

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)

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

The Permit number is: EPR/BL3269IH
The Operator is: Steetley Dolomite Ltd
The Installation is: Whitwell Quarry Lime works
This Variation Notice number is: EPR/BL3269IH/V007

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 Cement, Lime and Magnesium Oxide industry sector published on 9th April 2013 in the Official Journal of the European Union. In this decision document, we set out the reasoning for the consolidated variation notice that we are issuing.

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 Manufacture 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

Glossary of terms

The Mixing Rule

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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
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Glossary of acronyms used in this document

AEL	Associated Emission Level
BAT	Best Available Technique(s)
BATc	“Best Available Techniques (BAT) conclusions” for the production of cement, lime and magnesium oxide – published 9 April 2013
BAT-AEL	BAT Associated Emission Level
BREF	BAT Reference Note
CBA	Cost Benefit Analysis
CEM	Continuous emissions monitor
C	Carbon (chemical element)
Cd	Cadmium (metallic element)
Cl	Chlorine (chemical element)
CV	Calorific value
DAA	Directly associated activity – Additional activities necessary to be carried out to allow the principal activity to be carried out
DBD	Dead Burnt Dolime (product name ‘Dolopel’)
DD	Decision document
EAL	Environmental assessment level
ELV	Emission limit value
EMS	Environmental Management System
EPR	Environmental Permitting (England and Wales) Regulations 2016 (SI 2016 No. 1154) as amended
ESP	Electro static Precipitator
EWC	European waste catalogue
F	Fluorine (chemical element)
FSA	Food Standards Agency
GCV	Gross Calorific Value
Gp I	Group I metals: mercury (Hg)
Gp II	Group II metals: Cadmium (Cd) and Thallium (Tl)
Gp III	Group III metals: Antimony (Sb), Arsenic (As), Chromium (Cr), Cobalt (Cr), Copper (Cu), Lead (Pb), Manganese (Mn), Nickel (Ni) and Vanadium (V)
Hg	Mercury (metallic element)
IED	Industrial Emissions Directive (2010/75/EU)
I-TEF	Toxic Equivalent Factors set out in Annex VI Part 2 of IED
I-TEQ	Toxic Equivalent Quotient calculated using I-TEF

LRK	Long Rotary Kiln
NCV	Net Calorific Value
NOx	Oxides of nitrogen (NO plus NO ₂ expressed as NO ₂)
NPV	Net Present Value
PAH	Polycyclic aromatic hydrocarbons
PC	Process Contribution
PCB	Polychlorinated biphenyls
PEC	Predicted Environmental Concentration
PHE	Public Health England
PRK	Preheater Rotary Kiln
RDF	Refuse derived fuel
S	Sulphur (chemical element)
SAC	Special Area of Conservation
SD	Sintered Dolime (product name 'Dolofrit'),
SDF	Solvent Derived fuel
SDL	Steetley Dolomite Limited, also known as Lhoist Steetley Dolomite Ltd.
SGN	Sector guidance note
SNCR	Selective non-catalytic reduction
SPA(s)	Special Protection Area(s)
SSSI(s)	Site(s) of Special Scientific Interest
TAL	Tarmac Aggregates Limited (other operator for this multi-operation installation)
TEC	Thermal Energy Consumption
TEF	Toxic Equivalent Factors
TGN	Technical guidance note
TI	Thallium (chemical element)
TOC	Total Organic Carbon
ULCD	Ultra Low Carbon Dolime (product name 'Dolomet'),
WDF	Waste Derived Fuel
WFD	Waste Framework Directive (2008/98/EC)
WID	Waste Incineration Directive (2000/76/EC) – now superseded by IED

The Mixing Rule

From the IED, Annex VI “*Technical provisions relating to waste incineration plants and waste co-incineration plants*”

This is a key legislative aspect that has been used to set emission limit values for this dolomitic lime works and is referred to throughout this decision document.

PART 4

Determination of air emission limit values for the co-incineration of waste

1. The following formula (mixing rule) shall be applied whenever a specific total emission limit value 'C' has not been set out in a table in this Part.

The emission limit value for each relevant polluting substance and CO in the waste gas resulting from the co-incineration of waste shall be calculated as follows:

$$C = \frac{V_{\text{waste}} \times C_{\text{waste}} + V_{\text{proc}} \times C_{\text{proc}}}{V_{\text{waste}} + V_{\text{proc}}}$$

V_{waste} : waste gas volume resulting from the incineration of waste only determined from the waste with the lowest calorific value specified in the permit and standardised at the conditions given by this Directive.

If the resulting heat release from the incineration of hazardous waste amounts to less than 10 % of the total heat released in the plant, V_{waste} must be calculated from a (notional) quantity of waste that, being incinerated, would equal 10 % heat release, the total heat release being fixed.

C_{waste} : emission limit values for waste incineration plants set out in Part 3

V_{proc} : waste gas volume resulting from the plant process including the combustion of the authorised fuels normally used in the plant (wastes excluded) determined on the basis of oxygen contents at which the emissions must be standardised as set out in Union or national law. In the absence of legislation for this kind of plant, the real oxygen content in the waste gas without being thinned by addition of air unnecessary for the process must be used.

C_{proc} : emission limit values as set out in this Part for certain industrial activities or in case of the absence of such values, emission limit values of plants which comply with the national laws, regulations and administrative provisions for such plants while burning the normally authorised fuels (wastes excluded). In the absence of these measures the emission limit values set out in the permit are used. In the absence of such permit values the real mass concentrations are used.

C: total emission limit values at an oxygen content as set out in this Part for certain industrial activities and certain polluting substances or, in case of the absence of such values, total emission limit values replacing the emission limit values as set out in specific Annexes of this Directive. The total oxygen content to replace the oxygen content for the standardisation is calculated on the basis of the content above respecting the partial volumes.

All emission limit values shall be calculated at a temperature of 273,15 K, a pressure of 101,3 kPa and after correcting for the water vapour content of the waste gases.

1 Our decision

We have decided to grant 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 decision we have decided to grant the Operator's request for a derogation from the requirements of BAT Conclusions 47, 51 and 53 identified in the production of Cement, Lime and Magnesium Oxide BAT Conclusions document. The way we assessed the Operator's request 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 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 25 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.

Suitable further information was provided by the Operator on 2 July 2015 and 22 December 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, and issued further information requests on 22 May 2015 and 29 September 2016. A copy of each further information requests was 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 by email dated 26 March 2018. We made a copy of this information available to the public in the same way as the responses to our information requests.

We have consulted on our draft decision from 16/08/2018 to 14/09/2018. A summary of the consultation responses and how we have taken into account all relevant representations is shown in Annex 4.

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 the Consolidated Variation Notice 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 (BSI certificate number EMS91946).
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	SDL have outlined a number of BAT techniques which they employ to reduce/minimise noise emissions. These include enclosure of noisy operations, soundproofed buildings, use of bunding and tree planting as natural noise barriers, and noise suppression on the portable industrial vacuum units. We accept that BAT is in place for noise, however a future audit to ensure BAT for noise aspects is employed and covered by the EMS is recommended, as there have been noise issues at the site.
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 are taken into consideration, such as temperature and pressure, to monitor and maintain smooth and stable operations. The kilns use two solid fuels (coal and petcoke) and two WDFs, one solid (rubber crumb) and one a hazardous liquid (SDF). In their response, SDL have indicated that they have identified additional improvements to the delivery of fuels to the kilns, and have been running a project to improve fuel delivery systems and automation controls, with the changes expected to be in place by April 2017. An improvement condition IC13 has been set to require the Operator to report on the improvements made, as these should now be in place. Refer also Annex 3.
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 raw material is dolomitic limestone extracted from the adjacent quarry by Tarmac Aggregates Ltd. Specific sources of feed stone are targeted within the quarry based on sample analysis results and feed stone is controlled by regular quality checks to ensure that kiln feed quality is maintained. There is no alternative to this stone and it cannot be supplemented.

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32	<p>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.</p>	CC	<ul style="list-style-type: none"> a. all appropriate process parameters are measured and used for kiln control and to demonstrate stability, including temperature, pressure, oxygen and flow rate. Primary and total airflows are also monitored and checked via internal balances/audits. b. Consistent quality control procedures are applied to ensure homogenous raw material mix by the use of performance monitoring against targets for each process stage. Feed and fuels are controlled and delivered via calibrated feed devices. SDL are implementing a project to upgrade the automatic fuel delivery system to improve the accuracy and control of fuel feed (see response to BATC30). SDL sample and test the raw material and fuels to ensure they meet the relevant specification. Excess oxygen is monitored and checked. c. Dust, NOx, SOx, and CO emissions are all measured continuously using MCERTS-certified analysers which are calibrated to the standard BS EN14181 by an accredited testing organisation. There is no monitoring of ammonia as SNCR is not utilised. d. Wastes are co-incinerated and emissions of HCl and HF are continuously monitored. To date, the permit has contained daily average limits for HCl and HF with a requirement for continuous monitoring when operating with and without burning wastes. The requirement for continuous monitoring of HCl and HF is retained, although the HF limits for operating without WDFs are removed (see BATc 51). e. The permit has contained a requirement for continuous monitoring of TOC with a daily average limit when operating with and without wastes. f. PCDD/F and metal emissions are sampled 6 monthly, in accordance with permit requirements. g. Dust emissions from the coal milling plant are monitored annually, as a permit requirement. As part of the permit review, we have considered all dust emission points for listing in the permit. All dust emissions >10,000 Nm³/hr will be required to have an assessment of compliance against a 10 mg/Nm³ limit to ensure compliance with BATC 32(g) and those below this threshold will have a maintenance management system. See Key Issues section 3b for the details. The monitoring requirements set in the permit will ensure that SDL are compliant.

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33	In order to reduce/minimise thermal energy consumption, BAT is to use a combination of the listed techniques.	CC	SDL utilise a number of techniques to minimise energy consumption, including: process control optimisation; continuous monitoring of key parameters to ensure smooth and stable kiln operation; modern, gravimetric solid fuel feed system with dynamic classifier; maintenance and use of optimised size fraction of feed stone. Daily reviews of kiln performance are carried out which highlight potential issues with equipment or processes. SDL state that the thermal energy consumption (TEC) is 9 – 10 GJ/t for LRK W1, slightly above the LRK BAT-AEL of 6.0 – 9.2 GJ/t due to the high temperature products made on this kiln. The TEC for W2 is 5 – 6 GJ/t, at the lower end of the BAT-AEL range of 5.1 – 7.8 GJ/t for PRKs.
34	In order to minimise electrical energy consumption, BAT is to use one or a combination of the listed techniques.	CC	SDL use process optimisation and energy management techniques, including optimising feed stone size to minimise electrical energy usage. The power used by key pieces of equipment are either monitored daily or have their own separate meter. Where possible, drive motors are replaced with modern equivalents with variable speed inverters.
35	In order to minimise limestone consumption, BAT is to use one or a combination of the listed techniques	CC	Limestone quality is controlled (see BATC no. 31) with specific quarrying, and stone which is not suitable for calcining is sold as aggregate by Tarmac Aggregates. The rotary kilns have a stone range of 5 – 50 mm and both plants have equipment which ensures that the best stone size for the current product is selected.
36	In order to prevent/reduce emissions, BAT is to carry out a careful selection and control of fuels entering the kiln	CC	<p>Fuels used are non-renewable (coal, petcoke) and waste derived (tyre derived, solvent derived), and the choice is dependent on the product being manufactured. Dead burnt dolime uses only petcoke, due to stringent customer quality requirements, and ULCD uses coal, SDF and TDF. Low sulphur, low chlorine and low ash fuels are sourced. All fuels are sampled and tested externally on a monthly basis, to confirm quality and conformity to the specification.</p> <p>While it is clear that SDL are compliant with BAT, there was a breach of an HF limit in May 2014 due to a trial of a new low sulphur petcoke which was shown to have a higher Fluorine content. An audit of their procedures for assessing new sources of an existing fuel is recommended to confirm compliance.</p>
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	Two WDFs are used. SDL control key characteristics of the waste (eg SDF Cl must be <1.5%). Fuels are sampled weekly/monthly and sent for independent analysis, including S, C, Cl, NCV, GCV, Ash and heavy metals.

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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	The listed techniques are in place; both kilns are fitted with low NO _x multichannel burners, designed for burning multiple and WD fuels. W2 also has a low primary air burner. Wastes are fed in continuously and using a fully automated system which will not allow WDFs to be used during periods of start-up/shut down and if the temperatures are not high enough.
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	SDF is a hazardous material. Safety management is employed in its use.
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	Techniques, such as enclosure of grinding/screening processes, cleaning regimes and maintenance are in place. SDL stated in their response that improvements could be made, notably against techniques a, b, and j. Improvements have been made since the initial Reg 60 response was received. See Key Issues section 1a below, and associated improvement condition.
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	Techniques, such as use of product silos with LEV systems, cleaning regimes and use of a water bowser and road sweeper to minimise dust from site roads, are in place. At the time of the Reg60 submission, SDL stated that BAT was not achieved and improvements had been identified with compliance due by April 2017, (with some overlap with BATC 40). An improvement condition IC17 is set to require reporting on improvements. See Key Issues section 1b below, and associated improvement condition.
42	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 BAT-AEL <10 mg/Nm ³ (fabric filters) or <10-20 mg/Nm ³ (wet scrubbers) (daily avg or periodic)	CC	Fabric filters are applied to channelled dust emissions such as coal mills, crushing plants, conveyor systems and storage silos. 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/m ³ , and frequency of inspection and maintenance will be increased in order to maintain compliance with the <10mg/Nm ³ BAT-AEL. We have applied the BAT-AEL as a limit of 10mg/Nm ³ in the permit for all non-kiln channelled dust emissions. This includes the 6 emissions with a volumetric flow rate >10,000 Nm ³ /hr, now added to table S3.2 as emission points A5 – A10 , and small

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			<p>source emissions (<10,000 Nm³/hr) included as the group “<i>All other channelled dust emissions abated by filters</i>”.</p> <p>Refer to Key Issues section, para 1c 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 <10 mg/Nm³ (fabric filters) or <20*mg/Nm³ (ESP) (daily avg or periodic) *for high resistivity dust, the BAT-AEL is <30mg/Nm³</p>	CC	<p>W1 kiln is fitted with an ESP for dust abatement, with a previous limit of 90mg/m³ (daily average) for all products and when burning WDFs, a half hourly average limit of 135mg/m³. The Operator has supplied a report to demonstrate that dust resistivity is high, and we accept the case for the 30mg/Nm³ BAT-AEL to be applied. With the current ESP, emissions are at or above 30 mg/m³. Process improvements and an upgrade of the ESP will enable the new dust limit to be met before the compliance date. Refer Key Issues section, para 2d, for full explanation of all dust limits set.</p> <p>W2 is fitted with a bag filter, installed 2013, which is performing well. The emission limit is already 10 mg/m³, the BAT-AEL. The half hourly average limit when burning waste is reduced to 20mg/Nm³.</p>
44	<p>In order to reduce the emissions of gaseous compounds (i.e. NO_x, SO_x, 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</p>	CC	<p>Feed stone and fuels used in the process are carefully controlled. Feed stone must conform to a specification and may be rejected if certain parameters are too high. Fuels are limited on sulphur and chlorine, with WDFs having a specification limiting more parameters. The burners are multi-channel and designed to take liquid and solid fuels, including WDFs; they are classed as low NO_x. The installation of a bag filter has resulted in a reduction of various parameters in the emissions, notably SO₂, and the ducting and gas flows are monitored to ensure conditions are optimised for good performance.</p>
45	<p>In order to reduce the emissions of NO_x from the flue-gases of kiln firing processes, BAT is to use one or a combination of the listed techniques</p> <p>BAT-AEL <200-500* mg/Nm³ (LRK, PRK)</p> <p>*higher levels than the upper end of the range may be associated with the production of sintered dolime</p>	CC	<p>Appropriate techniques are in place on kiln W1 to minimise NO_x emissions. Note that the BAT-AELs for NO_x do not apply on either kiln or for any product; ULCD is not covered by the BATCs and a footnote to table 9 exempts the production of sintered dolime.</p> <p>W1: SDL use only petcoke to produce Dead Burnt Dolime (DBD), a very high temperature, two-pass process, and a combination of coal, petcoke and WDFs for ULCD and sintered dolime. Natural gas is not available at the site. Flame temperature and profile are controlled accurately using the adjustable low NO_x multichannel burner, to ensure efficient combustion and minimisation of thermal NO_x. SDL are investigating whether there are other burner options to allow a reduction in primary air. As W1 is a LRK, air staging and SNCR are not applicable. Although BAT techniques are in place,</p>

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			<p>NOx emissions are significantly higher than the BAT-AEL range due to the thermal NOx generated from the high temperatures.</p> <p>W2 kiln is not considered here as it is outside the scope of the BATc.</p> <p>Refer Key Issues section, para 2e, for full explanation of all NOx limits set.</p>
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 only applicable to Lepol rotary kilns.
47	<p>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</p> <p>BAT-AEL <50-400 mg/Nm³ (LRK) [and <50-200 mg/Nm³ (PRK)]</p> <p>Footnote: for the production of sintered dolime using the double-pass technique, SOx emissions might be higher than the upper end of the range.</p>	<p>N/A</p> <p>FC</p>	<p>Emissions of SO₂ have always been high from both kilns, however emissions have reduced through the application of BAT, such as using fuels with a lower Sulphur content. The conversion of W2 kiln to a preheater kiln (PRK) with bag filter has significantly reduced SO₂ emissions from this kiln.</p> <p>W1: for ULCD and DBD (Dolopel), the BAT-AELs do not apply. Because SOx emissions have reduced, we have set lower SO₂ limits to remove headroom. The only product with an applicable BAT-AEL is sintered dolime (Dolofrit) and the emissions of SO₂ are above this BAT-AEL. SDL cannot comply with the BAT-AEL and requested a short term derogation to allow them time to secure compliance.</p> <p>For derogation details, refer Annex 2, section 1: Assessment, determination and decision where an application for Derogation from BAT Conclusions with achievable emission levels (AEL) has been requested.</p> <p>W2: Although outside the scope of the BATCs, BAT techniques are in place for W2 and SO₂ emissions will meet a limit of 200mg/m³. The previous limit of 400 mg/m³ is reduced to 200 mg/m³ to remove headroom and bring it in line with the BAT-AEL for a PRK. This limit has been proposed by the Operator.</p> <p>Refer Key Issues section, para 2f, for full explanation of all SOx limits set.</p>
48	<p>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</p> <p>BAT-AEL <500 mg/Nm³</p>	CC	<p>Appropriate techniques are in place to minimise CO emissions; raw materials have low organic content and process optimisation techniques are employed. CO emissions are well below the BAT-AEL of <500 mg/Nm³ for both kilns. This is the existing daily average limit, and will be retained on both kilns for all products. Refer Key Issues section, para 2g, for full explanation of all CO limits set.</p>

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
49	In order to minimise the frequency of CO trips when using electrostatic precipitators, BAT is to use the listed techniques	CC	W1 kiln has an ESP with a fully automated CO trip system. CO is continuously monitored. The ESP downtime during a CO trip is normally 10 – 15 seconds. W2 kiln has a bag filter so this BATC is not applicable.
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 <10 mg/Nm ³ (LRK, PRK)	CC	General primary techniques are applied; refer to BATCs 30 and 31. TOC emissions for both kilns are within the BAT-AEL range of <10mg/Nm ³ (which is also the IED Annex VI limit for Cwaste) and the existing ELV of 10 mg/m ³ (daily average) is retained for both kilns and all products. For the mixing rule calculation, as Cwaste = Cproc, the limit for burning WDFs is also 10 mg/Nm ³ . The half hour average is set at double the daily average (with WDFs) and is therefore 20 mg/m ³ .
51	In order to reduce the emissions of HCl and the emissions of HF from the flue-gas of kiln firing processes, when using waste, BAT is to use the following primary techniques HCl BAT-AEL <10 mg/Nm ³ (when burning wastes) HF BAT-AEL <1 mg/Nm ³ (when burning wastes)	CC FC	SDL restricts the levels of chlorides in all fuels, however there is chloride within the dolomite feed stone which leads to elevated levels of HCl in the emissions, above the BAT-AEL. The current ELV for both kilns and all fuels is 200 mg/m ³ . This BAT-AEL of <10mg/Nm ³ applies to the production of sintered dolime (no WDFs) on W1 kiln only, as ULCD is outside the scope of the BATCs and DBD does not involve the use of WDFs. The BAT-AEL does apply to sintered dolime (dolofrit) produced on W1 and as this cannot comply with this level of emission, the Operator requested a derogation, which we have approved. The derogated limits are the same as the previous limits; at 200 mg/Nm ³ (no WDF), and 200 mg/Nm ³ (with WDF) and ½ hourly average set at 400mg/Nm ³ . Refer to Annex 2 below for full details of consideration of the derogation An improvement condition IC16 has been added to track progress with trials and the derogation request. The existing HF limit for all fuels on both kilns is 1mg/m ³ . This limit is retained when burning WDFs however we are removing the HF limit for ULCD and SD products on both kilns when not burning WDFs. The requirement to monitor HF is required by IED chapter IV (for co-incinerators). This is in line with the permit limits pre-2011, which had no limit for HF when burning only fossil fuels.

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
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	BAT techniques are in place; the chlorine and copper content of fuels is limited where possible, and back end and cooling temperatures monitored and controlled. PCDD/F have been regularly monitored as the permit has included a PCDD/F limit of 0.1ng/m ³ for a number of years. There have been occasional exceedances of the dioxin limit on both kilns over the past few years, however SDL state that compliance is possible. The previous limit is retained for all products and fuels, including for fossil fuels only, as it is in line with the BAT-AEL and the directly applicable limit in IED Annex VI for co-incineration plants. Monitoring will continue to be 6 monthly.
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 Hg BAT-AEL <0.05 mg/Nm ³ Cd & TI BAT-AEL <0.05 mg/Nm ³ Gp III metals BAT-AEL <0.5 mg/Nm ³ All apply only when burning wastes.	CC FC	BAT techniques are applied; dust removal is highly effective on W2 kiln as an efficient bag filter is installed, and improvements are being made to the W1 ESP to reduce dust emissions. A quality assurance system is in place for fuels, notably the waste derived fuels, with samples taken by SDL for independent analysis. The SDF has specification limits for gp III metals, mercury, copper and lead. The BAT-AELs for metals only apply to one scenario, however, as historically the permit has always included limits for these metals due to the metal content of the raw material and fuels, we have retained limits for all operating scenarios. For discussion on metal ELVs, see Key Issues section 2i. The BAT-AEL which applies; for producing sintered dolime when burning wastes, is 0.5 mg/Nm ³ for gpIII metal emissions. The Operator requested a derogation from this limit. We have approved this derogation. Refer to Annex 2 below for full details of consideration of the derogation.
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; W1 and W2 kiln filter dust is sold on as a byproduct where possible. It is deposited into the quarry void under a Mining Waste permit where this is not possible. The quantity of material being tipped has reduced by >50% over the past 5 years.

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 with a volumetric flow >10,000 Nm³/h are listed individually in permit table S3.2, 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 a group “*all other channelled dust emissions abated by filters*”.

Section 1 covers Non-kiln emissions, section 2 covers kiln emission limits and section 3 covers monitoring.

1. Non-kiln dust emissions: BATC 40 - 42

Reducing diffuse (fugitive) dust is an area of regulatory focus because of issues with water quality in the river catchment, which is failing its Water Framework Directive objective, and historically has had issues of solids build-up in ponds downstream. Tarmac Aggregates have responsibility for the water discharges off site, and they take all surface water run-off from SDL's area, most of which is settled prior to discharge. Following some historic suspended solids limit breaches, an investigation identified that unsettled road drainage from an area around the kilns was draining direct to watercourse without settlement. Some but not all, drainage has been re-routed to achieve settlement. It is considered imperative that housekeeping at this installation is of a high standard and diffuse dust is minimised hence rigorous attention has been given to compliance with BATCs 40 and 41.

1a BATC 40 diffuse dust emissions from dusty operations. At the time of submission, SDL stated that they were not compliant but would be by April 17. Several improvements were identified and listed in the Jan15 submission:

- To fully enclose dusty operations by replacing missing/damaged roof, wall and door panels (technique a)
- Fully enclose conveyors (technique b)
- Improve product loading facilities (technique j)

Since submission of the Reg 60 Notice response, work has been carried out on site, notably maintenance of conveyor sheeting and installation of extraction and filter unit for the product loading facilities. An improvement condition is set for the operator to report on work now completed to ensure compliance with BATC 40 and identify any further work required. Refer also Annex 3.

1b BATC 41 diffuse dust emissions from bulk storage areas. There are a number of areas with potential for fugitive dust from bulk storage areas;

- a. The coal/petcoke storage area is outside on an open slope and exposed (technique a). It is not enclosed by high walls but is managed on a daily basis, with damping down during dry weather. During wet weather, rainfall run-off picks up material and in dry weather fugitive dust can be created. In damp weather, the entry speed bump is not sufficient to retain material within the area. The Operator's Surface Water Management Plan (SWMP) identifies this storage facility as having potential impacts and includes actions to investigated improvements.

- b. Product is stored in enclosed silos, and product loading facilities have recently been improved with the installation of an extraction system with bag filter. There are some raw material silos and Tyre Derived fuel is stored in a silo although there are fugitive releases when silo filling. Kiln dust from abatement is collected in enclosed skips. There are open stockpiles for feed stone however these are under the control of Tarmac Aggregates.
- c. Humidification of the coal/petcoke storage area is carried out, however this does not eradicate the potential for fugitive emissions.
- d. This technique mostly relevant to Tarmac (other permit holder of this installation)
- e. A vehicle wash is operational at the site, although SDL-related lorries don't use it. A water bowser and road sweeper are in use.
- f. A mobile vacuum system is used to clean up spillages. Where possible, internal vacuum systems are being installed in key areas.
- g. SDL state that they manage dust levels using water sprays. A water bowser and road sweeper are employed to minimise dust emissions and clean all roads at the installation (for both operators). Most roads within SDL's site are paved, and these have been extended recently, however there are still several areas of unmade road or ground used by vehicles alongside the kilns (between surfaced roads) and alongside the product loading building. These areas are used by vehicles leading to churning of the surface and drag-out of mud onto the paved areas to be picked up by other vehicles. As SDL lorries don't generally use the wheel wash, the standard of road cleanliness can be poor despite the use of roadsweepers. The area of road which still drains direct to W2 without settlement is at the back end of the kilns hence good housekeeping (and clean roads) is important.

An improvement condition IC17 is being set to ensure the Operator continues to work towards reducing fugitive dust and address the specific issues mentioned above. Refer also Annex 3. Note that the operator also has a fugitive dust management plan.

Although there has been a big improvement in fugitive dust and housekeeping standards, and BAT is essentially met, further improvements are required because of the notable vulnerability at the installation.

1c BATC 42 channelled dust emissions from dusty operations The coal mills have a bag filter unit mounted for each mill, which discharge through emission point "A3", which is actually two emission points. We have renumbered these emission to A3 and A4, and retained them as listed emission points even though the Operator has indicated that they are <10,000 Nm³/hr in size. The filters are serviced monthly and have an annual extractive test to confirm operation and performance. The current limit is 50mg/m³ and historically there have been some non-compliances with this limit, with the most recent being Dec 14 when a result of 102mg/m³ was measured. Some results have come in between 10 and 50mg/m³. A number of results are <5mg/m³, indicating that the BAT-AEL is achievable. SDL advise that frequency of inspection and maintenance will be increased in order to achieve and maintain the emissions at <10mg/m³.

There are six new listed emission points in the permit, A5 – A10, being dust emission points >10,000 Nm³/hr, and the BAT-AEL of 10 mg/Nm³ has been applied.

2. Kiln emissions BATCs 43 - 53

2a Introduction - SDL Products

The application of the BAT conclusions to SDL's processes is not straight forward due to the complexity of the suite of products made on two different kilns, and range of emission limits, many of which are product specific with exemptions of some products and parameters from the BATCs. The processes to make dolomitic lime products are different to standard lime manufacture, requiring much higher kiln temperatures, hence emissions such as NO_x, are high. The feed stone, dolomitic limestone, has a different chemical make-up than normal limestone, with higher levels of parameters such as chloride and group III metals.

There are two kilns: a long rotary kiln (LRK) with an Electrostatic precipitator (ESP) for dust abatement, and a preheater rotary kiln (PRK) with a bag filter.

The production of ultra low-carbon dolime (ULCD) is explicitly exempted from the application of the BAT Conclusions. As this is the only product made on kiln W2, this means we can set appropriate emission limits however, as the BAT-AELs are regarded as Best Available Techniques, we are applying these to W2 where appropriate and where compliance can be maintained.

Kiln	Products		WDFs	Application of BAT-AELs
	SDL name	Generic name		
W1	Dolomet	ULCD	Yes	NONE
	Dolofrit	Sintered dolime	yes	Yes but some exemptions
	Dolopel	Sintered dolime using a double pass technique, or dead burnt dolime	NO	Yes but some exemptions
W2	Dolomet	ULCD	Yes	NONE

2b Approach taken to setting Kiln ELVs:

Waste derived fuels are used in the production of two products, but not Dead Burnt Dolime. In accordance with IED chapter IV, the mixing rule (IED Annex VI part 4, and included on page 6 of this document) is used to calculate emission limits for operation with WDFs.

There are **seven** scenarios at Whitwell each requiring a different set of emission limits derived in varying ways. The following tables outline the approach used in setting emission limits for each product.

i. Product: ULCD ('Dolomet')

Background:

WDFs used,

Four scenarios (and therefore 4 sets of ELVs): kilns W1 and W2, with and without WDFs on both kilns.

ULCD exempt from BAT Conclusions, and therefore no relevant BAT-AELs

Mixing rule applied

Approach: No BAT-AELs
Generate ELVs for the "without WDFs" scenario: <ul style="list-style-type: none"> • Use previous ELV • Where excessive headroom exists, reduce ELV
Use ELVs generated for the "without WDFs" scenario as Cproc for Mixing Rule calculation (daily avg) Use IED Annex VI part 4 directly applied limits for Cd/Th, Hg and Dioxins Set half hourly avg limits as 2xdaily avg
Note: Although they don't apply, ELVs = BAT-AEL for dust (W2 kiln), CO, VOC, HF, Cd/Th, mercury, dioxins (no WDF scenario) For several parameters, the Cwaste = Cproc and limits are therefore the same for with and without waste

ii. **Product: Sintered Dolime ('Dolofrit')**

Background:

WDFs used

Two scenarios (and therefore 2 sets of ELVs): kiln W1, with and without WDFs

Mixing rule applied

Derogation requested and granted for SO₂, HCl and group III metals

Approach: Use BAT-AELs unless exempted	
Generate ELVs for the "without WDFs" scenario: Use BAT-AELs where they apply	Dust, CO, VOC, Dioxin
Where BAT-AELs don't apply (due to exemptions in BAT conclusions): <ul style="list-style-type: none"> • Use previous ELV • Where excessive headroom exists, reduce ELV 	NOx, metals HCl, HF
Use Mixing Rule to calculate ELVs for "with WDFs" using ELVs generated for the "without WDFs" scenario as Cproc Derogated limits for 3 parameters IED Annex VI part 4 directly applied limits for Cd/Tl, Hg and Dioxins Set half hourly avg limits as 2xdaily avg	Dust, NOx, (SOx), CO, HF, TOC SOx, HCl, GpIII metals Cd/Tl, Hg, Dioxins
Note: no change to ELVs for VOC, dioxins as BAT-AEL = previous ELV Although they don't apply, BAT-AEL = previous ELV for Cd/Th and mercury	

iii. **Product: Sintered Dolime using double pass technique or Dead Burnt Dolime DBD ('Dolopel')**

Background:

No WDFs used

Only one scenario (and therefore one set of ELVs): kiln W1, no WDF

Mixing rule not required

Approach:	
Use BAT-AELs where they apply	Dust, CO, VOC, Dioxins
Where BAT-AELs don't apply (due to exemptions in BAT conclusions): <ul style="list-style-type: none"> • Use previous ELV • Where excessive headroom exists, reduce ELV 	NOx, SOx, metals HCl, (HF)
Note: no change to ELVs for CO, VOC, dioxins as BAT-AEL = previous ELV Although they don't apply, BAT-AEL = previous ELV for Cd/Tl and mercury Reduction in dust ELV to BAT-AEL for high resistivity dust (30 mg/Nm ³)	

2c Summary table of previous and new emission limits:

The table presented on the following page is an overview of the previous and new limits for each scenario. Further detail is given in subsequent sections, parameter by parameter.

Mixing Rule calculations are not included within this document but are available on the public register and by request.

In accordance with the IED chapter IV and Annex VI, the kilns are deemed co-incineration plants and have half hourly average limits when burning waste, in addition to the daily average limits. (note that this differs to cement co-incineration plants, where special provisions apply; limits for burning waste are daily averages only)

		1		2		3		4		10 ELVs 5		6		7	
KILN:		W1		W1		W1		W1		W1		W2		W2	
		ULCD	with WDFs	ULCD	no WDFs	sintered dolime	with WDFs	sintered dolime	NO WDFs	DBD	no WDFs	ULCD	+WDFs	ULCD	no WDFs
		Previous	New	Previous	New	Previous	New	Previous	New	Previous	New	Previous	New	Previous	New
Dust	daily avg	90	30	90	30	90	30	90	30	90	30	10	10	10	10
	1/2 hourly avg	135	60	-	-	135	60	-	-	-	-	135	20	-	-
NOx	daily avg	2400	2400	3000	3000	2500	2400	3300	3000	4420	3000	2400	2400	3000	3000
	1/2 hourly avg	3600	4800	-	-	4275	4800	-	-	-	-	3600	4800	-	-
SO2	daily avg	2100	750	2700	950	2500	1200	3300	1530	3830	3000	2100	170	400	200
	1/2 hourly avg	3300	1500	-	-	4275	2400	-	-	-	-	3300	340	-	-
CO	daily avg	500	400	500	500	500	400	500	500	500	500	500	400	500	500
	1/2 hourly avg	1000	1000	-	-	1000	1000	-	-	-	-	1000	1000	-	-
VOC/TOC	daily avg	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	1/2 hourly avg	15	20	-	-	15	20	-	-	-	-	15	20	-	-
HCl	daily avg	200	160	200	200	200	200	200	200	200	200	200	80	200	100
	1/2 hourly avg	300	320	-	-	300	400	-	-	-	-	300	160	-	-
HF	daily avg	1	1	1	No limit	1	1	1	No limit	No limit	No limit	1	1	1	No limit
	1/2 hourly avg	4	4	-	-	4	4	-	-	-	-	4	4	-	-
Cd & Th	periodic	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Mercury	periodic	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Gp III metals	periodic	2.6	4	5	5	2.6	2.6	5.0	5.0	5.0	5.0	2.6	4	5.0	5.0
Dioxin	6 - 8 hr avg	0.1ng	0.1ng	0.1ng	0.1	0.1ng	0.1	0.1ng	0.1	0.1ng	0.1	0.1ng	0.1	0.1ng	0.1
		BAT-AELs NO		BAT-AELs NO		BAT-AELs YES		BAT-AELs YES		BAT-AELs YES		BAT-AELs NO		BAT-AELs NO	
		Mix rule YES		Mix rule NO		Mix rule YES		Mix rule NO		Mix rule NO		Mix rule YES		Mix rule NO	
ELV determination:		use Mixing rule		set own		BAT-AELs		BAT-AELs		BAT-AELs		use Mixing rule		set own	
		using scenario 2		=<=> these limits		(or WID if BAT-AEL n/a)		except:		except:		using scenario 7		=<=> these limits	
		limits as Cproc		are Cproc		except:		NOx		NOx		limits as Cproc		are Cproc	
						NOx		metals		SOx					
								HCl		metals					
								HF		HCl					
										HF					
		= BAT-AEL applies													
		= Limit to be set appropriate to process, and then used for mixing rule (if approp)		as BAT-AEL isn't applied to this parameter or for this process		the starting point for these limits is the existing permit limit									
		= directly applicable limit from IED Annex VI part 4													
		= Limit calculated using mixing rule and Cproc													
		= derogated value													

2d BATC 43 kiln dust emissions:

Kiln W1 (ESP)

Sintered and dead burnt dolime: Kiln W1 is fitted with an ESP for dust abatement, with a previous limit of 90mg/m³ daily average (all burning conditions) and a half hour limit of 135mg/m³ when burning WDFs. SDL have provided a laboratory report to support their claim that the dust is of high resistivity. We are therefore applying a limit of 30mg/Nm³ in line with the footnote of table 4.8 of the BATcs, which allows a higher limit than 20 mg/Nm³ for “exceptional cases where the resistivity of dust is high” for these two products to which the BAT-AEL applies.

ULCD: although the BAT-AEL doesn't apply to ULCD, we are reducing the dust limit to 30 mg/Nm³ in line with the other products as this level of emission is in line with BAT.

Historically, emissions at A1/1 (for Kiln W1) are at or above 30 mg/m³, which includes more recent emission data from 2017. SDL have accepted this lower limit and believe that with improved maintenance, the ESP can perform to meet the lower limit.

WDF limits (ULCD & sintered dolime): In applying the mixing rule calculation, we have used a Cwaste of 30 mg/Nm³ which is the daily average emission limit value for cement kilns, not 10 mg/Nm³, because most cement kilns utilise ESPs for dust abatement. The daily average limit for ULCD and Dolofrit is therefore also 30 mg/Nm³ when burning waste. The half hourly limit is consequently set at 60 mg/Nm³, double the daily average limit.

Kiln W2 (bag filter)

ULCD only: Kiln W2 is fitted with a bag filter, with a previous limit of 10 mg/m³ daily average (all burning conditions) and a half hour limit of 135 mg/m³ when burning WDFs. The bag filter was installed and permitted (through V006) in 2013, is performing well and achieves <10mg/Nm³. This limit of 10 mg/Nm³ will be retained, and no issues with compliance are expected.

WDF limits (ULCD only): As Cwaste = Cproc = 10 mg/Nm³, the calculated daily average limit (using the mixing rule) when using WDF for ULCD is also 10 mg/Nm³. The half hourly limit is consequently set at 20 mg/Nm³, double the daily limit, reduced from 135mg/m³. The half hour average limit applies only when burning WDFs, and was not updated through V006; this higher limit originally applied when Kiln W2 had an ESP.

2e BATC 45 NOx emissions:

The applicable NOx BAT-AEL for LRK and PRK is <200 – 500 mg/Nm³, however there is a footnote 1 to table 4.9 which states “*Higher levels than the upper end of the range may be associated with the production of sintered dolime*”. We are therefore able to set ELVs which are above the BAT-AEL range for all 3 products. NOx emissions are high due to the high temperatures of the processes, which produce significant thermal NOx. To date, the permit has always included product specific NOx limits, however we have sought to simplify where possible to reduce the complexity of limits. We have reviewed recent emissions monitoring data to assess how suitable the previous limits were and the degree of headroom.

A limit of 3,000 mg/Nm³ (no WDFs) remains appropriate for ULCD on both kilns, so we are retaining this limit, along with the calculated limit of 2,400mg/Nm³ for using WDFs.

We concluded that NOx limits for both sintered dolime products Dolofrit and Dolopel (no WDFs) can be reduced to remove headroom; to 3,000 mg/Nm³, (a reduction from 3,300 and 4,420 mg/m³ respectively). Having a consistent limit across all 3 products (no WDFs) should make this parameter easier to manage and report.

The Mixing rule calculation therefore gives a limit of 2,400 mg/Nm³ when using WDFs (ULCD and Dolofrit only). Half hourly averages are set at 4800 mg/Nm³. Although these are higher than the previous half hour limits, this does not relax environmental control which is primarily through the daily averages (which are significantly reduced for 2 products)

2f BATC 47 SOx emissions

SOx emissions have historically been high for all products at Whitwell, with ELVs of between 2,100 and 3,830 mg/m³. The conversion of one LRK (with ESP) to a PRK (with bag filter) in 2013 has significantly reduced SOx emissions from Kiln W2, and the SO₂ limit was reduced to 400mg/m³. The applicable BAT-AELs for SOx are <50 – 200 mg/Nm³ for PRK (W2), and <50 – 400mg/Nm³ for LRK (W1), however there is a footnote 2 to table 4.10 which states “*For the production of sintered dolime using the “double-pass process”, SOx emissions might be higher than the upper end of the range*”.

Kiln W1 (ESP)

ULCD: ULCD is exempt from the BATCs, and SDL have proposed a reduced SOx limit for W1. This is set at 950 mg/Nm³ (down from 2,700 mg/m³), and applying the mixing rule calculation, the limit when burning WDFs is 750 mg/Nm³ (with half hour limit of 1,500 mg/Nm³). Recent monitoring data indicates that compliance is achievable.

Dead burnt dolime: As SOx emissions during the production of DBD, which uses a double pass process, are considerably higher than the top end of the range, we are able to set an appropriate limit outside the BAT-AEL. SDL have proposed a lower limit; we have reviewed monitoring data and are setting the new limit at 3,000 mg/Nm³ (a reduction from 3,830 mg/m³).

Dolofrit: The BAT-AEL however, does apply to sintered dolime (dolofrit) produced on W1 and as this cannot comply with this level of emission, the Operator requested a derogation, which we have approved. The derogated limits are lower than the previous limits; at 1,530 mg/Nm³ (no WDF), down from 3,300 mg/m³, and 1,200 mg/Nm³ (with WDF) down from 2,500 mg/Nm³. **Refer to Annex 2 below for full details of consideration of the derogation.** The half hour limit is set at 2,400mg/m³ (a reduction from the previous limit of 4,275 mg/m³).

Kiln W2 (bag filter)

ULCD only: We have accepted the Operator’s proposal for a further reduction in the SO₂ limit to 200 mg/Nm³ (from 400 mg/m³). Applying the mixing rule, the SO₂ limit for burning WDFs is then 170 mg/Nm³ and the half hour average limit is 340 mg/m³. [note that the previous permit erroneously listed the SO₂ limit when burning WDFs as 2,100 mg/m³ although SDL operated to 400 mg/m³). Recent emissions are all <100 mg/m³ so there should be no compliance issues.

2g BATC 48 CO emissions:

The existing limit of 500 mg/Nm³ (daily average) is retained for both kilns and all products. Application of the mixing rule for ULCD and Dolofrit results in a limit of 400 mg/Nm³ (daily average) when burning WDFs. We have, however, retained the previous half hour average limit of 1,000 mg/Nm³ at the request of the Operator. Although average CO emissions are low, there can be spikes of CO when making adjustments to kiln control or fuels. CO is not a parameter of concern and daily average emissions are generally well below the limit.

2h BATC 51 HCl emissions:

The applicable BAT-AEL for HCl is <10 mg/Nm³ for both kilns when burning wastes. We are therefore able to set an appropriate ELV for **DBD**, which does not use WDFs, sintered dolime when not using wastes, as well as for **ULCD**. The BAT-AEL therefore only applies to one scenario: producing sintered dolime on W1 with WDFs. These emissions, however, cannot comply with this level of emission, and the Operator requested a derogation (see below and Annex 2).

Kiln W1 (ESP)

HCl: ULCD is exempt from the BATCs, and although SDL proposed a reduced HCl limit for W1, we are retaining the existing limit of 200 mg/Nm³ to ensure compliance. Applying the mixing rule calculation, the limit when burning WDFs is 160 mg/Nm³ (with half hour limit of 320 mg/Nm³). Recent monitoring data indicates that compliance is achievable.

Dead burnt dolime: HCl emissions during the production of DBD, which uses a double pass process are set at the same 200mg/Nm³ value as previously as no Bat-AEL applies.

Dolofrit: The BAT-AEL however, does apply to sintered dolime (dolofrit) when WDFs are used. SDL cannot comply with this level of emission (W1 only). The Operator requested a derogation which we have approved. The derogated limits are the same as the previous limits; at 200 mg/Nm³ (no WDF), and 200 mg/Nm³ (with WDF) and ½ hourly average set at 400mg/Nm³. **Refer to Annex 2 below for full details of consideration of the derogation**

Kiln W2 (bag filter)

ULCD only: Following installation of a preheater and bag filter in 2013, emissions of HCl from kiln W2 have reduced significantly. The Operator proposed a reduction in limit. We have considered performance data and are setting a limit of 100mg/Nm³ (from 200 mg/m³) when not burning WDFs. Applying the mixing rule, the SO₂ limit for burning WDFs is 80 mg/Nm³ and the half hour average limit is 160 mg/m³. These limits are half of the previous limits.

2i BATC 53 metal emissions:

We consider it appropriate to retain limits for metals for all scenarios (with and without fuels) as the permit historically has contained these limits due to the nature of the raw material and fuels through the potential for metal inputs to the kilns.

Mercury and Cadmium/Thallium: For waste-burning, there are directly applied limits for Hg and Cd/Tl emissions in the IED (Annex VI part 4, para 4.2), which are the same as the BAT-AELs ie 0.05mg/Nm³. These were also the previous limits, for burning with and without waste fuels, and are therefore retained, for both kilns and all products and fuel inputs.

Group III metals: The majority of the gpIII metal input to the kiln comes from the feed stone, SDF and petcoke, with insignificant levels from coal and TDF, and emissions of these metals tend to be higher than from conventional lime or cement kilns.

This BAT-AEL only applies to producing sintered dolime with WDFs (scenario 3) as ULCD is exempted and the BAT-AEL is only applicable when using wastes.

Compliance with the BAT-AEL is not possible for this scenario, so we have granted a derogation from the limit – **refer Annex 2.**

For all non-waste burning production, we are therefore carrying forward the limit used previously of 5mg/m³ for all products (scenarios 2, 4, 5 and 7), as historic monitoring data indicates that compliance is reliable against this limit.

For production of ULCD (both kilns) with WDFs, the Mixing Rule has been used to calculate a limit, using the limit of 5mg/Nm³ as Cproc. Note that the calculation has derived a higher limit than in the previous permit. This will not change actual emissions.

Kiln W1 (ESP)

GpIII metals: ULCD is exempt from the BATCs, and SDL have proposed retaining the existing a reduced GpIII limit for W1. This is set at 5mg/Nm³, and applying the mixing rule calculation, the limit when burning WDFs is 4 mg/Nm³ (Recent monitoring data indicates that compliance is achievable.)

Dead burnt dolime: GpIII metals emissions during the production of DBD, which uses a double pass process are set at the same 5mg/Nm³ value as previously, as no BAT-AEL applies.

Dolofrit: The BAT-AEL however, does apply to sintered dolime (dolofrit) produced on W1 and as this cannot comply with this level of emission, the Operator requested a derogation, which we have approved. The derogated limits are the same as the previous limits; at 5 mg/Nm³ (no WDF), and 2.6 mg/Nm³ (with WDF). **Refer to Annex 2 below for full details of consideration of the derogation**

Kiln W2 (bag filter)

ULCD only: We have accepted the Operator's proposal retaining the existing GpIII metals ELV. This is set at 5mg/Nm³, and applying the mixing rule calculation, the limit when burning WDFs is 4 mg/Nm³.

3. Monitoring: BATC32

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 32c-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.

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

3a. Kiln parameters - all (BATC 32c, 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 32. No changes to kiln monitoring are required in order to comply with the BATCs. The monitoring method for continuously monitored substances is updated to BS EN 14181, which is the required standard for continuously monitored emissions from a co-incinerator.

The monitoring requirement for periodic monitoring of metals, Dioxins/furans, PCBs and PAHs on kiln W1 is set at 6 monthly for each product/fuel combination (permit tables S3.1a, 3.1b and 3.1c); however we only expect 2 sets of monitoring per year to be taken (and not two or four per product per year).

3b. Non-kiln dust (BATC 32g) – permit table S3.2:

A3, A4 Coal Mills: although the volumetric release is fairly low, we are initially setting a monitoring frequency of 6 monthly due to the variability of historical emissions results. This frequency will be reviewed once three consistent compliant results have been achieved.

A5 - A8: The BAT Conclusions require a compliance check at least annually; we are setting annual monitoring for A5 – A8, as these releases are all <25,000 Nm³/hr, and 6 monthly for A9, the Pellet Plant because this release is larger (c35,000 Nm³/hr). These units have not been previously monitored by permit requirement as they weren't previously listed in the permit. The Operator has stated that all these units have been fitted with an MCERTS-compliant sample point.

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 32g. Periodic monitoring is not required to demonstrate compliance with the new 10mg/Nm³ 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.

3c. Other emissions

We are retaining the listing of the SDF tank vent A2 within the permit however as releases only occur during tank filling, we do not require any monitoring.

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 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 derogations 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 requested a derogation from compliance with the AEL values included in the following BAT Conclusion as detailed below.

The operator requested three derogations; from BAT 47 which sets a BAT-AEL for lime kiln oxides of sulphur (SO_x) emissions of <50 - 400mg/Nm³ (daily average for a Long Rotary Kiln or LRK); from BAT 51 which sets a BAT-AEL for lime kiln hydrogen chloride (HCl) emissions of <10mg/Nm³; and from BAT 53 which sets a BAT-AEL for lime kiln group III metal emissions of <0.5mg/Nm³. The derogation is time limited, to end of December 2019, two and a half years beyond the compliance date.

The basis of request criterion: Technical (the configuration of the plant make it technically difficult and costly to comply). To produce Sintered Dolime high operational temperatures are required resulting in an increased level of sulphur disassociation. The temperature requirement limits the fuel type and kiln technology. Natural gas is neither suitable nor available. There are no available techniques that could achieve BAT-AEL compliance immediately. Fitting a wet scrubbing system could guarantee compliance but would require ceasing production in the interim while the plant was designed, constructed and commissioned.

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:

- 21/11/17 – mass flow discussions
- 17/10/17 – question raised by email dated 16/10/17
- 09/05/17 – Dolime data for Europe (scale of industry)

On review and assessment of this information we have decided to grant the derogations requested by the operator in respect to the AEL values described in BAT Conclusions 47, 51 and 53, 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 technical characteristics of the plant and its current configuration meant it was not possible to comply with the relevant BAT-AEL. The way in which we have considered, assessed and determined the derogation request is detailed in the section below.

The Operator requested a derogation from BAT 47, BAT-associated emission levels for oxides of Sulphur (SO_x) from flue-gases of kiln firing processes in the lime industry. The BAT-AEL is <50-400mg/Nm³ daily average (on a long rotary kiln) as expressed in the Best Available Techniques (BAT) Reference Document for the Production of Cement, Lime and Magnesium Oxide. The derogation request was on the basis of the technical characteristics of the plant, specifically the kiln design. The derogation request from BAT 47 was on a time limited basis until the 31/12/2019 after which point the BAT-AEL will apply. Until December 2019 the operator will undertake trials using absorption techniques such as fine Dolime spray, injection of Hydrated lime or Sorbical, a move to lower sulphur fuels, and establish costs and sulphur dioxide reduction efficiencies.

The Operator has also requested a time limited derogation for BATCs 51 and 53, for hydrogen Chloride (HCl) and Group III metals BAT-AELs which has been considered together with this application. The reason the derogations were considered together is that the outcomes of the trials and decisions associated with the SO₂ compliance with the BAT-AEL will have a direct impact on the releases of HCl and Group III metals.

Assessment of the derogation request

Validity of the derogation request

- 1.1 The BAT conclusions 47; BAT-associated emission level for SO_x from flue-gases of kiln firing processes in the lime industry of <50-400mg/Nm³ daily average (for a long rotary kiln) apply to this emission. There are no valid applicability exclusions.
- 1.2 The derogation request is based on: Technical characteristics, specifically “the configuration of the plant on a given site, making it more technically difficult and costly to comply”, and “the geographical location of the installation having a bearing on costs”. Technical characteristics considered included:
 - 1.2.1 There are only 4 plants in Europe making Sintered Dolime (SD). Three of them use parallel flow regenerative kiln (PFRK) technology as opposed to Whitwell’s Rotary kiln.
 - 1.2.2 The manufacture of Sintered Dolime (SD) requires higher temperatures than other dolomitic lime products and this has a direct impact on which fuel can be used. Higher temperatures will result in a more significant volatile alkaline cycle and by consequence more SO₂ in circulation. The kiln type (long rotary) also reduces the ability for SO₂ absorption.
 - 1.2.3 BAT-AEL for SO₂ is <50-400mg/Nm³ but the Bref identifies that product, fuels, raw materials and kiln type can have an impact on releases. Replacement of raw materials is possible but infrastructure and planning permission challenges would be significant. Fuel use (including the use of wastes) is already restricted by sulphur content.

1.2.4 Existing monitoring data have shown that the under normal operation the kiln is not capable of achieving the 400mg/Nm³ BAT-AEL levels, however typical SO₂ daily emission levels during 2016 were noted at 640mg/Nm³.

1.2.5 The installation uses a locally available raw material which affects the emissions (dolomitic limestone will contain sulphur). Importing the different raw materials would require substantial infrastructure investment both on-site and off-site and increased transport costs.

1.3 The Operator has addressed all the BAT options for achieving the BAT-AEL.

1.3.1 The techniques available can be summarised as: Raw material and fuels selection with a lower Sulphur content, process optimisation to increase absorption due to contact between SO₂ and free lime or using absorbent addition techniques such as lime injection or dry flue gas cleaning with a filter, wet scrubber or activated carbon injection. Options reviewed included:

1. Replacement of raw materials
2. Replacement of fuels with lower Sulphur content
3. Process optimisation
4. Fine Dolime use (absorbent)
5. Injection of Absorbent or Hydrated Lime
6. Installing bag filter and cooling tower
7. Flue gas cleaning with a wet scrubber or activated carbon injection

Option 1, 3 and 4 were not progressed to cost appraisal
Option 2 and 5 were included in the operators preferred options
Option 6 and 7 were considered in more detail by the EA.

1.3.2 The operator options taken to Cost Benefit Assessment (CBA) are a combination of trials that consider a reduction in sulphur input associated with fuels, injection of a proprietary absorbent sorbical and the use of fine Dolime material in raw material feed. The operator preferred option is to undertake two years of trials to establish the effectiveness of absorption techniques and using this information make financial decision on the viability of continued production of the product.

1.4 Summary: The operator has supplied a valid derogation request against the BAT conclusions BATC47 and the relevant BAT-associated emission levels for SO_x of <50-400mg/Nm³ daily average. The derogation request is based on technical characteristics of the plant required to manufacture sintered Dolime products at the Whitwell site, making it more technically difficult and costly to comply. Specifically the requirement to utilise locally available raw materials, use of a rotary kiln, and consequences of operations at a high temperature that are required to produce a high quality dolomitic product. The operator has described seven relevant options for achieving the BAT-AEL and justified the screening out two options. Five options (combined in to a series of trials) were taken forward to conduct a cost benefit analysis. The operator proposes a reduction in SO₂ ELV from the current Daily ELV (2500mg/Nm³) down to 1200mg/Nm³ during the two years of the proposed trial. After which point either production would cease or BAT-AEL would be achieved.

2. Demonstrating disproportionality of costs and benefits

2.1 The operator is required to demonstrate that the costs of achieving the BAT AEL within the relevant timescale are disproportionately costly compared to the proposed option. The options described in the CBA include:

	Description	Key points
Business as usual	Continuing operations with the SO ₂ ELV of 2500mg/Nm ³	No change in demand for product assumed. Production confined to one kiln only (W1).
Proposed derogation	Reducing ELV to 1200 mg/Nm ³ . Undertake trials with absorbent and fuels sulphur reduction. Pending trial results there would be one of four outcomes: absorbent use expanded, Bag filter, Wet scrubber or stop production by 1/1/2020.	Operational data says actual releases will be in the region of 640mg/Nm ³ (compared to BATC of 400mg/Nm ³) but due to process variability the limit of 1200 mg/Nm ³ during trials is needed. This higher level has been assumed for impact assessment.
BAT-AEL	Construction and utilisation of a wet scrubbing system. Capital cost of Scrubber - £5-£6m. Compliance with BATAEL achieved on commissioning of the scrubber.	Earliest construction would be 2018 with ongoing costs. An assumption that the plant would not shut down until commissioning has been made.

2.2 The operator submitted a CBA utilising the EA tool. The outcome of the CBA is summarised below with the (–) negative values indicating that the BAT-AEL option was more costly than the proposed option. Values are in £m:

BAT-AEL option	NPV
Central	- £37.60M
Sensitivity analysis	
Lowest NPV-low damage	-£48.66M
Highest NPV – EEA damage costs	-£14.87M
Scenario analysis	
Lowest NPV – High costs, low benefits	-£37.60M -£5.37M
Highest NPV – Low costs, High Benefits	

2.3 The CBA was reviewed and an EA assessment considered that certain points should be re-modelled to consider the impacts. These points included: SO₂ emissions were significantly underestimated and remodelled with more conservative values, commissioning date for a wet gas scrubber (WGS) under the BAT-AEL option was moved to 1/1/2019 and waste disposal costs were included (residues from scrubbing). Sorbent waste costs were not included as the scale and classification are subject to the trials. If sorbent waste costs were estimated at £200k per year this did not change the outcome of the CBA significantly. The predicted lifespan of the existing quarry was included and how it relates to equipment costs and any potential write off costs.

2.4 With the changes in place the following EA derived version of CBA summary concluded:

BAT-AEL option	NPV
Central	-£8.54M
Sensitivity analysis	
Lowest NPV-low damage	-£10.59M
Highest NPV – EEA damage costs	£0.24M
Scenario analysis	
Lowest NPV – High costs, low benefits	-£10.77M
Highest NPV – Low costs, High Benefits	£2.64M

2.5 The Cost Benefit Analysis has been reviewed and is considered to support the derogation request as the costs for achieving BAT AEL is considered disproportionate compared to the proposed option.

2.6 Summary. That the operator has provided a credible argument that the increased costs linked to the technical characteristics are disproportionate for achieving the BAT AEL compared to the environmental benefits. Based on a set of assumptions, compliance with the BAT-AEL by April 2017 can be demonstrated as disproportionately costly compared to the operator derogation request. The CBA analysis also highlights the impacts of the higher energy costs/impacts of sintered Dolime production and the influence of the lifetime of the existing quarry. For example a longer quarry life may have changed the outcomes of the model. Variables such as the SO₂ damage costs, disposal costs of gypsum produced by a scrubber, classification of waste products and the time to install and commission a wet scrubber do add to the uncertainty of the model but the conclusion was that the CBA supported the proposed option.

3. Risks of allowing derogation

3.1 Allowing the proposed derogation would not cause any significant pollution or prevent a high level of protection of the environment as a whole being achieved.

3.2 The annual emissions of SO₂ from the activity based on the worst case scenario of maximum flow and ELV limit permitted would be in the region of 1387 tonnes per year and this would reduce to 222 tonnes if the BAT-AEL was met in accordance with the timeline set by the IED. The change is based on the anticipated date from the point the derogation is completed as opposed to the date the BATC came into force. The operator's proposal will mean that the operating ELV will be reduced from 2500mg/Nm³ to 1200mg/Nm³. The proposal would be the equivalent of permitted release of 666 tonnes of SO₂ vs the BATC levels of 222 tonnes per year. However, it should be noted that these mass releases are based on the worst case modelling of full production and emissions at the maximum ELV allowed.

3.3 The process contribution of Sulphur dioxide from the installation was modelled as part of the installation of a preheater tower on the W2 kiln. Modelling concluded that process contribution of SO₂ from the installation (as a whole)

would be 8.4% of the long term EAL and 26.4% of the short term EAL. Sintered Dolime production (SD) accounts for no more than 20% of production with the proposal allowing a potential significant reduction (1387 to 666 tonnes). With this reduction the impact on the environment would be positive but the overall impact from the installation is still not considered insignificant.

- 3.4 Reporting thresholds in the pollution inventory for SO₂ are 100 tonnes per year. As mentioned earlier the technical characteristics (higher temperatures) of the production of SD mean that higher SO₂ levels will always be produced compared to other dolomitic limes.
- 3.5 The proposed derogation reflects a positive drive towards achieving the BAT-AEL of <400mg/Nm³. Previous ELVs for the product were 2500mg/Nm³, with this reduced to 1200mg/Nm³ (with actual performance likely to be around the 640mg/Nm³). Trials have shown the potential for further reductions towards the BAT-AEL. Due to the restricted timeframe of the derogation (end of 2019) a maximum of 1332 tonnes of SO₂ will be produced in excess of the BAT-AEL levels
- 3.6 Summary of the environmental consequences of allowing a derogation. The releases of SO₂ from the installation as a whole are not insignificant. The proposed derogation will see a reduction in permitted releases associated with a limit change from 2500mg/Nm³ to 1200mg/Nm³. The local environment is not expected to see any significant negative impacts from deferring the application of the BAT-AEL level (400mg/Nm³) until 2020.

4. Final considerations

- 4.1 The Whitwell site is between 1&2 km away from two villages; Whitwell (population 3,900) and Creswell (population 300). There are no significant compliance issues related to SO₂, HCl or metals associated with Sintered Dolime production. There have been very limited complaints from local residents regarding the installation; those complaints generally refer to dust and noise as opposed to odours and plume grounding. There is one SAC and one SSSI both of which are unlikely to be significantly negatively impacted by the derogation proposals.
- 4.2 Additional derogation requests for HCl and Group III metals have also been made by the operator. These BATCs only apply when burning wastes. The operator requested a total of three derogations linked to the manufacture of Sintered Dolime on kiln W1. As HCl and Group III metals emissions are linked to raw material content (as is the SO₂) and the solutions proposed for SO₂ reduction will have a direct impact in reducing metals and HCl emissions they have been considered together in one derogation assessment.

Overlap with SO ₂ arguments	HCl	Group III metals
Sources of pollutant	The Dolomitic limestone is the primary source of Chlorine entering the system. Chlorine content in dolomite is very variable with an average Chlorine content of 343mg/kg but a range between 5 and 1400mg/kg.	Previous variation evidence showed that the natural raw materials were the primary source (over 89%) of Group III metals input into the kiln system.
Derogation request	Retain the existing ELV of 200mg/Nm ³ (daily average) compared to the BATC of 10mg/Nm ³ for two years until the trials are completed and the impacts of the abatement decision for SO ₂ is concluded. The addition of a wet scrubber would have an impact on HCl reduction.	Retain existing ELVs for group III metals: range from 2.6mg/Nm ³ (when burning wastes) and 5.0 mg/Nm ³ (non-waste) compared to and BAT of 0.5mg/Nm ³ . The initial request was for a derogation until the next Bref review but due to the significant changes proposed under the SO ₂ derogation the request was changed to 1/1/2020.
Impacts of fuel content	With low chlorine fuels HCl reactions are driven by the chlorine content in the dolomite, the higher calcination temperatures for (SD) and the presence of Sulphur in the kiln system.	Fuel metals content has been controlled since 2010 with average annual content reduced from just under 900mg/kg to under 600mg/kg. However, this input stream only account for around 10% of the total input.
Methods of reduction	Raw material and fuel section (with low Chlorine content), Dry absorbent injection (part of the SO ₂ trials),	Generally a reduction of group III metals has been linked to dust abatement measures. Test results from kiln W2 (with a fabric filter) has not demonstrated improvements. Additional trials and assessment on kiln W1 would be needed to establish the potential effectiveness.
Abatement costs and benefits	No damage costs are available as part of the EA CBA tool. The operator modelling based on a comparison of the cost of sorbent required to meet 10mg/Nm ³ and the damage costs estimated at £5.50 per kg concluded that at all addition rates the costs were disproportionate. Dispersion modelling indicated impacts were minor.	There are no easily available direct damage costs for the Group III metals. Information for three of the metals: Arsenic, chromium and nickel are available but range from £240,617 for As to £2,734 for Ni. The variability in feedstock would lead to a very high level of uncertainty in damage calculations. The overall metals releases from the site were modelled in 2013 with a higher production rate. Impacts were modelled as insignificant

Impact of SO ₂ derogation proposal	The proposed trials include the use of sorbent and fuel composition controls. These will have an impact on HCl reduction. If a wet gas scrubber is utilised it will have a direct effect on reducing HCl levels due to the chemical reactions with water and lime slurry	The trials will have little potential impact on the Group III metals emissions. However, the move to fit a wet scrubbing system has some potential for reduction as the operating temperature will be much lower resulting in a condensation of more volatile metals out of the air flow.
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4.3 The outcomes of the proposed derogation includes trials, potential development of a wet scrubbing system or shutting down production. All of these options will have a material effect on the releases of HCl and Group III metals. The operator has confirmed that by combining the derogation timelines and completing the assessments taking account of HCl and Group III emissions a better overall outcome can be achieved as opposed to progressing these requests independently.

5. Overall conclusion

The operator has demonstrated that the costs of achieving the BAT-AEL prior to 31/12/2019 are disproportionate compared to the environmental benefits. All suitable options have been considered and taken forward for CBA where appropriate. A CBA has been submitted to support the derogation application. An assessment of this review has been completed and found to be supportive of the proposed derogation request. The Environmental impact of allowing the derogation are considered not significant. The operator has confirmed that they will be compliant with the BATAEL by 1/1/2020 or discontinue production of this product.

We have granted the derogations requested by the Operator in respect to the BAT AEL values described in BATc.s 47, 51 and 53, subject to the following conditions in the variation:

- Set an interim SO₂ ELV when burning wastes of 1200 mg/Nm³ for the period of the derogation (a reduction from 2500 mg/Nm³). A limit of 1530 mg/Nm³ will be applied when not burning wastes.
- Retain the existing ELVs for HCl and Group III metals (when burning wastes).
- An improvement condition IC16 to provide a progress report towards meeting BATCs 47, 51 and 53 (refer Annex 3).

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. These are detailed in this annex.

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 improvements conditions deemed complete; these are being removed from the permit. The permit now contains improvement conditions commencing at number IC13.

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC1	The Operator shall submit a written report for approval by the Environment Agency on the cost and feasibility of installing temperature monitoring probes or other devices to monitor and record temperature in the kilns combustion chambers.	complete
IC2	The Operator shall produce and submit a project plan setting out how releases of particulates in the exhaust gases from the kilns will be minimised and at least reduced to <20 mg/m ³ as daily averages when using EPs or equivalent, by the target date of 30 th 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.	complete
IC3	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 mg/m ³ for bag filters 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.	complete
IC4	The Operator shall produce and submit a project plan setting out how releases of NO _x in the exhaust gases from the kilns when not burning waste will be minimised and at least reduced to <800 mg/m ³ as a daily average by the target date of 30 th 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 its equivalent.	complete
IC5	The Operator shall produce and submit a project plan setting out how releases of HCl in the exhaust gases from the kilns will be minimised and at least reduced to less than 10 mg/m ³ as a daily average by the target date of 30 th 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.	complete

IC6	<p>The Operator shall produce and submit a project plan setting out how releases of SO₂ in the exhaust gases from the kilns when not burning waste will be minimised and at least reduced to less than 400 mg/m³ as a daily average by the target date of 30th June 2015.</p> <p>The project plan will be based on consideration of costs and benefits of all relevant options and using options appraisal methodology H1 or equivalent.</p>	complete
IC7	<p>The Operator shall carry out a technical evaluation of the burning of Rubber Crumb (Tyre Derived Fuel) as a waste derived fuel in kilns W1 and W2. The technical evaluation programme shall be agreed in writing with the Environment Agency, and carried out as soon as possible following the first use of the fuel on the kiln after allowing a short period to optimise process conditions and reach stability. The technical evaluation must be completed within six months from the first use of the fuel.</p>	complete
IC8	<p>The Operator shall submit a written report for approval by the Environment Agency on the technical evaluation of the burning of Rubber Crumb (Tyre Derived Fuel) as a waste derived fuel in kilns W1 and W2. The report shall explain how the use of Rubber Crumb (Tyre Derived Fuel) 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 Rubber Crumb (Tyre Derived Fuel) and a comparison of emissions with and without using Rubber Crumb (Tyre Derived Fuel). Data obtained during routine operation prior to the evaluation, or in previous technical evaluations of other waste derived fuels in the same kiln since December 2005 may be included for comparison.</p>	complete
IC9	<p>The Operator shall confirm, in writing to the Environment Agency, each continuous emission monitor (CEM) location following completion of the installation of the pre-heater and bag filter. Each CEM location shall be illustrated and referenced on a site plan that must include detail of the proposed access to them. The location and positioning of the CEMs shall be in-line with MCERTS guidance.</p>	complete
	<p>The Operator shall produce and submit a report to the Environment Agency, summarising the findings of the QAL (Quality Assurance Level) 2 and QAL3 tests. The report will summarise the operation of the CEM's, in line with MCERTS guidance on performance and their accuracy.</p>	complete
IC10	<p>The Operator shall undertake a noise survey to verify the conclusions and assumptions made within the application (Noise Assessment - report reference R11.7047/1/PC), as stated within Appendix 03 of application EPR/BL3269IH/V006.</p>	complete
	<p>The Operator shall submit a written report to the Environment Agency detailing the findings from the survey. Where any variances occur from the detail within the application, the Operator shall provide timescales for any required improvements– for approval in writing by the Environment Agency</p>	
IC11	<p>Upon completion of the commissioning of W2 pre-heater, the Operator shall use a minimum of two periodic data sets to validate, through comparison of the predicted and actual data, the assumptions and conclusions presented within air dispersion model report AS0359 Whitwell, Air Quality Impact Assessment, dated 24/04/13 and AS0359 Whitwell, Air Quality Impact Assessment Rev 03, dated 11/10/13.</p>	complete
	<p>The Operator shall produce and submit a report to the Environment Agency detailing the outcome of the validation checks. The report must include a review of periodic monitoring data against current Emission Limit Values (ELVs), as given in Table S3.1a and S3.1b. The Operator must consider and make reference to the choice of fuel type when reviewing ELVs.</p> <p>Following completion of this condition, the Environment Agency may reduce ELVs stated within table S3.1a and S3.1b.</p>	
IC12	<p>The Operator shall verify for W2 kiln, and confirm in writing to the Environment Agency, compliance with the IED requirement of Annex VI, Part 6, Paragraph 2.2 for residence time, minimum temperature and the oxygen content of the kiln combustion gases when burning WDFs. This shall be carried out upon completion of the refurbished kiln (W2) being brought into operation and under the most unfavourable operating conditions.</p>	complete

New Improvement conditions:

IC13: compliance with BATC 30, kiln control systems

An IC has been set to require the Operator to report on improvements made to the kiln process control systems, and particularly fuel delivery systems and automation controls, in order to demonstrate that improvements mentioned in the Reg60 response have been completed (Refer BATC 30 in Annex 1).

The Operator shall provide a written report to the Environment Agency on the implementation of planned improvements to the kiln process control systems and to the fuel feeds for both kilns, as proposed in the response to Regulation 60 notice received on the 9th January 2015 and on the 2 nd July 2015.	15/07/19
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IC14: compliance with BATC 40, diffuse dust emissions from dusty operations

An IC has been set to require the Operator to report on work now completed to achieve full compliance with BATC40. Several improvements were listed in the Reg60 response submitted in Jan 15. Refer also Annex 1 (BATC 40) and Key Issues section 1a.

Provide a written report to the Environment Agency on the implementation of improvements to minimise and prevent diffuse dust emissions from dusty operations as indicated in the response, received on 9 th January 2015, to the Regulation 60 notice.	15/07/19
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IC15: assessment of bunds and other containment [Not a BATC requirement]

Although the Operator has made improvements to bunding and chemical storage generally, there are still some areas which may require attention. This IC is set to require the Operator to demonstrate that all containment measures meet current guidance, and if not, to identify improvements required.

<p>The Operator shall undertake an assessment of containment measures on site including the ability of any containment structures, such as bunds or other secondary containment, and site drainage infrastructure, to prevent pollution to surface water and groundwater from the storage of chemicals and liquids.</p> <p>A written report detailing the findings from the assessment shall be submitted to the Environment Agency. The report shall include, but not be limited to:</p> <ul style="list-style-type: none">• The requirements of Environment Agency guidance: Control and monitor emissions for your environmental permit.• CIRIA guidance: containment systems for the prevention of pollution (C736). <p>The report shall identify any required improvements, together with proposed timescales for their implementation.</p> <p>The report shall be submitted to the Environment Agency for written approval.</p>	15/07/19
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IC16: Derogation progress

An IC is set to require the Operator to report on progress towards meeting the BAT-AELs for SO_x, HCl and GrpIII metals.

<p>The operator shall submit a written report detailing the steps they have taken to reduce emissions to air of Sulphur dioxide, hydrogen chloride and group III metals (under normal operating conditions) from the Installation as part of trials proposed by the Operator through their request for derogation and agreed by the Environment Agency.</p> <p>The report shall identify the actions implemented along with an appraisal of their success including any results from trials, including but not limited to:</p> <ul style="list-style-type: none"> • changing fuel sources, • operating techniques, • reducing sulphur content in raw materials, and • any abatement methods employed. <p>The report shall include proposals for any further methods to be implemented, along with a commitment from the operator to provide a regular update to this report throughout the period of the derogation. The report shall be submitted for written approval from the Environment Agency.</p>	31/07/19
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IC17: compliance with BATC 41, diffuse dust emissions from bulk storage

An IC has been set to require the Operator to report on work now completed to achieve full compliance with BATC41. Several improvements were identified in the Reg60 response submitted in July 15. Refer also Annex 1 (BATC 41) and Key Issues section 1b.

<p>The operator shall submit a written report to the Environment Agency for approval in writing, on process improvements for preventing, and where not practicable, minimising diffuse dust releases from bulk storage areas. The report should include details of:</p> <ul style="list-style-type: none"> • improvements implemented to reduce fugitive dust from bulk storage areas (since submission of Regulation 60 response). • Improvements that have been implemented relating to BATc41 technique g; the surfacing of <u>all</u> areas used by vehicles within the installation boundary of this permit. • Methods implemented for preventing, and where not practicable, minimising the migration of fugitive emissions, such as vehicle movement on internal roads within this permit's Installation boundary. • Any other improvements that have been implemented in order to prevent, and where that is not practicable, reduce diffuse dust emissions. <p>The report shall outline any additional improvements proposed including but not limited to:</p> <ul style="list-style-type: none"> • Options for enclosing the coal and petcoke storage areas to improve containment. <p>The report shall include timescales for implementation of proposed improvements and shall be implemented on receipt of written approval by the Environment Agency.</p>	31/10/19
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IC18: site condition – baseline report [Not a BATC requirement]

An IC has been set to ensure that the Operator has a comprehensive baseline report meeting the requirements of IED. Further details are included in Annex 5

<p>The operator shall undertake a review of the baseline report (as provided in response to our Regulation 60 Notice issued on 25/04/14), and submit a written report to the Environment Agency for approval in writing.</p> <p>The review shall include at least the following:</p> <ul style="list-style-type: none"> • Reference to historical spillages, the chemicals involved and locations so as to inform existing locations of chemicals and storage tanks. • Confirmation of the locations of bulk liquid storage areas (for storage of hazardous substances) within the permit boundary, including an inventory of storage quantities / maximum storage quantities. • Specifications and details of the storage tanks employed for the storage of hazardous substances (as identified above), including a location plan. • An appraisal of the condition of any storage tanks (as identified above). • Results from any visual or olfactory checks (of contamination) located around such hazardous storage areas (as identified above). <p>The review shall consider Environmental Standards (rather than ICRL criteria) for assessing contamination, specifically ‘Industrial emissions Directive Draft EPR Guidance on Part A installations.’ Dated March 2011 by DEFRA (section 5.8 - 5.13 on baseline reports, and Annex 3).</p> <p>Where the review establishes that additional baseline data is required, the operator shall submit proposals for undertaking further intrusive sampling (to ensure that all areas containing potential hazardous substances are assessed) together with a proposed date for submission of an updated baseline report.</p> <p>Any updated baseline report shall include a monitoring plan (for the testing of soil every 10 years and groundwater every 5 years, or more frequently where required) in consideration of condition 3.1.5 of this permit unless demonstration can be made that this is not required.</p>	<p>31/10/19</p>
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IC19: assessment of water discharges which leave SDL’s site boundary (permit red line) [Not a BATC requirement]

This improvement condition is set to require the Operator to provide information on the volume and nature of the water discharges leaving their site (the area within the red line ie SDL’s installation and not the whole installation) and going direct to the environment without any treatment. There is at least one discharge, which takes road drainage from the back area of the kilns near the ESP and bag filter plants, which is discharged into the manhole receiving settled water from the other Operator’s settlement tanks (permit EPR/BL3242IA). Due to the issues in the receiving water catchment (the Poulter catchment), we wish to establish the nature of any relevant discharges from SDL and ensure any impact is minimised.

<p>The Operator shall undertake an assessment of all untreated surface water discharges which leave the installation, and provide a written report to the Environment Agency. The report shall include, but not be limited to:</p> <ul style="list-style-type: none"> • Location of all water discharges leaving the area of installation covered by this permit. • Details of controls in place to prevent, and where that is not practicable, minimise the impacts from such discharges, prior to release. • Characterisation of any discharges not receiving treatment prior to release to watercourse. • An updated detailed drainage plan for the area of installation covered by this permit. <p>Where it is identified that appropriate measures or controls are not in place to minimise the impacts of a discharge, the operator shall provide either:</p> <ol style="list-style-type: none"> a) proposed measures for isolating the discharge (in order to prevent, or where not practicable, minimise the emission), <p>OR</p>	<p>31/10/19</p>
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<p>b) proposed measures for monitoring and sampling all discharges prior to leaving the Installation, including flow measurement.</p> <p>(Note that characterisation is not required if a discharge is isolated prior to the deadline of this condition.)</p> <p>The report shall be submitted to the Environment Agency for written approval.</p> <p>The Environment Agency may impose additional requirements, such as monitoring, sampling and emission limits, in response to this improvement condition.</p>	
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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 16/08/2018 and 14/09/2018.

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
No responses received
Brief summary of issues raised
N/A
Summary of actions taken or show how this has been covered
N/A

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

1. Change of Installation name

The installation name has been changed from Whitwell Works to **Whitwell Quarry Lime Works**. This has also been updated in the other permit relating to this Installation. Previously both permits for this multi-operator installation had different installation names on the permits. Going forward they will have the same installation name.

2. 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.

We have made it clearer that the permit is part of a multi-operator installation, with details of both permits and operators, and included an outline of which parts of the installation are covered by which permit.

3. Permit conditions

Conditions 1.5 and 2.2.1

Whitwell Quarry Lime works is a multi-operator installation, with two Companies operating the installation. Steetley Dolomite Ltd (SDL) operate the lime kilns (as primary activity for this site) while Tarmac Aggregates Ltd operate the quarry and prepare and supply dolomitic limestone to the lime kilns under permit EPR/BL3242IA.

The multiple operator installations condition was not included in the previous permit.

We have added multiple operator condition 1.5.1 (in line with our latest permit template) which requires the operator to also notify the operator without delay where notification has to be made to the Environment Agency under condition 4.3.1(a) or 4.3.1(c).

We have amended condition 2.2.1 to reflect the jurisdiction of the two operators. SDL's operations are carried out within the red line on the Site Plan, whilst Tarmac's operations are within the green line and outside the area bounded by the red line.

Condition 2.3.7(a)

The legislation reference has been updated.

Condition 2.3.4(c) and 2.3.16

These are new standard template conditions for all sites using waste.

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.

4. 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 the site permit Table S1.1, specifically:

- Updated the EPR schedule ref for the listed activity
- Amended the Limits of Specified Activity for all activities to ensure they are clearly defined,
- Combined the DAAs previously A3, for solids fuels, and A5, for waste-derived fuels, into one (AR4)
- Added in DAAs for raw materials storage and handling (AR3) and waste storage and handling (AR6)
- Added in an additional DAA of surface water drainage (AR7)

The additional DAAs are included to ensure that all activities (listed and non-listed) are covered. 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)(b)	Producing dolime in a Long Rotary Kiln (LRK) W1 with a production capacity of more than 50 tonnes per day	From the kiln feed stone silos and bulk storage of other materials and fuels, the subsequent preparation (including blending of raw materials and waste-derived raw materials specified within table S2.1) and feed of all materials and fuels into the W1 kiln system through any product processing steps to bulk storage of product. Includes releases to air from the main stack via an electro-static precipitator and any other process vents and associated abatement.
AR2	Section 3.1 Part A(1)(b)	Producing dolime in a Pre-heater Kiln (PRK) W2 with a production capacity of more than 50 tonnes per day	From the kiln feed stone silos and bulk storage of other materials and fuels, the subsequent preparation (including blending of raw materials specified within table S2.1) and feed of all materials and fuels into the W2 kiln system through any product processing steps to bulk storage of product. Includes releases to air from the main stack via a bag filter, and any other process vents and associated abatement. Kiln W2 shall only be used to produce ULCD.
	Directly Associated Activity		

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
AR3	Raw materials storage and handling	Raw materials receipt, transport, preliminary preparation and bulk storage	Receipt on site of raw materials, including alternative raw materials, through to bulk storage, and bulk storage of prepared stone in dolomitic limestone feed silos. <i>Note: recovery of stone from the quarry floors and its bulk handling, storage and preparation is not covered within the scope of this permit. These activities are covered by permit BL3242IA</i>
AR4	Fuels delivery and storage	Delivery and bulk storage of fuels	Offloading of waste-derived fuels and fossil fuels, and transfer to bulk storage. This includes the use of gas oil as a start-up, shutdown and support fuel.
AR5	All dolime storage, handling and loading	Dolime handling, storage, packing and dispatch	Storage, crushing, screening, pelletising, packing and dispatch by road. This includes ULCD processing for the manufacture of Dolopel.
AR6	Waste storage and handling	Waste storage and handling	From waste generation, handling, storage and monitoring through to dispatch off site.
AR7	Surface water drainage	Management of site drainage and process water	Collection of surface water drainage, including any reuse in site activities, through to discharge to the settlement tanks at emission points S1 (table S3.4), and at emission points SW1 and SW2 (table S3.3).

5. Schedule 3 Emissions

Kiln emissions and monitoring

Due to the complexity of emission limits, kiln ELVs have been presented in three tables S3.1a, 3.1b, 3.1c, with the aim of making the tables easier to use. Each table has the limits for one product; ULCD (Dolomet), sintered dolime (Dolofrit) or Dead burnt dolime (Dolopel). Previously two tables contained the limits; for with and without waste fuels.

Coal Mill emission points

Emission point "A3 Solid fuel milling system" in V006, covers two emissions points, referred to as A3/W1 and A3/W2, this variation rennumbers the emission point references to **A3 and A4**, with the sources coal mill serving kiln W1 and coal mill serving kiln W2, respectively.

Table S3.3 Point Source emissions to water (other than sewer) and land: water discharges from SDL's permitted area

Table S3.3 has been added in to list discharges from SDL's part of the installation (ie those crossing the red line) and which ultimately are released into the environment untreated, in order to represent the drainage situation at this multiple-operator installation. Nomenclature of "SW" has been used to avoid confusion with kiln references of W1 and W2.

Two known surface water discharges leave SDL's installation and ultimately are released without treatment (eg settlement). One of these, now named "SW1", consists of rainwater runoff from the site road near the dust abatement plants and is

discharged into the manhole near the Goods Vehicle site entrance to join the flow of water from Tarmac’s settlement ponds which is discharged at emission point W2 (refer permit EPR/BL3242IA). There is the potential for this drainage to carry solids to river. SDL have already carried out works on site to re-direct some drainage to sumps which are pumped to Tarmac’s settlement ponds, and have declared an intention to completely block off what is now SW1. Following satisfactory evidence that this has been done, this emission point may be removed from the permit.

“SW2” is rainwater runoff from the lower carpark near the offices. Historically heavy rainfall has resulted in surface water drainage running down the bank into the lower carpark from the area near the product off-loading building. This water carried additional solids (which would settle out in the lower carpark). The carpark contains a road drain, however recently a new drain has been installed across the entrance to re-direct drainage. Through IC19, the operator can demonstrate that the improvements made have reduced the risk of solids leaving the site and entering the local watercourses, or identify any further work required to minimise environmental impact.

As both SW1 and SW2 are rainwater run-off (and therefore intermittent), it is unlikely that monitoring and limits will be required for table S3.3, however this should be determined on review of the IC19 submission.

<p style="text-align: center;">SW1 (SK53537552)</p> <p>[Emission to W2 on permit EPR/BL3242IA prior to discharge from Installation with treated water]</p>	<p style="text-align: center;">Surface water drainage from back end of kilns</p>
<p style="text-align: center;">SW2 (SK53617513)</p>	<p style="text-align: center;">Surface water drainage from lower carpark</p>

Table S3.4 emission to sewer

Table S3.4 has been added in to the permit to identify SDL’s pumped release to Tarmac’s settlement tanks.

This is generated mostly from site drainage and wash water which collects in various sumps around SDL’s permitted area and can appear cloudy. We are not setting any monitoring requirements or limits as this discharge from SDL’s area receives treatment. (Note that the discharge from the settlement tanks is listed on Tarmac’s permit as W2, is released to the Millash Brook (aka Whitwell Brook) and is controlled through various limits including volume, rate and suspended solids.)

Table S3.5 Annual Limits

Table S3.5 is retained (from the permit template) within the permit although no limits are set. We may (at a future date) set annual limits by permit variation, and therefore retaining this table for this purpose.

Table S3.6 Process Monitoring requirements

Some changes have been made to this table. Refer Key Issues section 2d for details.

6. Schedule 6 Interpretation

Schedule 6 has been revised to remove interpretations which are no longer relevant, amend existing and introduce new ones, such as definitions relating to use of waste.

The monitoring reference conditions are updated in line with the BAT conclusions (refer Key Issues section, final paragraph)

Chapter IV abnormal operating conditions: “WID abnormal operating conditions” has been updated to “chapter IV abnormal operating conditions” as the IED has superseded WID (Waste Incineration directive).

Kiln shut down: this is revised to include a defined threshold; an Operator-agreed feed rate of 5 tonne per hour on kiln W1 and 10 tonne per hour on Kiln W2.

Kiln start up: this is revised in line with the current definition for start up of cement kilns, removing the reference to use of WDFs to determine end of start up, and instead including agreed threshold figures (5 tonne per hour on kiln W1 and 10 tonne per hour on kiln W2) of raw material feed into each kiln. Emission limits do not apply and waste cannot be burned until startup is complete.

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.

Product changeover: we have introduced this new definition, referenced in Sch3 of the permit, to allow exemption of half hourly average limits while kiln K1 is changing from one product to another because there can be short peaks in emissions while kiln operation is stabilised and product quality established. The operator is still allowed to burn waste derived fuels and daily limits still apply.

7. Schedule 7 Site plan

In addition to the current site plan, we have also included a site plan of the full installation, which shows the boundaries of both Operators of this facility. SDL has responsibility only for the area within the red line, and their operations, as specified in Table S1.1, should only be carried out within this area. Tarmac's area of responsibility is outside the red line and within the green line, controlled through permit BL3242IA.

8. Site condition and IED compliance

Question 4 of the Regulation 60 Notice requested provision of information relating to site condition, to ensure that the requirements of IED article 22(2) are fulfilled.

The Operator provided a summary report as part of their response to the Notice, submitted 8 January 2015, which referred to an original site condition report (dated August 2000) submitted to the EA in August 2001 as part of the PPC application to provide a characterisation of site condition.

We have assessed the summary report, along with the original data and reports, and are satisfied that this information fulfils IED requirements for Steetley but requested confirmation on a number of points as described in the improvement condition IC18. Note that this applies only to the part of the installation operated by Steetley Dolomite Ltd, and not the other operator of the multi-operator installation.

End of Decision Document.