ZERO WASTE ALLIANCE IRELAND

Towards Sustainable Resource Management

SUBMISSION

by Zero Waste Alliance Ireland to An Bord Pleanála in Response to the Application by Irish Cement Limited for Planning Permission for an Increase in the Quantity of Alternative Fuels and Further Quantities of Raw Materials to be Used in the Manufacture of Cement at Platin Cement Works, Platin, County Meath

An Bord Pleanála Reference PL04.PA0050

Túr na Gaoithe
Philipstown HBX
Castleblaney Road
Dundalk
County Louth

02 October 2017

ZERO WASTE ALLIANCE IRELAND

Towards Sustainable Resource Management

Túr na Gaoithe
Philipstown HBX
Castleblaney Road
Dundalk
County Louth

02 October 2017

The Secretary,
An Bord Pleanála,
64 Marlborough Street,
Dublin 1.

Dear Sir,

Submission by Zero Waste Alliance Ireland to An Bord Pleanála in Response to the Application by Irish Cement Limited for Planning Permission for an Increase in the Quantity of Alternative Fuels and Further Quantities of Raw Materials to be Used in the Manufacture of Cement at Platin Cement Works, Platin, County Meath

An Bord Pleanála Reference PL17.PA0050

Zero Waste Alliance Ireland (ZWAI) is an environmental NGO, primarily concerned with the way in which society deals with discarded materials and goods, whether from domestic, commercial or industrial sources, how these become "waste", and how such "waste" may be prevented by re-design along ecological principles and by more thorough adherence to the waste hierarchy.

We are concerned that the application by Irish Cement Ltd. to burn increasing quantities of potentially recyclable materials is inappropriate, environmentally damaging, in conflict with the European waste hierarchy and with many other policies, and we are attaching a submission which sets out our objections to the development.

The principal reasons for our objection to the development are:

- burning additional quantities of waste would lead to an increase in emissions to the atmosphere, which are likely to exacerbate the existing air quality problems in the local area, would be contrary to Ireland's obligations under the Stockholm Convention, and contrary to Ireland's international obligation to reduce greenhouse gas emissions in order to mitigate climate change;
- the applicant appears not to have taken into account the cumulative impacts of emissions to the atmosphere from the proposed incinerator

together with other industrial sources of atmospheric contamination in the area around Carranstown and Dundalk;

- the applicant appears not to have taken fully into account the adverse health effects of these emissions, and particularly the effects of PM_{10} and $PM_{2.5}$ particulates, dioxins and PCBs;
- the applicant has failed to justify a need for the proposed burning of such large quantities of potentially recyclable discarded materials, and has not comprehensively examined alternative processes for dealing with these wastes, such as waste elimination, segregation at source, waste reduction, avoiding the use of hazardous substances, etc.;
- the proposed waste intake would contain significant quantities of organic substances which could be more appropriately dealt with by composting or anaerobic digestion; and,
- the proposed facility is not a "recovery" facility (i.e., with a high rate of energy recovery), but is a "disposal" facility (i.e., an co-incineration facility for the partial destruction of waste in addition to the manufacture of cement); and we submit that this would be a retrograde step in Ireland's overall waste management policy, and should not be granted planning permission by the Board.

Please consider the above brief points in this covering letter as part of our overall objection to the above mentioned planning application; and we trust that you will find our submission relevant.

We enclose a cheque for €50.00 in payment of the statutory fee for making an submission.

Yours sincerely,

Ollan Herr Jack O'Sullivan.

Ollan Herr Jack O'Sullivan

On behalf of Zero Waste Alliance Ireland.

ZERO WASTE ALLIANCE IRELAND

Towards Sustainable Resource Management

Submission by Zero Waste Alliance Ireland to An Bord Pleanála in Response to the Application by Irish Cement Limited for Planning Permission for an Increase in the Quantity of Alternative Fuels and Further Quantities of Raw Materials to be Used in the Manufacture of Cement at Platin Cement Works, Platin, County Meath

An Bord Pleanála Reference PL17.PA0050

CONTENTS

Contd.

CONTENTS, Contd.

Figures

Contd.

Tables

ZERO WASTE ALLIANCE IRELAND

Towards Sustainable Resource Management

Submission by Zero Waste Alliance Ireland to An Bord Pleanála in Response to the Application by Irish Cement Limited for Planning Permission for an Increase in the Quantity of Alternative Fuels and Further Quantities of Raw Materials to be Used in the Manufacture of Cement at Platin Cement Works, Platin, County Meath

An Bord Pleanála Reference PL17.PA0050

1. INTRODUCTION AND PRELIMINARY COMMENTS

On 04 August 2017, Irish Cement Limited applied to An Bord Pleanála for planning permission for the proposed "*use of alternative fuels in the further replacement of fossil fuels and the use of alternative raw materials in the replacement of a portion of traditional raw material used in the manufacture of cement products"* (Planning Application form, reply to question 6). The reply to question 6 also stated that "*no change of use is proposed".*

The application was further described as a request for a "*ten year planning permission that will facilitate further replacement of fossil fuels with alternative fuels and allow for the introduction of alternative raw materials in the manufacturing of cement at Platin Cement Works, Platin, County Meath"* (Planning Application form, reply to question 9).

The applicant had four pre-application consultations with An Bord Pleanála, on 19 July 2016, 15 November 2016, 21 December 2016, and 21 March 2017 (Planning Application form, reply to question 18).

The application was made under Section 37E of Planning & Development Act, 2000, as amended by the Planning and Development (Strategic Infrastructure) Act, 2006, which allows a developer to make an application directly to An Bord Pleanála, thereby by-passing the relevant Planning Authority, which in this case is Meath County Council.

The planning application seeks permission to increase the annual tonnage of alternative fuels from the existing permitted 120,000 tonnes by the addition of a further 480,000 tonnes per annum of alternative fuels and alternative raw materials, which would include the use of both non-hazardous and hazardous wastes; and to permit the on-site handling, storage, and importation of these materials to the site. The total quantity of non-hazardous and hazardous

wastes and raw materials (other than the normal raw materials of quarried limestone and shale used in the manufacture of cement) accepted and processed would therefore rise to 600,000 tonnes per annum, a five-fold increase. Furthermore, it is the applicant's intention to almost entirely replace the currently used fossil fuels with a variety of combustible discarded materials in the form of "wastes" in order to provide an alternative or further source of thermal energy for the manufacture of cement.

In our submission to the Board, we intend to demonstrate that the application constitutes a material change of use, that the proposed development has been inaccurately and misleadingly described in the public notices advertising the application, that it is inappropriate and in conflict with the European Waste Hierarchy and the Circular Economy principle to burn such large quantities of potentially recyclable materials, that the proposed development would be in conflict with the Stockholm Convention if permitted, and that combined risks to human health and the environment (taking into account this proposal and other existing industries in the immediate area) have not been fully or properly taken into account.

2. ZERO WASTE ALLIANCE IRELAND (ZWAI)

At this point we consider that it is appropriate to mention the background to our submission, especially the policy and strategy of ZWAI.

Zero Waste Alliance Ireland (ZWAI) was established in May 1999 as an alliance of local citizens' groups from many locations in Ireland who were concerned about the management of landfills and the quantities of waste being sent to landfill for disposal at that time, and the alliance subsequently developed into a national confederation of local residents' groups, supported by some of Ireland's principal environmental organisations, with the objectives of:

i) sharing information, ideas and contacts,

ii) finding and recommending environmentally sustainable and practical solutions to the growing domestic, municipal, industrial and agricultural waste management crisis in Ireland;

iii) lobbying Government and local authorities to implement environmentally sustainable waste management practices, including clean production, elimination of toxic substances from products, re-use, recycling, segregation of discarded materials at source, and other beneficial practices;

iv) lobbying Government to follow the best international practice (for example, the policies and practices of countries such as New Zealand, Australia and many other countries, regions and cities which have adopted the policy of Zero Waste) and EU recommendations by introducing fiscal and economic measures designed to penalise the manufacturers of products which cannot be re-used, recycled or composted at the end of their useful lives, and to

financially support companies making products which can be re-used, recycled or are made from recycled materials;

v) raising public awareness about the long-term damaging human and animal health and economic consequences of landfilling and of the destruction of materials by incineration; and,

vi) maintaining contact and exchanging information with similar national networks in other countries, and with international zero waste organisations.

ZWAI initially had nearly 50 affiliated organisations and groups throughout Ireland, including all the principal environmental NGOs (An Taisce, Voice, Friends of the Earth Ireland, Earthwatch Leitrim, Earthwatch Sligo, Friends of the Irish Environment, Cork Harbour for a Safe Environment (CHASE), Kinsale Environment Watch, the Irish Doctors Environmental Association (IDEA)), and more than 40 active local groups developing and implementing new ways to address Ireland's waste problems.

In Galway, the efforts of the **ZWAI** group "Galway for a Safe Environment" had a major impact on the waste management policy of the City Council, resulting in a pilot-scale recycling initiative which spread city-wide with significant benefits.

2.1 Our Basic Principles

Human communities must behave like natural ones, living comfortably within the natural flow of energy from the sun and plants, producing no wastes which cannot be recycled back into the earth's systems, and guided by new economic values which are in harmony with personal and ecological values.

In nature, the waste products of every living organism serve as raw materials to be transformed by other living creatures, or benefit the planet in other ways. Instead of organising systems that efficiently dispose of or recycle our waste, we need to design systems of production that have little or no waste to begin with.

There are no technical barriers to achieving a "*zero waste society*", only our habits, our greed as a society, and the current economic structures and policies which have led to the present environmental, social and economic difficulties.

"Zero Waste" is a realistic whole-system approach to addressing the problem of society's unsustainable resource flows – it encompasses waste elimination at source through product design and producer responsibility, together with waste reduction strategies further down the supply chain, such as cleaner production, product repairing, dismantling, recycling, re-use and composting.

2.2 What We are Doing

Zero Waste Alliance Ireland has prepared a detailed policy document on waste management, and we continue to lobby Government on the issue of sustainable resource management, and to express our concern at the failure to address Ireland's waste problems at a fundamental level.

In recent years, as many older landfills were closed or became better managed (primarily as a consequence of the implementation of European Directives, Irish legislation transposing these Directives, the development of a waste licensing regime by the Environmental Protection Agency, and the establishment of the Office of Environmental Enforcement in 2003), the number of affiliated groups concerned about the adverse environmental and public health effects of landfills decreased considerably, and ZWAI has concentrated more on the objective of ensuring Ireland's compliance with waste management policy, especially waste reduction and elimination, and the promotion of re-use, repair and recycling.

ZWAI strongly believes that Ireland, as an EU Member State, has a binding obligation under the Stockholm Convention to significantly reduce emissions of persistent organic pollutants (POPs). Merely holding our submissions at present levels, or preventing an increase in either toxicity or volume, is not an adequate response to the aims of the Stockholm Convention. Instead, Irish State organizations, including the Department of the Environment and the EPA, should implement policies aimed at ensuring very significant reductions in the emissions of POPs; and, in some situations, reducing such emissions to zero.

ZWAI further believes that Ireland should have a policy of not sending our wastes for further treatment or recycling to developing countries where local populations are being exposed to dioxins and other very toxic POPs. Relying on those particular countries' infrastructure to achieve our "recycling" targets is not acceptable from a global ecological and societal perspective.

In recent years, Zero Waste Alliance Ireland has made the following submissions in response to public consultations:

a) in September 2011, to the Department of the Environment, Community and Local Government, on waste policy;

b) in September 2012, to the Environmental Protection Agency, on the Agency's draft National Implementation Plan (NIP) for the Stockholm Convention;

c) in December 2013, to Dublin City Council Regional Waste Coordinator in response to a notice of intention to commence preparation of regional waste management plans;

d) in January and February 2014, to the Department of the Environment, Community and Local Government, on proposals for the regulation of household waste collection and for dealing with used or end-of-life tyres;

e) in January 2015, to the Eastern & Midlands Regional Waste Coordinator, Dublin, on the Eastern and Midlands Draft Regional Waste Management Plan 2015 – 2021;

f) in March 2015, to the Environmental Protection Agency in response to the Agency's public consultation on the National Inspection Plan 2015-2017 for Domestic Wastewater Treatment Systems;

g) in April 2015, to Irish Water, on the Draft Water Services Strategic Plan;

h) in February 2016, a submission proposing amendments to the Building Regulations;

i) in March 2016, to An Bord Pleanála, observations on the planning application by Indaver Ireland Ltd for a proposed incinerator at Ringaskiddy, County Cork; and,

j) during 2016, undertaking a research project on the Circular Economy.

It will be clear that ZWAI is primarily concerned with the very serious issue of discarded materials and goods, whether from domestic, commercial or industrial sources, how these become "waste", and how such "waste" may be prevented by re-design along ecological principles and by more thorough adherence to the waste hierarchy.

ZWAI is represented on the Government's Waste Forum, is a member of the Irish Environmental Network and the Environmental Pillar, and is funded by the Department of Communications, Climate Action and the Environment (and previously by the Department of the Environment, Community and Local Government) through the Irish Environmental Network.

ZWAI maintains working relationships with Zero Waste New Zealand Trust, with the Grass Roots Recycling Network in the United States, the Community Resources Network Scotland (CRNS), with the Global Anti-Incinerator Alliance (Global Alliance for Incinerator Alternatives), and with other international environmental organisations.

In making this objection to the above mentioned planning application by Indaver, we are supported by the **Green Economy Foundation**, an environmental non-government organisation working on a variety of issues, from farming to economics, biodiversity and climate change.

Zero Waste Alliance Ireland is a registered charity, and our directors are Ollan Herr, Seán Cronin, Richard Auler and Jack O'Sullivan.

3. REASONS FOR MAKING THIS SUBMISSION TO AN BORD PLEANÁLA IN RESPONSE TO THE PLANNING APPLICATION BY IRISH CEMENT LIMITED

3.1 Change of Use and Inappropriate Naming and Description of the Proposed Development

As quoted in section 1 (Introduction) above, the planning application is for the "*use of alternative fuels in the further replacement of fossil fuels and the use of alternative raw materials in the replacement of a portion of traditional raw material used in the manufacture of cement products"* and "*no change of use is proposed".*

The applicant's Environmental Impact Assessment Report (EIAR) states in section 3.1 that "*the proposed development seeks the flexibility to replace virtually all existing use of imported fossil fuels (i.e. up to 85% replacement) and for the use of alternative fuels in replacing a portion of traditional raw materials used in the manufacture of cement. In total this requires an additional 480,000 tonnes per annum of alternative fuels and alternative raw materials for both Kiln 2 and Kiln 3"*; while section 3.5.1 states that "*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".*

These two statements make it very clear that the aim of the planning application is to eventually transform the cement production process into one which uses close on 100% of "waste" materials to supply thermal energy, following the example quoted in section 3.5.1 of the EIAR that "*in Germany for example … some cement plants have achieved 100% fossil fuel replacement".*

It is our submission that the proposed development is a major change from the currently permitted activity of "*the production of cement and cement products",* and is therefore a material change of use.

We would therefore like to draw the Board's attention to a case in County Offaly where Edenderry Power Limited, which had been granted planning permission by Offaly County Council as a peat-fired power station, made an application under Section 5 (3) (a) of the Planning and Development Act, 2000, for a Declaration by the planning authority on the question of whether the use of biomass and meat-and-bone meal (MBM) as supplementary or auxiliary fuels is, or is not, development or is, or is not, exempted development.

The planning authority is empowered to make such a Declaration under Section 5 of the Planning and Development Act, 2000; and Sub-section 5 (3) (a) of the Act allows a person issued with such a Declaration to refer it to An Bord Pleanála for review.

In making the application, the company argued that:

- "fuel switching" to less carbon intensive fuels, energy source diversification, and renewable energy technologies as proposed in the application for co-fuelling the Edenderry Power Station are consistent with government policy and the principle of sustainability;

- there would be no significant change in the chemical characteristics of the ash produced by the proposed fuel mix of peat, wood material and MBM, and the ash would be taken to Cloncreen Bog by rail for disposal in accordance with the planning permission and licence granted to Bord na Móna;

- the primary fuel would continue to be peat, and the power station could still be described as a "peat-fired generating station";

- the proposed co-fuelling would not involve any material alteration to the physical character of the permitted structure, and there would be no change to the external appearance of the plant;

- there would be no significant change in traffic movements as a result of the co-fuelling proposal; and,

- while there would be some changes in the chemical composition of the emissions to the environment and other potential environmental effects, these would be controlled by the Environmental Protection Agency, and should not be taken into consideration in assessing compliance with the current planning permission or in deciding whether or not the proposed development is, or is not, exempted development.

Offaly County Council concluded that the proposed change to co-fuelling, using materials which have been classified as waste, would constitute a material change from the terms of the permitted development, and that the proposed change in use is material in the context of the planning and development of the area. It was therefore declared by the planning authority that the proposed use is development and is not exempted development (Declaration dated 18 October 2002).

The Declaration was referred to An Bord Pleanála for review under Section 5(3)(a) of the Planning and Development Act, 2000, by Edenderry Power Ltd and by the Offaly and Kildare Anti-Incineration Group (OAKAIG).

On 23 May 2003, the Board ruled that the proposed change in the fuel mix would be a material change of use, that the proposed combustion of MBM would constitute a new and separate use of the power generating station as a "waste recovery facility", and this proposed change must be considered as development and not exempted development (An Bord Pleanála Reference Number: **19.RL.2032**).

Edenderry Power Limited subsequently made a planning application to Offaly County Council (Planning Register Reference Number: PL2/04/210); the Council's decision was appealed to the Board, and permission was granted by the Board on 11 July 2005 (An Bord Pleanála Ref. No.: **PL 19.211173**).

The proposed development by Irish Cement Limited at Platin, County Louth, as it involves a major and significant increase in the quantity of "wastes" to be burned as alternative fuels, with the intention of completely replacing the current fossil fuels by these materials, should therefore be considered as a material change of use, and we invite the Board to consider this reasoned argument. If the Board agrees, it must also find that the applicant's description of the proposed development in the planning application form is incorrect, and that the published newspaper notices and the site notices are also incorrect.

A more appropriate description of the proposed development may easily be found in the application dated 11 December 2015 by Irish Cement Limited to the EPA for a review of the plant's current Industrial Emissions Licence Register Number P0030-04. In that application, the relevant activities in the First Schedule of the EPA Act 1992, as amended, were listed in the following table in section B.3, Class of Activity:

Class	Description
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.
11.6	Temporary storage of hazardous waste, (other than waste referred to in paragraph 11.5) pending any of the activities referred to in paragraph 11.2, 11.3, 11.5 or 11.7 with a total capacity exceeding 50 tonnes, other than temporary storage, pending collection, on the site where the waste is generated.

Class 11.3 refers to waste incineration plants or waste co-incineration plants, and therefore it would be more appropriate to describe the proposed development, the subject of the current planning application, as a '*cement production plant involving co-incineration of hazardous and non-hazardous wastes".* The above mentioned application to the EPA therefore provides further proof that the description of the proposed development provided in response to question 9 in the planning application form as "*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" is incomplete and should be considered as incorrect.

3.2 Inadequate Examination or Consideration of Alternatives

As the Board will be aware, the requirement to carry out a realistic and suitably detailed consideration of alternative sites, processes and other possibilities which would meet the developer's requirements arises from EU Directive 85/337/EEC, as amended by Directive 97/11/EC, Directive 2011/92/EU, and Directive 2014/52/EU; and also under Article 94 and Schedule 6 of the Planning and Development Regulations 2001 (as subsequently amended) which set out the information to be contained in the EIS. Article 94 states that the EIS shall contain the information specified in Paragraph 1 of Schedule 6.

Paragraph 1 (d) states that the EIS should contain:

> *"An outline of the main alternatives studied by the developer, and an indication of the main reasons for his or her choice, taking into account the effects on the environment."*

While the Regulations do not define the term "*alternatives*", it is clear from the EPA "*Guidelines on Information to be contained in Environmental Impact Assessment Reports"* (draft, May 2017) that the consideration of alternative locations is a fundamental aspect of environmental impact assessment.

The Guidelines state in section 2.4.1 (page 12), "*alternatives that are available for consideration at the earlier stages in the evolution of a project often represent the greatest potential for avoidance of adverse effects."*

Later in section 3.4.1 (page 34), the Guidelines state that "*the presentation and consideration of the various reasonable alternatives investigated by the applicant is an important requirement of the EIA process"*; and that alternatives may be described at three levels:

- Alternative locations,
- Alternative designs,
- Alternative processes.

Since the planning application for the proposed development is accompanied by an EIAR (previously referred to as an EIS), and the development is subject to the Environmental Impact Assessment procedure, these Guidelines are statutory guidelines, and therefore the Board must have regard to them when assessing the adequacy of the planning application, the EIS and the suitability of the site.

While it is obvious that alternative locations could not be addressed, since the application was for changes to an existing facility, the applicant has addressed (in section 3.9 of the EIAR) only a very minor or limited subset of possibilities. These are:

1. Doing nothing, i.e., business as usual;
2. Replacement of up to 45% of the existing petroleum coke requirement with an equivalent quantity (in calorific value) of alternative fuels; or,

3. Replacement all, or nearly all (approximately 85%), of the existing petroleum coke requirement with an equivalent quantity (in calorific value) of alternative fuels.

The EIAR also states (in section 3.9, page 3.16) that "*for the most part there is little environmental difference between the alternatives considered"*; and this is a statement with which we strongly disagree, for reasons which will become clear in our submission.

It is also our submission that there are other possibilities which would enable Irish Cement to continue the production of cement more sustainably and perhaps competitively, but these were not explored. For example, a recently published review[1] by Cembureau, the European Cement Association, describes five routes by which the carbon footprint of cement manufacture could be significantly reduced, and these are summarised below.

Resource efficiency	Energy efficiency	Carbon sequestration and reuse	Product efficiency	Downstream
Alternative fuels	Electrical energy efficiency	Carbon sequestration and reuse	Low carbon concrete	Smart buildings & infrastructure development
Raw material substitution	Thermal energy efficiency	Biological carbon capture		Recycling concrete
Clinker substitution				Recarbonation
Novel cements				Sustainable construction
Transport efficiency				

The review by Cembureau lays out a roadmap for each of these routes, giving the key success factors, challenges and recommendations; while pointing out that for the cement industry to reach the 80% reduction in emissions suggested by the European Commission, a combination of all of the above routes to a low-carbon cement industry will be needed, aided by new or breakthrough technologies.

It is clear that the applicant has not seriously considered any of these alternatives to achieve a significant reduction in greenhouse gas emissions, with the exception of one – replacement of a petroleum coke by a mixture of

[1] The Role of Cement in the 2050 Low Carbon Economy. Cembureau, the European Cement Association, 2017.

discarded materials, labelled as "waste", but some components of which are potentially recyclable.

It is our submission that a careful and case-by-case analysis of the waste streams generated by the waste management firms from which the cement plant would, if permitted, source its alternative fuels would show significant opportunities for waste elimination, waste reduction and avoidance of toxic or hazardous materials in manufacturing or production. There are many examples world-wide to show that the replacement of hazardous by non-hazardous materials in production systems has led not only to an elimination of hazardous wastes, but has given the companies which have carried out these changes large savings in operating costs.

For example, the Solid Recovered Fuel (SRF) currently burned in the cement production process is produced from waste materials following extraction of recyclable and commercially valuable components. For SRF to be combustible, these materials must consist primarily of paper, cardboard and plastic; and if better separation techniques were to be used, a higher proportion of these materials could be recycled.

The Board should also be aware that a number of existing and proposed "*waste processing and transfer facilities"* have as their primary focus the production of solid recovered fuel from domestic, commercial and industrial waste sources; i.e., their intention is not to maximise re-use or recycling of discarded materials, but to process these into Solid Recovered Fuel (SRF) to be used in the cement industry. This can be easily done by shredding and mixing paper and plastic of various types, so that the resulting fine material is no longer suitable for recycling. The results can be seen in the form of Ireland's very poor recycling rate for these materials.

The Cembureau report also points out that the cement industry is unique due to the fact that the majority of greenhouse gas emissions are not caused by energy use from fuel combustion, but come from the raw materials themselves. Around 60% of total CO_2 emissions from clinker production are released directly from the processing of limestone. Of the remaining 40%, most originate from burning fuel in the kiln to reach the high temperatures necessary for clinker mineral formation. Indirect emissions from electrical power consumption contribute approximately 6% to overall CO_2 emissions. The greatest savings in CO_2 emissions can therefore be made by clinker substitution and by the use of novel types of cement.

The Cembureau report also points out cement is a bulk product, road transport over long distances is not economically viable, and the increased use of rail networks will decrease transport emissions. A rail line passes through the Platin site, but it remains unused.

CO_2 emissions could also be reduced by sourcing electricity from renewable sources.

It is our submission that the applicant's EIS has failed to comply with the EIA Directive and with the relevant Irish legislation, in that adequate or sufficient information about the examination and consideration of alternative sites for the proposed development has not been provided; and therefore in the absence of

any real, convincing or robust examination of alternatives, the Board should refuse planning permission.

3.3 Energy Recovery or Waste Disposal?

As mentioned briefly in section 3.2 above, for SRF to be combustible it must consist primarily of paper, cardboard, plastic and organic substances; other recyclable materials such as glass and metals have no calorific value. If better separation techniques were to be used, a higher proportion of these materials could be recycled; or, in the case of organic substances, composted and used as an additive to soil.

From a materials recovery and energy perspective, it would be much more advantageous and technically easier to extract paper, cardboard and plastic from the waste stream before burning them; from which we can logically argue that their use as a fuel in a cement kiln is an environmentally unnecessary and retrograde step.

For nearly all types of solid wastes, recycling saves more energy than can be generated by burning such wastes in a co-incineration or co-fuelling energy-from-waste facility. Recycling conserves energy that would otherwise be expended extracting virgin raw materials from the natural environment and transforming them to produce goods that can also be manufactured from recycled waste materials. Energy conserved by recycling exceeds the amount of energy which can be generated from waste.

The proposed use of waste materials as alternative fuels in the applicant's cement kiln will recover only a fraction of the embodied energy in these materials, the process is inherently inefficient, and is much less efficient than re-use or recycling of the same materials.

The Waste Framework Directive 2008 distinguishes between disposal and recovery operations, based on the efficiency of energy recovery. Those classified as recovery activities are placed firmly higher on the waste hierarchy, and above the level of disposal.

Therefore, notwithstanding its non-sustainable thermal energy production, the proposed facility is not a 'recovery' operation, using "waste" as alternative fuel in a cement production facility, but rather a 'disposal' operation within the context of the Waste Framework Directive 2008. Therefore the proposal does not support the current waste management strategy in so far as the strategy requires wastes to be dealt with as far as possible by methods at the top of the Waste Management Hierarchy.

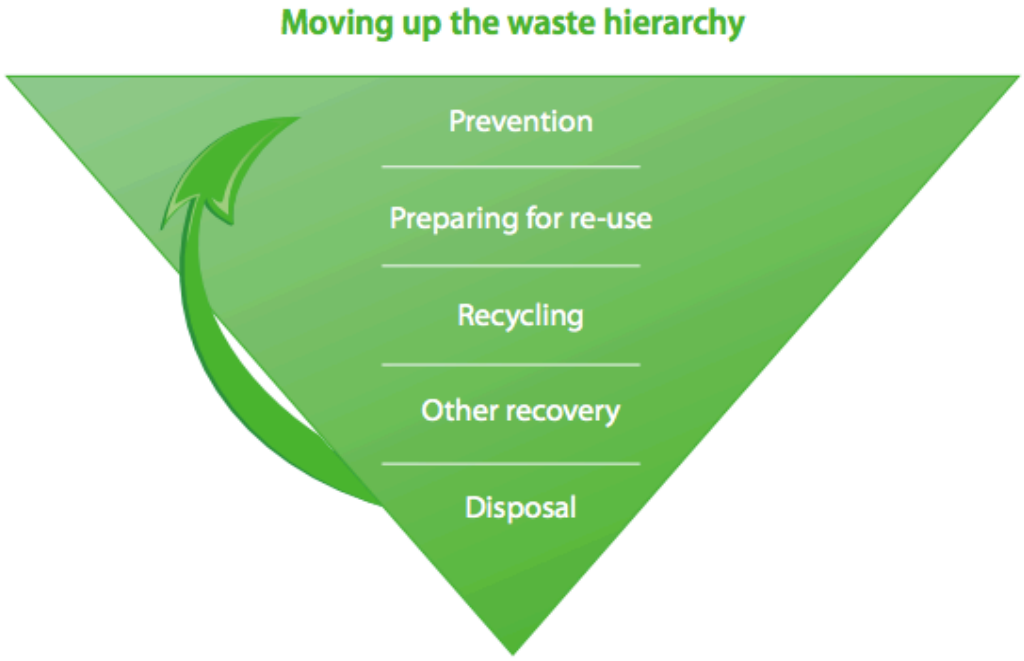
It is therefore our submission that the proposed development must be considered by the Board as "*disposal"*, and therefore at the lowest level in the EU Waste Hierarchy; and we would add that any such proposal must be accompanied by robust and detailed arguments showing why the waste streams cannot be wholly or partially eliminated, prevented, or segregated at source; and why some or all of the materials to be burned cannot be re-used, prepared for re-use, recycled, or (in the case of biodegradable materials)

composted or anaerobically digested. Neither the planning application nor the applicant's EIS addresses these key requirements.

3.4 Conflict with the European Waste Hierarchy

As the Board will be aware, the European 5-step waste hierarchy is a part of European and Irish waste management policy; it is a "*core principle of the waste strategy"* for the Eastern and Midland Waste Management region, and is "*central to the implementation"* of the Region's Waste Management Plan.

The steps are:



The waste hierarchy is mentioned briefly in sections 2.3.1 and 2.3.2.2, and section 14 of the applicant's EIAR. Section 14.5.3 states that the use of residual and hazardous waste as fuel in cement kilns in Ireland is preferable to landfill or export for use as fuel as identified in the three Regional Waste Management Plans; and that 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.

The above statement is partly correct, but the EIAR further argues that the use of the proposed alternative fuels will directly replace imported fossil fuels, and therefore the effects of the operational phase of the proposed development from a waste management perspective will be significant, positive and long-term.

It is our submission that this statement is incomplete and erroneous, as there is no reference to another equally important relationship between the waste hierarchy and the proposed use of alternative fuels, namely, that burning potentially re-usable and recyclable materials is contrary to the intention and focus of the hierarchy.

It is our submission that the application to facilitate the proposed use of a variety of "*alternative fuels"* which include potentially re-usable and recyclable materials should be refused by An Bord Pleanála.

3.5 Conflict with European Policy to Develop a "Circular Economy"

In the applicant's EIAR, there is a brief reference to the Circular Economy in section 14.1, which states that "*to achieve resource efficiency there is a need to move from a traditional linear economy model to a more circular economy model."*

The Board will be aware that a new *"Circular Economy Package"* has been adopted by the European Commission to stimulate Europe's transition towards a circular economy, with the aims of improving competitiveness, fostering sustainable economic growth and generating new jobs. The proposed actions will contribute to "*closing the loop"* of product lifecycles through greater recycling and re-use, and will bring benefits for both the environment and the economy. The plans will extract the maximum value and use from all raw materials, products and waste, fostering energy savings and reducing greenhouse gas emissions.

The European Commission's proposals cover the full lifecycle from production and consumption to waste management and the market for secondary raw materials. This vital transition is being supported financially by the European structural and investment funds (ESIF), €650 million from Horizon 2020 (the EU funding programme for research and innovation), €5.5 billion from structural funds for waste management, and by investments in the circular economy at national level.

Making the transition to a circular economy means changing the way we design, produce and use materials, objects, equipment, machinery and everything else that is part of modern society. All of these products can be, and are being, re-designed to keep remanufacturing, refurbishing and recycling in mind; so that nothing is wasted, and every man-made material, metal or biodegradable part is up-cycled.

By using only renewable energy, society and industry will not have to damage or degrade the environment for hard-to-find, finite and expensive resources; and such a move to a circular economy would save Europe's businesses €600 billion, and would significantly reduce greenhouse gas emissions.

It is our submission that the proposed development will not support recycling. It is not consistent with the European Commission's proposals for a Circular Economy, and its existence may put at risk the probability of other projects in Ireland being funded by the European Commission under the ESIF, Horizon 2020 and Structural Fund schemes mentioned briefly above.

In January 2017, the European Commission published a communication on the role of waste-to-energy in the circular economy (Brussels, 26.1.2017 COM (2017) 34 final), covering the principal waste-to-energy processes including co-incineration of waste in combustion plants (e.g., power plants) and in cement production.

This policy document advised that it is particularly important for public financial support not to undermine the EU waste hierarchy by discouraging waste management options with higher circular economy potential, that public financial support should also avoid creating overcapacity for non-recyclable waste treatment such as incinerators, and Member States are advised to gradually phase-out public support for the recovery of energy from mixed waste.

Before allowing any increase in the available capacity for co-incineration in combustion plants, cement kilns or other suitable industrial processes, Member States should carry out life-cycle analyses to ensure that the environmental impacts, including those related to the transport of waste, do not offset the sought benefits.

The Communication points out that rules on separate collection and more ambitious recycling rates covering wood, paper, plastic and biodegradable waste are expected to reduce the amount of waste potentially available for waste-to-energy processes such as incineration and co-incineration. The paper mentions Ljubljana as an example of a city that has already moved rapidly and successfully to high levels of separate collection. From 2011, Ljubljana has invested in the modernisation of the waste management infrastructure leading to a separate collection rate of 60% of total municipal waste generation.

A further and very relevant point made by the Communication is that for plastic waste, disposal and energy recovery remain the most common treatment options, landfilling has decreased over the past ten years, but incineration of this type of waste has been growing, with large disparities between Member States linked to various states of implementation of existing EU legislation. This situation confirms a need for urgent and concrete steps to improve the recyclability and reusability of plastics and to encourage innovation in this field.

The upcoming EU strategy on plastics in the circular economy will precisely aim to improve the economics, quality and uptake of plastic recycling and reuse by looking at the entire value chain. It will consider some new developments in the treatment of plastic waste, such as re-refining and innovations in design, so that in the future a higher share of plastic waste can be prevented or diverted from energy recovery to recycling.

A study by the European Commission found that wood waste is commonly used as a feedstock for incineration and co-incineration. However, as highlighted in the Circular Economy Action Plan, a cascading use of renewable resources such as wood, with several reuse and recycling cycles, should be encouraged where appropriate, in line with the waste hierarchy. In this context, it should be recalled that in its legislative package on waste, the Commission has, inter alia, proposed a higher mandatory EU-level target on recycling wood packaging waste.

The Commission's Communication also advised that, in circumstances where wastes cannot be recycled and may have to be used as a source of energy, the

most energy-efficient waste-to-energy techniques should be utilised, including conversion of waste heat to power in cement kilns. We would point out that this option of converting waste heat to power is another possible alternative neither mentioned nor considered by the applicant.

It is our submission that this planning application ignores the policy advice of the European Commission, and that a decision by An Bord Pleanála to grant planning permission for the proposed development would be contrary to EU policy in the area of the Circular Economy.

3.6 Failure by the Applicant to Provide Details of the Types and Additional Quantities of the Wastes to be Burned in the Cement Kiln

Neither the applicant's planning application nor the EIS give adequate information about the types and quantities of wastes to be burned in the proposed incinerator. Only the most general descriptions are provided in section 3.6.1 of the EIAR, under the headings of:

- Fine solids (SRF, chipped timber, shredded plastic);
- Coarse solids (shredded wood, rubber, dry filter cake);
- Free-flowing Solids (SRF pellets, sewage sludge pellets);
- Pumpable Fluids (secondary liquid fuels, waste oils, distillation residues, paint sludge); and,
- Whole Tyres.

In Appendix 3.5, a one-page list of European Waste Codes (List of Wastes) is provided.

The applicant's EIS states that the selection of fuel types and their approval for use in the cement production plant will be monitored and licenced by the EPA. However, we would assert that the types of materials to be accepted at the cement production plant, and the sources of these materials, are also planning matters, while accepting that An Bord Pleanála cannot attach environmental conditions to a decision to grant planning permission.

Even with this abbreviated list, we can address only some of the substances mentioned, but will group them into related types. Unique types of material, such as end-of-life tyres, deserve special mention, and we will deal with these first.

3.7 End-of-Life Tyres (EWC code 16 01 03)

The applicant has emphasised that whole tyres will be one of the "alternative fuels" used, and therefore we need to ask whether there are better uses for end-of-life tyres.

Let us firstly examine the position in Ireland. In 2013, the Department of the Environment, Community and Local Government released a report which it had

commissioned from RPS.[2] That report contained a number of disturbing comments on the existing situation. For example:

- The percentage of waste tyres unaccounted for in Ireland has been estimated at 51 % by the EPA, compared with 4 % for the 27 EU member states plus Norway and Switzerland (i.e. 96% of waste tyres are accounted for in these countries);
- Ireland's performance is significantly below the EU average, and the current system of collecting used tyres is clearly not functioning as intended;
- The existing Producer Responsibility Initiative schemes for tyres do not provide for specific recycling or recovery targets;
- In 2011, nearly 3.4 million tyres were placed on the market in Ireland, and 600,000 tyres were imported on vehicles, i.e., approximately 4.0 majority of these being motor car tyres;
- The All-Ireland Used Tyre Survey estimated that the tonnage of tyres placed on the market in Ireland in 2010 was **48,341** tonnes, but the producer responsibility organisations (PROs) reported that **35,147** tonnes of tyres were placed on the market by their members in 2010, leaving a gap of 13,194 tonnes of tyres (27%) of unknown origin[3];
- Importation into Ireland of part worn tyres may account for 10 to 20% of tyres placed on the market, and when these tyres are used by vehicles on roads they are a source of significant concern for road safety;
- In 2011, approximately 53.7 % of waste tyres were exported (mainly to South Korea) and 40.6 % were chipped; and,
- The review refers to cement kilns as a potential outlet for waste tyres, noting that there are two facilities in the country authorised to burn waste tyres (at that time), and that these could provide significant capacity to deal with a large amount quantity of waste tyres – but the review did not consider the atmospheric emissions or other environmentally damaging consequences which result from this combustion process.

Waste tyre activity	Quantity (tonnes)	Percentage
Exported from Ireland	10,253	53.7 %
Chipped (presumably made into crumb rubber, though this is not stated)	7,754	50.6 %

[2] Review of the Producer Responsibility Initiative Model in Ireland -- Section 9: Tyres and Waste Tyres. RPS, Draft Final Report to the Department of Environment, Community & Local Government, November 2013.

[3] Review of the Producer Responsibility Initiative Model in Ireland -- Section 9: Tyres and Waste Tyres. RPS, Draft Final Report to the Department of Environment, Community & Local Government, November 2013; section 9.10.1, pages 42-43.

Waste tyre activity	Quantity (tonnes)	Percentage
Ballast (presumably for agricultural use, covering silage pits)	843	4.4 %
Baled and processed into concrete blocks (further use not stated)	207	1.1 %
Re-treaded (remoulded)	35	0.2 %
Total	19,092	100 %

Table 3.7 Waste tyres recycled in Ireland and exported from Ireland in 2011 (source: November 2013 Review of Producer Responsibility, and EPA, 2013)

A more recent review published by the EPA in January 2017 gives the following information for the year 2014:

- **27,989** tonnes of waste tyres were managed in Ireland in 2014, a figure considerably lower than estimated in the above cited report by RPS;
- 35% (9,880 tonnes) were exported and used as fuel;
- 36% (10,000 tonnes) were crumbed to reclaim tyre constituents;
- 14% (3,913 tonnes) were baled for use in engineering or as ballast;
- 4% (1,092 tonnes) were untreated and used for engineering and ballast;
- 6% (1,679 tonnes) were shredded and then exported;
- <1% (100 tonnes) were prepared for reuse in the State.
- Total combined exports amounted to 12,688 tonnes (**45%** of total managed in 2014);
- The majority of exports were used as fuel (35%) with the remainder recycled (8%) or prepared for reuse (2%). ;
- 3% of tyres managed were exported without any treatment in the State.

The EPA website also states that rubber and metals in waste tyres are suitable for recycling or recovery, while the rubber can be crumbed or shredded and used in various products such as artificial turf or mats (recycling activity).[4]

3.7.1 Do we have adequate Data on Numbers of Tyres Imported, Used, Reused, Recycled and Exported?

The applicant has stated in section 3.6.1 the EIAR that whole tyres will be used as an alternative fuel, but provides no indication of where these tyres will be sourced, or if there will be an adequate supply in the future.

[4] http://www.epa.ie/newsandevents/news/pressreleases2017/name,61696,en.html

According to the November 2013 Review of Producer Responsibility Initiative (PRI) for tyres in Ireland, the percentage of end-of-life tyres unaccounted for has been estimated at approximately 51 %, compared with 4 % for the 27 EU member states plus Norway and Switzerland (i.e. 96% of waste tyres are accounted for in these countries). There appears to be no doubt that Ireland's performance is significantly below the EU average, and the current system of collecting used tyres is clearly not functioning as intended.[5]

A further problem identified in the Review is that certain types of tyres are not subject to the 2007 Tyres and Waste Tyre Regulations, and these include new and re-treaded aircraft tyres, bicycle tyres and other re-treaded pneumatic tyres.[6] It would therefore appear that these tyres are not included in any of the statistics quoted above.

In addition, the number of tyres imported on vehicles appears to be largely unknown, especially as the Review states that "*logistics companies also import tyres for the own use*". The number of logistics companies may not be known, but the number of Irish registered heavy trucks (16,700 above 10 tonnes unladen weight in 2012)[7], and the fact that nearly 26% of road freight was international (when measured in tonne-km), suggests that there are frequent opportunities for Irish vehicles to purchase new tyres on the European mainland and to bring them back to Ireland for fitting in their company's premises.

To make matters even more confusing, the Review of Producer Responsibility for waste tyres provides no information on the number or quantity of waste tyres generated in the North of Ireland, nor is it clear whether the partial data in the report refers only to used or worn tyres produced as waste in the entire country or only in the Republic of Ireland.

Given that any vehicle may be registered in one jurisdiction, and may drive across the border to have its worn tyres replaced in the other jurisdiction, and that truck-loads of used or waste tyres may pass in either direction across the border (all of these activities depending on the changing economics of tyre prices), it makes the utmost sense to consider the waste or used tyre "market" as a single All-Ireland market.

This problem is referred to briefly in the Review, where it is stated that "*there is an extensive cross-border movement of waste tyres*".[8]

---

[5] Review of the Producer Responsibility Initiative Model in Ireland -- Section 9: Tyres and Waste Tyres. RPS, Draft Final Report to the Department of Environment, Community & Local Government, November 2013; executive summary, page v.

[6] Review of the Producer Responsibility Initiative Model in Ireland -- Section 9: Tyres and Waste Tyres. RPS, Draft Final Report to the Department of Environment, Community & Local Government, November 2013, section 9.3.1.

[7] CSO Road Freight Transport Survey, 2012.

[8] Review of the Producer Responsibility Initiative Model in Ireland -- Section 9: Tyres and Waste Tyres. RPS, Draft Final Report to the Department of Environment, Community & Local Government, November 2013, section 9.3.1, page 10.

No reliable data appears to be available, despite the fact that an All-Ireland Freight Forum has been in existence since January 2010, having been established in response to an agreement made at the North-South Ministerial Council (NSMC) Transport Sector meeting in April 2009. One of the reasons for the lack of data on waste tyres in the North of Ireland is most likely to be the result of there being no system for collection of data on waste tyres.

At a session of the Northern Ireland Assembly Committee for the Environment, which enquired into used tyre disposal, the reply was given by Mr Norman Kerr that "*we are not regulated or licensed; there are no laws or legislation to say what we should do with our tyres*", while Mr Graham Byrne stated that his concern was "*the tyres that are not recycled but stored in large areas such as landfill sites*".[9]

However, that situation should have improved by now, as the Northern Ireland Assembly produced a very detailed and lengthy interim report on the committee's inquiry into used tyre disposal. The report includes minutes of proceedings, minutes of evidence, written submissions, research papers and recommendations. One important recommendation is that "*a strict producer responsibility scheme would be counterproductive unless introduced in both jurisdictions*".[10]

When RPS carried out a survey of used tyres in both jurisdictions in Ireland, the response rates by retailers, collectors, authorised treatment facilities and tyre recyclers on both sides of the border were very low, and were not sufficient to provide meaningful data.[11]

It is therefore our submission to the Board that any decision to grant planning permission to Irish Cement to burn as an alternative fuel such large quantities of end-of-life tyres is premature while the statistics on the numbers of end-of-life tyres generated are so poor, and so many tyres are unaccounted for, and there is a serious probability that end-of-life tyres may have to be imported in order to provide an adequate and continuous supply.

---

[9] NI Assembly, Committee for the Environment, Session: 2011/2012, Thursday, 01 December 2011: Inquiry into Used Tyre Disposal. Official Report. http://www.niassembly.gov.uk/Assembly-Business/Official-Report/Committee-Minutes-of-Evidence/Session-2011-2012/December-2011/Inquiry-into-Used-Tyre-Disposal-/

[10] Committee for the Environment: Interim Report on the Committee's Inquiry into Used Tyre Disposal, Together with the Minutes of Proceedings, Minutes of Evidence and Written Submissions Relating to the Report. Ordered by the Committee for the Environment to be printed, 19 April 2012. Report: NIA 11/11-15.

[11] RPS, 2013. All-Ireland Used Tyre Survey. Report to the Department of Environment Northern Ireland (DOE) & the Department of Environment, Community & Local Government (DECLG). January 2013.

3.7.2 Tyre Materials, Components and the Need to Conserve Scarce Raw Materials and Energy

A conventional motor vehicle tyre is a product with a complex structure and composition, highly resistant to biodegradation, photochemical decomposition, chemical reagents and high temperatures.[12]

Approximately 80% of the weight of car tyres and 75% of truck tyres consists of rubber compounds, including natural rubber and synthetic elastomers such as butyl rubber and styrene-butadiene rubber. Other materials include carbon black (approximately 22%), steel (approximately 16 to 25%); textile (approximately 5%), zinc oxide (1% to 2%), sulphur (approximately 1%) and other additives (approximately 7.5%).

Additional toxic components include copper compounds (used as an alloy in the steel reinforcing), cadmium, lead, organo-halogen compounds and poly-aromatic hydrocarbons (PAHs). In addition to carbon black, oil is used as a plasticiser in tyres. Hardening and vulcanising agents, various booster chemicals and protective agents are also used in the rubber compound. The presence of chlorine in the chlorinated butyl rubber liner, used to slow the leakage rate of air from the tyre, gives rise to toxic emissions to the atmosphere when whole tyres are burned or when shredded tyres are used as fuel.

It is our submission that this aspect of using tyres as a source of fuel has not been taken into account in the applicant's EIS, nor in the Appropriate Assessment Screening Report.

Tyre Component	Energy value (kWh/kg)
Energy required to manufacture a tyre	32.0
Energy required to produce tyre rubber compound	25.0
Energy content of tyre-derived fuel (TDF)	9.0
Energy consumed to produce crumb rubber from tyres ..	1.2

Table 3.7.2 **Specific energy values of tyre-related materials** (adapted from "Scrap Tyre Recycling", Kurt Reschner, Waste Management World, online article, 01 July 2003).

As shown in Table 3.7.2, the energy recovered from tyres or from tyre-derived fuel (TDF) is only a small fraction of the energy invested into the production of tyre rubber. This correlation is clearly reflected in the market prices for TDF (US $30-50 per tonne in 2003) and crumb rubber from scrap tyres (US $180-

[12] Review of the Producer Responsibility Initiative Model in Ireland -- Section 9: Tyres and Waste Tyres. RPS, Draft Final Report to the Department of Environment, Community & Local Government, November 2013; section 9.3.2, page 12. However, on page 16 of the Review, it is incorrectly stated that "Tyres are not biodegradable because the time they take to decompose is indeterminate".

300 per tonne in 2003). More recent data is likely to show a similar substantial difference in price between TDF and crumb rubber.

It will be clear that the manufacture of tyres uses a significant amount and number of raw materials, of which only the natural rubber component may be described as renewable. Steel, textiles and synthetic rubbers also use large amounts of energy to manufacture.

As we are now past the point of "peak oil", we should aim to achieve the maximum recovery rate of end-of-life tyres in Ireland. The extraction of new virgin materials from our finite planet, such as oil, for the manufacture of new tyres should be minimized. Given that some 40% of tyres are derived from oil, and that we have now passed "peak oil"; we submit that this is a very important national sustainability goal. Re-using tyre rubber for its originally intended purpose is our preferred option, both environmentally and economically. Reuse and recycling are much more desirable than burning waste tyres to extract a small proportion of the embodied energy which went into their manufacture.

Even if we consider that rubber is a renewable resource, as the raw material is harvested from rubber tree plantations (*Hevea brasiliensis*), we need to remember that rubber plantations displace other land uses, and are generally developed by cutting down species-rich mature forests. In addition, commercial rubber plantations may cause local water shortages and destruction of biodiversity, together with effects on soil fertility, microclimate and carbon sequestration. On the other hand, biodiversity can remains high in carefully managed rubber plantations, in marked contrast to most other forms of monoculture.

Despite being a renewable resource, the world supply of natural rubber should fall short of demand in 2017, according to the April 2017 issue of "*Natural Rubber Trends & Statistics"*, the official publication of the Association of Natural Rubber Producing Countries (ANRPC).

It is therefore inappropriate and unsustainable to depend on future harvesting and processing of raw rubber, while perfectly good rubber, capable of being re-used as rubber, or re-cycled for other purposes, is simply burned. It is our submission that it is totally unnecessary to burn rubber as a fuel, especially as innovations in the technology for re-processing used tyres in order to extract usable rubber and steel are being developed, and we will refer to these.

Notwithstanding these innovations, we would submit that the lack of any concerted effort to design, produce and place on the market a more eco-friendly type of vehicle tyre represents a failure to comply with the recommendation in Article 8 (2) of the EU Directive 2008/98/EC on Waste[13], which states that "*Member States may take appropriate measures to encourage the design of products in order to reduce their environmental impacts and the generation of waste in the course of the production and subsequent use of products*".

[13] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. OJ L 312/03-30; 22-11-2008.

These failures, especially the failure to utilise available technology to re-use or recycle rubber, has unfortunately left the door open for companies such as Irish Cement to consider end-of-life tyres as waste and as a source of fuel; but this approach is in direct conflict with other national and EU policies, as we have shown.

3.7.3 Re-use, Repair and Recycling

It is fair to say that rubber recycling - in one form or another - is as old as the industrial use of rubber itself. In 1910, natural rubber cost nearly as much as silver, and it thus made perfect sense to reuse as much as possible of this valuable commodity. During this time, the average recycled content of all rubber products was over 50%.

By 1960, the recycling content in rubber products dropped to around 20%; and in subsequent decades, the combination of cheap oil imports, more widespread use of synthetic rubber and the development of steel-belted radial tyres have all contributed to a steady decline in rubber recycling.[14]

In the early 1990s, the established tyre and rubber industry used only around 2% of recycled material. However, in recent decades the tyre recycling industry has experienced a significant growth, both in the United States and in Europe, primarily as the result of a legal framework requiring the safe disposal of waste or scrap tyres, the availability of reliable rubber particle size reduction technologies, and the emergence of innovative and economically viable applications for recycled rubber. But this has not happened in Ireland.

In Ireland, used tyres with the tread depth near or below the minimum depth required by legislation may be re-used on other road vehicles, re-treaded, remoulded or exported. It is not clear from the 2007 Tyres and Waste Tyre Regulations when a used tyre becomes a 'waste tyre', as the Regulations do not define explicitly what is a 'waste tyre'. This uncertainty further complicates the difficulty of estimating the annual production of waste tyres in Ireland. The November 2013 Review of Producer Responsibility estimated that 38,673 tonnes of waste tyres were generated in 2011; but in our opinion this is a very crude estimate, given the uncertainties in the data to which we have referred above.

The principal destinations to which waste tyres were exported from the Republic of Ireland in 2011 were South Korea, Britain, and the North of Ireland.

The remanufacture of new tyres from partly worn tyres, also described as remoulding or retreading, uses the same process as the manufacture of new tyres, with the exception that it begins with a scrap tyre or worn tyre with an intact casing (the steel and polyester belts, sidewall and steel rims). The remoulded tyre is made by refurbishing the casing where necessary, adding

[14] "Scrap Tyre Recycling"; Kurt Reschner, Waste Management World, online article, 01 July 2003).

new sidewall and rubber tread which is then vulcanised to the casing. For a small number of old tyres in good condition this is probably the best practice we can apply to tyre recycling.

However, we would also point out that there appears to be no information on the number of remoulded or retreaded tyres imported into Ireland, as distinct from the importation of new tyres. According to the 2013 Review of the Producer Responsibility Initiative Model for Tyres and Waste Tyres, carried out by RPS for the Department of the Environment, Community and Local Government, tyre manufacturing activity in Ireland "*consisted only in the rethreading* [sic] *of truck tyres but this activity stopped in 2013*".[15] Before that time, the quantity of tyres retreaded was quite small, amounting to only 35 tonnes in 2011.

Provided that safety and environmental standards are prescribed and adhered to, it is unfortunate that retreading has ceased in Ireland. Since about 60% of the tyre material is in the casing, retreading can make a significant impact. A quality car tyre can be retreaded about three times, and larger vehicles can be re-treaded as many as 12 times. Unfortunately only 10% of cars and light trucks are re-treaded in the United States. If this were to change, the result would be a major reduction in tyre waste, according to Energy Justice, a citizens' organisation which advocates a clean energy, zero-emission, zero-waste future for everyone.[16]

In fact, the Northern Ireland Assembly Committee for the Environment has commented that "*retreading used tyres has become highly specialised and improved technology ensures a safe product*" and has recommended that "*the industry should now endeavour to make the concept of retread tyres more acceptable to the public by developing and marketing accredited retread tyres as an economically viable and safe option*".[17]

The principal problem associated with tyre recycling arises from the fact that tyres are built to be tough and durable. The very properties which ensure a long service life and safe road-holding make size reduction by shredding or granulation difficult but not impossible, using technologies which are now well developed.

We understand that one of the largest and most modern waste/scrap tyre recycling plant in Europe is based at Asamer Holding's tyre recycling facilities in the upper Austrian town of Gmunden since 2003. Covering an operating area of 20,000 m^2, up to 40,000 tonnes of scrap tyres can be processed each year in a two-stage or three-stage operation.

---

[15] Review of the Producer Responsibility Initiative Model in Ireland -- Section 9: Tyres and Waste Tyres. RPS, Draft Final Report to the Department of Environment, Community & Local Government, November 2013, section 9.4, page 17; and table 9.10, page 38.

[16] http://www.energyjustice.net/tires/solutions

[17] Committee for the Environment: Interim Report on the Committee's Inquiry into Used Tyre Disposal, Together with the Minutes of Proceedings, Minutes of Evidence and Written Submissions Relating to the Report. Printed, 19 April 2012. Report: NIA 11/11-15.

In the first stage, truck, car and tractor tyres are pre-shredded into strip-like pieces, to a size of 100 mm x 150 mm. A conveyor feeds two large bunkers with a total volume of over 2000 m^3, where the pre-shredded truck tyres and car tyres are stored, temporarily separated from each other.

The second process takes place in several granulating lines, the end product of which is a largely textile-free and steel-free rubber granulate, less than 3 mm in size. High-value products are made from this granulate for a range of different manufacturers.

The typical product yield from scrap tyres is shown in Table 2.2.3.

Product	Yield by tyre type		
	Car tyres	Truck tyres	Earth mover tyres
Crumb rubber	70%	70%	78%
Steel	15%	27%	15%
Fibre and scrap	15%	3%	7%

Table 3.7.3 **Typical product yield from scrap** tyres (adapted from "Scrap Tyre Recycling", Kurt Reschner, Waste Management World, online article, 01 July 2003).

The Asamer plant also contains a further production area, where a third process is carried out, in which rubber granulate is used to produce a high-value rubber powder. At a cryogenic temperature of -120°C, the granulate becomes glass-hard, and can then be ground to a fineness of 50-250 µm (0.05-0.25 mm) in special mills. The technology produces a high purity rubber powder, and it is understood that there is a strong demand for this powder from a variety of industrial and chemical processes, for the production of anti-corrosives and other substances.

Rubber granules produced from waste or scrap tyres can be used in agriculture, horticulture, construction, equestrian sports and other areas. The steel reinforcing extracted during the shredding or granulation process can easily be recycled, while the textile cord can be used as a raw material for the production of thermal insulation, in a process similar to that used by Wellman International in County Meath to produce fibre from imported post-consumer PET soft drinks bottles.

Crumb rubber also serves as a very acceptable filler in virgin rubber products, and many tyre manufacturers add this recycled material into their compounds. Aside from the savings in material costs, adding crumb rubber to the virgin rubber compound offers the following processing advantages:

- better mixing properties and improved stability;
- improved degassing during the vulcanization process;

- improved mould release; and,
- reduced curing times.

3.7.4 The Particular Case of Crumb Rubber Production in Ireland, and Its Actual and Potential Uses

There are two plants in Ireland which produce crumb rubber from used or worn tyres[18], and a continuous and reliable supply of end-of-life tyres is needed by these facilities, given the quantity of used tyres generated annually in Ireland.

Established in 2003, *Crumb Rubber Ireland Limited* operates a recycling plant which takes tyres of any size, from car to large earth movers, and recycles them into granulate and matting products. The plant can process up to 1,000 tonnes per hour of waste tyres, and the company states that it has worked with University College Cork and the EPA to make the recycling activity energy efficient and to utilise all of the material released when the tyres are put through the process. Unfortunately the plant closed in 2017, thereby removing one of the outlets for end-of-life tyres and reducing the capacity for tyre re-cycling in Ireland.

Crumb Rubber Ireland formerly collected tyres from customers all over Ireland; and, after granulation and screening for quality control, some of the product is segregated into a granulate for the equestrian, garden, sports and child care sectors, while other granulate is further processed to make safety matting for the construction, equestrian, agricultural, child care, rail, industrial, pet and home sectors. For example, Dundalk's new state of the art all-weather racecourse was constructed using 2,000 tonnes of crumb rubber. In 2010, *Crumb Rubber Ireland* was given the award of Green Entrepreneur of the year.

Crumb Rubber Ireland made an objection to Limerick City and County Council in connection with a recent planning application by Irish Cement to burn tyres in Irish Cement's other cement production plant at Mungret, County Limerick, and that submission includes four points relevant to Irish Cement's application to burn increasing quantities of tyres in the Platin facility:

1. The planning application by Irish Cement Ltd would in effect mean that the company's cement plants would be competing with waste tyre reduction, re-use and recycling programmes;
2. Tyres consist of rubber, steel and fibres which can be separated using modern re-cycling technology into these basic components from which a variety of products can be produced, thereby replacing virgin raw materials, providing greater energy savings, substituting imports and creating jobs;

[18] Crumb Rubber Ireland Ltd., Mooretown, Dromiskin, Dundalk, Co.Louth. http://www.crumbrubber.ie/ and *Crossmore Tyre Recycling* in County Cork. http://crossmoretyres.com/tyre-recycling/

3. The quantity of used tyres proposed to be burned at the applicant's operation is excessive and would render tyre recycling in Ireland completely uneconomic; and,
4. Comparative life cycle assessment of two options for dealing with end-of-life tyres found that recycling results in a saving of over twice the amount of greenhouse gas emissions compared with co-incineration of tyres in a cement kiln.

ZWAI agree fully with these valid points, and would urge the Board to have particular regard to them.

The failure by the Irish Government to adequately promote and focus on a resource recovery and recycling policy for tyres has resulted in the closure of *Crumb Rubber Ireland* in County Louth. The closure of this business has resulted in people losing their jobs, and it is well known that recycling creates many more jobs than landfilling or incineration.

Crossmore Tyre Recycling in County Cork state that they process some 300 tonnes of tyres every week, and that they collect used or waste tyres and recycle them using state of the art technology into environmentally-friendly products such as equestrian rubber, and tyre bales which can be used in flood control and road foundations. The tyres pass through a shredding process to produce a multifunctional rubber crumb that is guaranteed to be 99% wire free.

It is our belief that an Irish businesses such as *Crumb Rubber Ireland* and *Crossmore Tyre Recycling* are good examples of resource recovery operations providing long-term employment. However, despite its environmental credentials, it appears that the company has difficulty in obtaining sufficient raw materials, i.e., used or worn tyres. According to a news item published the Irish Trucker in 2010[19], the company stated that while "*approximately 6,000 tonnes of tyres are recycled on a yearly basis in Ireland", "a massive 29,000 tonnes of tyres are not being recycled annually"* and the *"inability of policing waste laws has left thousand of tonnes of tyres being stockpiled throughout the country".*

The solution to this problem is not to burn these stockpiled tyres, but to create an economic model that will give all end-of-life tyres a monetary value based on re-use of the materials they contain.

These policy failures, especially the failure to utilise available technology to re-use or recycle rubber, have unfortunately left the door open for companies such as Irish Cement to consider end-of-life tyres as waste and as a source of fuel; but this approach is in direct conflict with other national and EU policies, as we show in this submission. A waste management policy that wastes finite resources (such as oil) and loses sustainable jobs is contrary to Ireland's efforts to support enterprise and to create employment (see section 3.7.8 below).

[19] http://www.irishtrucker.com/news/louth-rubber-plant-highlight-lack-of-tyre-recycling.

3.7.5. The Use of Crumb Rubber to Make More Durable Road Surfaces

We would point out that one of the most environmentally efficient uses of waste-tyre-derived crumb rubber not currently employed in Ireland is for the production of rubberized asphalt for road surfacing. Many more of the waste tyres in Ireland could be recycled if crumb rubber were to be used for road construction and road repair, but we have found no evidence of any significant interest in this technology; instead, it appears that local authorities have failed to grasp the concept of rubberized asphalt.

If the Transport Infrastructure Ireland (the former National Roads Authority) were to approve the use of rubberised asphalt, and if County Councils specified this material for road construction, they would be contributing to the recycling effort and would also obtain a 20 year extra life span to their road networks.

By contrast, in many other countries, particularly the United States, the use of recycled rubber in road construction is well known. It is not a new process, as engineers and chemists have been incorporating rubber into asphalt since the 1920s. In the 1960s, Charles McDonald, a former Federal Bureau of Highways (now FHWA) employee and later the Engineering Supervisor Materials Testing Section for the city of Phoenix, Arizona, developed the first successful time-temperature formula for incorporating scrap tire rubber into an asphalt paving material. This process is often referred to as the McDonald process, the "Arizona" process, or the "wet" process.[20]

In the production of asphalt-rubber road surfacing material, at least 15% by weight of crumb rubber (in some cases up to 20%) in the total blend is mixed into the hot asphalt for a sufficient length of time and at a high enough temperature to cause swelling of the rubber particles and a chemical reaction to take place between rubber and asphalt, causing the two principal components to become firmly bonded.

The Rubber Pavements Association estimates that a two-inch thick overlay of asphalt-rubber hot mix uses about 2,000 tyres per lane-mile, i.e., for a one-mile section of a four-lane highway, anywhere between 2,000 and 8,000 tyres can be used in creating a safer, quieter, longer-lasting road. The benefits of using asphalt-rubber are:

1. Reduction in the quantity of asphalt used in road construction, especially as the cost of this material has been risen very sharply since the early 1990s as a consequence of the increasing price of crude oil, whereas the cost of recycled tyre rubber has held steady over the same period;

[20] The information in this section of our submission is taken mainly from the website of the Rubber Pavements Association, a non-profit industry association comprised of crumb rubber producers, asphalt-rubber contractors, equipment manufacturers, engineering consulting firms, testing laboratories, crack sealant manufacturers, and asphalt suppliers. See: http://www.rubberpavements.org/, http://www.asphaltrubber.org/ and also http://www.youtube.com/watch?v=mlr7BTaOZiE.

2. Reduction in the quantity of asphalt used results in less oil – a non-renewable resource from which asphalt is derived – being used in road construction; though a significant amount of oil is used as a softening agent in some of the rubber-asphalt mixes;

3. There is no need to purchase new paving machines, as the conventional paving equipment can be used to apply the asphalt-rubber and aggregate mix; the only specialized equipment required is the "rubber plant" which blends crumb rubber with asphalt at the asphalt plant (these units are portable and are set up and operating on site in as little as one to three days);

4. Because of the better flexibility and strength of asphalt-rubber paving used in road surfacing, the thickness of the pavement layer required is less than the regular asphalt mix, and therefore less aggregate is needed to resurface a road, thereby saving the diminishing reserves of yet another resource, and reduced impacts of transporting aggregate to the road construction site;

5. The chemicals contained in the rubber retard the aging and oxidation of the asphalt, preventing it from becoming brittle and cracking; and the flexibility of the rubber in the asphalt mix also resists and reduces cracking and rutting (cracking of the road surface allows water under pressure to act on the road sub-surface, creating the many pot-holes and deterioration of the road surface seen on nearly all rural roads in Ireland, while rutting is caused by softening of the road surface on hot summer days);

6. Asphalt-rubber road surfacing has a longer service life and less maintenance than regular asphalt mix, with a consequential reduction in road maintenance costs (in the United States some asphalt-rubber road surfaces have been in service for 20 years);

7. Better flexibility of the asphalt-rubber road surface results in less cracking, and the rubber-asphalt mixture provides a “thermal blanket” which helps to preserve the underlying material (thermal stresses can be just as damaging to the road structure as traffic loads, and any method to mitigate these stresses will lead to a longer life of the investment);

8. As Ireland’s climate begins to change, with colder winters and much higher summer temperatures, there will be an increasing need for better materials to be used in road surfacing, particularly those materials which have the flexibility to withstand increased fluctuations in seasonal temperatures;

9. In addition to surviving hot climatic conditions (in Ireland’s case, during July 2013, when melting tarmac could be seen on many rural roads), asphalt-rubber road surfacing is used in Sweden, where engineers have developed a special grade which has proven to be very resistant to wear from tyre chains and snow ploughs; while asphalt-rubber road surfacing

is used also in Alaska, New Jersey, Massachusetts and the Provinces of Ontario, Nova Scotia and Saskatchewan in Canada;

10. Asphalt-rubber road surfacing provides better traction between vehicle tyres and the road surface, and therefore better skid resistance and improved vehicle braking and deceleration;

11. Another benefit is the reduction of traffic noise, as international studies have shown that asphalt-rubber pavements can reduce traffic noise by 50% to 85%, and less traffic noise can also reduce the cost of constructing sound barriers (as early as 1981, a Belgian study found that an asphalt-rubber hot mix reduced noise by 8 to 10 decibels or 75 % when applied to the Brussels Loop[21]);

12. Atmospheric emissions caused by using tyre rubber in asphalt are no greater than from conventional asphalt;

13. From an environmental perspective, the most important benefit of using asphalt-rubber is that it consumes scrap tyres, and can recycle very significant amounts of the rubber in these tyres; and,

14. Asphalt-rubber road surfacing may be recycled and re-used at the end of its normal service life (for example, the City of Los Angeles recycled a 12-year old asphalt-rubber road surface, and performed an air quality impact assessment of the effects of grinding, transporting and processing the asphalt rubber; the results of the testing showed that the reclaimed asphalt-rubber passed all the required tests and is recyclable using either microwave technology or conventional technology.

Despite the advantages listed above, the use of asphalt-rubber road surfacing has not been adopted by all States in the USA, primarily because of resistance by traditional road surfacing contractors who remain sceptical about the cost/benefit analysis of asphalt-rubber, despite the evidence that it can be more cost-effective when applied correctly.[22]

In Europe, asphalt-rubber road material is variously referred to as “crumb rubber modified bitumen” (RMB) or “rubber-modified asphalt” (RMA), and is used in Sweden, Spain[23], Poland[24], Germany and other countries. We also understand that there is significant interest in the technology in Barbados,

[21] Michael Fickes, 2003. The Asphalt Rubber Phenomenon. Hot Mix Asphalt Technology, July/August 2003.

[22] http://www.bitumenengineering.com/pressreleases/46-library/press/144-asphalt-rubberovercoming-the-obstacles.

[23] Juan José Potti. Crumb rubber modified bitumen; another way to recycle. Probisa, Spain. http://congress.cimne.upc.es/rilem04/admin/Files/FilePaper/p330.pdf

[24] Asphalt rubber as an alternative of polymer modified bitumen. Piotr Radziszewski, Jerzy Piłat, Michał Sarnowski, Karol J. Kowalski, Jan Król and Zbigniew Krupa. Road Materials and Technology Division, Institute of Road and Bridges, Faculty of Civil Engineering, Warsaw University of Technology, Warsaw, Poland; and Polski Asfalt Sp., Pruszków, Poland.

Brazil, China, Colombia, Italy, Mexico, Pakistan, Portugal, Saudi Arabia, Slovenia and South Africa.

In order to encourage a better use for end-of-life tyres than burning them, we would recommend the following:

a) An Bord Pleanála should refuse permission to Irish Cement Ltd to burn whole or shredded tyres in the existing cement kiln at Platin, on the grounds that doing so would destroy a potentially valuable resource, and that better alternative uses are available for end-of-life tyres;

b) The Department of Communications, Climate Action and Environment should consult with Transport Infrastructure Ireland, the EPA and County Councils to develop guidelines and criteria for the use of asphalt-rubber road surfacing material or crumb-rubber-modified-bitumen in Ireland;

c) A life-cycle cost-benefit analysis should be undertaken to determine the financial, environmental (taking into account the benefit of eliminating the stockpiles of waste tyres in various locations throughout the country) and employment benefits of using asphalt-rubber road surfacing for new roads and repair of existing roads which have become damaged, or simply need repair and maintenance;

d) Financial assistance should be given to County Councils using this material, in order to offset any additional expenses which might be incurred in the short term; and,

e) Consideration should be given to the temporary installation of an additional waste tyre processing plant to produce crumb rubber asphalt for road use, in order to more quickly eliminate the stockpiles of old tyres at various locations.

A decision to grant planning permission without these alternatives first having been explored would be premature.

3.7.6 Pyrolysis, Gasification and Liquefaction

Pyrolysis, gasification, and liquefaction (PGL) are further alternatives for the recycling of end-of-life tyres. These processes differ from each other, but all are thermochemical processes whereby carbonaceous feedstocks are transformed into useful products at elevated temperatures.[25]

Pyrolysis is thermal degradation or volatilization of the tyres without the addition of air or oxygen. Gasification is a process that utilizes a reactive agent such as air, oxygen, hydrogen, or steam. Gasification tends to have a slightly higher

[25] Technology Evaluation and Economic Analysis of Waste Tire Pyrolysis, Gasification, and Liquefaction. Produced under contract by the University of California Riverside, for the California Environmental Protection Agency, Integrated Waste Management Board, March 2006.

temperature range than pyrolysis, with the resulting products being primarily gaseous in nature. Liquefaction operates in a lower temperature range than either pyrolysis or gasification and produces a predominantly liquid product.

By using one or other of these processes (or a combination of them), waste tyres are thermally decomposed into oil (which may be used or sold as a fuel), gas (which also has a calorific value), carbon char and steel. No combustion is involved, but significant amounts of volatile hydrocarbons are produced which have the potential to cause air pollution and damage to health. Although the application of PGL to tyre feedstocks is limited worldwide, no significant technical barriers to the use of these technologies for processing end-of-life tyres exist.

3.7.7 Devulcanisation

In chemical terms, devulcanisation means returning rubber from its thermoset, elastic state back into a plastic, mouldable state, and is accomplished by selectively severing the sulphur bonds in the molecular structure. This processing step enables rubber manufacturers to use a much lager percentage of recycled material without compromising quality, appearance or performance characteristics.

The processes which accomplish devulcanisation are less well known than pyrolysis, gasification and liquefaction, but they have very significant potential to ensure that more rubber is recycled. There are three principal processes, in which heat, mechanical treatment of the rubber, and ultrasound are used.

In the thermal devulcanisation process, vulcanized rubber is exposed to elevated temperatures over an extended period of time in order to break the sulphur bonds as well as the polymer 'backbone'. This process was first patented by H.L. Hall in 1858, but is not widely used today due to environmental concerns and relatively severe degradation of the material. There are some commercial applications in Asia and Eastern Europe.

In mechanical devulcanisation, vulcanized rubber is exposed to intense mechanical work (mastication) in order to selectively break the sulphur bonds in the polymer matrix. Mechanical devulcanisation does not alter the chemical composition is any way, and yields material with excellent physical properties and commercial value.

Devulcanisation using ultrasound is a specific type of mechanical devulcanisation, in which the rubber is exposed to high intensity ultrasound. The process is not yet commercial, but research results are encouraging.

The ability to devulcanise rubber without damaging the polymer 'backbone' now makes it possible to truly close the loop in the rubber industry. Based on the excellent savings potential for rubber manufacture, this technology may become more widely accepted in the future, especially for the processing of higher-value rubber compounds and factory scrap. It is therefore our submission that this

technology should be the subject of a research report and pilot scale testing in Ireland before any decision is made to burn end-of-life tyres.

3.7.8 Potential Employment in Remoulding and Recycling Used Tyres

In the past there has been not enough recognition in Ireland of the jobs potential in recycling and resource recovery. We now need to set in place the most comprehensive national system of waste tyre recovery; so as to assure a stable raw material supply to the growing Irish tyre recycling industry. In such a system every tyre entering the Irish market should be ideally accounted for.

We need to achieve the maximum number of jobs in the management of tyres and the recycling of tyres to create value added products in Ireland, and this should be done by creating a more tightly regulated system for the accounting and the collection of all our waste and used tyres so that an Irish tyre recycling industry will be economically stable and can expand. As stated by *Crumb Rubber Ireland* (see section 3.7.4 above), recycling end-of-life tyres will create viable employment opportunities.

Recycling is a key element of Sustainable Materials Management (SMM), a systemic approach to using and reusing materials more productively over their entire life cycles. For example, recycling and reuse activities in the United States accounted for 757,000 jobs, produced $36.6 billion in wages and generated $6.7 billion in tax revenues in 2007, based on recent census data. This equates to 1.57 jobs for every 1,000 tons of materials recycled.

3.7.9 Storage or Stockpiling of Used Tyres – Potential for Water and Air Pollution

The applicant's proposal to maintain a stockpile of end-of-life tyres at the Platin cement plant has the potential to create an environmental and public health hazard, caused by:

- compounds leaching from the tyres and contaminating soil, groundwater and surface water;
- the tyre stockpile catching fire, leading to uncontrolled open air burning of tyres and release of pyrolytic oils and other compounds into the soil and groundwater as well as large plumes of black smoke and other contaminants into the air; and, in addition, water used to extinguish tyre fires is likely to become contaminated with tyre compounds;
- tyre piles may become breeding grounds for insects, rodents and other animals (diseases such as encephalitis and dengue fever have been reported around scrap tyre piles, particularly in warmer climates where tyre piles are ideal breeding grounds for disease-carrying mosquitoes); and,
- importing and stockpiling end-of-life creates a risk of introducing species of insects and other small living creatures that are not native to Ireland (alien species).

3.7.10 Uncontrolled Fires at Tyre Stockpiles and Tyre Storage Sites

The applicant's proposal to maintain a stockpile of end-of-life tyres at the Platin cement manufacturing site also creates a fire hazard. Tyres are not subject to spontaneous combustion, but when a store or stockpile of scrap or waste tyres catches fire (for whatever reason), the consequences are nearly always very serious. When a tyre pile catches fire, it is very hard, if not impossible, to extinguish quickly. In some cases, tyre piles have burned for several months, with the black fumes being visible for many miles.

Fires occurring in piles of whole tyres tend to burn down into the middle of the pile where air pockets allow continued combustion; and, as the fire grows in intensity, it generates higher temperatures, allowing the fire to spread and producing large plumes of dense smoke and other combustion products. The health risks caused by the emissions are not completely localised and can extend for many kilometres downwind of the fire.

Burning tyres at lower temperature gives rise to very significant air pollutants, and the principal products of incomplete combustion generated during scrap tyre fires include:

- ash (typically containing carbon, zinc oxide, titanium dioxide, silicon dioxides, etc);
- sulphur compounds (carbon disulphide, sulphur dioxide, hydrogen sulphide);
- polynuclear aromatic hydrocarbons (such as benzo(a)pyrene, chrysene, benzo(a)anthracene, etc), usually detected in runoff;
- aromatic, naphthenic and paraffinic oils;
- oxides of carbon and nitrogen;
- particulates; and,
- various light-end aromatic hydrocarbons (such as toluene, xylene, benzene, etc).

Most surface tyre fires are caused by either by lightning strikes, tyre shredding or arson. When a fire starts it will spread quickly, becoming uncontrollable within a few minutes. Tyres burn by the incomplete combustion of the vapour they give off when heated, and the tyre will also melt, forming an oily burning liquid, which flows under gravity to the bottom of the pile, from where it will then spread laterally. Adding water to the pile merely hastens the flow of burning liquid away from the original seat of the fire, as it floats on top of the water.

Smoke from tyre fires has some very damaging properties; it consists mainly of particles of unburned carbon, and the combination of hot carbon and the presence of atmospheric moisture has the effect of slightly activating the unburned carbon. In tyre fires, this fugitive activated carbon adsorbs toxic emissions, including dioxins and furans, onto the surface of the particles. The particles are extremely small, but with a very large internal surface area of

around 60m^2 per gram upon which to adsorb the toxins. These very small smoke particles, of less than 2.5µ (2.5 millionths of a metre in diameter), can be inhaled and pass directly into the bloodstream. A significant proportion of tyre smoke falls within this category, known as $PM_{2.5}$. By this means, the worst emissions are carried far from the fire.

These emission products are extensive and varied, depending on a variety of factors, including:

- tyre type;
- burn rate;
- pile size;
- ambient temperature; and,
- humidity.

The principal environmental impacts of uncontrolled tyre fires include:

air pollution*:* black smoke and other substances such as volatile organic compounds, dioxins and polycyclic aromatic hydrocarbons are released into the atmosphere.

water pollution*:* the intense heat allows pyrolysis of the rubber to occur, resulting in an oily decomposition product which is manifested as an oil runoff. This runoff can be carried by water, if water is used to put out the fire. Other combustion residues (such as zinc, cadmium and lead) can also be carried by fire water off the site.

soil pollution*:* residues that remain on the site after the fire can cause two types of pollution; these are immediate pollution by liquid decomposition products penetrating soil, and gradual pollution from leaching of ash and unburned residues following rainfall or other water entry.

It is our submission that the proposal by Irish Cement to store or stockpile large quantities of used tyres will create an unacceptable environmental and public health hazard and risk, for the reasons stated above.

3.8 Other Materials which the Applicant Proposes to Use as Fuel or Raw Material for Cement Production

As noted briefly in section 3.6 above, the applicant proposes to use a very wide variety of wastes either as alternative fuels or as additions to the cement production process.

Having considered in some detail the issues surrounding the burning of end-of-life tyres as a fuel, it may be appropriate to briefly consider some of the other materials listed, either as alternative fuels or as additives.

3.8.1 Plastic and Wood

Alternative fuels listed in Appendix 3.5 include waste plastic (EWC code 07 02 13), plastic shavings and turnings (EWC code 12 01 05), plastic packaging (EWC code 15 01 02), wood (EWC code 17 02 01), more plastic (EWC code 170203), paper and cardboard (EWC code 19 12 01; 20 01 01), yet more plastics (EWC code 20 01 39) and wastes from forestry (EWC code 02 01 07).

If there are two characteristics which all of these wastes have in common it is that they are combustible and may be recycled. Plastic packaging and most other types of synthetic polymer can be recycled, provided that they are separated according to their chemical composition. Even if mixed, they can be "downcycled" to other uses, e.g., fence posts, roadside marker posts, etc. As pointed out by the European Commission in the Communication cited in section 3.5 above (Brussels, 26.1.2017 COM (2017) 34 final), significant efforts are being made at European level to increase the recyclability of discarded plastic materials and items, and the divert them from waste-to-energy uses.

Paper and cardboard are also recyclable; and it is shameful that Ireland has no recycling facility for the large amounts of waste paper produced. Instead, it is exported or burned.

Some 451,309 tonnes of waste packaging were exported in 2012, representing 54% of total waste exports in that year. This is driven primarily by there being no glass manufacturing plant, metal smelter, or paper mill in Ireland using local raw materials. Paper and board exports alone represented 30% of all exports, with glass another 14%.[26]

While the lack of recycling infrastructure in Ireland, together with this country's heavy reliance on other countries' infrastructure and facilities to meet our recycling targets, and the failure of Government policy to support recycling are issues which cannot be addressed directly by An Bord Pleanála, it is our submission that granting planning permission for yet another facility which will burn these recyclable materials is only adding to the problem, and will serve to perpetuate Ireland's poor status in re-using or recycling potentially valuable secondary raw materials.

3.8.2 Animal Tissues, Faeces, Urine, Manure and Effluent

We have grouped together these materials, although there are some significant differences.

Animal tissue waste (EWC code 02 01 02) may include specified risk material (SRM) which has to be incinerated, but may also include other portions of slaughtered animals which would be better used as a feedstock for anaerobic digestion.

[26] Exporting a Resource Opportunity? Measures to Maximize Resource Efficiency and Jobs in Ireland. Consultation Paper; Department of the Environment, Community and Local Government, November 2015.

Animal faeces, urine, manure and effluent (EWC code 02 01 06) should not be burned in a co-incineration facility, as they comprise materials which should be returned to the land in order to conserve nutrients and organic matter. Their calorific value is not great; and the only reason for incinerating them in a cement kiln would be if there was a serious outbreak of animal disease which affected farm livestock, was transmissible, and required safe destruction of all potentially infected material.

Animal faeces, urine manure and effluent all contain phosphorus. Instead of burning we would also like to point out that the phosphorus content in animal and human excrement should be processed in order that it can be recycled back to land safely without being contaminated by toxic metals. Like oil-based products, phosphorus is a finite resources and it must be recycled to grow crops sustainably for our still growing world population. Phosphorus in excrement is finite and most importantly it is not replaceable. If we continue to waste phosphorus as we do in so many other ways and now if we also start to waste phosphorus by burning it; then we will be faced with a future food price crisis and eventually a food supply crisis.

3.8.3 Hazardous Agrochemical Waste and Halogenated Organic Solvents

These types of waste, which include some very toxic substances (EWC codes 02 01 08, 07 02 03, 07 03 03, 07 03 04, 07 05 03, 07 06 03, and 07 07 03), some of which are non-biodegradable, should not be burned in a cement production plant without adequate flue-gas treatment. Accepting these types of wastes, together with other toxic materials, is the equivalent of moving the cement plant in the direction of a toxic waste co-incineration facility.

Production of dioxins and furans is the consequence of utilising these materials; and, while it is accepted that the high temperature in the cement kiln will destroy dioxins and related compounds, the flue gas treatment system does not appear to have the essential step of quickly cooling the hot gases so as to inhibit or prevent re-formation of dioxins.

Handling and temporarily storing quantities of highly toxic substances would also introduce another element of risk into the entire operation of cement production.

We would therefore urge An Bord Pleanála to refuse planning permission to Irish Cement for the handling, storing and co-incineration of any type of toxic waste at Platin.

3.9 Criteria for the Acceptability of Waste Materials as Fuel or as Raw Materials to be Added to the Cement Production Process

Given the wide range of different types of waste to be accepted at the proposed facility, and the applicant's insistence on the high quality of the cement to be

produced, it is very surprising that there appears to be no criteria set out in the application or the EIAR for the acceptance of wastes; or the procedure to be followed in the event of a consignment of unacceptable waste arriving at the facility. Instead, reliance is placed on waste management companies delivering waste to provide "acceptable" material.

As the Board will be aware, acceptance criteria for waste, procedures for examination of wastes, and the provision of a quarantine area for temporarily holding unacceptable wastes are required at every landfill site or major waste treatment facility.

It is our submission that the applicant has not given adequate consideration to the way in which waste materials, including hazardous and toxic materials, will be handled at the proposed facility; and therefore the Board should refuse permission.

3.10 Conflict with the Aims of the Stockholm Convention

This application is in conflict with Ireland's obligations under the Stockholm Convention, which has been ratified and a National Implementation Plan put into force. A new international agreement has been in force since the 17th May 2004, aimed at eliminating twelve of the most toxic chemicals from the world's environment. Ireland ratified the Stockholm Convention on 29 June 2010.

These chemicals, referred to as Persistent Organic Pollutants (POPs) remain for long periods in the environment, bio-accumulate through the food chain and pose a risk of causing adverse effects to human health and the environment worldwide. The international community has therefore called for action to reduce and eliminate the production and release of these substances. To that end, internationally binding instruments have been negotiated and concluded. This international agreement is known as the Stockholm Convention.

The goal of this legally binding agreement is to avoid, minimise and where feasible eliminate emissions of POPs. The Convention requires Ireland to adopt methods and waste management strategies that will eventually eliminate and avoid emissions of two of these POPs, dioxins and furans.

New direction of the Stockholm Convention

Unlike previous international legal obligations, the Stockholm Convention places a requirement on all nations as follows;

- It requires a commitment by the participating nations to the goals of reduction and elimination of these chemical emissions where feasible;
- The Convention requires as a primary consideration, the adoption of strategies and methods that avoid the use of technologies that emit dioxins and furans;
- Unlike previous international agreements, the Stockholm Convention makes no allowance for "avoidable" sources or the permitting of any

additional increase in the quantities of dioxins and furans emitted to the atmosphere; instead there are clear statements in the Convention requiring their further reduction and the adoption of alternative methods that eliminates or avoids these emissions;

- Best available techniques and practices are no longer confined solely to the consideration of incinerator filter technologies**;** the new emphasis is on consideration of methods and technologies that eliminate or avoid dioxin emissions as the primary goal; and,
- Most importantly, the Stockholm Convention requires the Irish Government to adopt clean technologies in preference to technologies such as incineration that would result in new and avoidable or increasing sources of dioxins.

The Convention's initial statements may be summarised as follows:

1. *It underlines the public health threat of POPs in the environment;*
2. *It makes note of the health impacts on women and through them upon future generations; and,*
3. *It notes the present threat to peoples in the Ar**c**tic ecosystem and the bio-magnification of POP's in their traditional foods*.

Relevant excerpts of the convention need to be stated here in relation to the planned facility which will be a source of POPs (dioxins and furans) as well as CO_2.

Article 5: ***Measures to reduce or eliminate releases from unintentional production***

*"Each party **shall** at a minimum take the following measures to reduce the total releases derived from anthropogenic sources (of Dioxins and Furans) with the goal of their continuing minimization and where feasible ultimate elimination":*

(c) Promote the development and, where it deems appropriate, require the use of substitute or modified processes to prevent the formation and release of dioxins and furans, taking into consideration the general guidance on prevention and release reduction measures;

(d) Parties shall promote the use of best environmental practice. When applying best available techniques and best environmental practices, Parties should take into consideration the general guidance on prevention and release reduction measures;

(f) (1) "Best Available techniques" means the most effective and advanced stage in the development of activities for release limitations designed to prevent dioxins and furans;

(2) "Available" techniques mean the techniques that are accessible to the operator and that are developed on a scale that allows implementation in

the relevant industrial sector under economically viable conditions, taking into consideration the costs and advantages…

The above statements (c), (d), and (f) make the granting of planning permission for new dioxin emitters such as incineration, a breach of the Stockholm Convention whenever it can be demonstrated that an alternative process such as waste recycling or Zero Waste are available, feasible and economically more cost competitive. Before determining this planning application, the Board must therefore consider any alternative method or alternative technique aimed at avoiding dioxin emissions.

The recent changes in the European Union to prioritize the Circular Economy reverses any argument or justification that the burning of a waste resource such as tyres is "best environmental practice" (as required by Article 5 (d)).

We would also point out that the long record of making crumb rubber in Ireland by recycling end-of-life tyres for so many years proves the economic viability of the recycling option, despite the recent loss of one company – and this loss may only be temporary.

ZWAI believes that there is an obligation on Ireland and on An Bord Pleanála to undertake a formal and detailed process of examining and evaluating alternative substitute or modified processes prior to any consideration of this proposal by Irish Cement.

3.11 Conflict with the Urgent Need and Policy to Mitigate Climate Change by Reducing and Eventually Eliminating Greenhouse Gas Emissions

While it is accepted that waste should (and must) be diverted from landfills, it does not follow that the using this waste as a fuel, and the recovery of some energy from the combustion process would help to reduce greenhouse gas emissions.

On the contrary, it is our submission that burning biodegradable wastes, even with some energy recovery, is simply a form of disposal, in contrast to anaerobic digestion or the alternative of composting (depending on the water content and composition of the wastes) which have the advantage of making use of the organic content of the waste. A further benefit of not incinerating biodegradable wastes is that improvements in soil stability, fertility and moisture retaining properties derived from the use of compost in agriculture must be considered as part of the assessment of the overall 'best' option for dealing with these wastes.

The relationship between waste management and climate change is more complex when a variety of wastes has to be considered. For example, source segregation of municipal sold wastes (MSW) followed by recycling (for paper, metals, textiles and plastics) and composting or anaerobic digestion (for biodegradable wastes) gives the lowest net flux of greenhouse gases, compared with all other options for the treatment of bulk MSW.

Comparisons with using these wastes for co-fuelling a cement kiln are more difficult, and depend on whether the energy recovered displaces energy derived from fossil fuels, or displaces energy derived from other renewable sources. For example, if the combustion were to be part of a combined heat and power (CHP) installation, and the energy replaces that from a fossil fuelled plant, the incineration process would yield a net benefit by reducing greenhouse gas emissions overall.

It is therefore our submission that the proposed development will not be beneficial to the climate; in reality the situation is complex; and, on the whole, the additional fuel will be a net contributor to greenhouse gas emissions, and therefore in conflict with Ireland's international obligation to reduce such emissions.

3.12 Requirement to Engage Meaningfully with Members of the Public; the Aarhus Convention

The Board will be aware that, following a number of significant controversies about the development of multiple large-scale wind turbines by commercial organisations, the National Economic and Social Council (NESC) published in July 2014 a policy document on building community engagement and social support for potentially contentious projects in the area of wind energy.[27]

While the NESC report focuses primarily on wind energy, we believe that its findings are equally applicable to other infrastructure projects including waste-related developments and the current proposal by Irish Cement to increase significantly the quantities of waste to be burned in the company's Platin plant. Such projects have been (and are) just as controversial as the wind farms which led to the commissioning of the NESC policy document, and in this case possibly even more controversial.

The NESC policy document notes that:

> *"Irish people have generally been supportive of wind-energy growth and of electricity infrastructure, but recently there has been a more critical public mood. This signals something of a sea change in social support for wind energy and related infrastructure".*

Taking account of this change …

> *"The Green Paper on Energy Policy in Ireland recognises building societal acceptance as one of several challenges in further deploying renewable energy."*

The NESC policy document then recommends that:

> *"We believe it is **possible** to build social support with appropriate measures; we also believe it is **necessary** to enable continued development of wind-energy and energy infrastructure, and*

[27] Wind Energy in Ireland: Building Community Engagement and Social Support. NESC Report No. 139, July 2014.

> ***beneficial*** *to Ireland's energy transition and society, given the job potential, social and environmental benefits of a low-carbon future".*

The NESC suggests three components that they consider significant and that form part of the approach outlined in the policy paper; one of the most relevant of these components being:

> *"An effective and inclusive process of public participation that helps to shape and share local value: A genuine and open participatory process for wind energy that brings expertise together, facilitates exploration and executes possibilities is critical. Communities that contribute to and shape the local value of energy are more likely to be supportive of future developments".*

In another controversial area, that of public water supply, and charging for water delivered to households, the Report of the Expert Commission on the Funding of Domestic Public Water Services in Ireland (November 2016) stated that "*insufficient attention has been paid to social governance and the engagement of civil society"*, and it was essential to "*ensure meaningful engagement of citizens in the discussion on the development of water services"*.[28]

Transposing these recommendations to the present project, it is clear that local residents must be consulted and engaged in the planning for the proposed development before any planning application is made to the Local Authority.

In addition to the growing awareness of the need for public engagement as described above, public consultation has a legal foundation in the Aarhus Convention[29] which guarantees the right of public participation in environmental decision-making (Article 6 of the Convention).

Article 6 (2) states that:

> *"The public concerned shall be informed, either by public notice or individually as appropriate, early in an environmental decision-making procedure, and in an adequate, timely and effective manner, inter alia, of:*
>
> *(a) The proposed activity and the application on which a decision will be taken;*
>
> *(b) The nature of possible decisions or the draft decision;*
>
> *(c) The public authority responsible for making the decision;*
>
> *(d) The envisaged procedure, including, as and when this information can be provided:*
>
> *(i) The commencement of the procedure;*

[28] Expert Commission on Domestic Public Water Services in Ireland, 2016. Report on the Funding of Domestic Public Water Services in Ireland; available from https://www.oireachtas.ie/parliament/media/committees/futurefundingofdomesticwaterservices/Report-of-Expert-Commission-on-Domestic-Public-Water-Services.pdf

[29] Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters; done at Aarhus, Denmark, on 25 June 1998.

(ii) The opportunities for the public to participate;

(iii) The time and venue of any envisaged public hearing;

(iv) An indication of the public authority from which relevant information can be obtained and where the relevant information has been deposited for examination by the public;

(v) An indication of the relevant public authority or any other official body to which comments or questions can be submitted and of the time schedule for transmittal of comments or questions; and

(vi) An indication of what environmental information relevant to the proposed activity is available; and

(e) The fact that the activity is subject to a national or transboundary environmental impact assessment procedure.

Article 6 (4) states that:

> *"Each Party shall provide for early public participation,* ***when all options are open and effective public participation can take place****".* [our emphasis].

Finally, the public participation provisions of the Aarhus convention have been included in the revised EIA Directive 2003/35/EC which implements the public participation pillar of the Aarhus Convention by inserting a new Article 10a into the EIA directive (Directive 85/337/EEC as amended by Directive 97/11/EC and Directive 2003/35/EC).

To summarise, the Aarhus Convention guarantees three procedural rights – access to information, participation in decision-making and access to justice in environmental matters – which underpin the right of every person to live in an environment adequate for their health and well-being.

This is a dynamic international treaty with enormous potential to deliver environmental rights in practice; and, even though Ireland was the last Member State of the European Union to ratify it, the Convention is beginning to take effect, and we can see this (to some extent) in the changed attitude set out in the Energy White Paper mentioned above. These changed and improved attitudes to public participation are not yet fully accepted or widespread, but they are becoming increasingly important in planning; and it is our submission that the rights guaranteed by the Aarhus Convention, and the policy statements on energy infrastructure quoted above, should be taken into account by the Board when making a decision on this planning application.

3.13 Lack of Consultation and Lack of Community Support for the Project

One of the features of this proposed development is the extent of community opposition to the project, with several local environmental and residents' groups expressing their concerns.

The applicant's EIAR refers in section 1.8 to the consultation process which apparently took place during the course of this planning application, and it is clear that consultation took place principally with statutory bodies, even though there is a brief mention in section 1.8.2 of consulting with employees and with elected representatives.

Consultation with local residents and members of the public was undertaken by distributing copies of an information booklet on the proposed development to local residents together with a letter inviting recipients to attend a Project Information Day at Platin Cement Works. A total of 27 visitors attended the Public Information Day. It is our submission that this level of consultation was quite inadequate, and may have been one of the reasons for the lack of community support for the project.

Public opposition to the project also arose from the well-known and widespread concern that the concentration of heavy industry in the local area has been a cause of health problems as a consequence of atmospheric emissions from the existing cement plant in combination with other industries nearby.

Some 14 to 15 years ago, there was very little recognition that communities have a right to engage in the planning process to the extent that their views mattered – whatever consultation took place was designed more to advance the project in question, to soften opposition, and to get the necessary consents in spite of local opposition. The context has now changed, in that organisations such as the National Economic and Social Council have stated very clearly that building societal acceptance is essential for energy infrastructure projects, based on a genuine and open participatory process.

The NESC report on Building Community Engagement and Social Support (July 2014; see section 3.12 above) advocated an energy transition process that is intentional, participative and problem-solving, and the Green Paper on Energy Policy in Ireland recognised the importance of building societal acceptance in deploying renewable energy infrastructure.

Minister Alex White stated at the Renewable Energy Summit, in February 2015, that *"communities must be at the heart of the transition to a sustainable energy system*"; and the more recent White Paper on "*Ireland's Transition to a Low Carbon Energy Future, 2015 to 2030"* (December 2015) affirms that:

> *"energy transition will require improved community engagement in policy making and planning";* and,
>
> *"citizens and communities will be active participants in the energy transition, with robust public and stakeholder engagement in energy policy, and effective community consultation on energy infrastructure developments".*

If we apply these policy statements to the area of waste management, and particularly to the infrastructure for dealing with waste, we arrive at the logical conclusion that community engagement and support are essential for this type of project. Communities will no longer tolerate planning decisions which may be technically or legally acceptable to the project promoter, but which go against the community's wishes.

3.14 Public Health Impacts of Atmospheric Emissions

Important public health questions raised in previous oral hearings of the earlier planning applications for the proposed use of waste materials as alternative fuels for co-incineration in the cement production process have never been adequately answered. These questions concern:

i) the increased risk of cancer, particularly non-Hodgkin's lymphoma and soft tissue sarcoma, among populations living within 3km;

ii) the requirement for adequate and independent monitoring of the impact of the existing cluster of industries, including the nearby Indaver incinerator, on public health, especially the health of local residents throughout the lifetime of these industries;

iii) the need for a baseline assessment of the surrounding population to be undertaken; and,

iv) the absence of, and a need for, a clearly identified mechanism to know what the inventory of material for burning as a fuel is, at any given time.

Given the absence of answers to the above questions, we suggest that the Board should refuse planning permission for the proposed development.

We also wish to point out that, under the Ambient Air Quality Directive (2008/50/EC), individual citizens and residents who have bronchial breathing problems can force the Local Authority and the EPA to implement an Air Quality Action Plan, and to undertake effective ambient air monitoring in order to protect public health.

We would point out to the Board that, where there is a risk that the limit values for particulate matter may be exceeded, persons directly concerned can require the competent authorities to draw up an action plan:

> *"The Community Directive on ambient air quality assessment and management provides that the Member States are to draw up action plans indicating the measures to be taken in the short term where there is a risk that the limit values and/or alert thresholds may be exceeded, in order to reduce that risk and to limit the duration of such an occurrence.*
>
> *In today's judgment [25 July 2008] the Court* [of Justice of the European Union] *answers in the affirmative. It observes that it is incompatible with the binding effect of the Directive to exclude, in principle, the possibility of the obligation which it imposes being relied on by the persons concerned.*
>
> *Therefore, where there is a risk that the alert thresholds or limit values may be exceeded, persons directly concerned must be in a position to require the competent national authorities to draw up an action plan, even though, under national law, those persons may have other courses of action available to them for requiring*

> *the competent authorities to take measures to combat atmospheric pollution".*[30]

The EPA carried out ambient air monitoring beside the Borough Local Authority offices in the urban district of Drogheda, uphill from the River Boyne. The results showed in the period between 2002 and 2003, there was an alarming number of occasions where the PM_{10} levels were exceeded. The monitoring station was removed before a full 12 month measurement could be completed.

To our knowledge there has not been any continuous ambient air monitoring carried out in the Drogheda urban area over a full 12 month period since 2002-2003. If measurements were continued in the urban area of Drogheda, which lies in a saucer shaped depression, they would have detected more of the ambient air pollution to which the people of Drogheda were being exposed. There have been no measurements of the cumulative and combined effects of urban traffic, home heating, and the emissions from the Indaver incinerator, Premier Periclase and Irish Cement at Platin. There has been no monitoring of changes in the ambient air pollution at the same urban location beside the civic offices since the start up of the nearby Indaver incinerator or the new licences to burn waste at the Platin cement factory.

Since S.I. No. 180/2011, Standards for Ambient Air Monitoring, was established in 2011, the focus is more on measuring pollution in rural areas, i.e., away from more polluted urban areas where the cumulative effects of traffic, home heating, industrial pollution etc., would also be measured.

We contend that air monitoring in Ireland is flawed and that we should also be measuring ambient air in urban streets, in towns, in estuaries or in river valleys where the air pollutants are more likely to accumulate and where most of the population will be exposed.

In considering the air pollution impacts of a single new development such as the current planning application by Irish Cement it is unclear if the modelling or estimation techniques in the past or in future will also take other potential air pollution sources in the area sufficiently into account. The consideration by An Bord Pleanála or the EPA to consider only the air pollution impacts of the one development in question allows the cumulative impacts from other pollution sources in the area to be ignored.

In any case we believe that the modelling or estimation of the pollution effect from one single point source will never be sufficient as actually measuring the cumulative ambient air pollution on the ground from multiple sources.

If the wording in Statutory Instrument S.I. No. 180/2011 does indeed only allow rural ambient air monitoring then there is plenty of opportunity for producing air pollution figures that are lower than what most people in the area are actually

[30] Court of Justice of the European Communities, Press Release 25 July 2008: Judgment of the Court of Justice in Case C-237/07: *Dieter Janecek* v *Freistaat Bayern.*

being exposed to. This is contrary to the spirit and the purpose of the Stockholm and Aarhus conventions.

There is a problem in Ireland with the quality of the air we breathe – the Asthma Society of Ireland reminds us that this is so. Ireland has the fourth highest prevalence of asthma in the world:

- 7.1% of 18+ population have asthma;
- 18.9% of 13 – 15 year olds have asthma;
- 38.5% of 13 – 15 year olds reported wheezing;
- More than 1 person a week dies from asthma; and,
- 29% of asthma patients miss school or work.

3.15 Modelling of Atmospheric Emissions

The Board will be aware that at a recent oral hearing into a similar planning application by Irish Cement Ltd to increase the quantities of alternative fuels and raw materials at the company's Mungret plant, expert evidence threw considerable doubt on the accuracy, veracity and completeness of the air pollution model used by Irish Cement's consultants to predict the total concentrations of hydrocarbons in air when the plant would be in operation.

In the oral hearing, Irish Cement Ltd stated that a valid numerical model had been used to predict the dispersion and ground level concentrations of atmospheric emissions from the proposed development. The consultants to Limerick City and County Council stated that they were unable to verify the model, owing to the unavailability of basic information; and Irish Cement could not tell the oral hearing the values of basic parameters used, despite detailed and lengthy questioning by Dr Paul Connett and Dr Gordon Reid.

It became clear during questioning that Irish Cement's consultants used the mathematical model as no more than a "black box" into which data was fed, and "results" obtained; and there was no examination of the basic parameters on which model's equations depended.

Dr Gordon Reid pointed out that some PCB congeners were more toxic than dioxins and had a greater tendency to bio-accumulate, and would be emitted by the proposed development. These substances, which are persistent organics, had not been taken into account by the applicant when considering the potential impact of the proposed facility on human health. Furthermore, the applicant's data included only the additional amounts of contaminants which would be emitted, and did not take into account the cumulative effects of emissions and background levels combined. The effects on human health would clearly be seen to be more serious if PCBs and background levels had been considered.

It is our submission that similar questions could be raised about the modelling employed by Irish Cement for predicting the dispersion and ground level concentrations of atmospheric emissions from the proposed development at

Platin; and perhaps the opportunity will arise to examine this issue in greater detail if the Board decides to hold an oral hearing of this application and the submissions made in response to it.

4. CONCLUSIONS

The principal reasons for our objection to the development are set out above, and they include:

- burning additional quantities of waste would lead to an increase in emissions to the atmosphere, which are likely to exacerbate the existing air quality problems in the local area;
- burning additional quantities of waste would be contrary to Ireland's obligations under the Stockholm Convention, and contrary to Ireland's international obligation to substantially reduce greenhouse gas emissions in order to assist in mitigating the adverse effects of climate change;
- the applicant appears not to have taken into account the cumulative impacts of emissions to the atmosphere from the proposed increase in the quantities of waste burned, together with the emissions from the nearby Indaver incinerator, together with other industrial sources of atmospheric contamination in the Duleek and Dundalk area;
- the applicant appears not to have taken into account the adverse health effects of these emissions, and particularly the effects of PM_{10} and $PM_{2.5}$ particulates, and the cumulative emissions of dioxins, furans and PCBs;
- the applicant has failed to justify a need for the proposed increase in the quantity of wastes to be burned as alternative fuel, and has not comprehensively examined alternative processes for dealing with the planned intake of wastes, such as waste elimination, segregation at source, waste reduction, avoiding the use of hazardous substances, etc.;
- the application to burn large quantities of potentially recyclable materials is in conflict with the EU Waste Hierarchy and the Circular Economy principle and with EU policy in these areas; and,
- the proposed waste intake would contain significant quantities of organic substances which could be more appropriately dealt with by composting or anaerobic digestion.

We must therefore conclude that the proposed development would be a retrograde step in Ireland's overall waste management policy, and should not be granted planning permission by the Board.

Ollan Herr Jack O'Sullivan

On behalf of Zero Waste Alliance Ireland