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

Part 1: Non-Ferrous Metal Foundries Final report

June 2008



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Executive Summary

Introduction

The Commission published its proposal and an impact assessment for a Directive on industrial emissions (Industrial Emissions Integrated Pollution Prevention and Control, IE(IPPC)D ¹) on 21st December 2007. This consolidates seven existing Directives related to industrial emissions into “a single clear and coherent legislative instrument” and includes a number of changes related to new and existing activities. The main objective of this report is to assess, in outline, the likely impacts of the proposal in relation to non-ferrous metals installations within the UK.

Proposed Changes

The Commission has proposed that section 2.5 of Annex 1, within the IPPC Directive, be changed to read:

(a) **Production** of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes;

(b) **melting** including the alloyage, of non-ferrous metals, including recovered products, with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals **and excluding operation of foundries**;

(c) operation of non-ferrous metal foundries producing cast metal products, with a production capacity of good castings exceeding 2,4 tonnes per day for lead and cadmium or 12 tonnes per day for all other metals.

The **text shown in bold** replaces the original text, the italic text for para (c) is new and additional. The purposes of these changes are:

1. Replacement text for clarification of meaning and consistency with other parts of other Directives in paragraphs (a) and (b).

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

2. The inclusion of a new paragraph (c) to separate the activities of casting finished products from activities associated with melting and alloying, which are still regulated by paragraph (b).

Under the current IPPC Directive, some Member States have permitted foundries with melting capacities below the current IPPC threshold and lawsuits have been undertaken in Germany to clarify some 'capacity' definitions. To seek to resolve this, for the proposed changes to section 2.5 of Annex 1, paragraphs (a) and (b), there are clarifications of existing text. Paragraph (b) also now specifically excludes foundries, which would then be separately regulated under paragraph (c). The separation of smelters and casting foundries recognises different practical measures of capacity and different environmental issues relating to their operations. The objective and intended effect is therefore to confer more certainty into the evaluation of whether and how smelters and foundries are regulated under IPPC and allow more specific application of BAT to the different industries.

Costs & Benefits

Installations

The main benefit to accrue from these changes will be an increase in certainty of regulation, especially relating to 'foundries' making finished product castings, as these will no longer be regulated based upon the melting capacity of furnaces, etc. However, contributors have commented that this benefit will only accrue if there is clarity of definitions in regulatory guidance.

No installations have been identified in the UK where the proposed changes to the Directive will cause any amendment of the current regulatory regime applied at that site, although some permit variations may be required to change the details of the permit. These changes are unlikely to create costs beyond 'business as usual' (BAU) either at the operating sites or the regulators as they could be incorporated into the standard permit review schedule. For the purpose of this study, it has been assumed that no legal challenge would result from the UK interpretation of the Directive proposals.

It is believed that guidance on Best Available Techniques (BAT) for the non-ferrous metals (NFM) industry is not likely to change materially (notwithstanding the review of BREF Notes that is already ongoing), nor is it expected that there will be any change in emissions or other operational parameters at the installations as a result of these Directive changes.

Overall, it is considered that there will be few identifiable changes beyond BAU as a result of the Directive proposals.

Limitations/Uncertainties

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

- There are over 200 NFM foundry / casting sites in the UK, approximately 10% of which are regulated under IPPC, the remainder under LAPPC. Other IPPC-regulated sites carry out processes using non-ferrous metals, but not casting as a primary activity. Data collection has been limited to those installations currently regulated under IPPC, with impacts on the smaller sites evaluated from more general commentary by trade bodies and regulators.
- The benefits presented only relate to those that may be realised in the UK if the UK were to adopt the proposed changes in the IE(IPPC)D. They do not take into account the additional benefits that may be achieved in the UK from the rest of the EU implementing the proposed changes and vice-versa (i.e. transboundary impacts).
- It has been assumed that the UK government will apply the proposed IPPC Directive changes in line with current arrangements for IPPC, namely division into part A, A(1), A(2) and part B processes and based upon the same thresholds as currently apply.

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1. Introduction

1.1 This Report

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

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

- Environment Agency for England & Wales (EA);
- Scottish Environment Protection Agency (SEPA);
- Northern Ireland Environment and Heritage Service;
- Cast Metals Federation; (CMF);
- Non Ferrous Alliance (NFA); and
- Operators at regulated installations.

1.2 What is the Issue?

1.2.1 Overview of Proposed Revised IPPC Directive

The Commission published its proposal and an impact assessment for a Directive on industrial emissions (Industrial Emissions Integrated Pollution Prevention and Control, henceforth cited as "IE(IPPIC)D"²) on 21st December 2007. This consolidates seven existing Directives related to

² "Proposal for a Directive of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (recast)". European Commission, Brussels, 21st December 2007. Available from: <http://ec.europa.eu/environment/ippc/proposal.htm>

industrial emissions into “a single clear and coherent legislative instrument”. These existing Directives include titanium dioxide industry related directives (78/176/EEC, 82/883/EEC, 92/112/EEC), the IPPC Directive (2008/1/EC), the Solvent Emission Directive (1999/13/EC), the Waste Incineration Directive (2000/76/EC) and the Large Combustion Plants Directive (2001/80/EC). The Commission’s Impact Assessment (IA)³ identified a number of problems related “(1) to shortcomings in the current legislation that lead to unsatisfactory implementation and difficulties in Community enforcement actions and, thereby, to loss of health and environmental benefits and (2) to the complexity and lack of coherence of parts of the current legal framework.”

The Commission has provided an indicative timeline for discussion and implementation of the proposals. It is important to note that this is dependent on the length of time it will take to discuss and agree the proposed directive within the co-decision procedure. The initial timetable is set out below in Table 1.1.

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

Date	Description
12/2007	The Commission adopts its proposal for a Directive on industrial emissions as well as issuing its Communication ‘Towards an improved policy on industrial emissions’
01/2009	First reading in the European Parliament and political agreement in Council.
12/2010	Completion of the co-decision process and publication of the Directive on industrial emissions within the Official Journal.
07/2012	Member States fully transpose the new Directive (18 months after entry into force). The Directive applies to all new installations from this date onwards.
01/2014	All existing installations previously subject to IPPC, Waste Incineration, Solvent Emissions and Titanium Dioxide Directives must meet the requirements of the new Directive. Large Combustion Plants do not yet need to meet the new Emission Limit Values (ELVs) prescribed within the Directive

³ “Commission Staff Working Document: Accompanying document to the Proposal for a Directive of the European Parliament and of the Council on industrial emissions (integrated pollution prevention and control) (recast). Impact Assessment.” European Commission, Brussels, 21st December 2007. Available from: <http://ec.europa.eu/environment/ippc/proposal.htm>

Table 1.2 (continued) Key Dates For The Discussion And Implementation Of The Proposed IE(IPPC)D

Date	Description
07/2015	The newly prescribed activities such as additional poultry installations, smaller combustion units and wood preservation activities must meet the requirements of the new Directive.
01/2016	Large Combustion Plants must meet the requirements set out in Chapter 2 of the new Directive, as well as the ELVs set out in Annex V

1.2.2 Proposed Changes

The Commission has proposed the following changes to section 2.5 of Annex I, within the IPPC Directive:

2.5. Processing of non-ferrous metals: ~~Installations~~

(a) ~~for the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes;~~

(b) ~~for the smelting~~ **melting** including the alloyage, of non-ferrous metals, including recovered products, ~~(refining, foundry casting, etc.)~~ with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals **and excluding operation of foundries;**

(c) operation of non-ferrous metal foundries producing cast metal products, with a production capacity of good castings exceeding 2,4 tonnes per day for lead and cadmium or 12 tonnes per day for all other metals.

The **text shown in bold** replaces the text struck through; the italic text for para (c) is new and additional.

The purposes of these changes are:

3. Replacement text for clarification of meaning and consistency with other parts of other Directives in paragraphs (a) and (b).

4. The inclusion of a new paragraph (c) to separate the activities of casting finished products (including foundries) from activities associated with melting and alloying, which are still regulated by paragraph (b)

1.3 What are the Objectives and Intended Effects?

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

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

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

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

The fifth and sixth points presented above relating to the clarification of the scope and provisions of the existing legislation are most relevant to the changes concerning non-ferrous metal installations.

Under the current IPPC Directive, some Member States have permitted foundries with melting capacities below the current IPPC threshold and lawsuits have been undertaken in Germany to clarify some 'capacity' definitions⁴. To seek to resolve this, for the proposed changes to section 2.5 of Annex 1, paragraphs (a) and (b), there are clarifications of existing text. Paragraph (b) also now specifically excludes foundries, which would then be separately regulated under paragraph (c). The separation of smelters and casting foundries recognises different practical measures of capacity and different environmental issues relating to their operations.

The objective and intended effect is therefore to confer more certainty into the evaluation of whether and how smelters and foundries are regulated under IPPC and allow more specific application of BAT to the different industries.

⁴ VITO and BIO – fact sheet for foundries – data gathering for changes to the IPPC directive 09/2007. Section 2.5 current legislation

2. Policy Options

This section presents the policy options considered in this report for the proposed changes in thresholds for NFM installations and the application of BAT for these installations. These were discussed and agreed with Defra at the inception meeting (08th April 2008).

Note – the UK PPC Regulations for non-ferrous metals make further sub-divisions of the IPPC Directive definitions, to achieve different levels of regulatory control. These are discussed in section 4, baseline definition.

2.1 Non-Ferrous Metal (NFM) Installations

The following two options have been considered for NFM installations:

1. No change (i.e. changes to section 2.5 of Annex I, paragraphs (a), (b), and (c) to NFM installations are not brought under IPPC).
2. As included in the proposed IE(IPPC)D.

3. Who is Affected?

This section presents a list of those stakeholders likely to be affected by the proposed changes NFM installations.

3.1 NFM Installations

The installations that would be affected by the proposed changes are:

- Operators of NFM foundries installations currently falling outside the scope of the current IPPC Directive which will be affected by the proposed changes;
- operators of NFM foundries installations currently falling within the scope of the current IPPC Directive (under melting capacity) who may be affected by the proposed definition changes to 'good castings' capacity.
- competent authorities e.g. Environment Agency, Scottish Environment Protection Agency (SEPA), Defra; and
- others, including those possibly affected by emissions from installations.

Note 1: the current UK PPC regulations go beyond the requirements of the IPPC Directive. Almost all non-ferrous metals processes, *where metals are melted*, are regulated; under 'part A' processes, where those activities fall within the Directive limits and as 'part B' processes where those activities are outside the Directive limits. Please see section 4 below for more detail.

Note 2: the definitions of 'foundry casting' in the revised IPPC Directive are understood to apply only to producers of finished cast products, not those making ingots or billets which are re-melted to produce cast products. These would continue to be defined by the current Directive definitions of melting capacity.

Note 3: The definitions for 'smelting' or 'melting' operations are effectively unchanged by the Directive proposals and the changes are therefore unlikely to affect those (s)melting installations currently regulated by their melting capacity. The following table 3.1 summarises how non-ferrous metals operators may be affected by these changes.

Table 3.1 NFM activities – Possible Effects

Current UK Regulatory Situation	Possible Changes
<p>Non-ferrous metal smelters currently regulated under 2.2 part A1 (England and Wales) and 2.2 part A (Scotland & Northern Ireland)</p>	<p>Operators - None.</p> <p>The revised IPPC Directive redefines section 2.5b but the ‘capacity limits’ are unchanged. Foundries operations are excluded from this section in the revised Directive.</p> <p>Existing smelters and alloying operations will continue to be regulated under the melting capacity and batch size of their processes. The UK regulations enact the IPPC Directive fully</p>
<p>Non-ferrous metal smelters currently regulated under 2.2 part A2 (England and Wales)</p>	<p>Operators - None.</p> <p>Existing smelters and alloying operations will continue to be regulated under the melting capacity and batch size of their processes. The UK regulations enact the IPPC Directive fully</p>
<p>Non-ferrous metal smelters currently regulated under 2.2 part B</p>	<p>Operators - None.</p> <p>Part B processes are outside of the melting capacity limits established by the IPPC Directive – these limits are unchanged by the revised proposals</p>

Table 3.2 (continued) NFM activities – Possible Effects

Current UK Regulatory Situation	Possible Changes
<p>Non-ferrous metal foundries currently regulated under 2.2 part A1 & A2 (England and Wales) and 2.2 part A (Scotland & Northern Ireland)</p>	<p>Operators</p> <p>Foundries currently regulated by their melting capacity will now be regulated by their finished goods casting capacity. It is possible that any part A foundries just above the melting capacity limits may fall below the new ‘good castings’ capacity, in which case the PPC permit could be surrendered.</p> <p>Regulators</p> <p>The UK PPC Regulations are likely to require amendment, to create a new regulatory section exclusively for foundries, to comply with the proposed IE(IPPC) Directive 2.5(c). The regulatory agencies will need to vary permits to enact the revised regulations and deal with surrendered permits.</p>
<p>Non-ferrous metal foundries currently regulated under 2.2 part B</p>	<p>Operators</p> <p>It is possible that any part B foundries currently just below the IPPC melting capacity thresholds may fall within the new ‘good castings’ capacity threshold, in which case a PPC permit would be required.</p> <p>Regulators</p> <p>The PPC regulations are likely to require amendment, to create a new regulatory section exclusively for foundries, to comply with IPPC Directive 2.5(c). The regulatory agencies will need to review sites currently just outside PPC thresholds and determine any permit applications to enact the revised regulations.</p>
<p>Other non-ferrous metals activities</p>	<p>No changes for operators or regulators</p>

As can be seen from the table above, the only operators affected would be those casting / foundry operators who are currently just above or just below the current melting capacity limits.

Their regulatory status may be affected by definition changes depending upon their 'good castings' capacity.

4. Baseline Definition

4.1 Approach

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

4.1.1 Installations

Number of Installations

Discussions have been held with the separate authorities⁵ (ref 1) regarding the general regulatory situation relating to operation of non-ferrous metals installations in the UK, under PPC. Data has also been supplied by them which show the number of installations and the relevant regulatory section - a summary of this data is presented in Table 4.1 below.

Some of the data on numbers of installations is not supplied with full information on the relevant regulatory section, to allow precise interpretation. In addition, the data does not all relate to the same year, although this is all for either 2006 or 2007, which is the latest available. Through discussions with the relevant regulatory officers, some clarification has been obtained, such that the data presented in table 4.1 is believed to be the best available representation of the current situation.

Industry Structure

The non-ferrous casting and foundry industry in the UK is less significant than in other EU Member States, compared to overall GDP. The UK is now fifth largest in overall output, after Germany, France, Italy and Spain⁶. The nature of smelting and castings businesses requires that the producers are located close to their customers, who are generally industrial finished goods manufacturers, so the size of this industry typically reflects broader industrial production.

⁵ The Environment Agency for England and Wales for part A(1) processes; Defra for part A2 and part B; SEPA for processes in Scotland; NIEHS for processes in Northern Ireland.

⁶ VITO and BIO – fact sheet for foundries – data gathering for changes to the IPPC directive 09/2007.

The above referenced study of the foundry industry in Europe found NF foundries in particular are often small to medium sized enterprises (SMEs) with small workforces and small total capacities, a view supported by discussions with trade representatives for the installations in the UK (see below). The VITO / BIO report⁸ noted that 203 out of 230 foundries in the UK are outside of the scope of the IPPC Directive – in practice these are regulated under LA-IPPC (as ‘part B’ activities) under the relevant UK PPC Regulations – see overview of current regulation below. Current evaluation of returns from the UK regulatory authorities suggests that approximately 93 sites (ref 2) are regulated in the UK under the IPPC Directive requirements, currently relating to (s)melting of non-ferrous metals, including finished castings foundries. In the UK these are classified as ‘part A’ activities.

The table below summarises currently available data on all non-ferrous metal activities regulated under the UK PPC regulations.

Table 4.1 NFM Installations Currently Regulated in UK

Regulated Activity by Country	No. premises	Comment
England and Wales		
2.2 part A(1) b(i)		
Melting, including making alloys, of non-ferrous metals, including recovered products (refining, foundry casting etc.) where the plant has a melting capacity above 4tpd for lead and cadmium, or 20tpd for all other metals, and	39	92 permits currently issued, many sites have multiple permits and / or variations.
(ii)	17	35 permits currently issued, many sites have multiple permits or variations.
any furnace other than a vacuum furnace used in the plant for the melting has a holding capacity of 5 tonnes or more		For these premises, review of the activity description indicates approximately 10 sites are involved in casting activities.

Table 4.2 (continued) NFM Installations Currently Regulated in UK

Regulated Activity by Country	No. premises	Comment
<p>England and Wales</p>		
<p>part A(1) (c) and (d)</p> <p>(c) – refining any non-ferrous metal or alloy, other than the electrolytic refining of copper, except where the activity is related to an activity described in paragraph (a) of Part A(2), or paragraph (a) , (d) or (e) of part B, of this section.</p> <p>(d) producing, melting or recovering by chemical means or by the use of heat, lead or any lead alloy, if:-</p> <p>(i) the activity may result in the release of lead into the air, and</p> <p>(ii) in the case of lead alloy, the percentage by weight of lead in the alloy in molten form is more than 23%, if the alloy contains copper and 2% in other cases.</p>	<p>17</p>	<p>Approximately 17 specialist refining and recovery activities are covered by these PPC sections, but are considered unlikely to be changed by the proposals in the PPC directive.</p> <p>The activities under section 2.2 A(1) (d) relate specifically to lead production.</p> <p>For these premises, none of the sites appear to be involved in casting activities.</p>

Table 4.3 (continued) NFM Installations Currently Regulated in UK

Regulated Activity by Country	No. premises	Comment
<p>2.2 part A(2)(a)</p> <p>Melting, including making alloys, of non-ferrous metals, including recovered products (refining, foundry casting etc.) where the plant has a melting capacity above 4tpd for lead and cadmium, or 20tpd for all other metals, and</p> <p>(ii) no furnace other than a vacuum furnace used in the plant for the melting has a holding capacity of 5 tonnes or more</p> <p>(iii) the plant uses a vacuum furnace of any design holding capacity</p>	<p>6</p> <p>25</p>	<p>Normally A2 activities are regulated by local authorities, but activities are listed here by the EA as sites under A1 regulation for other activities. None of these appear to be casting / foundry operations</p> <p>This data is based on Defra information, for returns from local authorities, for sites regulated under 2.2 A(2) under LA-IPPC. There is no centralised database to identify the process activity, but It is likely that some if these sites will be involved in casting activities – see discussion below. It has been assumed that 12 sites (half the total) may qualify as foundry casters under the IPPC Directive definitions.</p>
<p>2.2 part B(a)</p> <p>Melting, including making alloys of non-ferrous metals (other than tin...) including recovered products, refining, foundry casting, etc., in an plant with a melting capacity of 4tpd or less for lead and cadmium or 20tpd or less for all other metals.</p>	<p>Unknown</p>	<p>No centralised database exists to identify part B activities. However, based on trade and regulator comment and review of the average size of part B operators, these are mainly small melting / foundry sites with low capacity (average daily capacity < 5 tonnes) , which will not meet the IPPC Directive limits.</p>

Table 4.4 (continued) NFM Installations Currently Regulated in UK

Regulated Activity by Country	No. premises	Comment
Scotland		
<p>2.2 part A(b)</p> <p>Melting, including making alloys, of non-ferrous metals, including recovered products (refining, foundry casting etc.) in an installation with a melting capacity exceeding 4tpd for lead and cadmium, or 20tpd for all other metals</p>	<p>4</p>	<p>Note – these are listed under PPC schedule reference ‘2.2’ without further clarification of sub-sector.</p> <p>Currently, 5 sites are regulated under 2.2A, but one is planned for closure. 2 sites may be regarded as finished castings foundries</p>
<p>2.2 part B(a)</p> <p>Unless falling within part A of this section, melting, including making alloys of non-ferrous metals (other than tin...) including recovered products, refining, foundry casting, etc., in an installation which has a design holding capacity of less than 5 tonnes</p>	<p>6</p>	<p>These are mainly small foundry sites, with low capacity which will not meet the proposed IPPC Directive limits.</p> <p>Data for part B processes in SE Scotland is not currently available</p>

Table 4.1 (continued) NFM Installations Currently Regulated in UK

Regulated Activity by Country	No. premises	Comment
Northern Ireland		
<p>2.2 part A(b)</p> <p>Melting, including making alloys, of non-ferrous metals, including recovered products (refining, foundry casting etc.) in an installation with a melting capacity exceeding 4tpd for lead and cadmium, or 20tpd for all other metals</p>	<p>3</p>	<p>Discussions with NIEHS.</p> <p>3 aluminium casting sites are regulated under part A of the NI regulations. These would appear to transfer to the new 'castings capacity' section under the proposed IE(IPPC)D</p>
<p>2.2 part B(a)</p> <p>Unless falling within part A of this section, melting, including making alloys of non-ferrous metals (other than tin...) including recovered products, refining, foundry casting, etc., in plant with a melting capacity of 4tpd or less for lead and cadmium, or 20tpd or less for all other metals, and where the design holding capacity of molten metal is 0.5tonnes or more.</p>	<p>none</p>	<p>No small foundries are regulated in NI under this section</p>
<p>2.2 part C(a)</p> <p>As part B above, where the design holding capacity of molten metal is less than 0.5tonnes</p>	<p>none</p>	<p>No small foundries are regulated in NI under this section</p>

Discussions with Relevant Stakeholders

Discussions have been held with regulatory officers across the UK, a summary of those discussions is shown in the text below.

Environment Agency (England and Wales) (ref 3)

Discussions were held with the regulatory specialist for non-ferrous metals within the EA. The register of installations regulated under section 2.2A(1)b, c and d, was reviewed, to identify those involved in non-ferrous metals casting activities, where known. The UK PPC Regulations include some activities previously regulated under IPC, and go beyond the requirements of the IPPC Directive, but where a regulated activity meets the IPPC Directive description (for melting capacity of non-ferrous metals), this would be regulated under part 2.2A(1)b, rather than another section (c or d). This review suggested approximately 10 part A1 sites (currently regulated for their melting capacity) have a finished product casting activity and hence may be regulated under the new 'good castings' capacity description. Other foundry installations, meeting the current IPPC Directive melting capacity but a smaller batch size than A1 installations, are regulated under A2 sections, by the local authorities.

A small number of sites carry out non-ferrous metal activities which may not be readily defined as either melting or casting. These may be processes which carry out extrusion (tubing, wire) or hot-rolling (sheet), where the metal is not melted. Within the UK it is probable that these processes will be unaffected by the proposed IPPC Directive changes, as these are typically regulated under other sections of the PPC Regulations.

Scottish Environment Protection Agency (SEPA) (ref 4)

Discussions have been held with SEPA, both with the regulatory specialist for NF metals and the site Inspectors for some part A and some part B processes. In general, there are few installations in Scotland (see table above) which are regulated under section 2.2 part A(b) or 2.2 part B(a), which are the regulatory sections pertaining to the melting / alloying of non-ferrous metals.

The regulation of the part A processes is unlikely to be affected by the proposed changes. Sites normally have melting capacities and good castings production capacities well above their actual outputs, to cope with production spikes. The change in regulatory definition for foundries is therefore unlikely to affect the regulatory status, so they will continue to be regulated as per current arrangements. Discussions suggested that the part B processes, that are small foundry operations, etc., were very unlikely to meet the proposed PPC Directive capacity limit for good

castings and hence would remain regulated – if at all – based on the melting activity and small batch size. This latter point would depend upon how the wording of the proposed IE(IPPC) Directive was transposed into UK and Scotland law.

Northern Ireland Environment and Heritage service (ref 5)

Discussions were held with the regulatory specialist for non-ferrous metals, which indicated that three part A installations were regulated in Northern Ireland, all casting aluminium. No other foundry / casting sites were regulated under part B or C of the relevant regulations. It appears likely these three installations would be regulated, in the future, under the ‘good castings’ capacity limit.

Trade Association / Manufacturer Commentary

Discussions have also been held with trade bodies and some currently-regulated operators, who have provided other information and comment about the size and structure of the UK non-ferrous metals industry and the likely impact at individual sites. The comments from these bodies have been summarised separately below – these add context to the data on IPPC regulated sites and inform discussion on the likely impacts of the Directive changes. The operating companies have been chosen to seek to cover producers of different metals / alloys.

Cast Metals Federation (CMF) (ref 6)

CMF’s membership comprises predominantly foundries, but also secondary aluminium smelters across the UK, representing approximately 40% of all operators by number, but more than 85% of UK cast metals production; the members therefore include most of the larger sites, more likely to be regulated under PPC. There are around a dozen secondary aluminium smelters in the UK and in addition some 500 foundry sites, split approximately 50/50 between ferrous and non-ferrous metals, giving around 250 non-ferrous foundries in total. Production of non-ferrous cast products is around 225,000tonnes/annum (2006 data), sub-divided as follows:-

Aluminium	~195,000tpa
Zinc	~20,000tpa
Brass/bronze (‘yellow metal’)	~5,400tpa
Other	<4000tpa

As can be seen, the average output of a non-ferrous foundry is some 900 tonne/annum, with a significant number of small-medium sized operations and a few large foundries, typically casting aluminium. The two main technologies are sand and die-casting, the latter probably representing 65% of production. Die-casting is recognised as a process with better yield (lower metal waste) and lower environmental impact, as waste casting sand and binder materials are not produced.

CMF represents both secondary aluminium smelters producing ingot and foundries producing finished castings. Aluminium smelters typically use scrap for the bulk of their charge, to which alloying elements are added if necessary during melting, prior to pouring into ingots; foundries typically re-melt the ingots and cast the molten metal into sand moulds or dies to produce finished products. CMF consider that the number of regulated secondary aluminium smelters will be unchanged by the proposed Directive changes. Although they are unable to track exactly the UK PPC regime for non-ferrous foundries, CMF considers that there may be only one installation falling under A1, a handful under A2 with most of the remainder falling under Part B control. CMF also consider it unlikely that the proposed change from 'melting capacity' to 'daily production capacity of good castings' would cause Part B foundries to move up to Part A2 and vice versa.

Galvanizers Association (ref 7)

Galvanizers have expressed some concern that non-ferrous metal (zinc etc.) fusing operations continue to be regulated as 2.1A(2)(c), and not seen as casting of non-ferrous metals (onto steel). It appears unlikely that this is the intended purpose of the Directive changes, however.

Lead Castings Manufacturer (ref 8)

Discussions were held with a foundry caster, who operate a casting facility for lead (and iron) products and generally make specialist, bespoke lead castings, which may weigh several tonnes which would be cast in one day. They are currently regulated under part A for their melting capacity and would equally continue to be regulated under the proposed 'good castings' capacity definition.

Brass Foundry, (ref 9)

This company currently operate a part A melting process for brass and stamp brass valve bodies etc., so may not be regarded as a foundry under the IPPC definitions. The finished

product output is below the proposed 12tpd threshold, but currently has a melting capacity well above 20tpd and is therefore likely to be regulated by its melt capacity

Aluminium Ingot Producer. (ref 10)

This company makes zinc and aluminium ingots, regulated by their melt capacity as an A2 process for aluminium. They will be unaffected by the proposed IPPC Directive changes.

Bronze Ingot Producer (ref 11)

This company makes both finished castings and bronze ingots, regulated by their melt capacity as an A2 process. They will be unaffected by the proposed IPPC Directive changes.

Magnesium Ingot Producer (ref 12)

This company cast magnesium ingot and are regulated by their melt capacity as an A2 process. They will be unaffected by the proposed IPPC Directive changes.

4.2 Overview of Current Legislation - NFM Installations

IPPC Requirements and Regulatory Structure

The PPC regulations in the UK (England & Wales, Scotland and Northern Ireland) enact the IPPC Directive. Under this current UK legislation⁷ further sub-divisions are made to the broad definitions within the IPPC Directive and separate registers are maintained by the relevant authorities of installations under their control.

In England and Wales, these subdivisions are based upon the largest batch size (furnace, bath or holding vessel) at the installation and create separate regulatory control for the EA (2.2A(1)(b) processes, for batches above 5 tonne) and local authorities (2.2A(2) processes) for batch sizes below 5 tonnes, under the LA-IPPC regime. Installations falling below the IPPC Directive melting capacity are regulated by local authorities, under 2.2B, the LAPPC regime

Scotland has a similar 'part A' and 'part B' separation of activities, both regulated by SEPA, but specifically includes 'foundry casting' in its' part 2.2A(b) definition. Activities falling below the

⁷ The Pollution Prevention and Control (England & Wales) Regulations 2000, SI 2000 No. 1973, and parallel statutory instruments in Scotland and Northern Ireland.

Directive melting capacity limits, but with a batch size above 5 tonnes, are regulated under part A(1) irrespective of throughput. Smaller batch size installations and those below the Directive melting capacity are regulated under part B (outside of IPPC)

Northern Ireland has a separation of regulatory activities similar to Scotland, with 2.2 part A(b) processes enacting the IPPC Directive, but with a de-minimis level of 0.5 tonne batch capacity for 2.2 part B processes falling below the directive melting capacity limits.

Throughout the UK, the IPPC Directive is therefore enacted by 'part A' regulation, but with some further subdivisions based on batch size and a separation into part A1 and A2 in England and Wales.

4.3 Results

Total UK Regulated Sites

A separate external review of the UK foundry industry⁸ indicated that some 230 non-ferrous metal foundry (casting) sites were operating, of which 27 were within the scope of the current IPPC Directive, regulated as part A installations in the UK. Other discussions with trade associations indicated approximately 250 non-ferrous foundries in total were in operation in the UK (see 'Trade Association commentary' above), which supports the total number above.

Analysis of databases held by central regulators has identified a total of 63 regulated installations across the UK where non-ferrous metals 'melting' is the primary regulated activity - these are sites regulated under part A1 in England and Wales, part A in Scotland and Northern Ireland. Of these, 15 are regulated where finished product casting could be defined as the primary activity in the future, although typically a range of non-ferrous metal operations are carried out at each site, often on different production lines, where the specific interpretation may be more complex. Other installations with a smaller batch size than A1 activities, but meeting the current IPPC Directive melting capacity, are regulated under part A2 in England and Wales (under LA-IPPC). This number is less than 25, which is the total number of regulated A2 sites, including smelting operations, but further detailed analysis is not possible currently. If half of these 25 sites carry out finished product casting, the UK total would then be 27 sites.

⁸ VITO and BIO – fact sheet for foundries – data gathering for changes to the IPPC directive 09/2007

The suggested total number of 27 'casting' installations, which currently exceed the IPPC Directive limits on melting capacity, would therefore appear to be a reasonable estimate. However, direct discussions with a number of these operators indicate that some of the installations which meet the melting capacity threshold are primary manufacturers of ingots or billet, rather than finished castings. The proposed Directive changes maintain regulation of ingot / billet production under their 'melting' capacity. In view of this the number of part A sites deemed to be carrying out casting is likely to be less than 27, possibly closer to 20.

A further number of approximately 200 foundry operations are believed to be regulated by the UK PPC regulations, as part B activities. These fall below the current IPPC Directive limits on melting capacity and are very unlikely to meet the new IPPC 'good casting' capacity.

4.4 Summary and Discussion

The following summarises the baseline situation and discusses the scale of likely impacts.

Regulated Sites

The above review of the current baseline suggests that a maximum of 27 (and possibly closer to 20) non-ferrous metal installations, carrying out **finished product casting** as their primary activity, are currently regulated within the UK under the IPPC Directive limits on melting capacity. Approximately half of these are believed to be regulated under the UK 'part A2' structure, known as LA-IPPC, where the local authority (in England and Wales) acts as the regulator. Some further 200 sites fall below the IPPC thresholds, but are regulated in the UK under part B of the PPC regulations.

As discussed in section 3, both smelting and casting activities and installations are currently regulated based on their melting capacity, which under the proposed IPPC Directive changes for foundries, will become a measure of 'good casting' capacity, based on a typical metal yield of 60% of the melt capacity. The 20tpd melt threshold will become 12tpd of 'good castings', the 4tpd threshold will become 2.4tpd of good castings. These changes are being enacted to provide more clarity of definition for casting foundries, which are currently regulated under their melt capacity.

As shown in table 3.1, two general types of activity may be affected by the changes. Firstly, foundries with *melt capacity* above the current IPPC Directive limits, but whose *casting capacity* would be below the new proposed limits. These activities would be regulated under part A of the PPC regulations currently and could become part B regulated facilities under LPPC (i.e. if the

IPPC Directive no longer applies). Any foundry meeting these requirements would have a metal yield below the nominal 60% used by the European Commission to connect the two parameters. Secondly, foundries with melt capacity below the current IPPC Directive limits (currently regulated under LAPPC, part B) would be regulated under part A if their casting capacity exceeded the new proposed limits. Any foundry meeting these requirements would have a metal yield above 60%.

As noted in the trade association commentary above, the average non-ferrous foundry makes 900 tonne/annum (or around 4 tonnes/day), of product (confirmed elsewhere⁹) and this overall average is strongly influenced by a few, large aluminium casting foundries, making engine components, for example. Of the currently regulated part A foundries, the largest single sector is aluminium foundries, with others producing brass, bronze, zinc and magnesium, etc. Only one lead foundry has been identified currently under part A regulation (Irons Brothers, Wadebridge) and no cadmium foundry is known. (note - lead and cadmium attract a lower threshold for capacity)

The only foundries whose regulatory regime could change would be those currently on or around the present IPPC melt capacity limit (4tpd for lead / cadmium; 20tpd other metals) *and have* a metal yield significantly different from the 60% norm used by the European Commission to develop the new limit. Discussions with regulators and trade representatives suggest that the larger sites, most likely to be currently regulated as part A activities, would have better (higher) metal yields than the norm (often through the use of die castings), whereas smaller sites (especially those using sand castings, or making more bespoke products) may have lower metal yields. Furthermore, a number of the larger sites with melting capacities above the IPPC threshold, regulated as part A activities, make ingots or billets, rather than finished castings and would therefore still be regulated by their melt capacity. The above issues would therefore tend to reinforce the current regulatory situation, rather than cause change. The review of centrally regulated installations has revealed no sites which would move out of PPC part A control.

The approximately 200 foundries in the UK outside of IPPC are not centrally regulated (they are regulated under part B of the PPC regulations, by individual local authorities in England and Wales), nor is a common database of these sites held, making analysis problematic. Discussions with trade bodies and regulators have strongly suggested that none of these sites are likely to have good castings capacities close to meeting the proposed IPPC Directive

⁹ VITO and BIO – fact sheet for foundries – data gathering for changes to the IPPC directive 09/2007, also indicates average output of UK non-IPPC regulated foundries is 4.5-5.5tpd.

thresholds. It is therefore considered very unlikely that any part B (LAPPC) sites would become regulated by IPPC.

Regulators

For the regulatory bodies, some change would occur through review of proposed changes to legislation (the PPC regulations for UK would need amendment to enact these changes), redrafting of guidance, discussions with industry to evaluate the need for changes to permits on regulated installations and specific review of permits.

Those regulated sites that are marginal on current melting capacity and / or proposed good castings production capacity would probably seek to have their regulatory status reviewed, based on any uncertainty in the regulatory definitions or guidance. Any such claims would undoubtedly involve the regulators in extensive review and possibly legal test cases. Clarity on any definitions contained in amended text would undoubtedly minimise these possible changes.

At the moment the extent of any future review of permits is unclear and is assumed to fall within the normal regulatory review process for permits.

5. Costs

5.1 Compliance Costs

It is not expected that there will be any additional costs to the industry as the affected installations in the UK are already covered by part A of the PPC Regulations and are already applying BAT. Any modifications to BREF notes or UK guidance may have future implications for the industry, but this is unlikely as castings operations generally have lower environmental impact than smelters. Changes to requirements under BREF review are regarded as 'BAU'.

As noted above, there is a possibility of discussions, reviews and even legal test cases for any operators who are on the margins of any new threshold, which would affect operators and regulators alike. However, such events are not possible to predict or evaluate at this stage.

5.2 Administrative Costs

5.2.1 Operators

As all sites are already permitted under part A, there should be no significant additional administrative costs beyond those already being incurred. Any non-contentious restructuring of permitted activities (a change to regulation based on casting capacity) would be expected to involve minimal cost.

5.2.2 Regulators

It is assumed that the subsistence fee paid by operators should be sufficient to cover any ongoing costs. As noted above, any non-contentious restructuring of permitted activities (a change to regulation based on casting capacity) would involve minimal cost.

As mentioned previously, there would be additional costs for the authorities associated with review of proposed changes to legislation, redrafting of guidance, discussions with industry to evaluate the need for changes to permits on regulated installations and specific review of permits.

5.3 Results

Larger NFM casting installations are already subject to the above regulatory costs under Part A of the UK PPC Regulations, and therefore no additional costs are expected as a result of the proposed Directive changes.

The only significant additional costs would be those associated with a change from a Part A(2) to a Part A(1) permit, or from part B to part A, if that occurred at any installation as a result of the proposed changes. However, no sites have been identified where such a change would be expected to occur.

Modest regulatory and compliance costs may be associated with transfer of the permitted activity within PPC part A, by permit variation, but these can be regarded as minimal in terms of impact.

6. Benefits

There are no expected emissions reductions associated with the proposed changes to the IPPC Directive as the sector is already covered under IPPC and applying BAT. It is expected that there will be no additional benefits for the industry, beyond some standardisation and clarification of the regulatory structure.

7. Competition Assessment

The competition guidelines (August 2007)¹⁰ set out four main questions, in order to ascertain whether the proposed policy (revisions in the IPPC Directive) would affect the market by:

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

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

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

Table 7.1 Summary of the Competition Test

Question	NFM Casting Installations
Q1. Directly limit the number or range of suppliers?	No
Q2. Indirectly limit the range of suppliers?	No
Q3. Limit the ability of suppliers to compete?	No
Q4. Reduce suppliers' incentives to compete vigorously?	No

¹⁰ http://www.offt.gov.uk/shared_offt/reports/comp_policy/oft876.pdf

The competitive position vs. foundries in other EU member states is unlikely to change from any proposals made by the Directive changes. Due to the nature of the industry and the products, foundries tend to be close to their customers and import / export changes are unlikely to be significant. There are no likely competitive impacts associated with this change.

8. Distribution of Costs

As larger NFM castings installations are already covered under IPPC and applying BAT, it is expected that there will be no additional costs for the industry. Smaller installations currently outside of IPPC are very unlikely to be affected by the Directive changes, by being drawn within the scope of IPPC and are not expected to incur any additional costs.

Therefore it is unlikely that there will be any cost burden to any installation in the industry and hence no expected concerns regarding the distribution of costs.

9. References

The following references are made in this report

1. The Environment Agency for England and Wales (part A(1) processes) ; DEFRA for A2 and part B processes in England and Wales ; SEPA for processes in Scotland; NIEHS for processes in Northern Ireland
2. Evaluation of IPPC databases supplied by above regulatory bodies, for non-ferrous regulated activities in UK
3. Goodlad N., Canham D. (EA), England & Wales. Personal communications, May 2008
4. Conroy I; McIntyre J; Burns J; (SEPA): Personal communications, May 2008
5. Cummings P; (NIEHS): Personal communications, May 2008
6. Parker J; (CMF): Personal communication, May 2008
7. Piatkiewicz W; (Galvanizers Assn): Personal communications, May 2008
8. Personal communication, May 2008
9. Personal communication, May 2008
10. Personal communication, May 2008
11. Personal communication, May 2008
12. Personal communication, May 2008

