

NRA NORTH WEST 91

WYRE ESTUARY

Summary of sampling locations and requirements

Marine and Special Projects
EQ & PC
October 1992

Report: MSP-WYR-001

WYRE ESTUARY

INTRODUCTION

The Wyre estuary is sampled for water quality four times a year. The sampling locations are shown in Figure 1, and their descriptions are found in Appendix 1.

REQUIREMENTS

The baseline monitoring stations have been chosen to respond to regional, national and European requirements. The suite of parameters to be analysed in the laboratory is listed in Tables 1 and 2. To monitor the impact of the discharge from the ICI complex, samples will be taken twelve times a year at stations 7, 9, 11, and 12. These samples will be analysed for salinity, trichloroethylene, tetrachloroethylene, and dichloroethane. Stations 7 and 12 will be used as EQS monitoring points.

Appendix 2 lists the environmental quality objectives (EQOs) and standards (EQSs) for estuaries and coastal waters. These values will help in interpreting the collected data from the Wyre surveys.

RESULTS

At present data have been acquired for February, March, May and August 1992. Due to the development of sampling logistics these results are somewhat limited and inconsistent, and nutrient levels are for unfiltered samples. A summary of these results will be shortly presented in the next report.

It should be understood that because of the nature of the analyses, some data (*i.e.* organics) will not be available to us for interpretation up to two months following a given survey. So please be patient, and in case of urgent needs do not hesitate to let us know.



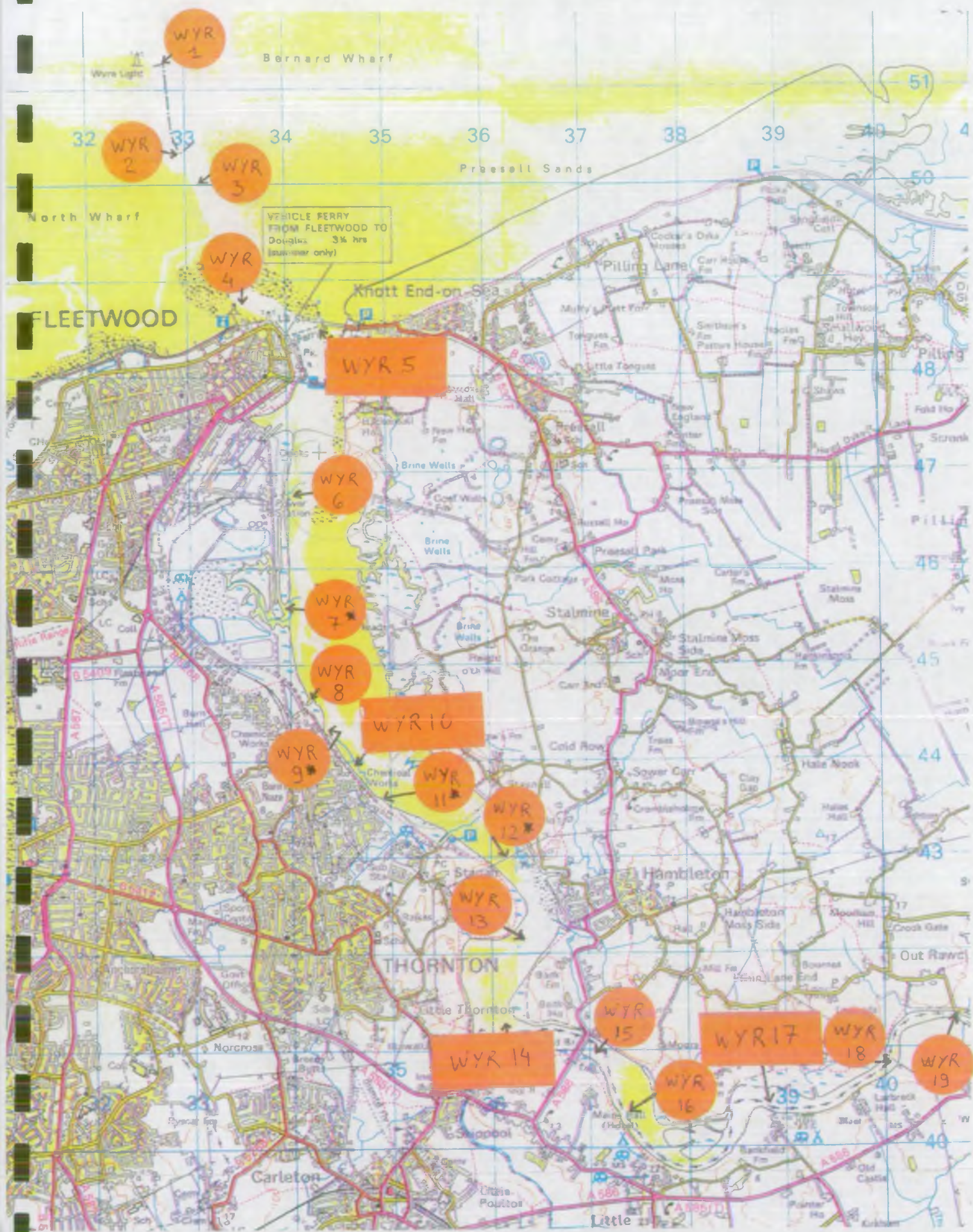
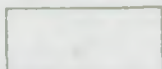


Figure 1: Location of sampling sites in the Wyre estuary (descriptions in Appendix 1)



Baseline monitoring stations

Table 1: Parameters analysed on all samples

PARAMETER	UNIT	CODE
pH at 20°C		61
Temperature	°C (Field)	76
Conductivity $\mu\text{S}/\text{cm}$ at 25°C		77
Dissolved Oxygen	% saturation	81
Dissolved Oxygen	mg/l	82
BOD 5 day (ATU)	mg/l	85
Chemical Oxygen Demand	mg/l O	92
Suspended Solids Total	mg/l	135
Alkalinity to mo	mg/l CaCO_3	162
Chloride	mg/l Cl	172
Chlorophyll a	$\mu\text{g}/\text{l}$	729
Phaeophytin	$\mu\text{g}/\text{l}$	950
Nitrate - filtered - as N	mg/l N	9853
Nitrite - filtered - as N	mg/l N	9854
Ammonia - filtered - as N	mg/l N	9855
Orthophosphate - filtered - as P	mg/l P	9856
Silicate - filtered - as SiO_2	mg/l SiO_2	9857
Salinity (calculated from conductivity and temperature)		1198

CODE = determinand code on the water archive

Table 2: Parameters only analysed on baseline monitoring stations

PARAMETER	UNIT	CODE
Lead (dissolved)	µg/l Pb	52
Mercury (dissolved)	µg/l Hg	103
Mercury	µg/l Hg	105
Cadmium (dissolved)	µg/l Cd	106
& Boron	mg/l	283
Aldrin	µg/l	483
HCH alpha	µg/l	487
HCH beta	µg/l	491
HCH gamma	µg/l	499
Dieldrin	µg/l	511
◆ Endosulphan	µg/l	519
DDT o,p'	µg/l	539
DDE p,p'	µg/l	551
DDT p,p'	µg/l	555
TDE p,p'	µg/l	559
Endrin	µg/l	562
Hexachlorobenzene	µg/l	576
DDE o,p'	µg/l	581
Pentachlorophenol	µg/l	1085
Copper (dissolved)	µg/l Cu	7213
Zinc (dissolved)	µg/l Zn	7243
Arsenic (dissolved)	µg/l As	7354
Chromium (dissolved)	µg/l Cr	7373
Nickel (dissolved)	µg/l Ni	7427
Chloroform	µg/l	9524
◆ Atrazine	µg/l	9632
◆ Simazine	µg/l	9633
Carbon tetrachloride	µg/l	9643
Hexachlorobutadiene	µg/l	9705
PCB CON28	µg/l	9768
PCB CON52	µg/l	9769
PCB CON101	µg/l	9770
PCB CON118	µg/l	9771
PCB CON138	µg/l	9772
PCB CON153	µg/l	9773
PCB CON180	µg/l	9774
PCB total congeners	µg/l	9807
! Tetrachloroethylene	µg/l	9706
! Trichloroethylene	µg/l	9707
!◆ Dichloroethane 1,2	µg/l	9712
!◆ Trichlorobenzene	µg/l	9713
◆ Trifluralin	µg/l	9714

CODE = determinand code on the water archive

- & = List II substance
- ◆ = Red List substance
- ! = List I substance from 1993

All other parameters = NRA routine baseline monitoring

APPENDIX 1

1993

WYRE SURVEY

STATION	WYRE SURVEY	S.P.N.
	1. Wyre estuary at Wyre light	206987
	2. Wyre number 7 buoy	206985
	3. Wyre number 9 buoy	206984
	4. Wyre number 16 buoy	206983
***	5. Wyre estuary at Fleetwood	206978
	6. Wyre at power station	206973
&	7. Wyre lagoon discharge	206972
	8. Wyre ICI sea water intake	206966
	9. Wyre north of ICI outfall	206965
***	10. Wyre ICI main outfall	206963
&	11. Wyre at last ICI building	206961
	12. Wyre at power lines	206954
	13. Wyre estuary at Hambleton bottleneck	206930
***	14. Wyre downstream Shard bridge	206861
	15. Wyre estuary at Shard bridge	206860
	16. Wyre estuary near Mains Hall	206859
***	17. Wyre estuary at Windy Harbour	206858
	18. Wyre near Larbreck Hall	206856
	19. Wyre estuary at out Rawcliffe	206855

*** BASELINE MONITORING STATION

NOTE: & = Sampled twelve times a year for dissolved metals
(Hg, Cu, Cr, Pb, Ni, Zn)

DESCRIPTION	N.G.R.	F.R.N.
1. Wyre estuary at Wyre light	SD 328 513	72806987
2. Wyre number 7 buoy	SD 329 504	72806985
3. Wyre number 9 buoy	SD 331 499	72806984
4. Wyre number 16 buoy	SD 336 488	72806983
5. Wyre estuary at Fleetwood	SD 341 485	72806978
6. Wyre at power station	SD 340 468	72806973
7. Wyre lagoon discharge	SD 340 457	72806972
8. Wyre ICI sea water intake	SD 342 447	72806966
9. Wyre north of ICI outfall	SD 343 444	72806965
10. Wyre ICI main outfall	SD 346 440	72806963
11. Wyre at last ICI building	SD 348 438	72806961
12. Wyre at power lines	SD 362 430	72806954
13. Wyre estuary at Hambleton bottleneck	SD 365 421	72806930
14. Wyre downstream Shard bridge	SD 361 412	72806861
15. Wyre estuary at Shard bridge	SD 369 411	72806860
16. Wyre estuary near Mains Hall	SD 374 403	72806859
17. Wyre estuary at Windy Harbour	SD 389 404	72806858
18. Wyre near Larbreck Hall	SD 400 409	72806856

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18. Wyre near Larbreck Hall	206856
19. Wyre estuary at out Rawcliffe	206855

*** BASELINE MONITORING STATION

& Sampled twelve times a year for salinity and certain organics

not any more

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Cu, Cr, Pb, Ni, Zn + Hg diss.

APPENDIX 2

ENVIRONMENTAL QUALITY OBJECTIVES AND STANDARDS

FOR ESTUARIES AND COASTAL WATERS

(Information Dated September 1992)

QUALITY OBJECTIVES

Protection of salt water life

Arsenic	25 µg/l	annual mean, dissolved
Boron	7000 µg/l	annual mean, total
Chromium	15 µg/l	annual mean, dissolved
Copper	5 µg/l	annual mean, dissolved
Cyfluthrin	0.001 µg/l	total, 95%
Fluocifuron	1 µg/l	total, 95%
Iron	1000 µg/l	annual mean, dissolved
Lead	25 µg/l	annual mean, dissolved
Nickel	30 µg/l	annual mean, dissolved
PCSDs	0.05 µg/l	total, 95%
Permethrin	0.01 µg/l	total, 95%
pH	6 - 8.5	95%
Sulcofuron	25 µg/l	total, 95%
Tributyltin	0.002 µg/l	maximum, total
Triphenyltin	0.008 µg/l	maximum, total
Vanadium	100 µg/l	annual mean, total
Zinc	40 µg/l	annual mean, dissolved

QUALITY STANDARDS

annual mean

Total "drins"	0.03 µg/l	until 1994
Aldrin	0.01 µg/l	from 1.1.94
Dieldrin	0.01 µg/l	from 1.1.94
Endrin	0.005 µg/l	
Isodrin	0.005 µg/l	from 1.1.94
Cadmium	2.5 µg/l	dissolved
Carbon tetrachloride (CTC)	12 µg/l	
Chloroform	12 µg/l	
DDT	0.01 µg/l	para-para-DDT
DDT total	0.025 µg/l	
1,2-Dichloroethane (EDC)	10 µg/l	from 1.1.93
Hexachlorobenzene (HCB)	0.03 µg/l	
Hexachlorobutadiene (HCBd)	0.1 µg/l	
Hexachlorocyclohexane (HCH)	0.02 µg/l	total of all 3 isomers
Mercury	0.3 µg/l	dissolved
Pentachlorophenol (PCP)	2 µg/l	
Trichlorobenzene (TCB)	0.4 µg/l	from 1.1.93
Trichloroethylene (TRI)	10 µg/l	from 1.1.93
Tetrachloroethylene (PER)	10 µg/l	from 1.1.93