EIA Report for Development for Further Replacement of Fossil Fuels with Alternative Fuels and Alternative Raw Materials

VOLUME 1 – NON TECHNICAL SUMMARY

BSM
Est. 1968
Brady Shipman Martin
Built. Environment.

Non-Technical Summary

1 Introduction i

2 Background, Policy and Legislation iv

3 Description of the Proposed Development v

4 Population and Human Health x

5 Biodiversity (Flora & Fauna) xii

6 Land, Soils, Geology & Hydrogeology xii

7 Water & Hydrology xiii

8 Air Quality & Climate xiv

9 Noise & Vibration xiv

10 Landscape & Visual xv

11 Cultural Heritage xv

12 Traffic and Transportation xvi

13 Material Assets xvi

14 Waste Management xvii

15 Interactions of the Foregoing xviii

1 Introduction

This non-technical summary forms part of an Environmental Impact Assessment Report which has been prepared by Brady Shipman Martin on behalf of Irish Cement Ltd. who is applying to An Bord Pleanála for a ten year planning permission to allow for the further replacement of fossil fuels with alternative fuels and the use of alternative raw materials at their Cement Works in Platin, Co. Meath.

Irish Cement Limited (ICL) is the leading supplier of cement in Ireland where it has operated for over 77 years. The company, which maintains its headquarters at Platin County Meath, is part of the CRH Group, one of the world's leading building materials companies with its global head office in Dublin. ICL supplies cement products to both the domestic construction market and also exports cement products to markets in Europe.

Platin Cement Works is located southwest of the junction between the R152 Drogheda to Kilmoon Cross Regional Road and Platin County Road CR311, circa 0.75km southwest of Junction 8 (Drogheda South) on the M1 Dublin Belfast Motorway. An Bord Pleanála notified Irish Cement Ltd. and Meath County Council (the Planning Authority) that development to allow further replacement of fossil fuels with alternative fuels and the use of alternative raw materials comprised Strategic Infrastructure Development within the context of the Planning and Development Act 2000 (as amended) and as such, an application for this development should be made directly to the Board.

1.1 Cement Manufacture at Platin Cement Works

Today, Platin Cement Works is the largest cement manufacturing facility in Ireland and is one of the most energy efficient cement plants in Europe. The Cement Works uses both fossil fuels and alternative fuels and produce a range of cement products, which it supplies across the country and exports to Britain and Europe. With the exception of annual maintenance shut downs, the Cement Works operate 24 hours per day and 7 days per week year round. An annotated view of Platin Cement Works is provided on Plate 1.1

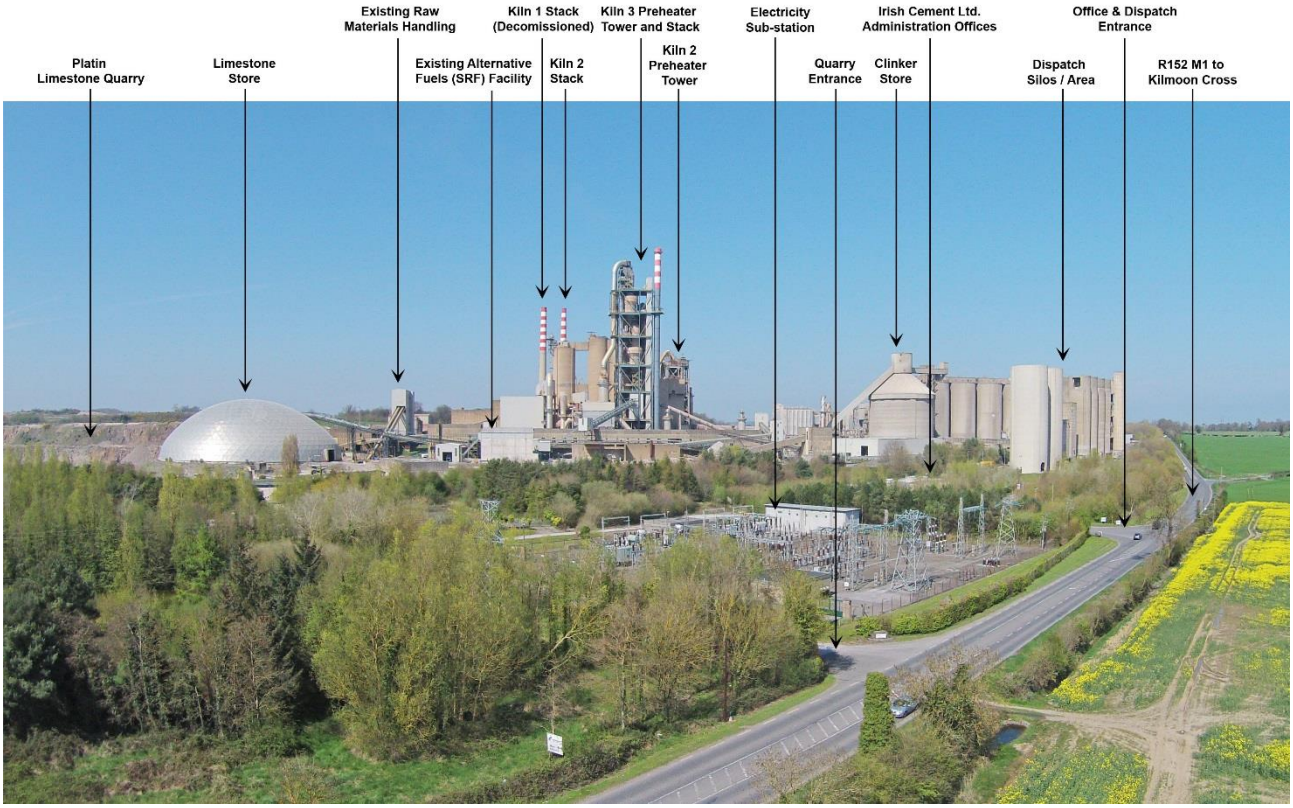

Plate 1 Annotated Photograph of Platin Cement Works (elevated view from south)

Cement is produced in a regulated process that includes continuous monitoring, quality control and testing through all stages of its manufacture. Cement, when combined with fine aggregates/sand, coarse aggregates, air and water, is the key ingredient used in the manufacture of **concrete**, the world's most widely used building material. There are 4 cement plants in Ireland, two of which are owned and operated by ICL at Limerick and at Platin. The other two plants are located near Kinnegad, County Meath (Lagan Cement Limited) and at Ballyconnell (Quinn Cement Limited) County Cavan.

A diagrammatic view of a typical cement plant / cement manufacture process is provided at Figure 1.1, which includes the following:

PREPARATION: Limestone, which is extracted from the adjoining quarry (label 1, Figure 1), is the main **raw material** used in the manufacture of cement. Clay overburden, also from the quarry, together with shale and small quantities of bauxite and iron ore are also used as raw materials in the manufacture of cement in site. The raw materials are crushed, ground and homogenised in a quality controlled and tested manner to produce a blend called **raw meal** (labels 2 to 6, Figure 1.1).

CLINKER PRODUCTION: As raw meal is introduced to the **kiln pre-heater tower** and **rotary kiln,** fuels are directly introduced and combusted at flame temperatures exceeding 2,000°C in order to **melt** the raw meal. These very high temperatures ensure total combustion of the fuels and drive a chemical transformation (known as **calcination**) that converts the raw meal to **clinker at a temperature of 1,450°C** (labels 9 to 11, Figure 1.1). Hot gas from the kiln mixes directly with the incoming powdered raw meal, preheating it as it approaches the kiln, and then the gas exits through a **cooling tower** and **bag filter** prior to discharge via the **kiln stack** (labels 7 and 8, Figure 1.1).

FINISHING AND DISPATCH: Once cooled, the clinker is stored prior to final blending and milling to produce **cement**, which is dispatched either in bags or in bulk (labels 12 to 15, Figure 1.1).

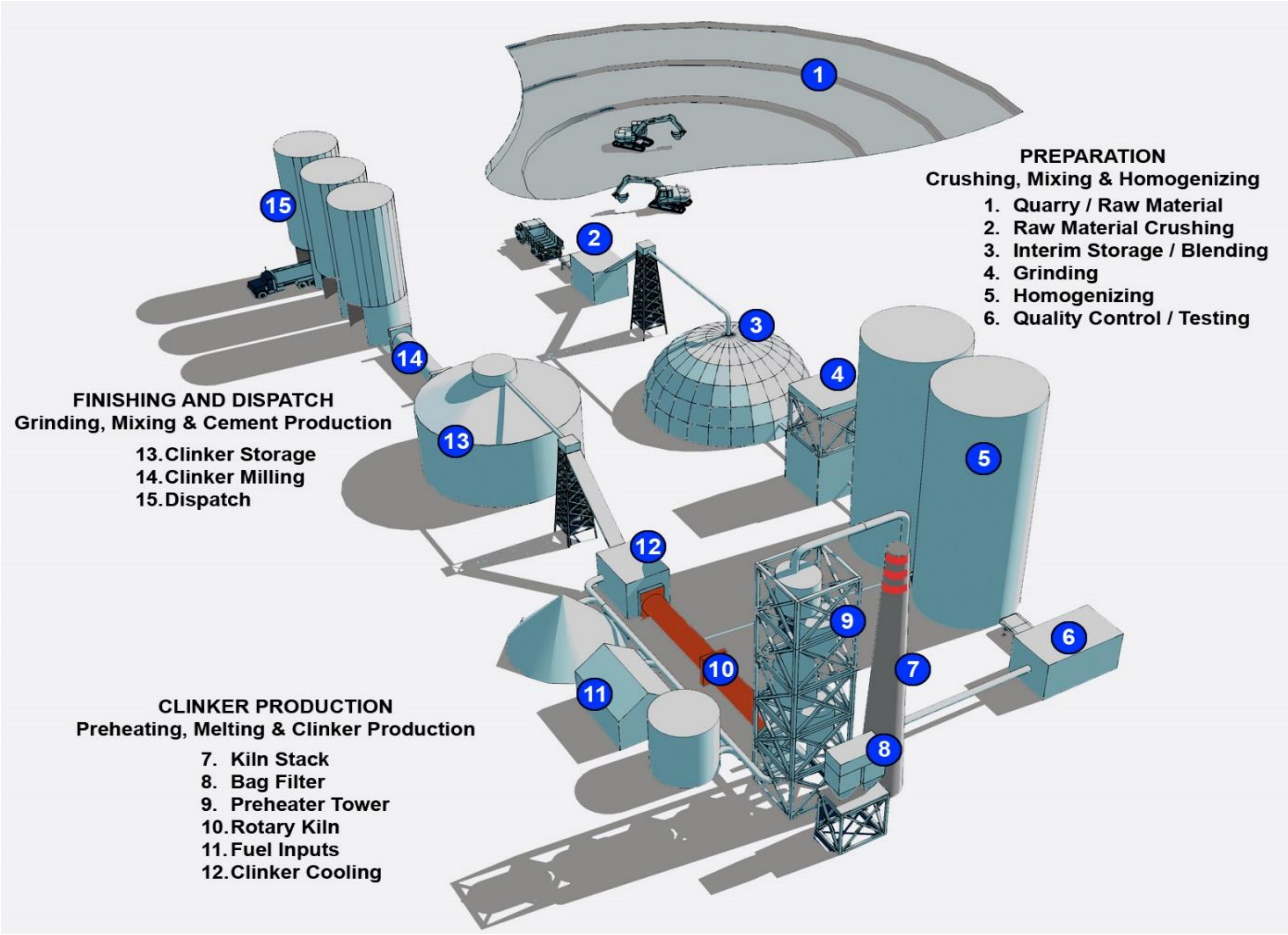

Figure 1.1 Diagrammatic View of a Typical Cement Plant/Cement Manufacture Process

1.2 Fuel use in Cement Manufacture

A typical illustration of a preheater tower and rotary cement kiln arrangement such as that at Platin is shown in Figure 1.2 and Plate 1.2.

As raw meal flows down through the pre-heater, fuel, including alternative fuels, is introduced (*i.e.* at the back-end of the kiln) to begin heating the raw meal up to c.450°C/500°C. From there the heated raw meal enters the refractory lined kiln, which is a slowly rotating tube steel set at a shallow angle that allows the raw meal to progress slowly through a very high temperature environment. The high temperature environment, which is maintained through the further introduction of fuel, including alternative fuels, at the front end of the kiln, gradually increases the heat of the raw meal up to the critical temperature of c.1,450°C at which the calcining transformation occurs and clinker is produced.

This is a highly monitored, quality controlled and tested process. Quality control is critical to each stage of cement manufacture and on-site laboratories are linked to a central control facility that operates round the clock testing regimes for the raw materials, fuels and final products. Platin Cement Works also includes a Research and Development laboratory that is involved in on-going product research and development.

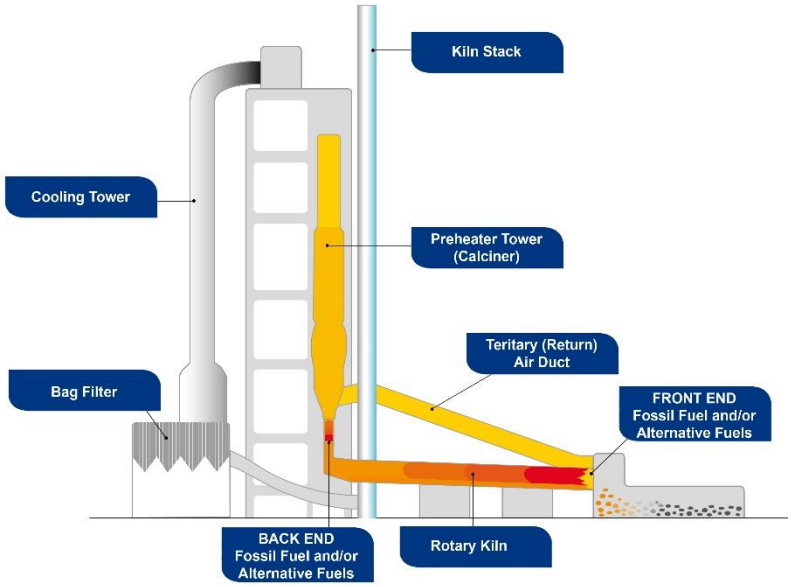

Figure 1.2 Diagrammatic View of a Preheater Tower and Rotary Cement Kiln

Plate 1.2 Photo of Preheater tower and Kiln 3 at Platin

1.3 Alternative Fuel use in Cement Plants and in Platin Cement Works

The cement industry in Europe has used alternative fuels for more than 30 years to directly replace conventional fossil fuels, to conserve non-renewable resources, and to reduce emissions to the environment. The utilisation of wastes in the cement industry, principally as alternative fuels, but also as alternative raw materials, is also compatible with the general principles of waste management.

Currently, Platin Cement Works has planning permission and an Industrial Emissions (IE) Licence to use up to a combined maximum of 120,000 tonnes per annum of three alternative fuels, *i.e.* Solid Recovered Fuels (SRF), Chipped Used Tyres and Meat and Bone Meal (MBM). During 2016, Platin Cement Works reached its permitted maximum limit of 120,000 tonnes for the use alternative fuels in Kiln 3. However, the works also required the importation of over 61,500 tonnes of imported fossil fuel in order to meet the fuel demand for cement production. These figures relate to 2016 fuel requirements, where Kiln 3 was operating below maximum output and where Kiln 2 was not operational. With demand growing and the use of alternative fuels currently restricted, the need for an increasing fuel requirement can only be met by increased importation of fossil fuels.

If Platin Cement Works were to run at full output, it is estimated that c.220,000 tonnes of imported fossil fuel would be required on top of the existing permitted quantity of 120,000 tonnes of alternative fuels. Therefore, this existing limit on the use of alternative fuels places a significant restriction on the ability of the Cement Works to use lower carbon alternative fuels to both reduce its use of imported fossil fuels and to maintain and enhance the sustainability of its operations at Platin.

1.4 Proposed Alternative Fuel / Raw Material use in Platin Cement Works

Irish Cement Ltd. is taking a strategic long-term view of their fossil fuel replacement programme at Platin Cement Works. The introduction of any new alternative fuel to the cement works requires that Irish Cement obtains appropriate planning permission from the Planning Authority; receives the necessary consent from the EPA; sources the appropriate alternative fuel (which must meet specified requirements); and provides the associated site handling and fuel introduction structures. For these reasons, it can take many years to successfully introduce a new alternative fuel to the cement works, and therefore, it is critical that a long-term and flexible approach be facilitated for the use of alternative fuels. With this in mind, it is considered appropriate that a ten year permission is sought for the development.

The application also seeks permission to introduce alternative raw materials to the cement production process and when combined, seeks permission for development to facilitate up an additional 480,000 tonnes of alternative fuels and alternative raw materials per annum. A number of new buildings and structures will be provided within the existing Cement Works for the receiving, storage, handling and introduction of the alternative fuels and alternative raw materials. No processing of fuels will take place on site and no residues will arise from this development. The application site occurs within the footprint of the existing Cement Works and extends to 22.5 hectares.

The proposed development proposes a gradual fuel replacement strategy in order to phase out the current reliance on imported fossil fuels. This strategy, which is supported the Environmental Protection Agency, envisages short, medium and longer-term investments that would be developed in line with planning and IE licence requirements. This long-term strategic approach to alternative fuels is seen as being beneficial for a number of reasons, in that it:

- avoids the requirement for multiple planning applications for sequential increases in alternative fuel / new structures use over time;
- allows for a complete and full environmental assessment of the activity;
- allows for a more streamlined approach to environmental licencing (IE Directive) – an approach that is strongly supported by the EPA;
- allows for long-term investment planning in the cement works;
- provides confidence and support to market development;
- and underpins current and envisaged employment.

The proposed development will require the provision of a number of additional buildings and structures, to be delivered on a gradual basis in line with the progressive introduction of alternative fuels over time. All of these buildings and structures are located within and around the existing developed footprint of the cement facility.

The activity is regulated under the terms of an Industrial Emissions (IE) license (No. P0030-04) issued and monitored by the Environmental Protection Agency (EPA). This licence limits and controls emissions from the Cement Works. The proposed changes will necessitate an application to the EPA to review the current IE license.

2 Background, Policy and Legislation

Irish Cement Ltd. is the leading supplier of cement in Ireland where it has operated for over seventy seven years. The company operates two cement production facilities; one at Platin, County Meath and a second at Castlemungret, County Limerick. The company is a major contributor to Ireland's economy and directly employs over 200 people as well as over an estimated seven hundred indirect jobs.

The history of Irish Cement extends back over 77 years and at Platin extends back to the opening of the Cement Works with Kiln 1 in 1972. Kiln 2 was added in 1977. In the intervening period, the company has continuously invested in new technology and processes to improve the efficiency and sustainability of their operations. Some of the more recent projects at Platin have involved the installation of energy efficient equipment, the manufacture of eco-efficient CEM II cement, the commissioning of a new highly efficient €200 million kiln (Kiln No.3) and since 2011, the replacement of a portion of imported fossil fuel use at Platin with up to 120,000 tonnes per annum (t/a) of alternative fuels sourced within Ireland. In 2016, the use of 119,965 tonnes of alternatives fuels reduced Carbon Dioxide (CO_2) emissions by over 64,500 tonnes. An annotated image of the existing Cement Works is provided at Plate 1.

ICL first received the necessary planning and licence permission for the use of alternative fuels in Kiln 3 in 2009 Since 2011, alternative fuels have been gradually introduced to Kiln 3 of the cement manufacturing process at Platin and in 2016 the Cement Works reached its maximum permitted use of alternative fuels. Over 61,000 tonnes of imported petcoke was also used in the cement manufacturing process to meet growing market demands. No permission exists for the use of alternative fuels in the second cement kiln (No. 2) at Platin Cement Works.

At present the use of alternative fuels at Platin Cement Works is restricted both in terms of overall quantity of 120,000 tonnes per annum and range of materials (*i.e.* to Solid Recovered Fuels; Chipped used Tyres and/or Meat and Bone Meal). In addition, the use of alternative fuels is only permitted in Kiln 3. However, these existing restrictions in the use of alternative fuels increase the requirement for importation of fossil fuel and prevents further improvements in plant efficiencies; and further savings in CO_2 emissions.

The proposed development will allow for up to 85% substitution of all fossil fuel use (i.e. in both kilns) with an increased quantity and range of lower carbon alternative fuels and will also allow for the introduction of alternative raw materials. Therefore, and subject to the availability of appropriate materials, the objective of the proposed development is to allow for a progressive phasing out over time of virtually all fossil use at Platin Cement Works. In total the proposed development will allow for the use of up to an additional 480,000 tonnes per annum of alternative fuels, including alternative raw materials. This proposed development has the potential to further improve the competitiveness and sustainability of the Cement Works and will further reduce CO_2 emissions by up to a significant 314,000 tonnes per annum.

3 Description of the Proposed Development

This chapter provides a description of the proposed development by Irish Cement Limited (ICL) at Platin Cement Works, County Meath and of the alternative scenarios considered in the selection of the proposed development.

Irish Cement proposes to introduce a range of lower carbon alternative fuel types and alternative raw materials to the cement manufacturing process that are regarded as suitable for alternative fuel usage under the EPA licensing regulations.

The alternative fuels can be characterised into broad categories of material:

- Fine Solids: Fine materials, like existing SRF, typically sized 10-50mm (*e.g.* chipped timber, shredded plastics). These materials will delivered to site ready for use and off-loaded from trucks into enclosed bays from where they will be pneumatically conveyed to the kiln system, similar to the existing SRF handling and feeding system installed on Kiln 3.
- 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). These materials will be delivered to site and off-loaded from trucks into bunkers inside enclosed halls and then transferred to the kiln feeding system using screw feeders or overhead cranes.

- **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). The fuels will be pneumatically conveyed from the storage silos to the kiln burners via enclosed pipelines.
- **Pumpable Fluids:** Fluid type materials (*e.g.* secondary liquid fuels (SLF), waste oils, secondary liquid fuels (SLF), distillation residues, paint sludge) that will be delivered by tanker and offloaded using pumps into on site storage tanks located within bunded compounds. These fluid fuels will be pumped to the kiln bunkers via enclosed pipelines.
- **Whole Tyres:** Whole tyres can be introduced to Kiln 2 using a dedicated sorting and elevation and weighing system to feed a single tyre at a time through a double flap feeding point on the preheater tower.

Due to the nature and source of the proposed alternative fuels, such materials are considered wastes in the EPA's Waste Classification: List of Waste & Determining if Waste is Hazardous or Non- hazardous[1] (June 2015). While the majority of these materials are not hazardous, some potential fuel materials are categorised as hazardous waste. Some materials such as secondary liquid fuels (SLF) and waste oils are flammable. In other cases, materials on the list may contain flammable components, such as soil containing trace levels of diesel and petrol from fuel spills, cloths and filters or sawdust containing solvent or paint residues. In some cases, packaging containing residues may qualify as being hazardous but will still be suitable for use in the cement kilns. These materials can be processed effectively in the kilns because of the high temperatures which ensures complete destruction and no increase in emissions from the site. These and similar materials are currently used throughout Europe to replace fossil fuels in cement kilns. All materials are subjected to testing to ensure they meet the agreed specifications and prior to any new material being introduced a test programme must be agreed with the EPA.

Experienced and licensed waste management contractors will produce and deliver the alternative fuels to a defined specification for use at Platin Cement Works. Therefore, fuels delivered to site must be in compliance with the relevant specification and be 'ready to use'. The fuels will be conveyed directly from their storage and handling locations and then through appropriate feeders to be combusted in the kilns. No processing, other than 'unpacking' or de-baling of the fuels, will take place on site and likewise no additional residues will arise from their use or from this development.

The application also seeks permission to introduce alternative raw materials to the cement production process. This includes materials such as alum filter cake, soils and stones, dusts *etc.* that will be stored within an enclosed purpose-built Raw Materials Building. These materials, which will replace a proportion of the traditional raw materials, are accommodated within the additional 480,000 tonnes per annum figure for further use of alternative fuels and for use of alternative raw materials.

The development will require the provision of a number of buildings, silos, and associated conveyors and structures, *etc*. for the receiving, handling and introduction of the alternative fuels and raw materials to the cement plant (Refer to Figure 1 and Table 1). The buildings and structures will be provided on a gradual phased basis in line with the progressive introduction of new fuels, and consequently, a ten year permission is sought for the overall development.

The development requires the demolition of one existing firewater retention tank associated with the existing alternative fuel handling facility for Fine Solids (SRF) at Kiln 3. Prior to demolition of the existing tank, a replacement firewater retention tank is to be constructed a short distance to the west of the current location.

[1] Based on:

- Commission Decision of 18 December 2014, amending Decision 2000/532/EC on the list of waste pursuant to Directive 2008/98/EC of the European parliament and of the Council (2014/955/EEC) [referred to hereafter as 'The List of Waste (LoW)'].
- Commission Regulation (EU) No 1357/2014 of 18 December 2014, replacing Annex III to Directive 2008/98/EC of the European Parliament and of the Council on waste and repealing certain Directives.

While some flexibility is required to take account of market availability of particular fuels and licensing approval with the EPA, the following provides a description of the buildings, structures and fuels that are proposed in the short-term (0 to 4 years), medium-term (3 to 7 years) and longer-term (6 to 10 years) within the overall timeframe of the ten year permission. Some overlap of timing is allowed for in the definition of short, medium and longer-term to facilitate construction, sourcing of alternative fuel and approval of test programmes by the EPA.

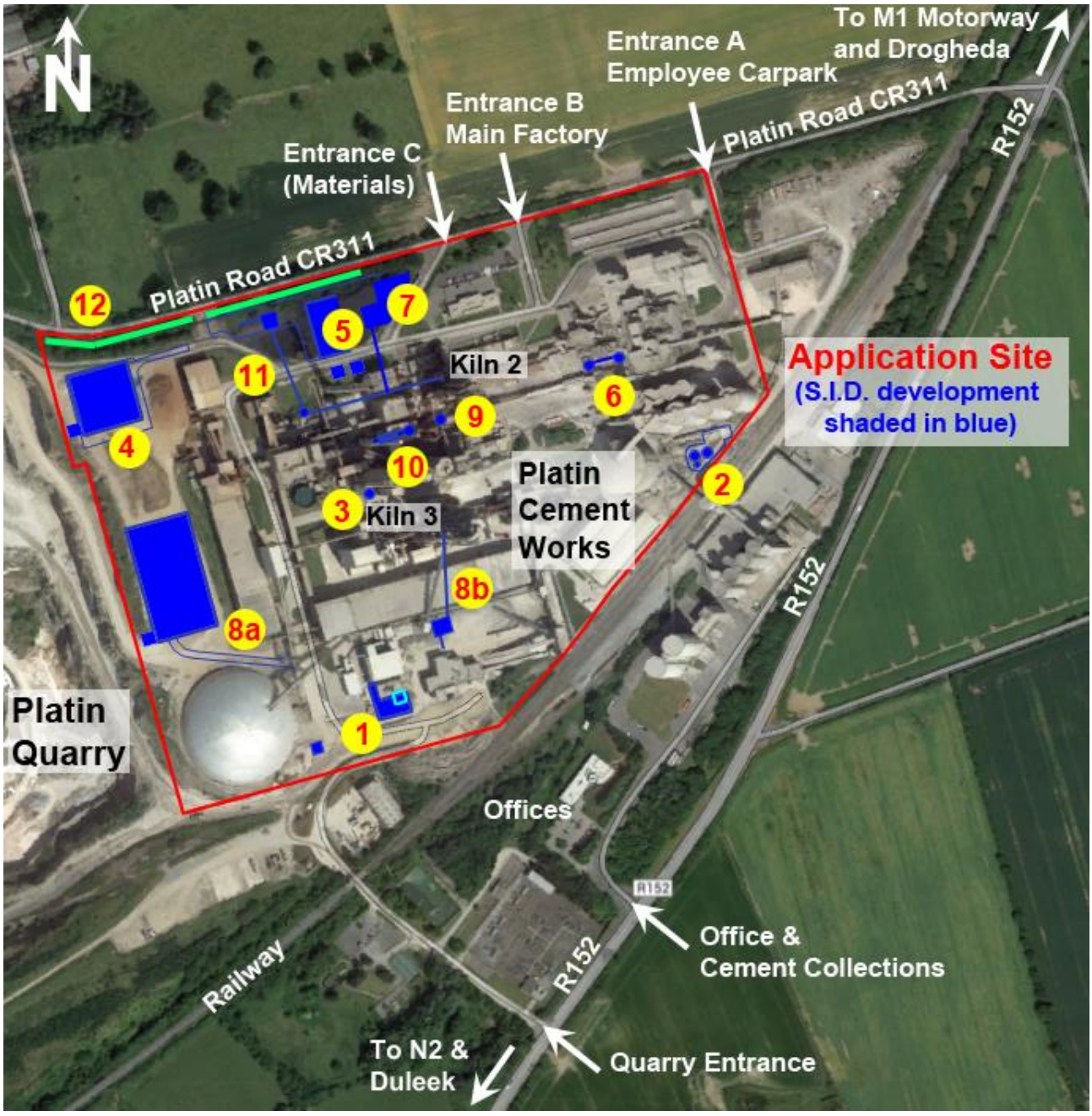

Figure 1 Location of Proposed Structures / Works

Table 1: Proposed Structures

Details of Proposed Structures (with reference to location as indicated on Figure 3.4)	Approximate Overall Building Dimensions (LxWxH)(m) Silo Dimensions (HxDia)(m)	Proposed External Treatment of Walls/Roof
Short-Term		
1. Fine Solids Building for Kiln 3 (As an extension to existing Fine Solids (SRF) building)	Building c.17m x 29m x 16m	Exposed cast concrete, steelwork & metal corrugated cladding
Fire-water Retention Tank (*i.e.* relocation of existing tank, which is to be demolished)	Concrete tank c.17m x 10.6m x 2.5m high on concrete pad c. 18.6m x 11.6m	Exposed cast concrete & steelwork
2. Proposed Pumpable Fluids Tanks for Kilns 2 and 3	2 no. Tanks c.9m x 8.24m dia. 1no. Tank c.9m x 5m dia.	Exposed cast concrete, steelwork and metal corrugated cladding
Bunded Area surrounding tanks	420sq.m enclosed by 2m high wall	Exposed cast concrete and steelwork
Tanker off-loading area	Concrete yard of c.23m x 10m, with 25m3 underground storage sump. Enclosed by 2.5m security fence	Exposed cast concrete, & steelwork
3. Proposed 'Free Flowing' Solids Silos for Kiln 3	2 no. silos c.26m x 5.5m dia.	Steel silos/tanks and steelwork
Bunded Area	9.2m x 15.1m x 4m high	Exposed cast concrete & steelwork
4. Alternative Raw Materials Building for Kilns 2 & Kiln 3	Building c.53.7m x 53m x 14.3m	Exposed cast concrete, steelwork & metal corrugated cladding
Fire-water Retention Tank	13.6m x 10.6m x 2.5m high on concrete pad c. 14.6m x 11.6m	Exposed cast concrete & steelwork
Medium-Term		
5 Proposed general Fine Solids Building for back end of Kiln 2	Building c.26 x 49.5 x 8m	Exposed cast concrete, steelwork & metal corrugated cladding
Fire-water Retention Tank	Concrete tank c.9.6m x 9.6m x 2.5m high on concrete pad c. 10.6m x 11.6m	Exposed cast concrete & steelwork
6. Proposed 'selected' Fine Solids fuel introduction / metering structures for front end of Kiln 2	Building c.7.5m x 6m x 26.7m 2 no. truck off-loading stations c.4m x 7.5m x 5.5m and c.35m length of conveyor	Exposed cast concrete, steelwork & metal corrugated cladding
Longer-Term		
7. Tyre Storage and Handling Area	Height 835 sq. m x 3m high	Exposed cast concrete.
Tyre Intake Station and Conveyor	c.18 x 16 x 30 plus c. 57m proposed conveyor.	Exposed cast concrete, steelwork & metal corrugated cladding
Transfer Station and Conveyor	c.8.5 x 5.5 plus c 55.3m proposed conveyor	Exposed cast concrete, steelwork & metal corrugated cladding
Fire-water Retention Tank		Exposed cast concrete & steelwork

Details of Proposed Structures (with reference to location as indicated on Figure 3.4)	Approximate Overall Building Dimensions (LxWxH)(m) Silo Dimensions (HxDia)(m)	Proposed External Treatment of Walls/Roof
	Concrete tank c.9.6m x 9.6m x 2.5 high on concrete pad c. 10.6m x 11.6m	
8a. Proposed Coarse Solids handling building for Kiln 2 & 3	Building c.97.5m x 50m x 12.15m	Exposed cast concrete, steelwork & metal corrugated cladding
Fire-water Retention Tank	13.6m x 10.6m x 2.5m high on concrete pad c. 14.6m x 11.6m	Exposed cast concrete & steelwork
8b. Conveying Building and Conveyors for Kiln 3	c.18m x 16m x 30.5m plus c.83m of proposed conveyor	Exposed cast concrete, steelwork & metal corrugated cladding
9. Proposed Free-flowing Solids for Kiln 2.	2no. silos c.26m x 5.5m dia.	Steel silos/tanks & steelwork
Bunded Area	9.2m x 15.1m x 4m high	Exposed cast concrete & steelwork
10. Bypass Filter for Kiln 2	c.9m x 15m x 24m, with cooling tower to c.46m x 5.0.2m dia.	Steel, steelwork & ductwork
Proposed Coarse Solids for Kiln 2 (makes use of same building as provided under Item 7a above.)	Makes use of same building as provided under Item 7a above.	Exposed cast concrete, steelwork & metal corrugated cladding.
11. Truck off-loading / elevator / buffer building	c.16m x 18m x 30.5m	Exposed cast concrete, steelwork & metal corrugated cladding.
Transfer Station	c.8.5m x 5.5m x 38.5m plus c.200m of proposed conveyor	Exposed cast concrete, steelwork & metal corrugated cladding

A number of alternative development scenarios considered for the proposed development as follows:

1. **'Do-nothing' Alternative:** Maintain the existing limit for alternative fuels at the permitted maximum of 120,000 tonnes per annum. Increased demand for cement production would be increasingly reliant on imported fossil fuels with up to c.220,000 tonnes per annum of fossil fuel required to meet the requirements of the Cement Works at full production. There is no allowance in this option for the use of alternative raw materials in the cement manufacturing process. The use of alternative fuels in the do-nothing (existing) scenario provides for CO_2 savings of c.64,500 tonnes per annum.
2. **'Do-Something' Intermediate Replacement Alternative**: Increase the existing limit for use of alternative fuels from the existing permitted 120,000 tonnes per annum to allow for up to c.45% replacement of fossil fuel requirements based on maximum cement production. This would require up to c.230,000 tonnes of alternative fuels (or an additional 110,000 tonnes per annum over existing permitted use). Up to 60,000 tonnes per annum of Alternative raw materials may also be used giving an overall annual maximum limit of 300,000 tonnes. The balance of requirement for fuel would revert to increased fossil fuel use, with up to c.130,000 tonnes of fossil fuel per annum needed to meet the requirements of the Cement Works at full production. This do-something alternative provides for CO_2 savings of up to c.115,500 tonnes per annum.
3. **'Do Maximum' Replacement Alternative:** Increase the limit for use of alternative fuels to the maximum required to allow for virtual full fossil fuel replacement (85%) at full cement production, i.e. up to an additional 480,000 tonnes per annum of a wide range of alternative fuels and alternative raw materials per annum over existing permitted use of 120,000 tonnes per annum of a limited range of alternative fuels. A

quantity of c.10,000 tonnes per annum of imported fossil fuel would continue to be required for initial firing of the kilns after start-ups etc. This do-maximum alternative provides for CO_2 savings of up to c.314,000 tonnes per annum.

While the 'Do-nothing Alternative' does not give rise to any change in terms of climate, it also means that the positive impacts associated with additional savings in CO_2 emissions in Alternatives 2 and 3 are not realised. Alternatives 2 and 3 has potential for minor construction-stage impacts on soils, water, visual, traffic and waste aspects. However, for the majority of environmental aspects, *e.g.* noise and vibration, air quality, water discharge, as well as for human health *etc*. no adverse impact will arise as all options must comply with the limits and controls set out and monitored by the EPA in the Industrial Emissions Licence for the Cement Works (Licence Reg. No.: P0030-04).

For the most part there is little environmental difference between the alternatives considered. Alternative 1 does not require any further construction. The provision of buildings and structures associated with Alternatives 2 and 3 has potential for minor construction-stage impacts on soils, water, visual, traffic and waste aspects.

Alternative 2 and more particularly Alternative 3 provides for significantly greater savings in CO_2 emissions than Alternative 1 ('Do-nothing' Alternative) and as such, Alternative 1 is the least preferable. Alternative 3 is the most beneficial and preferable in terms of providing for significant savings in CO_2 emissions.

For these reasons Alternative 3 the 'Do Maximum Fossil Fuel Replacement' option, with the use of a wide range of materials as alternative fuels and alternative raw materials was selected as the preferred option and this alternative forms the basis of the proposed development.

4 Population and Human Health

This chapter of the EIA Report considers the potential effects of the Proposed Development on human beings, living, working and visiting in the vicinity of Platin Cement Works and the application site. An acknowledged consideration in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct or indirect effects arising from the construction and operation of development. Ultimately, a development will impinge on human beings to some extent, either directly or indirectly, and either positively or negatively. The key issues examined in this section of the chapter includes the extent of effect on the population, employment, residential amenity economic activity and human health.

The Cement Works within which the Proposed Development is located in the townland of Platin, circa 2.5km northeast of Duleek, County Meath and circa 1.5km southeast of Donore Village. Drogheda Town is located approximately 1.75km northeast of the Cement Works. The land surrounding the Cement Works is primarily agricultural but also includes industrial uses. Indaver Waste to Energy Facility is located south of the Cement Works, while Platin Limestone quarry is immediately west of the Cement Works. A number of other quarries, including Roadstone's quarry at Mullaghcrone, are also located to the north and west of the Irish Cement quarry at Platin.

The Cement Works and the site of the Proposed Development is located between the electoral divisions (ED) of Duleek and St. Mary's. In 2016, the population of Duleek ED was 5,554 people while the population of St. Mary's ED was 11,967 bringing the overall population within the two electoral districts to 17,521. The population of both Duleek and St. Mary's has continued to grow rapidly in recent years.

Irish Cement currently employs c.130 people directly in Platin with as many hundred people indirectly employed in supporting activities and industries and in annual maintenance works contracts. Some of these indirect positions are already in the area of alternative fuels, in the sourcing, preparation and supply of such fuels in line with existing planning permission for alternative fuel use at Platin.

The Proposed Development will require further sourcing, preparation and supply of increased quantities of alternative fuels and alternative raw materials, to defined specifications on a consistent basis. This requirement will be sourced via external contractors who will supply the fuels/raw material on an 'as required basis' to Platin Cement

Works. This requirement for a regular and consistent supply of alternative fuels and alternative raw materials will have a positive effect in terms of additional indirect employment and on the local socio-economic environment.

Community liaison and engagement activities at Irish Cement have been a feature of company's presence in the greater Drogheda area for over 75 years. At present, as part of its Corporate Social Responsibility (CSR), Irish Cement financially contributes both directly and indirectly to the community annually through a broad range of sponsorships and support schemes, ranging from sports clubs to schools, to charities. In addition, multiple spin-off societal benefits arise from direct and indirect local employment, the use of local port facilities for exports, etc.

To assess the effects of Proposed Development on human health, a Human Health Risk Assessment has been carried out to estimate the nature and probability of adverse health effects in humans as a result of the Proposed Development. This assessment is focused on potential human health effects related to potential emissions, during the construction phase and the operational phase.

While every human being should be considered a sensitive receptor, clearly the vulnerable are the most sensitive. Children, particularly younger children, for example constitute a vulnerable group. Older people constitute a very vulnerable group. Older people in general have greater sensitivity to air pollution and potential effects on the respiratory system and cardiovascular system. There are other vulnerable groups also, for example, the disabled or psychologically ill.

A specific Human Health Risk Assessment has also been carried out for PCDD/Fs (*i.e.* polychlorinated dibenzodioxins, polychlorinated dibenzofurans and dioxin-like polychlorinated biphenyls). The assessment notes that measurements taken at cement plants throughout Europe burning alternative fuels show that emissions generally, and in particular emissions of PCDD/Fs, are much lower than the Emission Limit Value (ELV) set out in the Industrial Emissions Directive (IED).

Health based standards rely on the dose response concept, which suggests that the greater the dose to which an individual is exposed, the greater either the likelihood of a health response and/or the greater the severity of that response. The standards then try to identify by scientific means the threshold below which no significant health effects would occur. Health standards are not established based on the threshold to protect the robust who may be more resilient, but are primarily there to protect the vulnerable. They are to protect the elderly, the very young, and the ill and by extension thereby, the robust are not affected.

A detailed air quality assessment is provided in Chapter 8 of the EIA Report. The assessment in Chapter 8 of the EIA Report concludes that residual impacts of the proposed development on air quality and climate result in a positive effect in terms of climate with reduced CO_2 emissions, and imperceptible effects on local air quality. The human health effect for all receptors arising from potential emissions to air are assessed as being Imperceptible.

It is acknowledged that people may experience annoyance or other disturbance *e.g.* from temporary effects of the construction phase. Annoyance or other similar disturbance is not in itself a health effect, and it is also noted that the proposed development is not a greenfield development but is set within the context of an existing cement manufacturing facility with long-established operations. Residents are accustomed to living in the environment of a cement plant and a change of fuel is unlikely to be perceptible in terms of noise or other disturbances during the operational phase. It is unlikely that annoyance on a temporary basis that might occur during construction could lead to adverse health effects.

An Assessment of effects of Proposed Development arising from noise emissions and emissions to water has also been carried out. These assessments are further detailed in Chapter 9 (Nosie and Vibration) and Chapter 6 and 7 of the EIA Report on water and groundwater. These assessments have concluded that given the stated mitigation measures proposed in these chapters, there will be no significant impacts on noise, water or ground water.

5 Biodiversity (Flora & Fauna)

Chapter 5 of the EIA Report comprises an assessment of the likely effects on biodiversity of the proposed development for further replacement of fossil fuels with alternative fuels and for the use of alternative raw materials in Platin Cement Works County Meath.

The proposed development site does not hold any wildlife or conservation designation and no rare, threatened or legally protected plant species, as listed in the Irish Red Data Book, the Flora Protection Order, 1999 or the EU Habitats Directive, are known to occur within the site. Neither the proposed development footprint nor its immediate surroundings contain any habitats of ecological value 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)).

No designated conservation areas occur within the site at Platin and no evidence of any species or habitats with links to European sites was recorded during the ecological study. The potential for any impacts on sites designated as European sites (Natura 2000 sites), under the EU Habitats and Birds Directives was assessed, and the results of that study are presented in the separate Natura Impact Statement, where a finding of no likely significant impact is concluded.

No habitats of any ecological value will be affected by the proposed development. Construction activities pose a potential risk to watercourses, as surface water arising at the site may contain contaminants. If not properly managed, such pollutants may pose a temporary risk to surface water quality during the construction phase. There are no other significant potential operational impacts predicted to occur within the site due to its pre-existing industrial character.

The use of alternative fuels and raw materials will result in a number of positive indirect effects on air quality and climate through the reduced use of fossil fuel and reduced emission of CO_2.

The Air Quality Impact Assessment (Chapter 8 of the EIA Report) included the modelling of the changes in the ambient air quality a direct consequence of the proposed development. The modelling exercise showed that the relevant Air Quality Standards (AQS) that are used to control impacts on human health and ecosystems will not be breached. The predicted concentrations comply with the Air Quality Standards for the protection of vegetation. This worst-case value is predicted at the site boundary, levels are likely to be significantly less at the nearest ecological sensitive areas and no impacts whatsoever are therefore predicted on any ecological receptors.

There will be no change in the nature or quantity of runoff to surface waters as a result of the proposed development. The new buildings will be located on ground that is currently hard-standing. The runoff from the roofs of new buildings will be collected in a storm water drain which will be connected to the overall site box drainage network.

No mitigation measures are required other than those standard measures associated with air and water emission control, presented in Chapters 7 and 8 of the EIA Report.

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.

6 Land, Soils, Geology & Hydrogeology

This section describes the existing soils, geology and hydrogeology environment in the area of the proposed development and its immediate surroundings. It also describes the predicted soils, geology and hydrogeology impacts.

The ground within the cement works typically consists of made ground and glacial till over shallow bedrock. Topography across the cement works varies from approximately 60m OD at the eastern side of the site to 40m OD

at the ESB substation to the south of the cement works. Ground elevation around the edge of the limestone quarry ranges from 65m to 40m OD (north to south) with the deepest area of the quarry at -20.0m OD.

The vulnerability of the aquifer directly beneath the Site is classified by the GSI as having a "high" to "extreme" vulnerability due to the absence of overburden cover and close proximity of the bedrock to the ground surface. Within an area of 2 km from the proposed development, the aquifer falls into the "extreme" vulnerability category to the west and north-east of the site, reducing to "moderate" to "low" south of the site.

Based on the surveys carried out to date on site, some contamination has been detected in the soils on site. Excavation for foundations across the site may encounter areas of soil contamination.

The excavation and disposal of excavated soils may result in the generation of dust and also possible odours across the Site.

Excavation of soils close to existing structures may lead to instability in these buildings.

The leaching of hazardous materials into the underlying soils and groundwater, may impact upon general groundwater quality in the area.

The proposed works will have no impact on the dewatering operations within the quarry.

Following the implementation of a number of mitigation measures, there will be no significant residual negative impacts on the soil, geological or hydrogeological environment. The only likely receptor which is potentially at risk is the River Boyne, however following the implementation of mitigation measures the magnitude and significance are negligible and imperceptible.

7 Water & Hydrology

This chapter assesses the impact of the construction and operational phases of the proposed development on surface waters.

The Irish Cement Limited site is located in the River Nanny Catchment close to the watershed with the River Boyne. The River Nanny drains approximately 250 km² and rises in the east of County Meath before flowing to Duleek to discharge into the Irish Sea at Laytown. The River Boyne drains a catchment with an area of approximately 2,300 km², nearly 10 times that of the River Nanny. The River Boyne rises in counties Offaly and Kildare and drains most of County Meath before flowing through Drogheda to discharge into the Irish Sea at Mornington in County Meath.

The treated effluent from the site is discharged through over 2,600m of 610mm diameter pipeline which runs underground from the cement factory to the outfall point into the receiving waters of the River Nanny. Emissions from this discharge point are regulated by Industrial Emissions licence (Reg. no. P0030-04).

All construction activities will be carried out within the catchment area of the site drainage system. All surface water from the site passes through balancing and settlement tanks and these are effective in removing suspended solids. In addition, oil interceptors and absorbent booms in the existing surface water treatment system are effective in removing any accidental spills of oils or other hydrocarbons.

The total additional impermeable area from new proposed buildings will be 1.9 ha. With an impermeable area of approx. 17.5 ha for the developed area of the full site this represents a minor increase of 10.1%. In addition, the new buildings will generally be located on ground that is currently hard-standing so no significant change to the current drainage regime will occur.

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 box drainage network.

Prior to construction, the Contractor will be required to develop an Environmental Management Plan which will incorporate the mitigation measures detailed. These mitigation measures apply for the prevention of pollution to all waters during construction.

A Flood Risk Assessment (FRA) has been carried out and concludes that the risk of pluvial, fluvial, groundwater flooding are all low.

There will be no significant residual impact on water and hydrology as a result of the proposed development.

8 Air Quality & Climate

Irish Cement Limited (ICL) is licenced by the Environmental Protection Agency (EPA) – Industrial Emissions (IE) Licence Register Number P0030-04 – to operate a cement manufacturing facility at Duleek, Co. Meath. This licence regulates air emissions from the facility.

The ICL site is located in an area designated as Zone C by the Environmental Protection Agency. Measured pollutant concentrations are in compliance with air quality standards.

This air quality impact assessment considers the potential impact on air quality and climate due to the increased use of alternative fuels and the use of alternative raw materials at the ICL Platin facility.

An air dispersion modelling assessment was carried out to determine the effect of the proposed development on air quality. No new emission sources are proposed as part of the development.

The air dispersion modelling assessment concluded that the predicted ground level concentrations of relevant pollutants in addition to background concentrations and contributions from the Indaver waste-to-energy facility are in compliance with air quality standards and guideline levels.

A number of mitigation measures are currently in place to reduce emissions from sources. These include an electrostatic precipitator and a selective non catalytic reduction (SNCR) on kiln 2 and a bag filter and SNCR on kiln 3.

Potential odours are mitigated through off-site preparation of alternative fuels to required specification; enclosed delivery, primarily for 'just-in-time' use; handling within purpose-designed buildings, silos and tanks and direct feed to the kilns.

No significant emissions are expected due to the additional traffic accessing the site during the construction and operational phases of the development.

There is the potential for dust to be generated during the construction phase of the development. ICL will be required to comply with dust deposition limits contained in the IE licence for the plant. Mitigation measures will be implemented to ensure compliance, as required.

The proposed development is expected to have a positive impact on carbon emissions due to the CO2 savings through the use of alternative fuel relative to fossil fuel.

9 Noise & Vibration

Irish Cement Limited (ICL) is licenced by the Environmental Protection Agency (EPA) – Industrial Emissions (IE) Licence Register Number P0030-04 – to operate a cement manufacturing facility at Duleek, Co. Meath. This licence sets noise limits at the nearest sensitive receptors to the facility.

This chapter assesses the potential effects on the existing noise and vibration environment arising from the proposed development during the construction and operational phases.

Baseline noise measurements were taken at three noise sensitive locations in the vicinity of the cement works.

The construction phase of the proposed development will involve minimal demolition works, site clearance, excavation and the construction of buildings and structures. A variety of items of mobile plant will be in use. There will be additional vehicular movements to and from the site that will make use of the existing roads and site access points. No affected routes are predicted to experience increases of more than 25% in total traffic flows during the construction phase. An increase of 25% in traffic flows is equivalent to a 1dB increase in noise level.

No major new noise sources are proposed as part of the new development. The development mainly consists of the provision of buildings for the storage, handling and introduction of additional alternative fuels and raw materials. Additional conveyors will also be provided to transfer fuels and materials to Kilns 2 and 3. These conveyors, of which there are similar structures on site already, will be enclosed and are not likely to generate significant noise. Following the completion of the proposed development, ICL will be obliged to continue to comply with noise limits specified by IE Licence P0030-04.

No affected routes are predicted to experience increases of more than 25% in total traffic flows during the operational phase.

The contractor will employ noise reduction measures during the construction phase such as; selection of quieter plant, location of plant, hours of work, to reduce the effect of construction noise and vibration.

The cumulative effects have been considered through the completion of baseline monitoring which incorporates all existing noise sources, such as nearby roads and other industrial facilities e.g. Indaver Waste to Energy Facility.

No residual noise and vibration effects are predicted as a result of the proposed development as Platin Cement Works is obliged to continue to comply with noise limits specified in its IE licence.

10 Landscape & Visual

The Landscape and Visual Assessment considers the potential of the proposed development to give rise to effects on the landscape and visual environment. A series of Photomontages have also been prepared to assist in illustrating the physical and visual nature of the proposed development and these are included in Appendix 10.1 of the EIS.

Platin Cement Works and associated limestone quarry is a long-standing feature of the local environment having operated on this site since 1972. The Cement Works is dominated by large-scale structures of significant bulk and height and as such, is a prominent feature within its local context and forms the dominant visual reference, especially when viewed from the east. Extensive landscape works and planting has taken place around the works and this is important in providing visual buffering and anchoring of the Works from nearby views.

Upper aspects of the existing Cement Works are visible from within UNESCO World Heritage Site of Brú na Bóinne and from within protected views and prospects from this cultural heritage site. For the most part, lower aspects of the Cement Works are screened by intervening topography and or vegetation.

For the most part, the proposed development will not be visible outside of the Cement Works itself. In limited situations where the proposed development is visible, it will be viewed against the background of the existing built environment of the Cement Works without giving rise to any additional visual impact. The proposed development will not be visible from the UNESCO World heritage Site of Brú na Bóinne.

No specific mitigation measures are required for landscape and visual aspects and the proposed development will have no perceptible residual landscape and visual impact.

11 Cultural Heritage

The cultural heritage and archaeological component of this EIA Report for the proposed development at Platin, Co. Meath consists a desktop and fieldwork study that was carried out in June and July 2015 and again in March 2017.

A number of archaeological and other cultural heritage finds have been made in the vicinity of the application site. However, there are no items of cultural heritage, archaeological sites or monuments or buildings of heritage interest known within the application area. The closest recorded monument to the application site is a church in Platin townland. The closest archaeological monument in the database to the application area are the embanked enclosure and adjoining enclosure located circa 750m south in the townlands of Carranstown and Caulstown.

There are no direct or indirect impacts on any known items of cultural heritage, archaeology or buildings of heritage interest in the application area or the vicinity.

Due to the presence of Bru na Boinne, a visual impact assessment of the proposed development was undertaken from viewpoints within the World Heritage Site. This concluded that the proposed development would have no effect on the visual amenity of Brú na Bóinne World Heritage Site.

Four appendices are included with the main chapter of the EIS dealing with Historical and Archaeological background, Archaeological Excavations, Recorded Monuments in the study area and Monuments included in the Archaeological Survey database in the study area. This section of the Non-Technical Summary should be read in conjunction with the appendices.

12 Traffic and Transportation

This chapter assesses the potential effects on the existing traffic and transportation environment arising from the proposed development during the construction and operational phases.

Traffic counts on the surrounding road network were carried out in 2017 to develop and understanding of the current traffic conditions on the surrounding road network. The traffic count information was used to assist with the assessment.

The additional traffic associated with the construction phase and operational phase is expected to result in an increase in traffic flows of 2.4% and 2%, respectively, over the existing traffic volumes. The *Traffic and Transport Assessment Guidelines* (TII, 2014) states that a Traffic Impact Assessment (including junction assessment) should be produced where "traffic to and from the development exceeds 5% of the traffic flow on the adjoining road". As the predicted percentage increases are significantly less than 5%, no junction assessment is required. Therefore, the proposed development will not have a material impact on traffic conditions.

A Construction Traffic Management Plan (CTMP) and Mobility Management Plan (MMP) will be developed by the Contractor and presented to MCC for approval prior to commencement of the construction works. Construction traffic will be limited to certain routes and times of day, with the aim of keeping disruption to existing traffic and residents to a minimum.

The cumulative effects of the proposed development and other existing developments have been considered through the completion of traffic counts. There are no known committed or planned developments in the vicinity of the proposed development that would impact on the operation of the road network.

13 Material Assets

This chapter examines the existing material assists in the vicinity of the proposed development, predicts the potential effects that may occur on these assets and identities any measures required to mitigate these effects.

The existing Platin 110kV substation is located on Irish Cement lands south of Platin Cement Works and adjacent to the entrance to Platin Quarry. The substation serves Irish Cement Ltd. (ICL) only and all electrical power requirements for the Cement Works are provided from this substation. There is no gas network connection on site.

The existing Cement Works is not connected to the public water supply. Water is sourced from Irish Cement's adjoining deep quarry. Discharge of process and stormwater are managed through a stormwater balancing tank followed by a sedimentation tank. Domestic effluent is treated in a purpose built on-site wastewater treatment plant. Treated process water, stormwater and wastewater is then discharged to the River Nanny in accordance with Industrial Emission (IE) Licence P0030-04.

Platin Cement Works has existing permission for the maximum use of up to 120,000 tonnes per annum of alternative fuels. Platin Cement Works also uses imported non-renewable fossil fuels (e.g. petcoke) for additional fuelling requirements in the cement manufacturing process. In 2016, in addition to the use of 120,000 tonnes of

alternative fuels, the Cement Works also used c.62,000 tonnes of imported fossil fuel. This use of the existing maximum permitted 120,000 tonnes of alternative fuels replaced the use of c.53,500 tonnes of imported fossil fuel and reduced CO2 emissions by c. 64,500 tonnes. If the Cement Works was to operate at full output it would require up to 220,000 tonnes per annum of fossil fuel.

Platin Limestone Quarry is located immediately west of the Cement Works and of the site of Proposed Development. The permitted quarry is provides limestone, a natural resource and the primary raw material (over 80%) used in the manufacture of cement. Other natural resources used as raw materials in the manufacture of cement include alumina, shale, and iron ore. Overburden (soil and stones over rock) has also been used to replace a portion of shale use in the manufacture of cement.

There will be no effect on the existing Platin 110kV Substation which is located south of the site and no effect on services or utilities external to the Cement Works. There is no requirement for delivery of additional electrical or utility infrastructure to the site and the proposed development will have no adverse impact on such services.

The Proposed Development will not require a connection to the public water supply or to the public foul drainage network and there will be no negative effects on the surrounding water supply or foul drainage.

During the construction stage, natural resources will be consumed primarily as building materials. This will have a minor negative effect on natural resources using:

- Diesel for construction machinery
- Steel, exposed cast concrete and metal corrugated cladding in building construction.

During the operation stage, the Proposed Development allows for the use of up to an additional 360,000 tonnes of alternative fuels and for the use of up to 120,000 tonnes of alternative raw materials per annum. The proposed additional use of alternative fuels will have significant positive impact replacing up to 210,000 tonnes per annum of imported non-renewable fossil fuel. There will continue to be an on-going requirement for a small quantity of fossil fuel use (c.10,000 tonnes / annum) for initial firing of kilns (*i.e.* at start-up, or after maintenance stops) and as buffer to the availability of suitable alternative fuels.
The proposed development will also have a positive impact in diverting materials that would otherwise go to landfill or waste export, to the Cement Works, where they would be recovered and reused as alternative fuels. The proposed additional use of alternative fuels will reduce CO_2 emissions by up to c.314,000 tonnes per annum.

14 Waste Management

This chapter assess the impact of the construction and operational phases of the proposed development on waste management.

It is proposed to increase alternative fuel and raw materials use at the Platin facility up to 600,000 tonnes per annum on a phased basis over the next ten years. This is based on introduction of alternative fuels to both Kilns 2 and 3 and the availability of suitable alternative raw materials. These alternative fuels are likely to include additional SRF, solvents, tyres and dried sewage sludge *etc.*

No additional operational waste will be produced as a result of the proposed development.

During construction, the contractor will ensure that waste generation on site is minimised and that waste removed from site for recovery or disposal is reduced where feasible. The construction stage waste management impacts are deemed to be moderate, negative and short term.

Use of residual and hazardous waste as fuel in cement kilns in Ireland is preferable to landfill or export for use as fuel. Movement of waste management up the hierarchy and preventing export of residual and hazardous wastes is a key objective of Irish waste management policy and planning. Therefore the operational phase impact of the proposed development is significant, positive and long term.

Following implementation of mitigation measures during the construction phase, the impact following the adoption of mitigation measures is determined to be slight, negative and short-term.

The residual operational phase impact of the proposed development will be significant, positive and long term.

15 Interactions of the Foregoing

In most instances, potential environmental interactions have already been considered in the preparation of the various chapters of the EIA Report. The potential interactions have been specifically considered or are inherent in the assessments carried out in the relevant EIA Chapters. The assessments conclude that no potential for significant adverse effect arises and no adverse interaction effect was identified.

While interactions between various environmental topics are detailed in the following, it is noted that potential effects may be negative or positive. The following provides examples of potential negative and positive interactions:

Potential Negative Effects

- potential effects on reduced water quality on population
- potential effects on reduced air quality on population
- potential effects of increased noise on population
- potential effects of dust on population

Potential Positive Effects

- potential effects on climate on population arising from reduced CO_2 emissions
- potential effects of reducing waste disposal land, soils, geology and hydrogeology
- potential effects of reducing waste disposal on material assets (natural resources)

The assessment of effects on population and human health is detailed in Chapter 4 of the EIA Report. The potential for interactions between the effects of emissions on human beings is set out in detail in Chapter 7 Water & Hydrology; Chapter 8 Air Quality & Climate and Chapter 9 Noise & Vibration of the EIA Report. Specific mitigation measures are proposed, where required, during the construction stage and during operation stage. All emissions to the environment are licenced and monitored by the EPA in accordance with the Industrial Emissions Licence for the Cement Works. Therefore, with the specified mitigation in place for the construction stage, no adverse effect will arise either during the construction or operation stage arising from interactions with population & human health of water & hydrology, air & climate, and noise & vibration.

The assessment of effects on biodiversity is detailed in Chapter 5 of the EIA Report. The potential for interactions between the effects of emissions, on biodiversity and to water & hydrology, during the operation stage are addressed under the controls and monitoring established by the IE licence for the Cement Works. The predicted concentrations for NO_x complies with the relevant Air Quality Standards for the protection of vegetation. In terms of interactions of Biodiversity and Land with Material Assets, the proposed development has potential in the use of natural assets for minor negative effect during the construction stage; however the operation stage will have a positive effect replacing the use of imported fossil fuels and a portion of traditional raw materials used in the manufacture of cement.

The assessment of effects on hydrology is detailed in Chapter 7 of the EIA Report. The potential for interactions between the effects of waste arising from the construction phase has potential for effect on emissions to water. Specific mitigation measures have been detailed in Chapter 7 of the EIA Report and in Appendix 3.4 Construction and Environmental Management Plan to ensure no risk to water arises from the construction activities. During operational stage, no significant effect will rise from the interaction between wastes and water or between water and hydrology and other environmental topics.

The assessment of effects on air quality and climate is detailed in Chapter 8 of the EIA Report. The potential for interactions between the effects of traffic generation both during construction, including from waste removal, and during operation has been considered in Chapter 8 Air Quality. No adverse effect will arise as a result of the proposed development.

The assessment of effects on landscape and visual aspects is detailed in Chapter 10 of the EIA Report. The assessment of effects on cultural heritage is detailed in Chapter 11 of the EIA Report. Potential interactions with landscape and visual aspects has been considered in Chapter 10 of the EIA Report. No significant effects will rise from the interactions with cultural heritage.

The assessment of effects on traffic and transportation is detailed in Chapter 12 of the EIA Report. Potential arises for interaction with material assets (natural resources as raw materials) both during construction, and from waste removal, as well as during operation. The effect of traffic generation arising from waste management has also been considered in Chapter 14 of the EIA Report. No significant effects will rise from the interactions with traffic and transportation.

Previous chapters of this EIA Report have dealt with any potential effects arising from the proposed development and where potential negative effects have been identified appropriate mitigation measures have been proposed to reduce or avoid these impacts. No potential significant effects have been identified arising from interactions or from cumulative effects.

Brady Shipman Martin

DUBLIN
Canal House
Canal Road
Dublin 6
+353 1 208 1900

CORK
Penrose Wharf Business Centre
Penrose Wharf
Cork
+353 21 242 5620

LIMERICK
11 The Crescent
Limerick
+353 61 315 127

mail@bradyshipmanmartin.com
www.bradyshipmanmartin.com