A303 Amesbury to Berwick Down

TR010025

6.3 Environmental Statement Appendices

Appendix 8.6A River Habitat Survey River Avon

Volume 6

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

October 2018

Subject:	River Habitat Surveys of the River Avon		
Date:	13 January 2017	**Date amended:**	07 June 2017
Reference:	HE551506-AA-EWE-SWI-SU-YE- 000004 P01		
Prepared by:	Liam Atherton and Bonnie Boulton		

1 Introduction

1.1 Overview

1.1.1 River Habitat Surveys (RHS) were undertaken at four sites on the River Avon, to provide a baseline of the physical structure of the watercourses and vegetation types present.

1.1.2 Figure 1-1 provides an overview of the RHS reach locations on the Avon. The upstream and downstream NGRs for each survey reach are recorded in Table 1-1.

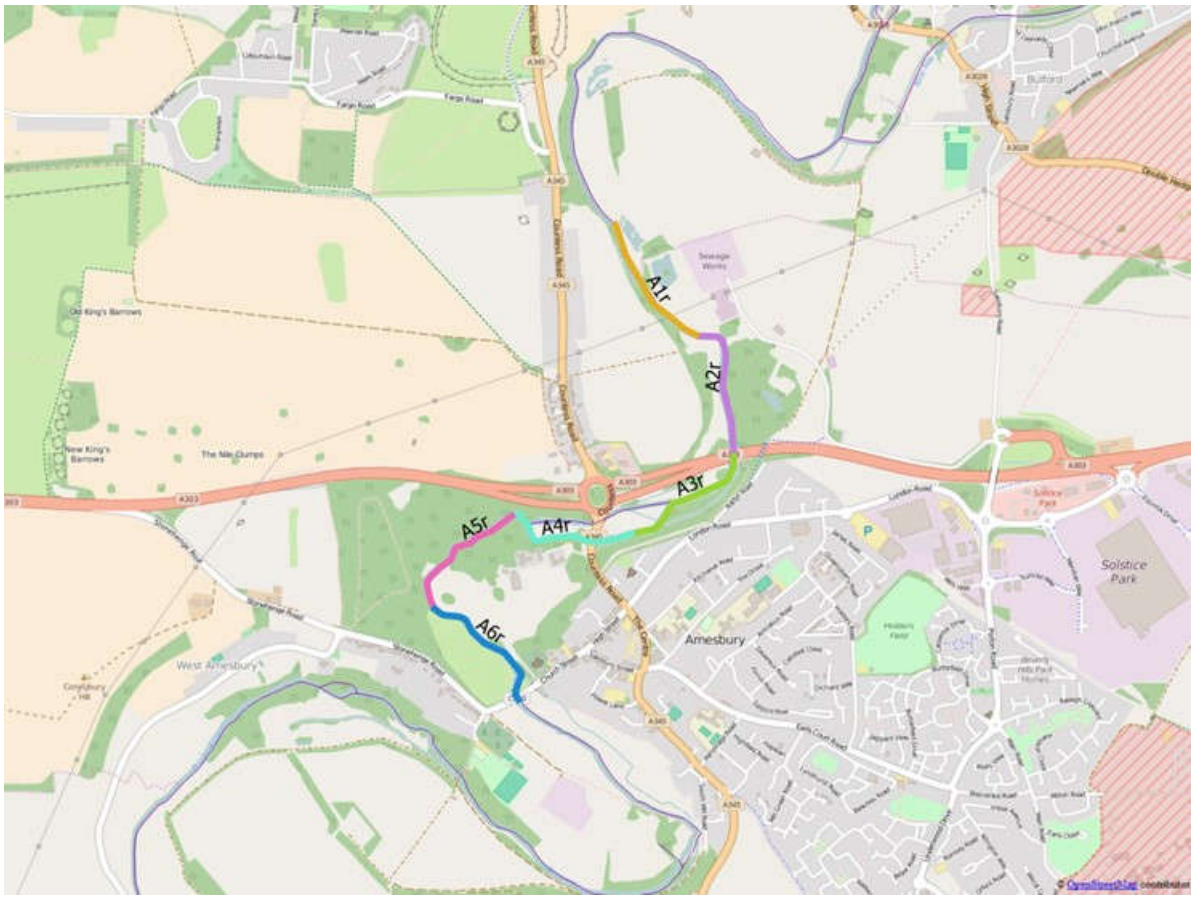

Figure 1-1 River Avon RHS locations

Table 1-1 RHS reach NGRs

RHS reach	Upstream NGR	Downstream NGR
River Avon A1r	SU 15450 42983	SU 15743 42604
River Avon A2r	SU 15743 42604	SU 15875 42187
River Avon A3r	SU 15875 42187	SU 15529 41900
River Avon A4r	SU 15529 41900	SU 15091 41961
River Avon A5r	SU 15091 41961	SU 14798 41639
River Avon A6r	SU 14798 41639	SU 15101 41316

2 Methods

2.1 Field survey

2.1.1 Field surveys were undertaken following published standards for RHS[1]. The surveys were undertaken on the 18th and 19th August 2016 in predominantly fair weather conditions, led by Atkins surveyors Bonnie Boulton (Environment Agency RHS Accreditation Number FA008) and Liam Atherton (Environment Agency RHS Accreditation Number FA002).

2.2 Habitat modification assessment

2.2.1 On completion of the RHS, Habitat Modification Scores (HMS) were calculated. Some bankside features were obscured due to abundant vegetation growth; however this has been acknowledged in the characterisation of the watercourses and has not impacted the overall Habitat Modification Class (HMC).

2.2.2 HMS is calculated from the RHS data based on the presence and distribution of habitat modifications such as channel and bank re-sectioning within the survey reach, as well as artificial features such as bridges, culverts and outfalls. The HMS translates into HMC which classifies each RHS site into one of five categories as outlined in Table 2-1.

Table 2-1 – Habitat modification categories

Habitat modification class (HMC)	HMC description	Habitat modification score (HMS)
1	Pristine/semi-natural	0 – 16
2	Predominantly unmodified	17 – 199
3	Obviously modified	200 – 499
4	Significantly modified	500 – 1399
5	Severely modified	1400 +

[1] Environment Agency (2003). River Habitat Survey in Britain and Ireland. Field Survey Guidance Manual: 2003. Bristol.

3 Summary results

3.1 Habitat modification

3.1.1 Table 3-1 summarises the HMS and HMC of each 500m RHS undertaken within the study area. All sites have been historically modified, reflected by high HMS, and a HMC of either 'Significantly' or 'Severely' modified.

3.1.2 Individual site summaries are provided in section 3, with HMS calculation and representative photos included in Appendix A.

Table 3-1 – Habitat modification results

RHS reach	Date	Central NGR	HMS	HMC
A1r	18th August 2016	SU 15564 42770	725	4
A2r	18th August 2016	SU 15838 42434	620	4
A3r	18th August 2016	SU 15727 42019	1380	5
A4r	19th August 2016	SU 15287 41886	1310	5
A5r	19th August 2016	SU 14874 41801	3190	5
A6r	18th August 2016	SU 14979 41496	3050	5

4 Site summaries

4.1 River Avon A1r

4.1.1 Representative channel dimensions: water depth: 0.5m; water width: 14.0m; bankfull width: 18.5m.

4.1.2 HMS: 725; HMC:4

4.1.3 Surrounding land use was dominated by broadleaved woodland on the right bank and rough pasture on the left bank. The only artificial structure recorded throughout this reach was a minor outfall, which discharged from fishing ponds on the left bank. The HMS is driven by widespread historical bank resectioning and isolated bank reinforcement, although the bank profile had locally re-naturalised from this historical modification through localised sediment erosion/deposition. Given the low energy of the system, widespread recovery of a natural bank profile will be slow, and the historical modification of the channel cross-section is likely to be decades if not centuries old. The river had recovered to a more natural width, predominantly through marginal vegetation encroachment rather than through fluvial processes of erosion and deposition.

4.1.4 Despite the HMS, the reach was observed to support a species rich marginal and submerged macrophyte community, comprising over 20 species, as recorded during macrophyte surveys in August 2016. The macrophyte community provided significant channel habitat complexity, locally affecting flow and substrate character. Substrate diversity was relatively limited, restricted to gravel/pebble and silt. Semi-continuous tree cover provided a range of shaded and non-shaded conditions. The tree-line also acts as a source

of wooded channel features, with overhanging boughs, exposed bankside roots and large woody debris all recorded by the survey. These features served to locally affect substrate and flow character, and increase river habitat variability. Brown trout and grayling were also observed. The extensive filamentous algae recorded may be indicative of nutrient enrichment, but high productivity is natural for this lowland chalk system. Further assessment of nutrient enrichment is provided in the Macrophyte Survey Report.

4.2 River Avon A2r

4.2.1 Representative channel dimensions: water depth: 0.6m; water width: 13.0m; bankfull width: 13.0m.

4.2.2 HMS: 620; HMC:4

4.2.3 Surrounding land use was dominated by broadleaved woodland on the left bank, and rough pasture on the right bank. No artificial structures were recorded within this reach. The HMS is driven by widespread historical bank resectioning and embankment, predominantly on the right bank. The bank profile had locally re-naturalised from this historical modification on the left bank in particular, through localised sediment erosion/deposition. Given the low energy of the system, widespread recovery of a natural profile will be slow, and the historical modification of the channel cross-section is likely to be decades if not centuries old. The river had recovered to a more natural width predominantly through marginal vegetation encroachment rather than through fluvial processes of erosion and deposition.

4.2.4 Despite the HMS, the reach was observed to support a species rich marginal and submerged macrophyte community, comprising 20 species within the channel as noted during macrophyte surveys in August 2016, and a higher abundance of submerged linear leaved species than A1r (predominantly un-branched bur-reed *Sparganium emersum*). The macrophyte community provided significant channel habitat complexity, locally affecting flow and substrate character. Substrate diversity, where visible, continued to be limited, restricted to gravel/pebble, silt and sand. Semi-continuous tree cover on the right bank, and scattered tree cover on the left bank provided a range of shaded and non-shaded conditions. The tree-line also acts as a source of wooded channel features, with overhanging boughs, exposed bankside roots and large woody debris all recorded by the survey. These features served to locally affect substrate and flow character, and increase river habitat complexity. Trout and grayling were also observed in abundance. Extensive filamentous algae recorded may be indicative of nutrient enrichment, but high productivity is natural for this lowland chalk system. Further assessment of nutrient enrichment is provided in the Macrophyte Survey Report.

4.3 River Avon A3r

4.3.1 Representative channel dimensions: water depth: 0.7m; water width: 15.0m; bankfull width: 15.0m.

4.3.2 HMS: 1380; HMC: 5

4.3.3 Surrounding land use was dominated by broadleaved woodland on the left bank, and rough pasture on the right bank. Artificial structures recorded were limited to the A303 road bridge and an intake at an artificial side channel, presumed to be for agricultural

purposes. In addition to these structures, the HMS is driven by widespread historical bank resectioning, localised reinforcement (associated with the road crossing) and embankment on both banks. Unlike the upstream sections, bank recovery was almost entirely absent, with historical modification of the cross-section still clearly apparent. Given the low energy of the system, widespread recovery of a natural profile will be slow, and the historical modification of the channel cross-section is likely to be decades if not centuries old. The river recovered a more natural width through marginal vegetation encroachment rather than through fluvial processes of erosion and deposition.

4.3.4 Despite the HMS, the reach was observed to support a species rich marginal and submerged macrophyte community, comprising 25 species recorded from within the channel during the August 2016 macrophyte surveys. Perfoliate pondweed *Potamogeton perfoliatus* was recorded in deeper areas of scour and /channel resectioning, immediately downstream of the A303 road bridge. The macrophyte community provided significant channel habitat complexity, locally affecting flow and substrate character. Substrate diversity, where visible, continued to be limited, restricted to gravel/pebble, silt and sand. Semi-continuous tree cover on the left bank, and scattered tree cover on the right bank provided a range of shaded and non-shaded conditions. The tree-line also acts as a source of wooded channel features, with overhanging boughs, exposed bankside roots and large woody debris all recorded by the survey. These features serve to locally affect substrate and flow character, and increase river habitat complexity. Trout and grayling were also observed. Extensive filamentous algae recorded may be indicative of nutrient enrichment, but high productivity is natural for this lowland chalk system. Further assessment of nutrient enrichment is provided in the Macrophyte Survey Report.

4.4 River Avon A4r

4.4.1 Representative channel dimensions: water depth: 0.5m; water width: 9.0m; bankfull width: 13.0m.

4.4.2 HMS: 1310; HMC:5

4.4.3 Surrounding land use was dominated by broadleaved woodland on the left bank, and rough pasture on the right bank. Artificial structures recorded were limited to the Countess Road bridge and a complex culvert structure approximately 150m from the end of the reach, north-east of Amesbury Abbey. In addition to these structures, the HMS is driven by widespread historical bank resectioning, localised reinforcement (particularly on the right bank) and embankment on the right bank. Localised bank recovery was apparent on the left bank, but the extensive reinforcement of the right bank limits potential for further recovery.

4.4.4 The character of the Avon was notably different in A4r as compared with A1r-A3r, which were relatively similar to one another. A4r was predominantly narrower, with greater variation in bed profile and lower macrophyte abundance as compared with the upper survey reaches. Two pools and two riffles were recorded within this reach; in contrast, no riffles or pools were recorded in any upstream reach. Unvegetated mid-channel and side bars were recorded; no bars were recorded in any upstream reach. Substrate diversity was also higher, with gravel/pebble, cobble, sand, silt and artificial substrates all recorded.

4.4.5 The reach was observed to support a relatively species rich (if not particularly abundant) marginal and submerged macrophyte community, comprising 18 species recorded from within the channel (see Macrophyte Survey Report). The macrophyte

community provided localised channel habitat complexity, affecting flow and substrate character. Continuous tree cover on the left bank, and scattered tree cover on the right bank provided a range of shaded and non-shaded conditions. The tree-line also acts as a source of wooded channel features, with overhanging boughs, exposed bankside roots, underwater tree roots and large woody debris all recorded during the survey. These features serve to locally affect substrate and flow character, and increase river habitat complexity. Fish were not observed in such abundance as was apparent in the upstream reaches.

4.5 River Avon A5r

4.5.1 Representative channel dimensions: water depth: 1-1.5m; water width: 16m; bankfull width: 17m.

4.5.2 HMS: 3190; HMC:5

4.5.3 The start of the survey reach is located south of the A303 crossing of the River Avon and flows through the gardens of the Amesbury Abbey Estate for much of the survey extent before the surrounding land use becomes pasture in the lower section. Here the channel has been historically modified and flow is impounded by a gauging station downstream, resulting in a uniform cross-section and smooth flows.

4.5.4 Despite the smooth flow the dominant substrate recorded was gravel and a variety of in channel vegetation types were recorded across the survey reach, providing good habitat for fish and invertebrates. The macrophyte survey recorded 20 species from within the channel (see Macrophyte Survey Report). Submerged linear leaved vegetation (primarily un-branched bur-reed *Sparganium emersum*) was recorded as extensive at five spot-checks, with submerged broad-leaved herbs (*Callitriche* spp) noted at the majority of spot-checks and stands of emergent reeds and rushes lining the banks.

4.5.5 Tree cover was semi-continuous on the right bank, often preventing an assessment of modification, but providing channel shading and over-hanging boughs, a source of cover for fish, and a source of woody debris, which provided isolated pockets of increase flow variability.

4.5.6 The channel falls into HMC 5, ‘severely modified’, due largely to bank and channel resectioning, and a major bridge which spans the channel at the upper section of the reach. While the channel morphology results in a high HMS, the macrophytes and surrounding trees provided fish habitat, with the River Avon through West Amesbury being renowned for its thriving grayling and trout populations.

4.1 River Avon A6r

4.1.1 Representative channel dimensions: water depth: 1.5m; water width: 17m; bankfull width: 20m.

4.1.2 HMS: 3050; HMC:5

4.1.3 A6r is located immediately downstream of A5r. The surrounding land use is rough pasture with broadleaved woodland recorded in the lower section. As with A6r the channel has been historically resectioned and flow is impounded for much of the survey length by the weir, which is located upstream of spot-check 10.

4.1.4 The banks are heavily poached, which contributes to the overall HMS and will result in accelerated sediment input to the channel. Informal embankments were also observed at a number of spot-checks on the left bank, likely a result of historic dredging.

4.1.5 The flow type was predominantly smooth, with sections of greater variation where a tree had fallen into the channel and downstream of the weir where the channel widens out and the water becomes shallower. The dominant substrate was gravel with silt being deposited at the edge of the channel.

4.1.6 In channel vegetation remained abundant and species rich, with submerged linear-leaved vegetation frequently recorded as extensive and emergent reeds (e.g. *Glyceria maxima*) lining the banks. The macrophyte survey recorded 27 species from within the channel (see Macrophyte Survey Report). Filamentous algae was also recorded at the majority of spot-checks, suggesting potential nutrient enrichment from the surrounding catchment. Further assessment of nutrient enrichment is provided in the Macrophyte Survey Report.

4.1.7 The channel falls into HMC 5, 'severely modified', due to the resectioning and in part to the embankments and poaching. Some bankside features were obscured due to abundant vegetation growth; however this limitation will not affect the overall HMC.

4.1.8 Like A5r, the channel has been subject to modification, which has limited morphological variability, the rich macrophyte assemblages and surrounding trees offer significant habitat availability for fish and aquatic fauna.

Appendix A HMS Calculations and Representative Photos

River Avon – A1r: RHS Habitat Modification Scoring and Key Photos

Survey: Avon (A1r) 18/08/16
RHS Habitat Modification Score & Habitat Modification Class Scoring System

A	Spot check channel modification - Culverts	0
B	Sweep-up artificial features - Culverts	0
	HMS: Culverts sub-score	**0**
C	Spot check bank material	40
D	Spot check bank modification - RI	20
E	Sweep-up bank profiles - RI	40
F	Sweep-up artificial features - revetments	0
G	Spot check channel substrate	0
H	Spot check channel modification - RI	0
	HMS: Bank & bed reinforcement sub-score	**100**
I	Spot check bank modification - RS	560
J	Sweep-up bank profiles - RS	0
K	Spot check channel modification - RS	0
L	Sweep-up channel modification - over deepened	0
	HMS: Bank & bed resectioning sub-score	**560**
M	Spot check bank modification - Berms (BM)	0
N	Spot check bank modification - EM	40
O	Sweep-up bank profiles - Artificial two-stage	0
P	Sweep-up bank profiles - Embanked	0
Q	Sweep-up bank profiles - set back embankment	0
	HMS: Berms & embankments sub-score	**40**
R	Sweep-up artificial features - weirs/dams/sluices	0
	HMS: Weirs/dams/sluices sub-score	**0**
S	Sweep-up artificial features - bridges	0
	HMS: Bridges sub-score	**0**
T	Spot check bank modification - poaching (PC or PC(B))	0
U	Sweep-up bank profiles - poached	0
	HMS: Poaching sub-score	**0**
V	Sweep-up artificial features - fords	0
	HMS: Fords sub-score	**0**
W	Sweep-up artificial features - outfall	25
X	Sweep-up artificial features - deflectors	0
	HMS: Outfall/deflectors sub-score	**25**
	Total HMS	**725**

Photo ATT-2

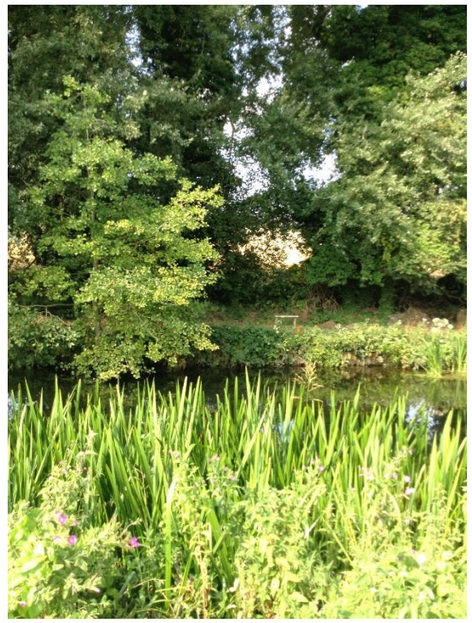

Photo ATT-3

Photo ATT-9

Photo ATT-12

River Avon – A2r: RHS Habitat Modification Scoring and Key Photos

Survey: Avon (A2r) 18/08/16 RHS Habitat Modification Score & Habitat Modification Class Scoring System		
A	Spot check channel modification - Culverts	0
B	Sweep-up artificial features - Culverts	0
	HMS: Culverts sub-score	**0**
C	Spot check bank material	0
D	Spot check bank modification - RI	0
E	Sweep-up bank profiles - RI	0
F	Sweep-up artificial features - revetments	0
G	Spot check channel substrate	0
H	Spot check channel modification - RI	0
	HMS: Bank & bed reinforcement sub-score	**0**
I	Spot check bank modification - RS	560
J	Sweep-up bank profiles - RS	0
K	Spot check channel modification - RS	0
L	Sweep-up channel modification - over deepened	0
	HMS: Bank & bed resectioning sub-score	**560**
M	Spot check bank modification - Berms (BM)	0
N	Spot check bank modification - EM	60
O	Sweep-up bank profiles - Artificial two-stage	0
P	Sweep-up bank profiles - Embanked	0
Q	Sweep-up bank profiles - set back embankment	0
	HMS: Berms & embankments sub-score	**60**
R	Sweep-up artificial features - weirs/dams/sluices	0
	HMS: Weirs/dams/sluices sub-score	**0**
S	Sweep-up artificial features - bridges	0
	HMS: Bridges sub-score	**0**
T	Spot check bank modification - poaching (PC or PC(B))	0
U	Sweep-up bank profiles - poached	0
	HMS: Poaching sub-score	**0**
V	Sweep-up artificial features - fords	0
	HMS: Fords sub-score	**0**
W	Sweep-up artificial features - outfall	0
X	Sweep-up artificial features - deflectors	0
	HMS: Outfall/deflectors sub-score	**0**
	Total HMS	**620**

Photo ATT-14

Photo ATT-17

Photo ATT-21

Photo ATT-23

River Avon – A3r: RHS Habitat Modification Scoring and Key Photos

Survey: Avon (A3r) 19/08/16
RHS Habitat Modification Score & Habitat Modification Class Scoring System

A	Spot check channel modification - Culverts	0
B	Sweep-up artificial features - Culverts	0
	HMS: Culverts sub-score	**0**
C	Spot check bank material	120
D	Spot check bank modification - RI	0
E	Sweep-up bank profiles - RI	0
F	Sweep-up artificial features - revetments	0
G	Spot check channel substrate	0
H	Spot check channel modification - RI	0
	HMS: Bank & bed reinforcement sub-score	**120**
I	Spot check bank modification - RS	680
J	Sweep-up bank profiles - RS	0
K	Spot check channel modification - RS	120
L	Sweep-up channel modification - over deepened	0
	HMS: Bank & bed resectioning sub-score	**800**
M	Spot check bank modification - Berms (BM)	0
N	Spot check bank modification - EM	200
O	Sweep-up bank profiles - Artificial two-stage	0
P	Sweep-up bank profiles - Embanked	0
Q	Sweep-up bank profiles - set back embankment	0
	HMS: Berms & embankments sub-score	**200**
R	Sweep-up artificial features - weirs/dams/sluices	0
	HMS: Weirs/dams/sluices sub-score	**0**
S	Sweep-up artificial features - bridges	250
	HMS: Bridges sub-score	**250**
T	Spot check bank modification - poaching (PC or PC(B))	0
U	Sweep-up bank profiles - poached	10
	HMS: Poaching sub-score	**10**
V	Sweep-up artificial features - fords	0
	HMS: Fords sub-score	**0**
W	Sweep-up artificial features - outfall	0
X	Sweep-up artificial features - deflectors	0
	HMS: Outfall/deflectors sub-score	**0**
	Total HMS	**1380**

Photo ATT-25

Photo ATT-26

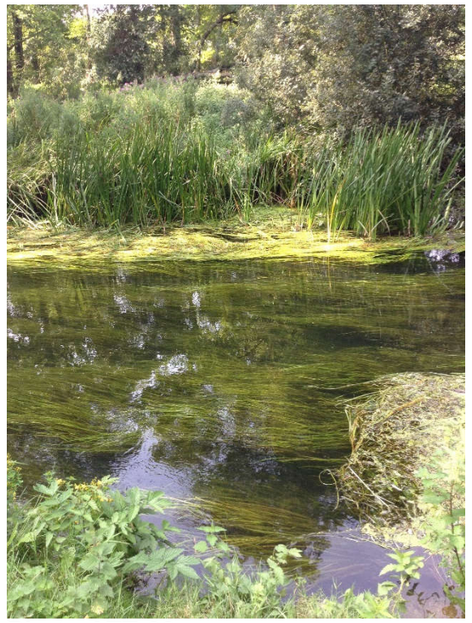

Photo ATT-28

Photo ATT-33

River Avon – A4r: RHS Habitat Modification Scoring and Key Photos

Survey: Avon (A4r) 18/08/16
RHS Habitat Modification Score & Habitat Modification Class Scoring System

A	Spot check channel modification - Culverts	0
B	Sweep-up artificial features - Culverts	400
	HMS: Culverts sub-score	**400**
C	Spot check bank material	110
D	Spot check bank modification - RI	40
E	Sweep-up bank profiles - RI	40
F	Sweep-up artificial features - revetments	0
G	Spot check channel substrate	0
H	Spot check channel modification - RI	0
	HMS: Bank & bed reinforcement sub-score	**190**
I	Spot check bank modification - RS	400
J	Sweep-up bank profiles - RS	0
K	Spot check channel modification - RS	0
L	Sweep-up channel modification - over deepened	0
	HMS: Bank & bed resectioning sub-score	**400**
M	Spot check bank modification - Berms (BM)	0
N	Spot check bank modification - EM	60
O	Sweep-up bank profiles - Artificial two-stage	0
P	Sweep-up bank profiles - Embanked	0
Q	Sweep-up bank profiles - set back embankment	0
	HMS: Berms & embankments sub-score	**60**
R	Sweep-up artificial features - weirs/dams/sluices	0
	HMS: Weirs/dams/sluices sub-score	**0**
S	Sweep-up artificial features - bridges	250
	HMS: Bridges sub-score	**250**
T	Spot check bank modification - poaching (PC or PC(B))	10
U	Sweep-up bank profiles - poached	0
	HMS: Poaching sub-score	**10**
V	Sweep-up artificial features - fords	0
	HMS: Fords sub-score	**0**
W	Sweep-up artificial features - outfall	0
X	Sweep-up artificial features - deflectors	0
	HMS: Outfall/deflectors sub-score	**0**
	Total HMS	**1310**

Photo ATT-40

Photo ATT-41

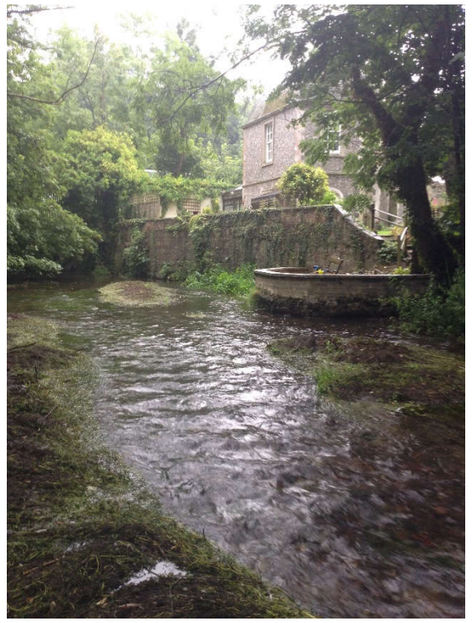

Photo ATT-43

Photo ATT-49

River Avon – A5r: RHS Habitat Modification Scoring and Key Photos

	Survey: Avon (A5r) 18/08/16 RHS Habitat Modification Score & Habitat Modification Class Scoring System	
A	Spot check channel modification - Culverts	0
B	Sweep-up artificial features - Culverts	0
	HMS: Culverts sub-score	**0**
C	Spot check bank material	0
D	Spot check bank modification - RI	0
E	Sweep-up bank profiles - RI	80
F	Sweep-up artificial features - revetments	0
G	Spot check channel substrate	0
H	Spot check channel modification - RI	0
	HMS: Bank & bed reinforcement sub-score	**80**
I	Spot check bank modification - RS	520
J	Sweep-up bank profiles - RS	0
K	Spot check channel modification - RS	2000
L	Sweep-up channel modification - over deepened	0
	HMS: Bank & bed resectioning sub-score	**2520**
M	Spot check bank modification - Berms (BM)	20
N	Spot check bank modification - EM	0
O	Sweep-up bank profiles - Artificial two-stage	0
P	Sweep-up bank profiles - Embanked	0
Q	Sweep-up bank profiles - set back embankment	0
	HMS: Berms & embankments sub-score	**20**
R	Sweep-up artificial features - weirs/dams/sluices	300
	HMS: Weirs/dams/sluices sub-score	**300**
S	Sweep-up artificial features - bridges	250
	HMS: Bridges sub-score	**250**
T	Spot check bank modification - poaching (PC or PC(B))	20
U	Sweep-up bank profiles - poached	0
	HMS: Poaching sub-score	**20**
V	Sweep-up artificial features - fords	0
	HMS: Fords sub-score	**0**
W	Sweep-up artificial features - outfall	
X	Sweep-up artificial features - deflectors	0
	HMS: Outfall/deflectors sub-score	**0**
	Total HMS	**3190**

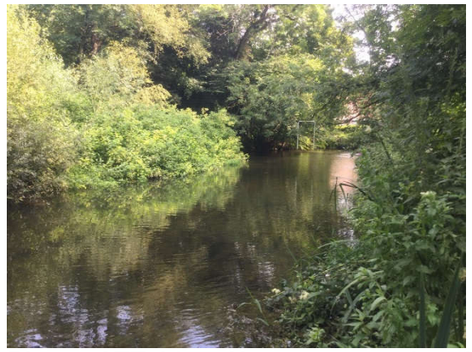

Photo ATT-14 – Upstream at the first cross-section

Photo ATT-17 – An artificial two-stage channel

Photo ATT-113 Looking upstream at the major bridge recorded

Photo ATT-124 – Abundant emergent vegetation

River Avon – A6r: RHS Habitat Modification Scoring and Key Photos

Survey:	**Avon (AR6) 19/08/16**	
RHS Habitat Modification Score & Habitat Modification Class Scoring System		
A	Spot check channel modification - Culverts	0
B	Sweep-up artificial features - Culverts	0
	HMS: Culverts sub-score	**0**
C	Spot check bank material	0
D	Spot check bank modification - RI	0
E	Sweep-up bank profiles - RI	80
F	Sweep-up artificial features - revetments	0
G	Spot check channel substrate	0
H	Spot check channel modification - RI	0
	HMS: Bank & bed reinforcement sub-score	**80**
I	Spot check bank modification - RS	320
J	Sweep-up bank profiles - RS	0
K	Spot check channel modification - RS	1800
L	Sweep-up channel modification - over deepened	0
	HMS: Bank & bed resectioning sub-score	**2120**
M	Spot check bank modification - Berms (BM)	0
N	Spot check bank modification - EM	180
O	Sweep-up bank profiles - Artificial two-stage	0
P	Sweep-up bank profiles - Embanked	0
Q	Sweep-up bank profiles - set back embankment	0
	HMS: Berms & embankments sub-score	**180**
R	Sweep-up artificial features - weirs/dams/sluices	600
	HMS: Weirs/dams/sluices sub-score	**600**
S	Sweep-up artificial features - bridges	0
	HMS: Bridges sub-score	**0**
T	Spot check bank modification - poaching (PC or PC(B))	70
U	Sweep-up bank profiles - poached	0
	HMS: Poaching sub-score	**70**
V	Sweep-up artificial features - fords	0
	HMS: Fords sub-score	**0**
W	Sweep-up artificial features - outfall	
X	Sweep-up artificial features - deflectors	0
	HMS: Outfall/deflectors sub-score	**0**
	Total HMS	**3050**

Photo ATT-132 – Overhanging boughs

Photo ATT- 134

Photo ATT-146 – Gauging weir

Photo ATT-147 – A view upstream of the A303 road crossing

Arup Atkins Joint Venture Approvals

Version	Role	Name	Signature	Date
P01	Author	Bonnie Boulton	[redacted]	13 January 2017
	Checker	Ellie Derbyshire	[redacted]	07 June 2017
	Checker	Liz Brown	[redacted]	07 June 2017
	Approver	Andy Keen	[redacted]	07 June 2017

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