

ENVIRONMENTAL PROTECTION



NRA

National Rivers Authority

South West Region

River Fal Catchment River Water Quality Classification 1990

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ENVIRONMENT AGENCY



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RIVER WATER QUALITY IN THE RIVER FAL CATCHMENT

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National Rivers Authority South West Region



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BODMIN

**Fal, Tresillian,
Allen, Kenwyn,
Carnon & Kennal
Catchment**

Fal, Tresillian, Allen, Kenwyn, Carnon & Kennal 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 Fal catchment.

2. RIVER FAL CATCHMENT

The River Fal flows over a distance of 29 km from its source to the tidal limit, (Appendix 10.1). Water quality was monitored at eight locations on the main river at approximately monthly intervals.

The Percuil River (5.5 km), Trevella Stream (8 km), River Allen (9.6 km), River Kenwyn (7.5 km) and Calenick Stream (9.1km) were all monitored at approximately monthly intervals at two sites between their source and the tidal limits, (Appendix 10.1).

The Penkevil Stream (5.6 km), Perranwell Stream (4.8 km), Penryn Stream (4.3 km) and Maenporth Stream (5.6 km) were all monitored at one site between their source and the tidal limits, (Appendix 10.1) on twenty occasions during 1990 because of no recent water quality data.

Swanpool Stream flows over a distance of 3.2 km from its source to the tidal limit, (Appendix 10.1) and was monitored at one site at approximately monthly intervals.

Mylor Creek flows over a distance of 2.2 km from its source to the tidal limit, (Appendix 10.1) and was monitored at three locations. Two sites were sampled at approximately monthly intervals and the site at Enys was sampled on twenty occasions during 1990 because of no recent water quality data.

The River Tresillian flows over a distance of 12.5 km from its source to the tidal limit, (Appendix 10.1) and was monitored at five locations. Three sites were sampled at approximately monthly intervals, the site downstream of Laddock sewage treatment works was sampled on six occasions and the site at Trendale was sampled on fifteen occasions during 1990 because of no recent water quality data.

The River Carnon flows over a distance of 9 km from its source to the tidal limit, (Appendix 10.1) and was monitored at six locations. Five sites were sampled at approximately monthly intervals and the site at Devoran Bridge, which is a National Water Quality monitoring point, was sampled fortnightly. In addition County Adit discharge was monitored at approximately monthly intervals.

The River Kennal flows over a distance of 12.1 km from its source to the tidal limit, (Appendix 10.1) and was monitored at three sites at approximately monthly intervals.

Throughout the Fal catchment three secondary tributaries of the River Fal, two secondary tributaries of the River Tresillian, one secondary tributary of the River Allen, one secondary tributary of the River Kenwyn, three secondary tributaries of the River Carnon and one secondary tributary of the River Kennal were monitored. In addition Stithians Reservoir and College Reservoir were both monitored at one location at approximately monthly intervals.

2.1 SECONDARY TRIBUTARIES

The Trewithen Stream and Bodella Brook flow over a distance of 6.0 km and 1.4 km respectively from their source to the confluence with the River Fal, (Appendix 10.1) and were both monitored at one location on twenty occasions during 1990 because of no recent water quality data. Monitoring points are located in the lower reaches.

The Gwindra Stream flows over a distance of 9.8 km from its source to the confluence with the River Fal, (Appendix 10.1) and was monitored at four locations at approximately monthly intervals.

Kestle Stream and Brighton Stream flow over a distance of 9.2 km and 6.8 km respectively from their source to the confluence with the River Tresillian, (Appendix 10.1) and were both monitored at one location at approximately monthly intervals.

Zelah Brook flows over a distance of 5.2 km from its source to the confluence with the River Allen, (Appendix 10.1) and was monitored at one location at approximately monthly intervals.

Shortlanesend Stream flows over a distance of 1.6 km from its source to the confluence with the River Kenwyn, (Appendix 10.1) and was monitored at one location on twenty occasions during 1990 because of no recent water quality data.

Baldhu Stream (1.6 km), Hick's Mill Stream (4.9 km) and St. Day Stream (3 km) were all monitored at one location between their source and confluence with the River Carnon, (Appendix 10.1) on twenty occasions during 1990 because of no recent water quality data.

Stithians Stream flows over a distance of 5.6 km from its source to the confluence with the River Kennal, (Appendix 10.1) and was monitored at one site on twenty occasions during 1990 because of no recent water quality data.

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 Fal 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

<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 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 have affected the classification of the River Fal at Terras Bridge, Grampound Bridge and Tregoney Gauging Station and the Gwindra Stream at all sites, except Nanpean Bridge.

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

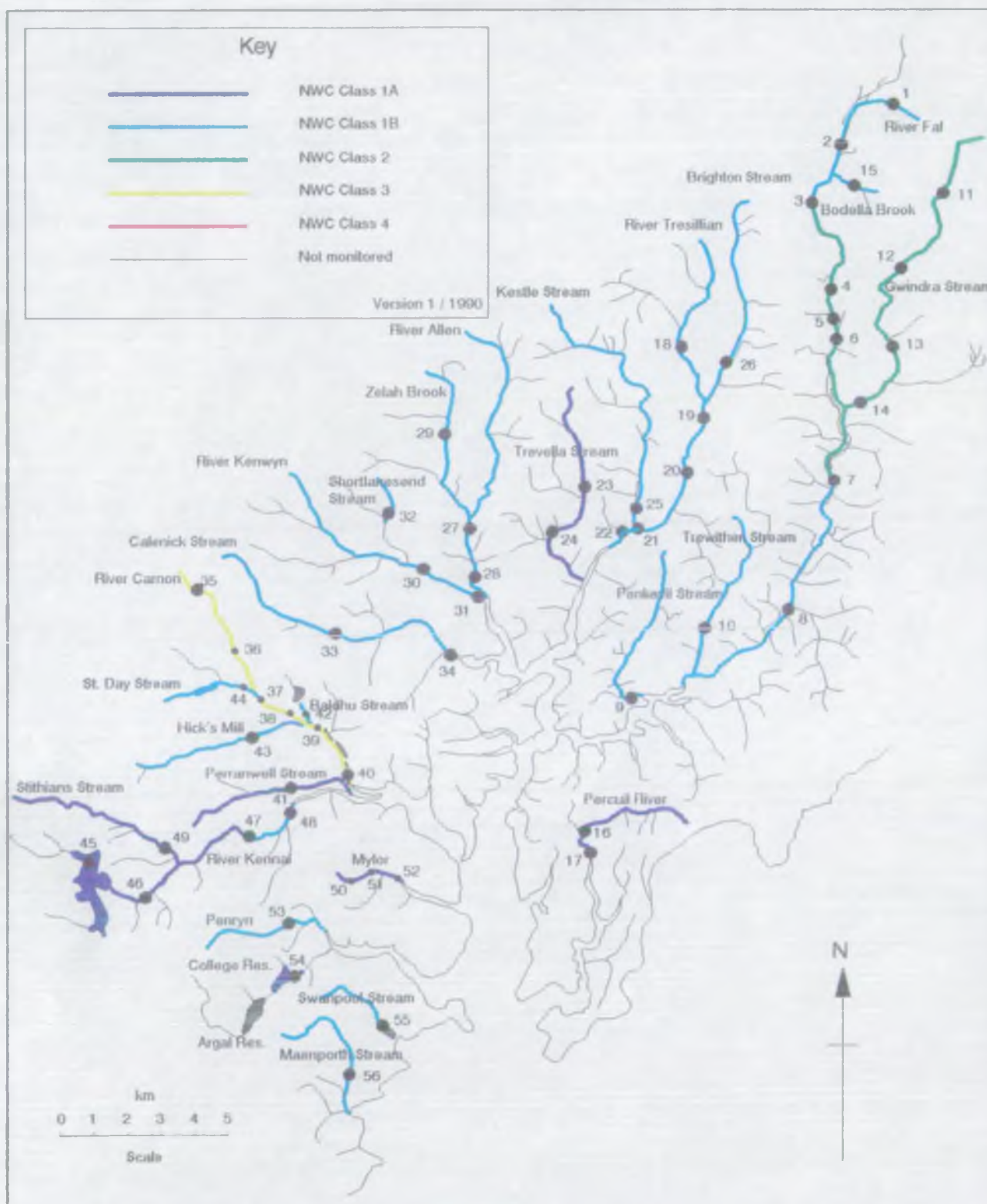
RIVER REACH	A segment of water, upstream from sampling point to the next sampling point.
RIVER LENGTH	River distance in kilometres.
RIVER QUALITY OBJECTIVE	That NWC class, which protects the most sensitive use of the water.
95 percentiles	Maximum limits, which must be met for at least 95% of the time.
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.

Fal, Tresillian, Allen, Kenwyn, Carnon & Kennal Catchments River Quality Objectives



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

MWC 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)	Biochemical oxygen demand not greater than 3 mg/l	(ii)	Visible evidence of pollution should be absent	(ii)	Game or other high class fisheries
	(iii)	Ammonia not greater than 0.4 mg/l			(iii)	High amenity value
	(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)	BOD not greater than 9 mg/l	(ii)	Similar to Class 2 of RPS	(ii)	Supporting reasonably good coarse fisheries
	(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	(iii)	Moderate amenity value
	(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
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4 Bad Quality	Waters which are inferior to Class 3 in terms of dissolved oxygen and likely to be anaerobic at times DO greater than 10% saturation	Similar to Class 4 of RPS	Waters which are grossly polluted and are likely to cause nuisance Insignificant watercourses and ditches not usable, where the objective is simply to prevent nuisance developing
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- 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 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 NH_4 /l to mg N/l)

Class 1A	0.4 mg NH_4 /l = 0.31 mg N/l
Class 1B	0.9 mg NH_4 /l = 0.70 mg N/l
	0.5 mg 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
	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 CaCO ₃	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 ₃	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: FAL (20)

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
1	FAL	TREGOSS BRIDGE	R19C001	SW 9655 6013	3.3	3.3	1B	1B	1B	1B	1B	1B	3
2	FAL	GAVERIGAN BRIDGE	R19C002	SW 9373 5875	4.2	7.5	1B	1B	2	2	1B	1B	1B
3	FAL	RETEW BRIDGE	R19C003	SW 9265 5696	2.3	9.8	1B	3	2	2	1B	1B	3
4	FAL	KERNICK BRIDGE	R19C011	SW 9325 5464	3.0	12.8	2	3	2	2	3	3	3
5	FAL	TRETHOSA BRIDGE	R19C013	SW 9340 5362	1.1	13.9	2	3	2	2	3	3	
6	FAL	TERRAS BRIDGE	R19C004	SW 9340 5361	0.6	14.5	2	3	2	2	3	3	3
7	FAL	GRAMPOUND BRIDGE	R19C005	SW 9336 4844	5.6	20.1	2	3	2	2	3	3	3
8	FAL	TREGONEY GAUGING STATION	R19C006	SW 9205 4473	4.3	24.4	1B	3	2	2	3	3	3
	FAL	NORMAL TIDAL LIMIT (INFERRED STRETCH)			4.6	29.0	1B	3	2	2	3	3	3
9	PENKEVIL STREAM	PARSON'S HILL WOOD	R19C019	SW 8709 4185	5.2	5.2	1B	1B					2
	PENKEVIL STREAM	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.4	5.6	1B	1B					2
10	TREWITHEN STREAM	MELLINGOOSE	R19C016	SW 8955 4438	4.1	4.1	1B	1B					2
	TREWITHEN STREAM	FAL CONFLUENCE (INFERRED STRETCH)			1.9	6.0	1B	1B					2
11	GWINDRA STREAM	NANPEAN BRIDGE	R19C014	SW 9632 5586	2.4	2.4	2	3	3	3	3	3	2
12	GWINDRA STREAM	GOONABARN	R19C017	SW 9555 5491	1.4	3.8	2	3	3	3	3	3	3
13	GWINDRA STREAM	GWINDRA BRIDGE	R19C008	SW 9510 5290	2.8	6.6	2	3	3	3	3	3	3
14	GWINDRA STREAM	TREMAX BRIDGE	R19C009	SW 9380 5065	3.1	9.7	2	3	2	3	3	3	3
	GWINDRA STREAM	FAL CONFLUENCE (INFERRED STRETCH)			0.1	9.8	2	3	2	3	3	3	3
15	BODELLA BROOK	CARSELLA	R19C018	SW 9409 5765	0.7	0.7	1B	3					3
	BODELLA BROOK	FAL CONFLUENCE (INFERRED STRETCH)			0.7	1.4	1B	3					3
16	PERCUIL RIVER	LANHOOSE	R19A034	SW 8606 3782	3.7	3.7	1A	1B	1B			1B	2
17	PERCUIL RIVER	TRETHEM MILL	R19A013	SW 8613 3638	1.8	5.5	1A	1B	1B			1B	2
18	TRESILLIAN RIVER	TREDEAL	R19D033	SW 8868 5283	4.0	4.0	1B	1B	2	1B	1B	2	1B
19	TRESILLIAN RIVER	LADOCK WATER PUMPING STATION	R19D001	SW 8928 5102	2.3	6.3	1B	1B	2	1B	1B	2	2
20	TRESILLIAN RIVER	TRESOWGAR BRIDGE	R19D002	SW 8855 4810	3.3	9.6	1B	2	2	2	2	2	1B
21	TRESILLIAN RIVER	TRESILLIAN PUMPING STATION	R19D032	SW 8713 4706	2.1	11.7	1B	2	2	2	2	2	
22	TRESILLIAN RIVER	BELLO LADOCK STW	R19D034	SW 8710 4695	0.2	11.9	1B	2	2	2	2	2	
	TRESILLIAN RIVER	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.6	12.5	1B	2	2	2	2	2	
23	TREVELLA STREAM	FROGMORE BRIDGE	R19D009	SW 8576 4835	3.8	3.8	1A	1B	1A	1B	1B	2	2
24	TREVELLA STREAM	TREGURRA BRIDGE	R19D014	SW 8483 4689	2.0	5.8	1A	1B	1A	1B	1B	2	1B
	TREVELLA STREAM	NORMAL TIDAL LIMIT (INFERRED STRETCH)			2.2	8.0	1A	1B	1A	1B	1B	2	1B
25	KESTLE STREAM	CANDOR FORD	R19D008	SW 8737 4770	8.5	8.5	1B	1B	1B			1B	2
	KESTLE STREAM	TRESSILLIAN R. CONFL. (INFERRED STRETCH)			0.7	9.2	1B	1B	1B			1B	2
26	BRIGHTON STREAM	NEW MILLS	R19D005	SW 9001 5228	5.5	5.5	1B	1B	2	2	2	2	1B
	BRIGHTON STREAM	TRESSILLIAN R. CONFL. (INFERRED STRETCH)			1.3	6.8	1B	1B	2	2	2	2	1B

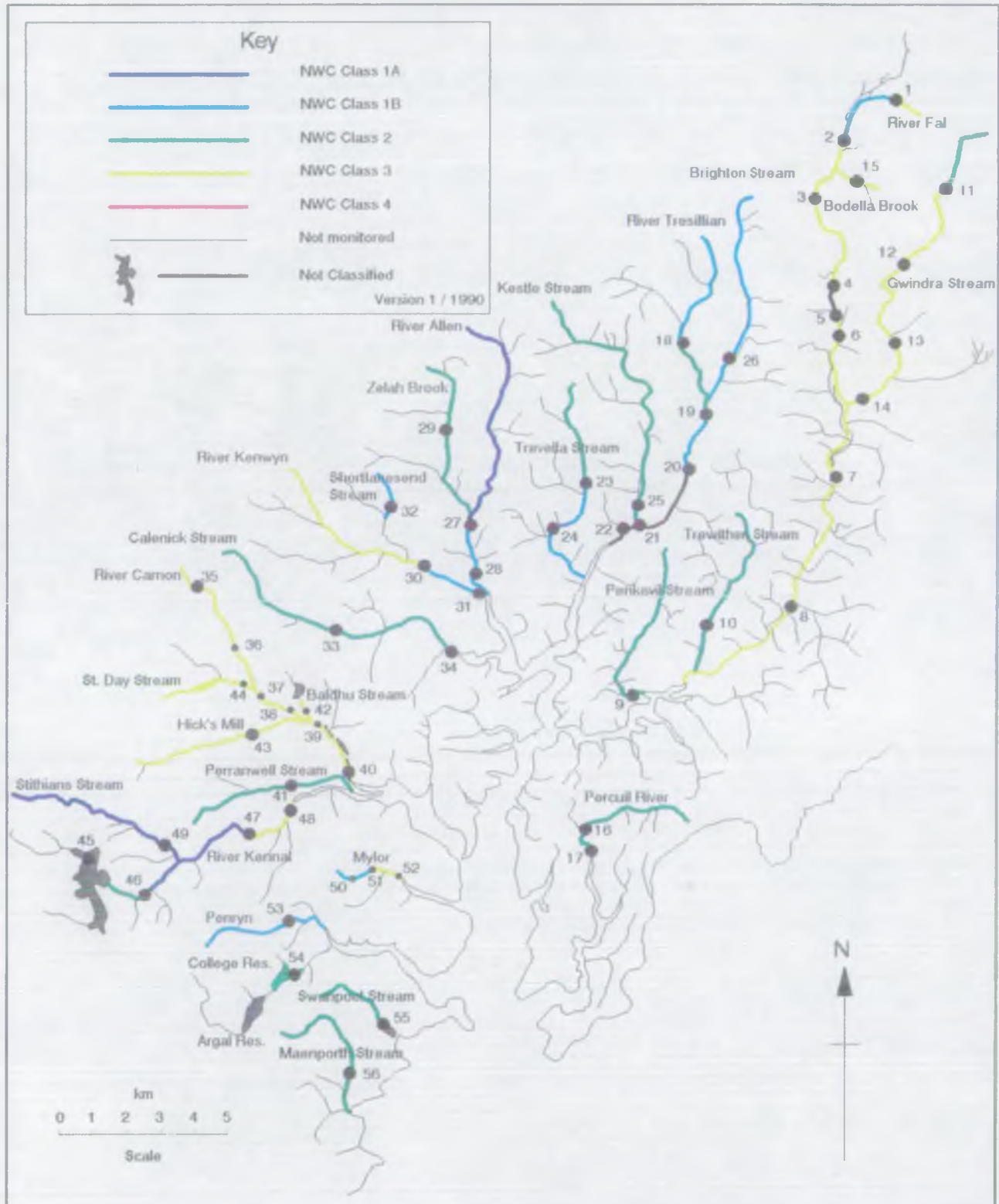
NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
1990 RIVER WATER QUALITY CLASSIFICATION
CATCHMENT: PAL (20)

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
27	ALLEN	IDLESS BRIDGE	R19D018	SW 8218 4701	7.3	7.3	1B	2	1B	1B	1B	1B	1A
28	ALLEN	MORRIS LAUNDRY BRIDGE	R19D004	SW 8268 4505	2.2	9.5	1B	2	1B	1B	1B	1B	1B
	ALLEN	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.1	9.6	1B	2	1B	1B	1B	1B	1B
29	ZELAH BROOK	GWARNICK MILL	R19D030	SW 8165 4923	3.0	3.0	1B						2
	ZELAH BROOK	ALLEN CONFLUENCE (INFERRED STRETCH)			2.2	5.2	1B						2
30	KENWYN	NEW MILL	R19D016	SW 8085 4587	5.1	5.1	1B	1B	1B		2	2	3
31	KENWYN	BOSVIGO BRIDGE	R19D007	SW 8161 4528	1.0	6.1	1B	1B	1B		2	2	1B
	KENWYN	NORMAL TIDAL LIMIT (INFERRED STRETCH)			1.4	7.5	1B	1B	1B		2	2	1B
32	SHORTLANESEND STREAM	ROSEWORTHY	R19D015	SW 8000 4710	1.6	1.6	1B						1B
33	CALENICK STREAM	RUGUS	R19D025	SW 7840 4381	4.5	4.5	1B	1B	1B		2	2	2
34	CALENICK STREAM	CALENICK BRIDGE	R19D006	SW 8220 4310	4.5	9.0	1B	1B	1B		2	2	2
	CALENICK STREAM	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.1	9.1	1B	1B	1B		2	2	2
35	CARNON RIVER	CHACEWATER VIADUCT	R19E016	SW 7446 4520	0.8	0.8	3	3	3	3	3	3	3
36	CARNON RIVER	BELOW CHACEWATER S T W	R19E008	SW 7560 4308	2.4	3.2	3	3	3	3	3	3	3
37	CARNON RIVER	TWELVEHEADS	R19E001	SW 7618 4194	1.6	4.8	3	3	3	3	3	3	3
38	CARNON RIVER	BELOW COUNTY AND WELLINGTON ADITS	R19E015	SW 7669 4146	0.9	5.7	3	3	3	3	3	3	3
39	CARNON RIVER	BISSOE BRIDGE	R19E003	SW 7758 4115	0.6	6.3	3	3	3	3	3	3	3
40	CARNON RIVER	DEVORAN BRIDGE	R19E004	SW 7910 3941	2.6	8.9	3	3	3	3	3	3	3
	CARNON RIVER	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.1	9.0	3	3	3	3	3	3	3
41	PERRANWELL STREAM	PERRANWELL	R19E020	SW 7758 3940	3.5	3.5	1A	1B					2
	PERRANWELL STREAM	CARNON CONFLUENCE (INFERRED STRETCH)			1.3	4.8	1A	1B					2
42	BALDHU STREAM	BISSOE BRIDGE	R19E021	SW 7760 4146	1.4	1.4	1B	3					3
	BALDHU STREAM	CARNON CONFLUENCE (INFERRED STRETCH)			0.2	1.6	1B	3					3
43	HICK'S MILL STREAM	HICK'S MILL	R19E019	SW 7673 4115	4.5	4.5	1B	3					3
	HICK'S MILL STREAM	CARNON CONFLUENCE (INFERRED STRETCH)			0.4	4.9	1B	3					2
44	ST DAY STREAM	PRIOR TO R.CARNON	R19E022	SW 7595 4225	2.9	2.9	1B	3					3
	ST DAY STREAM	CARNON CONFLUENCE (INFERRED STRETCH)			0.1	3.0	1B	3					3
45	KENNAL	INFLOW, STITHIANS RES. (UNMON. STRETCH)			2.6	2.6	1A	1B	1B	1B	1B	2	
46	KENNAL	STITHIANS RESERVOIR	R19E018	SW 7195 3635	1.5	4.1	1A	1B	1B	1B	1B	2	
47	KENNAL	TREGOLLS BRIDGE	R19E005	SW 7300 3613	1.6	5.7	1A	1B	1B	1B	1B	2	2
48	KENNAL	PONSANOOH GAUGING STATION	R19E006	SW 7631 3768	4.6	10.3	1A	1B	1B	1B	1B	2	1A
	KENNAL	STICKEN BRIDGE	R19E007	SW 7735 3819	1.4	11.7	1B	1B	1B	1B	1B	2	3
	KENNAL	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.4	12.1	1B	1B	1B	1B	1B	2	3
49	STITHIANS STREAM	SEAUDEAUGH MOOR	R19E023	SW 7349 3735	4.9	4.9	1A	1B					1A

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 CATCHMENT: FAL (20)

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
	STITHIANS STREAM	KENNAL CONFLUENCE (INFERRED STRETCH)			0.7	5.6	1A	1B					1A
50	MYLOR STREAM	ABOVE MYLOR S T W	R19A036	SW 7884 3651	0.3	0.3	1A	1B	1B			3	1B
51	MYLOR STREAM	ENYS	R19A035	SW 7906 3651	0.3	0.6	1A	1B	1B			3	1B
52	MYLOR STREAM	MYLOR BRIDGE	R19A014	SW 8043 3611	1.6	2.2	1A	1B	1B			3	3
53	PENRYN RIVER	TREMOUTH	R19A037	SW 7735 3505	2.8	2.8	1B	1A					1B
	PENRYN RIVER	NORMAL TIDAL LIMIT (INFERRED STRETCH)			1.5	4.3	1B	1A					1B
54	ARGAL STREAM	INFLOW, COLLEGE RES. (UNMON. STRETCH)			4.9	4.9	1A						
	ARGAL STREAM	COLLEGE RESERVOIR	R19A033	SW 7718 3355	0.9	5.8	1A						2
	ARGAL STREAM	NORMAL TIDAL LIMIT (UNMON. STRETCH)			1.8	7.6	1A						
55	SWANPOOL STREAM	ABOVE SWANPOOL	R19A009	SW 8004 3166	2.7	2.7	1B				1B	2	2
	SWANPOOL STREAM	NORMAL TIDAL LIMIT (UNMON. STRETCH)			0.5	3.2	1B				1B	2	
56	MAENPORTH STREAM	TREGEDRA BRIDGE	R19A008	SW 7883 3028	4.0	4.0	1B						2
	MAENPORTH STREAM	NORMAL TIDAL LIMIT (INFERRED STRETCH)			1.6	5.6	1B						2

Fal, Tresillian, Allen, Kenwyn, Carnon & Kennal Catchments Water Quality - 1990



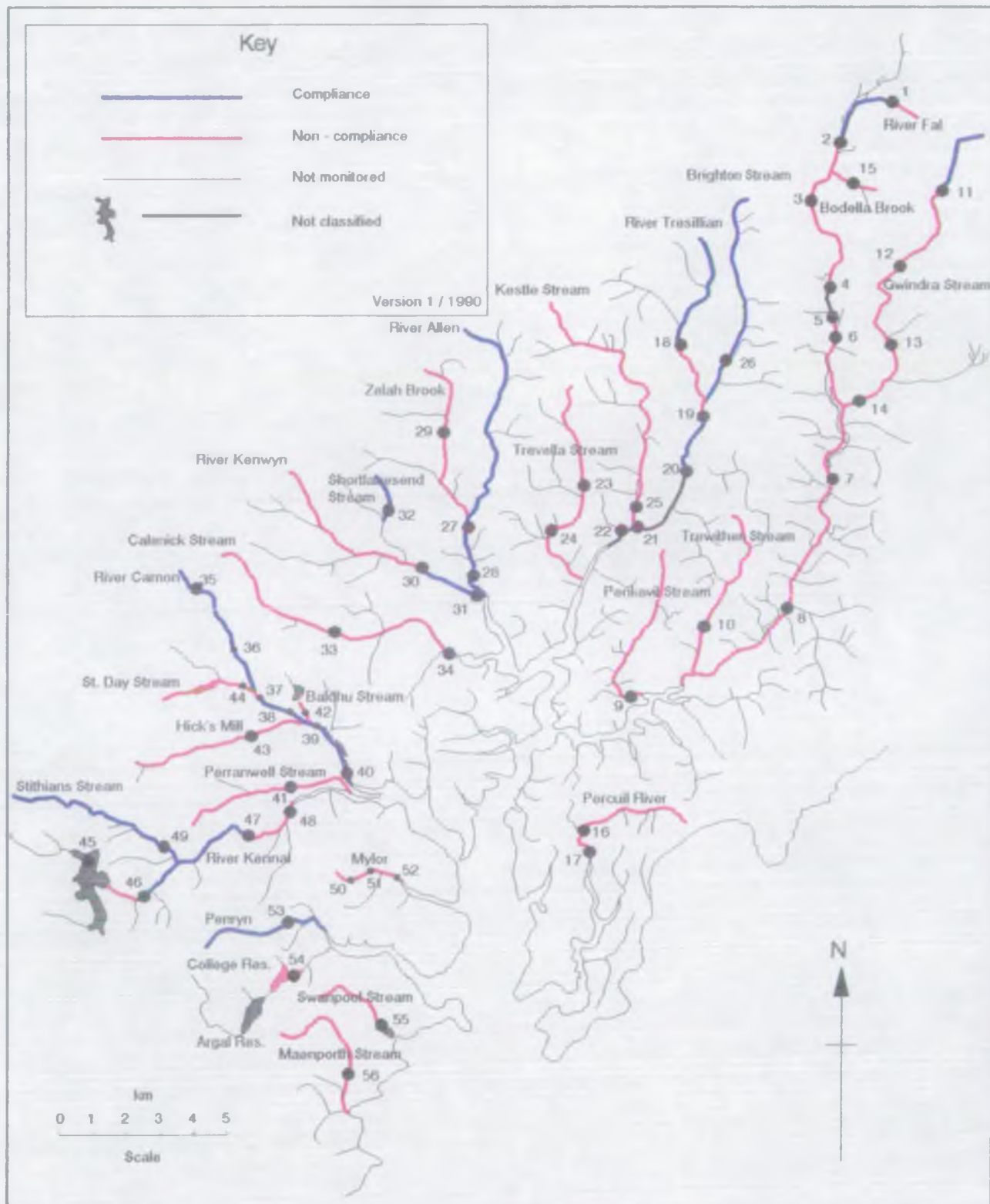
NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 CALCULATED DETERMINED STATISTICS USED FOR QUALITY ASSESSMENT
 CATCHMENT: FAL (20)

River	Reach upstream of	User Ref. Number	90 NMC Class	Calculated Determined Statistics used for Quality Assessment												S.Solids Class Mean		Total Copper Class 95tile	Total Zinc Class 95tile				
				pH Lower Class 5tile		pH Upper Class 95tile		Temperature Class 95tile		DO (%) Class 5tile		BOD (MDU) Class 95tile		Total Ammonia Class 95tile						Union. Ammonia Class 95tile			
FAL	THEOESS BRIDGE	R19C001	3	1A	5.9	1A	7.3	1A	14.8	1B	78.0	1A	2.2	1A	0.207	1A	0.010	3	32.2	1A	8.8	1A	31.5
FAL	GWERICH BRIDGE	R19C002	1B	1A	6.2	1A	7.2	1A	14.9	1B	76.0	1A	2.5	1A	0.175	1A	0.010	1A	11.5	1A	11.8	1A	41.3
FAL	RENEW BRIDGE	R19C003	3	1A	5.9	1A	7.1	1A	14.9	1B	77.5	1A	2.6	1A	0.212	1A	0.010	3	30.6	1A	12.8	1A	44.8
FAL	KERRICK BRIDGE	R19C011	3	1A	5.8	1A	6.8	1A	15.7	1B	78.3	1A	2.4	1A	0.139	1A	0.010	3	66.4	1A	9.9	1A	65.9
FAL	TERRAS BRIDGE	R19C004	3	1A	5.1	1A	7.0	1A	14.9	1A	80.4	1A	2.6	1A	0.237	1A	0.010	3	37.8	1A	16.3	1A	45.5
FAL	GRAMPOND BRIDGE	R19C005	3	1A	6.3	1A	7.1	1A	15.5	1A	80.7	1B	3.4	3	5.550	1A	0.014	3	38.7	1A	15.0	1A	105.4
FAL	THEOREY GAUGING SECTION	R19C006	3	1A	6.5	1A	7.2	1A	17.2	1B	79.4	1B	3.1	1B	0.313	1A	0.010	3	44.0	1A	15.3	1A	68.8
PERNEVIL STREAM	BRISON'S HILL WOOD	R19C019	2	1A	6.7	1A	8.1	1A	16.8	1A	82.3	2	5.2	1B	0.575	1A	0.010	1A	14.5	1A	5.0	1A	27.0
TREATHEN STREAM	MELLINGOGE	R19C016	2	1A	6.8	1A	7.9	1A	16.0	1B	78.5	1B	4.6	2	0.985	1A	0.010	1A	17.2	1A	6.0	1A	27.0
GUINFA STREAM	WARRAN BRIDGE	R19C014	2	1A	5.6	1A	7.5	1A	16.1	1B	68.1	2	7.9	1A	0.089	1A	0.010	1A	24.9	1A	8.0	1A	42.0
GUINFA STREAM	COONHERRY	R19C017	3	3	4.1	1A	7.0	1A	16.4	1B	73.1	2	5.3	2	0.961	1A	0.010	3	57.3	2	76.0	1A	157.0
GUINFA STREAM	GUINFA BRIDGE	R19C008	3	1A	5.9	1A	7.1	1A	16.1	2	54.0	3	10.6	3	5.525	1A	0.012	3	45.8	1A	14.6	1A	102.6
GUINFA STREAM	TREWAY BRIDGE	R19C009	3	1A	6.1	1A	7.1	1A	16.0	1B	72.5	2	5.7	3	3.650	1A	0.010	3	32.0	1A	14.3	1A	131.6
BOELLA BROOK	ORSELLA	R19C018	3	3	3.4	1A	6.6	1A	19.3	2	46.9	3	13.7	3	4.130	1A	0.010	3	54.4	1A	18.0	1A	59.0
PERCILL RIVER	LAWDOGE	R19C034	2	1A	7.2	1A	8.1	1A	15.3	1B	70.3	2	6.7	1A	0.080	1A	0.010	1A	5.3	1A	6.0	1A	11.0
PERCILL RIVER	TRETHEM MILL	R19C013	2	1A	7.2	1A	8.6	1A	18.8	2	58.5	1B	4.1	1B	0.570	1A	0.010	1A	9.2	1A	8.8	1A	10.9
TREWILLAN RIVER	TRENDAL	R19C033	1B	1A	6.8	1A	7.6	1A	15.9	1A	85.1	1B	3.1	1A	0.225	1A	0.010	1A	5.1	1A	6.0	1A	54.0
TREWILLAN RIVER	LADOCK WATER RUMPING SECTION	R19C001	2	1A	6.8	1A	7.5	1A	15.9	1A	83.5	2	5.1	1A	0.304	1A	0.010	1A	10.1	1A	7.0	1A	104.2
TREWILLAN RIVER	TRESONGAR BRIDGE	R19C002	1B	1A	7.0	1A	7.6	1A	16.1	1B	79.0	1B	4.8	1B	0.582	1A	0.010	1A	12.2	1A	6.9	1A	64.3
TREVELLA STREAM	PRODMORE BRIDGE	R19C009	2	1A	7.2	1A	7.7	1A	16.0	1A	80.3	1A	2.6	2	0.952	1A	0.010	1A	9.3	1A	11.4	1A	234.4
TREVELLA STREAM	TREQUINA BRIDGE	R19C014	1B	1A	7.1	1A	7.7	1A	16.6	1B	79.4	1B	3.7	1B	0.352	1A	0.010	1A	17.7	1A	7.9	1A	29.9
NESTLE STREAM	CANDOR FORD	R19C008	2	1A	6.6	1A	7.6	1A	16.3	1B	79.0	2	8.0	1B	0.540	1A	0.010	1A	14.4	1A	10.6	1A	34.2
BRIGHTON STREAM	NEW MILLS	R19C005	1B	1A	6.5	1A	7.5	1A	15.6	1B	64.4	1A	2.6	1A	0.254	1A	0.010	1A	8.0	1A	9.7	1A	179.7
ALLEN	WILLES BRIDGE	R19C018	1A	1A	7.2	1A	7.8	1A	17.3	1A	81.5	1A	2.6	1A	0.235	1A	0.010	1A	4.6	1A	9.5	1A	37.5
ALLEN	POWERS LAUNDRY BRIDGE	R19C004	1B	1A	7.2	1A	7.7	1A	17.1	1B	76.6	1B	3.5	1B	0.351	1A	0.010	1A	9.8	1A	5.5	1A	25.5
ZELAH BROOK	GWANNICK MILL	R19C030	2	1A	7.2	1A	7.7	2	21.8	1B	67.0	2	6.0	1B	0.600	1A	0.010	1A	15.9	1A	7.0	1A	31.0
RENNAN	NEW MILL	R19C016	3	1A	6.9	1A	7.7	1A	17.1	1A	81.0	1B	3.0	1A	0.090	1A	0.010	3	27.7	1A	24.0	1A	127.4
RENNAN	BOSWICK BRIDGE	R19C007	1B	1A	7.1	1A	7.8	1A	18.1	1A	86.8	1B	4.6	1B	0.400	1A	0.010	1A	11.8	1A	11.0	1A	55.8
SHORTLANESEND STREAM	ROSEBOROUGH	R19C015	1B	1A	6.8	1A	7.4	1A	17.8	1A	82.1	1A	2.6	1B	0.394	1A	0.010	1A	9.8	1A	3.0	1A	11.0
CALETICK STREAM	HUGUS	R19C025	2	1A	6.8	1A	7.7	1A	16.9	1B	78.2	2	6.4	2	0.868	1A	0.010	1A	8.2	-	-	-	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 CALCULATED DETERMINAND STATISTICS USED FOR QUALITY ASSESSMENT
 CRITCHMENT: FAL (20)

River	Reach upstream of	User Ref. Number	90 NWC Class	Calculated Determinand Statistics used for Quality Assessment																			
				pH Lower Class 5tile		pH Upper Class 95tile		Temperature Class 95tile		DO (%) Class 5tile		BOD (A.U) Class 95tile		Total Ammonia Class 95tile		Union. Ammonia Class 95tile		S.Solids Class Mean		Total Copper Class 95tile		Total Zinc Class 95tile	
CALENICK STREAM	CALENICK BRIDGE	R19E006	2	1A	6.6	1A	7.7	1A	16.5	1A	81.5	1B	3.6	1B	0.315	1A	0.010	1A	9.8	2	67.8	1A	292.0
CARRON RIVER	CHANCEWATER VIADUCT	R19E016	3	1A	6.1	1A	7.2	1A	17.5	2	44.0	2	5.3	1B	0.385	1A	0.010	1A	7.9	2	63.4	3	1126.0
CARRON RIVER	BELOW CHANCEWATER S T W	R19E008	3	1A	6.3	1A	7.2	1A	17.4	1B	61.0	1B	4.5	2	0.850	1A	0.010	3	32.7	2	427.2	3	1583.5
CARRON RIVER	TWELFTHENDS	R19E001	3	1A	5.2	1A	7.3	1A	16.6	1B	79.8	1A	2.6	1B	0.365	1A	0.010	1A	7.6	2	648.8	3	2280.0
CARRON RIVER	BELOW COUNTY AND WELLINGTON ADITS	R19E015	3	3	3.3	1A	6.4	1A	17.1	2	57.0	1A	2.5	1A	0.296	1A	0.010	1A	13.4	2	1280.0	3	8965.0
CARRON RIVER	RISSEIE BRIDGE	R19E003	3	3	3.2	1A	6.2	1A	20.2	1B	63.5	2	6.2	2	1.075	1A	0.010	1A	18.9	2	1339.0	3	12195.0
CARRON RIVER	DEVORAN BRIDGE	R19E004	3	3	3.5	1A	6.3	1A	19.3	1B	68.8	1B	3.5	2	1.247	1A	0.010	1A	19.1	2	872.5	3	19500.0
FERRANWELL STREAM	FERRANWELL	R19E020	2	1A	6.1	1A	7.4	1A	15.0	1B	74.4	1B	3.4	1B	0.390	1A	0.010	1A	11.1	2	1330.0	1A	31.0
BALHU STREAM	RUSSIE BRIDGE	R19E021	3	3	3.6	3	9.2	2	22.0	1B	65.1	2	9.0	3	2.092	3	0.490	3	28.8	2	350.0	3	87200.0
HICK'S MILL STREAM	HICK'S MILL	R19E019	3	1A	6.4	1A	7.4	1A	17.0	1A	86.0	1B	4.6	2	0.900	1A	0.010	1A	8.8	2	790.0	3	4000.0
ST DNY STREAM	PRIOR TO R.CARRON	R19E022	3	3	3.2	1A	6.6	2	23.0	1A	86.0	1A	2.4	1A	0.240	-	-	1A	4.4	-	-	-	-
KENNAL	TRECOLLS BRIDGE	R19E005	2	1A	6.3	1A	7.3	1A	18.8	1A	81.1	1B	4.9	2	0.829	1A	0.010	1A	6.0	1A	13.9	1A	25.7
KENNAL	ROSENDOON GRADING SECTION	R19E006	1A	1A	6.6	1A	7.5	1A	16.1	1A	86.5	1A	2.9	1A	0.194	1A	0.010	1A	5.6	1A	18.1	1A	135.6
KENNAL	SITTONEN BRIDGE	R19E007	3	1A	6.5	1A	7.2	1A	15.5	2	45.4	2	5.6	3	1.740	1A	0.010	1A	11.3	1A	11.6	1A	27.0
SITTHIANS STREAM	SEALREHUGH MOOR	R19E023	1A	1A	6.2	1A	7.4	1A	17.9	1A	86.1	1A	2.3	1A	0.118	1A	0.010	1A	5.7	1A	8.0	1A	43.0
MILOR STREAM	ABOVE MILOR S T W	R19A036	1B	1A	6.7	1A	7.4	1A	16.0	1B	77.0	1A	1.8	1A	0.040	1A	0.010	1A	2.8	1A	6.0	1A	36.0
MILOR STREAM	BEWS	R19A035	1B	1A	6.5	1A	7.4	1A	17.0	1B	67.0	1A	2.3	1A	0.174	1A	0.010	1A	3.5	1A	6.0	1A	27.0
MILOR STREAM	MILOR BRIDGE	R19A014	3	1A	6.8	1A	7.5	1A	16.9	2	58.9	2	7.3	3	5.440	1A	0.010	1A	7.6	1A	12.4	1A	76.6
PENRON RIVER	TREMLOUGH	R19A037	1B	1A	6.9	1A	7.8	1A	16.2	1A	82.2	1B	4.6	1A	0.199	1A	0.010	1A	21.1	1A	12.0	1A	62.0
ARGAL STREAM	COLLAGE RESERVOIR	R19A033	2	1A	7.0	1A	8.6	2	24.0	1A	86.0	2	8.6	1A	0.030	1A	0.010	1A	15.9	-	-	-	-
SHINFOOL STREAM	ABOVE SHINFOOL	R19A009	2	1A	7.0	1A	7.7	1A	18.7	1B	73.3	2	5.6	1A	0.082	1A	0.010	1A	20.0	1A	23.0	1A	115.0
MAENKORH STREAM	TREGEONA BRIDGE	R19A008	2	1A	6.8	1A	7.4	1A	18.9	2	54.2	1A	2.2	1A	0.188	1A	0.010	1A	6.0	1A	6.0	1A	33.0

Fal, Tresillian, Allen, Kenwyn, Carnon & Kennal Catchments Compliance - 1990



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION

1990 RIVER WATER QUALITY CLASSIFICATION

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

CATCHMENT: FAL (20)

River	Reach upstream of	Uber Ref. Number	pH Lower		pH Upper		Temperature		DO (%)		BOD (RTU)		Total Ammonia		Union. Ammonia		S.Solids		Total Copper		Total Zinc	
			N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P
FAL	TREBOSS BRIDGE	R19C001	34	-	34	-	34	-	34	-	33	-	34	-	34	-	34	4	34	-	34	-
FAL	GAVERIGH BRIDGE	R19C002	34	-	34	-	34	-	34	-	33	-	34	-	34	-	34	3	34	-	34	-
FAL	REIDY BRIDGE	R19C003	34	-	34	-	34	-	34	-	33	-	34	-	34	-	34	6	34	-	34	-
FAL	KERNICK BRIDGE	R19C001	21	-	21	-	20	-	20	-	20	-	21	-	20	-	21	11	21	-	21	-
FAL	TERRAS BRIDGE	R19C004	34	1	34	-	33	-	33	-	33	-	34	-	32	-	34	14	34	-	34	-
FAL	GRAPFOLD BRIDGE	R19C005	32	-	32	-	32	-	32	-	31	-	32	5	32	-	32	13	31	-	31	-
FAL	TREDEY GAUGING SECTION	R19C006	54	-	54	-	53	-	53	-	53	-	54	1	20	-	54	28	54	-	54	-
PENREVIL STREAM	BARSON'S HILL WOOD	R19C019	21	-	21	-	21	-	21	-	20	1	21	-	21	-	21	2	11	-	11	-
TRENTITHEN STREAM	MELTINGHOUSE	R19C016	21	-	21	-	21	-	21	-	20	-	21	1	21	-	21	3	11	-	11	-
GMINDRA STREAM	WHEEPAN BRIDGE	R19C014	20	-	20	-	20	-	20	-	19	-	20	-	19	-	20	5	19	-	19	-
GMINDRA STREAM	KOCKINERN	R19C017	20	3	20	-	20	-	20	-	19	-	20	-	20	-	20	12	19	-	19	-
GMINDRA STREAM	GMINDRA BRIDGE	R19C008	34	-	34	-	34	-	34	-	33	1	34	7	34	-	34	19	33	-	33	-
GMINDRA STREAM	TRENNY BRIDGE	R19C009	34	-	34	-	34	-	34	-	33	-	34	4	33	-	34	14	33	-	33	-
BODELLA BROOK	ORSELLA	R19C018	21	8	21	-	21	-	21	2	20	6	21	10	17	-	21	5	12	-	12	-
PERCUL RIVER	LANDHOSE	R19A034	21	-	21	-	21	-	21	2	21	1	21	-	19	-	21	-	20	-	20	-
PERCUL RIVER	TREDEY MILL	R19A013	25	-	25	-	25	-	24	5	25	2	24	3	23	-	25	2	20	-	20	-
TRESILLIAN RIVER	TREDEAL	R19C033	20	-	20	-	20	-	20	-	20	-	20	-	18	-	20	1	17	-	17	-
TRESILLIAN RIVER	LADOCK WATER PUMPING SECTION	R19C001	30	-	30	-	29	-	29	-	30	1	30	-	29	-	30	3	20	-	20	-
TRESILLIAN RIVER	TRESOMGAR BRIDGE	R19C002	31	-	31	-	31	-	31	-	31	1	31	-	30	-	31	2	21	-	21	-
TREVELLA STREAM	PROMORE BRIDGE	R19C009	30	-	30	-	30	-	30	1	30	-	30	3	30	-	30	1	23	-	23	-
TREVELLA STREAM	TREGLUNA BRIDGE	R19C014	28	-	28	-	28	-	28	1	28	2	28	1	26	-	28	4	20	-	20	-
RESILE STREAM	CHIDR FORD	R19C008	25	-	25	-	24	-	25	-	25	1	25	-	25	-	25	2	23	-	23	-
BRUGHON STREAM	NEW MILLS	R19C005	27	-	27	-	27	-	27	-	27	-	27	-	25	-	27	2	22	-	22	-
ALLEN	WLESS BRIDGE	R19C018	29	-	29	-	29	-	29	-	29	-	29	-	29	-	29	-	29	-	29	-
ALLEN	MCKESK LAUNDRY BRIDGE	R19C004	38	-	38	-	38	-	38	-	38	1	38	-	37	-	38	3	29	-	29	-
ZELEH BROOK	GNARICK MILL	R19C030	18	-	18	-	13	1	18	-	18	1	18	-	18	-	18	2	16	-	16	-
KENMAN	NEW MILL	R19C016	23	-	23	-	23	-	23	-	23	-	23	-	23	-	23	3	23	-	23	-
KENMAN	BOSWICK BRIDGE	R19C007	36	-	36	-	36	-	36	-	36	1	36	1	35	-	36	3	34	-	34	-
SHORTLANESEND STREAM	ROSEMORTHY	R19C015	20	-	20	-	20	-	20	-	20	-	20	-	20	-	20	1	11	-	11	-
CALENICK STREAM	HULIS	R19C025	22	-	22	-	22	-	22	-	22	1	22	1	20	-	22	2	20	-	20	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION

1990 RIVER WATER QUALITY CLASSIFICATION

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

CRITERION: PAL (20)

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
OLENICK STREAM	OLENICK BRIDGE	R196006	34	-	34	-	34	-	34	-	34	1	34	-	34	-	34	2	31	3	31	1
CARRON RIVER	CHANCEWATER VIADUCT	R196016	34	-	34	-	30	-	30	-	34	-	34	-	28	-	34	-	31	-	31	-
CARRON RIVER	BELOW CHANCEWATER S T W	R196008	35	-	35	-	35	-	35	-	35	-	35	-	34	-	35	-	32	-	32	-
CARRON RIVER	THELWHEADS	R196001	34	-	34	-	34	-	34	-	34	-	34	-	33	-	34	-	31	-	31	-
CARRON RIVER	BELOW COUNTY AND WELLINGTON ADITS	R196015	35	-	35	-	34	-	34	-	35	-	35	-	15	-	35	-	32	-	32	-
CARRON RIVER	BUSSIE BRIDGE	R196003	36	-	36	-	35	-	34	-	36	-	36	-	19	-	36	-	33	-	33	-
CARRON RIVER	DEWCHEN BRIDGE	R196004	54	-	54	-	54	-	54	-	54	-	54	-	16	-	54	-	54	-	54	-
PERRANWELL STREAM	PERRANWELL	R196020	20	-	20	-	20	-	20	1	20	1	20	1	20	-	20	1	11	1	11	-
BALCHU STREAM	BUSSIE BRIDGE	R196021	20	3	20	1	20	2	20	-	20	7	20	16	17	2	20	8	11	2	11	11
HICK'S MILL STREAM	HICK'S MILL	R196019	18	-	18	-	18	-	18	-	18	-	18	3	17	-	18	2	11	10	11	10
ST DAY STREAM	PRIOR TO R. CARRON	R196022	15	13	15	-	15	1	15	-	15	-	15	-	7	-	15	-	9	-	9	-
KENNAL	THECOLLS BRIDGE	R196005	22	-	22	-	20	-	20	-	21	2	22	3	20	-	22	-	22	-	22	-
KENNAL	PORSNOOTH GAUGING STATION	R196006	22	-	22	-	22	-	22	-	22	-	22	-	21	-	22	-	21	-	21	-
KENNAL	STICKEN BRIDGE	R196007	27	-	27	-	26	-	26	6	27	1	27	3	26	-	27	1	23	-	23	-
SIDDHANS STREAM	SEMPREUGH MOOR	R196023	20	-	20	-	20	-	20	-	19	-	20	-	20	-	20	-	12	-	12	-
MILOR STREAM	ABOVE MILOR S T W	R196036	12	-	12	-	12	-	12	1	12	-	12	-	10	-	12	-	12	-	12	-
MILOR STREAM	ENIS	R196035	20	-	20	-	19	-	19	2	19	-	20	-	18	-	20	-	12	-	12	-
MILOR STREAM	MILOR BRIDGE	R196014	25	-	25	-	25	-	25	11	25	7	25	17	25	-	25	-	23	-	23	-
PENRYN RIVER	TREMLOUGH	R196037	20	-	20	-	20	-	20	-	19	-	20	-	19	-	20	4	12	-	12	-
ARGAL STREAM	COLLEGE RESERVOIR	R196033	12	-	12	-	12	2	12	-	12	7	12	-	11	-	12	2	12	-	12	-
SMARCOOL STREAM	ABOVE SMARCOOL	R196009	27	-	27	-	26	-	26	-	27	1	27	-	25	-	27	4	19	-	19	-
MAENFORTH STREAM	THEGELVA BRIDGE	R196008	20	-	20	-	20	-	20	2	19	-	20	-	20	-	20	-	12	-	12	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS
 CATCHMENT: FAL (20)

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
FAL	TREGOSS BRIDGE	R19C001	-	-	-	-	-	-	-	29	-	-
FAL	GAVERIGAN BRIDGE	R19C002	-	-	-	-	-	-	-	-	-	-
FAL	RETEW BRIDGE	R19C003	-	-	-	-	-	-	-	22	-	-
FAL	KERNICK BRIDGE	R19C011	-	-	-	-	-	-	-	166	-	-
FAL	TERRAS BRIDGE	R19C004	-	-	-	-	-	-	-	51	-	-
FAL	GRAMPOUND BRIDGE	R19C005	-	-	-	-	-	256	-	55	-	-
FAL	TREGONEY GAUGING STATION	R19C006	-	-	-	-	-	-	-	76	-	-
PENKEVIL STREAM	PARSON'S HILL WOOD	R19C019	-	-	-	-	4	-	-	-	-	-
TREWITHEN STREAM	MELLINGOOSE	R19C016	-	-	-	-	-	41	-	-	-	-
GWINDRA STREAM	NANPEAN BRIDGE	R19C014	-	-	-	-	-	-	-	-	-	-
GWINDRA STREAM	GOONABARN	R19C017	18	-	-	-	-	-	-	129	-	-
GWINDRA STREAM	GWINDRA BRIDGE	R19C008	-	-	-	-	18	254	-	83	-	-
GWINDRA STREAM	TREWAY BRIDGE	R19C009	-	-	-	-	-	134	-	28	-	-
BODELLA BROOK	CARSELLA	R19C018	32	-	-	22	173	490	-	118	-	-
PERCUIL RIVER	LANHOOSE	R19A034	-	-	-	12	123	-	-	-	-	-
PERCUIL RIVER	TRETHEM MILL	R19A013	-	-	-	27	38	84	-	-	-	-
TRESILLIAN RIVER	TRENDEAL	R19D033	-	-	-	-	-	-	-	-	-	-
TRESILLIAN RIVER	LADOCK WATER PUMPING STATION	R19D001	-	-	-	-	2	-	-	-	-	-
TRESILLIAN RIVER	TRESOMGAR BRIDGE	R19D002	-	-	-	-	-	-	-	-	-	-
TREVELLA STREAM	FROGMORE BRIDGE	R19D009	-	-	-	-	-	207	-	-	-	-
TREVELLA STREAM	TREGURRA BRIDGE	R19D014	-	-	-	1	22	14	-	-	-	-
KESTLE STREAM	CANDOR FORD	R19D008	-	-	-	-	59	-	-	-	-	-
BRIGHTON STREAM	NEW MILLS	R19D005	-	-	-	-	-	-	-	-	-	-
ALLEN	IDLESS BRIDGE	R19D018	-	-	-	-	-	-	-	-	-	-
ALLEN	MORESK LAUNDRY BRIDGE	R19D004	-	-	-	-	-	-	-	-	-	-
ZELAH BROOK	GNARNICK MILL	R19D030	-	-	1	-	20	-	-	-	-	-
KENWYN	NEW MILL	R19D016	-	-	-	-	-	-	-	11	-	-
KENWYN	BOSVIGO BRIDGE	R19D007	-	-	-	-	-	-	-	-	-	-
SHORTLANESEND STREAM	ROSEWORTHY	R19D015	-	-	-	-	-	-	-	-	-	-
CALENICK STREAM	HUGUS	R19D025	-	-	-	-	27	24	-	-	-	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS
 CATCHMENT: FAL (20)

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
CALENICK STREAM	CALENICK BRIDGE	R19D006	-	-	-	-	-	-	-	-	70	-
CARNON RIVER	CHACWATER VIADUCT	R19E016	-	-	-	-	-	-	-	-	-	-
CARNON RIVER	BELOW CHACWATER S T W	R19E008	-	-	-	-	-	-	-	-	-	-
CARNON RIVER	TWELVEHEADS	R19E001	-	-	-	-	-	-	-	-	-	-
CARNON RIVER	BELOW COUNTY AND WELLINGTON ADITS	R19E015	-	-	-	-	-	-	-	-	-	-
CARNON RIVER	BISSOE BRIDGE	R19E003	-	-	-	-	-	-	-	-	-	-
CARNON RIVER	DEVORAN BRIDGE	R19E004	-	-	-	-	-	-	-	-	-	-
PERRANWELL STREAM	PERRANWELL	R19E020	-	-	-	7	14	26	-	-	3225	-
BALDHU STREAM	BISSOE BRIDGE	R19E021	28	2	2	-	80	199	2233	15	213	17340
HICK'S MILL STREAM	HICK'S MILL	R19E019	-	-	-	-	-	29	-	-	1875	1233
ST DAY STREAM	PRIOR TO R.CARNON	R19E022	36	-	7	-	-	-	-	-	-	-
KENNAL	TREGOLLS BRIDGE	R19E005	-	-	-	-	63	167	-	-	-	-
KENNAL	PONSANOOOTH GAUGING STATION	R19E006	-	-	-	-	-	-	-	-	-	-
KENNAL	STICKEN BRIDGE	R19E007	-	-	-	24	12	149	-	-	-	-
STITHIANS STREAM	SEANUREAUGH MOOR	R19E023	-	-	-	-	-	-	-	-	-	-
MYLOR STREAM	ABOVE MYLOR S T W	R19A036	-	-	-	4	-	-	-	-	-	-
MYLOR STREAM	ENYS	R19A035	-	-	-	16	-	-	-	-	-	-
MYLOR STREAM	MYLOR BRIDGE	R19A014	-	-	-	26	143	1655	-	-	-	-
PENRYN RIVER	TREMOUGH	R19A037	-	-	-	-	-	-	-	-	-	-
ARGAL STREAM	COLLEGE RESERVOIR	R19A033	-	-	12	-	187	-	-	-	-	-
SWANPOOL STREAM	ABOVE SWANPOOL	R19A009	-	-	-	-	11	-	-	-	-	-
MAENPORTH STREAM	TREGEDNA BRIDGE	R19A008	-	-	-	10	-	-	-	-	-	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
IDENTIFICATION OF POSSIBLE CAUSES OF NON-COMPLIANCE WITH RQO
CATCHMENT: PAL (20)

* = WORK ALREADY IN HAND

1990 Map Position Number	River	Reach upstream of	User Reference Number	Reach Length (km)	Possible causes of non-compliance
1	PAL	* TREGOSS BRIDGE	R19C001	3.3	CHINA CLAY DISCHARGE, POLLUTION (ONE OFF)
3	PAL	* RETEW BRIDGE	R19C003	2.3	CHINA CLAY DISCHARGE
4	PAL	* KERNICK BRIDGE	R19C011	3.0	CHINA CLAY DISCHARGE
6	PAL	* TERRAS BRIDGE	R19C004	0.6	CHINA CLAY DISCHARGE
7	PAL	* GRAMPOND BRIDGE	R19C005	5.6	CHINA CLAY DISCHARGE, SEWAGE TREATMENT WORKS
8	PAL	* TREGONEY GAUGING STATION	R19C006	4.3	CHINA CLAY DISCHARGE
9	PENKEVIL STREAM	PARSON'S HILL WOOD	R19C019	5.2	EUTROPHICATION, LAND RUN-OFF, FARMING ACTIVITIES
10	TREWITHER STREAM	MELLINGOOSE	R19C016	4.1	EUTROPHICATION
12	GWINDRA STREAM	* GOORABARN	R19C017	1.4	CHINA CLAY DISCHARGE
13	GWINDRA STREAM	* GWINDRA BRIDGE	R19C008	2.8	CHINA CLAY DISCHARGE, FARMING ACTIVITIES
14	GWINDRA STREAM	* TRENGAY BRIDGE	R19C009	3.1	SEWAGE TREATMENT WORKS, CHINA CLAY DISCHARGE, STORM OVERFLOW
15	BODELLA BROOK	* CARSELLA	R19C018	0.7	CHINA CLAY DISCHARGE, SEWAGE TREATMENT WORKS
16	PERCUIL RIVER	LANHOOSE	R19A034	3.7	LAND RUN-OFF, FARMING ACTIVITIES
17	PERCUIL RIVER	TRETHEM MILL	R19A013	1.8	LAND RUN-OFF
19	TRESILLIAN RIVER	LADOCK WATER PUMPING STATION	R19D001	2.3	LAND RUN-OFF
23	TREVELLA STREAM	FROGMORE BRIDGE	R19D009	3.8	LAND RUN-OFF
24	TREVELLA STREAM	TREGURRA BRIDGE	R19D014	2.0	LAND RUN-OFF
25	KESTLE STREAM	CANDOR FORD	R19D008	8.5	LAND RUN-OFF
29	LELAH BROOK	GMARNICK MILL	R19D030	3.0	LAND RUN-OFF, DROUGHT, FISH FARM EFFLUENT
30	KERWIN	NEW MILL	R19D016	5.1	ENGINEERING WORKS, LAND RUN-OFF
33	CALEWICK STREAM	HUGUS	R19D025	4.5	LAND RUN-OFF, FARMING ACTIVITIES
34	CALEWICK STREAM	CALEWICK BRIDGE	R19D006	4.5	MINING, CATCHMENT GEOLOGY
41	PERRANWELL STREAM	PERRANWELL	R19E020	3.5	POLLUTION (ON-GOING), MINING, CATCHMENT GEOLOGY
42	BALOHU STREAM	BISSOE BRIDGE	R19E021	1.4	UP-STREAM ABSTRACTIONS, MINING, CATCHMENT GEOLOGY
43	HICK'S MILL STREAM	HICK'S MILL	R19E019	4.5	MINING, CATCHMENT GEOLOGY, SEWAGE TREATMENT WORKS
44	ST DAY STREAM	PRIOR TO R. CARNON	R19E022	2.9	LAND RUN-OFF, BLUE-GREEN ALGAE
46	KENTAL	TREGOLLS BRIDGE	R19E005	1.6	LAND RUN-OFF, IMPOUNDMENT

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 IDENTIFICATION OF POSSIBLE CAUSES OF NON-COMPLIANCE WITH RQO
 CATCHMENT: PAL (20)

* = WORK ALREADY IN HAND

1990 Map Position Number	River	Reach upstream of	User Reference Number	Reach Length (km)	Possible causes of non-compliance
48	KERNAL	* STICKEN BRIDGE	R19E007	1.4	SEWAGE TREATMENT WORKS
50	MYLOR STREAM	ABOVE MYLOR S T W	R19A036	0.3	EUTROPHICATION SEWAGE TREATMENT WORKS, LAND RUN-OFF, POLLUTION (ONE OFF)
51	MYLOR STREAM	ENYS	R19A035	0.3	
52	MYLOR STREAM	* MYLOR BRIDGE	R19A014	1.6	
54	ARGAL STREAM	COLLEGE RESERVOIR	R19A033	0.9	BLUE-GREEN ALGAE, DROUGHT, EUTROPHICATION
55	SWANPOOL STREAM	* ABOVE SWANPOOL	R19A009	2.7	LAND RUN-OFF, URBANISATION, SPATE
56	MAENPORTH STREAM	TREGEDNA BRIDGE	R19A008	4.0	DROUGHT, FARMING