

ENVIRONMENTAL PROTECTION



NRA

National Rivers Authority

South West Region

**River Lynher Catchment
River Water Quality
Classification 1990**

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ENVIRONMENT AGENCY



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RIVER WATER QUALITY IN THE RIVER LYNHER CATCHMENT

LIST OF CONTENTS

	Page No.
1 Introduction	1
2 River Lynher Catchment	1
3 National Water Council's River Classification System	2
4 1990 River Water Quality Survey	3
5 1990 River Water Quality Classification	3
6 Non-compliance with Quality Objectives	4
7 Causes of Non-compliance	4
8 Glossary of Terms	5
9 References	5
10 Appendices:	
10.1 River Quality Objectives including Monitoring points	
10.2 Basic Determinand Analytical Suite	
10.3 National Water Council (NWC) River Classification System	
10.4 NWC Criteria for Non-Metallic Determinands - Regional Variation	
10.4.1 NWC Criteria for Metallic Determinands - Regional Variation	
10.5 1990 River Water Quality Classification - tabular format	
10.6 1990 River Water Quality Classification - map format	
10.7 Calculated Determinand Statistics used for Quality Assessment	
10.8 Compliant/Non-Compliant River Reaches	
10.9 Number of Samples Results exceeding quality standards	
10.10 Percentage Exceedance of Determinand Statistics from Quality Standard	
10.11 Identification of Possible Causes of Non-Compliance with River Quality Objectives	

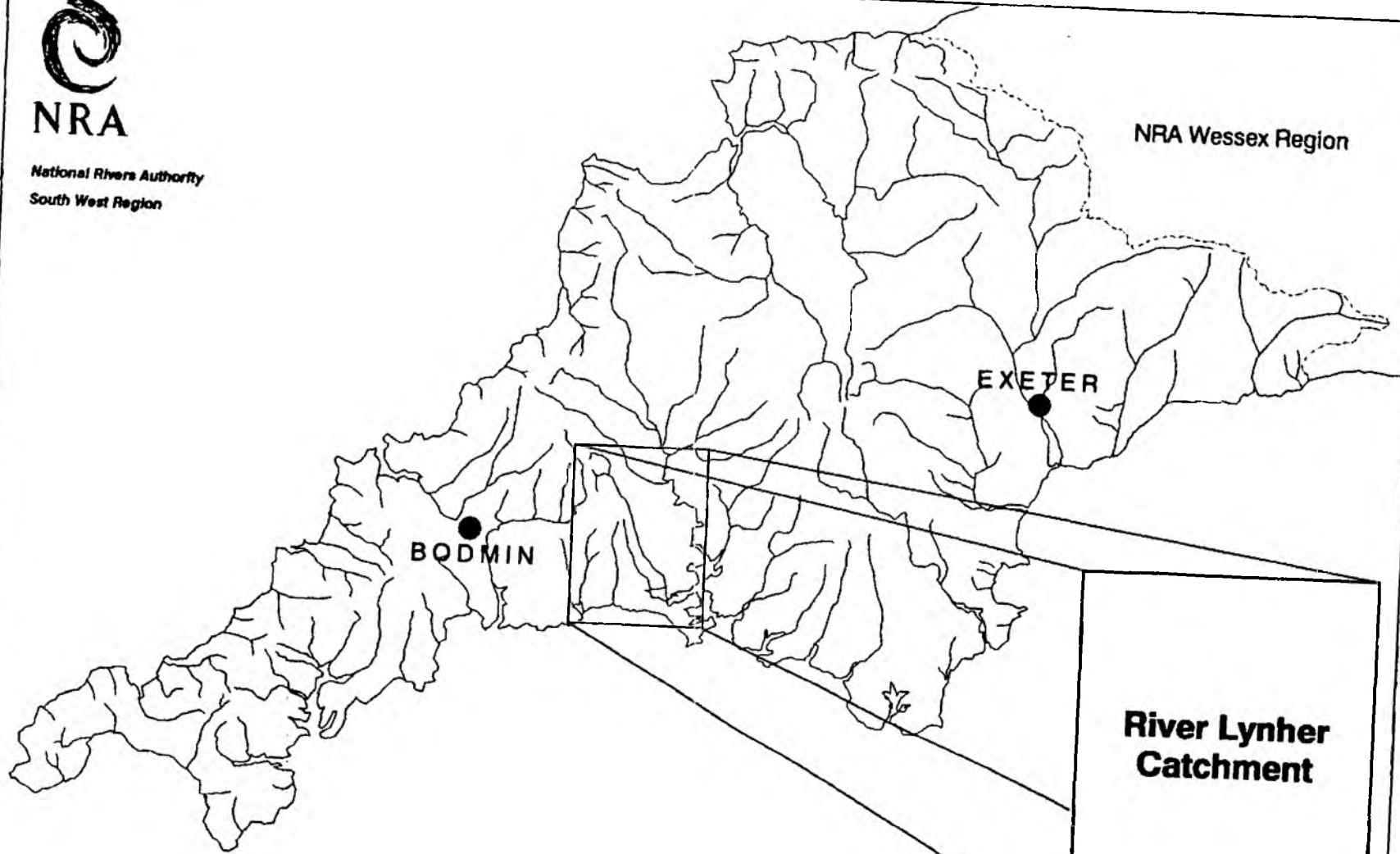
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River Lynher Catchment

**River Lynher
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 Lynher catchment.

2. RIVER LYNHER CATCHMENT

The River Lynher flows over a distance of 34.8 km from its source to the tidal limit, (Appendix 10.1). Water quality was monitored at eight locations on the main river; seven of these sites were sampled at approximately monthly intervals. The site at Notter Bridge, which is a National Water Quality monitoring point, was sampled fortnightly.

Throughout the Lynher catchment one secondary tributary of the River Lynher was monitored at approximately monthly intervals and three secondary streams (Kelly Brook (R12Q026), Dean's Brook and Marke Valley were sampled between fifteen and twenty times during 1990 because of no recent water quality data.

The River Tiddy flows over a distance of 15.9 km from its source to the tidal limit, (Appendix 10.1). Water quality was monitored at five locations; four of these sites were sampled at approximately monthly intervals and one site (R12R001) was sampled on twenty occasions during 1990 because of no recent water quality data.

The Trecorme Stream flows over a distance of 7.3 km from its source to the confluence with the River Tiddy, (Appendix 10.1). Water quality was monitored at one location on twenty occasions during 1990 because of no recent water quality data.

2.1 SECONDARY TRIBUTARIES

Kelly Brook and Withey Brook flow over a distance of 3 km and 7.5 km respectively from their source to the confluence with the River Lynher, (Appendix 10.1) and were monitored at two locations.

The Marke Valley Stream and Dean's Brook flow over a distance of 4.1 km and 6.5 km respectively from their source to the confluence with the River Lynher, (Appendix 10.1) and were both monitored at one location. Monitoring points are all located in the lower reaches.

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 Lynher 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

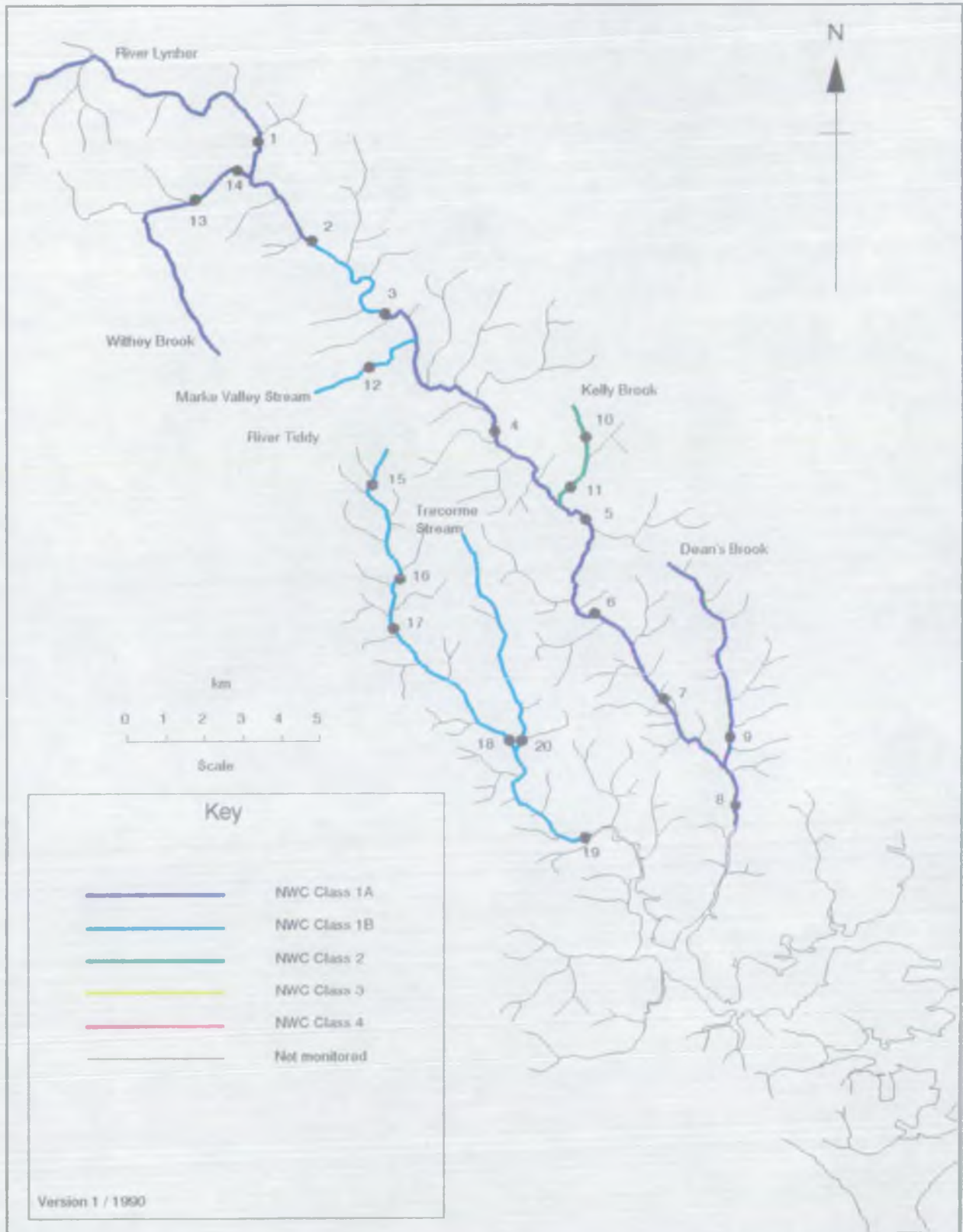
RIVER REACH	A segment of water, upstream from sampling point to the next sampling point.
RIVER LENGTH	River distance in kilometres.
RIVER QUALITY OBJECTIVE	That NWC class, which protects the most sensitive use of the water.
95 percentiles	Maximum limits, which must be met for at least 95% of the time.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

Lynher 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

NWC 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

Poor quality	(i) DO greater than 10% saturation (ii) Not likely to be anaerobic (iii) BOD not greater than 17 mg/l. This may not apply if there is a high degree of re-aeration	Similar to Class 3 of RPS	Waters which are polluted to an extent that fish are absent only sporadically present. May be used for low grade industrial abstraction purposes. Considerable potential for further use if cleaned up
4 Bad quality	Waters which are inferior to Class 3 in terms of dissolved oxygen and likely to be anaerobic at times	Similar to Class 4 of RPS	Waters which are grossly polluted and are likely to cause nuisance
A	DO greater than 10% saturation		Insignificant watercourses and ditches not usable, where the objective is simply to prevent nuisance developing

- Notes
- (a) Under extreme weather conditions (eg flood, drought, freeze-up), or when dominated by plant growth, or by aquatic plant decay, rivers usually in Class 1, 2, and 3 may have BODs and dissolved oxygen levels, or ammonia content outside the stated levels for those Classes. When this occurs the cause should be stated along with analytical results.
 - (b) The BOD determinations refer to 5 day carbonaceous BOD (ATU). Ammonia figures are expressed as 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*	
		Class 1 ug/l Cu	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.

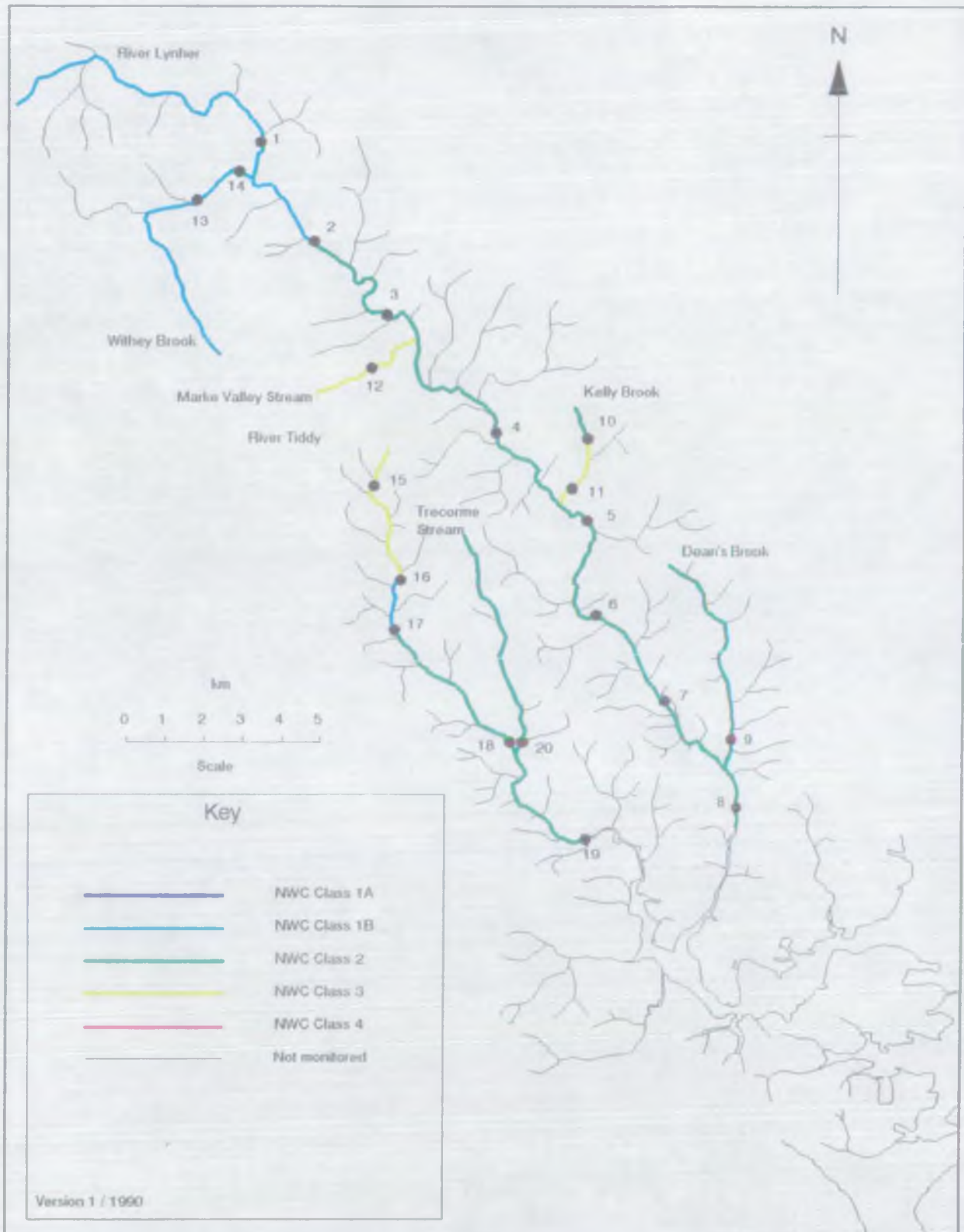
TOTAL ZINC

Total Hardness (mean) mg/l CaCO ₃	Statistic	Total Zinc		
		Class 1 ug/l Zn	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: LYNHER (14)

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 NWC Class	86 NWC Class	87 NWC Class	88 NWC Class	89 NWC Class	90 NWC Class
1	LYNHER	TREBARTHA ROAD BRIDGE	R12Q001	SX 2603 7778	9.2	9.2	1A	1A	1B	1B	1B	1B	1B
2	LYNHER	BERRIOWBRIDGE	R12Q002	SX 2733 7564	2.9	12.1	1A	1A	1B	1B	1B	1B	1B
3	LYNHER	RILLA MILL BRIDGE	R12Q003	SX 2948 7311	4.2	16.3	1B	1B	2	2	2	2	2
4	LYNHER	BIXTON MILL BRIDGE	R12Q004	SX 3215 7005	5.0	21.3	1A	1B	2	2	1B	2	2
5	LYNHER	NEWBRIDGE	R12Q005	SX 3473 6801	4.0	25.3	1A	1B	2	1B	3	3	2
6	LYNHER	CLAPPER BRIDGE	R12Q025	SX 3515 6526	3.5	28.8	1A	1B	2	1A	1A	2	2
7	LYNHER	PILLATON BRIDGE	R12Q006	SX 3650 6324	2.6	31.4	1A	1B	2	1A	1A	2	2
8	LYNHER	WOTTER BRIDGE	R12Q007	SX 3850 6090	3.4	34.8	1A	1B	2	2	1B	2	2
9	DEAN'S BROOK DEAN'S BROOK	BRIDGE LYNHER CONFLUENCE (INFERRED STRETCH)	R12Q029	SX 3825 6224	5.9 0.6	5.9 6.5	1A 1A	1B 1B					2 2
10	KELLY BROOK	HAYE	R12Q026	SX 3470 6991	1.3	1.3	2	2	3	3	3	3	2
11	KELLY BROOK KELLY BROOK	CADDAPIT LYNHER CONFLUENCE (INFERRED STRETCH)	R12Q009	SX 3400 6888	1.3 0.4	2.6 3.0	2 2	2 2	3 3	3 3	3 3	3 3	3 3
12	MARKE VALLEY STREAM MARKE VALLEY STREAM	UPTON CROSS LYNHER CONFLUENCE (INFERRED STRETCH)	R12Q027	SX 2870 7195	2.3 1.8	2.3 4.1	1B 1B	2 2					3 3
13	WITHEY BROOK	UPSTREAM OF BASTREET INTAKE	R12Q010	SX 2435 7637	5.3	5.3	1A	1B	2	2	2	2	1B
14	WITHEY BROOK WITHEY BROOK	PRIOR TO RIVER LYNHER LYNHER CONFLUENCE (INFERRED STRETCH)	R12Q008	SX 2610 7723	2.1 0.1	7.4 7.5	1A 1A	1B 1B	1B 1B	1B 1B	2 2	1B 1B	1B 1B
15	TIDDY	ABOVE PENSILVA S T W	R12R001	SX 2900 6890	0.7	0.7	1B	1B	2	2	4	4	3
16	TIDDY	BUTTERDON MILL	R12R002	SX 2944 6617	3.3	4.0	1B	1B	2	2	4	4	3
17	TIDDY	TREHUNSEY BRIDGE	R12R005	SX 2966 6502	1.3	5.3	1B	2	1B	1B	2	2	1B
18	TIDDY	TILLAND MILL BRIDGE	R12R003	SX 3288 6188	5.2	10.5	1B	2	1B	1B	2	2	2
19	TIDDY TIDDY	TIDEFORD BRIDGE NORMAL TIDAL LIMIT (INFERRED STRETCH)	R12R004	SX 3443 5960	3.6 1.8	14.1 15.9	1B 1B	2 2	1B 1B	1B 1B	2 2	2 2	2 2
20	TRECORME STREAM TRECORME STREAM	TILLAND BRIDGE TIDDY CONFLUENCE (INFERRED STRETCH)	R12R006	SX 3315 6196	6.8 0.5	6.8 7.3	1B 1B						2 2

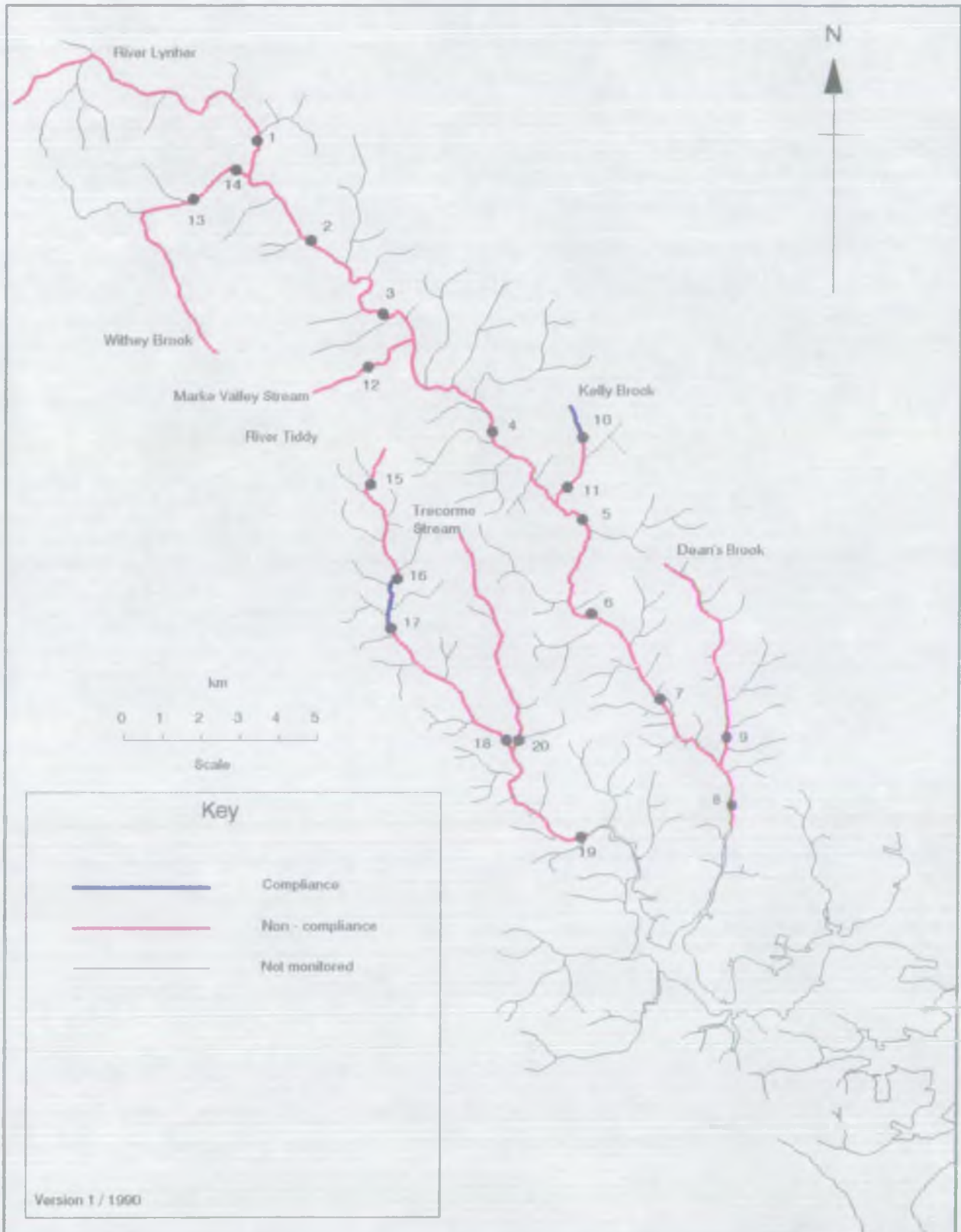
Lynher Catchment Water Quality - 1990



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 UNCALCULATED DETERMINED STATISTICS USED FOR QUALITY ASSESSMENT
 EQUIPMENT: DENVER (14)

River	Reach upstream of	User Ref. Number	90 PNC Class	Calculated Determined Statistics used for Quality Assessment																			
				pH Lower		pH Upper		Temperature		DO (%)		BOD (MG/L)		Total Ammonia		Union. Ammonia		S.Solids		Total Copper		Total Zinc	
				Class	5%ile	Class	95%ile	Class	95%ile	Class	5%ile	Class	95%ile	Class	95%ile	Class	95%ile	Class	Mean	Class	95%ile	Class	95%ile
DENVER	TERESA ROND BRIDGE	[R12Q001]	1B	1A	6.4	1A	7.7	1A	14.7	1B	75.5	1B	3.1	1B	0.340	1A	0.010	1A	18.1	1A	9.5	1A	46.0
DENVER	HERFORD BRIDGE	[R12Q002]	1B	1A	6.3	1A	7.3	1A	15.1	1B	71.0	1B	3.2	1A	0.220	1A	0.010	1A	10.7	1A	7.5	1A	22.5
DENVER	BILLA MILL BRIDGE	[R12Q003]	2	1A	6.6	1A	7.4	1A	15.3	1B	78.8	1B	4.8	1A	0.168	1A	0.010	1A	15.4	2	46.0	1A	57.2
DENVER	BURTON MILL BRIDGE	[R12Q004]	2	1A	6.7	1A	7.5	1A	15.5	1B	73.5	1B	3.9	1A	0.310	1A	0.010	1A	19.3	2	84.5	1A	146.5
DENVER	NEWBRIDGE	[R12Q005]	2	1A	6.6	1A	7.6	1A	15.9	2	52.0	1B	3.3	1B	0.325	1A	0.010	1A	19.4	2	90.0	1A	195.0
DENVER	CLAPPER BRIDGE	[R12Q025]	2	1A	6.6	1A	7.6	1A	15.6	1A	82.3	1B	4.0	1B	0.324	1A	0.010	1A	23.5	2	128.0	2	221.9
DENVER	PILLACON BRIDGE	[R12Q006]	2	1A	6.7	1A	7.5	1A	15.9	1A	84.0	1B	3.2	1A	0.300	1A	0.010	1A	23.1	2	90.5	2	207.0
DENVER	RUTHER BRIDGE	[R12Q007]	2	1A	6.7	1A	7.5	1A	16.5	1A	84.0	1B	3.2	1A	0.120	1A	0.010	1A	11.1	2	23.0	1A	83.7
LENN'S BROOK	BRIDGE	[R12Q029]	2	1A	7.0	1A	7.5	1A	18.1	1B	68.0	2	5.1	1A	0.260	1A	0.010	1A	10.6	1A	4.0	1A	6.0
SELBY BROOK	DAVE	[R12Q026]	2	1A	6.5	1A	7.4	1A	15.3	1B	75.1	2	7.7	1A	0.080	1A	0.010	1A	4.1	1A	30.0	2	414.0
SELBY BROOK	CONDAPET	[R12Q009]	3	1A	6.7	1A	7.4	1A	17.4	2	51.2	1B	4.1	3	3.350	1A	0.016	1A	11.0	2	46.1	2	414.6
WAKE VALLEY STREAM	RUPTON CROSS	[R12Q027]	3	1A	5.7	1A	7.0	1A	14.5	1A	61.2	3	15.5	1A	0.050	1A	0.010	1A	16.2	2	420.0	3	1320.0
MIDNEY BROOK	UPSTREAM OF BRIDGEET INDRSE	[R12Q010]	1B	1A	5.4	1A	6.8	1A	15.1	1B	61.5	1A	2.1	1A	0.055	1A	0.010	1A	3.2	1A	5.0	1A	18.4
MIDNEY BROOK	BEFORE TO RIVER DENVER	[R12Q008]	1B	1A	5.3	1A	7.5	1A	14.9	1B	69.0	1B	3.6	1A	0.168	1A	0.010	1A	11.1	1A	9.2	1A	18.7
FIDLY	ABOVE HENSLOW S T W	[R12R001]	3	1A	6.1	1A	7.9	1A	16.1	1A	81.0	3	10.1	1B	0.670	1A	0.010	1A	14.1	1A	13.0	1A	30.0
FIDLY	BUTTERLYN MILL	[R12R002]	3	1A	6.8	1A	7.7	1A	16.5	1B	73.4	3	15.7	2	1.250	1A	0.010	3	26.7	1A	22.3	1A	180.5
FIDLY	TREHUNSEY BRIDGE	[R12R005]	1B	1A	6.9	1A	7.8	1A	17.7	1B	79.5	1B	3.4	1A	0.240	1A	0.010	1A	8.1	1A	7.0	1A	106.6
FIDLY	TILLARD MILL BRIDGE	[R12R003]	2	1A	7.0	1A	8.9	1A	19.8	1B	77.0	2	6.1	1A	0.204	1A	0.010	1A	24.4	1A	22.2	1A	204.3
FIDLY	TILFORD BRIDGE	[R12R004]	2	1A	7.1	1A	8.0	1A	17.8	1A	80.5	2	6.4	1A	0.190	1A	0.010	1A	22.0	2	43.4	1A	85.2
WINDCOPPE STREAM	TILLARD BRIDGE	[R12R006]	2	1A	6.9	1A	7.9	1A	17.1	1B	73.4	2	8.0	1B	0.340	1A	0.010	1A	9.9	1A	7.0	1A	31.0

Lynher Catchment Compliance - 1990



NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 1990 RIVER WATER QUALITY CLASSIFICATION
 PERCENTAGE EXCEEDENCE OF DETERMINAND STATISTICS FROM QUALITY STANDARDS
 CATCHMENT: LYNHER (14)

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	
LYNHER	TREBARTH ROAD BRIDGE	R12Q001	-	-	-	6	3	10	-	-	-	-	-
LYNHER	BERRIOW BRIDGE	R12Q002	-	-	-	11	7	-	-	-	-	-	-
LYNHER	RILLA MILL BRIDGE	R12Q003	-	-	-	-	-	-	-	-	109	-	-
LYNHER	BICTON MILL BRIDGE	R12Q004	-	-	-	8	28	-	-	-	284	-	-
LYNHER	NEWBRIDGE	R12Q005	-	-	-	35	8	5	-	-	309	-	-
LYNHER	CLAPPER BRIDGE	R12Q025	-	-	-	-	34	4	-	-	482	11	-
LYNHER	PILLATON BRIDGE	R12Q006	-	-	-	-	5	-	-	-	322	4	-
LYNHER	NOTTER BRIDGE	R12Q007	-	-	-	-	7	-	-	-	5	-	-
DEAN'S BROOK	BRIDGE	R12Q029	-	-	-	15	70	-	-	-	-	-	-
KELLY BROOK	HAYE	R12Q026	-	-	-	-	-	-	-	-	-	-	-
KELLY BROOK	CADDAPIT	R12Q009	-	-	-	-	-	115	-	-	-	-	-
MARKE VALLEY STREAM	UPTON CROSS	R12Q027	-	-	-	-	209	-	-	-	1809	560	-
WITHEY BROOK	UPSTREAM OF EASTREET INTAKE	R12Q010	-	-	-	23	-	-	-	-	-	-	-
WITHEY BROOK	PRIOR TO RIVER LYNHER	R12Q008	-	-	-	14	20	-	-	-	-	-	-
TIDDY	ABOVE PEN SILVA S T W	R12R001	-	-	-	-	102	-	-	-	-	-	-
TIDDY	BUTTERDON MILL	R12R002	-	-	-	-	214	79	-	7	-	-	-
TIDDY	TREHUNSKY BRIDGE	R12R005	-	-	-	-	-	-	-	-	-	-	-
TIDDY	TILLAND MILL BRIDGE	R12R003	-	-	-	-	21	-	-	-	-	-	-
TIDDY	TIDEFORD BRIDGE	R12R004	-	-	-	-	27	-	-	-	9	-	-
TRECORNE STREAM	TILLAND BRIDGE	R12R006	-	-	-	-	61	-	-	-	-	-	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION

1990 RIVER WATER QUALITY CLASSIFICATION

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

CATCHMENT: LINDER (14)

River	Reach upstream of	User Ref. Number	pH Lower		pH Upper		Temperature		DO (%)		BOD (MGU)		Total Ammonia		Un-ion. 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
LEPPER	TREMPERNA ROAD BRIDGE	[RL2Q001]	29	-	29	-	29	-	29	2	29	1	29	1	25	-	29	4	29	-	29	-
LEPPER	BENEDICTS BRIDGE	[RL2Q002]	29	-	29	-	29	-	29	3	29	1	29	-	27	-	28	4	29	-	29	-
LEPPER	HILLA MILL BRIDGE	[RL2Q003]	31	-	31	-	31	-	31	-	31	1	31	-	31	-	31	3	31	2	31	-
LEPPER	MEDION MILL BRIDGE	[RL2Q004]	29	-	29	-	29	-	29	2	29	1	29	1	28	-	29	4	29	4	29	-
LEPPER	BENESIDE	[RL2Q005]	29	-	29	-	29	-	29	3	29	1	29	1	29	-	29	4	29	6	29	1
LEPPER	CLAFFER BRIDGE	[RL2Q005]	22	-	22	-	22	-	22	-	22	1	22	1	21	-	22	3	22	3	22	2
LEPPER	PILLACON BRIDGE	[RL2Q006]	29	-	29	-	29	-	29	-	29	1	29	1	29	-	29	4	29	3	29	1
LEPPER	ROTTER BRIDGE	[RL2Q007]	49	-	49	-	49	-	49	1	49	2	49	-	14	-	49	3	50	3	50	-
DENV'S BROOK	BRIDGE	[RL2Q029]	19	-	19	-	19	-	19	1	19	1	19	-	18	-	19	-	12	-	12	-
KELLY BROOK	FINN	[RL2Q026]	20	-	20	-	20	-	20	-	20	-	20	-	16	-	20	1	12	-	12	-
KELLY BROOK	CONDAPIT	[RL2Q009]	29	-	29	-	27	-	27	-	29	-	29	3	27	-	29	3	25	-	25	-
DANNE VALLEY STREAM	UPTON CROSS	[RL2Q027]	20	-	20	-	20	-	20	-	20	2	20	-	14	-	20	3	17	16	17	16
MIDNEY BROOK	UPSTREAM OF BRIDGE	[RL2Q010]	28	-	28	-	28	-	28	5	28	-	28	-	22	-	28	-	23	-	23	-
MIDNEY BROOK	BEFORE TO RIVER LINDER	[RL2Q008]	31	-	31	-	31	-	31	4	31	1	31	-	18	-	30	3	25	-	25	-
TELLY	ACROSS PENNINGTON S T W	[RL2R001]	18	-	18	-	18	-	18	-	18	3	18	-	18	-	18	2	11	-	11	-
TELLY	BUTTERSON MILL	[RL2R002]	29	-	29	-	28	-	28	-	29	2	29	3	27	-	29	3	24	-	24	-
TELLY	TREHILNEY BRIDGE	[RL2R005]	22	-	22	-	22	-	22	-	22	-	22	-	22	-	22	2	20	-	20	-
TELLY	TILLAND MILL BRIDGE	[RL2R003]	22	-	22	1	21	-	21	-	22	1	22	-	21	-	22	3	22	-	22	-
TELLY	TELEFORD BRIDGE	[RL2R004]	29	-	29	-	29	-	29	-	29	2	29	-	28	-	29	3	27	1	27	-
TELLY'S STREAM	TILLAND BRIDGE	[RL2R006]	20	-	20	-	20	-	20	-	20	1	20	-	18	-	20	2	12	-	12	-

NATIONAL RIVERS AUTHORITY - SOUTH WEST REGION
 IDENTIFICATION OF POSSIBLE CAUSES OF NON-COMPLIANCE WITH RQO
 CATCHMENT: LYNHER (14)

1990 Map Position Number	River	Reach upstream of	User Reference Number	Reach Length (km)	Possible causes of non-compliance
1	LYNHER	TREBARTHA ROAD BRIDGE	R12Q001	9.2	LAND RUN-OFF
2	LYNHER	BERRIOWERIDGE	R12Q002	2.9	LAND RUN-OFF
3	LYNHER	RILLA MILL BRIDGE	R12Q003	4.2	LAND RUN-OFF, MINING, CATCHMENT GEOLOGY
4	LYNHER	BICTON MILL BRIDGE	R12Q004	5.0	LAND RUN-OFF, UP-STREAM ABSTRACTIONS
5	LYNHER	NEWBRIDGE	R12Q005	4.0	MINING, CATCHMENT GEOLOGY, LAND RUN-OFF
6	LYNHER	CLAPPER BRIDGE	R12Q025	3.5	MINING
7	LYNHER	PILLATON BRIDGE	R12Q006	2.6	MINING
8	LYNHER	NOTTER BRIDGE	R12Q007	3.4	MINING, UP-STREAM ABSTRACTIONS
9	DEAN'S BROOK	BRIDGE	R12Q029	5.9	LAND RUN-OFF
11	KELLY BROOK	CADDAPIT	R12Q009	1.3	SEWAGE TREATMENT WORKS
12	MARK VALLEY STREAM	UPTON CROSS	R12Q027	2.3	MINING, CATCHMENT GEOLOGY
13	WITHEY BROOK	UPSTREAM OF BASTREET INTAKE	R12Q010	5.3	DROUGHT
14	WITHEY BROOK	PRIOR TO RIVER LYNHER	R12Q008	2.1	DROUGHT, LAND RUN-OFF
15	TIDDY	ABOVE PENSILVA S T W	R12R001	0.7	LAND RUN-OFF
16	TIDDY	BUTTERDON MILL	R12R002	3.3	LAND RUN-OFF
18	TIDDY	TILLAND MILL BRIDGE	R12R003	5.2	LAND RUN-OFF
19	TIDDY	TIDEFORD BRIDGE	R12R004	3.6	LAND RUN-OFF
20	TRECORNE STREAM	TILLAND BRIDGE	R12R006	6.8	LAND RUN-OFF