

ENVIRONMENTAL PROTECTION



NRA

National Rivers Authority

South West Region

**Lizard Peninsular Streams
and Helford River Catchment
River Water Quality
Classification 1990**

NOVEMBER 1991

WQP/91/021

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ACKNOWLEDGEMENTS

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

- R. Broome - Co-ordinator and Editor
- A. Burrows - Production of Maps and editorial support
- P. Grigorey - Production of Maps and editorial support
- B. Steele - Production of Forepage
- C. McCarthy - Administration and report compilation

Special thanks are extended to A. Burghes of Moonsoft, Exeter for computer support and the production of statistical schedules.

The following NRA sections also made valuable contributions:

- Pollution Control
- Field Control and Wardens
- Water Resources

Thanks also to R. Hamilton and J. Murray-Bligh for their contributions.

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

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ENVIRONMENT AGENCY



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RIVER WATER QUALITY IN THE LIZARD PENINSULA AND HELFORD RIVER CATCHMENT

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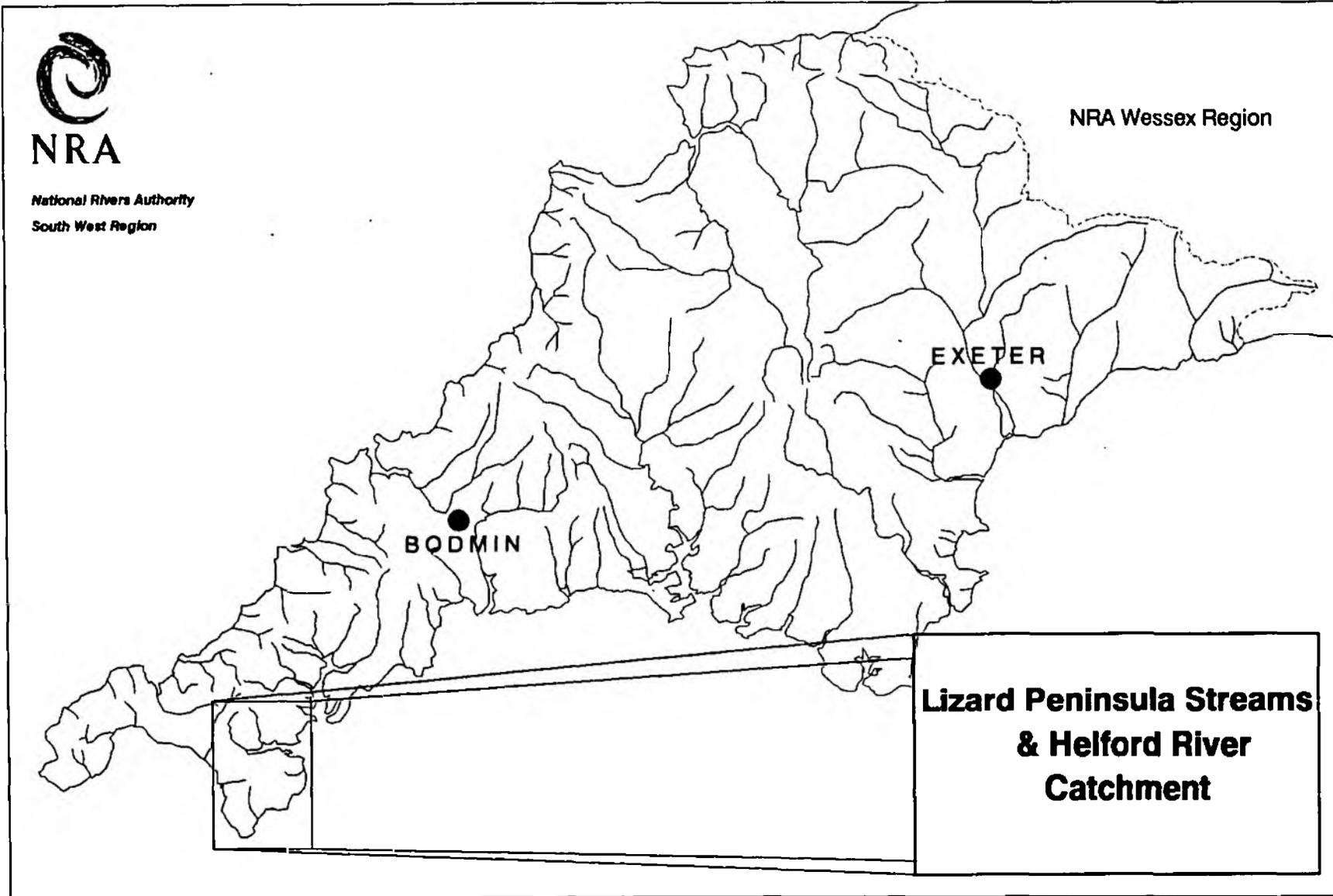
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**Lizard Peninsula Streams
& Helford River
Catchment**

Lizard Peninsula Streams & Helford River 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 Lizard Peninsula Streams and Helford River catchment.

2. LIZARD PENINSULAR STREAMS AND HELFORD RIVER CATCHMENT

The Porth Navas Stream and Trewince Stream flow over a distance of 3.8 km and 1.4 km respectively from their source to the tidal limit, (Appendix 10.1). Water quality was monitored at one location on each stream at approximately monthly intervals.

The Lestraines River flows over a distance of 7.4 km from its source to the tidal limit, (Appendix 10.1) and was monitored at two sites. The site at Eathorne Bridge was sampled on fifteen occasions during 1990 because of no recent water quality data and the site at Polwheveral Bridge was sampled at approximately monthly intervals.

The Rosevear (6.2 km), Porthallow Stream (4 km), St. Keverne Stream (3.1 km), Poltesco Stream (6.4 km) Mullion Stream (4.4 km) and Cury Stream (7.1 km) were monitored at approximately monthly intervals at one site between their source and the tidal limits, (Appendix 10.1).

Church Cove Stream and Gunwalloe Stream flow over a distance of 0.8 km and 4.6 km respectively from their source to the tidal limits, (Appendix 10.1) and were both monitored at one site on twenty occasions during 1990 because of no recent water quality data.

The Helford River and the Manaccan flow over a distance of 5.9 km and 7.8 km from their source to the tidal limits, (Appendix 10.1) and were monitored at two sites at approximately monthly intervals.

The Gweek River flows over a distance of 8 km from its source to the tidal limit, (Appendix 10.1) and was monitored at two sites. The site at Mether-Uny Mill Bridge was sampled on fifteen occasions because of no recent water quality data and the site at Gweek Bridge was sampled at approximately monthly intervals.

The Trelowarren Stream flows over a distance of 4.6 km from its source to the tidal limit, (Appendix 10.1) and was monitored at one location on fifteen occasions during 1990 because of no recent water quality data.

Throughout the Lizard Peninsular catchment one secondary tributary of the Lestraines River was monitored.

2.1 SECONDARY TRIBUTARY

The Carvedras Stream flows over a distance of 3.6 km from its source to the confluence with the Lestraines River, (Appendix 10.1) and was monitored at one location on fifteen 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 Lizard Peninsula Streams and Helford River 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 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

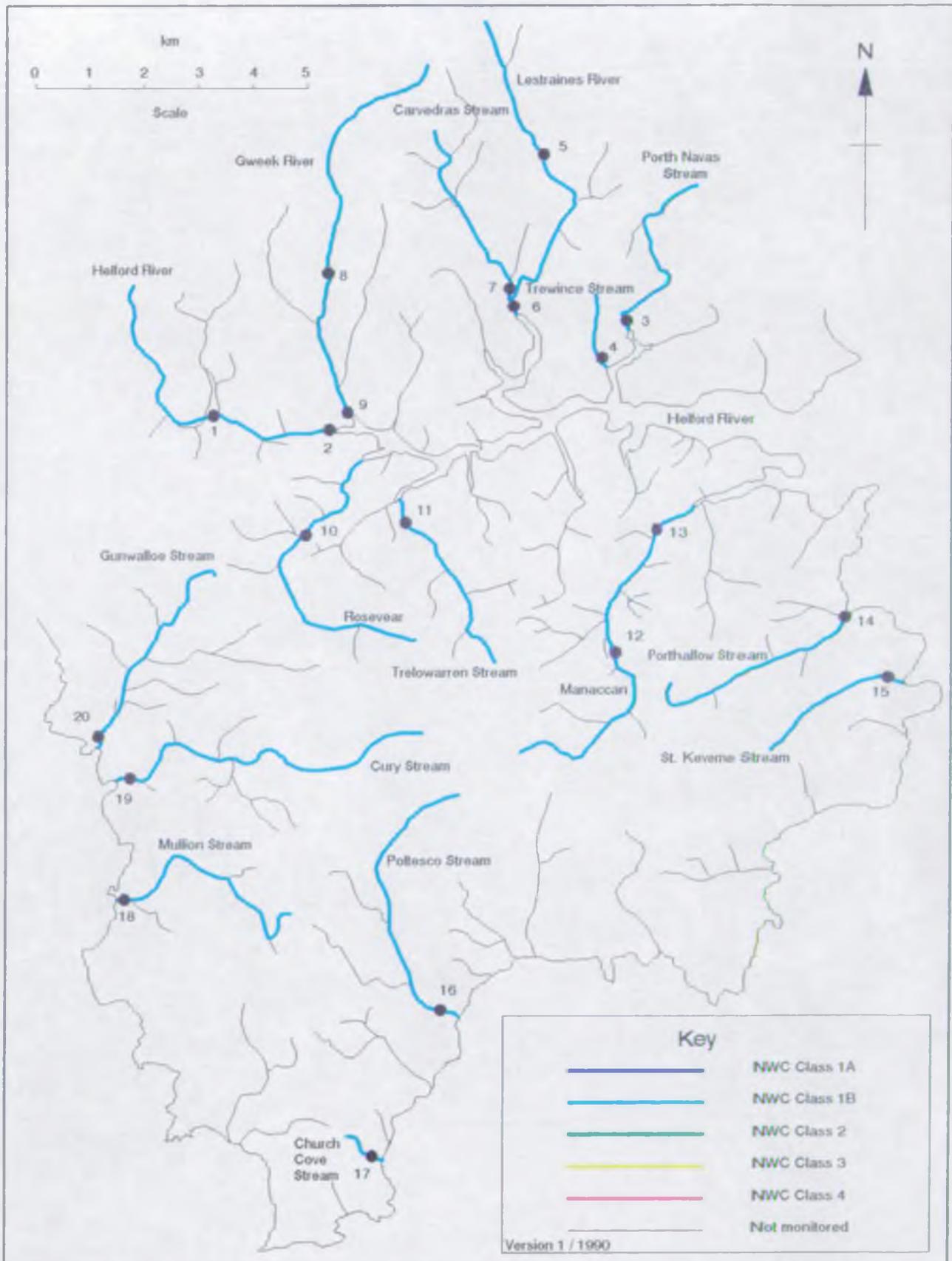
RIVER REACH	A segment of water, upstream from sampling point to the next sampling point.
RIVER LENGTH	River distance in kilometres.
RIVER QUALITY OBJECTIVE	That NWC class, which protects the most sensitive use of the water.
95 percentiles	Maximum limits, which must be met for at least 95% of the time.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

Lizard Peninsula Streams & Helford Catchment 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	<ul style="list-style-type: none"> (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) 	<ul style="list-style-type: none"> (i) Average BOD probably not greater than 1.5 mg/l (ii) Visible evidence of pollution should be absent 	<ul style="list-style-type: none"> (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
1B Good Quality	<ul style="list-style-type: none"> (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) 	<ul style="list-style-type: none"> (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) 	<ul style="list-style-type: none"> Water of less high quality than Class 1A but usable for substantially the same purposes
2 Fair Quality	<ul style="list-style-type: none"> (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) 	<ul style="list-style-type: none"> (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 	<ul style="list-style-type: none"> (i) Waters suitable for potable supply after advanced treatment (ii) Supporting reasonably good coarse fisheries (iii) Moderate amenity value

<p>poor Quality</p>	<p>(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</p>	<p>Similar to Class 3 of RPS</p>	<p>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</p>
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<p>4 Bad Quality</p>	<p>Waters which are inferior to Class 3 in terms of dissolved oxygen and likely to be anaerobic at times</p>	<p>Similar to Class 4 of RPS</p>	<p>Waters which are grossly polluted and are likely to cause nuisance</p>
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<p>X</p>	<p>DO greater than 10% saturation</p>		<p>Insignificant watercourses and ditches not usable, where the objective is simply to prevent nuisance developing</p>
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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 NH₄. **
 - (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 NH₄/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
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 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.

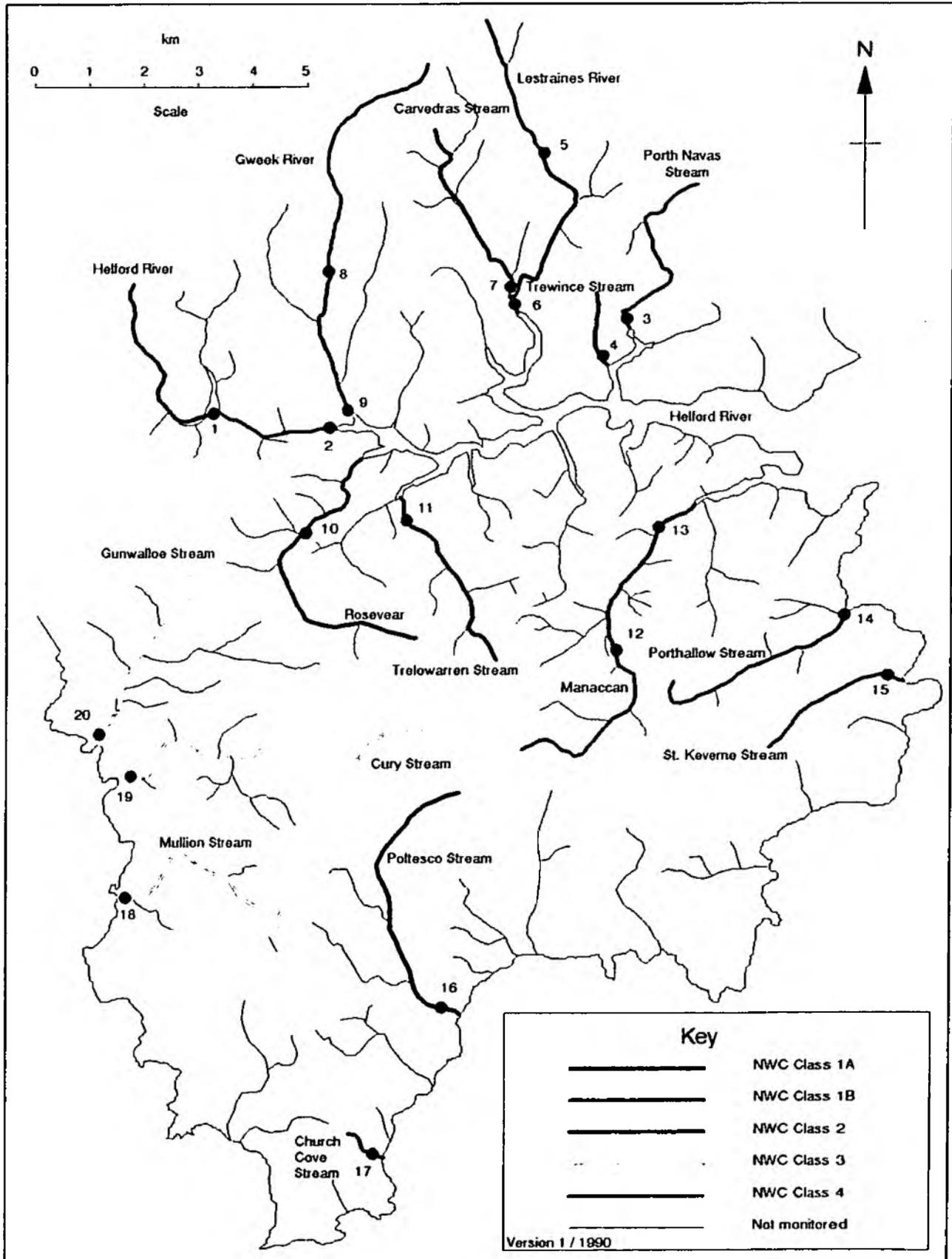
TOTAL ZINC

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: HELFORD (21)

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	HELFORD RIVER	MELLANGOOSE	R19A029	SW 6835 2679	3.7	3.7	1B	1B	1B	3	2	3	2
2	HELFORD RIVER	UPSTREAM OF GWECK MILL	R19A005	SW 7039 2649	2.2	5.9	1B	1B	1B	3	3	3	1B
3	PORTH NAVAS STREAM	ROSKELLAN BRIDGE	R19A001	SW 7575 2826	3.8	3.8	1B	1B	2	1B	1B	1B	1B
4	TREWINCE STREAM	PORTH NAVAS BRIDGE	R19A002	SW 7524 2775	1.4	1.4	1B	2	3	2	1B	1B	1A
5	LESTRAINES RIVER	EATHORNE BRIDGE	R19A026	SW 7418 3120	3.0	3.0	1B	1B	2	2	2	2	1B
6	LESTRAINES RIVER	POLMHEVERAL BRIDGE	R19A003	SW 7369 2845	3.6	6.6	1B	1B	2	2	2	2	2
	LESTRAINES RIVER	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.8	7.4	1B	1B	2	2	2	2	2
7	CARVEDRAS STREAM	PRIOR TO LESTRAINES RIVER	R19A027	SW 7374 2910	3.6	3.6	1B			2	2	2	2
8	GWECK RIVER	MERTHER-UNY MILL BRIDGE	R19A028	SW 7041 2911	5.3	5.3	1B	1B	1A	3	2	3	1B
9	GWECK RIVER	GWECK BRIDGE	R19A004	SW 7063 2675	2.7	8.0	1B	1B	1A	2	1B	2	1B
10	ROSEVEAR RIVER	ROSEVEAR	R19A006	SW 6970 2451	4.2	4.2	1B	1B	1B	2	2	2	2
	ROSEVEAR RIVER	NORMAL TIDAL LIMIT (INFERRED STRETCH)			2.0	6.2	1B	1B	1B	2	2	2	2
11	TRELOWARREN STREAM	TRELOWARREN MILL	R19A030	SW 7173 2483	4.5	4.5	1B			1B	3	3	2
	TRELOWARREN STREAM	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.1	4.6	1B			1B	3	3	2
12	MANACCAN RIVER	POLKANOGGO	R19A031	SW 7560 2224	4.0	4.0	1B	2	2	3	3	3	1B
13	MANACCAN RIVER	MANACCAN ROAD BRIDGE	R19A021	SW 7640 2468	3.0	7.0	1B	2	2	3	3	3	2
	MANACCAN RIVER	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.8	7.8	1B	2	2	3	3	3	2
14	PORTHALLOW STREAM	PORTHALLOW	R19A032	SW 7970 2318	3.9	3.9	1B			2	2	2	1B
	PORTHALLOW STREAM	MEAN HIGH WATER (INFERRED STRETCH)			0.1	4.0	1B			2	2	2	1B
15	ST KEVERNE STREAM	PORTRHOUSTOCK	R19A017	SW 8058 2181	2.9	2.9	1B	1B	1B	2	2	1B	1B
	ST KEVERNE STREAM	MEAN HIGH WATER (INFERRED STRETCH)			0.2	3.1	1B	1B	1B	2	2	1B	1B
16	POLTESCO RIVER	POLTESCO BRIDGE	R19A016	SW 7244 1568	5.9	5.9	1B	1B	1B			1A	1A
	POLTESCO RIVER	MEAN HIGH WATER (INFERRED STRETCH)			0.5	6.4	1B	1B	1B			1A	1A
17	CHURCH COVE STREAM	UPSTREAM OF CHURCH COVE	R19A018	SW 7136 1285	0.7	0.7	1B						1B
	CHURCH COVE STREAM	MEAN HIGH WATER (INFERRED STRETCH)			0.1	0.8	1B						1B
18	MULLION STREAM	UPSTREAM OF HARBOUR PORTH MELLIN	R19A012	SW 6679 1789	4.3	4.3	1B	1B	1B			3	3
	MULLION STREAM	MEAN HIGH WATER (INFERRED STRETCH)			0.1	4.4	1B	1B	1B			3	3
19	CUBY RIVER	UPSTREAM OF FOLDHU BEACH	R19A011	SW 6668 2002	6.9	6.9	1B	1B	1B			3	3
	CUBY RIVER	MEAN HIGH WATER (INFERRED STRETCH)			0.2	7.1	1B	1B	1B			3	3
20	GUNWALLOE STREAM	WINNIANTON FARM	R19A040	SW 6609 2070	4.3	4.3	1B	1B					3
	GUNWALLOE STREAM	MEAN HIGH WATER (INFERRED STRETCH)			0.3	4.6	1B	1B					3

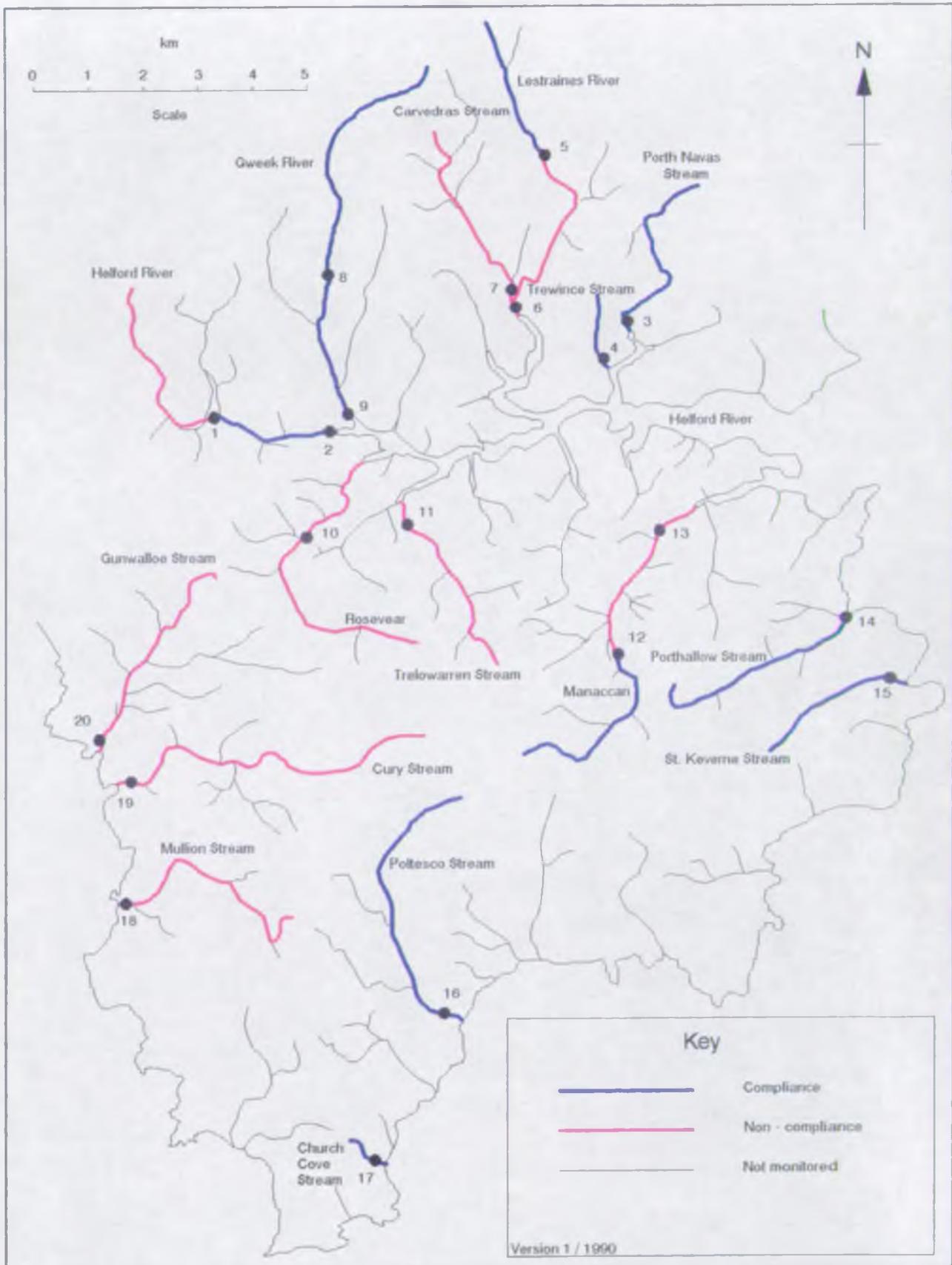
Lizard Peninsula Streams & Helford Catchment Water Quality - 1990



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 CALCULATED DETERMINAND STATISTICS USED FOR QUALITY ASSESSMENT
 CROMPTON: HELFORD (21)

River	Reach upstream of	User Ref. Number	90 NMC Class	Calculated Determinand Statistics used for Quality Assessment																			
				pH Lower Class 5tile		pH Upper Class 95tile		Temperature Class 95tile		DO (%) Class 5tile		BOD (ADU) Class 95tile		Total Ammonia Class 95tile		Union. Ammonia Class 95tile		S.Solids Class Mean		Total Copper Class 95tile		Total Zinc Class 95tile	
HELFORD RIVER	MELLANDOSE	R19A029	2	1A	6.8	1A	7.6	1A	15.6	1A	82.0	1A	2.9	2	1.345	1A	0.010	1A	11.3	1A	34.8	1A	42.8
HELFORD RIVER	UPSTREAM OF GNEEK MILL	R19A005	1B	1A	6.9	1A	7.6	1A	16.2	1B	79.8	1B	4.8	1B	0.438	1A	0.010	1A	19.4	1A	16.5	1A	41.5
FORTH NINAS STREAM	ROSELLAN BRIDGE	R19A001	1B	1A	6.8	1A	7.5	1A	17.7	1A	83.2	1B	3.4	1A	0.273	1A	0.010	1A	7.7	1A	8.5	1A	18.5
FIRENICE STREAM	FORTH NINAS BRIDGE	R19A002	1A	1A	6.9	1A	7.5	1A	17.2	1A	82.4	1A	2.6	1A	0.176	1A	0.010	1A	6.0	1A	9.0	1A	69.5
LESDRAINES RIVER	ERDORNE BRIDGE	R19A026	1B	1A	6.7	1A	7.5	1A	17.3	1B	78.4	1A	2.2	1A	0.288	1A	0.010	1A	7.9	1A	5.0	1A	94.1
LESDRAINES RIVER	RODNEVERAL BRIDGE	R19A003	2	1A	6.6	1A	7.4	1A	16.3	1B	73.1	1B	3.1	2	1.144	1A	0.010	1A	8.1	2	50.4	1A	18.8
ONVELRAS STREAM	PRIOR TO LESDRAINES RIVER	R19A027	2	1A	6.9	1A	7.7	1A	15.9	1A	89.2	1A	2.1	1A	0.146	1A	0.010	1A	4.9	2	70.7	1A	13.0
GNEEK RIVER	MERTHER-UNY MILL BRIDGE	R19A028	1B	1A	6.6	1A	7.4	1A	15.1	1B	80.0	1A	2.2	1A	0.138	1A	0.010	1A	5.4	1A	15.7	1A	66.7
GNEEK RIVER	GNEEK BRIDGE	R19A004	1B	1A	6.7	1A	7.3	1A	15.2	1A	81.6	1B	3.4	1A	0.301	1A	0.010	1A	12.1	1A	11.8	1A	59.0
ROSEVEAR RIVER	ROSEVEAR	R19A006	2	1A	7.0	1A	8.1	1A	16.5	1B	75.0	2	6.3	1B	0.510	1A	0.010	1A	14.8	1A	9.0	1A	35.5
TRELOWARNEN STREAM	TRELOWARNEN MILL	R19A030	2	1A	7.4	1A	8.5	1A	16.7	1A	82.2	2	8.2	1B	0.391	1A	0.010	1A	19.0	1A	8.7	1A	16.0
MARACON RIVER	POLANDGOD	R19A031	1B	1A	7.6	1A	8.2	1A	16.2	1A	85.0	1B	3.7	1B	0.457	1A	0.020	1A	11.7	1A	5.0	1A	13.0
MARACON RIVER	MARACON ROAD BRIDGE	R19A021	2	1A	7.5	1A	8.2	1A	16.7	1A	83.5	2	5.4	1B	0.560	1A	0.010	1A	13.5	1A	8.8	1A	16.2
FORTHALLON STREAM	FORTHALLON	R19A032	1B	1A	7.0	1A	8.2	1A	16.8	1A	85.4	1B	3.9	1B	0.354	1A	0.010	1A	10.0	1A	23.0	1A	23.6
ST REVERNE STREAM	FORTHHOUSECK	R19A017	1B	1A	6.7	1A	8.2	1A	16.8	1B	74.0	1B	3.3	1B	0.383	1A	0.010	1A	9.5	1A	34.8	1A	59.8
ROLESOD RIVER	ROLESOD BRIDGE	R19A016	1A	1A	7.4	1A	8.4	1A	16.6	1A	80.8	1A	2.3	1A	0.123	1A	0.010	1A	5.4	1A	11.3	1A	37.5
CHURCH COVE STREAM	UPSTREAM OF CHURCH COVE	R19A018	1B	1A	7.7	1A	8.9	1A	19.4	1B	69.5	1B	3.5	1A	0.180	1A	0.010	1A	24.9	1A	4.0	1A	71.0
MILLION STREAM	UPSTREAM OF HARBOUR FORTH MELLIN	R19A012	3	1A	7.8	1A	8.7	1A	15.9	1B	76.5	2	8.7	2	1.322	3	0.040	1A	6.6	1A	40.3	1A	48.0
CLRY RIVER	UPSTREAM OF FOLHU BEACH	R19A011	3	1A	7.2	1A	8.3	1A	17.6	3	13.2	1B	3.7	2	0.931	1A	0.018	1A	3.7	1A	8.0	1A	42.8
GRWALICE STREAM	MINNATION FARM	R19A040	3	1A	6.9	1A	7.6	1A	17.8	3	13.1	1B	4.0	1A	0.179	1A	0.010	1A	9.3	1A	6.0	1A	84.0

Lizard Peninsula Streams & Helford 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: HELFORD (21)

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	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F	N	F
HELFORD RIVER	MELLANDOSE	R19A029	20	-	20	-	20	-	20	-	20	-	20	1	20	-	20	2	20	-	20	-
HELFORD RIVER	UPSTREAM OF GWEEK MILL	R19A005	28	-	28	-	27	-	27	-	28	1	28	-	27	-	28	3	24	-	24	-
FORTH NERAS STREAM	ROSEBERRY BRIDGE	R19A001	28	-	28	-	27	-	27	-	28	-	28	-	27	-	28	2	24	-	24	-
DEWINGE STREAM	FORTH NERAS BRIDGE	R19A002	28	-	28	-	27	-	27	-	28	-	28	-	27	-	28	1	24	-	24	-
LESTRAINES RIVER	ENTHORE BRIDGE	R19A026	23	-	23	-	23	-	23	-	23	-	23	-	20	-	23	2	20	-	20	-
LESTRAINES RIVER	RODNEVERAL BRIDGE	R19A003	27	-	27	-	26	-	26	-	27	-	27	2	26	-	27	1	23	7	23	-
CARMELAS STREAM	PRIOR TO LESTRAINES RIVER	R19A027	23	-	23	-	22	-	22	-	23	-	23	-	20	-	23	1	20	10	20	-
GWEEK RIVER	MERTHER-LINY MILL BRIDGE	R19A028	23	-	23	-	23	-	23	-	23	-	23	-	23	-	23	1	20	-	20	-
GWEEK RIVER	GWEEK BRIDGE	R19A004	28	-	28	-	27	-	27	-	28	-	28	-	27	-	28	2	24	-	24	-
ROSEVEAR RIVER	ROSEVEAR	R19A006	28	-	28	-	27	-	27	-	28	2	28	-	27	-	28	2	24	-	24	-
TRELOWAREN STREAM	TRELOWAREN MILL	R19A030	25	-	25	-	25	-	25	-	25	1	25	-	24	-	25	3	22	-	22	-
MARACORN RIVER	FOLKWOOD	R19A031	20	-	20	-	19	-	20	-	20	-	20	-	19	-	20	2	19	-	19	-
MARACORN RIVER	MARACORN ROAD BRIDGE	R19A021	29	-	29	-	28	-	28	-	29	2	29	1	27	-	29	3	25	-	25	-
FORTHALLON STREAM	FORTHALLON	R19A032	27	-	27	-	27	-	27	-	27	-	27	-	26	-	27	2	27	-	27	-
ST NEVERNS STREAM	FORTHHOUSECROCK	R19A017	28	-	28	-	28	-	28	-	28	-	28	-	28	-	28	3	27	-	27	-
RODESOD RIVER	RODESOD BRIDGE	R19A016	34	-	34	-	34	-	34	-	34	-	34	-	34	-	34	1	33	-	33	-
CHURCH COVE STREAM	UPSTREAM OF CHURCH COVE	R19A018	20	-	20	-	20	-	20	-	19	-	20	-	20	-	20	3	12	-	12	-
MULLIN STREAM	UPSTREAM OF HARBOUR FORTH MELLIN	R19A012	24	-	24	-	24	-	24	-	24	2	24	2	23	2	24	1	24	-	24	-
CLRY RIVER	UPSTREAM OF FOLHU BEACH	R19A011	25	-	25	-	25	-	25	18	25	-	25	2	24	-	25	-	23	-	23	-
GLINWALDE STREAM	MINNARICH FARM	R19A040	20	-	20	-	20	-	20	16	19	-	20	-	20	-	20	2	12	-	12	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS
 CATCHMENT: HELPFORD (21)

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	
HELPFORD RIVER	MELLANGOOSE	R19A029	-	-	-	-	-	-	92	-	-	-	-
HELPFORD RIVER	UPSTREAM OF GWEEK MILL	R19A005	-	-	-	-	-	-	-	-	-	-	-
PORTH NAVAS STREAM	ROSKELLAN BRIDGE	R19A001	-	-	-	-	-	-	-	-	-	-	-
TREWINCE STREAM	PORTH NAVAS BRIDGE	R19A002	-	-	-	-	-	-	-	-	-	-	-
LESTRAINES RIVER	EATHORNE BRIDGE	R19A026	-	-	-	-	-	-	-	-	-	-	-
LESTRAINES RIVER	POLMHEVERAL BRIDGE	R19A003	-	-	-	-	-	-	63	-	-	129	-
CARVEDRAS STREAM	PRIOR TO LESTRAINES RIVER	R19A027	-	-	-	-	-	-	-	-	-	77	-
GWEEK RIVER	MERTHER-UNY MILL BRIDGE	R19A028	-	-	-	-	-	-	-	-	-	-	-
GWEEK RIVER	GWEEK BRIDGE	R19A004	-	-	-	-	-	-	-	-	-	-	-
ROSEVEAR RIVER	ROSEVEAR	R19A006	-	-	-	-	-	26	-	-	-	-	-
TRELOWARREN STREAM	TRELOWARREN MILL	R19A030	-	-	-	-	-	64	-	-	-	-	-
MANACCAN RIVER	POLKANOGGO	R19A031	-	-	-	-	-	-	-	-	-	-	-
MANACCAN RIVER	MANACCAN ROAD BRIDGE	R19A021	-	-	-	-	-	7	-	-	-	-	-
PORTHALLOW STREAM	PORTHALLOW	R19A032	-	-	-	-	-	-	-	-	-	-	-
ST KEVERNE STREAM	PORTRHOUSTOCK	R19A017	-	-	-	-	-	-	-	-	-	-	-
POLTESCO RIVER	POLTESCO BRIDGE	R19A016	-	-	-	-	-	-	-	-	-	-	-
CHURCH COVE STREAM	UPSTREAM OF CHURCH COVE	R19A018	-	-	-	-	-	-	-	-	-	-	-
MULLION STREAM	UPSTREAM OF HARBOUR PORTH MELLIN	R19A012	-	-	-	-	-	73	89	90	-	-	-
CURY RIVER	UPSTREAM OF FOLDHU BEACH	R19A011	-	-	-	-	78	-	33	-	-	-	-
GUNWALLOE STREAM	WINNANTON FARM	R19A040	-	-	-	-	78	-	-	-	-	-	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 IDENTIFICATION OF POSSIBLE CAUSES OF NON-COMPLIANCE WITH RQO
 CATCHMENT: HELPFORD (21)

1990 Map Position Number	River	Reach upstream of	User Reference Number	Reach Length (km)	Possible causes of non-compliance
1	HELFPORD RIVER	MELLANGOOSE	R19A029	3.7	LAND RUN-OFF, FARMING ACTIVITIES
6	LESTRAINES RIVER	POLDHEVERAL BRIDGE	R19A003	3.6	LAND RUN-OFF, UP-STREAM TRIBUTARY OF POOR QUALITY, MINING
7	CARVEDRAS STREAM	PRIOR TO LESTRAINES RIVER	R19A027	3.6	MINING, CATCHMENT GEOLOGY
10	ROSEVEAR RIVER	ROSEVEAR	R19A006	4.2	LAND RUN-OFF, FARMING ACTIVITIES
11	TRELOWARREN STREAM	TRELOWARREN MILL	R19A030	4.5	LAND RUN-OFF, FARMING ACTIVITIES, WASTE DISPOSAL SITE
13	MANACCAN RIVER	MANACCAN ROAD BRIDGE	R19A021	3.0	LAND RUN-OFF, FARMING ACTIVITIES
18	MULLION STREAM	UPSTREAM OF HARBOUR PORTH MELL	R19A012	4.3	LAND RUN-OFF, SEWAGE TREATMENT WORKS
19	CURY RIVER	UPSTREAM OF POLDHU BEACH	R19A011	6.9	LAND RUN-OFF, EUTROPHICATION
20	GURWALLOE STREAM	WINNIANTON FARM	R19A040	4.3	EUTROPHICATION