This Report has been cleared for submission to the Board by Senior Inspector, Brian Meaney.

Signed: Liz Reacy *Date: 7th June 2017*

OFFICE OF ENVIRONMENTAL SUSTAINABILITY

INSPECTOR'S REPORT ON AN INDUSTRIAL EMISSIONS LICENCE REVIEW REGISTER NUMBER P0029-05

TO: DIRECTORS

FROM: Dr. MAGNUS AMAJIRIONWU DATE: 7 June 2017

Licensee:	Irish Cement Limited
CRO number:	9212 (Status: Normal)
Location/address:	Rural site located at Castlemungret, County Limerick
Section 87(1)b notice sent:	18 January 2017
Classes of activity (under EPA Act 1992 as amended)	10.2 Production of 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. 11.1 The recovery or disposal of waste in a facility, within the meaning of the Waste Management Act, 1996, which facility is connected or associated with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.
European Directives relevant to this assessment are listed in the appendix of this report.	
Main CID	Commission Implementing Decision for the production of cement, lime and magnesium oxide (2013/163/EU).
Other relevant BREF documents are listed in the appendices of this report.	
Activity description Irish Cement Limited (ICL) has been producing cement at a site in Castlemungret, Co. Limerick since 1938. An IPC licence was first granted on 19th May 1996. The site comprises a limestone open cast quarry, the cement works and the Bunlicky Clayfield Pond. The licensee manufactures CEM I and eco-efficient CEM II cements at the installation with an authorised capacity to produce up to 1,300,000 tonnes of cement per annum.	
Information received	15 February and 28 February 2017
Submissions received	One

EIS submitted:	No	**NIS submitted:**	28 February 2017

1. Scope of Review

Scope of Licence Review

Proposed change	Details/comment
BAT Conclusions Review	This review has been initiated by the Agency for the purposes of updating the licence to ensure compliance with CID 2013/163/EU. This review was initiated by notifying the licensee and placing a newspaper notice in the Irish Independent.
Relevant Commission Implementation Decision Note 1	*Production of Cement, Lime and Magnesium Oxide*

Note 1: Refer to Appendices 3 to 6 of this report for more details on how BAT Conclusions have been addressed in the licence.

2. Licence/Permit History

Licence	Details	Date issued
P0029-01	Granted Integrated Pollution Control (IPC) licence for the production of cement	15 May 1996
P0029-01 TA*	Technical amendment to provide for the continued disposal of construction material containing asbestos in a dedicated on-site landfill facility; and update the licence to accommodate the 2003 amendments to the EPA Act.	10 May 2006
P0029-02	Compliance with the IPPC Directive (1996/61/EC) and the changes to Class 11 of the EPA Act.	28 April 2009
P0029-03	Compliance with requirements under the following Regulations: i. The European Communities Environmental Objectives (Surface Waters) Regulations ii. The European Communities Environmental Objectives (Groundwater) Regulations iii. The Waste Management (Management of Waste from the Extractive Industries) Regulations 2009	18 December 2013
P0029-03 IE Amendment	To bring existing licence into conformity with Industrial Emissions Directive 2010/75/EU.	6 February 2013
P0029-04	Licence review application withdrawn	-

TA* - Technical Amendment

3. Process Description

Limestone is quarried and crushed at the installation.

Cement production involves three stages:

Rawmilling: Limestone, shale, iron ore, pulverised fly ash are milled into a finely ground, dry and intimately mixed material known as rawmeal. Kiln exhaust gases are used for drying the mixture. The rawmeal is stored in silos.

Cement clinker: The rawmeal is mixed with fuel and charged to a horizontal inclined rotating kiln. Fuel is added at both ends and petroleum coke is milled prior to use. The heat develops a chemical reaction necessary to produce cement clinker. Evaporation and partial calcination of the rawmeal occurs in the preheater to the kiln. The calcination process is completed as the material travels down the rotary kiln where clinker minerals occur at 1500°C. The rotary kiln comprises of refractory materials that are replaced annually. The clinker is cooled by passing through planetary coolers attached to the end of the kiln.

Cement milling: Clinker and gypsum (with the assistance of grinding aids) are ground into a fine powder. Tin sulphate and ferrous sulphate are added to the final product as chrome reducing agents. The cement product is stored in silos prior to dispatch. Cement is dispatched either in bulk or 25kg bags via road or rail.

Blasting, noise and dust are associated with the quarry activities. The cement works generates air borne dusts and exhaust gases from the kiln. Water from the quarry is used as cooling water for various process plants. The landfilling of inert materials to Bunlicky Pond is undertaken as regulated in current licence P0029-03.

4. Compliance and Complaints Record

Compliance and complaints under existing licence

Under the current licence (P0029-03), Irish Cement Limited's compliance history for 2016 show that there were three non-compliances made up of one exceedance of an emission limit value (ELV) for NO_X on emission to air of 940.3mg/m^3 (the limit is 800mg/m^3); and two in relation to bunding and materials handling.

Three incidents were also recorded during the period; one in relation to abatement equipment and two in relation to dust. There were also three separate complaints as follows:

- In relation to a plume of black smoke,
- Two complaints in relation to noise.

The three valid complaints, two incidents and three non-compliances have all been closed out to the satisfaction of the Agency. No prosecution was recorded or in process of being taken against the licensee under licence register number P0029-03.

There is currently an ongoing formal Compliance Investigation into the management and control of dust at the installation. As part of this investigation, the licensee is conducting a detailed inspection of the material and product handling infrastructure and processes over the entire site to identify any potential defects. Irish Cement Limited will report back regularly to the Agency as it progresses. Any defects or failures are to be addressed by the licensee.

5. Best Available Techniques

The BAT conclusions (BATC) requirements in the RD are based on information supplied by the licensee in the review process on how they propose to comply with the BAT conclusions.

The information supplied by the licensee indicated that it can comply with all applicable BAT conclusions bar one. The licensee has requested derogation in relation to the NO_x BAT-AEL.

I confirm that the licensee has addressed all applicable BAT conclusions in the information submitted (Section 90(7) response). A number of the BAT conclusions were not applicable as they related to the use of waste as a fuel, or to abatement techniques not used at the installation.

5.1 BAT for Industrial Emissions Directive installations

Section 86A(3) of the EPA Act 1992 as amended, requires that the Agency shall apply BAT conclusions as a reference for attaching conditions to a licence or a revised licence. Therefore, BAT for the installation was assessed against the BAT conclusions contained in the relevant Commission Implementing decision (CID) and any relevant BREF documents (see Appendix 3: CID and BREF documents relevant to this assessment of this report). Appendix 4 sets out a summary of how the BAT Conclusions published in the CID have been taken into account in the RD.

The assessment has demonstrated that the installation will comply with all applicable BAT Conclusion requirements specified in the CID and BREF Documents.

I consider that the applicable BAT Conclusion requirements are addressed through: (i) the technologies and techniques as described in the licence review documentation supplied by the licensee; (ii) the conditions specified in the RD; and (iii) the inclusion of additional specific conditions in the RD.

BAT associated emission levels (BAT-AELs) as specified in CID 2013/163/EU have been included in the RD and are applicable from the date of grant of the licence.

The monitoring frequency of all emissions to air and water from the installation has been set in the RD and in line with CID 2013/163/EU, where relevant.

5.2 Derogation sought

NO_X emissions at the installation are abated using selective non-catalytic reduction (SNCR) on Kiln 6. The licensee's request for derogation is predicated on the premise that current emissions for NO_x are greater than 1,000 mg/Nm^3. Whereby a BAT-AEL of 500 mg/Nm^3 is permissible. Ordinarily, the upper level of the BAT-AEL range is 450 mg/Nm^3.

The current NOx limit value in the existing licence is 800mg/m^3.

The licensee requested a continuation of the NOx limit of 800mg/m^3 for the first eighteen months from the date of grant of a revised licence to allow time to:

i. overhaul the current systems,

ii. replace existing pipes (where necessary),

iii. carry out maintenance, and

iv. implement the SNCR optimisation programme.

In considering the request, it was noted that the outlined actions are operational matters. It is also noted that the CID establishing BAT conclusions under Directive 2010/75/EU on industrial emissions for the production of cement was published in 2013. A four-year period was allowed for installations to bring their activities into compliance. The licensee has not provided adequate technical justification for the existing limit to continue for a period. The licensee has not provided technical justification for the use of the higher allowable BAT-AEL of 500 mg/Nm^3. For these reasons, it is not possible to recommend the sought derogation. The BAT-AEL of 450mg/Nm^3 is proposed in the RD.

6. Planning Permission, EIS and EIA Requirements

The requirements of Section 83(2A) and Section 87(1A) to (1I) of the EPA Act 1992 as amended do not apply to a review of a licence carried out by the Agency under section 90(1)(aa) of the EPA Act 1992 as amended. Therefore this licence review has not been made subject to an Environmental Impact Assessment (EIA).

7. Submissions

One submission dated 23 March 2017, was received from the Health Service Executive (HSE) in relation to this licence review. While the main points raised in the submission are briefly summarised in the table below, the original submission should be referred to at all times for greater detail and expansion of particular points.

The issues raised in the submission are noted and addressed in this Inspector's Report and the submission was taken into consideration during the preparation of the Recommended Determination.

1	**Name & Position:** Mr Paul Harrington, Principal Environmental Health Officer	**Organisation:** HSE South, Environmental Health Department, 11 Patrick Street, Kilkenny	**Date received**: 31 January 2017
	Issues raised: The HSE indicates that there are no particular concerns regarding noise, and the HSE have not received complaints regarding noise from the installation. The HSE notes that a baseline report on geology and hydrogeology has been submitted by the licensee, and that this report concluded that all parameters are below limits set down in the relevant regulations. The HSE stated that there were no obvious dust deposits on the site boundary or on the entry/exit roads when they visited the site boundary on 14/03/2017. The inspector observed some dust deposits on the N69 which runs along the southern boundary, and clarified that the road has seen extensive road works over the preceding 12 months. The HSE noted that there have been two previous incidents of dust blow-off from the plant which was attributed to two separate one-off incidents within the plant.		
	Agency Response: <u>BAT - Dust emissions:</u> The OEE is aware of the dust issues at the site as a result of dust blow-offs. The company, at the behest of the Agency, is conducting a detailed inspection of the material and product handling infrastructure and processes over the entire site to identify any potential defects which should be addressed and rectified.		

	Condition 6.12 of the RD requires the licensee to ensure that dust associated with the activity does not result in impairment of, or an interference with, amenities or the environment at the installation or beyond the installation boundary. The RD sets emission limit values for kiln dust and for channelled dust emissions in compliance with BAT conclusions (CID 2013/163/EU). I am satisfied that the concerns raised are addressed satisfactorily in the RD.

8. Cessation of activity

Baseline Report

Article 22(2) of the IED requires that where the activity involves the use, production or release of relevant hazardous substances and having regard to the possibility of soil and groundwater contamination at the site of the installation, the operator shall prepare and submit to the competent authority a baseline report before the revision of a licence.

The baseline report is a tool that permits, as far as possible, a quantified comparison between the state of the site described in that report and the state of the site upon definitive cessation of activities, in order to ascertain whether a significant increase in pollution of soil or groundwater has taken place.

A baseline report (Job number 325373-47, dated 14 February 2017) was submitted. The site has previously been a greenfield, prior to the construction of the original buildings. It has been used for the quarrying of limestone rock and for the manufacture of cement since 1938. The report refers to data from 2015 groundwater analysis as required under the current licence P0029-03. The concentration of pollutants in ground water were below the overall threshold value range for environmental quality objectives set out in the European Communities Environmental Objectives (Groundwater) Regulations 2010 (SI No 9 of 2010) (as amended). However, some recorded levels of chloride and conductivity were slightly higher and were attributed in the report to the proximity of the groundwater wells to the Shannon Estuary, which is saline at the site's location. The vulnerability of the aquifer directly beneath the site is classified by the Geological Survey of Ireland (GSI) as having an "extreme" vulnerability, with vulnerability reducing towards the River Shannon.

The potential pathways through which the activity could impact on the surrounding environment were identified in the report as:

- An undetected spill or leak of a hazardous substance from bunded storage,
- An undetected leak from an in-ground drain,
- An emission to air exceeding the licensed limits,
- An emission to the Bunlicky Clayfield Pond exceeding the licensed limits.

The report concludes that the risk of contamination of soil/groundwater due to the activity is low; on the basis of the following provisions:

- Impermeable concrete surfaces in all areas associated with the handling and storage of potentially contaminating materials.
- Appropriate bunding for all tank and drum storage areas, with routine integrity testing
- Appropriate drainage incorporating firewater retention facilities,

– Monitoring of emissions to Bunlicky Clayfield pond as stipulated in current licence register number P0029-03.

In conclusion the site is currently uncontaminated and the risk of contamination from the activities at the installation is low due to the nature of the operation and the proposed measures as described above. Schedule C of the RD requires soil monitoring for relevant hazardous substances to be carried out every 10 years, and groundwater monitoring to be carried out biannually or annually.

On cessation of the activity where the installation has caused significant pollution of soil or groundwater, the licensee would have to take measures to address that pollution to return the site to the state established in the Baseline Report or to take actions aimed at the removal, control, containment or reduction of hazardous substances so that the site ceases to pose a significant risk to human health or the environment.

9. Appropriate Assessment

There are two European sites considered within the zone of influence of the installation. It was not necessary to consider any European sites outside of this zone of influence as, given the nature and quantity of the emissions from the installation, any such sites fall well outside of the potential zone of influence of the activity. Table 1.0 lists the European Sites assessed, their associated qualifying interests and conservation objectives.

Table 1.0: List of European Sites assessed, their associated qualifying interests and conservation objectives.

Distance / Direction from installation	**Qualifying interests** (* denotes a priority habitat)	**Conservation objectives**
1. Lower River Shannon SAC [002165]		
Adjacent to the northern part of the site.	- Sandbanks which are slightly covered by sea water all the time [1110] - Estuaries [1130] - Mudflats and sandflats not covered by seawater at low tide [1140] - *Coastal lagoons [1150] - Large shallow inlets and bays [1160] - Reefs [1170] - Perennial vegetation of stony banks [1220] - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* [1330] - Mediterranean salt meadows (*Juncetalia maritimi)* [1410] - Water courses of plain to montane levels with the *Ranunculion fluitantis and Callitricho Batrachion* vegetation [3260] - Molinia meadows on calcareous, peaty or	As per NPWS (2012) Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

Distance / Direction from installation	Qualifying interests (* denotes a priority habitat)	Conservation objectives
	clayey-silt-laden soils *(Molinion caeruleae)* [6410] - *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion albae)* [91E0] - *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] - *Petromyzon marinus* (Sea Lamprey) [1095] - *Lampetra planeri* (Brook Lamprey) [1096] - *Lampetra fluviatilis* (River Lamprey) [1099] - *Salmo salar (*Salmon) [1106] - *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] - *Lutra lutra* (Otter) [1355]	
2. River Shannon and River Fergus Estuaries SPA [004077]		
Within the northern site boundary.	- Cormorant *(Phalacrocorax carbo)* [A017] - Whooper Swan *(Cygnus cygnus)* [A038] - Light-bellied Brent Goose (*Branta bernicla hrota)* [A046] - Shelduck *(Tadorna tadorna)* [A048] - Wigeon *(Anas penelope)* [A050] - Teal *(Anas crecca)* [A052] - Pintail *(Anas acuta)* [A054] - Shoveler *(Anas clypeata)* [A056] - Scaup *(Aythya marila)* [A062] - Ringed Plover *(Charadrius hiaticula)* [A137] - Golden Plover *(Pluvialis apricaria)* [A140] - Grey Plover *(Pluvialis squatarola)* [A141] - Lapwing *(Vanellus vanellus)* [A142] - Knot *(Calidris canutus)* [A143] - Dunlin *(Calidris alpina)* [A149] - Black-tailed Godwit *(Limosa limosa)* [A156] - Bar-tailed Godwit *(Limosa lapponica)* [A157] - Curlew *(Numenius arquata)* [A160] - Redshank *(Tringa totanus)* [A162] - Greenshank *(Tringa nebularia)* [A164] - Black-headed Gull *(Chroicocephalus ridibundus)* [A179] - Wetland and Waterbirds [A999]	As per NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

A screening for Appropriate Assessment was undertaken to assess, in view of best scientific knowledge and the conservation objectives of the site, if the activity, individually or in combination with other plans or projects are likely to have a significant effect on any European Site. In this context, particular attention was paid to the European Sites at Lower River Shannon SAC [002165] and River Shannon and

River Fergus Estuaries SPA [004077].

The activity is not directly connected with or necessary to the management of any European Site and the Agency considered, for the reasons set out below, that it cannot be excluded, on the basis of objective information, that the activity, individually or in combination with other plans or projects, will have a significant effect on any European Site and accordingly determined that an Appropriate Assessment of the activity was required, and for this reason determined to require the applicant to submit a Natura Impact Statement.

The reasons for this determination are outlined as follows:

- Water arising at the installation (including groundwater diverted from the quarry, and surface water run-off from the cement works) discharges to Bunlicky Clayfield Pond, part of which is included in the River Shannon and River Fergus Estuaries SPA.
- The blasting operation at the onsite limestone quarry is a significant source of noise and vibration.

An Inspector's Appropriate Assessment has been completed and has determined, based on best scientific knowledge in the field and in accordance with the European Communities (Birds and Natural Habitats) Regulations 2011 as amended, pursuant to Article 6(3) of the Habitats Directive, that the activity, individually or in combination with other plans or projects, will not adversely affect the integrity of any European Site, in particular Lower River Shannon SAC [002165] and River Shannon and River Fergus Estuaries SPA [004077], having regard to their conservation objectives and will not affect the preservation of these sites at favourable conservation status if carried out in accordance with the recommended determination and the conditions attached thereto for the following reasons:

- There will be no process discharge from the installation;
- This review is for the purposes of updating the licence to ensure compliance with CID 2013/163/EU;
- The changes to the licence in this review do not substantially change the nature or extent of the operations and emissions at the installation from what was considered during the last review (P0029-03)
- All surface water discharged to Bunlicky Clayfield Pond from the cement works and quarry passes through a settlement tank and interceptor and undergoes monitoring in accordance with the existing IE Licence (P0029-03);
- Air dispersion modelling carried out in April 2016 has demonstrated that the potential for adverse impact on the integrity of the qualifying interests of any of the European sites is negligible;
- While there is potential for accidents and unplanned releases from the installation, it is considered that the conditions of the RD in relation to bunding and the protection of surface water and groundwater are sufficient to ensure that accidental emissions from the activity will not impact on the qualifying interests of any of the European sites identified above, particularly in light of the nature of the potential accidental emissions. The RD specifies accident prevention and emergency response requirements.

In light of the foregoing reasons no reasonable scientific doubt remains as to the absence of adverse effects on the integrity of those European sites specified in Table 1.0 above.

10. Fit & Proper Person Assessment

The Fit & Proper Person test requires three elements of examination:

Technical Ability

The licensee has provided details of the qualifications, technical knowledge and experience of key personnel. It is considered that the licensee has demonstrated the technical knowledge required.

Legal Standing

Neither the licensee nor any relevant person has relevant convictions under the Environmental Protection Agency Act 1992, as amended, or under any other relevant environmental legislation.

Financial Provision/Strength

ELRA, CRAMP & FP

The current licence has requirements for ELRA, CRAMP and FP with which the licensee has maintained compliance. I have maintained the current licence requirements despite the installation being assessed as not subject to ELRA and FP requirements because the licensee has applied for a further review of the licence (P0029-06) which, in the event of a revised licence being granted, may result in conditions requiring ELRA, CRAMP and FP as in the existing licence.

11. Updating the existing licence

In addition to the inclusion of the CID 2013/163/EU BAT conclusion requirements specified in the RD, the RD has transposed all the relevant existing conditions from P0029-03 into the Agency's current licence format.

Table 2 summarises the amendments made to the existing licence as a result of changes to the following:

- Adjustments approved by OEE under the existing licence,
- Once-off requirements specified in the existing licence having been achieved,
- Statutory and format updates of conditions.

Table 2: Summary of amendments made to the existing licence

Condition or Schedule No.	Reason for change	Description
2.2	Updated to reflect BAT	EMS
3.2	Updated to reflect BAT	New plant/infrastructure
3.10	Firewater retention report completed	Updated firewater retention condition in RD
4.2	Updated to reflect BAT	Reference conditions for air emissions
6.16	Groundwater monitoring	Updated groundwater monitoring condition in RD
8.11	Extractive Waste Management Plan	Extractive Waste

	approved	Management
9.2	Updated to reflect BAT	Accident Prevention and Emergency Response
Schedule C	Noise Monitoring	Includes evening time limit value
Schedule C	IED: Groundwater and soil monitoring	Monitoring of groundwater and soil

Amendments made to the existing licence as a result of the Commission Implementing Decision (2013/163/EU) of 26 March 2013 are outlined in Appendix 4: Licence conditions derived from BAT conclusions.

12. Cross Office Consultation

I consulted OEE Inspector, Maria Lenihan, in relation to this site. In general, the OEE have no significant concerns regarding the proposed changes to the licensable activity.

13. Charges

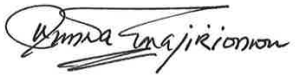
The annual enforcement change recommended in the RD is €14,472.18, which reflects the anticipated enforcement effort required and the cost of monitoring. This is the same as OEE charge for the existing licence.

14. Recommendation

The RD specifies the necessary measures to provide that the installation shall be operated in accordance with the requirements of Section 83(5) of the EPA Act 1992 as amended, and has regard to the AA screening. The RD gives effect to the requirements of the Environmental Protection Agency Acts 1992 as amended. The RD gives effect to the requirements of the CID 2013/163/EU.

I recommend that a Proposed Determination be issued subject to the conditions and for the reasons as drafted in the RD.

Signed



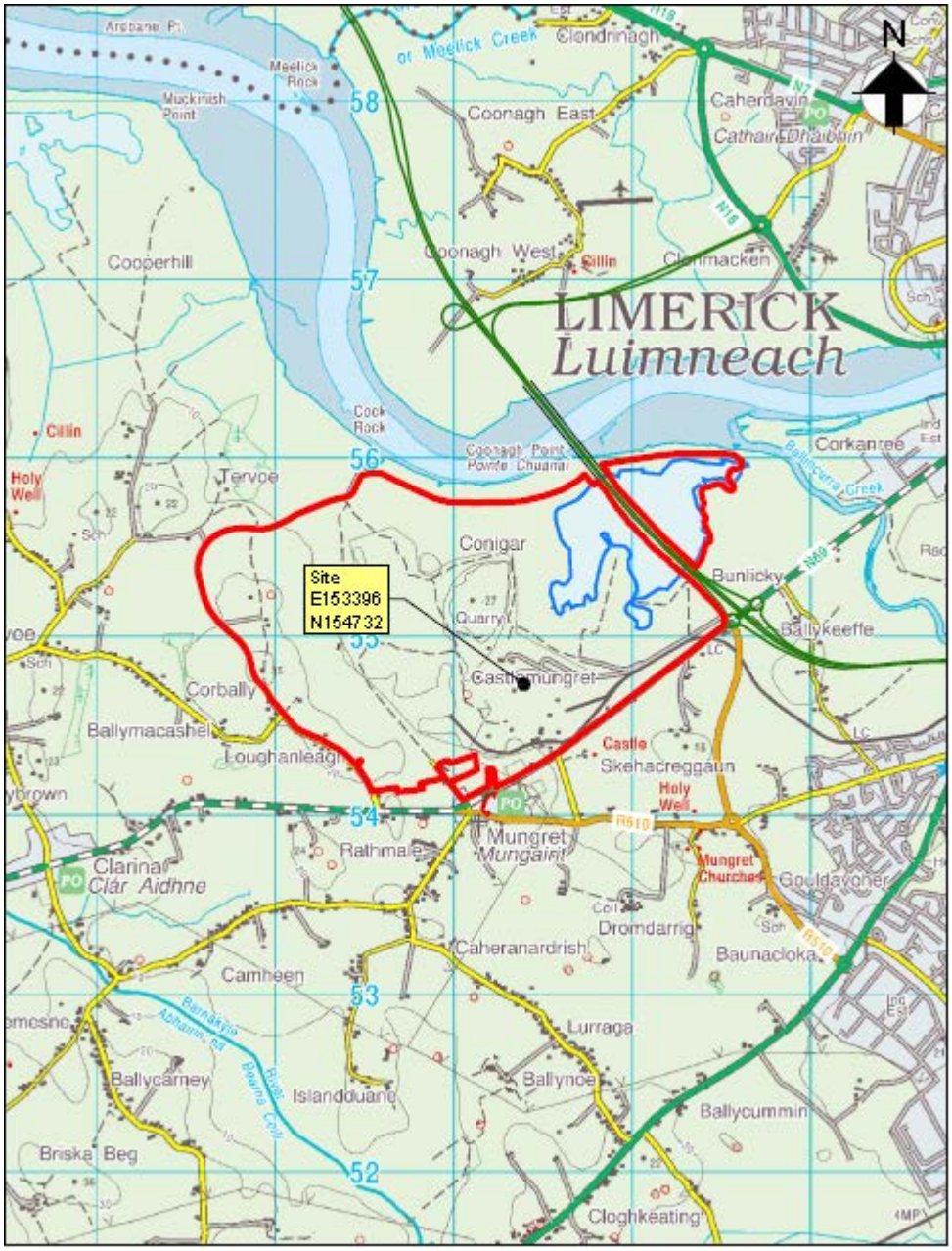
Dr Magnus Amajirionwu

Procedural Note

In the event that no objections are received to the Proposed Determination of the application, a licence will be granted in accordance with Section 87(4) of the Environmental Protection Agency Acts 1992 as amended as soon as may be after the expiration of the appropriate period.

Appendices

Appendix 1: Installation boundary map of Irish Cement Limited (P0029-05)



Appendix 2: Assessment of the effects of activity on European sites and proposed mitigation measures.

European Site (Site Code)	Distance / Direction from Installation	Qualifying Interests (* denotes a priority habitat)	Conservation Objectives	Assessment
Lower River Shannon SAC [002165]	Adjacent to the northern part of the site.	**Habitats:** - Sandbanks which are slightly covered by sea water all the time [1110] - Estuaries [1130] - Mudflats and sandflats not covered by seawater at low tide [1140] - *Coastal lagoons [1150] - Large shallow inlets and bays [1160] - Reefs [1170] - Perennial vegetation of stony banks [1220] - Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] - Salicornia and other annuals colonising mud and sand [1310] - Atlantic salt meadows *(Glauco-Puccinellietalia maritimae)* [1330] - Mediterranean salt meadows (*Juncetalia maritimi)* [1410] - Water courses of plain to montane levels with the *Ranunculion fluitantis and Callitricho Batrachion* vegetation [3260] - Molinia meadows on calcareous, peaty or clayey-silt-laden soils *(Molinion caeruleae)* [6410] - *Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion, Alnion incanae, Salicion*	As per NPWS (2012) Conservation Objectives: Lower River Shannon SAC 002165. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	<u>Emission to Water</u> Any change in water quality has the potential to impact on water dependant habitats and species. Industrial discharges and diffuse pollution from foul and surface water run-off can contribute to a reduction in water quality through a net contribution of nutrients or contamination from a wide range of organic and inorganic compounds. The main hazards to changes in water quality are: toxic contamination, changes in pH, nutrient and organic enrichment and sedimentation. Conclusion: - There will be no process discharge from the installation that will bring about the changes in water quality described above. - All surface water discharged to Bunlicky Clayfield Pond from the Cement Works and quarry passes through a settlement tank and interceptor and undergoes monitoring in accordance with the existing IE Licence (P0029-03). Condition 11.2 of the RD outlines the requirements for the management of emissions to sewer. Condition 3.9 outlines the requirements for the management of storm water and drainage systems. Condition 6.16 states the requirements for storm water and run-off

		albae) [91E0] **Species** - *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] - *Petromyzon marinus* (Sea Lamprey) [1095] - *Lampetra planeri* (Brook Lamprey) [1096] - *Lampetra fluviatilis* (River Lamprey) [1099] - *Salmo salar (*Salmon) [1106] - *Tursiops truncatus* (Common Bottlenose Dolphin) [1349] - *Lutra lutra* (Otter) [1355]		management at the installation. This includes the establishment of trigger levels for various parameters in storm water discharges. Where storm water exceeds these trigger levels it is required to be diverted for collection and disposal. <u>Emissions to Air</u> The combustion of fossil and other fuels to generate heat in kilns will produce a range of emissions. The main emissions with a potential to affect ecosystems within the zone of influence include nitrogen oxides (NO_X), oxides of sulphur, predominantly SO_2 and ammonia (NH_3) emissions. <u>Conclusion:</u> Schedule C requires continuous monitoring of NO_x, SO_x, and NH_3 emissions to air to ensure compliance with BAT-AELs, and to maintain air quality integrity. Schedule C outlines the requirements for control and monitoring of emissions to air that are protective of air quality standards. The measures outlined above will protect the qualifying interests of the Lower River Shannon SAC [002165], and River Shannon and River Fergus Estuaries SPA [004077].
River Shannon and River Fergus Estuaries SPA [004077]	Within the northern site boundary.	**Species:** - Cormorant *(Phalacrocorax carbo)* [A017] - Whooper Swan *(Cygnus cygnus)* [A038] - Light-bellied Brent Goose (*Branta bernicla hrota)* [A046] - Shelduck *(Tadorna tadorna)* [A048] - Wigeon *(Anas penelope)* [A050] - Teal *(Anas crecca)* [A052] - Pintail *(Anas acuta)* [A054] - Shoveler *(Anas clypeata)* [A056] - Scaup *(Aythya marila)* [A062] - Ringed Plover *(Charadrius hiaticula)* [A137] - Golden Plover *(Pluvialis apricaria)* [A140] - Grey Plover *(Pluvialis squatarola)* [A141] - Lapwing *(Vanellus vanellus)* [A142] - Knot *(Calidris canutus)* [A143] - Dunlin *(Calidris alpina)* [A149] - Black-tailed Godwit *(Limosa limosa)* [A156]	As per NPWS (2012) Conservation Objectives: River Shannon and River Fergus Estuaries SPA 004077. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.	

		- Bar-tailed Godwit *(Limosa lapponica)* [A157] - Curlew *(Numenius arquata)* [A160] - Redshank *(Tringa totanus)* [A162] - Greenshank *(Tringa nebularia)* [A164] - Black-headed Gull *(Chroicocephalus ridibundus)* [A179] - Wetland and Waterbirds [A999]		

Appendix 3: CID and BREF documents relevant to this assessment

Sectoral CID and BREF	Publication date
COMMISSION IMPLEMENTING DECISION of 26 March 2013 establishing the best available techniques (BAT) conclusions 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 (2013/163/EU)	26 March 2013
Best Available Techniques (BAT) Reference Document for the Production of Cement, Lime and Magnesium Oxide	2013
Horizontal BREF	Publication date
Reference Document on the Best Available Techniques on Emissions from Storage	July 2006
Reference Document on the Best Available Techniques for Energy Efficiency	February 2009

Appendix 4: Licence conditions derived from BAT conclusions

CID/BREF/BAT Document	**CID/BREF/BAT Reference**	**Additional requirements introduced into RD**	**Condition/ Schedule**
Production of cement, lime and magnesium oxide	CID 2013/163/EU	Environmental management systems (BAT 1)	Condition 2.2
		Maintenance Programme (BAT 16)	Condition 2.2.2.14
		Choosing/designing any new plant/infrastructure (BAT1)	Condition 3.2
		Reference conditions for air emissions for the kiln and non-kiln activities (General considerations)	Condition 4
		Diffuse dust emissions (BAT 14 and 15)	Condition 4 and Schedule C
		Energy Efficiency (BAT 6, 7, 8, 9 and 10	Condition 7
		Raw Material consumption (BAT 11, 12, 13, 24, 25a, 26a, 28a)	Condition 7
		Emergency preparedness (BAT 1)	Condition 9.2
		Energy Consumption (BAT 6,	Schedule D

CID/BREF/BAT Document	CID/BREF/BAT Reference	Additional requirements introduced into RD	Condition/ Schedule
		7, 8, 9 and 10)	
		Monitoring of the Kiln Process (BAT 5)	Schedule B
		BAT-AELs and monitoring are specified for emission points A2-01 to A2-07, A3-01 to A3-28, A3-30 to A3-36, A3-39 toA3-40, A3-42 to A3-51, A3-58 to A3-63	Schedule C
Energy Efficiency	BREF document for Energy Efficiency (02.2009)	Inclusion of Energy Efficiency management system in EMS	Condition 2

Appendix 5: Best Available Techniques in use at the installation

BAT conclusions No 30-54 and 55 to 69 inclusive are not applicable, as they only apply to the lime industry or magnesium oxide industry respectively.

The following outlines the applicable best available techniques, as specified in CID 2013/163/EU, which are in use at the installation:

BAT 1 In order to improve the overall environmental performance of the plants/installations producing cement, lime and magnesium oxide, production BAT is to implement and adhere to an environmental management system (EMS) that incorporates all of the following features:	
Technique	
i	commitment of the management, including senior management;
ii	definition of an environmental policy that includes the continuous improvement of the installation by the management;
iii	planning and establishing the necessary procedures, objectives and targets, in conjunction with financial planning and investment;
iv	implementation of procedures paying particular attention to: (a) structure and responsibility (b) training, awareness and competence (c) communication (d) employee involvement (e) documentation (f) efficient process control (g) maintenance programmes (h) emergency preparedness and response (i) safeguarding compliance with environmental legislation;
v	checking performance and taking corrective action, paying particular attention to: (a) monitoring and measurement (see also the Reference Document on the General Principles of Monitoring) (b) corrective and preventive action (c) maintenance of records (d) independent (where practicable) internal and external auditing in order to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;
vi	review of the EMS and its continuing suitability, adequacy and effectiveness by senior management;
vii	following the development of cleaner technologies;
viii	consideration for the environmental impacts from the eventual decommissioning of the installation at the stage of designing a new plant, and throughout its operating life;
ix	application of sectoral benchmarking on a regular basis.

BAT 2 In order to reduce/minimise noise emissions during the manufacturing process for lime, BAT is to**,** use a combination of the following techniques:			
Technique			
a	Select an appropriate location for noisy operations	k	Use sound insulation of wall breaks, e.g. by installation of a sluice at the entrance point of a belt conveyor
b	Enclose noisy operations/units	l	Install sound absorbers at air outlets, e.g. the clean gas outlet of dedusting units
c	Use vibration insulation of operations/units	m	Reduce flow rates in ducts
d	Use internal and external lining made of	n	Use sound insulation of ducts

	impact-absorbent material		
e	Use soundproofed buildings to shelter any noisy operations involving material transformation equipment	o	Apply the decoupled arrangement of noise sources and potentially resonant components, e.g. of compressors and ducts
f	Use noise protection walls and/or natural noise barriers	p	Use silencers for filter fans
g	Use outlet silencers to exhaust stacks	q	Use soundproofed modules for technical devices (e.g. compressors)
h	Lag ducts and final blowers which are situated in soundproofed buildings	r	Use rubber shields for mills (avoiding the contact of metal against metal)
i	Close doors and windows of covered areas	s	Construct buildings or growing trees and bushes between the protected area and the noisy activity
j	Use sound insulation of machine buildings		

BAT No.	Objective of technique and technique	Detail of Technique	
3	In order to reduce all kiln emissions and use energy efficiently, BAT is to**,** achieve a smooth and stable kiln process, operating close to the process parameter set points by using the techniques:	a	Process control optimisation, including computer-based automatic control
		b	Using modern, gravimetric solid fuel feed systems
4	In order to prevent and/or reduce emissions, BAT is to carry out a careful selection and control of the raw materials entering the kiln.		None specified
5	BAT is to carry out the monitoring and measurements of process parameters and emissions on a regular basis and to monitor emissions in accordance with the relevant EN standards or, if EN standards are not available, ISO, national or other international standards that ensure the provision of data of an equivalent	a	Continuous measurements of process parameters demonstrating the process stability, such as temperature, O_2 content, pressure and flowrate
		b	Monitoring and stabilising critical process parameters, i.e. homogenous raw material mix and fuel feed, regular dosage and excess oxygen
		c	Continuous measurements of NH 3 emissions when SNCR is applied

	scientific quality, including the following:	d	Continuous measurements of dust, NOx , SOx , and CO emissions
		e	Periodic measurements of PCDD/F and metal emissions
		f	Continuous or periodic measurements of HCl, HF and TOC emissions.
		g	Continuous or periodic measurements of dust
7	In order to reduce/minimise thermal energy consumption, BAT is to use a combination of the following techniques:	a	Applying improved and optimised kiln systems and a smooth and stable kiln process, operating close to the process parameter set points by applying: I. process control optimisation, including computer- based automatic control systems II. modern, gravimetric solid fuel feed systems III. preheating and precalcination to the extent possible, considering the existing kiln system configuration
		b	Recovering excess heat from kilns, especially from their cooling zone. In particular, the kiln excess heat from the cooling zone (hot air) or from the preheater can be used for drying raw materials
		c	Applying the appropriate number of cyclone stages related to the characteristics and properties of raw material and fuels used
		d	Using fuels with characteristics which have a positive influence on the thermal energy consumption
		e	When replacing conventional fuels by waste fuels, using optimised and suitable cement kiln systems for burning wastes
		f	Minimising bypass flows
8	In order to reduce primary energy consumption, BAT is to consider the reduction of the clinker content of cement and cement products.		None specified
9	In order to reduce primary energy consumption, BAT is to consider cogeneration/combined heat and power plants.		None specified
10	In order to reduce/minimise electrical energy consumption, BAT is to use one or a combination of the following techniques:	a	Using power management systems
		b	Using grinding equipment and other electricity based equipment with high energy efficiency
		c	Using improved monitoring systems
		d	Reducing air leaks into the system

		e	Process control optimisation
11	In order to guarantee the characteristics of the wastes to be used as fuels and/or raw materials in a cement kiln and reduce emissions, BAT is to apply the following techniques:	a	Apply quality assurance systems to guarantee the characteristics of wastes and to analyse any waste that is to be used as raw material and/or fuel in a cement kiln for: I. constant quality II. physical criteria, e.g. emissions formation, coarseness, reactivity, burnability, calorific value III. chemical criteria, e.g. chlorine, sulphur, alkali and phosphate content and relevant metals content
		b	Control the amount of relevant parameters for any waste that is to be used as raw material and/or fuel in a cement kiln, such as chlorine, relevant metals (e.g. cadmium, mercury, thallium), sulphur, total halogen content
		c	Apply quality assurance systems for each waste load
12	In order to ensure appropriate treatment of the wastes used as fuel and/or raw materials in the kiln, BAT is to use the following techniques:	a	Use appropriate points to feed the waste into the kiln in terms of temperature and residence time depending on kiln design and kiln operation
		b	To feed waste materials containing organic components that can be volatilised before the calcining zone into the adequately high temperature zones of the kiln system
		c	To operate in such a way that the gas resulting from the co-incineration of waste is raised in a controlled and homogeneous fashion, even under the most unfavourable conditions, to a temperature of 850 °C for 2 seconds
		d	To raise the temperature to 1 100 °C, if hazardous waste with a content of more than 1 % of halogenated organic substances, expressed as chlorine, are co-incinerated
		e	To feed wastes continuously and constantly
		f	Delay or stop co-incinerating waste for operations such as start-ups and/or shutdowns when appropriate temperatures and residence times cannot be reached, as noted in a) to d) above
13	BAT is to apply safety management for the storage, handling and feeding of hazardous waste materials, such as using a risk-based approach according to the source and type of waste, for the labelling, checking, sampling and testing of waste to be handled.		None specified
14	In order to minimise/prevent diffuse dust emissions from dusty operations, BAT is to use one or a combination of the following techniques:	b	Enclose/encapsulate dusty operations, such as grinding, screening and mixing
		c	Cover conveyors and elevators, which are constructed as closed systems, if diffuse dust emissions are likely to be released from dusty material

		d	Reduce air leakages and spillage points
		e	Use automatic devices and control systems
		f	Ensure trouble-free operations
		g	Ensure proper and complete maintenance of the installation using mobile and stationary vacuum cleaning. — During maintenance operations or in cases of trouble with conveying systems, spillage of materials can take place. To prevent the formation of diffuse dust during removal operations, vacuum systems should be used. New buildings can easily be equipped with stationary vacuum cleaning piping, while existing buildings are normally better fitted with mobile systems and flexible connections — In specific cases, a circulation process could be favoured for pneumatic conveying systems
		h	Ventilate and collect dust in fabric filters: — As far as possible, all material handling should be conducted in closed systems maintained under negative pressure. The suction air for this purpose is then dedusted by a fabric filter before being emitted into the air
		i	Use closed storage with an automatic handling system: — Clinker silos and closed fully automated raw material storage areas are considered the most efficient solution to the problem of diffuse dust generated by high volume stocks. These types of storage are equipped with one or more fabric filters to prevent diffuse dust formation in loading and unloading operations — Use storage silos with adequate capacities, level indicators with cut out switches and with filters to deal with dust-bearing air displaced during filling operations
		j	Use flexible filling pipes for dispatch and loading processes, equipped with a dust extraction system for loading cement, which are positioned towards the loading floor of the lorry
15	In order to minimise/prevent diffuse dust emissions from bulk storage areas, BAT is to use one or a combination of the following techniques:	a	Cover bulk storage areas or stockpiles or enclose them with screening, walling or an enclosure consisting of vertical greenery (artificial or natural wind barriers for open pile wind protection)
		b	Use open pile wind protection: — Outdoor storage piles of dusty materials should be avoided, but when they do exist it is possible to reduce diffuse dust by using properly designed wind barriers
		c	Use water spray and chemical dust suppressors: — When the point source of diffuse dust is well localised, a water spray injection system can be installed. The humidification of dust particles aids agglomeration and so helps dust settle. A wide variety of agents is also available to improve the overall efficiency of the water spray
		d	Ensure paving, road wetting and housekeeping:

			— Areas used by lorries should be paved when possible and the surface should be kept as clean as possible. Wetting the roads can reduce diffuse dust emissions, especially during dry weather. They also can be cleaned with road sweepers. Good housekeeping practices should be used in order to keep diffuse dust emissions to a minimum
		e	Ensure humidification of stockpiles: — Diffuse dust emissions at stockpiles can be reduced by using sufficient humidification of the charging and discharging points, and by using conveyor belts with adjustable heights
		f	Match the discharge height to the varying height of the heap, automatically if possible or by reduction of the unloading velocity, when diffuse dust emissions at the charging or discharging points of storage sites cannot be avoided
16	In order to reduce channelled dust emissions, BAT is to apply a maintenance management system which especially addresses the performance of filters applied to dusty operations, other than those from kiln firing, cooling and main milling processes. Taking this management system into account, BAT is to use dry flue-gas cleaning with a filter.	a	None specified
17	In order to reduce dust emissions from flue-gases of kiln firing processes, BAT is to use dry flue-gas cleaning with a filter.	a	Electrostatic precipitators (ESPs)
		b	Fabric filters
		c	Hybrid filters
18	In order to reduce dust emissions from the flue-gases of cooling and milling processes, BAT is to use dry flue-gas cleaning with a filter.	a	Electrostatic precipitators (ESPs)
		b	Fabric filters
		c	Hybrid filters
19	In order to reduce the emissions of NO x from the flue-gases of kiln firing and/or preheating/precalcining processes, BAT is to use one or a combination of the following techniques:	a	Primary techniques: I. Flame cooling II. Low NO_x burners III. Mid-kiln firing IV. Addition of minerlisers to improve the burnability of the raw meal (mineralised clinker) V. Process optimisation
		b	Staged combustion (conventional or waste fuels), also in combination with a precalciner and the use of

			optimised fuel mix
		c	Selective non-catalytic reduction (SNCR)
		d	Selective catalytic reduction (SCR)
20	When SNCR is used, BAT is to achieve efficient NO x reduction, while keeping the ammonia slip as low as possible, by using the following technique:	a	To apply an appropriate and sufficient NO_x reduction efficiency along with a stable operating process
		b	To apply a good stoichiometric distribution of ammonia in order to achieve the highest efficiency of NO_x reduction and to reduce the NH_3 slip
		c	To keep the emissions of NH_3 slip (due to unreacted ammonia) from the flue-gases as low as possible taking into account the correlation between the NO_x abatement efficiency and the NH_3 slip
21	In order to reduce/minimise the emissions of SO x from the flue-gases of kiln firing and/or preheating/precalcining processes, BAT is to use one of the following techniques:	a	Absorbent addition
		b	Wet scrubber
22	In order to reduce SO_2 emissions from the kiln, BAT is to optimise the raw milling processes.		None specified
23	In order to minimise the frequency of CO trips and keep their total duration to below 30 minutes annually, when using electrostatic precipitators (ESPs) or hybrid filters, BAT is to use the following techniques in combination:	a	Manage CO trips in order to reduce the ESP downtime
		b	Continuous automatic CO measurements by means of monitoring equipment with a short response time and situated close to the CO source
24	In order to keep the emissions of TOC from the flue-gases of the kiln firing processes low, BAT is to avoid feeding raw materials with a high content of volatile organic compounds (VOC) into the kiln system via the raw material feeding route.		None specified
25	In order prevent/reduce the emissions of HCl from flue-gases of the kiln firing processes, BAT is to use one or a combination of the following primary techniques:	a	Using raw materials and fuels with a low chlorine content
		b	Limiting the amount of chlorine content for any waste that is to be used as raw material and/or fuel in a cement kiln
26	In order to prevent/reduce the emissions of HF from the flue-gases of the kiln firing processes, BAT is to use	a	Using raw materials and fuels with a low fluorine content

	one or a combination of the following primary techniques:	b	Limiting the amount of fluorine content for any waste that is to be used as raw material and/or fuel in a cement kiln
27	In order to prevent emissions of PCDD/F or to keep the emissions of PCDD/F from the flue-gases of the kiln firing processes low, BAT is to use one or a combination of the following techniques:	a	Carefully selecting and controlling of kiln inputs (raw materials), i.e. chlorine, copper and volatile organic compounds
		b	Carefully selecting and controlling kiln inputs (fuels), i.e. chlorine and copper
		c	Limiting/avoiding the use of wastes which contain chlorinated organic materials
		d	Avoid feeding fuels with a high content of halogens (e.g. chlorine) in secondary firing
		e	Quick cooling of kiln flue-gases to lower than 200 °C and minimising residence time of flue-gases and oxygen content in zones where the temperatures range between 300 and 450 °C
		f	Stop co-incinerating waste for operations such as start-ups and/or shutdowns
28	In order to minimise the emissions of metals from the flue-gases of the kiln firing processes, BAT is to use one or a combination of the following techniques:	a	Selecting materials with a low content of relevant metals and limiting the content of relevant metals in materials, especially mercury
		b	Using a quality assurance system to guarantee the characteristics of the waste materials used
		c	Using effective dust removal techniques as set out in BAT 17
29	In order to reduce solid waste from the cement manufacturing process along with raw material savings, BAT is to:	a	Reuse collected dusts in the process, wherever practicable
		b	Utilise these dusts in other commercial products, when possible

Appendix 6: BAT associated emission levels as specified in the CID 2013/163/EU

BAT-associated energy consumption levels for new plants and major upgrades using dry process kiln with multistage preheating and precalcination [Note 1]

Thermal energy consumption lime range BAT 6 Table 1

Kiln type	MJ/tonne clinker
Dry process with multistage preheating and precalcination	2900 – 3300

Emissions to Air

Parameter	BAT-AELs mg/Nm^3	Current licence (P0029-03)	Proposed in the RD mg/Nm^3	BAT Minimum monitoring frequency	Monitoring frequency proposed in the RD
Emissions to air from the Kiln (A2-01 and A2-02)					
Oxides of sulphur	<50 - 400	200 mg/m^3	**400**	Continuous or periodic measurements	Quarterly / Continuous as SO_2
Nitrogen oxides (as NO_2)	200 – 450 (Preheater kilns)	800 mg/Nm^3	**450**	Continuous or periodic measurements	Continuous
Ammonia (NH_3) slip	30 - 50	-	**50**	Continuous or periodic measurements	Continuous
CO	-	1,500	**1,500**	Continuous or periodic measurements	Continuous
HCl	<10	-	**10**	Continuous or periodic measurements	Continuous
HF	<1	-	**1**	Continuous or periodic measurements	Continuous
Hg	<0.5	-	**0.05**	Continuous or periodic measurements	Quarterly
Σ (Cd, Tl)	<0.5	-	**0.05**	Continuous or periodic measurements	Quarterly
Σ (As, Sb, Pb, Cr, Co, Cu, Mn, Ni, V)	<0.5	-	**0.5**	Continuous or periodic measurements	Quarterly
Dioxins and furans (PCDD/F)	<0.05 – 0.1 ng PCDD/F 1-TEQ/Nm^3	-	**0.1 ng/Nm^3**	Periodic measurements	Quarterly
Dust emissions (A2-01 to A2-07)					
Dust	<10 - 20	50 (Particulate)	**20**	Continuous or periodic	Continuous

				measurements	
Channelled Dust emissions (A3-01 to A3-28, A3-30 to A3-36, A3-39 to A3-40, A3-42 to A3-51, A3-58 to A3-63)					
Dust	<10	20	**10**	Continuous or periodic measurements	-