Summary Report on Samples of Raw Untreated Water, November 2000 to November 2001

Source : **GY114**, New Inn No. 2
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The experimental results for the samples collected during November 2000 to February 2001 and for May 2001 to November 2001 from the source of the raw water for the group water scheme **GY114**, New Inn No. 2, are presented in the table below. (Samples were not collected for March and April 2001 due to F&M precautions). These results must be interpreted having regard to the national limit values for each parameter specified in the Quality of Drinking Water Regulations 1988 (S.I. No. 81 of 1988). This is the standard required at the consumers tap and will normally require treatment and disinfection of the raw water to achieve these values. A brief description of these chemical and bacteriological parameters and their associated limit values is provided in the explanatory leaflet that accompanies this report.

Parameter	Colour	Turbidity	Conductivity	pH	Ammonia	Nitrate	Nitrite	Aluminium	Iron	Manganese	Total Coliform	Faecal Coliform
Limit Value	20 Hazen	4 NTU	1500 µS/cm	6.0 to 9.0	0.23 mgN/l	11.3 mgN/l	0.03 mgN/l	200 µg/l	200 µg/l	50 µg/l	0 per 100 ml	0 per 100 ml
NOV2000	10	0.39	742	6.74	0.1	0.3	0.05	20	19	8	<1	<1
DEC2000	5	0.06	712	7.15	0.1	2	0.05	<4	<5	<6	<1	<1
JAN2001	2.5	0.28	670	6.67	0.1	2	0.05	<4	8	<6	3	<1
FEB2001	2.5	0.07	773	6.66	0.2	1.6	0.05	<4	16	<6	<1	<1
MAY2001	7.5	0.14	743	6.71	0.1	2	0.001	<4	6	<6	<1	<1
JUN2001	2.5	0.45	757	6.93	0.25	2.5	0.003				<1	<1
JUL2001	7.5	0.32	748	7.21	0.1	1.9	0.003	11	7	<6	<1	<1
AUG2001	5	<0.01	757	7.13	<0.1	1.8	0.004	<4	<5	<6	8	<1
SEP2001	7.5	0.17	739	7.16	0.15	1.6	0.006	4	5	6	<1	<1
OCT2001	10	<0.01	759	7.22	<0.1	2	0.002	<4	<5	<6	<1	<1
NOV2001	10	0.01	746	7.26	0.25	1.8	0.002	<4	<5	<6	<1	<1

Environmental Protection Agency Data 1995-2015. Sample probably from varying mixed borehole sources.

County	Site Name	Easting	Northing	New Code	Old MP Code	Sample Date	pH_field	Temp _field	Dissolved Oxygen_field _1	Dissolved Oxygen_field_ 2	Conductivity_ field	ORP_ Field	Total Coliforms	Faecal Coliforms	pH_Lab oratory	Conductivity_ Laboratory	Alkalinity	Total Hardness	Colour	Turbidity
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	12/12/1995	-	-	-	-	-	-	10	<1	7.5	723	253	265	5	2.0
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	02/09/1996	-	-	-	-	-	-	<1	<1	7.4	760	272	352	5	-
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	12/11/1996	-	-	-	-	-	-	<1	<1	7.1	751	206	285	5	-
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	03/11/1997	-	-	-	-	-	-	<1	<1	7.3	731	-	194	5	2.0
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	11/02/1998	-	7.1	-	-	-	-	1	<1	7.4	726	308	388	5	-
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	12/10/1998	-	-	-	-	-	-	4	<1	7.7	809	372	444	5	-
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	27/01/1999	-	-	-	-	-	-	9	5	7.3	730	356	376	14	<0.2
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	22/09/1999	-	15.0	-	-	-	-	920	336	7.3	792	336	408	17	0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	17/01/2000	7.3	-	73	-	-	-	<1	<1	7.2	796	364	396	<5	<0.2
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	27/09/2000	-	13.5	79	-	857	-	50	14	7.3	855	364	464	13	3.4
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	06/02/2001	-	-	54	-	773	-	<1	<1	7.3	776	320	404	<5	0.3
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	17/04/2002	-	-	-	-	-	-	5	<1	7.2	743	308	352	<5	1.2
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	02/10/2002	-	12.3	39	-	-	-	<1	<1	7.1	734	336	364	<5	0.4
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	26/02/2003	7.1	11.3	57	-	733	-	201	201	7.2	734	332	384	7	0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	17/09/2003	7.0	13.1	53	-	760	-	5	<1	7.1	758	360	360	8	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	11/02/2004	7.0	10.0	55	-	740	-	<1	<1	7.3	738	328	368	<5	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	22/09/2004	-	15.4	54	-	724	-	461	28	7.1	724	316	376	18	0.7
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	02/03/2005	6.8	9.8	62	-	735	-	3	<1	7.2	740	320	350	<5	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	14/09/2005	7.1	17.5	61	-	778	-	291	3	7.1	779	344	396	13	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	18/01/2006	7.1	10.8	65	-	751	-	3	<1	7.1	742	332	376	9	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	13/09/2006	7.1	12.7	91	-	750	-	53	13	7.1	750	320	380	15	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	23/07/2007	7.6	15.1	49	4.8	625	-	5	1	7.5	715	330	363	12	0.7
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	18/08/2007	7.1	15.9	59	5.9	635	-	<1	<1	7.6	732	310	382	11	0.9
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	21/09/2007	7.1	14.7	59	5.8	642	-	12	4	7.7	712	360	353	11	0.6
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	23/10/2007	6.7	10.6	56	7.2	645	-	<1	<1	7.2	732	370	375	13	0.2
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	04/12/2007	7.2	10.7	78	8.4	771	-	<1	<1	7.5	732	350	372	10	0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	10/01/2008	7.2	7.1	70	8.1	816	-	<1	<1	8.1	734	400	362	17	0.9
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	18/06/2008	7.3	11.8	45	4.7	730	-	15	7	7.3	672	310	345	13	4.1
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	13/08/2008	7.3	13.3	26	2.7	672	-	93	17	7.1	656	294	348	22	0.0
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	30/09/2008	6.9	12.7	53	5.5	751	-	3	<1	7.4	671	327	381	9	1.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	25/11/2008	7.5	11.6	60	6.5	746	-	4	1	7.6	669	344	400	8	3.6
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	29/07/2009	6.8	-	-	7.2	554	-	25	2	7.6	660	326	387	18	<0.11
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	22/09/2009	6.7	-	-	6.2	676	-	11	2	7.2	701	353	426	7	0.2
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	12/11/2009	6.6	-	-	6.5	696	-	250	9	7.1	682	355	392	<2.5	<0.11
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	24/06/2010	7.0	10.1	76	-	692	275	36	10	7.0	742	380	360	5	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	08/09/2010	6.9	12.6	31	-	667	52	<1	<1	7.2	710	320	372	19	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	11/11/2010	7.1	11.6	65	-	549	102	-	-	7.0	756	332	364	7	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	02/03/2011	7.0	9.3	86	10.0	511	73	1	<1	7.0	695	304	360	7	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	16/06/2011	7.2	10.9	71	8.0	660	34	<1	<1	7.0	699	348	328	22	4.0
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	12/10/2011	7.1	12.4	66	6.0	639	180	17	3	7.1	825	316	360	16	4.4
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	16/11/2011	7.1	11.6	74	8.0	606	170	23	1	7.4	777	352	336	14	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	22/02/2012	7.0	10.5	58	6.4	720	159	20	1	7.1	759	376	336	10	0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	05/06/2012	6.9	10.7	67	7.4	681	99	135	6	7.1	747	352	328	11	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	16/07/2012	6.9	12.5	53	5.7	695	13	17	3	7.0	752	288	352	6	0.1
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	04/04/2013	7.1	9.3	nm	nm	465	nm	<1	<1	7.0	755	360	376	9	1.6
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	19/09/2013	7.0	12.0	68	7.1	728	106	<1	<1	7.2	723	307	400	19	3.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	23/06/2014	7.1	11.2	78	8.5	674	147	38	4	7.1	695	293	304	10	0.7
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	01/09/2014	7.0	12.6	78	8.3	682	65	18	2	7.1	692	340	333	16	0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	01/12/2014	6.9	11.8	72	7.8	737	20	5	<1	7.0	738	360	360	10	<0.5
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	22/04/2015	6.9	9.9	74	8.3	665	83	4	1	7.1	676	310	358	<5	<0.50
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	01/07/2015	7.0	10.9	74	8.2	645	-23	5	2	7.1	675	346	349	7	<0.50
Galway	New Inn No.1	167300	228000	IE_WE_G_0100_1200_0018	07_018	15/10/2015	6.9	12	66	7.1	684	158	1	1	7.2	710	290	337	5	<0.50

Ammonium	Nitrite as NO_2	Nitrate as NO_3	Nitrate as N	Total Phosphorus	Molybdate Reactive Phosphorus	Filtered Molybdate Reactive Phosphorus	Total Organic Carbon	Silica	Chloride	Fluoride	Sulphate	Sodium	Potassium	Magnesium	Calcium	Iron	Manganese	Boron	Aluminium	Chromium	Nickel	Copper	Zinc	Arsenic
<0.008	-	13.0	-	-	0.041	-	-	-	21	-	-	10	1.3	-	-	<2	<1	-	-	-	-	-	-	-
<0.008	-	8.3	-	-	0.015	-	-	-	21	-	76	11	4.2	-	-	4	-	-	36	-	-	-	-	-
<0.008	-	14.4	-	-	0.031	-	-	-	20	0.2	78	11	3.4	-	-	10	10	-	40	-	-	-	-	-
<0.008	0.002	15.9	-	-	0.036	-	-	-	20	0.2	25	15	4.0	-	-	<100	<50	-	2	-	-	-	-	-
<0.008	0.002	18.6	-	-	0.040	-	-	-	22	-	22	8	2.5	-	-	225	20	-	90	-	-	-	-	-
<0.008	0.002	11.2	-	-	0.029	-	-	-	19	0.1	70	14	4.0	-	-	20	20	-	3	-	-	-	-	-
<0.008	<0.002	18.2	-	-	0.025	-	-	-	25	0.4	17	14	5.0	-	-	50	50	-	5	-	-	-	-	-
0.101	0.034	7.4	1.7	-	0.016	-	-	-	19	0.1	5	11	3.1	5.8	153	5	5	29	-	1	3	14	6	<0.5
<0.008	<0.002	18.7	4.2	-	0.032	-	-	-	32	0.2	17	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.008	0.003	6.2	1.4	-	0.041	-	-	-	23	0.2	82	15	3.2	6.4	163	<50	37	<50	-	3	4	19	17	<1
<0.01	<0.002	14.6	3.3	-	0.068	-	94.0	-	29	0.2	20	16	3.9	5.8	147	<50	<1	-	-	2	2	12	6	<1
0.010	<0.002	18.6	4.2	-	0.095	-	-	-	28	0.2	14	13	3.7	4.1	110	50	<1	<50	-	2	6	16	78	<1
<0.01	<0.002	-	-	-	0.081	-	-	-	23	0.2	20	8	2.3	3.7	101	246	2	<50	-	4	18	5	61	<1
<0.03	<0.005	11.1	2.5	-	0.086	-	-	-	24	0.2	12	15	3.5	5.3	154	139	<1	<50	-	<1	3	73	180	<1
<0.03	<0.005	10.2	2.3	-	0.079	-	-	-	23	0.2	22	15	3.6	5.4	152	155	<1	<50	-	<1	2	3	37	<1
<0.03	<0.005	20.8	4.7	-	0.075	-	-	-	26	0.2	18	13	3.6	4.9	124	177	<1	<50	-	<1	2	11	70	<1
<0.03	<0.005	6.2	1.4	-	0.049	-	-	-	21	0.2	42	10	2.6	4.7	135	283	31	<50	-	<1	7	38	160	<1
<0.03	<0.005	26.6	6.0	-	0.092	-	-	-	31	0.2	17	13	4.3	4.6	125	170	<1	<50	-	<1	3	<1	79	<1
<0.03	<0.005	11.5	2.6	-	0.060	-	-	-	30	0.2	28	11	2.9	131.0	5	167	10	<50	<50	5	5	110	180	<1
<0.03	<0.005	25.2	5.7	-	0.074	-	-	-	26	0.2	19	13	3.9	3.8	116	127	<1	<50	<50	-	-	<1	35	<1
0.110	<0.005	10.2	2.3	-	0.060	-	-	-	23	0.2	45	13	3.1	5.3	146	164	20	<50	<50	-	-	3	35	<1
0.100	<0.05	12.1	2.7	-	<0.003	-	6.0	-	25	0.2	22	19	3.4	4.4	137	<2	33	10	-	6	6	31	32	<1
0.090	<0.05	12.4	2.8	-	<0.003	-	6.0	-	27	0.2	29	16	3.9	4.7	140	43	20	11	32	15	6	38	88	<1
0.020	<0.05	10.8	2.4	-	0.010	-	6.0	-	26	0.4	22	16	3.3	4.4	132	8	20	15	<2	8	8	37	83	<1
0.230	0.060	11.4	2.6	-	0.405	-	5.0	-	33	0.4	17	15	3.2	4.9	139	37	11	<3	<2	8	7	27	121	<1
0.020	<0.05	13.3	3.0	-	0.026	-	6.0	-	26	0.3	33	15	3.9	5.1	152	47	12	12	<2	13	5	43	71	1.0
0.110	<0.05	15.5	3.5	-	0.020	-	10.0	-	24	0.2	24	15	3.5	5.6	151	<2	78	22	21	4	5	41	71	<1
0.043	<0.043	11.7	2.6	-	0.036	-	4.6	-	28	0.1	18	16	3.2	5.0	130	<5.0	1	<20	2	<1	2	<3	2	0.3
0.013	<0.043	7.8	1.8	-	<0.009	-	5.7	-	22	<0.1	23	14	3.2	4.7	132	<5.0	1	<20	<5	<1	3	3	14	0.6
0.083	<0.043	-	-	-	<0.009	-	3.6	-	29	<0.1	16	17	4.0	5.5	144	48	5	<20	<5	<1	2	<3	2	0.4
0.025	<0.043	5.8	1.3	-	0.068	-	2.7	-	21	<0.1	17	15	4.1	5.0	152	233	4	<20	<5	<1	2	5	8	0.7
0.056	0.061	7.3	1.6	-	<0.009	<0.009	5.4	5	20	0.2	29	15	3.2	5.2	147	<5.0	4	<20	<5	<1	2	3	<1.0	0.6
0.028	0.051	10.8	2.4	-	<0.009	0.010	3.0	6	24	0.1	20	18	3.9	5.7	161	<5.0	1	33	<5	<1	2	3	3	0.5
0.056	<0.043	5.5	1.2	-	0.021	<0.009	4.8	10	20	0.2	<1.0	14	3.5	5.6	148	6	2	<20	<5	2	2	<3	4	0.6
<0.026	<0.007	7.1	1.6	0.042	0.034	0.031	3.3	5	30	0.2	14	16	3.0	5.0	129	<10	<1	16	<5	<0.5	1	2	2	<0.5
<0.026	0.013	5.4	1.2	0.037	0.040	0.035	5.1	6	23	0.2	18	14	3.0	4.6	132	<10	5	22	<5	<0.5	2	4	4	<0.5
<0.026	<0.007	12.0	2.7	0.041	0.045	0.033	3.2	6	26	0.3	15	18	3.5	4.2	139	<10	1	24	<5	<0.5	1	2	3	<0.5
<0.026	<0.007	12.4	2.8	0.053	0.036	0.037	2.9	7	35	0.2	15	22	3.8	5.7	154	<10	<1	22	<5	<0.5	1	2	2	<0.5
<0.026	<0.007	6.5	1.5	0.040	0.051	0.033	74.5	6	26	0.2	15	16	2.7	4.4	119	<10	<1	18	<5	<0.5	1	2	2	<0.5
<0.026	<0.007	9.7	2.2	<0.007	0.039	0.035	4.5	7	30	0.2	14	18	3.0	5.0	131	<10	1	21	<5	<0.5	1	3	8	<0.5
<0.026	<0.007	11.6	2.6	0.027	0.034	0.035	7.4	7	20	0.2	14	21	3.4	5.5	136	<10	<1	24	<5	<0.5	2	2	5	<0.5
<0.026	<0.007	10.4	2.4	0.042	0.037	0.039	2.7	7	29	0.2	13	19	3.8	5.0	135	<10	<1	21	<5	<0.5	1	2	29	<0.5
0.027	<0.007	6.4	1.5	0.034	0.031	0.034	3.3	6	26	0.2	13	16	2.9	5.2	142	<10	<1	19	<5	<0.5	<0.5	2	4	<0.5
<0.026	<0.007	9.7	2.2	0.036	0.038	0.034	3.4	7	27	0.2	15	17	3.1	5.3	139	<10	<1	23	<5	<0.5	1	2	14	<0.5
<0.026	<0.007	7.8	1.8	0.036	0.035	0.032	3.1	7	26	0.5	13	16	3.0	5.4	137	<10	<1	19	<5	<0.5	1	2	1	<0.5
0.035	<0.007	4.1	0.9	0.060	0.035	0.030	1.9	7	23	0.2	12	15	2.8	5.3	134	15	6	22	<5	<0.5	4	2	2	<0.5
<0.020	<0.013	8.4	1.9	0.047	nr	0.034	3.5	6	28	0.2	13	14	2.9	4.8	130	16	<5.0	19	<10.0	<1.0	<1.0	2	<1.0	<1.0
0.021	<0.013	8.4	1.9	0.027	0.029	0.029	4.9	7	26	<0.20	11	13	2.8	4.7	120	19	<5.0	19	<10.0	1	1	2	<1.0	<1.0
<0.020	<0.013	13.7	3.1	0.028	0.033	0.035	3.4	7	25	<0.20	13	13	2.8	5.2	130	<10.0	<5.0	23	<10.0	<1.0	<1.0	1	<1.0	<1.0
<0.020	<0.013	13.73	3.10	0.036	0.035	0.033	3.0	6.80	32	<0.20	13	15.0	2.8	4.6	120	<10.0	<5.0	17	<10.0	<1.0	<1.0	1	<1.0	<1.0
<0.020	<0.013	11.07	2.50	0.032	0.037	0.034	3.3	6.40	29	<0.2	11	15.0	2.9	4.7	120	<10.0	<5.0	19	<10.0	1.1	<1.0	1	5.5	<1.0
<0.020	<0.013	10.19	2.30	0.037	0.037	0.036	4.0	6.60	26	<0.20	13	14.0	2.8	4.5	120	<10.0	<5.0	19	<10.0	1.1	<1.0	1	<1.0	<1.0

Cadmium	Antimony	Barium	Lead	Uranium	Mercury	Cobalt	Molybdenum	Strontium	Silver	Beryllium	Atrazine	MCPA	2,4-D	Isoproturon	Mecoprop	Chlortoluron	Glyphosate	Bentazone	Cypermethrin	Dieldrin	DDT	Lindane	Diuron
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-	-	-	-	-	-	-	-	-	-	-	<0.02	-	-	-	-	-	-	-	-	-	-	-	-
<0.05	<0.5	<20	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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<0.1	<1	<50	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<1	<50	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.1	<1	<50	3.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<1	<50	5.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<1	<50	2.0	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<1	<50	<1	1.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<1	<50	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<1	<50	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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<0.1	<1	<50	<1	<1	-	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<1	<50	<1	<1	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
0.2	<1	<50	<1	<1	-	<1	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.4	<1	13	2.0	<1	<0.05	<1	<1	713	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.4	<1	15	2.0	2.0	<0.05	<1	<1	745	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.4	<1	14	<1	1.0	<0.05	<1	<1	680	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.4	<1	8	1.0	2.0	<0.05	<1	<1	713	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.4	2.0	13	10.0	3.0	<0.05	2.0	2.0	687	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.4	<1	17	2.0	1.0	<0.05	<1	<1	700	<2	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	0.2	40	<0.3	1.3	<0.02	<1	<1	627	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	0.2	8	<0.3	3.2	<0.02	<1	<1	670	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	0.2	10	0.5	5.3	<0.02	<1	<1	714	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	0.2	33	<0.3	<1	0.0	<1	<1	676	3.0	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	0.3	10	<0.3	1.8	<0.02	<1	<1	763	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	0.2	12	<0.3	2.5	0.0	<1	<1	696	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	0.3	10	<0.3	1.4	<0.02	<1	<1	737	<1	<1	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	8	<0.5	2.0	<0.05	<0.5	<0.5	654	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	8	<0.5	1.6	<0.05	<0.5	0.7	637	0.6	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	8	<0.5	1.6	<0.05	<0.5	<0.5	556	nr	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	9	<0.5	1.5	<0.05	<0.5	<0.5	684	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	7	<0.5	1.7	<0.05	<0.5	<0.5	570	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	8	<0.5	1.6	<0.05	<0.5	0.5	676	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	9	<0.5	1.5	<0.05	<0.5	<0.5	634	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	8	<0.5	1.4	<0.05	<0.5	<0.5	616	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	8	<0.5	1.7	<0.05	<0.5	<0.5	614	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	9	<0.5	1.5	<0.05	<0.5	<0.5	612	-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	9	<0.5	1.5	<0.05	<0.5	<0.5	596	0.0	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.1	<0.5	9	<0.5	1.8	<0.05	<0.5	<0.5	664	0.0	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.020	<1.0	8	<1.0	1.4	<0.05	<1.0	<1.0	600	-	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
<0.020	<1.0	8	<1.0	1.5	<0.05	<1.0	<1.0	560	-	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
0.0	<1.0	9	<1.0	1.4	<0.05	<1.0	<1.0	610	-	<1.0	0.007	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01	<0.01	<0.01	<0.01	<0.005
<0.020	<1.0	8	<1.0	1.3	<0.020	<1.0	1.1	550	-	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
0.0	<1.0	9	<1.0	1.3	<0.020	<1.0	<1.0	540	-	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-
0.0	<1.0	8	<1.0	1.4	<0.020	<1.0	<1.0	580	-	<1.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Simazine	Dichlobenil	Total Pesticides	Cyanide	Napthalene	Pyrene	Anthracene	Benzo[a]pyrene	(Total) PAHs	Vinyl Chloride	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	1,1,1,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	Phenol
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-	-	-	<10	<0.01	<0.01	<0.01	<0.003	<0.01	<0.16	<0.1	<0.1	<0.5	<0.5	<1.3	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5
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0.008	<0.01	<0.02	<0.5	<0.01	<0.01	<0.01	<0.01	-	<0.1	<0.1	<0.1	<0.5	<0.5	<2	-	<0.5	<0.5	<0.5	<0.5	-	-
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Benzene	Toluene	Ethylbenzene	m+p Xylene	o Xylene	MTBE	(Total) Petroleum Hydrocarbons	Chloroform	Bromoform	Bromodichloromethane	Dibromochloromethane	(Total) Trihalomethanes	2,4,5-T	4,4-DDD	4-4-DDE	Acenaphtene	Acenaphthylene	Aldrin	alpha-BHC	Benzo (b)-Fluoranthene	Benzo (g,h,i)-Perylene	Benzo (k)-Fluoranthene	Benzo(a)-anthracene	beta-BHC
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Chrysene	delta-BHC	Dibenzo(a,h)anthracene	Drinking Water PAH Sum (Calc)	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin	Endrin Aldehyde	Fluoranthene	Fluorene	Heptachlor	Heptachlor Epoxide	Indeno(1, 2, 3-c, d)pyrene	Phenanthrene	Picloram	Bromoxynil	Clopyralid	Dicamba	Fluroxypyr	Ioxynil	MCPB
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Hexachlorobutadiene	Isodrin	1,2,4-trichlorobenzene	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	Hexachloroethane	Nitrobenzene	Bromacil	Trifluralin	Acetone	Dichloromethane	Tetrahydrofuran	Dichlorodifluoromethane	Chloromethane	Ethyl Chloride/ Chloroethane	Trichloromonofluoromethane	Propanenitrile	2-Butanone	Methyl Acrylate	Bromochloromethane	Methacrylonitrile	1-Chlorobutane
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Carbon Tetrachloride	11 Dichloro propene	1,2 dicloroethane	1,2-dichloro propane	Dibromo methane	Methyl Methacrylate	13 Dichloro propene, cis	MIBK/4 Methyl 2 Pentanone	13 Dichloropropene,trans	Ethyl Methacrylate	1,3-dichloro propane	2-Hexanone	1,2-dibromo ethane	Chlorobenzene	Styrene	Isopropyl benzene	Bromobenzene	Trans 14 Dichloro 2 Butene, tran	Propylbenzene	2-chlorotoluene	4-chlorotoluene	1,3,5-trimethylbenzene	Tert Butyl Benzene
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1,2,4-trimethylbenzene	sec-butylbenzene	P Isopropyl toluene	N Butyl Benzene	1,2-dibromo-3-chloropropane	1,2,3-trichlorobenzene	Epichlorohydrin	2-Propenenitrile/Acrylonitrile	Total HCH-Hexachlorocyclohexanes (Calc)	Dicofol	236-Trichlorobenzoic Acid (TBA)	24-DB	Dichloroprop (24DP)	Pentachlorophenol (PCP)	Quinmerac	Trichlopyr	26-Dichloro-benzamide (BAM)	Aclonifen	Ametryn-LC	Azinphos Ethyl-LC
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Pirimiphos-methyl-LC	Prometryn-LC	Propazine-LC	Propetamphos-LC	Propiconazole-LC	Propyzamide-Triaz-LC	Quinoxyfen	Terbutryn-LC	Triazophos-LC	Trietazine-LC	Bis (2-ethylhexyl) phthalate
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Appendix 4

Acronyms and Glossary

Acronyms

EPA – Environmental Protection Agency
DEHLG – Department of Environment Heritage and Local Government
EU – European Union
GSI – Geological Survey of Ireland
GWB – Groundwater Body
GWD – Groundwater Directive (European Union)
GWS – Group Water Scheme
IGI – Institute of Geologists of Ireland
IG – Irish National Grid Reference
m aOD – metres above Ordnance Datum
m bgl – metres below ground level
TVs – Threshold Values
UV – Ultra-Violet
ZOC – Zone of Contribution
WFD – Water Framework Directive

Glossary of Terms

Aquifer
A subsurface layer or layers of rock, or other geological strata, of sufficient porosity and permeability to allow either a significant flow of groundwater or the abstraction of significant quantities of groundwater (Groundwater Regulations, 2010).

Attenuation
A decrease in pollutant concentrations, flux, or toxicity as a function of physical, chemical and/or biological processes, individually or in combination, in the subsurface environment.

Borehole
A particular type of well - a narrow hole in the ground constructed by a drilling machine in order to gain access to the groundwater system.

Boulder Clay
See 'Till'

Conceptual Hydrogeological Model
A simplified representation or working description of how a real hydrogeological system is believed to behave on the basis of qualitative analysis of desk study information, field observations and field data.

Diffuse Sources
Diffuse sources of pollution are spread over wider geographical areas rather than at individual point locations. Diffuse sources include general land use activities and landspreading of industrial, municipal wastes and agricultural organic and inorganic fertilisers.

Direct Input
An input to groundwater that bypasses the unsaturated zone (e.g. direct injection through a borehole) or is directly in contact with the groundwater table in an aquifer either year round or seasonally.

Doline
Dolines, or enclosed depressions, are relatively shallow bowl or funnel shaped depressions that form in karst landscapes, and serve to funnel or concentrate recharge underground. Their presence indicates that subterranean drainage is in operation.

Dolomitisation
Is a process, whereby the calcite crystals in limestone is replaced by magnesium. This results in an increase in the porosity and permeability of the rock. Dolomitised rocks are a highly weathered, yellow/orange/brown colour and are usually evident in boreholes as loose yellow-brown sand with significant void space and poor core recovery. Dolomitisation often occurs preferentially in both fault zones and purer limestones.

Down-gradient
The direction of decreasing groundwater levels, i.e. flow direction. The area of the groundwater system that has lower groundwater levels than other areas. Opposite of upgradient.

Enclosed Depression
See doline

Fissure
A natural crack in rock which allows rapid water movement.

Groundwater
All water which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil (Groundwater Regulations, 2010).

Groundwater Body (GWB)
A volume of groundwater defined as a groundwater management unit for the purposes of reporting to the European Commission under the Water Framework Directive. Groundwater bodies are defined by aquifers capable of providing more than 10 m_3/d, on average, or serving more than 50 persons.

Groundwater Recharge
Two definitions: a) the process of rainwater or surface water infiltrating to the groundwater table; b) the volume (amount) of water added to a groundwater system.

Groundwater Resource
An aquifer capable of providing a groundwater supply of more than 10 m_3/d as an average or serving more than 50 persons.

Hydraulic Conductivity (also known as 'Permeability')
The rate at which water can move through a unit volume of geological medium under a potential unit hydraulic gradient. The hydraulic conductivity can be influenced by the properties of the fluid, including its density, viscosity and temperature, as well as by the properties of the soil or rock.

Hydraulic Gradient
The change in total head of water with distance; the slope of the groundwater table or the piezometric surface.

Igneous Rock
Igneous rock is formed through the cooling and solidification of magma or lava.

Indirect Input
An input to groundwater where the pollutants infiltrate through soil, subsoil and/or bedrock to the groundwater table.

Input
The direct or indirect introduction of pollutants into groundwater as a result of human activity.

Karst
A distinctive landform characterised by features such as surface collapses, sinking streams, swallow holes, caves, turloughs and dry valleys, and a distinctive groundwater flow regime where drainage is largely underground in solutionally enlarged fissures and conduits.

Karstification
Karstification is the process whereby limestones are slowly dissolved by acidic waters moving through them. This results in the development of an uneven distribution of permeability with the enlargement of certain fissures at the expense of others and the concentration of water flow into these high permeability zones. Karstification results in the progressive development of distinctive karst landforms such as caves, swallow holes, sinking streams, turloughs and dry valleys, and a distinctive groundwater flow regime. It is an important feature of Irish hydrogeology.

Metamorphic Rock
A rock made out of highly altered existing rock. Common types include marble, schist and quartzite.

Pathway
The route which a particle of water and/or chemical or biological substance takes through the environment from a source to a receptor location. Pathways are determined by natural hydrogeological characteristics and the nature of the contaminant, but can also be influenced by the presence of features resulting from human activities (e.g., abandoned ungrouted boreholes which can direct surface water and associated pollutants preferentially to groundwater).

Permeability
A measure of a soil or rock's ability or capacity to transmit water (synonymous with hydraulic conductivity).

Point Source
Any discernible, confined or discrete conveyance from which pollutants are or may be discharged. These may exist in the form of pipes, ditches, channels, tunnels, conduits, containers, and sheds, or may exist as distinct percolation areas, integrated constructed wetlands, or other surface application of pollutants at individual locations. Examples are discharges from waste water works and effluent discharges from industry.

Pollution
The direct or indirect introduction, as a result of human activity, of substances or heat into the air, water or land which may be harmful to human health or the quality of aquatic ecosystems or terrestrial ecosystems directly depending on aquatic ecosystems which result in damage to material property, or which impair or interfere with amenities and other legitimate uses of the environment (Groundwater Regulations, 2010).

Poorly Productive Aquifers (PPAs)
Low-yielding bedrock aquifers that are generally not regarded as important sources of water for public water supply but that nonetheless may be important in terms of providing domestic and small community water supplies and of delivering water and associated pollutants to rivers and lakes via shallow groundwater pathways.

Preferential Flow
A term used to describe water movement along favoured pathways through a geological medium, bypassing other parts of the medium. Examples include pores formed by soil fauna, plant root channels, weathering cracks, fissures and/or fractures.

Saturated Zone
The zone below the water table in an aquifer in which all pores and fissures and fractures are filled with water at a pressure that is greater than atmospheric.

Sedimentary Rock
A rock composed of sediments (sand, silt, clay, calcium carbonate fragments, shell fragments, etc.) that have been buried and lithified (cemented). Common types include sandstone, shale and limestone.

Soil (topsoil)
The uppermost layer of soil in which plants grow.

Spring
A spring is a natural feature where groundwater emerges at the surface. Springs usually occur where the rate of flow of groundwater is too great to remain underground. The position of a spring usually reflects a change in soil or rock type, or a change in slope.

Subsoil
Unlithified (uncemented) geological strata or materials beneath the topsoil and above bedrock. Common types include Till/Boulder Clay, sand/gravel and peat.

Surface Water
An element of water on the land's surface such as a lake, reservoir, stream, river or canal. Can also be part of transitional or coastal waters. (Surface Waters Regulations, 2009.).

Swallow Hole (also known as 'Sinkhole')
The point where concentrated inflows of water sink underground. They are found in karst environments.

Threshold Values (TVs)
Chemical concentration values for substances listed in Schedule 5 of the Groundwater Regulations (2010), which are used for the purpose of chemical status classification of groundwater bodies.

Till (also known as 'Boulder Clay')
Unsorted glacial Sediment deposited directly by the glacier. It is the most common Quaternary deposit in Ireland. Its components may vary from gravel, sands and clays.

Unsaturated Zone
The zone between the land surface and the water table, in which pores, fractures and fissures are only partially filled with water. Also known as the vadose zone.

Up-gradient
The direction of increasing groundwater levels, i.e. the direction from which groundwater is flowing. The area of the groundwater system that has higher groundwater levels than other areas. Opposite of down-gradient.

Vulnerability
The intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities (Fitzsimmons et al, 2003).

Water Table
The uppermost level of saturation in an aquifer at which the pressure is atmospheric. This is the level to which water naturally settles in the cracks, cavities and pore spaces underground. Above the water table, the spaces in the rock or sediments are air-filled. Below the water table, the spaces are filled with water.

Weathering
The breakdown of rocks and minerals at the earth's surface by chemical and physical processes.

Well
A construction into the ground in order to access groundwater. Can be a dug well, which is generally shallow, with a diameter of a metre of more, or a borewell (see 'Borehole'), which is narrower in diameter and generally deeper.

Zone of Contribution (ZOC)
The area surrounding a pumped well or spring that encompasses all areas or features that supply groundwater to the well or spring. It is defined as the area required to support an abstraction and/or overflow (in the case of springs) from long-term groundwater recharge.

Appendix 5

Hydrogeological Reports containing Borehole Descriptions and Logs

Index Table of Borehole Numbers

BH No. in ZOC Report	Borehole Marking	Drilling Date	Described and/or Logged in Report
BH 1	BH covered	1970s	Ball, D. (1999)
BH 2	None	1989-1990	Ball, D. (1999)
BH 3	4/5 marked on adjacent manhole cover	1996	Ball, D. (1999)
BH 4	None	1996	Ball, D. (1999)
BH 5	BH covered	2000	Ball, D. (2005)
BH 6	6 marked on adjacent manhole cover	2000	Ball, D. (2005)
BH 3S	None	2003	Ball, D. (2005)
BH 2S	None	2003	Ball, D. (2005)
BH 1S	None	2003	Ball, D. (2005)
Heidi Price Piezometers surrounding BH 2	Piezos covered	1994	Ball, D. (1999)

New Inn Group Water Scheme

ASSESSMENT REPORT

MAY 1999

David M. Ball, Emmet Bridge House, Clanbrassil St., Dublin 8

New Inn Group Water Scheme
Summary Technical Assessment
by
David M. Ball
(Hydrogeologist)

Background

I have drafted the following document from the standpoint of an independent hydrogeologist. I have been involved with the New Inn Group Water Scheme over the last 3-4 years. Whilst I am employed by the Scheme, I see my role as being to provide objective assessment, advice and assistance. Therefore, this document contains comments and observations which highlight both the problems and the successes of the present scheme.

The source of water for the scheme is groundwater. Hydrogeologists have been involved in the Scheme for many years. The involvement of hydrogeologists started with Bob Aldwell from the Geological survey of Ireland in the 1970's. The main borehole was located and drilled with his advice. Shane O'Neill of Environmental Resources Analysis (a Dublin based firm of consultants) sited and designed a second borehole in 1989-1990.

The Group Scheme has been very open and helpful to young research hydrogeologists. For example Heidi Price from TCD drilled some observation piezometers in 1994 and then carried out a research groundwater modelling exercise for the New Inn source as a part of her MSc.

Similarly Malcolm Doak under the supervision of Donal Daly and Willie Warren from the Geological Survey, Paul Johnson of Trinity College and Richard Thorn of Sligo RTC used aerial photography and site visits to try to map the Quaternary deposits of an area which included New Inn. This work was a part of a an exercise in groundwater vulnerability mapping in the mid 1990's supported by the European Union Stride Programme.

I provided advice in 1995 on the operational problems and in 1996 supervised the drilling of two emergency additional water supply boreholes. There has been a long-standing recognition that the present source is not satisfactory. It was not a problem of quality but of sustaining sufficient yield during the summer peak demand period when water levels in a thin shallow aquifer are at their lowest. In 1997 and 1998 there were visits to try to identify the location of new areas for groundwater exploration but the options were seen to be limited by a wide range of factors. In late 1998 and the spring of 1999 there have been field investigations to assess some new groundwater targets. There is a current groundwater exploration and development scheme.

The scheme has a long history and there have been many events, additions and changes. I do not intend to describe these in detail but instead try to provide below an overview description of the present status of the scheme, the present perception of the problems and the present programme of exploration and development. Additional specific details can be provided at a later stage if the County Council or other outside authorities wishes to obtain clarification on a particular matter.

The Scheme - General Description and Status

The New Inn Group Water Scheme is a large independent water supply scheme, centred on New Inn in east Galway. The scheme serves a population of 1011 people (July 1996 estimates) living in 146 farmhouses and 365 houses and cottages. In addition water is supplied to the Garda Barracks, Railway Station, Pubs, Shops, Steel works, other business' and garages. There is an active and progressive voluntary

committee of Trustees that has provided continuity over many years. The Scheme employs a supervisor (Vincent Finnerty) on a part time basis to maintain the Scheme. There is a considerable body of knowledge and understanding of both the Scheme and local land use history held by the supervisor and the Trustees. The water quality of the scheme is monitored by the Western Health Board and the local authority, but there does not appear to be a record held by the scheme of all the results of the water quality tests. The water quality is reputed to be excellent. There was one instance in late 1996 of two faecal coliform being found in one sample of water. This instance may have been real or may have arisen from sampling away from the source. The water is not chlorinated at present.

The scheme depends upon a supply from three very efficient shallow boreholes drawing groundwater from a fine gravel aquifer near the Community Centre west of the village. The water is pumped from the source at about 85 metres OD up to a large concrete reservoir about 2 km to the north east of the village at an elevation of over 120 metres OD. The water is distributed by gravity from the reservoir over a wide area around. The reservoir holds a usable storage of 150,000 gallons. The location of the boreholes and the reservoir is shown in Figures 1 and 2.

The discharge is metered at the groundwater source but it is not metered at the reservoir. A daily record has not been kept of the pumping rate. It varies according to demand, the availability of groundwater and the efficiency of the boreholes. However daily readings were taken in a warm dry period in the summer of 1996 which showed that the amount of water pumped varied between 135,000 gallons per day to 156,000 gallons per day. During this time, which was before two additional boreholes were drilled, this pumping rate barely kept pace with demand. It was estimated that at times when the ditches were dry and cattle were relying on field troughs the water demand could be as high as 200,000 gallons per day.

The meter reading on the 10th of July 1996 was 357,144,800 gallons. The meter reading on the 25th March 1999 was 505,824,900 gallons. The difference is 148,680,000 gallons. This shows that during the intervening two years and eight months (approximately 990 days) the average daily volume pumped was about 150,000 gallons per day (gpd). This period covers two average to wet summers and does not cover a period of prolonged drought.

In 1996 the number of animals in the area covered by the Scheme was estimated to be 1272 Cows, 3916 Dry stock, 6394 other stock (sheep and pigs). It is not possible to estimate the actual stock water use. Some animals such as sheep will require no water whereas dairy cows may require a large amount of water if they do not have access to streams and ditches. The current trend encouraged by the REPS scheme is to keep animals out of the surface water courses and to provide field drinking troughs. It is expected that more and more animals will require water from the scheme.

The Scheme is expanding. Recently there have been an average of 6 additional house hold connections each year.

Demand for domestic water is increasing, partly through increased domestic appliances and improved washing and sanitary facilities and also a change of attitude in terms of water use.

Consumers (both farmers and domestic) are also becoming increasingly aware of water quality and health. Whilst health concerns and safe water are uppermost there is also a desire to obtain a water supply that does not need, nor receive, chemical treatment. The taste of water is recognised as an important consideration for both drinking and making tea. There is a certain justifiable pleasure and pride that a

volunteer committee of local people has managed to sustain an essentially high quality, untreated water supply for so long.

The Groundwater Resources and the Groundwater Source

New Inn has a limited choice of aquifers. The bedrock is Carboniferous limestone. It is not the clean pale grey 'Burren limestone', that often is karstified and very permeable, but instead the black, shaley and iron pyrites rich Ballysteen limestone. The Ballysteen is a poor aquifer in terms of yield, and it also tends to contain groundwater rich in iron and sometimes hydrogen sulphide. There are three broad types of soil or overburden above the limestone bedrock; peats and marls, esker sands and gravels, and stony boulder clay. The esker is narrow and sinuous. It forms the route for the ancient road from Ballyfa to Kilconnell and on to Ballinasloe. The land to the south and east of the esker tends to be poorly drained boulder clay resting on limestone. To the north and west of the esker the land is low lying with peats and marls lying on an irregular boulder clay layer above limestone.

There is therefore just one potentially productive aquifer in the area; the esker sands and gravels. Unfortunately the esker has been quarried. Part of the old quarries have been used as domestic refuse dumps by the Council. As the esker forms the route of the road there has been ribbon housing development along the esker, with accompanying septic tanks. The soils on the esker are very thin and the core of the esker consists of very large cobbles and boulders. The esker is very permeable and would be classified as vulnerable to contamination.

Though the aquifer is not ideal it does have a redeeming characteristic. It appears from quarry histories, past drilling and recent augering that on the north western flank of the esker the material becomes a coarse sand to medium gravel. The general surface and groundwater drainage direction is from the higher land to the south and east. Therefore in general terms the water moving from this area recharges the coarse side and core of the esker and then slowly moves into the more fine grained sands and gravels on the north west flank. It appears therefore that contaminants are filtered out or break down in the sands and gravels.

The current groundwater source is next to the Community Centre and west of the school, shops and filling station in the centre of New Inn. The Community Centre has toilets and these discharge into a septic tank near the boreholes. A stream fed by spring seepages to the east drains round the site. This stream appears to receive some direct discharges from buildings in the village and run off from farm yards. It appears to suffer periodic pollution. The boreholes are clearly in position that is very vulnerable. The site is not ideal, and this is well recognised by the Trustees of the Group Scheme.

However the site has two main advantages. First it is on well drained flat land owned or accessible to the community. Second, in spite of the theoretical vulnerability, the scheme has been able to draw upon 100,000 to 150,000 gallons of good quality water each day without any serious or persistent deterioration in quality.

The groundwater source consists of 3 boreholes, within about 50 metres of each other. The location of these boreholes is shown on Figure 3 - a sketch plan of the site. The three pumping boreholes are shown as large red dots. The original borehole No.1 drilled in the 1970's is shown as a red circle with a white centre. Borehole 2 was drilled in 1989. Boreholes 3 and 4 were drilled in 1996. Three piezometers or observation boreholes (P1-3) are shown next to Borehole 2. These were installed by Heidi Price. The figure shows the approximate position of the esker and the GAA grounds.