

## Environmental Protection Report

Mount's Bay and  
Lands End Streams Catchment  
River Water Quality  
Classification 1991

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WQP/92/0025  
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*National Rivers Authority*

*South West Region*

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R Broome - Co-ordinator and Editor  
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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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ENVIRONMENT AGENCY



130041

# RIVER WATER QUALITY IN THE MOUNT'S BAY AND LANDS END STREAMS CATCHMENT

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# National Rivers Authority South West Region



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South West Region

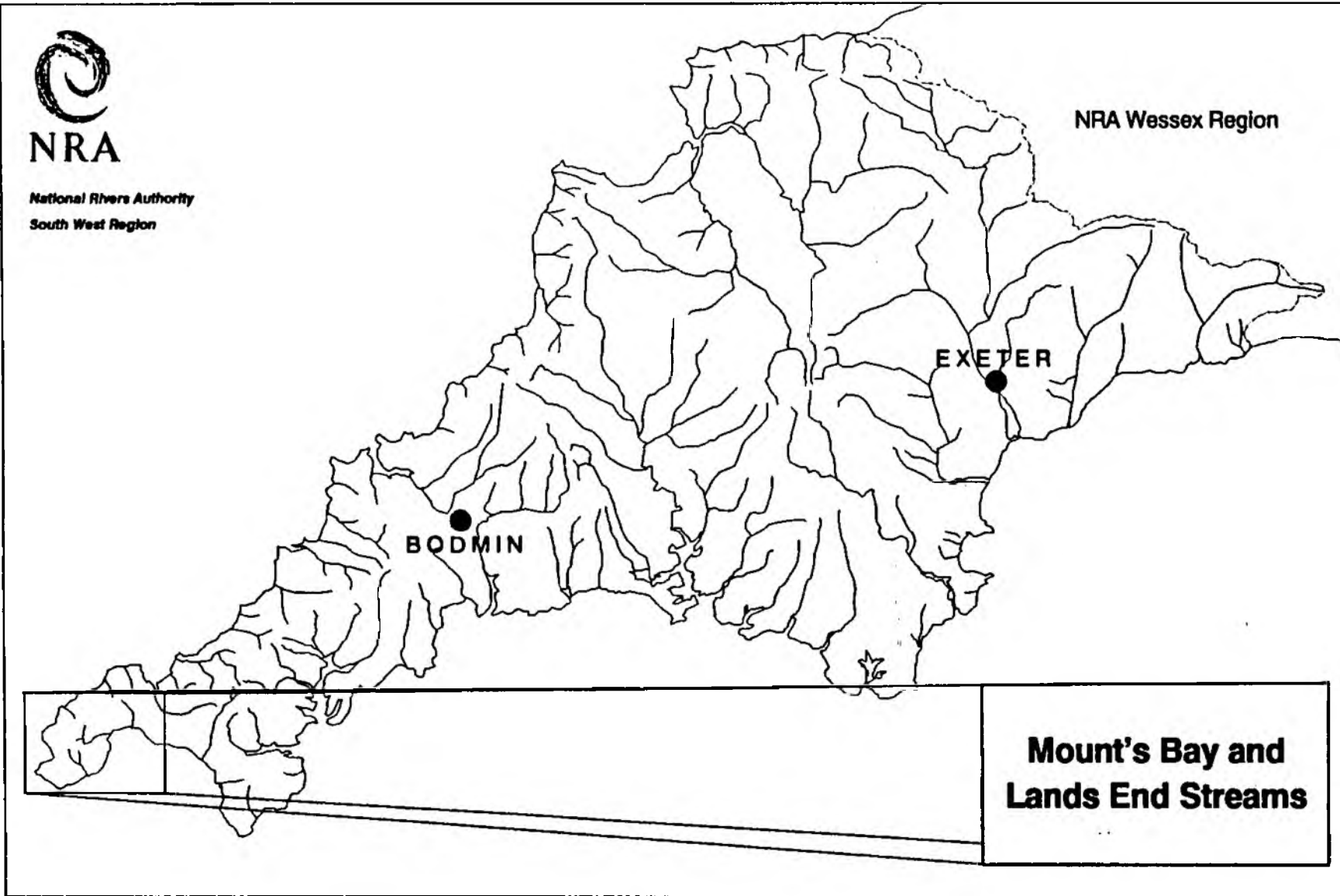
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Mount's Bay and Lands End Streams

Mount's Bay and  
Lands End Streams



## 1. INTRODUCTION

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

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

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

This report presents the river water quality classification for 1991 for monitored river reaches in the Mounts Bay and Lands End Streams catchment.

## 2. MOUNT'S BAY AND LANDS END STREAMS CATCHMENT

Newlyn River flows over a distance of 11.6 km respectively from its source to the tidal limits, (Appendix 8.1). Water quality was monitored at approximately monthly intervals at four locations.

Trevaylor Stream (7.2 km), Porthleven Stream (4.1 km), Marazion River (10.5 km), were all monitored at approximately monthly intervals at two sites between their source and the tidal limits, (Appendix 8.1).

Chyandour Stream (5.3 km), Lariggan River (6.5 km), Zennor Stream (2.5 km), Lamorna Stream (6.1 km), Penberth Stream (6.0 km) and Tregaseal Stream (4.9 km) were monitored at approximately monthly intervals at one location between their source and the tidal limit, (Appendix 8.1).

Throughout the Lands End Streams catchment one secondary tributary of the Marazion River, one secondary tributary of Trevaylor Stream, two secondary tributaries of the Newlyn River and one secondary tributary of the Lamorna Stream were monitored. In addition the Drift Reservoir was monitored at one location at approximately monthly intervals.

### 2.1 SECONDARY TRIBUTARIES

The Tregilliowe Stream flows over a distance of 2.7 km from its source to the confluence with the Marazion Stream, (Appendix 8.1) and was monitored at one location at approximately monthly intervals.

The Rosemorran Stream flows over a distance of 4.3 km from its source to the confluence with the Trevaylor Stream, (Appendix 8.1) and was monitored at one location at approximately monthly intervals.

The Trereife Stream flows over a distance of 1.6 km from its source to the confluence with the Newlyn River, (Appendix 8.1) and was sampled at two locations at approximately monthly intervals.

Sancreed Brook flows over a distance of 3.8 km from its source to the confluence with the Newlyn River, (Appendix 8.1) and was monitored at one location at approximately monthly intervals. Carn Euny Brook flows over a distance of 6.9 km from its source to the confluence with the Lamorna Stream, (Appendix 8.1) and was monitored at one location at approximately monthly intervals.

Monitoring points are all situated in the lower reaches.

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

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

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

#### 3.1 River Quality Objectives

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

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

The RQOs currently in use in the River Lands End Streams catchment are identified in Appendix 8.1.

#### 3.2 River Quality Classification

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

Table 1 - National Water Council - River Classification System

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

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

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

#### 4. 1991 RIVER WATER QUALITY CLASSIFICATION

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

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

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

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

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

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

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

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

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



6. GLOSSARY OF TERMS

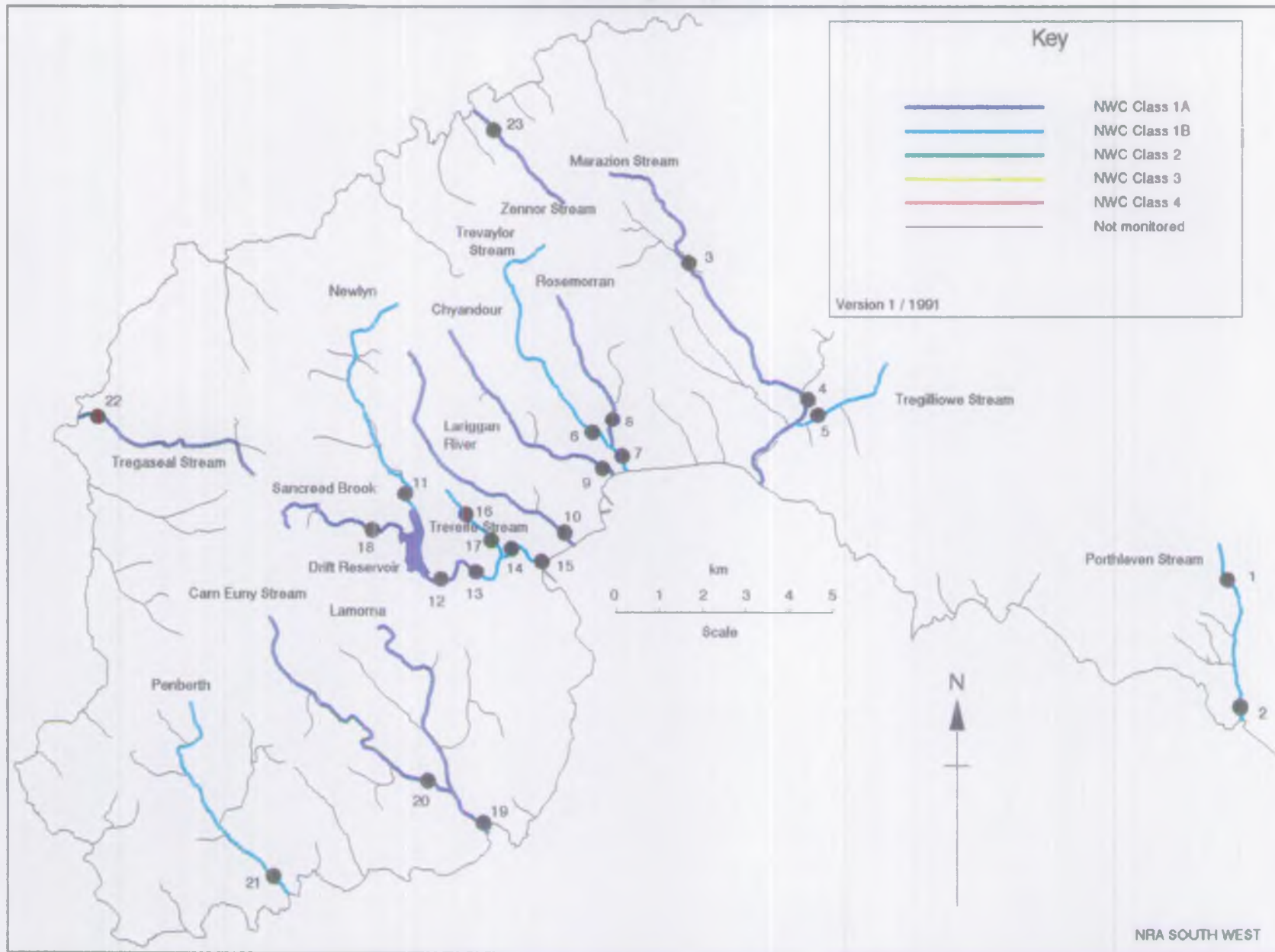
RIVER REACH	A segment of water, upstream from sampling point to the next sampling point.
RIVER LENGTH	River distance in kilometres.
RIVER QUALITY OBJECTIVE	That NWC class, which protects the most sensitive use of the water.
95 percentiles	Maximum limits, which must be met for at least 95% of the time.
5 percentiles	Minimum limits, which must be met for at least 95% of the time.
BIOLOGICAL OXYGEN DEMAND (5 day carbonaceous ATU)	A standard test measuring the microbial uptake of oxygen - an estimate of organic pollution.
pH	A scale of acid to alkali.
UN-IONISED AMMONIA	Fraction of ammonia poisonous to fish, $NH^3$ .
SUSPENDED SOLIDS	Solids removed by filtration or centrifuge under specific conditions.
USER REFERENCE NUMBER	Reference number allocated to a sampling point.
INFERRED STRETCH	Segment of water, which is not monitored and whose water quality classification is assigned from the monitored reach upstream.

7. REFERENCES

Reference

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

# Mount's Bay and Lands End Streams River Quality Objectives



## BASIC DETERMINAND ANALYTICAL SUITE FOR ALL CLASSIFIED RIVER SITES

pH as pH Units

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

Water temperature (Cel)

Oxygen dissolved & saturation

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## MVC RIVER QUALITY CLASSIFICATION SYSTEM

River Class	Quality criteria	Remarks	Current potential uses
	Class limiting criteria (95 percentile)		
1A Good Quality	<ul style="list-style-type: none"> <li>(i) Dissolved oxygen saturation greater than 80%</li> <li>(ii) Biochemical oxygen demand not greater than 3 mg/l</li> <li>(iii) Ammonia not greater than 0.4 mg/l</li> <li>(iv) Where the water is abstracted for drinking water, it complies with requirements for A2* water</li> <li>(v) Non-toxic to fish in EIFAC terms (or best estimates if EIFAC figures not available)</li> </ul>	<ul style="list-style-type: none"> <li>(i) Average BOD probably not greater than 1.5 mg/l</li> <li>(ii) Visible evidence of pollution should be absent</li> </ul>	<ul style="list-style-type: none"> <li>(i) Water of high quality suitable for potable supply abstractions and for all abstractions</li> <li>(ii) Game or other high class fisheries</li> <li>(iii) High amenity value</li> </ul>
1B Good Quality	<ul style="list-style-type: none"> <li>(i) DO greater than 60% saturation</li> <li>(ii) BOD not greater than 5 mg/l</li> <li>(iii) Ammonia not greater than 0.9 mg/l</li> <li>(iv) Where water is abstracted for drinking water, it complies with the requirements for A2* water</li> <li>(v) Non-toxic to fish in EIFAC terms (or best estimates if EIFAC figures not available)</li> </ul>	<ul style="list-style-type: none"> <li>(i) Average BOD probably not greater than 2 mg/l</li> <li>(ii) Average ammonia probably not greater than 0.5 mg/l</li> <li>(iii) Visible evidence of pollution should be absent</li> <li>(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</li> <li>(v) Class 1A and Class 1B together are essentially the Class 1 of the River Pollution Survey (RPS)</li> </ul>	Water of less high quality than Class 1A but usable for substantially the same purposes
2 Fair Quality	<ul style="list-style-type: none"> <li>(i) DO greater than 40% saturation</li> <li>(ii) BOD not greater than 9 mg/l</li> <li>(iii) Where water is abstracted for drinking water it complies with the requirements for A3* water</li> <li>(iv) Non-toxic to fish in EIFAC terms (or best estimates if EIFAC figures not available)</li> </ul>	<ul style="list-style-type: none"> <li>(i) Average BOD probably not greater than 5 mg/l</li> <li>(ii) Similar to Class 2 of RPS</li> <li>(iii) Water not showing physical signs of pollution other than humic colouration and a little foaming below weirs</li> </ul>	<ul style="list-style-type: none"> <li>(i) Waters suitable for potable supply after advanced treatment</li> <li>(ii) Supporting reasonably good coarse fisheries</li> <li>(iii) Moderate amenity value</li> </ul>

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	Similar to Class 4 of RPS	Waters which are grossly polluted and are likely to cause nuisance
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DO greater than 10% saturation	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<sub>4</sub>. \*\*
  - (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<sub>4</sub>/l to mg N/l)

Class 1A	0.4 mg NH <sub>4</sub> /l = 0.31 mg N/l
Class 1B	0.9 mg NH <sub>4</sub> /l = 0.70 mg N/l
	0.5 mg NH <sub>4</sub> /l = 0.39 mg N/l

## NWC RIVER CLASSIFICATION SYSTEM

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

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

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

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

## NWC RIVER CLASSIFICATION SYSTEM

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

## SOLUBLE COPPER

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

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

## TOTAL ZINC

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

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 CATCHMENT: LANDS END STREAMS (MOUNT'S BAY)

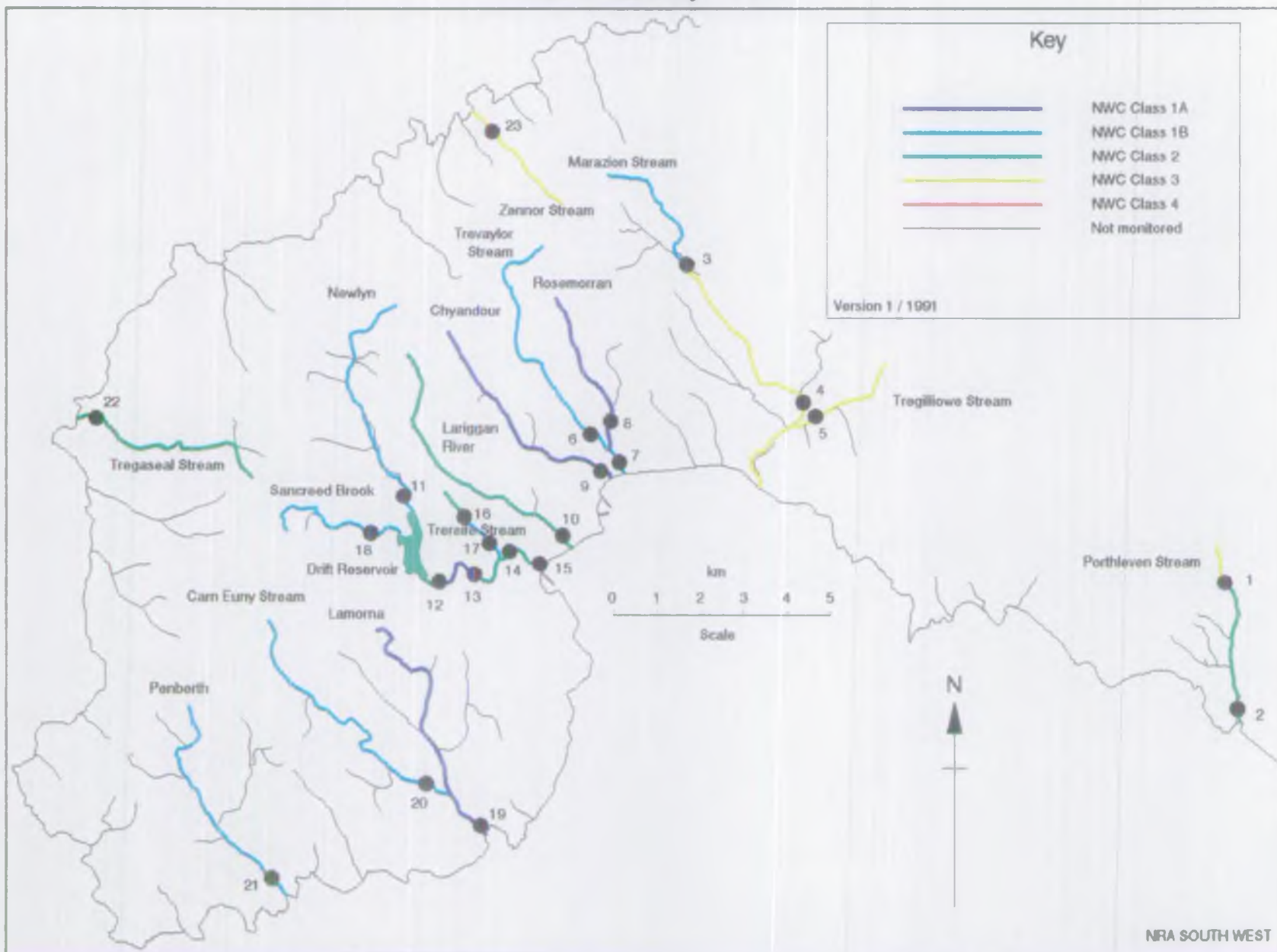
1991 Map Position Number	River	Reach upstream of	User Reference Number	National Grid Reference	Reach Length (km)	Distance from source (km)	River Quality Objective	85 RWC Class	86 RWC Class	87 RWC Class	88 RWC Class	89 RWC Class	90 RWC Class	91 RWC Class
1	PORHLEVEN STREAM	PENBRO	R21A013	SW 6283 2825	1.5	1.5	1B	1B	1B			2	3	3
2	PORHLEVEN STREAM	UPSTREAM OF HARBOUR, PORHLEVEN	R21A010	SW 6272 2600	2.3	3.8	1B	1B	1B			2	2	2
	PORHLEVEN STREAM	MEAN HIGH WATER (INFERRED STRETCH)			0.3	4.1	1B	1B	1B			2	2	2
3	MARAZION RIVER	NANCLDRA	R21A028	SW 4965 3603	3.4	3.4	1A	1B	1B	2		2	1A	1B
4	MARAZION RIVER	TRUTHWELL MILL BRIDGE	R21A002	SW 5237 3247	4.9	8.3	1A	1B	1B	2		2	2	3
	MARAZION RIVER	MEAN HIGH WATER (INFERRED STRETCH)			2.2	10.5	1A	1B	1B	2		2	2	3
5	TREGILLIOWE STREAM	GWALLON	R21A026	SW 5256 3213	2.3	2.3	1B						3	3
	TREGILLIOWE STREAM	MARAZION R. CONFL. (INFERRED STRETCH)			0.4	2.7	1B						3	3
6	TREVAYLOR STREAM	TRYTHOGGA	R21A022	SW 4769 3180	6.2	6.2	1B	1B	1A			2	1A	1B
7	TREVAYLOR STREAM	A.30 BRIDGE AT CHYANDOUR	R21A008	SW 4812 3115	0.9	7.1	1B	1B	1A			2	1B	1B
	TREVAYLOR STREAM	MEAN HIGH WATER (INFERRED STRETCH)			0.1	7.2	1B	1B	1A			2	1B	1B
8	ROSEMORRAN STREAM	KENEGIE COTTAGE	R21A021	SW 4788 3220	3.8	3.8	1A						1B	1A
	ROSEMORRAN STREAM	TREVAYLOR STREAM CONFL. (INF. STRETCH)			0.5	4.3	1A						1B	1A
9	CHYANDOUR BROOK	A.30 BRIDGE AT CHYANDOUR	R21A006	SW 4785 3102	5.2	5.2	1A	2	2		1B	1B	1A	1A
	CHYANDOUR BROOK	MEAN HIGH WATER (INFERRED STRETCH)			0.1	5.3	1A	2	2		1B	1B	1A	1A
10	LARIGGAN RIVER	WHERRY TOWN BRIDGE	R21A007	SW 4675 2945	6.5	6.5	1A	1B	1B			3	3	2
11	NEWLYN RIVER	SKIMMEL BRIDGE	R21A003	SW 4335 3018	6.4	6.4	1B	1B	1B	1B	1B	1B	1B	1B
	NEWLYN RIVER	INFLOW, DRIFT RES. (INFERRED STRETCH)			0.3	6.7	1A	1B	1B	1B	1B	1A	1B	1B
12	NEWLYN RIVER	DRIFT RESERVOIR	R21A018	SW 4381 2878	1.3	8.0	1A	1B	1B	1B	1B	1A	2	2
13	NEWLYN RIVER	BURYAS BRIDGE	R21A004	SW 4475 2908	1.2	9.2	1A	1B	1B	1B	1B	1A	1A	1A
14	NEWLYN RIVER	STABLE HOBBA	R21A027	SW 4550 2931	1.3	10.5	1B	2	1B	1B	1B	2	1B	2
15	NEWLYN RIVER	NEWLYN BRIDGE	R21A005	SW 4625 2903	1.0	11.5	1B	2	1B	1B	1B	2	2	2
	NEWLYN RIVER	NORMAL TIDAL LIMIT (INFERRED STRETCH)			0.1	11.6	1B	2	1B	1B	1B	2	2	2
16	TREREIFE STREAM	DENNIS PLACE	R21A019	SW 4461 3005	0.5	0.5	1B						2	2
17	TREREIFE STREAM	PRIOR TO NEWLYN RIVER	R21A020	SW 4520 2928	1.1	1.6	1B						1A	1B
18	SANCREED BROOK	LITTLE SELLAN BRIDGE	R21A017	SW 4256 2975	3.2	3.2	1A						1B	1B
	SANCREED BROOK	INFLOW, DRIFT RES. (INFERRED STRETCH)			0.6	3.8	1A						1B	1B



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 CATCHMENT: LANDS END STREAMS (NORTH COAST)

1991 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	91 RWC Class
19	LAMORNA STREAM	LAMORNA	R21A011	SW 4502 2410	6.1	6.1	1A	1A	1A			1A	1A	1A
20	CARN EUNY STREAM CARN EUNY STREAM	TREWOOFE LAMORNA STREAM CONFL. (INF. STRETCH)	R21A015	SW 4401 2524	6.4	6.4	1A	1B					2	1B
					0.5	6.9	1A	1B					2	1B
21	PENBERTH STREAM PENBERTH STREAM	PENBERTH BRIDGE MEAN HIGH WATER (INFERRED STRETCH)	R22A009	SW 4011 2289	5.7	5.7	1B	1A	1B				1B	1B
					0.3	6.0	1B	1A	1B				1B	1B
22	TREGSEAL STREAM TREGSEAL STREAM	PRIOR TO SEA MEAN HIGH WATER (INFERRED STRETCH)	R22A007	SW 3566 3231	4.7	4.7	1A	1B	1B				1B	2
					0.2	4.9	1A	1B	1B				1B	2
23	ZENNOR STREAM ZENNOR STREAM	ZENNOR MEAN HIGH WATER (INFERRED STRETCH)	R22A008	SW 4521 3860	1.9	1.9	1A	1A	1A				3	3
					0.6	2.5	1A	1A	1A				3	3

# Mount's Bay and Lands End Streams Water Quality - 1991



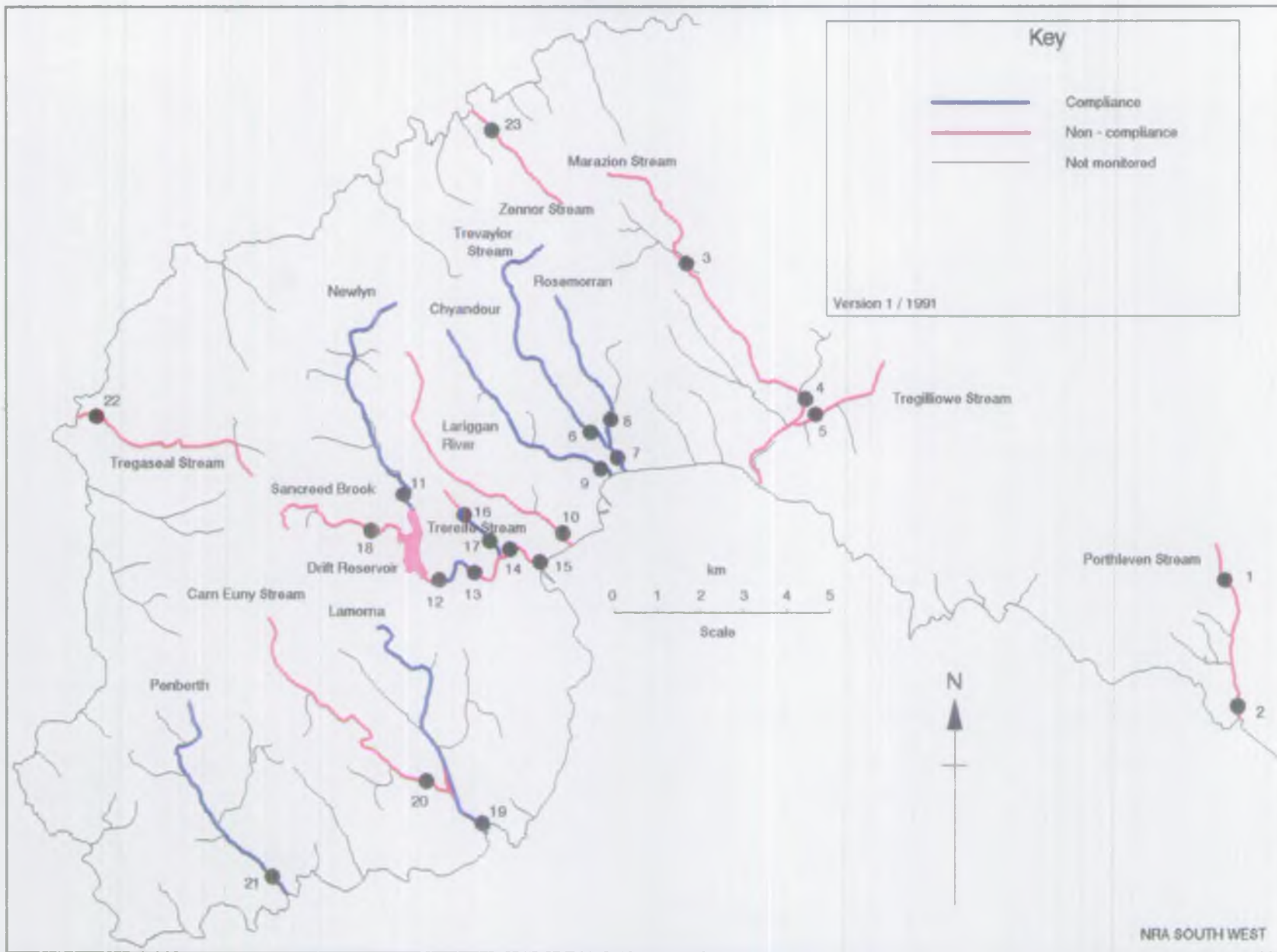
NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 CALCULATED DETERMINAND STATISTICS USED FOR QUALITY ASSESSMENT  
 CATCHMENT: LANDS END STREAMS (MOUNT'S BAY)

River	Reach upstream of	User Ref. Number	FOO	Calculated Determinand Statistics used for Quality Assessment																			
				pH Lower Class	pH Lower 5%ile	pH Upper Class	pH Upper 95%ile	Temperature Class	Temperature 95%ile	DO (%) Class	DO (%) 5%ile	BOD (MGU) Class	BOD (MGU) 95%ile	Total Ammonia Class	Total Ammonia 95%ile	Urdon. Ammonia Class	Urdon. Ammonia 95%ile	S.Solids Class	S.Solids Mean	Total Copper Class	Total Copper 95%ile	Total Zinc Class	Total Zinc 95%ile
FORTHLEVEN STREAM	PENRO	R21A013	1B	1A	6.2	1A	7.2	1A	15.8	1A	84.0	1A	2.2	1A	0.271	1A	0.010	1A	2.4	2	127.6	3	1700.0
FORTHLEVEN STREAM	UPSTREAM OF HARBOUR, FORTHLEVEN	R21A010	1B	1A	6.2	1A	7.5	1A	15.9	1B	77.2	1A	2.7	1A	0.171	1A	0.010	1A	7.5	2	64.4	2	939.2
MARAZION RIVER	NUCLEIRA	R21A028	1A	1A	6.4	1A	7.6	1A	16.4	1B	79.2	1A	2.3	1A	0.088	1A	0.010	1A	3.7	1A	11.0	1A	18.2
MARAZION RIVER	TRUBWELL MILL BRIDGE	R21A002	1A	1A	6.8	1A	7.6	1A	16.4	2	57.4	1B	3.2	1B	0.364	1A	0.010	1A	5.9	1A	25.2	3	1054.3
DREGLIDONE STREAM	OWALLON	R21A026	1B	1A	6.7	1A	7.6	1A	15.5	3	20.8	1B	3.4	1B	0.363	1A	0.010	1A	6.6	1A	96.5	2	1483.5
DREYVATOR STREAM	ERTHOOGA	R21A022	1B	1A	6.5	1A	7.5	1A	16.9	1B	77.1	1A	3.0	1A	0.132	1A	0.010	1A	4.7	1A	14.8	1A	12.6
DREYVATOR STREAM	A.30 BRIDGE AT CHEMNDUR	R21A008	1B	1A	6.7	1A	7.6	1A	18.1	1B	75.6	1A	2.1	1A	0.124	1A	0.010	1A	5.8	1A	10.8	1A	31.2
ROSEMORAN STREAM	RENEGIE COTTAGE	R21A021	1A	1A	6.7	1A	7.6	1A	16.0	1A	82.7	1A	2.5	1A	0.230	1A	0.010	1A	5.5	1A	12.8	1A	10.0
CHEMNDUR BROOK	A.30 BRIDGE AT CHEMNDUR	R21A006	1A	1A	6.8	1A	7.7	1A	17.4	1A	82.0	1A	2.4	1A	0.160	1A	0.010	1A	5.9	1A	14.4	1A	59.5
LARIGGAN RIVER	WERRY TOWN BRIDGE	R21A007	1A	1A	6.7	1A	8.8	1A	18.4	1B	75.9	2	5.4	1B	0.561	1A	0.012	1A	5.6	1A	21.4	1A	46.8
NEWLYN RIVER	SKIMMEL BRIDGE	R21A003	1B	1A	6.3	1A	7.2	1A	16.6	1A	82.0	1B	3.9	1B	0.332	1A	0.010	1A	9.7	1A	10.8	1A	15.5
NEWLYN RIVER	DRIFT RESERVOIR	R21A018	1A	1A	6.6	1A	7.7	2	21.7	1A	85.5	1A	2.4	2	0.830	1A	0.010	1A	5.4	2	27.4	1A	63.6
NEWLYN RIVER	BURGS BRIDGE	R21A004	1A	1A	6.1	1A	7.3	1A	17.3	1A	81.4	1A	2.4	1A	0.076	1A	0.010	1A	4.2	1A	5.0	1A	20.8
NEWLYN RIVER	SIMBLE HOBSA	R21A027	1B	1A	6.6	1A	7.5	1A	16.6	1B	77.4	2	6.3	1A	0.208	1A	0.010	1A	4.2	2	1052.4	1A	31.8
NEWLYN RIVER	NEWLYN BRIDGE	R21A005	1B	1A	6.1	1A	7.6	1A	17.0	1A	83.8	2	5.1	1A	0.145	1A	0.010	1A	13.2	2	40.8	1A	37.2
DRENEIFE STREAM	DENNIS PLACE	R21A019	1B	1A	6.1	1A	7.5	1A	15.4	1A	80.3	1A	3.0	2	0.957	1A	0.010	1A	9.8	1A	9.0	1A	54.8
DRENEIFE STREAM	PRIOR TO NEWLYN RIVER	R21A020	1B	1A	6.1	1A	7.7	1A	16.1	1A	84.0	1B	3.9	1A	0.111	1A	0.010	1A	15.5	1A	18.8	1A	60.0
SPINCEED BROOK	LITTLE SELLAN BRIDGE	R21A017	1A	1A	6.1	1A	7.3	1A	16.4	1A	80.4	1A	2.5	1B	0.452	1A	0.010	1A	7.1	1A	5.7	1A	14.1

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 CALCULATED DETERMINAND STATISTICS USED FOR QUALITY ASSESSMENT  
 CATCHMENT: LANDS END STREAMS (NORTH COAST)

River	Reach upstream of	User Ref. Number	RQD	Calculated Determinand Statistics used for Quality Assessment																			
				pH Lower Class 5tile		pH Upper Class 95tile		Temperature Class 95tile		DO (%) Class 5tile		BOD (RTU) Class 95tile		Total Ammonia Class 95tile		Union. Ammonia Class 95tile		S.Solids Class Mean		Total Copper Class 95tile		Total Zinc Class 95tile	
LAMORNA STREAM	LAMORNA	R21A011	1A	1A	7.0	1A	7.6	1A	15.9	1A	84.8	1A	2.2	1A	0.166	1A	0.010	1A	6.6	1A	7.0	1A	18.4
CARR ELNY STREAM	TREACOPE	R21A015	1A	1A	6.8	1A	7.6	1A	16.4	1A	85.7	1B	3.7	1B	0.391	1A	0.010	1A	10.3	1A	6.0	1A	21.8
PENDERGH STREAM	PENDERGH BRIDGE	R22A009	1B	1A	7.0	1A	7.7	1A	17.2	1A	81.0	1B	3.2	1B	0.345	1A	0.010	1A	9.1	1A	12.2	1A	16.3
TREGESEAL STREAM	PRIOR TO SEA	R22A007	1A	1A	6.2	1A	7.4	1A	17.1	1B	76.6	1B	3.2	1B	0.443	1A	0.010	1A	11.2	1A	11.8	2	311.0
ZENOR STREAM	ZENOR	R22A008	1A	1A	5.9	1A	7.5	1A	15.5	1B	61.0	2	7.7	3	2.340	1A	0.010	1A	4.3	1A	10.4	1A	28.9

# Mount's Bay and Lands End Streams Compliance - 1991



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION

1991 RIVER WATER QUALITY CLASSIFICATION

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

CATCHMENT: LINDS END STREAMS (MOUNT'S BAY)

River	Reach upstream of	Uber Ref. Number	pH Lower		pH Upper		Temperature		DO (%)		BOD (MGU)		Total Ammonia		Unden. 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
FORTHLEVEN STREAM	PENERO	R21A013	33	-	33	-	33	-	33	-	33	-	33	-	32	-	33	-	33	32	33	32
FORTHLEVEN STREAM	UPSTREAM OF HARBOUR, FORTHLEVEN	R21A010	32	-	32	-	32	-	32	-	32	-	32	-	31	-	32	2	30	8	30	30
MIRAZION RIVER	MANCLEDRA	R21A028	32	-	32	-	32	-	32	1	32	-	32	-	29	-	32	-	31	-	31	-
MIRAZION RIVER	TRUTHWELL MILL BRIDGE	R21A002	35	-	35	-	35	-	35	3	35	1	35	1	33	-	35	1	33	-	33	2
THEGILLION STREAM	GANLON	R21A026	32	-	32	-	32	-	32	8	32	-	32	-	25	-	32	3	30	-	30	24
TREVAYLOR STREAM	TRYDDEGA	R21A022	33	-	33	-	33	-	33	-	33	-	33	-	32	-	33	-	23	-	23	-
TREVAYLOR STREAM	A.30 BRIDGE AT CHEANDOUR	R21A008	35	-	35	-	35	-	35	-	35	-	35	-	33	-	35	-	33	-	33	-
ROSEMORAN STREAM	RENGLE COTTAGE	R21A021	31	-	31	-	30	-	30	-	31	1	31	1	28	-	31	1	21	-	21	-
CHEANDOUR BROOK	A.30 BRIDGE AT CHEANDOUR	R21A006	35	-	35	-	34	-	34	1	35	-	35	-	33	-	35	-	30	-	30	-
LARTOGAN RIVER	WHERRY TOWN BRIDGE	R21A007	36	-	36	1	36	-	36	2	36	2	36	1	36	-	36	1	30	-	30	-
NEMLEN RIVER	SKIMMEL BRIDGE	R21A003	38	-	38	-	38	-	38	-	38	-	38	-	34	-	38	1	33	-	33	-
NEMLEN RIVER	DRIFT RESERVOIR	R21A018	23	-	23	-	22	1	22	-	23	-	23	1	22	-	23	1	23	1	23	-
NEMLEN RIVER	BURZAS BRIDGE	R21A004	47	-	47	-	47	-	47	-	47	1	47	-	44	-	47	-	44	-	44	-
NEMLEN RIVER	SINALE HOEBA	R21A027	27	-	27	-	26	-	26	-	27	1	27	-	22	-	27	-	25	1	25	-
NEMLEN RIVER	NEMLEN BRIDGE	R21A005	48	-	48	-	48	-	48	-	48	2	48	-	48	-	48	2	45	2	45	-
TREHEIFE STREAM	DENNIS PLACE	R21A019	45	-	45	-	45	-	45	-	45	-	45	2	45	-	45	2	34	-	34	-
TREHEIFE STREAM	PRIOR TO NEMLEN RIVER	R21A020	45	-	45	-	45	-	45	-	45	1	45	-	39	-	45	6	34	-	34	-
SPYCREED BROOK	LITTLE SELLAN BRIDGE	R21A017	31	-	31	-	31	-	31	1	31	1	31	2	29	-	31	-	25	-	25	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION

1991 RIVER WATER QUALITY CLASSIFICATION

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

CATCHMENT: LANDS END STREAMS (NORTH COAST)

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
LAMPORA STREAM	LAMPORA	R21A011	35	-	35	-	35	-	35	-	35	1	35	-	34	-	35	1	35	-	35	-
CANN ELIN STREAM	TRESCOPE	R21A015	32	-	32	-	32	-	32	-	32	1	32	1	30	-	32	2	30	-	30	-
PENEROH STREAM	PENEROH BRIDGE	R22A009	29	-	29	-	29	-	28	-	29	-	29	-	27	-	29	1	26	-	26	-
INCESEAL STREAM	PRIOR TO SEA	R22A007	33	-	33	-	33	-	33	3	33	1	33	3	33	-	33	2	24	-	24	1
ZENOR STREAM	ZENOR	R22A008	29	-	29	-	29	-	29	4	29	2	29	7	28	-	29	-	22	-	22	-

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 1991 RIVER WATER QUALITY CLASSIFICATION  
 PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS  
 CATCHMENT: LANDS END STREAMS (MOUNT'S BAY)

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	
PORTHLEVEN STREAM	PENBRO	R21A013	-	-	-	-	-	-	-	-	-	219	467
PORTHLEVEN STREAM	UPSTREAM OF HARBOUR, PORTHLEVEN	R21A010	-	-	-	-	-	-	-	-	-	61	213
MARAZION RIVER	NANCLEDRA	R21A028	-	-	-	1	-	-	-	-	-	-	-
MARAZION RIVER	TRUTHWELL MILL BRIDGE	R21A002	-	-	-	28	7	17	-	-	-	-	251
TREGILLIOWE STREAM	GWALLON	R21A026	-	-	-	65	-	-	-	-	-	-	197
TREVAYLOR STREAM	TRYTHOGGA	R21A022	-	-	-	-	-	-	-	-	-	-	-
TREVAYLOR STREAM	A.30 BRIDGE AT CHYANDOUR	R21A008	-	-	-	-	-	-	-	-	-	-	-
ROSEMORRAN STREAM	KENEGIE COTTAGE	R21A021	-	-	-	-	-	-	-	-	-	-	-
CHYANDOUR BROOK	A.30 BRIDGE AT CHYANDOUR	R21A006	-	-	-	-	-	-	-	-	-	-	-
LARIGGAN RIVER	WHERRY TOWN BRIDGE	R21A007	-	-	-	5	80	87	-	-	-	-	-
NEWLYN RIVER	SKIMMEL BRIDGE	R21A003	-	-	-	-	-	-	-	-	-	-	-
NEWLYN RIVER	DRIFT RESERVOIR	R21A018	-	-	1	-	-	168	-	-	-	25	-
NEWLYN RIVER	BURYAS BRIDGE	R21A004	-	-	-	-	-	-	-	-	-	-	-
NEWLYN RIVER	STABLE ROBBA	R21A027	-	-	-	-	-	27	-	-	-	2531	-
NEWLYN RIVER	NEWLYN BRIDGE	R21A005	-	-	-	-	-	2	-	-	-	2	-
TREEIFE STREAM	DENNIS PLACE	R21A019	-	-	-	-	-	-	37	-	-	-	-
TREEIFE STREAM	PRIOR TO NEWLYN RIVER	R21A020	-	-	-	-	-	-	-	-	-	-	-
SANCREED BROOK	LITTLE SELLAN BRIDGE	R21A017	-	-	-	-	-	-	46	-	-	-	-



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION  
 1991 RIVER WATER QUALITY CLASSIFICATION  
 PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS  
 CATCHMENT: LANDS END STREAMS (NORTH COAST)

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
LAMORNA STREAM	LAMORNA	R21A011	-	-	-	-	-	-	-	-	-	-
CARN EUNY STREAM	TREWOOFE	R21A015	-	-	-	-	24	26	-	-	-	-
PENBERTH STREAM	PENBERTH BRIDGE	R22A009	-	-	-	-	-	-	-	-	-	-
TREGESAL STREAM	PRIOR TO SEA	R22A007	-	-	-	4	8	43	-	-	-	10
ZENNOR STREAM	ZENNOR	R22A008	-	-	-	24	155	655	-	-	-	-