

Environment Agency permitting decisions

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)

Decision document recording our decision-making process following review of a permit

The Permit number is: EPR/BK9571IU
The Operator is: Lhoist UK Limited
The Installation is: Brierlow Lime Works
This Variation Notice number is: EPR/BK9571IU/V006

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 production of cement, lime and magnesium oxide industry sector published on 9 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 consolidated variation notice that we have issued.

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 the 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 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.

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.

1 Our decision

We have decided 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.

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 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 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 30 April 2014 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 9 January 2015.

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, and issued further information requests on 22 May 2015 (response received 3 July 2015) and 8 September 2016 (response received 23 September 2016). Copies of the further information requests and responses were placed on our public register.

In addition to the responses to our further information requests, we received additional information during the determination from the Operator:

- 11 October 2016 (relating to new installation boundary),
- 17 December 2016 (relating to the non-kiln emission points),
- 6 January 2017 (Operator agreement to revised installation boundary)

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

3 The legal framework

The Consolidated Variation Notice will be issued, 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, in issuing 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.

Our assessment of 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 consider that it provides sufficient evidence to show that the operator is currently compliant with the BAT conclusion, and we have no reason to believe that 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 consider that it provide sufficient evidence to show that the operator has suitable plans in place to ensure that they will be compliant with the BAT conclusion by the implementation date. |
| NC | Not Compliant |

BAT Conclusion No	Summary of BAT Conclusion requirement for production of cement, lime and magnesium oxide	Status NA/CC/FC/NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
3-29 55-69	BAT Conclusions that are not applicable to this installation	NA	BAT Conclusions 3 – 29 inclusive are not applicable as they apply to cement industry only. BAT Conclusions 55 – 69 inclusive are not applicable as they apply to the magnesium oxide industry only.
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 EMS certified to ISO14001 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	Lhoist have outlined a number of BAT techniques which they employ to reduce/minimise noise emissions. These include enclosure of noise operations, use of impact absorbent linings, soundproofed buildings, use of bunding and tree planting as natural noise barriers, and silencers fitted on the kilns exhaust stack.
30	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	The kilns are operated using a modern computer based control system. Kiln operations are covered by site management systems and various parameters will be taken into consideration, such as temperature and pressure, to monitor and maintain smooth and stable operations. Solid fuels are not currently used at Lhoist.
31	In order to prevent and/or reduce emissions, BAT is to carry out a careful selection and control of the raw materials entering the kiln.	CC	The limestone deposits at Hindlow works are of high quality and relatively low impurities. The quarried stone is washed to remove clay. Historic emission testing results from the kiln confirm that the selection and control of raw materials entering the kiln is in accordance with BAT.
32	BAT is to carry out monitoring and measurements 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.	CC	BAT is in place for BAT conclusion 32 a – d, and 32 g <ul style="list-style-type: none"> a. all appropriate process parameters are measured and used for kiln control and to demonstrate kiln stability b. Critical process parameters are monitored; feed and fuel is delivered via calibrated feed devices. c. Continuous monitoring of dust from the kilns is carried out using an MCERTS CEM; an annual periodic measurement is also undertaken. We are changing this monitoring requirement to periodic only, from this variation. Refer Key Issues, section 2 below. Periodic monitoring of NOx, SOx and CO is carried out twice a year by an accredited organisation. SNCR is not utilised so NH₃ monitoring is not required.

BAT Conclusion No	Summary of BAT Conclusion requirement for production of cement, lime and magnesium oxide	Status NA/CC/ FC/NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
		FC	<p>d. Waste is not regularly co-incinerated, so HCl and HF are not routinely measured.</p> <p>g. Six monthly periodic measurements of non-kiln dust emissions are undertaken by an accredited testing organisation. Small dust sources are monitored as part of the on-site preventative maintenance regime, which operates on a monthly cycle. We are changing the monitoring requirements for these dust emissions, refer to Key Issues section 2 below.</p> <p>Lhoist have had permission to burn RFO (recovered fuel oil), a waste-derived fuel, in kiln 2 since 2006. The permit requires them to monitor dust, NOx, SO₂, CO, TOC and HCl continuously while burning RFO, together with periodic measurements of HF, Gp I, II and III metals, and PCDD/F. However RFO is rarely used and this variation removes the permission to burn it. The monitoring requirements associated with IED ch IV are removed with this variation. Refer to Annex 5, para 1.</p> <p>BAT 32 e and f: Monitoring of TOC, PCDD/F and metals is not routinely undertaken unless waste is being burned as “there is no permit requirement to do so”. Routine monitoring of TOC and PCDD/F is introduced through this variation. Refer to Key Issues section 2 below.</p>
33	In order to reduce/minimise thermal energy consumption, BAT is to use a combination of the listed techniques.	CC	Lhoist utilise a number of techniques to minimise energy consumption and state that the thermal energy consumption is well within the BAT associated levels (although the achieved level is not given). Process control has been optimised for efficient kiln operation, a modern gas delivery system with metered consumption is used, feed stone is screened to optimise size fraction and key equipment is maintained. Daily reviews of kiln performance are carried out which highlight potential issues with thermal efficiency.
34	In order to minimise electrical energy consumption, BAT is to use one or a combination of the listed techniques.	CC	Lhoist use process optimisation and energy management techniques, including optimising feed stone size through crushing, washing and screening to minimise electricity usage. Sub-metering has been installed. Internal product energy benchmarks have been established and performance is regularly monitored.
35	In order to minimise limestone consumption, BAT is to use one or a combination of the listed techniques	CC	Lhoist extract limestone from the on-site quarry for the kilns. Any material <30mm is sold for alternative uses such as aggregate. Recent improvements have increased the proportion of quarried rock suitable for calcining, which has reduced overall the quantity requiring to be quarried.

BAT Conclusion No	Summary of BAT Conclusion requirement for production of cement, lime and magnesium oxide	Status NA/CC/ FC/NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
36	In order to prevent/reduce emissions, BAT is to carry out a careful selection and control of fuels entering the kiln	CC	Lhoist use mainly natural gas fuel in the kilns, which is the cleanest available fuel. Other fuels have been considered, for use as a standby fuel and as an alternative to natural gas. Lhoist look in detail at handling, potential emissions and product compatibility prior to using a different fuel. To date, kerosene and RFO (a waste) have been identified as suitable fuels, however these are used very infrequently and RFO has not been used as a kiln fuel since 2009. Permission to burn this WDF is being removed from the permit, as Lhoist have no intentions to burn it in future and have removed stocks from site. If the operator decided in the future to utilise waste derived fuel, they would need to apply to vary their permit (seek permission to co-incinerate waste) and would not be permitted to utilise such waste derived fuels until permission is re-granted. Refer Annex 5 para 1.
37	In order to guarantee the characteristics of waste to be used as fuel in a lime kiln, BAT is to apply the listed techniques:	CC/NA	With this permit variation, this BATc becomes NA , as permission to burn RFO is being removed by this variation. Refer Annex 5 para 1.
38	In order to prevent/reduce emissions occurring from the use of waste fuels into the kiln, BAT is to use the listed techniques	CC/NA	For burning RFO, different fuel lances are inserted into the kiln. RFO is not considered a hazardous waste, and Lhoist demonstrated that they meet the requirement for 850°C for >2sec during the RFO trials. The EMS contains a procedure for start-up and shut-down. With this permit variation, this BATc becomes NA (see 36 above) .
39	In order to prevent accidental emissions, BAT is to use safety management for the storage, handling and feeding into the kiln of hazardous waste materials	CC/NA	RFO has been stored in a fully enclosed storage tank which is regularly inspected. Using RFO is not a high risk operation as it has not been used in the kiln since 2009. In Aug 2016, Lhoist informed us that all RFO had been removed from site. With this permit variation, permission to burn RFO is removed and therefore this BATc becomes NA
40	In order to minimise/prevent diffuse dust emissions from dusty operations, BAT is to use one or a combination of the listed techniques	CC	Lhoist employ a number of BAT techniques to minimise and prevent dust emissions from dusty operations, including; significant operations including materials handling are enclosed with filtration devices to minimise fugitive dust; conveyors and elevators are enclosed; dust extraction systems are used in loading areas; maintenance systems are employed to minimise spillage and air leaks and cleaning regimes are in place.

BAT Conclusion No	Summary of BAT Conclusion requirement for production of cement, lime and magnesium oxide	Status NA/CC/ FC/NC	Assessment of the installation capability and any alternative techniques proposed by the operator to demonstrate compliance with the BAT Conclusion requirement
41	In order to minimise/prevent diffuse dust emissions from bulk storage areas, BAT is to use one or a combination of the listed techniques	CC	<p>Lhoist employ a number of BAT techniques to minimise and prevent dust emissions from bulk storage areas, including; storage silos checked and monitored; product loading and bagging areas are enclosed; finished product storage within silos with associated LEV systems; made roads around the kilns and bagging plant which are cleaned on a regular basis.</p> <p>No reference has been made in the responses to bulk storage of raw materials. This is not a high priority aspect of the permit review, and the site is technically compliant through implementation of at least one of the listed techniques. It is not an issue of high enough priority to necessitate imposition of an improvement condition. Instead, the Area handover document will include a recommendation that a site inspection looks at minimising/preventing diffuse dust emissions from raw material storage and compliance with this BATC.</p>
42	<p>In order to reduce channelled dust emissions from dusty operations other than those from kiln firing processes, BAT is to use one of the listed techniques and to use a maintenance management system which specifically addresses the performance of filters</p> <p>BAT-AEL: fabric filter <10 mg/Nm³, Wet scrubber <10-20 mg/Nm³</p>	CC	<p>Fabric filters are applied to channelled dust emissions such as bag packers, silos, milling plants and hydrating plants. They are subject to both inspection and maintenance regimes. Regular inspections are carried out on the external aspects of the filter with an internal inspection and performance report at least annually. These inspections are used to define maintenance plans to ensure satisfactory performance of the filtration system. The current equipment is capable of achieving emissions of <10mg/m³, and frequency of inspection and maintenance will be increased in order to maintain compliance with the <10mg/Nm³ BAT-AEL.</p> <p>Refer to Key Issues section 1 below.</p>
43	<p>In order to reduce dust emissions from the flue-gases of kiln firing processes, BAT is to use flue-gas cleaning with a filter. One or a combination of the listed techniques can be used</p> <p>BAT-AEL: fabric filter <10 mg/Nm³, ESP or other filters <20 mg/Nm³</p>	CC	<p>The kilns are fitted with fabric filters, with continuous and annual periodic monitoring. The existing limits are 20 mg/m³ daily average and 48mg/m³ periodic and half hour average. From 9 April 2017, the only kiln dust limit will be 10mg/Nm³ (periodic sample only), in accordance with the BAT-AEL for bag filters of <10 mg/Nm³ and in line with the approach taken for the other similar lime works. Monitoring data previously submitted for compliance purposes indicate that the filters haven't performed to consistently meet a 10 mg/Nm³ limit, however they are designed to meet this limit and improved maintenance will ensure that compliance with the lower limit is achieved. Lhoist have not requested a derogation.</p> <p>Refer Key Issues section 1 below.</p>

44	In order to reduce the emissions of gaseous compounds (i.e. NOx, SOx , HCl, CO, TOC/VOC, volatile metals) from the flue-gases of kiln firing processes, BAT is to use one or a combination of the listed techniques	CC	Lhoist fire the kilns using mainly natural gas, the cleanest fuel available. The raw material limestone is of high quality with minimal impurities, having been screened and washed. Process optimisation ensures that emission of gaseous compounds are minimised while achieving the desired product output.
45	In order to reduce the emissions of NOx from the flue-gases of kiln firing processes, BAT is to use one or a combination of the listed techniques	CC	Lhoist use natural gas fuel, which along with process optimisation, minimise NOx emissions from the kilns. The current permit ELV is 150mg/m ³ (periodic sample) which is well within the BAT-AEL of 100-350mg/m ³ . The existing limit is to be retained within the permit as it is achievable. Periodic monitoring for NOx is carried out 6 monthly and results are generally <60mg/m ³ , below the BAT-AEL range and current limit.
46	When SNCR is used, BAT is to achieve efficient NOx reduction, while keeping the ammonia slip as low as possible, by using the listed technique	NA	SNCR is not used – this BATC is only applicable to Lepol rotary kilns.
47	In order to reduce the emissions of SOx from the flue-gases of kiln firing processes, BAT is to use one or a combination of the listed techniques BAT-AEL: PFRK <50-200 mg/Nm ³	CC	The kilns are fired on natural gas which has a low sulphur content. The standby fuel Kerosene is rarely used. The current permit ELV is 50mg/m ³ which is well within the BAT-AEL range of <50-200mg/m ³ . The existing limit is to be retained within the permit as it is achievable. Historical monitoring demonstrates very low SOx emissions in the flue gases, consistently <10mg/m ³ .
48	In order to reduce the emissions of CO from the flue-gases of kiln firing processes, BAT is to use one or a combination of the listed techniques BAT-AEL: PFRK <500 mg/Nm ³	CC	Both listed techniques are applied; the washed limestone feed stone contains minimal quantities of organic materials, and combustion is controlled to ensure CO emissions remain low. Historical monitoring demonstrates very low CO emissions, generally <20mg/m ³ , well within the BAT-AEL range of <500mg/m ³ . The existing permit limit of 325mg/m ³ limit is retained.
49	In order to minimise the frequency of CO trips when using electrostatic precipitators, BAT is to use the listed techniques	NA	Only applicable to kilns with ESPs. There are no ESPs at Hindlow.
50	In order to reduce the emissions of TOC from the flue-gases of kiln firing processes, BAT is to use one or a combination of the listed techniques BAT-AEL: PFRK <10 mg/Nm ³	CC	General primary techniques are applied; limestone feed to the kiln contains low levels of VOCs, as it is of good quality and is crushed, washed and screened prior to use. As emissions have not been regularly monitored for TOC, there is limited available data to assess compliance against the BAT-AEL, however Lhoist state that based on monitoring data from fuel trials, they can meet the BAT-AEL of <30mg/Nm ³ (for PFRK). The permit will include a limit of 30mg/Nm ³ from 9 April 2017, with a requirement for annual compliance monitoring. Refer Key Issues section 1 below and Annex 3.
51	In order to reduce the emissions of HCl and the emissions of HF from the flue-gas of kiln firing	NA	Lhoist no longer burn waste in kiln 2, and permit conditions which allow waste burning are being removed. This BATC is no longer relevant.

	processes, when using waste, BAT is to use the following primary techniques		
52	In order to prevent or reduce the emissions of PCDD/F from the flue-gas of kiln firing processes, BAT is to use one or a combination of the listed primary techniques BAT-AEL: <0.05-0.1 ng/Nm ³	CC	The predominant fuel used is natural gas, which has negligible chlorine and copper content, thereby minimising dioxin-formation conditions. The feedstock and fuel are of high quality and therefore inputs to the kiln will not be capable of generating significant emissions of PCDD/F emissions. As PCDD/F emissions have not been regularly monitored, there is limited available data to assess compliance against the BAT-AEL, however a monitoring exercise was carried out in 2009 and the highest measured result for total dioxins was 0.0117 ng/m ³ , within the BAT-AEL range of <0.05-0.1ng PCDD/F I-TEQ/Nm ³ . The permit will include a limit of 0.05 ng/Nm ³ from 9 April 2017, with a requirement for an annual compliance check. Refer Key Issues section 1 below.
53	In order to minimise the emissions of metals from the flue-gases of kiln firing processes, BAT is to use one or a combination of the listed techniques	CC	BAT techniques are applied; the main fuel is natural gas, which has a low metal content. Waste fuels will no longer be burned, and permission to burn RFO is removed by this variation. Efficient bag filters provide effective dust removal. No limit for emissions of metals will be set in the permit as the relevant BAT-AELs apply only when using wastes.
54	In order to reduce the solid wastes from the lime manufacturing processes and to save raw materials, BAT is to use the listed techniques	CC	BAT techniques are applied; the quantity of waste lime produced has reduced following process modifications and inclusion of material into certain products. Any lime waste not recovered in this way is used to treat waste clay, regulated through a Mining Waste permit, with the resulting material used for site restoration.

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 Nm³/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 Nm³/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 42, 43, 50 and 52

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:

Kiln emissions (permit table S3.1):			
Parameter	Previous ELV: mg/Nm ³	New Limit: mg/Nm ³	BAT-AEL mg/Nm ³
Dust (fabric filter)	20 daily avg 48 half hr avg 48 periodic	10 periodic	<10 (daily avg or avg over sample period)
NOx	150	150	100 – 350
SOx	50	50	<50 – 200
CO	325	325	<500
TOC	No previous limit	30	<30
Dioxin & furans PCDD/F		0.1ng/Nm³	<0.05-0.1 ng/Nm ³

BATC 42 Non-kiln dust emissions (permit table S3.2):			
A3, A5, A6, A7, A8, A10, A11, A13 (all fabric filters)	40	10	<10
A12, A14 (fabric filter)	30	10	<10
A9 (was scrubber, now fabric filter)	100	10	<10
All other abated channelled dust emissions (<10,000Nm³/hr)	No previous limit	10	10

a. TOC and PCDD/F (A1 and A2):

The BAT conclusions introduce BAT-AELs for TOC (BATC 50) and dioxins/furans (BATC 52) in kiln emissions, despite the fact that we do not expect to find these parameters in significant quantities due to the nature of the process and fuel used. A limit is now included for each parameter in line with the BAT-AEL, applied from the compliance date.

All other kiln parameters (NOX, SOx and CO) have existing limits which are well within the BAT-AEL, so these limits are retained.

b. Dust:

Dust emissions are all abated by filters and hence every dust limit is reduced to 10 mg/Nm³, in line with the BAT-AEL for fabric filters set by BATC 42 and 43, non-kiln and kiln emissions.

As we are removing the requirement for continuous monitoring on kiln emission points A1 and A2 (refer section 2a below), it will not be possible to demonstrate compliance with a half hourly and daily average limits; these limits are therefore no longer required, so we are setting one limit to be applied over the sampling period, an approach consistent with all other lime works. The operator has had several exceedences of the previous kiln dust ELV of 30 mg/m³. The issues which caused these have been resolved, and the Operator is confident that the new lower limit of 10 mg/Nm³ will be consistently met.

There are no new dust emission sources to be listed in the permit as a result of the permit review. All larger emissions with a volumetric flow >10,000Nm³/hr are already listed within table S3.2.

The group “*all other channelled dust emissions abated by filters*” is provided as a catch-all for non-listed “small source” emission points abated by filters as these need a dust emission limit set in line with BATC 42. This group consists of 10 abated emission points, mainly from silos, with volumetric flow all <5,000 Nm³/h. The list is available as document “LH_01” submitted on 17 Dec 2016.

Information provided by the operator indicates that some of the listed emissions, notably A7, A9, A10 and A13, have air flows <10,000 m³/hr. The operator has requested that these remain listed in the permit, however we have changed the monitoring requirements in line with the general approach (refer section 2). Retaining these as listed emission points also retains visibility of the emissions.

Table S3.2 also lists the group “All other non-channelled dust emissions”. No limit is set for these emissions, as the BATC applies to “channelled” emissions, however the requirement to maintain them is included within the table.

2. BATC32 Frequency of monitoring

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.

Referring to BATC 32 c-g, there are no specific regulatory requirements defined in the BREF other than the statement “continuous or periodic” for the parameters dust, NOx, SOx, CO, TOC, HCl and HF. For PCDD/F and metals, it is periodic only. 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.

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 and the frequency of sampling. 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.

a. Kiln dust, NOx, SOx and CO (BATC 32c):

The kiln releases, A1 and A2, have been monitored continuously for particulates since 2006, when permission was given for kiln 2 to burn a WDF. As this permission is being removed with this variation, this kiln will no longer fall under IED chapter IV. From the compliance date (9 April 2017), we are removing the requirement for continuous monitoring and setting only periodic, to be consistent with all other UK Parallel Flow Regenerative Kilns (PFRKs), most of which do not have continuous dust monitors. The CEM will then be used as an indicative tool to ensure particulate emissions are controlled, and this requirement is included in the permit in table S3.5 as a process monitoring requirement.

The dust monitoring frequency is initially set at quarterly as there have been some exceedances of the (higher) ELV over the past year, and we would like to be confident that the new limit of 10mg/Nm³ is complied with. This frequency can be reviewed once compliance with the new lower limit is demonstrated.

The frequency of periodic monitoring for NOx, SOx and CO is retained at 6 monthly, as this is an appropriate frequency.

b. Kiln TOC, Dioxins/Furans and metals (BATC 32e, f):

The BATC description states that for periodic measurements of PCDD/F, TOC and metal emissions “*a frequency appropriate to the raw materials and fuels that are used in the process should be applied*”. Due to the nature of the raw material (high purity, washed limestone) and fuel (natural gas), we do not expect high levels of these pollutants to be emitted. This was confirmed for PCDD/F with a sampling exercise carried out after the last permit review.

IED article 14(d) requires a demonstration of compliance at least annually against permit conditions. As an ELV is being set for PCDD/F, an annual compliance check is required, so we are setting a compliance check at a minimum frequency – **annual**.

In the UK, dioxin monitoring trials have taken place at many different lime kilns and the highest concentration recorded was 0.017 ng I-TEQ/Nm³, which is only 17% of the relevant BAT AEL. Most results were much lower than this. UK plants use natural gas as a fuel and do not burn any waste materials, and so the chloride input and the risk of high dioxin emissions is minimal. A risk-based approach would suggest that frequent dioxin monitoring is not required at lime kilns in the UK, unless there is a significant change in fuel, raw materials or residence time in the critical 300°C to 400°C temperature window.

An alternative protocol for dioxin monitoring, taking into account the known risk factors leading to dioxin formation has been adopted. A dioxin and furans PCDD/F test by an approved MCERTS contractor will be carried out on one kiln of each type per site. Provided the result is well below the limit of 0.1 ng/Nm³ and the fuel type (natural gas) and stone feed type does not change and there are no significant kiln process changes (e.g. new type of burner, change in physical configuration of the kiln which affects internal kiln gas flow) then that result will stand for a maximum of four years. A report will be written confirming the “no change in operation” and issued to the Environment Agency on an annual basis. Any changes will require a new dioxin baseline year to be established.

This protocol (a combination of a baseline measurement to prove that current emissions are well below the ELV and assessment of surrogate parameters to ensure that the risk of high dioxin concentrations remains minimal) will be adequate to demonstrate compliance with the ELV, without the cost burden of annual monitoring for each kiln.

There is no limit for emissions of metals when not burning waste, so monitoring is not required. The likelihood of metals being emitted in significant quantities is low due to the nature of the process and the raw material (limestone only) and fuel (natural gas) used.

c. Monitoring for IED ch IV:

All monitoring requirements related to the burning of a WDF (was table S3.1b) are removed from the permit as these are no longer required (Operator confirmation received 23 September 2016).

d. Non-kiln dust (BATC 42):

We have applied a periodic monitoring frequency appropriate to the scale of the release, potential impacts and history of compliance:

A3 and A8 are similar in volume to the main kiln emission, hence regarded as a major release point, so we have retained 6 monthly monitoring frequency.

The remaining listed emissions >10,000 Nm³/h (A5, A6, A11, A12, A14) are set at an annual frequency, as the volume of release is <20,000 Nm³/h.

For all emissions clearly <10,000 Nm³/h, no periodic monitoring is set as these are regarded as “small sources” by BATC 32 which states that “*for small sources, the frequency of the measurements should be based on a maintenance management system*”. This includes the emission group “*all other channelled dust emissions*” and

emission points A7, A9, A10 and A13, where the requirement to monitor 6 monthly is removed completed, and a maintenance management system is now required to ensure compliance. We have retained these as listed emission points to ensure visibility of the change.

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

Summary of monitoring requirements:

Emission point	Parameter	Type of monitoring	Frequency	Reference period
A1, A2 (kilns)	Particulates	periodic	quarterly	Min 1hr
	NOx, SOX, CO	periodic	6 monthly	Min 1hr
	TOC	periodic	annually	Min 1hr
	PCDD/F	periodic	annually	6 – 8 hr
A3, A8	particulates	periodic	6 monthly	Min 30 min
A5, A6, A11, A12, A14	particulates	periodic	annually	Min 30 min
A7, A9, A10, A13	particulates	Maintenance schedule		
All other abated emission points	particulates	Maintenance schedule		

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

e. Table S3.5 Process Monitoring requirements

This table (which was Table S3.4 in V005) has been updated to remove monitoring requirements related to the burning of WDFs. It now includes the indicative use of the A1 and A2 continuous monitor for dust, following the change, through this variation, in monitoring from continuous to periodic.

Monitoring - 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, and for lime hydrating plants, with no correction for temperature, pressure, oxygen or water vapour ie “as emitted”. The Schedule 6 interpretation has been updated for this change.

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

The Operator did not request derogation from compliance with any AEL included within the BAT Conclusions as part of their Regulation 60 Notice response.

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.

If the consolidated permit contains existing improvement conditions that are not yet complete or the opportunity has been taken to delete completed improvement conditions then the numbering in the table below will not be consecutive as these are only the improvement conditions arising from this permit variation.

Completed improvement conditions

The following table lists the improvement conditions contained with permit V005. These have been deemed complete and are therefore being removed from the permit.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC1	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 <10mg/m ³ for bag filters, or <10 – 20mg/m ³ when using wet scrubbers, averaged over the sampling period (spot measurements for at least half an hour), by the target date of 30 th June 2014. The plan will have a prioritised approach for reducing particulate releases from these sources, and will be based on consideration of costs and benefits of all relevant options and using options appraisal methodology H1 or equivalent.	Deemed complete 2 Nov 2013
IC2	The Operator shall carry out an exercise, agreed in writing with the Environment Agency, to characterise the releases of NOx, CO and SO ₂ in the exhaust gases from Maerz Kilns Number 1 and 2 and submit a risk based plan describing any changes to monitoring arrangements that will be taken including consideration of installing continuous monitors, or more frequent periodic monitoring as described in the Sector Guidance Note for the Lime Sector (EPR 3.01b).	Deemed complete 2 Nov 2013
IC3	The Operator shall carry out a sampling exercise to monitor dioxins and furans from one representative lime kiln on site, and send the results of the monitoring to the Environment Agency. The results of monitoring for dioxin and furans on the kiln obtained in the previous 12 months prior to this variation may be submitted instead of carrying out this sampling exercise. The results will be used to decide whether any future monitoring is required.	Deemed complete 2 Nov 2013

New Improvement conditions

The following are improvement conditions set at this permit variation.

For justification of IC4, refer Annex 5, sections 3 and 4.

For justification of IC5, refer Annex 5, section 7.

Table S1.3 Improvement programme requirements

Reference	Requirement	Date
IC4	<p>The operator shall submit an updated site condition report to the Environment Agency, which provides a baseline report in line with the requirements of IED article 22(2).</p> <p>The revised report should:</p> <ul style="list-style-type: none"> • Include an updated Conceptual Site Model and Source Pathway Receptor assessment, to that of the version provided within the PPC application site report, and an updated Report on Potential Contamination of Ground and Surface Water from the Lime Waste Tops at Hindlow Quarry (from the version dated October 2002) including an assessment of all hazardous substances present on site; • Include the area added to the installation boundary through variation V006; • Ensure intrusive investigation and sampling includes all potential hazardous substances at the site; • Include information on the concentrations in soil and groundwater of the hazardous substances used, produced or released by the installation. <p>The updated site condition report shall be submitted for written approval by the Environment Agency.</p>	6 months from permit issue
IC5	<p>The Operator shall undertake a geochemical assessment of the impacts from lagoon water infiltration (at emission points W1 and W2) as it infiltrates through the unsaturated zone, and any impacts / potential impacts upon the quality of on-site borehole water (groundwater abstraction) and underlying groundwater. The assessment shall include, but not be limited to, either of the following:</p> <ul style="list-style-type: none"> • groundwater quality sampling with analysis for pH, conductivity, major ions, hardness, alkalinity and nitrate, OR • review equivalent data (not older than 2010) with a minimum of 6 samples taken over a 12 month period and including samples from each season of the calendar year, for the parameters listed above. <p>A report detailing the findings of the assessment shall be submitted to the Environment Agency. If the assessment indicates that an impact on groundwater may occur, then the report shall propose further improvement works (such as hydrogeological risk assessments and/or a scheme to treat lagoon water) to be implemented within 12 months (or other timescale as proposed within the report), and shall seek written approval from the Environment Agency.</p>	18 months from permit issue

Annex 4: Advertising and Consultation on the draft decision

No public consultation is required on this permit variation as the Operator has not requested a derogation / nor is this site considered a Site of High Public Interest.

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

1. Removal of permission to burn RFO

Permission to burn Recovered Fuel Oil (RFO), a Waste Derived Fuel, in kiln 2 was given to Lhoist in 2006. This resulted in the inclusion of regulatory conditions specific to an Installation which co-incinerates waste (in order to comply with Annex IV of the industrial Emissions Directive). The material has not been used as a kiln fuel since 2009 and remaining stocks have recently been disposed of as there is no intention to use it again. We are therefore, with the agreement of Lhoist, (refer response to RFI received 23 September 2016) removing the conditions associated with the burning of this WDF. These conditions implement IED chapter IV requirements, and removing them will make no practical difference to the operation, monitoring and reporting carried out at site, as they are not relevant when burning the fossil fuels natural gas (the predominant fuel) or kerosene.

All conditions and requirements relating to the burning of WDFs are removed by this variation (refer to previous variation EPR/BK9571IU/V005 for sight of these):

- conditions removed: 2.3.3; 2.3.6 - 2.3.15; 3.5.5; and 3.5.6;
- Table S1.2 Operating Techniques updated; to remove sections of the application for variation V002, received 25/5/06, (parts C2.1, C2.2, C2.5 and C2.6) as this covered only operating techniques relevant to the co-incineration of waste.
- Table S2.1 updated (RFO specification removed);
- Table S2.2 removed;
- Table S3.1b removed (ELVs for emissions to air for A2 when burning RFO);
- Table S3.4 revised (process monitoring related to burning a WDF removed);
- Table S3.5 removed (analysis of kiln 2 dust for metals etc when burning RFO).
- Schedule 4 Reporting - requirements are reduced to remove those related to burning a WDF.
- Schedule 6 updated with removal of interpretations which relate to WDF burning.

2. Change of Installation name

The installation name has been changed from Hindlow Lime Works to **Brierlow Lime Works**, in order to minimise the potential for confusion with its neighbour, Hindlow Quarry Lime works, operated by Tarmac Ltd.. The site will remain "Hindlow works" on OS maps.

3. Change of Installation boundary (IB) and Schedule 6 Site Plan

The V005 IB, dating from 2003 when the site was permitted under PPC, included the kilns, associated plant, kiln feed preparation and stockpiles however the supplying quarry itself was excluded. This is not consistent with all other CLM sector sites where the supplying quarry is included within the IB where kilns are located in or next to the quarry. The quarry clearly serves the kilns, as evidenced by the response to BATC35, and therefore should be part of the installation. We have therefore re-drawn the IB to include the area of working quarry and haul road, and a new site plan is presented in Schedule 6.

Improvement condition IC4 requires the PPC site condition report to be updated to include the new area of installation.

This extension of the installation will not result in a change in regulation of the site. The OPRA score will not change; the area has been measured (using an Easimap tool) at 46.5ha, below the Rule 6 threshold of 50ha.

4. Improvement condition IC4 for work on site condition

Question 4 of the Regulation 60 Notice requested provision of information relating to site condition, to ensure that the requirement of the IED are fulfilled:

4. *Where your activity involves the use, production or release of a relevant hazardous substance (as defined in Article 3(18) of the Industrial Emissions Directive), carry out a risk assessment considering the possibility of soil and groundwater contamination at the installation with such substances. Where any risk of such contamination is established either*
 - prepare and submit a baseline report¹ containing information necessary to determine the current state of soil and groundwater contamination*

OR

- provide a summary report referring to information previously submitted where you are satisfied that such information represents the current state of soil and groundwater contamination,*

so as to enable a quantified comparison to be made with the state of soil and groundwater contamination upon definitive cessation of the activity.

Where you have concluded that there is no risks of soil and groundwater contamination provide a copy of the risk assessment.

The Operator provided a three-line summary report as part of their response to the Notice, which referred to the original application and site condition report, and proposed that this information represents the current state of soil and groundwater contamination.

This summary report, along with the original PPC application data and reports, has been assessed by a technical expert in the Groundwater and Contaminated Land team. A number of issues were identified:

- the original assessments did not account for all hazardous substances present on site, and neither did the intrusive investigation and sampling.
- Lack of available data on concentrations of hazardous substances in soil and groundwater.

The information available to us currently does not provide an adequate baseline report of the site.

We are therefore setting an improvement condition IC4 to require Lhoist to submit an updated SCR work to ensure that a baseline is established (refer section 4 for IC). Once the IC is completed, the information will fulfil the IED requirements for Brierlow Lime works. This IC combines the work required to comply with IED with the work required to establish the baseline of the area covered by the installation boundary extension.

5. 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.

The reference for the Mining Waste permit relating to this site is included in the "Other Permits" table.

6. Table S1.1 Activities

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 Brierlow lime works Table S1.1, specifically:

- Amended the kiln activity description to reflect EPR Sch 1 activity wording,
- 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.

Note that activity numbers (AR1, AR2 etc) were already included and we have only added numbers to activities not previously included. 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, AR2	Section 3.1 Part A(1)(b)	Producing lime in parallel flow regenerative kilns ("PFRK") no. 1 and no. 2, each with a production capacity of >50 tonnes per day.	From kiln feed stockpile through screening and feed of limestone into kilns along with fuel, through to intermediate storage of quicklime product prior to further processing or despatch by road, and associated releases to air from stacks and process vents.
AR3	Section 3.1 Part B (c)	Slaking lime for the purpose of making calcium hydroxide.	From the receipt of quicklime to the production of calcium hydroxide by hydration (including the addition of any additives), the associated releases to air from the stacks and other process vents, and product storage.
Directly Associated Activity			
AR4	Raw materials storage and handling	Raw materials receipt, preparation and bulk storage	From the recovery of raw materials from the quarry floors through transport, storage, crushing, washing and screening to bulk storage in kiln feed stockpile.
AR5	Fuel storage and handling	Delivery and bulk storage of standby fuel	Offloading of kerosene and bulk storage for use as standby fuel.
AR6	Quicklime processing and grinding	Crushing and grinding of calcium oxide and calcium hydroxide.	Crushing and grinding of lime products, including associated air releases
AR7	Lime product storage, bagging and bulk loading for despatch	Storing, bagging and loading from designated plant	Storage of quicklime and hydrated lime products in silos, bagging and bulk loading into tipper trucks and road tankers for despatch offsite.
AR8	Water discharges to controlled water	Discharge of site drainage water from settlement lagoons	Collection and treatment of site surface water and washing plant drainage through to discharge to groundwater by infiltration from settlement lagoons
AR9	Milk of lime production	Blending and suspension of hydrated lime in water	Blending and suspension of hydrated lime in water, including releases to air, through to product storage and despatch.
AR10	Waste handling	Thickening of clay waste from limestone washing plant	Processing of wash water using settlement, flocculent dosing and filter presses through to storage of clay cake

The Limit of activity for AR1 and AR2, the lime kilns (the primary activity), has been updated and combined into one row, and use of RFO in kiln 2 removed. For four activities (AR3 AR6 AR7 AR9), defined limits have been included to replace "utilising on-site equipment". The Limits also reflect the extension of the installation boundary to include the quarry.

The following DAAs are now included in the table:

AR4 Raw materials storage and handling: In accordance with RGN2 Appendix 2, the crushing, screening and washing of kiln feed material is not part of the Stationary Technical Unit (STU) because there is a large stockpile of kiln feed allowing the kilns to run independently for a period without the raw materials preparation. Consequently AR4 is included to cover preparation of raw materials as a DAA in its own right.

AR5 fuel storage and handling: this covers handling and storage of kerosene, the standby fuel. Natural gas is not stored and its use (within the kilns) is covered by the limits of specified activity for AR1 and AR2.

AR10 Waste handling: the only process wastes arising at the installation are small quantities of lime (eg spillage) and clay cake. The limestone preparation involves washing to remove clay. This produces an aqueous waste stream which is thickened in a settling tank, dosed with flocculant and pressed in a filter press to produce clay cake. This activity was not specifically included within table S1.1 previously. It is appropriate to include the washwater and clay thickening process within the installation; although most wastewater is reused, some drains into the settlement lagoons.

The cake is ultimately mixed with (waste) lime to stabilise it before the material is used in restoration. This mixing activity is covered by a Mining Waste permit (EAWML 102729), hence regulation of the wastes by this permit only covers production of the clay cake, to its bulk storage ready for mixing.

7. Table S3.3 Discharges to Groundwater and IC5

Table S3.3 has been updated to include the NGRs of the water emissions W1 and W2, two lagoons taking surface water drainage from the kiln plant and process areas (but not the quarry). They are designed as soakaways and the permit specifies monitoring for pH and visible oils/greases, however no limits are included. Similar sites in the area have water discharges with pH limits. This area of Derbyshire is fissured limestone with few surface water bodies, and the hydrogeological regime of the area has not been proven.

Submitted monitoring data indicates that the pH of the lagoon water is high, typically pH 11–12. The larger lagoon, W1, is in the middle of the site and was viewed on a site visit in Aug 2016. It contained a significant quantity of lime washed off the site area.

In May 2007, Lhoist submitted a report in response to an improvement condition, condition 9.10: "*the Operator shall carry out an audit to identify the causes of the high pH of the water being discharged from emission points W1 and W2. The Operator shall then review BAT for preventing or minimising any such causes. A report outlining the assessment, its conclusions, proposed measures to address any issues and timescales for implementation should be submitted to the Agency*". This report has been reviewed as part of this permit review. It states that the impact of elevated pH levels observed within the lagoons is considered to be insignificant,

since measured pH levels of abstracted water from the on-site borehole are around pH7.8.

An EA groundwater technical expert has reviewed groundwater data for the area, and has recommended that a geochemical assessment is carried out using recent data, to identify whether there is a likely impact on groundwater of the discharge of high pH water. We have therefore included an improvement condition (IC5) within this variation for a geochemical assessment (see Annex 3 for IC). Should the assessment identify that an impact is possible, further work, such as a hydrogeological risk assessment, should be undertaken or the Operator should propose work to treat water and reduce the pH of the water discharged. If the report concludes that there is no impact, water monitoring requirements can be removed from the permit and BATCs 40 and 41 enforced to minimise fugitive dust emissions.

8. Schedule 6 Interpretation

Schedule 6 has been revised to remove interpretations which are no longer relevant, such as those relating to the burning of WDFs, and introduce new ones, such as the Industrial Emissions Directive (IED). The standard tables for TEF Schemes for dioxins and furans has been retained as monitoring for PCDD/F is now required for lime works regardless of whether a waste-derived fuel is burned. The monitoring reference conditions are updated in line with the BAT conclusions (refer Key Issues section)

9. Other permit changes:

IED standard conditions: this variation includes the latest IED permit template conditions: 1.4.1 (waste), 3.1.4 (soil and groundwater monitoring) and 4.3.1 (notifications)

Table S3.2: emission A9, which was listed as a scrubber, is now a bag filter, so we have amended the permit to reflect this.

Table S3.4 Annual limits: this table is retained in line with the approach for other CLM sector permits, however no limits are set.

Sch 4 reporting: Reporting of water emissions monitoring data (generally removed as a reporting requirement from CLM permits during the 2010 permit review) is retained to enable an overview of lagoon pH pending completion of IC5. This reporting requirement should be reviewed once IC5 is closed.