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|---|---|--|-------------------|--|
| Title: Industrial emissions Directive IA No: Defra 1375 Lead department or agency: Defra Other departments or agencies: | Impact Assessment (IA) | | | |
| | Date: 5 December 2012 | | | |
| | Stage: Final | | | |
| | Source of intervention: EU | | | |
| | Type of measure: Secondary legislation | | | |
| Contact for enquiries: richard.vincent@defra.gsi.gov.uk | | | | |
| Summary: Intervention and Options | | | RPC: Green | |

| 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 |
| £ 558 | -£1,617 | £-0.4 £130 | 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 close to 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. The option assessed here makes the minimum amendments necessary to transpose, and makes full use of certain flexibilities in the Directive and to remove related otiose national requirements currently within the Regulations.

| | | | | | |
|---|---------------------|-----------------------|-----------------------|----------------------|---------------------|
| 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: 241 | 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 Parliamentary Under-Secretary for Resource Management, the Local Environment and Environmental Science

: _____ de Mauley _____ : _____ Date
5 December 2012

Summary: Analysis & Evidence

Preferred Policy Option

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

FULL ECONOMIC ASSESSMENT

| Price Base Year 2011 | PV Base Year 2015 | Time Period Years 15 | Net Benefit (Present Value (PV)) (£m) | | |
|-------------------------|----------------------|-------------------------|---------------------------------------|-----------|--------------------|
| | | | Low: 342 | High: 606 | Best Estimate: 558 |

| COSTS (£m) | Total Transition (Constant Price) Years | Average Annual (excl. Transition) (Constant Price) | Total Cost (Present Value) |
|---------------|--|---|-------------------------------|
| Low | 2012- 202 | | 1,120 |
| High | | | 2,131 |
| Best Estimate | | 1,127 | 105 |

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

Regulatory and compliance costs for operators of (i) large combustion plants - average £105million p.a, plus around £1,140m in transitional costs (falling mostly between 2016 and 2020 in time for 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 £18-93 million transitional costs (in 2016)
Reduced regulatory costs to potentially some 500 operators - £0.4m 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 | | 149 | 1,725 |
| High | | 214 | 2,472 |
| Best Estimate | | 188 | 2,175 |

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

Health and environmental benefits from reduction of key air pollutant emissions from large combustion plants - average £188 million p.a. Of these: around £86m from reductions in SO₂; £65m from reduced NO_x; and £38m from reduced particulate matter.

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: £132 £-0.4 | Benefits: | Net: - £132 £0.4 | 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 assessment¹ 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 publication² 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" agenda³.
4. A report⁴ 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.

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>

Industrial emissions affect ambient air quality which in turn has a significant 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 through⁷, because the reference material which is at the heart of that base comes from, and is assessed by,

⁵ An acronym drawn from “**b**est available techniques **r**eference 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. European Commission Implementing Decision 2012/119/EU, at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:063:0001:0039:EN:PDF> sets out the BREF process. 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.

representatives of operators themselves. This consideration alone provides powerful justification for the continuation of BAT-based regulation. Moreover, the definition⁸ 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 13ff 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 taken⁹ 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 combustion¹⁰, the incineration of waste¹¹, or the production of titanium dioxide¹², the Directive

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.

also stipulates that ELVs must be at least as stringent as those specified in the 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 solvents¹³ 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 Recast¹⁴ of seven existing Directives:** those concerning integrated pollution prevention and control (2008/1/EC¹⁵), large combustion plants (2001/80/EC), waste incineration (2000/76/EC), solvent emissions (1999/13/EC) and three concerning waste from the titanium dioxide industry¹⁶. 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.

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

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.

14. For example, 34 installations, mainly in the chemicals, power, metals and cement sectors, emitted between them in 2009 some 2.8 tonnes of mercury¹⁷. A total of some 18 tonnes of cyanides¹⁸ 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-line¹⁹ register set up as required by an EU Regulation²⁰. The Register also contains information²¹ on the health and environmental effects of each of the 91 pollutants it covers. The PRTR²², and also a longer-established “Pollution Inventory” maintained by the Environment Agency²³, 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

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 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> .

requiring²⁴ certain new large combustion plants to be “capture ready” and also by applying IPPC to carbon capture activities²⁵. And the compliance flexibilities provided to existing large combustion plants – particularly those in Articles 32 and 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 requirements²⁶ 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 controlled²⁷. 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 47) and other Member States. In responding to the consultation draft of this impact assessment²⁸, one local authority grouping called for early engagement by the regulator with affected waste management facilities to ensure that any cost increases are signalled well in advance and prevented or minimised where possible, particularly so as to minimise cost pressures through increased gate fees on local authority waste budgets.

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”).**

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.

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 The consultation draft impact assessment was published on 12 March 2012 as part of the consultation “package” on the transposition. This package is available at <http://www.defra.gov.uk/consult/2012/03/12/industrial-emissions-1203/>.

19. Each of the 92 substantively changed requirements has been analysed for its potential impact upon operators and regulators. 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;
 - independently operated wastewater treatment works serving only industrial activities subject to the Directive²⁹; 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 30ff and 44ff and in paragraph 34 and paragraphs 47ff on the other changes. The impact of each of these changes is further assessed in Annex A.

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.

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 Wales³⁰ 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 Considered

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

³⁰ Note that separate transposition arrangements are in progress in Scotland, Northern Ireland and Gibraltar and in respect of UK offshore installations.

23. Failure to complete transposition will precipitate infraction proceedings with the potential for substantial fines. This “do nothing” option is therefore not 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. The availability of the EPR as an eminently suitable regulatory platform therefore makes amendment of it the obvious means of transposing the Directive in England and Wales.
26. The consultation version of this Impact Assessment included two options. One option was simply to transpose the Directive fully, another (the preferred option) was to do so, but also to make some simplifications to reduce costs slightly to some operators. This version of the Impact Assessment considers only the preferred option. For a comparison of the two, the reader should refer to the consultation draft Impact Assessment³¹
27. As a result of the consultation launched in March 2012³², the option which is being taken is to:
- amend the EPR to transpose the Directive fully;
 - make further amendments so as to take full advantage of some significant derogations available within the Directive; and
 - address the existence of some otiose national requirements currently within the Regulations (see Annex B).

³¹ <http://www.defra.gov.uk/consult/2012/03/12/industrial-emissions-1203/>

³² See footnote 28.

Costs and benefits

Methodology

28. The **costs** of implementing the significant substantively changed components of the Directive fall into three 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.
 - Emissions Trading Scheme cost savings, associated with switching to fuels with lower CO₂ emissions. These are included as a cost-saving, as they offset other cost increases to operators associated with changing the fuel mix for generation.
29. 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 schemes³³ 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. Combined, the transitional costs for new or amended permits come to around £3,300 per regulated facility.
30. 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 to 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: | |
| <ul style="list-style-type: none">• For SO₂:<ul style="list-style-type: none">- ESI: Wet flue gas desulphurisation (FGD-wet) and low sulphur (0.5%) coal | |

³³The 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-lapcc-charges.pdf> .

- 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).

31. The cost saving from emission trading credits were valued using DECC projections³⁴ of the price CO₂.

32. The **benefit** of the substantively changed requirements made by the Directive is improved control of polluting activities such that 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.

33. Benefits are calculated from the calculated reduction in air pollution using the damage cost values agreed by the Inter-departmental Group on Costs and Benefits. The majority of these values are estimates of the cost of the health³⁵ impacts of marginal changes in emissions, but some other impacts are included³⁶. 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

³⁴ Available at <http://www.decc.gov.uk/assets/decc/11/cutting-emissions/carbon-valuation/3138-carbon-values-decc-energy-modelling.pdf>

³⁵ 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.

³⁶ For example, building soiling.

scenario assumes a 40 year lag. Other major impacts, such as those on ecosystems, are not included when using the damage cost approach, which therefore **understates the likely benefits associated with reduction of these pollutants.**

34. For the other substantively changed requirements, it is not possible to monetise any of the benefits, as evidence is not developed to place monetary values on the emissions of these pollutants. Amongst the 90 or more pollutants³⁷ of air, water and/or land potentially involved only around four can 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.
35. **It has therefore not been possible, other than in the specific cases of the three key air pollutants emitted by large combustion plants, to quantify and monetise the benefits of the substantively changed requirements³⁸.**

³⁷ The European Pollutant Release and Transfer Register (E-PRTR) requires reporting on 91 pollutants – see footnote 22.

³⁸ 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.

36. The costs and benefits of the substantial changes concerning **large combustion plants** are summarised in Annex A, drawn from a consultants' report³⁹. The Present Value Cost for these plants over the years 2016 to 2030 is estimated to lie in the range £1,648 million to £3,060 million.

37. The transitional and average annual costs for technology in large combustion plants, disaggregated by industry, and by year, are shown below. Table 2 shows the costs as they are incurred – i.e. showing that investment needs to take place in the years leading up to 2020 – these costs are not spread over the investment lifetime, as they are in the rest of this Impact Assessment

Table 1 - Distribution of costs by sector

| £m | Transitional | Average Annual |
|---|--------------|----------------|
| Change in electricity generation costs | | 61 |
| Electricity Generation Industry | 499 | 27 |
| Refineries | 128 | 21 |
| Iron & steel | 56 | 5 |
| Other | 373 | 15 |
| Permit variation (All) | 1 | - |
| CO₂ cost saving | | -33 |
| Total | 1,287 | 97 |

Table 2 - Distribution of transitional and ongoing costs through time

| | Transitional | Annual |
|------|--------------|--------|
| 2012 | 32 | |
| 2013 | 32 | |
| 2014 | 32 | |
| 2015 | 32 | |
| 2016 | 33 | 345 |
| 2017 | 228 | 223 |
| 2018 | 228 | 102 |
| 2019 | 228 | 81 |
| 2020 | 240 | 146 |
| 2021 | 0 | 99 |
| 2022 | 0 | 63 |
| 2023 | 0 | 66 |
| 2024 | 0 | 62 |

³⁹. Updated Impact Assessment of the Industrial Emissions Directive (IED): Large Combustion Plants – July 2012. Amec Environment & Infrastructure UK Limited..

| | | |
|------|---|----|
| 2025 | 0 | 59 |
| 2026 | 0 | 56 |
| 2027 | 0 | 50 |
| 2028 | 0 | 47 |
| 2029 | 0 | 42 |
| 2030 | 0 | 12 |

38. The costs of the substantial changes which draw additional activities into IPPC are shown in Table 3. Annex A also summarises in qualitative terms the benefits which may accrue, also drawn from a consultants' report⁴⁰. The estimated transitional costs range from £2-14m, with annual costs in the range £18m to £93m over the appraisal period. 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.

Table 3 - Distribution of costs for plants other than Large Combustion Plants

| Cost (£m) | Total annualised 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 | 0.0 | 0.2 | 0.2 | 1.9 |

⁴⁰ Updated Impact Assessment of the Industrial Emissions Directive (IED). AMEC Environment & Infrastructure UK Limited, July 2012.

| Cost (£m) | Total annualised transitional costs £million | | Total annual recurring costs: £million p.a. | |
|--------------------------------------|---|-------------|--|-------------|
| | | | | |
| waste water not covered by the UWWTD | | | | |
| Total – All sectors | 2.1 | 14.1 | 17.7 | 92.5 |

39. The annual net cost to business of £132m has been calculated by averaging the total transitional and annually recurring costs over the 15-year appraisal period. This total has been adjusted to 2009 prices using the GDP deflator, and has not been discounted.

40. The selected option provides 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 £134,000 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. This consideration was not challenged in consultation responses.
- 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 up to £20,000.
- The removal of the requirement to monitor for polycyclic aromatic hydrocarbons and polychlorinated biphenyls from most waste incinerators. Based on information from the Environment Agency, Annex D shows estimated annual cost savings of up to some £290,000.

41. The average annual monetised benefits total £188m. Of these: around £86m from reductions in SO₂; £65m from reduced NO_x; and £38m from reduced

particulate matter. Note that the monetised benefits are estimated based only on changes in emissions from large combustion plants.

Table 4 - Summary of Costs and Benefits

| Year | Costs (£m) | | | Benefits (£m) | | | Net Benefit (£m) | | |
|------|------------|-------|---------------|---------------|-------|---------------|------------------|------|---------------|
| | Low | High | Best Estimate | Low | High | Best Estimate | Low | High | Best Estimate |
| 2016 | 265 | 547 | 405 | 135 | 194 | 171 | -130 | -353 | -234 |
| 2017 | 166 | 319 | 242 | 130 | 188 | 165 | -36 | -131 | -77 |
| 2018 | 84 | 164 | 123 | 139 | 200 | 176 | 55 | 36 | 53 |
| 2019 | 73 | 145 | 108 | 161 | 231 | 204 | 88 | 86 | 96 |
| 2020 | 126 | 245 | 184 | 178 | 254 | 224 | 52 | 9 | 40 |
| 2021 | 94 | 182 | 137 | 180 | 258 | 227 | 86 | 76 | 90 |
| 2022 | 70 | 135 | 102 | 163 | 233 | 205 | 93 | 98 | 103 |
| 2023 | 73 | 138 | 105 | 172 | 246 | 216 | 99 | 108 | 111 |
| 2024 | 72 | 132 | 101 | 173 | 248 | 218 | 101 | 116 | 117 |
| 2025 | 71 | 129 | 100 | 136 | 195 | 171 | 65 | 66 | 71 |
| 2026 | 64 | 114 | 88 | 139 | 198 | 175 | 75 | 84 | 87 |
| 2027 | 59 | 101 | 80 | 137 | 196 | 172 | 78 | 95 | 92 |
| 2028 | 58 | 96 | 77 | 136 | 195 | 171 | 78 | 99 | 94 |
| 2029 | 55 | 86 | 70 | 135 | 193 | 170 | 80 | 107 | 100 |
| 2030 | 35 | 37 | 36 | 123 | 175 | 154 | 88 | 138 | 118 |
| | | | | | | | | | |
| PV: | 1,120 | 2,131 | 1,617 | 1,725 | 2,472 | 2,175 | 606 | 342 | 558 |

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

42. The average costs reported in Table 4 are annualised costs, and do not match the sum of the transitional and annually recurring costs reported above. This is because the appraisal period and the lifetime of the investments are not consistent. The approach taken has been to annualise the cost of investments over their lifetime. A proportion of the transitional costs are implicitly allocated to years beyond 2030 on the basis that investment lifetimes typically can be expected to be 20 years from 2020.
43. Costs and benefits will both continue to accrue post 2030, so this approach could be considered to represent a reasonable view of the balance of costs and benefits. Readers interested in the distribution of costs through time should refer to tables 2 and 3.

Wider impacts

Large combustion plants

44. As discussed in detail in the consultants' report cited at footnote 39, 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 year⁴¹. Or they may decide to close a large combustion plant they operate by the end of 2015. These flexibilities, promoted by the UK during negotiation, were well received by operators at various discussions held with them.
45. 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 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.
46. For all large combustion plant operators in the electricity supply industry, changed compliance costs may feed through into electricity prices⁴² 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

47. As discussed in further detail in the consultants' report cited at footnote 40, the substantive changes in respect to 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

⁴¹ 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 A2ff of Annex A.

⁴² 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.

already have permits giving effect to the requirements of the Directive on waste which include⁴³ 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 therefore prove limited, with additional costs perhaps being passed on to customers (although, as noted in paragraph 17, regulators will need to ensure that additional requirements are minimised and notified well in advance) . 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 predicted⁴⁴ .

Wood preservation activities

48. 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 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

49. 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.

⁴³ Article 13 of Directive 2008/98/EC.

⁴⁴ 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.

Green economy and carbon emissions

50. 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 them⁴⁵. The Directive as a whole carries on the need under the component Directives for suitably skilled operating and regulatory staff.
51. 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 39 - and link to the UK's efforts to encourage the demonstration and take up of low carbon alternatives.
52. 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.

Social issues

53. 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.
54. 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.
55. 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

⁴⁵ 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.

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

56. 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

57. 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 values⁴⁶. The CAFE values vary significantly from the IGCB values, primarily due to differences in health outcomes measured and the valuation of those health outcomes.

58. The CAFE values can be used as a sensitivity test. The impact would be to increase the benefits substantially: the benefits roughly quadruple.

| Present Value of Benefits | | | | Totals | | |
|---------------------------|-----------------|--------|--------|--------|---------|---------|
| | SO ₂ | NOx | Dust | Low | Mid | High |
| IGCB values | £974 | £778 | £424 | £1,725 | £2,175 | £2,472 |
| CAFE values | £4,906 | £3,757 | £2,242 | £5,768 | £10,908 | £16,047 |

59. 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.

60. An assessment of the costs and benefits as they accrue during the appraisal period would change the balance of costs and benefits.

⁴⁶ The CAFÉ (Clean Air For Europe) methodology is available through <http://ec.europa.eu/environment/archives/cafe/general/keydocs.htm#methodology> .

61. The projections used are the latest from DECC. These incorporate carbon price support but not the forthcoming Electricity Market Reform. As these projections extend to 2030, it is necessary to end the appraisal period in 2030. If the benefits continue to exceed the cost post 2030, this would further increase the positive Net Present Value.

Summary and preferred option with description of implementation plan.

62. The Net Present Value of the preferred option compared to the 'do nothing' option is £558m. Implementation thereafter will be a matter for the regulators, in accordance with guidance from the European Commission and from the Government.

63. As explained in paragraphs 24ff above, the preferred option will be delivered through amendment of the Environmental Permitting (England and Wales) Regulations 2010. As already amended⁴⁷, these Regulations as a whole have to be reviewed in relation to England and a report published by 6 April 2017. This review will therefore provide a means of **post-implementation review**.

64. The Directive itself requires⁴⁸ Member States to report to the European Commission on its implementation. These reports will be made according to a questionnaire which is to be agreed by Member States under the regulatory procedure. The Commission will require⁴⁹ a report covering the period to the end of 2013 and to be received by the Commission by September 2014, covering transposition and other initial implementation arrangements, with a more detailed report covering the three calendar years 2014 – 2016 due in September 2017. Member State voting on these proposals under the regulatory procedure is expected to take place at the end of 2012. The preparation of these reports will provide a further means of post implementation review.

65. Furthermore, Defra has a long established "Sounding Board" arrangement through which representatives of industry organisation, environmental regulators, environmental NGOs, the devolved administrations and other Government Departments meet regularly to discuss issues arising from the component Directives. This arrangement will continue to provide an effective means of reviewing the implementation of the industrial emissions Directive.

⁴⁷ Specifically, by regulation 11 of the Environmental Permitting (England and Wales) (Amendment) Regulations 2012 (SI 2012 No.630) which inserts a review requirement.

⁴⁸ In its Article 72.

⁴⁹ Under a Commission Implementing Decision which Member States agreed at a Committee meeting on 20 November 2012.

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 report⁵⁰ which also describes in detail the approach to modelling.

⁵⁰ See footnote 39.

- A5. The central estimate of the PV of **costs** over the 15 years from 2016⁵¹ 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 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 to 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 58ff).

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 activities⁵².
- 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 Directive⁵³, irrespective of the treatment capacity⁵⁴.

⁵¹ The LCP provisions of the industrial emissions Directive commence from 1 January 2016 for existing installations.

⁵² 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.

⁵³ This exemption is provided in Article 24 of the current Waste Directive, 2008/98/EC.

⁵⁴ 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.

A9. A study⁵⁵ 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 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

⁵⁵ See footnote 40.

- 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 m³ 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 other than solvents are not subject to EU environmental controls.

A15. A study⁵⁶ 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 controls⁵⁷, 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 be 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

⁵⁶ See footnote 40.

⁵⁷ 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.

- 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 exclusively⁵⁸ installations which are subject to IPPC, but which do not constitute directly associated activities⁵⁹ of those installations so not currently subject to IPPC.

A19. Defra's consultants estimate⁶⁰, 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)

⁵⁸ 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.

⁵⁹ 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'.

⁶⁰ In the report cited in footnote 40.

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 produced⁶¹. 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%.

A23. Defra's consultants estimate⁶², 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

⁶¹ As exemplified in the production of pea and ham soup.

⁶² In the report cited in footnote 40.

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 measure⁶³. 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.

⁶³ Under Article 13(5) of the industrial emissions Directive.

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 to remove the need for the derogation would be cost-effective).

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 guidance⁶⁴ in that respect has been provided since the inception of IPPC and will be revised in order to

⁶⁴ The current guidance is at <http://archive.defra.gov.uk/environment/policy/permits/documents/ep2010ippc.pdf> - see in particular paragraphs 4.22ff .

complement the transposition whilst maintaining a balanced approach to the assessment of the technical, economic and environmental considerations which must justify the derogation;

- 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 14 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 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.

| 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 <i>et al.</i>), 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. This consideration attracted no comment during consultation and is therefore taken as supported. .

B8. Removal from Part A of the activity descriptions in category 4 tabulated below could remove annual permit charges of some £134,000 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 |
|--|------------------------|--|
| | | |
| 3.3 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 organotin compounds | 3 | 24 |
| Totals | 17 | 134 |

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 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, confirmed by consultation responses, 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.
- C4. Of the some 2,700 other “solvent activity” installations in England and Wales, some 1,900 carry out spray coating, an activity which is in any case subject to BAT requirements as a “Part B” activity under Section 6.4 of Schedule 1 to the Environmental Permitting Regulations and thus unaffected by the transposition of the industrial emissions Directive.
- C5. Of the remaining 810 or so “solvent activity” installations, some 270 carry out activities for which (as is the case for dry cleaners), the BAT requirement does not impose additional costs .
- C6. The remaining 540 or so installations generally carry out some form of printing or coating without spraying. The main BAT costs, estimated at about £200 p.a., arise at the some 20% of these installations which use thermal abatement and results from the requirement to monitor carbon monoxide and particulate matter, although such monitoring will be able to be combined with monitoring for volatile organic compounds required by the Directive. In some cases, the activity at these installations will in any case, like spray coating, constitute a “Part B” activity and so be subject to the BAT requirement, but no information on the precise number is

available. So, the removal of the BAT requirement may give rise to annual costs savings of, at most, some £20,000 p.a..

C7. So the removal of the BAT requirement may reduce costs to operators by a total of up to some £20,000 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.

C8. 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.

ANNEX D

Removal of PAH and PCB monitoring requirements from waste incinerators

Costs of carrying out the bi-annual monitoring of dioxins and furans in emissions to air, required at all waste incineration and co-incineration plants by paragraph 2.1(c) of Part 6 of Annex VI of the Directive, are estimated by the Environment Agency to be some £3,000 per plant per annum.

The addition of dioxin-like polychlorinated biphenyls and polycyclic aromatic hydrocarbons to that bi-annual monitoring requirement, as required by paragraph 4(2)(d) of the current Schedule 13 to the Environmental Permitting (England and Wales) Regulations 2010, increases those costs to £5,800

With 103 permits for waste incineration installations in place at April 2012, the ending of that additional requirements would therefore save up to some £0.29 million p.a. although with commensurate reduction if, exceptionally, the regulator determined that the monitoring should be maintained.