Physical and biological monitoring of STREAM restoration projects

Year Four Report

Natural England

August 2009
Final Report
9S0459

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APPENDIX A: REACH SCALE MAPPING*

APPENDIX B: PHOTOGRAPHIC RECORDS*

(*All appendices are designed to be inserted into a ringbinder that accompanies this report and will be updated on an annual basis)

1 INTRODUCTION

1.1 The STREAM Restoration Project

Demonstrating Strategic Restoration and Management (STREAM) is funded jointly by the European Commission's LIFE-Nature programme, Natural England, Environment Agency, Wiltshire Wildlife Trust, Hampshire and Isle of Wight Wildlife Trust, and Wessex Water to improve river habitat conditions along a number of reaches of the River Avon Special Area of Conservation identified in **Table 1.1** and **Figure 1.1**.

Table 1.1 Location of river restoration sites within the Avon catchment

Site name	Watercourse	Upstream limit	Downstream limit
1.1 Upper Woodford	River Avon	SU 13183755	SU 12603723
1.2 Fovant	River Nadder	SU 00213059	SU 00663072
1.3 Seven Hatches	River Wylye	SU 09243304	SU 09833178
1.4 Amesbury	River Avon	SU 15834257	SU 15624195
1.5 Hale	River Avon	SU 17401889	SU 16351791
1.6 Blashford	Dockens Water	SU 15410828	SU15300826

Further details about the project and outline design of the restoration works to be undertaken are contained within the original LIFE bid document (English Nature, 2005).

1.2 Physical and Biological Monitoring

As part of the STREAM project, Royal Haskoning has been commissioned by Natural England to undertake physical and biological monitoring at each of the six restoration sites.

Monitoring will involve one pre-restoration and one post-restoration survey at each site. These surveys will be used to document the restoration works and to identify the possible influence of the works on ecology within the reach. Reach-scale mapping and repeat photography techniques will be used to monitor change at all restoration sites. It is not possible to undertake detailed survey at all sites due to resource constraints and practical limitations. Therefore two of the sites will also be subject to more detailed survey and the use of control sites.

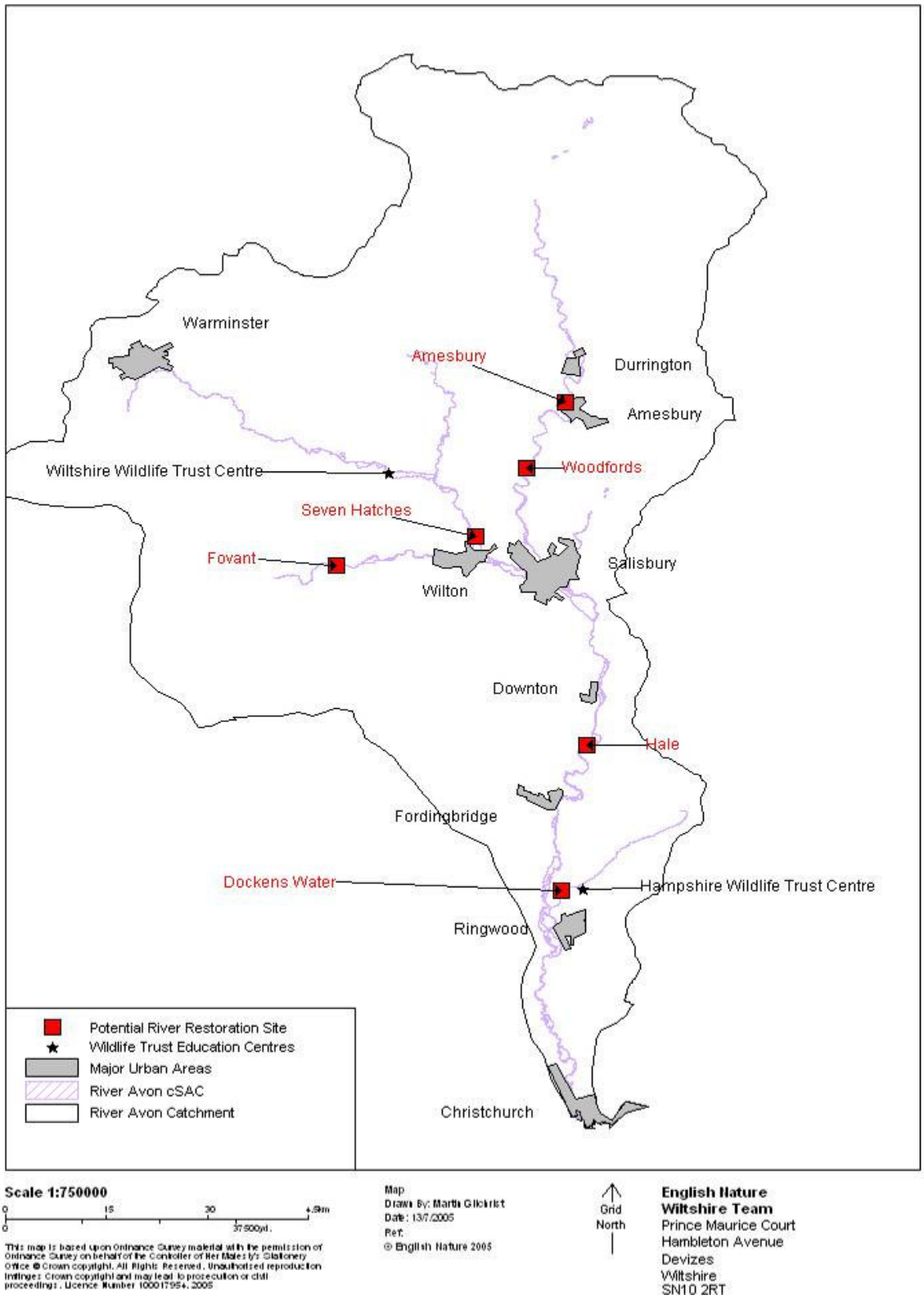
1.3 Reporting format

The findings of the monitoring project will be reported at the end of each of the four years of the project. This document reports on the findings of the forth year's monitoring surveys undertaken in 2009 at the following sites:

Detailed survey
None undertaken this year

Rapid assessment
- Amesbury Restoration Site (AMR);
- Dockens Water Restoration Site (DOR).

Figure 1.1 Location of STREAM restoration sites within the Avon Catchment



The purpose of this report is to present the data that has been collected this year and summarise any initial findings in relation to the physical and biological characteristics of the sites surveyed.

The primary data is contained within the appendices that accompany this report within a ringbinder. This ringbinder will be updated following subsequent annual reports in order to collate all of the data gathered over the four year period in one place.

2 METHOD

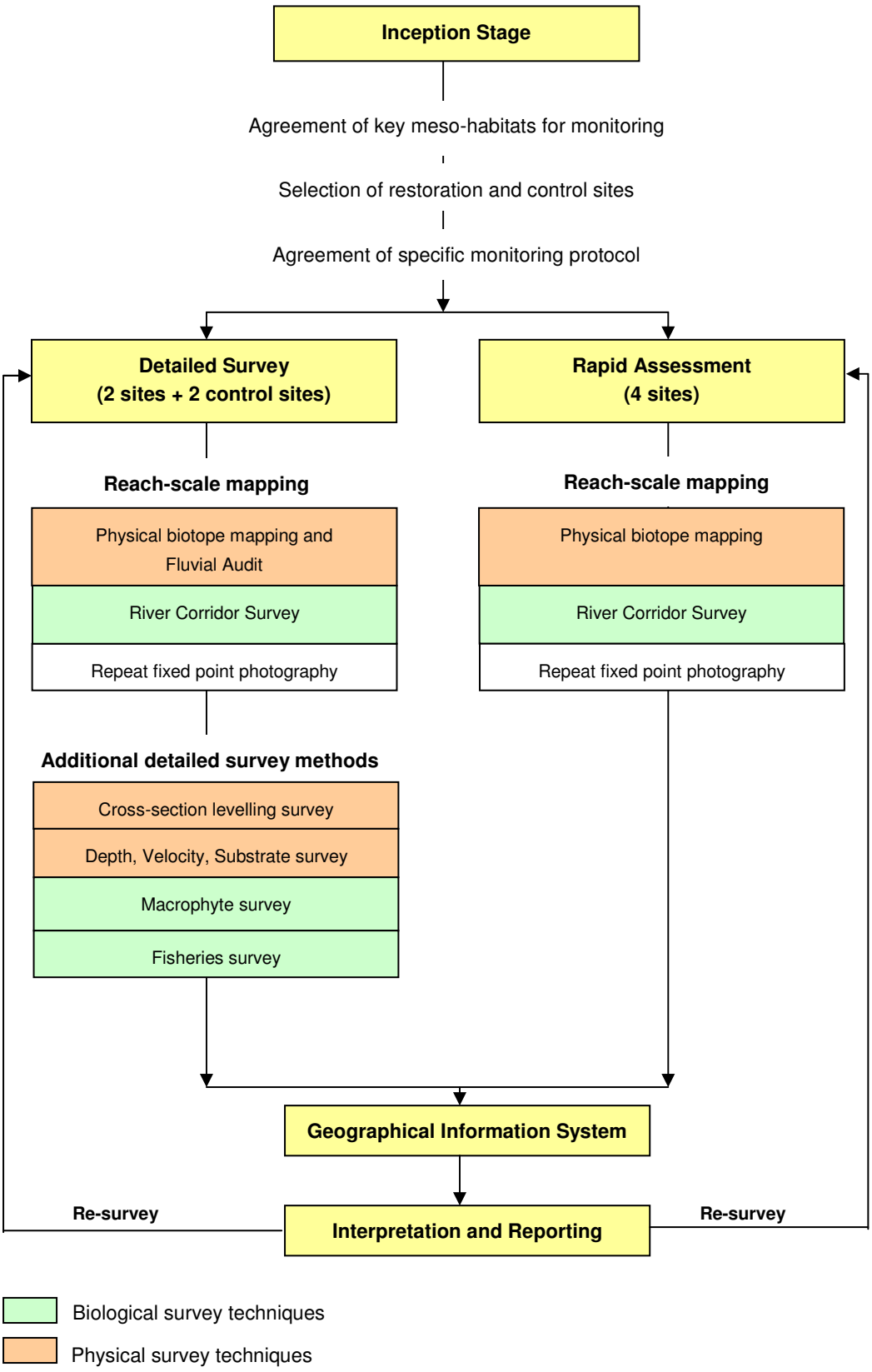
2.1 Monitoring Protocol

The methods used in gathering the physical and biological survey data presented in this report are based on those agreed with Natural England in developing the River Avon STREAM Monitoring Project – Monitoring Protocol (Royal Haskoning, 2006). The monitoring protocol describes how the monitoring sites were selected and the monitoring framework (**Figure 2.1**) together with the rationale underlying the project and should be read in conjunction with this report.

The following statements define the purpose and limitations of the monitoring framework.

- The pre-restoration survey will establish a record of biological and physical conditions at the site prior to restoration.
- The post-restoration survey will record modifications to the channel after restoration.
- The surveys will both provide snapshots pre- and post-restoration. It is important to recognise that there is a limitation to the comparisons that can be made over this short duration and it will not be possible to draw any conclusions regarding changes in conditions at a site pre / post-restoration.
- The relationship between physical and biological conditions will be analysed at each site. Comparisons will be drawn concerning the relationships identified at each site at the time of survey, taking into account other factors and processes that may influence relationships.
- The limitations of the control sites will prevent direct comparison of the restoration reaches with the control sites. The purpose of using the control site is to compare the relationship between physical and biological conditions recorded at both sites on a given day rather than to compare the magnitude of change of either physical or biological parameters between sites. Comparisons will therefore be made between pre-restoration and post-restoration surveys at each individual site. Inference may be drawn about changes in each parameter and in the relationship between physical and biological character.
- This monitoring framework will establish a documented baseline in order that repeat surveys of both physical and biological conditions can be made over longer time periods.

Figure 2.1 **Monitoring framework for the Avon STREAM Monitoring Project**



2.2 Changes since the pre-restoration surveys

A summary of the restoration works implemented as part of the STREAM project is provided below. More detailed information can be obtained in the bespoke design reports – please contact Natural England to obtain these further details.

Amesbury
The STREAM project carried out works to restore the River Avon at Amesbury in autumn 2008. The aim of the restoration work was to work with natural processes to modify the channel to a more appropriate width, shape and slope, and re-introduce woody debris to vary flow speed and direction, and sediment movement. The restoration work within the monitored reach included:

- selectively felling trees and anchoring them securely in the river as deflectors;
- re-grading part of the bank to make a more gently sloping river bank.

In addition to these works, gravel shoals/shoulders were installed downstream of the monitored reach whilst upstream selected coppicing was undertaken.

Dockens Water
Works were undertaken to complement river restoration that has already been completed at Hampshire and Isle of Wight Blashford Lakes Nature Reserve. The objective of this work was to improve the connection between the river and its floodplain, reduce shading, and restore a more dynamic channel. The work was completed in August 2008 and included:

- forming a small (approximately 15 metres long) floodplain pool connected with the river via a small channel that mimics a natural chute;
- decreasing heavy shading by felling a small number of non-native trees alongside and around the chute;
- creating brushwood barriers between the new path and pool to ensure safe public access to the area.

2.3 Realisation of the Monitoring Protocol

2.3.1 Reach-scale mapping

Reach-scale mapping of all sites was undertaking according to the monitoring protocol using Fluvial Audit, Physical Biotope Mapping, River Corridor Survey and repeat photography. Fluvial Audit sheets, Physical Biotope maps and River Corridor Survey maps have been prepared for each site and are presented in **Appendix A**. Definitions of the physical biotopes that were used during Physical Biotope Mapping are provided in Table 2.1. These definitions are consistent with those used during River Habitat Survey (RHS).

Table 2.1 Physical biotope definitions

Physical Biotope	Definition
Rapid	Boulder/cobble substrate with stepped profile. Associated with 'white water' from broken standing waves
Riffle	Shallow, fast flowing, discrete section of up to 5 channel widths in length. Unconsolidated gravel substrate with 'bubbling' unbroken standing waves.
Run	Shallow, fast flowing section, similar in character to a riffle but not a discrete feature.
Boil	Associated with upwelling flow, typically found on the outside of tight meander bends, behind structures, d/s of waterfalls
Glide	Section of smooth or rippled flow, deeper flow than a run.
Pool	Sections of deeper flow of up to 3 channel widths in length that are sustained by scour. Typically located on the outside of meander bends, downstream from bedrock outcrops (plunge pools) and weirs. Does not include impounded sections.
Ponded reach	Sections of no perceptible flow where water is impounded upstream of natural bedrock controls and weirs.
Marginal deadwater	Margins of the main channel where there is no perceptible flow.

For definitions of other terms used in the Fluvial Audit and River Corridor Survey please refer to the relevant reference sheets within **Appendix A**.

Photographic survey records are contained within **Appendix B.**

No additional detailed survey techniques were undertaken in 2009.

3 RAPID ASSESSMENT RESULTS

3.1 Amesbury

Upstream limit: 415044 142522
Downstream limit: 415655 142005
Length of site: 654m

Location:
The site is located either side of the A303 dual carriage way to the north of Amesbury. The upstream boundary of the site is parallel to the beginning of the ditch system on the left hand bank. The downstream boundary of the site is where the river branches in two, upstream of a weir structure. The A303 crosses at approximately the mid-point of the site.

Typical photographs:

a) 2006 **b) 2009**

Photo 3.1.1 - AMR01j: Looking upstream of the road crossing. Large Woody Debris deflectors on the right hand bank in 2009.

a) 2006 **b) 2009**

Photo 3.1.2 - AMR01k: Looking downstream to road crossing. Large Woody Debris deflectors on the right hand bank in 2009.

a) 2006

b) 2009

Photo 3.1.3 - AMR02e Looking downstream along glide physical biotope downstream of the road crossing. The public footpath is along the left hand bank.

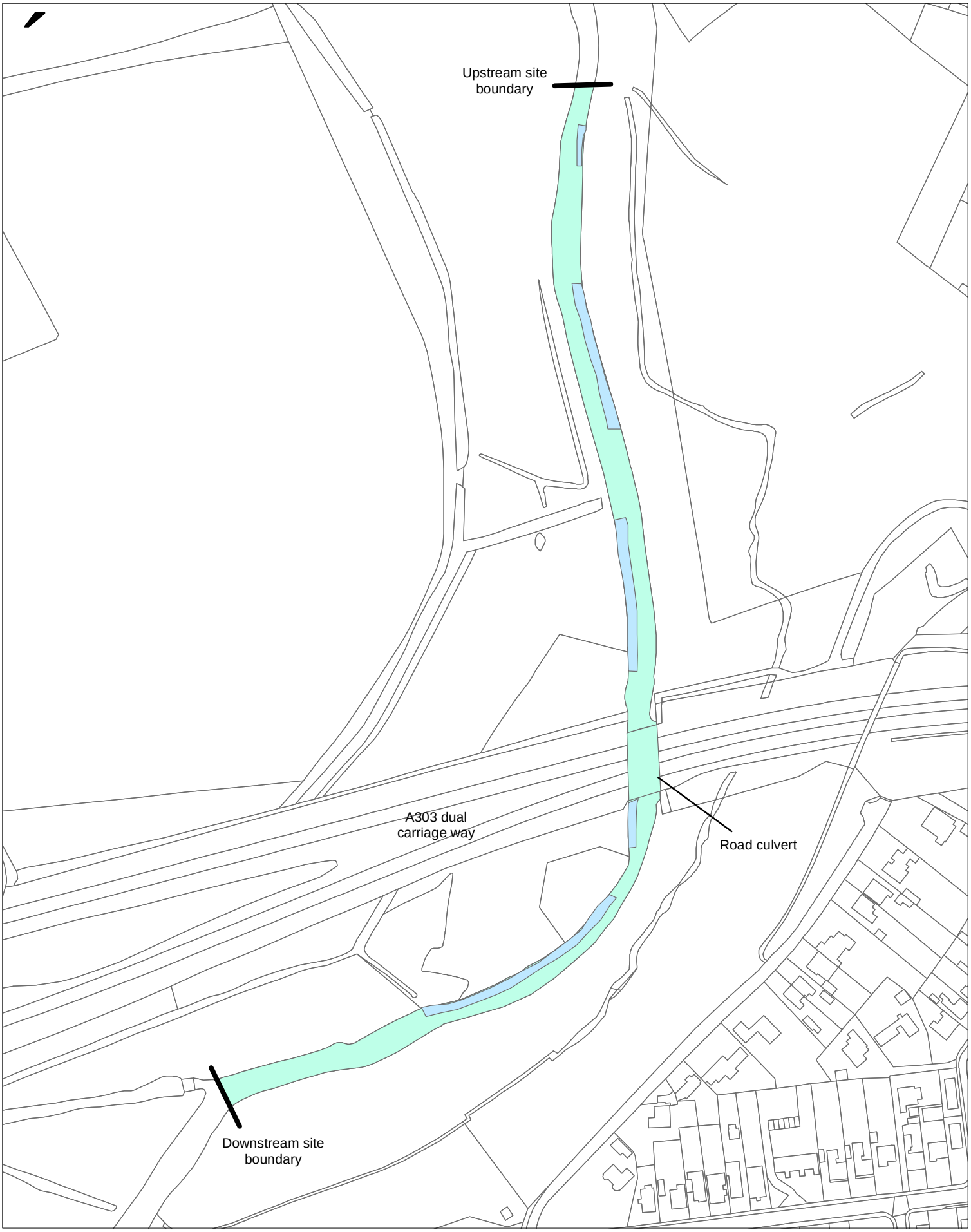
a) 2006

b) 2009

Photo 3.1.4 - AMR02f: Looking upstream. Large Woody Debris deflectors on the right hand bank in 2009.

Comparison with pre-restoration survey (2006)
The restoration works implemented at Amesbury have results in visual differences in the nature of flow and vegetation within the channel and on the floodplain, both upstream and downstream of the A303 road bridge. Upstream of the road bridge felling of poplar trees along the left hand bank (by the landowner) has opened up the floodplain (**Photo 3.1.1a and 3.1.1b**). Large Woody Debris (LWD) deflectors installed on alternate banks have resulted in areas of marginal deadwater and increased vegetation at the channel margins (**Photo 3.1.2a and 3.1.2b**).

Downstream of the A303 road bridge selected felling of trees (by the landowner) within the park has also opened up the floodplain and reduced shading (**Photo 3.1.3a and 3.1.3b**). LWD deflectors have also been installed on alternate banks. These are creating areas of marginal deadwater which are encouraging increased vegetation at the channel margins (**Photo 3.1.4a and 3.1.4b**).



Legend

Physical biotope

- Glide (laminar)
- Marginal deadwater

Title: Amersbury Restoration Site (AMR)
Location and physical biotopes

Project: Avon STREAM Monitoring Project

Client: Natural England

Date: 14/07/2009

Scale: 1:2,500

Map 4.2

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3.1.1 Physical Characteristics

Physical biotopes
The site consists primarily of a glide which is divided in two by the culvert under the A303 dual carriage way (**Map 3.1**). LWD deflectors installed along alternate banks upstream and downstream of the culvert create areas marginal deadwater immediately downstream of the deflectors. In addition, the deflectors divert flow towards the opposite bank within these areas, creating a slightly sinuous flow path throughout the reach. The bed of the culvert is artificial and is acting as a grade control between the two sections.

Comparison with pre-restoration survey (2006)
In 2006, prior to the restoration works, flow was uniform and slow flowing throughout the study reach. Whilst flow remains generally slow flowing, the installation of the LWD deflectors has created some diversity. There are now areas of marginal deadwater and shallower waters on top of the deflectors that can be distinguished from the main flow, thus creating more varied habitat conditions.

Sediment regime
The Fluvial Audit recorded no evidence of natural channel adjustment through erosion (see **Appendix A**). Localised sourcing of fine sediment to the channel is occurring due to poaching by humans and dogs within the land open to public access.

The predominant sediment process within the site is deposition of fine sediment due to the overwide / overdeep nature of the modified channel. Sedimentation is particularly occurring at the channel margins and in the lee of the LWD deflectors due to the creation of areas of marginal deadwater.

Comparison with pre-restoration survey (2006)
Sedimentation is occurring, as in 2006, due to the historically modified nature of the channel. However, due to the presence of the LWD deflectors, sedimentation is more concentrated at the channel margins than on the channel bed along the main flow path. Poaching is continuing to occur within the land open to public access and the area poached has become larger since 2006.

3.1.2 Biological characteristics

In-channel vegetation occurs throughout the channel. Species observed include Unbranched Bur-reed (*Sparganium emersum*), the negative indicator Fennel Pondweed (*Potamogeton pectinatus*) and a patch of Duckweed (*Lemna minor*) immediately upstream of an overhanging tree. However, areas of water-crowfoot (*Ranunculus pencillatus spp.*) were also observed within the reach.

Emergent vegetation is present semi-continuously along the right hand bank. The dominant species are Branched Bur-reed (Sparganium erectum) and Reed Sweet-grass (*Glyceria maxima*), with Greater Pond Sedge (*Carex riparia*) occurring in the downstream section of the site. Stands of emergent vegetation also occur along the left hand bank, in particular upstream of the A303 road bridge. There are also occasional stands of watercress (*Callitriche spp.*) and Water Mint (*Mentha aquatica*). These species are frequently associated with the LWD deflectors. At the downstream end of the reach, a section of marginal fringe has been pushed further into the channel and is well-established, acting to narrow the channel at this location.

The riparian zone along the right hand bank is better established than along the left hand bank with scattered willow trees and alder, and is dominated by ruderal vegetation such as Common Nettle (*Urtica dioica*), with Great Willow Herb (*Epilobium hirsutum*) occurring downstream of the road culvert), Meadowsweet and Great Willow Herb. Along the left hand bank upstream of the road bridge there is a mown grass fisherman's path which limits the width of the riparian zone. On the left hand bank there is a line of Poplars downstream of the road bridge. Species present along both include Common Nettle, Great Willow Herb, with occasional Meadowsweet and hemlock water dropwort (*Oenanthe crocata*).

Landuse along the right hand bank consists of tall grass and ruderal vegetation set back from the channel bank which is bordered by a mown fisherman's path. The downstream section of the site is open to public access and a footpath follows the right bank. On the left hand bank the landuse is tall ruderal vegetation dominated by Common Nettle and Common Comfrey (*Symphytum officinale*).

Comparison with pre-restoration survey (2006)
The dominant species present in the channel and marginal zone remain similar to those observed in the 2006 survey. However, additional species were observed in 2009, including water-crowfoot (*Ranunculus pencillatus spp.*), watercress (*Callitriche spp.*) and Water Mint (*Mentha aquatica*), which are frequently associated with the LWD deflectors. Occurrence of duckweed is less frequent than in 2006, now limited to one location.

The most dramatic difference in vegetation, however, is along the floodplain upstream of the A303 road bridge, where the previous poplar plantation has been felled by the landowner and has been replaced by tall herbs and ruderal vegetation.

3.1.3 Physical and biological relationships

- The cross-sectional profile of the channel has been widened and deepened as a result of historical dredging. This, combined with impoundment upstream of the downstream weir, results in deep, slow flow conditions.

- The depth and flow conditions within the channel are still likely to be limiting the extent and diversity of macrophyte species within the channel.

- Installation of LWD deflects has created some flow diversity within the reach, including areas of marginal deadwater in between and shallower waters on top of the deflectors. Marginal fringe species, such as water mint (*Mentha aquatica*), have established in some of these areas.

- The width of the riparian zone is restricted along the left hand bank due to footpaths used for fishing and public access and poaching is continuing to occur in localised areas.

3.2 Dockens Water

Upstream limit: 415142 108146
Downstream limit: 415513 108293
Length of site: 433m

Location:
The site is located to the south west of Ellingham Harbridge and Ibsley and runs parallel to Ellingham Drove. The upstream boundary of the site is the bridge between the sand and gravel pit and the water treatment works. The downstream boundary of the site is where the track meets Ellingham Drove (Figure 3.2)

Typical photographs:

a) 2007 **b) 2009**

Photo 3.2.1 - DOR01-c: Looking upstream towards footbridge. Point bar on the inside of meander bend.

a) 2007 **b) 2009**

Photo 3.2.2 - DOR01-i: Looking downstream with a point bar on the inside of the meander.

a) 2007 b) 2009

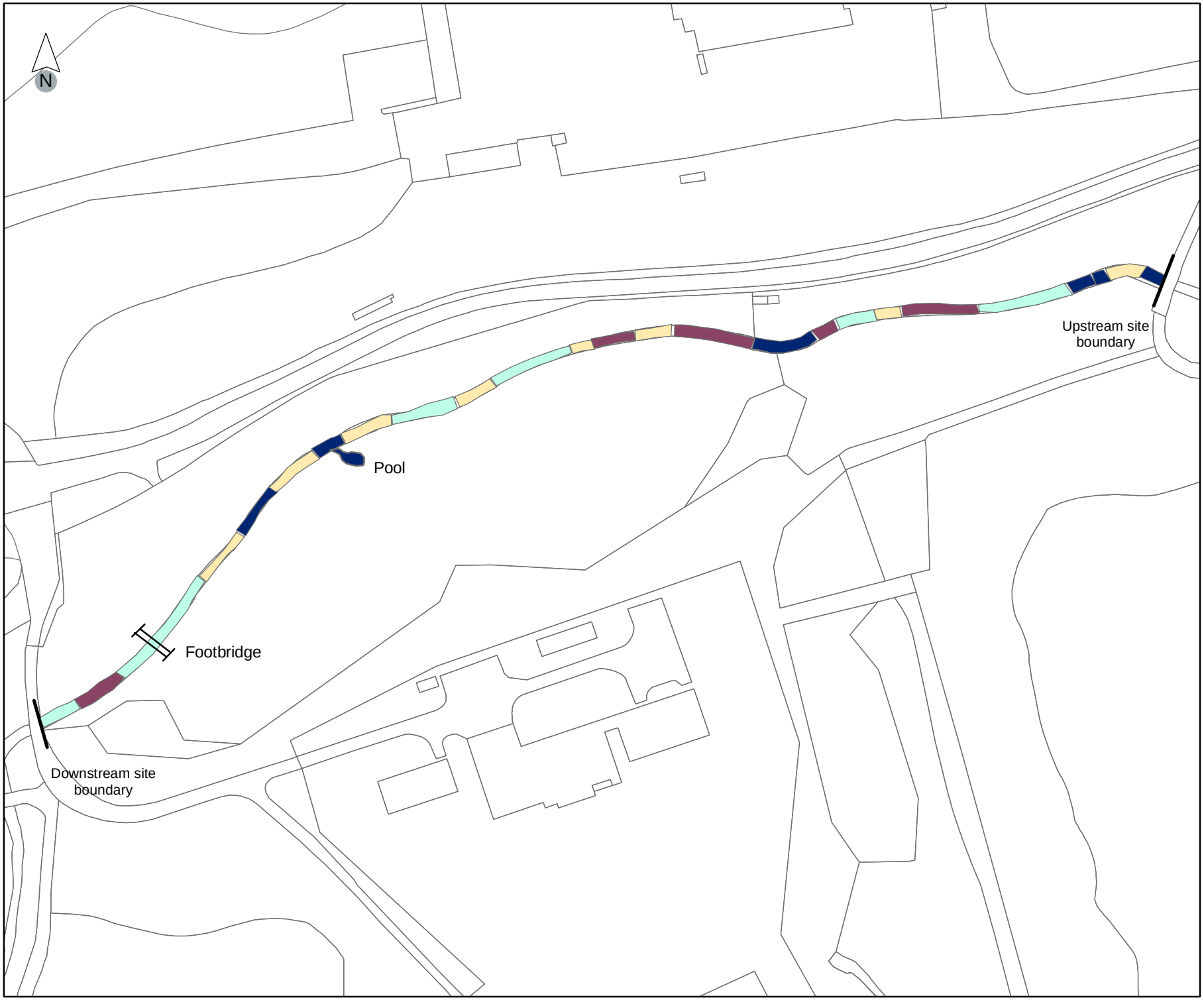
Photo 3.2.3 - DOR01-k: One of several fallen trees remains in the same position.

a) 2007 b) 2009

Photo 3.2.4 - DOR01-n: Looking downstream with vegetated bar in the foreground.

Comparison with pre-restoration survey (2007)
There are few visual differences between the photographs taken in 2007 and those in 2009. The main morphological difference is the construction of a pool / backwater on the left hand bank where the channel was previously embanked. In addition, a new footbridge has been constructed downstream of this pool for public access (see **Map 3.2**).

Most morphological features have remained in position since the baseline survey with only minor alterations. Vegetation cover also remains unchanged along the river, although significant works have been undertaken away from the river to improve access within the Blashford Lakes Nature Reserve.



Legend

Physical Biotope

Biotope

- Glide
- Pool
- Riffle
- Run

Title:
Dockens Water Restoration Site (DOC)

Project:
Avon STREAM Monitoring Project

Client:
Natural England

Date:
14/07/2009

Scale:
1:1,650

Map 3.2

3.2.1 Physical Characteristics

Physical biotopes

The channel is morphologically diverse and characterised by a number of different physical biotopes; glides, riffles, runs and pools were observed in sequence throughout the reach (Figure 3.2).

Comparison with pre-restoration survey (2007)

Physical biotopes throughout the reach remain very similar to those observed during the 2007 baseline survey. Differences are limited to minor changes in bar shape and size and modifications where the enhancement works themselves have been implemented where a new bar has formed and the pool-riffle sequence has been modified by the presence of a fallen tree across the channel and creation of an offtake to the pool feature.

Sediment regime

The dominant bed materials at the site are fine gravel and sand. The bank material varies but is predominantly earth comprising silt and sand which is subject to fluvial scour in places. Flow velocities are locally variable influenced by the irregularly meandering planfrom, though the average reach gradient is low.

Evidence of erosion was found at the upstream limit with both scour and bank erosion occurring on the left hand bank. A number of depositional features were observed throughout the study reach, including point bars and side bars composed of gravels and silts. The majority of the depositional features were unvegetated, indicating temporary storage and potential for transport downstream in periods of increased flow. However some bars have vegetated, forming more permanent and semi-permanent features. Tree roots and fallen trees are also creating temporary silt bars upstream in places.

The planform of the river and confined nature of the channel suggests that the river has been historically realigned. At the upstream end of the site there is evidence of dredging, which appears to have been used to embank the channel at several locations throughout the study reach. The embankments are currently limiting the interaction of the river with the floodplain thus limiting potential for sediment transfer to the floodplain. A fallen bridge near the downstream limit is acting as a local grade control limiting channel bed adjustment at, and upstream of, this location. Upstream of this structure, an offtake to a pool / backwater has been created and the embankment has been locally lowered. The pool was dry at the time of survey but may receive flow during high flow events.

The dominant sediment processes at the site are the transport and localised deposition of sediment occurring as a result of varied flow velocities throughout the reach. Previous modification is limiting the transfer of sediment to the floodplain in high flow conditions.

Comparison with pre-restoration survey (2007)

The sediment regime remains very similar to that observed during the 2007 baseline survey. Differences are limited to minor changes in bar shape and size, most noticeably where the enhancement works themselves have been implemented. Sediment may be transferred into the pool created during high flow events but was not connected with the channel at the time of survey.

3.2.2 Biological characteristics

The site is heavily wooded on both banks with broadleaved trees creating a continuous riparian buffer. In channel vegetation is sparse and dominated by a few mosses and liverworts and there is no emergent vegetation present. This is likely to be due to overshading and the shallow flow conditions in the channel.

Land use on both the right and left hand banks is broadleaved woodland. The dominant species are Pendunculate Oak (*Quercus robur*), Common Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*), Holly (*Ilex aquifolium*) and Ash (*Fraxinus excelsior*) many of which overhang and shade the channel. Beneath the woodland, the ground is predominantly covered with leaf litter, with some bare ground, Bracken (*Pteridium aquilinum*), Cranesbill (*Geranium sp.*) and Ivy (*Hedera helix*).

The riparian buffer zone is a continuous but narrow strip on both the left and right banks and is dominated by the Common Nettle. There are public footpaths running either side of the river corridor.

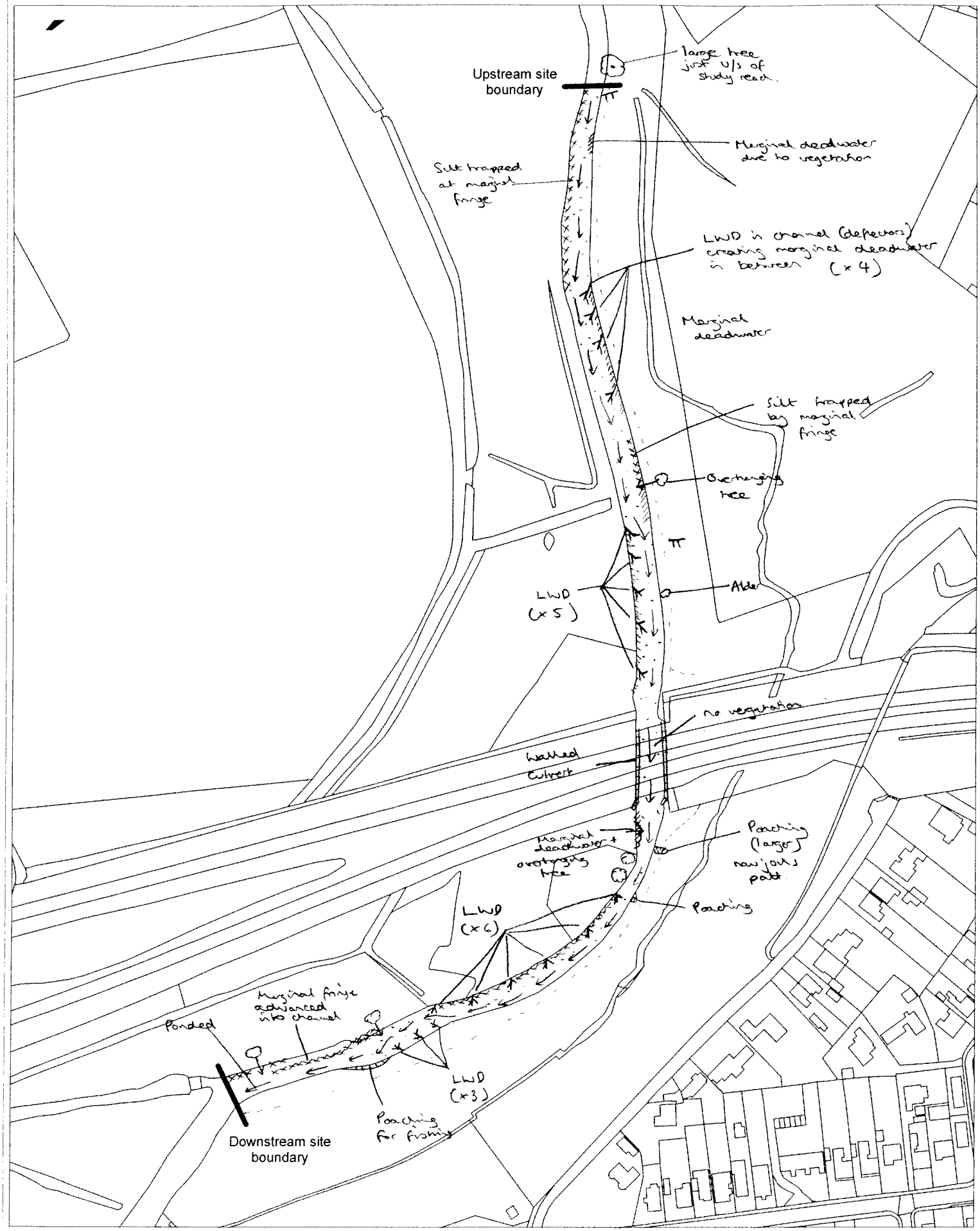
Comparison with pre-restoration survey (2007)
There has been limited significant biological change since the 2007 baseline survey. Selected trees have been removed. However, larger fallen trees remain in the same position and are influencing flow along Dockens Water.

Himalayan balsam (*Impatiens glandulifera*), an invasive non-native species which was previously present on both banks was not observed during the 2009 survey and is likely to have been removed by the Hampshire and Isle of Wight Wildlife Trust who maintain the Blashford Lakes Nature Reserve.

3.2.3 Physical and biological relationships

- The channel is morphologically diverse displaying both erosional and depositional features.
- The channel is disconnected from the floodplain due to previous channel modifications, including dredging and embankment.
- A pool / backwater has been created by locally lowering the embankment on the left hand bank and excavating a depression. However, there was no water in the pool at the time of survey.
- There is little in-channel or riparian vegetation likely to be due to overshading of the channel by woodland. Shallow water depths are also likely to be limiting emergent vegetation.

Appendix A: Reach-Scale Mapping



Physical Biotope Mapping

JLE

14/07/2009

Title: Amersbury Restoration Site (AMR)

Project: Avon STREAM Monitoring Project

Client: Natural England

Date: 14/07/2009

Scale: 1:2,500

Appendix A

R02

Part I: SURVEY CONDITIONS

See relevant 1:25000 mapping and watercourse summary sheet for watercourse name and Reach ID code

Catchment	Watercourse	Reach ID	NGR Start	Surveyor
Avon	River Avon	AMR-01	415844 142522	SLE
			NGR End 415872 142156	

Date	Time	Flow (tick):				
14/7/09	11.25	☑ Low/base	☐ Above low	☐ High		

Conditions influencing survey quality:	LHB ☑ RHB ☐	Reason for upstream reach boundary:	Record photo NGR (GPS) and mark on map	No. of Photos
Deep water		Start of restoration reach		13

Part II: SEDIMENT SOURCES

*Tally fine and coarse sediment sources, place totals in final box (e.g. F2, C4). * = Take GIS reading and mark on map*
Diffuse sources: tally with F for fine and C for coarse under Micro, Meso or Macro and direct from slope or indirect e.g.through creep

Point Sources

	Fine	Coarse	Totals
Tributaries*			
Field drain/mill leat*			
Tipped Material*			
Collapsed building/wall*			
Vehicle access			
Outfalls			

	Fine	Coarse	Totals
Scour at structure			
Tree fall			
Footpath			
Burrowing			
Poaching			
Fishing platforms			

Diffuse Sources

Fluvial erosion	Micro	Meso	Macro
Toe scour			
Eroding cliff			

Hillslope supply	Micro	Meso	Macro
direct			
indirect			

Geotechnical failure	Micro	Meso	Macro
Toe undermining			
Translational			
Rotational slip			
Complex failure			
Channel weathering			

Part III: SEDIMENT TRANSPORT

Tally each morphological form observed along the reach, most likely to be in sequences according to associated gradient (e.g. pool-riffle)

Morphological Forms

	Tally	Total
Waterfall		
Chute		
Rapid		
Riffle		
Run		

	Tally	Total
Boil		
Glide	1	1
Pool		
Ponded reach		
Marginal deadwater	~~1111~~ 111	8

Part IV: SEDIMENT SINKS

Tally fine and coarse sediment sources, place totals in final box (e.g. F2, C4)

Point Sinks

	Fine	Coarse	Totals
Weirs*			
Dams			
Fords			
Bridge	1		1
Large woody debris			

Ad-hoc Fisheries Improvements

	Tally	Totals
Dredged pools		
Submerged vanes		
Boulder placement		
Deflectors		
Minor weir		
Vegetation management		

Diffuse Sinks Recent flood chaos? ☐ Yes ☑ No

	Permanent			Semi-permanent			Temporary		
	Micro	Meso	Macro	Micro	Meso	Macro	Micro	Meso	Macro
Floodplain deposits									
Splays									

Channel Deposits

Tally and total permanent, semi-permanent and temporary sediment deposits Micro = <10m², Meso = 10-150m², Macro = < 150m²
Tick types of storage present, place an E on right of box if extensive (>33%) - do not tally isolated boulders

	Permanent			Semi-permanent			Temporary		
	Micro	Meso	Macro	Micro	Meso	Macro	Micro	Meso	Macro
Boulder/cobble									
Cobble/gravel									
Fine material									

Type of Storage

☐ Mid channel bar ☐ Side bars ☐ Point bars
☐ Berms ☐ Mature Islands ☑ Toe accummulation
☐ Isolated boulders

Part V: VALLEY OVERVIEW

Landuse codes: Coniferous Woodland (CW), Broadleaf Woodland (BL), Scrub (SH), Wetland (WL), Moorland Heath (MH), Grazing (G), Tilled land (TL), Standing water (SW), Road/Track (RT), Suburban/urban (SU), Recreational (RE) Tallherb (TH)

Valley Form (tick one)
- ☐ Shallow Vee
- ☐ Deep Vee
- ☐ Gorge
- ☑ Concave/Bowl
- ☐ Terraced valley floor
- ☐ Not visible

Landuse (dominant type)

	5m	50m
LH	RE	TH
RH	SH	SH

Floodplain (tick one)

		Width (tick one) LH	RH	
☐	None	☐	☐	< 1 river width
☐	One bank	☑	☑	1-5 river widths
☐	Alternate	☐	☐	5-10 river widths
☑	Both banks	☐	☐	> 10 river widths

Riparian Buffer Strip (tick one)

LH	RH		Width of strip (tick one) LH	RH	
☐	☐	None	☐	☐	None
☑	☐	Indefinite	☑	☑	< 1 river width
☐	☐	Fragmentary	☐	☐	1-5 river widths
☐	☑	Continuous	☐	☐	> 5 river widths

Bank top vegetation (tick one)

LH	RH	
☑	☐	Uniform
☐	☐	Simple
☐	☑	Complex
☐	☐	Diseased alders?
☐	☐	Invasive species?

Connectivity

Channel disconnected from floodplain? (no out of bank flow)
- ☑ Yes
- ☐ No

Terraces (tick one)

LH	RH	
☑	☑	None
☐	☐	Indefinite
☐	☐	Fragmentary
☐	☐	Continuous

Insert no. of terraces LH —, RH —

Levees (tick if present)

LH	RH	
☑	☑	None
☐	☐	Natural
☐	☐	Man Made
☐	☐	Continuous
☐	☐	Fragmented

Trashlines (tick one)
- ☐ LH
- ☐ RH

If Yes: — *Estimate height (m)*

Other features (e.g. palaeochannels)

Part VI: CHANNEL GEOMETRY

Planform (tick one)
- ☐ Straight
- ☑ Sinuous
- ☐ Irregular meanders
- ☐ Regular meanders
- ☐ Braided
- ☐ Anastomosed
- (Y)/N Realigned? *Ring Y/N*

Cross-section (tick one)
- ☐ Rectangular/Trapezoidal
- ☑ U-shaped
- ☐ Two stage
- ☐ Multi-stage

(Y)/N Resectioned? *Ring Y/N*

(Y)/N Culverted? *Ring Y/N*

32 Est. length of culvert (m)

Channel Dimensions

Width	Depth	Symmetry (tick one)		Qbf Min	Estimate (m)
☑	☑	☐	Uniform		
☐	☐	☐	Variable with planform		
☐	☐	☑	Variable without planform		
15	1.8			Qbf Max	
20	2.2				
17	2			Qbf Mean	

Gradient (tick one) (use look back test)
- ☐ High
- ☐ Medium
- ☑ Low

Velocity (tick one)
- ☑ Uniform
- ☑ Varied
- ☐ Highly varied

Part VII: BOUNDARY CONDITIONS

BED

Bed Material (tick all present, E if > 33%)

☑ E	Obscured	☐	Cobble
☐	Fine material	☐	Boulder
☑	Fine gravel	☐	Bedrock
☐	Coarse gravel	☑	Artificial
✓	Silt		

Bed Characteristics: (tick all applicable, E if > 33%)

Sorting:	☐	Sorted	☑	Unsorted	
Debris:	☑	None	☐	Natural	☐ Man made
Sphericity: NV	☐	Angular	☐	Sub-angular	☐ Rounded
Imbrication: NV	☐	None	☐	Imbricated	☐ Armoured
Diversity:	☐	Uniform	☑	Non-uniform	

Channel Vegetation: % cover 15

- ☑ Submerged in-channel vegetation
- ☐ Surface floating vegetation
- ☑ Emergent reeds/sedges/rushes
- ☐ Filamentous algae
- ☐ Moss/lichen/liverworts
- ☑ Exposed tree roots (LWD)

BANKS

Bank material (tick if present, E if > 33%)

LH	RH	
☑ E	☑ E	Obscured
☐	☐	Clay
☑	☑	Silt
☑	☑	Sand
☐	☐	Fine gravel
☐	☐	Coarse gravel
☐	☐	Cobble
☐	☐	Boulder
☐	☐	Bedrock
☐	☐	Artificial
(Y)/N	(Y)/N	Cohesive?

Profile (tick if present, E if > 33%)

LH	RH	
☑	☑	Cliff/Vertical
☐	☐	Stepped
☑	☑	Graded

Protection (tick if present, E if > 33%)

☐	☐	None
☐	☐	Toe
☑ (Culvert)	☑	Full
☑	☑	Walled
☐	☐	Concrete
☐	☐	Wooden
☐	☐	Rip rap
☐	☐	Other.....

Tree lining (tick one for each bank)

LH	RH	
☐	☐	None
☑	☐	Isolated/scattered
☐	☐	Reg. spaced/singular
☐	☑	Occasional clumps
☐	☐	Semi-continuous
☐	☐	Continuous
(Y)/N	(Y)/N	Recent tree planting

Bank face vegetation (tick one for each bank)

LH	RH	
☐	☐	None
☐	☐	Uniform
☑	☑	Simple
☐	☐	Complex

R02

Part I: SURVEY CONDITIONS

See relevant 1:25000 mapping and watercourse summary sheet for watercourse name and Reach ID code

Catchment	Watercourse	Reach ID	NGR Start	Surveyor
Avon	River Avon	AMR-02	415872 142156	JLE
			NGR End 415685 142005	

Date	Time	Flow (tick):	Low/base ☐	Above low ☐	High
14/7/09		☑			

Conditions influencing survey quality:	LHB	Reason for upstream reach boundary:	Record photo NGR (GPS) and mark on map	No. of Photos
Deep water	RHB ☐	Culvert		10

Part II: SEDIMENT SOURCES

*Tally fine and coarse sediment sources, place totals in final box (e.g. F2, C4). * = Take GIS reading and mark on map*
Diffuse sources: tally with F for fine and C for coarse under Micro, Meso or Macro and direct from slope or indirect e.g.through creep

Point Sources

	Fine	Coarse	Totals
Tributaries*			
Field drain/mill leat*			
Tipped Material*			
Collapsed building/wall*			
Vehicle access			
Outfalls			

	Fine	Coarse	Totals
Scour at structure			
Tree fall			
Footpath			
Burrowing			
Poaching	III		3
Fishing platforms			

Diffuse Sources

	Micro	Meso	Macro
Fluvial erosion			
Toe scour			
Eroding cliff			

	Micro	Meso	Macro
Geotechnical failure			
Toe undermining			
Translational			
Rotational slip			
Complex failure			

Hillslope supply	Micro	Meso	Macro
direct			
indirect			

Channel weathering			

Part III: SEDIMENT TRANSPORT

Tally each morphological form observed along the reach, most likely to be in sequences according to associated gradient (e.g. pool-riffle)

Morphological Forms

	Tally	Total
Waterfall		
Chute		
Rapid		
Riffle		
Run		

	Tally	Total
Boil		
Glide	I	1
Pool		
Ponded reach	I	1
Marginal deadwater	II	2

Part IV: SEDIMENT SINKS

Tally fine and coarse sediment sources, place totals in final box (e.g. F2, C4)

Point Sinks

	Fine	Coarse	Totals
Weirs*	I		1
Dams			
Fords			
Bridge			
Large woody debris			

Ad-hoc Fisheries Improvements

	Tally	Totals
Dredged pools		
Submerged vanes		
Boulder placement		
Deflectors		
Minor weir		
Vegetation management		

Diffuse Sinks Recent flood chaos? ☐ Yes ☐ No

	Permanent			Semi-permanent			Temporary		
	Micro	Meso	Macro	Micro	Meso	Macro	Micro	Meso	Macro
Floodplain deposits									
Splays									

Channel Deposits

Tally and total permanent, semi-permanent and temporary sediment deposits Micro = <10m², Meso = 10-150m², Macro = < 150m²
Tick types of storage present, place an E on right of box if extensive (>33%) - do not tally isolated boulders

	Permanent			Semi-permanent			Temporary		
	Micro	Meso	Macro	Micro	Meso	Macro	Micro	Meso	Macro
Boulder/cobble									
Cobble/gravel									
Fine material									

Type of Storage

☐ Mid channel bar ☐ Berms ☐ Isolated boulders
☐ Side bars ☐ Mature Islands
☐ Point bars ☑ Toe accummulation

Part V: VALLEY OVERVIEW

R02

Landuse codes: Coniferous Woodland (CW), Broadleaf Woodland (BL), Scrub (SH), Wetland (WL), Moorland Heath (MH), Grazing (G), Tilled land (TL), Standing water (SW), Road/Track (RT), Suburban/urban (SU), Recreational (RE)

Valley Form (tick one)

- ☐ Shallow Vee
- ☐ Deep Vee
- ☐ Gorge
- ☑ Concave/Bowl
- ☐ Terraced valley floor
- ☐ Not visible

Landuse (dominant type)

	5m	50m
LH	RE	BL
RH	SH	SH

Floodplain (tick one) / **Width (tick one)**

		LH	RH	
☐	None	☐	☐	< 1 river width
☐	One bank	☑	☑	1-5 river widths
☐	Alternate	☐	☐	5-10 river widths
☑	Both banks	☐	☐	> 10 river widths

Riparian Buffer Strip (tick one)

LH	RH	
☐	☐	None
☑	☐	Indefinite
☐	☐	Fragmentary
☐	☑	Continuous

Width of strip (tick one)

LH	RH	
☐	☐	None
☑	☑	< 1 river width
☐	☐	1-5 river widths
☐	☐	> 5 river widths

Bank top vegetation (tick one)

LH	RH	
☐	☐	Uniform
☑	☑	Simple
☐	☐	Complex
☐	☐	Diseased alders?
☐	☐	Invasive species?

Connectivity

Channel disconnected from floodplain? (no out of bank flow)

- ☑ Yes
- ☐ No

Terraces (tick one)

Insert no. of terraces LH —, RH —

LH	RH	
☑	☑	None
☐	☐	Indefinite
☐	☐	Fragmentary
☐	☐	Continuous

Levees (tick if present)

LH	RH	
☑	☑	None
☐	☐	Natural
☐	☐	Man Made
☐	☐	Continuous
☐	☐	Fragmented

Trashlines (tick one)

- ☐ LH
- ☐ RH

If Yes: *Estimate height (m)*

Other features (e.g. palaeochannels)

Part VI: CHANNEL GEOMETRY

Planform (tick one)

- ☐ Straight
- ☑ Sinuous
- ☐ Irregular meanders
- ☐ Regular meanders
- ☐ Braided
- ☐ Anastomosed
- Y/(N) Realigned? *Ring Y/N*

Cross-section (tick one)

- ☐ Rectangular/Trapezoidal
- ☑ U-shaped
- ☐ Two stage
- ☐ Multi-stage
- (Y)/N Resectioned? *Ring Y/N*
- Y/(N) Culverted? *Ring Y/N*
- Est. length of culvert (m)

Channel Dimensions

Width	Depth	Symmetry (tick one)	
☑	☑	☐	Uniform
☐	☐	☐	Variable with planform
☐	☐	☑	Variable without planform

	Estimate (m)
15	1.8
20	2.2
17	2

Qbf Min / Qbf Max / Qbf Mean

Gradient (tick one) (use look back test)

- ☐ High
- ☐ Medium
- ☑ Low

Velocity (tick one)

- ☑ Uniform (+ deadwater)
- ☑ Varied
- ☐ Highly varied

Part VII: BOUNDARY CONDITIONS

BED

Bed Material (tick all present, E if > 33%)

- ☑ E Obscured
- ☐ Fine material
- ☑ Fine gravel
- ☐ Coarse gravel
- ☐ Cobble
- ☐ Boulder
- ☐ Bedrock
- ☐ Artificial

✓E Silt

Bed Characteristics: (tick all applicable, E if > 33%)

Sorting:	☐	Sorted	☑	Unsorted		
Debris:	☑	None	☐	Natural	☐	Man made
Sphericity: NV	☐	Angular	☐	Sub-angular	☐	Rounded
Imbrication: NV	☐	None	☐	Imbricated	☐	Armoured
Diversity:	☑	Uniform	☑	Non-uniform		

Channel Vegetation: % cover 10

- ☑ Submerged in-channel vegetation
- ☐ Surface floating vegetation
- ☑ Emergent reeds/sedges/rushes
- ☐ Filamentous algae
- ☐ Moss/lichen/liverworts
- ☑ Exposed tree roots (CWD)

BANKS

Bank material (tick if present, E if > 33%)

LH	RH	
☑ E	☑ E	Obscured
☐	☐	Clay
☑	☑	Silt
☑	☑	Sand
☐	☐	Fine gravel
☐	☐	Coarse gravel
☐	☐	Cobble
☐	☐	Boulder
☐	☐	Bedrock
☐	☐	Artificial
Y/(N)	Y/(N)	Cohesive?

Profile (tick if present, E if > 33%)

LH	RH	
☑ E	☑ E	Cliff/Vertical
☐	☐	Stepped
☑	☑	Graded

Protection (tick if present, E if > 33%)

☑	☑	None
☐	☐	Toe
☐	☐	Full
☐	☐	Walled
☐	☐	Concrete
☐	☐	Wooden
☐	☐	Rip rap
☐	☐	Other……

Tree lining (tick one for each bank)

LH	RH	
☐	☐	None
☑	☐	Isolated/scattered
☐	☐	Reg. spaced/singular
☐	☑	Occasional clumps
☐	☐	Semi-continuous
☐	☐	Continuous
Y/(N)	Y/(N)	Recent tree planting

Bank face vegetation (tick one for each bank)

LH	RH	
☐	☐	None
☐	☐	Uniform
☑	☑	Simple
☐	☐	Complex

RIVER CORRIDOR SURVEY

AMARA GLYNN

14th July 2009

Title: Amersbury Restoration Site (AMR)

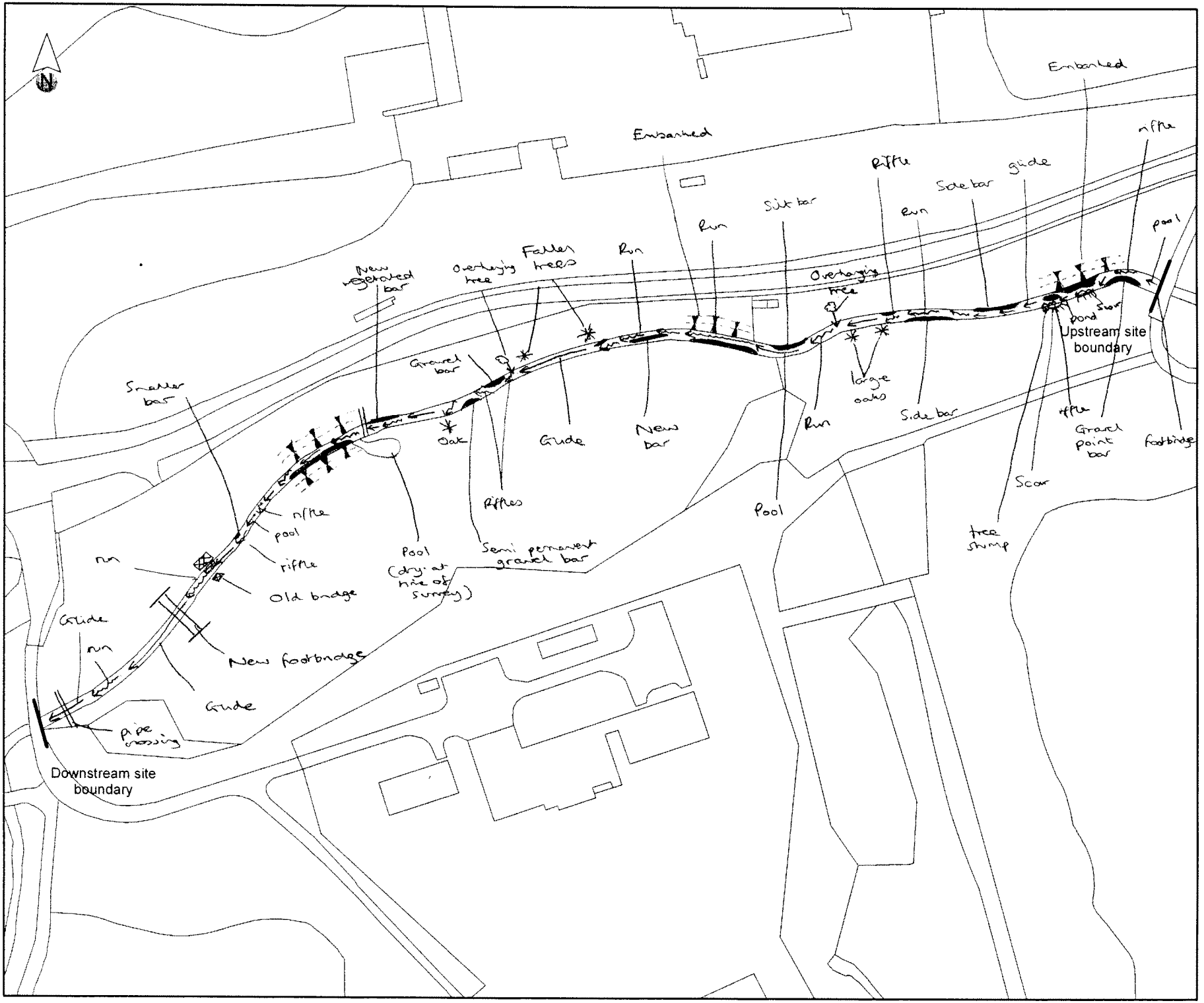
Project: Avon STREAM Monitoring Project

Client: Natural England

Date: 14/07/2009

Scale: 1:2,500

Appendix



Physical Biotope Mapping

JLE 14/07/09

Title:
Dockens Water Restoration Site (DOC)

Project:
Avon STREAM Monitoring Project

Client:
Natural England

Date:
14/07/2009

Scale:
1:1,650

Appendix A

Part I: SURVEY CONDITIONS R02

See relevant 1:25000 mapping and watercourse summary sheet for watercourse name and Reach ID code

Catchment	Watercourse	Reach ID	NGR Start	Surveyor
Avon	Dochers Water	DOR-01	415142 108146	
			NGR End 415513 108293	JLE

Date	Time	Flow (tick):				
14/7/09	16.25	☑ Low/base	☐ Above low	☐ High		

Conditions influencing survey quality:	LHB ☑ RHB ☐	Reason for upstream reach boundary:	Record photo NGR (GPS) and mark on map	No. of Photos
Strong water colour		Start of reach		

Part II: SEDIMENT SOURCES

*Tally fine and coarse sediment sources, place totals in final box (e.g. F2, C4). * = Take GIS reading and mark on map*
Diffuse sources: tally with F for fine and C for coarse under Micro, Meso or Macro and direct from slope or indirect e.g.through creep

Point Sources

	Fine	Coarse	Totals		Fine	Coarse	Totals
Tributaries*				Scour at structure			
Field drain/mill leat*				Tree fall			
Tipped Material*				Footpath			
Collapsed building/wall*				Burrowing			
Vehicle access				Poaching			
Outfalls				Fishing platforms			

Diffuse Sources

Fluvial erosion	Micro	Meso	Macro	*Geotechnical failure*	Micro	Meso	Macro
Toe scour	1			Toe undermining			
Eroding cliff	1			Translational			
				Rotational slip			
Hillslope supply	Micro	Meso	Macro	Complex failure			
direct				Channel weathering			
indirect							

Part III: SEDIMENT TRANSPORT

Tally each morphological form observed along the reach, most likely to be in sequences according to associated gradient (e.g. pool-riffle)

Morphological Forms

	Tally	Total		Tally	Total
Waterfall			Boil		
Chute			Glide	𝍸	5
Rapid			Pool	𝍸 𝍸	10
Riffle	𝍸 𝍸 1	11	Ponded reach		
Run	𝍸 1	6	Marginal deadwater		

Part IV: SEDIMENT SINKS

Tally fine and coarse sediment sources, place totals in final box (e.g. F2, C4)

Point Sinks

	Fine	Coarse	Totals
Weirs*			
Dams			
Fords			
Bridge		1	1
Large woody debris	11		1

Ad-hoc Fisheries Improvements

	Tally	Totals
Dredged pools		
Submerged vanes		
Boulder placement		
Deflectors		
Minor weir		
Vegetation management		

Diffuse Sinks Recent flood chaos? ☐ Yes ☑ No

	Permanent			Semi-permanent			Temporary		
	Micro	Meso	Macro	Micro	Meso	Macro	Micro	Meso	Macro
Floodplain deposits									
Splays									

Channel Deposits

Tally and total permanent, semi-permanent and temporary sediment deposits Micro = <10m², Meso = 10-150m², Macro = < 150m²
Tick types of storage present, place an E on right of box if extensive (>33%) - do not tally isolated boulders

	Permanent			Semi-permanent			Temporary		
	Micro	Meso	Macro	Micro	Meso	Macro	Micro	Meso	Macro
Boulder/cobble									
Cobble/gravel		1		1	1		𝍸 1	111	
Fine material							1		

Type of Storage

☑ Mid channel bar	☐ Berms	☐ Isolated boulders		
☑ Side bars	☐ Mature Islands			
☑ Point bars	☐ Toe accummulation			

Part V: VALLEY OVERVIEW

R02

Landuse codes: Coniferous Woodland (CW), Broadleaf Woodland (BL), Scrub (SH), Wetland (WL), Moorland Heath (MH), Grazing (G), Tilled land (TL), Standing water (SW), Road/Track (RT), Suburban/urban (SU), Recreational (RE)

Valley Form (tick one)

- ☐ Shallow Vee
- ☐ Deep Vee
- ☐ Gorge
- ☐ Concave/Bowl
- ☐ Terraced valley floor
- ☑ Not visible

Landuse (dominant type)

	5m	50m
LH	BL	BL
RH	BL	BL

Floodplain (tick one)

		Width (tick one) LH	RH	
☐	None	☐	☐	< 1 river width
☐	One bank	☑	☑	1-5 river widths
☐	Alternate	☐	☐	5-10 river widths
☑	Both banks	☐	☐	> 10 river widths

Riparian Buffer Strip (tick one)

LH	RH		Width of strip (tick one) LH	RH		Bank top vegetation (tick one) LH	RH	
☐	☐	None	☐	☐	None	☐	☐	Uniform
☐	☐	Indefinite	☐	☐	< 1 river width	☑	☑	Simple
☐	☐	Fragmentary	☑	☑	1-5 river widths	☐	☐	Complex
☑	☑	Continuous	☐	☐	> 5 river widths	☐	☐	Diseased alders?
						☐	☐	Invasive species?

Connectivity

Channel disconnected from floodplain? (no out of bank flow)

- ☑ Yes (in places)
- ☐ No

Terraces (tick one)

Insert no. of terraces LH —, RH —

LH	RH	
☑	☑	None
☐	☐	Indefinite
☐	☐	Fragmentary
☐	☐	Continuous

Levees (tick if present)

LH	RH	
☐	☐	None
☐	☐	Natural
☑	☑	Man Made
☐	☐	Continuous
☐	☐	Fragmented

Trashlines (tick one)

- ☐ LH
- ☐ RH

If Yes: — *Estimate height (m)*

Other features (e.g. palaeochannels)

Floodplain pool on LHB.

Part VI: CHANNEL GEOMETRY

Planform (tick one)

- ☐ Straight
- ☐ Sinuous
- ☑ Irregular meanders
- ☐ Regular meanders
- ☐ Braided
- ☐ Anastomosed
- (Y/N) Realigned? *Ring Y/N* — in places

Cross-section (tick one)

- ☐ Rectangular/Trapezoidal
- ☑ U-shaped
- ☐ Two stage
- ☐ Multi-stage

(Y/N) Resectioned? *Ring Y/N*

Y/(N) Culverted? *Ring Y/N*

Est. length of culvert (m)

Channel Dimensions

Width	Depth	Symmetry (tick one)		Estimate (m)
☐	☐	☐	Uniform	
☑	☑	☑	Variable with planform	
☐	☐	☐	Variable without planform	
4	0.5		Qbf Min	
7	1		Qbf Max	
5.5	0.7		Qbf Mean	

Gradient (tick one) (use look back test)

- ☐ High
- ☐ Medium
- ☑ Low

Velocity (tick one)

- ☐ Uniform
- ☑ Varied
- ☐ Highly varied

Part VII: BOUNDARY CONDITIONS

BED

Bed Material (tick all present, E if > 33%)

☐	Obscured	☐	Cobble
☐	Fine material	☐	Boulder
☑E	Fine gravel	☐	Bedrock
☐	Coarse gravel	☑	Artificial (old bridge)
✓	Sand		
✓	silt		

Bed Characteristics: (tick all applicable, E if > 33%)

Sorting:	☑	Sorted	☐	Unsorted	
Debris:	☐	None	☑	Natural	☐ Man made
Sphericity:	☐	Angular	☑E	Sub-angular	☐ Rounded
Imbrication:	☐	None	☑	Imbricated	☐ Armoured
Diversity:	☐	Uniform	☑	Non-uniform	

Channel Vegetation: % cover

- ☐ Submerged in-channel vegetation
- ☐ Surface floating vegetation
- ☐ Emergent reeds/sedges/rushes
- ☐ Filamentous algae
- ☑ Moss/lichen/liverworts
- ☑E Exposed tree roots

BANKS

Bank material (tick if present, E if > 33%)

LH	RH	
☑	☑	Obscured
☐	☐	Clay
☑	☑	Silt
☑	☑	Sand
☑	☑	Fine gravel
☐	☐	Coarse gravel
☐	☐	Cobble
☐	☐	Boulder
☐	☐	Bedrock
☐	☐	Artificial
(Y/N)	(Y/N)	Cohesive?

Profile (tick if present, E if > 33%)

LH	RH	
☑	☐	Cliff/Vertical
☐	☐	Stepped
☑	☑	Graded

Protection (tick if present, E if > 33%)

☐	☐	None
☐	☐	Toe
☑	☑	Full
☐	☐	Walled
☑ (old bridge)	☑	Concrete
☐	☐	Wooden
☐	☐	Rip rap
☐	☐	Other.....

Tree lining (tick one for each bank)

LH	RH	
☐	☐	None
☐	☐	Isolated/scattered
☐	☐	Reg. spaced/singular
☐	☐	Occasional clumps
☐	☐	Semi-continuous
☑	☑	Continuous
Y/(N)	Y/(N)	Recent tree planting

Bank face vegetation (tick one for each bank)

LH	RH	
☐	☐	None
☐	☐	Uniform
☑	☑	Simple
☐	☐	Complex

Title:
Dockens Water Restoration Site (DOC)

Project:
Avon STREAM Monitoring Project

Client:
Natural England

Date:	Scale:
14/07/2009	1:1,650

Appendix

RIVER CORRIDOR SURVEY
AMARA GLYNN
14th JULY 2009.

Appendix B: Photographic Records

Date	Site	Geomorphological Reach	Transect/ Cross-section	Photo Reference	Easting	Northing	Orientation	Time	Direction	Height (m)	Description / Comments
24/08/2006	Amesbury	AMR01	n/a	AMR01a	415855	142565	336	11.25	Upstream		Upstream of restoration site. Submerged vegetation in foreground.
24/08/2006	Amesbury	AMR01	n/a	AMR01b	415855	142565	209	11.26	Downstream		Downstream sinuous platform.
24/08/2006	Amesbury	AMR01	n/a	AMR01c	415845	142507	350	11.34	Upstream		Upstream to top of reach.
24/08/2006	Amesbury	AMR01	n/a	AMR01d	415845	142507	282	11.36	Right hand bank		Across channel. Turbid water & submerged vegetation.
24/08/2006	Amesbury	AMR01	n/a	AMR01e	415845	142507	201	11.37	Downstream		Downstream towards meander bend.
24/08/2006	Amesbury	AMR01	n/a	AMR01f	415855	142396	338	11.53	Upstream		Upstream- emergent change on right hand bank. Mown on right hand bank rather then wooded.
24/08/2006	Amesbury	AMR01	n/a	AMR01g	415855	142396	262	11.53	Right hand bank		Across channel. Just upstream of willow tree.
24/08/2006	Amesbury	AMR01	n/a	AMR01h	415855	142396	188	11.53	Downstream		Downstream towards road bridge.
24/08/2006	Amesbury	AMR01	n/a	AMR01i	415862	142374	306	12.12	Upstream Bed		Bed of channel- submeged vegetation & algae.
24/08/2006	Amesbury	AMR01	n/a	AMR01j	415877	142289	339	12.19	Upstream		Upstream along straight section.
24/08/2006	Amesbury	AMR01	n/a	AMR01k	415877	142289	196	12.23	Downstream		Downstream to road bridge. By alder tree.
24/08/2006	Amesbury	AMR01	n/a	AMR01l	415887	142246	196	12.29	Downstream		Downstream to culvert. Submerged/floating veg along to narrow the channel.
24/08/2006	Amesbury	AMR01	n/a	AMR01m	415978	142212	264	12.44	Downstream		Culvert under road in 32m long.
24/08/2006	Amesbury	AMR02	n/a	AMR02a	415876	142131	354	12.55	Upstream		Upstream towards culvert. Submerged veg difference under culvert.
24/08/2006	Amesbury	AMR02	n/a	AMR02b	415876	142131	224	12.56	Downstream		Downstream around meander bend.
		AMR02	n/a	AMR02b2	415873	142125	224	13.01	Downstream		
24/08/2006	Amesbury	AMR02	n/a	AMR02c	415877	142137	4	13.08	Upstream		Poaching due to public access on right hand bank.
24/08/2006	Amesbury	AMR02	n/a	AMR02d	415853	142076	20	13.14	Upstream		Wide glide through meander.
24/08/2006	Amesbury	AMR02	n/a	AMR02e	415853	142076	272	13.17	Downstream		Downstream submerged vegetation.
24/08/2006	Amesbury	AMR02	n/a	AMR02f	415775	142075	42	13.29	Upstream		Upstream around meander.
24/08/2006	Amesbury	AMR02	n/a	AMR02g	415775	142075	346	13.29	Right hand bank		Across channel. Unbranched burreed.
24/08/2006	Amesbury	AMR02	n/a	AMR02h	415775	142075	271	13.30	Downstream		Downstream to weir at right hand bank branch.
24/08/2006	Amesbury	AMR02	n/a	AMR02i	415659	142020	306	13.38	Downstream		Weir downstream causing ponding Upstream.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-a	415519	108303	290	15.29	DS		Looking downstream towards riffle from bridge at upstream limit.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-b	415485	108299	300	15.37	RHB		Across river towards artificial bank and gravel deposit.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-c	415485	108299	70	15.42	US		US towards bridge and riffle.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-d	415468	108290	290	15.45	DS		DS to RHB.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-e	415441	108282	280	15.56	DS		DS Bar on left and riffle.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-f	415422	108282	280	15.56	DS		Tree overhanging channel.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-g	415421	108278	280	16.05	DS		Fallen tree.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-h	415401	108276	280	16.07	DS		DS towards riffle and meander.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-i	415353	108272	260	16.12	DS		DS bar in foreground steep RHB.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-j	415355	108272	275	16.16	DS		Point bar on RHB.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-k	415333	108279	330	16.20	RHB		Large fallen tree.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-l	415314	108268	10	16.25	RHB		Across river to fallen tree roots.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-m	415300	108260	240	16.31	DS		DS standard stretch.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-n	415269	108250	260	16.39	DS		Vegetated bar and riffle in distance.
14/07/2009	Dockens Water	DOR01	n/a	DOR0 -n2	415269	108250		16.59	US		Dry pool.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-o	415238	108238	260	17.04	DS		High bank.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-p	415231	108225	300	17.10	RHB		Collapsed bridge.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-q	415220	108218	220	17.15	DS		DS from collapsed bridge - straight section.
14/07/2009	Dockens Water	DOR01	n/a	DOR01-r	415147	108157	60	17.24	US		DS limit looking towards pipe crossing.

Key	
LHB	Left Hand Bank
RHB	Right Hand Bank
US	Upstream
DS	Downstream