Title:	Impact Assessment (IA)
Industrial emissions Directive **IA No:** Defra 1375 **Lead department or agency:** Defra **Other departments or agencies:**	**Date:** 12/10/2011 **Stage:** Consultation **Source of intervention:** EU **Type of measure:** Secondary legislation **Contact for enquiries**: richard.vincent@defra.gsi.gov.uk

Summary: Intervention and Options

RPC: RPC Opinion Status

Cost of Preferred (or more likely) Option				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, One-Out?**	**Measure qualifies as**
£ 2,930	-£2,045	£-1 £175	Yes (simplifications) No (transposition of EU Directive)	Out N/A

What is the problem under consideration? Why is government intervention necessary?

To maintain and develop protection for human health and the environment, and in fulfilment of EU obligations upon government in England and in Wales, it is necessary to transpose the industrial emissions Directive ("the Directive"). This Directive recasts seven existing Directives, making several substantive changes to what is already an established system of environmental regulation.

What are the policy objectives and the intended effects?

Transposition by the Directive deadline of 7 January 2013 through already well-established legal frameworks which will ensure accuracy of implementation at minimal infraction risk. The effects will be in line with the "Coalition Programme for Government" statement `that we need to protect the environment for future generations, make our economy more environmentally sustainable, and improve our quality of life and well-being'. The effects will contribute to the Welsh Government's 2026 vision that 'our distinctive Welsh environment [will be] thriving and contributing to the economic and social wellbeing and health of all of the people of Wales'.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Transposition inevitably requires regulation. Leaving the existing Regulations un-amended would lead to infraction and the prospect of heavy daily fines for failure to transpose. Two options have therefore been considered:

Option 1: make the minimum amendments necessary to transpose, and

Option 2: as Option 1, but with additional amendments to make full use of certain flexibilities in the Directive and to remove related otiose national requirements currently within the Regulations.

Option 2 is preferred on grounds of offering further regulatory simplification along with annual cost savings of some £1 million.

Will the policy be reviewed? It will be reviewed. **If applicable, set review date:** 12/2017					
Does implementation go beyond minimum EU requirements?			No		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** Yes	**< 20** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO2 equivalent change in greenhouse gas emissions? (Million tonnes CO2 equivalent)			**Traded:** 198	**Non-traded:**	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: ---------- Date: ----------

Summary: Analysis & Evidence

Policy Option 1

Description: Amend EPR to transpose the Directive fully

FULL ECONOMIC ASSESSMENT

Price Base Year 2008	PV Base Year 2015	Time Period Years 15	Net Benefit (Present Value (PV)) (£m)		
			Low: 1,651	**High: 3,477**	**Best Estimate: 2,921**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	939	2020 (95%) 2016 (5%)	58	**1,377**
High	1,744		108	**2,731**
Best Estimate	1,324		83	**2,054**

Description and scale of key monetised costs by 'main affected groups'

Regulatory and compliance costs for operators of (i) large combustion plants - average £55-100 million p.a, plus around £1,285m in transitional costs (falling in 2020 following the expiration of a Transitional National Plan) and (ii) a range of other installations in the waste treatment and wood treatment sectors - £0-15 million p.a., plus around £20-95 million transitional costs (in 2016)

Other key non-monetised costs by 'main affected groups'

None

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low			247	**3,027**
High			503	**6,209**
Best Estimate			402	**4,975**

Description and scale of key monetised benefits by 'main affected groups'

Greenhouse gas benefits: £255 million p.a.
Health and environmental benefits from reduction of key air pollutant emissions from large combustion plants - average £150 million p.a.

Other key non-monetised benefits by 'main affected groups'

The monetised benefits presented above focus on the mortality benefits from reduced exposure to sulphur dioxide, oxides of nitrogen and particulate matter. It therefore excludes the wider range of health benefits (such as reduced activity days) and protection of ecosystems. There are also expected to be notable benefits arising from the added protection from managing emissions from non-LCP installations.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5%

Assumptions: Existing regulation already adequately implements most of the Directive.
Sensitivities: (i) energy market drivers upon operators of large combustion plants; (ii) numbers of "other installations" affected and their individual technical characteristics.
Risks: failure to meet implementation deadlines in the Directive and consequent infraction risk.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £175	**Benefits:**	**Net:** -£175	No	N/A

Summary: Analysis & Evidence **[Preferred]** Policy Option 2

Description: Amend EPR to transpose the Directive fully, adopting all derogations and addressing otiose requirements.

FULL ECONOMIC ASSESSMENT

Price Base Year 2008	PV Base Year 2015	Time Period Years 15	Net Benefit (Present Value (PV)) (£m)		
			Low: 1,656	**High: 3,488**	**Best Estimate: 2,929**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	939	2020 (95%)	58	**1,371**
High	1,745		107	**2,721**
Best Estimate	1,342	2016 (5%)	83	**2,046**

Description and scale of key monetised costs by 'main affected groups'

Regulatory and compliance costs for operators of (i) large combustion plants - average £55-100 million p.a, plus around £1,285m in transitional costs (falling in 2020 following the expiration of a Transitional National Plan) and (ii) a range of other installations in the waste treatment and wood treatment sectors - £0-15 million p.a., plus around £20-95 million transitional costs (in 2016)
Reduced regulatory costs to some 3000 operators - £1 million p.a.

Other key non-monetised costs by 'main affected groups'

Minor reductions in costs are possible due to simplification of regulations

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low			247	**3,027**
High			503	**6,209**
Best Estimate			402	**4,975**

Description and scale of key monetised benefits by 'main affected groups'

Greenhouse gas benefits: £255 million p.a.
Health and environmental benefits from reduction of key air pollutant emissions from large combustion plants - average £150 million p.a.

Other key non-monetised benefits by 'main affected groups'

The monetised benefits presented above focus on the mortality benefits from reduced exposure to sulphur dioxide, oxides of nitrogen and particulate matter. It therefore excludes the wider range of health benefits (such as reduced activity days) and protection of ecosystems. There are also expected to be notable benefits arising from the added protection from managing emissions from non-LCP installations.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5%

Assumptions: Existing regulation already adequately implements most of the Directive.
Sensitivities: (i) energy market drivers upon operators of large combustion plants; (ii) numbers of "other installations" affected and their individual technical characteristics.
Risks: failure to meet implementation deadlines in the Directive and consequent infraction risk.

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:				In scope of OIOO?	Measure qualifies as
Costs:	£175 £-1	**Benefits:**	**Net:** **-** £175 £1	No Yes	N/A Out

IMPACT ASSESSMENT SUPPORTING MATERIAL

1. The transposition of the industrial emissions Directive is directly relevant to the Coalition Government's *Programme for Government* which states that `the Government believes that we need to protect the environment for future generations, make our economy more environmentally sustainable, and improve our quality of life and well-being'.

2. The contribution of industrial activities to environmental problems is significant and varies widely according to the sectors or the impacts concerned. The European Commission's impact assessment[1] of its draft Industrial Emissions Directive at the end of 2007 found that industrial activities covered by the integrated pollution prevention and control (IPPC) Directive emitted about 55% of the EU's anthropogenic carbon dioxide, 83% of sulphur dioxide, 34% of nitrogen oxides, 43% of particulate matter and 55% of volatile organic compound emissions. About 38% of ammonia emissions were found to be emitted by livestock rearing installations covered by IPPC. IPPC installations were also found to contribute to about 23% and 25% of mercury and dioxin emissions to air respectively. Emissions to water from IPPC installations are also significant, notably of phosphorus, nitrogen and heavy metals. In addition, many priority substances and priority hazardous substances listed in the Water Framework Directive are exclusively or predominantly emitted by industrial installations falling under the IPPC Directive.

3. Within the UK, a publication[2] by the Environment Agency reviewing its industrial pollution control activities over ten years to 2008 showed that, whilst substantial reductions in industrial pollution had been achieved, need for continued action remained. This remains a priority for the Environment Agency under its "Greener Business" agenda[3].

4. A report[4] by the European Environment Agency estimated cost in 2009 of damage caused by emissions from industrial facilities in the EU as being at least €102–169 billion. This provides a particular example of the significance of the industrial pollution which is addressed by the EU legislation to be transposed. Industrial emissions affect ambient air quality which in turn has a significant

---

[1] At http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52007SC1679:EN:HTML . A .pdf version is available on request from Defra.

[2] *Spotlight on business - 10 years of improving the environment*. Environment Agency, July 2008. Available at http://publications.environment-agency.gov.uk/dispay.php?name=GEHO0708BOFX-E-E .

[3] A summary is at http://publications.environment-agency.gov.uk/PDF/GEHO1110BTGE-E-E.pdf . Fact sheets on individual industry sectors are available through http://www.environment-agency.gov.uk/research/library/publications/125184.aspx . Evidence underpinning the Agency's 2010 – 2015 Corporate Strategy in that regard is at http://www.environment-agency.gov.uk/static/documents/Research/business_FINAL.pdf .

[4] *Revealing the costs of air pollution from industrial facilities in Europe. .* Available at http://www.eea.europa.eu/publications/cost-of-air-pollution/revealing-the-costs-of-air

impact on human health and the natural environment. Current levels of air pollution are estimated to reduce the life expectancy of every person in the UK by around six months. In addition over half of UK habitats are estimated to be exposed to levels of pollution which could lead to significant harmful effects on the local environment.

The industrial emissions Directive - background

5. The purpose of the Directive on industrial emissions (integrated pollution prevention and control) (recast) – 2010/75/EU, the "industrial emissions Directive" or simply "the Directive" hereinafter - is `to achieve a high level of protection for the environment taken as a whole' from harmful effects of industrial activities. It does so for many activities by requiring each of the industrial installations concerned to have a permit from the competent authority (in England and Wales, the Environment Agency or, for smaller installations, the relevant local authority). Permit conditions and pollutant emission limit values (ELVs) therein have to be set on the basis of the application of best available techniques (BAT).

6. It is ultimately for each competent authority to determine what BAT are for each installation. But the competent authority is aided by the European Commission's publication, over the period 2001 -2007, of 29 European reference documents on BAT – the "BREFs"[5] – each drawing conclusions on what are BAT for the sector in question, ranging from intensive livestock to large combustion plants and from food to speciality organic chemicals.

7. The BREFs are drawn up by a technical author on the basis of information supplied and considered by technical experts from throughout the EU in a technical working group (TWG)[6]. The information they consider can only come from the real-life experience of operators of installations. In a sense, therefore, the basing of regulation upon BAT amounts to a form of self-regulation, albeit in a process which takes several years to work through[7], because the reference material which is at the heart of that base comes from, and is assessed by, representatives of operators themselves. This consideration alone provides powerful justification for the continuation of BAT-based regulation. Moreover, the

[5] An acronym drawn from" **b**est available techniques **ref**erence document".

[6] The information process takes place under provisions in Article 17 of the current IPPC Directive which are strengthened by Article 13 of the industrial emissions Directive.

[7] In the initial production of BREFs, typically some three years elapsed between the formation of a TWG and the agreement of a final draft BREF. A guidance document on the BREF process, recently published as a Commission Implementing Decision, is at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:063:0001:0039:EN:PDF . It contains an outline timetable which envisages a similar time period – and up to another year or so is likely to elapse before a BREF's BAT conclusions are formally adopted and published. A period of up to four years thereafter is allowed for permits to be updated accordingly.

definition[8] of BAT requires the techniques identified as such to be technically and economically viable in the sector as a whole, thus providing a balance between what is technically possible and that which is economically sensible.

8. Some of the BREF conclusions on BAT state the levels to which emissions would be constrained by application of a particular technique; these are referred to as BAT-associated emission levels ("BAT-AELs"). There are some 1,500 BAT-AELs in the current range of BREFs. Using this material but pre-eminently its own judgment, it is for the regulator to determine what ELVs must be set, taking account of the circumstances and nature of each installation. One option for replacing BAT-based regulation would be to set no ELVs whatsoever, but, as exemplified in paragraphs 13*ff* below, this would remove controls upon a wide range of substances which are harmful to human health and the environment. Another option would be the imposition of uniform ELVs with little or no regard to the diversity of installations and circumstances which are encountered in practice – but that would be economically inefficient in that it would take no account of the costs and (where it is possible to quantify them) the resulting benefits of the abatement measures which would be needed.

9. Nevertheless, the view has been taken[9] within the EU that, for certain activities, minimum standards of environmental protection from emissions from certain classes of activity have to be ensured, even though the BAT-based approach retains primacy. So, for industrial activities involving large-scale combustion[10], the incineration of waste[11], or the production of titanium dioxide[12], the Directive also stipulates that ELVs must be at least as stringent as those specified in the

[8] In Article 3(10) of the industrial emissions Directive:

> '"best available techniques" means the most effective and advanced stage in the development of activities and their methods of operation which indicates the practical suitability of particular techniques for providing the basis for emission limit values and other permit conditions designed to prevent and, where that is not practicable, to reduce emissions and the impact on the environment as a whole:
>
> (a) "techniques" includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;
>
> (b) "available techniques" means those developed on a scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether or not the techniques are used or produced inside the Member State in question, as long as they are reasonably accessible to the operator;
>
> (c) "best" means most effective in achieving a high general level of protection of the environment as a whole'.

[9] In Directives which originated in the 1980s.

[10] Chapter III and Annex V of the Directive.

[11] Chapter IV and Annex VI of the Directive.

[12] Chapter VI and Annex VIII of the Directive. Note that only two such installations currently operate in the UK, both in England.

Directive's Annexes, and that permits must contain other conditions relating to specific aspects of the conduct of those activities. In other words, whilst the competent authority may find that even more stringent or specific requirements are justified, it is obliged to set at least the minimum requirements of the Directive.

10. Similarly, industrial activities using solvents[13] are required to be either permitted or registered with conditions which set ELVs at least as stringent as those specified in the Directive. However, except in particular cases, there is no requirement for the conditions of permits or registrations to be based upon the competent authority's assessment of BAT where solvent use is the only Directive activity involved.

11. The Directive also sets out requirements for the monitoring and inspection of permitted activities and for the periodic reconsideration of permits. It contains reporting obligations upon Member States which will contribute to the European Commission's own obligatory triennial reports to the European Parliament and Council on the implementation of the Directive.

12. The preceding paragraphs describe the essence of the industrial emissions Directive as would be encountered at first sight. **But it is vital to this impact assessment to understand that the Directive is a Recast[14] of seven existing Directives**: those concerning integrated pollution prevention and control (2008/1/EC[15]), large combustion plants (2001/80/EC), waste incineration (2000/76/EC), solvent emissions (1999/13/EC) and three concerning waste from the titanium dioxide industry[16]. These are referred to as "component Directives" hereinafter.

13. Between them, these component Directives apply to some 10,200 industrial installations in England and Wales, ranging from power stations to intensive poultry farms and from waste incinerators to dry cleaners. All this wide range is however united in that all the installations it encompasses present – often individually and certainly in aggregate - a significant risk in various ways to human health and the environment from polluting activities.

14. For example, 34 installations, mainly in the chemicals, power, metals and cement sectors, emitted between them in 2009 some 2.8 tonnes of mercury[17]. A total of

[13] Chapter V and Annex VII of the Directive.

[14] The Recast was made under Inter-institutional Agreement of 28 November 2001 on a more structured use of the recasting technique for legal acts (2002/C 77/01). This states that 'recasting shall consist in the adoption of a new legal act which incorporates in a single text both the substantive amendments which it makes to an earlier act and the unchanged provisions of that act. The new legal act replaces and repeals the earlier act'.

[15] Directive 2008/1/EC is a codified version of the original IPPC Directive, 96/61/EC.

[16] Directives 78/176/EEC, 82/883/EEC and 92/112/EEC.

[17] 'Mercury and compounds containing mercury are very toxic to wildlife, plants and micro-organisms. It also persists indefinitely (in various forms) in the environment….The persistent nature of mercury means that it can be transported and have environmental effects at a global level. Mercury is toxic to humans, damaging the nervous system, lungs and kidneys……. methyl mercury rapidly accumulates

some 18 tonnes of cyanides[18] was emitted to surface water from 37 facilities in the UK in 2009: direct emissions from chemicals installations were the largest, but with contributions also from sewage works which treat effluent from industrial processes. The installations in these examples had permits with emission limits based on the application of best available techniques and there is no suggestion that those limits were breached, but these figures exemplify the need for constant vigilance.

15. The emissions information in these examples is taken from the UK Pollutant Release and Transfer Register (PRTR) – an on-line[19] register set up as required by an EU Regulation[20]. The Register also contains information[21] on the health and environmental effects of each of the 91 pollutants it covers. The PRTR[22], and also a longer-established "Pollution Inventory" maintained by the Environment Agency[23], show substantial reductions in pollutant emissions in England and Wales in recent years, due largely to the transposition and implementation of the component Directives.

16. Besides their immediate significance for the direct protection of human health and the environment, elements of the component Directives , and hence the industrial emissions Directive, relate in various ways to several other policy areas. For example, the energy efficiency requirements which form part of IPPC are significant in respect of climate change mitigation policies, although there are provisions in Article 9 of the Directive to avoid possible "double regulation" of installations subject to the EU emissions trading scheme. The industrial emissions Directive also influences carbon capture and storage, both by requiring[24] certain new large combustion plants to be "capture ready" and also by applying IPPC to carbon capture activities[25]. And the compliance flexibilities provided to existing large combustion plants – particularly those in Articles 32 and

---

in the brain. Exposure to both organic and inorganic forms may also be carcinogenic' – taken from the reference at footnote 21.

[18] `Cyanides in water are very toxic to aquatic life [although] not persistent in water or soils and are unlikely to accumulate in aquatic life. They are not thought to have any environmental effects at a global level. Exposure to potentially [health] damaging levels of cyanides would only usually occur in occupational settings or where there was an accidental release' – taken from the reference at footnote 21.

[19] At http://prtr.defra.gov.uk/ .

[20] Regulation 166/2006 concerning the establishment of a European Pollutant Release and Transfer Register.

[21] At http://prtr.defra.gov.uk/pollutant_list.php.

[22] The European PRTR contains information from all EU Member States. It is at http://prtr.ec.europa.eu/ .

[23] See http://www.environment-agency.gov.uk/business/topics/pollution/32314.aspx .

[24] In Article 36, which originates from Directive 2009/31/EC on the geological storage of carbon dioxide.

[25] Point 6.9 of Annex I to the Directive.

33 – were achieved in order to facilitate the transition to low carbon power generation by the early 2020s.

17. Waste policy is another area upon which the Directive has an impact. The Directive continues IPPC requirements[26] in respect of waste minimisation, although now expressed in terms of the new "Waste Hierarchy" set out in Directive 2008/98/EC. In bringing more waste treatment activities into IPPC, the intention of the Directive is to provide a consistent, BAT-based approach to the regulation of waste management techniques which can be used both for disposal and for recovery and which have the potential to cause environmental damage if they are not appropriately controlled[27]. However, it remains to be seen how in detail these changes may affect the delivery of waste policy within the UK (see for example paragraph 44) and other Member States and >**consultees with interests in that sector are invited to present information they may have in that regard**.

Changes to the component Directives

18. As a Recast, the Directive contains large amounts of text either completely unchanged from the component Directives or adapted from them without substantial change. But it also contains some substantively changed material. **Only the material substantively changed from the component Directives is considered in this draft impact assessment (**referred to hereinafter as "the substantively changed requirements").

19. Each of the 92 substantively changed requirements has been analysed for its potential impact upon operators and regulators[28]. Of these, only the following have been assessed as having impacts that would not have occurred under the implementation in England and Wales of the component Directives:

- changes to minimum requirements in respect of emission limit values applied to large combustion plants, with particular significance for the electricity supply industry;
- placing integrated pollution prevention and control (IPPC) requirements upon:
    - more waste treatment activities;
    - wood preservation activities;

[26] In Article 11(e) of the industrial emissions Directive.

[27] Recital 34 of the Directive: 'In order to ensure a high level of environmental and human health protection and to avoid transboundary movements of waste to plants operating at lower environmental standards, it is necessary to set and maintain stringent operating conditions, technical requirements and emission limit values for plants incinerating or co-incinerating waste within the Union'

[28] This analysis is set out in a document available on request from Defra.

- independently operated wastewater treatment works serving only industrial activities subject to the Directive[29]; and

- clarification of

  - the application of IPPC to installations producing foodstuffs from a mixture of animal and vegetable materials.

20. Further information on the large combustion plants changes are in paragraphs 29*ff* and 41*ff* and in paragraph 32 and paragraphs *44ff* on the other changes. The impact of each of these changes is further assessed in Annex A. **Consultees should consider each of those components in detail according to the relevance of each to their particular interests. Consultees should also comment on any other substantively changed requirements which they consider potentially significant. In all cases, quantified information on costs and information, quantified if possible, on benefits would be particularly welcome.**

21. Annex A also contains a short analysis of the Directive's IPPC requirements in respect of the use of emission levels associated with best available techniques (BAT-AELs) when they are formally adopted and published by the European Commission. The assessment is that the requirements do not amount to an impact which could not have arisen under the present IPPC Directive. However, **consultees are invited to submit quantified information on impacts they have already identified as arising from the recent adoption[30] of BAT Conclusions for the glass and the iron & steel sectors. .**

22. For all the substantively changed requirements, whether their impact is significant or not, the immediate policy objective is to transpose the Directive within England and Wales[31] by its deadline of 7 January 2013. Failure to do so, either in whole or in part, will precipitate infraction proceedings and so **the transposition must be seen as a single package** as presented in this impact assessment.

Options

23. As delayed and/or incomplete transposition will precipitate infraction proceedings with the potential for substantial fines. This "do nothing" option is therefore not

[29] And thus not subject to the "Urban waste water treatment Directive, 91/271/EEC.

[30] BAT conclusions for these sectors were adopted at an "Article 75 Committee" meeting on 21 November 2011 – see http://ec.europa.eu/transparency/regcomitology/index.cfm?do=search.documentdetail&UU4soGRWsgfzdmH/lU54oqf6ZNYs8O6L/grLpgvGs10DftvKFOKx2dvStAkgOQoq and http://ec.europa.eu/transparency/regcomitology/index.cfm?do=search.documentdetail&UU4soGRWsgfzdmH/lU54orkLOmRpZHQ56xsDITXZiYsDftvKFOKx2dvStAkgOQoq and are expected to be published by the European Commission in the early spring of 2012.

[31] Note that separate transposition arrangements are in progress in Scotland, Northern Ireland and Gibraltar and in respect of UK offshore installations.

available, but is used as a benchmark against which the other options are assessed.

24. The component Directives are currently transposed through the Environmental Permitting (England and Wales) Regulations 2010 (SI 2010 No. 675) – the "EPR" hereinafter. First made in 2007 and replacing disparate secondary environmental legislation, the EPR provide the framework for protecting the environment in England and Wales. They were designed to simplify, both for operators and for regulators, the processes for applying, enforcing and amending various sorts of environmental permits, notably those required under the component Directives.

25. This regulatory structure has proved effective. It brought about considerable savings in regulatory effort both for the regulators and for the regulated. The EP framework was launched in April 2008, with projected benefits estimated to be £76m NPV over 10 years. Additions to that structure in April 2010 gave projected additional benefits of £45m NPV over 10 years. Qualitatively, operators have communicated general content. In particular, joint working on the regime across the England and Wales border is also positively received by those businesses who work in both countries, allowing consistency of regulation which provide them with efficiencies and clarity.

26. The availability of the EPR as an eminently suitable regulatory platform, makes an amendment to it the obvious means of transposing the Directive in England and Wales. This leads to two options:

Option 1: amend the EPR to transpose the Directive fully but with no other amendments to the EPR. This would involve amendment of the EPR Schedules, but in a way which would incorporate the additional requirements of the Directive with a minimum of disturbance to the existing framework.; or

Option 2: amend the EPR to transpose the Directive fully and to make further amendments so as to take full advantage of some significant derogations available within the Directive and to address the existence of some otiose national requirements currently within the Regulations.

Costs and benefits of each option

Methodology

27. The **costs** of implementing the significant substantively changed components of the Directive fall into two main categories:

- administrative costs arising from the need for new or varied environmental permits which those changes bring; and.
- costs – operating and, in some cases, capital - upon operators of complying with those permit requirements.

28. Administrative costs are subdivided into those incurred by the regulator and by the operator. The regulator's costs arise from the task of considering applications for new or varied permits and reviewing existing permits. These costs will be recovered from operators through permit application charges and annual "subsistence" charges. These charges are made through schemes[32] approved by Ministers which reflect the varying complexity of the regulator's task according to the industry sector involved and are intended to recover the regulator's costs fully.

29. The costs of complying with permit requirements vary considerably, even within industry sectors, according to the particular characteristics of each installation. Abatement measures for Large Combustion Plants are shown in Box 1 below. Operating costs arise from the operation of pollution control techniques and of monitoring equipment. Capital expenditure may be required in order to reconfigure the installation so as meet new permit requirements. The compliance cost estimates have been made after consultation with the regulatory agencies and the relevant industry and trade organisations.

Box 1 Abatement Measures

Abatement measures considered for the different sectors, split by pollutant include:

- For SO_2:
  - ESI: Wet flue gas desulphurisation (FGD-wet) and low sulphur (0.5%) coal
  - Petroleum refineries: fuel switching to natural gas, amine treating units (scrubbers), low sulphur oil
  - Iron and Steel: coke oven gas (COG) desulphurisation
  - Other: FGD-wet and low sulphur (0.5%) oil;

- For NOx
  - ESI: selective catalytic reduction (SCR), combustion modification (CM) and additionally for gas turbines, closure and reopen new combined cycle gas turbine (CCGT)
  - Petroleum refineries: low NOx burners, selective non-catalytic reduction (SNCR) and SCR
  - Iron and Steel: SCR
  - Other: combustion modification, SNCR, SCR; and

- For dust:
  - ESI: (dust abatement included in FGD-wet)
  - Petroleum refineries: (dust abatement included in fuel switching to natural gas)
  - Iron and Steel: High efficiency deduster
  - Other: (dust abatement included in FGD-wet).

[32] The relevant Environment Agency scheme can be accessed through http://www.environment-agency.gov.uk/business/regulation/38811.aspx . The scheme for local authorities is at http://archive.defra.gov.uk/environment/quality/pollution/ppc/localauth/fees-risk/documents/fees-charges/2011-12parta-lappc-charges.pdf .

30. The **benefit** of the substantively changed requirements made by the Directive is improved control of polluting activities such that greenhouse gas and air pollutant emissions are prevented or reduced. For the changes in respect of large combustion plants, the extent of pollutant reduction can be estimated. This is because the Directive requires that emission limit values (ELVs) for sulphur dioxide, nitrogen oxides and dust must, from 1 January 2016, be at least as stringent as those set out in the Directive's Annex V. As described in Annex A of this draft impact assessment, a comparison has been made between these minimum requirements and those which currently apply.

31. Benefits are calculated from the calculated reduction in greenhouse gas emissions and air pollution using DECC carbon prices and the damage cost values agreed by the Inter-departmental Group on Costs and Benefits. These values are estimates of the cost of the health[33] and other[34] impacts of marginal changes in emissions. The sensitivity range presented uses the range of high, low and best-estimate damage costs. The high damage cost scenario assumes no lag between exposure to pollution and health impacts, whilst the low damage cost scenario assumes a 40 year lag.

32. But for the other substantively changed requirements, estimating monetised benefits is currently not possible as evidence is not developed to place monetary values on the emissions of these pollutants. Amongst the 90 or more pollutants[35] of air, water and/or land potentially involved only around four are potentially be monetised. Moreover, even if damage costs were available, monetising the benefits of pollutant reductions would require estimates of the amount of each pollutant potentially abated as a direct result of compliance with permit conditions embodying the substantively changed requirements. This is impractical.

33. **It has therefore not been possible, other than in the specific cases of greenhouse gases and the three key air pollutants emitted by large combustion plants, to quantify and monetise the benefits of the substantively changed requirements[36]**.

[33] The value of health impacts are estimated from functions linking emissions to concentrations, which in turn are linked to health outcomes. Health outcomes are valued using the value of life-years lost approach.

[34] For example, building soiling.

[35] The European Pollutant Release and Transfer Register (E-PRTR) requires reporting on 91 pollutants – see footnote 22.

[36] It should be noted that the European Commission's impact assessment of its initial proposal for the Directive was similarly unable to present quantified benefits.

Option 1

34. The costs and benefits of the substantial changes concerning **large combustion plants** are summarised in Annex A, drawn from a consultants' report[37]. The Present Value Cost for these plants over the years 2016 to 2030 is estimated to lie in the range £1,335 million to £2,480 million.

35. The transitional and average annual costs for large combustion plants, disaggregated by industry are shown below:

£m	Electricity Generation Industry	Refineries	Iron & steel	Other	Permit variation (All)	Total
Transitional (2020)	754	120	57	354	1	1287
Average Annual	41	15	5	14		64

36. The costs of the substantial changes which draw additional activities into IPPC are set out in Annex A which also summarises in qualitative terms the benefits which may accrue, also drawn from a consultants' report[38]. The estimated transitional costs range from £18m to £93m, with annual costs in the range £2-14m. In comparison with the benefits accruing from the changes in respect of large combustion plants, these costs are minor, although they of course fall upon different industrial sectors.

[37]. *Updated Impact Assessment of the Industrial Emissions Directive (IED): Large Combustion Plants – June 2011*. Entec UK Limited. Available on the Defra web site within the consultation package of which this draft impact assessment forms part. The report is due to be further updated in the spring of 2012 to reflect updated energy projections due to be published by DECC in late 2011 and, along with consultees responses to this draft IA, will inform the finalised IA to be prepared in the summer of 2012.

[38] *Updated Impact Assessment of the Industrial Emissions Directive (IED)*. AMEC Environment & Infrastructure UK Limited, 27 January 2012. Available on the Defra web site within the consultation package of which this draft impact assessment forms part.

Cost (£m)	Total transitional costs £million		Total annual recurring costs: £million p.a.	
	Low	High	Low	High
5.3(b) - Water Sector Biological Treatment	0.0	3.3	0.0	5.7
5.3(b) - Treatment of Slags and Ashes	0.0	0.4	0.4	5.7
5.3(b) - Treatment of Scrap Metal with Shredders	0.3	1.4	12.2	27.3
5.3(b) - Waste Sector Biological Treatment (MBT, AD & Composting)	0.3	4.0	2.2	43.5
6.4(b) Mixed animal and vegetable processing	0.6	3.0	1.0	5.7
6.10 Preservation of wood and wood products	0.8	1.9	1.7	2.8
6.11 Independently operated treatment of waste water not covered by the UWWTD	0.0	0.2	0.2	1.9
Total – All sectors	**2.1**	**14.1**	**17.7**	**92.5**

37. The annual net cost to business of £175m has been calculated by averaging the total transitional and annually recurring costs over the 15-year appraisal period. This total has been uplifted from 2008 prices to 2009 prices using the GDP deflator, and had not been discounted.

38. The average annual monetised benefits total £402m. Of these: around £253m per annum are from greenhouse gas savings; £73m from reductions in SO_2; £51m from reduced NO_x; and £26m from reduced particulate matter. Note that the monetised benefits are estimated based only on changes in emissions from Large Combustion Plants.

Average Annual Benefit (£m)	Energy Supply	Petrol Refineries	Iron & Steel	Other	All Industries
SO_2	50	16	1	6	73
NO_x	42	6	0	3	51

Dust	6	13	1	6	26
CO_2	217	41	0	-5	253
All	315	75	2	10	402

Option 1 – Summary of Total Costs and Benefits									
	Costs (£m)			**Benefits (£m)**			**Net Benefit (£m)**		
Year	Low	High	**Best Estimate**	Low	High	**Best Estimate**	Low	High	**Best Estimate**
2016	24	115	**70**	338	699	**566**	314	584	**497**
2017	1	12	**7**	328	705	**577**	326	693	**570**
2018	0	11	**5**	338	729	**596**	338	718	**590**
2019	21	49	**35**	347	750	**613**	326	701	**578**
2020	993	1855	**1424**	417	845	**679**	-577	-1010	**-745**
2021	96	189	**143**	493	1050	**832**	397	861	**690**
2022	99	193	**146**	564	1266	**950**	465	1073	**804**
2023	63	128	**95**	103	165	**139**	40	38	**44**
2024	63	128	**95**	104	169	**142**	41	42	**47**
2025	63	128	**95**	107	177	**147**	44	50	**51**
2026	63	128	**95**	109	183	**151**	45	56	**56**
2027	63	128	**95**	111	190	**155**	48	63	**60**
2028	63	128	**95**	113	196	**159**	50	69	**64**
2029	63	128	**95**	115	203	**164**	52	76	**68**
2030	63	128	**95**	117	209	**167**	54	82	**72**
PV:	1,377	2,731	**2,054**	3,027	6,209	**4,975**	1,651	3,477	**2,921**

Note: The benefits and costs do not necessarily accrue to the same parties

Option 2

39. Option 2 incorporates all of Option 1 and adds the following relatively small changes which, subject to consultees' views and necessarily in line with the Directive, appear to provide useful simplification of certain regulatory requirements for particular industrial activities:

- The removal from the EPR of 43 descriptions of industrial activities – largely in the energy, metals and chemicals sectors - which have no foundation in the industrial emissions Directive and which are considered to be superfluous in that either (i) they are already incorporated in Directive-founded descriptions, or (ii) describe activities which are not carried out and are considered unlikely to be in the future. There will consequently be no impact upon current costs or benefits from their removal. The change will however somewhat simplify the Regulations.

- The removal from IPPC of six activities currently described in Part 2 of Schedule 1 to the EPR which are not covered by the Directive. Annual savings in permit charges of some £132,000 are estimated. These are set out in Annex B. Annex B also sets out another 13 activity descriptions, covering 137 installations with total annual permit charges of £1.3 million, for which IPPC controls would be retained even though the activities are not listed in the industrial emissions Directive. Retention is considered by the Environment Agency to be justified by the environmental protection it provides.

- The removal of BAT-based requirements which are not present in the Directive from some 6,160 installations subject only to the Directive's controls upon solvent emissions. Annex C shows estimated annual cost savings of £550,000[39], although there could be a one-off costs totalling some £270,000 to vary the permits of the installations concerned.

- As set out in Annex C, the transfer of potentially some 6,160 installations subject only to controls upon solvent emissions under the Directive from a permitting to a registration requirement, taking advantage of a derogation already available in the solvent emissions Directive and maintained in the industrial emissions Directive. However, significant reduction of annual permit charges totalling up to some £1.8 million is currently seen as unlikely as there would remain a need for periodic inspection or verification of the registered activity.

40. In summary, Option 2 brings with it the prospect of annual cost savings to businesses of up to £0.7 million, with no significant impact on benefits. But the full extent of those cost savings, and the possible identification of lost benefits in terms of environmental protection, will only become clear in the light of responses to consultation about the proposals and the finalised details thereafter. **Consultees – particularly in the industry sectors concerned - are therefore asked to consider in detail the impact of the components described in the preceding paragraph. Quantified information on changes in costs to**

[39] The majority (£527,000 p.a.) covering spray coating.

operators changes which would result from the proposals within this option would be particularly welcome.

Option 2 – Summary of Total Costs and Benefits									
	Costs (£m)			Benefits (£m)			Net Benefit (£m)		
Year	Low	High	**Best Estimate**	Low	High	**Best Estimate**	Low	High	**Best Estimate**
2016	24	114	**69**	338	699	**566**	314	585	**497**
2017	1	11	**6**	328	705	**577**	327	694	**571**
2018	0	10	**5**	338	729	**596**	338	719	**591**
2019	20	48	**34**	347	750	**613**	326	702	**578**
2020	993	1854	**1424**	417	845	**679**	-576	-1009	**-744**
2021	96	188	**142**	493	1050	**832**	397	862	**690**
2022	98	192	**145**	564	1266	**950**	466	1074	**805**
2023	63	127	**95**	103	165	**139**	40	38	**44**
2024	63	127	**95**	104	169	**142**	42	43	**47**
2025	63	127	**95**	107	177	**147**	45	51	**52**
2026	63	127	**95**	109	183	**151**	46	57	**57**
2027	63	127	**95**	111	190	**155**	48	64	**61**
2028	63	127	**95**	113	196	**159**	51	70	**64**
2029	63	127	**95**	115	203	**164**	52	77	**69**
2030	63	127	**95**	117	209	**167**	55	83	**73**
PV:	1,371	2,721	**2,046**	3,027	6,209	**4,975**	1,656	3,488	**2,929**

Note: The benefits and costs do not necessarily accrue to the same parties

Wider impacts

Large combustion plants

41. As discussed in detail in the consultants' report cited at footnote 37, the substantive changes in respect of large combustion plants will have an impact upon existing operators when they take effect from 1 January 2016. Those operators will need to decide whether to use the compliance flexibilities offered by the "limited life derogation" the transitional national plan, and operation for less than an average of 1,500 hours per year[40],. Or they may decide to close a large combustion plant they operate by the end of 2015.

42. The impact upon operators of plants which receive their permit after 7 January 2013 will be by comparison much less since the design of such plants which are already under construction should have taken account of the tightened minimum requirements (which have been in prospect at least since December 2007). The

[40] These flexibilities are provided respectively by Articles 33, 34 and Part 1 of Annex V of the Directive, in a fashion similar to that provided in the large combustion plants Directive. See also paragraph A2*ff* of Annex A.

costs for new entrants to sectors requiring a new large combustion plant are in any case very high (not least because of the need for construction labour resources) and it is unlikely that the changed requirements will significantly affect their entrance.

43. For all large combustion plant operators in the electricity supply industry, changed compliance costs may feed through into electricity prices[41] for domestic and business users, but only under the supervision of Ofgem. Operators in other sectors may elect to reflect compliance cost changes in their prices to consumers, according to the dictates of the world-wide markets in which they operate. But the European Commission, in its impact assessment of its December 2007 proposal, considered that the changes 'will lead to a much more level playing field for [all] the sectors concerned by narrowing the range over which emission limit values can be set. In the context of the liberalisation of the energy market, this option would also avoid unacceptable distortion of competition linked to very different levels of environmental standards currently applied in the electricity generation sector'.

Waste treatment activities

44. As discussed in further detail in the consultants' report cited at footnote 38, the substantive changes in respect waste treatment activities will expose existing operators to additional compliance costs that will vary according to the quality of their existing operation in terms of environmental protection. However, all will already have permits giving effect to the requirements of the Directive on waste which include[42] the use of 'measures to ensure that waste management is carried out without endangering human health [and] without harming the environment'. The additional impact of IPPC controls should prove limited in a sector which is typically dominated by large companies with additional costs perhaps being passed on to their customers. From 7 January 2013, new entrant operators will need a permit incorporating IPPC, but should be able to configure their operation beforehand to meet the requirements at least cost. Nevertheless, there is a risk that the extension of IPPC to more waste treatment activities might adversely affect, in particular, waste recovery activities in ways which cannot be quantifiably predicted[43].

Wood preservation activities

45. The subjection of existing wood preservation activities to IPPC permit from 7 July 2015 is considered unlikely to present operators with additional compliance costs other than those associated with permit application and maintenance. Operators

[41] The European Commission's impact assessment of its original proposal in respect of large combustion plants – which was significantly more stringent than in the finalised Directive – indicated an electricity price increase of about €0.0003 per kWh (0.65%) by 2020 averaged across the EU.

[42] Article 13 of Directive 2008/98/EC.

[43] It was on the basis of such anxieties that several Member States, including the UK, argued successfully for a threshold of 75 tonnes/day for recovery activities rather than the 50 tonnes/day proposed by the European Commission, and that the UK secured a threshold of 100 tonnes/day for anaerobic digestion.

may reflect those limited costs in their charges to customers, here also subject to the discipline of the market place. New entrants would be expected to adhere to the high environmental standards promoted by the industry's Code of Practice.

Applying BAT to installations newly subject to IPPC

46. All operators of installations newly subject to IPPC under the Directive will be affected in the same way in that each will need to apply for and retain a permit containing BAT-based conditions. No distinction according to business size is available in that regard. However, the industrial activities newly covered are defined with a clear capacity threshold. Whilst there is not necessarily a direct relationship between the capacity of an installation and the business size of its operator, the existence of those thresholds very probably means that micro business is scarcely affected, and small business to a very limited extent. But any small or micro businesses will be affected as a result of this EU legislation only to the extent of the permit conditions which the regulator considers it necessary to impose. That in turn will affect the attendant charges for permit application and annual subsistence thereafter. Regulators already have established criteria – irrespective of business size - for identifying "low impact" installations and regulating them accordingly within the general requirements of IPPC. It must also be borne in mind that existing installations newly subject to IPPC have until 7 July 2015 to be operating in accordance with a permit incorporating IPPC requirements.

Green economy and carbon emissions

47. The extension of installations falling within IPPC will provide an opportunity for prospective suppliers of the necessary goods and services to compete for operators' business. This should encourage innovatory approaches on the part both of operators in specifying their needs and of suppliers in responding to them[44]. The Directive as a whole carries on the need under the component Directives for suitably skilled operating and regulatory staff.

48. The compliance flexibilities available to operators of large combustion plants were included in the Directive in order to ease the transition to low carbon power generation by the early 2020s. Those flexibilities have both a direct and beneficial effect upon emissions of carbon dioxide over that period – as set out in the consultants' report cited at footnote 37 - and link to the UK's efforts to encourage the demonstration and take up of low carbon alternatives.

49. The subjection of additional activities to IPPC also provides an additional means of bearing down upon emissions of greenhouse gases from them, both through specific permit conditions for installations where direct emissions are likely to be significant and through energy efficiency requirements. However, for the reasons described above, it is not practically possible to estimate the extent of the reductions which might accrue.

[44] Note that Article 27 of the Directive requires Member States to encourage the development and application of emerging techniques for pollution control. Under Article 72(1), Member States will need periodically to report thereon to the European Commission.

Social issues

50. Like the component Directives, the entire Directive aims to provide a high level of protection for the environment taken as a whole. It therefore follows that the substantively changed requirements should help address social, wellbeing and health inequalities, although the precise way in which they do so will depend upon the technical characteristics and location of installations affected by the significant substantive changes and upon the quality of the environment in the locality.

51. Given that IPPC requirements address the need to prevent accidental discharges and to restore the site to a satisfactory state after the industrial activity has ceased, the substantive changes will also contribute to the health and safety of the workforce and of the community around the installation.

52. It follows that there will be no clear distinction between impacts in rural and urban areas: local criteria alone are key in determining impacts of the Directive and more particularly the impacts of the substantive changes it makes to the existing Directives. Similarly, there will generally be no distinction between regions except to the extent that there happens to be a concentration in particular areas or regions of installations affected by the significant substantive changes. By providing a high level of protection for the environment taken as a whole, the Directive's transposition in England and Wales will help ensure that people and environments in deprived areas are afforded the same level of protection as those in more fortunate circumstances.

The justice system

53. On the basis that operators will continue to endeavour to comply with permit or registration requirements as they do under the component Directives, there should be no effect upon the justice system. Similarly, on the basis that regulators will continue to take robust, evidence-based decisions about permit conditions and their enforcement, there should be no significant increase in recourse to Judicial Review of those decisions.

Uncertainties and Sensitivities

54. The consultants' report on large combustion plant provisions explains that the benefits have been calculated using both the UK's IGCB damage costs and the European Commission's CAFE values[45]. The CAFE values vary significantly from the IGCB values, primarily due to differences in health outcomes measured and the valuation of those health outcomes.

[45] The CAFÉ (Clean Air For Europe) methodology is available through http://ec.europa.eu/environment/archives/cafe/general/keydocs.htm#methodology .

55. The CAFE values can be used as a sensitivity test. The impact would be to increase the benefits substantially: the benefits more than double, despite CO_2 not being valued using this method.

Present Value of Benefits	SO_2	NOx	Dust	Air Quality Total	CO_2	Totals Low	Totals Mid	Totals High
IGCB/DECC values	**£848**	**£615**	**£302**	**£1,758**	**£3,218**	**£3,027**	**£4,975**	**£6,207**
CAFE values	**£5,710**	**£3,805**	**£2,388**	**£11,902**	**N/A**	**£6,021**	**£11,902**	**£17,344**

Assumptions necessary for modelling the energy sector are set out in the consultant's report. These include assumptions about electricity demand, plant properties and fuel prices.

Summary and preferred option with description of implementation plan.

56. **The preferred option is Option 2** since compared with Option 1 it has lower costs but no significant difference in benefits. The Net Present Value compared to the 'do nothing' option is £2,930m. Transposition will proceed in accordance with the plan already notified to RRC (letter from the Defra Secretary of State dated 28 February 2011). Implementation thereafter will be a matter for the regulators, in accordance with guidance from the European Commission and, after joint England and Wales consultation upon a draft, from the Government.

ANNEX A

This Annex considers each of the substantively changed requirements of the Directive listed in paragraph 19 as having impacts that would not have occurred under the implementation in England and Wales of the component Directives.

Minimum requirements for large combustion plants – Chapter III and Annex V

A1. The industrial emissions Directive requires that the sulphur dioxide, nitrogen oxides and dust emission limit values (ELVs) set for large combustion plants (LCPs) must be at least as stringent as those prescribed for various combinations of rated thermal input and fuel type. It also provides various optional "bounded flexibilities" through which those ELVs can be relaxed or not applied.

A2. The transitional national plan (TNP) enables operators to opt to place plants in the TNP. In this, each plant will be subject to an overall annual emissions cap instead of concentration based ELVs. This emissions cap reduces between 2016 and 2020 providing time – and therefore compliance cost flexibility - for the plant to make the transition between ELVs it faces under the current Directives and the more stringent ELVs required by the industrial emissions Directive,

A3. The "limited life derogation" (LLD) provides an option for an operator to operate a plant for no more than 17,500 hours, starting from 1 January 2016 and in any event to cease operation by 31 December 2023. Under this derogation the ELVs set in the permit for such plant at 31 December 2015 will at least be maintained for the remaining operating life of the LCP.

A4. Defra's consultants have modelled the impact of these provisions on a plant by plant basis for all existing UK LCPs. However, there is significant uncertainty over the expected reaction of any individual LCP due to the limited availability of plant by plant information and the large number of factors that may influence each plant's decision(s) in addition to the IED. Therefore, the plant by plant modelling has been based on readily available information and informed judgement selecting representative plant. The results are orientated towards providing an indication of sector level impacts (electricity supply industry, iron and steel, refineries and other) due to the high uncertainties at a plant level. The results of this modelling are set out in the consultant's report[46] which also describes in detail the approach to modelling.

A5. The central estimate of the PV of **costs** over the 15 years from 2016[47] to 2030 is **£1,907 million** (range £1,335 – £2,480 million). The costs include the capital expenditure and operating cost of additional abatement equipment

[46] See footnote 37.

[47] The LCP provisions of the industrial emissions Directive commence from 1 January 2016 for existing installations.

required by installations to meet either the ELVs prescribed in the Directive or, for plants taking the LLD, to maintain compliance with current ELVs. For "LLD plants", the costs of the plant closure consequent upon expiry of the derogation have been assessed. There is no cost associated with participation in the TNP, but rather a postponement of the installation, and associated costs, of abatement equipment which would be necessary if the plant were to remain in operation after expiry in July 2020 of the TNP provision.

A6. The estimate of the PV of **benefits** over the same period, assessed according the methodology of the Government's Inter-Departmental Group on Costs and Benefits, is **£4,975 million**. It should be noted that, using the methodology adopted by the Clean Air for Europe (CAFÉ) programme, the PV of the benefit rises to £11,903 million (see paragraph 55*ff*.

Waste treatment activities – Directive Annex I, point 5.3(b)

A7. The current IPPC Directive covers disposal of non-hazardous waste but not, with a few exceptions, its recovery. The European Commission's own impact assessment pointed out that recovery activities are very often similar in nature and therefore in potential environmental impact to disposal activities and that this inconsistent coverage may have resulted in possible distortion of competition between disposal and recovery activities. The recast Directive therefore places non-hazardous waste recovery and disposal activities on a similar footing, although with somewhat higher threshold for inclusion of recovery activities[48].

A8. The recast has also removed a provision in the IPPC Directive which the UK had interpreted as dis-applying IPPC from any waste treatment activity which had been registered as exempt from the permitting requirements of the Waste Directive[49], irrespective of the treatment capacity[50].

A9. A study[51] carried out for Defra by consultants has found that between 142 and 416 installations may as a result be newly subjected to the IPPC requirements, with total annual costs of between £3.6 million and £44 million.

A10. These costs are dominated by the cost of complying with the permit conditions which may be applied. These have been estimated based on discussions with waste and waste management companies, some of whom already hold environmental permits for both for installations relevant to this

[48] Disposal activities with a capacity greater than 50 tonnes/day are included, whereas for recovery the threshold is 75 tonnes/day and 100 tonnes/day if the activity is anaerobic digestion.

[49] This exemption is provided in Article 24 of the current Waste Directive, 2008/98/EC.

[50] Part 1 of Schedule 3 to the Environmental Permitting (England and Wales) Regulations 2010 sets out the waste operations which are exempted from Waste Directive controls in this way.

[51] See footnote 38.

assessment and also for other activities. Components of compliance costs are likely to relate to site protection, minimisation of odour and noise and monitoring.

A11. Applying IPPC controls to waste recovery will require the regulator to consider what pollutant emissions (including noise and odour) are likely to be significant and to set permit conditions accordingly on the basis of BAT. Those conditions should cover all operating factors which may have a bearing upon pollutant release, including arrangements for reception and storage of waste on site and measures to prevent contamination of the site.

A12. **Benefits** of reduced pollutant emissions will accrue accordingly, and public perception and acceptance of these sometimes controversial installations will be improved. In particular, applying IPPC controls:

- to biological treatment activities will enable the regulator to address emissions of ammonia, nitrous oxide and methane - the European Commission reported estimated reductions of 5 kilotonnes, 2.5 kilotonnes and 7 kilotonnes for those substances respectively in the total emissions from the some 225 installations in the EU considered in its impact assessment;

- to treatment of slags and ashes will enable the regulator to address dust emissions; and

- to treatment in shredders of metal waste will enable the regulator to address emission of dust and the possibility of emissions of dioxins.

A13. The **principal uncertainties** about the impact of this change arise from:

- the number of installations affected and the extent of their current regulation: over half are currently unpermitted; many of the remainder will already be permitted as waste management activities under the EPR whilst a few may be operating under a waste exemption;

- the extent and therefore the cost for each installation of the additional requirements which permitting under the Directive will involve; and

- permit application and subsistence charges by the regulator: these will vary according to the precise nature of the activity at each installation.

Wood preservation activities - Annex I, point 6.10

A14. The recast Directive adds to IPPC control the 'preservation of wood and wood products with chemicals with a production capacity exceeding 75 m^3 per day other than exclusively treating against sapstain'. Although some such activities will already be subject to controls under the solvent emissions Directive, others

presenting broadly similar impacts to water and air which use chemicals others than solvents are not subject to EU environmental controls.

A15. A study[52] carried out for Defra by consultants has reported that the wood preservation industry has established a Code of Practice for Timber Treatment Installations. This outlines measures that should be taken to eliminate, or where this is not possible, minimise and render harmless any releases to air, water (surface and ground) or land. Discussions between Defra's consultants and operators of timber treatment installations confirmed that the Code of Practice is widely used within the sector. This, in combination with other existing regulatory controls[53], indicates an already existing high level of overall environmental protection that is comparable (in most aspects) to that likely to be required under IPPC. It is therefore not anticipated that any significant additional measures will required by operators under the industrial emissions Directive. However, total annualised administrative costs of between £0.9 million and £2.1 million are estimated to be incurred by the 244 installations in the UK as whole which Defra's consultants consider may be affected.

A16. Benefits may accrue from further reductions in emissions of substances – such as heavy metals and biocides – used in wood preservation. However, the consultants have not been able to quantify the likely extent of reductions although these would be expected to be small, given the already high standard of environmental protection claimed for wood preservation activities in the UK.

A17. The **principal uncertainties** about the impact of this change arise from:

- the number of installations affected and the precise extent of their current regulation, (although 43 installations in England and Wales have been confidently identified through their current subjection to controls upon their emissions to air);
- the extent and therefore the cost for each installation of the additional requirements which permitting under the Directive will involve; and
- permit application and subsistence charges by the regulator: these will vary according to the precise nature of the activity at each installation.

Independently operated wastewater treatment works – Annex I, point 6.11

A18. The recast Directive adds to IPPC control those waste water treatment works which serve exclusively[54] installations which are subject to IPPC, but which do

[52] See footnote 38.

[53] These existing regulatory controls derive principally from various EU Directives concerning the use of biocidal products. Full details are set out in the consultant's report.

[54] Waste water treatment works also serving domestic properties will be subject to the "urban waste water treatment Directive" 91/271/EC, and so will not be covered by point 6.11.

not constitute directly associated activities[55] of those installations so not currently subject to IPPC.

A19. Defra's consultants estimate[56], from discussions with representative bodies, that there may be between three and five such installations. The requirements of IPPC are considered likely to give rise to costs in dealing with odour and providing site protection. These, combined with administrative costs, are estimated to give rise to annualised total costs of up to £0.3 million.

A20. Waste water treatment works can affect the environment through unmanaged releases of waste water, sludge and biogas. These may cause land contamination, pollution of surface water and/or groundwater, and public nuisance due to odour. Application of IPPC would be expected to reduce instances of such releases but there is scant information on the extent of such reductions.

A21. The **principal uncertainties** about the impact of this change arise from:

- the number of installations affected and the precise extent of their current regulation;
- the extent and therefore the cost for each installation of the additional requirements which permitting under the Directive will involve; and
- permit application and subsistence charges by the regulator: these will vary according to the precise nature of the activity at each installation.

Producing foodstuffs from a mixture of animal and vegetable materials – Annex I point 6.4(b)(iii)

A22. Thresholds within the current IPPC Directive are set for production of foodstuffs from 75 tonnes/day of animal raw materials and 300 tonnes/day of vegetable raw materials, leaving unclear what threshold applies where foodstuffs containing both animal and vegetable materials are produced[57]. Based on an approach used by the Environment Agency, the industrial emissions Directive resolves this by using a formula which amounts to prescribing that the lower threshold applies if the amount of animal material in the product exceeds 10%.

[55] The definition of an installation in the industrial emissions Directive, like that in the current IPPC Directive, includes 'directly associated activities on the same site which have a technical connection with the [installation] and which could have an effect on emissions and pollution'.

[56] In the report cited in footnote 38.

[57] As exemplified in the production of pea and ham soup.

A23. Defra's consultants estimate[58], from discussion with representatives of the food production industry, that between 20 and 40 installations could be newly subject to IPPC as a result of the application of this formulaic approach, although there remain some uncertainties about how it is to be applied in practice. Total annualised costs of between £0.7 million and £3.4 million are estimated, arising principally from costs in dealing with odour and noise and in providing site protection and monitoring. Benefits of reduced pollutant emissions should accrue accordingly but it is not possible to quantify these.

A24. The **principal uncertainties** about the impact of this change arise from:

- the number of installations affected - it is possible that close examination of the installations may show that the capacity thresholds are not in fact reached;
- the extent and therefore the cost for each installation of the additional requirements which permitting under the Directive will involve; and
- permit application and subsistence charges by the regulator: these will vary according to the precise nature of the activity at each installation.

Setting emission limit values – Articles 15(3), 15(4) and 21

A25. Article 15(3) requires the competent authority to 'set emission limit values that ensure that, under normal operating conditions, emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions referred to in Article 13(5)'.

A26. Article 9(4) of the current IPPC Directive states that 'emission limit values and the equivalent parameters and technical measures.... shall be based on the best available techniques.....'. So, where emission levels associated with BAT ("BAT-AELs") are known, particularly through their inclusion in existing BAT reference documents ("BREFs"), it is already implicit that ELVs should be set such that those levels are not exceeded. To that extent, **Article 15(3) does not bring about any fundamental change in the current regulatory position**: regulators must continue to take a BAT-based approach to setting ELVs as they should do already.

A27. The **Article 15(3) requirement has no effect upon existing permits** until such time as relevant BAT conclusions are published by the European Commission after adoption as an implementing measure[59], either as a result of

[58] In the report cited in footnote 38.

[59] Under Article 13(5) of the industrial emissions Directive.

the review of a BREF or through direct adoption of existing BAT conclusions[60]. From a programme of work currently being finalised by the European Commission, it is clear that the process of publication of adopted BAT conclusions is likely to extend, sector by sector, over the most of the rest of the present decade. And even when that stage is reached for each sector, under Article 21(3) there is a four year period after publication of the adopted BAT conclusions within which the permits concerned are to be reconsidered and updated and compliance with them achieved.

A28. As part of that reconsideration, regulators will need to determine whether ELVs which are not consistent with the relevant BAT-AELs will need to be made so, or whether a derogation under Article 15(4) can be applied (if the operator so wishes).

A29. Article 9(4) of the current IPPC Directive provides that, 'taking into account' the stated considerations, ELVs which allow emissions somewhat higher than those associated with the use of BAT may be set in permits. Article 15(4) of the industrial emissions Directive clarifies that position and makes it clear that such ELVs must be justified by an assessment showing that the costs of more stringent ELVs would be disproportionate to the environmental benefits. Article 15(4) also reminds the competent authority that:

- no significant pollution must be caused - as stated already in Article 11(a) of the Directive, in continuance of the requirement in Article 3(1)(b) of the current IPPC Directive; and

- a high level of protection of the environment as a whole must be achieved – a stated purpose of both this Directive and the current IPPC Directive (Article 1 in each case).

A30. So **Article 15(4) amounts to no significant regulatory change from what is already provided in the current IPPC Directive**.

A31. Upon reconsideration of permits, it may be found in some cases that the actual emissions of the installation are consistent with BAT-AELs and that the permit ELVs can be changed accordingly with little or no practical impact upon the operator.

A32. In cases where existing ELVs and the consequent emissions performance can be justified under the Article 15(4) derogation provision, there will similarly be no immediate practical impact upon the operator (although the operator may choose to consider whether, in the longer term, changes at the installation so as remove the need for the derogation would be cost-effective).

[60] It should be noted that the European Commission has said that, although it will work towards the adoption of the BAT conclusions of BREFs published before the coming into force of the industrial emission Directive, it will not seek to undo the work of the Technical Working Groups concerned by changing the BAT-AELs in those BREFs in any way.

A33. Where, upon permit reconsideration, ELVs and actual emissions performance are found to be inconsistent with BAT-AELs, and the regulator determines that the Article 15(4) derogation is not applicable, the operator will be faced with the need either to make the changes at the installation necessary to comply with revised ELVs or to cease operation.

A34. But **the need to comply with revised ELVs can already arise under the current IPPC Directive and so does not constitute a new impact**, even though it could give rise to substantial costs to the operator. Rather, it is a potential impact of which operators should have been aware from the outset of the permitting of their installations under the IPPC Directive.

A35. It must be borne in mind that regulators are obliged, already under Article 13 of the IPPC Directive and under Article 21 of the industrial emissions Directive, periodically to review permit conditions. **There can be no certainty, even had the IPPC Directive continued unchanged, that any ELVs allowing emissions above BAT-AELs would be allowed to remain unchanged.** It is therefore not possible unequivocally to attribute any additional impact in this respect to the transposition of the industrial emissions Directive.

A36. Nevertheless, despite this analysis, it is recognised that the clarification of the current requirements in respect of setting ELVs which the Directive provides causes some misgiving and, inevitably, uncertainty. It may therefore be helpful to set out the principal issues - which have been present ever since IPPC came into effect – which will influence the existing impact upon operators of existing installations of the requirements clarified by the Directive. These are:

- the adoption of BAT conclusions: the conclusions are drawn from a process on information exchange in which all operators are able to participate and upon which Member States have a deciding voice through the "comitology" process set out in Article 75 of the Directive; it will be for all involved in that process to see that it works in way which is technically and economically justified by the facts;

- the timing of the publication of BAT conclusions;

- the competent authority's decision on whether what will become the Article 15(4) derogation is justified: Government guidance[61] in that respect has been provided since the inception of IPPC and will be revised[62] in order to complement the transposition whilst maintaining a balanced approach to the assessment of the technical, economic and environmental considerations which must justify the derogation;

[61] The current guidance is at http://archive.defra.gov.uk/environment/policy/permits/documents/ep2010ippc.pdf - see in particular paragraphs 4.22*ff* .

[62] Draft revised guidance forms part of the consultation package of which this draft impact assessment is another part.

- the extent and ease of compliance of individual installations with ELVs set in current permits: this is a matter for individual operators and, if non-compliance is deemed likely or occurs, the regulator; and

- Individual operators' overall investment plans for their installations.

A37. Predicting overall – or even individual - impacts of the existing requirements against this background is complex, but **consultees with quantified information from such prediction are invited to submit it** in response to the consultation of which this draft impact assessment forms part.

ANNEX B

National-origin requirements currently embodied in the EPR

B1. The activities covered by the current Directives on IPPC, large combustion plants, waste incineration and titanium dioxide plants are contained in the "Part A" activity descriptions set out in Part 2 of Schedule 1 to the EPR. As such, all are subjected to the requirements of the IPPC Directive.

B2. Part A activities are further subdivided into "Part A(1)" and "Part A(2)", signifying that the former are regulated by the Environment Agency (some 3,500 installations) and the latter by the Local Authority (some 400 installations).

B3. Also included in Part A activities are several which have no foundation in EU requirements. They originate from the system of integrated pollution control which was set up under the Environmental Protection Act 1990 (and which was influential upon the making of the IPPC Directive in 1996). For the purposes of this impact assessment they are referred to as "**legacy activities**"

B4. An assessment of the legacy activities has been carried out. Four categories have been identified:

1. There are 15 instances of "moribund" descriptions" meaning that no extant Part A permits contain them and that it is considered very unlikely that any instances of these activities un-associated with other Directive Annex I activities will arise in future.

2. There are 28 instances of descriptions which are superfluous because they are in fact covered by Directive Annex I activities for which a permit is needed in any case.

3. In 13 cases, involving 137 permits, the activities are not covered in Directive Annex I, but there appear to be sound environmental protection reasons[63] for maintaining Part A regulation.

4. There may be a case for removal of controls under EPR Schedule 1 Part A from six activity descriptions, currently accounting for 17 permits.

B5. Removal of the activity descriptions in categories 1 and 2 will have no effects upon current costs and benefits. There may be a small benefit in future in that operators of new activities will be confronted by a somewhat smaller array of descriptions when seeking to identify the regulatory requirements upon them.

B6. The activity descriptions in category 3 are tabulated below.

[63] See the consultation paper which this draft impact assessment accompanies.

Category 3: **EPR Schedule 1 reference and description**	**Current permits**	**Total current permit charges,** **£000s**
1.2 A(1)(h)(i) – loading, unloading, handling or storage, or the physical, chemical or thermal treatment of crude oil.	37	446
1.2 A(1)(h)(ii) – loading, unloading, handling or storage, or the physical, chemical or thermal treatment of stabilised crude petroleum.	2	24
1.2 A(1)(j) – pyrolysis, carbonisation, distillation, liquefaction, gasification, partial oxidation or other heat treatment of coal, oil or other carbonaceous material.	8	147
2.1 A(1)(d) – loading, unloading or otherwise handling or storing more than 500,000 tonnes in any 12-month period of iron ore.	3	24
2.1 A(1)(f) - – producing, melting or recovering cadmium or mercury or any alloy containing more than 0.05% of either metal or of both in aggregate.	7	55
3.2 A(1)(b) – stripping asbestos from railway vehicles.	2	16
4.2 A(1)(b) – activity (other than water treatment and other specified activities) likely to release halogens (chlorine *et al.*), interhalogens or hydrogen halides to air.	20	157
4.2 A(1)(d) – use of any compound of a range of metallic elements (including arsenic and lead) where the activity may result in releases of the elements or their compounds to air or to water.	24	188
4.2 A(1)(f) – use of mercury or cadmium or any compound thereof which may result in releases to air.	18	141

Category 3: **EPR Schedule 1 reference and description**	**Current permits**	**Total current permit charges,** **£000s**
4.2 A(1)(h) – any activity, other than combustion or incineration of carbonaceous material, which is likely to result in the release to air of any acid-forming oxide of nitrogen.	9	71
4.7 A(1)(b) – any activity for the manufacture of a chemical which may result in the release of ammonia into the air other than a refrigeration activity.	5	39
5.1 A(1)(f) - - incineration of any gaseous compound containing halogens in a plant which is not an incineration plant or co-incineration plant.	0	0
6.3 A(1)(a)(i) – distilling tar or bitumen in connection with any process of manufacture.	2	16
Totals	137	1324

B7. The annual permit charges for activities in category 3 total some £1.3 million. The largest element of these costs is some £446,000 in respect of the 37 permits for handling crude oil. With several instances in recent years of breaches of permits in the category leading to significant pollution incidents, the benefits of maintaining current permit requirements are considered to justify the costs. The next largest element is some £188,000 in respect of activities using a range of metallic elements or their compounds, some of which however are immediately recognisable as notorious pollutants (notably lead and arsenic). After that comes £141,000 in respect of activities using (rather than producing) mercury or cadmium. With a global legally binding instrument in respect of mercury emissions currently in advanced negotiation, and with an instrument in respect of cadmium envisaged, it is not considered appropriate to dismantle existing integrated pollution controls in respect of these two notorious pollutants. Information in support of retaining the other tabulated descriptions can be supplied on request.

B8. Removal from Part A of the activity descriptions in category 4 tabulated below could remove annual permit charges of some £146,000 from the installations

involved, although in the cases marked * the activity will become subject to controls on air emissions only as a “Part B” activity in Schedule 1 of the EPR.

Category 4: EPR Schedule 1 reference and description	**Current permits**	**Total current permit charges, £000s**
3.1 A(2) - grinding cement clinker or metallurgical slag*	8	12
3.3 A(1)(a) - – manufacturing glass fibre in an installation with a capacity of 20 tonnes/day or less.	5	39
3.3 A(1)(b) – manufacturing glass frit or enamel frit *	4	31
3.4 A(1)(b) – producing any fibre from any mineral.	1	8
4.1 A(1)(e) flame bonding polyurethane foams etc*	3	24
4.4 A(1)(b) Plant health and biocides - formulating products if release to water of prescribed substances,	1	8
6.4 A(1)(a) Applying or removing organo-tin compounds	3	24
Totals	25	146

ANNEX C

Removal of BAT requirements from solvent activities

C1. "Solvent activities" are those covered by Chapter V and Annex VII of the Directive. The requirements of that chapter in summary are that a wide range of activities using solvents (ranging from vehicle coating through shoe-making to dry cleaning) need either a permit or a registration if they use more than a specified amount of solvent, and that the permit or registration has to place solvent emission limits on the activity which are at least as stringent as those set out in Annex VII. These requirements are unchanged from the "solvent emissions Directive " (SED) which is currently in force.

C2. The transposition of the current SED through the EPR applies requirements in respect of the use of BAT. This is requirement is not in either the SED or the industrial emissions Directive. The question therefore arises of whether, in transposing the industrial emissions Directive, the opportunity should be taken to remove BAT requirements from both existing and new activities where the Directive does not require them.

C3. Initial indications from operators and regulators are that, in general, the BAT requirement does not add much or anything by way of compliance costs which would not in any case be necessary to meet the relevant solvent ELVs. For the some 3,460 dry cleaning installations, BAT adds nothing. For the some 2,700 other "solvent activity" installations in England and Wales, impacts of the BAT requirement can be categorised as follows:

- spray coating (some 1,890 installations)**:** the main BAT costs for these installations come from filter replacement and additional monitoring. However, regular filter replacement for vehicle refinishing installations is normally necessary to ensure paint finish quality, not merely to control particulate matter (PM) emissions. Monitoring requirements have recently been reduced if there is a spraybooth manufacturer's guarantee[64]. Taking these factors into account, it is estimated that removal of the BAT requirement may give rise to annual costs savings of some £527,000 pa.

[64] See http://archive.defra.gov.uk/environment/quality/pollution/ppc/localauth/pubs/guidance/notes/pgnotes/documents/pg6-34b.pdf

- printing and coating without spraying (some 540 installations): the main BAT costs for these installations results from the requirement to monitor for carbon monoxide and particulate matter where thermal abatement is used, although such monitoring will be able to be combined with monitoring for volatile organic compounds required by the SED. Based on assumptions about the proportion of installations where thermal abatement is fitted, it is estimated that removal of the BAT requirement may give rise to annual costs savings of some £22,000 pa.

- others (some 270 installations): it is considered that the BAT requirement does not impose additional costs..

C4. So the removal of the BAT requirement may reduce costs to operators by a total of some £550,000 pa. However, it should be noted that the removal of BAT conditions from current permits, if done on an individual permit basis, could give rise to a one-off charge estimated at £100 per permit, and so totalling some £270,000.

C5. The removal of the BAT requirement may lead to marginally increased emissions of pollutants (mainly particulate matter, oxides of nitrogen, and carbon monoxide) other than solvents from the installations in question. However, there is no inventory of current emissions of these pollutants from the installations in question and so it is not possible to assess the resulting very small loss of benefit to environmental protection.

Replacement of permitting by registration

C6. The annual subsistence charge for permits for installations at which only solvent activities are carried out are set at three levels – low , medium and high – according to the assessed risk rating of the installation. Currently the charges and the estimated number of installations paying them are as follows:

Risk	**Annual charge, £**	**estimated number of installations**	**Total £000**
Dry cleaning			
L	76	3096	235
M	151	315	48
H	227	45	10

Risk	Annual charge, £	estimated number of installations	Total £000
Vehicle refinishing			
L	618	1060	655
M	989	108	107
H	1454	15	22
Standard installation			
L	739	1032	200
M	1,111	434	482
H	1,672	52	87
Total		1518	**769**

C7. It is not yet apparent that a registration system would enable any reduction in the regulatory activities – in particular, inspection – which these charges are set to recover. Furthermore, any reduction in inspection activity could be delivered through the existing permitting system. The consultation paper which this draft impact assessment accompanies nevertheless sets out options for a registration system and invites the identification of possible cost savings.

C8. However, the removal of the need for operators of new installation to apply for permit may possibly allow reduction of the current permit application fees of £1,579 (standard installations), £148 (dry cleaners) and £346 (vehicle refinishing) . The extent of those possible reductions – if any - would need to be determined from the detail of the registration system.