

## **Environment Agency**

### **Review of an Environmental Permit for an Installation subject to Chapter II of the Industrial Emissions Directive under the Environmental Permitting (England & Wales) Regulations 2010 (as amended)**

#### **Consultation on our decision recording our decision-making process following review of a permit**

The Permit number is: EPR/TP3334AW  
The Operator is: Lafarge Caudon Limited  
The Installation is: Caudon Cement Plant  
This Variation Notice number is: EPR/TP3334AW/V005

Consultation commences/commenced on: 03/03/2017  
Consultation ends/ended on: 03/04/2017

#### **What this document is about**

Article 21(3) of the Industrial Emissions Directive (IED) requires the Environment Agency to review conditions in permits that it has issued and to ensure that the permit delivers compliance with relevant standards, within four years of the publication by the European Commission of updated decisions on BAT conclusions.

We have reviewed the permit for this installation against the revised BAT Conclusions for the manufacture of Cement, Lime and Magnesium Oxide industry sector published on 9th April 2013 in the Official Journal of the European Union. Where appropriate, we also considered other relevant BAT Conclusions published prior to this date but not previously included in a permit review for the Installation. In this decision document, we set out the reasoning for the draft consolidated variation notice that we are minded to issue.

It explains how we have reviewed and considered the techniques used by the Operator in the operation and control of the plant and activities of the installation. This review has been undertaken with reference to the decision made by the European Commission establishing best available techniques (BAT) conclusions (BATc) for production of cement, lime and magnesium oxide as detailed in document reference 2013/163/EU. It is our record of our decision-making process and shows how we have taken into account all relevant factors in reaching our position. It also provides a justification for the

inclusion of any specific conditions in the permit that are in addition to those included in our generic permit template.

As well as considering the review of the operating techniques used by the Operator for the operation of the plant and activities of the installation, the draft consolidated variation notice takes into account and brings together in a single document all previous variations that relate to the original permit issue. Where this has not already been done, it also modernises the entire permit to reflect the conditions contained in our current generic permit template.

The introduction of new template conditions makes the Permit consistent with our current general approach and with other permits issued to installations in this sector. Although the wording of some conditions has changed, while others have been deleted because of the new regulatory approach, it does not reduce the level of environmental protection achieved by the Permit in any way. In this document we therefore address only our determination of substantive issues relating to the new BAT Conclusions and any changes to the operation of the installation.

The document is in draft at this stage, because we have yet to make a final decision. Because the operator has requested a relaxation of certain otherwise mandatory standards, before we make this decision the IED requires us to explain our thinking to the public and other interested parties, to give them a chance to understand that thinking and, if they wish, to make relevant representations to us. We will make our final decision only after carefully taking into account any relevant matter raised in the responses we receive. Our mind remains open at this stage: although we believe we have covered all the relevant issues and reached a reasonable conclusion, our ultimate decision could yet be affected by any information that is relevant to the issues we have to consider. However, unless we receive information that leads us to alter the conditions in the draft Consolidated Variation Notice, or to reject it altogether, we will issue the Notice in its current form with an explanation of how we have addressed consultation responses.

In this document we frequently say “we have decided”. That gives the impression that our mind is already made up; but as we have explained above, we have not yet done so. The language we use enables this document to become the final decision document in due course with no more re-drafting than is absolutely necessary.

We try to explain our decision as accurately, comprehensively and plainly as possible. Achieving all three objectives is not always easy, and we would welcome any feedback as to how we might improve our decision documents in future.

## How this document is structured

1. Our proposed decision
2. How we reached our decision
3. The legal framework
4. Annex 1– Review of operating techniques within the Installation against BAT Conclusions.
5. Annex 2 – Review and assessment of derogation request(s) made by the operator in relation to BAT Conclusions which include an Associated Emission Level (AEL) value.
6. Annex 3 – Improvement Conditions
7. Annex 4 – Consultation responses
8. Annex 5 – Review and assessment of changes that are not part of the BAT Conclusions derived permit review.

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# 1 Our proposed decision

We are minded to issue the Variation Notice to the Operator. This will allow it to continue to operate the Installation, subject to the conditions in the Consolidated Variation Notice that updates the whole permit.

As part of our proposed decision we have decided to grant the Operator's request for a derogation from the requirements of BAT Conclusion 17 as identified in the production of cement, lime and magnesium oxide BAT Conclusions document. The way we assessed the Operator's request(s) for derogation and how we subsequently arrived at our conclusion is recorded in Annex 2 to this document.

We consider that, in reaching our decision, we have taken into account all relevant considerations and legal requirements and that the varied permit will ensure that a high level of protection is provided for the environment and human health.

The draft Consolidated Variation Notice contains many conditions taken from our standard Environmental Permit template including the relevant annexes. We developed these conditions in consultation with industry, having regard to the legal requirements of the Environmental Permitting Regulations and other relevant legislation. This document does not therefore include an explanation for these standard conditions. Where they are included in the Notice, we have considered the techniques identified by the operator for the operation of their installation, and have accepted that the details are sufficient and satisfactory to make those standard conditions appropriate. This document does, however, provide an explanation of our use of "tailor-made" or installation-specific conditions, or where our Permit template provides two or more options.

## 2 How we reached our draft decision

### 2.1 Requesting information to demonstrate compliance with BAT Conclusion techniques

We issued a Notice under regulation 60(1) of the Environmental Permitting (England and Wales) Regulations 2010 (a Regulation 60 Notice) on 2 February 2016 requiring the Operator to provide information to demonstrate where the operation of their installation currently meets, or how it will subsequently meet, the revised standards described in the relevant BAT Conclusions document.

The Notice required that where the revised standards are not currently met, the operator should provide information that

- Describes the techniques that will be implemented before 9 April 2017, which will then ensure that operations meet the revised standard, or
- justifies why standards will not be met by 9 April 2017, and confirmation of the date when the operation of those processes will cease within the installation or an explanation of why the revised BAT standard is not applicable to those processes, or
- justifies why an alternative technique will achieve the same level of environmental protection equivalent to the revised standard described in the BAT Conclusions.

Where the Operator proposed that they were not intending to meet a BAT standard that also included a BAT Associated Emission Level (BAT AEL) described in the BAT Conclusions Document, the Regulation 60 Notice required that the Operator make a formal request for derogation from compliance with that AEL (as provisioned by Article 15(4) of IED). In this circumstance, the Notice identified that any such request for derogation must be supported and justified by sufficient technical and commercial information that would enable us to determine acceptability of the derogation request.

The Regulation 60 Notice response from the Operator was received on 1 April 2016.

We considered that the response did not contain sufficient information for us to commence determination of the permit review. We therefore issued a further information request to the Operator. Further information was provided by the Operator on 29 April 2016 and 28 July 2016.

We considered it was in the correct form and contained sufficient information for us to begin our determination of the permit review but not that it necessarily contained all the information we would need to complete that determination.

The Operator made no claim for commercial confidentiality. We have not received any information in relation to the Regulation 60 Notice response that appears to be confidential in relation to any party.

## 2.2 Review of our own information in respect to the capability of the installation to meet revised standards included in the BAT Conclusions document

Based on our records and previous experience in the regulation of the installation we have no reason to consider that the operator will not be able to comply with the techniques and standards described in the BAT Conclusions.

## 2.3 Requests for Further Information during determination

Although we were able to consider the Regulation 60 Notice response generally satisfactory at receipt, we did in fact need more information in order to complete our permit review assessment.

We received additional information during the determination:

- 29 April 2016 – Cost Benefit Appraisal CBA model
- 28 July 2016 – Dispersion modelling information

We made a copy of this information available to the public in the same way as the responses to our information requests.

Having carefully considered the Regulation 60 Notice response and all other relevant information, we are now putting our draft decision before the public and other interested parties in the form of a draft Consolidated Variation Notice, together with this explanatory document.

We are now providing the public with an opportunity to comment on our proposed decision and conclusion to the Permit Review which includes our draft Consolidated Variation Notice and this decision document. We will consider all relevant representations we receive in response to this consultation and will amend this explanatory document as appropriate to explain how we have done this, when we publish our final decision.

### **3 The legal framework**

The Consolidated Variation Notice will be issued, if appropriate, under Regulations 18 and 20 of the EPR. The Environmental Permitting regime is a legal vehicle which delivers most of the relevant legal requirements for activities falling within its scope. In particular, the regulated facility is:

- an *installation* as described by the IED;
- subject to aspects of other relevant legislation which also have to be addressed.

We consider that, if we issue the Consolidated Variation Notice, it will ensure that the operation of the Installation complies with all relevant legal requirements and that a high level of protection will be delivered for the environment and human health.

We explain how we have addressed specific statutory requirements more fully in the rest of this document.

## **Annex 1: decision checklist regarding relevant BAT Conclusions**

BAT Conclusions for the production of cement, lime and magnesium oxide, were published by the European Commission on 9 April 2013. There are 69 BAT Conclusions; 1 and 2 are generally applicable, 3 – 29 apply to the cement industry, 30 – 54 apply to the lime industry, and 55 – 69 apply to the production of magnesium oxide. This annex provides a record of decisions made in relation to each relevant BAT Conclusion applicable to the installation. This annex should be read in conjunction with the Consolidated Variation Notice.

The overall status of compliance with the BAT conclusion is indicated in the table as

- NA Not Applicable
- CC Currently Compliant – We have reviewed the information available to us and considered that it provides sufficient evidence show the operator is currently compliant with the BAT conclusion and have no reason this will change before the implementation date.
- FC Compliant in the future (within 4 years of publication of BAT conclusions) - We have reviewed the information available to us and considered that it provides sufficient evidence show the operator has suitable plans in place to ensure they will be compliant with the BAT conclusion by the implementation date.
- NC Not Compliant

BATC No	Summary of BAT Conclusion requirement for production of cement, Lime and magnesium oxide	Status NA/ C / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
1	In order to improve the overall environmental performance of the plants/installations producing cement, lime and magnesium oxide, production BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the listed features.	CC	An Accredited EMS system is in place.
2	In order to reduce/minimise noise emissions during the manufacturing processes for cement, lime and magnesium oxide, BAT is to use a combination of the listed techniques.	CC	LAFARGE CAULDON LIMITED undertake occupational and environmental noise monitoring surveys. Main stack silencers and vibration insulation are provided as evidence. The plant is rurally situated and screened by trees and shrubbery. Doors and windows are also kept shut to help minimise noise. Noise reduction measures are implemented where plant is identified as being a significant noise source.
3	In order to reduce all kiln emissions and use energy efficiently, BAT is to achieve a smooth and stable kiln process, operating close to the process parameter set points by using the listed techniques.	CC	LAFARGE CAULDON LIMITED operated kilns using a modern computer based control system and fuel feed systems: all use modern gravimetric techniques to ensure the process is optimised, emissions are reduced and energy is used efficiently. Kiln operations are covered by site management systems and various parameters are taken into consideration, such as temperature and pressure, to monitor and maintain smooth and stable operations.
4	In order to prevent and/or reduce emissions, BAT is to carry out a careful selection and control of all substances entering the kiln.	CC	Quality management systems are employed to manage kiln inputs. Core samples or raw materials are analysed periodically. LAFARGE CAULDON LIMITED utilise a risk assessment and mass balance for new materials before they are introduced to the kiln system
5	BAT is to carry out monitoring and measurement of process parameters and emissions on a regular basis and to monitor emissions in accordance with the relevant EN standards or, if EN standards are not available, ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality, including the following:	CC	<p>a. Plant information system utilises monitors and controls via sensors including temperature, pressure, oxygen and flow rates. This is backed up with primary and total airflow monitoring auditing.</p> <p>b. QC procedures are applied including raw material and fuel specifications and related standards and sampling and testing to ensure meeting of the standards.</p>



BATC No	Summary of BAT Conclusion requirement for production of cement, Lime and magnesium oxide	Status NA/ C / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
	<ul style="list-style-type: none"> <li>a. Continuous measurements of process parameters demonstrating the process stability, such as temperature, O<sub>2</sub> content, pressure and flowrate.</li> <li>b. Monitoring and stabilising critical process parameters, i.e. homogenous raw material mix and fuel feed, regular dosage and excess oxygen</li> <li>c. Continuous measurements of NH<sub>3</sub> emissions when SNCR is applied</li> <li>d. Continuous measurements of dust, NO<sub>x</sub> , SO<sub>x</sub> , and CO emissions</li> <li>e. Periodic measurements of PCDD/F and metal emissions</li> <li>f. Continuous or periodic measurements of HCl, HF and TOC emissions.</li> <li>g. Continuous or periodic measurements of dust</li> </ul>		<ul style="list-style-type: none"> <li>c, d, f, g. Continuous measurement of NO<sub>x</sub>, SO<sub>x</sub>, CO, HCL, TOC and dust using MCERTS on main stack emission.</li> <li>e. Periodic measurement of PCDD and metals is also takes place.</li> <li>f. HF monitored twice per year.</li> <li>g. Channelled dust emissions. Scheduled periodic monitoring is undertaken on channelled dust flow points if below 10,000Nm<sup>3</sup>/hr. If greater than 10,000Nm<sup>3</sup>/hr they will have a continuous monitor (Burst bag detector) with alarms into the control systems. A list of all channelled dust emission points was provided which identified 6 points greater than 10,000Nm<sup>3</sup>/hr.</li> </ul>
6	In order to reduce energy consumption, BAT is to use a dry process kiln with multistage preheating and precalcination.	<b>NA</b>	The kiln at Caudon Works was installed in 1985: it is a precalciner with multistage cyclone preheater, therefore BAT has been achieved for process selection. The BAT-AEL however, is applied to new plant and major upgrades thus no direct comparison to thus BAT-AEL is needed.
7	In order to reduce/minimise thermal energy consumption, BAT is to use a combination of the listed techniques.	<b>CC</b>	The operator listed the approach they take against the techniques a-f in BATC7. The responses indicate compliance with the requirement to reduce/minimise thermal energy consumption. The Caudon plant does not operate a bypass system so 7f is not applicable.
8	In order to reduce primary energy consumption, BAT is to consider the reduction of the clinker content of cement and cement products.	<b>CC</b>	Lafarge Caudon Limited quote that the quality specifications drive the degree of clinker substitution allowed. Minor Additive Constituents are used in the form of ground raw limestone and PFA.

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9	In order to reduce primary energy consumption, BAT is to consider cogeneration/combined heat and power plants.	CC	The scale of the Caudon plant production and the lower exhaust gas temperature (110oC) indicate it is not economically viable to utilise CHP at the moment.
10	In order to reduce/minimise electrical energy consumption, BAT is to use one or a combination of the listed techniques.	CC	Caudon site is accredited to EN ISO 5001:2011 standard for Energy Management Systems. This includes reference to the techniques identified in BATC10.
11	<p>In order to guarantee the characteristics of the wastes to be used as fuels and/or raw materials in a cement kiln and reduce emissions, BAT is to apply the listed techniques:</p> <ul style="list-style-type: none"> <li>- Apply QA systems to guarantee the characteristics of wastes and to analyse any waste that is to be used as a raw material or fuel for constant quality, physical criteria, chemical criteria</li> <li>- Control the amount of relevant parameters for any waste that is to be used as raw material or fuel</li> <li>- Apply QA systems for each waste load.</li> </ul>	CC	<p>Caudon site implement an Environmental management system that includes quality assurance systems for the characteristics of wastes to be used as fuels and/or raw materials.</p> <p>No waste stream specific details have been provided as part of the Reg60 response but this area has been subject of inspector review in the past and is considered acceptable.</p>
12	In order to ensure appropriate treatment of the wastes used as fuel and/or raw materials in the kiln, BAT is to use the listed techniques.	CC	On site procedures are employed to ensure that waste used as fuel or raw materials are handled correctly. No waste stream specific details have been provided as part of the Reg60 response but this area and the processes involved have been subject of inspector review in the past and are considered acceptable when followed.
13	BAT is to apply safety management for the storage, handling and feeding of hazardous waste materials, such as using a risk-based approach according to the source and type of waste, for the labelling,	CC	The operator states “the implementation of the MPA code of practice for the use of waste materials ensures a through, detailed risk assessment approach is applied to all wastes, both fuels and raw materials.” This covers all new materials or changes in waste supplier. Prior to the Code of practice fuel or raw material changes were

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	checking, sampling and testing of waste to be handled.		covered by EA permitting processes and included a risk assessment undertaken by the operators.
14	In order to minimise/prevent diffuse dust emissions from dusty operations, BAT is to use one or a combination of the listed techniques.	<b>CC</b>	The operator listed the approach they take against the techniques b-j in BATC14. The responses indicate compliance with the requirement to minimise/prevent diffuse dust emissions from dusty operations.
15	In order to minimise/prevent diffuse dust emissions from bulk storage areas, BAT is to use one or a combination of the listed techniques.	<b>CC</b>	The bulk open storage of raw material to the west of the office block is of concern due to its size and location. Specific details of abatement methods was requested. No waste stream specific details have been provided as part of the Reg60 response but this area has been subject of inspector review in the past and is considered acceptable.
16	In order to reduce channelled dust emissions, BAT is to apply a maintenance management system which especially addresses the performance of filters applied to dusty operations, other than those from kiln firing, cooling and main milling processes. Taking this management system into account, BAT is to use dry flue-gas cleaning with a filter. BAT-AEL <10 mg/Nm <sup>3</sup>	<b>CC</b>	The operator has confirmed that fabric filters are used and are subject to annual inspection and maintenance processes. There is a statement that replacement filters are designed to be less than 10mg/Nm <sup>3</sup> . Large volume plant (<10,000Nm <sup>3</sup> /hr ) will have relevant periodic compliance monitoring checks.
17	In order to reduce dust emissions from flue-gases of kiln firing processes, BAT is to use dry flue-gas cleaning with a filter. BAT-AEL <10-20 mg/Nm <sup>3</sup> (daily average)	<b>CC</b>	Emissions of dust from the kiln are infrequently above the BAT-AEL of <10-20mg/Nm <sup>3</sup> due to the age design of the existing ESP. Lafarge Caudon limited cannot comply with the BAT-AEL and requested a derogation from the BAT-AEL for Particulate until the next permit review. The derogation request has been considered in detail by the EA and accepted. The current ELV of 30mg/Nm <sup>3</sup> will be retained. For details, refer Annex 2: Assessment, determination and decision where an application for Derogation from BAT Conclusions with achievable emission levels (AEL) has been requested.

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18	<p>In order to reduce dust emissions from the flue-gases of cooling and milling processes, BAT is to use dry flue-gas cleaning with a filter.</p> <p>BAT-AEL &lt;10-20 mg/Nm<sup>3</sup> (daily average or periodic)</p>	<b>FC</b>	<p>Fabric filters are used on bag packers, powder silos, large crushers and coal mills. The operator has accepted that there will be a need to change plant maintenance strategy to move from the existing ELV of 30mg/Nm<sup>3</sup> to 10 mg/Nm<sup>3</sup> by April 2017.</p>
19	<p>In order to reduce the emissions of NO<sub>x</sub> from the flue-gases of kiln firing and/or preheating/ precalcining processes, BAT is to use one or a combination of the listed techniques.</p> <p>BAT-AEL (preheater kilns) &lt;200-450 mg/Nm<sup>3</sup> (daily average)</p>	<b>CC</b>	<p>The operator has confirmed that SNCR is utilised and provided no evidence that the footnote defined in the BATC applies to allow a ELV of 500 to be applied. Consequently the BAT-AEL of 450 mg/Nm<sup>3</sup> is expected to be achieved.</p>
20	<p>When SNCR is used, BAT is to achieve efficient NO<sub>x</sub> reduction, while keeping the ammonia slip as low as possible, by using the listed technique.</p> <p>Ammonia slip BAT-AEL &lt;30-50 mg/Nm<sup>3</sup> (daily average)</p>	<b>FC</b>	<p>SNCR is used at Lafarge Caudon limited works to control NO<sub>x</sub> emissions to &lt;500mg/m<sup>3</sup>. The BAT-AEL for ammonia slip is &lt;30-50 mg/Nm<sup>3</sup> when SNCR is applied. A trial was conducted in October 2014-Jan 2015 to establish NH<sub>3</sub> and NO<sub>x</sub> emissions without SNCR operating. The results of the trial have been presented as part of the Reg 60 Notice submission and indicate that there is not a significant degree of ammonia slip (unreacted ammonia in the kiln emissions) and it is within the BAT-AEL. Lafarge Caudon limited propose that this figure is added to the calculated background ammonia concentration to establish an appropriate ELV, and their submission proposed a daily average ELV of 120mg/m<sup>3</sup>. This has been accepted as modelling was undertaken at the predicted ELV of 120mg/Nm<sup>3</sup> (even though this is likely to be very conservative based on actual emission results) to assess environmental impact of ammonia emissions at this level on the nearby sensitive ecological receptors in the vicinity of the works.</p>

BATC No	Summary of BAT Conclusion requirement for production of cement, Lime and magnesium oxide	Status NA/ C / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			Assessment was conducted against a critical load level of 3ug/m <sup>3</sup> but no justification was provided to justify the use of this standard. An improvement condition has been set to confirm the validity of this assumption and re-assess impact assessment if required.
21	<p>In order to reduce/minimise the emissions of SO<sub>x</sub> from the flue-gases of kiln firing and/or preheating/precalcining processes, BAT is to use one of the listed techniques.</p> <p>BAT-AEL &lt;50-400 mg/Nm<sup>3</sup></p>	<b>FC</b>	The existing permit allowed a higher level of SO <sub>2</sub> release when the raw mill is off. There is no provision in the BATC to allow for this and the BAT-AEL limit has been applied at all times. Cauldon has accepted the proposed change The existing limit is 400mg/Nm <sup>3</sup> and will be retained under the permit review.
22	<p>In order to reduce SO<sub>2</sub> emissions from the kiln, BAT is to optimise the raw milling processes.</p> <p>(no BAT-AEL)</p>	<b>CC</b>	An example screen from “Lucie” control system submitted as part of the Reg60 response. Considered acceptable as an indicator of measurement of process parameters with a view to reducing SO <sub>2</sub> releases.
23	<p>In order to minimise the frequency of CO trips and keep their total duration to below 30 minutes annually, when using electrostatic precipitators (ESPs) or hybrid filters, BAT is to use the listed techniques in combination.</p> <p>(no BAT-AEL)</p>	<b>CC</b>	<p>There is no significant history of CO trips. The operator utilises a CO analyser and investigates any trips.</p> <p>The operator requested that the existing CO limit is removed from the permit as releases are not linked to any BAT-AEL. The EA is required to set an ELV for any parameter listed in annex 2 that could be released in significant quantities. Permit variation EPR/TP3334AW/V004 concluded that the CO limit of 5,000 mg/Nm<sup>3</sup> was appropriate.</p>
24	<p>In order to keep the emissions of TOC from the flue-gases of the kiln firing processes low, BAT is to avoid feeding raw materials with a high content of volatile organic compounds (VOC) into the kiln system via the raw material feeding route.</p>	<b>CC</b>	<p>The operator employs a risk assessment process to establish and assess the impacts of raw materials with a high content of volatile organic compounds into the kiln system. Previous permit conditions also limit the organic component in raw materials to 5000 mg/kg as organic hydrocarbon as well as restraining the CV value to less than 10Mj/kg. As the installation is a co-incinerator the special provisions in the Annex vi apply. Chapter iv (IED) allows cement co-incinerators to request derogations away from the</p>

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	no BAT-AEL		TOC value of 10mg/Nm <sup>3</sup> where TOC and SO <sub>2</sub> do not result from the co-incineration of waste. Proof was not provided as part of the Reg60 response but has been previously supplied as part of the WID implementation.
25	<p>In order to prevent/reduce the emissions of HCl from flue-gases of the kiln firing processes, BAT is to use one or a combination of the listed primary techniques.</p> <p>BAT-AEL &lt;10 mg/Nm<sup>3</sup></p>	<b>FC</b>	Lafarge Caudon limited originally requested a derogation on the basis of abnormal operation of the raw mill resulting in higher levels >10mg/Nm <sup>3</sup> being emitted. A subsequent response July 2016 withdrew this request as the operator is planning to improve operation control and plans to be compliant by April 2017.
26	In order to prevent/reduce the emissions of HF from the flue-gases of the kiln firing processes, BAT is to use one or a combination of the listed primary techniques.	<b>CC</b>	Emissions of HF are periodically monitored, and HCL are compliant with the BAT-AEL of 1mg/m <sup>3</sup> , which is the current permit limit.
27	In order to prevent emissions of PCDD/F or to keep the emissions of PCDD/F from the flue-gases of the kiln firing processes low, BAT is to use one or a combination of the listed techniques.	<b>CC</b>	<p>The operator described the techniques employed to prevent emissions of PCDD/F and these are considered in line with the techniques listed in the BAT conclusions. Emissions of PCCD/F are considered to be BAT in there prevention via the following approaches:</p> <ul style="list-style-type: none"> <li>a). Inputs to the kiln system are monitored for inputs for quality and environmental reasons, internal limitations to the process balance are set.</li> <li>b). Chlorine cycles are monitored within the process as these can cause significant production issues and as such chlorine in put is internally regulated to prevent high levels.</li> <li>c). As above.</li> <li>d). halogenated chlorine above 1% is only burnt via the main burner above 1100°C.</li> <li>e). Kiln gasses leaving the top of the preheater tower are quenched in line with PCDD/F control and process requirements.</li> </ul>

BATC No	Summary of BAT Conclusion requirement for production of cement, Lime and magnesium oxide	Status NA/ C / FC / NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
			<p>f). No waste is burnt on start up or shut down of the kiln system.</p> <p>Historic results show that the ELV has been consistently applied with since 2005 and the WID (now Chapter IV of the IED)</p> <p>See also annex 5</p>
28	<p>In order to minimise the emissions of metals from the flue-gases of the kiln firing processes, BAT is to use one or a combination of the listed techniques.</p>	<b>CC</b>	<p>The operator listed the approach they take to minimise the emissions of metals against the techniques a-c in BATC28. The responses indicate compliance with the requirement to minimise emissions of metals.</p> <p>There is a good compliance with previous ELV's which are unchanged as a result of the BATC.</p>
29	<p>In order to reduce solid waste from the cement manufacturing process along with raw material savings, BAT is to:</p> <ul style="list-style-type: none"> <li>- reuse collected dusts within the process, wherever practicable</li> </ul> <p>utilise these dusts in other commercial products, when possible</p>	<b>CC</b>	<p>Lafarge Caudon Limited does not produce any excess dusts. The kiln do not have bypass. Any material produced within the process is generally reused within the process.</p>
30-69	<p>BAT Conclusions that are not applicable to this installation</p>	<b>NA</b>	<p>BAT Conclusions 30 – 54 inclusive are not applicable as they apply to lime industry only.</p> <p>BAT Conclusions 55 – 69 inclusive are not applicable as they apply to the magnesium oxide industry only.</p>

## Key Issues

Where relevant and appropriate, we have incorporated the techniques described by the Operator in their Regulation 60 Notice response as specific operating techniques required by the permit, through their inclusion in Table S1.2 of the Consolidated Variation Notice.

We have reviewed the limits and monitoring requirements for all emissions at the installation to ensure that they are in accordance with the requirements of the BATCs. We considered all emission points, many fairly small and not listed in the permit.

The Operator provided a list of all channelled dust emissions, with an indication of volumetric flow rate. The general approach is that dust emissions >10,000 Nm<sup>3</sup>/h are listed individually, have a dust limit applied (in accordance with the BAT-AEL for the type of abatement) with a monitoring requirement to demonstrate compliance. Dust emissions <10,000 Nm<sup>3</sup>/h, which are deemed “small sources” by the BATCs, are included as group.

Section 1 covers emission limits and section 2 covers monitoring.

### **1. Emission limit changes: BATc 16 - 28**

Changes to some emission limits and the introduction of new ones are required to ensure compliance with the BAT Conclusions. All the new and revised limits apply from 9 April 2017, the compliance date.

The following table provides an overview of emission limits within permit tables S3.1 and S3.2, with changes highlighted in bold text:

#### **Overview of changes to emission limit values:**

Parameter	ELVs (mg/Nm <sup>3</sup> )		BAT-AEL mg/Nm <sup>3</sup>
	Previously: Variation V004	New Limit: (Variation V005)	
<b>Kiln emissions (permit table S3.1):</b>			
<b>Dust (ESP)</b>	30	<b>30</b>	<10-20
NOx	500	<b>450</b>	<200 – 450 (500)
CO	5,000	5,000	-
SOx	400 (600)	<b>400</b>	<50 - 400
Ammonia slip	-	<b>120</b>	<30 - 50
<b>TOC</b>	150	150	-
HCl, HF	10, 1	10, 1	<10, <1
Metals – Gp I, II	0.05	0.05	<0.05
Metals – Gp III	0.5	0.5	<0.5
Dioxin & furans PCDD/F	0.1	0.1ng/Nm <sup>3</sup>	<0.05-0.1 ng/Nm <sup>3</sup>
<b>BATC 16, 17 Non-kiln dust emissions (permit table S3.2):</b>			
<b>A32 Clinker cooler</b>	30	<b>10</b>	<10



<b>Cement mills – A33, A34, A35, A37, A38, A76, A77</b>	30	<b>10</b>	<10
<b>A36 clinker import</b>	30	<b>10</b>	<10
<b>Rotopack II Bagging plant</b>	30	<b>10</b>	<10
<b>All other channelled dust emissions abated by fabric filters (&lt;10,000Nm<sup>3</sup>/hr)</b>	No previous limit	<b>10</b>	<10
Vents on ammonia system	No previous limit	No limit set	-

**a. Dust limits (BATCs 16, 17, 18):**

Lafarge Caudon Limited supplied a list (28 July 2016) of channelled dust emissions of which 10 are >10,000Nm<sup>3</sup>/hr most already listed in the permit. There is one new dust emission sources to be listed in the permit as a result of the permit review (rotopack ii).

**BATC16:** Emission points <10,000Nm<sup>3</sup>/hr, and therefore deemed “small source” emissions by the BAT Conclusions; with BAT identified as utilising fabric filters. The abated emissions are now included in the permit as a new emission group “*all other channelled dust emissions abated by fabric filters*” and the BAT-AEL is applied as a dust limit of 10 mg/Nm<sup>3</sup> (in accordance with BATC 16).

BATCs 17 and 18 contain a composite BAT-AEL: <10 – 20 mg/Nm<sup>3</sup>, with a footnote “*when applying fabric filters or new or upgraded ESPs, the lower level is achieved*”. In line with this, we have applied a limit of 10mg/Nm<sup>3</sup> to emissions from kilns, coolers and mills which are abated by bag filters, and a limit of 20mg/Nm<sup>3</sup> to such emissions abated by (existing) ESPs.

**BATC17:** kiln emissions, are abated by ESP and have been the subject of a derogation request. This derogation has been granted allowing the ELV to be retained at 30mg/Nm<sup>3</sup> as opposed to the BAT-AEL of 10-20mg/Nm<sup>3</sup>. See annex 2. Historic monitoring results indicate that the emissions will comply with the new limit.

**BATC18 (see also p15):** clinker cooler emissions, at A32 are abated by fabric filter so the dust limits are reduced from 30 to 10 mg/Nm<sup>3</sup>. The operator has stated that an improved maintenance programme should be sufficient to meet the new standard.

All other emission points greater than 10,000 Nm<sup>3</sup>/hr including cement mills, clinker import and packing are abated by bag filters so the dust limits are reduced from 30mg/Nm<sup>3</sup> to 10 mg/Nm<sup>3</sup>. The operator has stated that an improved maintenance programme should be sufficient to meet the new standard.

All emission limits apply for the specified monitoring reference period – **see section 2 below**, regarding detail of monitoring of these emissions.

**b. NOX (BATC 19)**

The operator did not supply any information to show that the NOx emissions after primary techniques alone (ie without SNCR) are >1000mg/Nm<sup>3</sup>. Hence the applicable BAT-AEL is 450 mg/Nm<sup>3</sup> and the ELV changed from 500mg/Nm<sup>3</sup> accordingly.

**c. Oxides of Sulphur SOx (BATC 21)**

Lafarge Caudon Limited have previously been allowed time periods of higher emission when the raw mill is non-operational. No such allowance is available under the BATC 21 and so the BAT-AEL of 400mg/Nm<sup>3</sup> has been applied at all times.

**d. CO (BATC 23)**

BATC 23 does not set a BAT-AEL for emissions of CO. The operator previously requested a variation to change CO limits and this included an impact assessment. On this basis the current CO limit is maintained.

**e. TOC (BATC 24):**

There is no BAT-AEL for TOC; instead IED Annex VI applies. We have retained the existing ELV.

All other kiln parameters (HCl, HF, Gp I, II & III metals and dioxins/furans PCDD/F) have existing limits which are in line with the BAT-AEL, so these limits are retained unchanged.

**2. Monitoring: BATC 5**

The basis for choosing a frequency and method (continuous or periodic) of monitoring of emissions included reference to the BATC, an assessment of the mass of release, potential impacts, previous compliance history and process variability. The results are summarised here and reflect the permit conditions.

The length of sampling period can vary from ½ hour to 6-8 hours depending on the sampling strategy and standard used. For compliance purposes the selection of sampling period reflects the likelihood of variance, potential impacts, the frequency of sampling and the expected concentration. In general terms smaller releases with limited potential for impact have sampling frequencies as low as ½ hour. Larger releases, or where compliance is based on infrequent sampling, have a longer sampling period to allow it to be more representative.

Referring to BATC 5c-g, there are some specific regulatory requirements defined for monitoring of kiln processes, which also fall under IED ch IV and Annex VI as waste is co-incinerated. For non-kiln activities, there are no specific monitoring requirements other than the statement “continuous or periodic” for dust emissions. Each emission point has been assessed to decide if it should be monitored continuously or periodically, and if the latter, the frequency of sampling has been decided based upon risks posed. We have taken into account the history of compliance as well as the scale and impact of a potential release in setting the monitoring requirements.

**a. Kiln parameters - all (BATC 5c, d, e and f):**

The type of monitoring (continuous/periodic), the reference period and frequency of monitoring of the kiln emissions are all unchanged from the previous variation for all parameters. As waste fuels are burned, the permit implements the requirements of IED Annex VI and these are in line with the requirements of BATC 5. No changes to kiln monitoring are required in order to comply with the BATCs.

**b. Non-kiln dust (BATC 5g):**

We are retaining the requirement for period monitoring on the clinker cooler (A32), which is abated with fabric filter. Although this is considered a significant releases monitoring returns have shown good compliance with a 10mg/Nm<sup>3</sup> limit. However, there will be an added requirement to maintain CEMs as indicative monitoring.

BATC 5 allows for continuous or periodic monitoring of dust from non-kiln activities. We are changing the required monitoring on the cement and coal mills from continuous to periodic. The mills all fitted with bag filters and the volumetric releases are relatively small (and smaller in size than the regulated lime kilns on which dust is monitored periodically) and consequently pose a lower risk. We are setting a frequency of 6 monthly for the mills. The continuous monitors previously used for compliance will now be used indicatively to assess performance of the abatement plant, and establish any performance problems. Environmental protection will be maintained as this variation reduces the ELV for releases from all mills to 10mg/m<sup>3</sup>. Historic monitoring data indicates that emissions can meet the 10mg/Nm<sup>3</sup> limit. A review of the data indicated that there has not been 100% compliance with the new tighter ELV. The increase in frequency of bag maintenance identified by the operator will be required to ensure ongoing compliance with the new limit.

The periodic dust monitoring has a reference period of 30 minutes (minimum). This is considered to be an appropriate minimum period for these emissions.

For the “small sources” emission group “all other channelled dust emissions abated by fabric filters”, we are requiring a performance check based on a maintenance management system, as allowed by BAT 5g. Periodic monitoring is not required to demonstrate compliance with the new 10mg/Nm<sup>3</sup>.

Emission point	Parameter	Type of monitoring	Frequency	Reference period
A31 (Main stack on pre-heater tower)	Dust, NOx, SO <sub>2</sub> , CO, TOC, HCl, ammonia	continuous	-	Daily average
	HF	periodic	6 monthly	Min 1 hour
	metals	periodic	6 monthly	Min 30 min
	PCDD/F	periodic	6 monthly	6 – 8 hour
<b>A33, A34, A35, A36</b>	particulates	<b>periodic</b>	<b>Annual</b>	<b>Min 30min</b>
<b>A37, A38, and A77</b>	particulates	<b>periodic</b>	<b>6 monthly</b>	<b>Min 30min</b>
<b>A32, A76</b>	particulates	<b>periodic</b>	<b>6 monthly</b>	<b>Min 30min</b>
<b>A36 clinker import, Roto pack II Bagging plant</b>	particulates	<b>periodic</b>	<b>Annual</b>	<b>Min 30min</b>
<b>All other abated emission points</b>	particulates	<b>Maintenance schedule</b>		

We have set monitoring methods according to our monitoring guidance note, M2

### c. Table S3.5 Process Monitoring requirements

This table has been updated from previous variations to remove parameters which we no longer require to be reported (electricity and water usage) and add in Raw meal and Fuels feed rate (both in t/hr) which is required in line with BATC 5b. The table now includes the indicative use of the mills with continuous dust monitors, and continuous monitoring of the kilns’ emissions for temperature, pressure, oxygen and water vapour to demonstrate process stability and to allow monitoring correction to reference conditions, in line with BATC 5a.

### **Other Monitoring aspects**

#### **Reference conditions:**

The reference conditions for reporting measured emissions from non-combustion sources has been changed by the BATCs from no correction required for temperature, pressure, oxygen or water vapour content, to reporting dry at Standard Temperature and Pressure (STP) with no correction for oxygen. The Schedule 6 interpretation has been updated for this change.

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**Annex 2: Assessment, determination and decision where an application(s) for Derogation from BAT Conclusions with associated emission levels (AEL) has been requested.**

The IED enables a competent authority to allow derogations from BAT AELs stated in BAT Conclusions under specific circumstances as detailed under Article 15(4):

‘By way of derogation from paragraph 3, and without prejudice to Article 18, the competent authority may, in specific cases, set less strict emission limit values. Such a derogation may apply only where an assessment shows that the achievement of emission levels associated with the best available techniques as described in BAT conclusions would lead to disproportionately higher costs compared to the environmental benefits due to:

(a) the geographical location or the local environmental conditions of the installation concerned; or

(b) the technical characteristics of the installation concerned.

The competent authority shall document in an annex to the permit conditions the reasons for the application of the first subparagraph including the result of the assessment and the justification for the conditions imposed. ‘

A summary of any derogation granted is also recorded in Annex 1 of the Consolidated Variation Notice in accordance with the requirement of IED Article 15(4) as described above.

As part of their Regulation 60 Notice response, the operator has requested a derogation from compliance with the AEL values included in the following BAT Conclusion as detailed below.

Lafarge Caudon Limited derogation from BATC17 taking it to the next BREF review. The operator requested to retain the existing ELV for particulate matter (PM) of 30mg/Nm<sup>3</sup> as opposed to moving to the BAT-AEL for electrostatic precipitator (ESP) of 20mg/Nm<sup>3</sup>. The existing ESP is not capable of achieving the BAT-AEL consistently. The operator requested the derogation on the basis of technical aspect of article 15(4). Specifically the plant configuration makes it technically very difficult and costly to upgrade ESP or replace it with a bag filtration system.

Although information was provided in their response to allow us to commence assessment of the derogation request it was insufficient to enable us to complete the determination and further information was requested and subsequently supplied on 28 July 2016 including detailed dispersion modelling and costs.

On review and assessment of this information we have decided to grant the derogation requested by the operator in respect to the AEL values described in BAT Conclusion 17, but have included other Emission Limit Values in the

Consolidated Variation Notice that will ensure suitable protection of the environment.

As part of their response they stated that the reason for their derogation request was the current ESP is operating at its optimal performance and is compliant with the BAT-AEL over 90% of the time. As full compliance cannot be guaranteed a derogation request was made.

The way in which we have considered, assessed and determined the derogation request is detailed in the section below.

The operator supplied a valid derogation request against the BAT conclusions 17. The derogation request was based on technical characteristics specifically the plant configuration and the impacts of the lack of space on equipment replacement and selection. The operator described 4 relevant options for achieving the BAT-AEL and justified the screening out the use of hybrid filters. Four options were taken forward to conduct a cost benefit analysis. The operator proposed the retention of the existing ELV of 30mg/Nm<sup>3</sup> until the next permit review or the existing ESP is replaced or significantly upgraded.

- The derogation request is based on the technical characteristics of the plant, specifically the restrictions as a result of the lack of physical space at the installation and the consequential cost implications of changing the existing ESP with, either an upgraded plant, or new fabric filtration system.
- The operator provided evidence to support the claim of lack of space including:
  - Photographs and maps of the installation (see figures 1 and 2)
  - Highlighting the proximity of a road (Yelsway Lane)
  - The need for complete removal of site main substation (and the ESP itself)
    - Need to protect main sub-station during work
  - Impacts of major site closure while work is undertaken (18-24 months)
  - Impacts on the community of extended road closures (Yelsway Lane) – affecting local traffic and movement on and off site.
  - Current cooler exhaust amongst other infrastructure would not be compatible with fabric filters requiring additional restructuring.
  - Possibility that the new fabric plant would be too large for the plant (capacity) while being proportionately less effective than the smaller ESP.
  - Current ESP can handle higher temperatures and for prolonged periods of time compared to a fabric filter
  - Non-viability of purchasing land surrounding the works.
- Officers from the EA visited the site to review the evidence presented and confirmed that the general claim that the specific plant layout had a significant impact when considering options for improving abatement such as changing the existing ESP to a bag filtration system.

The operator provided a credible argument that the increased costs linked to the technical characteristics are disproportionate for achieving the BAT AEL. The operator supplied sufficient evidence to support the assertion that the additional costs due to plant configuration are significantly above those compared to a typical site. The evidence, as described in the application and derived from the CBA analysis, was reviewed and considered to be applicable and correct and should be considered as part of the derogation request. The basis for the cost assumptions were challenged and considered within reasonable levels of uncertainty.

The operator demonstrated that the costs of achieving the BAT-AEL by April 2017 are disproportionate to the environmental benefits. There are considered to be no environmental risks by allowing the derogation as requested. The current permitted ELVs mean that the impact on the environment is not significant. Achieving the BAT-AEL by replacement of the ESP with a bag filter would result in a lower particulate release but the impact would remain not significant.

- The annual emissions of particulate matter (PM) from the kiln is between 31 and 58 tonnes per year (dependant on assumptions and production). This range is calculated on the basis of ELV values of  $30\text{mg}/\text{Nm}^3$  and  $20\text{Mg}/\text{Nm}^3$ . With the lower value 31 tonnes based on a continuous emission at  $20\text{mg}/\text{Nm}^3$  and 80% runtime during the year and the larger value 58 tonnes based on continuous emission of  $30\text{mg}/\text{Nm}^3$  and 100% runtime. The operator's proposal of retaining the ESP with an Emission limit value of  $30\text{mg}/\text{Nm}^3$  will mean that the actual releases would remain unchanged circa  $20\text{mg}/\text{Nm}^3$ . For comparison the pollution inventory reporting threshold is 50 tonnes per year. The operator still reports PM releases to the Agency due to the requirements imposed through Chapter iv of the IED (co-incineration) and other release point on the site such as mills and the clinker cooler

The derogation would allow continuation of existing ELV's of  $30\text{mg}/\text{Nm}^3$  and the requirement to monitor continuously. These are considered appropriate measures to maintain the required degree of environmental protection. There are no additional factors that are significant enough to include any extra justifications for improvement conditions or tighter limits.

### Annex 3: Improvement Conditions

Based on the information in the Operator's Regulation 60 Notice response and our own records of the capability and performance of the installation at this site, we consider that we need to set improvement conditions so that the outcome of the techniques detailed in the BAT Conclusions are achieved by the installation. These improvement conditions are set out below - justifications for them is provided at the relevant section of the decision document (Annex 1 or Annex 2).

We also consider that we need to set improvement conditions relating to changes in the permit not arising from the review of compliance with BAT conclusions. The justifications for these are provided in Annex 5 of this decision document.

Previously completed improvement conditions are recorded below but removed from the permit to improve clarity. The numbering format has been retained to ensure consistency in record keeping.

Reference	Requirement	Date
IP01	The operator shall carry out a technical evaluation of the burning of WLF as an alternative waste derived fuel in the cement kiln. The technical evaluation programme shall comply with the requirements of the "Technical Evaluation of the burning of WLF as a Cement Kiln Fuel - Caudon Works" document produced by the Environment Agency.	completed
IP02	The operator shall submit a written report for approval by the Environment Agency on the technical evaluation of the burning of WLF as an alternative waste derived fuel in the kiln. The report shall explain how the use of WLF on a permanent basis at the levels used during the evaluation represents the use of Best Available Techniques. It will also include an assessment of the environmental performance of the kiln while burning WLF and a comparison of emissions with and without using WLF. Data obtained during routine operation prior to the evaluation, or in previous technical evaluations of other waste derived fuels in the kiln may be included for comparison.	completed.
IP03	The operator shall carry out a technical evaluation of the burning of SRF as an alternative waste derived fuel in the front end of the cement kiln. The technical evaluation programme shall comply with the requirements of the "Technical Evaluation of the burning of SRF as a Cement Kiln Fuel - Caudon Works" document produced by the Environment Agency.	completed
IP04	The operator shall submit a written report for approval by the Environment Agency on the technical evaluation of the burning of SRF as an alternative waste derived fuel in the kiln. The report shall explain how the use of SRF on a permanent basis at the levels used during the evaluation represents the use of Best Available Techniques. It will also include an assessment of the environmental performance of the kiln while burning SRF and a comparison of emissions with and without using SRF. In particular any reductions in NOx releases will be highlighted. Data obtained during routine operation prior to the evaluation, or in previous technical evaluations of other waste derived fuels in the kiln may be included for comparison.	completed
IP05	The operator shall produce and submit a project plan setting out how releases of NOx in the exhaust gases from the kiln will be minimised and at least reduced to <500 mg/m3 as a daily average by the target date of 30 June 2014. The project plan will be based on	completed



	consideration of costs and benefits of all relevant options and using options appraisal methodology H1 or equivalent.	
IP06	The operator shall assess and submit a report on the impacts of the ammonia emissions from the kiln stack, in particular on non-statutory sites such as local wildlife sites, and SSSI's within 2km of the installation and Natura 2000 and Ramsar habitat sites within 10km of the installation. The assessment shall cover both background NH3 emissions and the maximum ammonia slip when SNCR is optimised for NOx abatement.	Completed
IP07	The operator shall produce and submit a project plan setting out how releases of particulates in the exhaust gases from the kiln will be minimised and at least reduced to <10 - 20 mg/m3 as a daily average by the target date of 30 June 2014. The project plan will be based on consideration of costs and benefits of all relevant options and using options appraisal methodology H1 or equivalent.	completed
IP08	The operator shall produce and submit a project plan setting out how releases of particulates from all significant non-kiln sources will be minimised and at least reduced to <10 - 20 mg/m3 as a daily average by the target date of 30 June 2014. The plan will have a prioritised approach for reducing particulate releases from these sources. The project plan will be based on consideration of costs and benefits of all relevant options and using options appraisal methodology H1 or equivalent.	completed

### **New Improvement conditions:**

#### **IP9: Ammonia ELV and associated environmental impact assessment**

BAT conclusion 20 includes a BAT-AEL for ammonia slip when using SNCR of <30 – 50 mg/Nm<sup>3</sup>. We are therefore required to set an ELV for ammonia, which, since slip cannot be measured directly, must be for total ammonia (background plus slip). The operator proposed an ammonia ELV of 120mg/Nm<sup>3</sup> daily average. The operator supplied a detailed impact assessment based on a potential ELV of 120mg/Nm<sup>3</sup>. The model included an assessment against a critical level of 3µg/Nm<sup>3</sup>. The more restrictive Critical Level for lichens and bryophytes (1µg/m<sup>3</sup>) has been identified as not relevant for the sites but no evidence provided. An improvement condition is required to confirm the applicability of an assessment against 3µg/m<sup>3</sup> and if needed rework the impact assessment using the tighter critical level value of 1µg/m<sup>3</sup>.

IP9	<p>The operator shall submit an updated report on ammonia emissions (considering both ammonia slip and background ammonia) from the Installation. The report shall include the following:-</p> <ul style="list-style-type: none"> <li>An updated impact assessment for Ammonia. The assessment shall consider the default environmental standard of 1µg/m<sup>3</sup> unless appropriate justification can be provided for using the less stringent value of 3µg/m<sup>3</sup> (according to features present within such conservation site).</li> </ul> <p>The report shall confirm that the current ELV for ammonia (stated within table S3.1) remains appropriate (considering the revised impact assessment, ambient ammonia and slippage levels), or shall propose an alternative ELV (complying with all BAT-AELs) for approval in writing by the Environment Agency.</p>	30/09/17
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#### **Annex 4: Advertising and Consultation on the draft decision**

This section reports on the outcome of the public consultation on our draft decision carried out between <insert date> and <insert date>.

The draft decision record and associated draft Consolidated Variation Notice was published and made available to view on .Gov website between the dates detailed above.

Summary of responses to consultation and the way in which we have taken these into account in the determination process.

Response received from
Brief summary of issues raised
Summary of actions taken or show how this has been covered

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## Annex 5: Review and assessment of changes that are not part of the BAT Conclusions derived permit review.

### 1. Introductory Note

The installation description has been updated to a consistent format applied across the cement and lime sector. We have included additional information such as the installation NGR, kiln production capacity, details of process wastes and emissions to air and water, and local sensitive receptors.

### 2. Permit conditions

#### Condition 2.3.16

This is a new standard template condition for all sites using waste.

#### Condition 3.5.5(a) Ammonia confidence levels

A confidence level of 40% for continuous monitoring of ammonia has been set based on guidance from EA monitoring teams. This value could be lower depending on the techniques employed. However, as we gather more information on the continuous monitoring of ammonia on cement works, the % uncertainty figure may be reduced.

#### Section 3.6 Fire Prevention conditions

Conditions 3.6.1 & 2 are now standard template conditions for all installations that store combustible wastes. New installations storing combustible wastes are required to have an FPP in place. For existing installations, there is no automatic requirement to submit an FPP when a permit is varied or as a result of a permit review, however an FPP will be required under certain conditions, eg if there is a fire at the installation, or a change on site which increases the risk of a fire.

### 3. Schedule 1 Changes to Table S1.1

We have reviewed Table S1.1 for all CLM sector permits, to ensure these accurately reflect the activities on each site.

We have reviewed and revised Hope cement works Table S1.1, specifically:

- Amended the kiln activity description to reflect EPR Sch 1 activity wording,
- Revised the listed activities, to include additional part A(2) and (B) activities,
- Added Directly Associated Activities (DAAs) to ensure that all activities (listed and non-listed) at the installation are included,
- Amended the Limits of Specified Activity for all activities to ensure they are clearly defined,
- Assigned Activity Reference numbers to listed and directly associated activities.

The amended Table S1.1 is reproduced below with new and revised text identified by shaded sections:

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
AR1	Section 3.1 Part A(1)(a)	Producing cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other kilns with a	<u>Kiln production</u> From the transport of raw materials and fuels from bulk storage, the preparation (including blending of

<b>Table S1.1 activities</b>			
<b>Activity reference</b>	<b>Activity listed in Schedule 1 of the EP Regulations</b>	<b>Description of specified activity</b>	<b>Limits of specified activity</b>
		production capacity exceeding 50 tonnes per day.	raw materials listed in table S2.1, in order to produce raw meal) and feeding of all materials into the kiln system through to discharge of cooled clinker to the clinker store, and emissions to air from the main stack and other process vents.
AR3	Section 3.1 Part A(2)(a)	Grinding cement clinker	<u>Cement mills</u> The transport of clinker, including imported clinker, from the clinker store and handling of raw materials from bulk storage, through milling and blending to storage of cement, including emissions to air from the mill stacks and other process vents.
AR4	Section 3.1 Part B(a)	Storing, loading or unloading cement or cement clinker in bulk prior to further transportation in bulk.	Storage and dispatch of cement clinker and cement in bulk by road or rail.
<b>Directly Associated Activity</b>			
AR5	Raw materials storage and handling	Raw materials receipt, transport, preliminary preparation and bulk storage	From the recovery of raw materials from the quarry floors, the crushing, screening and other preparations, and the receipt on site of other raw materials, including alternative raw materials, through to bulk storage.
AR6	Fuels storage and handling	Delivery and bulk storage of fuels	Offloading of waste-derived and fossil fuels, and transfer to bulk storage
AR7	Clinker import	Bulk import of cement clinker by road and rail	Offloading of cement clinker imported to site by road and rail and transfer to the clinker stores.
AR8	Waste storage and handling	Waste storage and handling	From waste generation, storage and monitoring through to dispatch off site.
AR9	Water discharge to controlled waters	Management of site drainage and process water	Collection of surface water drainage, including reuse in site activities, through to discharge to controlled waters.

**Listed Activities – producing clinker and grinding clinker:**

Until this review, Cement and Lime permits listed the activity Section 3.1 Part A(1)(a) as ***producing and grinding cement clinker*** in accordance with the Environmental Permitting Regulations 2010, which stated the following:

**Part A(1)** (a) *Producing cement clinker or producing and grinding cement clinker.*

(b) *Producing lime—*

*(i) in kilns or other furnaces with a production capacity of more than 50 tonnes per day;*

*or*

*(ii) if the activity is likely to involve the heating in any 12-month period of 5,000 or more tonnes of calcium carbonate or calcium magnesium carbonate or both in aggregate.*

- Part A(2)** (a) Unless falling with Part A(1) of this Section, grinding cement clinker.  
 (b) Unless falling within Part A(1) of Section 2.1 or 2.2, grinding metallurgical slag in plant with a grinding capacity of more than 250,000 tonnes in any 12-month period.
- Part B** (a) Storing, loading or unloading cement or cement clinker in bulk prior to further transportation in bulk.  
 (b) Blending cement in bulk or using cement in bulk other than at a construction site, including the bagging of cement and cement mixtures, the batching of ready-mixed concrete and the manufacture of concrete blocks and other cement products.

Under the EPR 2010, the activity 3.1 **A(2)(a)** covers only the grinding of cement clinker where this is undertaken at a different location from that of clinker production. In 2013, the Regulations were amended and moved the activity of grinding cement clinker to Section 3.1 Part **A(2)(a)** regardless of where the grinding takes place ; .

- Part A(1)** (a) Producing cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other kilns with a production capacity exceeding 50 tonnes per day.  
 (b) Producing lime or magnesium oxide in kilns with a production capacity of more than 50 tonnes per day.
- Part A(2)** (a) Grinding cement clinker  
 (b) Activities deleted by EPR amendment SI 2013 No. 390.
- Part B** (a) Storing, loading or unloading cement or cement clinker in bulk prior to further transportation in bulk.  
 (b) Blending cement in bulk or using cement in bulk other than at a construction site, including the bagging of cement and cement mixtures, the batching of ready-mixed concrete and the manufacture of concrete blocks and other cement products.

In Lafarge Caudon Limited previous permit, although cement milling was included on a separate row in table S1.1, it was still part of the listed activity S3.1 A(1)(a). Table S1.1 has been revised to reflect the legislative changes; the 3.1A(1)(a) activity covers producing cement clinker only and an additional activity 3.1A(2)(a) has been included to cover all grinding activities.

We are assigning **one** A(2) activity (reference AR2), for clinker grinding at this installation, to cover all cement mills processing clinker manufactured on site and imported. The Regulations do not define capacity or aggregation rules for 3.1A(2)(a) and having consulted EA permitting guidance, including RGN2 Appendix 2, we consider that multiple cement mills do not operate entirely independently and we can therefore regard them as one activity, incurring one part A(2) fee. Regarding each mill as a separate A(2) activity would increase charges per site in a manner disproportionate with the regulatory effort required.

There is however, one 3.1A(1)(a) activity for each kiln with a production capacity above the listed threshold of 500 t/d.

An additional part B activity is now included (activity AR3) for Storing, loading or unloading cement in bulk following the Regulations' amendment. This covers bulk storage of clinker and cement and loading into road and rail tankers (bulk transport). This activity is not covered by any other activity (listed or directly associated) following amendments to the Regs and is listed as a part B in its own right.

#### **Other changes to Table S1.1:**

Previously Tbl S1.1 contained only two DAAs; for cement storage, blending, packing & loading (now a part B activity), and for waste storage and handling. In line with our

RGN2 guidance, the following activities have been included as DAAs, in order to ensure all appropriate activities at the installation are covered:

- Raw materials storage and handling,
- Fuels storage and handling (fossil and Waste derived),
- Clinker import,
- Discharge to controlled waters, including drainage and ponds.

We have revised the Limits of Specified Activity descriptions, to ensure that the activities are clearly defined.

#### **4. Schedule 3 Emissions**

##### **Table S3.1 TOC ELV:**

The BAT conclusions do not include a BAT-AEL for TOC emissions, instead Annex VI of IED applies. This prescribes a limit of 10 mg/Nm<sup>3</sup> and allows for a derogation from this where TOC emissions do not result from the co-incineration of waste. Lafarge Caudon Limited ELV has been 150 mg/Nm<sup>3</sup> since WID was implemented in November 2005. This has been retained.

##### **Table S3.1 Requirement for ongoing monitoring of Dioxins, Dioxin like PCB and PAH.**

Air Emission Limit Values - Article 7 (d) Dioxins. The WID requires dioxins to be reported using the I-TEQ reporting convention to assess compliance against an emission limit of 0.1ng I-TEQ / Nm<sup>3</sup>. The UK's independent health advisory committee, Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT), has adopted the World Health Authority (WHO) toxicity equivalence factors (TEF) for both dioxins and dioxin-like PCBs in their recent review of Tolerable Daily Intake (TDI) criteria.

The Government is of the opinion that, in addition to the requirements of the WID, the WHO-TEF values for both dioxins and dioxin-like PCBs should be specified for monitoring and reporting purposes. This will enable evaluation of exposure to dioxins and dioxin-like PCBs to be made using the revised TDI recommended by COT. Regulators will, therefore, set dioxin emission limits using on I-TEF (1990) values but with additional monitoring/reporting requirements for dioxins and dioxin-like PCBs using WHO-TEF (1997/98) factors as shown in the permit.

Article 7(5) (WID) allows Member States to set emission limits for other pollutants including polycyclic aromatic hydrocarbons (PAHs). There is lack of monitoring data on the release of PAHs from incinerators on which to base such limits or even to decide if a limit is required. The Waste Incineration directions thus require the regulators to impose monitoring requirements in the permits but not to set a limit. Once sufficient data is available, a decision can be made on the future of this requirement. The following PAHs should be monitored and results reported on the same frequency as for dioxins and dioxin-like PCBs.

Polycyclic Aromatic Hydrocarbons (PAHs) to be monitored:

Anthanthrene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo(b)naph(2,1-d)thiophene, Benzo(c)phenanthrene, Benzo[ghi]perylene, Benzo[a]pyrene, Cholanthrene, Chrysene, Cyclopenta(c,d)pyrene, Dibenzo[ah]anthracene, Dibenzo[a,i]pyrene, Fluoranthene, Indo[1,2,3-cd]pyrene, Napthalene.

This requirement for ongoing measurement of PAH will be reviewed in 2017.

#### **5. Schedule 6 Interpretation**

Schedule 6 has been revised to remove interpretations which are no longer relevant, amend existing and introduce new ones. The monitoring reference conditions are updated in line with the BAT conclusions (refer Key Issues section)

**Chapter IV abnormal operating conditions:** “abnormal operating conditions” has been prefixed with “chapter IV” to emphasise that these conditions relate to specific circumstances outlined in IED ch IV, for plants burning waste derived fuels. Prior to IED, this was termed “WID abnormal operating conditions”.

**Management System:** the guidance previously referenced, the EA’s Horizontal guidance Note H6, Environmental Management systems, has now been withdrawn. The .gov.uk website provides guidelines on what a management system should cover when operating a regulated industry.

<https://www.gov.uk/guidance/develop-a-management-system-environmental-permits> It is no longer considered necessary to define management system in the interpretation section. The EMS system has also been reviewed as part of the BATC1.

**Chipped tyres:** included to clarify that this type of WDF includes shredded rubber conveyor belts.

**Kiln shut down:** this is revised to include an Operator-agreed feed rate in tonnes per hour.

**Kiln start up:** this is revised in line with current definition for start up, removing reference to use of WDFs to determine end of start up, and instead including an agreed threshold figure of raw meal feed into the kiln. We are now allowing an option to calculate the first daily average emission value using the 24 hour period after the end of kiln start up (ie when the kiln reaches a pre-determined feed rate). This is to avoid the anomaly which allowed for a daily average emission to be calculated from only a few hours of data if start up was achieved late in a 24 hour period, when emissions may still be higher than typical. Emissions may take a while to stabilise as feeding of WDFs can only commence after start up is complete. Higher emissions initially are compensated for over a 24 hour period, with lower emissions once kiln stability is established, however this cannot be the case if only a few hours are used to derive a 24 hour period, leading to possible compliance issues.