

Notice of variation and consolidation with introductory note

The Environmental Permitting (England & Wales) Regulations 2010

Castle Cement Limited
Ketton Cement Works
Ketton
Stamford
Lincolnshire
PE9 3SX

Variation application number

EPR/BM0486IT/V011

Permit number

ERR/BM0486IT

Ketton Works

Permit number ERR/BM0486IT

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/BM0486IT. 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 26 March 2013.

Ketton Cement Works (the installation) is operated by Castle Cement Limited and is located in Ketton at grid reference SK98470532 near Stamford, Lincolnshire.

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 1 million tonnes per annum using pre-calciner kiln technology.

Brief description of the process:

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

Clay, limestone and iron ore sourced from the quarry are transported to the crushing plant. Once the stone has been crushed it is combined with the clay and selected minerals (including waste alternative materials) according to site requirements, and then transported to one of two raw material storage houses – one for blended materials (slightly clay rich), and the other limestone. From here the raw materials are transferred to the raw mill where the material is dried and undergoes size reduction to produce raw meal, which is then stored within storage silos prior to feed into the kiln. Additional selected waste alternative raw materials may be added at the raw meal milling stage.

Cement Clinker Production

The Installation is permitted to operate two “dry” process kilns, Kiln 7 and Kiln 8.

[Kiln 7 was commissioned in 1975, and currently is mothballed / non-operational, however remains present within the permit until the operator applies for surrender of that activity].

Kiln 8 is a 4 stage pre-calciner kiln commissioned in 1986. Raw meal is conveyed to the top of the pre-heater tower and enters the first stage of the pre-heater. The feed descends through each stage of the pre-heater until reaching the calciner combustion chamber that is located at the base of the pre-heater tower. During the descent down the tower, the raw meal is heated by hot exhaust gases from both the kiln and from fuel fired in the calciner combustion chamber as the heat rises through the cyclones (in a counter-current direction).

The combustion chamber provides a temperature of 880°C allowing for 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 4.2m in diameter, 68m in length, and it lined with refractory bricks. The kiln is inclined at 4° to the horizontal and as it rotates material passes downhill from the inlet towards the outlet. Material within the kiln is raised to a temperature profile of around 1450°C - during which a series of chemical reactions take place to produce cement clinker. The clinker leaves the kiln and enters the cooler. The cooler comprises a series of moving grates where cold air is used to cool the clinker to 250°C. The 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 fuels used are petcoke and coal which are 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 kiln process is used to dry the raw meal and coal during the milling process. This improves the energy efficiency of the Installation by reducing the amount of heat energy lost to atmosphere.

Cement Production

Cooled clinker is transported to the clinker store for intermediate storage – pending transport to one of six 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.

The majority of cement produced is despatched in bulk by rail and road while the remainder is mechanically conveyed to an automatic bagging plant. The filled bags are palletised and stored in a dedicated warehouse ready for despatch by road.

Emissions to Air

Waste gases are produced from various operations including fuel combustion (within the kiln), calcination of the raw meal (kiln and pre-heater), drying and preparation of raw materials fuel processing, and cement milling and packaging. 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]. A selective non-catalytic reduction (SNCR) system is utilised to control emissions of nitrogen oxides, and a lime injection system utilised to control emissions of HCl from the kiln stack.

A small proportion of gas is extracted through the kiln bypass in order to control cement alkaline chloride levels, which can create operational issues within the pre-heater tower if allowed to accumulate. Following gas conditioning, the by-pass gas re-joins abated kiln gases within the stack, and is discharged to atmosphere at a release height of 92 metres.

Emissions to Water

The Installation is permitted to abstract water from the River Chater that is primarily used for closed circuit cooling – avoiding contamination with materials used during the production process. Following cooling, the cooling water is collected with any surface rainwater and directed to an oil/water separator and settling

lagoon prior to discharge offsite back into the river. Table S3.3 of this permit contains emission limit values for the discharge to the River Chater.

Process waste materials that are not recycled on site are sent off site for further recovery/recycling/disposal. The works produces bypass dust [BPD] which is either disposed of in the on-site landfill, or conditioned and sent off site for soil conditioning, or for further processing / disposal.

There are a number of sensitive receptors close to the installation, including 1 Special Area of Conservation (SAC), 1 Special Protection Area (SPA), 1 Ramsar site, 1 Site of Special Scientific Interest (SSSIs), 5 Local Wildlife Sites (LWSs), and 4 Ancient Woodlands.

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.

Status log of the permit		
Description	Date	Comments
Application EPR/BM0486IT/A001	Received 29/08/2001	
Notice requiring information	Requested 21/03/2002	Response received 05/07/02
Notice requiring information	Requested 09/09/2002	Response received 16/12/02
Permit EPR/BM0486IT determined	17/12/2002	
Application for variation EPR/BM0486IT/V002 received	Received 27/08/2003	
Application for variation EPR/BM0486IT/V002 determined	16/09/2003	(PAS billing ref : BV6668IE)
Application for variation EPR/BM0486IT/V003 received	Received 20/10/2004	Application for MBM and Kiln 8 bypass variation
Application for variation EPR/BM0486IT/V003 determined	07/03/2005	(PAS billing red : EP3639SC)
Application for variation EPR/BM0486IT/V004 received	Received 24/03/2005	
Notice requiring information	Requested 16/05/2005	Response received 10/06/05
Application for variation EPR/BM0486IT/V004 determined	17/11/2005	(PAS billing ref: LP3532SL)
Application for variation EPR/BM0486IT/V005 received	10/10/2007	
Application for variation EPR/BM0486IT/V005 determined	21/01/2008	(PAS billing ref: MP3833XW)
Environment Agency led variation EPR/BM0486IT/V006 determined	27/07/2010	Environment Agency sector review for the Cement and Lime sector
Environment Agency led variation EPR/BM0486IT/V007 determined	18/08/2010	
Application for variation EPR/BM0486IT/V008	Duly made 25/07/2012	
Additional information received	02/08/2012	Further information - feed rate & profuel usage
	09/08/2012	Trial period extended
Application for variation EPR/BM0486IT/V008 determined	09/08/2012	Variation notice issued for burning SRF in kiln 8

Application for variation EPR/BM0486IT/V009 received	Duly made 21/08/2015	MPA Code of Practice dated October 2014
Application for variation EPR/BM0486IT/V009 determined	04/11/2015	
Application for variation EPR/BM0486IT/V010 received	Duly made 23/02/2016	Variation application for temporary operation at a reduced stack height.
Application EPR/BM0486IT/V010 withdrawn	05/05/2016	Remedial action complete completed prior to permit determination - normal operations resumed.
Regulation 60 Notice issued	29/04/2014	Notice requiring information for Environment Agency sector review [Cement and Lime sector]
Regulation 60 Response received	08/01/2015	
Notice requiring information	Requested 22/05/2015	Response received on 03/07/2015 and 26/05/2016
Variation EPR/BM0486IT/V011 (Billing Ref: YP3738RG) determined	05/04/2017	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/BM0486IT

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

Ketton Works

Ketton

Stamford

Lincolnshire

PE9 3SX

to the extent set out in the schedules.

The notice shall take effect from 05/04/2017

Name	Date
SIMON HEWITT	05/04/2017

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.

Permit

The Environmental Permitting (England and Wales) Regulations 2010

Permit number

ERR/BM0486IT

This is the consolidated permit referred to in the variation and consolidation notice for application
EPR/BM0486IT/V011 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

Ketton Works

Ketton

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PE9 3SX

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

Name	Date
SIMON HEWITT	05/04/2017

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”).
- 2.1.2 Activity AR1 (schedule 1, table S1.1) shall not take place until the operator has submitted a report in writing to the Environment Agency demonstrating compliance with the Best Available Techniques (BAT) as described in BAT conclusions (BATc) under Directive 2010/75/EU of the European Parliament and of the Council on Industrial Emissions for ‘The Production of Cement, Lime and Magnesium Oxide’, and has obtained written approval from the Environment Agency.

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 Any raw materials or fuels listed in schedule 2 table S2.1 shall conform to the specifications set out in that table.
- 2.3.4 Waste shall only be accepted if:
- (a) it is of a type and quantity listed in schedule 2 table S2.1;
 - (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.
- 2.3.5 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.
- 2.3.6 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.

- 2.3.7 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.
- 2.3.8 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.
- 2.3.9 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.
- 2.3.10 The operator shall ensure that prior to accepting waste derived fuels subject to condition 2.3.3 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 2.3.3.
- 2.3.11 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 2.3.10. 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.
- 2.3.12 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 50 tonnes/hr for Kiln 7 and less than 100 tonnes/hr for Kiln 8; or
 - (d) the calciner temperature on kiln 7 and kiln 8 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 kiln temperature on kiln 7 and kiln 8 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".

- 2.3.13 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.
- 2.3.14 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.
- 2.3.15 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.
- 2.3.16 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.
- 2.3.17 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.

2.5 Pre-operational conditions

- 2.5.1 There are no pre-operational conditions in this permit

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.

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 S3.5;

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 ₂ expressed as NO ₂)	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 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;
 - an Annual Surveillance Test (AST) shall be performed at least annually, as specified within BS EN 14181;
 - 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.	<p><u>Kiln K7 – mothballed</u></p> <p>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.</p>
AR2	Section 3.1 Part A(1)(a)		<p><u>Kiln K8.</u></p> <p>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.</p>
AR3	Section 3.1 Part A(2)(a)	Grinding cement clinker	<p><u>Cement mills no.5,6,7,8,9 & 10</u></p> <p>The transport of clinker, including imported clinker, from the clinker store and handling of raw materials from bulk storage, through milling in 6 mills and blending to storage of cement, including emissions to air from the mill stacks and other process vents</p>
AR4	Section 3.1 part B(a)	Storing, loading or unloading cement or cement clinker in bulk prior to further transportation in bulk.	Storage and dispatch of cement clinker and cement in bulk by road or rail.
AR5	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. Includes the blending with other cementitious materials - including Pulverised Fuel Ash (PFA) and Ground Granulated Blast-furnace Slag (GGBS).
Directly Associated Activities			
AR6	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.

Directly Associated Activities			
AR7	Fuels storage and handling	Delivery and bulk storage of fuels	Offloading of waste-derived and fossil fuels, and transfer to bulk storage
AR8	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.
AR9	Waste storage and handling	Waste storage and handling	From waste generation, storage and monitoring through to dispatch off site.
AR10	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 for permit EPR/BM0486IT	The response to question 2.1 given in section CCL/KETTON/2.1/Management Techniques/0801	29/08/2001
Response to Information Notice dated 27/03/2002	The response to question 8	05/07/2002
Application for variation EPR/BM0486IT/V003 [EP3639SC]	Section C2.3 of the application	20/10/2004
Application for variation EPR/BM0486IT/V004 [LP3532SL]	The response to questions given in sections C2.1, C2.7 and C2.10 of the application for variation	24/03/2005
Response to Information Notice dated 16/05/05	The response to questions 2,4 and 5	09/06/2005
Variation Application EPR/BM0461IT/V008	Parts C2 and C3 and the supplementary information supplied with these parts	Duly made 25/07/2012
Variation Application EPR/BM0461IT/V009 to adopt the procedures outlined in the October 2014 Code of Practice	All parts, including changes to the Environment Management System (EMS) for the introduction of Alternative Raw Materials and Waste Derived Fuels.	21/08/2015
Response to Regulation 60(1) Notice dated 29/04/2014 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, 8, 9, 11, 13, 17, 19, 20, 25 and 26.	Received 03/07/2015
	Additional information provided against the IED Best Available Techniques, request for derogation from BATc17 and BATc18 (Ketton Kiln 8 filter derogation request, Cooler derogation request, Ketton coal mill filter Derogation Request)	Received 26/05/2016

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC7	<p>The operator shall submit a report to the Environment Agency, for written approval detailing:-</p> <ul style="list-style-type: none"> • Confirmation of the completion of changes proposed within the regulation 60 response and additional information to cement mills 9 and 10 (emission points A8 & A9, table S3.1) in order to comply with BAT-AELs by the compliance date of 9th April 2017. • An update on any planned operations of cement mills 5, 6, 7 and 8 (emission points A4 – A7, table S3.1) together with confirmation that compliance with BAT-AELs will be achieved. • A progress update on planned upgrade works to particulate abatement plants serving Kiln 8, Kiln 8 clinker cooler and coal mill 8 (emission points A2, A3, and A10, table S3.1). <p>This improvement condition shall be deemed complete upon receipt of written approval from the Environment Agency.</p>	02/05/2017
IC8	<p>The operator shall investigate the feasibility of installing monitoring access to and/or modifying the ductwork of dust emission points A11 – to A24 (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/Nm³.</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>	30/11/2017
IC9	<p>The operator shall submit an updated report on ammonia emissions 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"> • An assessment of usage rates following the ELV reduction for 'Oxides of Nitrogen' to 450 mg/Nm³ in order to demonstrate that ammonia dosing (through SNCR) is optimised, whilst complying with the Ammonia slip BAT-AEL of 50mg/Nm³, • An assessment of the criteria used within the existing impact assessment / air dispersion modelling report, in order to confirm that:- <ul style="list-style-type: none"> i) maximum ammonia emission rates (as worst case scenario) were assessed, ii) emission concentrations are uncorrected, and iii) the environmental standard value used of 3µg/m³ (for protected conservation areas) is appropriate (by providing justification for use of this target over that of the default target value of 1µg/m³). <p>Where any of the above criteria have not been assessed, the Operator shall provide an updated impact assessment / air dispersion modelling report, and confirm that impacts remain acceptable (for total ammonia).</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>	01/09/2018

Table S1.3 Improvement programme requirements		
Reference	Requirement	Date
IC10	<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"> • 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> • 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). • That the sensitive receptors and other factors such as environmental standards / targets, as included within the dispersion modelling report, remain relevant. <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>	01/09/2018
IC11	<p>The operator shall undertake a review of “Baseline Report – Ketton Site” dated September 2014 (as provided in response to our Regulation 60 Notice issued on 29th April 2014), and submit a report to the Environment Agency for approval in writing.</p> <p>The review shall include justification for the following:-</p> <ul style="list-style-type: none"> • The exclusion of hydrocarbons (hazardous substances) testing from the analysis undertaken for ‘groundwater quality testing’ from the boreholes to the north of the site. • The locations tested within the baseline report, in consideration for their distance to operational areas containing the additional storage tanks -as identified within the report. <p>Where the review establishes that additional baseline data is required, the operator shall provide details of the data to be collected (to ensure that all areas containing potential hazardous substances are assessed) together with a proposed date for submission of an updated baseline report.</p> <p>Any updated baseline report shall include a monitoring plan (for the testing of soil every 10 years and groundwater every 5 years) in consideration of condition 3.1.5 of this permit unless demonstration can be made that this is not required.</p>	04/12/2017
IC12	<p>The operator shall carry out a feasibility study for recovering waste heat from the clinker cooler <i>in consideration of condition 1.2.1 of this permit</i> and planned modifications to the clinker cooler - as referenced within ‘Ketton Kiln Clinker Cooler 8 Particulate Emission Limit Derogation Request’ <i>provided as further information on 26/05/2016.</i></p> <p>A report detailing the findings the study shall be submitted to the Environment Agency. Where improvements are identified, the Operator shall propose a timetable for their implementation.</p>	02/04/2018

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-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
	Coal fly ash	10 01 02

Table S2.1 Raw materials and fuels		
Raw materials and fuel description		
	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
	Wastes from cement-based composite materials other than those mentioned in 10 13 09 and 10 13 10	10 13 11

Table S2.1 Raw materials and fuels		
Raw materials and fuel description		
	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
	Sludges from water clarification	19 09 02
	minerals (for example sand, stones)	19 12 09

Table S2.1 Raw materials and fuels		
Raw materials and fuel description		
	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
Fuels (including Waste Derived Fuels)		
Gas oil	Sulphur Content \leq 0.2 % by weight (w/w)	
Coal	Sulphur Content \leq 5.0 % by weight (w/w)	
Petcoke	Sulphur Content \leq 6 % by weight (w/w)	
Coal / Petcoke mix	Sulphur Content \leq 6 % 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%
	Mercury	\leq 10 mg/kg
	Total Group II Metals (Cd + Tl)	\leq 30 mg/kg
Waste Liquid Fuels (WLF)	Gross CV	10 – 42 MJ/kg

Table S2.1 Raw materials and fuels		
Raw materials and fuel description		
	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)		
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

Table S2.1 Raw materials and fuels		
Raw materials and fuel description		
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
	Wooden packaging	15 01 03
	Composite packaging	15 01 05
	Mixed packaging	15 01 06

Table S2.1 Raw materials and fuels		
Raw materials and fuel description		
	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	Kiln 7	Particulate matter	Compliance with condition 2.1.2 of this permit will result in emission limits being set within this permit.	-	-	-
		Oxides of nitrogen				
		Sulphur dioxide				
		Total Ammonia				
		Carbon monoxide				
		Total Organic Carbon (TOC)				
		Hydrogen chloride				
		Hydrogen fluoride				
		Cadmium & thallium and their compounds (total)				
		Mercury and its compounds				
		Group III metals				
		Dioxins / furans (I-TEQ)				
		Dioxins / furans (WHO-TEQ Humans / Mammals / fish / birds)				
PCBs [Dioxin-like PCBs (WHO-TEQ Humans / Mammals / fish / birds)]						
PAHs Specific individual polycyclic aromatic hydrocarbons						
A2	Kiln 8	Particulate matter	Until 01/04/2018 30 mg/Nm ³	Daily average	Continuous measurement	BS EN 14181 Note 1
			From 01/04/2018 10 mg/Nm ³			
		Oxides of nitrogen	Until 09/04/2017 800 mg/Nm ³			
			From 09/04/2017 450 mg/Nm ³			
Sulphur dioxide	200 mg/Nm ³					

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				
A2	Kiln 8	Total Ammonia	Until 09/04/2017 No limit set	Daily average	Continuous measurement	BS EN 14181 Note 1				
			From 09/04/2017 60 mg/Nm ³ Note 2							
		Carbon monoxide	1,650 mg/Nm ³							
		Total Organic Carbon (TOC)	80 mg/Nm ³							
		Hydrogen chloride	10 mg/Nm ³							
		Hydrogen fluoride	1 mg/Nm ³				Periodic : Average value over minimum 1-hour period	ISO 15713		
		Cadmium & thallium and their compounds (total)	0.05 mg/Nm ³				Periodic : Average value over minimum 30 minute, maximum 8 hour period	BS EN 14385		
		Mercury and its compounds	0.05 mg/Nm ³					BS EN 13211		
		Group III metals	0.5 mg/Nm ³					BS EN 14385		
		Dioxins / furans (I-TEQ)	0.1 ng/Nm ³				Periodic : Average value over sample period of between 6 and 8 hours	Six monthly periodic monitoring	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)]								BS EN/TS 1948 part 4
		PAHs Specific individual poly-cyclic aromatic hydrocarbons								BS ISO 11338 part 1 & 2

Note 1 Certification to the MCERTS performance standards indicates compliance with BS EN 15267-3

Note 2 Limit subject to change following completion of improvement condition IC9.

Table S3.2 Point source emissions to air – emission limits and monitoring requirements for non-kiln sources

Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method	
A3	Kiln 8 Clinker cooler	Particulate matter	Until 31/12/2020 50 mg/m ³	Daily average	Continuous measurement	BS EN 15267-3	
			From 31/12/2020 10 mg/Nm ³				
A4 – A7	Cement mills (No's 5, 6, 7, & 8)		10 mg/Nm ³ Note 1	Average value over minimum 30 minute period	6 monthly Note 2	BS EN 13284-1	
A8 – A9	Cement mills (No. 9, 10)		Until 9/4/2017 50 mg/Nm ³	Daily average	Continuous measurement	BS EN 13284-1	
			From 9/4/2017 10 mg/Nm ³	Average value over minimum 30 minute period	6 monthly Note 2	BS EN 13284-1	
A10	Coal mill 8		Until 31/12/2020 30 mg/m ³	Daily average	Continuous measurement	BS EN 13284-1	
			From 31/12/2020 10 mg/Nm ³	Average value over minimum 30 minute period	6 monthly Note 2	BS EN 13284-1	
A11	Crusher Building Filter		Particulate matter	From 9/4/2017 < 10 mg/Nm ³	-	In accordance with maintenance management system or other monitoring as agreed in writing by the Environment Agency. Note 3	Permanent sampling access not required
A12	Coal Crusher Filter						
A13	Silos 5 - 11						
A14	Silos 12 - 17						
A15	Clinker store (top filter)						
A16	Dust Plant (packer)						
A17	8 Raw Mill Silo						
A18	Silo 17B loading						
A19	Clinker extract conveyor						
A20	Sample Mill Vibro Filter						
A21	Sample station						
A22	8 Besta Building						
A23	Deep Bucket conveyors						
A24	Kiln Feed (tower)						

Emission point ref. & location	Source	Parameter	Limit (incl. unit)	Reference Period	Monitoring frequency	Monitoring standard or method
All other channelled dust emissions abated by filters.	Dusty operations such as crushing, conveyors, material handling, silos		From 9/4/2017 10 mg/Nm ³	-	In accordance with maintenance management system	Permanent sampling access not required

Note 1 Cement Mills currently non-operational. In the event that either mill should be restarted, the Operator shall write to the Environment Agency providing detail of any monitoring that will be undertaken (at restart) in order to demonstrate that the emission limit value (as stated) will be met.

Note 2 The frequency of monitoring (6 monthly) may be reduced after 12 months operation at the lower emission value (to annually) upon written agreement from the Environment Agency.

Note 3 Monitoring frequency and monitoring method subject to change following the completion of improvement condition IC8.

Emission point ref. & location	Source	Parameter	Limit (incl. Unit)	Reference period	Monitoring frequency	Monitoring standard or method
W1	Suspended Solids	Surface run-off and cooling water via settling lagoons.	50 mg/l	Daily average	Monthly spot monitoring	Method as agreed in writing with the Environment Agency
	Oil or Grease		None Visible	-		
	pH		7 – 9	-		
	Turbidity		115 NTU (Nephelometric Turbidity Units)	Daily average	Continuous	
	Temperature		25°C	-	Monthly spot monitoring	

Substance	Medium	Limit (including unit)
-	-	-

Table S3.5 Process monitoring requirements				
Emission point 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)	Before use of a new disposal or recycling route		
A2 (Kiln8)	Total soluble fraction for metals (Antimony, Cadmium, Thallium, Mercury, Lead, Chromium, Copper, Manganese, Nickel, Arsenic, Cobalt, Vanadium, Zinc)	Continuous	As described in the Application	Traceable to National Standards
	Temperature			
	Pressure			
	Oxygen content			
	Water vapour content	Monthly		
	Fuels usage			
	Waste derived fuels usage			
	Relative thermal input of waste derived fuels	Continuous		
	Ammonia usage			
Bottom stage cyclone inlet temperature (°C)				
Raw meal feed rate (t/hr)				
A4, A5, A6, A7, A8, A7, A10.	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.

Parameter	Emission or monitoring point/reference	Reporting period	Period begins
Emissions to air Parameters as required by condition 3.5.1.	A2 - A3,	Monthly summary of continuous monitoring reported quarterly	1 January, 1 April, 1 July, 1 October.
	A4 – A6.	Quarterly periodic monitoring reported every 6 months	1 January, 1 July.
	A2.	6 monthly periodic monitoring reported every 6 months	1 January, 1 July.
Emissions to water Parameters as required by condition 3.5.1	W1	Every 6 months	1 January, 1 July
Fuel Usage, Alternative raw materials, and Waste Derived Fuel usage as required by condition 4.2.6	A2.	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		

Parameter	Units
-	-

Parameter	Frequency of assessment	Units
Mass of CKD/BPD sent off-site for landfill	Annually	Tonnes
Mass of CKD/BPD sent off-site for recovery		

Table S4.4 Reporting forms		
Media/parameter	Reporting format	Date of form
Air	Form air 1 or other form as agreed in writing by the Environment Agency	April 2017
Water and Land	Form water 1 or other form as agreed in writing by the Environment Agency	
Waste derived fuels and alternative raw materials	Form WDF/ARM1 or other form as agreed in writing by the Environment Agency	
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	
Other performance indicators	Form performance 1 or other form as agreed in writing by the Environment Agency	

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	EPR/BM0486IT
Name of operator	Castle Cement Limited
Location of Facility	Ketton Cement Works
Time and date of the detection	

(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	
To be notified within 24 hours of detection	
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) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value and uncertainty	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

(b) Notification requirements for the breach of a limit	
To be notified within 24 hours of detection unless otherwise specified below	
Time periods for notification following detection of a breach of a limit	
Parameter	Notification period

(c) Notification requirements for the detection of any significant adverse environmental effect	
To be notified within 24 hours of detection	
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 100 tonne per hour [kiln 8].

“*Kiln Start Up*” means from the time when raw meal is introduced into the kiln to the time the feed rate has reached 100 tonne per hour [kiln 8] 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.

“*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_x)*” means nitric oxide (NO) plus nitrogen dioxide (NO₂) expressed as NO₂

“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, Dibenzo[ah]anthracene, Dibenzo[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.

“SPA” means Special Protection Area

“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

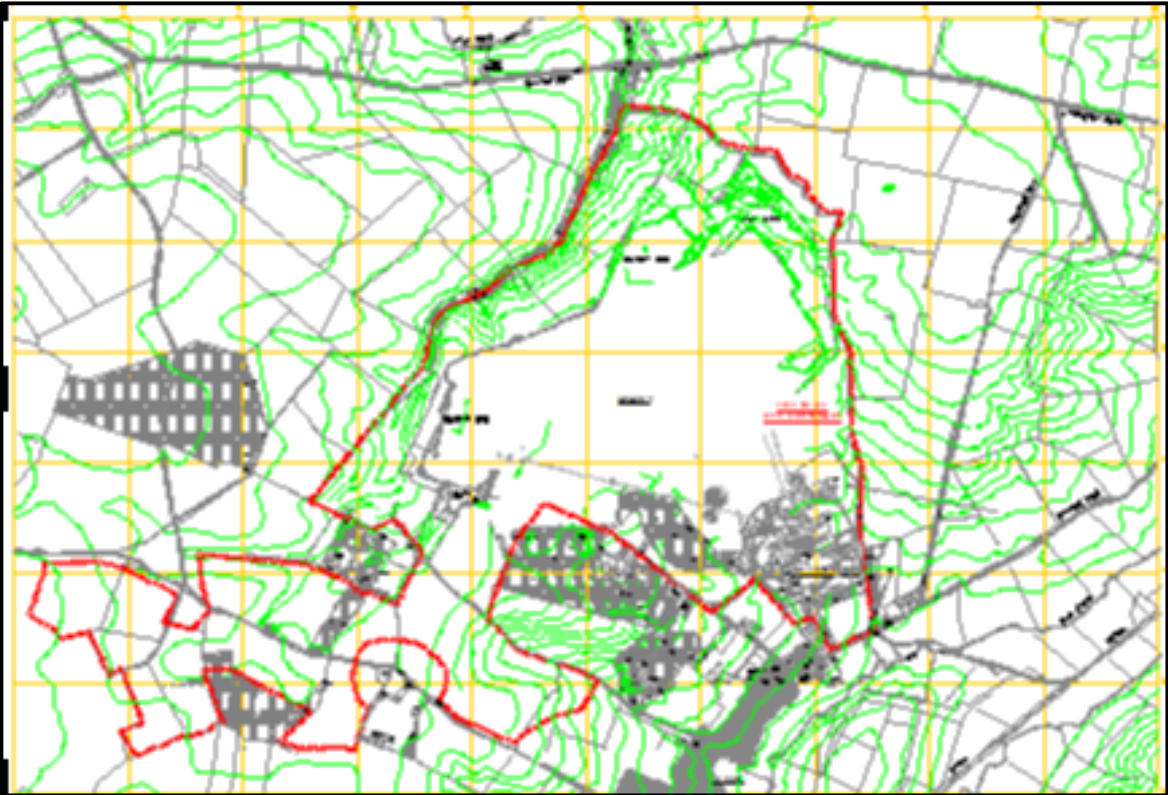
- (c) in relation to emissions from non-combustion sources, the concentration in dry air at a temperature of 273K, at a pressure of 101.3 kPa and with no correction required for oxygen.

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.

TEF schemes for dioxins and furans				
Congener	I-TEF	WHO-TEF		
		1990	2005	1997/8
		Humans / Mammals	Fish	Birds
Dioxins				
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	0.0003	-	-
Furans				
2,3,7,8-TCDF	0.1	0.1	0.05	1
1,2,3,7,8-PeCDF	0.05	0.03	0.05	0.1
2,3,4,7,8-PeCDF	0.5	0.3	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	0.0003	0.0001	0.0001

TEF schemes for dioxin-like PCBs			
Congener	WHO-TEF		
	2005	1997/8	
	Humans / mammals	Fish	Birds
Non-ortho PCBs			
3,4,4',5-TCB (81)	0.0001	0.0005	0.1
3,3',4,4'-TCB (77)	0.0003	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)	0.03	0.00005	0.001
Mono-ortho PCBs			
2,3,3',4,4'-PeCB (105)	0.00003	<0.000005	0.0001
2,3,4,4',5-PeCB (114)	0.00003	<0.000005	0.0001
2,3',4,4',5-PeCB (118)	0.00003	<0.000005	0.00001
2',3,4,4',5-PeCB (123)	0.00003	<0.000005	0.00001
2,3,3',4,4',5-HxCB (156)	0.00003	<0.000005	0.0001
2,3,3',4,4',5'-HxCB (157)	0.00003	<0.000005	0.0001
2,3',4,4',5,5'-HxCB (167)	0.00003	<0.000005	0.00001
2,3,3',4,4',5,5'-HpCB (189)	0.00003	<0.000005	0.00001

Schedule 7 – Site plan



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	<p>The operator has been granted derogations from BATc17 'Particulate emissions from Kiln firing processes', BATc18 'Particulate emissions from clinker cooling processes' and BATc18 'Particulate emissions from milling (coal milling) processes'. These BATc's sets a BAT-AEL of <10-20mg/Nm³ (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 practicability of interrupting the activity so as to install improved emission control. The derogations are time limited (as shown below) beyond the BAT-AEL compliance date of 9th April 2017.</p> <table border="1" data-bbox="380 842 1328 1249"> <thead> <tr> <th>BAT conclusion</th> <th>Associated BAT-AEL</th> <th>Derogation until</th> <th>ELV during derogation period</th> <th>Previous ELV</th> <th>ELV after derogation period</th> </tr> </thead> <tbody> <tr> <td>17 (Kin 8)</td> <td><20 mg/Nm³</td> <td>01/04/2018</td> <td>30 mg/Nm³</td> <td>30 mg/Nm³</td> <td>10 mg/Nm³</td> </tr> <tr> <td>18 (clinker cooler)</td> <td><20 mg/Nm³</td> <td>31/12/2020</td> <td>50 mg/m³</td> <td>50 mg/m³</td> <td>10 mg/Nm³</td> </tr> <tr> <td>18 (coal mill)</td> <td><10 mg/Nm³</td> <td>31/12/2020</td> <td>50 mg/m³</td> <td>30 mg/m³</td> <td>10 mg/Nm³</td> </tr> </tbody> </table> <p>The Operator's request considered 3 options (for each derogation) for achieving compliance with the BAT-AEL.</p> <ul style="list-style-type: none"> BATc17 'Particulate emissions from Kiln firing processes' : For Kiln 8 they proposed to continue using the Electrostatic Precipitator abatement kit - at the existing ELV of 30 mg/Nm³ until 01/04/2018 (the derogation period), from which point they will meet the BAT-AEL of 10 mg/Nm³ which is appropriate for fabric filter technology. <i>This abatement change will be implemented by the operator during annual shutdown (prior to the end of the derogation period).</i> BATc18 'Particulate emissions from clinker cooling processes' : For the clinker cooler they proposed to continue using the Electrostatic Precipitator abatement kit - at the existing ELV of 50 mg/Nm³ until 31/12/2020 (the derogation period), from which point they will meet the BAT-AEL of 10 mg/Nm³ which is appropriate for fabric filter technology. <i>This abatement change will be implemented by the operator during annual shutdown (prior to the end of the derogation period).</i> BATc18 'Particulate emissions from milling (coal milling) processes' : For Coal Mill 8 they proposed to continue using the Fabric Filter abatement kit – but reduce the existing ELV of 50 mg/Nm³ to 30 mg/Nm³ until 31/12/2020 (the derogation period), from which point they will meet the BAT-AEL of 10 mg/Nm³ which is appropriate for fabric filter technology. <i>The updated fabric filter will be implemented by the operator during annual shutdown (prior to the end of the derogation period).</i> <p>We have considered the operators justification for departure from the guidance and accept it in the following respects and for the following reasons;</p>	BAT conclusion	Associated BAT-AEL	Derogation until	ELV during derogation period	Previous ELV	ELV after derogation period	17 (Kin 8)	<20 mg/Nm ³	01/04/2018	30 mg/Nm ³	30 mg/Nm ³	10 mg/Nm ³	18 (clinker cooler)	<20 mg/Nm ³	31/12/2020	50 mg/m ³	50 mg/m ³	10 mg/Nm ³	18 (coal mill)	<10 mg/Nm ³	31/12/2020	50 mg/m ³	30 mg/m ³	10 mg/Nm ³
BAT conclusion	Associated BAT-AEL	Derogation until	ELV during derogation period	Previous ELV	ELV after derogation period																				
17 (Kin 8)	<20 mg/Nm ³	01/04/2018	30 mg/Nm ³	30 mg/Nm ³	10 mg/Nm ³																				
18 (clinker cooler)	<20 mg/Nm ³	31/12/2020	50 mg/m ³	50 mg/m ³	10 mg/Nm ³																				
18 (coal mill)	<10 mg/Nm ³	31/12/2020	50 mg/m ³	30 mg/m ³	10 mg/Nm ³																				

- 1) The operator has supplied valid derogation requests against BAT conclusions 17 and 18 (by 3 separate derogation requests) for the Kiln, Clinker Cooler and Coal Mill. The derogation request is based on the technical characteristics of the plant; complete replacement of a relatively new piece of plant would result in significant write-off costs. Maintenance and installation work needs to be carried out during the annual shutdown to avoid incurring the substantial costs of loss of production.
- 2) The operator has described 3 relevant options for achieving the BAT-AEL for each derogation. Three options were taken forward for cost benefit analysis. The Operator proposes to replace the existing electrostatic precipitator (for kiln and cooler) with a fabric filter, and replace the existing fabric filter on the coal mill with an updated fabric filter in order to meet the BAT-AEL's.
- 3) The operator has demonstrated that the costs of achieving the BAT-AEL by 9th April 2017 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 until the dates shown above, during this period there will be a reduction to emissions. We have deemed that the impacts of allowing the derogations are acceptable.
- 5) The proposed derogation, timescale and associated ELVs have been accepted in principle. We have set an improvement condition to monitor progress with these.