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Phase 2 of the Impact Assessment of Proposals for a Revised IPPC Directive

Part 8: Off-site Treatment of Waste Water Final report

June 2008



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Executive Summary

Introduction

The Commission published its proposal and an impact assessment for a Directive on industrial emissions (Industrial Emissions Integrated Pollution Prevention and Control, IE(IPPC)D¹) on 21st December 2007. This consolidates seven existing Directives related to industrial emissions into “a single clear and coherent legislative instrument” and includes a number of changes related to new and existing activities. The main objective of this report is to assess, in outline, the likely impacts of the proposal in relation to off-site waste water treatment plants treating waste discharged by an IPPC installation.

Proposed Changes

The Commission has proposed that Clause 6.10 of Annex 1, within the IPPC Directive, is inserted as a new inclusion that reads:

6.10 Off-site treatment of waste water not covered by Council Directive 91/271/EEC of 21 May 1991 concerning urban waste water treatment and discharged by an installation covered by Chapter I.

The aim of the amendments is to provide more consistency, with off-site waste water treatment plants being regulated the same as industrial waste water treatment plants which are currently covered under the scope of the IPPC Directive as a result of being an IPPC installation in its own right or, more commonly, as a directly associated activity to another IPPC permitted activity.

Amending the IPPC Directive to include Clause 6.10 would only affect a very small number of waste water treatment plants and in some instances may involve a small part of a site already regulated by the Urban Waste Water Treatment Directive.

¹ “Proposal for a Directive of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (recast)”. European Commission, Brussels, 21st December 2007. Available from: <http://ec.europa.eu/environment/ippc/proposal.htm>

A total of three off-site waste water treatment plants were identified where off-site activities occur which *may* fit into the definition outlined above. There is the potential that more sites may be affected by the proposed amendment, although the total number is expected to be no more than 10 installations.

Costs & Benefits

Total compliance costs are estimated to be approximately:

- £52,100 to £112,800 one-off costs, equating to £156,300 to £1,128,000 for all (3-10) installations;
- £7,120 to £22,260 annual costs, equating to £21,360-£222,600 for all installations; and
- this gives total annualised costs of £34,000 to £310,000 per year² for all installations

Total annualised **administrative costs** for operators could vary between **£5,000 and £270,000 per year**. The administrative costs of the regulatory authorities are assumed to be covered by the fees and charges levied. The wide range of costs represents uncertainties regarding the number of installations, costs of preparing a permit and the charges likely to be levied for the type of installation under the Opra scheme. This gives a total annual administrative cost (for operators of installations brought under IPPC regulation and regulatory authorities) of approximately **£2,000 to £27,000 per installation per year**.

The environmental impact of the changes is unknown. However due to the small scale of the off-site waste water treatment plants which are likely to be affected the impact is likely to be small and is likely to focus on the reduction of fugitive emissions to groundwater/ water due to leaks, spillages or releases to air which may cause odour.

Limitations/Uncertainties

There are a number of limitations and uncertainties with the approach applied and input data available that should be noted:

- Clarification needs to be given to the definition of 'off-site treatment'; and

² Assuming an investment lifetime of 20 years and a discount rate of 3.5%.

- this study has considered plants which are solely treating industrial waste water and has not included plants where the load of industrial waste water is > 50% of the total load of the sewage treatment works. These sites are regulated under the Urban Waste Water Treatment Regulations and as such would fall out of the scope of the proposed new IE(IPPC) Directive. However concern has been expressed by stakeholders that national interpretation of the Directive may incorporate these sites.

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1. Introduction

1.1 This Report

The overall aim of this work package is to provide support to Defra in response to the publication of the European Commission's proposal for a new Directive on industrial emissions. This work has been undertaken under Entec's framework contract with Defra on "*The Preparation of Regulatory Environmental Impact Assessments in Relation to Proposals for Air Quality Legislation*" contract (RIA). The main objective of this report is to assess the likely impacts of the proposal in relation to **off-site industrial waste water treatment** within the UK, building and commenting on as well as extending the Commission's Impact Assessment (IA), where appropriate. In particular, this report focuses on the proposed changes relating to the definition of off-site waste water treatment installations.

The project team has consulted with the following stakeholders to support the development of this report:

- Environment Agency for England & Wales (EA);
- industry association - Water UK;
- water companies - United Utilities, Wessex Water, Thames Water, Yorkshire Water, Scottish Water, Severn Trent Water, Dŵr Cymru Welsh Water (DCWW), South West Water, Northumbrian Water Limited, and
- independent water and waste water asset management company - Alpheus Environmental.

1.2 What Is The Issue?

1.2.1 Overview of Revised IPPC Directive

The Commission published its proposal and an impact assessment for a Directive on industrial emissions (Industrial Emissions (Integrated Pollution Prevention and Control), henceforth cited as "IE(IPPC)D"³) 21st December 2007. This consolidates seven existing Directives related to

³ "Proposal for a Directive of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (recast)". European Commission, Brussels, 21st December 2007. Available from: <http://ec.europa.eu/environment/ippc/proposal.htm>

industrial emissions into a “single clear and coherent legislative instrument”. These existing Directives include titanium dioxide industry related directives (78/176/EEC, 82/883/EEC, 92/112/EEC), the IPPC Directive (2008/01/EC), the Solvent Emission Directive (1999/13/EC), the Waste Incineration Directive (2000/76/EC) and the Large Combustion Plants Directive (2001/80/EC). The Commission’s Impact Assessment (IA)⁴ identified a number of problems related “(1) to shortcomings in the current legislation that lead to unsatisfactory implementation and difficulties in Community enforcement actions and, thereby, to loss of health and environmental benefits and (2) to the complexity and lack of coherence of parts of the current legal framework.”

The Commission has provided an indicative timeline for discussion and implementation of the proposals. It is important to note that this is dependent on the length of time it will take to discuss and agree the proposed directive within the co-decision procedure. The initial timetable is set out below in.

Table 1.1 Key Dates for the Discussion and Implementation of the Proposed IE(IPPC)D

Date	Description
12/2007	The Commission adopts its proposal for a Directive on industrial emissions as well as issuing its Communication ‘Towards an improved policy on industrial emissions’
01/2009	First reading in the European Parliament and political agreement in Council.
12/2010	Completion of the co-decision process and publication of the Directive on industrial emissions within the Official Journal.
07/2012	Member States fully transpose the new Directive (18 months after entry into force). The Directive applies to all new installations from this date onwards.

⁴ “Commission Staff Working Document: Accompanying document to the Proposal for a Directive of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (recast). Impact Assessment.” European Commission, Brussels, 21st December 2007. Available from: <http://ec.europa.eu/environment/ippc/proposal.htm>

Table 1.1 (continued) Key Dates For The Discussion And Implementation Of The Proposed IE(IPPC)D

Date	Description
01/2014	All existing installations previously subject to IPPC, Waste Incineration, Solvent Emissions and Titanium Dioxide Directives must meet the requirements of the new Directive. Large Combustion Plants do not yet need to meet the new Emission Limit Values (ELVs) prescribed within the Directive
07/2015	The newly prescribed activities such as additional poultry installations, smaller combustion units and wood preservation activities must meet the requirements of the new Directive.
01/2016	Large Combustion Plants must meet the requirements set out in Chapter 2 of the new Directive, as well as the ELVs set out in Annex V

1.2.2 Proposed Changes:

The Commission has proposed the addition of the following as a listed activity within the IPPC Directive:

“Off-site treatment of waste water not covered by Council Directive 91/271/EEC/ of 21 May 1991 concerning urban waste-water treatment and discharged by an installation covered by Chapter 1.” (of the IPPC Directive)

The purpose of this inclusion is to include industrial waste water treatment plants which are not located on the site of an IPPC installation, and are not covered by the Urban Waste Water Treatment Directive. The aim of the amendments is to provide more consistency, with off-site waste water treatment plants being regulated the same as industrial waste water treatment plants which are currently covered under the scope of the IPPC Directive as a result of being an IPPC installation in its own right or, more commonly, as a directly associated activity to another IPPC permitted activity.

1.3 What are the Objectives and Intended Effects?

The main drivers for the revision of industrial emissions legislation are described in the IA undertaken by the Commission:

- The Lisbon Strategy and the EU Sustainable Development Strategy; this strategy stresses the role of environmental technologies in having “*significant economic, environmental and employment potential*”;
- the different Thematic Strategies (Air Pollution, Soil Protection, etc.) set objectives to protect human health and the environment from key air pollutants. Industrial emissions regulation has a major role in meeting these objectives;
- the need for “Better Regulation” and designing laws and legislation in a more coherent way and with minimum administrative burden; and
- experience in the implementation of the IPPC Directive in the last 10 years and ways to improve the legal framework to ensure that its objectives are met.

The Commission’s proposals aim to address the issues identified via a number of amendments to the existing legislation including the following:

- Clarification and strengthening of the concept of BAT;
- revision of the minimum ELVs for some sectors (for example, large combustion plants) to bring them into line with BAT standards;
- introduction of provisions on inspection and environmental improvements;
- stimulating innovation and the development and deployment of new techniques;
- simplifying and clarifying certain provisions on issuing permits, monitoring and reporting to cut unnecessary administrative burdens; and
- extending and clarifying the scope and provisions of the legislation to better contribute to the objectives of the Thematic Strategies.

For this particular amendment, the main objectives are to improve consistency providing a more level playing field when dealing with on-site and off-site waste water treatment from an IPPC Installation. Industrial waste water treatment plants are currently covered under the scope of the IPPC Directive as a result of being an IPPC installation in their own right or, more commonly, as a directly associated activity to another IPPC permitted activity.

In addition, the proposed changes should provide a positive environmental and social impact through the implementation of BAT already established in existing BREFs for those installations not currently covered by the IPPC Directive.

2. Policy Options

This section presents the policy options considered in this report for the proposed addition of the off-site treatment of waste water discharged by an IPPC installation, as a listed activity. This was discussed and agreed with Defra at the inception meeting (8th April 2008).

2.1 Off-site Waste Water Treatment Installations

The following two options have been considered for off-site waste water treatment installation:

1. No change.
2. As included in the proposed IE(IPPC)D.

3. Who is Affected?

This section presents a list of those stakeholders likely to be affected by the proposed changes for inclusion of off-site treatment of waste water from an IPPC installation.

- Operators of off-site waste water treatment works;
- competent authorities e.g. Environment Agency and SEPA; and
- operators of IPPC installations.

4. Baseline Definition

4.1 Approach

This section outlines the approach that has been taken to define the baseline, for the relevant installations and/or activities and their associated emissions that may be affected by the proposed changes to the Directive.

4.2 Proposed Installations

4.2.1 Number of Installations

The offsite wastewater treatment industry is regulated under The Environmental Permitting (England and Wales) Regulations 2007 and, in Scotland and Northern Ireland, by the Pollution Prevention and Control Regulations, and also the Waste Management Licensing Regulations for those respective territories.

The scenarios provided in

Table 4.1 below give an overview of the different approaches to treatment of industrial effluent in the UK, and highlights those that would be affected by the proposed addition of off-site industrial waste water treatment as a listed activity to the IPPC Directive.

Table 4.1 Approaches to Waste Water Treatment of Industrial Effluent in the UK

Scenario		Current UK Regulatory Regime	Affected by Insertion of Point 6.10 of Annex I
Decentralised waste water treatment facilities	Treat the waste water at source from an IPPC activity.	Waste water treatment is a directly associated activity (DAA) to the IPPC activities and so will be regulated under the Environmental Permitting Regulations 2007 (EPR) (or the analogous reference in the Scotland and Northern Ireland Regulations)	x
Centralised waste water treatment	Treat the waste water at source from a number of different IPPC activities.	Where the waste water treatment plant is located within an IPPC installation this will be included as a DAA and so will be regulated under the Environmental Permitting Regulations 2007 (EPR) (or the analogous reference in the Scotland and Northern Ireland Regulations).	x
	A joint treatment plant used by a number of IPPC installations.	If the capacity is > 50 tonnes for non-hazardous waste and >10 tonnes for hazardous waste and the resulting sludge is disposed of then the waste water treatment plant will be regulated under the Environmental Permitting Regulations 2007 (EPR) (or the analogous reference in the Scotland and Northern Ireland Regulations).	x
		Where the waste water treatment plant is off-site, there is still a technical connection with the IPPC activity they serve, therefore they will be included as a DAA and so will be regulated under the Environmental Permitting Regulations 2007 (EPR) (or the analogous reference in the Scotland and Northern Ireland Regulations).	x

Table 4.2 (continued) Approaches to Waste Water Treatment of Industrial Effluent in the UK

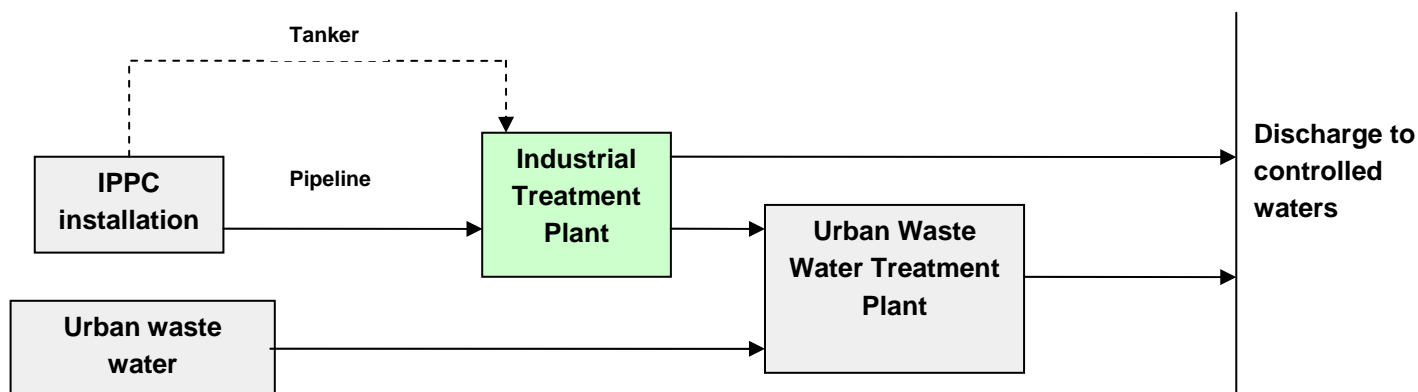
Scenario	Current UK Regulatory Regime	Affected by Insertion of Point 6.10 of Annex I
Waste water discharge into a municipal WWTP	Discharge of industrial waste water into a treatment plant treating domestic waste water with no pre-treatment	✓
	Where there is only industrial waste water being treated prior to discharge to sewer	✓

Table 4.3 (continued) Approaches to Waste Water Treatment of Industrial Effluent in the UK

Scenario	Current UK Regulatory Regime	Affected by Insertion of Point 6.10 of Annex I
	<p>If the capacity is > 50 tonnes for non-hazardous waste and >10 tonnes for hazardous waste and the resulting sludge is sent for recovery then the waste water treatment plant may be regulated under the Environmental Permitting Regulations 2007 (EPR) for waste operations (or the analogous reference in the Scotland and Northern Ireland Regulations).</p> <p>If the threshold is < 50 tonnes for non-hazardous waste and <10 tonnes for hazardous waste and the site is not regarded as a directly associated activity it may be regulated under the Environmental Permitting Regulations 2007 (EPR) for waste operations (or the analogous reference in the Scotland and Northern Ireland Regulations). if it is treating > 100,000m³/annum or Duty of Care if below this figure.</p>	<p><input type="checkbox"/></p> <p><input type="checkbox"/></p>

The likely scenarios that will be affected by the proposed amendment to the IPPC Directive can be summarised as shown in Figure 4.1 below (where the industrial treatment plant is not a DAA):

Figure 4.1 Installations to Be Included Within Point 6.10 of Annex I of the Proposed Amended Directive



In the UK, where industrial waste water is discharged from an IPPC installation for off-site treatment, in the majority of cases the industrial waste water is mixed with domestic waste water as soon as it enters the sewage treatment works. Of the waste water treatment plants that treat only industrial waste, a number of these are already permitted under the IPPC Directive as installations in their own right or are directly associated activities to an IPPC installation. These therefore, will not be affected by the proposed amendment to the Directive.

Based on discussion with the stakeholders listed in Section 1.1 a total of three off-site waste water treatment plants have been identified where off-site activities occur which *may* fit into the definition outlined above. These include the following:

- Waste water from an IPPC permitted milk processing plant which is pre-treated within an off-site waste water treatment plant operating under a waste management licence (WML) before being discharged into the sewage treatment works (STW),
- waste water from an IPPC permitted brewery, which is pre-treated at a STW through a dedicated pre-filter which reduces the load of the effluent prior to it being mixed with domestic waste water; and

- waste water from a poultry factory (not confirmed as an IPPC installation) which is pre-treated at a STW prior to being mixed with the urban waste water treatment flow.

This information is based on a response from nine waste water treatment companies in the UK and one independent company specialising in water and waste water asset management. There is the potential that more sites affected by the proposed amendment exist, although the total number is expected to be no more than 10 installations.

All of the installations identified above are located in England and Wales.

Environmental Impacts

The potential impacts of waste water treatment plants on the environment have been described in detail in a fact sheet⁵ produced on behalf of the Commission and are summarised in Table 4.2 below.

Table 4.2 Potential Impact of Waste Water Treatment Facilities

Environmental Compartment	Potential Effect/Emission
Air	<ul style="list-style-type: none"> • Evaporation/ formation of odour (H₂S, NH₃, mercaptans, etc.) • Formation of aerosols • Drift of potentially hazardous microorganisms from the treatment plant. • VOC emissions (evaporated or stripped from the water) • If biogas is generated and to used as fuel for energy supply, it is normally flared, resulting in emissions to air
Water	<ul style="list-style-type: none"> • In principle, significant reduction of water emission • When rainwater is treated together with process water, the treatment system might get overloaded in the event of heavy rain fall, which can cause additional pollutant emission because the treatment system cannot function properly.

⁵ Data gathering and impact assessment for a possible technical review of the IPPC Directive. Fact Sheet B.4 http://circa.europa.eu/Public/irc/env/ippc_rev/library?l=/gathering_amendments_1/final_report/oiowtp_finaldoc/_EN_1.0_&a=d

Table 4.2 (continued) Potential Impact of Waste Water Treatment Facilities

Environmental Compartment	Potential Effect/Emission
Waste	<ul style="list-style-type: none"> • Waste water treatment sludge and scrubber solutions
Other	<ul style="list-style-type: none"> • The central WWTP consumes energy. In some cases, biogas is generated and can be used as a source of energy.

In addition, impacts to land, groundwater and water may occur as a result of leaks and spillages from infrastructure associated with waste water treatment processes. Waste water treatment companies which are currently permitted under IPPC have requirements to conduct leak detection and consider secondary containment. However there is currently no quantitative data available to determine the current risk to the environment of leaks and spillages from infrastructure.

The off-site waste water treatment plants identified in Section 4.2.1 as likely to be affected by the proposed amendments to the Directive are small in nature and may incorporate tanks and associated pipeworks, odour control and chemical dosing. None of the waste water plants are connected to CHP units or boilers, therefore the potential environmental impact is likely to include fugitive emissions to land, groundwater and water as a result of leaks and spillages, and fugitive emissions to air, which include odour.

4.3 Overview of Current Legislation

The UK legislation and associated European Directives controlling the activities of waste water treatment companies is summarised in Table 4.3 and discussed in detail in the following sections:

Table 4.3 Relevant Statutory Instruments for the Permitting/Licensing of Waste Water Treatment Activities

EC Directive	Corresponding UK Statutory Instrument / Act	
Integrated Pollution Prevention and Control Directive (2008/1/EC)	England and Wales	Environmental Permitting (England and Wales) Regulations 2007
	Scotland	Pollution Prevention and Control (Scotland) Regulations 2000, as amended
	Northern Ireland	The Pollution Prevention and Control Regulations (Northern Ireland) 2003, as amended
Urban Waste Water Treatment Directive (91/271/EC)	England and Wales	Urban Waste Water Treatment (England and Wales) Regulations 1994 as amended
	Scotland	Urban Waste Water Treatment (Scotland) Regulations 1994 as amended
	Northern Ireland	Urban Waste Water Treatment (Northern Ireland) Regulations 1995 as amended
Waste Framework Directive (75/442/EEC)	England and Wales	Environmental Permitting (England and Wales) Regulations 2007
	Scotland	Waste Management Licensing Regulations 1994, as amended
	Northern Ireland	The Waste Management Licensing Regulations (Northern Ireland) 2003 as amended

4.3.1 Environmental Permitting Regulations (EPR)

The EPR regime does not apply to Scotland or Northern Ireland, which still have separate PPC and waste management licensing systems.

Integrated Pollution Prevention Control (IPPC)

Waste water treatment remote from IPPC-permitted industrial activities is currently controlled by the Environmental Permitting Regulations in England and Wales, if it meets one of the following criteria:

- The threshold capacity for the physico-chemical and/or biological treatment is 50 tonnes/day for non hazardous wastes and 10 tonnes/day for hazardous wastes; and
- the treatment plant is a directly associated activity to a IPPC permitted industrial activity (i.e. the permitted process is the principal user, it has a technical connection to the industrial activity, can be regarded as part of the installation and is on the same site).

The same activity definitions are contained in the Pollution Prevention and Control Regulations for Scotland and for Northern Ireland.

During the implementation of IPPC within the UK, a number of off-site waste water treatment plants were considered in order to determine if they could and should be included as directly associated activities. However due to various technicalities, including the review of technical connections and definition of the 'same site' rule it was ruled that these should not be permitted.

The European Commission is proposing to amend the Directive so that an 'installation' will be interpreted to include the technical unit and the DAAs that are on the 'same site'. In addition the definition of 'same site' is currently being reviewed by the Environment Agency. This may impact in the future on the definition of off-site waste water treatment as a directly associated activity.

Waste water treatment plants which currently have an IPPC permit have submitted applications which have included elements such as: application site report, site plans and assessment of environmental impacts; they may also have included an odour management plan.

Waste Management Licensing Regulations

A number of waste water treatment plants are covered by the Environmental Permitting Regulations for waste operations, because they import or export waste. If an installation treats > 100,000m³ per annum it will require a waste management license. In some cases waste water treatment operations will be exempt depending on the origin and quantity of waste treated. These exemptions are set out in Schedule 3 to the Regulations.

The same activity definitions are contained in Waste Management Licensing Regulations for Scotland and for Northern Ireland.

4.3.2 Urban Waste Water Treatment Regulations

The objectives of the Urban Waste Water Treatment Regulations are to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors, specifically food processing industries, where the waste water is biodegradable. These sectors include milk processing, fruit and vegetable product manufacturers, soft drink manufacturers, potato processors, meat industry, breweries, production of alcohol and alcoholic beverages, manufacture of animal feed from plant products, manufacture of gelatine and of glue from hides, skin and bones, malt-houses and fish-processing industries.

The regulations apply to discharges of this biodegradable industrial waste water from plants representing 4,000 population equivalent or more where the waste water does not enter an urban waste water treatment plants before discharge to receiving waters.

For urban waste water the threshold level is a population equivalent of 10,000 in respect of all discharges, and a population equivalent of 2,000 if the discharge is into freshwaters and estuaries.

Where industrial waste water is discharged into an urban waste water treatment plant, with or without pre-treatment there is a need for its flow to be monitored and the load determined in line with the requirements of the regulations in order to ensure it does not impact on the treatment of the urban waste water.

4.4 Results

Based on discussions held with the stakeholders there are a limited number of off-site waste water treatment plants that will be affected by the proposed amendment to the IPPC Directive. All of the sites identified as part of this impact assessment are pre-treating waste water from food processing industries prior to discharge into an urban waste water treatment plant. As a result the coverage of these installations under the definition of the proposed Directive would be limited to the plant treating the waste water up to the point where it discharges into the urban waste water treatment plant.

The main environmental impacts associated with the operation of waste water treatment plants are fugitive emissions to air, water and land and odour, however due to lack of available data it is not possible to quantify the extent of these emissions.

4.5 Summary

There are a number of off-site waste water treatment sites within the UK, however many of these are currently permitted as IPPC installations in their own right (under Section 5.1 or 5.3 of the EPR/ PPC Regulations) or as directly associated activities (DAAs) to an IPPC permitted installation.

Amending the IPPC Directive to include Point 6.10 of Annex I would only affect a very small number of waste water treatment plants and in some instances may involve a small part of a site already regulated by the Urban Waste Water Treatment Directive.

In order to avoid ambiguity, clarity will need to be given either within the final IE(IPPC) Directive or within future UK legislation and associated guidance to the following:

- The definition of 'off-site treatment';
- consideration should be given to setting a threshold. Off-site waste water treatment works which are outside the scope of the UWWTD, due to their small size, may be captured. However it has not been possible to identify such a plant which is accepting waste from an IPPC permitted activity and is below the threshold level; and
- this study has considered plants which are solely treating industrial waste water and has not included plants where the load of industrial waste water is > 50% of the total load of the STW. These sites are regulated under the Urban Waste Water Treatment Regulations and as such would fall out of the scope of the proposed new IE(IPPC) Directive. However concern has been expressed by stakeholders that national interpretation of the Directive may incorporate these sites.

The environmental impact of the changes is unknown. However due to the small scale of the off-site waste water treatment plants which are likely to be affected the impact is likely to be small and is likely to focus on the reduction of fugitive emissions to groundwater/ water due to leaks, spillages or releases to air which may cause odour.

5. Costs

5.1 Approach

5.1.1 Compliance Costs

Compliance costs for the waste water treatment installations that may be affected by the proposed changes to the threshold have been estimated based on discussions with waste water treatment companies who currently hold IPPC permits for waste water treatment installations. Prior to the introduction of IPPC, these installations were regulated in the same way as those which potentially may be included with the proposed amendment regarding off-site treatment; therefore it is reasonable to assume that the changes that would be required under the proposed IE(IPPC)D and environmental improvements may be similar. The only exception is the improvement conditions relating to operation of flares and CHP units as these are unlikely to apply.

The improvements that, therefore, may be required at off-site waste water treatment plants as a result of a requirement to meet BAT, include the following:

- Development of an odour management plan;
- development of a site closure plan;
- development of a flood risk and spillage plan;
- development and implementation of a competence and training plan;
- review of the condition of all sub-surface pipe work and storage measures including sumps, lagoons, storage tanks and vessels in relation to their potential to cause fugitive emissions to surface and ground water;
- development of proposals for a monitoring programme for the detection of leaks from the surface and subsurface infrastructure including tanks, sumps, pumps, digesters and associated pipework;
- proposals to be developed for providing secondary containment, or other appropriate measures, to prevent, or where that is not practicable, to minimise leakage and spillage from primary pipe work including drains, sumps, storage and treatment vessels in relation to their risk of causing pollution;

- development of a written report detailing the condition of the installations drainage which includes reviewing the condition of drains and developing a detailed drainage plan; and
- review of odour emissions abatement equipment to assess their adequacy.

The above are based on the improvement conditions previously required for UK installations. The potential future requirements that may apply through the development of BAT for the off-site waste water treatment installations may or may not be similar to these.

Compliance costs for operators can be broken down into the following elements:

- Improvement conditions (excluding civil works) - £125,000 - £350,000 per site,
- monitoring and reporting - £15,000 per site and between 10-50 full time employee (f.t.e.) days per year (equivalent to around £1,800 to £8,900 per year⁶); and
- capital costs associated with civil works such as repairs on sumps, tanks, drains, pumps and secondary containment, amongst others (it is not possible to quantify these based on currently available information, due to uncertainties regarding the actual improvements that would be required).

The costs provided within this report are very broad due to the relatively small number of sites identified and the nature of the off-site waste water treatment. They should therefore be viewed as indicative only. However they are based on experience to date of regulatory compliance under EPR for similar types of installations.

5.2 Administrative Costs

5.2.1 Operators

The three off-site waste water treatment plants where off-site activities occur which *may* be affected by the proposed amendment to the Directive, as identified in Section 4.2.1 are all located in England and Wales. No installations were identified in Northern Ireland or Scotland, therefore the administrative costs outlined in this section refer to England and Wales only.

⁶ Based on an hourly cost of £21.05 in 2004 prices (using the Better Regulation Executive's Standard Cost Model), inflated to January 2008 prices based on the Retail Price Index and assuming 7.5 working hours per day.

Under the Environmental Permitting Regulations, waste water treatment works would be classed as tier 3 facilities, which means they are regarded as being more complex and high risk facilities that require a more detailed and individually-tailored permit. The associated costs for application submission fees and annual subsistence charges for these installations will therefore be based on the relevant permit application charge multiplier for that facility, multiplied by the relevant Operational Risk Appraisal (Opra) charging score for that facility. Based on the 2008/2009 figures the permit application charge multiplier is £195 and the subsistence charge multiplier is £94.

Administrative costs for operators can be broken down into two main elements each of which can be further sub-divided:

- Permit Application (one-off):
 - permit application fee (£4,600-£16,000);
 - time and costs to prepare the permit and carry out associated investigations (assumed to vary between £13,500 - £350,000);
- Subsistence Costs (annual):
 - subsistence charge (£6,000-£15,000);
 - time for record keeping, inventory preparation, staff training and inspections (may be up to 10 f.t.e. days per year (equivalent to around £1,800⁶).

One-off costs have been annualised over the lifetime of a permit (assumed to be 20 years in line with Defra, 2006) with a discount rate of 3.5%.

5.2.2 Regulators

It can be assumed that the permit fees and subsistence charges paid by operators through the Opra charging scheme would be sufficient to cover regulators' costs for the processing of the permit and ongoing enforcement.

5.3 Payment of Costs

The compliance and administration costs to the waste water treatment company could not be recovered if the discharge from the PPC installation is consented under a trade effluent consent, i.e. if the trader discharges directly to sewer, as these charges are based on an agreed national formula.

If there is a trade agreement in place the costs might be able to be passed back to the trader, at the time an agreement is made. For existing agreements both parties would have to agree to vary the agreement before any costs could be passed back to the trader. This is unlikely to occur and could take many years to be resolved.

Where the costs can be passed back to the trader, in some instances it may be less expensive for the trader to build their own waste water treatment plant and discharge direct to controlled waters.

5.4 Results

Compliance Costs

Estimate of the compliance costs likely to be incurred by operators of the additional waste water treatment plants that would be included under IPPC are presented in Table 5.1. These are broken down into capital (one-off) and annual costs. The costs do not include costs for replacement of infrastructure following the results of reviews or monitoring.

Table 5.1 Compliance Costs (Off-Site Waste Water Treatment Plant)

Cost Element	Number/volume	Proportion affected (%)	Capital cost (£/unit)	Annual cost (£/unit)	Total capital cost (£)	Total annual cost (£)
Odour management plan	3-10	100%	£5,000	£1,500	£15,000-£50,000	£4,500-£15,000
Site closure plan	3-10	100%	£2,000-£4,000	-	£6,000-£40,000	
Flood risk & spillage plan	3-10	100%	£15,000 - £20,000	-	£45,000 - £200,000	
Competence & training plan	3-10	100%	£5,000 - £20,000		£15,000 - £200,000	

Table 5.2 (continued) Compliance Costs (Off-Site Waste Water Treatment Plant)

Cost Element	Number/ volume	Proportion affected (%)	Capital cost (£/unit)	Annual cost (£/unit)	Total capital cost (£)	Total annual cost (£)
Review of sub-surface pipework & storage	3-10	100%	£7,000-£10,000		£21,000 - £100,000	
Leak detection monitoring	3-10	100%	£15,000-£50,000	£5,000 - £20,000	£45,000-£500,000	£15,000-£200,000
Secondary containment	3-10	100%	NE	NE	NE	NE
Drainage survey	3-10	100%	£2,500-£3,000	£500-£600	£7,500-£30,000	£1,500-£6,000
Review of odour abatement equipment	3-10	20%	£600-£800	£120-£160	£1,800-£8,000	£360-£1,600
Total Cost			£52,100-£112,800	£7,120-£22,260	£156,300-£1,128,000	£21,360-£222,600
<p>These costs are indicative estimates based on consultation and internal expert judgement. Total costs are estimated by assuming that between 3 and 10 installations would be covered. NE = Not Estimated (information on costs of secondary containment or equivalent measures has not yet been received).</p>						

Administrative Costs

Administrative costs would be incurred by the waste water treatment sites through permit application and subsistence costs as the proposed change to the IPPC Directive includes sites which have previously not been regulated under the IPPC regime. In some instances these sites may have been covered by the WML Regulations; however IPPC costs will be higher due to the move from Tier 2 to Tier 3 facilities under Opra.

The administrative costs associated with the proposed change to off-site waste water treatment are summarised in the Table 5.2 below.

Table 5.2 Administrative Costs

Cost element	Unit cost (£/installation)	One-off costs (£)	Total costs (£)
Operators			
Permit application fees	£4,600-£16,000	£13,800 - £160,000	-
Permit application time costs	£13,500 - £350,000	-	£40,500 - £3,500,000
Subsistence charge	£6,000-£15,000	-	£18,000 - £150,000
Subsistence time costs	£1,800	-	£5,400 - £18,000
<i>Sub-Total</i>	<i>£24,100 - £381,000</i>	<i>£13,800 - £160,000</i>	<i>£63,900 - £3,668,000</i>
Regulatory Authorities			
Permit application time costs (regulators)	Assuming cost covered within the application fee		
Subsistence time costs	Assuming cost covered within the subsistence charge		
Sub-Total	N/A	N/A	N/A
Total Administrative Costs	£24,100 - £381,000	£13,800 - £160,000	£63,900 - £3,668,000

5.4.1 Summary

Total **compliance costs** are estimated to be approximately:

- £52,100 to £112,800 one-off costs, equating to £156,300 to £1,128,000 for all (3-10) installations;
- £7,120 to £22,260 annual costs, equating to £21,360-£222,600 for all installations; and

- this gives total annualised costs of £34,000 to £310,000 per year⁷ for all installations.

Total annualised **administrative costs** for operators could vary between **£5,000 and £270,000 per year**. The administrative costs of the regulatory authorities are assumed to be covered by the fees and charges levied. The wide range of costs represents uncertainties regarding the number of installations, costs of preparing a permit and the charges likely to be levied for the type of installation under the Opra scheme. This gives a total annual administrative cost (for operators of installations brought under IPPC regulation and regulatory authorities) of approximately **£2,000 to £27,000 per installation per year**.

⁷ Assuming an investment lifetime of 20 years and a discount rate of 3.5%.

6. Benefits

6.1 Approach

The following table summarises the benefits likely to be achieved from permitting the off-site waste water treatment works. Due to lack of available information it is not possible to quantify the benefits.

Table 6.1 Benefits

Benefits	Situation under IE(IPPC)D	Business as Usual (BAU)
Reduction in pollution	<p>IPPC permits issued to waste water treatment plants contain improvement conditions designed to reduce pollution, including combinations of the following:</p> <p>Leak detection/ secondary containment</p> <p>Impact assessment</p> <p>Odour management plans</p>	<p>Noise and odour will be currently regulated by the local authority as Statutory Nuisance. Odour control is already subject to a Defra Code of Practice and is reported to be easily enforceable.</p> <p>Leak detection and secondary containment is not currently addressed.</p>
Waste reduction, minimisation and resource efficiency	All IPPC permits include standard conditions designed to address waste reduction, minimisation and resource efficiency.	The discharge consents and waste management licences do not contain conditions to address waste reduction, minimisation and resource efficiency.

Table 6.1 (continued) Benefits

Benefits	Situation under IE(IPPC)D	Business as Usual (BAU)
Formalisation of environmental management systems	IPPC permits include standard conditions designed to require the operators to implement and maintain a management system, organisational structure and allocate resources that are sufficient to achieve compliance with the limits and conditions of the permit.	The discharge consents and waste management licences do not contain conditions to address environmental management.
Prevention of accidents and minimisation of their consequences	IPPC permits contain standard conditions requiring the maintenance and implementation of an accident management plan.	Discharge consents do not contain conditions to address accident prevention and minimisation. Waste management licences generally contain standard conditions to address site facilities and infrastructure (including drainage and hardstandings), fire-fighting and pollution control with respect to spillages.

6.2 Damage Cost Function

Off-site waste water treatment works can affect the environment through the fugitive releases of emissions, including waste water, sludge and biogas. The impact of these emissions may include:

- Land contamination;
- pollution of controlled waters;
- pollution of groundwater; and
- public nuisance due to odour.

The main impact of the proposed changes would be a reduction in fugitive emissions, however due to limited information available from the stakeholders, BREF documents and EA guidance it is not possible to quantify this. Waste water treatment plants currently permitted under IPPC are investigating the feasibility of leak detection and secondary containment in line with BAT requirements relating to storage of waste within bulk storage vessels. This investigation is still in the preliminary stages so it is not currently possible to determine:

- The extent of leakage from the existing WwTW assets; and
- the damage that any leaks may have on the environment.

This current work is in relation to sludge and the perceived “negative” impact of uncontrolled leaks/spills of sludge to land is deemed questionable by the waste water treatment companies, as sludge to agricultural and for ecological benefit is the dominant sludge disposal route.

In relation to the off-site waste water treatment plants the environmental impact of the leak is dependant on the nature of the waste water. The installations identified within this report are all pre-treating food processing waste which can have a high BOD and is highly biodegradable. In some instances, however more complex waste, such as from a chemical works, may be treated.

If secondary containment is deemed to be required then there may be a need for replacement of the whole asset in the event that secondary containment cannot be retrofitted (at substantial cost) although this will not necessarily be required in practice. In addition, contingency measures may need to be brought in for the treatment of the wastewater. All of this can add up to a significant cost.

It has not been able to quantitatively estimate benefits of reduced environmental impacts in quantitative or monetary terms due to a lack of information on the substances likely to be released and their likely impacts.

6.3 **Summary**

The application of IPPC requirements to the installations that may be affected by a change to the IPPC Directive with the inclusion of off-site waste water treatment could potentially lead to a reduction in fugitive emissions, including odour. However due to the absence of data it is not possible to quantify this.

In addition the application of IPPC may affect only a small part of a large waste water treatment plant otherwise regulated under the urban waste water directive.

7. Competition Assessment

The competition guidelines (August 2007)⁸ set out four main questions in order to ascertain whether the proposed policy (revisions in the IPPC Directive) would affect the market by:

1. Directly limiting the number or range of suppliers?
2. Indirectly limiting the number or range of suppliers?
3. Limiting the ability of suppliers to compete?
4. Reducing suppliers' incentives to compete vigorously?

A brief summary of the four questions are presented in Table 7.1 and for those where the answer to one of the questions is "Yes", then an explanation is provided in the following sections.

The results should be included in the "Evidence Base" within the Impact Assessment template.

Table 7.1 Summary of the Competition Test

Question	Off-site waste water treatment
Q1. Directly limit the number or range of suppliers?	No
Q2. Indirectly limit the range of suppliers?	No
Q3. Limit the ability of suppliers to compete?	No
Q4. Reduce suppliers' incentives to compete vigorously?	No

⁸ http://www.offt.gov.uk/shared_offt/reports/comp_policy/oft876.pdf

Water companies are natural monopolies, because it is not possible for more than one company to survive and benefit from economies of scale (based on current infrastructure and the investment costs involved). This generally means they have the ability to set prices rather than being a price taker. In the UK each region has one water company and a limited number of treatment sites.

Therefore in some instances waste water treatment works, used by IPPC installations are not necessarily competing with other treatment works to provide a better or cheaper service as it is limited to the distribution of the waste water network. Under these circumstances the costs of IPPC may be passed on to its customers through a trade agreement.

However within the UK there are a number of independent companies specialising in water and waste water asset management, who may either tanker waste water to an off-site treatment plant or construct a waste water treatment plant on the same site as an IPPC installation. Although both of these scenarios may still require permitting under IPPC (either as a directly associated activity, or activity in its own right), it may result in more competition to the waste water treatment companies which may make it more difficult to pass on the costs of IPPC compliance to the customer through a trade agreement.

The possibility of transporting treatment material to an independent off-site waste water treatment plant will be limited to distances where the inclusion of transportation costs makes it cheaper to treat the material at the nearest offsite treatment plant (who charges a higher price) or to treat the waste water on-site. If off-site waste water treatment sites do increase their prices, this will make the costs of onsite treatment and transporting waste water more competitive and may even encourage new entrants to the market (for independent treatment of both on-site and off-site waste water treatment) if there is a possibility of treating waste water at a lower cost than the local off-site waste water treatment works.

Water companies are regulated by OWFAT to ensure; an adequate supply, good quality of water and at a good value to consumers. In theory the water company can pass on the costs of IPPC legislation to its customers if it can be justified to OWFAT. However if they are unable to pass on costs (either due to competition or regulation), this may lead to a redistribution of expenditure with spending elsewhere reduced (e.g. on infrastructure) which may ultimately reduce the value offered to consumers and the general public.