From **The Salisbury and District Angling Club and Salmon and Trout Conservation UK**

Correspondence address
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9th March 2018

Our Ref: JS/NM

BY EMAIL ONLY

Dear Sir,

Re: Environmental Crisis on the River Avon near Stonehenge

Regulation 29 The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 ("the Environmental Damage Regulations")
Wessex Water Limited

REQUEST FOR ACTION

The River Avon is a chalk stream, with its own unique habitat. Its precious environmental value has warranted it being awarded SAC status (Special Area of Conservation). We are fortunate in England to enjoy most of the world's chalk streams. They are England's rainforests. This good fortune carries with it a heavy burden of responsibility (enforceable by statutory regulation) to see that the river is not allowed to deteriorate.

Please accept this formal notification of severe environmental damage that has been caused and continues to be caused by excessive phosphate effluent from Sewage Treatment Works operated by Wessex Water Limited ("Wessex").

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Keeping our waters wild · Est 1901

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We also notify you that there is an imminent threat that the damage will become even worse.

The notifications are given under the Environmental Damage Regulations.

Since this is a matter of public importance, we copy this request to your Chief Executive, your Chairlady, the Secretary of State and to our local MPs.

What is our interest?

The Fishing Clubs

The Salisbury and District Angling Club has fishing rights on the River Avon identified in the table below. The Club has about 2,200 members.

Club Name	Fishery Name	Tenure	Title No.
The Salisbury and District Angling Club Limited	Stonehenge	10 year lease	WT313617
	Countess	20 year Lease	WT315357
	West Amesbury	Freehold	Unregistered
	Durnford	10 year Lease	WT425404

We attach maps roughly identifying the affected stretches ("the affected river"), the "Benchmarking" monitoring sites and sewage treatment works. We explain "Benchmarking" under the heading "The Environmental Damage" below. The extent of most of the affected river is precisely identifiable in the plans attached to the Land Registry Title numbers. The river at West Amesbury (below Queensberry Bridge, Amesbury) is presently unregistered.

Salmon and Trust Conservation

Salmon and Trout Conservation UK ("Salmon and Trout") is registered in England under charity number 1123285. Its objects are the conservation, protection and sustainable exploitation of salmon, trout and other fish stocks of UK origin, and the conservation and improvement of the aquatic environment and ecosystems. It is the UK's voice for fish and water conservation. It has 6,800 members.

The Environmental Damage

For several years, fishermen and riverkeepers alike have noticed and reported deterioration in the affected river, with increased siltation, reduced fly-hatches and a reducing area of river containing ranunculus growth. Ranunculus is the glorious trailing weed in the crystal-clear water that is the signature of a healthy chalk stream.

Matters came to a head when the third year of river "Benchmarking"[1] confirmed with certainty just how dramatic is the decline.

It is no exaggeration to say that we have an environmental disaster on our hands. The affected river is being destroyed.

[1] "Benchmarking" is a recognised and authoritative standard method for measuring water quality. The numbers and diversity of the freshwater invertebrate species are recorded at the site where water quality is to be measured. Each species of invertebrate has a 'fingerprint' of its sensitivity (or tolerance) to each type of pollutant and most of our river flies are sensitive to most pollutants. When a full invertebrate survey is carried out (Benchmark) water quality parameters can be determined.

This can readily be seen from the extreme decline in the numbers of invertebrates in the 3-year period from 2015 to 2017 revealed by the "Benchmark" site monitoring[2] and apparent from the table below.

Benchmarking Site	**Mayfly Nos.**		**Decline (%)**		**Shrimp (Gammarus) Nos.**		**Decline (%)**
Year	*2015*	*2017*			*2015*	*2017*	
Durnford Fishery Beat 3 (Stratford Bridge)	594	39	**93.4%**		1334	183	**86.3%**
West Amesbury Fishery (Ham Hatches)	1903	4	**99.8%**		8220	339	**95.9%**
West Amesbury Fishery (Queensberry Bridge)	903	49	**94.6%**		584	45	**92.3%**
Stonehenge Fishery	708	40	**94.4%**		2176	249	**88.6%**

As well as the destruction of the wonderful phenomenon of the Mayfly hatch, birds, fish and other animals all depend on the fly and invertebrate life for their survival. The data shows that this vital food source is being wiped out.

What is causing the damage?

Phosphate pollution

Orthophosphates ("phosphates") are acknowledged as a major cause of deterioration in water quality in the River Avon. The ***South West River Basin Management Plan*** ("the RBMP") (2015, published February 2016) prepared by the Environment Agency ("the EA") as required by the Water Framework Directive identifies phosphates as the major cause of deterioration and failure to improve the environmental status of the River Avon. Another, excellent report dated 30th April 2015 "***River Avon Special Area of Conservation Nutrient Management Plan for Phosphorus***" ("the Phosphorous Report") (commissioned by Natural England, the EA, and Wiltshire Council) also identifies phosphates as the major cause of deterioration. The RBMP and Phosphorous Report each recognise that 2015 phosphate levels exceed those necessary to achieve conservation objectives. There is no doubting the sound science that underpins the RBMP and Phosphorous Report.

How do Phosphates cause damage?

Briefly, the added nutrients provided by phosphates cause excessive algal growth. As the algae die, they sink to the bed of the river creating silt. As the matter decomposes it reduces the dissolved oxygen in the bedof the river. The sensitive eggs and larvae of invertebrate life become smothered, are deprived of oxygen and fail to hatch. This is what kills the fly life.

Discharges from Sewage Treatment Works are recognised as a major source of the introduction of damaging phosphates into the river.

[2] The full results of the Benchmarking together with other detailed data are supplied in the attached report **"Water Quality Deterioration in the Upper Hampshire Avon"** prepared by Dr. Cyril Bennett MBE. We would hope that the Environment Agency has the expertise to quickly grasp the significance of the report and other scientific detail referred to in this notification.

The increase in phosphate levels in the affected river

The phosphate levels in the affected river have dramatically increased since 2015.

In the same 3-year period as the destruction of invertebrate life, the phosphate levels in the river have increased by 50%. This is apparent from the table below. The table is based on the EA's own monitoring of phosphate concentrations at Stratford-sub-Castle, at the downstream boundary of the affected river.

	2015	*2017*	**Increase in phosphate levels**
Stratford-sub-Castle (phosphate levels in the river)	0.06mg/L	0.09mg/L	**50%**
Note: the maximum level at which water quality can be considered healthy in the affected river is 0.04 mg/L: see the Phosphorous Report.			

The levels have increased to more than double the maximum required for good health.

The source of the increase in phosphates

The readily identifiable source of the *increase* in phosphate levels is effluent discharged from Sewage Treatment Works. The discharges have been increasing at an alarming rate. We refer to the table below, which is based on Wessex's own reporting of phosphate effluent levels to the EA.

Mean increase in phosphate levels from Sewage Treatment Works – based on monitoring reported by Wessex Water and obtained from EA Data			
	***2011* mg/L**	***2017* mg/L**	**Increase (%)**
Upavon STW	0.58	0.86	**48%**
Ratfyn STW	0.37	0.5	**35%**
Amesbury STW	0.39	0.7	**79%**

Each of these Sewage Treatment Works above is upstream of or flows directly into the affected river, so that the phosphate effluent is washed down through those stretches, leading, in turn to the increase by 50% of the phosphate levels in the river at Stratford-sub-Castle.

The Causal Link

It is obvious that there is significant causal link between: -

- the increase of 50% between 2015-2017 in phosphate at the downstream boundary of the affected river;
- the increase by an average of 54% between 2015 – 2017 in the concentration of phosphate from the 3 Sewage Treatment Works;
- the decrease by an average of more than 90% in invertebrate life in the same period.

<u>Imminent threat of more severe environmental damage</u>

According to the Phosphorous Report (Annex 4), Wessex has forecast that: -

- the population served by the Ratfyn Sewage Treatment Works will increase from 10,770 in 2015 to no more than 11,152 by 2020;
- the population served by the Upavon Sewage Treatment Works will increase from 1,056 in 2015 to no more than 1,075 by 2020;
- the population served by the Amesbury Sewage Treatment Works will increase from 10,283 in 2015 to no more than 11,545 by 2020.

These population forecasts are completely outdated. They don't appear to include: -

- the rebasing of 1000's of servicemen and their families at Larkhill, Bulford and Upavon;
- large residential developments at Lionsgate, Kingsgate and Archers Gate, Amesbury.

	Actual Population Increase by 2019		
Relevant Sewage Treatment Works	**MOD rebasing at Larkhill, Bulford and Upavon**	**Amesbury Developments - 845 new homes**	**Excess over Wessex's forecast**
Ratfyn STW	4,715		**42%**
Upavon STW	384		**36%**
Amesbury STW		Say, a minimum of 2,500	**22%**

Wessex's own comment in relation to the planning application for the Lionsgate development is telling:

"*Recent planning applications have increased the number of dwellings in the sewer catchment beyond the design capacity of the original sewer improvements.*"

The added population can only serve to increase not only the concentration, but also the amount of phosphate effluent at an even more alarming rate. This is even supposing that the existing Sewage Treatment Works can cope at all with the additional loading.

This presents a further imminent and wholly unacceptable threat to wildlife and the unique chalk stream ecosystem.

What action should be taken?

We realise that phosphate effluent is by no means the only harmful factor adversely impacting the health of our affected rivers. However, the effluent presents a clear and continuing threat that must be addressed as a matter of urgency. Immediate action is needed to reduce the level of phosphate discharge.

We accept that it would be extreme and impracticable for the Sewage Treatment Works to be closed. However, it is entirely practicable and essential for them to be subject to an urgent major upgrade and for phosphate stripping capability to be radically improved.

The Phosphorous Report recommends that tighter limits should be imposed where technically feasible. The technology exists to reduce the phosphate effluent levels to 0.1mg/L (see the Phosphorous Report).

We accept that this may be expensive. However, Wessex has consistent profit levels of more than £150m per annum and has more than adequate resource to invest in improved treatment. This will be at no cost to the EA.

Conclusion

We trust that the EA will exercise its regulatory power under Regulation 29 to take swift action to stop the continuing and further damage.

May we suggest that a meeting is arranged as soon as possible and certainly by 30th March to address the constructive way forward? We will be happy to host the meeting at a convenient place, whether locally or in London.

Should you require further information or clarification of any of the scientific research, we will provide this.

We look forward to hearing from you urgently.

For convenience, you may address any correspondence to all of us by email to Jan Szakowski.

Yours faithfully,

Jan Szakowski

The Salisbury and District Angling Club

Nick Measham

Freshwater Campaigns Manager

Salmon and Trout Conservation UK

cc. **The Rt Hon Michael Gove MP, Secretary of State for Environment, Food and Rural Affairs.** michael.gove.mp@parliament.uk

Emma Howard Boyd, Chair of the Environment Agency. emma.boyd@environment-agency.gov.uk

Sir John Bevan, Chief Executive of the Environment Agency. james.bevan@environment-agency.gov.uk

The Rt Honourable John Glen MP john.glen.mp@parliament.uk

The Rt Honourable Claire Perry MP claire.perry.mp@parliament.uk

Attachments: -

(1) Maps roughly indicating extent of the affected river, sewage treatment plants and benchmarking monitoring sites.

(2) Report "Water Quality Deterioration in the Upper Hampshire Avon".

The River Avon at Amesbury

A Mayfly

Upavon OS

0 0.65 1.3
km

Projection = OSGB36

xmin = 408000

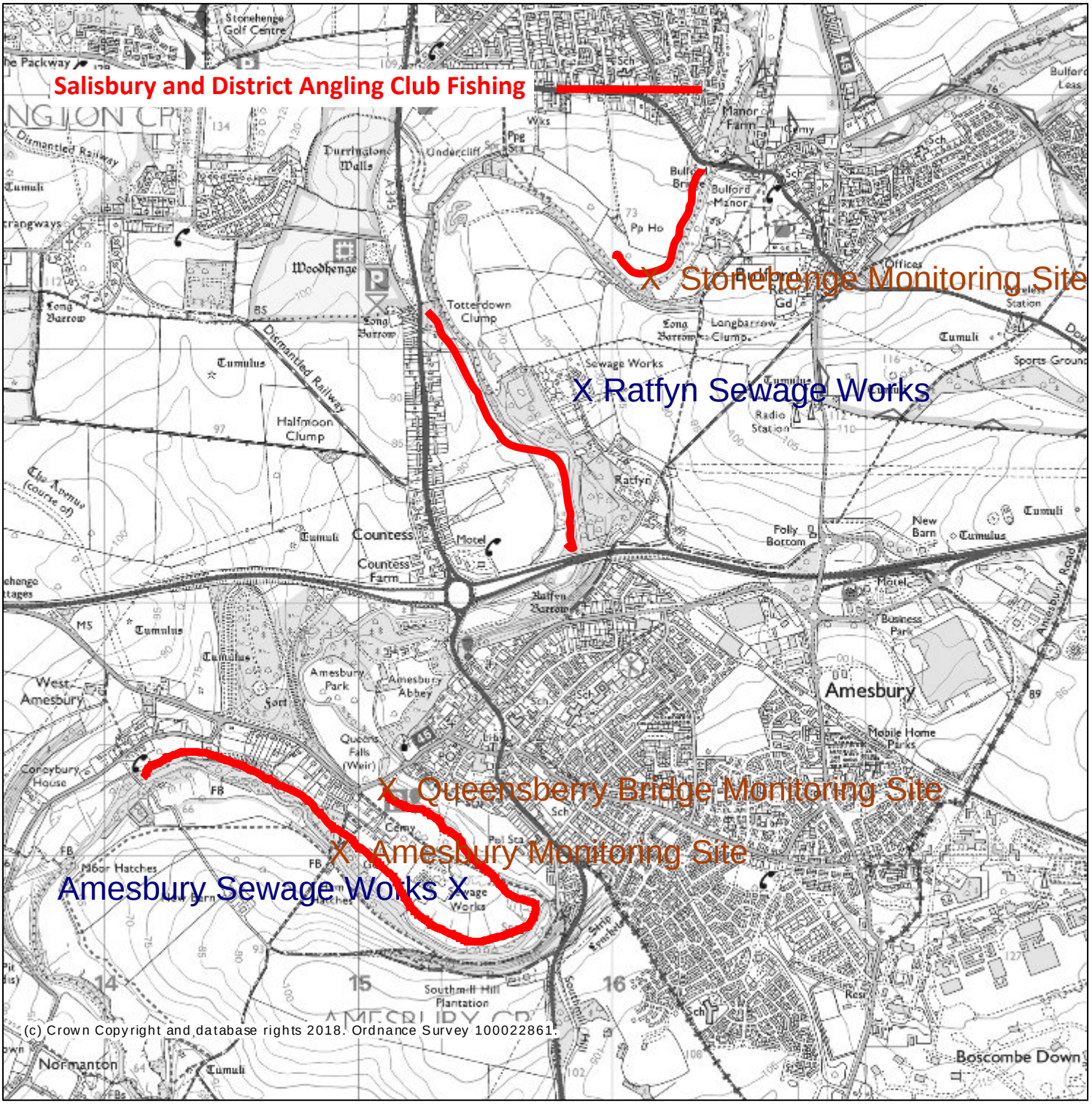
ymin = 151600

xmax = 418900

ymax = 157100

Map produced by MAGIC on 7 March, 2018.

Amesbury



0 0.65 1.3
km

Projection = OSGB36

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ymax = 144900

Map produced by MAGIC on 27 February, 2018.
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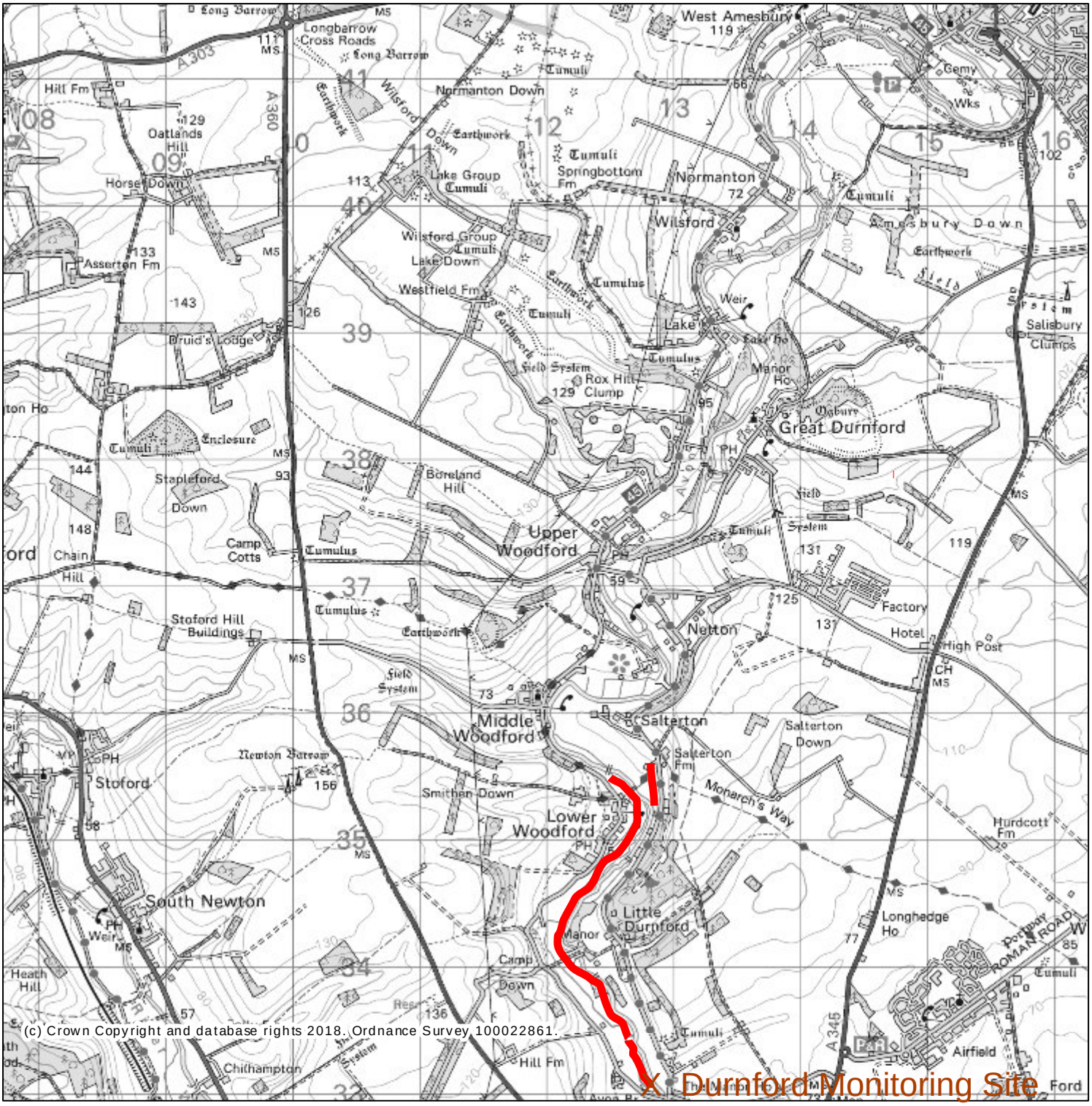
Durnford



0 1 2
km

Projection = OSGB36

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ymax = 142500

Map produced by MAGIC on 27 February, 2018.

Water Quality Deterioration in the Upper Hampshire Avon
Special Area of Conservation

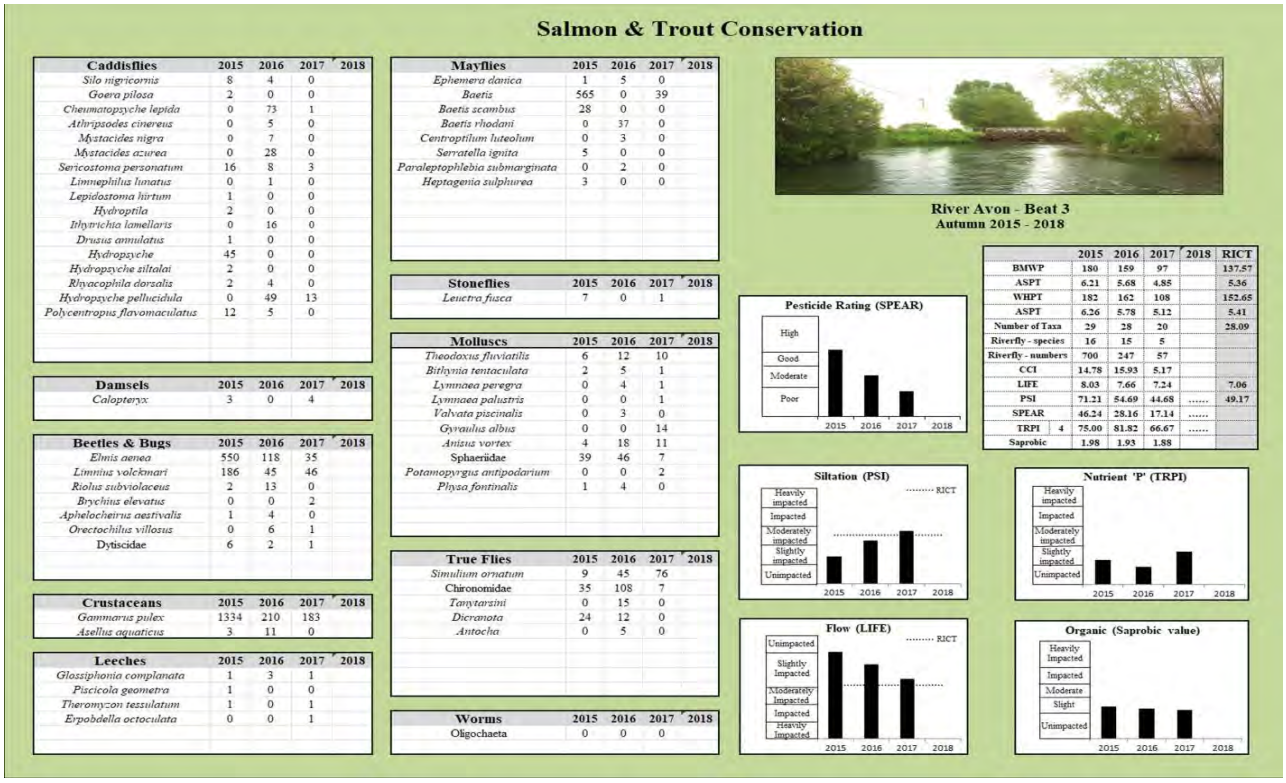
Introduction

The standard method for measuring water quality at a site is by recording the numbers and diversity of the freshwater invertebrate species at that site. Each species has a 'fingerprint' of its sensitivity (or tolerance) to each type of pollutant and most of our Riverflies are sensitive to most pollutants. When a full invertebrate survey is carried out (Benchmark) water quality parameters can be determined.

Invertebrate benchmark surveys have been carried out at five S&DAC sites (spring & autumn) over the past three years, all of which are available on the club's website. As this data is showing a serious decline in the water quality of our river, the club is looking for possible reasons for this decline. Our benchmark data has therefore been compared with water quality measurements collected by the Environment Agency. As this decline is most pronounced in the autumn benchmark samples, these have been used. Sites are considered moving upstream.

Beat 3 (Stratford Bridge)

Invertebrate benchmark data taken during the spring & autumn over the past three years shows a serious reduction in our Riverfly and Gammarus populations at this site. This indicates reduced flow rates (LIFE), increased siltation (PSI) and phosphates (TRPI) and a large reduction in the pesticide rating (SPEAR). The large increase in silt levels has only just reached the EA 'RICT' prediction level for this site which clearly shows a basic defect in this 'prediction'.



Salmon & Trout Conservation

Caddisflies	2015	2016	2017	2018
Silo nigricornis	8	4	0	
Goera pilosa	2	0	0	
Cheumatopsyche lepida	0	73	1	
Athripsodes cinereus	0	5	0	
Mystacides nigra	0	7	0	
Mystacides azurea	0	28	0	
Sericostoma personatum	16	8	3	
Limnephilus lunatus	0	1	0	
Lepidostoma hirtum	1	0	0	
Hydroptila	2	0	0	
Rhyrichia lamellaris	0	16	0	
Drusus annulatus	1	0	0	
Hydropsyche	45	0	0	
Hydropsyche siltalai	2	0	0	
Rhyacophila dorsalis	2	4	0	
Hydropsyche pellucidula	0	49	13	
Polycentropus flavomaculatus	12	5	0	

Damsels	2015	2016	2017	2018
Calopteryx	3	0	4	

Beetles & Bugs	2015	2016	2017	2018
Elmis aenea	550	118	35	
Limnius volckmari	186	45	46	
Riolus subviolaceus	2	13	0	
Brychius elevatus	0	0	2	
Aphelocheirus aestivalis	1	4	0	
Orectochilus villosus	0	6	1	
Dytiscidae	6	2	1	

Crustaceans	2015	2016	2017	2018
Gammarus pulex	1334	210	183	
Asellus aquaticus	3	11	0	

Leeches	2015	2016	2017	2018
Glossiphonia complanata	1	3	1	
Piscicola geometra	1	0	0	
Theromyzon tessulatum	1	0	1	
Erpobdella octoculata	0	0	1	

Mayflies	2015	2016	2017	2018
Ephemera danica	1	5	0	
Baetis	565	0	39	
Baetis scambus	28	0	0	
Baetis rhodani	0	37	0	
Centroptilum luteolum	0	3	0	
Serratella ignita	5	0	0	
Paraleptophlebia submarginata	0	2	0	
Heptagenia sulphurea	3	0	0	

Stoneflies	2015	2016	2017	2018
Leuctra fusca	7	0	1	

Molluscs	2015	2016	2017	2018
Theodoxus fluviatilis	6	12	10	
Bithynia tentaculata	2	5	1	
Lymnaea peregra	0	4	1	
Lymnaea palustris	0	0	1	
Valvata piscinalis	0	3	0	
Gyraulus albus	0	0	14	
Anisus vortex	4	18	11	
Sphaeriidae	39	46	7	
Potamopyrgus antipodarium	0	0	2	
Physa fontinalis	1	4	0	

True Flies	2015	2016	2017	2018
Simulium ornatum	9	45	76	
Chironomidae	35	108	7	
Tanytarsini	0	15	0	
Dicranota	24	12	0	
Antocha	0	5	0	

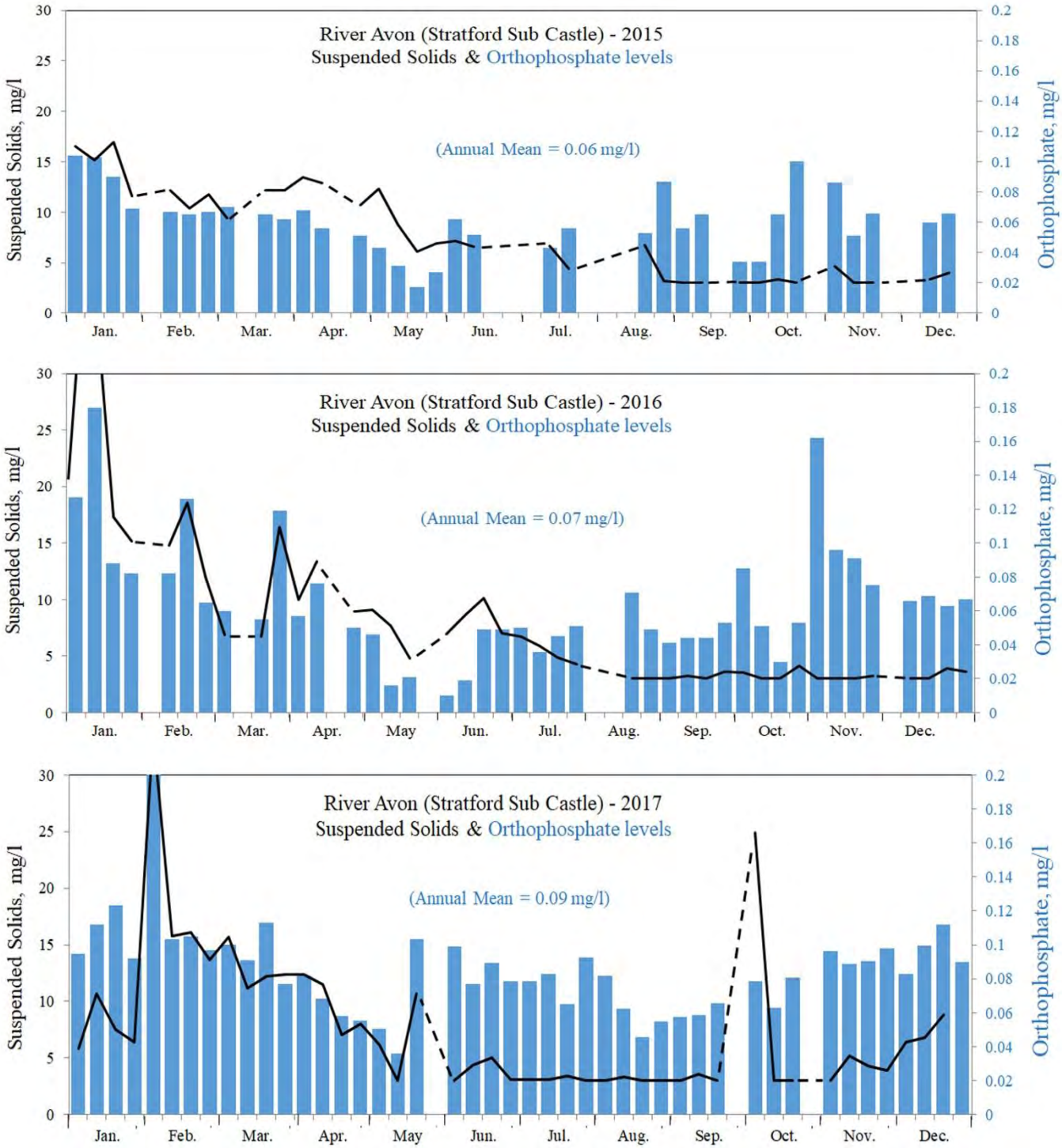
Worms	2015	2016	2017	2018
Oligochaeta	0	0	0	

River Avon - Beat 3
Autumn 2015 - 2018

	2015	2016	2017	2018	RICT
BMWP	180	159	97		137.57
ASPT	6.21	5.68	4.85		5.36
WHPT	182	162	108		152.65
ASPT	6.26	5.78	5.12		5.41
Number of Taxa	29	28	20		28.09
Riverfly - species	16	15	5		
Riverfly - numbers	700	247	57		
CCI	14.78	15.93	5.17		
LIFE	8.03	7.66	7.24		7.06
PSI	71.21	54.69	44.68	.....	49.17
SPEAR	46.24	28.16	17.14	.....	
TRPI 4	75.00	81.82	66.67	.....	
Saprobic	1.98	1.93	1.88		

River Avon – Beat 3 (Stratford Bridge)

As there is no major sewage treatment works in this area, weekly EA data for phosphates (orthophosphate) and suspended solids taken just downstream at Stratford Sub Castle, have been compared for this period.

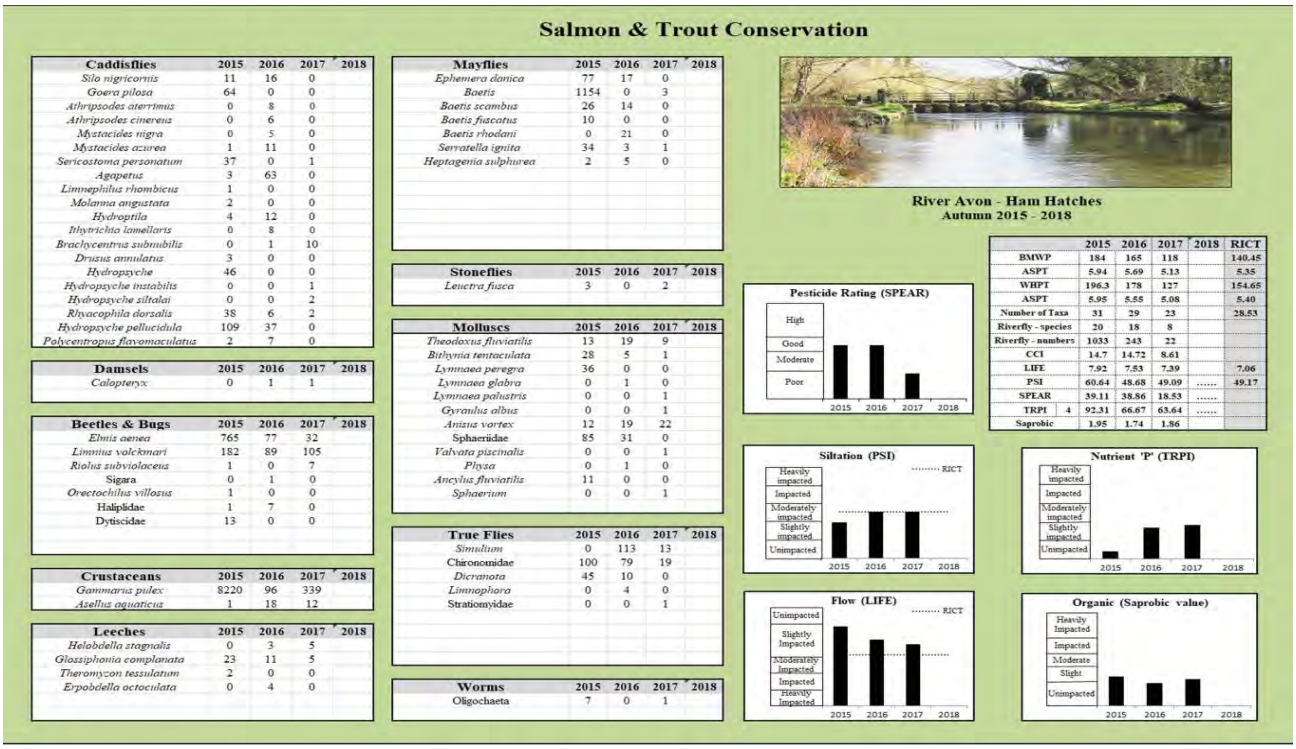


River Avon at Stratford Sub Castle – Suspended Solids & Phosphates Levels

Clearly there is a close relationship between these two determinants; high levels of suspended solids coming into the river during the early part of the year appear to be carrying phosphates. Whilst suspended solids drop out during the summer and autumn months, phosphates remain at relatively high levels, and increasing over the three year period.

Ham Hatches (West Amesbury)

Invertebrate benchmark data, taken during the spring & autumn, over the past three years shows a serious reduction in our Riverfly and Gammarus populations, with Riverfly numbers falling to drastic levels in the autumn.



Caddisflies	2015	2016	2017	2018
Silo nigricornis	11	16	0	
Goera pilosa	64	0	0	
Athripsodes aterrimus	0	8	0	
Athripsodes cinereus	0	6	0	
Mystacides nigra	0	5	0	
Mystacides azurea	1	11	0	
Sericostoma personatum	37	0	1	
Agapetus	3	63	0	
Limnephilus rhombicus	1	0	0	
Molanna angustata	2	0	0	
Hydroptila	4	12	0	
Ithytrichia lamellaris	0	8	0	
Brachycentrus subnubilis	0	1	10	
Drusus annulatus	3	0	0	
Hydropsyche	46	0	0	
Hydropsyche instabilis	0	0	1	
Hydropsyche siltalai	0	0	2	
Rhyacophila dorsalis	38	6	2	
Hydropsyche pellucidula	109	37	0	
Polycentropus flavomaculatus	2	7	0	

Damsels	2015	2016	2017	2018
Calopteryx	0	1	1	

Beetles & Bugs	2015	2016	2017	2018
Elmis aenea	765	77	32	
Limnius volckmari	182	89	105	
Riolus subviolaceus	1	0	7	
Sigara	0	1	0	
Orectochilus villosus	1	0	0	
Haliplidae	1	7	0	
Dytiscidae	13	0	0	

Crustaceans	2015	2016	2017	2018
Gammarus pulex	8220	96	339	
Asellus aquaticus	1	18	12	

Leeches	2015	2016	2017	2018
Helobdella stagnalis	0	3	5	
Glossiphonia complanata	23	11	5	
Theromyzon tessulatum	2	0	0	
Erpobdella octoculata	0	4	0	

Mayflies	2015	2016	2017	2018
Ephemera danica	77	17	0	
Baetis	1154	0	3	
Baetis scambus	26	14	0	
Baetis fuscatus	10	0	0	
Baetis rhodani	0	21	0	
Serratella ignita	34	3	1	
Heptagenia sulphurea	2	5	0	

Stoneflies	2015	2016	2017	2018
Leuctra fusca	3	0	2	

Molluscs	2015	2016	2017	2018
Theodoxus fluviatilis	13	19	9	
Bithynia tentaculata	28	5	1	
Lymnaea peregra	36	0	0	
Lymnaea glabra	0	1	0	
Lymnaea palustris	0	0	1	
Gyraulus albus	0	0	1	
Anisus vortex	12	19	22	
Sphaeriidae	85	31	0	
Valvata piscinalis	0	0	1	
Physa	0	1	0	
Ancylus fluviatilis	11	0	0	
Sphaerium	0	0	1	

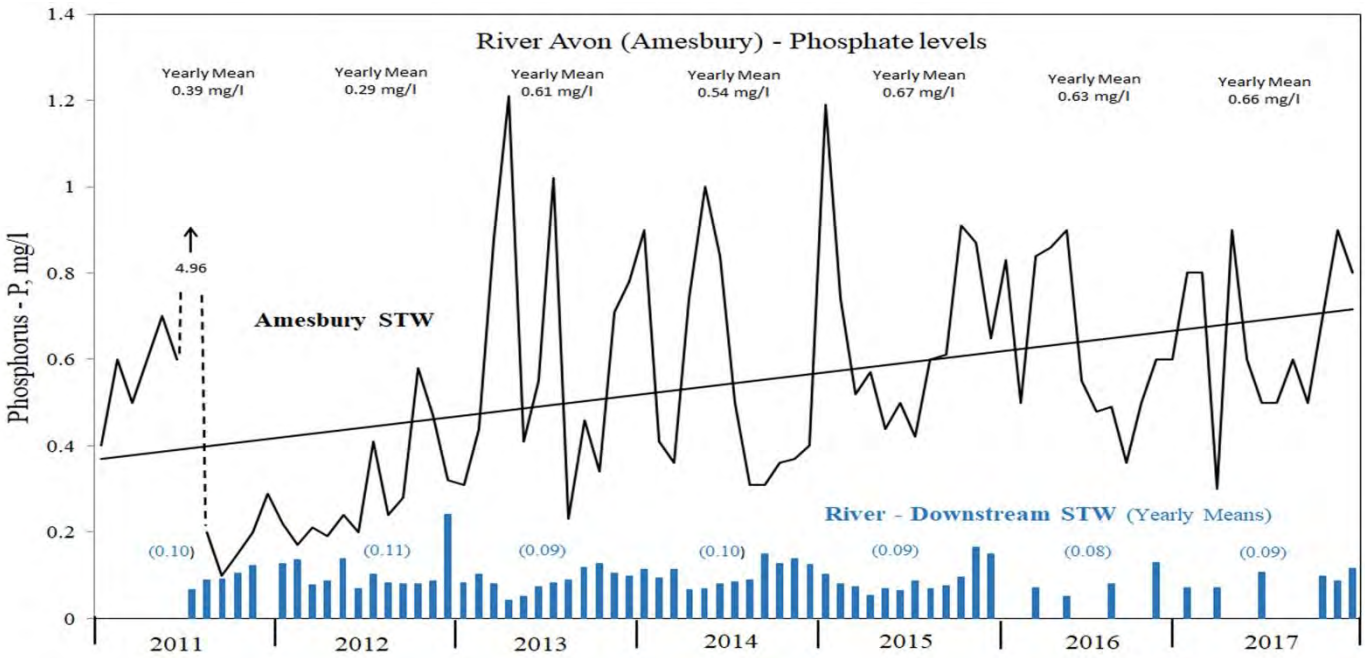
True Flies	2015	2016	2017	2018
Simulium	0	113	13	
Chironomidae	100	79	19	
Dicranota	45	10	0	
Limnophora	0	4	0	
Stratiomyidae	0	0	1	

Worms	2015	2016	2017	2018
Oligochaeta	7	0	1	

	2015	2016	2017	2018	RICT
BMWP	184	165	118		140.45
ASPT	5.94	5.69	5.13		5.35
WHPT	196.3	178	127		154.65
ASPT	5.95	5.55	5.08		5.40
Number of Taxa	31	29	23		28.53
Riverfly - species	20	18	8		
Riverfly - numbers	1033	243	22		
CCI	14.7	14.72	8.61		
LIFE	7.92	7.53	7.39		7.06
PSI	60.64	48.68	49.09	.....	49.17
SPEAR	39.11	38.86	18.53	.....	
TRPI 4	92.31	66.67	63.64	.....	
Saprobic	1.95	1.74	1.86		

Autumn Invertebrate Benchmark data for Ham Hatches

This again correlates with reduced flow rates (LIFE), increased siltation (PSI) and phosphates (TRPI) and a large reduction in the pesticide rating (SPEAR). This data was compared with EA water quality data recorded at Amesbury Sewage Treatment Works (upstream of this site) and in the river downstream of the STW.

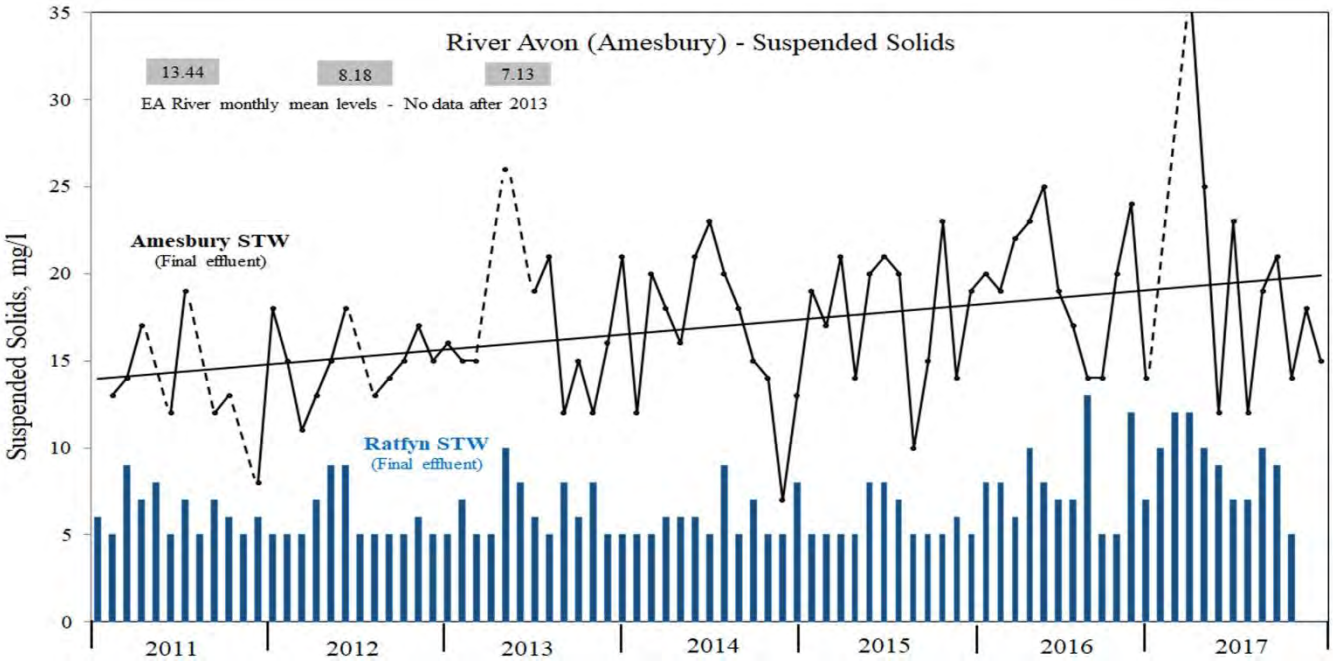


Phosphates levels at Amesbury STW & in the river downstream of the STW

Phosphorus (P) levels taken once a month by Wessex Water at the final effluent of the STW shows a significant upward trend. The reason for the very high peak in 2011 is unknown and has been omitted in the monthly mean and trend line calculations.

In contrast to the data recorded downstream at Stratford Sub Castle, EA monitoring of phosphorus in the river below Amesbury STW was only taken once a month and less frequently during the last two years. This shows annual means of 0.8mg/l – 0.11mg/l which is high for a chalk stream. Levels should be no higher than 0.04mg/l; Salmon & Trout Conservation is working with the EA for a standard of 0.02mg/l on the River Itchen.

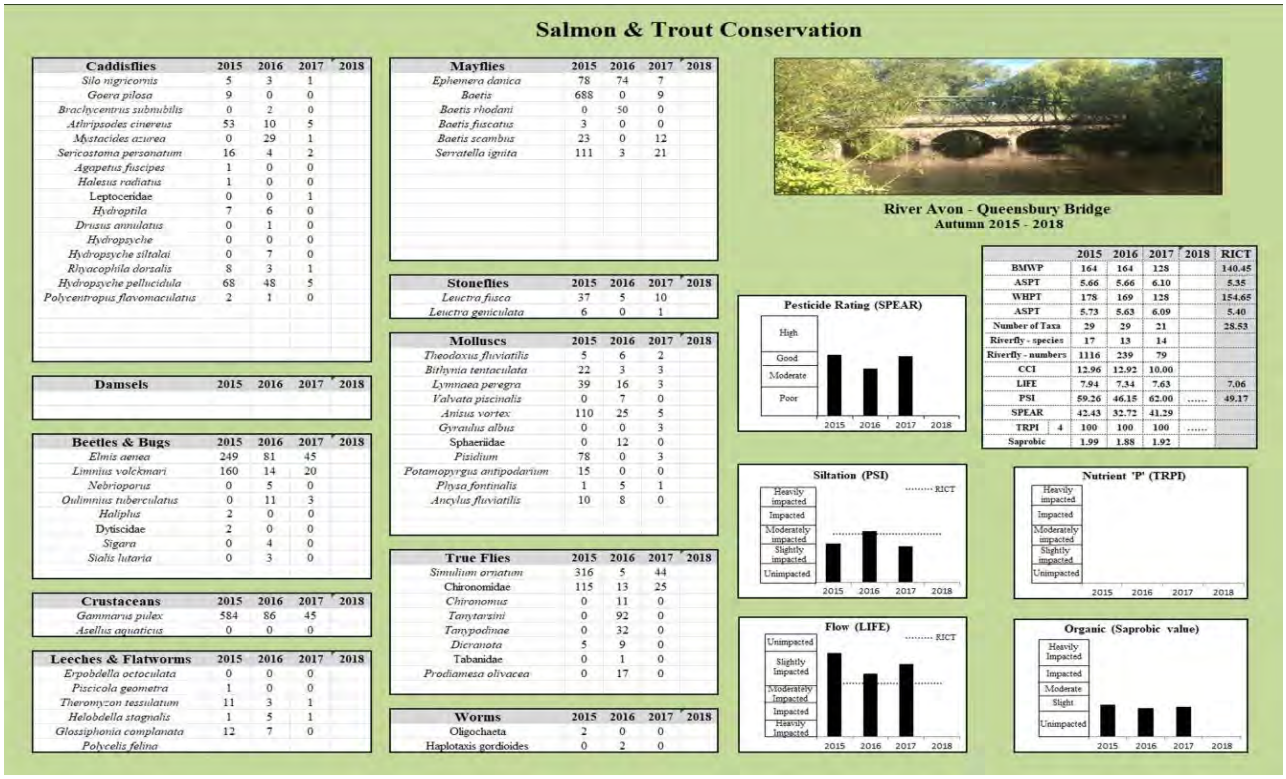
There appears to be no river data for suspended solids after 2013, but suspended solids recorded at the output of Amesbury STW were compared with those at Ratfyn STW, upstream of Amesbury.



This clearly shows a huge difference between the STW's, with much higher, erratic and increasing levels of suspended solids at Amesbury STW compared to those at Ratfyn although there is an increase at Ratfyn during the past two years.

Queensbury Bridge

The autumn survey at this site again showed considerable reductions in both Riverfly and Gammarus populations over the three year period; reduced flow rates (LIFE) with increased siltation (PSI) were indicated in 2016 whilst phosphate levels remained below recordable levels.



Salmon & Trout Conservation

Caddisflies	2015	2016	2017	2018
Silo nigricornis	5	3	1	
Goera pilosa	9	0	0	
Brachycentrus subnubilis	0	2	0	
Athripsodes cinereus	53	10	5	
Mystacides azurea	0	29	1	
Sericostoma personatum	16	4	2	
Agapetus fuscipes	1	0	0	
Halesus radiatus	1	0	0	
Leptoceridae	0	0	1	
Hydroptila	7	6	0	
Drusus annulatus	0	1	0	
Hydropsyche	0	0	0	
Hydropsyche siltalai	0	7	0	
Rhyacophila dorsalis	8	3	1	
Hydropsyche pellucidula	68	48	5	
Polycentropus flavomaculatus	2	1	0	

Damsels	2015	2016	2017	2018

Beetles & Bugs	2015	2016	2017	2018
Elmis aenea	249	81	45	
Limnius volckmari	160	14	20	
Nebrioporus	0	5	0	
Oulimnius tuberculatus	0	11	3	
Haliplus	2	0	0	
Dytiscidae	2	0	0	
Sigara	0	4	0	
Sialis lutaria	0	3	0	

Crustaceans	2015	2016	2017	2018
Gammarus pulex	584	86	45	
Asellus aquaticus	0	0	0	

Leeches & Flatworms	2015	2016	2017	2018
Erpobdella octoculata	0	0	0	
Piscicola geometra	1	0	0	
Theromyzon tessulatum	11	3	1	
Helobdella stagnalis	1	5	1	
Glossiphonia complanata	12	7	0	
Polycelis felina				

Mayflies	2015	2016	2017	2018
Ephemera danica	78	74	7	
Baetis	688	0	9	
Baetis rhodani	0	50	0	
Baetis fuscatus	3	0	0	
Baetis scambus	23	0	12	
Serratella ignita	111	3	21	

Stoneflies	2015	2016	2017	2018
Leuctra fusca	37	5	10	
Leuctra geniculata	6	0	1	

Molluscs	2015	2016	2017	2018
Theodoxus fluviatilis	5	6	2	
Bithynia tentaculata	22	3	3	
Lymnaea peregra	39	16	3	
Valvata piscinalis	0	7	0	
Anisus vortex	110	25	5	
Gyraulus albus	0	0	3	
Sphaeriidae	0	12	0	
Pisidium	78	0	3	
Potamopyrgus antipodarum	15	0	0	
Physa fontinalis	1	5	1	
Ancylus fluviatilis	10	8	0	

True Flies	2015	2016	2017	2018
Simulium ornatum	316	5	44	
Chironomidae	115	13	25	
Chironomus	0	11	0	
Tanytarsini	0	92	0	
Tanypodinae	0	32	0	
Dicranota	5	9	0	
Tabanidae	0	1	0	
Prodiamesa olivacea	0	17	0	

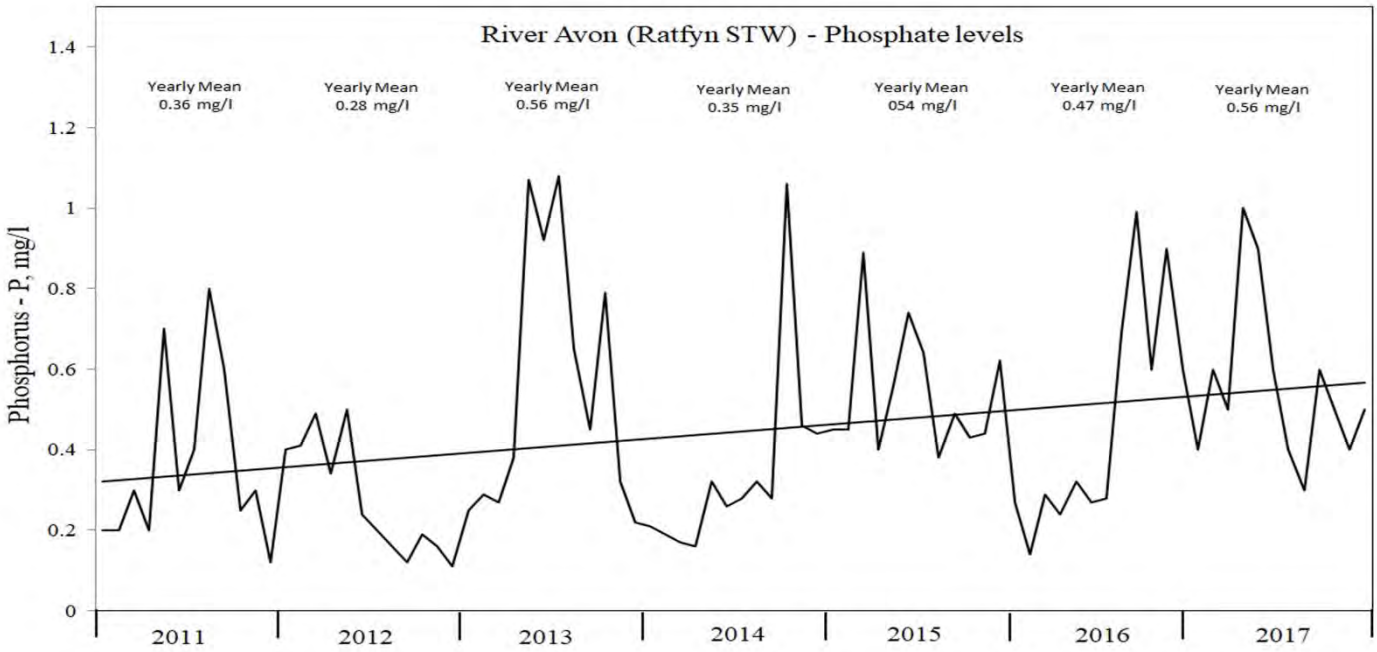
Worms	2015	2016	2017	2018
Oligochaeta	2	0	0	
Haplotaxis gordioides	0	2	0	

River Avon - Queensbury Bridge
Autumn 2015 - 2018

	2015	2016	2017	2018	RICT
BMWP	164	164	128		140.45
ASPT	5.66	5.66	6.10		5.35
WHPT	178	169	128		154.65
ASPT	5.73	5.63	6.09		5.40
Number of Taxa	29	29	21		28.53
Riverfly - species	17	13	14		
Riverfly - numbers	1116	239	79		
CCI	12.96	12.92	10.00		
LIFE	7.94	7.34	7.63		7.06
PSI	59.26	46.15	62.00	.....	49.17
SPEAR	42.43	32.72	41.29		
TRPI 4	100	100	100	.....	
Saprobic	1.99	1.88	1.92		

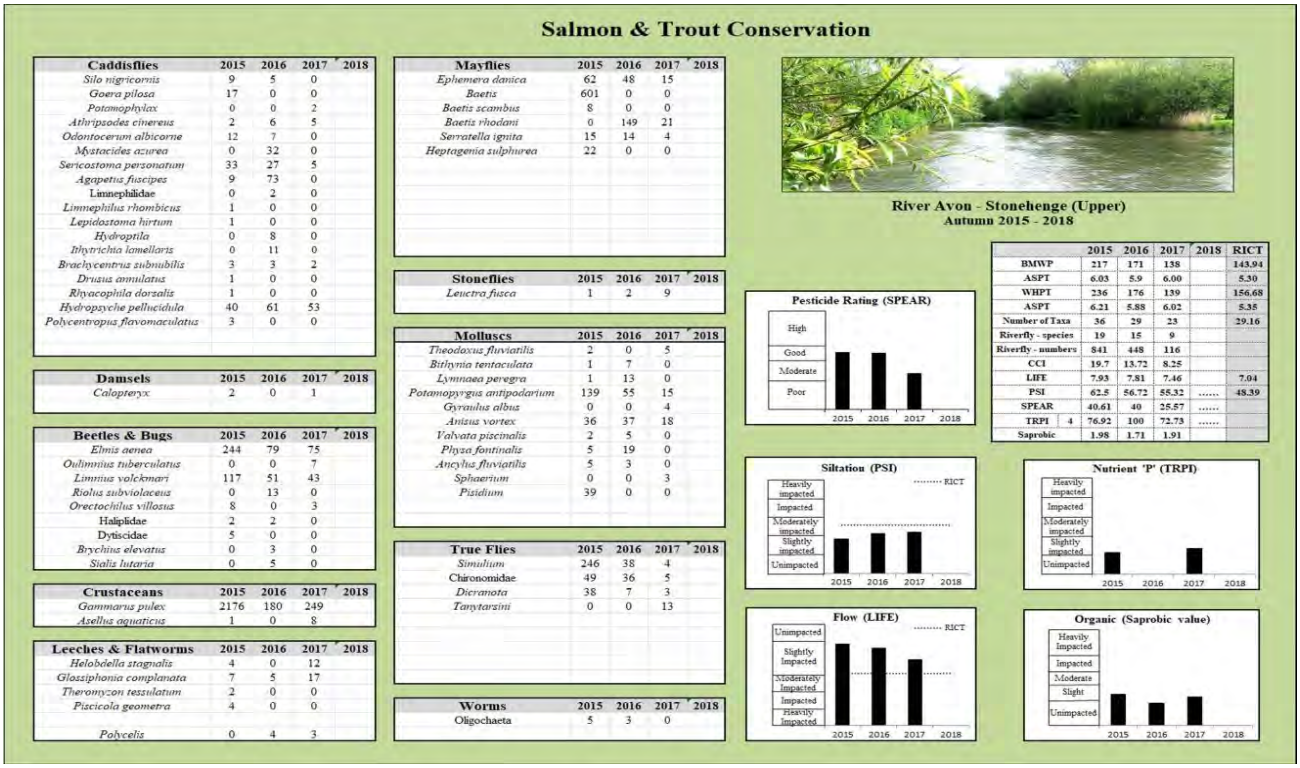
Autumn Invertebrate Benchmark data for Queensbury Bridge

This site is downstream of Ratfyn STW. Mean yearly levels were generally lower than those at Amesbury together with a lower upward trend. There appears to be no EA data for either phosphates or suspended solids in the river below the STW.



Phosphates levels at Ratfyn STW

Stonehenge



Caddisflies	2015	2016	2017	2018
Silo nigricornis	9	5	0	
Goera pilosa	17	0	0	
Potamophylax	0	0	2	
Athripsodes cinereus	2	6	5	
Odontocerum albicorne	12	7	0	
Mystacides azurea	0	32	0	
Sericostoma personatum	33	27	5	
Agapetus fuscipes	9	73	0	
Limnephilidae	0	2	0	
Limnephilus rhombicus	1	0	0	
Lepidostoma hirtum	1	0	0	
Hydroptila	0	8	0	
Ithytrichia lamellaris	0	11	0	
Brachycentrus subnubilis	3	3	2	
Drusus annulatus	1	0	0	
Rhyacophila dorsalis	1	0	0	
Hydropsyche pellucidula	40	61	53	
Polycentropus flavomaculatus	3	0	0	

Mayflies	2015	2016	2017	2018
Ephemera danica	62	48	15	
Baetis	601	0	0	
Baetis scambus	8	0	0	
Baetis rhodani	0	149	21	
Serratella ignita	15	14	4	
Heptagenia sulphurea	22	0	0	

Stoneflies	2015	2016	2017	2018
Leuctra fusca	1	2	9	

Damsels	2015	2016	2017	2018
Calopteryx	2	0	1	

Molluscs	2015	2016	2017	2018
Theodoxus fluviatilis	2	0	5	
Bithynia tentaculata	1	7	0	
Lymnaea peregra	1	13	0	
Potamopyrgus antipodarum	139	55	15	
Gyraulus albus	0	0	4	
Anisus vortex	36	37	18	
Valvata piscinalis	2	5	0	
Physa fontinalis	5	19	0	
Ancylus fluviatilis	5	3	0	
Sphaerium	0	0	3	
Pisidium	39	0	0	

Beetles & Bugs	2015	2016	2017	2018
Elmis aenea	244	79	75	
Oulimnius tuberculatus	0	0	7	
Limnius volckmari	117	51	43	
Riolus subviolaceus	0	13	0	
Orectochilus villosus	8	0	3	
Haliplidae	2	2	0	
Dytiscidae	5	0	0	
Brychius elevatus	0	3	0	
Sialis lutaria	0	5	0	

True Flies	2015	2016	2017	2018
Simulium	246	38	4	
Chironomidae	49	36	5	
Diceranota	38	7	3	
Tanytarsini	0	0	13	

Crustaceans	2015	2016	2017	2018
Gammarus pulex	2176	180	249	
Asellus aquaticus	1	0	8	

Leeches & Flatworms	2015	2016	2017	2018
Helobdella stagnalis	4	0	12	
Glossiphonia complanata	7	5	17	
Theromyzon tessulatum	2	0	0	
Piscicola geometra	4	0	0	
Polycelis	0	4	3	

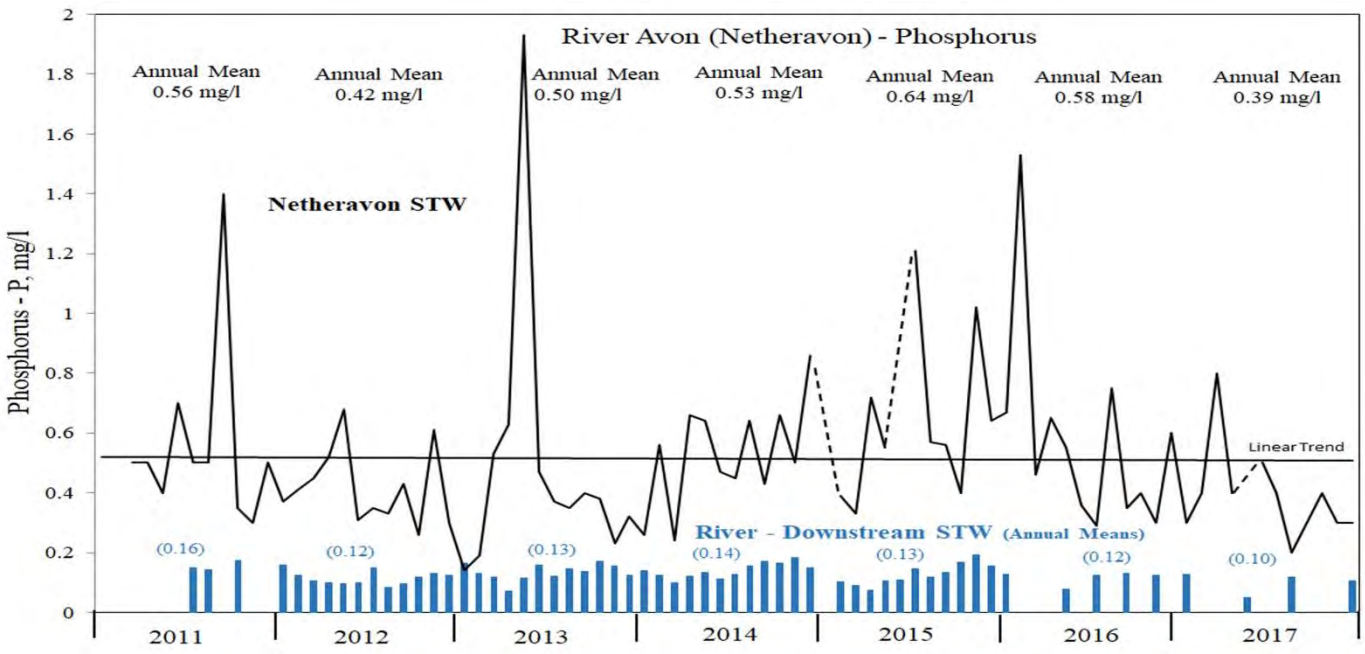
Worms	2015	2016	2017	2018
Oligochaeta	5	3	0	

	2015	2016	2017	2018	RICT
BMWP	217	171	138		143.94
ASPT	6.03	5.9	6.00		5.30
WHPT	236	176	139		156.68
ASPT	6.21	5.88	6.02		5.35
Number of Taxa	36	29	23		29.16
Riverfly - species	19	15	9		
Riverfly - numbers	841	448	116		
CCI	19.7	13.72	8.25		
LIFE	7.93	7.81	7.46		7.04
PSI	62.5	56.72	55.32	.....	48.39
SPEAR	40.61	40	25.57	.....	
TRPI 4	76.92	100	72.73	.....	
Saprobic	1.98	1.71	1.91		

Autumn Invertebrate Benchmark data for Stonehenge

Again reductions in Riverfly and Gammarus populations were recorded and associated with decreasing flow rates (LIFE) resulting in increasing silt levels (PSI) and a significant drop in pesticide rating (SPEAR).

This site is downstream of the Netheravon STW and phosphate (P) levels measured monthly by Wessex Water have a number of unexplained spikes but, unlike Amesbury & Ratfyn, there is no upward trend.

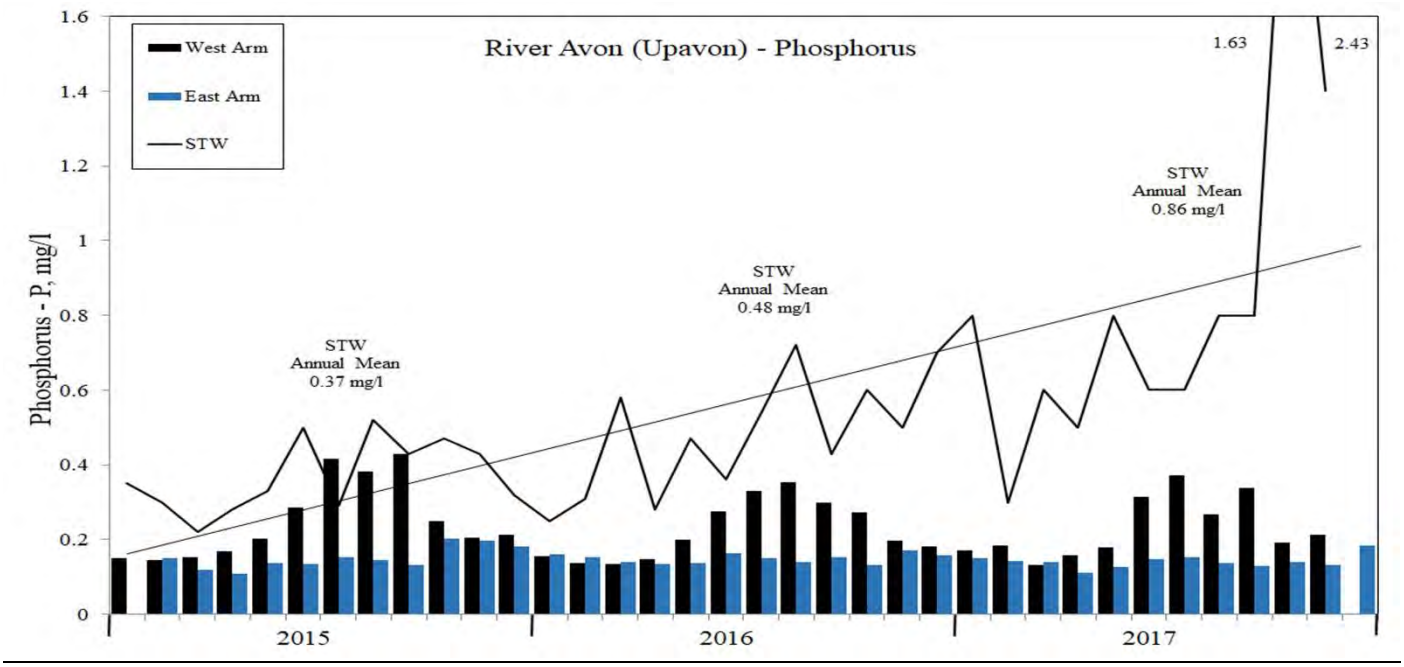


Phosphates levels at Netheravon STW & in the river downstream of the STW

Phosphates recorded in the river downstream of the STW are higher than those at downstream sites. These could not be compared with suspended solids as there is no data for this determinant in the EA data base. There is very little data for the river above the STW but levels are mostly above 0.1 mg/l.

Upavon

Phosphate levels measured in the final effluent of the STW show a significant increase over the past three years.



Phosphate levels at Upavon STW and upstream in the West and East Arms of the river

Just upstream of Upavon, the river divides into the East and West Arms. Data on each branch (just above the confluence) show high levels of phosphates, with very high levels on the West Arm peaking in the summer months to around 3-4 mg/l. These are upstream of the STW and with the increasing amounts of phosphates coming in from the STW, levels downstream would have been interesting but there appears to be no EA data for this part of the river.

Summary

1. Phosphates (orthophosphates) and suspended solids appear to be carried into the river at Stratford Sub Castle in the early part of the year with phosphates persisting for most of the year.

2. Amesbury STW – Phosphate levels have an increasing upward trend. Suspended solids are high, erratic and increasing.

3. Ratfyn STW – Phosphates levels are increasing albeit not so rapidly as at Amesbury STW. Suspended solids are also lower and more stable than Amesbury, although increasing in the past two years. There is no river data below the STW.

4. Netheravon STW – Phosphates have some high peaks but no upward trend. River monitoring downstream of the STW recorded higher levels of phosphates than those at sites downstream; no suspended solids were recorded after 2013.

5. Upavon STW – Phosphates high (& increasing). High levels of phosphates in both the East and West Arms of the river, particularly the West Arm. There is no EA monitoring data for the river below the STW.

6. Apart from the weekly river monitoring at Stratford Sub Castle, EA monitoring is declining.

7. Apparently there are no plans to upgrade Amesbury or Ratfyn STW's.

8. Phosphates in the river show a pattern of increasing levels upstream.

Salisbury & District Angling Club
February 2018