

# Environmental Protection Report

## Rivers Avon and Gara Catchments River Water Quality Classification 1991

April 1992  
WQP/92/0010  
Author: B L Milford  
Water Quality Planner



**NRA**

*National Rivers Authority*

*South West Region*

C V M Davies  
Environmental Protection Manager

## ACKNOWLEDGEMENTS

The Water Quality Planner acknowledges the substantial contributions made by the following staff:

R Broome - Co-ordinator and Editor  
Freshwater Planning - Production of Maps  
C McCarthy - Administration and report compilation  
A Gurney - Statistical Schedule production

Thanks are extended to A. Burghes of Moonsoft, Exeter for computer support.

---

Suggestions for improvements that could be incorporated in the production of the next Classification report would be welcomed.

---

Further enquiries regarding the content of these reports should be addressed to:

Freshwater Officer,  
National Rivers Authority,  
Manley House,  
Kestrel Way,  
EXETER,  
Devon           EX2 7LQ

ENVIRONMENT AGENCY



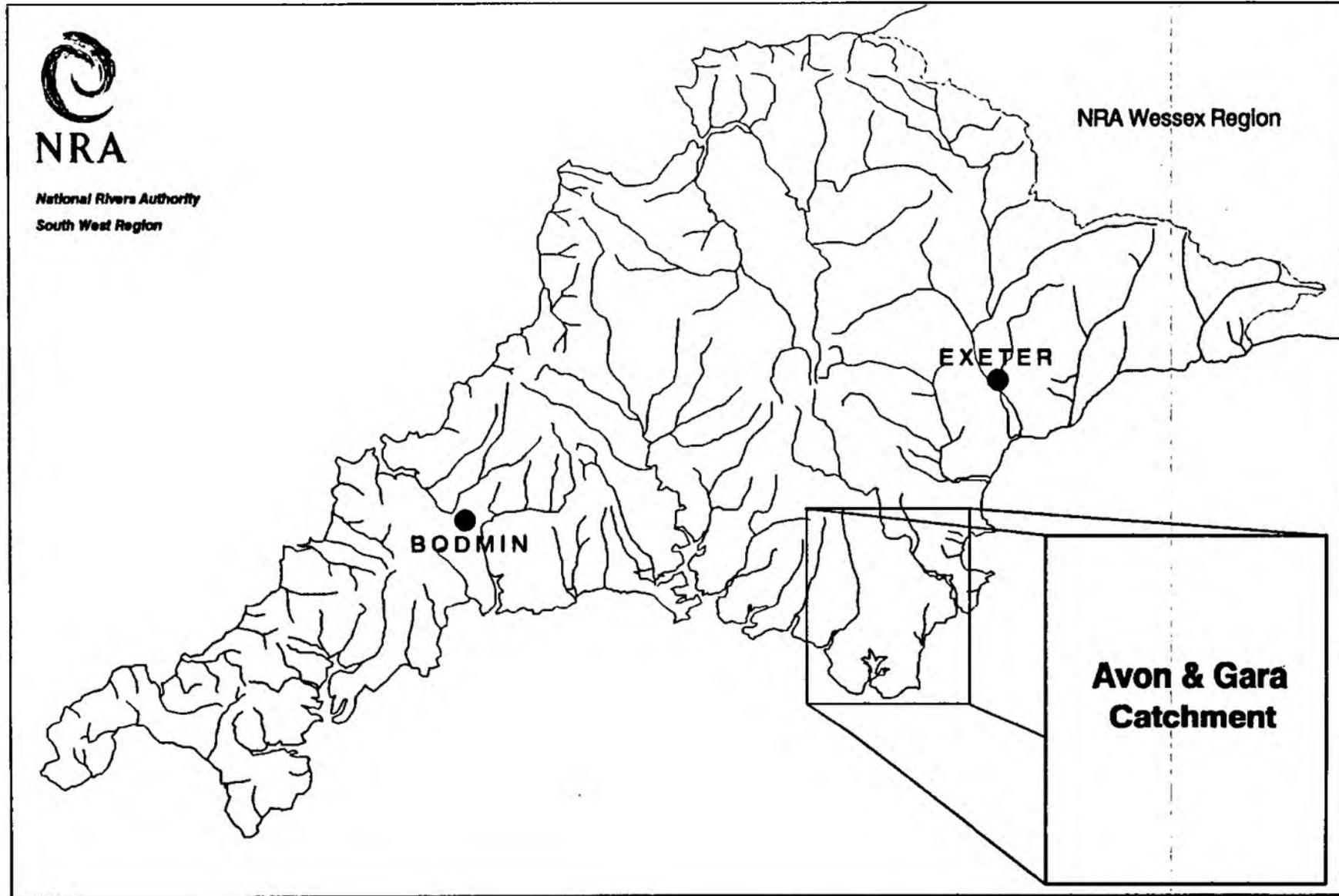
130045

# RIVER WATER QUALITY IN THE RIVERS AVON AND GARA CATCHMENTS

## LIST OF CONTENTS

	Page No.
1 Introduction	1
2 Rivers Avon and Gara Catchment	1
3 National Water Council's River Classification System	2
4 1991 River Water Quality Classification	3
5 Non-compliance with Quality Objectives	3
6 Glossary of Terms	4
7 References	4
8 Appendices:	
8.1 River Quality Objectives including Monitoring points - map format	
8.2 Basic Determinand Analytical Suite	
8.3 National Water Council (NWC) River Classification System	
8.4 NWC Criteria for Non-Metallic Determinands - Regional Variation	
8.4.1 NWC Criteria for Metallic Determinands - Regional Variation	
8.5 1991 River Water Quality Classification - tabular format	
8.6 1991 River Water Quality Classification - map format	
8.7 Calculated Determinand Statistics used for Quality Assessment - tabular format	
8.8 Compliant/Non-Compliant River Reaches - map format	
8.9 Number of Samples Results exceeding quality standards - tabular format	
8.10 Percentage Exceedance of Determinand Statistics from Quality Standard - tabular format	

# National Rivers Authority South West Region



**NRA**

*National Rivers Authority  
South West Region*

NRA Wessex Region

EXETER

BODMIN

Avon & Gara Catchment

**Avon & Gara  
Catchment**

## 1. INTRODUCTION

Monitoring to assess the quality of river waters is undertaken in thirty-four catchments within the region. As part of this monitoring programme samples are collected routinely from selected monitoring points at a pre-determined frequency per year, usually twelve spaced at monthly intervals. Each monitoring point provides data for the water quality of a river reach (in kilometres) upstream of the monitoring point.

Each water sample collected from each monitoring point is analysed for a range of chemical and physical constituents or properties known as determinands. The analytical results for each sample are entered into a computer database called the Water Quality Archive.

Selected data are accessed from the Archive so that the quality of each river reach can be determined based on a River Classification System developed by the National Water Council (NWC), (7.1).

This report presents the river water quality classification for 1991 for monitored river reaches in the Rivers Avon and Gara catchments.

## 2. RIVERS AVON AND GARA CATCHMENTS

The River Avon flows over a distance of 33.5 km from its source to the tidal limit, (Appendix 8.1). Water quality was monitored at seven locations on the main river; six of these sites were sampled at approximately monthly intervals. The site at Hatch, which is a National Water Quality monitoring point, was sampled fortnightly.

The River Gara flows over a distance of 14.1 km from its source to the tidal limit, (Appendix 8.1) and was monitored at five sites at approximately monthly intervals.

Small Brook flows over a distance of 8.4 km from source to the tidal limit, (Appendix 8.1) and was monitored at one location at approximately monthly intervals.

Throughout the Avon catchment three secondary tributaries of the River Avon and one secondary tributary of the River Gara were monitored. In addition the Avon reservoir was monitored at one site at approximately monthly intervals.

### 2.1 SECONDARY TRIBUTARIES

The Torr Brook, Glaze Brook and Bala Brook flow over a distance of 6.9 km, 6.1 km and 3.8 km respectively from their source to the confluence with the River Avon, (Appendix 8.1) and were monitored at one location at approximately monthly intervals.

The Slapton Stream flows over a distance of 6.1 km from its source to the confluence with the River Gara, (Appendix 8.1) and was monitored at one location at approximately monthly intervals.

Monitoring points are all located in the lower reaches.

Each sample was analysed for a minimum number of determinands (Appendix 8.2) plus additional determinands based on local knowledge of the catchment. In addition, at selected sites, certain metal analyses were carried out.

The analytical results from all of these samples have been entered into the Water Quality Archive and can be accessed through the Water Resources Act Register, (7.2).

### 3. NATIONAL WATER COUNCIL'S RIVER CLASSIFICATION SYSTEM

#### 3.1 River Quality Objectives

In 1978 River Quality Objectives (RQOs) were assigned to all river lengths that were part of the routine monitoring network and to those additional watercourses, which were not part of the routine network, but which received discharges of effluents.

For the majority of watercourses long term objectives were identified based on existing and assumed adequate quality for the long term protection of the watercourse. In a few instances short term objectives were identified but no timetable for the achievement of the associated long term objective was set.

The RQOs currently in use in the River Avon catchment are identified in Appendix 8.1.

#### 3.2 River Quality Classification

River water quality is classified using the National Water Council's (NWC) River Classification System (see Appendix 8.3), which identifies river water quality as being one of five quality classes as shown in Table 1 below:

Table 1 - National Water Council - River Classification System

<u>Class</u>	<u>Description</u>
1A	Good quality
1B	Lesser good quality
2	Fair quality
3	Poor quality
4	Bad quality

Using the NWC system, the classification of river water quality is based on the values of certain determinands as arithmetic means or as 95 percentiles (5 percentiles are used for pH and dissolved oxygen) as indicated in Appendices 8.4 and 8.4.1.

The quality classification system incorporates some of the European Inland Fisheries Advisory Commission (EIFAC) criteria (Appendix 8.3) recommended for use by the NWC system.

#### 4. 1991 RIVER WATER QUALITY CLASSIFICATION

Analytical data collected from monitoring during 1989, 1990 and 1991 were processed through a computerised river water quality classification programme. This resulted in a quality class being assigned to each monitored river reach as indicated in Appendix 8.5.

The quality class for 1991 can be compared against the appropriate River Quality Objective and previous annual quality classes (1985-1990) also based on three years combined data, for each river reach in Appendix 8.5.

The river water classification system used to classify each river length is identical to the system used both in 1985 and 1990 for the Department of the Environment's Quinquennial River Quality Surveys. The determinand classification criteria used to determine the annual quality classes in 1985, subsequent years and for 1991 are indicated in Appendices 8.4 and 8.4.1.

The river quality classes for 1991 of monitored river reaches in the catchment are shown in map form in Appendix 8.6.

The calculated determinand statistics for pH, temperature, dissolved oxygen, biochemical oxygen demand (BOD), total ammonia, un-ionised ammonia, suspended solids, copper and zinc from which the quality class was determined for each river reach, are indicated in Appendix 8.7.

#### 5. NON-COMPLIANCE WITH QUALITY OBJECTIVES

Those monitored river reaches within the catchment, which do not comply with their assigned (RQO), are shown in map form in Appendix 8.8.

Appendix 8.9 indicates the number of samples analysed for each determinand over the period 1989 to 1991 and the number of sample results per determinand, which exceed the determinand quality standard.

For those non-compliant river reaches in the catchment, the extent of exceedance of the calculated determinand statistic with the relevant quality standard (represented as a percentage), is indicated in Appendix 8.10.

## 6. GLOSSARY OF TERMS

RIVER REACH	A segment of water, upstream from sampling point to the next sampling point.
RIVER LENGTH	River distance in kilometres.
RIVER QUALITY OBJECTIVE	That NWC class, which protects the most sensitive use of the water.
95 percentiles	Maximum limits, which must be met for at least 95% of the time.
5 percentiles	Minimum limits, which must be met for at least 95% of the time.
BIOLOGICAL OXYGEN DEMAND (5 day carbonaceous ATU)	A standard test measuring the microbial uptake of oxygen - an estimate of organic pollution.
pH	A scale of acid to alkali.
UN-IONISED AMMONIA	Fraction of ammonia poisonous to fish, $\text{NH}_3$ .
SUSPENDED SOLIDS	Solids removed by filtration or centrifuge under specific conditions.
USER REFERENCE NUMBER	Reference number allocated to a sampling point.
INFERRED STRETCH	Segment of water, which is not monitored and whose water quality classification is assigned from the monitored reach upstream.

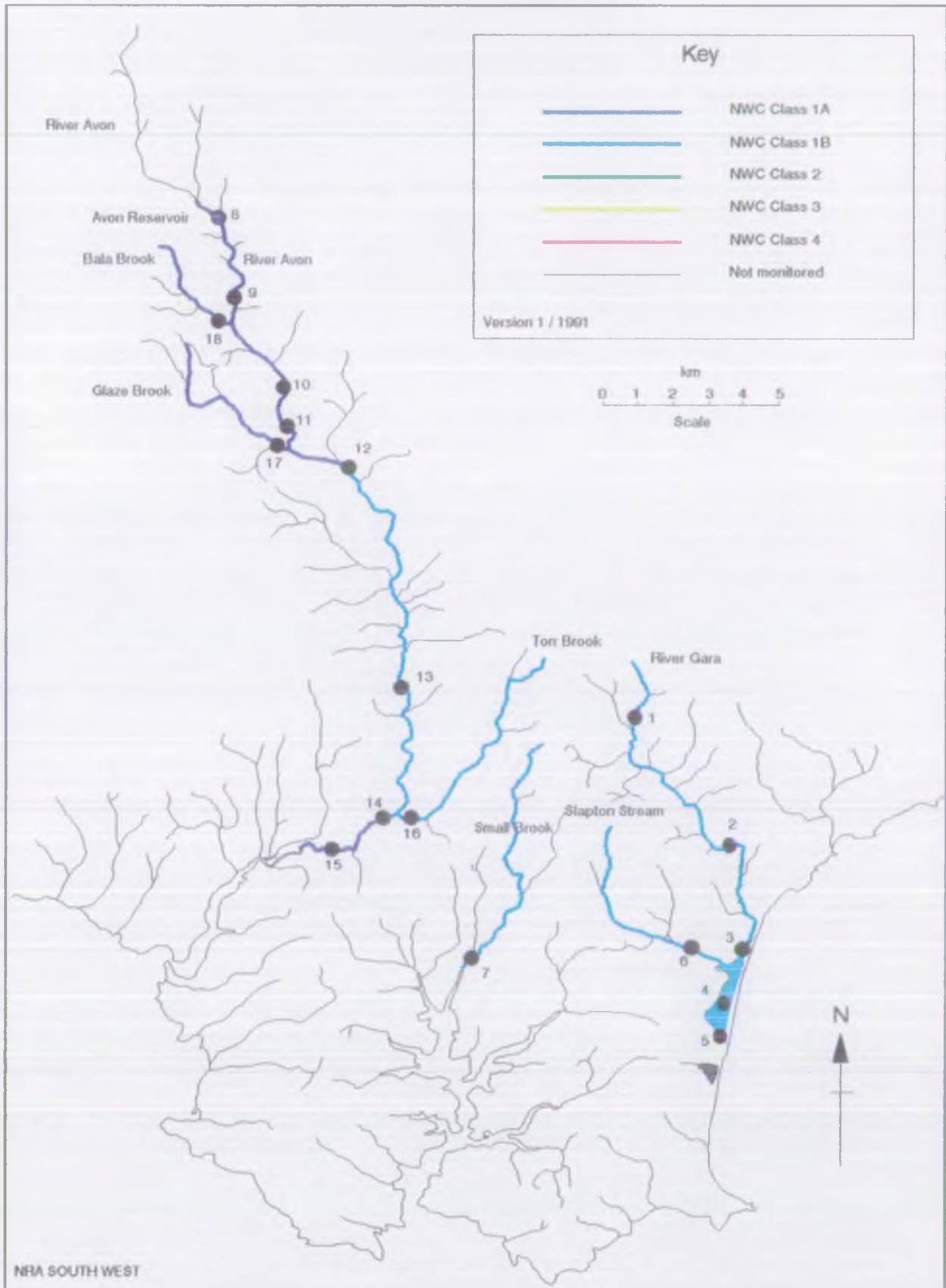
## 7. REFERENCES

### Reference

- 7.1 National Water Council (1977). River Water Quality: The Next Stage. Review of Discharge Consent Conditions. London.
- 7.2 Water Resources Act 1991 Section 190.
- 7.3 Alabaster J. S. and Lloyd R. Water Quality Criteria for Freshwater Fish, 2nd edition, 1982. Butterworths.

# Avon and Gara Catchment River Quality Objectives

Appendix 8.1



## BASIC DETERMINAND ANALYTICAL SUITE FOR ALL CLASSIFIED RIVER SITES

pH as pH Units

Conductivity at 20 C as  $\mu\text{S}/\text{cm}$

Water temperature (Cel)

Oxygen dissolved % saturation

Oxygen dissolved as  $\text{mg}/\text{l O}$

Biochemical oxygen demand (5 day total ATU) as  $\text{mg}/\text{l O}$

Total organic carbon as  $\text{mg}/\text{l C}$

Nitrogen ammoniacal as  $\text{mg}/\text{l N}$

Ammonia un-ionised as  $\text{mg}/\text{l N}$

Nitrate as  $\text{mg}/\text{l N}$

Nitrite as  $\text{mg}/\text{l N}$

Suspended solids at 105 C as  $\text{mg}/\text{l}$

Total hardness as  $\text{mg}/\text{l CaCO}_3$

Chloride as  $\text{mg}/\text{l Cl}$

Orthophosphate (total) as  $\text{mg}/\text{l P}$

Silicate reactive dissolved as  $\text{mg}/\text{l SiO}_2$

Sulphate (dissolved) as  $\text{mg}/\text{l SO}_4$

Sodium (total) as  $\text{mg}/\text{l Na}$

Potassium (total) as  $\text{mg}/\text{l K}$

Magnesium (total) as  $\text{mg}/\text{l Mg}$

Calcium (total) as  $\text{mg}/\text{l Ca}$

Alkalinity as pH 4.5 as  $\text{mg}/\text{l CaCO}_3$

## MVC RIVER QUALITY CLASSIFICATION SYSTEM

River Class	Quality criteria	Remarks	Current potential uses
Class limiting criteria (95 percentile)			
1A Good Quality	(i) Dissolved oxygen saturation greater than 80%	(i) Average BOD probably not greater than 1.5 mg/l	(i) Water of high quality suitable for potable supply abstractions and for all abstractions (ii) Game or other high class fisheries (iii) High amenity value
	(ii) Biochemical oxygen demand not greater than 3 mg/l	(ii) Visible evidence of pollution should be absent	
	(iii) Ammonia not greater than 0.4 mg/l		
	(iv) Where the water is abstracted for drinking water, it complies with requirements for A2* water		
	(v) Non-toxic to fish in EIFAC terms (or best estimates if EIFAC figures not available)		
1B Good Quality	(i) DO greater than 60% saturation	(i) Average BOD probably not greater than 2 mg/l	Water of less high quality than Class 1A but usable for substantially the same purposes
	(ii) BOD not greater than 5 mg/l	(ii) Average ammonia probably not greater than 0.5 mg/l	
	(iii) Ammonia not greater than 0.9 mg/l	(iii) Visible evidence of pollution should be absent	
	(iv) Where water is abstracted for drinking water, it complies with the requirements for A2* water	(iv) Waters of high quality which cannot be placed in Class 1A because of the high proportion of high quality effluent present or because of the effect of physical factors such as canalisation, low gradient or eutrophication	
	(v) Non-toxic to fish in EIFAC terms (or best estimates if EIFAC figures not available)	(v) Class 1A and Class 1B together are essentially the Class 1 of the River Pollution Survey (RPS)	
2 Fair Quality	(i) DO greater than 40% saturation	(i) Average BOD probably not greater than 5 mg/l	(i) Waters suitable for potable supply after advanced treatment (ii) Supporting reasonably good coarse fisheries (iii) Moderate amenity value
	(ii) BOD not greater than 9 mg/l	(ii) Similar to Class 2 of RPS	
	(iii) Where water is abstracted for drinking water it complies with the requirements for A3* water	(iii) Water not showing physical signs of pollution other than humic colouration and a little foaming below weirs	
	(iv) Non-toxic to fish in EIFAC terms (or best estimates if EIFAC figures not available)		

3 Poor Quality (i) DO greater than 10% saturation  
(ii) Not likely to be anaerobic  
(iii) BOD not greater than 17 mg/l.  
This may not apply if there is a high degree of re-aeration

Similar to Class 3 of RPS

Waters which are polluted to an extent that fish are absent only sporadically present. May be used for low grade industrial abstraction purposes. Considerable potential for further use if cleaned up

4 Bad Quality Waters which are inferior to Class 3 in terms of dissolved oxygen and likely to be anaerobic at times

Similar to Class 4 of RPS

Waters which are grossly polluted and are likely to cause nuisance

X DO greater than 10% saturation

Insignificant watercourses and ditches not usable, where the objective is simply to prevent nuisance developing

- Notes
- (a) Under extreme weather conditions (eg flood, drought, freeze-up), or when dominated by plant growth, or by aquatic plant decay, rivers usually in Class 1, 2, and 3 may have BODs and dissolved oxygen levels, or ammonia content outside the stated levels for those Classes. When this occurs the cause should be stated along with analytical results.
  - (b) The BOD determinations refer to 5 day carbonaceous BOD (ATU). Ammonia figures are expressed as  $\text{NH}_4$ . \*\*
  - (c) In most instances the chemical classification given above will be suitable. However, the basis of the classification is restricted to a finite number of chemical determinands and there may be a few cases where the presence of a chemical substance other than those used in the classification markedly reduces the quality of the water. In such cases, the quality classification of the water should be down-graded on the basis of biota actually present, and the reasons stated.
  - (d) EIFAC (European Inland Fisheries Advisory Commission) limits should be expressed as 95 percentile limits.

\* EEC category A2 and A3 requirements are those specified in the EEC Council directive of 16 June 1975 concerning the Quality of Surface Water intended for Abstraction of Drinking Water in the Member State.

\*\* Ammonia Conversion Factors

(mg  $\text{NH}_4$ /l to mg N/l)

Class 1A	0.4 mg $\text{NH}_4$ /l = 0.31 mg N/l
Class 1B	0.9 mg $\text{NH}_4$ /l = 0.70 mg N/l
	0.5 mg $\text{NH}_4$ /l = 0.39 mg N/l

## NWC RIVER CLASSIFICATION SYSTEM

## CRITERIA USED BY NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION FOR NON-METALLIC DETERMINANDS

River Class	Quality Criteria
1A	Dissolved oxygen % saturation greater than 80% BOD (ATU) not greater than 3 mg/l O Total ammonia not greater than 0.31 mg/l N Non-ionised ammonia not greater than 0.021 mg/l N Temperature not greater than 21.5 C pH greater than 5.0 and less than 9.0 Suspended solids not greater than 25 mg/l
1B	Dissolved oxygen % saturation greater than 60% BOD (ATU) not greater than 5 mg/l O Total ammonia not greater than 0.70 mg/l N Non-ionised ammonia not greater than 0.021 mg/l N Temperature not greater than 21.5 C pH greater than 5.0 and less than 9.0 Suspended solids not greater than 25 mg/l
2	Dissolved oxygen & saturation greater than 40% BOD (ATU) not greater than 9 mg/l O Total ammonia not greater than 1.56 mg/l N Non-ionised ammonia not greater than 0.021 mg/l N Temperature not greater than 28 C pH greater than 5.0 and less than 9.0 Suspended solids not greater than 25 mg/l
3	Dissolved oxygen & saturation greater than 10% BOD (ATU) not greater than 17 mg/l O
4	Dissolved oxygen & saturation not greater than 10% BOD (ATU) greater than 17 mg/l O

## STATISTICS USED BY NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION

Determinand	Statistic
Dissolved oxygen	5 percentile
BOD (ATU)	95 percentile
Total ammonia	95 percentile
Non-ionised ammonia	95 percentile
Temperature	95 percentile
pH	5 percentile
Suspended solids	95 percentile
	arithmetic mean

## NWC RIVER CLASSIFICATION SYSTEM

## CRITERIA USED BY NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION FOR METALLIC DETERMINANDS

## SOLUBLE COPPER

Total Hardness (mean) mg/l CaCO <sub>3</sub>	Statistic	Soluble Copper* ug/l Cu	
		Class 1	Class 2
0 - 10	95 percentile	< = 5	> 5
10 - 50	95 percentile	< = 22	> 22
50 - 100	95 percentile	< = 40	> 40
100 - 300	95 percentile	< = 112	> 112

\* Total copper is used for classification until sufficient data on soluble copper can be obtained.

## TOTAL ZINC

Total Hardness (mean) mg/l CaCO <sub>3</sub>	Statistic	Total Zinc ug/l Zn		
		Class 1	Class 2	Class 3
0 - 10	95 percentile	< = 30	< = 300	> 300
10 - 50	95 percentile	< = 200	< = 700	> 700
50 - 100	95 percentile	< = 300	< = 1000	> 1000
100 - 300	95 percentile	< = 500	< = 2000	> 2000

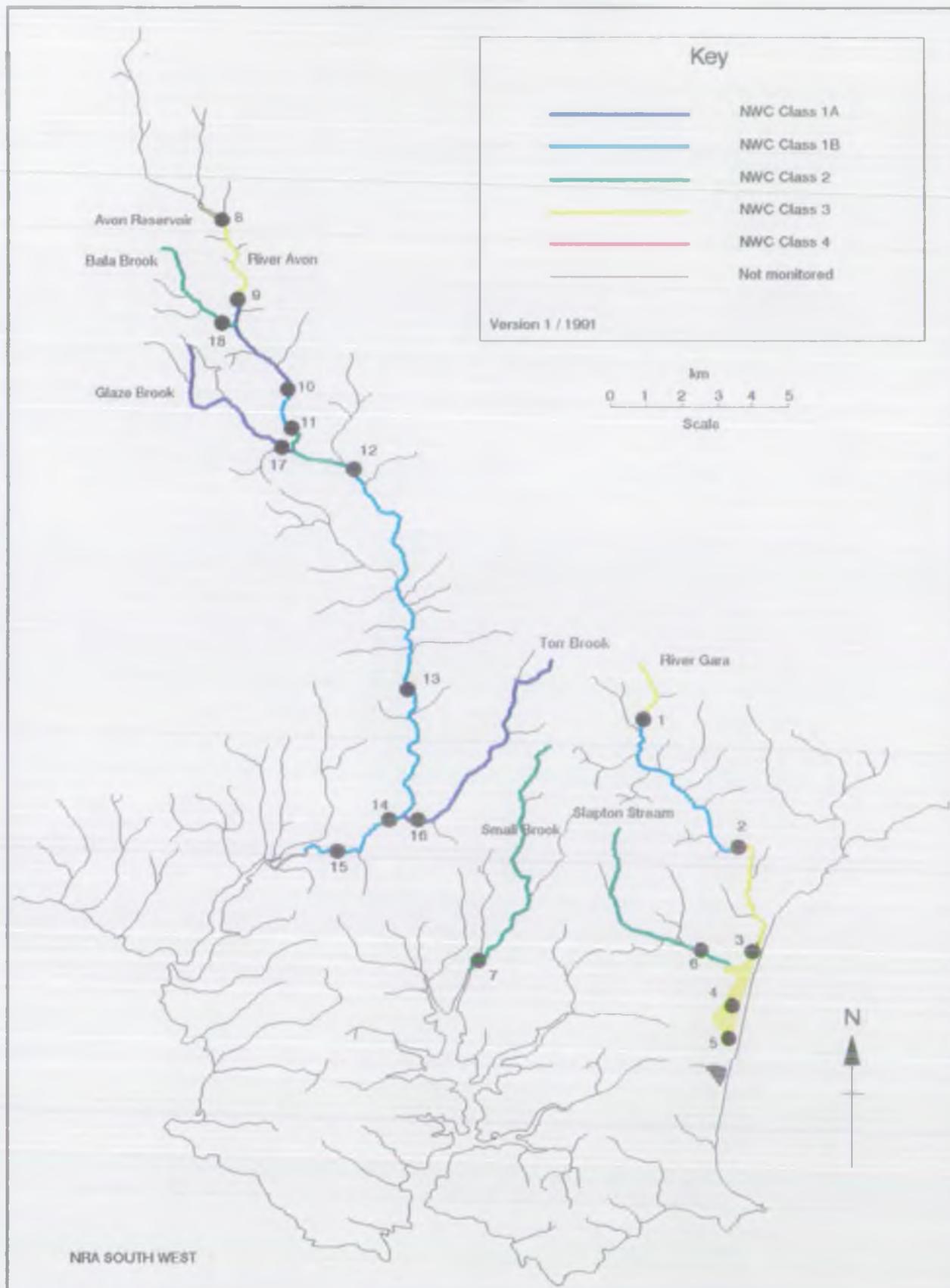
NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 CATCHMENT: GARA AND AVON

1991 Map Position Number	River	Reach upstream of	User Reference Number	National Grid Reference
1	THE GARA	WOODFORD	R08A002	SX 7986 5103
2	THE GARA	HIGHER NORTH MILL	R08A004	SX 8252 4765
3	THE GARA	SLAPTON BRIDGE	R08A006	SX 8282 4435
4	THE GARA	SLAPTON LEY	R08A011	SX 8230 4335
5	THE GARA	TORCROSS	R08A007	SX 8222 4207
	THE GARA	MEAN HIGH WATER (INFERRED STRETCH)		
6	SLAPTON STREAM	DEER BRIDGE	R08A012	SX 8131 4455
	SLAPTON STREAM	GARA (SLAPTON LEY) CONFL. (INF. STRETCH)		
7	SMALL BROOK	BOWCOMBE	R08A013	SX 7503 4438
	SMALL BROOK	NORMAL TIDAL LIMIT (INFERRED STRETCH)		
	AVON	INFLOW, AVON RES. (UNMONITORED STRETCH)		
8	AVON	AVON RESERVOIR	R08B010	SX 6780 6540
9	AVON	SHIPLEY BRIDGE	R08B007	SX 6810 6290
10	AVON	LYDIA BRIDGE	R08B001	SX 6956 6070
11	AVON	A38 BRIDGE, SOUTH BRENT	R08B008	SX 6978 5925
12	AVON	HORSEBROOK	R08B002	SX 7126 5845
13	AVON	GARA BRIDGE	R08B003	SX 7290 5347
14	AVON	LODDISWELL	R08B004	SX 7272 4822
15	AVON	HATCH	R08B005	SX 7145 4725
	AVON	NORMAL TIDAL LIMIT (INFERRED STRETCH)		
16	TORR BROOK	LODDISWELL	R08B015	SX 7334 4832
	TORR BROOK	AVON CONFLUENCE (INFERRED STRETCH)		
17	GLAZE BROOK	HIGHER TURTLEY	R08B009	SX 6979 5878
	GLAZE BROOK	AVON CONFLUENCE (INFERRED STRETCH)		
18	BALA BROOK	ZEAL	R08B011	SX 6792 6244
	BALA BROOK	AVON CONFLUENCE (INFERRED STRETCH)		

Reach Length (km)	Distance from source (km)	River Quality Objective	85	86	87	88	89	90	91
			NWC Class						
2.0	2.0	1B	1B	1B	1B	1A	1A	3	3
5.5	7.5	1B	1B	1A	1A	2	1B	2	1B
4.1	11.6	1B	3	3	3	3	3	2	3
1.1	12.7	1B	2	3	3	3	3	2	3
1.3	14.0	1B	2	3	3	3	3	3	3
0.1	14.1	1B	2	3	3	3	3	3	3
5.1	5.1	1B						2	2
1.0	6.1	1B						2	2
8.1	8.1	1B	1B					2	2
0.3	8.4	1B	1B					2	2
5.5	5.5	1A	1A	1A	1A	1A	1A	U	U
1.1	6.6	1A	1A	1A	1A	1A	1A	3	3
2.9	9.5	1A	1A	1A	1A	1A	1A	3	3
3.0	12.5	1A	1A	1A	1A	1A	1A	1A	1A
1.8	14.3	1A	1A	1B	1B	1B	1B	1B	1B
2.0	16.3	1A	1A	1B	1B	1B	1B	2	2
6.6	22.9	1B	1A	2	2	2	1B	1B	1B
6.5	29.4	1B	1A	1A	1B	1B	1A	1B	1B
2.0	31.4	1A	1A	1A	1B	1B	1A	1A	1B
2.1	33.5	1A	1A	1A	1B	1B	1A	1A	1B
6.5	6.5	1B						1A	1A
0.4	6.9	1B						1A	1A
6.0	6.0	1A						1B	1A
0.1	6.1	1A						1B	1A
3.6	3.6	1A	1A					2	2
0.2	3.8	1A	1A					2	2

# Avon and Gara Catchment Water Quality - 1991

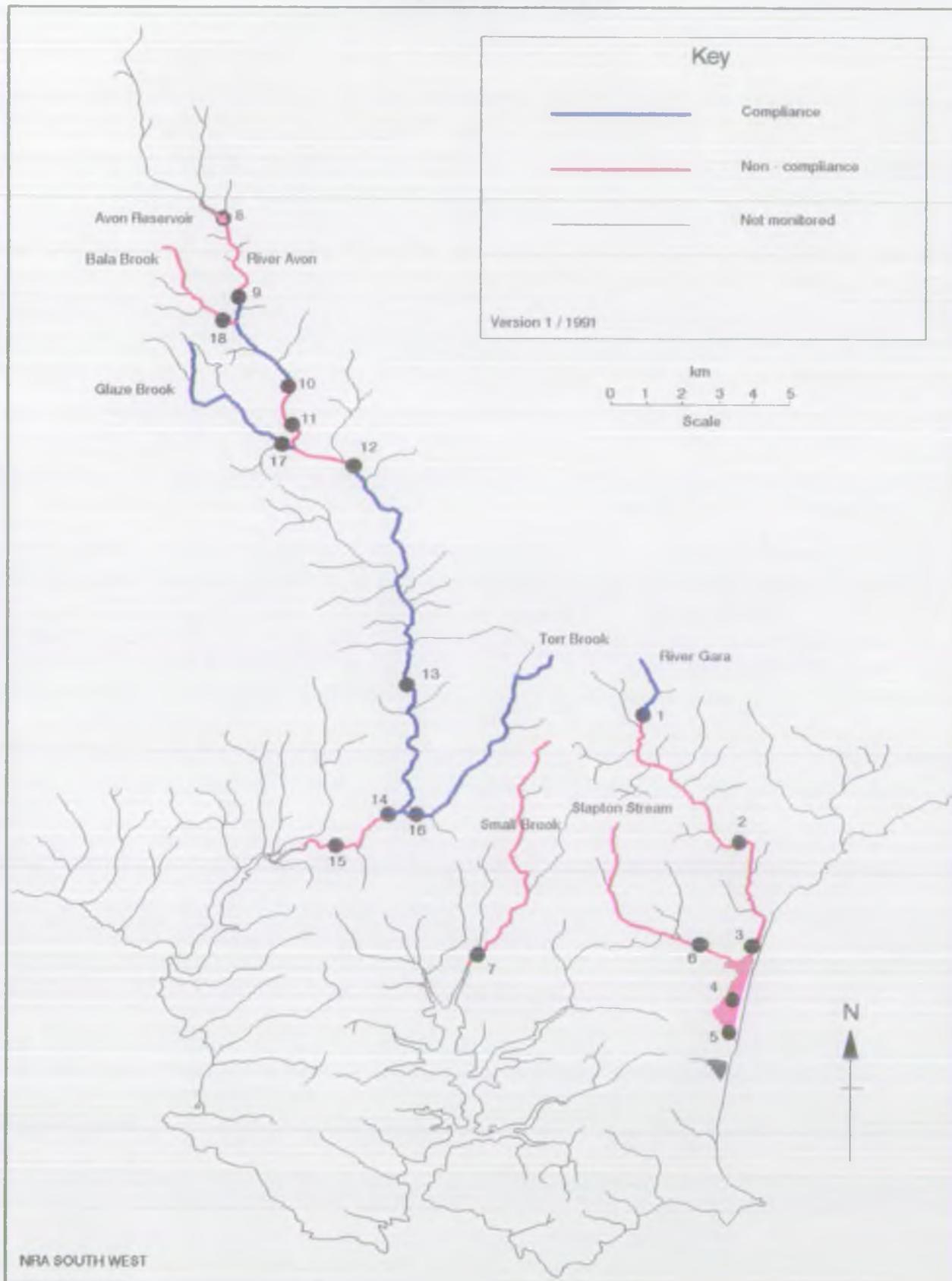
Appendix 8.6



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 CALCULATED DETERMINAND STATISTICS USED FOR QUALITY ASSESSMENT  
 CATCHMENT: GARA AND AVON

River	Reach upstream of	User Ref. Number	RQD	Calculated Determinand Statistics used for Quality Assessment																			
				pH Lower Class 5tile		pH Upper Class 95tile		Temperature Class 95tile		DO (%) Class 5tile		BOD (mg/l) Class 95tile		Total Ammonia Class 95tile		Union. Ammonia Class 95tile		S.Solids Class Mean		Total Copper Class 95tile		Total Zinc Class 95tile	
THE GARA	WOODFORD	[R08A002]	1B	1A	7.2	1A	7.8	1A	17.7	1B	75.0	3	10.4	1B	0.402	1A	0.010	1A	16.6	-	-	-	-
THE GARA	HIGHER NORTH MILL	[R08A004]	1B	1A	7.6	1A	8.1	1A	17.0	1B	68.8	1B	4.5	1A	0.197	1A	0.010	1A	11.5	1A	22.0	1A	89.4
THE GARA	SLAPTON BRIDGE	[R08A006]	1B	1A	7.2	1A	7.9	1A	19.8	3	32.0	1B	3.2	1A	0.075	1A	0.010	1A	2.7	-	-	-	-
THE GARA	SLAPTON LEY	[R08A011]	1B	1A	7.1	3	9.2	1A	19.6	2	52.7	2	7.9	1A	0.170	1A	0.010	1A	14.3	1A	50.0	1A	85.3
THE GARA	TORCROSS	[R08A007]	1B	1A	7.6	3	9.3	1A	20.7	2	47.3	2	7.6	1B	0.572	1A	0.016	1A	16.2	1A	19.6	1A	41.2
SLAPTON SENEWY	DEER BRIDGE	[R08A012]	1B	1A	7.4	1A	7.9	1A	15.4	1B	69.2	2	5.2	1A	0.083	1A	0.010	1A	10.4	-	-	-	-
SPALL BROOK	BOWCOME	[R08A013]	1B	1A	7.6	1A	8.2	1A	17.1	1B	71.0	2	5.1	1A	0.140	1A	0.010	1A	17.1	-	-	-	-
AVON	AVON RESERVOIR	[R08B010]	1A	3	4.7	1A	7.2	1A	17.3	1A	81.8	1A	2.0	1A	0.088	1A	0.010	1A	3.5	2	38.8	2	41.3
AVON	SHIPLEY BRIDGE	[R08B007]	1A	3	4.8	1A	7.1	1A	15.8	1A	88.6	1A	2.1	1A	0.096	1A	0.010	1A	1.9	1A	5.0	1A	8.5
AVON	LEZIA BRIDGE	[R08B001]	1A	1A	6.2	1A	7.4	1A	15.4	1A	88.9	1A	2.1	1A	0.054	1A	0.010	1A	3.3	-	-	-	-
AVON	A38 BRIDGE, SOUTHER BRENT	[R08B008]	1A	1A	6.3	1A	7.6	1A	15.0	1B	77.4	1A	2.5	1A	0.091	1A	0.010	1A	13.0	1A	5.9	1A	14.7
AVON	HORSEBROOK	[R08B002]	1A	1A	6.7	1A	7.8	1A	16.1	2	58.5	1A	2.2	1A	0.041	1A	0.010	1A	3.3	1A	5.0	1A	24.0
AVON	GARA BRIDGE	[R08B003]	1B	1A	6.1	1A	7.8	1A	15.8	1B	78.0	1A	2.9	1A	0.094	1A	0.010	1A	4.8	1A	6.9	1A	17.7
AVON	LODDSWELL	[R08B004]	1B	1A	7.3	1A	8.0	1A	16.7	1B	71.1	1A	2.9	1A	0.063	1A	0.010	1A	5.3	-	-	-	-
AVON	FRITCH	[R08B005]	1A	1A	7.2	1A	8.1	1A	16.8	1A	82.4	1B	3.2	1A	0.093	1A	0.010	1A	10.5	1A	5.0	1A	16.5
TORR BROOK	LODDSWELL	[R08B015]	1B	1A	7.5	1A	8.1	1A	15.7	1A	86.1	1A	3.0	1A	0.132	1A	0.010	1A	9.9	1A	5.0	1A	9.0
GLAZE BROOK	HIGHER TURTLEY	[R08B009]	1A	1A	6.8	1A	7.6	1A	16.4	1A	83.6	1A	2.5	1A	0.228	1A	0.010	1A	3.1	1A	5.0	1A	9.0
EPOLA BROOK	ZEAL	[R08B011]	1A	1A	5.1	1A	7.3	1A	15.5	1A	82.5	1A	2.0	1A	0.045	1A	0.010	1A	4.5	2	6.4	1A	11.4

# Avon and Gara Catchment Compliance - 1991



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION

1991 RIVER WATER QUALITY CLASSIFICATION

NUMBER OF SAMPLES (N) AND NUMBER OF SAMPLES EXCEEDING QUALITY STANDARD (F)

CRITCHMENT: GARA AND AWON

River	Reach upstream of	User Ref. Number	pH Lower		pH Upper		Temperature		DO (%)		BOD (ATU)		Total Ammonia		Union. Ammonia		S.Solids		Total Copper		Total Zinc	
			N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F
THE GARA	WOODFORD	R08A002	31	-	31	-	31	-	31	-	31	2	31	-	30	-	31	4	0	-	0	-
THE GARA	HIGHER NORTH MILL	R08A004	36	-	36	-	36	-	35	1	36	-	36	-	33	-	36	5	35	-	35	-
THE GARA	SLAPTON BRIDGE	R08A006	30	-	30	-	29	-	29	11	30	-	30	-	27	-	30	-	0	-	0	-
THE GARA	SLAPTON LEY	R08A011	24	-	24	1	23	-	22	1	24	5	24	-	21	-	24	5	24	-	24	-
THE GARA	TURCROSS	R08A007	35	-	35	2	35	-	34	2	35	8	35	-	33	1	35	7	35	-	35	-
SLAPTON STREAM	DEER BRIDGE	R08A012	33	-	33	-	31	-	31	-	33	1	33	-	29	-	33	3	2	-	2	-
SMALL BROOK	BONDOME	R08A013	32	-	32	-	32	-	32	1	32	1	32	-	31	-	32	4	1	-	1	-
AWON	AWON RESERVOIR	R08B010	24	5	24	-	24	-	24	-	24	-	24	-	17	-	24	-	24	1	24	1
AWON	SHIPLEY BRIDGE	R08B007	31	2	31	-	31	-	31	-	31	-	31	-	18	-	31	-	30	-	30	-
AWON	INDIA BRIDGE	R08B001	32	-	32	-	32	-	32	-	32	-	32	-	26	-	32	-	0	-	0	-
AWON	JA8 BRIDGE, SOUTH BENT	R08B008	32	-	32	-	32	-	32	1	32	-	32	-	27	-	32	1	21	-	21	-
AWON	HORSEBROOK	R08B002	38	-	38	-	37	-	37	2	38	-	38	-	32	-	38	1	15	-	15	-
AWON	GARA BRIDGE	R08B003	31	-	31	-	31	-	31	-	31	-	31	-	28	-	31	-	20	-	20	-
AWON	LODDISWELL	R08B004	33	-	33	-	33	-	33	-	33	-	33	-	30	-	33	1	0	-	0	-
AWON	BRUCH	R08B005	64	-	64	-	63	-	61	2	64	3	64	-	57	-	65	4	64	-	64	-
TORR BROOK	LODDISWELL	R08B015	31	-	31	-	30	-	30	-	31	-	31	-	30	-	31	3	19	-	19	-
GLAZE BROOK	HIGHER TURLEY	R08B009	31	-	31	-	31	-	31	-	31	-	31	1	26	-	31	-	19	-	19	-
BALA BROOK	ZEAL	R08B011	30	1	30	-	30	-	30	1	29	-	30	-	18	-	30	1	30	1	30	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS  
 CATCHMENT: GARA AND AVON

River	Reach upstream of	User Ref. Number	PERCENTAGE EXCEEDENCE OF STATISTIC FROM QUALITY STANDARD									
			pH Lower	pH Upper	Temperature	DO (%)	BOD (ATU)	Total Ammonia	Un-ionised Ammonia	Suspended Solids	Total Copper	Total Zinc
THE GARA	WOODFORD	R08A002	-	-	-	-	108	-	-	-	-	-
THE GARA	HIGHER NORTH MILL	R08A004	-	-	-	-	-	-	-	-	-	-
THE GARA	SLAPTON BRIDGE	R08A006	-	-	-	47	-	-	-	-	-	-
THE GARA	SLAPTON LEY	R08A011	-	2	-	12	57	-	-	-	-	-
THE GARA	TORCROSS	R08A007	-	3	-	21	52	-	-	-	-	-
SLAPTON STREAM	DEER BRIDGE	R08A012	-	-	-	-	4	-	-	-	-	-
SMALL BROOK	BOWCOMBE	R08A013	-	-	-	-	1	-	-	-	-	-
AVON	AVON RESERVOIR	R08B010	7	-	-	-	-	-	-	-	675	38
AVON	SHIPLEY BRIDGE	R08B007	4	-	-	-	-	-	-	-	-	-
AVON	LYDLA BRIDGE	R08B001	-	-	-	-	-	-	-	-	-	-
AVON	A38 BRIDGE, SOUTH BRENT	R08B008	-	-	-	3	-	-	-	-	-	-
AVON	HORSEBROOK	R08B002	-	-	-	27	-	-	-	-	-	-
AVON	GARA BRIDGE	R08B003	-	-	-	-	-	-	-	-	-	-
AVON	LODDISWELL	R08B004	-	-	-	-	-	-	-	-	-	-
AVON	HATCH	R08B005	-	-	-	-	9	-	-	-	-	-
TORR BROOK	LODDISWELL	R08B015	-	-	-	-	-	-	-	-	-	-
GLAZE BROOK	HIGHER TURTLEY	R08B009	-	-	-	-	-	-	-	-	-	-
BALA BROOK	ZEAL	R08B011	-	-	-	-	-	-	-	-	27	-