

UK Cross-Cutting Interpretation Guidance and Permitting Advice on the Best Available Techniques (BAT) Conclusions published under the Industrial Emissions Directive (IED)

14 May 2020

This guidance applies to all IED installations in the UK for which BAT Conclusions have been published since the IED came into force in 2010. It has been written jointly by the Environment Agency (EA), the Scottish Environment Protection Agency (SEPA), Natural Resources Wales (NRW), the Northern Ireland Environment Agency (NIEA), the Department for Business, Energy and Industrial Strategy (BEIS) and the Local Authority Unit of the Environment Agency (acting on behalf of the Local Authorities regulating Part A(2) installations).

Most of the issues covered in this guidance have emerged since the Defra guidance on Part A Installations was published in 2013. However for installations in England and Wales, in the event of any overlap or ambiguity between this guidance, the Defra Core guidance and the Defra guidance on Part A Installations, then the Defra guidance documents still have precedence.

Similarly, for Scotland, in the event of any overlap or ambiguity between this guidance and the SEPA PPC Part A BAT conclusions review guidance published in 2018, then the SEPA guidance still has precedence.

This guidance is 'cross-cutting' in that it covers issues that are relevant to more than one of the Best Available Techniques Reference (BRef) documents published by the European Commission under the Industrial Emissions Directive (IED). It should be read in conjunction with any UK sector-specific guidance document that covers issues related to only one BRef.

The UK left the EU on 31 January 2020 and entered a Transition Period, during which it will continue to apply EU law. The IED, BAT conclusions published prior to EU Exit and BAT conclusions published during the Transition Period apply in the UK. Arrangements are being put in place to determine BAT for the UK after the end of the Transition Period.

This guidance has been approved by the UK regulators. It can be used by the Regulators and provided to operators and other interested parties on request, prior to publication. Any comments and suggestions for improvement should be sent to one of the main authors:

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Acronyms and Definitions

BAT	<p>Best Available Techniques, defined in Article 3(10) to the IED</p> <p><i>‘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:</i></p> <p><i>(a) ‘techniques’ includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned;</i></p> <p><i>(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;</i></p> <p><i>(c) ‘best’ means most effective in achieving a high general level of protection of the environment as a whole.</i></p>
BAT-AEL	<p>BAT Associated Emission Levels, defined in Article 3(13) to the IED</p> <p><i>‘emission levels associated with the best available techniques’ means the range of emission levels obtained under normal operating conditions using a best available technique or a combination of best available techniques, as described in BAT conclusions, expressed as an average over a given period of time, under specified reference conditions;</i></p>
BAT-AEPL	<p>BAT Associated Environmental Performance Level, described in Commission Implementing Decision 2012/119/EU, Section 3.3.</p> <p><i>Environmental performance levels associated with BAT may include:</i></p> <ul style="list-style-type: none"> <i>— emission levels,</i> <i>— consumption levels,</i> <i>— other levels (e.g. abatement efficiency).</i> <p>A BAT Associated Energy Efficiency Levels (BAT-AEEL) is a form of BAT-AEPL used in the Large Combustion Plant BRef and sometimes elsewhere.</p>
BATc	<p>BAT conclusion published by the European Commission, part of a BRef, as defined in Article 3(12) to the IED</p> <p><i>‘BAT conclusions’ means a document containing the parts of a BAT reference document laying down the conclusions on best available techniques, their description, information to assess their applicability, the emission levels associated with the best available techniques, associated monitoring, associated consumption levels and, where appropriate, relevant site remediation measures</i></p>
BRef	<p>BAT Reference documents published by the EC, defined in Article 3(11) of the IED. <i>‘BAT reference document’ means a document, resulting from the exchange of information organised pursuant to Article 13, drawn up for defined activities and describing, in particular, applied techniques, present emissions and consumption levels, techniques considered for the determination of best available techniques as well as BAT conclusions and any emerging techniques,</i></p>

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	<p><i>giving special consideration to the criteria listed in Annex III;</i></p> <p>The Commission Implementing Decision 2012/119/EU lays down the rules for drawing up BRefs.</p>
CA	<p>Competent Authority:</p> <p>In England this is either the Environment Agency (EA) or the Local Authority</p> <p>In Northern Ireland this is either the Northern Ireland Environment Agency (NIEA) or the District Council</p> <p>In Scotland this is the Scottish Environment Protection Agency (SEPA)</p> <p>In Wales this is either Natural Resources Wales (NRW) or the Local Authority</p> <p>For offshore hydrocarbon installations this is either the Offshore Petroleum Regulator for Environment & Decommissioning (OPRED), which is part of the Department for Business, Energy and Industrial Strategy (BEIS), or the Devolved Authority (in respect to hydrocarbon installations that fall within the legislative competence of the relevant devolved authorities of Scotland, Wales and Northern Ireland).</p>
Defra Core guidance	<p>Environmental permitting: Core guidance</p> <p>published by the Department for Environment, Food and Rural Affairs (Defra) on 15 April 2020. (Note: This guidance only applies in England and Wales.)</p>
Defra guidance on Part A Installations	<p>Environmental permitting regulations: Guidance on Part A installations</p> <p>published by the Department for Environment, Food and Rural Affairs (Defra) on 7 March 2013. (Note: This guidance only applies in England and Wales.)</p>
ELV	<p>Emission Limit Value, defined in Article 3(5) to the IED</p> <p><i>'emission limit value' means the mass, expressed in terms of certain specific parameters, concentration and/or level of an emission, which may not be exceeded during one or more periods of time;</i></p>
IED	<p>Industrial Emissions Directive</p> <p>Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control)</p>
Permitting Regulations	<p>These are the regulations that transpose the IED into UK law:</p> <p>In England and Wales. The Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154, as amended) (which consolidated and replaced SI 2010 No. 675, as amended)</p> <p>In Scotland. The Pollution Prevention and Control (Scotland) Regulations 2012 (SSI 2012 No. 360, as amended)</p> <p>In Northern Ireland. The Pollution Prevention and Control (Northern Ireland) Regulations 2013 (SR 2013 No. 160, as amended)</p> <p>For offshore hydrocarbon installations regulated by OPRED. The Offshore Combustion Installations (Pollution Prevention and Control) Regulations 2013 (SI 2013 No. 971, as amended).</p>
SEPA PPC Part A BAT conclusions review guidance	<p>IED-TG-43 Guidance on PPC Part A Permit reviews following the publication of BAT Conclusions Documents or developments in BAT</p> <p>Version 3, published by SEPA, November 2018. (Note: This guidance only applies in Scotland.)</p>

INDUSTRIAL EMISSIONS DIRECTIVE (IED) – STRUCTURE AND SCOPE

1. The Industrial Emissions Directive (IED) brought together the seven European Union Directives that covered industrial emissions, including the Integrated Pollution Prevention and Control (IPPC) Directive (2008/1/EC). The IED strengthened the position of Best Available Techniques (BAT) Reference documents (BRefs) and their associated BAT conclusions (BATc). It introduced legally binding emission levels in the form of BAT Associated Emission Levels (BAT-AELs) and gave Member States the ability to issue derogations from BAT-AELs, provided that certain criteria are met. The IED also extended the scope and provisions on soil and groundwater protection.
2. Directives are European Union (EU) legislation to enable Member States to achieve a stated outcome without dictating how that outcome is achieved. Each has to be transposed into the Member State's legislative system (unlike EU Regulations, which are directly applicable as law in all Member States). The IED is transposed into UK law by 'Permitting Regulations'.

BATc – PURPOSE AND STATUS

3. One of the main aims of the IED is to ensure robust and more consistent application of BAT. The BRefs produced under the previous IPPC Directive are being reviewed, revised and republished under IED with a greater emphasis on outcomes, delivered through BATc.
4. Article 3(12) of the IED defines BATc as:

‘a document containing the parts of a BAT reference document [BRef] laying down the conclusions on best available techniques, their description, information to assess their applicability, the emission levels associated with the best available techniques, associated monitoring, associated consumption levels and, where appropriate, relevant site remediation measures’.

The “*emission levels associated with the best available techniques*” (BAT-AELs) in IED BATc are mandatory emission levels whereas the emission levels given in the previous IPPC BRefs were only advisory.
5. Article 14(3) of the IED states that BATc are the reference for setting permit conditions.
6. Article 13(6) of the IED states that the Commission will make BATc publicly available. Publication of BATc in the Official Journal of the European Union in all EU official languages confers the status of an EU 'Implementing Decision'. The BATc describe the issues to be considered and the expected performance levels for an installation. The BRefs are published on the European IPPC Bureau website, in English only.
7. The publication of BATc is likely to be the main reason for the Competent Authority (CA) to conduct a permit review (see [What is a BATc Review?](#)).
8. The programme of reviewing all the IPPC BRefs and producing IED BRefs will not be completed before 2024 at the earliest. Article 13(7) of the IED states that during this transitional period the BATc from IPPC BRef documents, that have not yet been updated, will continue to apply as BATc under the IED, subject to the caveat that any BAT-AELs contained within the IPPC BRefs are not mandatory.

9. Some BRefs developed under the IPPC Directive do not contain BATc, for example the existing IPPC BRef on Economics and Cross Media Effects. These are therefore no longer referred to as BRefs, but simply as “Reference Documents (REFs)”. When they are reviewed under the IED, they will not generate associated BATc.

PURPOSE OF THIS GUIDANCE

10. This document is the overall interpretational guidance and permitting advice covering aspects that are common to many BATc. It sets out the UK Competent Authorities’ guidance for the use of BATc in determining an application for a permit for a new or modified IED installation and any review of a permit for an IED installation. This document provides additional guidance to that provided in the Defra Core guidance published in 2020, the Defra guidance on Part A Installations published in 2013 and the SEPA PPC Part A BAT conclusions review guidance published in 2018. In the event of any overlap or ambiguity between the Defra or SEPA guidance and this guidance then the Defra or SEPA guidance takes precedence.
11. This document should be read in conjunction with the Commission Implementing Decision on the drawing up of IED BRefs 2012/119/EU.
12. In addition to this document, the UK CAs may produce a sector specific ‘interpretation guidance and permitting advice’ which will aim to resolve any ambiguities and uncertainties that may exist in an individual BATc.

WHAT IS A BATc REVIEW?

13. Article 21 of the IED places a duty on the CA to periodically review permits and lists a number of reasons why such a review should be carried out. In practice, the vast majority of permit reviews are carried out following the publication of the BATc relating to the main activity of the installation as described in Article 21(3). (see [Main activity and applicable BATc](#)).
14. The objectives of a BATc permit review are to:
 - (a) identify or confirm the levels of performance, and in particular emission levels, that represent BAT for the installation, and
 - (b) ensure that the permit conditions reflect the levels of performance that are indicative of BAT for the installation.
15. A BATc review should cover the whole installation to comply with Article 21. An installation may have more than one permit because there is more than one operator. In such cases, all of the permits should be reviewed following the publication of the BATc relating to the main activity of the installation as described in Article 21(3) (see [Main activity and applicable BATc](#)).
16. There are three possible outcomes following the BATc permit review:
 - (a) **No change to the permit required** – where all BAT are applied and all aspects of the permit are fit for purpose and sufficiently comprehensive.
 - (b) **Variation to the permit required** – in order to ensure it reflects BAT and complies with the relevant Permitting Regulations.
 - (c) **Enforcement action commenced** – if the operator cannot comply with the relevant Permitting Regulations or meet BAT within the implementation timescale.

17. The normal UK approach is to use bespoke permits for IED installations, but standard rules or general binding rules can be used to ensure BAT is employed. For example, standard rules permits are currently available in England for low impact installations and several waste treatment activities including composting, anaerobic digestion and the treatment of incinerator bottom ash. Any relevant standard rules should be reviewed and revised as the first stage of the BATc review, then each installation which has an existing standard rules permit should be reviewed to see if it can comply with the revised standard rules.

PRINCIPLES UNDERPINNING PERMIT CONDITIONS

18. The overall objective of reconsidering and updating permit conditions is to ensure that the operation of installations is in line with the latest developments in BAT and achieves a high level of protection of the environment taken as a whole.
19. Not all BATc will have specific permit conditions or reporting requirements associated with them. In these cases the CA may ensure compliance by carrying out inspections.
20. Article 14 of the IED requires the CA to set permit conditions that ensure compliance with the principles of the IED set out in Article 11, including the application of BAT. Article 14 also requires the CA to set permit conditions that ensure compliance with the relevant environmental quality standards set out in Article 18. This may mean setting stricter conditions than those achievable by the use of BAT as described in the BATc.
21. Given the requirement to ensure a high level of protection for the environment as a whole, and to take account of BATc, the following issues may need to be addressed in permit conditions:
- **Energy efficiency:** Article 11 of the IED requires that energy is used efficiently. There may be BATc that address energy efficiency or energy consumption and they may contain BAT Associated Environmental Performance Levels (BAT-AEPLs).
 - **Noise & Vibration:** Article 3(2) and 3(4) of the IED define 'pollution' and 'emissions' to include noise and vibration. The definition of Emission Limit Value (ELV) in Article 3(5) includes 'the level of an emission' so ELVs could be set for both noise and vibration. Some BATc address techniques for minimising emissions of noise and vibration, but to date none have contained numerical emission limits.
 - **Odour:** Odour will arise from the emission of odorous substances, and there is therefore the potential for odour to be dealt with via ELVs. BATc usually focus on techniques to reduce emissions of odorous substances and associated environmental monitoring rather than emissions monitoring. For example, the Waste Incineration (WI) BATc refers to "... odour monitoring in accordance with EN standards (e.g. dynamic olfactometry according to EN 13725 to determine the odour concentration);...". To date, the only BATc to specify a BAT-AEL for odour are the Waste Treatment (WT) BATc, in which BAT 34 specifies a BAT-AEL for odour concentration as a dynamic olfactory measurement in European Odour Units (ou_E) using EN 13725, taking into account the inherent uncertainty associated with this EN standard. Although BATc do not usually provide a basis for setting any ELVs related to odour this does not prevent the CA setting ELVs on the emissions of specific odorous substances when it is appropriate and necessary to do so.

- **Raw Material and Water Consumptions:** BATc may address these issues and are often a useful way of ensuring that waste generation is avoided or minimised. As consumptions are clearly not emissions, ELVs are not relevant, however BAT-AEPLs may be included in BATc, and may need to be included in permit conditions.
 - **Management:** The Commission has adopted a standard text for BATc covering the use of Environmental Management Systems (EMSs). This is a matter that most permits will already address.
22. **Sector-Specific Permit Conditions:** The IED includes specific permitting requirements for certain types of activity: large combustion plants (Chapter III and Annex V); waste incinerators and co-incinerators (Chapter IV and Annex VI), the use of solvents (Chapter V and Annex VII), and titanium dioxide production (Chapter VI and Annex VIII). These requirements are additional to the general requirements, and set prescriptive minimum standards, often with statutory ELVs. These sector-specific requirements should already be included in all permits.
23. **Off-Site Permit Conditions:** The IED does not include any explicit requirement to set off-site permit conditions. However, the Permitting Regulations allow the CA to impose off-site conditions, which normally relate to environmental monitoring in order to understand the impact of emissions. Such conditions relate to the principle that no significant pollution is caused.

BATc REVIEW TIMESCALES

24. Recital 13 of the IED says that the Commission should aim to update BRefs every eight years. By 2019 about two thirds of the BRefs that were written under the IPPC Directive have been updated under the IED so the first cycle of updates is likely to take about 13 years and will not be completed until 2024 at the earliest.
25. Article 21(3) of the IED requires that the BATc review, including issuing any variation of the permit, must be completed within four years of the publication of the BATc relating to the main activity of an installation. The operator must comply with the BATc and the revised permit conditions by the same date. The CA could require the operator to comply with the BATc by an earlier date but this would involve going beyond the requirements of the IED.
26. An operator may need to undertake significant investment and upgrade of site operations in order to comply with the BATc and revised permit conditions. The CA should aim to complete the BATc review and issue the revised permit in significantly less than four years so that the operator knows for certain what is required and has sufficient time to implement the necessary plant upgrades.
27. Where two or more BATc apply to an installation, publication of BATc for an activity that is not the main activity will not trigger a BATc permit review. However, the CA and the operator should consider the potential consequences of the BATc for the next installation permit review. The CA should identify all relevant BATc ahead of any review (see [Main activity and applicable BATc](#)).
28. The installation-wide review will be triggered by the publication of BATc for the main activity and will include a review of all relevant BATc published since the previous permit review. The installation permit review will require compliance with all the published BATc within the same time period, that is within four years of the publication of the BATc for the main activity at the installation.

29. The Permitting Regulations impose a general duty on the CA to regularly review permits and therefore a permit review can be completed outside the BRef cycle where appropriate.

MANAGEMENT OF CHANGE IN OPERATION AT AN INSTALLATION

30. Article 20 of the IED requires the operator to notify the CA of any proposed change in operation that may have consequences for the environment and requires the CA to update the permit where appropriate.
31. Article 20 also requires that where the proposed change in operation involves a new Annex 1 activity, or the expansion of an existing activity that will exceed the Annex 1 capacity threshold, it will be considered to be a substantial change.
32. Article 24 of the IED requires public participation in the variation of a permit for a substantial change.
33. The change in operation that has implemented the substantial change will be required to meet the relevant BATc for that activity immediately, even if it is not the main activity of the installation. However, other operations on the same installation carrying out the same activity do not have to be reviewed until the BATc for the main activity are published.

MAIN ACTIVITY AND APPLICABLE BATc

34. Many installations will involve several activities that are covered by common BATc, in which case there is no need to determine which activity is the main activity at the installation.
35. However, some installations will have activities that are covered by a number of different BATc. In these cases, the CA needs to determine which is the main activity at the installation. For example, an installation for the manufacture of chemicals that also has a combustion plant over 50MW would be expected to have as its main activity the manufacture of chemicals rather than the combustion of fuels. There is some guidance on how to determine the main activity included in the European Commission Frequently Asked Questions (EC FAQs) (see IED II.2, II.3 and II.4 on <http://ec.europa.eu/environment/industry/stationary/ied/faq.htm>).
36. For most installations, identification of the 'main activity', and the corresponding BATc that will trigger the BATc review, will be straightforward. However, for installations comprising several activities (e.g. producing chemicals via a series of intermediates), this identification may be less obvious. The CA should decide which is the main activity, on a case-by-case basis, taking account of the following factors:
- The purpose(s) of, and the product(s) produced by, the activities carried out at the installation;
 - the environmental impacts of the activities carried out at the installation;
 - the rationale of the IED and the general principles governing the basic obligations on the operator, including the avoidance of significant pollution, as laid down in Article 11;
 - the scope and content of each BATc.

INSTALLATIONS WHOSE MAIN ACTIVITY IS NOT COVERED BY BATc

37. There are a few IED Annex I activities not covered by any BATc, for example: 1.1. combustion plant that are not covered by Chapter III and so are outside the scope of the Large Combustion Plant (LCP) BRef and activities 1.4 (gasification or liquefaction of coal or other fuels....), 3.4 (melting mineral substances....[other than glass]), 5.4 (Landfills....[as defined in the Landfill Directive]) & 5.6 (Underground storage of hazardous waste....). Each CA will determine how and when the permits for these installations are reviewed.
38. Some installations carry out activities which are not covered in IED Annex 1 but which for historical reasons continue to be regulated under national legislation, e.g. The Environmental Permitting Regulations (EPR) Schedule 1, Section 4.7 “The manufacture of a chemical involving the release of ammonia”. As these so-called ‘IPC legacy’ activities are not directly covered by BRefs, there may be no trigger to initiate permit review. Each CA will decide how and when permits for these installations are reviewed.

BATc THAT APPLY TO MULTIPLE SECTORS

39. The majority of BATc cover a particular sector of industry that has activities listed in the same section of Annex I to the IED. The scope of the BRef defines which activities are included and excluded. The application of the BATc is therefore narrow, and they are commonly referred to as ‘vertical’ BATc. Examples include the Production of Large Volume Organic Chemicals, the Tanning of Hides and Skins, and Waste Incineration.
40. However, there are some BATc that address general issues that are relevant across several sectors, and these BATc are commonly referred to as ‘cross cutting’ or ‘horizontal’ BATc. Examples include Energy Efficiency, Industrial Cooling Systems, and Emissions from Storage.
41. In some cases, a BATc can function in either a single or cross cutting sector role. For example, the BATc for Common Waste Water and Waste Gas Treatment/ Management Systems in the Chemicals Sector (CWW), which have a single sector role in the context of effluent treatment plants located on IED Annex I, Section 4 chemical manufacturing installations, but a cross cutting role in the context of IED Annex I, Section 6 independently operated waste water treatment plants not covered under the Urban Waste Water Treatment Directive.

ENVIRONMENTAL OBJECTIVES

42. Each BATc starts by stating the environmental objective e.g. “In order to reduce channelled emissions to air”.
43. The environmental objective provides the focus for CAs when reviewing a permit, and suggests the possible need for permit conditions, although a permit condition is not necessarily required to address each BATc and some permit conditions will address several BATc. All of the relevant BATc must be addressed in the decision document for the review to demonstrate that the BATc have provided the reference for setting permit conditions.
44. Some BATc can be considered as “stand-alone”, in that they are discrete conclusions

whose implementation does not have an impact on the ability to achieve any other BATc, e.g. noise control. Conversely, some BATc are closely linked to, or are partly the means of achieving compliance with, related BATc. For example, a BATc may require segregation of contaminated and non-contaminated water, where failure to segregate may increase the complexity of cleaning up effluent streams to meet discharge limits set in a different BATc. The CA should be mindful of such linkages when determining BAT and setting permit conditions.

TECHNIQUES

45. Each BATc lists the technique or combination of techniques that could be used to achieve the objective. The techniques are based on the data collected during the BRef review process and the CA would normally expect the operator to use those techniques. The description of the techniques in the BATc is generally quite short with a longer description provided in the “Techniques to consider in the determination of BAT” chapter in the BRef.
46. The General Considerations section at the beginning of each BATc states that “The techniques listed and described in these BATc are neither prescriptive nor exhaustive. Other techniques may be used that ensure at least an equivalent level of environmental protection.” Therefore, if a technique used at an installation is not explicitly mentioned in a BATc, this does not mean that the installation is not using BAT. In such cases the operator should describe the techniques being used and demonstrate how they achieve an equivalent level of environmental protection.
47. The General Considerations section at the beginning of each BATc states “Unless otherwise stated, the BAT conclusions are generally applicable”. If there are restrictions on the applicability of a technique, the restrictions will be explicitly stated, often as a footnote, known as an ‘applicability statement’, e.g. “For existing plants, applicability may be limited by space availability ...”. If the operator wants to make use of an applicability statement they should demonstrate that the applicability statement is relevant to their plant and describe what, if any, alternative techniques they will use to achieve, or partially achieve, the environmental objective. The operator does not need to apply for an Article 15(4) derogation. If the CA accepts the arguments put forward by the operator then the plant does not have to apply the technique specified in the BATc and therefore may not be able to achieve the BAT-AEL. The expectation is that the CA will then set a different ELV, based on a site-specific assessment of the proposals put forward by the operator. However, if the CA does not accept the arguments put forward by the operator then either the CA will set an ELV within the BAT-AEL range or the operator may apply for a derogation.
48. On a few occasions the BATc state that a certain technique “is not BAT”. The technique may be deliberately excluded due to factors such as lack of availability, poor environmental performance, economics, cross-media effects, or operational reliability. In such cases the technique should not be used beyond the end of the four year BATc implementation period. The operator should provide a timescale for ceasing to use the excluded technique and describe what alternative techniques they will use to achieve the environmental objective.

'NARRATIVE' BATc

49. Any BATc that does not contain a quantitative measure of performance is commonly known as a 'narrative' or sometimes as a 'descriptive' BATc (note the terms 'narrative' and 'descriptive' are not used in the IED, BRefs or BATc). The expectation is that the operator will normally apply all of the narrative BATc.
50. A narrative BATc may address a matter for which it is not appropriate to assign a quantitative measure e.g. management systems.
51. A narrative BAT may address a matter for which the Technical Working Group could not agree a quantitative performance level, either due to a lack of robust and representative data from the exchange of information carried out as part of the BRef review, or because of difficulties in setting a level that was transferrable from one installation to another.

ENVIRONMENTAL PERFORMANCE LEVEL ASSOCIATED WITH BAT (BAT-AEPL)

52. Some BATc include a BAT-AEPL. This is a quantitative measure of performance that can be achieved if BAT is employed. BAT-AEPLs may include emission levels, consumption levels or other parameters such as abatement efficiency.
53. Article 3(13) of the IED defines 'emission levels associated with the best available techniques', commonly called BAT-AELs. They are mandatory (legally binding) emission levels that must be used as the basis for setting ELVs in permits. The only potential route for setting less strict ELVs in the permit is through derogation (see [Derogation from the BAT-AEL Range](#)). BAT-AELs are a subset of BAT-AEPLs.
54. For those BAT-AEPLs that are not BAT-AELs, there is an expectation that installations will achieve the BAT-AEPL and that it will be included in the permit, but they are not mandatory. If the operator cannot achieve the BAT-AEPL they do not have to apply for a derogation but they should explain why they cannot achieve the BAT-AEPL and describe what, if any, alternative techniques they will use to achieve, or partially achieve, the environmental objective. If the CA accepts the arguments put forward by the operator then the BAT-AEPL does not have to be specified in the permit. The expectation is that the CA will set a performance measure with a different value to that of the BAT-AEPL based on a site-specific assessment of the proposals put forward by the operator.

NORMAL AND OTHER THAN NORMAL OPERATING CONDITIONS (NOC AND OTNOC)

55. It is important to note that BAT-AELs relate to performance under normal operating conditions (NOC) and that different performance levels might legitimately be expected during other than normal operating conditions (OTNOC).
56. Article 14(1)(f) of the IED provides some examples of OTNOC - "start-up and shut-down operations, leaks, malfunctions, momentary stoppages, and definitive cessation of operations". Each BATc may provide further guidance on OTNOC for the activities within its scope, and the associated UK interpretation guidance and permitting advice may provide additional guidance.
57. The expression of BAT-AELs as long-term averages reduces the impact of short-term

process variations/fluctuations when assessing compliance and there may be no need to set permit conditions related to OTNOC. However, if a BAT-AEL is expressed as a short-term average, OTNOC can have a significant impact and permit conditions related to OTNOC may be required. For example, a permit condition may need to define OTNOC and specify the maximum number of data points that can be removed from a monitoring data set when assessing compliance.

THE PURPOSES OF PERMIT ELVS

58. There are two purposes for setting ELVs in permits.
59. **Purpose 1 - Quantifying BAT:** Article 11(b) of the IED requires installations to use BAT. The BAT-AELs in the BATc quantify the emission levels that can be achieved by using BAT and they are the basis for setting ELVs in permits (although other techniques that achieve the same levels can be used instead - see [Techniques](#)). If there are no BAT-AELs set in the BATc then the CA should use the criteria in Annex III to the IED as a basis for setting ELVs. The BAT-AELs in the BATc only fulfil this purpose, they do not necessarily fulfill the second purpose.
60. **Purpose 2 - Environmental Protection:** Article 11(c) of the IED requires that installations should cause no significant pollution and Article 18 requires that installations should not cause a breach of any environmental quality standards. In order to achieve these requirements:
- (a) permit ELVs need to take account of site-specific issues, including:
 - (i) long-term mass emissions;
 - (ii) dispersion of emissions;
 - (iii) proximity and sensitivity of receptors; and
 - (iv) relevant long-term Environmental Quality Standards (EQSs);
 - (b) if there are breaches of EQSs, the CA may require installations to go 'beyond BAT' to reduce emissions or explore other options for reducing their impact, e.g. reducing the plant throughput during local pollution episodes or raising the stack height to improve dispersion.

ELVS AND POSSIBLE WAYS TO EXPRESS

61. ELVs should be set using the same parameters as the BAT-AEL unless there is a good reason for using different parameters, in which case the reasons should be recorded in the decisions document.
62. Emissions may be expressed in terms of:
- (a) "**concentration**" (for example mg/l or mg/m³), which is often used to measure the effectiveness of abatement plant and is usually measurable and enforceable;
 - (b) "**specific mass release**" (for example, kg/t product or percentage of total solvent input), which is used as a measure of the overall environmental performance of the plant and is usually measurable and enforceable. It is often used to compare a plant with similar plants elsewhere;
 - (c) "**absolute mass release**" (for example, kg/hr, t/yr), which can be directly related to environmental impact and can be calculated by mass balance or by combining measurements of concentration and mass flow.
63. Article 15(3)(b) of the IED allows the CA to set ELVs using different parameters from

those used in the BAT-AELs. This should only be done on a site-specific basis and should include monitoring and reporting conditions. The operator should justify the use of different parameters and demonstrate that they achieve an equivalent level of protection to the environment, compared to the BAT-AEL. For example, a BAT-AEL for an emission to water, expressed as an annual mass release may be converted to a daily average concentration which is easier for the operator to measure and assess potential compliance.

64. In some circumstances, it may be appropriate to use surrogate parameters, which reflect the optimum environmental performance of plant, as the routine means of measurement. This should only be done on a site-specific basis and should include monitoring and reporting conditions to ensure that emissions under normal operating conditions have not exceeded the BAT-AEL. The operator should justify the use of surrogate parameters and demonstrate that they achieve an equivalent level of protection for the environment, compared to the BAT-AEL.

BAT-AEL RANGES

65. The BATc normally express each BAT-AEL as a range that applies on a 100-percentile basis.
66. The upper end of the BAT-AEL range is the maximum emission that should be permitted under normal operating conditions when using one, or any combination of, the techniques that are considered BAT. All plants should achieve emissions below the upper end of the BAT-AEL range within four years of the publication of the BATc, unless they have been granted a derogation under Article 15(4) or (5) of the IED.
67. The lower end of the BAT-AEL range is the minimum emission that might be achievable using one, or any combination of, the techniques that are considered BAT.
68. Each technique, or combination of techniques, can result in different performance levels depending on how the process is designed, built, operated, and maintained. If the operator of an installation can demonstrate that the process is BAT and the emissions are within the BAT-AEL range, an appropriate ELV should be set to reflect the emissions from the process that, where relevant, are in accordance with the Defra Core guidance and the Defra guidance on Part A Installations (for installations in England and Wales) and the SEPA PPC Part A BAT conclusions review guidance (for installations in Scotland).

BAT-AEL EXEMPTIONS AND APPLICABILITY IN FOOTNOTES

69. If there are restrictions on the applicability of a BAT-AEL, the restrictions will be explicitly stated, often as a footnote in the relevant table. The relevant UK sector specific guidance may clarify how these applicability statements will be interpreted in practice.
70. For example, there may be an applicability statement that the lower end of the range is associated with the use of a particular technique e.g. low NO_x emissions achieved by using Selective Catalytic Reduction (SCR) or Selective Non-Catalytic Reduction (SNCR). This should not be read as indicating that other techniques would have different emission profiles within the range.
71. For example, there may be an applicability statement that a BAT-AEL “may not apply” under certain circumstances, which should be taken into account when considering a request for derogation under Article 15(4).

72. For example, there may be an applicability statement that a different BAT-AEL range applies under certain circumstances. If the operator wants to make use of such an applicability statement they should demonstrate that it is relevant to their plant and describe what, if any, techniques they will use to minimise their emissions. The operator does not need to apply for an Article 15(4) derogation. If the CA accepts the arguments put forward by the operator then an ELV will be set, within the range specified in the applicability statement, based on a site-specific assessment.
73. For example, there may be an applicability statement stating that the BAT-AEL is 'indicative' under certain circumstances. The expectation is that the activity should be able to demonstrate compliance with the indicative BAT level and, where appropriate, that the CA would use the indicative BAT level as the basis for setting the ELV. However, the existence of an indicative BAT statement is an acknowledgement that the BAT-AEPL or BAT-AEL might not be achievable under certain circumstances. The operator should justify any deviation from the indicative BAT level and describe what, if any, techniques they will use to achieve, or partially achieve, the indicative BAT level. The operator does not need to apply for an Article 15(4) derogation. If the CA accepts the arguments put forward by the operator then the plant does not have to achieve the indicative BAT level. The expectation is that the CA will set a different ELV, where appropriate based on a site-specific assessment.

MONITORING

74. BATc specify monitoring methods and monitoring frequencies for all parameters that have BAT-AE(P)Ls and in some cases for other parameters. The CA may decide to specify monitoring for additional parameters, which may or may not have ELVs, e.g. flow rate, temperature, O₂ content etc. There are some BAT-AELs that do not apply when the mass emission rate is below a certain threshold (e.g. CWW BATc, BAT 12, Table 1 'BAT-AELs for direct emissions of TOC, COD and TSS to a receiving waterbody'). In such cases, where the BAT-AEL does not apply and there is no need to set an ELV in the permit, then no corresponding monitoring is required. However if an ELV is required to address site-specific BAT considerations, then monitoring should be required to ensure compliance.
75. Where an ELV is set that derogates from the BAT-AEL range, the monitoring method and frequency set in the BATc are still applicable.
76. Some BATc that specify continuous monitoring contain an applicability statement that, in certain circumstances, allows long-term sampling or periodic measurements with a specified frequency as an alternative to continuous monitoring. For example, in the WI BATc, BAT 4, Footnote 5 states that "For plants incinerating wastes with a proven low and stable mercury content (e.g. mono-streams of waste of a controlled composition), the continuous monitoring of emissions may be replaced by long term sampling....". The relevant UK sector specific guidance may clarify how such applicability statements will be interpreted in practice.
77. Some BATc that specify a minimum monitoring frequency also contain an applicability statement that allows less frequent monitoring. For example, in the CWW BATc, BAT 4, Footnote 1 states that "Monitoring frequencies may be adapted if the data series clearly demonstrate a sufficient stability". The relevant UK sector specific guidance may clarify how these applicability statements will be interpreted in practice.
78. Article 15(1) of the IED states that ELVs apply at the point where the emission leaves the installation, so BATc do not specify BAT-AELs at intermediate locations. However, some narrative BATc do specify monitoring at intermediate locations. For example in the Food

Drink and Milk (FDM) BATc, BAT3 for waste water monitoring. The CA may require additional monitoring of waste water or waste gas streams at intermediate locations, or additional monitoring for control purposes. The monitoring standards used should be the same as those required for the BAT-AELs so that the results can be compared.

79. Article 16(2) of the IED specifies minimum monitoring frequencies for groundwater and soil. The expectation is that the CA will set monitoring conditions for relevant parameters in groundwater and soil at the installation at the monitoring frequency specified in Article 16(2) or more frequently. However, Article 16(2) also states that if the operator can demonstrate that in practice the risk of contamination is negligible, then the CA can decide that such monitoring is not required or that it can be carried out less frequently.

BAT-AEL AVERAGED PERIOD

80. BAT-AELs may be expressed using long-term averaging periods (monthly or annual) or short-term averaging periods (hourly or daily). Long-term averaged data should be based on continuous monitoring - an average of three periodic samples taken during a month is not a monthly average. An ELV expressed as an annual average should be calculated from the average of the hourly values over the year and the CA must assess the results of the emission monitoring at least annually. Where only periodic monitoring is available for a parameter, the ELV can only be expressed as the average over the sampling period.
81. The variability of emissions increases as the period of time over which they are expressed reduces, so ELVs expressed as short-term averages will normally be higher than those expressed as long-term averages. Therefore, since BAT is concerned with achieving a high level of protection of the environment as a whole and is related to normal operating conditions, BAT-AELs are more robust when they are expressed as the longest-term average for which data is available.
82. Article 15(3) of the IED requires ELVs to be set to ensure compliance with the BATc. It allows the use of alternative averaging periods to those specified in the BATc provided compliance with the BATc is ensured.
83. The IED contains a number of mandatory emission limits, for example in Annex V for combustion activities, Annex VI for waste incineration/co-incineration and Annex VII for activities using organic solvents. In many such cases the BATc contain BAT-AELs for the same parameters expressed over the same averaging period and in general the BAT-AEL ranges are lower than the ELVs in the Directive. Where both the BATc and the IED require an ELV over the same averaging period, only the lower value will be set in the permit.

CONFIDENCE INTERVALS

84. The IED requires that confidence intervals are subtracted from continuous measurements of emissions of CO, SO₂, NO_x and dust from Annex V combustion installations and for CO, SO₂, NO_x, dust, TOC, HCl and HF from Annex VI waste incineration/ co-incineration installations. A specified level of uncertainty is subtracted from measured data for the purpose of reporting against the ELVs specified in the Directive and verifying whether compliance has been achieved. Where the IED does not specify a confidence interval, the performance of the monitoring instrument assessed by an MCERTS/ UKAS accredited testing house can be used. For the Annex V combustion

and Annex VI waste incineration installations:

- a. **For Continuous Emissions Monitoring Systems (CEMS)**, the confidence interval should be subtracted from the measured value to derive a value for assessing compliance. The measured value, confidence interval and reporting value should all be made available to the CA to demonstrate compliance with the ELV.
 - b. **For periodic monitoring**, the measured data and the confidence level will be reported to the CA and will be used by the CA to assess compliance with the ELV.
85. The approach used in Annexes V and VI is not used elsewhere in the IED or in the BRefs or for emissions inventory reporting. All BAT-AELs, including those in the LCP and WI BATc, have been derived using 'as measured' data, without subtracting the confidence interval, and the BATc do not specify that confidence intervals should be subtracted from measured values when assessing compliance.
86. For all installations not covered by Annexes V and VI, the measured values and confidence intervals should both be reported to the CA. If this monitoring data indicates that an ELV may have been exceeded, no enforcement action should be taken unless it is beyond reasonable doubt that a breach has occurred, i.e. that the measured value exceeds the ELV plus the confidence interval. The EU Reference Report on Monitoring of Emissions to Air and Water (ROM) provides guidance on the quality assurance of measurement data and dealing with measurement uncertainty.

MONITORING AT LOW LEVELS

87. Measurement uncertainty increases as the measured value decreases, so setting BAT-AELs at low levels creates challenges for accurate monitoring, reporting and verification of compliance. This was generally not a significant issue for BATc published during 2012-15, which typically set the upper end of the BAT-AEL ranges for dust emissions at 10 or 20 mg/Nm³. However, since 2016 it has become a more significant issue with BATc often setting BAT-AEL ranges for emissions of dust of < 2-5 mg/Nm³.
88. Periodic monitoring for dust is considered to be sufficiently accurate for compliance purposes down to 3 mg/Nm³, though the sampling time may need to be increased at such low levels.
89. Continuous monitoring should be considered to be indicative only for levels of 5 mg/Nm³ and lower. While the continuous measurement can be used for reporting purposes additional periodic measurements should be taken for compliance purposes.

BAT-AELS FOR DIRECT EMISSIONS TO WATER AND GROUNDWATER

90. For direct emissions to water, the upper end of the BAT-AEL range for some parameters may be set at a higher value if certain removal efficiencies are achieved. This will typically be explained in footnotes as "the upper end of the range is x mg/l only if the abatement efficiency is ≥ y % measured as a yearly average". Unless otherwise stated, assessment of abatement efficiency should be made on a flow weighted basis. The ROM provides further guidance on this issue.

91. Some installations have a direct discharge to groundwater, typically via some form of a soakaway. If the BAT-AELs have been derived solely using data for direct discharges to surface waters then it is not appropriate to use them for direct discharges to groundwater. A site-specific groundwater assessment should be carried out using the methodology established under the groundwater regulations and the relevant ELVs should then be set in the permit.

BAT-AELS FOR INDIRECT EMISSIONS TO WATER

92. Article 15(1) of the IED states that ELVs apply at the point where the emissions leave the installation and describes how the effect of a water treatment plant should be taken into account when determining ELVs for indirect discharges to water.
93. Waste water emissions are considered to be direct where the emission is to the receiving environment (e.g. a river or the sea), and indirect where the emission is to another treatment facility (e.g. a municipal Sewage Treatment Works). A discharge into a collection sewer, owned and managed by another operator, which then discharges into the receiving environment should be considered to be a direct discharge unless there is an intermediate treatment process that abates the pollutants concerned. Dilution in the collection sewer by discharges from other locations does not constitute treatment.
94. Most of the BATc published during 2012-17 only specify BAT-AELs for direct emissions to water. However the Waste Treatment (WT) BATc, published in 2018, specified BAT-AELs for indirect emissions with an applicability statement that is consistent with Article 15(1) "The BAT-AELs may not apply if the downstream waste water treatment plant abates the pollutants concerned, provided this does not lead to a higher level of pollution in the environment". The WI BATc published in December 2019 also specify BAT-AELs for indirect emissions to water with similar applicability statements and this may become the norm in future BATc for other sectors.
95. If the installation has indirect emissions to water and the BATc specify BAT-AELs for indirect emissions then the CA should set ELVs that are within the BAT-AEL ranges, unless there is an applicability statement similar to that in the WT BATc and the CA has accepted the arguments put forward by the operator demonstrating that the applicability statement applies. In such cases the CA may decide not to set an ELV or to set an ELV that is higher than the BAT-AEL because it takes into account the further treatment that will be provided by the waste water treatment plant. In these circumstances, the operator does not require a derogation under Article 15(4).
96. If the installation has indirect emissions to water and the BATc do not specify BAT-AELs for indirect emissions, the CA may decide to set site-specific ELVs for indirect emissions. In such cases the BAT-AEL for direct emissions to water will be used as the reference point to set the ELV, which may be higher than the BAT-AEL because it takes into account the further treatment that will be provided by the waste water treatment plant – an approach consistent with Article 15(1). However the CA may decide not to set an ELV if the operator has demonstrated that the waste water treatment plant will provide adequate abatement of that particular pollutant.
97. Independently operated waste water treatment plants are those that have a different operator from the installation(s) that produce the waste water discharge, so they have to be issued with a separate permit. They may be located inside the boundary of another installation, or adjacent to, or geographically separated from the other installation(s). They should be permitted as an IED Section 5.1 or 5.3 waste treatment activity or as an

IED Section 6.11 independently operated waste water treatment activity. Where a waste water treatment plant is operated by the same operator, it should be permitted as an IED Section 5.1 or 5.3 waste treatment activity or as a directly associated activity of the main activity at the installation.

ARTICLE 15(4) DEROGATIONS FROM THE BAT-AEL RANGE

98. Article 15(4) of the IED allows the CA to grant an operator a derogation from a BAT-AEL and to set an ELV that exceeds the upper limit of a BAT-AEL range.
99. If an operator wants a derogation under Article 15(4) they must demonstrate that meeting the BAT-AEL would lead to disproportionately higher costs compared to the environmental benefits due to:
- the geographical location of the installation;
 - the local environmental conditions of the installation; or
 - the technical characteristics of the installation.

The operator should first demonstrate which of the three criteria apply and only then demonstrate that the costs exceed the benefits. The operator must consider both the 'do nothing' option and 'achieve full compliance within four years' option. In most cases the operator should also consider intermediate options that will either reduce emissions without fully achieving the BAT-AEL or that will achieve the BAT-AEL but at a later date.

100. The CA can grant a 'time limited' derogation by setting an ELV higher than the BAT-AEL which will apply for a fixed length of time beyond the four year implementation period. Alternatively the CA can grant a 'non-time limited' derogation by setting an ELV higher than the BAT-AEL without a time limit. Such a derogation should not be considered to be 'permanent' because the permit could be reviewed at any time and will certainly be reviewed when the BATc are next revised.
101. Further guidance on derogations is available from CAs, including details of the cost benefit analysis methodology and a spreadsheet that the operator can use.

BASELINE REPORTS

102. Article 22 of the IED requires operators of installations that use, produce or release relevant hazardous substances which could pollute the soil or groundwater, to have a baseline report that details the pollution status of the soil, and groundwater at the site. However, if the operator can demonstrate that in practice the risk of contamination is negligible, then the CA can decide that a report is not required. For new installations such a report must be produced before the activities start and for existing installations it must be produced as part of the first permit review undertaken after January 2013.
103. The European Commission has issued guidance on the content of baseline reports: [European Commission Guidance concerning baseline reports under Article 22\(2\) of Directive 2010/75/EU on industrial emissions \(2014/C 136/03\)](#). If an installation already has a site condition report or a Site Protection Monitoring Plan, then much of the work required to produce a baseline report may have been done. However, such installations will be required to put the information they have into the format required by the Commission Guidance.

104. Baseline reports will be site-specific, so there is likely to be considerable variation in the amount of information provided in reports produced for different installations. The key is to gather accurate and reliable information on the current status of the site in relation to the presence of relevant hazardous substances so that when activities at the site cease, an accurate assessment can be made of any remediation required.

ENVIRONMENTAL MANAGEMENT SYSTEMS (EMS)

105. BATc usually require the operator to have an EMS and most permits should already include such a requirement. There is no requirement for the EMS to be formally accredited.
106. Where a BATc contains additional requirements not covered by the installation's current EMS, the operator should be required to update the EMS accordingly. This can be done at permit review or by the addition of an improvement condition in the permit that require the EMS to be modified to fully comply with the BATc requirements within four years of the BATc publication.

EMERGING TECHNIQUES AND ARTICLE 15(5) DEROGATIONS

107. Article 3(14) of the IED defines an emerging technique as '*a novel technique for an industrial activity that, if commercially developed, could provide either a higher general level of protection of the environment or at least the same level of protection of the environment and higher cost savings than existing best available techniques*'.
108. Article 15(5) of the IED allows the CA to grant an operator a temporary derogation of up to nine months for the testing and use of emerging techniques.
109. Each BRef normally has a section on emerging techniques.
110. If an operator wants an Article 15(5) derogation they should provide a justification which explains how emissions will be minimised and demonstrates that the environment and human health will be protected.