ENVIRONMENTAL PROTECTION

NRA

National Rivers Authority
South West Region

River Camel Catchment
River Water Quality
Classification 1990

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

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RIVER WATER QUALITY IN THE RIVER CAMEL CATCHMENT

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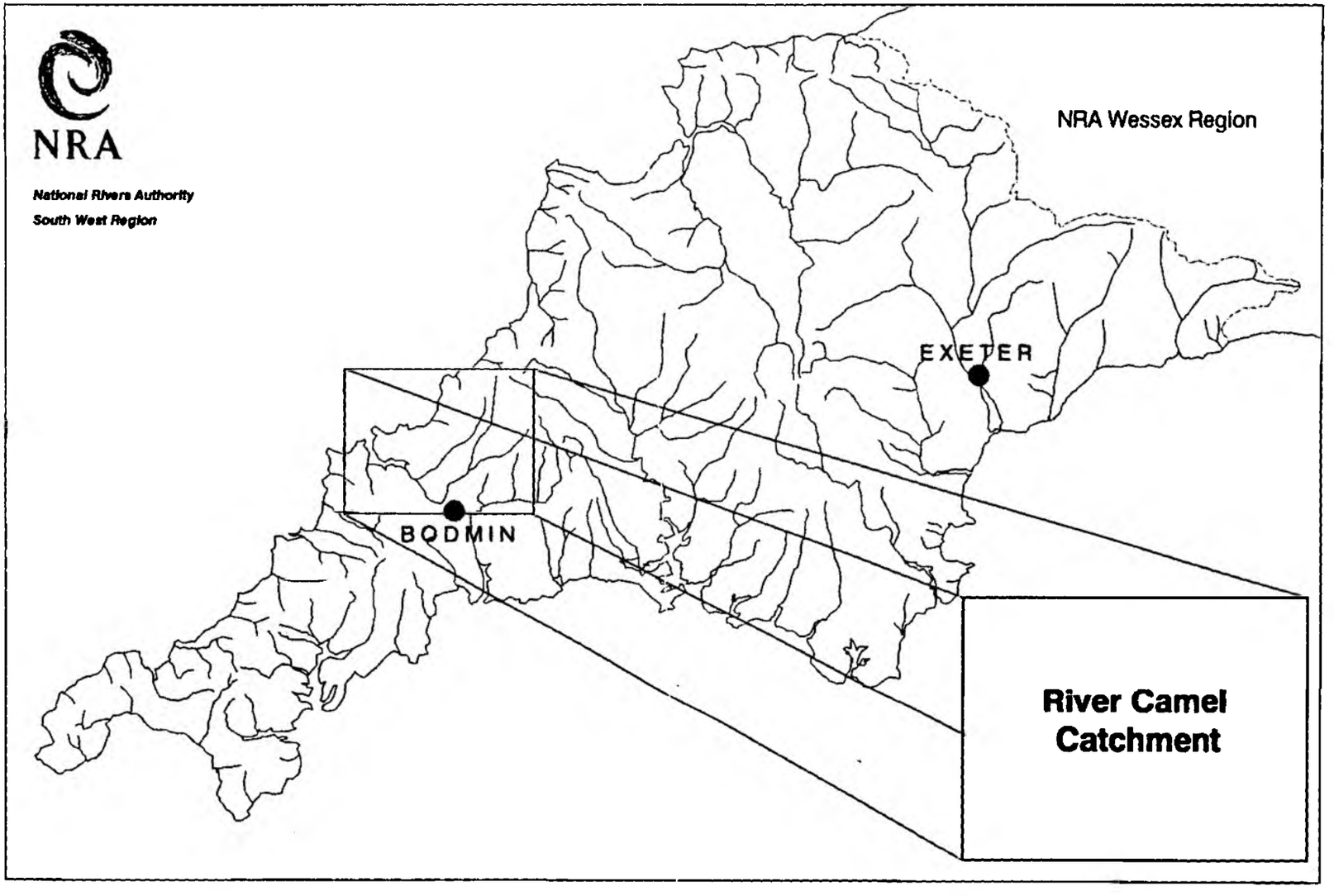
National Rivers Authority
South West Region



River Camel Catchment

1. INTRODUCTION

Monitoring to assess the quality of river waters is undertaken in thirty-two 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.

River lengths have been re-measured and variations exist over those recorded previously.

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), (9.1).

This report presents the river water quality classification for 1990 for monitored river reaches in the River Camel catchment.

2. RIVER CAMEL CATCHMENT

The River Camel flows over a distance of 34.6 km from its source to the tidal limit, (Appendix 10.1). Water quality was monitored at twelve locations on the main river; eleven of these sites were sampled at approximately monthly intervals. The site at Grogley Bridge, which is a National Water Quality Monitoring point, was sampled fortnightly.

Throughout the Camel catchment five secondary tributaries (River Ruthern, Lanivet Stream, St. Lawrence Stream, De Lank River, Clerkenwater Stream) of the River Camel were monitored at approximately monthly intervals and three secondary tributaries (Dunmere Stream, Stannon Stream, Davidstow Stream) were sampled on twenty occasions during 1990 because of no recent water quality data.

Issey Brook and Polmorla Stream flow over a distance of 4.9 km and 6.7 km respectively from their source to the tidal limit, (Appendix 10.1) and were each monitored at one location situated in the lower reaches. These streams were sampled on twenty occasions during 1990 because of no recent water quality data.

The River Amble flows over a distance of 10.7 km from its source to the tidal limit, (Appendix 10.1) and was monitored at two locations at approximately monthly intervals.

The River Allen flows over a distance of 19.1 km from its source to the tidal limit, (Appendix 10.1) and was monitored at four locations at monthly intervals.

2.1 SECONDARY TRIBUTARIES

The River Ruthern (9.4 km), Lanivet Stream (6.1 km) and St. Lawrence Stream (5.3 km) were monitored at three locations between their source and the confluence with the River Camel, (Appendix 10.1).

The River Dunmere (1.9 km), Clerkenwater Stream (4.7 km) Stannon Stream (6.8km) and Davidstow Stream (4.8 km) were monitored at one location. Monitoring points are all located in the lower reaches of these streams.

The De Lank River flows over a distance of 14.8 km from its source to the confluence with the River Camel, (Appendix 10.1) and was monitored at two locations at approximately monthly intervals.

Each sample was analysed for a minimum number of determinands (Appendix 10.2) 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 Act Register, (9.2).

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 Camel catchment are identified in Appendix 10.1.

3.2 River Quality Classification

River water quality is classified using the National Water Council's (NWC) River Classification System (see Appendix 10.3), 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

Class	Description
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 10.4.1 and 10.4.2.

The quality classification system incorporates some of the European Inland Fisheries Advisory Commission (EIFAC) criteria (Appendix 10.3) recommended for use by the NWC system.

4. 1990 RIVER WATER QUALITY SURVEY

The 1990 regional classification of river water quality also includes the requirements of the Department of the Environment quinquennial national river quality survey. The objectives for the Department of the Environment 1990 River Quality Survey are given below:

1) To carry out a National Classification Survey based on procedures used in the 1985 National Classification Survey, including all regional differences.

2) To classify all rivers and canals included in the 1985 National Classification Survey.

3) To compare the 1990 Classification with those obtained in 1985.

In addition, those watercourses, which were not part of the 1985 Survey and have been monitored since that date, are included in the 1990 regional classification of river water quality.

5. 1990 RIVER WATER QUALITY CLASSIFICATION

Analytical data collected from monitoring during 1988, 1989 and 1990 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 10.5.

The quality class for 1990 can be compared against the appropriate River Quality Objective and previous annual quality classes (1985-1989) also based on three years combined data, for each river reach in Appendix 10.5.

The river water classification system used to classify each river length is identical to the system used in 1985 for the Department of the Environment's 1985 River Quality Survey. The determinand classification criteria used to determine the annual quality classes in 1985, subsequent years and for 1990 are indicated in Appendices 10.4 and 10.4.1.

Improvements to this classification system could have been made, particularly in the use of a different suspended solids standard for Class 2 waters. As the National Rivers Authority will be proposing new classification systems to the Secretary of State in the near future, it was decided to classify river lengths in 1990 with the classification used for the 1985-1989 classification period.

The adoption of the revised criteria for suspended solids in Class 2 waters would not have affected the classification of river reaches.

The river quality classes for 1990 of monitored river reaches in the catchment are shown in map form in Appendix 10.6.

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 10.7.

6. 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 10.8.

Appendix 10.9 indicates the number of samples analysed for each determinand over the period 1988 to 1990 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 relevant quality standard (represented as a percentage), is indicated in Appendix 10.10.

7. CAUSES OF NON-COMPLIANCE

For those river reaches, which did not comply with their assigned RQOs, the cause of non-compliance (where possible to identify) is indicated in Appendix 10.11.

8. 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, 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.

9. REFERENCES

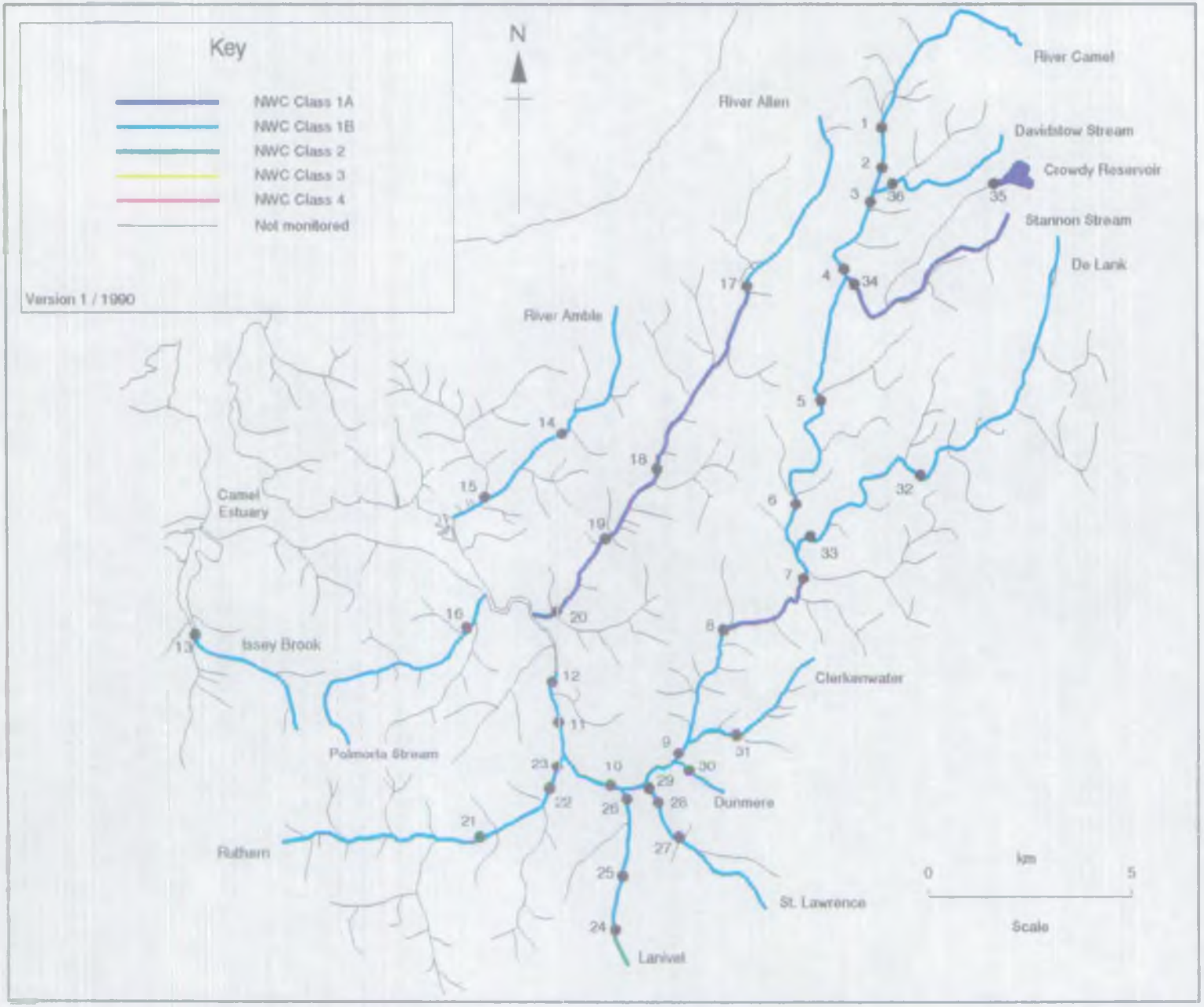
Reference

9.1 National Water Council (1977). River Water Quality: The Next Stage. Review of Discharge Consent Conditions. London.

9.2 Water Act 1989 Section 117

9.3 Alabaster J. S. and Lloyd R. Water Quality Criteria for Freshwater Fish, 2nd edition, 1982. Butterworths.

Camel Catchment
River Quality Objectives



Appendix 10.1

BASIC DETERMINAND ANALYTICAL SUITE FOR ALL CLASSIFIED RIVER SITES

pH as pH Units

Conductivity at 20 C as uS/cm

Water temperature (Cel)

Oxygen dissolved % saturation

Oxygen dissolved as mg/l O

Biochemical oxygen demand (5 day total ATU) as mg/l O

Total organic carbon as mg/l C

Nitrogen ammoniacal as mg/l N

Ammonia un-ionised as mg/l N

Nitrate as mg/l N

Nitrite as mg/l N

Suspended solids at 105 C as mg/l

Total hardness as mg/l CaCO3

Chloride as mg/l Cl

Orthophosphate (total) as mg/l P

Silicate reactive dissolved as mg/l SiO2

Sulphate (dissolved) as mg/l SO4

Sodium (total) as mg/l Na

Potassium (total) as mg/l K

Magnesium (total) as mg/l Mg

Calcium (total) as mg/l Ca

Alkalinity as pH 4.5 as mg/l CaCO3

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

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
	DO greater than 10% saturation		Insignificant watercourses and ditches not usable, where the objective is simply to prevent nuisance developing

s (a) Under ex[illegible] conditions (eg flood, drought, freeze-up), or when dominated by plant growth, or by aquatic plant decay, r[illegible] Class 1, 2, and 3 may have BODs and dissolved oxygen levels, or ammonia content outside the stated leve[illegible] Classes. When this occurs the cause should be stated along with analytical results.

(b) The BOD d[illegible] refer to 5 day carbonaceous BOD (ATU). Ammonia figures are expressed as NH_4. **

(c) In most in[illegible] chemical classification given above will be suitable. However, the basis of the classification is restricted [illegible] number of chemical determinands and there may be a few cases where the presence of a chemical substance [illegible] those used in the classification markedly reduces the quality of the water. In such cases, the quality cl[illegible] of the water should be down-graded on the basis of biota actually present, and the reasons stated.

(d) EIFAC (Eur[illegible] Fisheries Advisory Commission) limits should be expressed as 95 percentile limits.

Category A2 and A[illegible] are those specified in the EEC Council directive of 16 June 1975 concerning the Quality of Surface ter intended for Abs[illegible] Drinking Water in the Member State.

monia Conversion F[illegible]

(mg NH_4 [illegible] mg/l)

366 1A 0.4 mg NH_4 [illegible] mg N/l

s 1B 0.9 mg NH_4 [illegible] mg N/l

0.5 mg NH_4 [illegible] 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
	95 percentile
Suspended solids	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 CaCO3	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 CaCO3	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
1990 RIVER WATER QUALITY CLASSIFICATION
CATCHMENT: CAMEL (28)

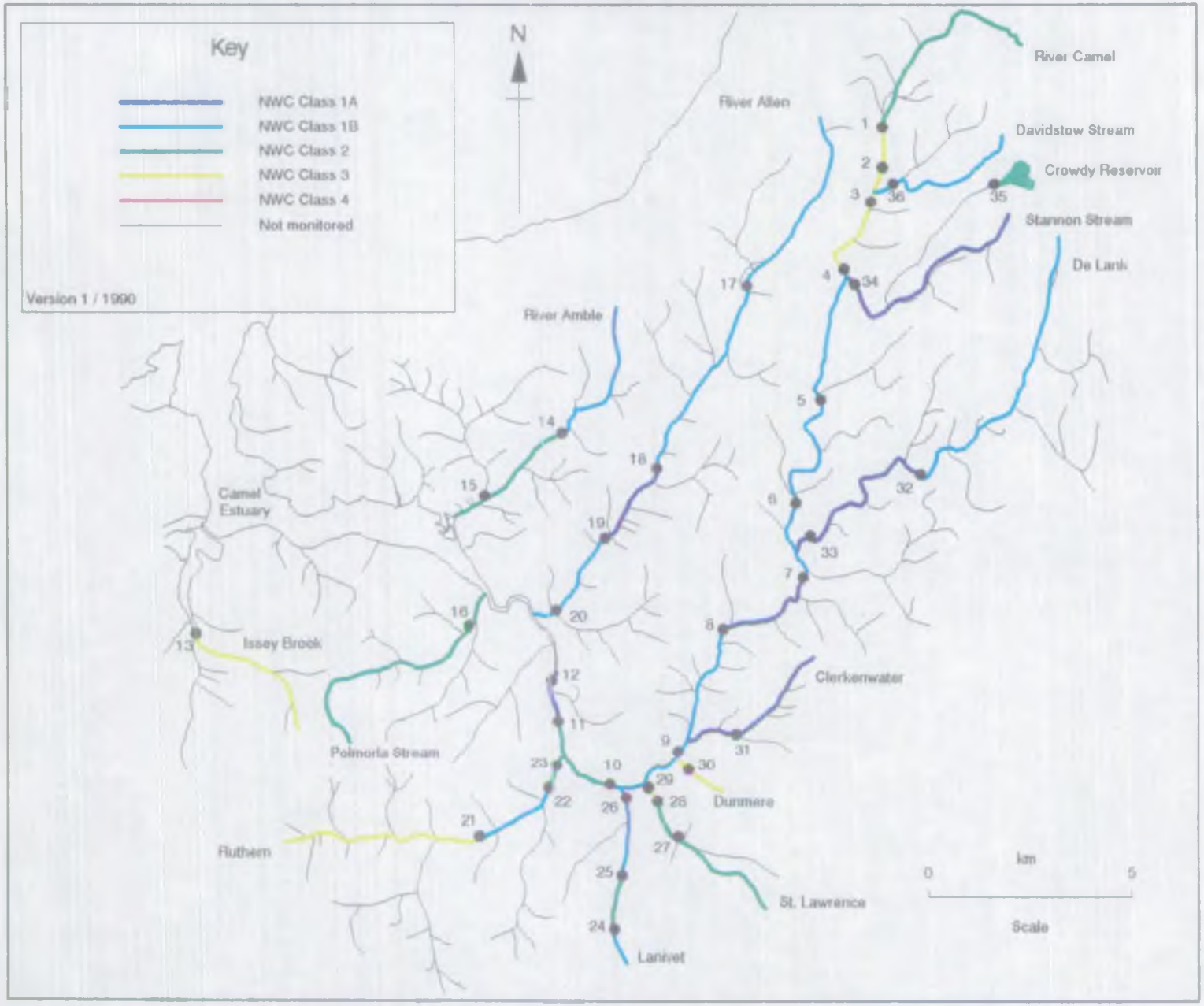
1990 Map Position Number	River	Reach upstream of	User Reference Number	National Grid Reference
1	CAMEL	SLAUGHTERBRIDGE	R25B021	SX 1093 8555
2	CAMEL	CAMELFORD BRIDGE	R25B001	SX 1067 8383
3	CAMEL	PENCARROW	R25B022	SX 1038 8270
4	CAMEL	TRECARNE BRIDGE	R25B002	SX 0973 8053
5	CAMEL	GAM BRIDGE	R25B003	SX 0887 7785
6	CAMEL	WENFORD	R25B023	SX 0850 7518
7	CAMEL	TRESARRET BRIDGE	R25B004	SX 0888 7313
8	CAMEL	HELLANDBRIDGE	R25B005	SX 0655 7150
9	CAMEL	DUNMERE BRIDGE	R25B006	SX 0480 6781
10	CAMEL	HANSTALLON BRIDGE	R25B007	SX 0348 6741
11	CAMEL	GROGLEY	R25B008	SX 0153 6850
12	CAMEL	POLBROCK	R25B029	SX 0138 6949
	CAMEL	NORMAL TIDAL LIMIT (INFERRED STRETCH)		
13	ISSEY BROOK	MELLINGEY	R25A019	SW 9206 7181
	ISSEY BROOK	NORMAL TIDAL LIMIT (INFERRED STRETCH)		
14	AMBLE	ST KEW FORD	R25A010	SX 0211 7678
15	AMBLE	CHAPEL AMBLE BRIDGE	R25A006	SW 9988 7534
	AMBLE	NORMAL TIDAL LIMIT (INFERRED STRETCH)		
16	POLMORLA STREAM	POLMORLA	R24A013	SW 9833 7155
	POLMORLA STREAM	NORMAL TIDAL LIMIT (INFERRED STRETCH)		
17	ALLEN	KNIGHTSMILL BRIDGE	R25D001	SX 0713 8063
18	ALLEN	KELLYGREEN BRIDGE	R25D002	SX 0455 7586
19	ALLEN	DINHAM'S BRIDGE	R25D032	SX 0317 7393
20	ALLEN	SLADESBRIDGE	R25D003	SX 0107 7147
21	RUTHERN	WITHIEL BRIDGE	R25B027	SW 9981 6594
22	RUTHERN	RUTHERNBRIDGE	R25B039	SX 0129 6682
23	RUTHERN	GROGLEY DOWNS BRIDGE	R25B028	SX 0161 6787
	RUTHERN	CAMEL CONFLUENCE (INFERRED STRETCH)		
24	LANIVET STREAM	LANIVET	R25B014	SX 0373 6425
25	LANIVET STREAM	HOOPER'S BRIDGE	R25B015	SX 0390 6553
26	LANIVET STREAM	HANSTALLON BRIDGE	R25B016	SX 0358 6728
	LANIVET STREAM	CAMEL CONFLUENCE (INFERRED STRETCH)		
27	ST. LAWRENCE STREAM	A30 BRIDGE, LAVEDDON	R25B017	SX 0515 6595
28	ST. LAWRENCE STREAM	ABOVE ST. LAWRENCE S T W	R25B040	SX 0450 6697
29	ST. LAWRENCE STREAM	PRIOR TO RIVER CAMEL	R25B038	SX 0433 6731
30	DUNMERE STREAM	DUNMERE (BELOW SCARLETTS WELL STW)	R25B026	SX 0478 6771
	DUNMERE STREAM	CAMEL CONFLUENCE (INFERRED STRETCH)		

Reach Length (km)	Distance from source (km)	River Quality Objective	85 NWC Class	86 NWC Class	87 NWC Class	88 NWC Class	89 NWC Class	90 NWC Class
4.9	4.9	1B	1B	2	2	1B	2	2
1.9	6.8	1B	1B	1B	1B	1B	1B	3
1.3	8.1	1B	1B	2	1B	1A	3	3
2.9	11.0	1B	1B	1B	1A	1A	1B	3
3.4	14.4	1B	1B	1B	1B	1B	1B	1B
3.6	18.0	1B	1A	1A	1A	1B	1B	1B
2.6	20.6	1B	1B	1B	1B	1B	1B	1B
3.5	24.1	1A	1A	1A	1A	1B	1A	1A
4.8	28.9	1B	1B	1B	1B	1B	1B	1B
1.7	30.6	1B	1B	2	1B	1B	1B	1B
2.6	33.2	1B	1B	1B	1B	1B	1B	2
1.3	34.5	1B	1B	1B	1B	1B	1B	1A
0.1	34.6	1B	1B	1B	1B	1B	1B	1A
4.6	4.6	1B	1B					3
0.3	4.9	1B	1B					3
5.1	5.1	1B	1B	3	3	1B	1B	1B
3.2	8.3	1B	2	3	2	1B	1B	2
2.4	10.7	1B	2	3	2	1B	1B	2
6.0	6.0	1B	1B					2
0.7	6.7	1B	1B					2
6.3	6.3	1B	1B	2	1B	1A	1B	1B
6.2	12.5	1A	1B	2	1B	1A	1B	1B
2.8	15.3	1A	1B	1B	1B	1B	1B	1A
3.8	19.1	1A	1B	1B	1B	1B	1B	1B
5.9	5.9	1B	1B	2	1B	1B	3	3
2.0	7.9	1B	1B	2	1B	1B	2	1B
1.2	9.1	1B	1B	2	1B	1B	2	2
0.3	9.4	1B	1B	2	1B	1B	2	2
2.7	2.7	2	3	3	3	2	2	1B
1.5	4.2	1B	2	2	2	2	2	2
1.8	6.0	1B	1B	2	2	2	2	1B
0.1	6.1	1B	1B	2	2	2	2	1B
3.6	3.6	1B	1B	1B	1B	2	2	2
1.3	4.9	1B	1B	1B	1B	2	2	2
0.4	5.3	1B	1B	1B	1B	2	2	3
1.8	1.8	1B	2					3
0.1	1.9	1B	2					3

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
CATCHMENT: CAMEL (28)

1990 Map Position Number	River	Reach upstream of	User Reference Number	National Grid Reference	Reach Length (km)	Distance from source (km)	River Quality Objective	85 RWC Class	86 RWC Class	87 RWC Class	88 RWC Class	89 RWC Class	90 RWC Class
31	CLERKENWATER	CLERKENWATER	R25B018	SX 0688 6878	3.0	3.0	1B	1A	1A	1A		1A	1A
	CLERKENWATER	CAMEL CONFLUENCE (INFERRED STRETCH)			1.7	4.7	1B	1A	1A	1A		1A	1A
32	DE LANK RIVER	BRADFORD BRIDGE	R25C001	SX 1191 7543	9.1	9.1	1B	1A	1A	1B	2	1A	1B
33	DE LANK RIVER	KEYBRIDGE	R25C002	SX 0888 7390	4.9	14.0	1B	1A	1B	1B	2	1B	1A
	DE LANK RIVER	CAMEL CONFLUENCE (INFERRED STRETCH)			0.8	14.8	1B	1A	1B	1B	2	1B	1A
34	STANNON STREAM	TRECARNE	R25B025	SX 0975 8053	6.8	6.8	1A	1B					1A
	CROWDY STREAM	INFLOW, CROWDY RES. (UNMON. STRETCH)			0.8	0.8	1A						
35	CROWDY STREAM	CROWDY RESERVOIR	R25B031	SX 1392 8323	1.3	2.1	1A						2
	CROWDY STREAM	STANNON STREAM CONFL. (UNMON. STRETCH)			5.0	7.1	1A						
36	DAVIDSTOW STREAM	TREGOODWELL	R25B024	SX 108 833	4.5	4.5	1B	1B					1B
	DAVIDSTOW STREAM	CAMEL CONFLUENCE (INFERRED STRETCH)			0.3	4.8	1B	1B					1B

Camel Catchment
Water Quality - 1990



NATIONAL RIVERS AUTHORITY – SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
CALCULATED DETERMINAND STATISTICS USED FOR QUALITY ASSESSMENT
CATCHMENT: CAMEL (28)

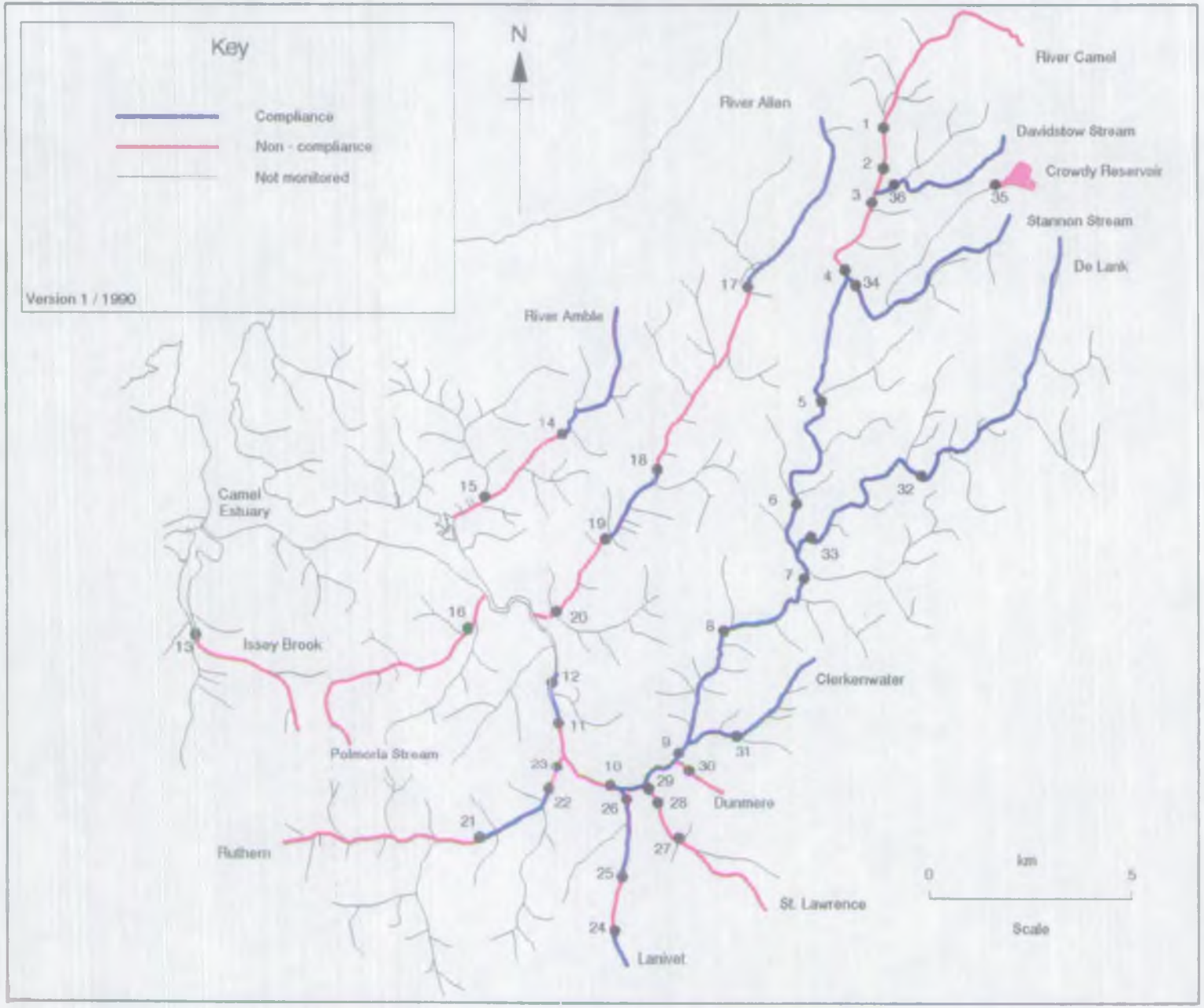
River	Reach upstream of	User Ref. Number	90 NWC Class	Calculated Determinand Statistics used for Quality Assessment																			
				pH Lower		pH Upper		Temperature		DO (%)		BOD (ATU)		Total Ammonia		Union. Ammonia		S.Solids		Total Copper		Total Zinc	
				Class	5%ile	Class	95%ile	Class	95%ile	Class	5%ile	Class	95%ile	Class	95%ile	Class	95%ile	Class	Mean	Class	95%ile	Class	95%ile
CAMEL	SLAUGHTERBRIDGE	RZSB021	2	1A	6.4	1A	7.3	1A	15.5	1B	75.8	1A	2.3	1B	0.368	1A	0.010	1A	7.5	2	48.3	2	527.5
CAMEL	CAMELFORD BRIDGE	RZSB001	3	1A	6.6	1A	7.5	1A	15.1	1B	69.3	1B	4.7	1A	0.264	1A	0.010	3	27.0	1A	9.5	1A	38.3
CAMEL	PENCARROW	RZSB022	3	1A	6.5	1A	7.6	1A	15.4	1B	78.4	1B	4.8	3	2.625	1A	0.010	1A	15.5	1A	10.3	1A	28.0
CAMEL	TRECARNE BRIDGE	RZSB002	3	1A	6.3	1A	7.6	1A	16.1	1A	83.2	2	5.1	1B	0.384	1A	0.010	3	28.2	1A	11.5	1A	39.5
CAMEL	GAM BRIDGE	RZSB003	1B	1A	6.6	1A	7.5	1A	15.4	1A	83.2	1B	3.6	1A	0.184	1A	0.010	1A	22.4	1A	9.1	1A	35.4
CAMEL	MENFORD	RZSB023	1B	1A	6.5	1A	7.9	1A	16.4	1A	83.0	1B	3.3	1A	0.178	1A	0.010	1A	16.1	1A	6.3	1A	19.5
CAMEL	TRESARRET BRIDGE	RZSB004	1B	1A	6.6	1A	7.6	1A	15.9	1B	76.8	1B	3.9	1B	0.318	1A	0.010	1A	24.5	1A	12.8	1A	33.6
CAMEL	HELLANDBRIDGE	RZSB005	1A	1A	6.6	1A	7.6	1A	16.6	1A	82.6	1A	2.5	1A	0.192	1A	0.010	1A	8.8	1A	6.6	1A	40.8
CAMEL	DUNMERE BRIDGE	RZSB006	1B	1A	6.6	1A	7.5	1A	14.8	1B	70.5	1B	3.9	1B	0.324	1A	0.010	1A	15.3	1A	11.0	1A	30.8
CAMEL	WANSTALLON BRIDGE	RZSB007	1B	1A	6.7	1A	7.5	1A	15.6	1B	71.8	1B	3.5	1B	0.319	1A	0.010	1A	17.0	1A	11.8	1A	31.8
CAMEL	CROGLEY	RZSB008	2	1A	6.5	1A	7.5	1A	15.5	1B	75.2	2	6.0	1A	0.151	1A	0.010	1A	16.8	1A	13.2	1A	50.0
CAMEL	POLBROCK	RZSB029	1A	1A	6.7	1A	7.4	1A	16.6	1A	81.2	1A	2.4	1A	0.167	-	-	1A	11.7	1A	13.8	1A	68.9
ISSEY BROOK	MELLINGEY	RZSN019	3	1A	7.1	1A	8.1	1A	15.8	2	58.3	2	8.5	2	0.824	1A	0.010	3	37.0	1A	6.0	1A	20.0
AMBLE	ST KEW FORD	RZSN010	1B	1A	6.8	1A	8.0	1A	17.5	1B	69.0	1A	3.0	1B	0.668	1A	0.010	1A	23.1	1A	25.0	1A	35.0
AMBLE	CHAPEL AMBLE BRIDGE	RZSN006	2	1A	7.1	1A	8.1	1A	18.0	1B	71.8	2	8.1	1B	0.395	1A	0.010	1A	21.0	1A	26.3	1A	21.0
POLMORLA STREAM	POLMORLA	RZAN013	2	1A	7.3	1A	8.0	1A	15.9	1B	78.8	2	6.5	1B	0.620	1A	0.010	1A	10.1	1A	5.0	1A	15.0
ALLEN	KNIGHTSMILL BRIDGE	RZSD001	1B	1A	7.1	1A	8.1	1A	16.0	1A	83.0	1B	3.2	1A	0.150	1A	0.010	1A	11.4	1A	7.0	1A	258.5
ALLEN	KELLYGREEN BRIDGE	RZSD002	1B	1A	7.2	1A	8.1	1A	17.0	1A	82.7	1B	3.3	1A	0.139	1A	0.010	1A	16.6	1A	6.9	1A	114.4
ALLEN	DINHAM'S BRIDGE	RZSD032	1A	1A	7.1	1A	8.0	1A	16.9	1A	80.5	1A	3.0	1A	0.227	1A	0.010	1A	22.8	1A	18.4	1A	403.6
ALLEN	SLADESBRIDGE	RZSD003	1B	1A	7.3	1A	8.1	1A	17.5	1B	76.8	1B	3.3	1A	0.224	1A	0.010	1A	12.1	1A	11.3	1A	67.5
RUTHERN	MITHIEL BRIDGE	RZSB027	3	1A	6.9	1A	7.5	1A	16.2	1A	85.2	1A	2.6	1A	0.128	1A	0.010	1A	13.2	2	282.4	3	1176.0
RUTHERN	RUTHERNBRIDGE	RZSB039	1B	1A	6.9	1A	7.9	1A	16.8	1A	85.1	1B	3.2	1A	0.179	1A	0.010	1A	13.7	1A	11.0	1A	97.0
RUTHERN	CROGLEY DOWNS BRIDGE	RZSB028	2	1A	6.8	1A	7.8	1A	15.9	1A	86.4	1B	3.1	1A	0.158	1A	0.010	1A	11.9	1A	13.2	2	622.7
LANIVET STREAM	LANIVET	RZSB014	1B	1A	6.7	1A	7.5	1A	14.9	1B	66.8	1B	4.7	1B	0.422	1A	0.010	1A	17.4	1A	13.8	1A	35.9
LANIVET STREAM	HOOPER'S BRIDGE	RZSB015	2	1A	6.6	1A	8.1	1A	15.0	1B	73.9	2	5.2	1B	0.335	1A	0.010	1A	16.6	1A	26.4	1A	66.8
LANIVET STREAM	WANSTALLON BRIDGE	RZSB016	1B	1A	6.7	1A	7.4	1A	15.1	1B	62.7	1B	4.1	1B	0.330	1A	0.010	1A	20.2	1A	21.9	1A	75.2
ST. LAWRENCE STREAM	A30 BRIDGE, LAVEDDON	RZSB017	2	1A	6.5	1A	7.5	1A	15.4	1B	73.8	2	5.4	1B	0.324	1A	0.010	1A	17.4	1A	38.1	1A	106.3
ST. LAWRENCE STREAM	ABOVE ST. LAWRENCE S T W	RZSB040	2	1A	6.7	1A	7.5	1A	16.1	1A	83.3	2	5.1	1A	0.200	1A	0.010	1A	10.7	1A	37.3	1A	93.3
ST. LAWRENCE STREAM	PRIOR TO RIVER CAMEL	RZSB038	3	1A	6.4	1A	7.2	1A	17.6	1B	66.2	3	10.1	3	2.432	1A	0.010	1A	13.1	1A	32.3	1A	87.0
DUNMERE STREAM	DUNMERE (BELOW SCARLETTS WELL STW)	RZSB026	3	1A	6.8	1A	7.5	1A	16.4	1A	81.4	2	5.4	3	2.607	1A	0.010	1A	11.4	1A	17.0	1A	80.0
CLERKENWATER	CLERKENWATER	RZSB018	1A	1A	7.0	1A	7.9	1A	15.4	1A	83.9	1A	2.3	1A	0.147	1A	0.010	1A	4.9	1A	11.6	1A	54.8
DE LANK RIVER	BRADFORD BRIDGE	RZSC001	1B	1A	5.4	1A	7.4	1A	16.5	1A	86.4	1B	3.1	1A	0.092	1A	0.010	1A	2.0	1A	5.7	1A	7.9
DE LANK RIVER	KEYBRIDGE	RZSC002	1A	1A	6.0	1A	7.3	1A	16.4	1A	87.4	1A	2.8	1A	0.035	1A	0.010	1A	4.3	1A	10.9	1A	18.6

NATIONAL RIVERS AUTHORITY – SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
CALCULATED DETERMINAND STATISTICS USED FOR QUALITY ASSESSMENT
CATCHMENT: CAMEL (28)

River	Reach upstream of	User Ref. Number	90 NWC Class	Calculated Determinand Statistics used for Quality Assessment																					
				pH Lower		pH Upper		Temperature		DO (%)		BOD (ATU)		Total Ammonia		Union. Ammonia		S.Solids		Total Copper		Total Zinc	
				Class	5%ile	Class	95%ile	Class	95%ile	Class	5%ile	Class	95%ile	Class	95%ile	Class	95%ile	Class	Mean	Class	95%ile	Class	95%ile
STANNON STREAM	TRECARNE	RS58025	1A	1A	5.9	1A	7.2	1A	15.9	1A	83.7	1A	2.6	1A	0.138	1A	0.010	1A	11.7	1A	18.3	1A	12.0
CROWDY STREAM	CROWDY RESERVOIR	RS58031	2	1A	5.3	1A	6.9	2	23.3	1A	81.3	1B	3.5	1A	0.215	1A	0.010	1A	19.8	-	-	-	-
DAVIDSTOW STREAM	TRECODDELL	RS58024	1B	1A	6.0	1A	7.5	1A	16.5	1A	87.0	1B	4.2	1A	0.228	1A	0.010	1A	12.9	1A	12.9	1A	30.9

Appendix 10.1

Camel Catchment
Compliance - 1990



NATIONAL RIVERS AUTHORITY – SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
NUMBER OF SAMPLES (N) AND NUMBER OF SAMPLES EXCEEDING QUALITY STANDARD (F)
CATCHMENT: CAMEL (28)

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
CAMEL	SLAUGHTERBRIDGE	RZSB021	23	–	23	–	24	–	24	–	24	–	23	–	22	–	23	1	24	2	24	2
CAMEL	CAMELFORD BRIDGE	RZSB001	36	–	36	–	36	–	36	–	36	1	36	–	34	–	36	2	30	–	30	–
CAMEL	PENCARROW	RZSB022	24	–	24	–	23	–	23	–	24	1	24	6	23	–	24	1	24	–	24	–
CAMEL	TRECARNE BRIDGE	RZSB002	35	–	35	–	35	–	35	–	35	1	35	–	32	–	35	2	29	–	29	–
CAMEL	GAM BRIDGE	RZSB003	38	–	38	–	38	–	38	–	38	1	38	–	34	–	38	2	32	–	32	–
CAMEL	MENFORD	RZSB023	24	–	24	–	24	–	24	–	24	–	24	–	23	–	24	2	24	–	24	–
CAMEL	TRESARRET BRIDGE	RZSB004	33	–	33	–	33	–	33	–	33	1	33	–	31	–	33	2	27	–	27	–
CAMEL	HELLANDBRIDGE	RZSB005	23	–	23	–	23	–	23	–	23	–	23	–	21	–	23	1	23	–	23	–
CAMEL	DUNMERE BRIDGE	RZSB006	35	–	35	–	34	–	34	–	35	1	35	–	33	–	35	2	34	–	34	–
CAMEL	NANSTALLON BRIDGE	RZSB007	36	–	36	–	35	–	34	1	36	1	36	–	34	–	36	2	34	–	34	–
CAMEL	GROGLEY	RZSB008	36	–	36	–	36	–	36	–	36	2	36	–	36	–	36	4	31	–	31	–
CAMEL	POLBROCK	RZSB029	41	–	41	–	41	–	41	–	41	–	41	–	5	–	41	4	41	–	41	–
ISSEY BROOK	MELLINGEY	RZSA019	40	–	40	–	40	–	40	2	40	2	40	2	40	–	40	8	24	–	24	–
AMBLE	ST KEW FORD	RZSA010	21	–	21	–	18	–	16	–	21	–	21	1	18	–	21	3	18	–	18	–
AMBLE	CHAPEL AMBLE BRIDGE	RZSA006	25	–	25	–	25	–	25	–	25	1	25	–	25	–	25	4	20	–	20	–
POLMORLA STREAM	POLMORLA	RZAA013	36	–	36	–	36	–	36	–	36	2	36	–	36	–	36	6	22	–	22	–
ALLEN	KNIGHTSMILL BRIDGE	RZSD001	29	–	29	–	29	–	29	–	29	–	29	–	29	–	29	4	22	–	22	–
ALLEN	KELLYGREEN BRIDGE	RZSD002	30	–	30	–	30	–	30	1	30	2	30	–	29	–	30	3	22	–	22	–
ALLEN	DINHAM'S BRIDGE	RZSD032	21	–	21	–	20	–	20	–	21	–	21	–	19	–	21	1	20	–	20	–
ALLEN	SLADESBRIDGE	RZSD003	31	–	31	–	30	–	30	2	31	2	31	–	29	–	31	3	24	–	24	–
RUTHERN	METHEL BRIDGE	RZSB027	23	–	23	–	23	–	23	–	23	–	23	–	23	–	23	2	23	1	23	1
RUTHERN	RUTHERNBRIDGE	RZSB039	40	–	40	–	40	–	40	–	40	–	40	–	38	–	40	2	24	–	24	–
RUTHERN	GROGLEY DOWNS BRIDGE	RZSB028	27	–	27	–	27	–	27	–	27	–	27	–	25	–	27	1	21	–	21	2
LANIVET STREAM	LANIVET	RZSB014	28	–	28	–	28	–	28	–	28	–	28	–	27	–	28	2	21	–	21	–
LANIVET STREAM	HOOPER'S BRIDGE	RZSB015	28	–	28	–	29	–	28	–	28	1	28	–	26	–	28	4	21	–	21	–
LANIVET STREAM	NANSTALLON BRIDGE	RZSB016	28	–	28	–	28	–	28	1	28	–	28	–	27	–	28	2	21	–	21	–
ST. LAWRENCE STREAM	A30 BRIDGE, LAWEDDON	RZSB017	33	–	33	–	33	–	32	–	32	2	33	–	32	–	33	4	33	1	33	–
ST. LAWRENCE STREAM	ABOVE ST. LAWRENCE S T W	RZSB040	24	–	24	–	21	–	24	–	24	1	24	–	23	–	24	1	24	1	24	–
ST. LAWRENCE STREAM	PRIOR TO RIVER CAMEL	RZSB038	24	–	24	–	22	–	22	–	24	5	24	4	22	–	24	1	24	–	24	–
DUNMERE STREAM	DUNMERE (BELOW SCARLETTS WELL STW)	RZSB026	20	–	20	–	20	–	20	–	20	1	20	3	19	–	20	2	16	–	16	–
CLERKENWATER	CLERKENWATER	RZSB018	25	–	25	–	25	–	25	–	25	–	25	–	20	–	25	–	23	–	23	–
DE LANK RIVER	BRADFORD BRIDGE	RZSC001	26	–	26	–	26	–	26	–	26	–	26	–	21	–	26	–	22	–	22	–
DE LANK RIVER	KEYBRIDGE	RZSC002	28	–	28	–	28	–	28	–	28	–	28	–	21	–	28	–	26	–	26	–

NATIONAL RIVERS AUTHORITY – SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
NUMBER OF SAMPLES (N) AND NUMBER OF SAMPLES EXCEEDING QUALITY STANDARD (F)
CATCHMENT: CAMEL (28)

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
SHANNON STREAM	TREVARNE	RZSB025	28	–	28	–	28	–	28	–	28	–	28	–	25	–	28	2	20	–	20	–
CROWDY STREAM	CROWDY RESERVOIR	RZSB031	24	–	24	–	23	2	22	–	24	3	24	–	23	–	24	5	23	–	23	–
DAVIDSTOW STREAM	TREGOODWELL	RZSB024	28	–	28	–	29	–	29	–	28	1	28	–	24	–	28	1	20	–	20	–

Appendix 10.9

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS
CATCHMENT: CAMEL (28)

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
CAMEL	SLAUGHTERBRIDGE	R25B021	-	-	-	-	-	-	-	-	119	164
CAMEL	CAMELFORD BRIDGE	R25B001	-	-	-	-	-	-	-	8	-	-
CAMEL	PENCARROW	R25B022	-	-	-	-	-	275	-	-	-	-
CAMEL	TRECARNE BRIDGE	R25B002	-	-	-	-	2	-	-	13	-	-
CAMEL	GAM BRIDGE	R25B003	-	-	-	-	-	-	-	-	-	-
CAMEL	WENFORD	R25B023	-	-	-	-	-	-	-	-	-	-
CAMEL	TRESARRET BRIDGE	R25B004	-	-	-	-	-	-	-	-	-	-
CAMEL	HELLANDBRIDGE	R25B005	-	-	-	-	-	-	-	-	-	-
CAMEL	DUNMERE BRIDGE	R25B006	-	-	-	-	-	-	-	-	-	-
CAMEL	NANSTALLON BRIDGE	R25B007	-	-	-	-	-	-	-	-	-	-
CAMEL	GROGLEY	R25B008	-	-	-	-	20	-	-	-	-	-
CAMEL	POLBROCK	R25B029	-	-	-	-	-	-	-	-	-	-
ISSEY BROOK	MELLINGEY	R25A019	-	-	-	3	70	18	-	48	-	-
AMBLE	ST KEW FORD	R25A010	-	-	-	-	-	-	-	-	-	-
AMBLE	CHAPEL AMBLE BRIDGE	R25A006	-	-	-	-	62	-	-	-	-	-
POLMORLA STREAM	POLMORLA	R24A013	-	-	-	-	30	-	-	-	-	-
ALLEN	KNIGHTSMILL BRIDGE	R25D001	-	-	-	-	-	-	-	-	-	-
ALLEN	KELLYGREEN BRIDGE	R25D002	-	-	-	-	9	-	-	-	-	-
ALLEN	DINHAM'S BRIDGE	R25D032	-	-	-	-	-	-	-	-	-	-
ALLEN	SLADESBRIDGE	R25D003	-	-	-	4	9	-	-	-	-	-
RUTHERN	WITHIEL BRIDGE	R25B027	-	-	-	-	-	-	-	-	606	292
RUTHERN	RUTHERNBRIDGE	R25B039	-	-	-	-	-	-	-	-	-	-
RUTHERN	GROGLEY DOWNS BRIDGE	R25B028	-	-	-	-	-	-	-	-	-	108
LANIVET STREAM	LANIVET	R25B014	-	-	-	-	-	-	-	-	-	-
LANIVET STREAM	HOOPER'S BRIDGE	R25B015	-	-	-	-	3	-	-	-	-	-
LANIVET STREAM	NANSTALLON BRIDGE	R25B016	-	-	-	-	-	-	-	-	-	-
ST. LAWRENCE STREAM	A30 BRIDGE, LAVEDDON	R25B017	-	-	-	-	8	-	-	-	-	-
ST. LAWRENCE STREAM	ABOVE ST. LAWRENCE S T W	R25B040	-	-	-	-	1	-	-	-	-	-
ST. LAWRENCE STREAM	PRIOR TO RIVER CAMEL	R25B038	-	-	-	-	102	247	-	-	-	-
DUNMERE STREAM	DUNMERE (BELOW SCARLETTS WELL STW	R25B026	-	-	-	-	7	272	-	-	-	-
CLERKENWATER	CLERKENWATER	R25B018	-	-	-	-	-	-	-	-	-	-
DE LANK RIVER	BRADFORD BRIDGE	R25C001	-	-	-	-	-	-	-	-	-	-
DE LANK RIVER	KEYBRIDGE	R25C002	-	-	-	-	-	-	-	-	-	-

Appendix 10.10

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS
CATCHMENT: CAMEL (28)

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
STANNON STREAM	TRECARNE	R25B025	-	-	-	-	-	-	-	-	-	-
CROWDY STREAM	CROWDY RESERVOIR	R25B031	-	-	8	-	16	-	-	-	-	-
DAVIDSTOW STREAM	TREGOODWELL	R25B024	-	-	-	-	-	-	-	-	-	-

Appendix 10.10

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
IDENTIFICATION OF POSSIBLE CAUSES OF NON-COMPLIANCE WITH RQO
CATCHMENT: CAMEL (28)

* = WORK ALREADY IN HAND

1990 Map Position Number	River	Reach upstream of	User Reference Number	Reach Length (km)	Possible causes of non-compliance
1	CAMEL	SLAUGHTERBRIDGE	R25B021	4.9	FISH FARM EFFLUENT, UP-STREAM ABSTRACTIONS, MINING, CATCHMENT GEOLOGY
2	CAMEL	CAMELFORD BRIDGE	R25B001	1.9	LAND RUN-OFF, CATCHMENT GEOLOGY, SPATE
3	CAMEL	PENCARROW	R25B022	1.3	SEWAGE TREATMENT WORKS
4	CAMEL	TRECARNE BRIDGE	R25B002	2.9	LAND RUN-OFF, UP-STREAM ABSTRACTION
11	CAMEL	GROGLEY	R25B008	2.6	LAND RUN-OFF
13	ISSEY BROOK	MELLINGEY	R25A019	4.6	FISH FARM EFFLUENT, LAND RUN-OFF
15	AMBLE	CHAPEL AMBLE BRIDGE	R25A006	3.2	LAND RUN-OFF, EUTROPHICATION
16	POLMORLA STREAM	POLMORLA	R24A013	6.0	LAND RUN-OFF, POLLUTION (ON-GOING)
18	ALLEN	KELLYGREEN BRIDGE	R25D002	6.2	LAND RUN-OFF
20	ALLEN	SLADESBRIDGE	R25D003	3.8	LAND RUN-OFF, EUTROPHICATION
21	RUTHERN	WITHIEL BRIDGE	R25B027	5.9	CATCHMENT GEOLOGY, MINING
23	RUTHERN	GROGLEY DOWNS BRIDGE	R25B028	1.2	CATCHMENT GEOLOGY
25	LANIVET STREAM	HOOPER'S BRIDGE	R25B015	1.5	SEPTIC TANK, OLD TIP
27	ST. LAWRENCE STREAM	* A30 BRIDGE, LAVEDDON	R25B017	3.6	SEWAGE TREATMENT WORKS, LAND RUN-OFF, FARMING ACTIVITIES
28	ST. LAWRENCE STREAM	* ABOVE ST. LAWRENCE S T W	R25B040	1.3	LAND RUN-OFF, FARMING ACTIVITIES
29	ST. LAWRENCE STREAM	* PRIOR TO RIVER CAMEL	R25B038	0.4	LAND RUN-OFF, SEWAGE TREATMENT WORKS
30	DUNMERE STREAM	DUNMERE (BELOW SCARLETTS WELL)	R25B026	1.8	SEWAGE TREATMENT WORKS (HISTORIC)
35	CROWDY STREAM	CROWDY RESERVOIR	R25B031	1.3	DROUGHT, FARMING ACTIVITIES