

Irish Cement Facility, Castlemungret, Co. Limerick

'BAT C' REVIEW
Screening for Appropriate Assessment
Natura Impact Statement

*(Provision of information for an Appropriate
Assessment)*



**Brady Shipman
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**Built.
Environment.**

Survey
Assessment
**Built
Environment**

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CLIENT: **Irish Cement Ltd.**
DATE: **February 2017**

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1 Introduction and background

This document is intended to provide the information required to assist the Environmental Protection Agency (EPA), the competent authority, to undertake a Screening Assessment and, if necessary, an Appropriate Assessment (AA) relating to European sites, also known as Natura 2000 Sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA), designated for nature conservation).

The document is being submitted as part of an EPA review of the existing Industrial Emissions (IE) Licence for Limerick Cement Works (existing IE Licence Reg. No.: P0029-03). The review has been instigated by the EPA to ensure compliance with the Best Available Techniques (BAT) Reference Document for the Production of Cement, Lime and Magnesium Oxide (2013¹) at the Factory. The review is in accordance with the Industrial Emissions Directive (*Directive 2010/75/EU of the European Parliament and the Council on Industrial Emissions*), which regulates pollutant emissions from industrial installations in Europe. It is based on a Commission proposal recasting seven previous directives (including the IPPC Directive) following an extensive review of the policy². This licence review, which is known as the 'BAT C Review', is referenced as IE Licence Reg. No.: P0029-05 and the Cement Factory will be obliged to comply with these revised limits once the new licence is issued.

Separately, Irish Cement Limited (ICL) has also submitted a planning application to Limerick City and County Council for a proposal to use alternative fuels and to use alternative raw materials at the Cement Factory. This planning application is currently being considered by the planning authority and is subject to a separate IE Licence Review (IE Licence Reg. No.: P0029-06) by the EPA.

This Appropriate Assessment report (Natura Impact Statement) appraises the effects on European sites, if any, of the measures required as part of the BAT Review (IE Licence Reg. No.: P0029-05). The assessment also considers the potential for in-combination effects with other plans and projects. As requested by the EPA, the competent authority, and while not directly linked to the BAT Review, the report also includes an assessment of potential effects arising from:

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

Brady Shipman Martin was commissioned to undertake the study, which was carried out by Consultant Ecologist Matthew Hague CEnv MCIEEM.

The requirements for an Appropriate Assessment are set out under *Article 6 of the EU Habitats Directive (92/34/EEC)*, transposed into Irish law through the *European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011)* and the *Planning and Development Act, 2000 (as amended)*.

¹ http://eippcb.jrc.ec.europa.eu/reference/BREF/CLM_Published_def.pdf

² <http://ec.europa.eu/environment/industry/stationary/ied/legislation.htm>

2 Methodology

2.1 Baseline data collation and field visit

A desk-based assessment was undertaken of the Cement Factory at Castlemungret in Limerick and of the wider area. This focused on habitats and species that are listed as Qualifying Interests (QI) (in the case of SACs) and Special Conservation Interests (SCI) (in the case of SPAs) in the designations for the European sites. A field visit was undertaken on 15th January 2016.

This report takes the following guidance documents into account:

- *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, 2010 revision);
- *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*. Circular NPWS 1/10 & PSSP 2/10;
- *Assessment of Plans and Projects Significantly Affecting European sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC* (European Commission Environment Directorate-General, 2001);
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC*. Draft Guidance issued by the European Commission (April 2015).

Information was collated from the organisations and websites listed below:

- Data on European sites and rare and protected plant and animal species contained in the following databases:
 - The National Parks and Wildlife Service (NPWS) of the Department of Arts, Heritage and the Gaeltacht (www.NPWS.ie);
 - The National Biodiversity Data Centre (NDBC) (www.biodiversityireland.ie);
 - BirdWatch Ireland (www.birdwatchireland.ie);
 - Bat Conservation Ireland (www.batconservationireland.org).
- Information on land-use zoning from the online mapping of the Department of the Environment, Community and Local Government (<http://www.myplan.ie/en/index.html>);
- Recent and historical OSi mapping and aerial photography;
- Information on the River Shannon and other local watercourses from www.catchments.ie;
- Information on water quality in the area (www.epa.ie);
- Information on soils, geology and hydrogeology in the area (www.gsi.ie);
- Information on the status of EU protected habitats in Ireland (NPWS, 2013);
- National Biodiversity Plan 2011 – 2016 (Department of Arts, Heritage and the Gaeltacht, 2011);
- Draft 3rd National Biodiversity Action Plan 2017 – 2021 (Department of Arts, Heritage Regional, Rural and Gaeltacht Affairs, 2017);
- Limerick City Development Plan 2010 – 2016;
- Limerick County Development Plan 2010 – 2016;

- Southern Region Waste Management Plan 2015 – 2021;
- Strategic Integrated Framework Plan for the Shannon Estuary (SIFP) 2013 – 2020.

The report has regard to the following legislative instruments:

- Planning and Development, Act 2000, as amended;
- European Commission (EC) Habitats Directive 92/43/EEC;
- European Commission (EC) Birds Directive 2009/147/EC;
- European Communities (Birds and Natural Habitats) Regulations 2011 (SI no 477 of 2011).

Where relevant, information contained in the following documents has been reviewed:

- BAT Review (IE Licence Reg. No. P0029-05) Information submitted to the EPA on 15th February 2017.
- *Environmental Impact Statement* prepared as part of an application for a 10 year permission for development to allow for the replacement of fossil fuels through the introduction of lower carbon alternative fuels and to allow for the use of alternative raw materials at the ICL facility at Castlemungret (Arup, April 2016);
 - In particular, Chapter 5 (Flora and Fauna), Chapter 7 (Hydrology), Chapter 8 (Air Quality and Climate) and Chapter 9 (Noise and Vibration) of the EIS are relevant to this report;
- Use of Alternative Fuels and Use of Alternative Raw Materials, Limerick Cement Factory. *Response to Further Information Request – Pl. Ref. No. 16/345* (Brady Shipman Martin, October 2016).
- *Annual Environmental Report 2015*, Irish Cement Ltd, Limerick Works, Castlemungret, Co. Limerick, PPC Licence Reg. No. P0029-03.

Given the amount of information available, including from ICL, NPWS and other sources, it has been possible to gather adequate information on the site and the adjacent area, to make an informed, sound judgement as to the potential impacts of the proposed changes on the qualifying interests of the European sites.

3 Screening for Appropriate Assessment

3.1 Background

The first part of the Appropriate Assessment process is known as Screening. Screening identifies the likely effects of the proposed development on European sites that could arise, either alone or in combination with other plans or projects, and considers whether these impacts are likely to have an adverse effect on the integrity of the European sites.

Following Screening, if there is a possibility of there being a significant effect on the European site, this will generate the need for an appropriate assessment for the purposes of Article 6(3) of the Habitats Directive. This means that if the conclusions at the end of the screening exercise are that significant impacts on any European sites, as a result of the proposed development, either alone or in combination with other plans and projects, are likely, uncertain or unknown,

then an Appropriate Assessment, must be carried out. This is in accordance with established precedent and case law, for example *Kelly v An Bord Pleanála* (2014, IEHC 400).

3.2 Potential Zone of Influence

In an ecological and environmental impact assessment, for the risk of an impact to occur there must be a 'source', such as a construction site; a 'receptor', such as a designated site for nature conservation; and a pathway between the source and the receptor, such as a watercourse that links the construction site to the designated site. Although there may be a risk of an impact it may not necessarily occur, and if it does occur, it may not be significant.

Identification of a risk means that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature and exposure to the risk and the characteristics of the receptor.

There are no set recommended distances for projects to consider European sites as being relevant for assessment. Rather, NPWS (2010) recommends that *'the distance should be evaluated on a case-by-case basis with reference to the nature, size and location of the project, and the sensitivities of the ecological receptors, and the potential for in combination effects'*. As a rule of thumb, it is often considered appropriate to include all European sites within 15km.

However, in some instances where there are hydrological connections a whole river catchment or a groundwater aquifer may need to be included. Similarly, where bird flight paths are involved the impact may be on an SPA more than 15 km away. Taking this into account, as a starting point a search was carried out for all European sites within 15km of the study area at Cement Factory. This search was then extended to ensure that all European sites with any potential links to the proposed development were accounted for in the study.

3.3 Description of the Proposed Development

3.3.1 Study area and surrounding environment

The study area (see **Figure AA-1**) is the existing Irish Cement Factory, which is located primarily in the townlands of Castlemungret, Bunlicky and Conigar, to the south of the River Shannon, and southwest of Limerick City. The Cement Factory is bounded to the south by the N69 Limerick – Foynes road. An active quarry, associated with the cement works, is located immediately west. Bunlicky Clayfield Pond is located to the northeast of the Cement Factory. This man-made pond drains to the River Shannon and is crossed, via a causeway, by the N18 National Primary Road. The pond was formed as a result of the extraction of clay used for the cement production process between 1938 and 1981.

The eastern part of Bunlicky Clayfield Pond (*i.e.* the portion to the east of the N18) is within the River Shannon and River Fergus Estuaries SPA. Bunlicky Clayfield Pond is fed from a number of sources, including by groundwater diverted from the quarry, discharges and surface water run-off from the cement works and process water from the cement works. In addition, surface water run-off from the N18, two discharges from drainage ditches serving Limerick Municipal Wastewater Treatment Plant and a number of other land drains and ditches also feed the pond. The Lower River Shannon SAC is located approximately 600m to the north of the Cement Factory at its closest point.

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).

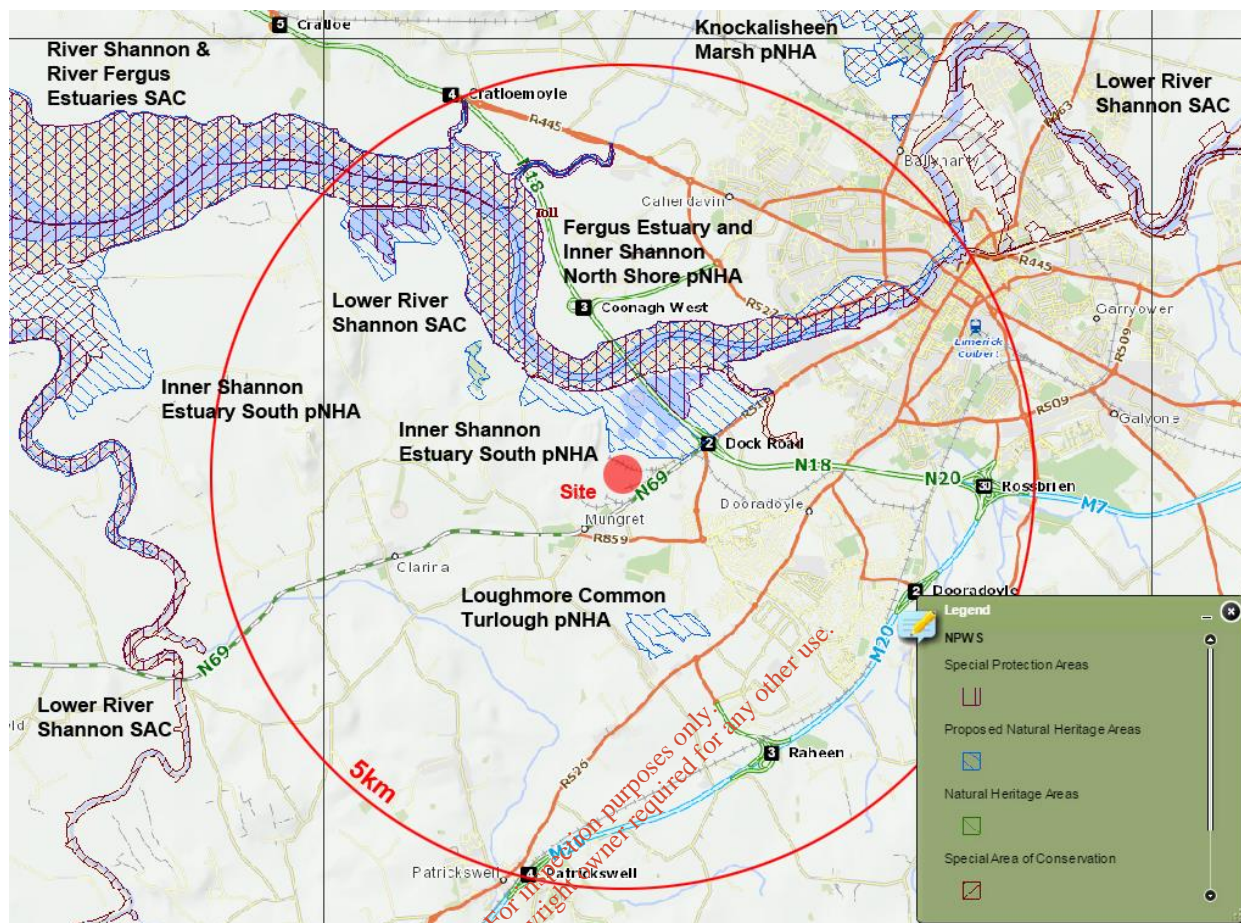


Figure AA-1: Study Area location

3.3.2 Description of the proposed development

Installations such as the Cement Works at Castlemungret are required to operate in accordance with an Industrial Emissions licence issued by the Environmental Protection Agency. The current IE Licence for Platin Cement Works is IE Reg. No. P0029-03. As per the Industrial Emissions Directive (2010/75/EU), licence conditions including emission limit values must be based on the Best Available Techniques (BAT) and as such the existing licence is currently under review by the EPA (IE Reg. No. P0029-05).

For the purposes of this report the proposed development therefore comprises the implementation of the more stringent emissions limits imposed by the Industrial Emissions Directive and the BAT Reference Document for the Production of Cement, Lime and Magnesium Dioxide.

3.3.3 Links to European sites

Table 1 provides a list of the European sites surrounding the Cement Factory and the reasons for their designation.

The ICL facility at Limerick is not under any wildlife or conservation designation. Furthermore, no rare, threatened or legally protected plant species, as listed in the *Irish Red Data Book*, the Flora Protection Order, 2015 or the EU Habitats Directive, are known to occur within the Cement

Factory holding. Neither the factory nor its immediate surroundings contain any habitats of ecological value. No Key Ecological Receptors (defined in accordance with the ecological resource valuations presented in the National Roads Authority *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2009 (Rev. 2))) have been recorded.

No evidence of any habitats or species with links to European sites was recorded during either the field survey or desk study undertaken and no 'reservoir' type habitats are present. There will be no loss of any habitat or species listed as a Qualifying Interest or Special Conservation Interest of any designated site, nor will there be any impacts on water quality as a consequence of the BAT Review.

In preparing the EIS for the planning application for the use of alternative fuels and alternative raw materials a comprehensive air dispersion modelling study was undertaken. Full details of the air modelling are contained in Chapter 8 of the EIS (previously submitted to the EPA), however in summary the study found that in the case of all modelled parameters (including, for example, PM₁₀, PM_{2.5}, nitrogen dioxide, nitrogen oxides and sulphur dioxide), the predicted ground level concentrations (GLC) for the proposed scenarios, in the worse-case scenarios, were lower than for the existing scenarios, relative to the relevant Air Quality Standards (AQS).

In each case this is due to the required implementation of more stringent emission limit values from the Industrial Emissions Directive 2010/75/EU and BAT Conclusion on the Production of Cement, Lime and Magnesium Oxide.

The modelling assessment was based on all sources operating at emissions limit values and on a continuous 24 hour, 7 days a week 365 days a year basis. In addition, the maximum predicted values were determined from the modelling of 5 years of meteorological data. On this basis, the potential worse-case predicted concentrations were determined.

In the air quality study the cumulative impacts were considered through the addition of process emissions from ICL and background levels. No other major emitters are considered likely to contribute to maximum predicted values due to the separation from the ICL facility, as follows:

- Tarbert – 45km;
- Moneypoint – 45km;
- Aughinish Alumina – 20km.

In relation to Air Quality Standards for ecologically sensitive sites, the maximum worse-case GLC of NO_x is predicted to be 13.54µg/m³ at Bunlicky Pond including a background level of 8µg/m³. This amounts to 45.1% of the AQS for the annual mean for the protection of vegetation. The predicted concentrations comply with the AQS for the protection of vegetation. This worst-case value is predicted on the southern boundary of Bunlicky Clayfield Pond.

Assuming a deposition velocity of 0.001m/s the nitrogen deposition at Bunlicky Clayfield Pond is calculated based on the following:

- 1 µg/m³ NO₂ = 0.1 kg N ha⁻¹ yr⁻¹

This results in a value of 1.4 kg N ha⁻¹ yr⁻¹. This is well within the UNECE critical load for nitrogen of 5-10 Kg (N) ha⁻¹/yr⁻¹ for permanent oligotrophic waters.

The air quality modelling study undertaken predicted that all air quality standards will be complied with, therefore no new mitigation measures were proposed.

Table 1 Relevant European sites including reasons for designation

European Site	Reasons for designation (information correct as of 22 nd February 2016) (*denotes a priority habitat)
<p>Lower River Shannon SAC (002165) 600m to the north</p>	<p>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 (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] <i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029] <i>Petromyzon marinus</i> (Sea Lamprey) [1095] <i>Lampetra planeri</i> (Brook Lamprey) [1096] <i>Lampetra fluviatilis</i> (River Lamprey) [1099] <i>Salmo salar</i> (Salmon) [1106] <i>Tursiops truncatus</i> (Common Bottlenose Dolphin) [1349] <i>Lutra lutra</i> (Otter) [1355]</p> <p>According to the site Natura 2000 Form the SAC comprises a very large, long site approximately 14 km wide and 120 km long, encompassing: the drained river valley which forms the River Shannon estuary; the broader River Fergus estuary, plus a number of smaller estuaries e.g. Poulmasherry Bay; the freshwater lower reaches of the Shannon River, between Killaloe and Limerick, plus the freshwater stretches of much of the Feale and Mulkear catchments; a marine area at the mouth of the Shannon estuary with high rocky cliffs to the north and south; ericaceous heath on Kerry Head and Loop Head; and several lagoons. The underlying geology ranges from Carboniferous limestone (east of Foynes) to Namurian shales and flagstones (west of Foynes) to Old Red Sandstone (at Kerry Head). The salinity of the system varies daily with the ebb and flood of the tide and with annual rainfall fluctuations seasonally.</p> <p>The site contains many Annexed habitats, including the most extensive area of estuarine habitat in Ireland. A good range of Annexed species are also present, including the only known resident population of <i>Tursiops truncatus</i> in Ireland, all three Irish species of lamprey, and a good population of <i>Salmo salar</i>. A number of birds listed on the EU Birds Directive either winter or breed in the site. The site is internationally important for waterfowl with more than 50,000 individuals occurring in winter. Several species listed in the Irish Red Data Book are present, perhaps most notably the only known Irish populations of <i>Scirpus triqueteter</i>.</p>
<p>River Shannon and River Fergus Estuaries SPA (004077) 600m to the north</p>	<p>Cormorant (<i>Phalacrocorax carbo</i>) [A017] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054]</p>

European Site	Reasons for designation (information correct as of 22 nd February 2016) (*denotes a priority habitat)
	<p>Shoveler (<i>Anas clypeata</i>) [A056] Scaup (<i>Aythya marila</i>) [A062] Ringed Plover (<i>Charadrius hiaticula</i>) [A137] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Greenshank (<i>Tringa nebularia</i>) [A164] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Wetland and Waterbirds [A999]</p> <p>According to the site Natura 2000 Form the River Shannon and River Fergus Estuaries form the largest estuarine complex in Ireland. The site comprises all of the estuarine habitat west from Limerick City and south from Ennis, extending west as far as Killadysert and Foynes on the north and south shores of the Shannon respectively (a distance of some 25 km from east to west). Also included are several areas in the outer Shannon estuary, notably Clonderalaw Bay and Poulnasherry Bay. The site has vast expanses of intertidal flats. The main macro-invertebrate community is a <i>Macoma-Scrobicularia-Nereis</i> community which provides a rich food resource for the wintering birds. Eelgrass (<i>Zostera</i> spp.) is present in places. The intertidal flats are often fringed with salt marsh vegetation, areas which provide important high tide roost sites for the birds. In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as <i>Phragmites australis</i> and <i>Scirpus</i> spp. <i>Spartina anglica</i> is frequent in parts.</p> <p>This is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl. It has internationally important populations of <i>Calidris alpina</i>, <i>Limosa limosa</i> and <i>Tringa totanus</i>. A further 16 species have populations of national importance. The site is particularly significant for <i>Calidris alpina</i> (11% of national total), <i>Pluvialis squatarola</i> (7.5% of total), <i>Vanellus vanellus</i> (6.5% of total), <i>Tringa totanus</i> (6.1% of total) and <i>Tadorna tadorna</i> (6.0% of total). It has <i>Cygnus cygnus</i>, <i>Pluvialis apricaria</i> and <i>Limosa lapponica</i> in significant numbers. The site was formerly frequented by a population of <i>Anser albifrons flavirostris</i> but these have now abandoned the area. The site provides both feeding and roosting areas for the wintering birds and habitat quality for most of the estuarine habitats is good.</p>

In addition to the two European sites listed and appraised in **Table 1**, a number of other sites are present in the wider area. These include the following:

- Askeaton Fen Complex SAC (002279), 11km to the west;
- Tory Hill SAC (000439), 11.5km to the south;
- Curraghchase Woods SAC (000174), 12km to the west;
- Glenomra Wood SAC (001013), 14km to the northeast;
- Ratty River Cave SAC (002316), 14km to the northwest.

It is considered that there is no Source-Pathway-Receptor Link between these sites and the ICL Cement Factory. This is due to the distance between the sites and the lack of any hydrological or other link between the sites.

An assessment of other (non-European) designated sites was also undertaken. A total of three proposed Natural Heritage Areas (pNHAs) occur within 5km of the Cement Factory. The closest is the Inner Shannon Estuary – South Shore pNHA (000435). For the most part this pNHA is concurrent with the Lower River Shannon SAC, however, it also includes all of Bunlicky Clayfield Pond and parts of the surrounding land, including parts of the ICL landholding. The Fergus Estuary and Inner Shannon, North Shore pNHA (002048) is located along the north shore of the Shannon and is also concurrent with both the Shannon and River Fergus Estuaries SPA and the Lower River Shannon SAC. Loughmore Common Turlough pNHA (000438) is located c.2km south of the Cement Factory – Refer to **Figure AA-1**. No other sites occur within 5km.

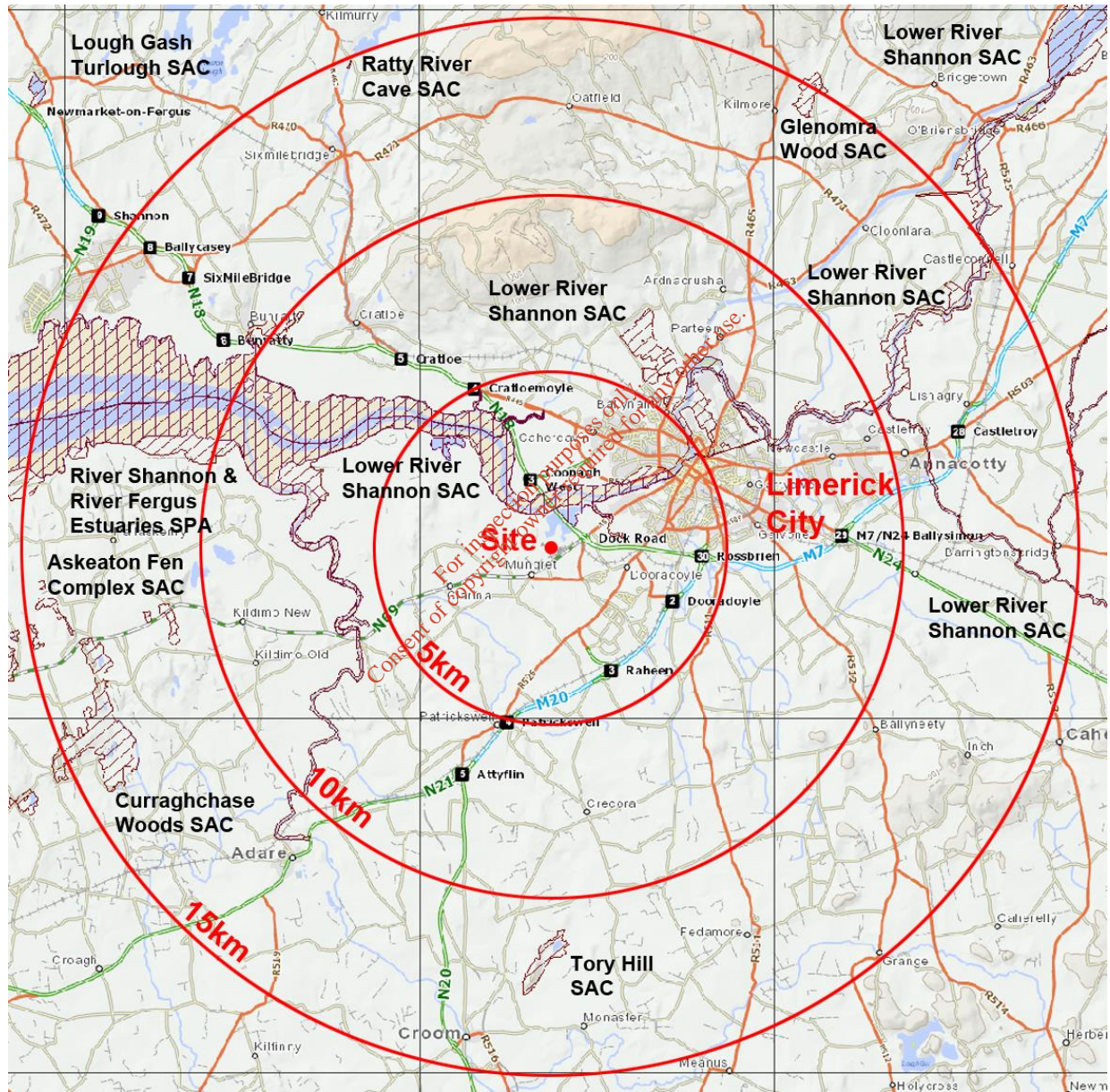


Figure AA-2: European Sites within 15km of the Study Area

3.3.4 Other issues

No other potential environmental impacts (such as impacts on cultural heritage or landscape and visual receptors) are considered relevant to this report.

4 Natura Impact Statement

4.1 Introduction

According to the draft Guidance published by the EC (Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC, dated April 2015) the “integrity of a site” relates to the site’s conservation objectives. For example, it is possible that a plan or project will adversely affect the site only in a visual sense or only affect habitat types or species other than those listed in Annex I or Annex II. In such cases, the effects do not amount to an adverse effect for purposes of Article 6(3).

In other words, if none of the habitat types or species for which the site has been designated is significantly affected then the site’s integrity cannot be considered to be adversely affected. However, if just one of them is significantly affected then the site integrity is necessarily adversely affected.

The integrity of the site involves its constitutive characteristics and ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site’s conservation objectives.

The Appropriate Assessment Screening exercise undertaken by the EPA concluded that it cannot be excluded that the activity, individually or in combination with other plans or projects, will have a significant effect on a European site.

The EPA has accordingly determined that the applicant is required to submit a Natura Impact Statement, for the following reasons (letter dated 31 January 2017):

- Water arising at the installation (including groundwater diverted from the quarry, and surface water 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.

This Natura Impact Statement examines the potential impacts of the proposal on the integrity of the European sites, in the context of the Conservation Objectives of the European sites, and in the context of the issues raised by the EPA.

4.2 Conservation objectives, threats and vulnerabilities of the European sites

A key aim of the Habitats Directive is to ‘*maintain or restore the favourable conservation status of habitats and species of community interest*’. Site-specific conservation objectives aim to define favourable conservation condition for particular habitats or species within a European site.

Site-specific conservation objectives for the Lower River Shannon SAC were published on 7th August 2012. The Conservation Objectives are:

- To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.

Site-specific conservation objectives for the River Shannon and River Fergus Estuaries SPA were published on 17th September 2012. The Conservation Objectives are:

- To maintain the favourable conservation condition of bird species listed as special conservation interests for this SPA.

Table 1 above outlines the reasons for designation of each European site relevant to this report.

4.3 Appraisal of likely impacts on European sites and in-combination effects

As shown in Section 3.3 of this report, the implementation of Best Available Techniques for the Production of Cement, Lime and Magnesium Oxide at the Cement Works, specifically the implementation of and compliance with more stringent air quality standards, will result in no effects on either the Conservation Objectives or the Qualifying Interests/Special Conservation Interests of either the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA.

Nevertheless, it is a requirement of the *Birds and Natural Habitats Regulations, 2011* that when considering whether a plan or project will adversely affect the integrity of a European site the assessment must take into account in-combination effects with other current or reasonably foreseeable plans and projects.

- If it can be clearly demonstrated that the plan or project will not result in any effects at all that are relevant to the integrity of a European site then the plan or project should proceed without considering the in-combination test; further,
- If there are identified effects arising from the plan or project even if they are perceived as minor and not likely to have a significant effect on the integrity of a European site alone, then these effects must be considered 'in-combination' with the effects arising from other plans and projects.

The EPA, in its letter dated 27th January 2017, raises the potential issues of water arising at the installation and blasting at the limestone quarry. It is considered that the EPA BAT Review (Reg. No. P0029-05) is specific to the implementation of the BAT Conclusions. Therefore, other issues, specifically the issues in relation to water and blasting are separate to the proposal and must be considered in terms of their potential in-combination effects on the European sites.

4.3.1 Water arising at the installation

Water arising at the ICL facility (including groundwater diverted from the quarry, discharges and surface water run-off from the cement works and process water from the cement works) discharges via two emission points (SW1 and SW2 - both of which are monitored by the EPA under the existing IE Licence) to the western portion of Bunlicky Clayfield Pond. This portion of the pond is located west of the N18 causeway, which crosses through the centre of Bunlicky Clayfield pond. Only the eastern portion of the clayfield pond (*i.e.* the portion located east of the N18 causeway) is included in the River Shannon and River Fergus Estuaries SPA.

In addition to Irish Cement, a number of other land uses, including the N18 road, the Limerick City Wastewater Treatment Works, and other landowners also discharge directly to Bunlicky Clayfield Pond. In fact only circa 50% of the water discharged to Bunlicky Pond comes from Limerick Cement Factory, with the remainder from a variety of other sources.

All surface water runoff from the Cement Factory passes through a settling tank and interceptor prior to discharge. In 2016, as reported in Tables B.2(i) for locations SW1 and SW2 of the Section 90(1)(aa) Review Form submitted to the EPA on 15 February, 2017³, all parameters measured emissions were shown to comply with limit values. In addition, the water outflow for SW1 and SW2 was sampled by the EPA for laboratory analysis on the 29th June and the 11th August 2016. The results of the analyses recorded were in compliance with licence requirements.

The measures proposed at part of the implementation of the BAT C Review will have no impact on surface water or on Bunlicky Clayfield Pond – only part of which is designated within the River Shannon and River Fergus Estuaries SPA. In any case discharges continue to be regularly monitored to ensure that they comply at all times with the IE licence limits. Given the nature of the site drainage and discharge system, in particular its monitoring requirements, no potential impact on water is envisaged and the Cement Works will continue to be bound by the limits set down in the Industrial Emissions licence for the facility.

4.3.2 Blasting at the limestone quarry

The limestone quarry and cement works at Castlemungret have been in operation since 1938. Regular blasting operations have been undertaken at the limestone quarry for many decades and significantly pre-date the designation of both the River Shannon and River Fergus Estuaries SPA (designated in 1997) and the Lower River Shannon SAC (designated as a Site of Community Importance (SCI – precursor to SAC) in 2002). The European sites were designated in the context of the activities that take place at the quarry and cement factory, and are located within an environment that contains a number of other potentially significant sources of noise and vibration, in particular the N18 road, which crosses Bunlicky Clay Pond on a causeway.

All blasting that occurs within the limestone quarry is undertaken within the parameters of the existing IE licence, (Reg. No. P0029-03). Under the terms of this licence the air overpressure (dB) and the vibration (mm/s) are subject to the limits set out in the licence. Section 4.6 of the IE licence states, that the:

...‘blasting operations at the installation shall not give rise to vibration levels or air over-pressure values measured at noise sensitive locations in excess of the vibration limit value or overpressure value, subject to the following:

- (i) Vibration levels measured at noise sensitive location(s) shall not exceed the specified limit values;*
- (ii) 95% of all air over-pressure levels measured at noise sensitive locations(s) shall conform to the specified limit value. No individual air over-pressure value shall exceed the limit value by more than 2.5dB(lin).’*

³ http://www.epa.ie/licences/lic_eDMS/090151b2805f7a49.pdf

In 2016 there were 34 blasts at the limestone quarry and while there was one noise complaint from a nearby residential property, the IE licence limits for blasting operations (both air over pressure and ground vibration) were not exceeded.

Given the long history of operations at the site, the baseline noise environment already includes the operation of the existing cement factory and the limestone quarry. There is no evidence to suggest that noise arising from the blasting activities has ever had any significant impacts on the bird populations in the vicinity, either in or on Bunlicky Clayfield Pond, the River Shannon itself or in the fields and other habitats that are outside any designated site but may nevertheless be utilised by bird species. A case study included in the *Guidelines for the Protection of Biodiversity within the Extractive Industry*⁴ (Notice Nature/NPWS), relating to the protection of nesting peregrine falcons at an active quarry in County Cork (Killeady Quarry), concluded that a buffer zone of 150m between the quarry blast face and the nest was successful in ensuring that nesting peregrine falcons, including their eggs and chicks, were not disturbed. This buffer distance is significantly less than the circa 1.7km that separates the extraction (blast) face at the Irish Cement Quarry from the SPA in the eastern portion of Bunlicky Clayfield Pond and the circa 0.7km that separates the extraction (blast) face in the quarry from the SAC / SPA boundary along the River Shannon to the north (Refer to **Figure AA-3**).

It can be concluded that noise and vibration arising as a result of blasting activities at the limestone quarry in no way impact on any European sites. All blasting operations are strictly controlled and comply with the limits set out in the IE licence.

Regardless of the foregoing, the implementation of the measures associated with the BAT Review will have no effect on noise or vibration levels that may arise as a result of blasting in the quarry.

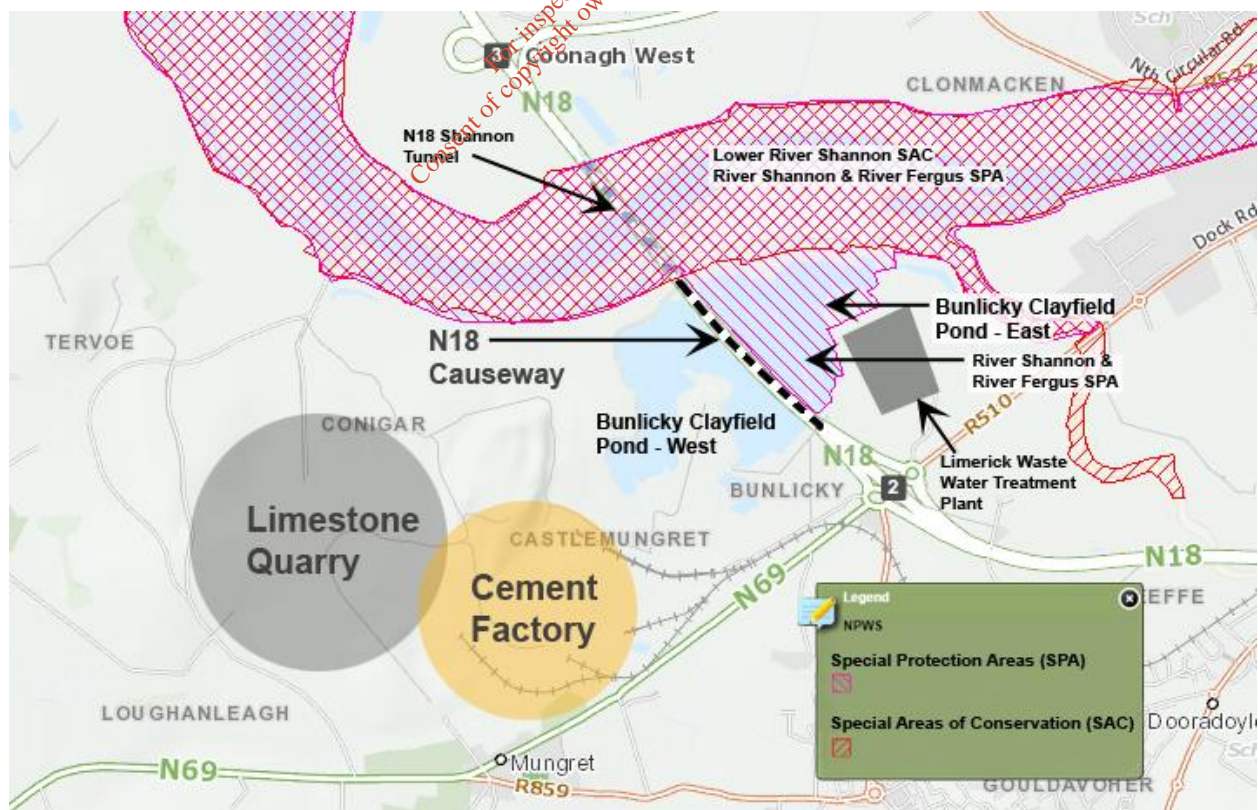


Figure AA-3: Location of ICL Castlemungret, Limerick

⁴ http://www.noticenature.ie/files/Notice%20Nature%20quarry%20brochure%20web_1.pdf

4.3.3 Potential impacts arising from the proposed BAT Compliance in-combination with water discharges to Bunlicky Clayfield Pond and/or blasting at the limestone quarry

All emissions from the Cement Factory are strictly controlled under IE licence from the EPA. No impacts are predicted on any European sites as a result of groundwater or surface water discharges, and no impacts are predicted as a result of noise or vibration, including that caused by blasting. No impacts on any European sites will arise as a result of BAT compliance.

Therefore, it can reasonably be concluded that there will be no in-combination effects on European sites because of these operations.

4.4 Mitigation measures

In relation to European sites, there will be no impacts as a result of the proposed works. No mitigation is proposed, other than standard best-practice methodologies and site management measures that are already employed at all times at the Cement Factory.

5 Summary and Conclusions

This Natura Impact Statement has specifically considered the potential effects of a review of the IE Licence for Limerick Cement Factory to ensure compliance with, or to achieve greater compliance with, the Best Available Techniques (BAT) Reference Document for the Production of Cement, Lime and Magnesium Oxide (2013). The NIS has also considered potential effects that may arise from:

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

This NIS concludes that it can be clearly demonstrated that no aspect of the implementation of BAT Conclusions will result in any significant effects on the integrity or Qualifying Interests/Special Conservation Interests of any European site, in particular the Lower River Shannon SAC and the River Shannon and River Fergus Estuaries SPA, either on their own or in-combination with other plans or projects. The assessment has also shown that discharge of water from the Cement Factory under licence to Bunlicky Clayfield Pond, and blasting operations under licence within the limestone quarry, have no impact on the integrity or Qualifying Interests/Special Conservation Interests of any European site.

It is considered that this NIS provides sufficient relevant information to allow the Competent Authority (the Environmental Protection Agency) to reach a determination that the implementation of BAT Conclusions will not affect the integrity of any of the identified European sites under Article 6 of the Habitats Directive (92/43/EEC).

6 References

Council of the European Communities (1992) Council Directive of 21 May 1992 on The Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC). O. J. L 206/35, 22 July 1992

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European Commission (EC) (2015 (DRAFT). Managing Natura 2000 sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC. (Draft Guidance issued by the European Commission, April 2015)

European Communities (Birds and Natural Habitats) Regulations 2011 (SI No. 477 of 2011)
NPWS (2010). Circular NPW 1/10 & PSSP 2/10 Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, March 2010)

NPWS (2013a). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 2, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

NPWS (2013b). The Status of EU Protected Habitats and Species in Ireland. Species Assessments Volume 3, Version 1.0. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland

Online data available on European sites as held by the National Parks and Wildlife Service (NPWS) (www.npws.ie/protectedsites)

Planning and Development, Act 2000, as amended

7 Appendices

7.1 European Sites and Appropriate Assessment

The European⁵ network is a Europe-wide network of ecologically important sites (SPAs and cSACs – also known as ‘European Sites’ or ‘Natura 2000 sites’) that have been designated for protection under either the EU Birds Directive (Council Directive 79/409/EEC on the Conservation of Wild Birds) or the EU Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna).

The main aim of the Habitats Directive is *“to contribute towards ensuring biodiversity through the conservation of natural habitats of wild fauna and flora in the European territory of the Member States to which the treaty applies”*. Any actions taken must be designed to *“maintain or restore, at a favourable conservation status, natural habitats and species of wild fauna and flora of Community interest”*. Under Article 6 of the Habitats Directive, an assessment is required where a plan or project may give rise to significant effects upon a European site.

In addition, it is a matter of law that candidate SACs (cSACs) and Sites of Community Importance (SCI) are considered in this process;

Article 6 (paragraphs (3) and (4)) of the Habitats Directive states that:

- (3) Any plan or project not directly connected with or necessary to the management of the site but likely to have significant effect thereon, either individually or in combination with other plans or projects, shall be subject to Appropriate Assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.
- (4) If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of European is protected. It shall inform the Commission of the compensatory measures adopted.”

The requirements of the Habitats Directive are transposed into Irish law by means of the *European Communities (Birds and Natural Habitats) Regulations 2011* (hereafter referred to as the *Birds and Habitats Regulations*)⁶ and by the *Planning and Development Act 2000*, as amended.

In Ireland, the statutory agency responsible for the designated areas is NPWS.

⁵ The EU Habitats Directive, Article 3.1, states “A Coherent European ecological network of Special Areas of Conservation and Special Protection Areas pursuant to Directive 79/409/EEC shall be set up under the title European”

⁶ SI No. 477 of 2011

7.2 Stages in the assessment

European Commission guidance (2001)⁷ sets out the principles on how to undertake decision making in applying the Habitats Directive. The requirements of the Habitats Directive comprise four distinct stages:

Stage 1: Screening is the process which initially identifies the likely impacts upon a European site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts may be significant. It is important to note that the burden of evidence is to show, on the basis of objective information, that there will be no significant effect; if the effect may be significant, or is not known, that would trigger the need for an Appropriate Assessment. There is European Court of Justice case law to the effect that unless the likelihood of a significant effect can be ruled out on the basis of objective information, then an Appropriate Assessment must be made.

Stage 2: Appropriate Assessment is the detailed consideration of the impact on the integrity of the European site of the project or plan, either alone or in combination with other projects or plans, with respect to the site's conservation objectives and its structure and function. This is to determine whether or not there will be adverse effects on the integrity of the site. This stage also includes the development of mitigation measures to avoid or reduce any possible impacts.

Stage 3: Assessment of alternative solutions is the process which examines alternative ways of achieving the objectives of the project or plan that would avoid adverse impacts on the integrity of the European site, should avoidance or mitigation measures be unable to cancel out adverse effects.

Stage 4: Assessment where no alternative solutions exist and where adverse impacts remain. At Stage 4 an assessment is made with regard to whether or not the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, of the compensatory measures needed to maintain the overall coherence of the European network.

⁷ European Commission (2001) *Assessment of Plans and Projects Significantly Affecting European Sites: Methodological Guidance on the Provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC*

7.3 Conservation Objectives of European sites

The conservation objectives for a European Site are intended to represent the aims of the Habitats and Birds Directives in relation to that site. To this end, habitats and species of European Community importance should be maintained or restored to 'favourable conservation status' (FCS), as defined in Article 1 of the Habitats Directive below:

The conservation status of a natural habitat will be taken as 'favourable' when:

- Its natural range and the area it covers within that range are stable or increasing;
- The specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future;
- Conservation status of typical species is favourable as defined in Article 1(i).

The conservation status of a species will be taken as favourable when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future;
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Guidance from the European Commission indicates that the Habitats Directive intends FCS to be applied at the level of an individual site, as well as to habitats and species across their European range. Therefore, in order to properly express the aims of the Habitats Directive for an individual site, the conservation objectives for a site are essentially to maintain (or restore) the habitats and species of the site at (or to) FCS.

The European Commission guidance recommends that screening should fulfil the following steps:

- 1 Determine whether the plan (or policy) is directly connected with or necessary for the management of European sites;
- 2 Describe the plan and describe and characterise any other plans or projects which, in combination, have the potential for having significant effects on European sites;
- 3 Identify the potential effects on European sites;
- 4 Assess the likely significance of any effects on European sites.

⁸ Managing European sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC. (European Commission 2000)

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ATTACHMENT No. A

NON- TECHNICAL SUMMARY

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A.1. Introduction

In line with other cement companies in Ireland and Europe, Irish Cement Ltd. (ICL) wishes to progress with the introduction of alternative fuel and alternative raw material use in Limerick, in kiln 6. Figures A1 and A2 show the site location and the proposed site layout, respectively.

This licence review has been prepared to set out a number of changes on site to allow the introduction of alternative fuels and alternative raw materials as follows:

- Introduction of the use of alternative fuels and use of alternative raw materials on a gradual basis up to a combined total of 210,000 tonnes per annum;
- New storage areas to accommodate the new materials;
- Increase the volumetric gas flow rates from kiln 6, cement mill 6 and cement mill 7;

A number of other changes are also sought as listed below to ensure representative monitoring results, eliminate anomalies and wastage due to duplication of monitoring:

- Relocate the groundwater monitoring point GW3 to a new location (GW4);
- Increase the Potassium trigger value for all groundwater monitoring points from 5mg/l to 25mg/l;
- Remove the requirement for monitoring of NO_x and SO_x at Coal Mill 6;
- Relocate dust deposition gauge AA3.

In addition to reducing the dependency on imported fossil fuels, the use of alternative fuels results in lower CO₂ emissions associated with the cement manufacturing process and delivers wider community benefits by providing an effective and energy efficient alternative to landfill or export for residual wastes.

For existing installations, the Industrial Emissions directive 2010/75/EU requires that where a Commission Implementing Decision on BAT conclusions is published, within four years (relating to the main activity of the installation) the Environmental Protection Agency (EPA) must ensure that *'all permit/licence conditions for the installation concerned are reconsidered, where necessary updated'* and ensure compliance with the BAT. The relevant date for compliance with the BAT Conclusions for Production of Cement, Lime and Magnesium Oxide sector is 26 March 2017.

The cement-clinker production facility at Platin, Co. Meath, the sister plant of ICL Limerick Works, has been using alternative fuels since March 2011 and has recently applied to the EPA to increase the use of alternative fuels and alternative raw materials to 600,000 tonnes per year.

The principle aim of this strategy is to further reduce dependence on imported fossil fuels and to improve the environmental and business performance of the company.

Based on current licence conditions for another cement plant in Ireland as well a review of regulatory guidance for alternative fuels in the cement industry in Switzerland (refer to Addendum A.1) and Germany, ICL has identified a range of suitable alternative fuel types (see list in Section H) that are technically compatible with the cement manufacturing process. As well as alternative fuels the list contains waste materials that can be used to replace a proportion of raw materials needed for the cement manufacturing process.

The experience in Europe where alternative fuels have been in use for more than 35 years by the cement industry is that where suitable supplies exist virtually 100% of the heat required for the cement-clinker manufacturing process can be supplied by alternative fuels. As part of a long-term strategy to fully replace conventional fossil fuels with alternative fuels the facility in Limerick could

have a capacity to use up to 210,000 tonnes of per annum of alternative fuels. The progress towards this quantity will be a long-term strategy that will be achieved on a phased basis with the ultimate benefit being a substantial reduction in the use of fossil fuels. The total heat requirement for the facility will remain the same and the replacement of fossil fuels with alternative fuels will not give rise to any increase in emissions. One fuel source will be replaced by another and the quantity of fuel to be used each year will be directly linked to clinker production.

To facilitate this increased use of alternative fuels, a number of additional structures and associated equipment are proposed for Limerick which are described in Sections H and F of this application, refer to Figure A.2 for a revised site layout. The broad categories of reception, temporary storage and handling systems can be subdivided based on the typical physical characteristics of the various proposed waste materials;

- Whole Tyres: Whole Tyres no longer suitable or legal for their intended use due to damage, brittleness or low thread depth.
- Fine Solids: Fine materials, like Solid Recovered Fuel (SRF), typically sized 10-50mm (*e.g.* chipped timber, shredded plastics, *etc.*).
- Free-flowing Solids: Some fuels will be free-flowing solids or powders that will be off-loaded into sealed silos (*e.g.* SRF pellets, sewage sludge pellets, bio-solids *etc.*).
- Pumpable fluids: Fluid type materials (*e.g.* secondary liquid fuels (SLF), waste oils, solvents, distillation residues, paint sludges, *etc.*).
- Coarse Solids: Materials typically of 30-120mm particle size will be prepared off site to a defined specification before delivery to site (*e.g.* shredded wood, rubber, dry filter cakes, *etc.*).

The following planning permission and EIS documents are included in this application:

- Planning application reference number 16153;
- Environmental Impact Statement (EIS) that accompanied the planning application, entitled 'Use of alternative fuels and alternative raw materials at Limerick Cement Works, Castlemungret, County Limerick'.

Product quality is a vital part of the daily cement plant operation and is closely monitored throughout the cement making process via an established quality control system. The quality control system is accredited to:

- ISO 9001:2000 Quality Management System
- NSAI Product Certification and CE marking to IS EN 197-1 and 197-2

Furthermore the company has also adopted ISO 14001 which is an internationally accepted environmental management system (EMS). The ISO 14001 environmental management standard exists to help organisations minimise operational effects on the environment.

ISO 14001 is similar to ISO 9001 quality management in that they both relate to the production process or activity rather than to the product itself. The overall concept is to take a planned approach to managing the environmental aspects which an organisation can control. Certification to both of these standards requires third-party audits to be successfully completed.

The company complies with all relevant environmental legislation and best industry practice at its two plants at Platin and Limerick. Both plants operate in compliance with IE Licences issued by the Environmental Protection Agency.

ICL has developed a Responsible Sourcing Policy in accordance with the requirements of the BRE Environmental and Sustainability Standard BES, 6001. All products produced at Irish Cement conform to the BES 6001 standard for responsible sourcing and ICL has achieved an 'excellent' standard in the most recent audit.

The ICL Limerick facility is not an establishment to which the Seveso III Directive applies (Directive 2012/18/EU of the European Parliament and of the Council of 4 July 2012 on the control of major-accident hazards involving dangerous substances, amending and subsequently repealing Council Directive 96/82/EC). The Seveso III Directive has been transposed into Irish law by the Chemicals Act (Control of Major Accident Hazards Involving Dangerous Substances) Regulations 2015 (S.I. No 209 of 2015). The Directive does not apply to the ICL Limerick facility because the quantities of hazardous materials are less than the threshold quantities (refer to **Attachment No. B**).

A.2. Classes of Activity

The relevant activities in the First Schedule of the EPA Act 1992, as amended, to which the activity relates are as follows:

- 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 Act of 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.
- 11.3 Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants -
 - (a) for non-hazardous waste with a capacity exceeding 3 tonnes per hour,
 - (b) for hazardous waste with a capacity exceeding 10 tonnes per day

The relevant category/categories of industrial activity referred to in Annex I of the Industrial Emissions Directive (2010/75/EU) is/are to be carried out at the installation.

- 3.1. Production of cement, lime and magnesium oxide:
 - 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
- 5.2. Disposal or recovery of waste in waste incineration plants or in waste co-incineration plants:
 - (a) for non-hazardous waste with a capacity exceeding 3 tonnes per hour;
 - (b) for hazardous waste with a capacity exceeding 10 tonnes per day.

Limerick works operates 24 hours per day and for 7 days each week from quarry operation through to cement dispatch/customer collections.

A.3. Emissions Levels

Details of how emissions limit values have been determined are provided in Table A.1. ICL proposes to co-incinerate waste in Kiln 6 (A2-01) and include exhaust gases from the co-incineration of waste in the operation of Coal Mill 6 (A2-02). The relevant limits for these sources are included in Table A.1 and the air quality impact assessment included in Attachment I.

Table A.1: Air Emission Levels

Emission point	Parameter	Emission limit value (mg/m ³)	Source
A2-01 (Kiln 6)	Particulates	10	BAT Conclusion
	Sulphur dioxide (as SO ₂)	50	BAT Conclusion
	Nitrogen Oxides (as NO _x)	500	BAT Conclusion
	Hydrogen chloride (HCl)	10	BAT Conclusion
	Hydrogen fluoride (HF)	1	BAT Conclusion
	Ammonia	50	BAT Conclusion
	The sum of cadmium (Cd) and thallium (Tl) and their compounds	0.05	BAT Conclusion
	Mercury (Hg) and its compounds	0.05	BAT Conclusion
	The sum of antimony (Sb), arsenic (As), lead (Pb), chromium (Cr), cobalt (Co), copper (Cu), manganese (Mn), nickel (Ni), vanadium (V) and their compounds	0.5	BAT Conclusion
Dioxins and furans	0.0000001	BAT Conclusion	
A2-02 (Coal mill 6)*	Particulates	20	BAT Conclusion
A2-03 (Cement Mill 5)	Particulates	10	BAT Conclusion
A2-04 (Cement Mill 6)	Particulates	10	BAT Conclusion
A2-05 (Cement Mill 6 Separator)	Particulates	10	BAT Conclusion
A2-06 (Cement Mill 7)	Particulates	10	BAT Conclusion
A2-07 (Cement Mill 7 Separator)	Particulates	10	BAT Conclusion

* exhaust gases from Kiln 6 will occasionally be vented through Coal Mill 6. These combustion gases will be abated and monitored as they pass through Kiln 6. Kiln 6 combustion gases are continuously monitored, in addition to quarterly kiln flue gas monitoring. The only potential change in the coal mill emission from a monitoring point of view is to the concentration of particulates in the gases.

Table A.2: Dust Deposition / Particulate Levels

Emission point	Parameter	Emission level	Source
AA1, AA2, AA3A, AA4-6, AA8-9, AA11	Dust	240 mg/m ² /day	IE Licence P0029-03
AA12	Ambient dust	Not applicable	IE Licence P0029-03

Table A.3: Water Emission Levels

Emission point	Parameter	Emission level	Source
SW-1 Bunlicky Clayfield Pond	BOD	10 mg/L	IE Licence P0029-03
	Mineral Oil	12 mg/L	IE Licence P0029-03
	pH	6-9 mg/L	IE Licence P0029-03
SW-2	Suspended Solids	35 mg/L	IE Licence P0029-03
	BOD	6 mg/L	IE Licence P0029-03
	Mineral Oil	10 mg/L	IE Licence P0029-03
	pH	6-9	IE Licence P0029-03

It is expected that the following noise limits will be implemented in the new Industrial Emissions licence.

Table A.1: Noise Emission Levels

Emission point	Parameter	Limit L _{Aeq} (30 minutes)	Source
Noise	Daytime (07:00 to 19:00hrs)	55	EPA <i>Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities</i> (NG4) 2012
	Evening time (19:00 to 23:00hrs)	50	EPA <i>Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities</i> (NG4) 2012
	Night-time (23:00 to 07:00hrs)	45	EPA <i>Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities</i> (NG4) 2012

Table A.1: Vibration Emission Levels

Emission point	Parameter	Emission level (mm/sec)	Source
Vibration	Vibration Limit Value at the nearest noise sensitive location during blasting operation (mm/sec as measured in three mutually orthogonal directions about a fixed point)	12	IE Licence P0029-03

Table A.1: Air Overpressure Emission Levels

Emission point	Parameter	Emission level (dB (lin))	Source
Air Overpressure	Nearest noise sensitive location during blasting operation	125*	IE Licence P0029-03

*This based on a statistical analysis that 95% are <125 dB (lin) and all are less than 127.5 dB ICL requests that this condition be retained in its revised licence.

A.4. Derogation under Section 86A(6)

Current NO_x emissions from Kiln 6 (A2-01) and Coal Mill 6 (A2-02) comply with the existing IE Licence (Reg No P0029-03) limit value (30 June 2014) but would exceed the new (26 March 2013) *BAT Conclusions for Production of Cement, Lime and Magnesium Oxide* limit of 500mg/m³. ICL are continuously improving the performance of the SNCRs for these sources and expect that compliance can be achieved in a future licence at the new BAT levels.

However, if any of the emission sources cannot comply with BAT emission limit values, a planned programme of improvement towards meeting the limits will be submitted to the Agency. Irish Cement propose to include in its Environmental Management Plan an assessment of the means necessary to enable the BAT ELVs to be met and a realistic programme to achieve this. A derogation limit of 800mg/Nm³ is sought for a period of 18 months from the commencement of the new licence to implement these programmes.

As emissions from Cement Mill 6 Separator are abated using a bag filter it is expected that the lower limit of 10mg/m³ will be applied. The supplier's guarantee is less than 20 mg/m³.

A derogation limit of 20 mg/Nm³ is requested for a period of 18 months from the commencement of the new licence in order to improve the function of the bag filter. This time is required to identify, design, procure, install and commission the measures required to comply with the lower limit.

As emissions from Cement Mill 7 Separator are abated using a bag filter, it is expected that the lower limit of 10mg/m³ will be applied. The supplier's guarantee is less than 20 mg/m³.

A derogation limit of 20 mg/Nm³ is requested for a period of 18 months from the commencement of the new licence in order to improve the function of the bag filter. This time is required to identify, design, procure, install and commission the measures required to comply with the lower limit.

A.5. The Installation

Quarrying

Quarrying involves overburden stripping, drilling, blasting, loading, hauling, crushing and storage of limestone. In ICL Limerick's case, the crushing and storage of argillaceous shales, sourced from off-site quarries, also features. Various process material streams from the factory are recycled via the quarry and crushing plants. Roof tiles from an ICL customer that do not meet quality control specifications are also currently recycled through the limestone crusher.

Rawmilling

Limestone and overburden/shale are extracted from stores by specially designed reclaimers and conveyed to separate mill feed hoppers. Limestone, overburden/shale, bauxite and iron oxide are extracted from their respective storage hoppers and conveyed together to the raw mills.

The objective of the rawmilling unit operation is to produce a meal of finely ground, dry and homogenised raw material. The raw meal produced in the mills is conveyed to homogenising silos by mechanical equipment. There are two raw meal homogenising silos and two raw meal storage silos. The raw meal is homogenised in the upper chambers prior to dropping by gravity to the storage silos below.

Raw Mill 6 is a horizontal ball mill that uses the action of spherical steel media in a revolving chamber for grinding. It has a nominal capacity of 200 tonnes per hour. Energy is recovered from the exhaust gases of the kiln by directing the gases to dry the raw materials in the mills. The gases are also used to convey raw meal from the mill.

Cement Clinker Making

Raw meal is extracted from the storage silos and mechanically transported to feed hoppers. Raw meal flow is controlled and weighed on extraction from the feed hoppers before mechanical transport into the kiln system.

Kiln 6 is a single string four stage cyclone preheater kiln. Evaporation of residual moisture and partial calcination of the meal occurs in the cyclone preheater. Calcination of the raw meal commences in the preheater (pre-calciner) stage. The preheater cyclone system of the kiln system is a counter current, cyclone based heat exchanger where heat is recovered from the exiting exhaust gases by the incoming kiln feed.

In the preheater towers any residual moisture is driven off. Thereafter the temperature of the raw meal rises rapidly as it descends through the preheater system. Calcination begins in the preheater system. Conversely the temperature of the exhaust gases falls rapidly as it flows to the exit of the preheater system.

The heated raw meal drops into the kiln from the preheater. As the material travels down the rotating kiln the calcination process is completed and the transformation into clinker minerals occurs at a material temperature of approximately 1,450°C with the main flame temperature of approximately 2,000°C. To protect the kiln shell at these high temperatures, a lining of refractory material is installed. This lining gradually wears away by abrasion and thermal shocks. Renewal is required at approximately yearly intervals.

Conservation of energy is achieved by recovering heat from the cooling clinker to preheat the combustion air. There are 9 planetary cooler tubes attached to the kiln into which the clinker falls as the kiln rotates. Clinker exiting from the kiln is cooled rapidly.

Cooled clinker is transported by enclosed mechanical conveyors to enclosed clinker storage silos.

To facilitate market demand and maintenance and production planning, it may be necessary from time to time to store clinker in enclosed storage sheds.

Exhaust gases from Kiln 6 are dedusted using a modern bag filter. A gas conditioning tower cools and conditions the exhaust gases using water sprays before the dedusting. The NO_x abatement equipment installed on Kiln 6 is an SNCR installation.

Kiln 6 is currently fired with solid fossil fuels. Solid fuel storage is in outside stockpiles. The fuel is pulverised in a gas swept ball mill. The fuel is metered and pneumatically conveyed thereafter to the kiln burner. Exhaust gases from the kiln is used to ventilate the pet coke/coal mills. These gases are dedusted in a dedicated hybrid filter designed to handle high temperature gases.

While the kiln is currently pet coke fuelled, small quantities of LPG and oil are used for lighting the kiln during start-up.

This application is seeking permission to substitute traditional fossil fuel types used in Kiln 6 with Alternative Fuels and to introduce the use of alternative raw materials in the process.

A bypass filter and cooling tower is proposed for Kiln 6. The bypass system removes a controlled amount of process gas from the system, treats it by air quenching, conditioning and electrostatic precipitation before venting it to atmosphere via the kiln stack. The benefit of this system is that it helps to control the alkali content of the clinker and facilitates the removal of mineral salts which if not removed can cause blockage in the kiln system. The dust collected is returned back into the process in a similar manner to filter dusts.

Cement Milling

Cement milling involves extraction of clinker from storage and milling of clinker with small portions of gypsum and minor additional constituents (raw meal/limestone/gypsum/Grind Granulated Blast Furnace Slag (GGBS)/pulverised ash/Cr VI reducing agents/grinding aids). In the production of CEM II cement limestone is added in quantities exceeding 5%. The milled cement is transported to silos.

Alternative Fuels

Irish Cement Platin was granted planning permission by Meath County Council and a revised IE licence by the EPA to permit the use of up to 120,000 tonnes of three named alternative fuels to replace fossil fuels. An application has been made to Meath County Council for planning permission to permit an increase in the range and quantity of alternative fuels to allow, in time, the almost complete replacement of fossil fuels in both Kiln 2 and Kiln 3. An application has also been made to the EPA for a revised IE licence for this purpose.

Irish Cement, Limerick proposes to introduce the use of 210,000 tonnes of alternative fuels and raw materials to replace fossil fuels. The use of alternative fuels in the clinker manufacturing process reduces the carbon intensity of the process, improves resource efficiency and in a broader context provides an effective recovery and recycling option for local residual waste materials.

CEM II Cements

Irish Cement introduced lower carbon 'eco-efficient' CEM II cements to the market in 2006. CEM II cements are produced to a European standard using unburnt finely milled limestone and or 'Pulverised flyash' (PFA) from coal fired power stations, to replace a percentage of the clinker. These 'eco-efficient' cements emit less carbon dioxide in their manufacture and require less energy to produce and so directly contribute to a reduced carbon footprint for the final product. CEM II cements are the dominant cement in use in Ireland, now making up over 80% of the cement sales.

Cement Storage and Dispatch

Silos are used for the storage and direct dispatch of bulk cement by road. Rail dispatch has been used in the past.

Packing Plant

The cement is transported from the silos to the Packing Plant by a combination of air slides, screw conveyers and elevators. There are two rotary packers which fill 25 kg bags. The bags of cement are stacked on pallets, wrapped and loaded onto trucks by overhead crane or forklift for dispatch.

Operating Hours

The Cement Works at Limerick operates on a 24 hour per day basis, 7 days per week. The principle activities involved in the production of cement are described in **Table A.1**.

Table A.1 Summary of the Key Cement Production Stages

Activity	Outline of the activity
Quarrying	Limestone the primary ingredient is quarried on site. Overburden also originates on the site. Other raw materials are delivered.
Raw Material Preparation	All the raw materials are tested, milled and blended to produce an homogenous mixture called 'raw meal' which ensures the correct chemical balance is fed into the calciner and kilns
Clinker production	Heating the raw materials up to 1,450°C is essential for clinker production, where the minerals fuse together. This stage requires significant heat inputs from fuel combustion
Testing & Quality Control	Quality control is a vital activity at all stages of the cement production process. Most of the testing is carried out on-site including in a fully automated laboratory
Cement Milling	Clinker and additional materials are milled into the final fine cement product. It is at this stage that 'unburnt' milled limestone/PFA is added to make CEM II 'eco-efficient' cements
Packing & Dispatch	The cements are stored in silos for dispatch in bulk road tankers or packed in to 25kg paper sacks

A.6. Raw materials and energy produced and utilized

Materials

The principal materials used in the cement manufacturing process are:

- Limestone
- Shale

The secondary materials used in the cement manufacturing process are:

- Iron oxide;
- Pulverised Fly Ash (PFA);
- Overburden;
- Gypsum;
- Ferrous/tin sulphates;
- Grinding aids;
- Bauxite;
- Ground Blast Furnace Slag (GBS)
- Ground Granulated Blast Furnace Slag (GGBS);
- Flue Dust Portland Cement (FDPC); and
- Other materials as required.

Limestone is quarried on-site and can also be sourced off-site. Overburden is removed from the rock in the Limestone Quarry before quarrying commences. Shale is quarried off-site. Overburden can be used as a shale replacement material depending on its mineralogical composition. Iron ore and PFA are used as raw materials to optimise the mineral composition of cement clinker. Planning permission was granted in 2004 for limestone and overburden to be taken off-site for use by local industry.

At ICL, cement manufacture begins at the feeders to the primary crushing equipment. Pre-crushed shales are delivered to site.

After primary crushing, the materials are homogenised in separate blending stores. Limestone, Shale, PFA and Iron Oxide are then mixed, dried and milled in a raw mill.

The proportions of mixing are controlled by chemical analysis. The raw mill operates in the exhaust system of a rotary kiln, thereby using the available excess low-grade heat for drying of the raw materials. The product of the raw mill is a powdered blend of raw materials called 'raw meal'. The mineralogical composition of the raw meal is carefully controlled.

The raw meal is blended in homogenising silos before being converted to cement clinker in the kiln systems. Kiln 6 is a four stage cyclone preheater kiln. Evaporation of residual moisture and partial calcination of the meal occurs in the cyclone preheater. Calcination of the raw meal, now known as kiln feed begins in the preheater stage. The preheater of the kiln system is a counter current, cyclone based heat exchanger where heat is recovered from the exiting exhaust gases to the incoming kiln feed. Clinker formation occurs in the kiln at temperatures of 1,450°C.

Pet coke is the current standard fuels for the kiln. Small quantities of gas and diesel oil are used in the heating up process. Light fuel oil can also be used. Solid fuels such as pet coke are milled on-site before use.

This application is seeking permission to substitute traditional fossil fuels with Alternative Fuels in the Kiln 6 system on a phased basis and the use of alternative raw materials at the plant.

Clinker produced at ICL is stored in dedicated silos and sheds. Imported clinker can be introduced to the cement production process downstream of the kiln stage.

Ball mills are currently used to mill the clinker to produce the final cement products. Minor additional constituents (PFA/limestone) are added to the clinker and gypsum to make cement at ICL Limerick in accordance with cement Standard requirements. ICL Limerick currently produces Eco-efficient CEM II cements that have a lower carbon footprint and require less energy to produce than high clinker CEM I cements. CEM II cements are produced by inter grinding secondary cementitious materials notably PFA and limestone during the final cement milling phase as a replacement for some of the clinker.

In accordance with current legislation, chromate reducing agents (tin sulphate or ferrous sulphate) are added either at the cement milling or at the packing stages to reduce Cr-VI concentrations to below 2 ppm. Cement is pneumatically conveyed from the cement mills to storage silos. These silos are either fitted with bulk loading facilities or feed transport systems to the Packing Plant. Bulk cement is dispatched by road and rail transport has been used in the past. In the Packing Plant, cement is packed into multi-layered packaging and palletised prior to despatch by road.

The factory is designed to operate 24 hours per day and 365 days per year. Maintenance periods and market demand influence the actual operating pattern of the factory.

A.7. Emissions

A.7.1 Emissions to Atmosphere

The IE licensed main emission points to atmosphere at Irish Cement Ltd (ICL) Limerick Works are given in Table A.2. No significant boiler emissions are present on site.

Table A.2 Industrial Emissions Licensed Main Emission Points to Atmosphere

IE Licence Label	Description
A2-01	Kiln 6/Raw Mill
A2-02	Coal Mill 6
A2-03	Cement Mill 5
A2-04	Cement Mill 6
A2-05	Cement Mill 6 Separator
A2-06	Cement Mill 7
A2-07	Cement Mill 7 Separator

A minor emission is an emission, which on the basis of its concentration and mass emission is not considered environmentally significant. Therefore it is not classified as a main emission.

ICL are seeking to increase the volumetric gas flow rates limits of kiln 6, cement mill 6 and cement mill 7 to accommodate the use of alternative fuels and raw materials, as outlined in Table A.3.

Table A.3: Proposed changes to volumetric flow rates

Source	Current volumetric flow limits (m ³ /hr)	Proposed volumetric flow limits (m ³ /hr)
Kiln 6 (A2-01)	335,000	500,000
Cement mill 6 (A2-04)	25,500	30,000
Cement mill 7 (A2-06)	25,500	30,000

The air quality impact assessment contained in Attachment I, considers the effect of increasing the volumetric flow rates of these sources on the atmospheric environment. It concludes that all air quality standards will be in compliance.

ICL requests that the Agency remove the requirement for the periodic monitoring of NO_x and SO_x at Coal Mill 6 (A2-02). Under IE licence P0029-03, ICL is required to monitor particulates (continuously), NO_x and SO_x (both quarterly). Some of the exhaust gases from Kiln 6 (A2-01) are vented through Coal Mill 6. These gases are monitored and abated at Kiln 6 in accordance with the BAT Conclusion on the Production of Cement Lime and Magnesium Oxide 2013. BAT only requires continuous or periodic monitoring of dust from non-kiln activities. Continuous measurement of NO_x and SO_x is only relevant to kiln activities and the values obtained by monitoring the kiln 6 emissions are exactly the same as those in the Coal Mill 6 emissions. In addition, flue gas monitoring for NO_x and SO_x is carried out on Kiln 6 gases on a quarterly basis. No further useful information can be gained from separately monitoring the emissions from Coal Mill 6 for NO_x and SO_x. On this basis, the continuous monitoring of particulates only is proposed for Coal Mill 6 and ICL requests that the requirement for Coal Mill 6 NO_x and SO_x monitoring be removed from its revised licence, in accordance with BAT.

Some relevant minor emission points to atmosphere (e.g. extract from transfer points on materials handling systems) are abated using bag filters. There are currently no new minor emission points associated with the proposal to increase the use of Alternative Fuels. However, new minor emissions may be required as the commerciality of different alternative fuels become available. ICL request that, in line with other industrial sectors licensed by the EPA, minor emissions points should no longer be listed in the revised licence. Minor emission points will continue to be maintained and monitored by ICL as part of the site environmental management system.

Fugitive dust emissions can occur from operations on-site. Every effort is made to minimise such emissions. Dust management measures appropriate to modern cement manufacture are applied and are continually reviewed as part of the annual Environmental Management Plan for the site. ICL currently monitors dust deposition and ambient particulates at nine locations in accordance with IE licence requirements. One location, AA3 which is located in a sports field to the south of the site, is regularly vandalised and has not produced results in the last two years. ICL requests that this monitoring point be relocated to a more secure area, refer to Figure F.5, so that meaningful results can be generated.

A potential emission point is an emission point that is not active under normal operations. There are no potential emission sources associated with the proposal to increase the use of alternative fuels and raw materials.

A.7.1 Main Emissions – Description of Abatement Systems

Particulate emissions from the following sources are be abated using bag filters:

A2-01	Kiln 6/Raw Mill
A2-03	Cement Mill 5
A2-04	Cement Mill 6
A2-05	Cement Mill 6 Separator
A2-06	Cement Mill 7
A2-07	Cement Mill 7 Separator

Particulates emissions from the following sources are abated using a hybrid filter:

A2-02	Coal Mill 6
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A hybrid filter comprises an electrostatic dust precipitator followed immediately by a bag filter.

NO_x emissions from Kiln 6 are abated using selective non-catalytic reduction (SNCR). SNCR involves injecting aqueous ammonia into the kiln exhaust gas to reduce chemically NO_x to N₂. The SNCR system includes off-loading and storage facilities for aqueous ammonia solution.

A.7.2 Emissions to Surface Water

IE Licensed Emission Points associated with emissions to surface water are set out in **Table A.3:**

Table A.3: IE Licensed Emission Points associated with Emissions to Surface Water

Emission Point	Emission Type
SW-1	Surface water runoff from the factory site, the quarry water pumped from the shale crusher and the spent cooling water
SW-2	Excess outflow from the sump pump in the limestone quarry.

Water discharged from SW1 and SW2 passes through oil interceptors that incorporate silt traps prior to discharge into Bunlicky Clayfield Pond. The separators are Class 1 full retention separators and the settling tanks and interceptor are in accordance with I.S.EN-858-2:2008 (separator systems for light liquids). The interceptors have been installed in compliance with Condition No 3.7 of the IE licence.

The proposed development will give rise to minor additional rainwater runoff from the new structures that will be constructed on site, as follows:

- Tyre storage handling area;
- Pumpable fluids storage area;
- Fine solids handling building;
- Raw materials store;
- Free flowing solids store;
- Bypass filter and cooling tower;
- Fine solids building;
- Coarse solids building.

The total additional impermeable area from these buildings will be 1.8 ha. In addition, the new buildings will generally be located on ground that is currently hard-standing.

The runoff from the roofs of the new structures will be collected in a storm water drain which will be connected to the overall site drainage network.

The proposed facilities will have no significant impact on the site storm water management system which currently caters for an area of approximately 35 ha.

Domestic effluent arising on-site is discharged to the Local Authority (Irish Water) Municipal Waste Water Treatment Plant (MWTP) located adjacent to ICL facility via Irish Water domestic effluent sewer. No on-site treatment is undertaken. Four septic tanks are in operation. They are periodically cleaned out and the material recovered is delivered to the MWTP.

A.7.3 Emissions to Ground

There are no direct emissions to ground from the site.

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A.7.4 Noise Emissions

Current IE licensed noise limits are set out in **Table A.4**. These limits apply to Noise Sensitive Locations (NSLs) as outlined in the licence.

Table A.4: IE licence limits for noise

Daytime dB(A) L_{Aeq} (30 minutes)	Night-time dB(A) L_{Aeq} (30 minutes)
55	45

Note 1: There shall be no clearly audible loud component or impulsive component in the noise emission from the activity of any noise-sensitive location.

The cement works operates for 24 hours a day which results in continuous noise emissions. The main plant items which generate noise are totally enclosed in high quality industrial buildings which are designed to reduce noise emissions to the outside. Significant noise sources are listed in Attachment E.

Noise surveys are carried out and reported annually in Irish Cement's AER along with blast monitoring data. A noise impact assessment is provided in Attachment I. The assessment concludes that ICL can continue to comply with licence limits once the proposed development is operational. The development mainly consists of the provision of storage areas for the additional alternative fuels and raw materials. Conveyors will be provided to transfer fuels and materials to kiln 6. These conveyors will be enclosed and are not likely to generate significant noise.

The EPA *Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities* (NG4) 2012 specifies the following noise limits:

- Daytime (07:00 to 19:00hrs) – 55dB $L_{Ar,T}$;
- Evening (19:00 to 23:00hrs) – 50dB $L_{Ar,T}$;
- Nighttime (23:00 to 07:00hrs) – 45dB $L_{Aeq,T}$.

It is likely that these limits will be applied to a new licence that will be issued to Irish Cement as part of an Industrial Emissions licence review. ICL is confident that these limits will be complied with. It should be noted that the noise contributions from the ICL facility is best represented by the L_{A90} parameter as noise sources are generally continuous and high contributions to the noise environment are from local traffic.

A.7.4 Long Distance Emissions

No measures are required to be taken for minimising pollution over long distances or outside the territory of Ireland.

A.8. Environmental Conditions of the site

Attachment I.4 contains a Baseline Report which includes a compilation of the soil groundwater and surface water information from the Environmental Impact Statement along with results from the soil sample testing undertaken during the ground investigations. It provides the information necessary to determine the state of soil and groundwater condition onsite in order that a quantified comparison may be made to the state of the site upon the permanent cessation of the activity controlled under the Industrial Emissions Directive.

Soil

In order to examine the current ground conditions across the site a series of site investigations, in the form of trial pits, were undertaken across the site. Six trial pits were excavated (max depth of 1.7mbgl) across the site with 13 soil samples taken that are representative of the geology underlying the site. The locations of the trial pits are presented

in **Attachment I.4**. Soil sampling depths were selected to provide representative samples of the made ground/overburden.

The soil samples were tested for a wide range of parameters. These specific parameters were chosen because they related to the activities being carried out on site and would represent the most likely contaminants of concern which could be produced from the site. The concentration values for each of the parameters tested were compared to the Generic Assessment Criteria (GACs) target values for commercial sites. Where GAC target values are defined compliance is achieved.

Groundwater

Dry working conditions are maintained in the Quarry by use of water pumps which are located in the Quarry Sump. The level of the quarry floor at the Quarry Sump is -26.25mOD. The level of groundwater in the Quarry Sump is maintained a few metres below this level.

Groundwater monitoring is carried out in compliance with the IE licence requirements. ICL requests that the Potassium trigger value for all groundwater monitoring points be increased from 5mg/l to 25mg/l in order to take account of saline intrusion. EU Directives do not set limits for potassium in ground water. These Directives have been transposed into law in Ireland by the European Communities (Environmental Objectives of Groundwater) Regulations 2010 (SI No 9 of 2010)

ICL also requests that the current groundwater monitoring point GW3 be relocated to an alternative location GW4. Refer to Section I.4 for the rationale behind relocating this point.

Surface water

Storm water is discharged from the Irish Cement Ltd (ICL) facility through two emission points, SW1 and SW2. These discharge spent cooling water, quarry water and surface run-off from the facility. Water discharged from SW1 and SW2 passes through settling tanks and interceptors prior to discharge into Bunlicky Clayfield Pond. The separators are Class 1 full retention separators and the settling tanks and interceptor are in accordance with I.S.EN-858-2:2008 (separator systems for light liquids). The interceptors have been installed in compliance with Condition No 3.7 of the IE licence.

Emissions to Sewer

There is no direct process waste stream generated at the ICL facility.

Domestic effluent arising on-site is discharged to the Irish Water Waste Water Treatment Plant (MWTP) located adjacent to ICL facility via the domestic effluent sewer. No on-site treatment is undertaken. Four septic tanks are in operation. They are periodically cleaned out and the material recovered is delivered to the MWTP.

A.9. Wastes

Alternative fuels accepted at the installation

It is proposed to introduce the use of alternative fuels as a replacement for over 95% of the petcoke at the site. Fuels will be sourced by Irish Cement from approved contractors, for the supply of 'ready-to-use' fuels that will require no further processing on-site, apart from unwrapping or de-baling prepared fuels which may be required from time to time. A number of additional buildings, tanks and silos are proposed for the storage of the alternative fuels. The facility in Limerick could have a capacity to use up to 210,000 tonnes of per annum of alternative fuels. The additional alternative fuels can be characterised into five broad categories of material, based on physical and handling characteristics:

- Whole tyres;
- Fine solids;

- Free-flowing solids;
- Pumpable fluids;
- Coarse Solids.

Alternative raw materials accepted at the installation

It is proposed to use various mineral-based materials as alternatives to standard raw materials, thereby reducing the need for quarrying virgin raw materials and, increasing the overall resource efficiency of the installation.

Waste generated at the installation

ICL operates an Environmental Management System certified to the international standard for Environmental Management ISO 14001. ISO 14001 includes measures to prevent waste and adverse environmental impacts.

Waste generated at ICL Limerick, arises from the ancillary activities on site and can be categorised into:

- Non-hazardous waste which includes municipal waste, non-hazardous industrial waste and other wastes
- Hazardous waste as defined in the EC Directive 91/689/EEC, which includes waste batteries and discarded electrical and electronic equipment.

Segregation of waste occurs where practicable. Resultant waste streams are either recovered or disposed of internally or externally, following strict waste management guidelines set out by the Environmental Protection Agency (EPA). The quantities of waste disposed of on and off site are reported to the EPA in the AER.

Waste Hierarchy

Where wastes or by-products generated on site cannot be reused, recycled or recovered Irish Cement takes the following measures to ensure they are disposed of in a manner which will prevent or minimise any impact on the environment:

- Hazardous wastes will be separately collected and stored in the installation
- Waste arising on site will be collected by authorised waste collection permit holder and delivered to appropriately authorised facilities e.g. holding a waste facility permit or a waste licence.
- By-products will be returned to the process where possible.

Waste recycling and recovery

Source segregation of waste into the following streams to facilitate recycling and recovery will take place:

- Dry mixed recyclables (including paper, metal, plastic and glass);
- Food waste; and
- Residual wastes.

Wastes will be source segregated into additional streams where suitable recycling or recovery opportunities are identified by Irish Cement, including opportunities for source segregation and re-use of non-hazardous construction and demolition waste.

A.10. EIS

The likely significant effects of the activity as set out in the EIS is submitted as part of the licence review application are summarised as follows:

Environmental Factor	Likely effects identified	Brief description of effect	Mitigation measures proposed to control effect
Human beings	Sourcing and supply of significant quantities of alternative fuels and raw materials.	<p>Disruption to residents arising from traffic, noise and dust during construction will be imperceptible and will be carried out over a phased period. The existing facility and proposed works will operate under the terms and conditions of the Industrial Emissions (IE) Licence as monitored by the Environmental Protection Agency. This license controls emissions relating air quality, dust and noise <i>etc.</i> Emissions arising from the proposed development will not change as a result of the proposed development and will thereby ensuring there will be no impact on human health. It is considered that the proposed development will improve the competitiveness of the facility as a whole; support on-going investment and underpin both existing and future employment resulting in a positive residual impact on population and socio-economic aspects.</p>	None
Flora and fauna	None	There will be no residual impact on any ecological receptors, either within the site itself or associated with any site designated for nature conservation as a result of the proposed development.	None.
Soils, geology and hydrogeology	Potential for contamination of excavated soil.	<p>Excavation for foundations across the site may potentially encounter areas of minor soil contamination. For all trial pits completed in the recent soil survey, all parameters were in compliance with target values.</p> <p>The excavation and disposal of excavated soils may result in</p>	Excavations in the made ground will be monitored by an appropriately qualified person to ensure that should a hotspot of contamination be encountered it is identified, segregated

		<p>the generation of dust and also possible odours across the site.</p> <p>Excavation of soil close to existing structures may lead to instability in these buildings.</p>	<p>and treated appropriately as soon as possible.</p> <p>Dust and odour suppression systems may be required during construction to manage any impacts. Haul roads will be wetted down during dry weather and road sweepers employed to ensure the surrounding roads are kept clean.</p> <p>Appropriate foundation construction techniques will be adopted to comply with the requirements of statutory bodies in terms of noise, vibration, soil and groundwater contamination.</p>
Water	Water run-off from open excavations and construction areas.	<p>Surface construction activities pose a potentially significant risk to all watercourses as these sites will be exposed to rainfall which has the potential to produce run-off. Surface water run-off has the potential to become contaminated with suspended solids, hydrocarbons, and concrete/cementitious products. However the applicant site has extensive drainage and water treatment systems already in operation so any risk of impacts is substantially reduced.</p>	<p>Prior to construction, the Contractor will be required to develop an Environmental Management Plan which will incorporate the mitigation measures. These mitigation measures apply for the prevention of pollution to all waters during construction.</p>
	Additional water run-off from proposed development and additional areas in which a fire can be generated.	<p>The proposed development will give rise to minor additional rainwater runoff due an increase in developed area of the site. This additional run-off will enter the existing surface water drainage network.</p>	<p>Three new fire water retention tanks will be provided.</p>

Air	Reduction in ground level concentrations, the use of raw materials and energy consumption.	<p>The use of additional alternative fuels and alternative raw materials will result in a number of positive indirect effects on air quality, for example:</p> <ul style="list-style-type: none"> • reduced use of natural raw materials, • reduced energy requirement for blasting and crushing • reduced predicted ground level concentrations for all major pollutants 	A number of bag filters will be provided on new minor emission points associated with the new development. A number of other mitigation measures are currently in place to reduce emissions from sources. These including bag filters and a selective non catalytic reduction (SNCR) on Kiln 6.
Climate	Annual savings in CO ₂ emissions	The use of additional alternative fuels in place of fossil fuels could result in annual CO ₂ savings of approximately 128,000 tonnes.	None.
Landscape and Visual	Slight increase in visual mass/bulk of existing development	<p>The proposed development would not give rise to significant additional landscape or visual impact. The scale and nature of the change would be relatively small and overall within the context of the existing facility would have a negligible or imperceptible visual impact.</p> <p>In the medium and longer-term, given the presence of the existing facility and other proposed developments there would be no appreciable change within existing views. It is considered that negative landscape or visual impact would not arise from the proposed development.</p>	None. The continuing establishment of the existing planting will increasingly have a more pronounced effect in the screening and softening of the mass of the facility. All of the landscape areas are managed and maintained under on-going landscape maintenance contracts.
Material Assets	None	The increase in operational traffic volumes does not exceed 5% and therefore does not have a significant impact on traffic conditions.	None.
Cultural Heritage	No negative impact	The proposed development will have no impact on the cultural heritage in the area.	None

A.11. NIS

The Natura Impact Statement prepared for the implementation of the BAT Conclusions BAT Conclusion on the Production of Cement Lime and Magnesium Oxide 2013 concludes the following:

It is considered that this NIS provides sufficient relevant information to allow the Competent Authority (the Environmental Protection Agency) to reach a determination that the implementation of BAT Conclusions will not affect the integrity of any of the identified European sites under Article 6 of the Habitats Directive (92/43/EEC).

A.12. BAT and BREF

Relevant BAT and BREF documents are detailed in this section.

Title of Document	Status¹	Applicability
Reference Document on Best Available Techniques on Emissions from Storage July 2006	Formally adopted by the European Commission under the IPPC Directive (2008/1/EC)	Applicable, guidance only
Reference Document on Best Available Techniques for Energy Efficiency February 2009	Formally adopted by the European Commission under the IPPC Directive (2008/1/EC)	Applicable, guidance only
BREF on the Production of Cement, Lime and Magnesium Oxide 2013	Adopted	Applicable
BAT Conclusion on the Production of Cement Lime and Magnesium Oxide 2013	Adopted	Applicable
Reference Document on the Best Available Techniques for Waste Incineration August 2006	Work has started on revision but a draft is not yet available.	Applicable, guidance only
Reference Document on Best Available Techniques	Work has started but a draft is not yet available.	Applicable, guidance only

¹ Drafts of (B)REFs have no legal value. They only reflect work in progress and are available for information only to those interested in the exchange of information under Article 13(1) of the IED.

for the Waste Treatments Industries August 2006		
Of the reference documents or REFs ² have also been published by the European IPPC Bureau one applies to the Irish Cement Plant as follows:		
Monitoring of emissions from IED-installations 2013	Document has been sent to the IED Article 13 Forum for its opinion.	Applicable, guidance only

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² On the European IPPC Bureau website, a REF is explained as follows:
“The REF or ‘reference document’ or ‘reference report’ means a document, which is not a BREF, used as the main reference for a specific horizontal task or topic in the Sevilla process.”