qty	Unit	Rate	Price
	Brazil Mill Wood				
1	Mobilisation to site and set up	1	Item	£4,869.28	£4,869.28
2	Sample and analysis of stream silt for disposal	1	Item	£381.55	£381.55
3	Remove silts from Section 1 and 2 (based on 300mm deep). Dredge and deposit to bank under 'D1 Exemption'.	94	m3	£12.80	£1,203.20
4	Silt disposal to landfill (Flood Plain - if no D1 possible)	0	m3	£85.30	£0.00
5	Regrading of outlet stream including use of arisings under U1 Exemption for landscaping in the vicinity	40	m3	£30.08	£1,203.20
6	Provision of hardwood timber bridge complete with handrails and decked - all in Azobe FSC timber, including formation of concrete-filled sandbags to form abutments	1	Item	£9,857.64	£9,857.64
7	Access enablement by removing trees and bushes	1	Item	£2,730.00	£2,730.00
	Final Summary				**£20,244.87**

Things to consider:

- The clarifications affecting this offer specified by the contractor must be considered before proceeding with this work (included in full quote provided by contractor).
- This quote assumes that a D1 exemption is obtainable for this work.
- If a D1 exemption is not obtainable, silt removed must be placed in landfill at a cost of £85.30 per m^3.
- This will increase the price of the capital works by £11,430 (134m^3 X £85.30 = £11,430.20)

Green Lane Floodplain Enhancement TQ 11033 75216

Green Lane is part of the natural floodplain of the River Crane and is connected to the river between autumn and spring. The site is owned by the London Borough of Hounslow but has been unmanaged since the local stables ceased to graze the land. .

Floodplains provide essential habitat for coarse fish when rivers are in high flow. They offer valuable shelter away from the current of the main river and an important refuge for juvenile fish feeding on smaller organisms and sheltering from predation. Green lane is of special importance as natural floodplain is extremely scarce in the Crane Catchment. It is also noted for its diversity in aquatic plant species and flora.

Enhancement for Coarse Fish

The site can be enhanced to provide more suitable habitat for coarse fish species. This can be achieved by removing mats of aquatic vegetation to expose areas of open water. These areas should be cleared in close proximity to the points where water is known to flow in and out of the floodplain, ensuing their connectivity with the river for the longest time possible.

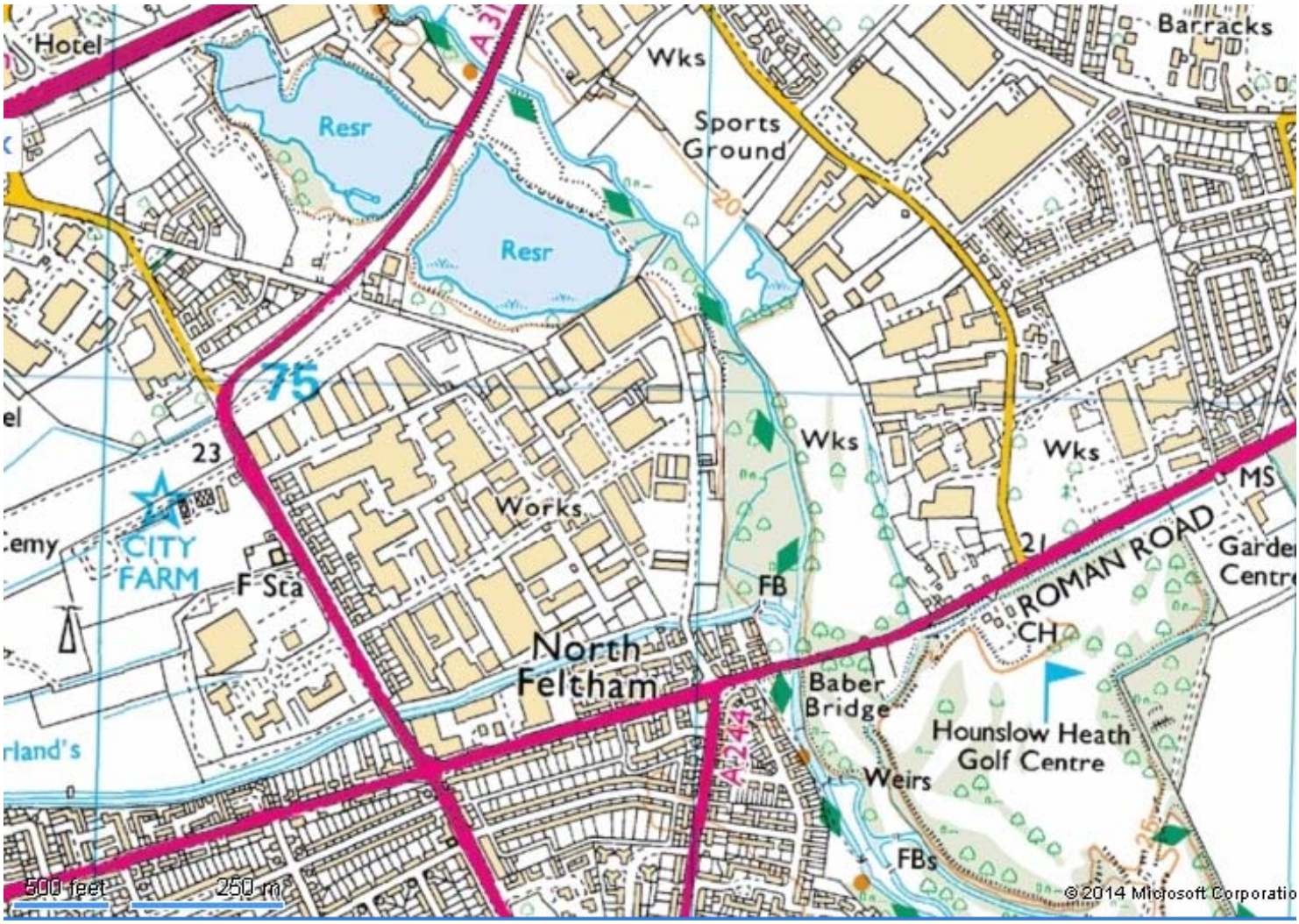
Use of aquatic plants removed in this exercise

Aquatic plants removed during the clearance exercise can be reused in the other backwater projects outlined in this report. The enhancement of these backwaters through the planting of marginal plant species will catalyse their path to maturity and increase their aesthetic and conservation value. This exercise will also engage volunteers with every back water project as they will be responsible for enhancement work after the contractors have completed each job.

Foreseeable Problems

Crassula helmsii is known to be present at one location on site (in a deepened lined channel). *Crassula helmsii* is a macrophyte native to Australia and New Zealand. It establishes dense, floating or submerged populations that displace native aquatic plants, decrease biodiversity and alter water conditions.

Consent from the Environment Agency must be sought before any plants are removed from this site.



Scope of Works

London Wildlife Trust

- Volunteer management
- Find suitable storage for plants to be used for backwater enhancement at other sites

Volunteers

- Clearance of aquatic plants to provide areas of open water in appropriate locations.

Exemptions and Consents Required

- Consent to move plants off site due to the presence of *Crassula helmsii* .

Access

The site can be accessed from Green Lane (LB Hounslow)

Causeway Road (Backwater): TQ 10579 75543

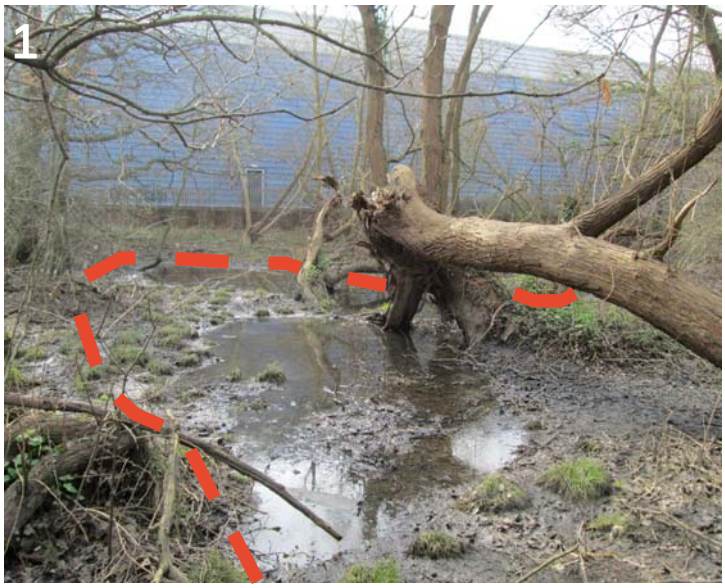
Opposite Causeway open space, on the southern bank of the river, there is an area that is believed to be a former watercress bed. The indentation of the pond still holds water in wintertime showing the feature has good potential for restoration.

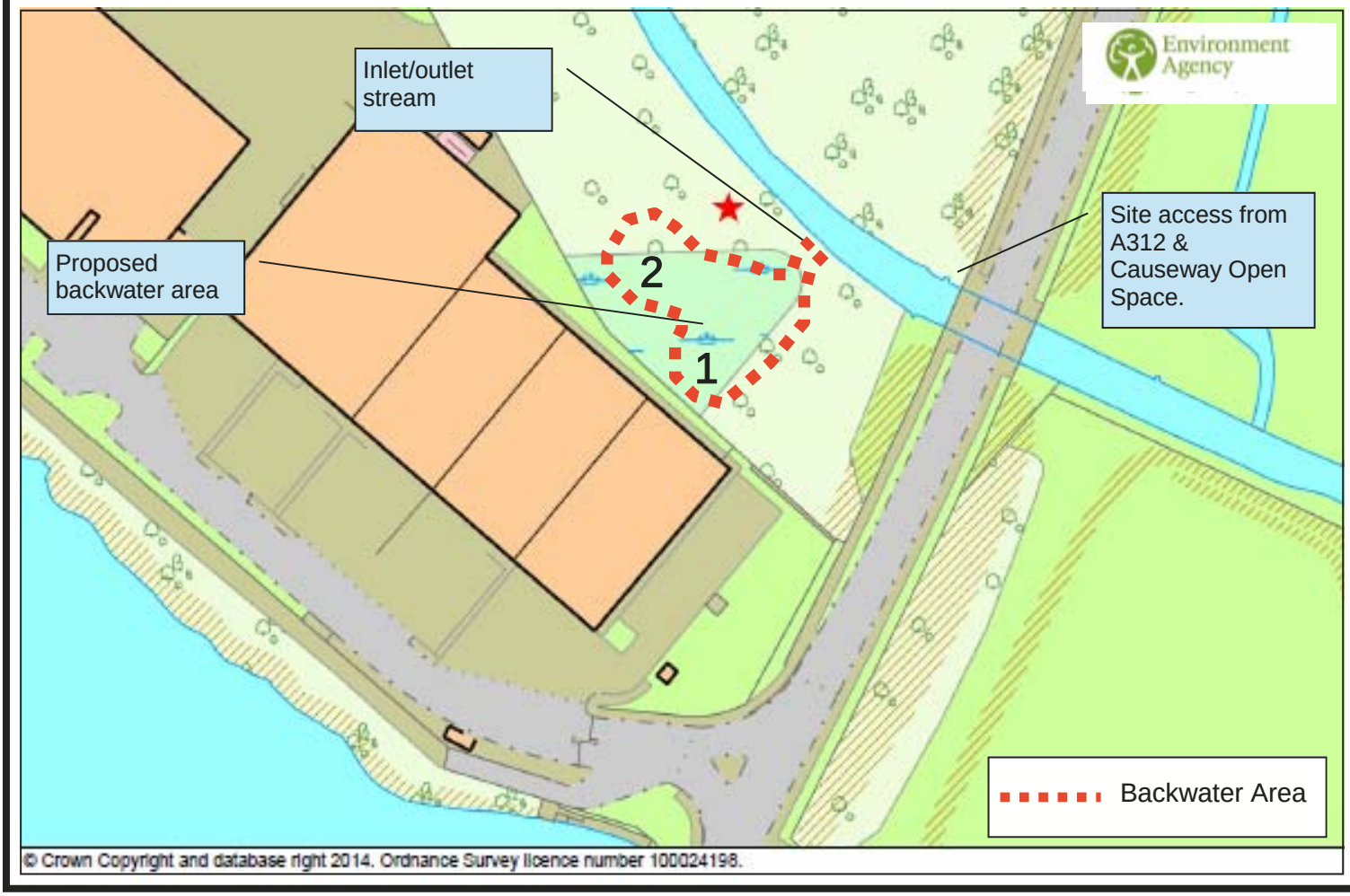
A new pond could be excavated in this area and connected to the river via a graded high flow channel. This will allow fresh water and aquatic wildlife into the pond when river levels rise.

There is enough space to build a pond of 220m² with a depth ranging between 0.5-1m³. However the total area of the pond could be scaled down to reduce contractor costs (see reduced size option on next page).

Silt at the site must be tested for contamination and materials must be disposed of off site.

A gas main runs past the northern bank of the river, where the site will be accessed from, so it is necessary to acquire service plans for the area before work and design begins.





Backwater Measurements

Maximum backwater area = 220m²
Reduced sized option = 110m²
Depth = 0.5-1.0m²

Inlet/Outlet Channel = 6.5 X 1.5 = 9.75m²

Scope of Works

Contractor

- Design work to confirm detail.
- Materials analysis.
- Pond excavation.
- Traffic management whilst works take place.
- Disposal of materials removed.

London Wildlife Trust Project Officer

- Site management during contractor works.
- Volunteer Management during enhancement & maintenance works

Volunteers

- Backwater enhancement:
  - Introduction of riparian/marginal plant life.
- Maintenance and monitoring of backwater.
  - Aquatic invertebrate monitoring.
  - Visits throughout the year to ensure backwater functioning correctly.
  - Removal of leaves and organic detritus.

Exemptions and Consents Required

- Environment Agency Flood Defence Consent

Site Access

- The site must be accessed from the northern bank of the river (Causeway Open Space, LB Hounslow)
- Fencing panel must be removed by LB Hounslow in order to provide access to heavy machinery.
- A temporary bridge must be laid across the river in order to provide vehicle access to the site.
- Service plans must be acquired to check the location of the gas main running through Causeway Open Space.

Access point to Causeway Open Space (A312)

Contractor Quote for works at Causeway Road

Reference	Description	Qty	Unit	Rate	Price
	Causeway Road				
1	Topographical survey	1	Item	£845.00	£845.00
2	Sample and test organic material to demonstrate suitability to remain on site	1	Item	£381.55	£381.55
3	Prepare pond drawings	1	Item	£624.00	£624.00
4	Mobilisation to site and set up	1	Item	£3,094.00	£3,094.00
5	Traffic Management and form access	1	Item	£4281.18	£4281.18
6	Strip organic materials from surface area of pond	33	m3	£33.84	£1,116.72
7	Excavate pond and connection to river Crane	142	m3	£18.61	£2,642.62
8	Disposal of organic material as non-hazardous waste	33	m3	£71.62	£2,363.46
9	Dispose of gravel subsoil for disposal. Material to be used for landfill capping or other beneficial use	142	m3	£14.30	£2,030.60
	Final Summary				**£17,379.13**

Things to consider:

- The clarifications affecting this offer specified by the contractor must be considered before proceeding with this work (included in document provided by contractor).
- Reducing the back water size by half will reduce project costs by £3,860.

Crane Meadows (Historic River Channel): TQ 10055 76681

Crane Meadows contains a 750m stretch of the ‘natural crane’ that exists today as an unconnected ditch network. This unconnected stretch of river is a result of historic straightening works predating those that took place along the majority of the Crane in the 1930s.

On first appearance this looks like an excellent opportunity to restore one of the largest sections of the Crane’s original course. However, despite the old river appearing relatively well defined on maps, reconnecting this channel to the main river will be an ambitious and costly task.

The land between the historic channel and the current route of the river Crane is made up by 4-5 ft of hard standing and dressed with tarmac. This has left the channel buried in places and difficult to access. The area is also restricted by security fencing and is impeded by the presence of invasive species (giant hogweed, Himalayan balsam)

The only realistic way this project could be funded is if it was considered for mitigation by Heathrow if plans for a third runway were approved.

Costs aside, the connection of this channel would make an impressive, high profile river restoration project. The works would complement the connection of the disconnected meanders elsewhere on site (see pages 18-21) and would make this stretch of the Crane one of the most natural and sinuous in the catchment.

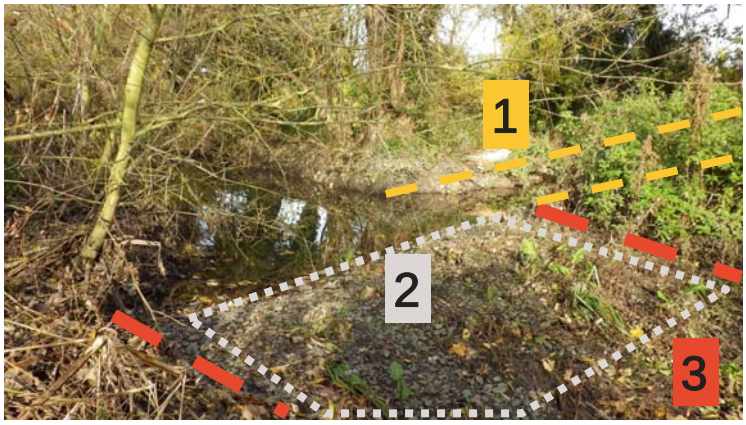
Crane Meadows and Crane Bank (Meanders): TQ 10165 76308

Crane Meadows and Crane Bank, the park on the eastern side of the river, contain a series of misconnected meanders. The misconnected meanders are believed to be a product of the channalisation of the Crane carried out in the early 1900's.

The Environment Agency and London Borough of Hounslow have previously reconnected three of these meanders (meanders 3-5). Two misconnected meanders remain; one contained within LWT's Crane Meadows nature reserve and another on the eastern bank of the river, at Crane Bank, Cranford.

It was a desire of the Environment Agency and London Borough of Hounslow to reconnect the remaining two meanders, but this was not possible due to insufficient funds. London Wildlife Trust wish to complete this project and believe that undertaking this work will reduce the risk of flooding at Crane Meadows and be of great benefit to freshwater biodiversity, aiding the rivers recovery from recent pollution events.

Reconnection Method



1. The bund blocking the inflow of water to the meander is removed. The outflow of the meander is also connected downstream.
2. A gravel riffle is placed just downstream of the inflow to the meander to ensure all water flows through the meander when river levels are low.
3. The section of river bypassed by the meander lies dry until river levels rise, overtopping the riffle and utilising the channel at high flows.

Site and Project Overview

Crane Bank Meander (Meander 1)

This meander requires excavation to deepen and redefine the shape of the river channel. Substantial tree clearance is required in order to access this meander from Crane Bank and to clear the channel sufficiently to begin excavation work.

The bund and bank height at the inlet of this meander are smaller than those found at meander 2.

Crane Meadows Meander (Meander 2)

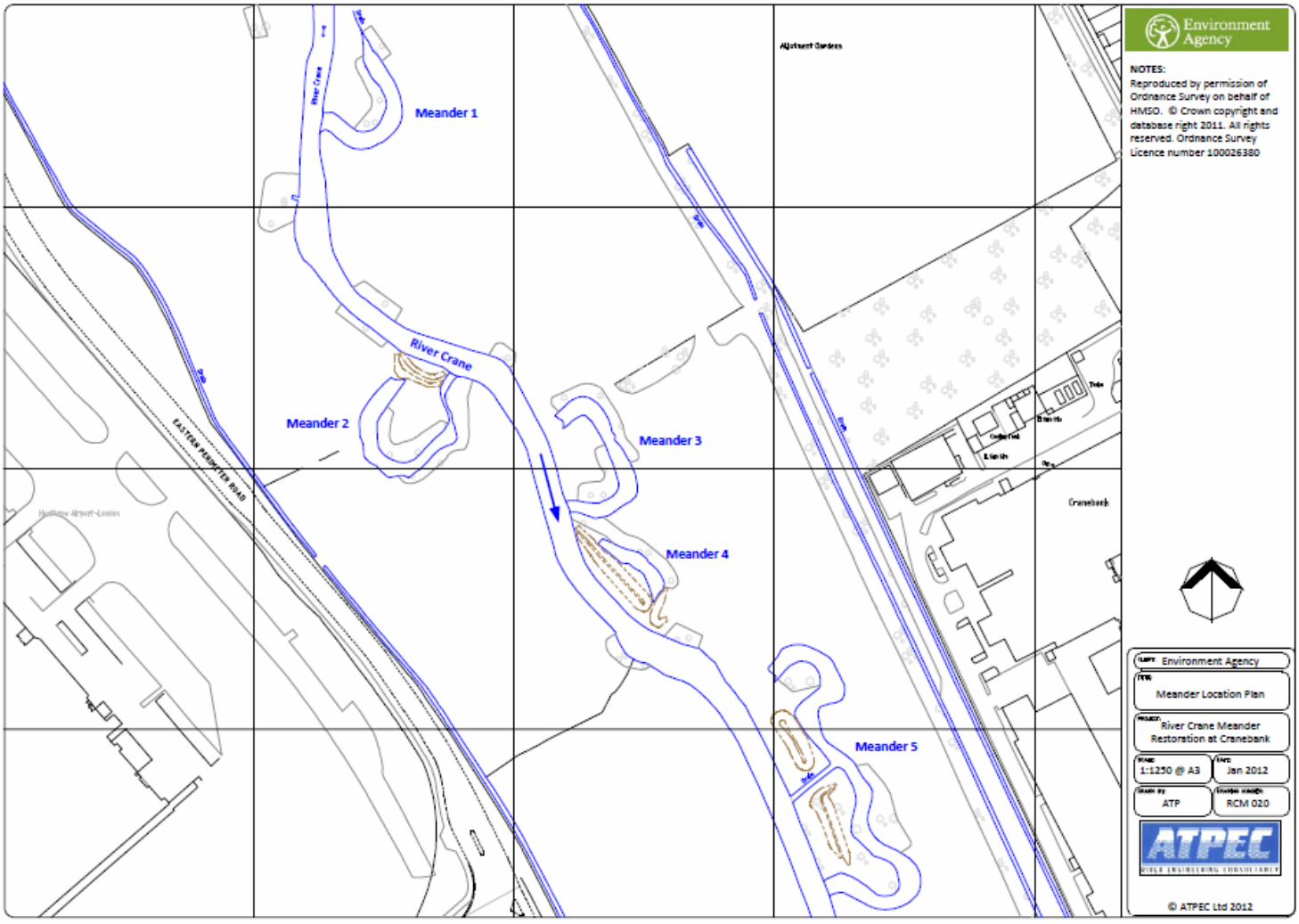
This meander contains rubbish and scrap metal that must be cleared before work begins. It requires the same level of excavation and tree clearance as Meander 1, however, the bund separating the meander from the river is of a greater height and requires further excavation in order to provide connectivity with the river.

Crane Meadows Meander Bund (Meander 2)

This image shows the height of the bund that must be levelled in order to provide connectivity to the meander.

There is also an ash tree blocking the most obvious route for this channel. This tree is most practically bypassed by creating the inlet just upstream from this point.

The outlet of this meander is not obstructed by a bund and only requires minor excavation work to provide connectivity.



Scope of Works

Contractor

- Clear site sufficiently for work to begin.
- Excavate material to restore meander
- Disposal of materials excavated.
- Installation of riffles downstream of meander inflow.

Environment Agency

- The Environment Agency have provided modelling for this project.

London Wildlife Trust Project Officer

- Site management during contractor works.
- Volunteer Management during enhancement & maintenance works

Volunteers

- Backwater enhancement:
  - Introduction of riparian/marginal plant life.
- Maintenance and monitoring of backwater.
  - Aquatic invertebrate monitoring before and after works.
  - Visits throughout the year to ensure backwater functioning correctly.
  - Removal of leaves and organic detritus.

Exemptions and Consents Required

- Environment Agency Flood Defence Consent
- Full service check required to evaluate route of gas main supplying Heathrow Airport.
- Service check to confirm manhole near meander 2 will not prohibit works.

Access

Crane Meadows

- Access to the site is only possible during dryer months when the ground is less water logged and soft.
- The contractor has specified that they wish to create a site compound off Earhart Way and will need to place some temporary fill to create access into scrub area.

Crane Bank

- Access to Crane Bank is also permissible from Earhart Way (south of site).
- Public footpath closure required for when works take place.

Contractor Quote for works on Meander 1 and 2

Reference	Description	Qty	Unit	Rate	Price
	Re-connecting Meanders				
1	Mobilisation	1	Item	£7,723.82	£7,723.82
2	Sample and test of material to be removed to prove 'non-hazardous' waste	1	Item	£576.55	£576.55
3	Clear trees and vegetation to provide access	1	Item	£4,550.00	£4,550.00
4	Pump out and remove material between meander 1 and main river	140	m3	£12.06	£1,688.40
5	Pump out and remove material between meander 2 and main river	170	m3	£9.93	£1,688.10
6	Import and place clean gravels to new meanders to form new riffles	100	Tonne	£45.48	£4,548.00
7	Disposal of excavated material to licenced landfill as 'non -hazardous waste'	310	m3	£65.26	£20,230.60
	Final Summary				**£41,005.47**

Things to consider:

- The clarifications affecting this offer specified by the contractor must be considered before proceeding with this work (included in document provided by contractor).

Cranford Park (Double Pond Connection) TQ 10310 78029

Site and Project Overview

Cranford Park contains two ponds to the east of the main river that were installed by LB Hounslow between 1998-2004. Although the ponds are situated next to the main river there is currently no connectivity between them. The top pond is known to dry out during summer months. Improving connectivity between the ponds and main river could ensure that the ponds stay wet throughout the year providing quality nursery habitat for juvenile coarse fish.

1. Top Pond

The top pond is approximately 100m². It can be enhanced by softening the gradient of marginal areas, allowing the ponds bed to gently shelve into deeper water. This will enable the pond to support a more diverse aray of marginal plant life.

The softening of the ponds banks could also be complimented by the introduction of new marginal plant species.

2. Bund

Between the two ponds is a bund of approximately 1.5m that restricts connectivity. A short pipe line could be installed to connect the two ponds. The pipeline must be appropriately placed to maintain suitable head levels in each pond, on either side of the bund.

3. Connecting Channel

There is a small channel where water seeps through the bund and flows into the bottom pond. This channel could be cleared of organic debris and scrub and enhanced through appropriate marginal planting.

4. Bottom Pond

The bottom pond is equal in size to the top pond and can be enhanced in the same fashion. It is important to note that the Crane, running adjacent to this pond, undergoes a change in levels as it passes over a sluice at an Environment Agency telemetry station. This means that there is head differentiation between the pond and the river (pond level is higher than river level).

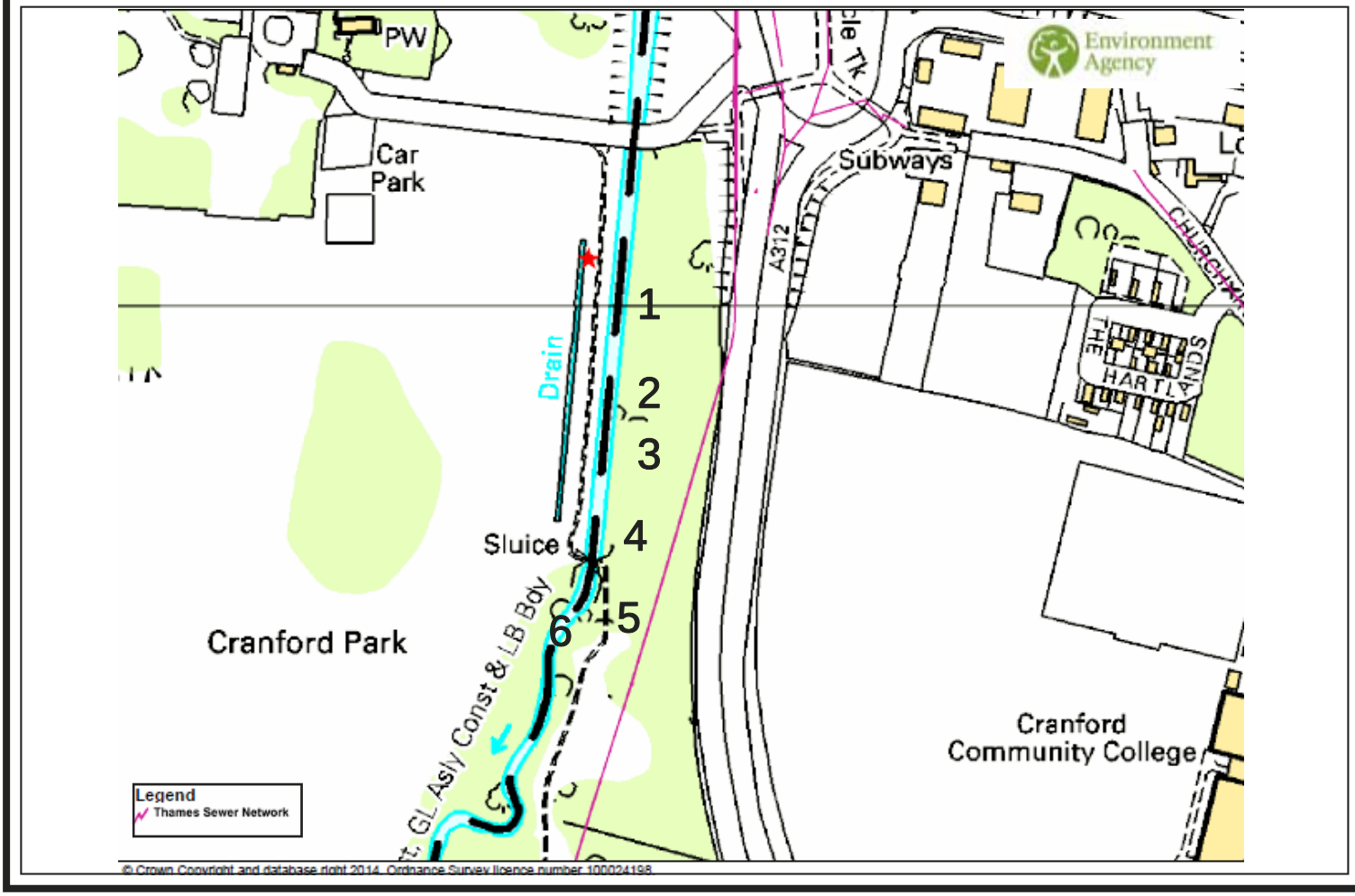
5. Outlet/Inlet Channel Route
6. Outlet/Inlet Confluence with Main River

Due to the head differential between the ponds and river, water may escape the ponds if they are connected via a simple outlet channel. Appropriate outlet design or a change in river levels below the telemetry station is required to overcome this problem.

Pond levels could be held back with stop logs or a plinth above the outlet stream, but this would mean that connectivity would only be maintained when river levels rose significantly and passed over this barrier.

Another way of improving connectivity would be to pinch the river downstream of the confluence of the outlet channel with the main river. Pinching the river would increase levels above the pinch point and below the telemetry station, meaning that water could flow into the ponds at times of year when river levels were not at their highest.

The end of the site is impeded by the London sewer network (shown on map) and an unknown outfall. These services must be considered during the design of the project as they may limit and impede on the most appropriate route for the outlet channel. The outlet channel will also have to cross a foot path (see map). A suitable crossing, such as a small sleeper bridge, must be installed to ensure that pedestrian access is maintained.



Scope of Works

Contractor

- Topographical survey to understand differential between pond and river and validate design.
- Design work for outlet channel to ensure water does not escape from pond.
- Excavation of outlet channel.
- Pinching of river via appropriately placed deflectors or hinged logs and materials excavated elsewhere on site.
- Use of excavated materials on site for landscaping.
- Provision of suitable access (eg. Sleeper bridge) over newly installed channel.

Environment Agency

- Recalibration of telemetry station following pinching of river and rise in levels below sluice.

London Wildlife Trust

- Tree works: - Clearance of trees to allow heavy machinery on site.
  - Thinning of trees to allow more sunlight onto backwater area.
- Volunteer management.

Volunteers

- Assistance with tree works.
- Backwater enhancement: - Softening of banks to enhance available habitat for marginal plant life.
  - Introduction of riparian/marginal plant life.
  - Maintenance and monitoring of backwater.

Exemptions and Consents Required

- Environment Agency Flood Defence Consent
- D1 Exemption: Depositing waste from dredging inland waters (see appendix)
  More Info: https://www.gov.uk/waste-exemptions-disposing-of-waste
- U1 Exemption:
  More Info: https://www.gov.uk/waste-exemptions-using-waste#U1
- Full service check required to evaluate route of unknown outfall and London sewer network.

Access

- Site can be accessed from A312 and Cranford Park Road
- Footpath closure required during works (LB Hillingdon)

Issues Affecting the Feasibility of this Project

- The site was revisited by the Project Officer and the contractor's Site Manager to assess weather the head difference between the bottom pond and the main river would pose a problem to the projects design.
- The water level and bed level were measured in the bottom pond and main river (above and below sluice) with a levelling instrument.
- The results showed that pinching the river to raise levels and provide connectivity with the ponds was not feasible. This is due to the fact that river levels would have to exceed the height of the sluice, thus reducing the gradient and flow of the river.
- Connection via a simple channel is still possible, but would be of lesser environmental value, as connectivity would only be maintained when the river reached its highest levels.
- It was decided that the costs outweighed the benefits of this project. Funds would be better spent making improvements to the overly straightened and widened stretch of river that runs through Cranford Park.
- It is worth noting that the sluice at the Environment Agency telemetry station may be responsible for reducing the gradient and flow of the river upstream of its position and will also pose a barrier to fish migration during times of low flow.