



Environment  
Agency

# Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

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Castle Cement Limited

Ribblesdale Cement Works  
West Bradford Road  
Clitheroe  
Lancashire  
BB7 4QF

**Variation number**

EPR/BL7272IB/V010

**Permit number**

EPR/BL7272IB

# Ribblesdale Cement Works

## Permit number EPR/BL7272IB

### Introductory note

#### **This introductory note does not form a part of the notice.**

Under the Environmental Permitting (England & Wales) Regulations 2010 (schedule 5, part 1, paragraph 19) a variation may comprise a consolidated permit reflecting the variations and a notice specifying the variations included in that consolidated permit.

Schedule 1 of the notice specifies the conditions that have been varied and schedule 2 comprises a consolidated permit which reflects the variations being made. All the conditions of the permit have been varied and are subject to the right of appeal.

#### **Brief description of the changes introduced by this variation notice:**

This is an Environment Agency initiated variation and consolidation – consolidating previous variations of environmental permit EPR/BL7272IB. This variation incorporates a number of changes as a result of:-

- a statutory review of permits in the Cement and Lime sector
- the incorporation of legislative changes following the publication of “Best Available Techniques (BAT) conclusions” for the production of cement, lime and magnesium oxide – published 9 April 2013.

Concurrent with this permit review we have considered requests for derogation from the Operator relating to BAT Conclusions 17, 18 and 21. We have granted the derogation requests and include the derogations and the reasons for granting them in an Annex to the permit, as required by Article 15(4) of IED.

#### **Brief description of the process:**

Ribblesdale Cement Works (the Installation) is operated by Castle Cement Limited and is located within the Ribble Valley at grid reference SD74834364, near Clitheroe, Lancashire.

The main activity taking place at the Installation is the production of Cement which is a listed activity within ‘The Environmental Permitting (England and Wales) Regulations 2010’:

Section 3.1 Part A(1)(a) - Producing cement clinker in rotary kilns with a production capacity exceeding 500 tonnes per day or in other kilns with a production capacity exceeding 50 tonnes per day.

Cement clinker production capacity of the works is around 0.75 million tonnes per annum using pre-calciner kiln technology.

The Installation includes:-

- The quarries and associated activities (*excluding drilling and blasting which is regulated elsewhere*)
- All raw material handling and raw meal preparation operations
- All associated fuel handling and storage operations
- All clinker manufacturing, handling, grinding and storage operations
- All cement handling, storage and bagging operations.

#### Raw materials and Materials Handling

Limestone, sourced from Lanehead and Bellman Quarries, is transported to the crushing plant whereby two primary impact breaker crushers, and two secondary crushers reduce the size of the stone to site requirements. Additional components, such as sandstone and wet pulverised fuel ash, are added at the quarry to control the chemistry of the stone to the required targets. From the crushing plant, the limestone is transported by conveyor to a raw material storage area.

## Cement Clinker Production

The Installation operates a “dry” process kiln, Kiln 7. The operator previously operated Kilns 5 and 6 in addition to K7. Kilns 5 and 6 were decommissioned in 2007 and subsequently demolished.

Crushed limestone is ground and dried (utilising waste heat from the kiln process) and then stored in a raw meal silo until required within K7 kiln system (for the production of clinker).

When required, the meal is conveyed to the top of the pre-heater tower and enters the first of a series of 4 cyclones. Here, the feed descends through each of the cyclones until reaching the combustion chamber known as the calciner which is located at the base of the pre-heater tower, next to the kiln inlet. During the descent down the tower, the meal is heated by hot exhaust gases from the kiln which rise through the cyclones (in a counter-current direction).

The combustion chamber provides a temperature of 880°C allowing for pre-calcination to occur (*a chemical reaction involving the decomposition of calcium carbonate [limestone] to calcium oxide [lime] and carbon dioxide*). From here, the almost calcined meal enters the kiln (via the kiln inlet). The kiln is a rotating steel tube 4.15m in diameter, 58m in length, and it lined with fire resistant bricks. The kiln is inclined at 4° to the horizontal and as it rotates material passes downhill from the inlet towards the outlet. The kiln is fired by a firing pipe located at the outlet that extends approximately 2m into the kiln. The fuel that is fired through the firing pipe raises the temperature of the material to 1450°C and at this temperature a series of complex chemical reactions take place to produce cement clinker. The clinker drops from the kiln outlet into a grate cooler where large volumes of cold air are used to cool the material to 150°C. The hot air from the cooler is then used as combustion air in the kiln and calciner.

A combination of fuels (fossil and waste derived) provide direct combustion heat for the kiln. The main fossil fuel used is coal, which is pulverised and dried within a coal mill. Various waste derived fuels are permitted (as shown in table S2.1 of this permit) which reduce the reliance on fossil fuel usage and disposal of waste by landfill. Regulatory conditions relating to co-incineration of waste are included within this permit in order to comply the requirements of the Industrial Emissions Directive (Chapter IV).

Waste heat from the process is used at various locations around site, including the pre-heater tower (pre-calcination) and raw material preparation plants. This ensures that the raw meal and fuels are at optimum moisture and temperature levels best suited to calcination – which in turn improves the energy efficiency of the Installation whilst reducing the amount of heat energy lost to atmosphere.

## Cement Production

Cooled clinker (to suitable handling temperatures) is transported to the clinker store for intermediate storage - pending transportation to the cement mills. Within the cement mills, clinker is ground to size requirements, and milled with additives (according to product specification). Additives can include: gypsum, de-sulphurised gypsum, limestone, ferrous sulphate, and grinding aids. Following milling, the finished product “Portland cement” is transported to bulk storage facilities pending despatch offsite.

## Emissions to Air

Waste gases are produced from various operations including fuel combustion (within the kiln), calcination of raw meal (kiln and preheater), drying and preparation of raw materials and fuel processing. An induced draft (ID) fan transports hot gases around the plant for heating requirements (cyclones and raw meal) and for abatement (gas cleaning prior to releases to atmosphere). A number of different abatement techniques provide gas cleaning around the site. These include electro-static precipitators (ESPs) and fabric filters [which collect particulate matter [dust] and any elements entrapped within], and a wet scrubber - *utilising a limestone scrubbing medium* which primarily abates sulphur dioxide emissions. A selective non-catalytic reduction (SNCR) system is also utilised to control emission of nitrogen oxides from the kiln stack.

A small proportion of gas is extracted through the kiln bypass in order to control cement alkaline content, which can create operational issues within the pre-heater tower if allowed to accumulate. Following gas conditioning, the bypass gas re-joins kiln gases and then enters the wet scrubber. Significant emission cooling results as a consequence of wet scrubbing, and because of this, hot exhaust air (direct from the cooler ESP) is combined with scrubbed gases in order to re-heat the gas and increase thermal buoyancy / dispersion of gases once discharged from site (via a 91 metre stack).

## Emissions to Water

The Installation is permitted to abstract water from the River Ribble to an on-site catchpit, which is also fed by site surface water. The catchpit provides cooling for various processes on site. A purpose built settlement pond for treatment of surface run off from the works is located within a field adjacent to the works. The site is permitted to discharge to the River Ribble from such sources as shown in table S3.3 of this permit.

Process waste materials are sent off site for further recovery/recycling. The works produces excess dust (cement kiln dust [CKD] / or bypass dust [BPD]) which is nodulised on site and then sent off site for further processing / disposal.

There are a number of sensitive ecological receptors close to the installation, including 1 Special Area of Conservation (SAC), 2 Sites of Special Scientific Interest (SSSIs), 2 Local Nature Reserves (LNRs), 16 Local Wildlife Sites (LWSs), and 3 Ancient Woodlands. The River Ribble is located less than 200 metres from the boundary of the Installation.

The installation operates an Environmental Management System, which is certified as conforming to ISO 14001.

The schedules specify the changes made to the permit.

The status log of a permit sets out the permitting history, including any changes to the permit reference number.

<b>Status log of the permit</b>		
<b>Description</b>	<b>Date</b>	<b>Comments</b>
Application BL7272IB (EPR/BL7272IB/A001) received	29/08/2001	Application received
Letter with additional information	31/08/2001	
Permit BL7272IB (EPR/BL7272IB) determined	03/04/2003	
Permission given to use tyres on a permanent basis.	14/05/2004	
Application for variation BW2374IP (EPR/BL7272IB/V002) received	22/10/2003	Application to use AWDF as a substitute fuel
Notice for additional information	13/02/2004	
Response to notice for additional information	08/04/2004	
Variation BW2374IP (EPR/BL7272IB/V002) determined	30/09/2004	
Application for variation MP3132SD (EPR/BL7272IB/V003) received	31/03/2005	Application to comply with the requirements of the WID
Notice for additional information	26/05/2005	
Response to notice for additional information	23/06/2005	
Variation MP3132SD (EPR/BL7272IB/V003) determined	14/12/2005	
Letter received	18/01/2007	Letter confirming decommissioning of Kilns 5 & 6
Application for variation PP3634XA (EPR/BL7272IB/V004) received	20/02/2008	Request to increase quantity of MBM that can be burned in the pre-calciner,

Status log of the permit		
Description	Date	Comments
Variation PP3634XA (EPR/BL7272IB/V004) determined	01/08/2008	
Application for variation EPR/BL7272IB/V005 received	02/01/2009	Request to use wood as a substitute fuel and to increase tyre substitution
Additional information received	27/01/2009	Re: Increase in tyre substitution
Variation EPR/BL7272IB/V005 determined	03/07/2009	
Environment Agency Cement & Lime Sector Review Variation EPR/BL7272IB/V006 determined	27/07/2010	
Application for variation EPR/BL7272IB/V007 received	06/04/2011	
Variation EPR/BL7272IB/V007 determined	01/07/2011	
Environment Agency initiated variation EPR/BL7272IB/V008 determined	09/07/2014	Variation to implement chapter IV of the Industrial Emissions Directive.
Application for variation EPR/BL7272IB/V009 received	17/10/2014	Request to add list of waste codes suitable in principle (MPA Code of Practice dated October 2014), remove Group III Metals specification in fuels and consolidate waste derived fuels naming.
Variation EPR/BL7272IB/V009 determined	30/01/2015	
Regulation 60 Notice issued	07/08/2014	
Regulation 60 Response received	08/01/2015	
Notice requiring information	Requested 22/05/2015	Response received on 02/07/2015, 26/05/2016 16/08/2016, 22/11/2016, 16/12/2016 and 14/02/2017.
Variation EPR/BL7272IB/V010 (Billing Ref: XXXXXXXX) determined		Environment Agency initiated variation following the Cement and Lime Sector Review

End of introductory note

# Notice of variation and consolidation

## The Environmental Permitting (England and Wales) Regulations 2010

The Environment Agency in exercise of its powers under regulation 20 of the Environmental Permitting (England and Wales) Regulations 2010 varies and consolidates

### Permit number

EPR/BL7272IB

### Issued to

**Castle Cement Limited** (“the operator”)

whose registered office is

**Hanson House  
14 Castle Hill  
Maidenhead  
Berkshire  
SL6 4JJ**

company registration number **02182762**

to operate a regulated facility at

**Ribblesdale Cement Works  
West Bradford Road  
Clitheroe  
Lancashire  
BB7 4QF**

to the extent set out in the schedules.

The notice shall take effect from **[DD/MM/YYYY]**

Name	Date
	<b>[DD/MM/YYYY]</b>

Authorised on behalf of the Environment Agency

## **Schedule 1**

All conditions have been varied by the consolidated permit as a result of an Environment Agency initiated variation.

## **Schedule 2 – consolidated permit**

Consolidated permit issued as a separate document.

**DRAFT**

# Permit

## The Environmental Permitting (England and Wales) Regulations 2010

### Permit number

EPR/BL7272IB

This is the consolidated permit referred to in the variation and consolidation notice for Environment Agency led variation EPR/BL7272IB/V010 authorising,

**Castle Cement Limited** ("the operator"),

whose registered office is

**Hanson House  
14 Castle Hill  
Maidenhead  
Berkshire  
SL6 4JJ**

company registration number **02182762**

to operate an installation at

**Ribblesdale Cement Works  
West Bradford Road  
Clitheroe  
Lancashire  
BB7 4QF**

to the extent authorised by and subject to the conditions of this permit.

Name	Date
[name of authorised person]	[DD/MM/YYYY]

Authorised on behalf of the Environment Agency



# Conditions

## 1 Management

### 1.1 General management

1.1.1 The operator shall manage and operate the activities:

- (a) in accordance with a written management system that identifies and minimises risks of pollution, including those arising from operations, maintenance, accidents, incidents, non-conformances, closure and those drawn to the attention of the operator as a result of complaints; and
- (b) using sufficient competent persons and resources.

1.1.2 Records demonstrating compliance with condition 1.1.1 shall be maintained.

1.1.3 Any person having duties that are or may be affected by the matters set out in this permit shall have convenient access to a copy of it kept at or near the place where those duties are carried out.

1.1.4 The operator shall comply with the MPA Code of Practice dated October 2014

### 1.2 Energy efficiency

1.2.1 The operator shall:

- (a) take appropriate measures to ensure that energy is recovered with a high level of energy efficiency and energy is used efficiently in the activities.
- (b) review and record at least every four years whether there are suitable opportunities to improve the energy efficiency of the activities; and
- (c) take any further appropriate measures identified by a review.

### 1.3 Efficient use of raw materials

1.3.1 The operator shall:

- (a) take appropriate measures to ensure that raw materials and water are used efficiently in the activities;
- (b) maintain records of raw materials and water used in the activities;
- (c) review and record at least every four years whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use; and
- (d) take any further appropriate measures identified by a review.

### 1.4 Avoidance, recovery and disposal of wastes produced by the activities

1.4.1 The operator shall take appropriate measures to ensure that:

- (a) the waste hierarchy referred to in Article 4 of the Waste Framework Directive is applied to the generation of waste by the activities; and
- (b) any waste generated by the activities is treated in accordance with the waste hierarchy referred to in Article 4 of the Waste Framework Directive; and
- (c) where disposal is necessary, this is undertaken in a manner which minimises its impact on the environment.

- 1.4.2 The operator shall review and record at least every four years whether changes to those measures should be made and take any further appropriate measures identified by a review.

## 2 Operations

### 2.1 Permitted activities

- 2.1.1 The operator is only authorised to carry out the activities specified in schedule 1 table S1.1 (the "activities").

### 2.2 The site

- 2.2.1 The activities shall not extend beyond the site, being the land shown edged in green on the site plan at schedule 7 to this permit.

### 2.3 Operating techniques

- 2.3.1 The activities shall, subject to the conditions of this permit, be operated using the techniques and in the manner described in the documentation specified in schedule 1, table S1.2, unless otherwise agreed in writing by the Environment Agency.
- 2.3.2 If notified by the Environment Agency that the activities are giving rise to pollution, the operator shall submit to the Environment Agency for approval within the period specified, a revision of any plan or other documentation ("plan") specified in schedule 1, table S1.2 or otherwise required under this permit which identifies and minimises the risks of pollution relevant to that plan, and shall implement the approved revised plan in place of the original from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 2.3.3 Kiln 7 shall not be operated without the wet scrubber other than under the following circumstances and subject to compliance with other conditions of this permit.
- (i) During start up and shut down of the kiln;  
Under these circumstances the maximum release concentration of sulphur dioxide shall not exceed **1000mg/Nm<sup>3</sup>** averaged over the day, or part of the day, during which the scrubber is not operating.
  - (ii) During unavoidable maintenance as follows:
    - (a) For any periods up to a total of 2 hours in any day which do not result in a release of sulphur dioxide at a concentration of greater than 1000mg/m<sup>3</sup> and/or particulate of 150mg/m<sup>3</sup> averaged over the time period the scrubber is off.
    - (b) For any periods exceeding a total of 2 hours in any day, up to 200 hours in any calendar year (the whole of such periods to be included in calculating this). Under these circumstances the maximum authorised release concentration of sulphur dioxide shall be 1000mg/m<sup>3</sup> and/or particulate 150mg/m<sup>3</sup> averaged over that day or part of the day, during which the scrubber is not operating.
    - (c) For any continuous period exceeding 72 hours only in accordance with the written approval of the Environment Agency.
  - (iii) In the event of major maintenance which cannot be completed within the time constraints given in (ii)(b) above only with the written approval of the Environment Agency.
- 2.3.4 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.5 Waste shall only be accepted if:
- (a) it is of a type and quantity listed in schedule 2 table 2.1;

- (b) it conforms to the description in the documentation supplied by the producer and holder; and
  - (c) it having been separately collected for recycling, it is subsequently unsuitable for recovery by recycling.
- 2.3.6 The operator shall ensure that where waste produced by the activities is sent to a relevant waste operation, that operation is provided with the following information, prior to the receipt of the waste:
- (a) the nature of the process producing the waste;
  - (b) the composition of the waste;
  - (c) the handling requirements of the waste;
  - (d) the hazardous property associated with the waste, if applicable; and
  - (e) the waste code of the waste.
- 2.3.7 The operator shall ensure that where waste produced by the activities is sent to a landfill site, it meets the waste acceptance criteria for that landfill.
- 2.3.8 All waste derived fuels used at the installation are subject to the following conditions:
- (a) No radioactive materials or radioactive wastes (as defined by sections 1 and 2 of the Radioactive Substances Act 1993) shall be included.
  - (b) No substances with PCB concentrations greater than 10mg/kg shall be included.
  - (c) No substances with PCP concentrations greater than 100mg/kg shall be included.
  - (d) No pharmaceutical products, pesticide products, biocide products and iodine compounds shall be included except as constituents of other materials and at levels that are minimised as far as reasonably practicable.
  - (e) No dioxins or furans shall be included except as constituents of other materials and at levels that are minimised as far as reasonably practicable.
  - (f) No medical/clinical waste shall be included
- 2.3.9 The operator shall obtain prior written approval from the Environment Agency for each feasibility trial of a Waste Derived Fuel (WDF) not listed in Table S2.1. Any such feasibility trials will be limited to a maximum of 100 tonnes of the fuel and a maximum duration of 14 days
- 2.3.10 Waste materials, not listed in table S2.1, shall not be used as raw materials in the process except with the prior written approval of the Environment Agency, and shall be subject to the specification in table S2.1 of schedule 2 or otherwise agreed in writing with the Environment Agency.
- 2.3.11 The operator shall ensure that prior to accepting waste derived fuels subject to condition 2.3.5 at the site, it has obtained sufficient information about the wastes to be burned as fuel to demonstrate compliance with the characteristics described in condition 2.3.5.
- 2.3.12 The operator shall take representative samples of all waste derived fuels delivered to the site unless otherwise agreed in writing with the Environment Agency and test a representative selection of these samples to verify conformity with the information obtained as required by condition 2.3.12. These samples shall be retained for inspection by the Environment Agency for a period of at least 1 month after the material is burned and results of any analysis made of such samples will be retained for at least 2 years after the material is burned.
- 2.3.13 Waste derived fuels shall not be burned, or shall cease to be burned, if:
- (a) the kiln is in start up (as agreed in writing with the Environment Agency); or
  - (b) the kiln is in the process of shutting down (as agreed in writing with the Environment Agency);  
or
  - (c) raw meal feed rate is less than 130 tonnes/hr; or

- (d) the calciner temperature is below or falls below 850°C when using non-hazardous waste, or hazardous waste where the content of halogenated organic substances (as chlorine) does not exceed 1%; or
- (e) the calciner temperature is below or falls below 1100°C when using hazardous waste where the content of halogenated organic substances (as chlorine) exceeds 1%;
- (f) any continuous emission limit value in schedule 3 table S3.1 is exceeded due to disturbances or failures of the abatement systems, other than under “Chapter IV abnormal operating conditions”; or
- (g) monitoring results required to demonstrate compliance with any continuous emission limit value in schedule 3, table S3.1 are unavailable other than under “Chapter IV abnormal operating conditions”.

2.3.14 The operator shall record the beginning and end of each period of “Chapter IV abnormal operating conditions”, and shall restore normal operation of the failed equipment or replace the failed equipment as rapidly as possible.

2.3.15 Where, during “Chapter IV abnormal operating conditions”, any of the following situations arise, the operator shall, as soon as is practicable, cease the burning of waste derived fuels until normal operation can be restored:

- (a) continuous measurement shows that an emission exceeds any emission limit value in schedule 3 table S3.1 due to disturbances or failures of the abatement systems, or continuous emission monitor(s) for a total of four hours uninterrupted duration;
- (b) the cumulative duration of “Chapter IV abnormal operating conditions” periods over one calendar year exceeds 60 hours on each kiln.

2.3.16 The operator shall interpret the end of the period of “Chapter IV abnormal operating conditions” as the earliest of the following:

- (a) when the failed equipment is repaired and brought back into normal operation;
- (b) when the operator initiates a shut down of the waste derived fuels, as described in the application or as agreed in writing with the Environment Agency;
- (c) when a period of four hours has elapsed from the start of the “Chapter IV abnormal operating conditions”;
- (d) when, in any calendar year, an aggregated period of 60 hours “Chapter IV abnormal operating conditions” has been reached for a given kiln.

2.3.17 Hazardous waste derived fuels (where the content of halogenated organic substances (as chlorine) exceeds 1%) shall only be burned in the main burner of the kiln.

2.3.18 Hazardous waste shall not be mixed, either with a different category of hazardous waste or with other waste, substances or materials, unless it is authorised by schedule 1 table S1.1 and appropriate measures are taken.

## **2.4 Improvement programme**

2.4.1 The operator shall complete the improvements specified in schedule 1 table S1.3 by the date specified in that table unless otherwise agreed in writing by the Environment Agency.

2.4.2 Except in the case of an improvement which consists only of a submission to the Environment Agency, the operator shall notify the Environment Agency within 14 days of completion of each improvement.

## **3 Emissions and monitoring**

### **3.1 Emissions to water, air or land**

- 3.1.1 There shall be no point source emissions to water, air or land except from the sources and emission points listed in schedule 3 tables S3.1, S3.2 and S3.3.
- 3.1.2 The limits given in schedule 3 shall not be exceeded.
- 3.1.3 Where a substance is specified in schedule 3 table S3.3 but no limit is set for it, the concentration of such substance in emissions to water from the relevant emission point shall be no greater than the background concentration.
- 3.1.4 Total annual emissions from the emission point(s) set out in schedule 3 tables S3.1, S3.2 and S3.3 of a substance listed in schedule 3 table S3.4 shall not exceed the relevant limit in table S3.4.
- 3.1.5 Periodic monitoring shall be carried out at least once every 5 years for groundwater and 10 years for soil, unless such monitoring is based on a systematic appraisal of the risk of contamination.

### **3.2 Emissions of substances not controlled by emission limits**

- 3.2.1 Emissions of substances not controlled by emission limits (excluding odour) shall not cause pollution. The operator shall not be taken to have breached this condition if appropriate measures, including, but not limited to, those specified in any approved emissions management plan, have been taken to prevent or where that is not practicable, to minimise, those emissions.
- 3.2.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution, submit to the Environment Agency for approval within the period specified, an emissions management plan which identifies and minimises the risks of pollution from emissions of substances not controlled by emission limits;
  - (b) implement the approved emissions management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.
- 3.2.3 All liquids in containers, whose emission to water or land could cause pollution, shall be provided with secondary containment, unless the operator has used other appropriate measures to prevent or where that is not practicable, to minimise, leakage and spillage from the primary container.

### **3.3 Odour**

- 3.3.1 Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour.
- 3.3.2 The operator shall:
- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, submit to the Environment Agency for approval within the period specified, an odour management plan which identifies and minimises the risks of pollution from odour;
  - (b) implement the approved odour management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

### 3.4 Noise and vibration

3.4.1 Emissions from the activities shall be free from noise and vibration at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Environment Agency, unless the operator has used appropriate measures, including, but not limited to, those specified in any approved noise and vibration management plan to prevent or where that is not practicable to minimise the noise and vibration.

3.4.2 The operator shall:

- (a) if notified by the Environment Agency that the activities are giving rise to pollution outside the site due to noise and vibration, submit to the Environment Agency for approval within the period specified, a noise and vibration management plan which identifies and minimises the risks of pollution from noise and vibration;
- (b) implement the approved noise and vibration management plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

### 3.5 Monitoring

3.5.1 The operator shall, unless otherwise agreed in writing by the Environment Agency, undertake the monitoring specified in the following tables in schedule 3 to this permit:

- (a) point source emissions specified in tables S3.1, S3.2 and S3.3;
- (b) process monitoring specified in table S3.4;

3.5.2 The operator shall maintain records of all monitoring required by this permit including records of the taking and analysis of samples, instrument measurements (periodic and continual), calibrations, examinations, tests and surveys and any assessment or evaluation made on the basis of such data.

3.5.3 Monitoring equipment, techniques, personnel and organisations employed for the emissions monitoring programme and the environmental or other monitoring specified in condition 3.5.1 shall have either MCERTS certification or MCERTS accreditation (as appropriate), where available, unless otherwise agreed in writing by the Environment Agency. Newly installed CEMs, or CEMs replacing existing CEMs, shall have MCERTS certification and have an MCERTS certified range which is not greater than 1.5 times the daily emission limit value (ELV) specified in schedule 3 table S3.1. The CEM shall also be able to measure instantaneous values over the ranges which are to be expected during all operating conditions. If it is necessary to use more than one range setting of the CEM to achieve this requirement, the CEM shall be verified for monitoring supplementary, higher ranges.

3.5.4 Permanent means of access shall be provided to enable sampling/monitoring to be carried out in relation to the emission points specified in schedule 3 tables S3.1, S3.2, and S3.3 unless otherwise agreed in writing by the Environment Agency.

3.5.5 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1; the Continuous Emission Monitors shall be used such that;

- (a) the values of the 95% confidence intervals of a single measured result at the daily emission limit value shall not exceed the following percentages:

• Ammonia	40 %
• Carbon monoxide	10%
• Sulphur dioxide	20%
• Oxides of nitrogen (NO & NO <sub>2</sub> expressed as NO <sub>2</sub> )	20%
• Particulate matter	30%
• Total organic carbon (TOC)	30%
• Hydrogen chloride	40%

- (b) valid half-hourly average values shall be determined within the effective operating time (excluding the start-up and shut-down periods) from the measured values after having subtracted the value of the confidence intervals in condition 3.5.5 (a);
- (c) where it is necessary to calibrate or maintain the monitor and this means that data are not available for a complete half-hour period, the half-hourly average shall in any case be considered valid if measurements are available for a minimum of 20 minutes during the half-hour period. The number of half-hourly averages so validated shall not exceed 5 per day;
- (d) daily average values shall be determined as the average of all the valid half-hourly average values within a calendar day. The daily average value shall be considered valid if no more than five half-hourly average values in any day have been determined not to be valid;
- (e) no more than ten daily average values per year shall be determined not to be valid.

3.5.6 Where Continuous Emission Monitors are installed to comply with the monitoring requirements in schedule 3 table S3.1:

- (a) a QAL2 test as specified in BS EN 14181 shall be performed at least every three years or whenever there are significant changes to either the process, the fuel used or to the CEMs themselves;
- (b) an Annual Surveillance Test (AST) shall be performed at least annually, as specified within BS EN 14181;
- (c) the operator shall have a procedure to apply the QAL3 requirements of BS EN 14181

## 3.6 Fire prevention

3.6.1 The operator shall take all appropriate measures to prevent fires on site and minimise the risk of pollution from them including, but not limited to, those specified in any approved fire prevention plan.

3.6.2 The operator shall:

- (a) if notified by the Environment Agency that the activities are giving rise to a risk of fire, submit to the Environment Agency for approval within the period specified, a fire prevention plan which prevents fires and minimises the risk of pollution from fires;
- (b) implement the fire prevention plan, from the date of approval, unless otherwise agreed in writing by the Environment Agency.

## 4 Information

### 4.1 Records

4.1.1 All records required to be made by this permit shall:

- (a) be legible;
- (b) be made as soon as reasonably practicable;
- (c) if amended, be amended in such a way that the original and any subsequent amendments remain legible, or are capable of retrieval; and
- (d) be retained, unless otherwise agreed in writing by the Environment Agency, for at least 6 years from the date when the records were made, or in the case of the following records until permit surrender:
  - (i) off-site environmental effects; and
  - (ii) matters which affect the condition of the land and groundwater.

4.1.2 The operator shall keep on site all records, plans and the management system required to be maintained by this permit, unless otherwise agreed in writing by the Environment Agency.

## 4.2 Reporting

4.2.1 The operator shall send all reports and notifications required by the permit to the Environment Agency using the contact details supplied in writing by the Environment Agency.

4.2.2 A report or reports on the performance of the activities over the previous year shall be submitted to the Environment Agency by 31 January (or other date agreed in writing by the Environment Agency) each year. The report(s) shall include as a minimum:

- (a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data;
- (b) the annual production /treatment data set out in schedule 4 table S4.2; and
- (c) the performance parameters set out in schedule 4 table S4.3 using the forms specified in table S4.4 of that schedule.
- (d) the functioning and monitoring of the plant involved with the burning of waste derived fuels, in a format agreed with the Environment Agency. The report shall, as a minimum requirement (as required by Chapter IV of the Industrial Emissions Directive) give an account of the running of the process and the emissions into air and water compared with the emission standards in the IED

4.2.3 Within 28 days of the end of the reporting period the operator shall, unless otherwise agreed in writing by the Environment Agency, submit reports of the monitoring and assessment carried out in accordance with the conditions of this permit, as follows:

- (a) in respect of the parameters and emission points specified in schedule 4 table S4.1;
- (b) for the reporting periods specified in schedule 4 table S4.1 and using the forms specified in schedule 4 table S4.4 ; and
- (c) giving the information from such results and assessments as may be required by the forms specified in those tables.

4.2.4 The operator shall, unless notice under this condition has been served within the preceding four years, submit to the Environment Agency, within six months of receipt of a written notice, a report assessing whether there are other appropriate measures that could be taken to prevent, or where that is not practicable, to minimise pollution.

4.2.5 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency using the form made available for the purpose, the information specified on the form relating to the site and the waste accepted and removed from it during the previous quarter.

4.2.6 Within 1 month of the end of each quarter, the operator shall submit to the Environment Agency, using the form specified by the Environment Agency for the purpose, the information specified on the form, relating to the types of waste Alternative Raw Materials and Waste-Derived Fuels that the Operator has used in that quarter

## 4.3 Notifications

4.3.1 In the event:

- (a) that the operation of the activities gives rise to an incident or accident which significantly affects or may significantly affect the environment, the operator must immediately—
  - (i) inform the Environment Agency,
  - (ii) take the measures necessary to limit the environmental consequences of such an incident or accident, and



- (iii) take the measures necessary to prevent further possible incidents or accidents;
  - (b) of a breach of any permit condition the operator must immediately—
    - (i) inform the Environment Agency, and
    - (ii) take the measures necessary to ensure that compliance is restored within the shortest possible time;
  - (c) of a breach of permit condition which poses an immediate danger to human health or threatens to cause an immediate significant adverse effect on the environment, the operator must immediately suspend the operation of the activities or the relevant part of it until compliance with the permit conditions has been restored.
- 4.3.2 Any information provided under condition 4.3.1 (a)(i), or 4.3.1 (b)(i) where the information relates to the breach of a limit specified in the permit, shall be confirmed by sending the information listed in schedule 5 to this permit within the time period specified in that schedule.
- 4.3.3 Where the Environment Agency has requested in writing that it shall be notified when the operator is to undertake monitoring and/or spot sampling, the operator shall inform the Environment Agency when the relevant monitoring and/or spot sampling is to take place. The operator shall provide this information to the Environment Agency at least 14 days before the date the monitoring is to be undertaken.
- 4.3.4 The Environment Agency shall be notified within 14 days of the occurrence of the following matters, except where such disclosure is prohibited by Stock Exchange rules:
- Where the operator is a registered company:
- (a) any change in the operator's trading name, registered name or registered office address; and
  - (b) any steps taken with a view to the operator going into administration, entering into a company voluntary arrangement or being wound up.
- Where the operator is a corporate body other than a registered company:
- (a) any change in the operator's name or address; and
  - (b) any steps taken with a view to the dissolution of the operator.
- 4.3.5 Where the operator proposes to make a change in the nature or functioning, or an extension of the activities, which may have consequences for the environment and the change is not otherwise the subject of an application for approval under the Regulations or this permit:
- (a) the Environment Agency shall be notified at least 14 days before making the change; and
  - (b) the notification shall contain a description of the proposed change in operation.
- 4.3.6 The Environment Agency shall be given at least 14 days notice before implementation of any part of the site closure plan.
- 4.3.7 Where the operator has entered into a climate change agreement with the Government, the Environment Agency shall be notified within one month of:
- (a) a decision by the Secretary of State not to re-certify the agreement;
  - (b) a decision by either the operator or the Secretary of State to terminate the agreement; and
  - (c) any subsequent decision by the Secretary of State to re-certify such an agreement.

## 4.4 Interpretation

- 4.4.1 In this permit the expressions listed in schedule 6 shall have the meaning given in that schedule.
- 4.4.2 In this permit references to reports and notifications mean written reports and notifications, except where reference is made to notification being made "immediately" in which case it may be provided by telephone.

# Schedule 1 – Operations

Table S1.1 activities			
Activity reference	Activity listed in Schedule 1 of the EP Regulations	Description of specified activity	Limits of specified activity
AR1	Section 3.1 Part A(1)(a)	Producing cement clinker in a rotary kiln with a production capacity exceeding 500 tonnes per day or in other kilns with a production capacity exceeding 50 tonnes per day.	<u>Kiln K7</u> From the transport of raw materials and fuels from bulk storage, the preparation (including blending of raw materials specified within table S2.1 in order to produce raw meal) and feeding of all materials into the kiln system, through to discharge of cooled clinker to the clinker store, and emissions to air from the main stack and other process vents.
AR2	Section 3.1 Part A(2)(a)	Grinding cement clinker	<u>Cement mills no. 7, 8, 9 &amp; 10.</u> The transport of clinker, including imported clinker, from the clinker store and handling of raw materials from bulk storage, through to mills and subsequent blending and storage of cement. Includes emissions to air from the mill stacks and other process vents.
AR3	Section 3.1 part B (a)	Storing, loading or unloading cement or cement clinker in bulk prior to further transportation in bulk.	Storage and dispatch of cement clinker and cement in bulk by road or rail.
AR4	Section 3.1 part B (b)	Blending cement in bulk or using cement in bulk other than at a construction site, including the bagging of cement and cement mixtures, the batching of ready-mixed concrete and the manufacture of concrete blocks and other cement products.	Blending and bagging of cement products
Directly Associated Activities			
AR5	Raw materials storage and handling	Raw materials receipt, transport, preliminary preparation and bulk storage	From the recovery of raw materials from the quarry floors and crushing, and the receipt on site of other raw materials, including alternative raw materials, through to bulk storage.
AR6	Fuels storage and handling	Delivery and bulk storage of fuels	Offloading of waste-derived and fossil fuels, and transfer to bulk storage
AR7	Clinker import	Bulk import of cement clinker by road and rail	Offloading of cement clinker imported to site by road and rail and transfer to the clinker stores.

Directly Associated Activities			
AR8	Waste storage and handling	Waste storage and handling	From waste generation, storage and monitoring through to dispatch off site.
AR9	Water discharge to controlled water	Management of site drainage and process water.	From collection of surface water drainage including reuse within site activities through to discharge to controlled waters.

Table S1.2 Operating techniques		
Description	Parts	Date Received
Application	The responses to question 2.1 given in section CCL/Ribble/2.1/management techniques/0801. Excluding A2.2 reference to chipped tyre trial.	29/08/2001
Response to Schedule 4 request for information (dated 21/12/2001)	The response given in section CCL/Ribble/2.1/Management techniques/Sch4 2002 and response.	07/05/2002
Response to Schedule 7 request for information (dated 13/02/2004).	All parts.	15/04/2004
Application for variation to comply with the requirements of the WID.	The response given in section C2.3 Management, of the main WID variation application.	31/03/2005
Variation application EPR/BL7272IB/V007	Parts C2 and C3.	14/06/2010
Application for variation EPR/BL7272IB/V009 to adopt the procedures outlined in the 2014 Code of Practice	All parts, including charges to the Environmental Management System (EMS) for the introduction of Alternative Raw Materials and Waste-Derived Fuels.	17/10/2014
Response to Regulation 60(1) Notice dated 07/08/2014 requiring information	In relation to the IED Best Available Techniques, the details submitted against CLM BAT conclusion numbers 1-29.	Received 08/01/2015
	Additional information provided against the IED Best Available Techniques, the details submitted against CLM BAT conclusion numbers 5(g), 16, 5, 26, 7, 8, 9, 13, 17, 18, 19, 20, 25 and 26.	Received 02/07/2016
	Additional information provided against the IED Best Available Techniques, request for derogation from BATc17 and BATc18.	Received 26/05/2016
Additional information	Kiln 7 Particulate Emission Limit Derogation Request Further Information.	Received 16/08/2016
	Ribblesdale Cement Mill 7 and 8 Particulate Emissions	Received 22/11/2016
	Further information (for derogation from BATc21) amending previous emission data relating to SO <sub>2</sub> impacts.	Received 16/12/2016
	Further information on emission points A10 – A14, and details of additional emission points A15 and A16.	Received 23/12/2016 and 14/02/2017

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC11	<p>The operator shall submit a report to the Environment Agency, for written approval detailing:-</p> <ul style="list-style-type: none"> <li>• Confirmation of the completion that changes proposed within the regulation 60 response and additional information to emission points A3, A4, A5, A6, A7, A8 and A9 [table S3.1] in order to comply with BAT-AELs by the compliance date of 9<sup>th</sup> April 2017.</li> <li>• A progress update on the installation of new indicative monitors for key plant including, but not limited to, the reheat duct, the outlet of the main ESP, and the outlet of the bypass ESP. <i>Where completion has not been achieved, the Operator shall provide a timetable for such completion, and provide written confirmation when completion is achieved.</i></li> <li>• A progress update on planned upgrade works to the wet scrubber, in order to achieve compliance for BATc 17, BATc18, and BATc21 (emission points A1 and A2 table S3.1).</li> </ul> <p>This improvement condition shall be deemed complete upon confirmation of completion for all works.</p>	02/05/2017
IC12	<p>The operator shall submit a report to the Environment Agency detailing:-</p> <ul style="list-style-type: none"> <li>• A progress update on the scrubber refurbishment works, including but not limited to:- <ul style="list-style-type: none"> <li>i). a start date and end date for the refurbishment works (for a maximum duration of 6 months), and</li> <li>ii). actions to be taken during the 6 month period when the scrubber is not operational including, but not limited to, operating in accordance with an odour management plan.</li> </ul> </li> </ul> <p>The report shall be submitted to the Environment Agency for approval in writing.</p>	02/05/2017 <i>[or earlier where scrubber refurbishment works commence before this date].</i>
IC13	<p>The operator shall investigate the feasibility of installing monitoring access to and/or modifying the ductwork of dust emission points A10 – to A16 (Table S3.2) to enable MCERTs monitoring of emissions to be carried out at each point.</p> <p>The operator shall assess each emission point and produce a risk-based plan of modifications with the aim of ensuring that MCERTs monitoring can be carried out. The plan shall prioritise the larger and more significant dust emission points.</p> <p>For any emission points where MCERTS monitoring is not proposed, the operator shall provide justification for why and propose an alternative means for demonstrating compliance with the limit of 10 mg/Nm<sup>3</sup>.</p> <p>A report detailing the assessment of each dust emission, the plan for modifications, timescales and any alternative compliance assessments shall be submitted to the Environment Agency for written approval. The plan shall be implemented upon approval by the Environment Agency.</p>	31/07/17

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC14	<p>The operator shall submit an updated report on ammonia emissions (quantifying both ammonia slip and background ammonia) from the Installation, in order to confirm that the current ELV for ammonia (stated within table S3.1) remains appropriate. The report shall include:-</p> <ul style="list-style-type: none"> <li>• An assessment of usage rates following the ELV reduction for 'Oxides of Nitrogen' to 450mg/Nm<sup>3</sup> in order to demonstrate that ammonia dosing (through SNCR) is optimised, whilst complying with the Ammonia slip BAT-AEL of 50mg/Nm<sup>3</sup>.</li> <li>• An updated impact assessment / dispersion modelling for Total Ammonia which: <ul style="list-style-type: none"> <li>i) considers the maximum ammonia emission rate (as worst case),</li> <li>ii) considers uncorrected ammonia concentrations, and</li> <li>iii) considers the default environmental standard of 1µg/m<sup>3</sup> <i>unless appropriate justification can be provided for using the less stringent value of 3µg/m<sup>3</sup>.</i></li> </ul> </li> </ul> <p>The impact assessment shall confirm that impacts are acceptable (for total ammonia) for emissions at the proposed ammonia ELV.</p> <p>The report shall be submitted to the Environment Agency for written approval. The Environment Agency may change the total ammonia limit stated within table S3.1 of this permit upon completion of this improvement condition.</p>	01/09/2017
IC15	<p>The operator shall consider the existing impact assessment / air dispersion modelling report for the Installation, and confirm the following in writing to the Environment Agency:-</p> <ul style="list-style-type: none"> <li>• That the clinker production rates and effective volumetric flow rates and emission rates used in the modelling reflect current maximum clinker production, volumetric flow and emission rates. <i>Consideration should be made for the annual production capacity value stated within the introductory note of this permit.</i></li> <li>• That the assessments were undertaken using uncorrected emission data (rather than emissions data calculated to standardised reference conditions and before IED chapter IV confidence correction was applied).</li> <li>• That the sensitive receptors and other factors such as environmental standards / targets, as included within the dispersion modelling report, remain relevant.</li> </ul> <p>Where any of the above identify variances to the conditions used within the impact assessment / air dispersion modelling, then the Operator shall undertake a new impact assessment / air dispersion modelling for all emissions to air from the Installation (as listed within tables S3.1 and S3.2) in order to confirm all impacts as acceptable.</p> <p>The Environment Agency may revise the limits in table S3.1, S3.2 and S3.4 in response to this improvement condition.</p>	01/09/2017

## Schedule 2 – Waste types, raw materials and fuels

Table S2.1 Raw materials and fuels		
Raw materials and fuel description		
Alternative Raw Materials		
Wastes used as raw materials (not as fuels)	Minimum Mineral Content	At least 80% dry weight (w/w)
	Organic Materials	Organic Materials as measured by net CV should be <10MJ/kg dry (w/w)
	Mercury	≤ 2 ppm
	TOC/VOC	≤ 5000 mg/kg as organic hydrocarbon
	No materials which are defined as carcinogens for the purposes of the COSHH Regulations 2002 (as amended) shall be used.	
EWC Numbers (excluding domestic municipal wastes)		
01 Wastes resulting from exploration, mining, quarrying, physical and chemical treatment of minerals	wastes from mineral metalliferous excavation	01 01 01
	wastes from mineral non-metalliferous excavation	01 01 02
	waste gravel and crushed rocks other than those mentioned in 01 04 07	01 04 08
	waste sand and clays	01 04 09
	wastes from stone cutting and sawing other than those mentioned in 01 04 07	01 04 13
02 Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	soil from cleaning and washing beet	02 04 01
	off-specification calcium carbonate	02 04 02
03 Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	lime mud waste	03 03 09
04 Wastes from the leather, fur and textile industries	liming waste	04 01 02
06 Wastes from inorganic chemical processes	calcium hydroxide	06 02 01*
	calcium-based reaction wastes other than those mentioned in 06 09 03	06 09 04
	calcium-based reaction wastes from titanium dioxide production	06 11 01
10 Wastes from thermal processes	bottom ash, slag and boiler dust (excluding boiler dust mentioned in 10 01 04)	10 01 01

**Table S2.1 Raw materials and fuels**

<b>Raw materials and fuel description</b>		
	Coal fly ash	10 01 02
	fly ash from peat and untreated wood	10 01 03
	calcium-based reaction wastes from flue-gas desulphurisation in solid form	10 01 05
	calcium-based reaction wastes from flue-gas desulphurisation in sludge form	10 01 07
	bottom ash, slag and boiler dust from co-incineration other than those mentioned in 10 01 14	10 01 15
	fly ash from co-incineration containing hazardous substances	10 01 16*
	Fly ash from co-incineration other than those mentioned in 10 01 16	10 01 17
	Mill scales	10 02 10
	sludges and filter cakes from gas treatment containing hazardous substances.	10 02 13*
	casting cores and moulds which have not undergone pouring other than those mentioned in 10 09 05	10 09 06
	Casting cores and moulds which have undergone pouring other than those mentioned in 10 09 07	10 09 08
	casting cores and moulds which have not undergone pouring, other than those mentioned in 10 10 05	10 10 06
	casting cores and moulds which have undergone pouring, other than those mentioned in 10 10 07	10 10 08
	Waste glass-based fibrous materials	10 11 03
	Discarded moulds	10 12 06
	waste ceramics, bricks, tiles and construction products (after thermal processing)	10 12 08
	waste preparation mixture before thermal processing	10 13 01
	wastes from calcination and hydration of lime	10 13 04
	Particulates and dust (except 10 13 12 and 10 13 13)	10 13 06

<b>Table S2.1 Raw materials and fuels</b>		
<b>Raw materials and fuel description</b>		
	Wastes from cement-based composite materials other than those mentioned in 10 13 09 and 10 13 10	10 13 11
	Solid wastes from gas treatment containing hazardous substances	10 13 12*
	Solid wastes from gas treatment other than those mentioned in 10 13 12	10 13 13
	Waste concrete and concrete sludge	10 13 14
16 Wastes not otherwise specified in the list	Spent catalysts containing transition metals or transition metal compounds not otherwise specified	16 08 03
	Spent fluid catalytic cracking catalysts (except 16 08 07)	16 08 04
	spent catalysts contaminated with hazardous substances	16 08 07*
17 Construction and demolition wastes (including excavated soil from contaminated sites)	concrete	17 01 01
	bricks	17 01 02
	tiles and ceramics	17 01 03
	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06*.	17 01 07
	soil and stones other than those mentioned in 17 05 03	17 05 04
	dredging spoil other than those mentioned in 17 05 05	17 05 06
	track ballast other than those mentioned in 17 05 07	17 05 08
	Gypsum-based construction materials other than those mentioned in 17 08 01	17 08 02
19 Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use	Aqueous liquid wastes from gas treatment and other aqueous liquid wastes	19 01 06*
	Fly ash containing hazardous substances	19 01 13*
	Premixed wastes composed only of non-hazardous wastes	19 02 03
	Premixed wastes composed of at least one hazardous waste	19 02 04*
	Sludges from treatment of urban waste water	19 08 05



<b>Table S2.1 Raw materials and fuels</b>		
<b>Raw materials and fuel description</b>		
	sludges containing hazardous substances from other treatment of industrial waste water	19 08 13*
	Sludges from water clarification	19 09 02
	minerals (for example sand, stones)	19 12 09
	Other wastes (including mixtures of materials) from mechanical treatment of waste containing hazardous substances	19 12 11*
	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	19 12 12
<b>Fuels (including Waste Derived Fuels)</b>		
Gas oil	Sulphur Content $\leq$ 0.1% by weight (w/w)	
Coal	Sulphur Content $\leq$ 2.0% by weight (w/w)	
Petcoke	Sulphur Content $\leq$ 2.0% by weight (w/w)	
Coal / Petcoke mix	Sulphur Content $\leq$ 2.0% by weight (w/w)	
Waste generated on-site in connection with the handling and storing of waste derived fuels	Burnt with chipped tyres at a rate that constitutes less than 1.0% by mass of the chipped tyre feed rate.	
New waste derived fuel for feasibility trials	Specification to be agreed in writing with the Environment Agency.	
Chipped Tyres	EWC Number	16 01 03
	Gross CV	15 – 40 MJ/kg
	Sulphur	$\leq$ 2.0%
Meat & Bone Meal (MBM)	EWC Number	02 02 03
	Gross CV	10 – 40 MJ/kg
	Sulphur	$\leq$ 2.0%
	Chlorine	$\leq$ 2.0%
Solid Recovered Fuel (SRF)	Gross CV	10 – 40 MJ/kg
	Sulphur	$\leq$ 2.0%
	Chlorine	$\leq$ 2.0%
	Total Fluorine, Bromine & Iodine	$\leq$ 1.5%

<b>Table S2.1 Raw materials and fuels</b>		
<b>Raw materials and fuel description</b>		
	Mercury	≤10 mg/kg
	Total Group II Metals (Cd + Tl)	≤30 mg/kg
Waste Liquid Fuels (WLF)	Gross CV	10 – 42 MJ/kg
	Sulphur	≤2.0%
	Chlorine	≤2.0%
	Total Fluorine, Bromine & Iodine	≤1.5%
	Mercury	≤20 mg/kg
	Total Group II Metals (Cd + Tl)	≤40 mg/kg
Processed Sewage Pellets (PSP)	Gross CV	10 – 40 MJ/kg
	Sulphur	≤2.0%
	Chlorine	≤2.0%
	Mercury	≤10 mg/kg
	Total Group II Metals (Cd + Tl)	≤30 mg/kg
Recovered Fuel Oil (RFO)	Gross CV	30 – 48 MJ/kg
	Sulphur	≤2.0%
	Chlorine	≤2.0%
	Mercury	≤10 mg/kg
	Total Group II Metals (Cd + Tl)	≤40 mg/kg
Wood	Gross CV	10 – 40 MJ/kg
	Sulphur	≤2.0%
	Chlorine	≤2.0%
	Total Fluorine, Bromine & Iodine	≤1.5%
	Mercury	≤10 mg/kg
	Total Group II Metals (Cd + Tl)	≤30 mg/kg
EWC Numbers (excluding domestic municipal wastes)		

<b>Table S2.1 Raw materials and fuels</b>		
<b>Raw materials and fuel description</b>		
02 Wastes from agriculture, horticulture, aquaculture, forestry, hunting and fishing, food preparation and processing	Waste plastics (except packaging)	02 01 04
	Wastes from forestry	02 01 07
	materials unsuitable for consumption or processing	02 02 03
03 Wastes from wood processing and the production of panels and furniture, pulp, paper and cardboard	Waste bark and cork	03 01 01
	Sawdust, shavings, cuttings, wood, particle board and veneer other than those mentioned in 03 01 04	03 01 05
	Waste bark and wood	03 03 01
	De-inking sludges from paper recycling	03 03 05
	Mechanically separated rejects from pulping of waste paper and cardboard	03 03 07
	Wastes from sorting of paper and cardboard destined for recycling	03 03 08
	Fibre rejects, fibre-, filler- and coating-sludges from mechanical separation	03 03 10
04 Wastes from the leather, fur and textile industries	Wastes from dressing and finishing	04 01 09
	Wastes from composite materials (impregnated textile, elastomer, plastomer)	04 02 09
	Wastes from unprocessed textile fibers	04 02 21
	Wastes from processed textile fibers	04 02 22
05 Wastes from petroleum refining, natural gas purification and pyrolytic treatment of coal	other tars	05 06 03*
07 Wastes from organic chemical processes	Waste plastic.	07 02 13
09 Wastes from the photographic industry	Photographic film and paper free of silver or silver compounds	09 01 08
12 Wastes from shaping and physical and mechanical surface treatment of metals and plastics	Plastic shavings and turnings	12 01 05
13 Oil wastes and wastes of liquid fuels (except edible oils, 05 and 12)	Fuel oil and diesel	13 07 01*
15 Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified	Paper and cardboard packaging	15 01 01
	Plastic packaging	15 01 02

<b>Table S2.1 Raw materials and fuels</b>		
<b>Raw materials and fuel description</b>		
	Wooden packaging	15 01 03
	Composite packaging	15 01 05
	Mixed packaging	15 01 06
	Textile packaging	15 01 09
16 Wastes not otherwise specified in the list	End-of-Life Tyres	16 01 03
	Plastic	16 01 19
	Components not otherwise specified	16 01 22
17 Construction and demolition wastes (including excavated soil from contaminated sites)	Wood	17 02 01
	Plastic	17 02 03
19 Wastes from waste management facilities, off-site waste water treatment plants and the preparation of water intended for human consumption and water for industrial use	Liquid combustible waste containing hazardous substances	19 02 08*
	Combustible waste other than those in 19 02 08* and 19 02 09*	19 02 10
	Sludges from treatment of urban waste water	19 08 05
	Paper and cardboard	19 12 01
	Plastic and rubber	19 12 04
	Wood other than mentioned in 19 12 06	19 12 07
	Textiles	19 12 08
	Combustible waste (refuse-derived fuel)	19 12 10
	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11	19 12 12
20 Municipal wastes (household waste and similar commercial, industrial and institutional wastes) including separately collected fractions	Paper and cardboard	20 01 01
	Clothes	20 01 10
	Textiles	20 01 11
	Wood other than that mentioned in 20 01 37	20 01 38
	Plastics	20 01 39

## Schedule 3 – Emissions and monitoring

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method			
A1	Cement plant Kiln7, main stack	Particulate matter	Until 31/03/2019 32 mg/Nm <sup>3</sup>	Daily average	Continuous measurement	BS EN 14181			
			From 31/03/2019 20 mg/Nm <sup>3</sup> Note (1)						
		Oxides of nitrogen	Until 09/04/2017 500 mg/Nm <sup>3</sup>						
			From 09/04/2017 450 mg/Nm <sup>3</sup>						
		Sulphur dioxide	Until 31/03/2018 1,000 mg/Nm <sup>3</sup> Note 2						
			From 31/03/2018 200 mg/Nm <sup>3</sup>						
		Ammonia	Until 09/04/2017 No limit set						
			From 09/04/2017 200 mg/Nm <sup>3</sup> Note 3						
		Carbon Monoxide	2,000 mg/Nm <sup>3</sup>						
		Total Organic Carbon (TOC)	100 mg/Nm <sup>3</sup>						
		Hydrogen chloride	10 mg/Nm <sup>3</sup>						
		Hydrogen fluoride	1 mg/Nm <sup>3</sup>				Periodic : Average value over minimum 1-hour period	Six monthly periodic monitoring	ISO 15713
		Cadmium & thallium and their compounds (total)	0.05 mg/Nm <sup>3</sup>				Periodic : Average value over minimum 30 minute, maximum 8 hour period		BS EN 14385
Mercury and its compounds	0.05 mg/Nm <sup>3</sup>	BS EN 13211							
Group III metals	0.5 mg/Nm <sup>3</sup>	BS EN 14385							

**Table S3.1 Point source emissions to air – emission limits and monitoring requirements for kiln exhaust(s)**

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference period	Monitoring frequency	Monitoring standard or method
		Dioxins / furans (I-TEQ)	0.1 ng/Nm <sup>3</sup>	Periodic : Average value over sample period of between 6 and 8 hours		BS EN 1948 Parts 1, 2 & 3
		Dioxins / furans (WHO-TEQ Humans / Mammals /fish / birds)	No limit set			
		PCBs [Dioxin-like PCBs (WHO-TEQ Humans / Mammals / fish / birds)]				
		PAHs Specific individual poly-cyclic aromatic hydrocarbons				BS ISO 11338 part 1 & 2

Note 1 The ELV will be based on an oxygen correction to 14% as opposed to the standard 10% due to the sample location

Note 2 Maximum Period / Duration of emission for 6 months only. Limit to revert to 200 mg/Nm<sup>3</sup> following such period.

Note 3 Limit subject to change following completion of improvement condition IC4

**Table S3.2 Point source emissions to air – emission limits and monitoring requirements**

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
A2 (point 5 on site plan)	Clinker cooler Note 1		Until 31/03/2019 40 mg/m <sup>3</sup>	Daily average	Continuous measurement and annual periodic (as CEMs check)	BS EN 15267-3
			From 31/03/2019 20 mg/Nm <sup>3</sup>			
A3 (point 4 on site plan)	Cement milling plant (no.s 9 & 10) [No2 Redicam]	Particulate matter	Until 09/04/2017 40 mg/m <sup>3</sup>	Daily average	Continuous measurement and annual periodic (as CEMs check)	BS EN 15267-3
			From 09/04/2017 10 mg/Nm <sup>3</sup>	Average value over minimum 30 minute period	Quarterly Note 3	BS EN 13284-1
A4 (point 3 on site plan)	Cement milling plant (no.s 9 & 10)	Particulate matter	Until 09/04/2017 40 mg/m <sup>3</sup>	Daily average	Continuous measurement and annual periodic (as CEMs check)	BS EN 15267-3

Table S3.2 Point source emissions to air – emission limits and monitoring requirements						
Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
	[No1 Redicam]		From 09/04/2017 10 mg/Nm <sup>3</sup>	Average value over minimum 30 minute period	Quarterly Note 3	BS EN 13284-1
A5 (point 2 on site plan)	Cement Mill No.7		Until 09/04/2017 75 mg/m <sup>3</sup> (then no longer in use)	Daily average	Continuous measurement and annual periodic (as CEMs check)	BS EN 15267-3
A6 (point 1 on site plan)	Cement Mill No.8					
A7	Cement Mill No's 7 & 8		From 09/04/2017 10 mg/Nm <sup>3</sup>	Average value over minimum 30 minute period	Quarterly Note 3	BS EN 13284-1
A8 (point 8 on site plan)	Coal mill No. 4		Until 09/04/2017 40 mg/m <sup>3</sup>	Daily average	Continuous measurement and annual periodic (as CEMs check)	BS EN 15267-3
			From 09/04/2017 10 mg/Nm <sup>3</sup>	Average value over minimum 30 minute period	Quarterly Note 3	BS EN 13284-1
A9 (point 7 on site plan)	Coal mill No. 5		Until 09/04/2017 40 mg/m <sup>3</sup>	Daily average	Continuous measurement and annual periodic (as CEMs check)	BS EN 15267-3
			From 09/04/2017 10 mg/Nm <sup>3</sup>	Average value over minimum 30 minute period	Quarterly Note 3	BS EN 13284-1
A10	Raw meal silo H1P11		From 09/04/2017 10 mg/Nm <sup>3</sup>	-	In accordance with maintenance management system or other monitoring as agreed in writing by the Environment Agency. Note 4	Permanent sampling access not required
A11	Crushing plant No.1 Dust Collector					
A12	Crushing plant No.2 Dust Collector					
A13	Crushing plant No.3 Dust Collector					
A14	Crushing plant No.4 Dust Collector	Particulate matter				

Emission point ref. & location	Source	Parameter	Limit (including unit)	Reference Period	Monitoring frequency	Monitoring standard or method
A15	Packing Plant - Haver Rotopacker dust filter					
A16	Packing Plant - Arodo packer dust filter					
All other channelled dust emissions abated by filters.	Dusty operations such as crushing, conveyors, material handling, silos				In accordance with maintenance management system	Permanent sampling access not required

Note 1 Emission during abnormal operations when Wet Scrubber if off line.

Note 2 If used for a period exceeding 21 consecutive days, unless agreed otherwise, in writing, with the Environment Agency.

Note 3 The frequency of monitoring (quarterly) may be reduced after 12 months operation at the lower emission value (to 6<sup>th</sup> monthly) upon written agreement from the Environment Agency.

Note 4 Monitoring frequency and monitoring method subject to change following the completion of improvement condition IC13.

Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
W1 on site plan (emission to River Ribble at SD 7503 4412)	Surface water run-off, quarry drainage and cooling water, via catch pit.	Total suspended solids	45 mg/l	spot sample	Monthly	-
		pH	5 - 9			
		Oil or grease	Non visible			
W2 on site plan (emission to River Ribble at SD 7452 4396)	Surface water run-off and cooling water via interceptor and settling pond.	Total suspended solids	45 mg/l			
		pH	5 - 9			
		Oil or grease	Non visible			
W3 (emission to Worston Brook at SD 7619 4254)	water from the de watering of Bellman quarry [EA discharge permit, number 017190882]	Total suspended solids	35 mg/l			
		pH	6 - 9			

Substance	Medium	Limit (including unit)
None	-	-



Table S3.5 Process monitoring requirements				
Emission reference or source or description of point of measurement	Parameter	Monitoring frequency	Monitoring standard or method	Other specifications
Cement Kiln Dust and / or By-pass dust.	Metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium Zinc) and their compounds.	6 Monthly	Sampling in accordance with a protocol agreed in writing with the Agency.	
	Dioxins/furans and dioxin-like PCBs			
	Halides (Chloride, Bromide and Fluoride)			
	Total soluble fraction for metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc)	Before use of a new disposal or recycling route		
A1 (Kiln 7)	Temperature	Continuous	As described in the application or otherwise agreed in writing with the Environment Agency	Traceable to National Standards
	Pressure			
	Oxygen content			
	Water vapour content			
	Fuels usage	Monthly		
	Waste derived fuels usage			
	Relative thermal input of waste derived fuels			
	Ammonia usage	Continuous		
	Cyclone 4 inlet duct temperature (°C)			
	Raw meal feed rate (t/hr)			
A3,A4,A7,A8,A9	Particulates		Indicative	From 09/04/2017

## Schedule 4 – Reporting

Parameters, for which reports shall be made, in accordance with conditions of this permit, are listed below.

<b>Table S4.1 Reporting of monitoring data</b>			
<b>Parameter</b>	<b>Emission or monitoring point/reference</b>	<b>Reporting period</b>	<b>Period begins</b>
Emissions to air Parameters as required by condition 3.5.1.	A1 – A2.	Monthly summary of continuous monitoring reported quarterly	1 January, 1 April, 1 July, 1 October.
	A3 – A9.	Quarterly periodic monitoring reported every 6 months	1 January, 1 July.
	A1.	6 monthly periodic monitoring reported every 6 months	1 January, 1 July.
Emissions to water Parameters as required by condition 3.5.1	W1 – W3.	Every 6 months	1 January, 1 July.
Alternative raw materials, and Waste Derived Fuel usage as required by condition 4.2.6	A1.	Quarterly	1 January.
Functioning and monitoring of the plant involved in the burning of waste derived fuels, as required by condition 4.2.2.		Annually	1 January.
Process Monitoring Parameters as required by condition 3.5.1	Cement Kiln Dust and / or By-pass dust composition	Annually	1 January.
	Fuels usage		
	Waste derived fuels usage		
	Relative thermal input of waste derived fuels		
	Ammonia usage		

<b>Table S4.2: Annual production/treatment</b>	
<b>Parameter</b>	<b>Units</b>
-	-

<b>Table S4.3 Performance parameters</b>		
<b>Parameter</b>	<b>Frequency of assessment</b>	<b>Units</b>
Mass of CKD/BPD sent off-site for landfill	Quarterly	Tonnes
Mass of CKD/BPD sent off-site for recovery		

<b>Table S4.3 Performance parameters</b>		
<b>Parameter</b>	<b>Frequency of assessment</b>	<b>Units</b>
Amount of produced gypsum from scrubber operation		

<b>Table S4.4 Reporting forms</b>		
<b>Media/parameter</b>	<b>Reporting format</b>	<b>Date of form</b>
Air	Form air 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Water and Land	Form water 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Waste derived fuels and alternative raw materials	Form WDF/ARM1 or other form as agreed in writing by the Environment Agency	DD/MM/YY
Process Monitoring	Form process1 or other form as agreed in writing by the Environment Agency	
Annual WID report	Report format as agreed in writing by the Environment Agency	DD/MM/YY
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	DD/MM/YY

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# Schedule 5 – Notification

These pages outline the information that the operator must provide.

Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

If any information is considered commercially confidential, it should be separated from non-confidential information, supplied on a separate sheet and accompanied by an application for commercial confidentiality under the provisions of the EP Regulations.

## Part A

Permit Number	<b>EPR/BL7272IB</b>
Name of operator	<b>Castle Cement Limited</b>
Location of Facility	<b>Ribblesdale Cement Works</b>
Time and date of the detection	

<b>(a) Notification requirements for any malfunction, breakdown or failure of equipment or techniques, accident, or emission of a substance not controlled by an emission limit which has caused, is causing or may cause significant pollution</b>	
<b>To be notified within 24 hours of detection</b>	
Date and time of the event	
Reference or description of the location of the event	
Description of where any release into the environment took place	
Substances(s) potentially released	
Best estimate of the quantity or rate of release of substances	
Measures taken, or intended to be taken, to stop any emission	
Description of the failure or accident.	

<b>(b) Notification requirements for the breach of a limit</b>	
<b>To be notified within 24 hours of detection unless otherwise specified below</b>	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	

<b>(b) Notification requirements for the breach of a limit</b>	
<b>To be notified within 24 hours of detection unless otherwise specified below</b>	
Measures taken, or intended to be taken, to stop the emission	

<b>Time periods for notification following detection of a breach of a limit</b>	
<b>Parameter</b>	<b>Notification period</b>

<b>(c) Notification requirements for the detection of any significant adverse environmental effect</b>	
<b>To be notified within 24 hours of detection</b>	
Description of where the effect on the environment was detected	
Substances(s) detected	
Concentrations of substances detected	
Date of monitoring/sampling	

**Part B – to be submitted as soon as practicable**

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission	
The dates of any unauthorised emissions from the facility in the preceding 24 months.	

Name*	
Post	
Signature	
Date	

\* authorised to sign on behalf of the operator

## Schedule 6 – Interpretation

“*abatement equipment*” means that equipment dedicated to the removal of polluting substances from releases from the installation to air or water media.

“*accident*” means an accident that may result in pollution.

“*annual average*” means the average of all daily averages in a calendar year.

“*annually*” means once every year.

“*application*” means the application for this permit, together with any additional information supplied by the operator as part of the application and any response to a notice served under Schedule 5 to the EP Regulations.

“*authorised officer*” means any person authorised by the Environment Agency under section 108(1) of The Environment Act 1995 to exercise, in accordance with the terms of any such authorisation, any power specified in section 108(4) of that Act.

“*background concentration*” means such concentration of that substance as is present in:

- for emissions to surface water, the surface water quality up-gradient of the site; or
- for emissions to sewer, the surface water quality up-gradient of the sewage treatment works discharge.

“*CEM*” means Continuous Emission Monitor.

“*Chapter IV abnormal operating conditions*” means any technically unavoidable stoppages, disturbances, or failures of the abatement plant or the measurement devices, during which the concentrations in the discharges into air or waste water of the regulated substances may exceed the normal emission limit values.

“*chipped tyres*” means both chipped and granulate tyre or rubber conveyor belt derived material.

“*Climate Change Agreement*” means an agreement made between the Secretary of State and the operator, either directly or through the offices of any association of which he is a member, in which he agrees to secure energy efficiency improvements as set out in a plan agreed with the Secretary of State in that agreement in return for a discount from the amount he would otherwise pay as a Climate Change Levy.

“*commissioning*” relates to the period after construction has been completed or when a modification has been made to the plant or the raw materials when the Permitted installation process is being tested and modified to operate according to its design.

“*COSHH Regulations 2002 (as amended)*” means the Control of Substances Hazardous to Human Health Regulations 2002 (as amended) (SI 2002 No.2677).

“*CO trip*” means a de-energisation of electrical precipitators following detection of carbon monoxide in the kiln gases above a pre-determined concentration. This is a safety system.

“*daily*” means a 24 hour period commencing at 12:00 hrs (either midnight or midday as agreed in writing with the Environment Agency).

“*daily average*” for releases of substances to air means the average of valid half-hourly averages over consecutive discrete period of 24 hours commencing at a time agreed in writing with the Environment Agency during normal operation.

“*dioxin and furans*” means polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans.

“*disposal*” Means any of the operations provided for in Annex I to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“*ELV*” means emission limit value.

“emissions of substances not controlled by emission limits” means emissions of substances to air, water or land from the activities, either from the emission points specified in schedule 3 or from other localised or diffuse sources, which are not controlled by an emission or background concentration limit.

“emissions to land” includes emissions to groundwater.

“EP Regulations” means The Environmental Permitting (England and Wales) Regulations SI 2010 No.675 and words and expressions used in this permit which are also used in the Regulations have the same meanings as in those Regulations.

“EWC code” means the code number from the European Waste Catalogue.

“groundwater” means all water, which is below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

“group I metals” means mercury (Hg).

“group II Metals” means Cadmium (Cd) and Thallium (Tl).

“group III Metals” means Antimony (Sb), Arsenic (As), Chromium (Cr), Cobalt (Co), Copper (Cu), Lead (Pb), Manganese (Mn), Nickel (Ni), & Vanadium (V) and their compounds (total).

“half-hour or half-hourly” means a 30 minute period commencing on the hour or at half past the hour.

“hazardous property” has the meaning in Annex III of the Waste Framework Directive.

“hazardous waste” has the meaning given in the Hazardous Waste (England and Wales) Regulations 2005 (as amended).

“hourly” means a 60 minute period commencing on the hour.

“Industrial Emissions Directive” or “IED” means DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions

“ISO” means International Standards Organisation.

“kiln flush” refers to kiln upset due to a surge of feed material into the kiln which passes through without reacting fully.

“kiln shut down” is defined as when the plant is being returned to a non-operational state and no waste is being burned. Emission limit values do not apply during shutdown once the feed rate is below 130 tonne per hour.

‘Kiln Start Up’ means from the time when raw meal is introduced into the kiln to the time the feed rate has reached 130 tonne per hour and the kiln is stable or as otherwise agreed in writing by the Agency.

On commencing kiln operation, the first continuous monitoring daily average can be calculated from the 24 hour period starting from the time that kiln start-up has completed. Subsequent daily averages will be based on a 24 hour period commencing 12 noon/midnight.

“List of Wastes” means the list of wastes established by Commission Decision 2000/532/EC replacing Decision 94/3/EC establishing a list of wastes pursuant to Article 1(a) of Council Directive 75/442/EEC on waste and Council Decision 94/904/EC establishing a list of hazardous waste pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste, as amended from time to time.

“LNR” means Local Nature Reserve

“LWS” means Local Wildlife Site

“MBM” means Meat and Bone Meal. MBM is classified as a non-hazardous waste by the EWC Code 02 02 03, defined as “Wastes from the preparation and processing of meat, fish and other foods of animal origin” and the sub-clause “Materials unsuitable for consumption or processing”. MBM cannot contain raw or unprocessed meat, bones or animal parts, or any other waste of agricultural, horticultural or industrial origin.

“MCERTS” means the Environment Agency’s Monitoring Certification Scheme.

“Monitoring” includes the taking and analysis of samples, instrumental measurements (periodic and continual), calibrations, examinations, tests and surveys.

“MPA Code of Practice” means the MPA Code of Practice for the use of waste materials in Cement and Dolomitic Lime Manufacture – dated October 2014

“*Oxides of Nitrogen (NO<sub>x</sub>)*” means nitric oxide (NO) plus nitrogen dioxide (NO<sub>2</sub>) expressed as NO<sub>2</sub>

“*PAH*” means Poly-cyclic aromatic hydrocarbon, and comprises Anthanthrene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Benzo[b]naph(2,1-d)thiophene, Benzo[c]phenanthrene, Benzo[ghi]perylene, Benzo[a]pyrene, Cholanthrene, Chrysene, Cyclopenta[c,d]pyrene, Dibenz[ah]anthracene, Dibenz[*a,i*]pyrene, Fluoranthene, Indo[1,2,3-cd]pyrene, Naphthalene

“*PCB*” means Polychlorinated Biphenyl. Dioxin-like PCBs are the non-ortho and mono-ortho PCBs listed in the table below,

“*PCP*” means Pentachlorophenol,

“*permitted installation*” means the activities and the limits to those activities described in Table S1.1 of this Permit.

“*PFA*” means pulverised fuel ash and is the fine ash recovered from the gas stream from the combustion of pulverised coal in coal-fired power stations

“*quarter*” means a calendar year quarter commencing on 1 January, 1 April, 1 July or 1 October.

“*quarterly periodic monitoring*” for reporting/sampling means after/during each 3 month period, January to March; April to June; July to September and October to December and, when sampling, with at least 2 months between each sampling date.

“*recovery*” means any of the operations provided for in Annex II to Directive 2008/98/EC of the European Parliament and of the Council on waste.

“*SAC*” means Special Area of Conservation

“*six monthly periodic monitoring*” means periodic monitoring in each 6 month period (January-June & July – December) with at least 4 months between sampling dates.

“*SSSI*” means a site of special scientific interest designated under the Wildlife and Countryside Act 1981 being a site in the UK which is of particular importance because of its geology, topography, or ecology.

“*thermal input*” refers to the combined pre-calciner and main kiln burner inputs. Maximum thermal substitution of hazardous waste shall not exceed 40% to comply with IED co-incineration requirements. Hazardous waste may be substituted only as a main kiln burner input due to IED minimum thermal operating requirements.

“*TOC*” means Total Organic Carbon. In respect of releases to air, this means the gaseous and vaporous organic substances, expressed as TOC.

“*waste code*” means the six digit code referable to a type of waste in accordance with the List of Wastes and in relation to hazardous waste, includes the asterisk.

“*Waste Framework Directive*” or “*WFD*” means Waste Framework Directive 2008/98/EC of the European Parliament and of the Council on waste

“*year*” means calendar year ending 31 December.

Where a minimum limit is set for any emission parameter, for example pH, reference to exceeding the limit shall mean that the parameter shall not be less than that limit.

Unless otherwise stated, any references in this permit to concentrations of substances in emissions into air means:

- (a) in relation to emissions from cement kilns, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 10% dry for all fuels;
- (b) in relation to emissions from combustion processes from other sources, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with an oxygen content of 3% dry for liquid and gaseous fuels; and



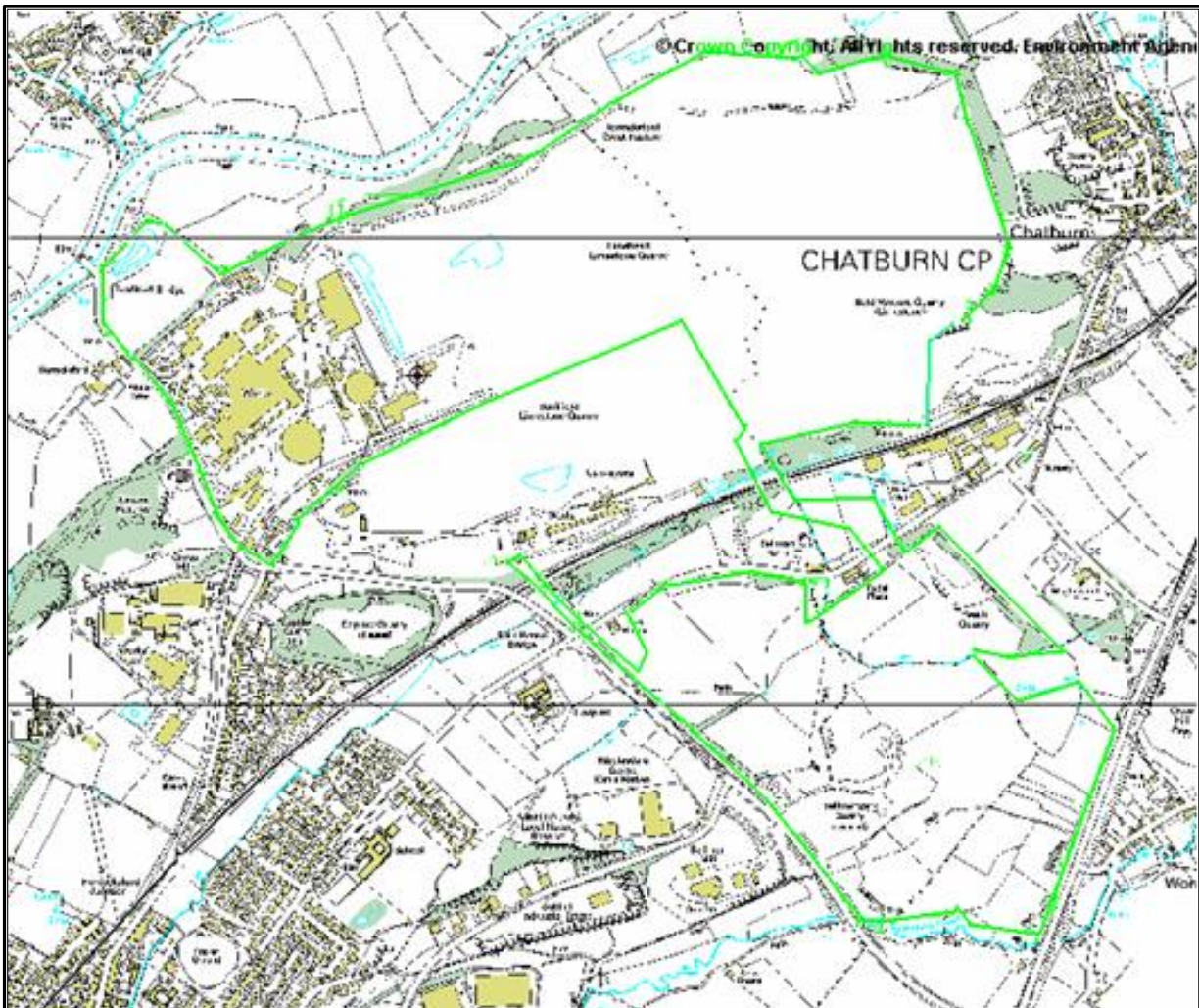
- (c) in relation to emissions from non-combustion sources, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with no correction required for oxygen.

For dioxins/furans and dioxin-like PCBs the determination of the toxic equivalence concentration (I-TEQ, & WHO-TEQ for dioxins/furans, WHO-TEQ for dioxin-like PCBs) stated as a release limit and/ or reporting requirement, the mass concentrations of the following congeners have to be multiplied with their respective toxic equivalence factors before summing.

<b>TEF schemes for dioxins and furans</b>				
<b>Congener</b>	<b>I-TEF(1990)</b>	<b>WHO-TEF (1997/8)</b>		
		<b>Humans / Mammals</b>	<b>Fish</b>	<b>Birds</b>
<b>Dioxins</b>				
2,3,7,8-TCDD	1	1	1	1
1,2,3,7,8-PeCDD	0.5	1	1	1
1,2,3,4,7,8-HxCDD	0.1	0.1	0.5	0.05
1,2,3,6,7,8-HxCDD	0.1	0.1	0.01	0.01
1,2,3,7,8,9-HxCDD	0.1	0.1	0.01	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01	0.001	<0.001
OCDD	0.001	0.0001	-	-
<b>Furans</b>				
2,3,7,8-TCDF	0.1	0.1	0.05	1
1,2,3,7,8-PeCDF	0.05	0.05	0.05	0.1
2,3,4,7,8-PeCDF	0.5	0.5	0.5	1
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01	0.01
OCDF	0.001	0.0001	0.0001	0.0001

<b>TEF schemes for dioxin-like PCBs</b>			
<b>Congener</b>	<b>WHO-TEF (1997/8)</b>		
	<b>Humans / mammals</b>	<b>Fish</b>	<b>Birds</b>
<b>Non-ortho PCBs</b>			
3,4,4',5'-TCB (81)	0.0001	0.0005	0.1
3,3',4,4'-TCB (77)	0.0001	0.0001	0.05
3,3',4,4',5' - PeCB (126)	0.1	0.005	0.1
3,3',4,4',5,5'-HxCB(169)	0.01	0.00005	0.001
<b>Mono-ortho PCBs</b>			
2,3,3',4,4'-PeCB (105)	0.0001	<0.000005	0.0001
2,3,4,4',5-PeCB (114)	0.0005	<0.000005	0.0001
2,3',4,4',5-PeCB (118)	0.0001	<0.000005	0.00001
2',3,4,4',5-PeCB (123)	0.0001	<0.000005	0.00001
2,3,3',4,4',5-HxCB (156)	0.0005	<0.000005	0.0001
2,3,3',4,4',5'-HxCB (157)	0.0005	<0.000005	0.0001
2,3',4,4',5,5'-HxCB (167)	0.00001	<0.000005	0.00001
2,3,3',4,4',5,5'-HpCB (189)	0.0001	<0.000005	0.00001

# Schedule 7 – Site plan



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END OF PERMIT

# Annex to conditions – Derogation under Industrial Emissions Directive

Derogation under Article 15(4) of Industrial Emissions Directive

**DIRECTIVE 2010/75/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on industrial emissions**

Operating techniques	We have considered the Operator’s proposed techniques and its comparison against other relevant techniques as described in best available techniques (BAT) conclusions (BATc) for the production of cement, lime and magnesium oxide and detailed in document reference 2013/163/EU. Our full reasoning is given in our decision document that accompanies the permit determination.					
CEMENT	The operator has been granted derogations from BATc17 ‘Particulate emissions from Kiln firing processes’, BATc18 ‘Particulate emissions from clinker cooling’ and BATc21 – Sulphur Dioxide emissions from kiln processes’. BATc’s 17 and 18 set a BAT-AEL of <10-20mg/Nm <sup>3</sup> (daily average or average over the sampling period) and BATc21 sets a BAT-AEL of <50–400 mg/Nm <sup>3</sup> (daily average or average over the sampling period). The derogation request was made on the basis of the technical characteristics of the plant, specifically the plant configuration (which makes it technically more difficult and costly to comply). The derogations are time limited (as shown below) beyond the BAT-AEL compliance date of 9 <sup>th</sup> April 2017.					
	<b>BAT conclusion</b>	<b>Associated BAT-AEL</b>	<b>Derogation until</b>	<b>ELV during derogation period</b>	<b>Previous ELV</b>	<b>ELV after derogation period</b>
17 (Kin 7)	<20 mg/Nm <sup>3</sup>	31/03/19	32 mg/Nm <sup>3</sup>	30 mg/Nm <sup>3</sup>	20 mg/Nm <sup>3</sup>	20 mg/Nm <sup>3</sup>
18 (clinker cooler)	<20 mg/Nm <sup>3</sup>	31/03/19	40 mg/Nm <sup>3</sup>	40 mg/Nm <sup>3</sup>	20 mg/Nm <sup>3</sup>	20 mg/Nm <sup>3</sup>
21 (Wet Scrubber)	<50–400 mg/Nm <sup>3</sup>	31/03/18	1,000 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>	200 mg/Nm <sup>3</sup>
<p>The Operator’s request for derogation from BATc17 and BATc18 considered 8 options for achieving compliance with the BAT-AEL.</p> <ul style="list-style-type: none"> <li>They proposed to suspend wet scrubbing operations (for a period of 6 months) in order to carry out improvement and maintenance works to the wet scrubber in order to improve particulate removal (which takes place within this plant) as their proposed option for achieving compliance with BAT-AELs for BATc17 and BATc18.</li> </ul> <p>The Derogation from BATc21 has been included as a result of the proposed option above. <i>Suspending wet scrubbing operations will impact the sulphur dioxide emission because the wet scrubber’s primary purpose is to abate sulphur emissions.</i> The Installation currently complies with the sulphur dioxide BAT-AEL of &lt;50–400 mg/Nm<sup>3</sup> (with an existing ELV of 200 mg/Nm<sup>3</sup>), however will not comply during the period when the Wet Scrubber is temporarily offline and will require a maximum limit of 1,000 mg/Nm<sup>3</sup> in order to account for such interruption to sulphur dioxide abatement. <i>This limit allows some headroom (for any elevated sulphur contained within the raw material) whilst evidence has shown that unabated releases will typically be significantly less than this limit.</i></p> <p>The increase of 2 mg/Nm<sup>3</sup> to the particulates ELV (within the permit) to 32 mg/Nm<sup>3</sup> relates to the requirement to report emissions to an oxygen content of 10% for which the technical characteristics of this plant (plant configuration) impact upon such oxygen conditions prior to measurements are taken. (The operator has demonstrated that the mass of particulates is not increasing from kin operations). Following the derogation period, the limit is reduced to 20 mg/Nm<sup>3</sup> in compliance with the BAT-AEL but, due to the location of the sampling point</p>						

after the gas streams are mixed, the oxygen correction factor has been changed to 14% as opposed to 10%. Compliance with the BATC for dust is still met at each of the points (exit from scrubber and exit from the clinker cooler) but the combined gas flow can only effectively be measured on the main stack where the 14% correction is more appropriate.

Improvements to particulate abatement within the wet scrubber (see point 2 below) will be made during the period that the scrubber is offline, following which time wet scrubbing operations will resume, and the sulphur dioxide limit is resumed to 200 mg/Nm<sup>3</sup>. The operator is only permitted a maximum period of 6 months (for scrubber offline) during which time the emission limit value will increase to 1,000 mg/Nm<sup>3</sup>.

We have considered the operators justification for departure from the guidance and accept it in the following respects and for the following reasons;

- 1) The operator has supplied a valid derogation request against BAT conclusions 17 and 18. The derogation request is based on the technical characteristics of the plant; specifically the plant configuration (which makes it technically more difficult and costly to comply). Maintenance works need to be carried out on the wet scrubber, during which time the scrubber will need to be offline. As a consequence of this, a third derogation from BATc21 has been accepted for the period when sulphur dioxide abatement will be unavailable.
- 2) The operator has described 8 relevant options for achieving the BAT-AEL and justified the screening out of 3 options. Five options were taken forward for cost benefit analysis. The Operator proposes to refurbish the wet scrubber, including an extension to the existing scrubber vessel, and increase to the demisting capacity of the scrubber (to improve upon its performance). The time limited derogation is requested to 31/03/19 for BATc17 and BATc18. The time limited derogation period for BATc21 is 31/03/18 (based upon a 6 month period from when works are scheduled to commence).
- 3) The operator has demonstrated that the costs of achieving the BAT-AEL by 09/04/17 are disproportionate to the environment benefits, and that these are linked to the technical characteristics of the plant. The costs of meeting the BAT-AEL on time are significantly higher than the environmental benefits of doing so in comparison to the proposed derogation option. There are no other options which show the benefits outweighing the costs even under sensitivity testing.
- 4) The derogation request is to delay compliance with the BAT-AEL (for BATc17 and BATc18) until 31 March 2019. During this period the ELV for the kiln ELV will increase from 30 to 32 mg/Nm<sup>3</sup>, and the Cooler ELV will remain at 40 mg/Nm<sup>3</sup>. The derogation from BATc21 is until 31 March 2018, and during this period the current ELV of 200 mg/Nm<sup>3</sup> will be increased to 1,000 mg/Nm<sup>3</sup> for the reasons detailed earlier. We have deemed that the impacts to the environment (for the time period set) are acceptable.
- 5) The proposed derogation, timescale and associated ELVs have been accepted in principle. However, we have set an improvement condition to monitor progress with these.