Office of Environmental Enforcement

Focus on Urban Waste Water Discharges in Ireland

Environmental Protection Agency

The Environmental Protection Agency (EPA) is a statutory body responsible for protecting the environment in Ireland. We regulate and police activities that might otherwise cause pollution. We ensure there is solid information on environmental trends so that necessary actions are taken. Our priorities are protecting the Irish environment and ensuring that development is sustainable.

The EPA is an independent public body established in July 1993 under the Environmental Protection Agency Act, 1992. Its sponsor in Government is the Department of the Environment, Community and Local Government.

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- large scale industrial activities (e.g., pharmaceutical manufacturing, cement manufacturing, power plants);
- intensive agriculture;
- the contained use and controlled release of Genetically Modified Organisms (GMOs);
- large petrol storage facilities;
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- Providing guidance to the public and to industry on various environmental topics (including licence applications, waste prevention and environmental regulations).
- Generating greater environmental awareness (through environmental television programmes and primary and secondary schools' resource packs).

PROACTIVE WASTE MANAGEMENT

- Promoting waste prevention and minimisation projects through the co-ordination of the National Waste Prevention Programme, including input into the implementation of Producer Responsibility Initiatives.
- Enforcing Regulations such as Waste Electrical and Electronic Equipment (WEEE) and Restriction of Hazardous Substances (RoHS) and substances that deplete the ozone layer.
- Developing a National Hazardous Waste Management Plan to prevent and manage hazardous waste.

MANAGEMENT AND STRUCTURE OF THE EPA

The organisation is managed by a full time Board, consisting of a Director General and four Directors.

The work of the EPA is carried out across four offices:

- Office of Climate, Licensing and Resource Use
- Office of Environmental Enforcement
- Office of Environmental Assessment
- Office of Communications and Corporate Services

The EPA is assisted by an Advisory Committee of twelve members who meet several times a year to discuss issues of concern and offer advice to the Board.

Focus on Urban Waste Water Discharges in Ireland

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Executive Summary

Introduction

The Urban Waste Water Treatment Regulations 2001-2010 and the 1991 Urban Waste Water Treatment Directive (UWWTD) set requirements on the provision of waste water collection systems and treatment plants, provide for the monitoring of waste water discharges and specify limits for certain parameters in the discharges.

This report, the eighth in the series, includes for the first time a review of the operation of waste water treatment plants at **529** urban areas that are the subject of an EPA waste water discharge licence application. These treatment plants treat waste water from an average population equivalent[1] of 4.97 million.

Infrastructure

The level of treatment provided for these urban areas in 2009 is summarised below in Table 1. Treatment provided in 2007 and 2001 is listed for comparison purposes and illustrates the continued increase in the provision of secondary treatment.

Table 1: Provision of waste water treatment 2001-2009 (based on p.e.)

Year	No treatment/ Preliminary treatment %	Primary treatment %	Secondary treatment %	Secondary with nutrient reduction %
2009	6	1	78	15
2007	9	1	75	15
2001	30	41	21	8

Eleven large urban areas (≥2,000 p.e.) do not meet the UWWTD requirement to have secondary treatment in place (Table 2). Expected completion dates are included in the table. In the case of Bray and Ringaskiddy the provision of treatment is now over 10 years late.

Table 2: Urban areas with secondary treatment required by the UWWTD but not yet in operation

Water services authority	Urban area	Date secondary treatment required	Estimated completion date[2]
Fingal	Lusk	2005	mid 2012 connection to Portrane
Cork	Skibbereen	2005	end 2012
Wicklow	Bray	2000	2012 pipeline to Shanganagh
Galway	Clifden	2005	2013
Cork	Cobh	2005	2014[3]
Cork	Passage West/Monkstown	2005	2014[3]
Cork	Ringaskiddy/Crosshaven/ Carrigaline	2000	2014[3]
Donegal	Moville	2005	mid 2014
Donegal	Killybegs	2008	end 2014
Cork	Youghal	2005	end 2015
Wicklow	Arklow	2005	end 2015

[1] Population Equivalent is a measurement of organic biodegradable load. A population equivalent of 1 (1 p.e.) is defined in the UWWTD as the organic biodegradable load having a five-day biochemical oxygen demand (BOD_5) of 60g of oxygen per day.

[2] Provided by water service authorities and the Department of Environment, Community and Local Government.

[3] The Cork Harbour Main Drainage Scheme will provide collection systems and waste water treatment facilities in the Cork lower harbour area serving the areas of Cobh, Passage West/Monkstown, and Ringaskiddy/Carrigaline/ Crosshaven.

Eight urban areas with a p.e. greater than 10,000 do not meet the UWWTD requirement to provide nutrient reduction in addition to secondary treatment for discharges to sensitive areas[4] by specified dates. Table 3 shows the 8 areas and includes the expected dates for provision of the required treatment, or cessation of discharges to sensitive areas.

Table 3: Urban areas with secondary treatment with nutrient reduction required by the UWWTD but not yet in operation

Water services authority	Urban area	Date secondary treatment with nutrient reduction required	Estimated completion date[5]
Donegal	Killybegs	31 May 2008	2012 new outfall to eliminate discharge to sensitive area
Kerry	Tralee	31 May 2008	end 2012
Louth	Dundalk	31 May 2008	end 2013
Cork City	Cork City	31 May 2008	end 2014
Cork	Carrigtohill	31 May 2008	end 2014
Wexford	Enniscorthy	31 May 2008	mid 2014
Dublin City, Fingal, South Dublin, Dun Laoghaire-Rath & Meath	Greater Dublin (Ringsend)	31 May 2008	2015 proposed new outfall to eliminate discharge to sensitive area
Kilkenny	Kilkenny City & Environs	31 May 2008	mid 2015

26 urban areas, in the size range 500 p.e. up to specified UWWTD thresholds[6], have been identified in this report as not having any treatment or just screening in place. These urban areas all require appropriate treatment[7] under the UWWTD. Also **71** urban areas in the same size range that have primary treatment in place may or may not have appropriate treatment depending on the site specific location of the discharge and any impacts associated with it. **42** coastal towns without secondary treatment are tourist centres linked to water activities.

Quality Standards

The Regulations and UWWTD specify monitoring requirements and set limits on the concentration of biochemical oxygen demand (BOD), chemical oxygen demand (COD) and total suspended solids (TSS) in waste water discharges from the larger urban areas. **57%** (99 of the 174 larger urban areas) met all of the effluent quality standards and monitoring requirements in 2009. When all urban areas with secondary treatment plants are included, this figure reduces to **54%**. If effluent from the areas with no treatment is included the compliance rate is **42%**. As such while 93% of urban waste water received secondary treatment or better (see Table 1) over one half of waste water treatment plants are not achieving the strict standards and guidelines set for effluent quality in the UWWTD.

The EPA inspected 86 licensed waste water works in 2010 and found that compliance with limits set in the licences for BOD, COD, TSS and nutrients ranged between 93% and 96%.

Waste Water Discharge Authorisations

The EPA introduced an authorisation system for all local authority waste water discharges as required by the Waste Water Discharge (Authorisation) Regulations 2007. The purpose of the authorisation system is to prevent and reduce pollution of waters by waste water discharges. As well as giving effect to measures required under the UWWTD and the Water Framework Directive, the Regulations

[4] Sensitive areas are identified in the Urban Waste Water Treatment Regulations 2001 and 2010.
[5] Provided by water service authorities and the Department of Environment, Community and Local Government.
[6] 2,000 p.e. for discharges to freshwater and estuaries. 10,000 p.e. for coastal discharges.
[7] "appropriate treatment" as in Article 2 of the Urban Waste Water Treatment Directive means treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the UWWTD and other Community Directives.

also give effect to certain measures required under Directives on Groundwater, Drinking Water, Bathing Water, Dangerous Substances, Habitats and Birds.

The EPA has received **529** licence applications and **515** applications for certificates of authorisation. The EPA granted **190** licences and **512** certificates by the end of 2011. Compliance with these licences and certificates will drive improvements in waste water treatment and water quality in Ireland.

Enforcement of Licences

The EPA's enforcement goal is to focus on protecting high quality waters from the impacts of waste water discharges, restoring the quality of waters seriously impacted by waste water discharges and preventing environmental pollution by waste water discharges. This report identifies the waste water works that monitoring has shown to be the cause of water pollution, those that have no treatment or lack the level of treatment required by the Directive, as well as those that will be prioritised for enforcement to protect water quality, pearl mussels, shellfish waters and bathing waters. In total **176** different waste water works are identified and these are listed in Appendices C to F, Appendix I and Tables 2.2 and 2.3 of this report.

The EPA's waste water enforcement strategy will focus on the following 5 intermediate outcomes[8] to work towards this goal:

1. Progress on **infrastructural improvement programmes**: the EPA will track progress with completion of works.
2. Compliance with **emission limit values**: the EPA will carry out audits and monitoring of licensed waste water works.
3. Reducing environmental **incidents and complaints**: the EPA will require prompt notification of incidents and will track progress in corrective and preventative actions.
4. Reducing the **environmental risk profile** of waste water works: the EPA has developed a model that assigns enforcement categories based on risks associated with waste water discharges.
5. **Reporting** by water services authorities to the EPA: the EPA will assess reports submitted by licensees and publish the reports to the website www.epa.ie.

It is expected that by 2015 Ireland will be compliant with the UWWTD requirements on the provision of secondary treatment and nutrient reduction in respect of the 18 large urban areas identified in Tables 2 and 3 above (Figure 1).

Figure 1: Expected compliance with requirements of the UWWTD with regard to provision of treatment for the large urban areas in Tables 2 and 3

Sewage Sludge

Approximately 106,000 tonnes of sewage sludge were produced at urban waste water treatment plants in 2009. Most of this was reused in agriculture (62%). The disposal of sludge in landfill has reduced to 0.1% in 2009 whereas disposal by other uses such as composting and land remediation at mine sites has increased to 38%.

[8] Intermediate outcomes are the key stepping stones or targets that must be achieved in order to secure a final goal. They relate to the environmental behaviour or compliance level of the regulated community and are the core short to medium term focus of outcome based enforcement.

An emerging issue that needs to be considered by water services authorities is the capacity to deal with the acceptance at waste water treatment plants of sludge from other treatment plants including single house on-site waste water treatment systems.

Concluding

The objective of the UWWTD is to protect the environment from the adverse impacts of discharges of urban waste water from population centres. Currently discharges from 57 waste water works are directly impacting on rivers or bathing waters. Progress in achieving the UWWTD objective will go a long way to meeting the objectives of the Water Framework Directive. While Ireland continues to improve provision of secondary treatment for waste water this has not kept pace with the requirements of the UWWTD and the Water Framework Directive as the discharge of waste water with inadequate or no treatment is still evident. In addition, where the treatment is in place this has not always led to achievement of the quality standards set out by the UWWTD, and required by the Water Framework Directive. The reasons for this include inadequate capacity or the poor performance of the treatment plant. The implementation of the UWWTD requires one of the most substantial investments in the environmental sector. The benefits though extend beyond water quality, as clean water is a pre-requisite to our tourism industry, food production and other manufacturing.

The licensing and enforcement of waste water discharges by the EPA will set out the roadmap for compliance with the UWWTD. This alone will not be sufficient to deliver value for money from the investment in waste water infrastructure. A step change in expertise is required in the operation of these national assets along with improving overall River Basin District management of our rivers, lakes, estuaries and coastal waters.

1. The Regulation of Waste Water treatment

1.1 Background and focus of this report

Main findings:

- 174 towns and cities in Ireland come under the remit of the 1991 Urban Waste Water Treatment Directive and sewage from these areas must undergo specified treatment and meet effluent quality standards.
- The waste water discharged from other agglomerations requires appropriate treatment to protect water quality and amenities.
- The EPA is now charged with authorising the discharges from all sewerage systems operated by local authorities. 529 licence applications were received by the EPA for these discharges.
- 190 waste water discharge licences (for agglomerations over 500 p.e.) and 512 certificates of authorisation (for agglomerations under 500 p.e) have been issued (to end of 2011).

In 2007 with the introduction of the Waste Water Discharge (Authorisation) Regulations 2007 the Environmental Protection Agency (EPA) was given responsibility for authorisation of waste water (sewage) discharges from any waste water works owned by, vested in, controlled or used by a water services authority. Waste water discharges[1] from agglomerations[2] greater than 500 population equivalent (p.e.) require a waste water discharge licence (WWDL) and discharges from agglomerations less than 500 p.e. require a certificate of authorisation.

The focus of this report is on the new licensing and enforcement system[3]. It covers only those cities, towns and villages requiring such licences. While the report deals with agglomerations over 500 p.e. many of the recommendations in the report may also apply to smaller agglomerations and treatment plants. The report provides information on the level of treatment of waste water and the quality of discharges in the period 2008 to 2010. It also investigates the performance of the water services authorities with the requirements of the WWDLs issued in this period.

The reference years for the data used in the report are as follows;

Year	Data used in the report
2008 - 2009	Data on effluent quality and treatment supplied by water services authorities for agglomerations over 500 p.e.
2009 – 2010	Data on licence enforcement, including the Annual Environmental Reports and findings of EPA inspections, for agglomerations issued with WWDLs up to the end of 2010[4].
2011	Data on the number of waste water discharge licences and certificates of authorisation issued up to the end of 2011.

The EPA makes recommendations regarding the actions required by the water services authorities to improve the level of treatment provided, the level of operation of the plants and compliance with WWDLs. The report is based on information supplied by water services

[1] Urban Waste Water is domestic waste water or a mixture of domestic and industrial waste water.
[2] Agglomeration, as defined in the Waste Water Discharge (Authorisation) Regulations, means an area where the population or economic activities or both are sufficiently concentrated for a waste water works to have been put in place.
[3] Waste water treatment in un-sewered areas served by septic tanks or on-site systems, discharges to surface water or ground water from single media licences, and discharges from private waste water treatment plants are not covered in this report.
[4] 124 WWDL's were issued by the EPA up to the end of 2010.

authorities but also includes details on the independent monitoring of licensed discharges carried out by the EPA.

For previous reports on Urban Waste Water and information on EPA licensing of waste water discharges go to the EPA website www.epa.ie.

1.2 The Urban Waste Water Treatment Directive

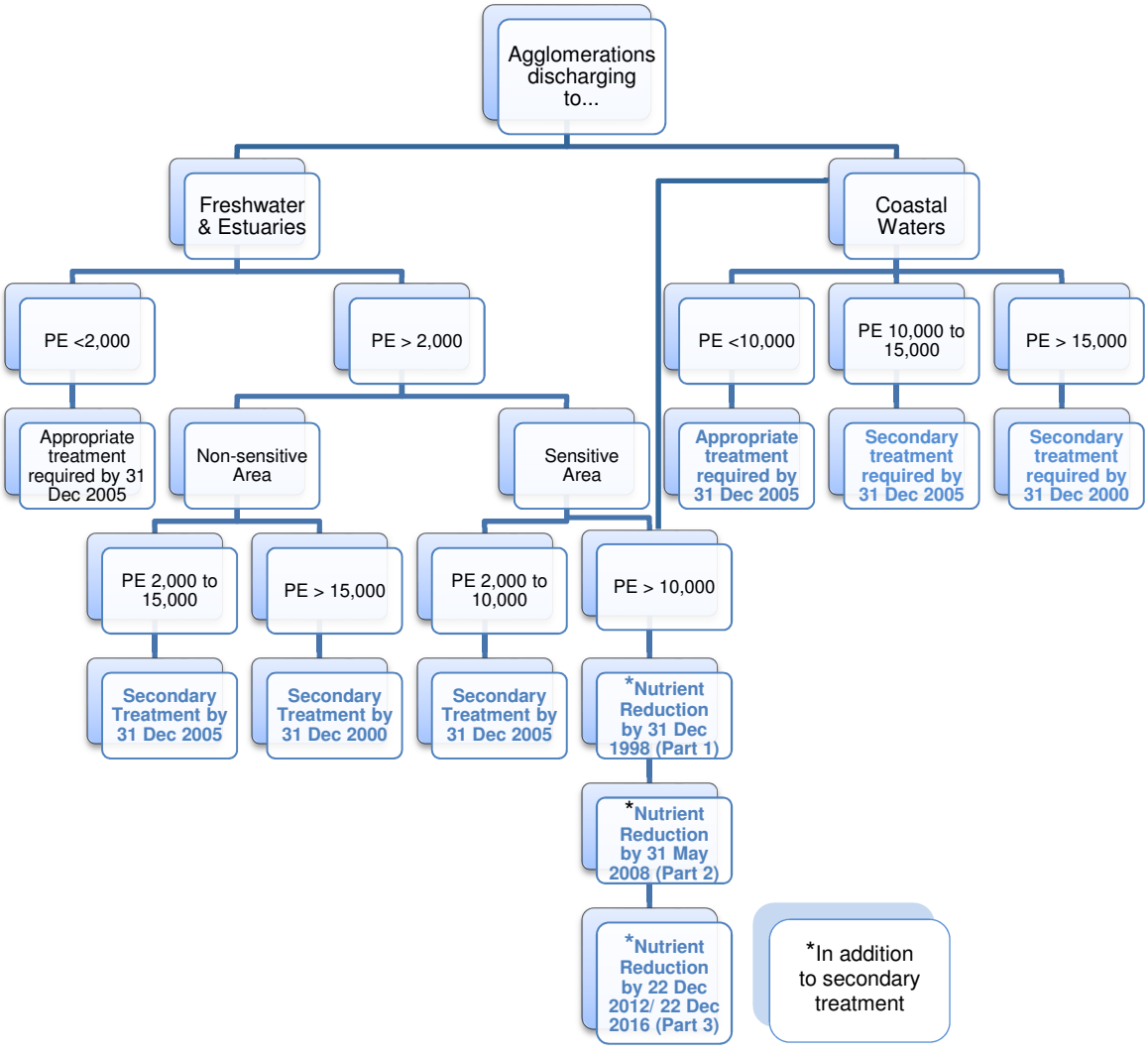
The Urban Waste Water Treatment Directive (91/271/EEC) has requirements for sewerage systems (or waste water collection systems) to be provided and sets deadlines for the provision of sewage treatment. The main requirements of the UWWTD are as follows:

- Scheduled provision of waste water **collecting systems** and **treatment plants** based on the size of the agglomeration and the type of water body to which the waste water is discharged (freshwater, estuarine or coastal, sensitive or non-sensitive).
- **Monitoring** by water services authorities (including frequency of monitoring) of discharges from waste water treatment plants.

In Ireland the Urban Waste Water Treatment Regulations, 2001 (S.I. No. 254 of 2001), as amended, give effect to the Urban Waste Water Treatment Directive (91/271/EEC) (UWWTD).

The requirements of the UWWTD (and Regulations) in respect of the provision of treatment are summarised in Figure 1-1.

Figure 1-1: Treatment provision required by the Urban Waste Water Treatment Directive



The UWWTD also sets out criteria for identification of sensitive areas, such as freshwater bodies, estuaries and coastal waters which are eutrophic or may become eutrophic if action is not taken. Fifty-one water bodies are now designated as sensitive in Ireland[5].

In Ireland a specific level of treatment is prescribed for 174 agglomerations. Where a specific level of treatment is not prescribed under the UWWTD, what is described as 'appropriate treatment' is required. Appropriate treatment is treatment that allows the receiving waters to meet all relevant quality objectives and legislative requirements[6].

1.3 Licensing and enforcement of waste water discharges

Since 2007 all discharges from sewerage systems owned by, vested in, controlled or used by water service authorities require a waste water discharge licence (agglomerations >500 p.e) or certificate of authorisation (agglomerations <500 p.e) from the EPA. Water services authorities were required to apply to the EPA for a licence or certificate of authorisation by set dates, starting in December 2007 with the largest agglomerations.

The last prescribed date for the submission of licence applications was 22 June 2009 and 529 licence applications were received by the EPA. The total number of licences and certificates applied for and granted to date is shown in Table 1-1 below. During the period 2008/2009 there were 59 WWDLs issued by the EPA, a further 65 WWDLs were issued in 2010 and 66 in 2011.

The authorisation process provides for the EPA to place conditions on the operation of discharges and to set emission limit values for the discharges to achieve good surface water status and good groundwater status as is required by the Water Framework Directive. Further details on the Regulations and application process are available on the EPA website www.epa.ie.

Table 1-1: Number of waste water discharge licences and certificates of authorisation applied for and issued by the end of 2011

WWDLs			**Certificates of authorisation**		
Applied		***529***	***Applied***		***515***
Issued	2008	10	**Issued**	2008	0
	2009	49		2009	0
	2010	65		2010	45
	2011	66		2011	467
Total Issued		**190**	**Total Issued**		**512**

Waste water discharge authorisations require monitoring and reporting of discharges and thus allow a comprehensive assessment of the environmental performance of plants. The additional powers given to the EPA under the Waste Water Discharge (Authorisation) Regulations will be used to ensure better environmental performance from waste water treatment plants in order to improve receiving water quality.

[5] All the existing sensitive areas are identified in the Urban Waste Water Treatment (Amendment) Regulations 2010 (S.I. No. 48/2010) with maps included in the 2010 Regulations showing the location of designated areas.

[6] 'Appropriate treatment' as per Article 2 of the Urban Waste Water Treatment Directive means treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the UWWTD and other Community Directives.

2. The National Picture – Implementation of secondary treatment and plant performance in 2009

Main findings in 2009:

- 93% of urban waste water discharges in Ireland received secondary treatment or higher.
- 17 agglomerations did not have the level of treatment required by the Urban Waste Water Treatment Directive (reduced to 11 in 2011). In 2 cases provision of treatment is now over 10 years late.
- 8 agglomerations did not have nutrient reduction provided by the specified date in the Urban Waste Water Treatment Directive (no improvement by end of 2011).
- Compliance with UWWTD standards was 57% for larger plants and drops to 42% compliance when you include all smaller plants (500 - 2,000 p.e.).
- Failures due to lack of sampling reduced by two-thirds since 2007.

This Chapter covers Ireland's performance in complying with the requirements of the UWWTD and reports on the performance of all plants that have a WWDL or are the subject of a WWDL application.

Sections 2.1, 2.2 and 2.3 discuss Ireland's performance against the main requirements of the UWWTD that is:

- Provision of treatment
- The performance of treatment plants against effluent quality and monitoring frequency standards.

Section 2.4 sets out the baseline position against which future assessments of WWDL performance will be assessed by the EPA, and deals with the effluent quality levels achieved in all agglomerations that have a WWDL or are the subject of a WWDL application.

All 529[7] agglomerations subject to the waste water discharge licensing regime are addressed in this report. Over 50,000 parameter results submitted to the EPA were assessed during the preparation of the report.

2.1 The National status of waste water treatment

Figure 2-1 shows the level of treatment provided based on population equivalent since this was last reported in 2007. 93% of waste water discharges in Ireland received secondary treatment or higher at the end of 2009. Figure 2-2 is a National Asset Map of waste water infrastructure at the end of 2009. The map shows there is still a significant lack of secondary treatment in place for coastal towns. 42 coastal towns without secondary treatment are tourist centres linked to water activities.

[7]This figure is comprised of 529 agglomerations for which a licence application was received. A subset of 13 out of the 529 plants for which a licence application was received were not assessed for compliance in 2009. These comprise of 7 agglomerations that were <500 p.e. and therefore below the reporting threshold for the UWW returns so there was no reporting requirement in 2009, 4 agglomerations that had no water service authority collection systems in place in 2009 (i.e. unsewered population with septic tanks) and 2 plants which the water services authority had not yet taken in charge in 2009.

Figure 2-1: Level of treatment provided from 2007 to 2009 based on agglomeration p.e.

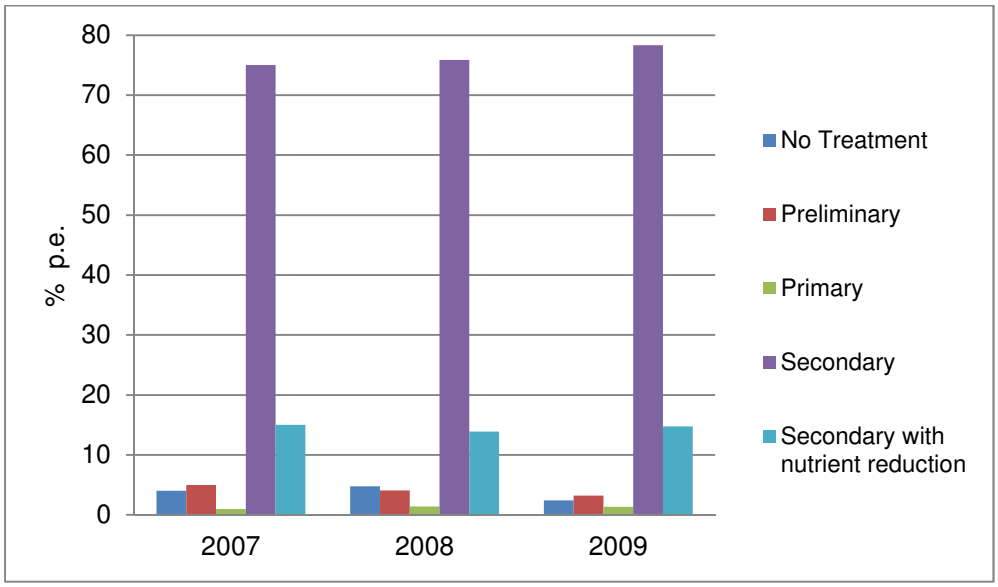
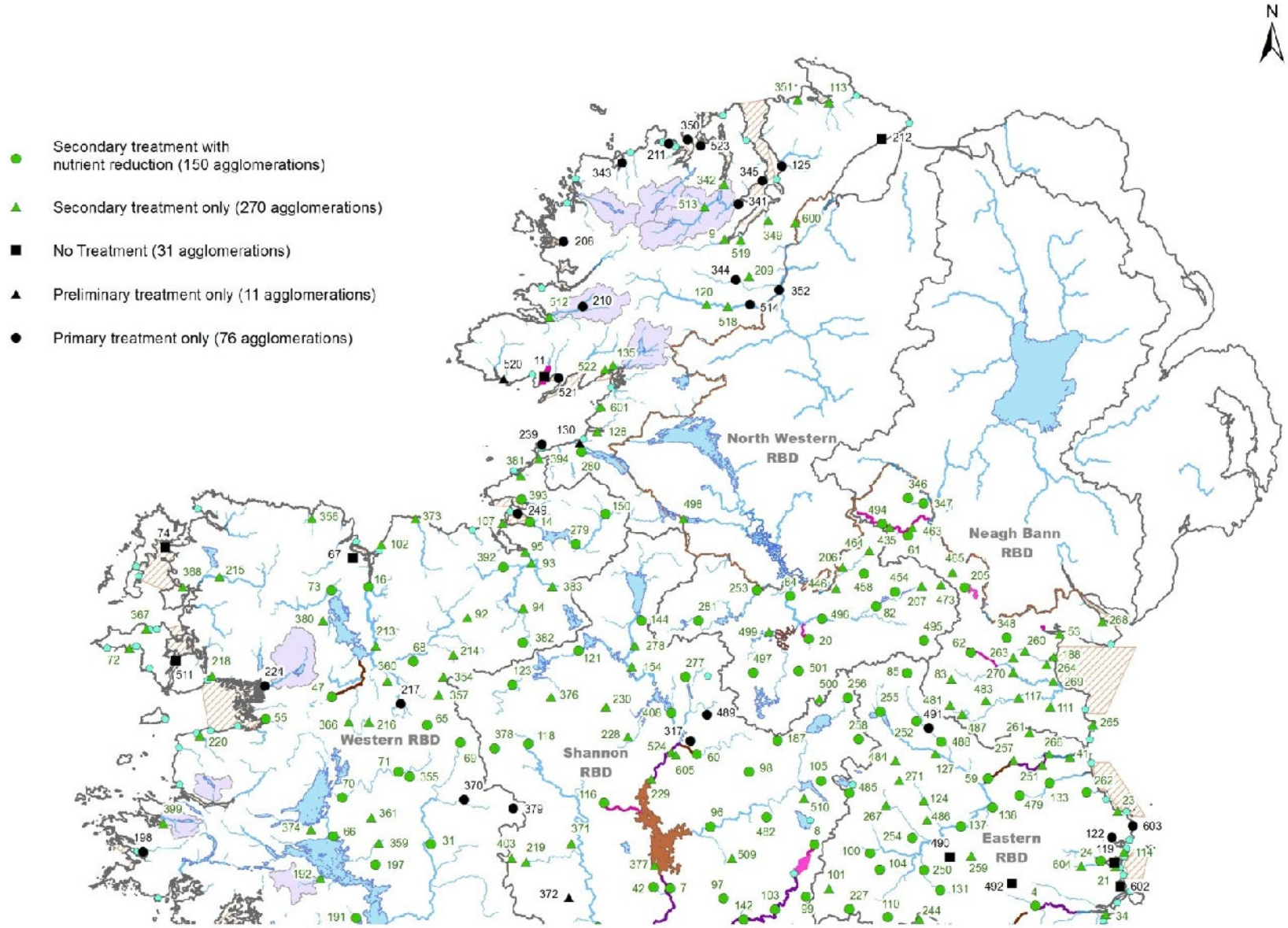
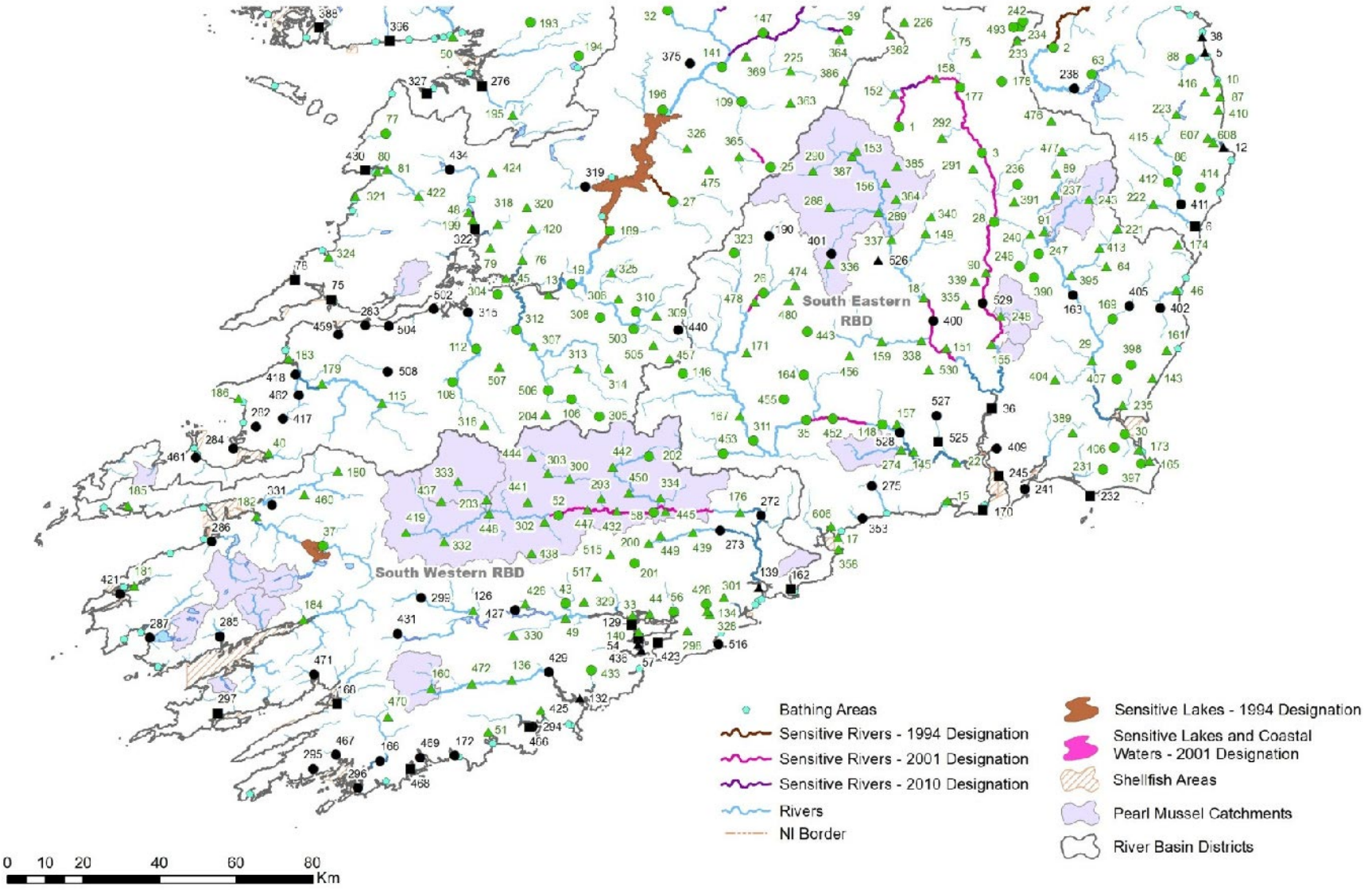


Figure 2-2: Asset map showing the national status of urban waste water treatment provided at the end of 2009. [1]





[1] This includes 4 agglomerations < 1,000 p.e. where there were no water services authority collection systems in 2009 but the water services authorities are installing new waste water works and have applied for waste water discharge licences.
This map shows all 529 agglomerations that applied for a WWDL and 9 additional agglomerations that were stand alone agglomerations in 2009 but have since become part of another WWDL or WWDL Application.
The numbers on this map correspond to the WWDL Registration Number of each agglomeration e.g. 34 is D0034-01. For a complete list of numbers and their corresponding agglomeration names see Appendix A, Table A-1.
Go to www.epa.ie/downloads to view this map.

Table 2-1 shows the treatment provided for agglomerations discharging to sensitive areas. 22 agglomerations discharging to sensitive areas did not receive secondary treatment at the end of 2009.

Table 2-1: Level of treatment for all agglomeration discharging to sensitive areas in 2009[8]

Agglomeration p.e.	No treatment or preliminary treatment	Primary treatment	Secondary treatment		Total
			Without nutrient reduction	With nutrient reduction	
< 2,000	3	11	35	17	**66**
2,000 to 10,000	4	3	17	21	**45**
>10,000	1		7	21	**29**
Total	**8**	**14**	**59**	**59**	**140**

Of the 174 agglomerations requiring secondary treatment by prescribed dates in the UWWTD (see Chapter 1, Fig 1-1), 17 did not have the required level of treatment in place at the end of 2009. This figure fell to 11 at the end of 2011 with plants providing secondary treatment commissioned at Kinsale (Co. Cork), Templemore (Co. Tipperary), Bunclody (Co. Wexford), New Ross (Co. Wexford), Wicklow Town and Shanganagh (Dun-Laoghaire Rathdown).

Table 2-2 lists the 11 agglomerations for which secondary treatment was not provided at the time of reporting. Estimated completion dates are included in the table, some projects are nearing completion in 2012 but in most cases completion is planned for 2014 and 2015. In 2 instances the provision of this treatment is now over 10 years late.

Table 2-2: Agglomerations where secondary treatment required by the UWWTD is not yet in operation

Water services authority	Agglomeration	Population equivalent	Receiving water	Date secondary treatment required in UWWTD	Estimated completion date[9]
Fingal	Lusk	3,000	Estuarine	**2005**	mid 2012 connection to Portrane
Cork	Skibbereen	3,500	Estuarine	**2005**	end 2012
Wicklow	Bray	40,000	Coastal	**2000**	2012 pipeline to Shanganagh
Galway	Clifden	4,063	Estuarine	**2005**	2013
Cork	Cobh	12,000	Coastal	**2005**	2014[10]
Cork	Passage West/Monkstown	5,000	Estuarine	**2005**	2014[10]
Cork	Ringaskiddy/ Crosshaven/ Carrigaline	97,556	Coastal	**2000**	2014[10]
Donegal	Moville	2,000	Freshwater	**2005**	mid 2014
Donegal	Killybegs	92,000[11]	Estuarine	**2008**	end 2014
Cork	Youghal	8,000	Estuarine	**2005**	end 2015
Wicklow	Arklow	15,000	Coastal	**2005**	end 2015

[8] As identified in urban waste water returns data provided by water service authorities.
[9] Provided by water service authorities and/or the Department of Environment, Community and Local Government.
[10] The Cork Harbour Main Drainage Scheme will provide collection systems and waste water treatment facilities in the Cork lower harbour area serving the agglomerations of Cobh, Passage West/Monkstown, and Ringaskiddy/Carrigaline/Crosshaven.
[11] This p.e is a combination of domestic and industrial effluent from fish processing factories in Killybegs.

The UWWTD also requires nutrient reduction to be provided for discharges to sensitive areas[12] from agglomerations with a population equivalent greater than 10,000. Table 2-3 shows the 8 agglomerations for which at the time of reporting nutrient reduction was not provided by the date specified in the UWWTD. The table includes estimates of the dates for provision of nutrient reduction, or the cessation of discharges to sensitive areas, for these agglomerations at the time of reporting.

Table 2-3: Agglomerations where secondary treatment with nutrient reduction required by the UWWTD is not yet in operation[13]

Water services authority	Agglomeration	Population equivalent	Receiving water	Existing level of treatment	Estimated completion date[8]
Donegal	Killybegs	92,000[14]	Estuarine	No treatment	2012 new outfall to eliminate discharge to sensitive inner harbour
Kerry	Tralee	17,358	Estuarine	Secondary	end 2012
Louth	Dundalk	89,000	Estuarine	Secondary	end 2013
Cork City	Cork City	256,000	Estuarine	Secondary	end 2014
Cork	Carrigtohill	12,000	Estuarine	Secondary	end 2014
Wexford	Enniscorthy	17,216	Estuarine	Secondary	mid 2014
Dublin City, Fingal, South Dublin, Dun Laoghaire-Rath & Meath	Greater Dublin (Ringsend)	4,418,113[15] (1,738,477)	Estuarine	Secondary	2015 proposed new outfall to eliminate discharge to sensitive Liffey Estuary
Kilkenny	Kilkenny City & Environs	97,660	Freshwater River	Secondary	mid 2015

26 smaller agglomerations, in the size range 500 p.e. up to the UWWTD thresholds[16], have no treatment or just preliminary treatment in place. These agglomerations, listed in Appendix I of this report, all require appropriate treatment[17] under the UWWTD. 71 smaller agglomerations have primary treatment in place which may or may not be appropriate depending on the site specific location of the discharge and any impacts associated with them. All of these are listed in the "Agglomerations without secondary treatment in 2009" tables in Appendix B. 42 coastal towns without secondary treatment are tourist centres linked to water activities.

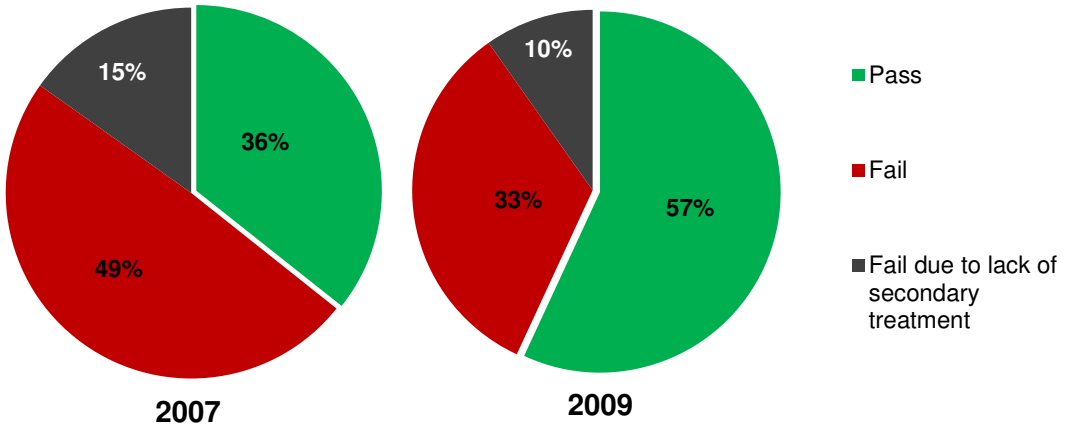
[12] Sensitive areas are identified in the Urban Waste Water Treatment Regulations 2001 and 2010
[13] This treatment was required by the 31st May 2008.
[14] This p.e is a combination of domestic and industrial effluent from fish processing factories in Killybegs.
[15] This was the maximum weekly p.e loading to Ringsend in 2009. The average weekly p.e in 2009 was 1,738,477. Maximum weekly p.e loading was 3,837,891 in 2008 and 2,454,924 in 2010.
[16] 2,000 p.e. for discharges to freshwater and estuaries. 10,000 p.e. for coastal discharges.
[17] 'Appropriate treatment' as in Article 2 of the Urban Waste Water Treatment Regulations means treatment of urban waste water by any process and/or disposal system which after discharge allows the receiving waters to meet the relevant quality objectives and the relevant provisions of the UWWTD and other Community Directives.

2.2 National compliance with effluent quality limits in the UWWTD

Larger agglomerations must comply with all the requirements of the UWWTD regarding treatment effluent quality and monitoring standards[18]. Their overall compliance with the UWWTD is shown in Figure 2-3. Compliance is assessed against the limits and monitoring frequencies set in the UWWTD for biological oxygen demand (BOD), chemical oxygen demand (COD) and total suspended solids (TSS).

In 2009, 57% of agglomerations complied with the requirements of the UWWTD[19]. These results show an improvement on 2007 figures where the pass rate with the UWWTD was 36% (Figure 2-3). This increase in compliance is due to provision of treatment, improved sampling frequency by water service authorities and to a lesser extent improvements in effluent quality. Figure 2-4 maps the compliance with UWWTD requirements in 2009[20]. A similar map showing compliance for 2008 is in Appendix G.

Figure 2-3: Compliance of the larger agglomerations with the requirements of the Urban Waste Water Treatment Directive for 2007 and 2009



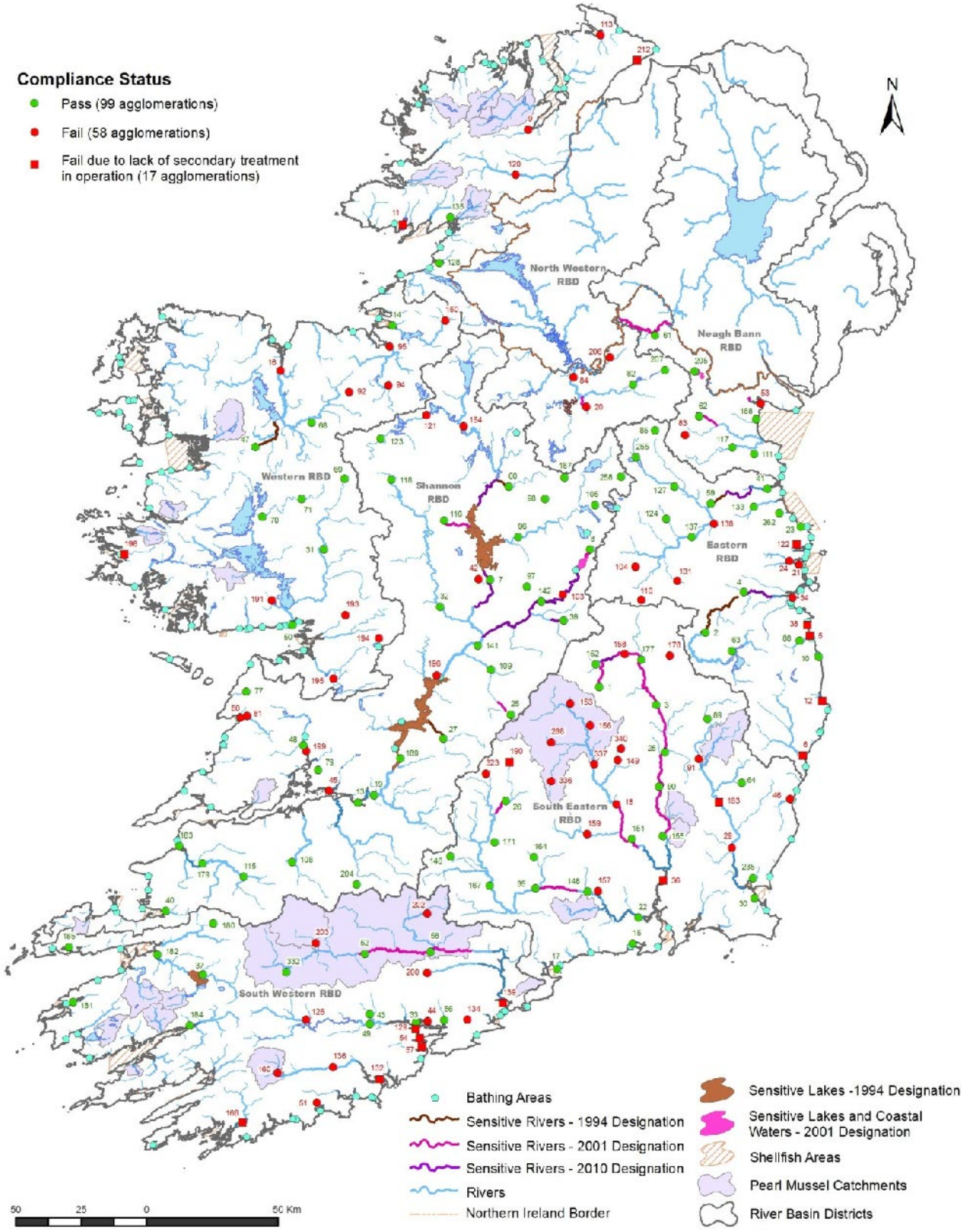
2.3 The level of compliance with nutrient standards in the UWWTD for discharges to sensitive areas

In addition to the limits for BOD, COD and TSS the Directive specifies limits for total phosphorus and/or total nitrogen when the agglomeration discharges to nutrient sensitive water bodies. The UWWTD specifies that 'one or both parameters may be applied depending on the local situation'.

Figure 2-5 shows the compliance in 2009 for plants greater than 10,000 p.e. discharging to nutrient sensitive areas as defined in the 2001 Regulations (as amended)[21]. Plants that were not compliant with the Regulations are highlighted in red. For phosphorus monitoring 10 plants either failed to meet the standard or the required sampling frequency, for total nitrogen monitoring a higher number of plants (19) failed.

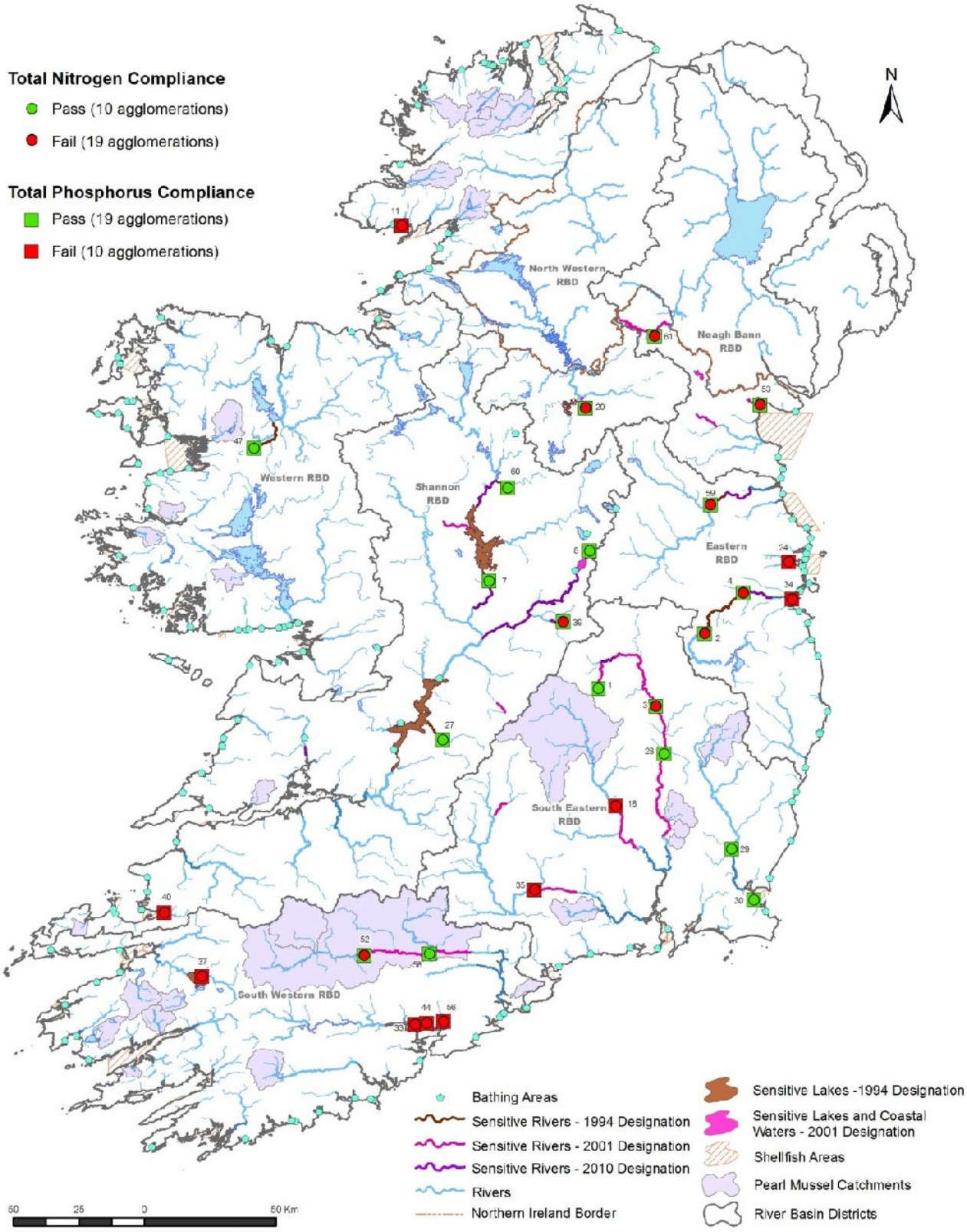
[18] In 2009 there was a total of 174 agglomerations >2,000 p.e. discharging to freshwaters and estuaries or >10,000 p.e discharging to coastal waters, these all come in the larger agglomeration category.
[19] This figure is based on agglomeration number as opposed to overall p.e.
[20] A Pass (green circle) indicates that the agglomeration complied with effluent quality and monitoring frequency as specified in the Directive. Agglomerations that fail (red circle) may have failed due to poor effluent quality or insufficient monitoring frequency, or both. A further category (red square) denotes plants that failed due to a lack of provision of secondary treatment as required in the Directive.
[21] Regulation 4(3) as amended in the UWWT Regulations 2010, requires the EPA to determine whether limits for total phosphorus, total nitrogen, or both apply in an individual situation through the authorisation (licencing) process.

Figure 2-4: Compliance in 2009 with the Urban Waste Water Treatment Directive requirements for BOD, COD and suspended solids in waste water discharges from the agglomerations required by the Directive to have secondary treatment. [1]



[1] The Directive requires waste water from agglomerations ≥ 2,000 p.e. discharging to freshwater or estuaries and agglomerations ≥ 10,000 p.e. discharging to coastal waters to be subject to secondary treatment or equivalent. Compliance was assessed against the limits for BOD (25 mg/l O_2), COD (125 mg/l O_2) and suspended solids (35 mg/l) set in Table 1 of the Directive, and the sampling requirements in Annex 1.D.3 of the Directive.
The numbers on this map correspond to the WWDL Registration Number of each agglomeration e.g. 34 is D0034-01. For a complete list of numbers and their corresponding agglomeration names see Appendix A, Table A-1.
Go to www.epa.ie/downloads to view this map.

Figure 2-5: Compliance in 2009 with the Urban Waste Water Treatment Directive requirements for Total Phosphorus and Total Nitrogen in waste water discharges from agglomerations ≥ 10,000 p.e. discharging to sensitive areas. [1]



[1] The Directive requires waste water from agglomerations ≥ 10,000 p.e. discharging to sensitive areas to be subject to secondary treatment and nutrient reduction. Compliance was assessed against the limits for Total Phosphorus and Total Nitrogen set in Table 2 of the Directive (2 mg/l P & 15 mg/l N for agglomerations 10,000 to 100,000 p.e. and 1 mg/l P & 10 mg/l N for agglomerations ≥ 100,000 p.e.) and the sampling requirements in Annex 1 D.3 of the Directive. Sensitive areas are identified in the Urban Waste Water Treatment Regulations 2001 and 2010. 6 agglomerations ≥ 10,000 p.e. discharging to sensitive areas at the end of 2009 without the treatment required by the Directive are listed in Table 2-3. The numbers on this map correspond to the WWDL Registration Number of each agglomeration e.g. 34 is D0034-01. For a complete list of numbers and their corresponding agglomeration names see Appendix A, Table A-1.
Go to www.epa.ie/downloads to view this map.

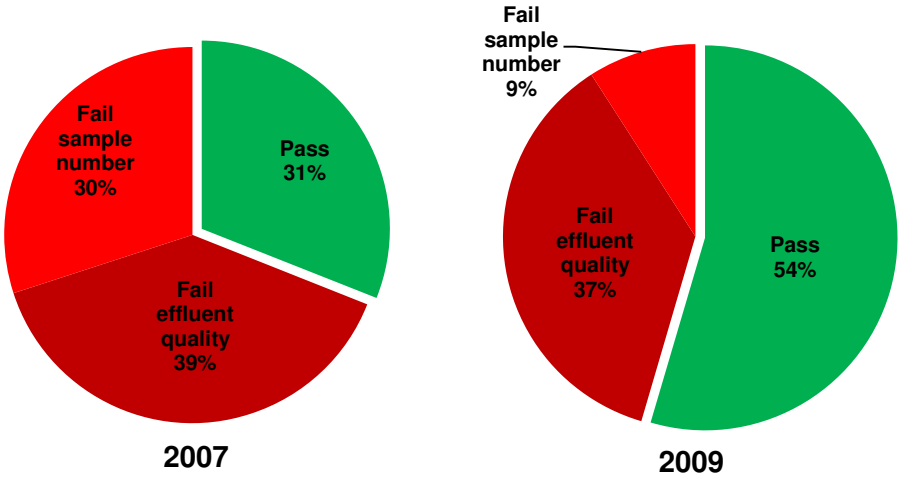
2.4 Effluent quality for all agglomerations

This section describes the effluent quality levels achieved in 2009 for all agglomerations subject to the waste water discharge licensing regime[22]. Effluent quality is measured against the standards in the UWWTD. The results presented in these figures set the baseline for future enforcement of WWDLs by the EPA.

Compliance assessments presented in Figure 2-6 are based on all agglomerations that had secondary treatment in operation. This assessment indicates that 54% of all secondary treatment plants met all of the effluent quality and sampling requirements[23]. The improvement since 2007 is mainly due to improved sampling by the water service authorities, there has been no significant improvement in the quality of effluent discharged.

Approximately one-fifth of all agglomerations had no secondary treatment in operation and the effluent discharged from these agglomerations could not meet the quality standards specified in the UWWTD. When effluent from the agglomerations with no secondary treatment is included, the compliance rate reduces to 42%.

Figure 2-6: Compliance of secondary treatment plants with the effluent quality and monitoring standards of the Urban Waste Water Treatment Directive for 2007 and 2009



There has been a significant improvement in the monitoring of waste water since 2007. In 2007 a total of 112 plants did not take sufficient samples, in 2009 this figure was down to 38 plants. The treatment plants that did not comply with the UWWTD requirements due to insufficient sample numbers taken in 2009 are shown in Appendix H.

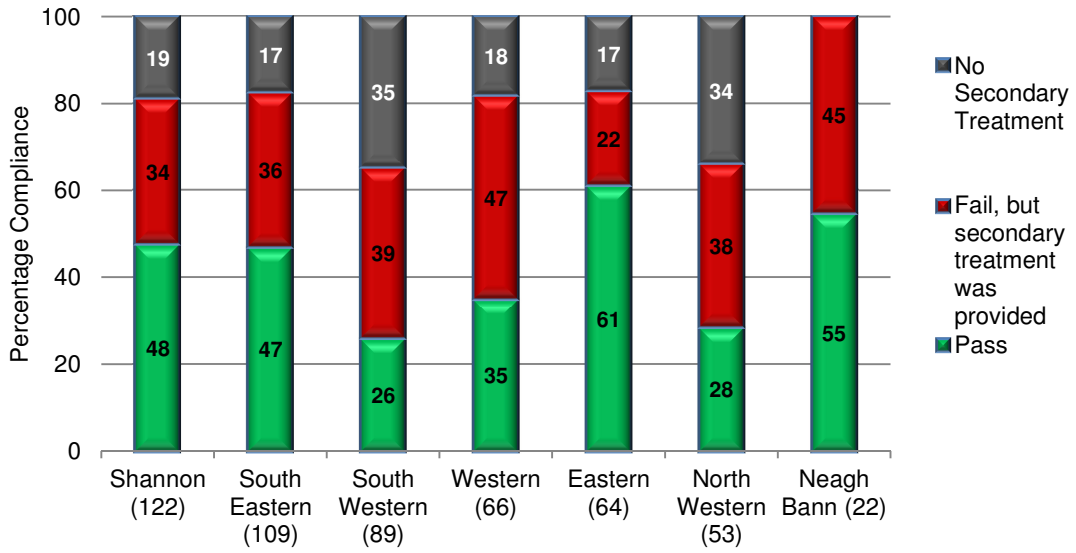
Of the 190 agglomerations with secondary treatment that did not meet the effluent standards, 66 did not meet the standards consistently during the year with more than 50% of samples over the basic limits for at least one parameter. This is indicative of poor plant performance and/or overloading of the treatment plant. 10 agglomerations did not return any data to the EPA.

The compliance information is mapped per river basin district (RBD) in Appendix A. Figure 2-7 (below) and the RBD maps in Appendix A compare effluent quality with the limits in the UWWTD achieved in each RBD. Agglomerations with less than secondary treatment are included in these assessments.

[22] All agglomerations over 500 p.e require a waste water discharge licence, in some cases water services authorities applied for a WWDL for agglomerations less that 500 p.e in anticipation of future population growth

[23] For agglomerations <2,000 p.e. discharging to freshwater and <10,000 p.e. discharging to coastal water the effluent quality standards specified in the Directive are not a statutory requirement, unless specified in a waste water discharge licence, but were applied for comparison, and a minimum of 6 samples was a requirement for monitoring. For large secondary waste water treatment plants (≥2000 p.e. discharging to freshwaters and ≥10,000 p.e. discharging to coastal waters) the required sample numbers per annum are as determined in the Urban Waste Water Treatment Directive.

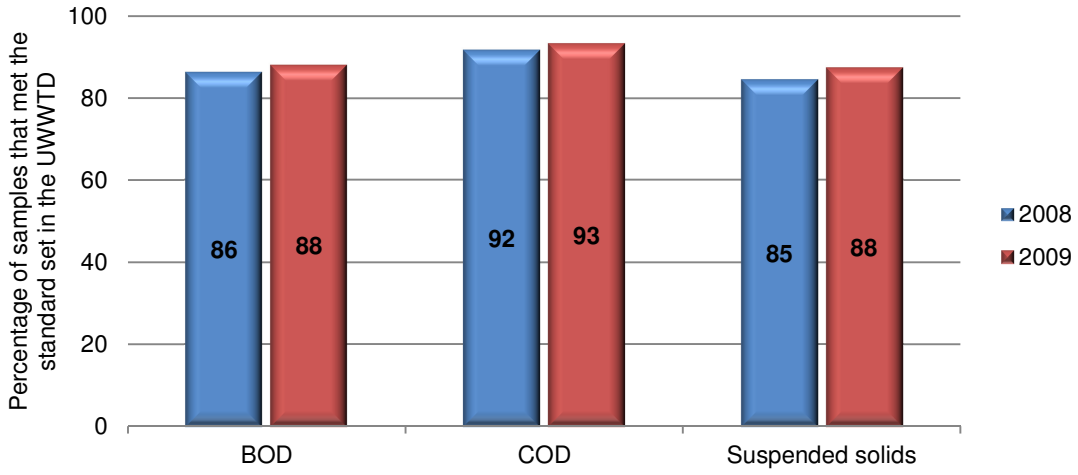
Figure 2-7: Summary of compliance with the Urban Waste Water Treatment Directive by River Basin District for 2009



Note: The number in brackets refers to total number of agglomerations greater than 500 p.e. in the River Basin District

When the 2009 monitoring data from over 6,000 samples is compared against the individual standard set in the UWWTD for BOD, COD and TSS, 88% of all samples met the standards set for BOD and TSS and 93% of all samples met the standard set for COD as shown in Figure 2-8.[24]

Figure 2-8: Water services authorities' monitoring results showing percentage of samples that met the standards set in the UWWTD for BOD, COD & TSS for 2008 and 2009



[24] This is an alternative way of looking at the monitoring data as the compliance rates in the UWWTD are based on an assessment of effluent monitoring data against limits and monitoring requirements set out for specific agglomerations. Under UWWTD requirements an agglomeration can, in some cases, be deemed to have failed for a given year on the basis of just one non-compliant sample, or because an insufficient number of samples were taken.

2.6 Summary of performance by water services authority

Table 2-4 is a summary of the performance of each water services authority.

In total, 13 out of 33 water service authorities had a failure rate of greater than 50% for 2009. This is an improvement on 2007 when 22 out of 33 water service authorities had a failure rate of greater than 50%. A detailed analysis of compliance of each agglomeration per water service authority is given in Appendix B.

Table 2-4: Summary of the overall compliance of water services authorities in 2009

Water services authority	Total number of aggloms reported	Number of aggloms without secondary treatment[25]	Number of aggloms where nutrient reduction is required but not provided	Number of aggloms with secondary treatment that did not meet the standards for BOD, COD & TSS
Carlow	10	0	0	4 (40%)
Cavan	16	0	0	7 (44%)
Clare	22	7	0	6 (40%)
Cork City	1	0	1	0
Cork County	73	24	1	33 (67%)
Donegal	33	17	1	12 (75%)
Dublin City	1	0	1	1 (100%)
Dun Laogh-Rath	1	1	0	0
Fingal	9	4	0	4 (80%)
Galway City	1	0	0	0
Galway	22	8	0	10 (71%)
Kerry	25	13	1	2 (17%)
Kildare	13	1	0	1 (8%)
Kilkenny	19	6	1	10 (77%)
Laois	14	0	0	10 (71%)
Leitrim	8	0	0	6 (75%)
Limerick City	1	0	0	0
Limerick	24	4	0	14 (70%)
Longford	7	2	0	0
Louth	12	0	1	6 (50%)
Mayo	32	4	0	12 (43%)
Meath	22	1	0	4 (19%)
Monaghan	15	0	0	6 (40%)
Offaly	14	0	0	4 (29%)
Roscommon	13	0	0	7 (54%)
Sligo	16	2	0	10 (71%)
Tipperary North	12	1	0	3 (27%)
Tipperary South	14	1	0	1 (8%)
Waterford City	1	0	0	0
Waterford	12	6	0	2 (33%)
Westmeath	15	0	0	5 (33%)
Wexford	24	8	1	9 (56%)
Wicklow	23	4	0	1 (5%)
Total	**525[26]**	**114**	**8**	**190**

[25] As mentioned in section 2.4 in some cases smaller agglomerations may not necessarily require secondary treatment but 'appropriate treatment' must be provided.

[26] There are 529 licence applications for agglomerations ≥500 p.e. 13 of these were either <500 p.e. or did not have a water services authority operated treatment plant in 2009 and are excluded from this table. 9 additional agglomerations were stand-alone agglomerations of ≥500 p.e. in 2009 but have since become part of another licence application.

3. Enforcement of Waste Water Discharge Licences

Main findings:

- Waste water discharges from 10 waste water works are linked to serious water pollution or bathing water failures at 12 locations.
- 67 river locations with slight to moderate water pollution are linked to poor waste water treatment at 52 waste water works.
- Monitoring of effluent samples from licenced secondary treatment plants taken by EPA staff found that compliance with key parameters ranged between 85% and 96%.
- 86% of improvement works required by the EPA to be completed by the end of 2010 are complete, but improvement works due in 2010 are delayed at 2 agglomerations.
- A review of the Annual Environmental Reports submitted for WWDLs found considerable variations in the quality of such reports and in some cases reports did not contain all the information or assessments required by the WWDL.

Compliance with WWDL conditions plays a key role in protecting water resources and the aquatic environment. This chapter outlines how water services authorities have complied with the conditions of their WWDLs.

Failure to comply with a WWDL is an offence under the Waste Water Discharge (Authorisation) Regulations, 2007. The EPA carries out audits of waste water treatment works, it also samples and monitors waste water discharges and assesses the environmental performance of waste water works in order to determine compliance with the Regulations and WWDLs. A series of guidance and training workshops have been provided to water services authorities to help secure and improve licence compliance.

3.1 Key pressures on the environment associated with urban waste water discharges

The EPA's enforcement goal is to meet the requirements of the Water Framework Directive by achieving at least good status in all waters, and ensuring that the status does not deteriorate in any waters. To meet this goal several key pressures, risks and impacts on the environment associated with urban waste water discharges have to be managed. These include risks to sensitive freshwater pearl mussel sites, discharges that are causing pollution of rivers, risks to drinking water abstractions, discharges to bathing waters which contribute to poor water quality status, and shellfish waters that may be at risk from waste water discharges.

Table 3-1: Pressures on waters from waste water discharges

Key Pressure	Background	Action
Waste water discharges to designated freshwater pearl mussel waters	The freshwater pearl mussel is an endangered species of mollusc that requires clean, fast flowing, well oxygenated rivers with little nutrient or organic content and a clean river bed. None of the populations in Ireland are considered to be in favourable conservation status and numbers are declining annually, due mainly to a continuous failure to produce new generations of mussels. The main cause of the decline is attributed to deteriorating quality of the river water and river bed habitat. There are twenty-seven designated freshwater pearl mussel waters in Ireland	Appendix C of this report includes a priority list of thirty five urban waste water treatment works within freshwater pearl mussel catchments. The EPA will prioritise the enforcement of WWDLs and Certificates of Authorisation issued for these waste water works and will carry out further work to determine if other waste water works should be added to this list.

	and these are listed in the First Schedule of the European Communities Environmental Objectives (Freshwater Pearl Mussel) Regulations 2009, S.I. No. 296 of 2009.	
Serious water pollution caused by waste water discharges	The EPA's report on Water Quality in Ireland 2007 - 2009[27] identifies twenty river sites within the country which were classified as seriously polluted at the end of the reporting period. The pollution at nine of these sites is attributed to urban waste water discharges from eight waste water works.	The nine seriously polluted river sites and the eight associated waste water works are listed in Appendix D of this report. These waters must be restored to at least good status and the EPA will prioritise the enforcement of WWDLs issued for these waste water works.
Moderate and slight water pollution caused by waste water discharges	Following a review of moderately and slightly polluted river sites identified during the EPA's river monitoring programme 2007-2009 a total of sixty-seven sites were highlighted where there is a high probability that the principle cause of pollution is the discharge of urban waste water. These waste water discharges are from fifty-two waste water works.	The sixty-seven moderately and slightly polluted river sites and fifty-two associated waste water works are listed in Appendix E of this report. These waters must be protected from pollution by the listed waste water discharges.
Waste water discharges to bathing waters	In 2010 four of the designated bathing areas in Ireland were assigned a poor water quality status, because water samples taken from these areas failed to comply with mandatory water quality standards[28]. The discharge of urban waste water from an overloaded treatment plant is the principal cause of the poor quality bathing water at one of the areas (Clifden Beach), which has failed to comply with mandatory water quality standards since 2005. Waste water from water services authorities' waste water works is considered to have been a contributing factor in the poor water quality at two of the other areas.	The 3 bathing waters impacted by waste water discharges and listed in Appendix D must be restored to at least good status and the risks to designated bathing areas from waste water discharges must be minimised.
Waste water discharges to shellfish waters	The Department of the Environment, Community & Local Government established Pollution Reduction Programmes for designated shellfish waters in Ireland in order to protect or improve the aquatic habitat of shellfish within these waters. The programmes are a requirement of the Shellfish Waters Directive (2006/113/EC). Where the Pollution Reduction Programmes identify measures to be implemented to protect shellfish waters from the effects of urban waste water discharges these measures will be implemented and enforced through the waste water discharge licensing regime.	The Pollution Reduction Programmes identify fifty-five urban waste water works as key pressures on designated shellfish waters and these works are listed in Appendix F of this report.
Protection of drinking water	The EPA has recommended that local authorities adopt the Drinking Water Safety	Local authorities should adopt the Drinking Water Safety Plan

[27] This report is available for download from the EPA website at http://www.epa.ie/downloads/pubs/water/waterqua/WaterQuality0709.pdf

[28] Clifden Beach (Galway), Sutton Burrow Beach (Dublin), Lilliput, Lough Ennel (Westmeath) and Ballyallia (Clare) were assigned poor water quality status in 2010. The 2010 bathing water quality is addressed in The Quality of Bathing Water in Ireland – An Overview for the Year 2010, which is available for download from the EPA website at http://www.epa.ie/downloads/pubs/water/bathing/2010BathingWaterOverviewReport.pdf

abstraction points	Plan approach to the protection of water abstracted for drinking water treatment. This method of risk based management of drinking water supplies and the identification of risks to the raw water source is covered in detail in separate EPA reports on drinking water.	approach to the protection of drinking water supplies.

3.2 Enforcement strategy

The EPA will take a risk based and outcome driven approach to licence enforcement with resources targeted where they are most effective. The outcome sought is to protect high quality waters from the impacts of waste water discharges, restore the quality of waters seriously impacted by waste water discharges and prevent environmental pollution by waste water discharges. The enforcement strategy will focus on the following five intermediate outcomes[29] in working towards the final goal.

1. Progress on infrastructural improvements required by the licence.
2. Reducing the environmental risk profile of waste water works.
3. Compliance with emission limit values where infrastructure is in place.
4. Reducing environmental incidents and complaints.
5. Comprehensive and accurate reporting by water services authorities to the EPA.

3.2.1 Progress on infrastructural improvements required by the licence

Waste water discharge licences include a requirement to carry out Specified Improvement Programmes within certain timeframes. These infrastructural upgrades are necessary to improve discharges from waste water works and reduce their environmental impact. Such improvement programmes typically include upgrades to the waste water treatment plant, the storm water overflows and/or the sewer network. Licences may also require the cessation of certain discharges.

The licences issued by the EPA identify the following:

- Over 500 individual infrastructural improvements must be carried out at 128 waste water works.
- The majority of the deadlines set for completion of these improvements are by 2013, but some deadlines extend to 2020.
- 22 of the licences require a total of 65 infrastructural improvements to be completed before the end of 2010.
- 56 (86%) of the 65 improvement works are complete. The completed works include the installation of new waste water treatment plants in Wicklow, Bunclody (Co. Wexford) and Athboy (Co Meath), the upgrade of Castlebar (Co. Mayo), Carrick on Shannon (Co. Leitrim) and Mullingar (Co. Westmeath) treatment plants, and the cessation of 13 waste water discharges.
- 9 improvements required at 2 different agglomerations by the end of 2010 have not been completed.

While there has been significant funding made available for urban waste water infrastructure through the Water Services Investment Programme, there is a continued need for investment in this sector. This investment will ensure the waste water works are upgraded in a timely manner in order to ensure compliance with the statutory timelines in waste water discharge licences issued by the EPA, as well as Irelands obligations for compliance with the Water Framework Directive. There are Specified Improvement Programmes required by waste water discharge licences for some agglomerations that are not included in the DoECLG Water Services Investment Programme 2010-2012. EPA water quality reports have highlighted municipal waste water as one of the main sources of pressure on water quality. It is therefore imperative that there is continued investment in waste water treatment.

[29] Intermediate outcomes are the key stepping stones or targets that must be achieved in order to secure a final goal. They relate to the environmental behaviour or compliance level of the regulated community and are the core short to medium term focus of outcome based enforcement.

3.2.2 The environmental risk profile of the waste water works.

A Dynamic Risk Enforcement Assessment Methodology (DREAM) has been developed by the EPA to assist with risk based enforcement of waste water discharge licences. The methodology assigns each agglomeration to one of four enforcement categories, based on risk scores issued for each of the following:

- Level of waste water treatment provided.
- Effluent quality.
- Impact of discharges on receiving waters.
- Proximity to sensitive environments such as bathing waters or freshwater pearl mussel habitats.

The risk assessment will be carried out annually and results provided to licensees to allow them to identify and implement improvements to decrease environmental risks, improve environmental performance and reduce their DREAM risk profile in future years. The DREAM risk profile will also be used to determine the annual enforcement fee for the waste water discharge licence, with higher fees assigned to agglomerations in the higher risk DREAM categories.

Risk Based Enforcement:

The EPA will target enforcement resources at agglomerations assigned a high or very high enforcement category.

In 2010 the EPA carried out an initial baseline DREAM assessment of 521 agglomerations that had a waste water discharge licence or were the subject of a licence application. Further work is on-going to refine and update the model used, as well as to verify the enforcement categories for each agglomeration.

3.2.3 Compliance with emission limit values where infrastructure is in place

Compliance with the emission limit values specified in Schedule A of each WWDL and/or the standards set in the UWWTD are the main drivers to minimise the impacts of waste water discharges on receiving waters. Water services authorities are responsible for ensuring that waste water discharges comply with these limits and standards.

Two sources of monitoring results are used to assess compliance.

- Water services authorities employ a system of self-monitoring where they conduct regular monitoring of treated waste water discharges and provide the results to the EPA. The assessment of the 2008 and 2009 self-monitoring results is covered in detail in Chapter 2 of this report.
- The EPA carries out its own independent monitoring of WWDL discharges and conducts an annual assessment of this monitoring to track treatment plant performance and highlight problematic discharges. EPA monitoring typically involves taking a discrete sample of the treated waste water discharge, carrying out a laboratory analysis of the sample, and assessing the results against allowable discharge limits set in the licence. The EPA issues the licensee with a copy of the laboratory results and, where relevant, instructions on follow up actions to be taken.

The EPA conducted a programme of discharge monitoring in 2010 and the results from that year, which are summarised below, will be used as the baseline to track trends in compliance with allowable limits into the future. In 2010 the EPA monitoring programme comprised 144 inspections of 86 licensed waste water works and the collection of over 150 treated effluent samples where secondary treatment plants were in operation[30].

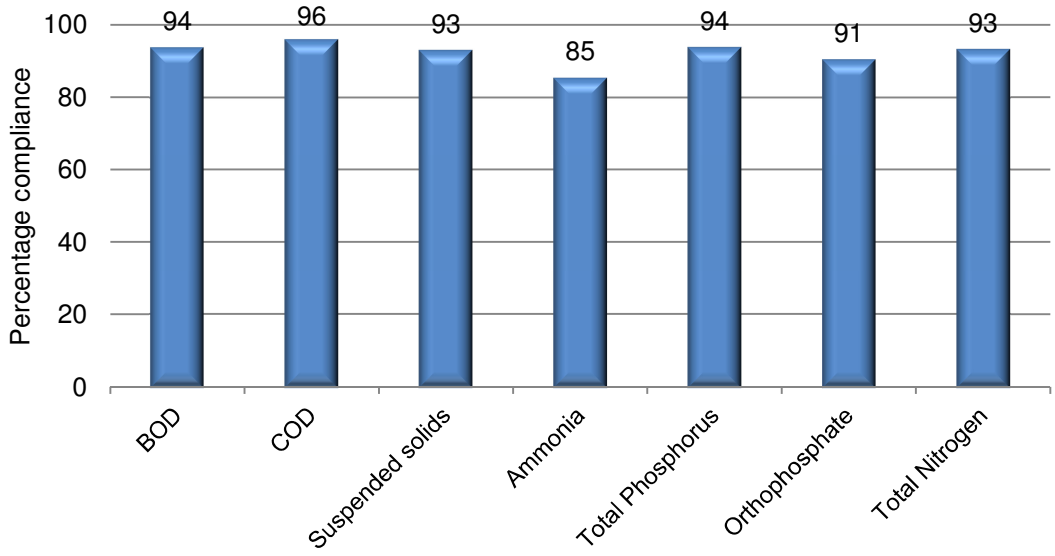
The compliance rates of the treated effluent samples with the allowable limits set in the licence for key water quality parameters can be seen in Figure 3-1 of this report. Compliance

[30] Samples were not taken at waste water works where there is no treatment, preliminary treatment or primary treatment as in these cases it is known already that the effluent quality is poor and monitoring is not required to confirm this.

with these key parameters ranged between 85% and 96% in 2010. The allowable limits against which compliance rates are assessed take into consideration the emission limit values set out in Schedule A of each WWDL and how these emission limit values must be interpreted, which is specified in Condition 2 of the WWDL.

The compliance rates in Figure 3-1 are based on over 140 BOD, COD and TSS monitoring results and on 103, 82, 75 and 30 monitoring results for ammonia, total phosphorous, orthophosphate and total nitrogen respectively.

Figure 3-1: EPA monitoring results for 2010 showing percentage compliance with WWDL limits (at licensed secondary waste water treatment plants)



3.2.4 Environmental incidents and complaints

An incident is any discharge that does not comply with the requirements of a WWDL or any occurrence at a waste water works with the potential for environmental contamination or requiring an emergency response by the water services authority. Licencees are obliged to notify the EPA as soon as practicable after the occurrence of any incident. Guidance on incident reporting is provided on the EPA website.

- Licensees notified the EPA of over 90 incidents at licensed waste water works during 2009 and over 330 incidents during 2010.
- Licensees must also include an annual summary of all incidents in their Annual Environmental Report[31] for each licensed agglomeration. Approximately 160 incidents are included in the incident summaries for 2009 and almost 520 in the incident summaries for 2010.
- Discharges that failed to meet the allowable standards or limits set in the licence and overflows of waste water from the waste water works account for the vast majority of incidents reported to the EPA in 2009 and 2010.
- The Annual Environmental Reports show that on many occasions when waste water discharges fail to comply with the allowable limits set in the licence the licensee did not report such failures to the EPA.

This failure to report all incidents, together with the considerable discrepancy between the number of incidents notified to the EPA at the time of their occurrence and the number in the incident summary sections of the Annual Environmental Reports, highlights the need for many licensees to improve their incident recording and notification procedures.

[31] Annual Environmental Reports are discussed in more detail in Section 3.2.5 of this report

Reducing incidents through maintenance programmes:

The implementation of a programme of maintenance and operation for all plant and equipment is essential in reducing incidents and ensuring the correct operation of critical equipment at waste water works. All licences require a programme of maintenance and operation and the EPA will check these programmes during audits.

The EPA received 4 complaints about licensed waste water works in 2009 and 37 in 2010. The complaints were made about 13 different waste water works. Most of the complaints relate to waste water overflows or spillages, with the remainder relating mainly to odours. Nearly half of the complaints concern overflows from one waste water works (Tramore).

Licensees must provide an annual summary of the complaints they receive in their Annual Environmental Report. There are over 120 complaints about waste water works in the complaints summaries for 2010 and the majority of these relate to odours[32].

3.2.5 Comprehensive and accurate reporting by water service authorities to the EPA

The EPA requires an Annual Environmental Report that includes summary information on: monitoring results, incidents and complaints, infrastructure assessment, update on works required as part of the specified improvement programme, an environmental liabilities risk assessment (for larger plants) as well as some licence specific reports such an assessment of impact on shellfish waters.

The information required in the Annual Environmental Reports is used to assess the performance of the treatment plant, to track licence compliance issues and to identify any environmental risks or impacts associated with the waste water works. The EPA received 6 Annual Environmental Reports for 2008, 57 for 2009 and 122 for 2010. The reports can be viewed on the waste water discharge licensing section of the EPA website at http://www.epa.ie/terminalfour/wwda/index.jsp. A review of the 122 reports covering 2010 found considerable variations in the quality of reporting and in some cases the reports did not include all of the required information. The main areas for improvement in the Annual Environmental Reports are outlined in Table 3-2 below;

Table 3-2: Improvements required in Annual Environmental Reports

Key Issue	Annual Environmental Report Assessment Details
Monitoring Results	In many cases monitoring results were provided without any interpretation or discussion of the significance of the results. For example where waste water discharge monitoring results breached allowable limits set in the licence the causes of these breaches and the corrective actions necessary to address any significant or repeated breaches were not summarised in the Annual Environmental Report. In most reports the ambient monitoring results, such as the results of surface water monitoring, were not assessed against the relevant Environmental Quality Standards in order to determine if the waste water discharges are impacting on the receiving waters. It is important that licensees use their monitoring results to assess the performance of the waste water treatment plant and the impact of discharges on the environment and that a summary of this assessment is included in the Annual Environmental Report.
Storm Water Overflow	The second Annual Environmental Report for each waste water works should include an assessment of storm water overflows[33]. This

[32] In addition Dublin City Council reported receiving 120 complaints, however it is unclear how many of these relate to the waste water works.

[33] A storm water overflow is an outlet on the sewerage system designed to relieve the system of excess flow collected as a result of heavy rain. The excess flow bypasses the treatment plant and discharges to receiving waters via the storm water overflow. Without such overflow mechanisms the waste water treatment works and private properties could be at risk of flooding during and after rainstorms. Discharges from storm water overflows are diluted with significant volumes of rainfall, however they may still have the potential to impact on the environment and consequently they must be designed to meet

Assessments	assessment was omitted from approximately one third of the reports where it was required. In some reports where an assessment of storm water overflows was provided it did not include an adequate evaluation of compliance with the required criteria for such overflows. Approximately 100 storm water overflows were assessed in the 2010 reports for compliance with the criteria and standards and over 70% of these were reported by the licensee as compliant.
Environmental Liabilities Risk Assessments	An environmental liabilities risk assessment report addressing liabilities from present or planned discharges was included in approximately three quarters of the Annual Environmental Reports that required such an assessment. While almost two thirds of these assessments did address the financial provisions necessary to cover all risks or liabilities identified in the risk assessments most licensees do not appear to have put any such financial provisions in place.

3.3 EPA Audits

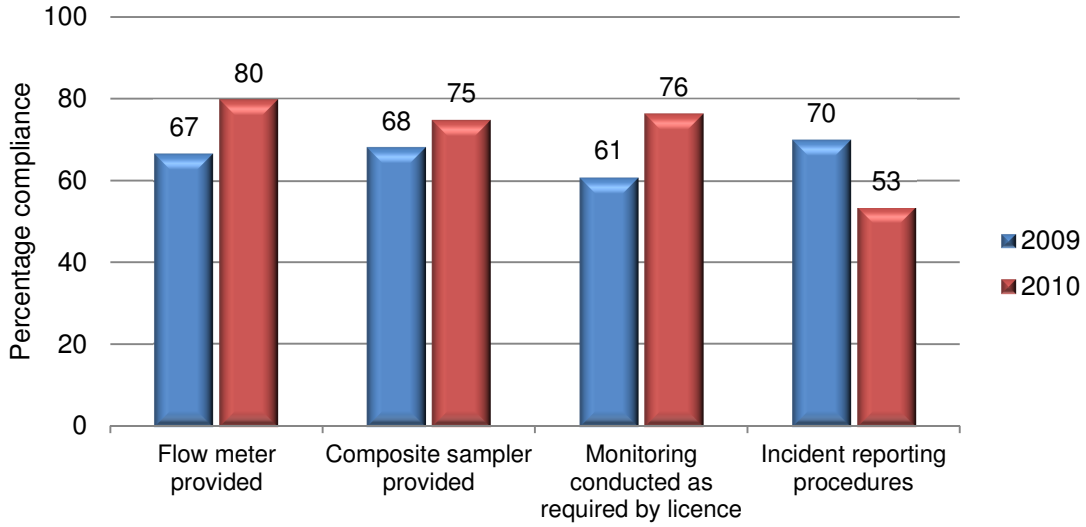
The EPA carried out 24 audits at 22 licensed waste water works in 2009. During 2010, 111 audits were conducted at 82 licensed waste water works. The key areas for improvement identified by the audits relate to:

- Failure to provide a flow meter at the primary discharge.
- Failure to provide a composite sampler at the primary discharge.
- Sampling, analysis and measurements of waste water discharges not carried out in accordance with licence requirements.
- Non-reporting of incidents to the EPA.

The compliance rates in meeting licence requirements in these areas, based on the audits conducted in 2009 and 2010, can be seen in Figure 3-2.

The audits also found poor compliance with the calibration of flow meters at discharge points (65% in 2010), maintenance of a public awareness and communications programme (53% in 2010), and labelling of discharge monitoring points (57% in 2010). The resources required to achieve compliance with these requirements are low and licensees should aim to address these issues within a short timeframe.

Figure 3-2: Percentage compliance with key licence requirements in 2009 and 2010



Compliance was high with the requirement to ensure that amenities and the environment are not impaired by sewage debris in water, with just one discharge failing to comply during the 2009 and 2010 audits.

certain criteria and standards. These are set out in the Department of the Environment 'Procedures and Criteria in relation to Storm Water Overflows'.

3.4 Advice and guidance

The EPA provides advice, guidance and training to water services authorities to promote compliance with licence obligations and assist the authorities in meeting the reporting requirements of their licences.

The EPA publishes guidance notes covering licence compliance issues, such as:

- how to prepare an Annual Environmental Report
- how to report an environmental incident to the EPA
- what to consider when establishing various programmes and procedures required by licences, e.g. the operation and maintenance programme.

All of the EPA guidance notes are available for download from the EPA website at http://www.epa.ie/downloads/advice/waste%20water/

The EPA carries out audits to assess compliance with waste water discharge licences. A standard audit report form, focusing on key conditions in the licence, is used to ensure a consistent approach to all audits. An audit report is issued to the licensee following the audit, along with the results of any EPA monitoring carried out on the day of the audit. To enable licensees to plan for audits a copy of the standard audit report form is available for download at: http://www.epa.ie/downloads/advice/waste%20water/name,30564,en.html

The EPA also provides seminars and training workshops for water services authorities on licence related topics. In 2010 two seminars were held outlining the statutory requirements of waste water discharge licences and setting out how the EPA will enforce these licences. In 2011 the EPA ran three workshops on the preparation and submission of the Annual Environmental Report covering the year 2010 and two workshops addressing issues such as sewer network integrity assessment, reporting of urban waste water data to the EPA, process control at waste water treatment plants and incident reporting.

Where necessary the EPA holds package meetings with individual water services authorities to discuss compliance with all of the licences and certificates of authorisation issued to the water services authority. These meetings can typically include discussions on the status of infrastructural improvements required by the licences and environmental incidents at the waste water works.

4. Sewage sludge

Main findings:

- In 2008 and 2009 a total of 102,967 tonnes and 106,778 tonnes respectively of sewage sludge (dry solids) were reported to have been produced nationally by the treatment plants covered in this report.
- The use of sewage sludge in agriculture decreased from 70% of total sludge arising in 2007 to 62% in 2009.
- The disposal of sludge to landfill has reduced significantly over the past 4 years. It was 17% in 2005, reducing to 5% in 2007 and less than 0.1% in 2009.
- National capacity for sludge treatment needs detailed planning in light of new legislation to control on-site waste water treatment systems.

This chapter outlines the national picture in relation to sewage sludge produced at waste water treatment plants in Ireland during 2008 and 2009. The disposal routes for sewage sludge are discussed and a summary of sludge produced by each water services authority is given.

4.1 Management and disposal in 2009

During 2008 and 2009 a total of 102,967 tonnes and 106,778 tonnes respectively of sewage sludge (dry solids) were reported to have been produced nationally by the treatment plants covered in this report. The destination routes for the sludge produced in 2009 are shown in Table 4-1. The use of sewage sludge in agriculture decreased from 70% of total sludge arisings in 2007 to 62% in 2009. The disposal of sludge to landfill has reduced significantly over the past 4 years it was 17% in 2005, reducing to 5% in 2007 and less than 0.1% in 2009. The 'other' category in Table 4-1 mainly consists of composting but also includes other uses such as land remediation in mine sites. The use of sewage sludge in this area increased to 38% in 2009 from 25% in 2007.

Where waste water sludge is used in agriculture the local authority must maintain a sludge register setting out details of the quantity of sludge produced and the quantity supplied for use in agriculture in their functional area, the composition of the sludge, the type of treatment which the sludge has undergone, the recipients of the sludge and the locations where it is to be used[34]. The register must be available for inspection by any person at the offices of the relevant local authority during office hours.

Table 4-1: Sewage sludge reuse and disposal routes for 2009

	Agriculture	**Landfill**	**Other (e.g. composting & land remediation)**	**Total**
Quantity (tonnes dry solids)	66,194 (62%)	63 (0.1%)	40,521 (38%)	106,778

4.2 National sludge production and capacity for treatment

The total quantity of sewage sludge produced by each county is shown in Table 4-2 below.

[34] This is a requirement of the Waste Management (Use of Sewage Sludge in Agriculture) Regulations, 1998 to 2001

Table 4-2: Sewage sludge produced by water service authorities in 2008 and 2009

Water services authority	2008 (tds/year)	2009 (tds/year)	% of the total waste water generated nationally in 2009[35]	% of the total sewage sludge produced nationally in 2009[36]
Carlow County Council	5,349	5,410	0.6	5.1
Cavan County Council	1,043	1,484	0.5	1.4
Clare County Council	300	258	0.9	0.2
Cork City Council	3,068	2,867	3.3	2.7
Cork County Council	7,166	7,377	4.3	6.9
Donegal County Council	151	300	2.3	0.3
Dublin City Council	16,903	16,905	57.8	15.8
Dun Laoghaire-Rathdown	0	0	0.9	0.0
Fingal County Council	6,151	8,463	1.8	7.9
Galway County Council	832	805	0.8	0.8
Galway City Council	6,951	7,209	1.2	6.8
Kerry County Council	966	796	1.7	0.7
Kildare County Council	3,548	3,131	2.4	2.9
Kilkenny County Council	1,237	1,154	1.7	1.1
Laois County Council	7,640	9,799	0.6	9.2
Leitrim County Council	105	109	0.2	0.1
Limerick City & Limerick County Council	2,500	1,950	2.3	1.8
Longford County Council	543	455	0.4	0.4
Louth County Council	1,589	2,103	2.6	2.0
Mayo County Council	8,342	8,903	1.7	8.3
Meath County Council	8,940	7,139	1.1	6.7
Monaghan County Council	1,274	1,286	0.7	1.2
Offaly County Council	3,600	5,621	0.7	5.3
Roscommon County Council	765	692	0.6	0.6
Sligo County Council	87	72	0.7	0.1
Tipperary N.R.	1,369	1,167	0.7	1.1
Tipperary S.R. Co. Co.	1,048	942	1.1	0.9
Waterford City Council	0	0	1.6	0.0
Waterford County Council	377	311	0.5	0.3
Westmeath County Council	8,656	7,866	1.0	7.4
Wexford County Council	1,496	1,121	1.4	1.0
Wicklow County Council	971	1,083	1.8	1.0
Total	**102,967**	**106,778**		

[35] The population equivalent of the county expressed as a percentage of the total population equivalent of the country.
[36] The tonnage of sewage sludge produced in the county expressed as a percentage of the total tonnage of sewage sludge produced within the country.

The issue of national capacity for sludge treatment and the implications for sludge treatment in Ireland in the future needs to be addressed, especially in light of the Water Services Amendment Act 2012 to control on-site waste water treatment systems. Unless properly controlled the addition of sludge loads from other plants and septic tanks could have a damaging effect on the performance of a waste water treatment plant, depending on the size of the plant and the time period taken for the discharge of the sludge into the treatment process. The waste water treatment plant treating the sludge should have adequate process capacity to cater for the sludge intake and, preferably, should have specific storage for the sludge so that it can be pumped into the plant in a planned manner without causing any negative effects to the operation and performance of the plant. The sludge load from other plants and on-site systems is substantial and its treatment requires careful planning and adequate facilities.

5. Recommendations

Urban waste water is one of the principal pressures on water quality in Ireland and continued financial investment in waste water infrastructure is vital to ensure that infrastructural improvements specified in licences are completed in a timely manner and that Ireland meets its obligations under the Urban Waste Water Treatment Directive and the Water Framework Directive.

To achieve this goal the EPA will pursue five intermediate outcomes. These outcomes can be applied to all agglomerations, both licensed and at application stage. The EPA makes the following recommendations in relation to actions to achieve these intermediate outcomes:

5.1 Progress on infrastructural improvements

- The provision of secondary treatment for the 11 agglomerations that did not have the required level of treatment at the time of reporting should be progressed as a matter of priority (see Table 2-2 for the list of 11 agglomerations).
- Nutrient reduction must be provided at the 8 agglomerations greater than 10,000 p.e. that continue to discharge to sensitive areas in the absence of such treatment (see Table 2-3 for the list of 8 agglomerations).
- Water services authorities should ensure that appropriate treatment is provided at the 26 locations identified in Appendix I of this report where waste water is being discharged with either no treatment or preliminary treatment only. For the 71 agglomerations with primary treatment in place, it must be determined whether primary treatment is appropriate depending on site specific conditions. These agglomerations are listed under the county reports in Appendix B. Higher priority should be given to those where there is environmental pollution and/or risk to high quality waters.
- Water services authorities should implement programmes of improvements required by the waste water discharge licence within the specified timeframes as these improvements are now legally binding.
- National capacity for sludge treatment needs to improve and the future needs reviewed in light of new legislation to control on-site waste water treatment systems.

5.2 Reducing the environmental risk profile of agglomerations

- Water services authorities should ensure that waste water discharges from the 35 agglomerations listed in Appendix C (*Waste water treatment plants prioritised for enforcement to protect freshwater pearl mussel catchments*) of this report do not impact on the habitat of freshwater pearl mussels.
- The 8 waste water works listed in Appendix D (*Seriously polluted river locations where the source of pollution is attributed to urban waste water discharges*) of the report as causing serious pollution must be upgraded or improved by the relevant water services authorities in order to minimise the impact of discharges on the receiving waters and restore the waters to at least good status.
- Water services authorities should ensure that discharges from the 52 waste water works listed in Appendix E (*Moderately or slightly polluted river locations where there is a high probability that the principle cause of pollution can be attributed to urban waste water discharges*) are improved in order to protect the receiving waters, as there is a high probability that these discharges are the principle cause of moderate or slight pollution.
- Water services authorities should ensure that the impacts of urban waste water discharges on designated bathing areas are minimised. Discharges of urban waste water that continue to be the principal cause of poor quality bathing water should be upgraded to improve discharge quality and restore the bathing waters to at least good status.

- Water services authorities should ensure that discharges from the 55 waste water works listed in Appendix F (*Urban waste water works identified in Pollution Reduction Programmes as key pressures on designated shellfish waters*) of this report do not adversely affect the aquatic habitat of shellfish within designated shellfish waters.
- Urban waste water discharges should be managed and controlled in order to minimise risks to any drinking water abstractions downstream of waste water discharge points.

5.3 Compliance with effluent quality standards in WWDLs and the UWWTD

- Water services authorities should review the operation of, and develop corrective action programmes for, all urban waste water treatment plants in their functional areas that fail to meet effluent quality standards, including those less than 500 p.e. Particular priority should be placed on plants whose discharges are causing or contributing to environmental pollution of receiving waters (Appendices D & E).
- Water services authorities should review sampling programmes to ensure sufficient sample numbers are taken each year. Failures due to insufficient sampling should be eliminated.
- Key equipment necessary to monitor plant performance, such as composite samplers and flow meters, should be installed where necessary and maintained.
- Water services authorities should continue to invest in the training of plant operators in order to improve the management and operation of waste water treatment plants.

5.4 Environmental incidents and complaints

- Maintenance and operation programmes should be put in place for all plant and equipment to ensure the correct operation of the waste water works at all times and to prevent environmental pollution. These programmes also serve to improve effluent quality. This programme should also address the provision of back up equipment (duty and standby) such as mobile generators and pumps.
- All environmental complaints should be dealt with in accordance with the national environmental complaints procedure.

5.5 Comprehensive and accurate reporting by water service authorities to the EPA

- Water services authorities should ensure that all monitoring and analysis is reported in accordance with the requirements of UWWTD and the individual WWDLs.
- Sampling and analyses should be carried out using the methods specified in the WWDL. In particular, time-based twenty-four hour or flow-proportional composite samples should be taken.
- The Annual Environmental Reports should be prepared in accordance with EPA guidelines and submitted by the 28th February each year.
- Water services authorities should assess all storm water overflows from their waste water works for compliance with the 'Procedures and Criteria in relation to Storm Water Overflows' and report the findings to the EPA. Any storm water overflows that are not in compliance should be upgraded to ensure compliance, or decommissioned.
- Water services authorities must improve compliance with the licence condition that covers financial provision to cover risks or liabilities identified in their environmental liability risk assessments.