

3.21. KILKENNY

Summary Information	
Number of Public Water Supplies Monitored during 2001:	15
Estimated Population Served by Public Water Supplies Monitored during 2001:	51,409 persons
Number of Group Water Schemes Monitored during 2001:	74
Estimated Population Served by Group Water Schemes Monitored during 2001:	4,304 persons
Results of Microbiological Analysis:	
Number of Public Water Supplies Monitored Free of Faecal Coliforms:	10
Number of Group Water Schemes Monitored Free of Faecal Coliforms:	63
Percentage of Samples Free of Faecal Coliforms in Public Water Supplies:	95.4%
Percentage of Samples Free of Faecal Coliforms in Group Water Schemes:	87.5%

Assessment of the Monitoring Results for 2001

There were 15 public water supplies and 74 group water schemes monitored by Kilkenny County Council during 2001 serving a population of 55,000 people.

Compliance with the faecal coliform standard in public water supplies was below the national average in Kilkenny during 2001. There were 5 incidents of faecal contamination of public water supplies in 2001. These incidents were recorded in the Bennettsbridge, Castlecomer (Old), Kilkenny City (Troyswood), Mooncoin Regional and Clogh-Castlecomer supplies. All of the public water supplies were fully compliant for ammonium, nitrate and nitrite in 2001. Other parameters of concern were aluminium and fluoride. Exceedances of the aluminium standard were recorded in Kilkenny City (Troyswood) (2 of 9 samples analysed) and Mooncoin Regional (4 of 8 samples analysed). However, the compliance rate for both of these schemes has improved over the previous year and it is hoped that stringent efforts will be made to ensure that both of these schemes are brought into full compliance over the coming year. Fluoride exceedances were recorded in 10 of the 15 public supplies monitored in Kilkenny, although the number of exceedances has decreased since the previous year. An examination of the dosing regime at these plants should be carried out to ensure that exceedances of the standard are eliminated.

The quality of drinking water in group water schemes, based on a once a year sampling regime, is satisfactory in 63 of the 71 group water schemes monitored for faecal coliforms. However, the remainder of the group water schemes continue to have faecal contamination. Although the number of exceedances of the nitrate standard decreased in group water schemes in 2001, nitrate was still a problem in the Windgap group water scheme where a value of 58 mg/l was recorded in 2001.

Review of the Period 1999-2001

With the exception of the issues highlighted above the general quality of drinking water in public water supplies in Kilkenny was satisfactory with improvements noted in compliance with faecal coliform, ammonium, nitrate and aluminium standard over the review period. Compliance with the aluminium standard is, however, still relatively low and alum dosing at the plants specified above needs further refining. The quality of drinking water in the majority of group water schemes is satisfactory although the compliance rate for faecal coliforms has decreased slightly since 2000.

3.21. KILKENNY

Summary Information	
Number of Public Water Supplies Monitored during 2002:	15
Estimated Population Served by Public Water Supplies Monitored during 2002:	51,409 persons
Overall Percentage Compliance in Public Water Supplies:	97.8%
Number of Group Water Schemes Monitored during 2002:	25
Estimated Population Served by Group Water Schemes Monitored during 2002:	3,260 persons
Overall Percentage Compliance in Group Water Schemes:	93.6%
Results of Microbiological Analysis:	
Number of Public Water Supplies Monitored Free of Faecal Coliforms:	13
Number of Group Water Schemes Monitored Free of Faecal Coliforms:	19
Percentage of Samples Free of Faecal Coliforms in Public Water Supplies:	98.6%
Percentage of Samples Free of Faecal Coliforms in Group Water Schemes:	76.9%

Assessment of the Monitoring Results for 2002

There were 15 public water supplies and 25 group water schemes monitored in Kilkenny in 2002 collectively supplying water to a population of approximately 55,000 people.

Overall compliance with the drinking water standards in public water supplies was close to the national average at 97.8%. Compliance with the faecal coliform standard in public water supplies was also close to the national average during 2002. There were 3 incidents of faecal coliform contamination of public water supplies during 2002. These were in the Callan and Kilkenny (Troyswood) supplies, with two incidents in the latter supply. Overall, of the 15 public water supplies in Kilkenny, 13 were fully compliant with the faecal coliform standard. All public water supplies in Kilkenny were fully compliant with the standards for colour, turbidity, taste, nitrites, ammonium and the heavy metals. The continued exceedances of aluminium in the Kilkenny (Troyswood) (5 of 8 samples analysed exceeded) and Mooncoin (3 of 13 samples exceeded) supplies are of concern. Aluminium exceedances in these supplies has been highlighted in previous reports. Of particular concern is the Troyswood supply which exhibited exceedances of the colour, aluminium, total and faecal coliform standards in 2002. Exceedances of the nitrate standard were reported in the Castlecomer (Old) and Clogh-Castlecomer supplies.

The overall compliance rate for group water schemes in Kilkenny was above the national average at 93.6%. Despite this, compliance with the faecal coliform standard was below average with around 25% of group water schemes exceeding standard in 2002. Nitrate exceedances were reported in Galmoy, Kilree (Stoneyford) and Windgap group water schemes.

Review of the Period 2000-2002

The general quality of drinking water in public water supplies in Kilkenny was satisfactory during the review period. However, problems remain in relation to the Kilkenny (Troyswood) and Mooncoin supplies that have not improved during the review period. There has been an improvement in the overall aluminium compliance rate during the review period from 62% in 2000 to 71% in 2002, though this low rate of compliance is still far from acceptable and urgent action is required to remedy the situation.

The overall quality of drinking water in group water schemes was unsatisfactory during the review period. The compliance rate with the faecal coliform standard consistently decreased during the review period from 93% in 2000 to 77% in 2002. Action is required to arrest this decline and bring these supplies into compliance with the drinking water Regulations.

3.21. KILKENNY

Summary Information	
Number of Public Water Supplies Monitored during 2003:	15
Estimated Population Served by Public Water Supplies Monitored during 2003:	51,748 persons
Overall Percentage Compliance in Public Water Supplies:	97.1%
Number of Group Water Schemes Monitored during 2003:	26
Estimated Population Served by Group Water Schemes Monitored during 2003:	3,463 persons
Overall Percentage Compliance in Group Water Schemes:	94.7%
Results of Microbiological Analysis:	
Number of Public Water Supplies Monitored Free of Faecal Coliforms:	14
Number of Group Water Schemes Monitored Free of Faecal Coliforms:	18
Percentage of Samples Free of Faecal Coliforms in Public Water Supplies:	98.7%
Percentage of Samples Free of Faecal Coliforms in Group Water Schemes:	88.2%

Assessment of the Monitoring Results for 2003

There were 15 public water supplies and 26 group water schemes monitored in Kilkenny in 2003 collectively supplying water to a population of 55,211 people.

Overall compliance with the drinking water standards in public water supplies was slightly below average at 97.1%. Compliance with the faecal coliform standard in public water supplies was the same as the national average during 2003. A number of moderate exceedances of the faecal coliform standard were reported in the Mooncoin water supply during July 2003. Overall, of the 15 public water supplies in Kilkenny, 14 were fully compliant with the faecal coliform standard. All public water supplies in Kilkenny were fully compliant with the standards for ammonium, the heavy metals, nitrate, nitrite, odour and pH. Percentage compliance with the aluminium (81%) and fluoride (91%) standards was relatively low in Kilkenny during 2003. The aluminium problem relates to poor compliance at the Troyswood supply. Intensive sampling during 2003 indicated that the water supplied failed to meet the standard over 20% of the time (34 of 155 samples analysed failed). Non-compliances in the Troyswood supply have been ongoing for a number of years and must be addressed by the sanitary authority.

The overall compliance rate for group water schemes in Kilkenny was above the national average at 94.7%. Although faecal coliform compliance was above average in 2003 over 30% of group water schemes were contaminated during the year. Elevated levels of nitrates were also a problem in Galmoy, Kilree (Stonyford) and Windgap group water schemes

Review of the Period 2001-2003

The general quality of drinking water in public water supplies in Kilkenny was satisfactory during the review period. There has been an improvement in the rate of compliance with the faecal coliforms standard from 95% in 2001 to just under 99% in 2003. Compliance with the aluminium standard remains problematic in Troyswood though has improved somewhat in Mooncoin. Fluoride compliance remains consistently below average at 91% throughout the review period.

The overall quality of drinking water in group water schemes was unsatisfactory during the review period. The level of compliance with the faecal coliform standard has not improved between 2001 and 2003 while the Galmoy, Kilree (Stonyford) and Windgap group water schemes exhibited nitrate exceedances in 2002 and 2003.

Kilkenny County Council

Summary of Water Supplies

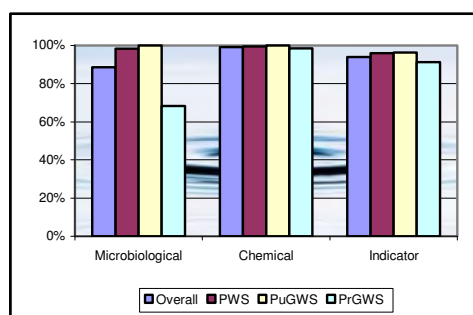
Type of Supply	No. of Supply Zones	Population Served
PWS	15	44,687
PuGWS	59	5,939
PrGWS	35	4,043
SMP	None Identified	

Assessment of 2004 Monitoring

Kilkenny County Council carried out analysis on 600 check and 25 audit samples during 2004. In general, Kilkenny County Council have carried out appropriate sampling in the majority of public water supplies (and have exceeded the minimum requirements in most cases). However, Kilkenny County Council did not carry out monitoring in 57 public group water schemes and 3 private group water schemes that were covered by the Regulations in 2004. Furthermore, no monitoring results were reported for cyanide, benzo(a)pyrene, bromate, pesticides, PAH's, trihalomethanes and taste nor was compliance reported for acrylamide, epichlorohydrin and vinyl chloride. There was no monitoring carried out in private supplies that supply water as part of public or commercial activities in Kilkenny during 2004. These discrepancies must be corrected in future monitoring programmes.

Overall Compliance in 2004

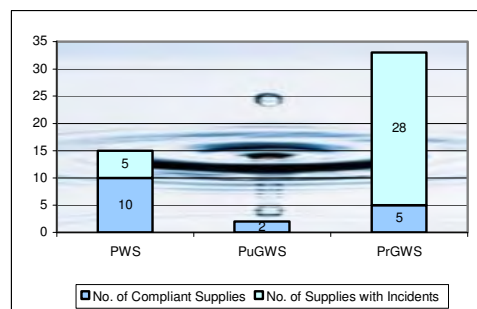
The overall rate of compliance in Kilkenny County Council, 94.6%, was below the national average during 2004. The quality of drinking water in public water supplies was, in general, satisfactory while the quality of drinking water provided by private group water schemes was below average and was unsatisfactory. Compliance with the microbiological, chemical and indicator parametric values for the different types of water supplies is shown below.



	PWS	PuGWS	PrGWS	SMP
Overall	96.9%	97.1%	92.4%	N/A
Micro	98.3%	100%	68.3%	N/A
Chemical	99.5%	100%	98.4%	N/A
Indicator	95.9%	96.3%	91.4%	N/A

Compliance with the *E. coli* Standard

A summary of the number of incidents of *E. coli* contamination reported during 2004 is provided on the figure below. A brief summary of the *E. coli* incidents in the public water supplies is also provided.



There were 5 incidents of *E. coli* contamination in public water supplies in Kilkenny County during 2004 in the Bennetsbridge, Gowran-Goresbridge-Paulstown, Kilkenny City (Troyswood), Mooncoin and Thomastown. All these incidents were moderate (<20 cfu/100ml) and were once off incidents. The number of private group water schemes in which *E. coli* was unacceptable as 28 of the 33 private group water schemes tested failed to meet the standards at least once during 2004. This situation is unacceptable and action must be taken by the sanitary authority to ensure that these group schemes take the appropriate measures to ensure that they are capable of supplying potable water on a consistent basis.

Compliance with the Chemical and Indicator Parametric Values

The overall rate of compliance with the chemical standards in public water supplies was, with the exception of a small number of moderate fluoride exceedances, satisfactory. The sole issue of concern in relation to the chemical parameters was the presence of elevated levels of nitrate in 4 private group water schemes. Exceedances of the nitrate parametric value have been a feature of a small number of private group water schemes in Kilkenny historically and the issue must be addressed by the sanitary authority and the group schemes concerned.

Compliance with the indicator parametric values in Kilkenny County was marginally above the national average. While there has been an improvement in compliance with the aluminium parametric value in Kilkenny City (Troyswood) (just 1 of the 31 samples analysed exceeded) there has been a decline in the level of aluminium compliance in the Mooncoin supply (11 of 21 samples analysed exceeded) reversing the trend reported in 2003. Compliance with the indicator parametric value in the public group water schemes was similar to that of the public water supplies.

The overriding feature of the monitoring of the indicator parameters in the private group water schemes was the relatively low percentage of samples complying with the coliform bacteria parametric value (52%). In total 30 of the 33 private group water schemes monitored exceeded the parametric value for coliform bacteria at least once during 2004. The Council must address the quality bacteriological quality deficiencies in the private group water schemes as a matter of urgency.

Kilkenny County Council

Summary of Water Supplies

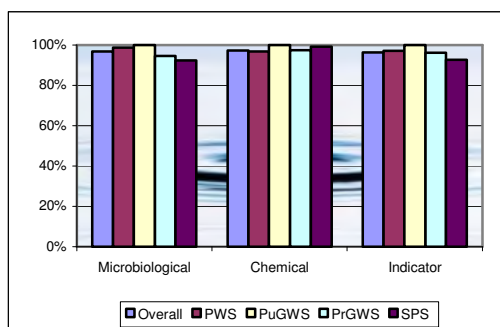
Type of Supply	No. of Supply Zones	Population Served
PWS	15	51,320
PuGWS	8	768
PrGWS	35	3,463
SPS	59	N/A

Assessment of 2005 Monitoring

Kilkenny County Council carried out analysis on 1,106 check and 20 audit samples during 2005. No monitoring was carried out in 7 of the 8 public group water schemes in Kilkenny during 2005. While the number of check samples analysed was in some cases in excess of the requirements of the Regulations, no audit samples were analysed in 5 public water supplies. Furthermore, in those supplies where audit monitoring was carried out, no monitoring was done for benzo(a)pyrene, bromate, cyanide, pesticides and PAH's.

Overall Compliance in 2005

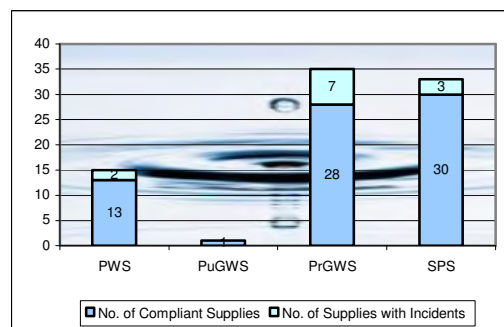
The overall rate of compliance in Kilkenny County Council, 96.7%, was above the national average (up from 94.6% compliance in 2004). Compliance in most public water supplies, public group water schemes and private group water schemes was satisfactory during 2005. Compliance with the microbiological, chemical and indicator parametric values are shown below.



	Micro	Chemical	Indicator
Overall	96.9%	97.3%	96.4%
PWS	98.8%	96.8%	97.1%
PuGWS	100%	100%	100%
PrGWS	94.7%	97.5%	96.2%
SPS	92.5%	99.3%	92.8%

Compliance with the *E. coli* Standard

A summary of the number of incidents of *E. coli* contamination reported during 2005 is provided on the figure below. A brief summary of the *E. coli* incidents in the public water supplies is also provided.



There were 2 incidents of *E. coli* contamination in public water supplies in Kilkenny during 2005 in the Bennetsbridge and Callan supplies; however, both incidents were due to one-off detections of a single organism. The microbiological quality of the majority of private group water schemes was satisfactory although 7 of the 35 schemes monitored were contaminated with *E. coli*. This is a significant reduction in the number of schemes that were contaminated compared to 2004 when 28 of the 33 private group water schemes monitored were contaminated.

Compliance with the Chemical and Indicator Parametric Values

The main feature of the below average level of compliance in public water supplies in Kilkenny with the chemical parametric values was the high number of fluoride exceedances (24 of 188 samples analysed exceeded). There were a particularly high number of fluoride exceedances in the Ballyragget WS (10 of 14 samples analysed) though there were moderate fluoride exceedances in most of the fluoridated supplies in Kilkenny. Elevated levels of nitrate were detected in the Urlingford-Johnstown WS in one sample during 2005 while there was also a single trihalomethenes exceedance in the Kilkenny (Radestown) supply.

Compliance with the nitrate parametric value was problematic in a number of private group water schemes with 7 schemes reporting nitrate exceedances in 2005 (an increase from 4 schemes in 2004). This trend is worrying and must be addressed by the sanitary authority.

Though compliance with the indicator parametric values in public water supplies in Kilkenny was above the national average there were problems in complying with the aluminium parametric values in the Mooncoin supply (8 of 22 samples analysed exceeded).

The poor rate of compliance with the coliform bacteria parametric value in both the private group water schemes and the private water supplies remains the overriding issue in relation to compliance with the indicator parametric values. 80% of samples analysed in private group water schemes (up from 52% in 2004) were compliant while 69% of the samples analysed in the private water supplies were free of coliform bacteria in Kilkenny in 2005.

Kilkenny County Council

Summary of Water Supplies²⁶

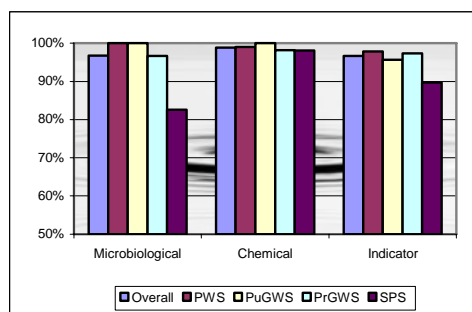
Type of Supply	No. of Supply Zones	Population Served
PWS	15	46,045
PuGWS	26	2,649
PrGWS	26	3,243
SPS	67	N/A

Assessment of 2006 Monitoring

Kilkenny County Council carried out analysis on 1,070 check and 62 audit samples during 2006. While there was a significant amount of monitoring carried out in Kilkenny there was a shortfall in monitoring in one public group water scheme and one private group water scheme.

Overall Compliance in 2006

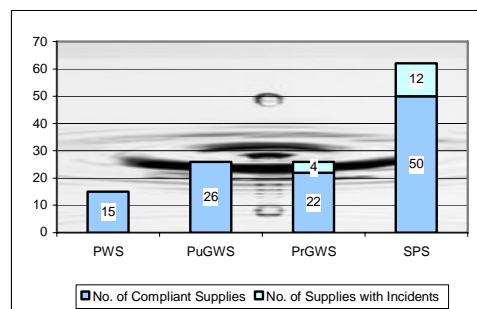
The overall rate of compliance in County Kilkenny, 97.3%, was close to the national average, though improved marginally compared to 2005 (up from 96.7% compliance). While compliance in most public water supplies and public group water schemes was satisfactory during 2006, the level of compliance in some private group water schemes and private water supplies was poor. Compliance with the microbiological, chemical and indicator parametric values are shown below.



	Micro	Chemical	Indicator
Overall	96.8%	98.8%	96.7%
PWS	100%	99.0%	97.9%
PuGWS	100%	100%	95.7%
PrGWS	96.7%	98.2%	97.3%
SPS	82.6%	98.1%	89.7%

Compliance with the *E. coli* Standard

A summary of the number of incidents of *E. coli* contamination reported during 2006 is provided in the figure below.



There were no incidents of *E. coli* contamination in public water supplies or public group water schemes in Kilkenny during 2006. The microbiological quality of the majority of private group water schemes was good, however, 4 of the 26 schemes monitored were contaminated with *E. coli* during the year. This is a drop in the number of contaminated schemes compared to 2005 (when 7 schemes were contaminated).

Compliance with the Chemical and Indicator Parametric Values

Compliance with the chemical standard was below average and was mainly due to a relatively large number of marginal exceedances of the fluoride standard (11 of 84 samples analysed exceeded). There was a high number of fluoride exceedances in the Kilkenny (Radestown) supply though there were fluoride exceedances in most of the fluoridated supplies in Kilkenny. An elevated level of nitrate was detected in the Ballyragget WS in one sample during 2006 while there was also two significant exceedances of the trihalomethanes standard in the Clogh-Castlecomer and Inistioge supplies. There was also one marginal exceedance of the mercury standard in Mooncoin Regional supply though all five other samples (taken both before and after this exceedance) in this supply were well below the standard, and it is likely that this result was an anomaly.

Compliance with the nitrate parametric value was problematic in a number of private group water schemes with 6 schemes reporting nitrate exceedances in 2006 (decrease from 7 schemes in 2004). The cause of contamination of these schemes must be investigated and action taken to return the supplies to compliance.

Though compliance with the indicator parametric values in public water supplies in Kilkenny was above the national average there were problems in complying with the iron (95% compliance) and pH (94% compliance) standards.

The poor rate of compliance with the coliform bacteria parametric value in both the private group water schemes and the private water supplies remains the most significant issue in relation to compliance with the indicator parametric values. 12 of the 26 private group water schemes and 25 of the 62 private water supplies monitored contained coliform bacteria.

²⁶ PWS = Public Water Supply, PuGWS = Public Group Water Scheme, PrGWS = Private Group Water Scheme, SPS = Small Private Supply

Kilkenny County Council

Summary of Water Supplies⁴⁴

Type of Supply	No. of Supply Zones	Population Served
PWS	15	51,409
PuGWS	25	2,467
PrGWS	23	3,397
SPS	83	N/A

Assessment of 2007 Monitoring

Kilkenny County Council carried out 7,197 individual tests on drinking water during 2007. There was a minor shortfall in the number of tests carried out in Kilkenny during 2007 with just over 1% of tests not carried out.

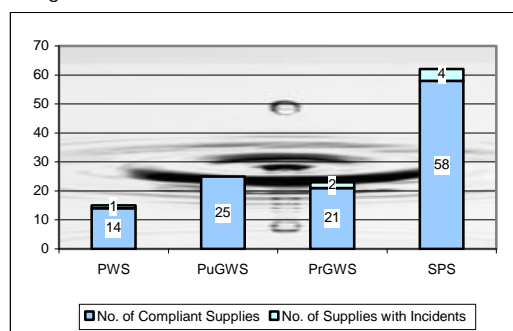
Overall Compliance in 2007

The overall rate of compliance in Co. Kilkenny, 97.6%, was above the national average, though improved marginally compared to 2006 (up from 97.3% compliance). Compliance with the microbiological, chemical and indicator parametric values is shown below.

	Micro	Chemical	Indicator
Overall	98.6%	98.7%	96.9%
PWS	99.7%	98.6%	97.5%
PuGWS	100%	100%	97.6%
PrGWS	96.9%	100%	97.0%
SPS	93.8%	98.0%	94.0%

Compliance with the *E. coli* Standard

A summary of the number of incidents of *E. coli* contamination reported during 2007 is provided in the figure below.



There was one incident of *E. coli* contamination in public water supplies in the Gowran-Goresbridge-Paulstown supply in Kilkenny during 2007. The microbiological quality of the majority of private group water schemes was good; however, 2 of the 23 schemes monitored were contaminated with *E. coli* during the year. This is a drop in the number of contaminated schemes compared to 2006 (when 4 schemes were contaminated).

Compliance with the Chemical and Indicator Parametric Values

Compliance with the chemical standard was below average and was mainly due to a relatively large number of marginal exceedances of the fluoride

standard (15 of 69 samples analysed exceeded). However, the majority of these exceedances (11) were in the first six months of 2007 and were due to the reduction in the fluoride standard. There were 2 marginal mercury exceedances in the Callan water supply which were subsequently found to be due to an old flowmeter at the treatment plant which contained mercury. This meter has been removed from the treatment plant and the supply is now compliant with the mercury standard. A single lead exceedance in the Clogh-Castlecomer supply was due to the presence of a lead service connection and a single nitrate exceedance was also reported in the Kilkenny City (Troyswood) supply. The latter is significantly higher than the 33 other samples analysed and may be an anomalous result. Compliance with the trihalomethanes parametric value in the Kilkenny City (Radestown) supply was also problematic as 2 of the 8 samples analysed failed to meet the standard.

There were no exceedances of the chemical parametric values in private group water schemes in Kilkenny during 2007 (down from 6 in 2006). However, 5 of the 62 private water supplies monitored failed to comply with the nitrate standard. Though compliance with the indicator parametric values in public water supplies was the same as the national average, a large number of samples analysed for pH failed to comply with the parametric at the Glenmore (all 6 samples analysed failed) and the Piltown Fiddown (9 of 10 samples analysed failed). Furthermore, 10 of the 23 private group water schemes and 17 of the 62 private water supplies monitored contained coliform bacteria.

EPA Enforcement in 2007/2008

There are currently 9 public water supplies operated by Kilkenny County Council on the Remedial Action List (RAL⁴⁵) of public water supplies. Two supplies in Kilkenny County were added to the RAL in 2008 while none were removed. Of the supplies on the RAL, Kilkenny County Council indicates that 4 supplies will be upgraded, 3 will be replaced and 2 supplies will have operations improved to ensure the supply can produce safe and secure water.

The EPA has advised all local authorities to install chlorine monitors and alarms at all treatment plants. As of August 2008, Kilkenny County Council had installed chlorine monitors and alarms on 8 of 15 supplies.

The EPA received 7 notifications of the failure to meet the parametric value from Kilkenny County Council in the period March 2007 to September 2008. The notifications were due to the failure to meet the *E. coli* (2), coliform bacteria (2), *Cryptosporidium* (1) and mercury (1) parametric values while one supply was notified to the EPA as a precaution due to flooding at the treatment plant. During this period 3 boil water notices were put in place in the following supplies; Ballyragget, Paulstown and Bennetsbridge. All 3 were in August 2008 and were due to the poor weather in this period. Arising from the notifications 2 Directions were issued by the EPA to Kilkenny County Council, which required the preparation of action programmes in both cases.

⁴⁴ PWS = Public Water Supply, PuGWS = Public Group Water Scheme, PrGWS = Private Group Water Scheme, SPS = Small Private Supply.

⁴⁵ Details on the supplies that are on the RAL are listed in the disk published with this report and this list is also available at www.epa.ie.