

APPENDIX E – Water Quality Report on River Proules

For inspection purposes only.
Consent of copyright owner required for any other use.

River and Code : **PROULES**
 Tributary of : Glyde
 OS Grid Ref : N 912 993

06/P/01
 OS Catchment No: 95
 Date(s) Surveyed : 18/08/2003

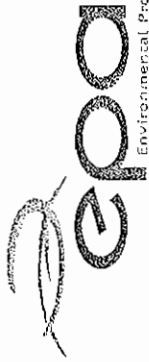
Stations No.	Biological Quality Ratings (Q Values)												
	1971	1974	1976	1978	1980	1982	1984	1990	1991	1994	1997	2000	2003
0100	5	-	5	5	5	4	4-5	5	-	4	4-5	-	-
0110	-	-	-	-	-	-	-	3	-	-	-	4-5	4-5
0300	1	1	1	3	1	3	3-4	1-2	1-2	2-3	2	2-3	2-3
0400	2	2	2-3	2-3	2	3-4	3	2	2	2	2	2-3	3
0600	4	-	4	3-4	4	4	4	3-4	-	3	3	3-4	3

Assessment: Continuing satisfactory upstream of Carrickmacross (0110) and significantly polluted at each of the three points surveyed below the town. Subsequent information (Bill Quirke pers. comm.) has revealed unsatisfactory conditions (Q2-3) at the Ardee Road Bridge (Station 0200): this is upstream of the sewage discharge indicating the presence of other pollution sources in the environs of the town.

Sampling Stations No.	Location	National Grid Ref.		Discovery Series No.	County Code
		X	Y		
0100	Dry Br	283385	304013	35	MN
0110	500m d/s Dry Br (d/s St 0100)	283385	304013	35	MN
0300	Just u/s Lough Naglack	284961	302669	35	MN
0400	Broken Br	285069	302902	35	MN
0600	Br at Killanny	289348	301043	35	LH

Site Altitude and Upstream Catchment Characteristics (where available):											
No.	Alt	Area	Sil	Cal	Pasture	Forestry	Bogs	Urban	Misc Ag.	Water	Other
0100	44	8	52	48	85	0	0	0.0	15	0	0
0110	44	8	52	48	85	0	0	0.0	15	0	0
0300	26	17	25	75	75	7	0	8.5	9	0	0
0400	30	18	24	76	75	7	0	9.3	9	0	0
0600	28	91	52	48	87	1	0	3.1	8	0	0

Alt is in metres Area is km² and Sil, Cal are % siliceous and calcareous bedrock and Pasture, Forestry, etc., are % of catchment area.



PROULES

Sample No.	Date Sampled	Temp. deg. C	Conductivity µS/cm	pH	Colour Hazen	D.O. % Sat	B.O.D. mg/l O2	o-Phosphate mg/l P	Ammonia mg/l N	T.O.N. mg/l N	Chloride mg/l Cl	Guage
0100 - Br W of Old Workhouse												
06P01-0100	28-Jan-04	5.8	458	7.9	20	95	<1.5	0.04	0.06	3.89	42	
2400206												
06P01-0100	25-Feb-04							0.02	<0.03	3.67	16	
2400433												
06P01-0100	22-Mar-04	7.5	280	7.8	38	103	<1.5	0.06	0.03	3.07	16	
2400613												
06P01-0100	19-Apr-04							0.03	<0.03	1.75	13	
2400831												
06P01-0100	19-May-04	14.9			14	69	4.3	0.03	0.03	2.96	19	
2401155												
06P01-0100	16-Jun-04		564	7.9				0.13	0.08	2.01	40	
2401481												
06P01-0100	27-Jul-04	14.7			70	94	<1.5	0.02	0.04	1.45	19	
2402024												
06P01-0100	25-Aug-04		258					0.03	<0.03	1.79	18	
2402425												
06P01-0100	22-Sep-04							0.04	0.05	1.52	14	
2402737												
06P01-0100	28-Oct-04	11.0	245	7.6		90	1.8	0.05	<0.03	1.88	16	
2403075												
06P01-0100	24-Nov-04	9.2	307	7.8	39	80	<1.5	<0.02	<0.03	2.90	15	
2403358												
06P01-0100	22-Dec-04							0.04	0.04	2.30	18	
2403688												
0200 - Ardee Rd Br Carrickmacross												
06P01-0200	28-Jan-04	5.9	581	7.9	17	94	1.7	0.05	0.10	3.90	74	
2400207												
06P01-0200	25-Feb-04							0.03	0.06	4.18	19	
2400434												
06P01-0200	22-Mar-04	7.2	331	7.8	41	101	2.4	0.07	0.06	3.00	19	
2400614												
06P01-0200	19-Apr-04							0.05	0.03	2.04	28	
2400832												
06P01-0200	19-May-04							0.14	0.06	3.45	67	
2401156												
06P01-0200	16-Jun-04	14.2	583	7.8	11	70	3.8	0.20	0.30	1.61	36	
2401482												
06P01-0200	27-Jul-04	14.8			63	89	<1.5	0.12	0.34	1.26	26	
2402025												
06P01-0200	25-Aug-04		310	7.6				0.04	0.05	1.92	40	
2402426												
06P01-0200	22-Sep-04							0.11	0.09	1.76	20	
2402738												
06P01-0200	28-Oct-04	11.1	271	7.7	72	91	1.7	0.05	0.03	1.95	17	
2403076												
06P01-0200	24-Nov-04	10.1	368	7.8	42	89	<1.5	<0.02	0.04	3.30	17	
2403359												
06P01-0200	22-Dec-04							0.06	0.03	2.53	24	
2403691												

Consent of copyright owner required for any other use.
For inspection purposes only.

0300 - Just u/s Lough Naglack

06P01-0300	2400208	28-Jan-04	6.5	752	7.8	14	85	3.5	0.07	0.20	3.75	89
06P01-0300	2400435	25-Feb-04							0.02	0.06	3.72	42
06P01-0300	2400615	22-Mar-04	7.8	499	7.8	123	94	>6.2	0.26	1.41	3.25	49
06P01-0300	2400833	19-Apr-04							0.04	<0.03	2.75	41
06P01-0300	2401157	19-May-04							0.20	0.08	2.48	153
06P01-0300	2401483	16-Jun-04	18.2	1092	7.8	12	76	5.4	0.25	0.21	1.77	124
06P01-0300	2402029	27-Jul-04							0.14	0.07	2.31	78
06P01-0300	2402427	25-Aug-04	16.0	553	7.1	82	68	>7.4	0.06	0.12	2.12	32
06P01-0300	2402739	22-Sep-04							0.19	0.10	1.95	107
06P01-0300	2403077	28-Oct-04	12.3	339	7.7	71	88	2.0	0.06	0.03	1.97	28
06P01-0300	2403360	24-Nov-04	10.0	460	7.8	39	85	<1.5	<0.02	0.04	3.27	29
06P01-0300	2403693	22-Dec-04							0.07	0.03	2.87	49

0400 - Br d/s Lough Naglack

06P01-0400	2400209	28-Jan-04	5.5	577	7.7	17	45	1.7	0.07	0.24	3.46	33
06P01-0400	2400436	25-Feb-04							0.02	0.03	3.57	27
06P01-0400	2400616	22-Mar-04	8.6	599	8.2	61	109	2.8	0.03	<0.03	2.69	41
06P01-0400	2400834	19-Apr-04							0.03	0.05	2.01	38
06P01-0400	2401158	19-May-04							0.09	0.15	2.20	58
06P01-0400	2402026	27-Jul-04							0.15	0.16	0.14	66
06P01-0400	2402428	25-Aug-04	18.1	627	8.1	41	118	8.1	0.07	0.03	0.22	64
06P01-0400	2402740	22-Sep-04							0.56	0.71	0.77	58
06P01-0400	2403078	28-Oct-04	10.4	515	7.8	33	82	3.0	0.09	0.09	1.82	41
06P01-0400	2403361	24-Nov-04	9.5	586	7.8	36	85	2.4	0.02	0.09	2.88	37
06P01-0400	2403692	22-Dec-04							0.05	0.20	2.80	43

0500 - Ballymackney Br

06P01-0500	2400210	28-Jan-04	5.0	527	7.9	23	87	<1.5	0.05	0.08	3.90	23
06P01-0500	2400437	25-Feb-04							0.02	0.06	3.72	19
06P01-0500	2400617	22-Mar-04	8.0	448	8.1	77	100	2.4	0.05	0.03	2.86	22
06P01-0500	2400835	19-Apr-04							0.14	0.03	<0.05	21
06P01-0500	2401159	19-May-04							<0.02	0.04	2.10	32
06P01-0500	2401484	16-Jun-04	18.6	556	8.2	15	75	3.2	0.06	0.07	1.16	30
06P01-0500	2402027	27-Jul-04							0.08	0.46	0.58	34
06P01-0500	2402429	25-Aug-04	16.5	397	7.9	66	102	6.4	0.03	<0.03	1.40	28
06P01-0500	2402741	22-Sep-04							0.06	0.06	1.37	24
06P01-0500	2403079	28-Oct-04	10.2	447	7.9	39	85	<1.5	0.06	0.04	2.39	21

Consent of copyright owner required for any other use.
For inspection purposes only.

Sample ID	Sample No.	Date	Flow (L)	Temp (°C)	Flow (L)	Temp (°C)	Flow (L)	Temp (°C)	Flow (L)	Temp (°C)	Flow (L)	Temp (°C)	Flow (L)	Temp (°C)	Flow (L)	Temp (°C)	Flow (L)	Temp (°C)
06P01-0500	2403362	24-Nov-04	474	7.8	37	96	3.0	0.03	0.15	2.99	22							
06P01-0500	2403690	22-Dec-04						0.05	0.09	3.06	23							
06P01-0600	2400211	28-Jan-04	531	7.9	19	85	<1.5	0.05	0.07	4.01	22							
06P01-0600	2400438	25-Feb-04						0.02	0.03	3.76	19							
06P01-0600	2400618	22-Mar-04	449	8.1	56	98	1.9	0.05	<0.03	2.88	19							
06P01-0600	2400836	19-Apr-04						0.10	<0.03	<0.05	21							
06P01-0600	2401160	19-May-04						0.02	0.06	2.14	32							
06P01-0600	2401485	16-Jun-04	561	7.9	14	59	1.9	0.09	0.06	1.19	29							
06P01-0600	2402028	27-Jul-04						0.08	0.15	0.78	34							
06P01-0600	2402430	25-Aug-04	401	7.9	71	92	4.5	0.03	<0.03	1.41	28							
06P01-0600	2402742	22-Sep-04						0.07	0.07	1.40	24							
06P01-0600	2403080	28-Oct-04	458	7.9	56	83	1.6	0.05	0.04	2.51	21							
06P01-0600	2403363	24-Nov-04	474	7.8	39	98	1.5	0.03	0.06	2.92	20							
06P01-0600	2403689	22-Dec-04						0.05	0.08	3.12	25							

0600 - Br at Killanny

For inspection purposes only.
 Consent of copyright owner required for any other use.



PROULES

Sample No.	Date Sampled	Temp. deg. C	Conductivity µS/cm	pH	Colour Hazen	D.O. % Sat	B.O.D. mg/l O2	o-Phosphate mg/l P	Ammonia mg/l N	T.O.N. mg/l N	Chloride mg/l Cl	Guage
0100 - Br W of Old Workhouse												
06P01-0100 2300530	27-Feb-03	7	356	7.7	34	98	1.2	0.03	0.06	2.87	22	
06P01-0100 2301151	06-May-03	10	254	7.9	40	96	<1.0	0.02	<0.03	1.84	12	
06P01-0100 2301835	01-Jul-03	14	269	7.8	88	94	1.3	0.05	0.05	1.32	16	
06P01-0100 2303443	16-Oct-03	14	281	7.9	53	91	1.2	0.02	0.08	1.33	16	
0200 - Ardee Rd Br Carrickmacross												
06P01-0200 2300531	27-Feb-03	8	433	7.6	36	94	1.5	0.04	0.10	3.22	31	
06P01-0200 2301152	06-May-03	10	335	7.7	37	96	<1.0	0.02	0.03	2.24	16	
06P01-0200 2301836	01-Jul-03	14	327	7.7	93	89	1.7	0.06	0.08	1.59	20	
06P01-0200 2303441	16-Oct-03	14	392	7.9	41	77	1.9	0.08	0.11	1.20	29	
0300 - Just u/s Lough Naglack												
06P01-0300 2300532	27-Feb-03	10	605	7.6	40	96	3.8	0.04	0.10	3.20	55	
06P01-0300 2301153	06-May-03	12	447	7.8	35	99	1.5	0.04	0.05	2.82	28	
0400 - Br d/s Lough Naglack												
06P01-0400 2300533	27-Feb-03	7	609	7.7	24	87	2.5	0.02	0.10	3.41	34	
06P01-0400 2301154	06-May-03	13	595	7.9	24	94	3.4	0.02	0.11	2.05	33	
06P01-0400 2301837	01-Jul-03	18	614	7.8	34	55	1.6	0.10	0.35	1.79	36	
06P01-0400 2303442	16-Oct-03	16	698	8.0	34	77	6.5	0.24	0.34	0.73	55	
0500 - Ballymackney Br												
06P01-0500 2300534	27-Feb-03	7	501	7.9	21	97	1.8	0.03	0.03	3.12	22	
06P01-0500 2301155	06-May-03	12	412	8.0	38	109	3.0	<0.02	<0.03	1.91	18	
06P01-0500 2301838	01-Jul-03	17	507	8.1	28	101	1.8	0.02	0.05	1.88	20	
06P01-0500 2303440	16-Oct-03	15	560	8.1	23	83	1.9	0.05	0.13	1.28	26	
0600 - Br at Killanny												
06P01-0600 2300535	27-Feb-03	7	502	7.9	20	97	1.4	0.03	0.03	3.16	21	
06P01-0600 2301156	06-May-03	12	422	8.0	42	107	3.2	<0.02	<0.03	1.95	18	
06P01-0600 2301839	01-Jul-03	17	512	8.1	26	88	1.1	0.03	0.06	1.89	20	
06P01-0600 2303444	16-Oct-03	15	550	8.0	31	77	1.4	0.05	0.05	1.34	26	

Consent of copyright owner required for any other use.

River : PROULES

RiverCode : 06P01

tributary Of : Glyde

Sampling Stations and their Biological Quality Rating

Station	Location	2003	2000	1997	1994	1991	1990	1984	1982	1980
0100	Br W of Old Workhouse	-	-	4-5	4	-	5	4-5	4	5
0110	500m d/s St 0100	4-5	4-5	-	-	-	3	-	-	-
0200	Ardee Rd Br Carrickmacross	-	-	-	-	-	4	4	4	3
0300	Just u/s Lough Naglack	2-3	2-3	2	2-3	1-2	1-2	3-4	3	1
0400	Br d/s Lough Naglack	3	2-3	2	2	2	2	3	3-4	2
0500	Ballymackney Br	-	-	-	-	-	3-4	4-5	4	4
0600	Br at Killanny	3	3-4	3	3	-	3-4	4	4	4

Dates Of Chemical Sampling

27/02/2003 06/05/2003 01/07/2003 16/10/2003

Results of Chemical Analyses

<u>Temperature</u> (°C)				<u>Conductivity</u> (µS/cm)				<u>pH</u> (pH Units)						
Station #	Min	Med	Max	Station #	Min	Med	Max	Station #	Min	Med	Max			
0100	4	7	12	14	0100	4	254	275	356	0100	4	7.7	7.9	7.9
0200	4	8	12	14	0200	4	327	364	433	0200	4	7.6	7.7	7.9
0300	2	10	11	12	0300	2	447	526	605	0300	2	7.6	7.7	7.8
0400	4	7	15	18	0400	4	594	612	698	0400	4	7.7	7.9	8.0
0500	4	7	14	17	0500	4	419	504	560	0500	4	7.9	8.1	8.1
0600	4	7	14	17	0600	4	422	507	550	0600	4	7.9	8.0	8.1
<u>True Colour</u> (Hazen)				<u>Dissolved Oxygen</u> (% Saturation)				<u>Biochemical Oxygen Demand</u> (mg/l O2)						
Station #	Min	Med	Max	Station #	Min	Med	Max	Station #	Min	Med	Max			
0100	4	34	47	88	0100	4	91	95	98	0100	4	< 1.0	1.2	1.3
0200	4	36	39	93	0200	4	77	92	96	0200	4	< 1.0	1.6	1.9
0300	2	35	38	40	0300	2	96	98	99	0300	2	1.5	2.7	3.8
0400	4	24	29	34	0400	4	55	82	94	0400	4	1.6	3.0	6.5
0500	4	21	26	38	0500	4	83	99	109	0500	4	1.8	1.9	3.0
0600	4	20	29	42	0600	4	77	93	107	0600	4	1.1	1.4	3.2
<u>Ortho-Phosphate</u> (mg/l P)				<u>Ammonia</u> (mg/l N)				<u>Total Oxidised Nitrogen</u> (mg/l N)						
Station #	Min	Med	Max	Station #	Min	Med	Max	Station #	Min	Med	Max			
0100	4	0.02	0.03	0.05	0100	4	< 0.03	0.06	0.08	0100	4	1.32	1.59	2.87
0200	4	0.02	0.05	0.08	0200	4	0.03	0.09	0.11	0200	4	1.20	1.92	3.22
0300	2	0.04	0.04	0.04	0300	2	0.05	0.08	0.10	0300	2	2.82	3.01	3.20
0400	4	0.02	0.06	0.24	0400	4	0.10	0.23	0.35	0400	4	0.73	1.92	3.41
0500	4	< 0.02	0.03	0.05	0500	4	< 0.03	0.04	0.13	0500	4	1.28	1.90	3.12
0600	4	< 0.02	0.03	0.05	0600	4	< 0.03	0.04	0.06	0600	4	1.34	1.92	3.16

06P01

PROULES

Chloride
(mg/l Cl)

Station #	Min	Med	Max	
0100	4	12	16	22
0200	4	16	25	31
0300	2	28	42	55
0400	4	33	35	55
0500	4	18	21	26
0600	4	18	21	26

Assessment

The river is in a satisfactory condition above the town and then deteriorates to moderately polluted with intermittent elevated B.O.D., ammonia and chloride values. D.O. at station 0400 was 55% when sampled in July.

Change from 2002

No improvement apparent.

For inspection purposes only.
Consent of copyright owner required for any other use.

River : PROULES

RiverCode : 06P01

Tributary Of : Glyde

Sampling Stations and their Biological Quality Rating

Station	Location	2000	1997	1994	1991	1990	1984	1982	1980	1978
0100	Br W of Old Workhouse	-	4-5	4	-	5	4-5	4	5	5
0110	500m d/s St 0100	4-5	-	-	-	3	-	-	-	-
0200	Ardee Rd Br Carrickmacross	-	-	-	-	4	4	4	3	2-3
0300	Just u/s Lough Naglack	2-3	2	2-3	1-2	1-2	3-4	3	1	3
0400	Br d/s Lough Naglack	2-3	2	2	2	2	3	3-4	2	2-3
0500	Ballymackney Br	-	-	-	-	3-4	4-5	4	4	4
0600	Br at Killanny	3-4	3	3	-	3-4	4	4	4	3-4

Dates Of Chemical Sampling

13/02/02 15/05/02 19/08/02 29/10/02

Results of Chemical Analyses

<u>Temperature</u> (°C)				<u>Conductivity</u> (µS/cm)				<u>pH</u> (pH Units)					
Station #	Min	Med	Max	Station #	Min	Med	Max	Station #	Min	Med	Max		
0100	4	7	10	15	0100	4	309	427	0100	4	7.7	7.8	7.8
0200	4	7	10	14	0200	4	313	468	0200	4	7.6	7.8	7.8
0300	4	8	11	16	0300	4	335	519	0300	4	7.6	7.7	7.8
0400	4	7	11	16	0400	4	436	523	0400	4	7.6	7.8	7.8
0500	4	7	11	18	0500	4	432	467	0500	4	7.6	8.0	8.1
0600	4	7	11	18	0600	4	435	470	0600	4	7.6	7.9	8.1

<u>True Colour</u> (Hazen)				<u>Dissolved Oxygen</u> (% Saturation)				<u>Biochemical Oxygen Demand</u> (mg/l O2)						
Station #	Min	Med	Max	Station #	Min	Med	Max	Station #	Min	Med	Max			
0100	4	25	33	64	0100	4	88	94	107	0100	4	1.1	1.4	1.9
0200	4	22	29	57	0200	4	92	94	105	0200	4	1.2	2.2	3.3
0300	4	22	30	57	0300	4	89	93	106	0300	4	1.4	3.8	5.0
0400	4	24	29	53	0400	4	68	80	85	0400	4	1.7	1.8	2.2
0500	4	24	34	58	0500	4	86	99	112	0500	4	1.2	1.4	2.0
0600	4	26	32	55	0600	4	88	96	98	0600	4	1.1	1.2	1.6

<u>Ortho-Phosphate</u> (mg/l P)				<u>Ammonia</u> (mg/l N)				<u>Total Oxidised Nitrogen</u> (mg/l N)						
Station #	Min	Med	Max	Station #	Min	Med	Max	Station #	Min	Med	Max			
0100	4	0.03	0.04	0.12	0100	4	< 0.03	0.07	0.26	0100	4	2.66	3.17	5.39
0200	4	0.03	0.06	0.11	0200	4	< 0.03	0.11	0.27	0200	4	2.95	3.42	5.52
0300	4	0.04	0.09	0.20	0300	4	0.03	0.13	0.22	0300	4	3.18	5.23	6.45
0400	4	0.06	0.09	0.12	0400	4	0.16	0.20	0.52	0400	4	2.64	2.66	4.55
0500	4	0.02	0.04	0.06	0500	4	< 0.03	0.07	0.09	0500	4	1.67	2.96	5.05
0600	4	0.02	0.05	0.06	0600	4	0.03	0.05	0.08	0600	4	1.78	2.99	5.08

06P01

PROULES

Chloride
(mg/l Cl)

Station #	Min	Med	Max	
0100	4	15	17	19
0200	4	15	20	20
0300	4	16	36	54
0400	4	24	28	32
0500	4	18	20	20
0600	4	18	20	20

Assessment

Moderately polluted. Station 0300 shows a loss of quality throughout the year with elevated ammonia, B.O.D., o-phosphate and nitrate values throughout the year. Nitrate (TON) levels were high over the length of the river when sampled in February.

Change from 2001

Little improvement apparent.

*For inspection purposes only.
Consent of copyright owner required for any other use.*