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Adroddiad Report

gan/by David Tester CChem MRSC FCIWEM

Arolygydd penodwyd gan Cynulliad Cenedlaethol Cymru

an Assessor appointed by the National Assembly for Wales

Town and Country Planning Act 1990

Section 77

Planning Application Made by Castle Cement Limited

For

The Construction of a New Kiln Line and Associated Plant, Limestone Store, Fuel Storage Buildings, Re-Profiling of Former Licensed Waste Site, and Ancillary Works

at

Padeswood Cement Works

Padeswood, Mold, Flintshire, CH7 4HB

ASSESSOR'S REPORT

Ymchwiliad a agorwyd ar: 11/10/2000 Inquiry opened on: 11/10/2000

Cyf. Ffeil/File Ref APP/A6835/X/00/513778

PROPOSED DEVELOPMENT AT PADESWOOD CEMENT WORKS

CONTENTS

Stance of the Environment Agency Wales (EAW)
Enforcement and monitoring
The IPC/IPPC applications

14. THE CASE FOR THE NORTH WALES HEALTH AUTHORITY

15. THE CASE FOR THE CHESHIRE COUNTY COUNCIL

Proposed planning conditions

OBJECTORS TO THE PROJECT

16. THE CASE FOR CHESTER CITY COUNCIL

17. THE CASE FOR THE OBJECTOR GROUP: CAMPAIGN AGAINST THE NEW KILN (CANK)

Public anxiety
Risks to public health
BPEO: The waste hierarchy, and the proximity principle and regional self-sufficiency
Waste need
Emissions reduction need

18. THE CASE FOR THE PHOENIX OBJECTOR GROUP

Human rights and fair hearing
Inadequate Environmental Statement
Weighing public concern
Planning and land use
Health
Habitats assessment
Planning and hazardous waste
Cemfuel
Dioxins
Air pollution

19. THE CASE FOR MRS MIA-JONES A CHESTER CITY COUNCILLOR

Planning policy
Public health

20. THE CASE FOR THE FLINTSHIRE GREEN PARTY (FGP)

21. THE CASE FOR TREFNU CYMUNEDOL CYMRU (TCC)
Pollution
Public Health

22. THE CASE FOR DODLESTON PARISH COUNCIL

File Ref: APP/A6835/X/513778

Padeswood Cement Works, Padeswood, Mold, Flintshire, CH7 4HB.

- The application is made under section 62 of the Town and Country Planning Act 1990.
- The application is made by Castle Cement Limited.
- The application ref: M99/0/0024 is dated January 1999.
- The development proposed is the construction of new kiln line and associated plant, limestone store, fuel storage buildings, re-profiling of former licensed waste site, and ancillary works.
- The application was called in for decision by the National Assembly for Wales by a direction made under section 77 of the 1990 Act on 15 February 2000.
- The reason given for making the direction was that it was considered that the proposed development raised planning issues of more than local importance.
- On the information available at the time of making the direction the following were the matters on which the National Assembly for Wales particularly wished to be informed for the purpose of its consideration of the application:-

(i) The effect of the proposed development on public health in view of possible emissions.
(ii) The effect of the proposed development on the landscape, including the visual impact.
(iii) The effect on employment.
(iv) The relevant national planning and development plan policies.

ASSESSOR'S TERMS OF REFERENCE

1. I have been appointed to advise you on the potential pollution that could arise from the proposed development. In particular, I have addressed the following two main issues. Firstly, the effect that potential emissions and discharges from the proposed development would have upon public health; and secondly, their effect on the environment in general. A copy of my brief is included on the next page.

Assessor's Brief

At the end of the Assessor's involvement in the inquiry he will be expected to provide a report to the Inspector on the issue concerning the potential pollution that could arise from the proposed development. The issues to be addressed should be the effect that potential emissions and discharges from the project would have upon:

- public health and;
- the environment in general.
- These issues are wide ranging and the report should address:
- background;
- the Environmental Statement;
- legislation and authorizations;
- planning policy on pollution;
- the process, both existing, and proposed;
- the raw materials used in the process;
- fuel types and constituents;
- emissions: gaseous, solid and liquid together with disposal routes to land and watercourses;
- plume mobility, modelling and dispersion;
- likely effects of emissions upon health having regard to background air quality and diffuse emissions such as vehicle exhaust gas;
- potential pollutants in the final cement product;
- the "fall back" situation.

The report should set out, in standard Inspectorate form, the material points raised in evidence at the inquiry and in written submissions. Conclusions should be drawn from the evidence and should identify the source material that is set out in the cases for the parties. The report will be included as an Appendix to the Inspector's report to the National Assembly for Wales.

2. INTRODUCTION

2.1 Castle Cement Ltd (CCL) operates three cement works at Ribbledale in Lancashire, Ketton in Rutland and Padeswood near Buckley in Flintshire. The existing works at Padeswood is in a mainly rural location and has been operational since 1948. Three kilns are currently used: two wet process lines which together produce 250,000 tonnes of cement clinker per annum; and one long dry process kiln producing around the same quantity. This latter kiln was introduced in 1967. The key raw materials of limestone, shale and sand are all locally extracted. Coal and petroleum coke (petcoke) are used to fire the rotary kilns to the high temperature necessary to convert the raw materials to clinker, which is then ground to produce cement. The principal emissions from the works are releases of water vapour and waste gases to the atmosphere via the kiln chimneys and 'fugitive' releases of dust from the site. There is a history of public complaints about emissions from the plant, which is a prescribed process regulated by the Environment Agency under the Integrated Pollution Control (IPC) provisions of the Environment Protection Act, 1990.

2.2 As part of the Applicant's strategy of establishing modern dry process kilns on each of its sites, it now proposes to build a new kiln (Kiln 4) at Padeswood with a capacity of 750,000 tonnes of clinker per annum. The scheme would also introduce alternative fuels including the Applicant's own proprietary fuels, *Cemfuel* and *Profuel*, and waste tyres. The existing kilns would eventually be demolished as part of this proposal, which would also facilitate the mothballing and then closure of two other less efficient wet process kilns with poor emission records, at Ribblesdale. The Company claims that the proposal would improve its environmental performance and enable it to meet the forthcoming more stringent Pollution Prevention and Control (PPC) Regulations and national and European air quality standards. However, there is public concern about the potential health effect of emissions from the plant as a result of the proposed increase in production and the use of waste as fuel.

2.3 In this report I have not considered the visual impact, highway, employment or any other aspects of the proposal other than those on which I have been briefed.

3. THE SITE AND SURROUNDINGS

3.1 The site of the proposal is at the CCL works at Padeswood, near Mold, in Flintshire. The works is in a site of approximately 73 hectares, in a mainly rural location near the town of Buckley and the villages of Penyffordd and Penymynydd. At Padeswood there is a smallscattering of farms and houses, and the Company owns some of these closest to the works. The site is designated as a Development Zone in the Local Plan, and it is surrounded by undulating agricultural land. In the wider context this gives way to higher ground in the south, whereas the Clwydian Range (AONB) lies to the west. The Dee Estuary is towards the north and north west and some 7km distant.

3.2 The existing cement works is a sizeable and prominent industrial complex within the landscape. It comprises a low-level matrix of kilns, storage areas, crushers, conveyors, packing plant, offices, and stockpiled materials. Within the main working zone there are many light coloured buildings and two tall circular section chimneys; the taller of which rises to 67 metres above ground level.

3.3 A tributary of the Black Brook skirts the eastern perimeter of the site. In parts it has been re-sectioned into a well-defined trapezoidal channel, but other parts display normal bank side vegetation. There are discharges from the Works into this watercourse and sampling points are present. Near the south eastern corner of the site, and alongside the brook, there is a butyl lined lagoon which collects leachate from the on-site landfill zone. Where the brook passes the lagoon surface oil booms have been placed in the fluvial flow. The watercourse joins the Black Brook about 0.5 km west of the Works and the River Alyn about 1km beyond that. This latter river is itself a significant tributary of the River Dee.

4 THE PROJECT

4.1 The £48 million project would comprise the modernization of a cement works that is now over 50 years old. A new dry process kiln would be built to replace the existing kilns. Together with the new kiln, on site infrastructure is proposed for fuel and raw material storage. The project includes a pre-heater tower about 110 metres tall and several covered manufacturing and storage zones. The planning application includes the treatment and restoration of an existing waste disposal site on the Padeswood site. Parts of the existing works, including the stacks, would be demolished and removed.

4.2 The new kiln would burn alternative fuels as a part substitute for primary fossil fuels that are burnt in the present kilns. The alternative fuel types would include chipped tyres, *Cemfuel* and *Profuel.* The operation of the proposed kiln, and its emission standards, would be subject to authorization by the Environment Agency (EA) which is the pollution control authority under the IPC and PPC Regulations. The new kiln would not be able to operate without an authorization, including emission standards, being in place. Breach of these standards is a criminal offence.

4.3 It is the Applicant's intention that production of cement clinker at the new works would increase from current levels of about 500,000 tonnes a year to around 750,000 tonnes per year.

5 THE CEMENT MANUFACTURING PROCESS

5.1 Cement is made to a set specification from raw materials that contain the elements necessary to produce the principal active components. The primary raw materials used in cement manufacture are:

- limestone or chalk (calcium carbonate, the main source of calcium oxide or lime)
- clay or shale and sand (the main sources of aluminium, iron oxide and silica) (pulverized fuel ash is now also used).

These components are ground together and heated to about 1450°C to create cement. Various technologies exist but most make use of a rotary kiln to contain the final high temperature element of the process where chemical reactions take place and the active ingredients, calcium silicates, are produced.

5.2 In the basic process the raw materials are fed into the top of a rotating kiln. At Padeswood the existing Kilns 1 and 2 use a wet process, where the limestone, shale and sand raw materials are ground in water and fed into a (98m) long rotating kiln as slurry. The slurry takes about 3 hours to move down the kilns and be converted to clinker by heating with hot air that facilitates the chemical reactions. Hot gases from the kiln flame travel up the kilns, heating the raw materials which are successively dried, pre-heated to 800°C, calcined (calcium carbonate breaks down to calcium oxide and carbon dioxide is released) and further heated to about 1450°C, as they pass down. The materials reach a temperature of 1800°C in the hottest part of the kilns where the fuel is burnt in the kiln flame at up to 2000°C. At these temperatures many of the raw materials become molten, complex chemical reactions take place and the calcium, silicon, iron and aluminium oxides are combined to form the clinker minerals such as calcium silicates ($(Ca0)_3$. $Si0_2$) and ($(Ca0)_2$. $Si0_2$). Once the molten clinker passes the flame the temperature is reduced rapidly to below 1200°C by drawing cold air into the kilns through a cooler. The clinker is then further cooled before being ground with about 5 % gypsum (calcium sulphate) to make the grey powder that is Ordinary Portland Cement (OPC).

5.3 Kiln No.3 at Padeswood is a long dry kiln. The process is essentially the same as the wet process, but the raw materials are in a dry powder form, reducing energy consumption by about 20%. However, this is still less energy efficient than the more modern shorter dry kilns used at Ketton (Nos.7 and 8) and Ribblesdale (No.7), where the raw materials are first heated to about 900°C in pre-heater towers. The Ribblesdale site also still operates older technology wet process kilns.

5.4 The proposed Kiln 4 at Padeswood would utilize a dry process where the raw meal would be pre-heated in a 5 stage cyclone pre-heater tower, calcined in a calciner (pre-calciner) and then fed into a shorter kiln to complete the formation of the silicates and the clinker process. There is an agreed statement of the process description (Doc CC/59).

Alternative fuels

5.5 Cement manufacture is an energy intensive process. At present, Padeswood works utilises coal and petroleum coke (petcoke), a by-product from oil refining, as fuels. However, cement kilns are capable of using a wide range of fuels and the global cement industry has in recent years started to use alternative fuels, largely based on waste products. The use of these fuels is now common in Europe and the USA (Doc EA/31).

5.6 CCL's alternative fuels programme is based around three such fuels, all of which are claimed to be unsuitable for re-cycling:

- *Cemfuel,* a liquid fuel developed by the company and manufactured from industrial waste such as paint and ink residues, solvents, resins and waste oils,
- Used tyres, and
- *Profuel,* a solid fuel developed by the Company and principally manufactured from paper, textile and plastic wastes.

5.7 Following earlier trials at Kiln No.7 the Applicant's Ketton works received a full authorisation in December 2000 to use *Cemfuel, Profuel* and tyres as fuel. Kiln No.8 at Ketton uses *Cemfuel* and *Profuel* and Kiln No.7 at Ribblesdale, *Cemfuel.*

Emissions to air

5.8 The largest volume releases to the air from all cement making processes include nitrogen, water vapour, oxygen and carbon dioxide. Of these only the latter is of potential consequence - as a contributor to global warming (but see paragraph 29.17 of the conclusions). It has no local pollution implications. Of more importance in a pollution context are dust, sulphur dioxide, nitrogen oxides, trace metals and dioxins, which can also be released from the process in smaller but significant quantities and can be of concern if not controlled. Carbon monoxide (CO), Hydrofluoric acid (HF), Hydrochloric acid (HCl) and traces of organic compounds can also be present but are generally of lesser importance.

5.9 **Dust** emissions are of major concern in cement manufacture, both from kiln chimneys and as fugitive wind borne emissions. They originate primarily from the necessity to grind raw materials to a fine powder (<90μm) before they enter the kiln, the storage and on-site transportation of raw materials and the grinding of the clinker to produce the final product. Emissions of dust can be controlled by utilising covered storage and transportation systems and by the use of suitable abatement equipment such as electrostatic precipitators or fabric filters (bag filters), which retain particles down to less than 1μm in diameter.

5.9 The emission of **sulphur dioxide** (SO_2) can also be problematical. This arises from the combustion of elemental sulphur and sulphur compounds in the raw materials and in fuels. If sulphur dioxide is exposed to lime (Ca0) in the calcining process they react to form the stable calcium sulphate (CaS04) which leaves the kiln with the clinker, resulting in low emissions of sulphur dioxide. In long kilns, however, there is more limited contact and much more of the sulphur dioxide released from both the raw materials and the fuel can be emitted.

5.10 Combustion processes are known to produce **oxides of nitrogen (NOx),** a collective description for three gases: nitric oxide (NO), nitrogen dioxide (NOD) and dinitrogen oxide (N20). In cement kilns the emission is typically more than 95% NO. However, this is mostly converted to N02 in the atmosphere. The most important source of NOx is from the high temperature reaction between oxygen and nitrogen as a result of the combustion of air in the kiln flame. This 'thermal' NOx can be controlled by changing conditions in the kiln flame and operating temperatures. NOx is also produced when fuel containing nitrogen compounds reacts with oxygen in the air in the combustion process. If necessary this can be reduced by controlling the fuel source.

5.11 **Trace metals** are present in the raw materials and fuels used in cement manufacture, and low level emissions to the atmosphere occur of the most volatile metals such as mercury, cadmium, thallium and lead in both the particulate and vapour phases. The refractory metals mostly remain in the solid phase and are therefore contained in the clinker or emitted combined in the particulate matter. Although the emissions of volatile metals can be controlled by limiting their input to the kiln, this can only be

done by the careful selection of the local raw materials and fossil fuels, which may be impractical at some locations, and the use of a detailed specification for alternative fuels. However, it should be noted that the raw materials usually comprise 80-90% of the total input of metals to the kilns. The emissions are therefore mainly a function of the natural raw materials.

5.13 **Poly chlorinated di-benzo dioxins (dioxins) and poly chlorinated di-benzo furans (furans)** are groups of extremely toxic and persistent organic substances, some of which are thought to have carcinogenic properties. Emissions of very low levels of these compounds arise from reformation reactions that occur in parts of the kiln system where suitable organic precursors are present with chlorine, at temperatures between 250 and 400°C. Minimizing the residence time of kiln gases within this temperature window can control emissions.

Solid waste production

5.14 As part of the cement making process, high alkali dust is discarded from the process as a solid waste to ensure that the clinker manufactured meets the quality requirement of less than 0.6% sodium oxide equivalent. This material is known as Cement Kiln Dust (CKD), and in modern plants, which operate a by-pass system it is referred to as by-pass dust. Semi volatile trace metals can also increase in concentration in this dust, which is discarded from the process and normally landfilled.

Discharges to controlled waters

5.15 There are normally no industrial effluent discharges to watercourses from cement making and effluents are usually limited to cooling water, wheel washes and site drainage. The landfilling of CKD can cause pollution of surface waters and groundwater from the leaching of the soluble components by rainfall. Leachate can have a high pH and sodium and potassium salt content, together with trace metals such as lead, thallium, copper and chromium. In addition, gross pollution of controlled waters can occur from spillages of fuel oils and liquid alternative fuels. Nonetheless, the cement industry is not regarded as a major source of water pollution.

6 PLANNING POLICY

6.1 For the purposes of S54(A) of the Town and Country Planning Act of 1990 the Development Plan is the adopted Clwyd Structure Plan First Alteration (CSPFA). The Structure Plan Second Alteration (SPSA) and the Alyn and Deeside Local Plan (ADLP), although not formally adopted, are more up to date and have reached advanced stages. They are used by the Council for development control purposes. The policies of the SPSA reflect the intent of the adopted CSPFA policies but are expanded to include other relevant issues and safeguards taking into account planning guidance at the time of preparation.

Clwyd Structure Plan First Alteration (CSPFA)

6.2 Policy A5 of the CSPFA states that the expansion of existing industry on land adjacent to existing industrial premises will be permitted subject to appropriate safeguarding of

amenity, public safety and the environment. Policy H11 requires proposals for development not to have an unacceptable effect on public health, on the natural environment or on general amenity by emissions to water, land or the atmosphere, or by noise or vibration. It states:

"(i) Whilst it is not possible to eliminate completely all emissions of noise, dust, fumes and effluent, new developments will be expected to limit such emissions to acceptable levels. In deciding on the acceptability of a proposal the local planning authority will, where appropriate, require the submission of an environmental statement and have regard to available scientific and medical evidence and the advice of the relevant authorities for controlling pollution. "

Structure Plan Second Alteration - Flintshire Edition (SPSA)

6.3 Policy GENT of the SPSA requires new development to minimise any adverse impact on the environment. Policy CONS14 states that planning permission will only be granted for new development which will not have an unacceptable effect on public health, on the natural environment or on general amenity by virtue of emissions to water, land or the atmosphere, or by noise or vibration. Where permission is granted it will be subject to appropriate safeguards for neighbouring uses. In addition, policy CONS16 states that schemes for the disposal, handling or treatment of waste will only be permitted where the proposal will have no significant adverse effects on amenity, nature conservation interests, water resources and the aquatic environment, the local landscape, the local highway network, public health and safety, and the local community. In addition, proposals for waste disposal sites must ensure that restoration provisions are adequate.

6.4 Criterion D of policy EMP3 says that employment development should not increase air, noise, water pollution or hazard to unacceptable levels, nor be in conflict with Structure Plan policies that protect the environment. Policy EMP 6 is similar to policy AS of the CSPFA. Policy EMP8 restricts industrial developments, which are potentially polluting, to land either allocated or with planning permission for employment development and where, amongst other things, the industry does not cause unavoidable nuisance, hazard or damage to neighbouring areas.

Alyn and Deeside Local Plan (ADLP)

6.5 The area to which the planning application relates is defined in the ADLP as the Castle Cement Development Zone. In this case the relevant policies are EM1 and EM3, together with policies G1 (general requirements for development), D7 (development involving hazardous substances), WM1 and WM2.

6.6 Policy GI of the ADLP lists criteria that new development must meet, including those that require that it should not have an unduly detrimental effect on the amenities of people living nearby, or on wildlife habitats and the general environment, or the quality of controlled waters. Neither should it increase air and/or noise pollution to unacceptable levels.

6.7 Policy EM3 states that proposals in the settlements and development zones for general industry on sites with planning permission for such uses or allocated for such uses will

be allowed if the development complies with policy GI. Policy D7 only permits the storage of hazardous substances if there is no appreciable risk or danger to either the occupants of properties or damage to properties in the surrounding area and the proposals comply with policy GI.

6.8 Policy WM1 allows proposals for handling, treatment or disposal of waste if they comply with policy GI and the development is needed bearing in mind the type, quantity and source of the waste material, and no suitable alternative site or facility exists. There must also be, if appropriate, long term benefits such as restoration of the site, or other environmental improvements, and the proposal should not lead to any unacceptable contamination of the site or elsewhere. When a proposal for the handling, treatment or disposal of waste complies with policy WMI, planning permission will be granted only if criteria in policy WM2 are agreed by the local planning authority. These include types and quantities of wastes to be handled, treated or disposed, measures to avoid, reduce or remedy, as far as practicable, pollution from noise, dust, odours, windblown waste, fumes and vibration, and pollution from effluent, leachate or landfill gas.

National policy

6.9 Amongst other documents, there are national policy guidance notes that relate to this project. These include Planning Guidance (Wales) Planning Policy - First Review (PGWPP), which sets out the Government's land use planning policies as they apply in Wales and Minerals Policy Guidance Note 10: Provision of Raw Materials for the Cement. Industry (MPG10). The publication of a Technical Advice Note (Wales) on Waste is imminent. Paragraph 8.20 of the December 2000 draft of this document states, *"Energy recovery via incineration in general is known not to be popular with some sectors of the public, but the industry is now using cleaner and safer technologies than ever, with vastly reduced and controllable emissions. "*

6.10 National strategies for air quality and waste are to be found in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Cm4548 January 2000) and Waste Strategy 2000 (Cm4693 May 2000). The National Air Quality Strategy (NAQS) originated as a requirement of part IV of the Environment Act 1995 (which also set up the EA). The NAQS 2000 sets out health based air quality standards and objectives which the Government intends to achieve by 2005-2008 and the process by which those objectives will be achieved. Waste Strategy 2000 sets targets to reduce the amount of waste sent to landfill and the changes needed to deliver more sustainable development. Where waste is created the strategy says that it must be put to good use - through re-cycling, composting or using it as a fuel.

6.11 **PG**WPP says, *"the planning system should determine whether a development is an acceptable use of land used in any particular development. Planning authorities should operate on the basis that the relevant control regimes would be properly applied and enforced by other agencies"*. This echoes previous advice in PPG23.

6.12 In November 2000 the Welsh Assembly introduced its Sustainable Development Scheme, *'Learning to Live Differently'*. The scheme supports the objectives set out in the UK Government's Sustainable Development Strategy and commits the Assembly to, amongst other things, respecting environmental limits, including contributing to the

protection of the planet's climate and minimizing harmful emissions, applying the precautionary principle and preventing pollution as far as possible.

7 POLLUTION CONTROL REGULATION AND THE CEMENT INDUSTRY

7.1 Cement making is a prescribed process under the Integrated Pollution Control (IPC) regime. As such it is subject to authorisation under Part I of the Environmental Protection Act (1990) and the Environmental Protection (Prescribed Processes and Substances) Regulations 1991, as amended. Amongst other things, the Regulations empower the EA to impose conditions that the best available techniques, not entailing excessive cost (BATNEEC), are used for preventing the release of prescribed substances, or where that is not practicable, for minimizing and rendering harmless such releases; and for rendering harmless releases of other substances which may cause harm. Detailed information on the implementation of the Regulations in the cement industry is to be found in IPC Guidance Note S2 3.01 'Cement Manufacture, Lime Manufacture and Associated Processes' (Doc EA/8).

7.2 The 1999 Pollution Prevention and Control Act paved the way for the Pollution Prevention and Control (PPC) Regulations 2000, which implement Directive 96/61/EC (The IPPC Directive) in England and Wales. Part A of the Act will eventually replace the IPC regime and apply a similar integrated approach to the regulation of certain industrial activities, including cement production. Regulators must set permit conditions so as to achieve a high level of protection for the environment as a whole. These conditions are based on the use of the Best Available Techniques (BAT). Where an environmental quality standard (EQS) as set out in community legislation requires stricter emission limit values than those achievable under BAT, the regulator must impose those stricter limits. In addition, it extends the issues that regulators must consider alongside emissions into such areas as energy use, noise, and site restoration and waste management.

7.3 New installations, which the EA will regulate, became subject to the regime in October 2000 and existing cement industry activities will be phased in between June and August 2001. Domestic guidance on the required standards and BAT for industrial sectors will be made available drawing on information contained within BAT Reference documents (BREF notes) produced by the European Commission. A BREF note of Best Available Techniques in the Cement and Lime Manufacturing Industries was produced in March 2000 (Doc EA/23).

8 THE ENVIRONMENTAL STATEMENT

8.1 An Environmental Statement (ES) was produced by CCL for the development proposal in January 1999 (Doc CD/2) and non-technical summaries and a supplementary statement in June 1999 (Doc CD/3), followed by an addendum in December 1999 (Doc CD/5). Further information was supplied on 9 October 2000 as a result of a request by the National Assembly for Wales (NAW). As the planning application was made before 14 March 1999 the 1988 Town and Country Planning (Assessment of Environmental Effects) Regulations, as amended, apply in this case.

8.2 Some of the essential facts and data about the project and emissions are covered in outline only in the ES, having been set out in detail in the Applicant's application to

the EA for its IPC Authorization. I have taken into account the information provided by the ES and the additional statements, together with the comments received on these documents. Much of the information has since been further updated as part of this Inquiry, but the ecological and hydrological assessments have been the major sources of information for the assessment of the impact of the project on the environment.

8.3 Objectors (see p18.4-p18.5) have challenged the adequacy of the ES and the alleged deficiencies are dealt with individually in my conclusions. The only outstanding item within my terms of reference where information appears to be lacking is the location and status of nearby sites of importance for nature conservation. The valid explanation for this omission in the ES (Doc CD/2) is that these would be unaffected by the proposal. Nevertheless, I consider information on such sites within l0km of the proposed development would have been helpful (although not essential) to my assessment. Notwithstanding this, it is clear that the requirements of paragraph 2 of Schedule 3 of the Regulations have been met. Information has also been provided in accordance with paragraph 3 of the Schedule.

8.4 I have considered the alleged deficiencies of the ES and the various additions to the original document against the 6 July House of Lords decision *[Berkeley v Secretary of State and others]* and subsequent cases. The Berkeley case concerned the complete absence of an ES. In the current case a lengthy document was produced by the Applicant together with a supplementary statement. Although the original document was deficient in some respects, FCC has accepted that sufficient information has been provided to enable a decision to be taken. Furthermore, additional information requested by the NAW was produced before the Inquiry opened.

8.5 A similar situation arose in R *v Derbyshire County Council ex parte Murray* (High Court, Queen's Bench Division, 6 October 2000) when it was held that the documents supplied by the developer complied or substantially complied with the EIA Regulations and therefore the decision should not be quashed. In my view, this is the position that has been reached in this case.

9 **THE CASE FOR THE Applicant (see also full closing submissions, Doc CC/63)**
The material points are:

Overview

9.1 The general principle of the application is entirely consistent with government policy and it should, save for particular and strong reasons to the contrary, be granted planning permission. The following points are of importance in this regard:

a) The NAW seeks to ensure that manufacturing industries in Wales continue to thrive; to modernise; and to improve their environmental standards.

b) There are up-to-date and important criteria in respect of air quality, the NAQS having been set as recently as 2000. These objectives are intended to protect public health, including the most vulnerable individuals. In addition, there is a body of other official standards reflecting the accumulated knowledge and expertise of those advising government on health and environmental related issues.

c) It is implicit in policy and legislation that cement kilns are capable of operating to the appropriate standards and within the relevant limits. It is also implicit that their operation can be effectively and appropriately regulated by the powers and duties available to the EA, especially in the context of the new PPC Regulations.

d) The NAW's policies in respect of waste favour its use as a fuel, with cement kilns being highlighted as one of the processes where such use is seen to be beneficial and to be promoted - see Waste Strategy 2000.

9.2 It would be strange if, against that waste policy position, the proposal for Kiln 4 was not deemed to fall four square within these policies, especially since:

a) A manufacturer should be confident that his reasonable proposals for modernisation of existing plant would be considered favourably. He should also be confident that proposals to introduce modern state of the art processes, with their relevant structures, would be permitted - especially on a longstanding existing site.

b) Kiln 4 is on an existing site. The proposal is to replace outmoded equipment and processes. It would result in an environmental improvement, reducing both the mass and the concentration of any emissions of concern.

c) Kiln 4 would also be likely to meet all known regulatory standards and criteria, and the only proper approach in this regard is to assess whether a proposed plant meets those standards set by government.

d) The EA would ensure that the plant does not operate until it has a PPC permit. That would not be given until the EA is satisfied that the plant is both BAT and safe.

Health issue

9.3 The pertinent issue is whether the operation of Kiln 4 and the burning of alternative fuels would be materially detrimental to the health of the public. It is helpful that the

assessment can be made against a background where a cement works has been operating at the site for over 50 years, and during a period when the environmental controls were far less stringent than at present. It is important to have established that both air quality and soil samples in the locality demonstrate no adverse effects from the Works, conditions being as good as those which might be expected in a rural location in Wales, i.e. as if Works were not present.

9.4 Kiln 4 would represent the most modern and state-of-the-art pre-calciner dry kiln process. If Kiln 4 burnt conventional fuels, then compared to the existing Kilns 1, 2 and 3, it would substantially reduce emissions, both in terms of mass and concentration. The use of alternative fuels in Kiln 4 would result in even greater reduction in mass and concentration, and also significantly lessen the production of CKD. The benefits are summarized in tables 11.1 (a) - (d) of Doc CC/7F. (Table l l.l b is attached in Appendix 1 of this report to illustrate existing emissions versus future emissions from Kiln 4 with alternative fuels). Recent but extensive data from other cement works, **particularly Ketton and Ribblesdale, demonstrate the benefits achieved by the use of alternative fuels.** These have been monitored by the EA, who have given full IPC authorization for the use of alternative fuels in two kilns at the Ketton works. The data also establishes that the burning of alternative fuels results in little operational variability in terms of the emissions.

9.5 Modelled calculations demonstrate that the relevant maximum concentrations from the emissions at those areas frequented by the public would be substantially less than the emissions of Kilns 1,2 and 3; also significantly less than the current ambient concentrations; and well within any recognized official criteria. This applies to bath average and annual mean values, as well as to maximum short-term concentrations. Importantly, this is by reference to the most modern standards, the NAQS 2000 – see tables G14 and G15 of Doc CC/11 (also shown in Appendix 1 of this report).

9.6 Objectors have failed to make out the claims that the burning of alternative fuels would result in considerable variations in the emissions levels. Similarly they have failed to make out their claim that maximum worst case short-term values of NOx and SOx might exceed NAQS criteria. These are, in any event, relatively modest criticisms in the overall scheme of things and the wide ranging operational issues. It is also to be noted that in all other respects, the objectors' professional witnesses had accepted that emission values would not exceed long term or short term NAQS 2000 values or any relevant Environmental Assessment Levels (EAL).

9.7 Particulate matter released from the stack would be limited by the bag filters and other aspects of the process. The particulate emission levels would be substantially less than for Kilns 1,2 and 3; significantly less than current ambient concentrations; and well within NAQS criteria limits. Those limits are set by reference to PM_{l0}. The objectors do not contend that the limits would be exceeded, but simply assert that there are no "safe" levels for ultrafine particulate matter (less than $PM_{2.5}$). This assertion does not reflect government advice, standards or practice.

9.8 Modelled calculations of predicted maximum ground level concentrations of metals and dioxins demonstrate that all would be substantially less than any EAL or World Health Organization (WHO) criteria. The emissions from Kiln 4 would not result in any adverse effects for the air, vegetation, and soil or water regimes within the sphere

of influence of the Works. Conversely, Kiln 4 would be likely to improve the position over that which applies at present - and that is one currently typical of a rural location in Wales.

9.9 A detailed mufti-pathway risk assessment shows that making "worst case" assumptions, the theoretically most exposed member of the public would only be subject to a very low order of risk, substantially below any identified threshold of concern for any type of health risk - see table 6.6 in Doc CC/14.

9.10 Several references and objections have been made as to the risks said to be associated with dioxins and furans from Kiln 4. Results of extensive sampling in the locality show that dioxin levels are not elevated compared to other rural areas. Kiln 4 would result in a substantial reduction of the emissions of those substances as compared with Kilns 1,2 and 3. The dioxin levels associated with Kiln 4 would be approximately 18,000 times less than the most stringent level identified in the WHO advice (Doc CC/26).

9.11 In the analysis, Kiln 4 would make for environmentally cleaner and safer conditions, and substantially better than even the most stringent of recognized limit values.

Policy issues

9.12 The proposal is entirely consistent with national policy as identified in PGWPP. It would protect employment in the manufacturing sector; improve environmental conditions; make prudent use of resources, and help to retain cement manufacture as part of the Welsh economic profile.

9.13 The proposal is also in accord with MPG10, which considers cement manufacture of "major importance to the national economy' and that it is in the "national interest to maintain and increase cement production and counter any rising import trend".

9.14 The use of wastes as fuels in a manufacturing process accords with NAW policies on sustainability and is a practical implementation of the policy promoted in Waste Strategy 2000. The reduction of use of fossil fuels would help deliver the government's promise to lessen harmful emissions and the greenhouse effect.

9.15 The Development Plan policies are generally out of date. However, there are recent and relevant policies in unadopted plans that provide the local policy framework for decision making in respect of the proposal. The principal applicable policies are EMP3 of the SPSA and EM3, incorporating Policy GI, of the ADLP. These policies are criteria based and detail the relevant considerations for assessing the acceptability of an application for industrial development on an existing or allocated industrial site. When assessed against the criteria in these policies, the proposal performs extremely well. The detailed assessment supports the conclusion that planning permission should be granted.

9.16 While the question of need for the proposal and the availability of alternative sites are material considerations, neither is a pre-requisite of a grant of planning permission. Nor is it necessary that such has to be demonstrated by the Applicant. The objectors` claim in this respect is mistaken. As to need, then clearly there are the most obvious

needs satisfied by the proposal, such as the benefits of retaining existing employment; modernising the plant; improving environmental conditions, and retaining a healthy manufacturing base for the County. In the context of alternative sites, MPG10 makes it clear that cement works are highly capital intensive and costly operations necessitating significant front-end outlay. A location close to the main source of raw materials is a fundamental requirement. CCL has investigated and rightly rejected the possibility of moving the works to the Cefn Mawr quarry. There are no other alternatives that satisfy the requirements of a cement manufacturer wishing to continue his business in North Wales. This is an extremely difficult industry to place and it would be unrealistic to expect that, both for economic and locational reasons, the Company could move elsewhere.

Public concern

9.17 It is agreed that public concern as to a number of issues, including the adverse effects of the loss of the Works and the claims of harm to health, are material considerations for the purposes of the decision. In this particular case, public concern on the issues relied upon by the objectors does not represent an appropriate or sufficient reason for refusing the grant of planning permission. It would be quite wrong to afford such weight to this aspect in circumstances where;

a) The substantive evidence demonstrates that Kiln 4 would not only operate without harmful effects, but also would actually improve current conditions, and continue to do so for the foreseeable future.

b) Much of the public concern has been generated by the wide dissemination of inaccurate, untruthful, misleading and emotive claims as to the ill effects of using alternative fuels.

c) The proposal is entirely in accord with all government policy objectives; represents the state of the art in the particular industry; and would meet internationally recognised air quality and environmental standards and objectives.

d) The Area Health Authority considers that the proposal would not represent a threat
to health, but actually provide a benefit.

e) The EA would ensure, through the IPPC process, that the Kiln would not operate until all health related concerns have been properly addressed.

f) The proposal is in accord with policy and there are substantial material considerations that favour the grant of planning permission. These, taken together, outweigh the public concern consideration, especially in circumstances where that concern is demonstrated to be without proper foundation.

10 THE CASE FOR THE FLINTSHIRE COUNTY COUNCIL IN SUPPORT OF THE PROJECT

The material points are:

10.1 It was resolved on the 23 May 2000 to support the case for the Applicant at this Inquiry (Doc FCC/5). It was not considered appropriate to incur public expense in adducing evidence, (and thereby duplicating evidence), on matters to be dealt with by the Applicant, the EA and Dr Richard Roberts, consultant in public health medicine for the North Wales Health Authority (NWHA).

10.2 The Council adheres to the support on which it previously resolved. At the conclusion of the Inquiry, the evidence for the Applicant is relied upon, together with the EAW and NWHA.

10.3 It remains the case that a balancing exercise falls to be performed. To the extent that the Applicant is seeking to modernise its plant and improve emission standards then, the principal matters to weigh against each other are seen to be the preservation of jobs on the one hand and the visual impact of the development on the other.

10.4 There is no satisfactory evidence that the re-siting elsewhere of cement manufacture is a practical or realistic option for the Company.

10.5 Attention has been drawn, on behalf of objectors, to the Local Plan policies said in the report of Director of Transportation and Planning of the 2 February 2000 to be contravened, should there not be a refusal (Doc FCC/2). The point to be made here is that the sole reason suggested for refusal in the report was unacceptable visual intrusion, and ultimately this is a matter of subjective assessment.

10.6 It is accepted that health concerns may, at least in certain circumstances, amount to a material consideration in the determination of a planning application. This has been recognised in two Court of Appeal cases: *Gateshead MBC v. SSE and Northumbrian Water (1996) 71 P. & C. R. 35 and Newport County Borough Council v. Secretary o State for Wales and Browning Ferris Environmental Services Limited [1998J J.P.L. 377.* In the former case, it was suggested that public concern could not be conclusive where it is not justified. In the latter case, it was suggested that public fears albeit not justified could be given direct effect as an exceptional or special circumstance.

10.7 Reliance is placed on the views of Dr Roberts. His standpoint is entirely independent from that of any party, and he has a distinguished curriculum vitae. He has specifically been concerned to assess the development for its impact on local residents (Doc PH/1). Fundamental to his assessment has been an understanding of risk in terms of the probability of adverse events actually occurring, as well as the proposition that the quantification of emissions is critical to the question of whether they can be objected to on health grounds. The proposal has been assessed by Dr Roberts as bringing about improvement in local air quality. The summaries of emission reductions now set out in Doc CCf1F are noted, and the substantial improvement yielded by the operation of the new kiln. Attention is drawn to the detailed work undertaken by Dr Roberts to negate expressed concerns about existing levels of cancer (Doc PH/6).

10.8 Since resolving to support the case for the Applicant, there has been the decision of Mr. Justice Gibbs in R v. *Durham County Council ex parte Lowther* on the 21 June 2000. An attempt to overturn the decision of a local planning authority that planning permission was not needed for the burning of waste derived fuel was unsuccessful. (Gibbs J. did state in his judgment that the use of a waste substance as fuel was

capable of being material in planning terms, both in deciding whether there has been a change of use and also if a change of use has been established in deciding whether or not to grant planning permission.)

10.9 Concerning planning controls for hazardous substances, the authority for this mechanism will usually be the local authority and this obligation is accepted. An application has not yet been received but it would be dealt with in the appropriate way.

10.10 The Council has not altered its standpoint that the control of emissions falls within the responsibility of the Environment Agency, so as to limit the planning relevance of such pollution issues as have been raised (PGWPP ch3.6). The Council fords irrefutable the evidence for the Agency that the proposal presents an opportunity to overcome some problems in current operations. It is proper for reliance to be placed on the process of the staged IPC application and any prospective IPPC application. On further matters, the Council in supporting the Applicant adopts its submission to the Inquiry.

11 **THE CASE FOR COUNCILLOR MESSHAM IN SUPPORT OF THE PROJECT** The material points are:

11.1 There have been many improvements at the factory over the years. In the past there was a dust problem but improvement had been made. The latest scheme is another piece in the jigsaw of improvement.

11.2 This is not an attractive industry, but it does provide employment. There is a need for constant environmental improvement with a works of this type. It would be easy to join the "NO" lobby. It is a hard option to accept, but now there is an opportunity for it to be done on the best environmental terms possible with the potential for continued employment.

12 **THE CASE FOR OTHER INTERESTED PERSONS IN SUPPORT OF THE PROJECT** The material points are:

12.1 Many of the letters and Inquiry submissions from interested persons cover similar topics. They are summarized as follows:

- The objectors have not provided any evidence to support their case
- With investment comes improvement and the works needs modernisation
- This positive contribution to sustainable development should be supported
- A new kiln would be better than the existing kilns
- The environmental and economic benefits far outweigh the arguments against the project
- Kiln 4 would be more energy efficient than the existing kilns
- There would be reduced emissions from the proposed plant
- The information supplied by objectors is nothing less than scaremongering
- The new kiln would burn waste material that would otherwise be directed to landfill.

13 THE CASE FOR THE ENVIRONMENT AGENCY AS A NEUTRAL PARTY

The material points are:

Stance of the Environment Agency Wales (EAW)

13.1 The EAW has sought to be represented in order to assist the Inquiry and to answer relevant questions put by any party to the Inquiry. A great deal of evidence has been given which might objectively be thought to relate rather more to the pending IPC application and the likely IPPC applications. The EAW is nonetheless confident that the Inspector and the NAW will bear carefully in mind the guidance given at 6.1 of PGWPP that the planning system should operate on the basis that the relevant control regimes would be applied.

13.2 The process operated by CCL at their Padeswood works is subject to an Authorization issued in 1993 under the Environmental Protection Act 1990 and the Environmental Protection (Prescribed Processes and Substances) Regulations 1991. The Company has made a new application to operate the proposed new kiln and this is currently being considered by EAW (Doc CD/30-32). The proposal would also be defined as a new installation under the new PPC Regulations. If permission is granted then CCL would still need to successfully progress an IPPC application in order to implement its proposals. Indeed CCL would need to obtain IPPC approval in the immediate future whatever the outcome of this Inquiry.

13.3 The EAW would of course be informed in those decisions by matters that have been raised at this Inquiry, together with all representations made to it during the consultation processes of the IPC/IPPC applications. The NAW can be re-assured that where debate at the Inquiry has covered issues that normally the EAW would consider, then it would have been nonetheless worthwhile.

13.4 However, the Inquiry must approach the application before it upon the basis that the EAW would perform its statutory responsibilities diligently and properly and that the pollution control regime of Part I of the Environmental Protection Act 1990 would operate properly insofar as it relates to this application. If the NAW were in doubt as to the EAW's ability to deal with the application fairly then it would be fully aware of its powers to recover determination of the IPC/IPPC applications itself.

13.5 The EAW in accordance with national and European guidance fully recognizes that the proposed process is one that in principle is capable of being authorised. That does not mean that any indication can be given as to the likely outcome of this proposed process. That is not because the EAW is reticent at that stage, but rather because the determination process is far from complete.

13.6 Firstly, the IPC application would be overtaken in due course by an IPPC application (Doc EA/3). Secondly, even though a very considerable amount of work and information has been done and provided by CCL, it is the view of the EAW that it is not yet in a position to determine the IPC application and additional detailed information is to be requested in the near future. A further element is that in the present form of the information its content is somewhat opaque to even an informed member of the public, such that the EAW sees considerable merit in creating a comprehensive document together with a non-technical summary which should be more digestible to the public.

13.7 Thirdly, before any decision is reached there will be a further opportunity for public comment upon the application that will be taken into account by the EAW. Once a decision has been arrived at by the EAW that decision will be set out in a Decision Document that will also explain its rationale.

Enforcement and monitoring

13.8 There can be no doubt that the site has not operated as the EAW would have wished it to operate in recent years. As detailed in the evidence there have been a number of inspections which have resulted in requests for action to be taken. There has also been formal enforcement action taken, as well as two successful prosecutions (Docs EA/3 and CC/33).

13.9 The EAW continues to regulate the site and monitor emissions and the surrounding area. It claims its monitoring of the premises has been effective and that both as a result of its actions and CCL's improvements, the operation of the site has altered for the better over recent years. Indeed, whilst some significant problems remain, such as fugitive dust emissions, the site and the process overall have shown a marked improvement since the formation of the EAW.

13.10 For example there has been a dramatic reduction in the number of 'trips' from the electrostatic precipitators (ESP's) -as a result of CCL working together with the EAW. Accordingly, when considering what Mr. Allan refers to as 'unauthorised releases' it is important to note that a significant number of those 'releases are as a result of the operation of the ESPs which has now been largely addressed (Doc EA/3).

13.11 Whilst it is true that there are 5 inspectors in North Wales to monitor around 80 authorised processes in the Region, the EAW have considered it proper to direct significant resources to CCL's site. For most of the last year Mr. Morris has worked exclusively upon the site and is likely to continue to do so during the application process.

13.12 The site, in common with most other authorised processes in the UK, relies greatly upon 'self reporting' of breaches of the Authorisation. But that should not be viewed of *itself* as a weakness in the system of monitoring. To fail to report matters properly is considered by the Agency and the Courts to be a very serious matter indeed. Moreover, there is empirical verification of some elements of the site, together with regular inspections and a significant amount of public reporting. Thus the Black Brook incident was first notified by CCL, then inspected by Mr. Morris and then resulted in public complaint. The EAW therefore strongly disputes the assertion made by Councillor Mia Jones that it is simply reactive. Enforcement and monitoring is a complex and ongoing process and it would be wholly wrong and misleading to characterise it as reactive process.

13.13 The EAW is self evidently concerned in relation to certain aspects of the site operation. It has not been idle in terms of investigation, enforcement, and even prosecution. However, the EAW accepts that there is a fundamental difficulty with regard to the running of the site, which arises directly out of the vintage of the present operation. Whilst there remains further scope for improvement, the EAW recognizes

that significant difficulties will remain. The proposed process would allow certain matters of current concern to be addressed, which cannot readily be tackled with the current operation. These include measures to ensure the minimization of fugitive dust emissions, improved retention and oxidation of sulphurous compounds and improved dispersion from the stack (Doc EA/3).

13.14 In addition to the proposed changes to the plant one of the advantages of the proposal is that the ease of monitoring, and therefore of enforcement will be significantly improved.

The IPC/IPPC applications

13.15 The Environment Agency agrees that the present IPC application is unlikely to ever result in the plant operating within the scope of any authorization granted pursuant to it. That is because by the time even this part of the process is completed IPC will have been overtaken by IPPC, and both the existing and the proposed processes would require a permit under the new regime.

13.16 Nonetheless CCL has submitted a staged IPC application, effectively as a first step in determining the issues which would, if successful, ultimately result in an IPPC permit. That has enabled the EAW to make an informed decision as to what information is needed to determine that application as well as any IPPC application. As outlined above the outcome of that application cannot be presumed and there is, in the view of the EAW, a very significant amount of technical work that needs to be done before the application could be determined. Moreover, that information needs to be presented in a clear manner to enable the public to make informed representations in the process of public consultation.

13.17 The first stage of the application described the basic principle of the use of a short dry kiln with pre-calciner and 5-stage pre-heater tower. This is the most up-to-date system available and is described in IPC Guidance Note S2 3.01 and the BREF Reference Document on BAT in the Cement and Lime Manufacturing Industries (Does EA/8 and EA/23). On the information before the EAW, the process is one that is in principle capable of being authorised. However, no two sites, processes or applications are the same and therefore each needs to be assessed on their own individual merits. In order to assess the impact of common pollutants Environment Assessment Levels (EAL's) have been established by the EA for the purpose of Best Practical Environment Option (BPEO) methodology. The NAQS 2000 is important in this process.

13.18 The IPC application proposes the use of 'non-conventional' fuels - in particular tyres, *Profuel* and *Cemfuel.* Trials of *Profuel* have been conducted elsewhere and *Cemfuel* has been authorised at Ketton and Ribblesdale. That does not mean that they would be authorised here. However, if the proposed fuel mix were used, on the evidence presently available to EAW there would appear to be a reduction in the emissions of certain pollutants. The fact that there is a difference of view between CCL and the EAW as to the whether or not *Cemfuel is* hazardous waste or not, would not affect the IPC/IPPC determination. That is because the EAW would require BAT to be deployed regardless of its definition under the HWID. Nevertheless, in order to assist its assessment, it has derived the Substitute Fuels Protocol (Doc EA/25). It remains the position that EAW is firmly of the view that *Cemfuel is* properly a hazardous waste

under the HWID. That approach is the subject of a High Court challenge, yet to be determined.

13.19 In order to inform the process, the EAW has commissioned a number of studies to identify the 'base line' position of emissions from the present process. That is part of a process that is ongoing and would continue regardless of the outcome of this Inquiry. Indeed that would inform the future operation of the plant, for example in seeking to effect the reduction in dioxin emissions as anticipated in the report submitted by CCL in June 2000 to EAW.

13.20 At all events the outcome of the IPPC applications either in respect of the present or the proposed process is overwhelmingly likely to result in improvements to the present position. That is as a consequence both of the change in legislative context as well as the inevitable requirement to demonstrate that 'BAT' is being employed. Moreover, there remains scope for further improvements on the site.

13.21 On the question of modelling, the interesting debate as to the shortcomings and advantages of the various models before the Inquiry has deliberately not been informed by any view of the EAW. That is because all of the models have certain disadvantages, and it would, ultimately be for CCL to demonstrate in the IPC/IPPC applications that the modelling it has undertaken has been sufficiently robust. The present view of the EAW is that for the purposes of the IPC (which it is accepted is not to be taken as coincident with the planning process) the exercise has not yet been completed.

13.22 As to the capacity of the operation, whatever the physical capacity of the plant the application is for not more than 750,000 tonnes of cement per annum. To operate the plant in a way so as to produce materially more than that would not be within the scope of the Authorization and therefore CCL would be in breach of it. Nonetheless, it would not be for the EAW to seek to constrain the physical capacity of the plant within the terms of the Authorization, rather if CCL sought to increase capacity that would require a further application.

13.23 Finally, the Inspector asked the question whether the proposed kiln could stand alone as an incinerator, as feared by some objectors. Mr. Morris believes that it could not, because it would not be economically viable to operate it as such.

14 THE CASE FOR THE NORTH WALES HEALTH AUTHORITY AS A NEUTRAL PARTY

The material points are:

14.1 The role of the NWHA in this Inquiry is to give independent, unbiased advice on the risk to public health. If the risk to health were not minimal it would not hesitate to point this out. In the same way, if health effects are unlikely it is the responsibility of the NWHA to explain this.

14.2 There is understandable public concern about the burning of flammable liquid waste *(Cemfuel)* and other alternative "waste derived" fuels such as tyres, paper and plastic in the proposed kiln. Although such concern may cause us to question any view which does not fit with our own, residents must go beyond this instinctive scepticism if they

are to come to a realistic view of the likely impact of any development on their own health.

14.3 The aim of the contribution of the NWHA to the process over the last two years, and to this Inquiry, has been to help local residents and decision makers understand the potential risks to health and be able to compare these risks to other health risks within their own experience.

14.4 There has been confusion caused by opposing views over local cancer rates, and this has been a cause for concern and anxiety to some. A local health study of cancer cases was carried out, in collaboration with the experts at Welsh Cancer Intelligence and Surveillance Unit (WCISU), to look for any effect due to historical emissions from the works. Over 30 combinations of data on deaths and new cases for several different cancers over a period of 14 years have been looked at. Cancer rates in the area around the works were found to be normal, with no evidence of a cluster (Docs PH/3 and PH/6). The opposing views have come from those without access to the resources and independent epidemiological expertise in local cancer statistics that are available to the Health Authority.

14.5 There have been calls from some parties for a more extensive, but undefined, local health study. This issue was dealt with in detail in the proof of evidence (PH/1-Section 6 (page 12); Appendix 2, section 5 (page 6); and Appendix 4, section 7.3 (page8)). Although the reasons are complex, expert advice is unequivocal that such studies would not be helpful. The UK expert Committee on the Medical Effects of Air Pollutants (COMEAP), in its advice to local health authorities on investigating the health effects of local industry states that *"Single site studies of effects of air pollutants on health are unlikely to have sufficient statistical power to confirm or refute assertions of effects and there is a significant risk that the results of such investigations will be impossible to interpret."*

14.6 The NWHA has been completely open about the process it followed in carrying out the Health Impact Assessment (HIA). None of the evidence submitted to the Inquiry has been changed as a result of cross-examination indicating that the process followed to assess the evidence has been robust.

14.7 In assessing the effect of this proposal the NWHA has relied on data from the EAW and CCL on emission levels and published conclusions of national and international expert groups in describing the public health risks of the various environmental pollutants. For the major air pollutants, the safe levels called Air Quality Standards (AQS) have been used. These standards have been set at levels at which the risks to public health are very small or negligible. Environmental assessment levels (EALs) have been used for metals not defined by national standards. EALs are health-based levels set to protect human health and the environment. For dioxins, the reference levels used are the tolerable daily intakes (TDI) defined by the WHO.

14.8 The data show that the overall pollution and therefore health impact due to sulphur dioxide, oxides of nitrogen, particles, metals and dioxins would be less with the proposed kiln. The predicted ground level concentrations of sulphur dioxide, nitrogen dioxide, particulate matter, carbon monoxide and lead were all within the AQS, indicating the risks to public health, including vulnerable groups, are very small or

regarded as negligible. Releases of metals from the kiln would be many times below the EAL and unlikely to have any significant effect on health.

14.9 The impact on health of the use of alternative fuels by CCL at Ribblesdale has been studied by COMEAP who concluded that the concentrations of substances detected in ambient air samples did not indicate any concerns for health. The Committee also concluded, "none of the evidence suggests that particles released locally are likely to pose a special risk to health" (Doc CD/44).

14.10 With regard to dioxins, the emission data for Ketton and Ribblesdale and that predicted for Kiln 4 all indicate that dioxin intake in local residents would remain well within the range of intake in the general population.

14.11 The advice offered to local residents in November 1999 on behalf of the Health Authority, and submitted to the planning committee in February 2000 (Appendix 2 to Doc PH/1), has been confirmed and strengthened by the evidence before the Inquiry, and is in line with expert assessments of similar local industry elsewhere. It is now clear that local air quality would improve if Kiln 4 replaces the existing kilns.

14.12 Individuals living in the area of the works, including the most vulnerable members of the most exposed communities, are very unlikely to suffer any harmful effects from authorised emissions of any pollutant from the proposed kiln.

15 **THE CASE FOR THE CHESHIRE COUNTY COUNCIL** (Letter and comments submitted to NAW 1 September 2000)
The material points are:

Cheshire County Council proposed a number of planning conditions:

Air Emissions

15.1 All data relating to emissions into the air from the Development which are supplied by the Company to the enforcing authority pursuant to the Environmental Protection Act 1990 or any other relevant legislation, for publication on the public register, shall be supplied by the Company, as soon as possible after the data becomes available, to Flintshire County Council and Cheshire County Council, except where any party has informed the Company in writing that it does not wish the Company to supply all or part of such data to it.

Reason: To ensure that Councils are given access to information required for the exercise of their functions.

Air Pollution Monitoring

15.2 The commissioning of the development shall not take place until there has been submitted to and approved in writing by Flintshire County Council, in consultation with Cheshire County Council, schemes for the monitoring of air pollution in their areas. Each scheme shall include the measurement location or locations within the relevant area from which air pollution would be monitored, the equipment and methods to be used and the frequency of measurement. The schemes shall include

measurements of the following pollutants: sulphur dioxide, nitrogen dioxide and particulates. Details relating to the monitoring, control and dispersion of trace metals, dioxins and furans should also be included in the air quality-monitoring scheme. Each scheme shall provide for the first measurement to be taken not less than 12 months prior to the commissioning of the development and for the final measurement to be taken not more than 24 months after the commissioning of the Development. The Company shall supply full details of the measurements obtained in accordance with the schemes to Flintshire County Council and Cheshire County Council, as appropriate, as soon as possible after they become available.

15.3 Should Flintshire County Council or Cheshire County Council require continued monitoring of air pollution the Company shall extend the scheme approved pursuant to Condition (3) for a period of up to 36 months from the date of the last measurement taken pursuant to Condition (3). The Company shall supply full details of the measurements obtained during the extended period to Flintshire County Council and Cheshire County Council, as appropriate, as soon as possible after they become available.

Reason: To ensure that the Councils are kept informed on a regular and programmed basis about the changes in the level of air pollution at locations within their areas.

Suppression of Dust

15.4 The commencement of the Development shall not take place until there has been submitted to and approved in writing by Flintshire County Council in consultation with Cheshire County Council a scheme employing the best practical means for the suppression of dust during the period of the construction of the Development. The measures approved in the scheme shall be employed throughout the period of the construction unless any variation has been approved in writing by Flintshire County Council.

15.5 The commencement of the Development shall not take place until there has been submitted to and approved in writing by Flintshire County Council in consultation with Cheshire County Council a scheme employing the best practical means for the suppression of dust during the operation of the Development. The measures approved in the scheme shall be employed throughout the period of the operation of the Development unless any variation has been approved in writing by Flintshire County Council.

Reason: To ensure that satisfactory measures are in force so as to alleviate any impact dust may have on the local environment.

Steam Plumes

15.6 The commencement of the Development shall not take place until there has been submitted to and approved in writing by Flintshire County Council in consultation with Cheshire County Council a scheme employing the best practical means for the reduction of visible steam plumes from the Site. The measures approved in the scheme shall be employed throughout the period of the operation of the Development unless any variation has been approved in writing by Flintshire County Council.

Reason: In the interests of visual amenity.

16 **THE CASE FOR CHESTER CITY COUNCIL AS AN OBJECTOR** (Letter dated 14 September 2000 from the City Council) The material points are:

16.1 Padeswood is situated 5 km from the closest part of Chester district, Lower Kinnerton; 7.Skm from Dodleston and 9.Skm from Pulford and Chester. The prevailing wind is from the south and west. This would take emissions from the plant in the direction of Chester District.

16.2 The principal concerns regarding the process are that the plant would burn a number of waste products as fuel for the kiln. The environmental assessment that accompanied the planning application assessed the emissions as carbon dioxide, nitrogen dioxide, and sulphur dioxide, but did not take into account emissions of heavy metals and dioxins that the plant would also produce.

16.3 Dioxin exposure in humans is via the food web. Dioxins are deposited from the atmosphere, and as they are persistent chemicals they accumulate in the tissue of food animals. It is estimated that 95% of dioxin exposure for a typical person is through the dietary intake of animal fats.

16.4 The other pollutants that would be emitted from the process include heavy metals from the burning of waste tyres and plastics in the kiln. Heavy metals such as mercury are released by the manufacture of cement, and the use of waste for fuel would increase the emissions of metals from the process.

16.5 It would appear that the planning application for the new kiln would be the type of development that should have a IRA carried out upon it due to the perceived adverse health effects that could arise from emissions. The NAW has recently published a document: Developing Health Impact Assessment in Wales which describes what a HIA is and how to carry one out (Doc CD/38).

16.6 The objection to the project is sustained on grounds of adverse health effects. Should planning permission for the project be granted a condition should be attached stating that the Applicant should fund a HIA. Also that a working group should be established to monitor and respond to emissions from the proposed kiln.

17 **THE CASE FOR THE OBJECTOR GROUP: CAMPAIGN AGAINST THE NEW KILN (CANK) (see also full closing submissions - Doc CAM/40)** The material points are:

Public anxiety

17.1 It is evident that a very large section of the local community opposes the proposed development: (see petition of 9,000 signatures presented by Cllr Woolley and countless letters sent to the Inquiry and the NAW) (Doc CAM/6 vol.2). The groundswell of public concern is genuine. Expressions of support have been more difficult to judge and have, as at the public meeting, had the appearance of having been a little too carefully and obviously orchestrated by the CCL team.

17.2 Public anxiety about a proposal is a material planning consideration: see *Newport BC v. Secretary of State for Wales and Browning Ferris (1998)* Env. LR174. Moreover, Dr Roberts of the NWHA agreed that public anxiety was "understandable" and that anxiety was "a significant contributor to morbidity and mortality". This anxiety stems from 3 principal sources, addressed as follows:

The Applicant's track record at Padeswood (and elsewhere)

17.3 Castle has an unenviable track record at Padeswood: over 250 (self-reported) unauthorised emissions over 4 years (Doc CAM/7). The standard response has been to blame these failings on the old plant or the Authorisation for being too strict. It is plain that much of the problem is attributable to very poor standards of housekeeping: (Doc CAM/9). Moreover, even though the EA relaxed the reporting standards from November 1999, the year 2000 still saw a greater mass of fugitive dust released than 1997 or 1999. Even during the course of **the Inquiry, the Applicant** received two further criminal convictions and substantial fines and costs awards arising from incidents attributable to management failures.

17.4 These have all taken place during the currency of the regime and workforce who is expected to remain in place if burning of hazardous wastes is permitted at Padeswood. It is hardly surprising that local people are fearful of an operator which cannot run a conventional cement kiln satisfactorily being let loose to run a far more complex and potentially hazardous process. The local community fear that they would be the guinea pigs whilst the Applicant, if successful, experiments trying to get the new plant to work properly. It is known that it took from 1986 to 1991 to get its newest kiln at Ketton working satisfactorily. There is a lot of substance upon which to base anxiety.

The proposed use of Cemfuel and other waste fuels

17.5 There is an enormous commercial advantage for cement kiln operators to be gained in using waste fuels: they get paid to dispose of discarded residues. Understandably the cement kiln industry is delighted at the prospect of being paid to dispose of waste rather than paying for fuel and has been offering encouragement to this development. However this bring dangers with it: firstly, there is no incentive to burn fuel in an efficient manner; and secondly, the knowledge that hazardous wastes are being imported into this country (Doc CAM/36) with little or no control and the proximity of Padeswood and *Cemfuel* plants to ports heightens fears that illegal imports may find their way into kiln fuels. Doc EA136 and Doc EA/37 would not assuage these fears; there is still no evidence of any successful prosecutions in this regard.

17.6 Furthermore *Cemfuel* batches would not be subjected to sampling analysis until after those batches have been burned. A 0.5 litre sample is taken from a 100 tonne batch; CCL would then decide whether the sample accords with the specification or whether there has been a "serious breach". It is to be noted that *Cemfuel* would contain on average 20% solids (see Doc CC/8 table 8.1), but it is unclear how these would be detected by sampling. No continuous monitoring is available for dioxins, heavy metals or ultrafines, so public concern cannot be allayed in this way.

17.7 No independent EA sponsored trials of burning alternative fuels have taken place with the exception of tyres at Westbury (Doc CAM/18). These revealed significantly greater concentrations of heavy metals in emissions when compared to conventional fuels. The ENTEC report on *Profuel* burning in kilns seems to have been limited largely to the industry in its research; there is no discernible input from the residential communities surrounding the kilns in question, nor the regulatory authorities.

The resources and effectiveness of the EAW

17.8 There is no intended criticism of the EAW. On average an EAW inspector at the Buckley office would be responsible for the day-to-day regulation of 17 installations and 20 radioactive sites (hospitals) across N. Wales. As the EAW explained, for knowledge of what is going on at Padeswood, it is largely dependent upon CCL's self-reporting of malfunctions and/or complaints from members of the public. This is all the more worrying because of the absence of continuous monitoring technology for many of the most toxic pollutants emitted.

17.9 Three other examples show why the local community does not feel that it can rely upon EA for protection if this permission is granted:

- Despite S years as the regulator of the Padeswood site and in the knowledge that the limestone store was a "major source" of fugitive emissions from the site, EA never once sought to apply BATNEEC to achieve its enclosure;

- The Padeswood site is, on the EA's own data, the 11th highest emitter of dioxins of any prescribed process in England and Wales: Doc CAM/16. It might have been supposed that this would have been a major cause of concern: in fact the EA asked CCL to address the problem in October 1999, received a report in June 2000 (9 months later) and have not yet considered its conclusions (as at December 2000):

- The EA has not monitored air quality around Padeswood, other than in 2000 in connection with this application.

17.10 Thus many powerful reasons underlie the deep and genuine anxiety felt by many local residents about the possibility of CCL receiving planning permission for its proposals. Consideration of this issue must be set against the backdrop of a long history of emissions from CCL directly affecting local people in their homes - polluting the air around them and covering their cars with layers of dust.

Risks to public health

17.11 Cement kilns using conventional fuels have been associated with both health impacts and environmental impacts on air and groundwater. Research from the USA has shown that the introduction of industrial waste as fuel into the combustion process can have adverse effects on the toxicity of the gaseous effluvia as well as the dust from cement plants (Doc CAM/3 vol.2). No doubt when everything is working properly at a modern cement kiln (burning whatever type of fuel), there should be no risks to health. But to assume that this would be the norm would be to depart from reality. A number of propositions take effect cumulatively to establish a real and serious risk to public

health that has not been satisfactorily addressed at this Inquiry. These are listed as follows:

Unreliability of emissions guarantees

17.12 F.L. Smidth's emissions guarantees assume, and are only valid for, the burning of conventional fuels. F. L. Smidth are not responsible for the design and manufacture of alternative fuel systems; the Applicant admitted that no system had yet been designed for feeding *Profue/ltyres into* the kiln. This clearly undermines the heavy reliance by CCL on guarantees offered by a reputable plant supplier. Yet there is, for example, a risk of blockages and fire within the feeding systems of these fuels and risks of difficulties with firing of *Cemfuel* due to coking of fuel injection lances (Doc CAM/5 vol.2).

No independent or EA sponsored comparative test - burning of Cemfuel/Profuel as against conventional fuels

17.13 Note USEPA Draft Report (Doc CAM/3 vol.3 - Reference 6) that total dioxin emissions for kilns burning hazardous waste were 90 x those burning conventional fuels. There is a need for authoritative research by an independent and authoritative public body.

The propensity for things to go wrong generally and particularly for CCL

17.14 The Applicant accepts: "These plants depend upon hundreds of motors and mechanical plant; things simply would go wrong," and again "There are problems with mufti-stage pre-heaters. They keep stopping". And other evidence by Mr Pratt: "My expectation is that plant would comply with its Authorisation. Sadly this is seldom achieved." See e.g. Ketton CAM/4 vol. 2. "In my experience, many plants do exceed their Authorisations and the EA does not necessarily take action ...excursions do occur"

17.15 Several major planks in the Applicant's case depend upon the identity of the operator -CCL's position in relation to its competitors; CCL's wish to serve its market; CCL's investment plans; CCL's workforce to be retained (Doc CC/1). If the NAW is to attach any weight to that part of CCL's case, then it must also take full account of CCL's operating record. To do otherwise would be to tip the scales in CCL's favour.

The utilisation of waste fuels the chemical composition of which makes them significantly more hazardous than conventional fuels in the event of system failure

17.16 Doc CAM/13 shows greatly elevated concentrations of heavy metals in waste fuels when compared to conventional fuels. Note also 20% solids in *Cemfuel* (table 8.1 of Doc CC/8) and sampling "after the horse has bolted". *Profuel*, as solid waste, would be difficult if not impossible to sample effectively. As a result, it may be difficult to' control the level and nature of plastics amongst other things, with the associated potential for the formation of dioxins on combustion.

Risks associated with ordinary operations

17.17 Small airborne particles (PM_{I0}) from combustion processes are known to be a particular hazard causing up to 3% of all deaths (Doc CAM/3 vol.l). Now there is the increasing knowledge of the health hazards associated with ultrafine particles ($Pm_{0.2}$), particularly with a high metallic content. The EA does not regulate beyond PM_{10} and ultrafine particles enable metals to travel through bag filters in vaporised form. The high surface to volume ratio of these small particles of metals is thought to give them the property of catalysts making them particularly toxic.

17.18 It has been shown that the Applicant's modelling work is flawed (CAM/4 vol. 2) and there remains a major gulf between the parties in respect of modelling results. The Applicant ignoring entirely the effect of the pre-heater tower on dispersion because of the significant impact it had on the ADMS v3 model used. This casts grave doubts on the integrity of CCL's modelling exercise and other work that depends upon it. However, if increases in emissions of between a factor of 4 and 8 are considered then it is possible that air quality objectives for $S0_2$ and NO_x could be approached, if not exceeded. Drawing clear conclusions on the achievement of air quality objectives is also difficult because there is little information on existing background concentrations. CCL has also assumed that there are no other pollution sources in the area contributing to ambient air quality. This is clearly incorrect. Neither has there been any attempt to examine dust deposition. It is to be noted that the EAW is "not satisfied that the current modelling is accurate". In some instances the results are thus two orders of magnitude apart.

Risks from abnormal operations

17.19 This issue has been ignored by CCL - notwithstanding the safety and pollution hazards associated with bringing *Cemfuel,* which includes solvent wastes, onto the site; known incidents of spillage of *Cemfuel* at other CCL plants; the increased toxicity of the CKD and the close proximity of residential properties to the site. There is clear evidence (Appendix D to Doc CAM/5 vol. 3) that the introduction of *Cemfuel* and tyres to the process increases the loadings of the volatile metals. As a consequence the quantity of CKD would increase significantly. The retention factors given indicate that 99% of the metals (except mercury) remain in the clinker and CKD. The main impact and threat to the environment may therefore be from the mal-operation of systems containing the CKD and clinker where large releases can occur. (Doc CAM/5 vol. 2).

The presence of a vulnerable population

17.20 Neither the Applicant nor the NWHA saw fit to consider the health of a local population exposed to emissions from Padeswood for 50 years. Dr Roberts avoided referring to these paragraphs in the COMEAP advice. Indeed the NWHA resisted looking at the health of the local population - notwithstanding advice in the COMEAP report even when the contrary view of the Area Health Authority in Wiltshire was pointed out: (Doc CAM/22). Work on asthma admissions for children, cardio-vascular and respiratory deaths had been commissioned but no preliminary results were revealed.

17.21 Using spatial statistical methods, which take account of the topography of the area, CANK has identified a statistically significant increase in cancer incidence in the area of influence of the existing plant. The Applicant (Doc CC/58) has attempted to attack

some of the conclusions, but this directly contradicts the evidence of Mr Morris in cross-examination, which confirmed the existence of the meteorological conditions (the trapping of pollutants under an inversion layer), discussed. The NWHA's response was to stand by its methodology of using 2km radii, although its origin was unclear and data had not been obtained at a sufficiently fine resolution to perform a comparison correctly. Thus large parts of Buckley Bistre West - within 2 kms of the site and one of the most populous wards with high cancer rates - were excluded even though the study was so vulnerable to the movement of the 2 kms radius.

17.22 The contribution of the NWHA was difficult to understand - swallowing whole CCL's data and assumptions in the ES without any requirement for their peer review. The effects of unauthorized releases were ignored because `no data was available'. Instead, attention was focused by the NWHA and the applicant on the spurious exercise of comparing existing emissions from Kilns 1-3 with Kiln 4's theoretical emissions, assuming all to be working perfectly and relying upon the inapplicable process guarantees and flawed modelling.

17.23 Only CANK sought to seek out information about the health of the local population and found clear evidence of elevated levels of respiratory cancer. The NWHA used an unjustified annulus and incomplete data to seek to find support for its previously stated position. Dr Roberts's other work is apparently not available although, if it clearly supported his position, one wonders whether a preview might have been permitted. The LANK work points to a need to investigate fully the vulnerability and susceptibility of the population influenced by the Padeswood plant to polluting emissions and that no decision can properly be taken on the application until that has been done (Doc CAM/3 vols.4 and 6). In combination the above factors lead to the conclusion that planning permission for the proposed development should be denied until the issues of risk to public health set out above are properly and comprehensively addressed.

BPEO: The waste hierarchy; the proximity principle and regional self-sufficiency

17.24 The Applicant makes no reference to any of these matters - not even Waste Strategy 2000 that might otherwise have been said to apply to its proposals. Flintshire C.C. accepts the relevance of these principles, but omits to apply them. CCL's basis for ignoring these issues appears to be the general encouragement found at a variety of places in government policy documentation given to the use of waste fuels in cement kilns. It is true that these statements of encouragement do occur, but, nowhere in any of the relevant documentation is there any reference to this general encouragement having the effect of disapplying key and critical elements of national waste policy insofar as they relate to waste fuels. Nor is that surprising. BPEO is at the heart of waste planning: (PPG10, Annex A) and Waste Strategy 2000 (Part 2 Chapter 3). It is inconceivable that one or two references to possibilities for cement kilns to burn alternative (waste) fuels could obviate the need to analyse and identify the BPEO for the waste streams in question.

17.25 The Applicant's evidence has fallen woefully short of what is required. Now is the time to determine the BPEO. The EA does not regard examination of BPEO to be a matter for the Agency (EA `look at the other end of the chain'). There remains therefore a large hole in the Applicant's evidence: a need to examine options higher up

the waste hierarchy and to apply the proximity principle to the waste streams identified.

17.26 Even on the limited evidence extracted from CCL, it is plain to see that the proximity principle is highly unlikely to be satisfied in this case: ***Cemfuel*** would come from Solrec at Heysham, Sunderland and Rye; and Safetykleen at Dinnington; tyres would come from Grantham and Nottingham/Derby. ***Profuel*** would come from Greater Manchester, Leeds/Bradford and the Midlands. It is highly unlikely that the BPEO for these waste streams is for them to be driven on the road network for many hundreds of miles across England to North Wales. For example Waste Strategy 2000 Map 14 shows a variety of Energy from Waste facilities for Secondary Liquid Fuels (SLF) and tyres which are much better located for the waste streams identified than Padeswood. Equally there are both cement and lime kilns located much nearer to many of the identified waste streams than Padeswood.

17.27 By the same token, the proposal is clearly contrary to principles of regional (and national) self-sufficiency. The entire waste fuel throughput identified so far is proposed to arrive at Padeswood from England. Equally the Applicant has ignored the Development Plan policies relating to waste. They clearly tell against the proposal for the reasons that have been explained (ADLP - policy WM 1).

Waste need

17.28 As there has been no examination of alternative means of waste management for the waste streams that would be brought to the site, no need has been established. Certainly no requirement has been identified for a waste disposal facility such as that proposed to be located at Padeswood to serve any identified national, regional or local need. Clearly, the site is not well located to serve a major conurbation.

Emissions reduction need

17.29 The Applicant has consistently produced tables comparing emissions from Kilns 1– 3 with those from Kiln 4. This is a spurious exercise. First, the EA would not permit Kilns 1 - 3 to continue to operate as they have been, so the assumption (if it is made) that Kiln 4 represents an opportunity for emission reduction, which would not otherwise arise, is mistaken. The Inquiry was told that the IPPC application for Kilns 1 - 3 is already under preparation this year and that there is no scope for changing the timescale as to when the IPPC kicks in. Equally, the Doc CC/7 series is of no value, as it is not presented on a mass balance basis and the underlying assumptions about the chemical constituents of the fuels burned are not transparent.

18 **THE CASE FOR THE PHOENIX OBJECTOR GROUP (see also full closing submissions, Doc PCG/35)** The material points are:

Human rights and fair hearing

18.1 Before the Inquiry an objection was lodged to the restriction of the terms of reference, which conflicts with the European Convention on Human Rights (ECHR) Article (6). The Court ruling in December 2000 that decision making on planning appeals by DETR is incompatible with the Convention extends to the same functions as that

exercised by the NAW regarding its determination of appeals. The ECHR assures the right of a fair and public hearing by an impartial tribunal.

18.2 The restriction of the terms of reference affected the Inquiry in at least two material aspects:

- The omission of waste policy and waste management strategy.
- Omission of the impact on the environment (specifying health alone).

Because of the first omission, the policy issues concerning a major hazardous waste (disposal or recovery) facility have been raised only by objectors and not by the responsible public authorities, so placing objectors at a disadvantage. Because of the second omission, the Countryside Council for Wales (CCW) on conservation was not invited to the Inquiry and the EAW omitted to represent its concerns on acid deposition and on habitats assessment to the Inquiry. Only objectors have raised the potential impact on European sites, and the public authorities have not given any evidence on these sites, or their location.

18.3 It is therefore submitted, that the NAW, in setting its terms of reference, conflicted with the HRA in principle and material ways because of these defects.

Inadequate Environmental Statement

18.4 Under the Environmental Impact Assessment Regulations 1999, the Environmental Statement (ES) has to contain the necessary data and assessment of impacts of the development on the environment. But the ES is deficient in important respects. Some of the deficiencies have been rectified through evidence supplied subsequently. However, the House of Lords decision *[Berkeley v. Secretary of State and Others, 6 July 2000]* showed that a "paper chase" cannot replace the "single and accessible compilation" plus non-technical summary that was needed for an ES. Public consultation on the ES is an essential part of Environmental Impact Assessment "requires the inclusive and democratic procedure... in which the public... is given an opportunity to express its opinion on the environmental issues". It follows from that judicial ruling that a significantly or deficient ES does not satisfy the EIA Directive and planning law. (See Section 8).

18.5 The following areas in the ES are defective (see Doc PCG/1):

- Impacts of acid gas emissions on critically acidified uplands and fragile ecosystems.
- Impacts of air pollution on crops, semi-natural vegetation and ecosystems.
- Data on Natura 2000 sites and listed species under the Habitats Directive, and potential impacts on them.
- Data and impacts on ultrafine particles in the air.
- Lack of HIA, under the policy and framework of the Welsh Assembly.

- Data and hazard of ***Cemfuel*** and other waste fuels.

- No assessment under COMAH, particularly of impacts of potential accidents and ways to limit effects on human beings and the environment.

Weighing public concern

18.6 The public was not made fully aware of this proposal and its implications by any authority or body, including their own County Councillors. Public meetings were not adequately advertised and methods used to alert the community were insufficient (Doc PCG/1).

18.7 FCC, the NWHA and the EAW, have not given enough consideration to the vast amount of public concern that this application has generated. The public has been expected to understand a complex application with little understandable information, when the company has been allowed to present its application in stages because of its complex nature.

18.8 Residents are appalled at the prospect of the continuous burning, transport and storage of hazardous waste products in close proximity to their homes. The opposition to this proposal has come from many thousands of people who feel that their peace of mind, quality of life, safety and amenity are all under threat. Many letters of concern have been submitted, including those to the Assembly requesting that the application be called in for determination. The number has been claimed as 25,000, but this has yet to be verified.

18.9 A study carried out by Peak Associates Environmental Consultants Ltd into the number of justified public complaints that can positively be traced to CCL's plant at Ribblesdale is unusually high. In a three-year period some 475 complaints have been recorded. This does not reflect a site where Integrated Pollution Control can be said to be working. Video evidence from the Flintshire Green Party (FGP) illustrated the plume grounding that takes place and the volume of dust that is released during a trip (Doc FGP/8.7). The problems incurred at Ribblesdale and the lack of satisfactory air quality modelling for Padeswood have only added to the lack of confidence in the Company.

Planning and land use

18.10 Decisions on planning applications have to take into account all material considerations. Alyn & Deeside LP, the Structure Plan and the draft UDP all allocate the area to general industrial use, not exclusively for the cement works. No policies allocate it for hazardous industry or for waste disposal.

18.11 Policy MIN3 is relevant to this development, but FCC did not apply it. The wording would apply to the processing (crushing etc.) of limestone and would apply without question if the kiln were sited in the quarry, as is normally the case (e.g. Ribblesdale and Ketton). So:

- The visual and pollution effects of the new kiln contravene policy MIN3.

- The Inquiry cannot ignore failures in Pollution Control.
- Four classes of failures by the Environment Agency have been identified:

(i) falling far short of the ideal of minimising harm (delayed action; tolerating bad practice),
(ii) failure to identify polluting practices and discharges,
(iii) failure to take prompt and serious action over the dangerous dioxins and furans,
(iv) ignoring pollutants which are not UK-specified (UFPs, heavy metals).

18.12 PGWPP advises that *"Planning authorities should operate on the basis that the relevant pollution control regimes would be properly applied and enforced"*. However, it has been shown that the EAW controls have been inadequate to protect the public and the environment. Breaches of the Authorisation have been running at the rate of 2 per week for several years, and tolerated by the EAW (Doe PCG/12). The EAW has recently changed the goalposts, replacing the short-term particulate limit by a 24-hour limit (Doe CD/61). Yet this has been criticised as "very poor enforcement practice".

18.13 The EAW does not say in its evidence that the pollution control regimes have not been properly applied and enforced, excusing the pollution as either harmless or because measures are restricted by BATNEEC. It has to be concluded that there would continue to be pollution risks to health and the environment despite IPPC. It is wrong to say that "concerns about potential releases" can be simply left to the EA. Though the EA (with HSE) is the competent authority for COMAH, it has not considered whether the hazardous wastes/fuel would bring the site under the COMAH regulations, and if not, whether planning conditions are required to deal with this in any permission for this proposal.

18.14 The EAW should not be relying on the 1995 WO Circular 35/95 rather than the 1999 guidance and recent legal decisions. The new draft TAN says of material planning considerations *"in land use planning this includes pollution control, and it must be given* full *weight"*. It adds, *"the local planning authority must be satisfied that the conditions likely to be imposed by the Environment Agency Wales would protect the planning interest"*.

18.15 The Waste Management Licensing Regulations Schedule 4 [s.2 (1) and (4)] and the Environment Act's Schedule 12 introduce the relevant objectives from the Waste Framework Directive. This includes prevention of pollution which planning processes must fulfil. So the requirements from the draft TAN have to be taken to supersede the WO Circular.

18.16 There have also been important developments in relation to the materiality of public perceptions of risk.

Health

18.17 The NWHA report to the County Council in November 1999 did not mention that the proposed fuel is composed of hazardous waste (Doc PHIL - Appendix 2). It refers to waste streams and *Cemfuel* as a mixture of various combustible liquid wastes. This report also states its assessment does not take into account the effects of unauthorised

releases, the effects of increased traffic locally or the contributions of non-stack emissions (from delivery and movements of materials around the site) and dust and particulate releases. Given CCL's record of unauthorised releases and bad housekeeping, ignoring these emissions can only be seen as unacceptable bias towards the Company.

18.18 The NWHA claims that a HIA is not necessary but makes reference to the issue of two important documents on HIA, one of which is Developing Health Impact Assessments Wales (Doc CD/38). This is National Assembly policy and the document makes clear its commitment to the use and development of HIA.

18.19 Developing Health Impact Assessments in Wales states: *"There is no doubt that better tools are needed to enable us to predict the health consequences of policies in numerous areas. Health impact assessment has been described as "an idea whose time has come" and its use as a tool to aid policy and decision-making must be tested. The need for health and well being to be sustainable was emphasised in Better Health Better Wales. This can only be achieved in the context of sustainable development and care for the environment. Local Agenda 21 strategies have been adopted by local authorities in Wales to focus on sustainable development. The degree to which policies, programmes and projects that impact on health produced sustainable health also needs to be assessed".* Where EIA's are undertaken *"it should be ensured that health issues are adequately covered'.* It was the NWHA's duty to advise the Council and this Inquiry that the EIA needed a full evaluation of the health and risk to health of the local population.

18.20 The importance of outcomes to people and communities must be recognised and therefore their participation in the health impact assessment process is essential. The NWHA said it knew of the level of public concern yet it didn't involve the public in its study. It also provided vital medical data to an American company retained by CCL several days before it was released to Rule 6 parties. This can only be seen as bias to CCL and shows the NWHA cannot be regarded as independent.

18.21 The Committee on the Medical Effects of Air Pollution (COMEAP) report (repeated in Doc PH/1 Appendix 2) states the following:

- *"Sulphur dioxide is a respiratory irritant, especially in people with asthma, doesn't have a threshold below which $S0_2$ has no effect on health. Significant increases in daily averages cause a small rise in deaths and increases acute admissions for chest problems for people over 65 and could be alarming to locals with asthma, heart and chest problems.*
- *Large increases in levels of NO_2 result in a small overall increase in deaths. There is also a small increase in deaths, acute hospital admissions for chest problems and heart problems due to a significant increase in PM_{10}.*
- *Significant increases in levels of ozone result in small increases in deaths overall and acute hospital admissions for chest problems.*
- Current medical knowledge does not allow us to estimate the effects on health of any specific levels of the pollutants dioxins and metals in the environment". (This is not exactly true, as CANK's evidence on dioxin shows, but the presence of many unknown hazards from ultrafine particles and trace chemicals means that

the report should not dismiss the dangers to health: a precautionary approach is essential).

18.22 The report goes on to state: *"Anxiety about the health effects of emissions from local sources of pollution may affect the mental and physical health of certain individuals. Anxiety may be exacerbated by episodes of visible pollution or odours, an absence of information on health or misinformation about the level of risk. Therefore minimising unauthorised releases, effective systems to respond to complaints about visible pollution or odour and availability of factual information on levels of risk and health effects are important".*

18.23 It is not surprising then that a high degree of anxiety exists in the local population since there has been an on-going odour and dust problem at Padeswood and uncertainty about the effects on health. Dr Roberts has also added to the misinformation about health due to his positive reassurances about the Kiln 4 emissions, whereas other health professionals have been more cautious.

18.24 Some of the local residents have lived for many years close to this plant that has such a poor record of environmental care. The NWHA used Ketton works as the model for emissions, although Ribblesdale also burns *Cemfuel* and has a far worse record of justifiable public complaints (472 in a three-year period). The NWHA ignores this record of complaints and plume grounding and only states that the COMEAP report on Ribblesdale did not indicate any concerns for health (Doc CD/44).

18.25 The experiences with BSE, contaminated fly ash from Byker and the Aintree incinerator should be a lesson to all concerned with this application where there is so much uncertainty and conflicting views on the health impact of this proposal.

Habitats assessment

18.26 Under the Habitat Regulations the Inspector and the Assembly must consider the impact on European sites and on listed species whether or not breeding or resting on those sites. The specialist body in Wales is the Countryside Council for Wales (CCW), who had informed the EA and Flintshire CC that an assessment should be made. Neither body has required the Applicant to conduct the required assessment. Phoenix informed the Inquiry that certain local sites are included in a list of candidate SACS, which have recently been notified by the NAW to the European Commission. It is Government policy to give candidate SACS the full consideration and protection accorded to confirmed sites under the Habitats Directive and *Natura 2000*. None of the responsible bodies have presented evidence to the Inquiry on this aspect.

18.27 Buckley Common cSAC lies about 1 km from the site. From the dioxin survey (Annex 4 of Doc EA/3) the Common has the highest levels of lead and dioxin/furan pollution of all the sites sampled. From Phoenix's interpretation of the dioxin re-analysis, this is caused by the plume tending to ground on the hillside more than in the valley east of the plant. Phoenix concludes there may well be a problem of abnormal dioxin-furan pollution (as well as lead) on the Buckley Common cSAC. The NAW office may be at fault for failing to check the need for a habitat assessment, to insert it in the terms of reference and to ask the Applicant and/or CCW to give evidence.

Planning and hazardous waste

18.28 Mr Morris from the EAW said under questioning that the prime purpose of the proposed development "has to be cement making" and failed to consider it as a hazardous waste incinerator masquerading as a cement kiln. For IPC/1PPC licensing he considers it only under one classification, though the EA also has duties under waste management, which include the fundamental Waste Framework directive duty of "ensuring waste is recovered or disposed of without endangering health".

18.29 The EAW did accept the change of fuel to waste (including storage of waste fuels) is a "major change" and that considerations of BPEO apply to use of the particular waste streams. Therefore, waste policy is relevant, and the full legislation on waste applies. The EA and HSE are the competent authorities for implementation of the COMAH Regulations 1999 (implementing the COMAH Directive) yet the EAW provided no evidence. The EAW did not deny that COMAH legislation on hazardous wastes could apply. Planning law requires particular consideration to be given to hazardous development. In this case the wastes are classed under Annex II of the Hazardous Waste Incineration Directive (HWID). It is also classed as hazardous under COMAH (Doc PCG/28).

18.30 Schedule 12 of the Environment Act 1995 contains not only the phrase "without endangering health", but also "without risk to water, air, soil, plants or animals". There is clearly a risk of accidents involving the proposed transport and use of *Cemfuel.* Accidental spillages could reach the Black Brook, as have recent spillages of fuel oil. More seriously, any fire or explosion of the kiln would spread the *Cemfuel* and/or other wastes into the Brook, because no "buffer zone" has been planned. There are therefore risks to nearby residents and to users of the adjacent right-of-way and public road, the Black Brook and adjacent badger habitat. The EAW evidence refers to accidents only under IPPC (s.4.7.8.2), which would only "limit the consequences" of accidents. The EAW did not advise the Planning Authority on the risk of development without a buffer zone, and on the consequent inability to meet Sch.12. Pheonix believes a presumption for a buffer zone must be made in the absence of contrary evidence.

Cemfuel

18.31 Phoenix has demonstrated that a 600 tonne store of *Cemfuel* comes under COMAH because a) it contains hazardous substances from the European waste list and b) it is classified as a dangerous substance in COMAH Annex I, highly flammable or flammable liquid (Doc PCG/28). Neither the Company nor the EAW have given evidence to dispute this. Moreover, under its classification by the Agency as "waste", *Cemfuel* comes under Annex II of the HWID.

18.32 The EAW said that *Cemfuel* would not contain PCBs, nor dioxins and furans but it was wrong. The approved categories of wastes in *Cemfuel* do not exclude these from classes of industrial or chemical industry residues. Indeed, the permitted classes include spent carbon filters (Doc CC/7), just the substance used to filter out dioxins and furans from combustion gases. While the dioxins and furans may be present in small quantities, no limits are set or tests required for their presence in *Cemfuel.*

Dioxins

18.33 The EA's record on dealing with the dioxins' problem is poor and fully justifies public concern over their ability to protect us from pollution. LANK, TCC and Phoenix have all detailed their concerns over this chemical.

18.34 The October 1998 results of sampling of emissions from Kiln 3 had the immensely high value of 25-27ng/m^3 I-TEQ, yet the EAW took no action until the Improvement Notice of 29 November 1999. Under that Notice, a report was due by the end of June, but has apparently just lain on a desk. Mr Morris told the Inquiry he was waiting for CCL to submit an application to change working methods, while the Company is waiting for him to read and review the report. Sampling commissioned by the Agency in 1999 gave lower dioxin readings of about 2 ng/m^3, but the level is still very high and established the Kiln as the UK's l1th worst industrial emitter in 1999. The September 2000 sample had a level of 3ng/m^3, so the Kiln presumably rates still worse this year.

18.35 The Agency's cursory dismissal of the dioxin problem in the soil sample analysis also validates the public lack of confidence. Phoenix's interpretation of the dioxin analysis is that there is definite evidence of raised dioxin and furan levels around the plant and that the components (cogeners) reflect the fingerprint of the 1999 emissions from Kiln 3. There is no emission monitoring under kiln disturbances or attempt to find other reasons for the ten-fold higher dioxin emissions in 1998.

18.36 Proper action by the EA in the light of the Rechem/Pontypool and CPL/Bolsover dioxin cases would have been to:

(a) require continuous monitoring instead of single samples and
(b) check on bio-accumulation via sampling of foodstuffs and fauna in the area.

18.37 The EAW's failure to treat the dioxin issue promptly and seriously demonstrates to the public (and this Inquiry) that we should place only limited confidence in their regulatory function. Phoenix is highly concerned that part of the present proposal is to continue operating Kiln 3 for several years, despite it emitting more dioxin than Kilns l and 2. The dioxin story is a strong reason for shutting down Kiln 3 first - and forthwith.

Air pollution

18.3 8 On the detailed use of plume models and parameters assumed, Phoenix relies on LANK evidence that the claims made by CCL are unsound. The EAW excused the Applicant's substantial changes in its estimation of stack gas emission volumes between stage 2 of the IPC application and the Inquiry by asserting that it was "too expensive" for the Company to draw up a "final design". Phoenix does not accept this failure to provide the "consolidated document" in the earlier stages of the application for this Inquiry, and indeed as part of the ES.

18.39 Phoenix pointed out the uncertainties of plume dispersion models and submitted in evidence the new comparison commissioned by the EA (Doc PCG/1). A factor of 3 error may well be expected when using the same input parameters. There are further

errors in using inappropriate meteorological data from a distant site. The Applicant's modellers had explained they used Speke's 1970s data because there was none more recent available. Data reliability and climatic conditions have changed since then, and Speke is close to sea level and could not be compared to the Padeswood valley that lies at a few hundred feet altitude. The Company should have carried out their own local monitoring for at least a full year.

18.40 There was an additional uncertainty about the highest hourly values that ADMS v3 gives compared with ADMS v2.2 (>98%ile). The modellers put differences between the ADMS versions down in (large) part to differences in the pre-processor. Only second generation models (not ISC) can give one-hour peaks, and the agreement between ADMSv3 and AERMOD as reported by CCL's evidence could be just a common error in the preprocessor. The new EA appraisal retains the ADMSv2 assessment, which is several times higher at the 99.8%ile level than AERMOD. In the absence of contrary evidence, the worst case should be assumed.

18.41 Phoenix has reported plume grounding events - and produced pictures of a day when grounding was seen. To local residents, these events are not uncommon. The modellers agree that the local terrain with rather low hills is unimportant in the models AERMOD, ADMS and ISC that they use. This could mean that the models fail to represent the plume grounding that is seen to occur. The existing Works is an obvious method to test the modelling, by checking measured pollution under measured meteorological conditions and emission rates. The Applicant's reliance on uncertain models and inappropriate assumptions of meteorological data should not be accepted.

18.42 The CCW drew attention (June 2000 letter to the EAW - Doc PCG/22) to the high levels of N02 in the EA data (Doc EA/3 - Annex 2, Fig. 4.1) and said these should be assessed against the short-term vegetation standards. CCW said (Doc PCG/33 - letter 15 March 1999) CCL's application "has omitted vital information" and it was unexplained why the Agency did not act to remedy this. Neither letter is in the EA's Appendix of relevant correspondence. This establishes that the CCW interest has not been officially represented at this Inquiry. (see Habitats assessment).

18.43 The EAW agreed that the SO_2 data (Doc EA/3 Annex 2, Fig. 3.1,2) shows the kilns plumes were reaching and affecting the Penyfordd monitor, implying the NOx plume was reaching it too. The one-hour concentrations of Fig. 4.1 could mean 100 or 150ppb of NOx and was likely to exceed the 40ppb (75µg/m^3) WHO 4-hour vegetation limit. Additional to this, the short-term peaks in $S0_2$ (Fig. 3.2) could result in further and synergistic damaging stress on plant-life.

18.44 The EAW would not apply the annual limits on $S0_2$ and NOx for protection of vegetation and ecosystems, because the Government intends to exempt areas within 5km of the cement works (para 299 of NAQS 2000 and Doc PCG/1). It was thus unable to assure the Inquiry that the Agency would be able to protect the nature conservation interests (in particular European-designated sites) from air pollution harm. Although the EAW would consider the issue in future under IPPC, its powers are limited by BAT. And if the EAW is unable to protect the conservation interest, then this must be secured under the planning system. The evidence to ensure that has not been presented to the Inquiry by CCL, or by the Agency.

18.45 The CCW letters also raised strongly the issue of acid gas emissions within range of critically acidified countryside. The first letter said the EA was conducting "UK wide critical loads modelling" to assess pollution from individual sources reaching "EuropeanlNatura 2000 sites", and added, "existing and proposed developments at Padeswood would also require such assessment" (Doc PCG/33 March 1999). It's very possible that Padeswood would be required to cut its acid emissions. The emissions have to be assessed relative to Natura 2000 sites, so the nearby sites to Padeswood could be critical. It is thus important to know these sites and their current pollution/acid state. Over the Newbridge scheme, the EAW informed the Council specifically (Doc PCG/l, letters from EAW to Powys CC) that the Habitats assessment, including impact on *Natura* 2000 sites, had to be carried out before the planning decision. Phoenix noted that the EAW did not deny that this guidance should apply at Padeswood too.

18.46 Ultrafine particles (UFP) from the stack were identified as an important issue in evidence; yet no emission standards exist for this pollutant. The EAW said PMIO included all particulates below PMIO. But this ignores the fact that the standard is based on data relating to urban particulates from vehicles, that industrial particulates can be very different (formed by condensation of metals and chlorides, and that composition and ultrafineness strongly affects toxicity (Royal Society conference, M Wallis - Doc PCG/1). One also needs to consider the Directive that requires consideration of $PM_{2.5}$ particles (1999/30/EC).

18.47 Phoenix concludes that UFPs from the proposed kiln should be identified as a potentially significant or serious problem for public health, which has not been assessed or technical fix offered. The EAW's evidence to this Inquiry (Doc EA/3) has assessed problems only against official standards, and failed to advise a precautionary approach on siting an incineration plant within range of housing.

18.48 The Austrian EA has a policy that waste-burning plants like cement kilns should meet the same standards as dedicated waste incinerators. This is particularly relevant to the NOx levels for the latter (200mg/m_3) beings much tighter than for cement kilns. The Applicant is expecting only to meet 500mg/m_3, even though pilot plants in three countries have proven that the tighter limit can be met using selective catalytic reduction (SCR) technology.

18.49 The lack of data on acid emissions/deposition, on sensitive *(Natura 2000)* sites and on NOx levels near Padeswood makes the argument for the need for NOx abatement difficult. And it seems unlikely that the EA with its policy that SCR is not BATNEEC or selective I, non-catalytic reduction (SNCR) would in the near future decide that SCR is `BAT' under IPPC. Therefore, a planning condition should be imposed that SCR technology should be included on precautionary grounds, if the plant goes ahead.

18.50 There are further worries about many trace pollutants from incineration processes. The EA admitted to the Commons Environment Committee (Doc PCG/19 - The *Guardian* 29 Nov 2000) that the understanding of health impacts of incinerators is at an early stage. The lack of information on possible emissions of these pollutants from Kiln 4 means that the proposal should be rejected in the absence of any proposals to investigate let alone abate them.

19 THE CASE FOR MRS MIA JONES A CHESTER CITY COUNCILLOR FOR THE DODLESTON WARD AND AN OBJECTOR

The material points are:

Planning policy

19.1 An environmental assessment should take account of impacts wherever they occur. In principle it is wrong to approve development which would undermine the ability of neighbouring authorities to achieve their objectives. Especially where those objectives accord with national policy and guidance.

19.2 The Applicant says that the Cheshire Structure Plan Policy GEN 3 only relates to Cheshire. This is correct, of course, but the policy clearly sets out the principle that the environment should be protected. Given the proximity of the cement works to the border (some 4km to the nearest boundary of Dodleston ward), and the potential wider impacts that the development might have, it is important that the policy approach of neighbouring authorities is taken into account. In considering issues of sustainability it is essential to consider the wider impacts.

19.3 It is agreed that RPG13 is not directly applicable to development in Wales, and that Policy GEN 7 of the Cheshire Replacement Structure Plan relates to development in Cheshire. However the underlying environmental objectives of those policies are equally relevant in this case. Paragraph 3.7.1 of PGWPP indicates that collaboration is necessary between "all authorities likely to be affected'. This lends weight to the view that the policies and objectives of neighboring areas are legitimate matters for consideration in a case of this type. The relative weight to be ascribed to neighbouring plans and proposals is an important issue, especially given the potential cross border impacts of so many environmental matters. After all nature does not respect administrative boundaries.

Public health

19.4 The technical evidence submitted by the CANK group is adopted. There is particular concern in relation to the perception of risk. In this respect reference may be made to R v *Tandridge District Council (2000) JIPL* 604 where the Court of Appeal held that the existence of objectively unjustified fears can, in some circumstances, be a legitimate factor for a planning authority to take into account when deciding a planning application, although the weight to be given to them is in principle a matter for the authority.

19.5 It is because of the concern in relation to the perception of risk that a local survey was organised. It was distributed to 570 households in the Dodleston ward and advice on its preparation was sought from experts in this field. The Appendix to Doc MJ/2 and Doc MJ/5 contain the survey material. It is submitted that the NAW can have confidence in the professional nature of the survey and the validity of its conclusions against the project. That survey demonstrates:

- a high response rate in Dodleston ward;
- considerable concern about the visual impact of the proposed development; and

- considerable concern that there would be harm to human health as a result of the proposed development if consented.

19.6 In addition Dr Roberts from the NWHA recognised the existence of public health perception as a phenomenon. He said, "I do not attempt to say that their fears are unjustified- no matter what you say you cannot stop fear". In these circumstances, and in the light of *Tandridge,* it is submitted that considerable weight should be given to the public perception of risk, and this remains the case whatever conclusions are reached in relation to the technical evidence presented to the Inquiry.

20 THE CASE FOR THE FLINTSHIRE GREEN PARTY AGAINST THE PROJECT (see also fall closing submissions - Doc FGP/10)

The material points are:

20.1 The project as a whole, including the burning and storage of hazardous waste should have been considered together and an EIA carried out under the Environmental Impact Assessment Directive (EIAD) and the HWID. (A complaint has been made to the EU Commission). The ES is in breach of the EIA, as explained in the legal submission. It is flawed in that it did not consider the disposal of waste and hazardous waste residue. The project is co-incineration and should be considered as such.

20.2 The proposal would cause serious health problems including increases in asthma and cancer cases in the local community.

20.3 On the site visit, gaseous emissions were occurring from the seals to one of the kilns due to reduced rotation of the kiln caused by wet coal. This bypassing of the stack monitor and reduced kiln temperature would occur in the new kiln and cause unburned toxic particles to be emitted to the atmosphere.

20.4 The Applicant has an appalling record of mismanagement of the works as indicated by 290 breaches of conditions in the Authorization at Padeswood since 1995 and several criminal convictions (Doc FGP/1.3). How could the Applicant be trusted to operate a hazardous project? The EAW has no resources or will to enforce the Authorization conditions.

20.5 The Applicant would make more money burning hazardous waste than making cement. The burning of *Cemfuel is* not energy recovery but entirely waste disposal. The solvents could all be re-cycled thus the process is unsustainable. Waste could also be imported from overseas and there is therefore no legal mechanism to trail waste and no way of knowing what is in the waste or the emissions from the stack (Doc FGP/1.3). In addition, there are 98 waste codes used in *Cemfuel* and no way that all of these can be analyzed for.

20.6 The NWHA was not neutral or impartial. It was biased and collaborated with the Applicant on its evidence before supplying the same information to the public. It did not look into the health problems of 20 workers who suffered severe skin rashes from materials used at the Padeswood works (Doc FGP/6.3).

20.7 The emissions from Kiln 4 are not agreed to be lower than from Kiln 3. They would be different and more toxic. Species including badgers and newts would be harmed from the increased toxic emissions.

20.8 The Ribblesdale plant causes levels of pollution over four times the UK health limit at the farm on the top of the ridge 3 miles from the cement works: children and adults living there have developed asthma and chemical responses and one of the children has ME. There are no other nearby pollution sources. Neither the Health Authority nor the Ribble Valley Borough Council has been out to monitor this. The same could happen at Padeswood (Doc FGP/8.1).

20.9 All of the air quality modelling is invalid because it is based on an efflux velocity of 12.5m/sec, when the minimum is 15m/sec. CCL has failed to justify why less than the minimum velocity was used. Neither has there been any assessment of the impact of malfunctions e.g. failed bags. Furthermore, all the weather data is from the totally unrepresentative coastal source at Speke airport, whereas Padeswood is inland with a microclimate of its own. In addition, the particle size, shape and aerodynamics have not been taken into account in the modelling. For these reasons alone the application should be refused.

20.10 Cement kilns work at a maximum of 2% oxygen. They cannot make cement with 6% oxygen in the firing zone. But 6% oxygen is needed for complete combustion of organic waste (Doc FGP/2.1). The high levels of carbon monoxide emitted confirm poor combustion in Kiln 7 at Ribblesdale, when burning hazardous waste.

20.11 No account has been taken of leakages, spillages and breakdowns, reduction of particle size and secondary particle formation when burning hazardous waste, or the increase in mass of bypass dust and the increase in heavy metals.

20.12 The Maastricht Treaty states that, *"the Precautionary Approach principle has precedence where all the factors in an application are not known"*, and if this application were to be allowed it would be in breach of this Treaty.

21 THE CASE FOR TREFNU CYMUNEDOL CYMRU (THE WALES BROADBASED ORGANISATION) AGAINST THE PROJECT

The material points are:

Pollution

21.1 Toxic emissions, no matter how small, would be additional to the existing pollutants in the atmosphere and the soil. Inevitably there would be a cumulative effect over a prolonged period and the grass, vegetables and fruit grown on that soil would have high levels of dioxins. If an individual were allergic to any toxic substance then he or she would react even to the smallest doses. In other words, the effect is not always dosed related (Doc TCC/5).

21.2 It is a fact that the childhood asthma is on the increase in the United Kingdom and is blamed on a number of air pollutants. Vulnerable children would be particularly at risk of developing allergic asthma as a result of exposure to particulate emissions.

21.3 In medical practice, any new drug goes through a period of research and development extending from 10 to 20 years. It is tested on laboratory animals before human testing and after a very thorough and vigorous examination, the committee on safety of medicines would grant a license for the use in the humans. Each new drug is closely monitored and all adverse side-effects are reported. Physicians observe any serious side effects, and drugs can be withdrawn at anytime, and it can be recorded that a particular patient is never given the same drug again. If CCL were allowed to burn toxic substances in the proposed new kiln there would be no such safeguards to protect the local population. The damage would be continuous and it would be extremely difficult to shut the kiln.

21.4 To allow CCL to burn potentially hazardous substances in populated areas would be utterly irresponsible especially because no one can guarantee against accidents, human failure or equipment failure. It would be of no use to the victims for everyone to say that the burning of toxic substances should have never been allowed so close to populated areas as was the case after the Bhopal disaster.

21.5 Internationally cement kilns burning hazardous wastes are known to be a major source of dioxins (USEPA dioxin draft review vol. 11 Chapter 5, March 2000). Furthermore, the draft of a recent US Environmental Protection Act study on dioxins found new evidence of cancer risk from exposure to the toxic chemical compound (Doc JWE/17). It is claimed that modern emission standards are stringent. However, it is difficult to be confident that emission levels are always in compliance with authorizations when they are normally only sampled twice a year, even when the highest levels are likely to occur during plant upsets, when no monitoring is undertaken.

21.6 Furthermore, the emission standard and monitoring does not include brominated dioxins, which are claimed to be as toxic as the chlorinated species. It is known that brominated and other halogenated dioxins are formed in incinerators and the levels of brominated precursors are increasing because of the use of these compounds as fire retardants etc (Doc TCC/1).

Public health

21.7 Kiln 4 would be a huge point source for emissions of a range of toxic substances and there is great uncertainty about the total level of impacts on local health and those living more distant from the plant.

21.8 The NWHA fully accepts the impacts on health that arise from public concern and anxiety and acknowledged that they had not been reduced by its evidence or the EA regulation.

21.9 The existing kilns have, on the Applicant's evidence, been exceeding health-based standards but neither the EAW nor the NWHA have acted to ensure that health is protected over this period. Even after correcting the recently notified error in the DETR report produced by ENTEC: Regulatory and Environmental Impact Assessment of the Proposed Waste Incineration Directive (REIA), the proposed NOx SO_2 and particulates emissions would still bring forward more than 2 deaths per annum (Doc TCC/6). The number of hospitalisations brought forward is even larger. The NWHA claims that you cannot compare deaths brought forward by air pollution with other

deaths even though there is 200x greater risk than the risks from rail travel - which itself has caused huge anxiety during the course of the Inquiry.

21.10 The NWHA accepts:

- the calculations based on the Institute of Occupational Medicine impacts of deaths (TCC/7) - 3 days lost/person with 5000 people affected. It rationalised this impact from the proposal by comparing with other impacts and deaths.

- Air pollution is undesirable and every effort should be made to reduce it. CCL do not use the best techniques to do so.

- Important information needed to assess health impacts is still missing - this included particle size, distribution and specification. It was unclear when, or if, this data would be made available.

- NWHA has based its assessment on the impacts from the main stack and that this was incorrect in relation to the concentrations of particulates from the clinker cooler by a factor 8-10 (even after the CCL correction of the errors in modelling evidence).

- There is a level of harm but argues that it is acceptable in relation to other risks.

21.11 TCC do not consider that the comparative exercise is a legal (or moral) basis for the decision. The approach clearly places the application in conflict with the provisions of the Human Rights Act implementing Articles 2 and 8 of the Convention on Human Rights and for this, and the other reasons presented in our evidence, the application should be refused.

22 THE CASE FOR DODLESTON PARISH COUNCIL AGAINST THE PROTECT

The material points are:

22.1 Objections are sustained on grounds of public health, visual amenity and highway traffic.

22.2 No evidence was put before the Inquiry to prove that the components of *Cemfuel* and *Profuel* are not capable of being re-cycled.

22.3 From the European Communities Eleventh Report it would appear that the cement industry is still fighting for permission to pollute.

22.4 The dangers of incinerator ash are very relevant to Cement Kiln Dust (CKD) from Kiln 4.

22.5 Environmentalists, extrapolating from the EPA's risk findings, have estimated that about 100 or 7% of the 1400 cancer deaths occurring daily in the United States are attributable to dioxin. (Doc DPC/7). The dangers of dioxins are referred to in Document DPC/10.

22.6 Dodleston and District Parish Council had obtained verbal information from the Meteorological Office (MO) to the effect that, "In the UK the generally prevailing wind is from the West part of the quadrant, between NW and SSW". Local questionnaires tend to confirm the local validity of that statement. Hawarden airport may have been laid out in an X shape precisely because of the predominance of winds from the Western quadrant -particularly NW and SW. There is evidently less need for a North/South runway (Doc DPC/1 A).

22.7 The fact that the prevailing winds in Speke are from the SE and NW is totally irrelevant to the site at Padeswood. The CCL data from Padeswood itself clearly shows that the prevailing winds are from the West. Dodleston and District Parish Council have used the data supplied to produce a "Padeswood Wind". The same data is used by the EAW. The Padeswood data, even though not subject to MO standards and calibration, is undoubtedly the most relevant wind information before the Inquiry. It would be sensible to re-work the Applicant's evidence using the Padeswood information.

22.8 The Applicant's "Additional Information" shows that Dodleston would receive an incremental Annual Mean Concentration of any unit pollutant of 0.006. If the modelling were re-worked using "Padeswood Wind" information then the increment would probably increase to about 0.009.

22.9 Two out of three Doctors of Medicine contacted in Dodleston expressed concern about the hazards of Kiln 4 - including dioxins (Doc DCP/15). Using the inference of CCL's own argument, the average member of the general public would be even more concerned.

22.10 The computer modelling undertaken by CCL is deficient in that it did not use Padeswood wind data and did not consider topographic effects. Furthermore neither they nor the NWHA considered unauthorised or fugitive emissions of which CCL at Padeswood has a very bad record.

22.11 The bordering South Cheshire Health Authority, only 4.7km away from Kiln 4, recommended that a HIA should be carried out. The NWHA survey was not adequate. It did not consider the down-wind English wards at all.

22.12 Most people, on learning that Kiln 4 would incinerate tyres and chemical wastes, become concerned about emissions, which they expect to be bad for their health. Within a 10km radius of Padeswood this anxiety is likely to affect 25,000 people. They know that if you burn tyres or plastics on a bonfire you get huge quantities of smelly black smoke that it is dangerous to inhale. In contrast they burn coal on open hearths in their homes and are quite happy to do so. There is an instinctive fear that burning rubbish emits dangerous pollution. Evidence before the Inquiry about ultrafine particles and brominated dioxins extends that fear of the unknown. Biochemical knowledge and stack emission analyses are not yet fully understood. If Kiln 4 goes ahead then up to 25,000 anxious people may have an expectation to become ill; a huge potential impact reducing their lives by months and causing blight for years of suffering mental health problems. As the NWHA reported, anxiety itself has significant adverse mental and physical effects.

22.13 In the event of the grant of planning permission the following conditions should be considered in addition to those already submitted in the proof of Dodleston and District Parish Council Proof of Evidence:

(a) A monitoring post, run and manned by the EAW should be set up lkm East of kiln 4, in Penymynydd, to continuously monitor NO, and $S0_2$

(b) Weaker standards for authorised emission limits should not be allowed during the start-up period, which lasted up to 5 years at Ketton.

(c) The invalidity of any FL Smidth guarantee resulting from use of alternative fuels should not impact upon insurance cover to pay compensation should emissions prove hazardous.

(d) SCR technology has been well researched, so despite its cost it is most certainly an "available technique". Depending on its effect on ultrafines and other emissions globally, it may well be "BAT". Additions of electrostatic precipitators (ESP's) after the bag filters might further decrease particulate emissions and be BAT. BAT should be used for Kiln 4.

3 THE CASE FOR COUNCILLOR DEREK DARLINGTON AGAINST THE PROJECT

The material points are:

23.1 Many debates have taken place regarding the possible effects of burning toxic wastes. One thing that has not been challenged is the statement made (repeatedly) by Dr. Roberts that people would (not may) suffer anxiety. Anxiety would be exacerbated by episodes of visual pollution or odours and would affect the mental and physical health of certain individuals. Dr.Roberts cited the case of the dwellings built on a former chromium works in Glasgow where 25% of the residents suffered deteriorating health (Doc PH/1).

23.2 Not only would there (undoubtedly) be visible pollution but a massive physical visible monument to remind those affected of their fears and anxieties.

23.3 No one can claim that CCL's housekeeping record has been good. A high figure of 255 self reported "occurrences" over the last four years equates to more than one per week. Additionally, the firm has recently been fined £1,500 for an oil spillage. More recently, the firm has been fined £18,000 in connection with a prosecution brought by the Health and Safety Executive. In February 2000, Flintshire County Council served a Noise Abatement Notice on the firm.

23.4 If Kiln 4 were granted planning permission it would have devastating effects on the community of Penyffordd. Many people would leave the village even though they would undoubtedly encounter problems when selling their property. Many people would suffer from anxiety. Penyffordd is a very vibrant community. This would be lost. The area would decline. It is not known what the long-term health effects would be. The precautionary principle should apply.

24 THE CASE FOR MS JILL EVANS MEP AGAINST THE PROJECT

The material points are:

24.1 The European Union is committed to the re-use, recycling and minimisation of waste. Incineration depends on the continuing production of waste and therefore discourages these aims. Over capacity would encourage incineration rather than the treatment and recycling of waste.

24.2 The NAW has a duty under section 121 of the Government of Wales Act 1998 to promote sustainable development in everything it does. The NAW defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The Assembly, in common with the UK Government is committed to the precautionary principle, to preventing pollution and respecting environmental limits.

24.3 *Cemfuel,* which would be used to fire the kiln, would produce dioxins for which there is no safe threshold for emissions. The House of Lords Select Committee (15/6/99) and other reports have produced evidence to back this statement. More research work needs to be done on the affects of micro-particles on human health and the environment. Until such research is conducted the precautionary principle should apply.

24.3 The co-incineration process creates dust which contributes to particulate matter concentrations which are known be responsible for increasing mortality and exacerbating respiratory and circulatory illness.

24.5 Pollutants from incinerators (and co-incinerators) include toxic and bio-accumulative substances such as heavy metals, dioxins and furans, the latter two of which are carcinogenic.

24.6 European Union waste legislation includes a principle of proximity that states that waste should be handled as locally as possible. In the case of Padeswood, hazardous waste *(Cemfuel)* for which there is no local supplier would be transported considerable distances to and from the plant.

24.7 Transportation of *Cemfuel* to Padeswood would increase traffic volume and could pose a possible health hazard in the event of an accident.

25 THE CASE FOR MR J W ELLIS AGAINST THE PROJECT

The material points are:

Authorized emissions

25.1 The concept of authorized emissions endorses industry's economic assumption that it is acceptable to expose the population to a polluted atmosphere. This Authorised emission, it is claimed, ensures a non hazardous environment for the full spectrum of human types and genetic categories. That is the summary of the commercially sponsored fallacy. It does not take account of factors such as age, physical condition, side effects or allergic reaction.

The Environment Agency

25.2 CCL and FCC claim that the Agency would protect the health and welfare of the general public from the proposal. But there is little evidence that where a breach of so-called safe emission standards occurs, abatement or closure orders are imposed. Page V of the 1997 House of Commons Environment Committee Report on the Environmental Impact of the Cement Industry criticized the EA for its handling of the introduction of *Cemfuel* at the CCL cement plant at Ribblesdale. A number of deficiencies in its handling and interpretation of environmental monitoring data were highlighted as well as examples of inefficiency and lack of foresight (Doc JWE/4).

25.3 In its May 2000 report on the EA (Doc JWE/7) this same Committee says "On the evidence we have received, the Agency appears still to lack a cogent ethos and strategy". It also accuses the Agency of lacking vision, ineffective management and for "punching below its weight".

Emissions to air and land

25.4 The Applicant has issued written assurances that chemicals emitted from the proposed Kiln 4 would comply with EC Directives and the NAQS 2000. The Directives and the Strategy do not claim that compliance guarantees that there would be no health risks for the public or that the environment would not be at risk. It is CCL's task to prove that emissions are safe and not for objectors to prove they are unsafe. In rejecting a proposal for an incinerator in Anglesey the NAW has concluded that the perception of a health hazard was sufficient in itself and did not require specific basis (Doc JWE/9).

25.5 The 22nd Report from the Royal Commission on Environment Pollution and Energy - The Changing Climate - June 2000 (Doc JWE/10) describes the "challenge to halt the steady rise in the concentrations of carbon dioxide ($C0_2$) and other greenhouse gases, limiting further change and reducing the risks of catastrophic alterations in climate". CCL's figures show that the current output of $C0_2$ is 488,600 tonnes p.a. at Padeswood and that the projected output from Kiln 4 is 650,000 tonnes p.a., an increase of 33%.

25.6 Emissions include a number of chemicals which cause adverse health effects at low concentrations including small particles, $S0_2$, NO_x and ozone which, according to the Royal Commission on Environmental Pollution Report, have been estimated to contribute to 24,000 deaths and the same number of hospital admissions each year. The most dangerous particles to the lungs are 5 microns in size or smaller (PMS). Dioxins are also of concern. The Washington Post of 7 May 2000 (Doc JWE/17) quotes the US Environmental Protection Agency in reporting that the US government was preparing to dramatically raise its estimate of health effects from dioxins. It cited new evidence of cancer risk from low-grade exposure, including changes in hormone levels as well as developmental defects in babies and children.

25.7 All the evidence leads to the conclusion that the public does not want to be subjected to chemical emissions from CCL.

Human Rights - respect for family life

25.8 The ECHR as now been absorbed into UK law. All Strasbourg case law has to be recognised in the UK. Article 6 of the ECHR makes it unlawful for a public authority to act in a way that is incompatible with a convention right.

25.9 The works proposed by the Applicant would emit life-threatening chemicals, produce substantial increases in traffic movements with its accompanying pollution from lorry engines. The effect of the Padeswood structure would not only be traumatic for local people but also for those who live much further afield. All this adds up to a violation of human rights under Article 8 of ECHR stating that "Everyone has the right to respect for his private and family life, his home .....".

26 **THE CASE FOR PARISH AND COMMUNITY COUNCILS WHO MADE WRITTEN SUBMISSIONS AGAINST THE PROJECT**
The material points are:

26.1 Many of the letters and Inquiry submissions from these sources cover similar topics. They are summarised as follows:

- toxic fumes would affect the area.
- The fear and apprehension of local people is a material consideration which weighs against the project.
- The predicted increase in carbon dioxide emissions is in direct conflict with the Government's policy on the reduction of greenhouse gases.
- There would be harm to the quality of life in the area.
- There is need to protect the environment, the land, and the health of unborn children.

27 **THE CASE FOR OTHER INTERESTED PERSONS AND ORGANISATIONS AGAINST THE PROJECT** (Approximately 550 letters)
The material points are:

27.1 Many of the letters and Inquiry submissions from interested persons as objectors cover similar topics. They are summarised as follows:

- The Applicant has not proved that the project, which involves the burning of hazardous waste, would not be harmful.
- The quality of life would suffer in the locality.
- Local people have suffered from many years of pollution. It should come to an end.
- The public health risk is too great to permit the application.

- The potential for the pollution to milk production and the livelihood of the farming community.
- There are no safe levels for the type of pollutants that the works would produce.
- The transportation of hazardous waste on the highway is an unacceptable risk.
- The storage of hazardous waste would be an unacceptable risk.
- Lack of confidence in the EAW to monitor the plant.
- The Company has a poor compliance record and has been fined for breaches; this is not a good example of housekeeping.
- There could be accidental emissions that would be harmful.
- Pollutants would be carried forward in the cement product - the kiln should burn conventional fuels.
- The project cannot be considered as modernization, as no improvements would result in pollution terms.
- The potential pollution would not be restrained within political boundaries.
- The Padeswood plant would be no different from the Ribblesdale plant where there is also pollution.
- The project would have serious long-term implications for wildlife and the environment.

28 **THE CASE FOR THE TOURIST INDUSTRY** The material points are:

28.1 There is concern over the proximity of the new works to Chester and the potential for pollution reaching the city. The tourist industry is dependent upon its host environment and this could be harmed by the project.

28.2 Other points made relate to the visual impact of the scheme.

29 CONCLUSIONS - SUBSIDIARY ISSUES

29.1 I have first considered those subsidiary issues raised which, in my view, are not critical to the determination of the application. Source material is indicated by bracketed text.

Cement manufactured with alternative fuels

29.2 Objectors claimed that cement made with the use of alternative fuel in the proposed kiln would contain higher levels of metals than if conventional fuels were used and

that this could be damaging to health and the environment (p27.1). It is true that most of the less volatile metals in *Cemfuel, Profuel* and tyres would be retained in the clinker and would thence become part of the final cement product (p5.12). However, in my opinion, these would largely be bound up within the matrix of the clinker itself or be otherwise in an insoluble form and not readily available for leaching from the product once it had set. More volatile metals would be emitted from the stack or otherwise accumulate in the CKD (Doc CCl7F). I would not therefore expect cement made from alternative fuels to be materially less safe in this respect than that made from conventional fossil fuels.

The use of waste as a fuel

The Waste Framework Directive

29.3 It was argued that the development did not take account of the aims of the Waste Framework Directive. The Waste Framework Directive also covers IPPC activities involving the disposal or recovery of waste. This means that the EA must apply IPPC in a way that achieves the relevant objectives of the Waste Framework Directive. These are set out in Schedule 4 to the Waste Management Licensing Regulations 1994 and repeated in Schedule 12 of the Environment Act 1995. They include: *'ensuring that waste is recovered or disposed of without using processes or methods which could harm the environment and in particular without -*

(i) risk to water, air, soil, plants or animals; or

(ii) causing nuisance through noise or odours; or

(iii) adversely affecting the countryside or places of special interest.'

Circular 11/94 gives guidance on applying the Waste Framework Directive and the relevant objectives. The objectives are addressed directly as part of the two main issues in this report.

The Hazardous Waste Incineration Directive

29.4 Phoenix asserted that the proposal came within the scope of the Hazardous Waste Incineration Directive (HWID) (94/67/EC) (p18.29). This Directive sets out stringent performance standards for hazardous waste incinerators, including cement kilns, that co-incinerate hazardous waste oil and solvents (see Waste Strategy 2000). New facilities within the scope of the Directive are required to comply with its requirements immediately. The EA believes that *Cemfuel* is a 'special waste', as defined in the Special Waste Regulations 1996, which includes all waste on the Hazardous Waste List (currently under review), but this is awaiting a High Court Decision (Doc EA/3). Any incinerator burning waste on the List is subject to the HWID. The HWID is being merged with the proposed Waste Incineration Directive, which would also impose tight emission standards, but is likely to remain in force until around 2005. I agree that the EAW would need to take account of both of these Directives in determining the Permit for the proposed kiln

The Best Practicable Environmental Option (BPEO) and the Proximity Principle

29.5 Potentially, the proposed plant would burn waste material, together with fossil fuel, at various percentage mixes (Doc CC/8). Waste material would be drawn from a number of sources (CAM/30).

29.6 There is guidance on waste recovery, and its transportation, in many published policy documents. One of the overarching themes is the proximity principle. It is simply stated in PGPPP at Chapter 14 entitled Waste Treatment and Disposal: *Waste should be disposed of (or otherwise managed) as close to the point of generation as possible.* There is no ambiguity in this recommendation, and it is a thread which is continued into TAN8: Renewable Energy and in the draft Technical Advice Note (Wales) on Waste.

29.7 MPG10 says *"The availability of raw materials, particularly chalk and limestone, is normally the dominant locational factor in the cement industry. Market and transport considerations and the availability and cost* of *fuel and labour are also important. "*

29.8 There are three main transport components in the manufacturing of the product at Padeswood, comprising the importing of fuel and raw material, and the export of cement. To satisfy the proximity principle on waste recovery the plant would have to be as close as possible to its waste stream sources. These are widespread (Doc CAM/30). Moving closer to a waste stream would impact on the other two factors of raw material movement and movement of the final product. In my view, in an ideal situation, the plant would be at its source of raw material, centrally placed for its distribution, and near its waste stream, but this is not the case here. Moreover, I was not presented with any cogent option which would have satisfied these criteria.

29.9 In my opinion, in line with MPG 10, the dominant elements in the production run are the position of the existing Works and its infrastructure and the availability of limestone nearby at Cefn Mawr Quarry. For the manufacturing process waste for fuel might have to be transported over fairly long distances (Doc CAM/30). But even at present, the existing kilns require a fuel stream that is not sourced close at hand; some of the fossil fuel that would be replaced comes from outside the UK (Doc CC/22C), although much of this is transported by rail in this country. I noticed on my Ketton visit that some of the Caste Cement delivery lorries have been adapted so that on return they can carry tyres for use as fuel in the kilns. In my view, this has a beneficial impact on waste travel and could be adopted for this project.

29.10 The proximity principle is also tied to the BPEO and the Applicant has used the EA BPEO Assessment methodology (Doc EA/10) to demonstrate that its choice of process and use of alternative fuels was the BPEO (Doc CC/7 and 8-table 9.1). But CANK argued that a separate BPEO should be applied to the individual *Cemfuel, Profuel* and tyres waste streams proposed for this development (p.17.24 and Doc CAM/30). The EAW said during cross-examination that the BPEO for these waste streams should be considered at source (p 17. 25). I agree.

29.11 In my opinion, the proposal at Padeswood is primarily to provide a new cement-manufacturing kiln. It can be fuelled by conventional fossil fuels or a combination of waste and fossil fuels (Doc CC/8). The approval of the scheme would not therefore

determine that the site is necessarily the BPEO for the individual wastes themselves. That would depend on their distance from the kiln, the mode of transport and the availability of alternative disposal options suitable on environmental and safety grounds and their position in the waste hierarchy (Waste Strategy 2000-Part 2). In my view, this is a matter for the waste producers and the originating WPA to decide. If some of the wastes intended for Kiln 4 fail to materialise because of this, then the kiln might need to revert to the use of conventional fuels for part or all of the time.

29.12 However, the type of facility proposed at Padeswood is advocated by the Government in Waste Strategy 2000 for some wastes where high temperature incineration is the BPEO. Cement kilns, in particular, are considered to be appropriate for the use of secondary liquid fuels (such as *Cemfuel)* and the incineration of tyres. In this respect, it can be seen that Kiln 4 would be a more sustainable option in the waste hierarchy listed in Chapter 14 of PGWPP compared with a specialist hazardous waste incinerator, for instance, because the process involves energy recovery (see also p30.17 and Doc EA/30).

29.13 PGWPP also says that in Wales the aim should be to provide sufficient facilities to treat or dispose of all the waste produced. But, paragraph 3.3 of the December 2000 draft TAN (Wales) says that regional self-sufficiency may be relaxed in special circumstances. I accept that no evidence of the need for an incineration facility has been given (p17.28). But equally, I have heard no evidence that adequate, similar facilities are already available regionally or that Wales is self-sufficient in this respect, notwithstanding the fact that the waste streams so far identified for Kiln 4 are in England. For the same reason the proposal would not contravene policy WM 1 of the ADLP.

29.14 It seems likely to me that there will be a strong demand for suitable facilities for the disposal of combustible liquid or 'special' wastes and tyres because of the recent adoption of the Landfill Directive, which will prohibit landfilling of such waste (page No.97 Waste Strategy 2000). Paragraph 12.8 of the draft TAN (Waste) says that, *"the implications of the base legislation and strategies, could be that Wales may develop a need for new facilities to manage evolving special waste arisings"*. In my view, the proposed facility should be seen as part of a network of similar installations utilising secondary liquid fuels and tyres, serving the whole of England and Wales. In these circumstances it would be the BPEO for these wastes and would not contravene the proximity principle. I conclude the proposal would not contravene the aims of local and national policies for waste.

The storage of hazardous substances

29.15 It was claimed that the storage of *Cemfuel and Profuel* would require Hazardous Substances Consent (HSC) and that this matter seems to have been ignored during the current process (p18.29). The most recent guidance to be found on this matter is in DETR Circular 4/ 2000. The hazardous substance authority will usually be the local authority and the Flintshire County Council accepts this obligation. The Council says that it has not yet received an application for HSC, but would deal with an application should it be made (p10.9).

29.16 It is clear from the Circular that separate and different decisions can be made for planning permission and HSC. So far as possible, it will generally be desirable and appropriate for detailed control over the manner in which hazardous substances are to be kept or used to be regulated by HSC conditions. In my view there is no confusion here. The guidance in this Circular is in line with Planning Guidance (Wales) Planning Policy p3.6 entitled Other Legislation. Therefore, I consider, that there is nothing in this matter which impedes the grant of planning permission or the later determination by the Council, if needed, of HSC.

Carbon dioxide emissions and global warming

29.17 Carbon dioxide (CO_2) occurs naturally in the atmosphere and is not toxic at the levels generally found. It is not therefore of concern as a local air pollutant. However, CO_2 is regarded as one of the 'greenhouse' gases that contribute to global warming and the UK Government is obligated to reducing the 1990 emissions levels by 12.5% by 2010 under the Kyoto Protocol (p5.8). It has further announced a more ambitious goal of a 20% reduction by this date. The existing Padeswood Works emits 423,000 tonnes per annum of C02 as a result of the decarbonisation of the limestone raw material and the combustion of fuels. Kiln 4 would have a 50% increase in output and would emit 582,000 tonnes per annum of CO_2 burning alternative fuels (Doc CC/8 - table 10.10 and p25.5). This apparent increase hides the fact that the construction of Kiln 4 would allow CCL to close the two wet kilns at Ribblesdale, resulting in a further substantial reduction in CO_2 emitted by the Company there (Doc CC/7).

29.18 I agree with the Applicant's estimate (Doc CCl7) that there would be an overall reduction in CO_2 emissions by the Company between the two sites as a result of this development. This would be largely due to the improvements in energy efficiency that would occur and the replacement of alternative fuels that have higher hydrogen content than coal of the same calorific value. In addition to this there would, arguably, be a further reduction in emissions because of the 'carbon neutrality' of waste fuels that otherwise might be burnt without energy recovery, replacing coal. CCL estimates an overall reduction of 15% of CO_2 emissions per tonne of cement produced compared with today's position as a result of the development of Kiln 4, the closure of wet kilns at Padeswood and Ribblesdale and previous action. I have no reason to doubt this estimate.

The precautionary principle

29.19 Objectors argued that some of the risks to health were uncertain and the precautionary principle should be applied (p20.12, 23.4 and 24.3). Amongst other things, EC policy is based on the precautionary principle, which stems from the Rio Convention. The principle is based on the undesirability of acting in advance of scientific knowledge where there is the proven potential for harm. Appropriate EC action levels are being established for each type of pollution area to be protected, including air quality. In the case of emissions to air, these are largely incorporated into the NAQS 2000 and various EC Directives. If the appeal is allowed, in due course, the EAW through the IPPC procedures will use these standards and BAT to determine emission limits for Kiln 4 that are intended to protect public health.

29.20 BSE, the Byker incinerator and the Bhopal disaster were quoted as examples of things that had gone wrong (p18.25). BSE is not a factor here, and there is no suggestion in this case that incineration ash is disposed of by using it for footpaths and allotments as was the case at Byker. I have no detailed information about the background to the Bhopal disaster, but India is a developing country that does not have the same stringent pollution control standards as those applied in this country. Other sites at Aintree, Bolsover and Runcorn where pollution from persistent organic compounds was a problem, were also raised during the Inquiry (Doc PCG/1 and p.18.36). No detailed evidence was presented about any of these sites but, in my opinion, from the information I have, the proposals in this application would not give rise to the same problems that were identified in the examples listed.

29.21 I agree that we should be cautious in our approach to schemes such as the one in this Inquiry. But the use of alternative fuels at cement works is not an untried practice (see Waste Strategy 2000) and I consider that scientific knowledge and standards are sufficiently advanced to satisfy the precautionary principle in this case.

30. **CONCLUSIONS -THE PRINCIPAL ISSUES** (source material indicated by bracketed text)

30.1 From the aspects of this case that I have considered as part of my brief, I consider there are two main issues. Firstly, the effect that potential emissions and discharges from the proposal would have upon public health; and secondly, their impact on the environment in general surrounding the site.

Issue 1 - The effect of potential emissions on public health

Expected emissions

30.2 On the first issue, Section 5 of this report explains how the cement making process results in emissions from the kiln to the atmosphere and outlines the substances of concern (p 5.8 5.13). Appendix 1 - tables (a) - (d) illustrates the existing emissions and those expected from Kiln 4, together with the predicted key ground level concentrations of pollutants versus national and international standards for these substances. Reductions in releases of substances of concern in the order of 40-90% can be seen, even though there would be a 50% increase in the capacity of the plant.

30.3 The pollutant loads from the existing kilns are based on measured results obtained in 1999 by CCL and submitted to the EAW (Doc CC/7). A correction has been made to increase the loadings to the plant capacity of 500,000 tonnes per annum from the actual production of 421,505 tonnes. The predicted Kiln 4 emissions have been calculated from process equipment supplier guarantees and the performance of similar plant at Ketton and Ribblesdale (Doc CC/7). The pollutant loads from Kiln 4 have been calculated from the planned production of 750,000 tonnes clinker per annum. Objectors claimed a mass balance technique should have been used to calculate the emissions of metals from the kiln (p17.29). But I agree with CCL that this approach is not appropriate where, as in this case, elements are at or below the limit of detection

and where material and product flows are so large that representative samples are not practicable (Doc CC/7F).

30.4 Some objectors (p17.18, p20.7, p22.12 and p27.1) have doubted the emission reductions the Applicant claims can be achieved under normal operating conditions. But, in my opinion, when judged against improvements in technology that have been incorporated into the design compared with sister plants at Ketton and Ribblesdale (Doc CC/7A), the predicted reductions (table l l.l b of Doc CC/7F and table from Doc CC/8C - see tables (a) and (b) of Appendix 1) represent a conservative estimate of the expected performance of the new plant. I believe further reductions in metal emissions from the kiln may also be possible by careful selection and control of raw materials and fuel specifications. Again, this is an assessment that EAW still needs to make, as is the control of fugitive dust emissions (p13.5 and 13.13), which is also covered by the BREF document. EAW has so far only indicated that the basic process selection for the new kiln could in principle comply with BAT under IPPC (p13.17).

30.5 Even larger reductions in ground level concentrations of the key pollutants (in the order of 95-99%) are predicted in the air in the vicinity of the site from the air quality modelling work (Doc CC/10). This is most likely to be due to the improved dispersion that would result from the increase in chimneystack height from 61-76m to 110m. Importantly, subject to satisfactory background air quality being maintained, compliance with NAQS 2000 standards is expected for the key pollutants (Appendix 1-tables (c) and (d)), whereas the existing kilns do not currently achieve this standard.

Air quality-modelling techniques

30.6 There was a difference of opinion between technical witnesses on the potential range of emission rates for the substances of concern and the likely effect that would have on compliance with the short and long-term standards used to assess the modelling data (p9.6 and p17.18). The Applicant claimed that 97.5% of the emissions from Kiln 4 would be within the daily mean + 2x the standard deviation for individual parameters (Doc CCl7A). This seems to be borne out by data from the kilns at Ketton. CANK also used data from Ketton and Ribblesdale to draw a different conclusion that short-term values could be 4-8 times daily mean values (Doc CAM/4 vol.2 and p17.16). From the data I have seen I would expect a lower variability in Kiln 4 emissions than that suggested by CANK (Doc CC/37). Furthermore, if the conditions in the existing Authorization (Doc CD/61) are repeated, the Authorization for Kiln 4 is likely only to permit short-term daily excursions of up to 50% of the daily average emission concentrations, although I accept that these might be exceeded on occasions.

30.7 In addition, there was the accusation that the models did not take account of malfunctioning of the plant and the emissions that could result (Doc CAM/4 vol. 2). It is clear that the existing kilns do sometimes operate outside the Authorization limits and this is true also at the Applicant's Ketton and Ribblesdale works (Doc CAM/4 vol. 3). However, in my experience, occasional exceedences of the emissions limit are not uncommon as they are rarely set in absolute terms. In any case the modelling work produced for the Inquiry was not intended to simulate extreme events at the works. I consider that its primary function would have been to predict the effect of the plant

during normal operation, although the range of values chosen might have included some plant upset conditions.

30.8 Fugitive dust emissions were the most frequently reported unauthorised event (Doc CAM/ 8). CANK had attempted to model these events using the ADMSv3 model because AERMOD does not deal with particulates deposition (Doc CAM/4 vol.2). The results showed that relatively small releases could have a significant impact at a distance of 500m and beyond. In addition to the nuisance effect, it was claimed that increased levels of metals would he deposited beyond the site boundary (p17.19 and Doc CAM/4 vo1.2). However, it seems to me that one of the benefits of the new kiln is that older plant on the works would be replaced and fugitive emissions reduced. For instance, the tertiary meal crusher, planetary coolers and the return dust scoops on the kilns would be removed, as well as an enclosed limestone store and raw material transportation system introduced (Doc CCl7). Any increase in metals in the CKD would be more than offset by the expected reduction in dust emissions. Neither can it be assumed that metals in the CKD are readily available for leaching (p17.19).

30.9 There were complaints that information and data used in the modelling had changed between the ES, the IPC application stages and the Inquiry (p18.38). I have taken the Inquiry documents together with the corrections made during cross-examination that lead up to the agreed statement (Doc CAM/23) as the up-to-date evidence.

3 0.10 There was also disagreement on the version of models used (p 17.18 and p 18.40), with the Applicant preferring AERMOD to the ADMSv3 model because the latter produced concentrations of pollutants downwind, close to the Kiln 4 pre-heater tower that were believed to be too high. Even if the ADMS model had been chosen I note that the high values occurred within the site perimeter and that the NAQS 2000 standards may not apply there. Assuming the agreed oxidation of NO_x to NO_2 of about 30% at 500m from the source all other predictions on either model comply with the NAQS 2000 standards (Doc CC/10A). This is in contrast to the modelled impact of the existing kilns, which indicated failure of the NAQS 2000 short-term average standards for $N0_2$ and $S0_2$ (Appendix 1 - table (d)).

30.11 Other objectors were concerned about the 1973-76 Speke Airport wind data used in the dispersion model as it was considered that this coastal site was not representative of the inland conditions around the higher Padeswood site (p18.39, p20.9 and p22.7). This might be so, but it seems to me that, even if it were available, the use of local data would most affect the direction and shape of the contours rather than make major differences to the peak levels of pollutants recorded. Similarly, it was argued that the efflux velocity needed to be at least 15m/sec and that the model had wrongly used a figure of 12.5m/sec (p20.9). To my mind, the use of a higher efflux rate would only serve to improve the dispersion shown in the model results, but the actual efflux velocity required for the new kiln is a matter for the EAW to decide.

30.12 There were other concerns that there was little information on background air quality and that the modelling had not taken account of other nearby pollution sources (p17.18). Although several other potential sources of poor air quality were volunteered verbally at the Inquiry, I heard no evidence about levels of pollution from these sources and the background air quality that was available did not indicate any other significant point sources of pollution.

30.13 It was further pointed out that the increased volume of traffic resulting from the development would add to pollution levels in the area, although it was accepted that the contribution from this source would be small compared with Kiln 4 (Doc PCG/18). Furthermore, it would be offset by the expected general reduction in air pollution from vehicles as a result of improved vehicle emission levels from the increasing use of catalytic converters and low sulphur fuels, for example (NAQS 2000 - Doc CD/24).

30.14 Overall, I believe most of the points raised would not make a significant difference to the results in Appendix 1 - table (c), bearing in mind the stated accuracy of the model of ± 50% (Doc CC/10). In any event, the EAW stated during the Inquiry that it was not yet satisfied with a number of aspects of the modelling work (p13.16 and 13.21). Clearly the Agency will determine the IPPC Permit emission limits by reference to a model which meets its requirements and BAT considerations under the PPC Regulations. These conditions can also be expected to take account of NAQS 2000 and other relevant standards designed to protect public health and the environment (p13.21).

Plume grounding events

30.15 Plume 'grounding' events have been reported from the Ribblesdale site (Doc FGP/8.7 -video evidence - M V Homer) and by local residents near Padeswood (p18.41). From my observations of the topography of both sites I would expect that plume grounding would occur much more readily in the more pronounced valley at Ribblesdale than at Padeswood with its lower nearby hills. Nevertheless, under certain meteorological conditions, I accept that this phenomenon can occur at Padeswood. In my view, the greater stack height of Kiln 4 should make these events rarer than currently is the case. Furthermore, because of the large reduction in emissions of pollutants from Kiln 4, the plume should be much less noticeable than the existing plume under these conditions and, unlike the current plume, it would not be likely to be readily detectable, by its odour for example. For the same reason I would not expect this limited and infrequent grounding to have a significant impact on public health.

The effect of alternative fuels on emissions

30.16 Probably the most serious reservations local people had about the project concerned the proposed use *of Cemfuel, Profuel* and used tyres as alternatives to coal and petcoke in Kiln 4 (p17.4 and p18.8). *Cemfuel* in particular was seen as hazardous waste of an uncertain origin, which was intended to be burnt at Padeswood first and foremost as a disposal option. It was firmly believed by some that it would result in more toxic emissions. It is true that there are economic benefits to the cement industry in utilizing alternative fuels such as these (Dots EA/29 -31). As a result they are becoming widely used in the US, Europe and the UK. So much so that plants may become uncompetitive *if* they are not used (Dot CC/7). The CCL cement works at Ketton is authorised to use *Cemfuel, Profuel* and tyres, whilst the Ribblesdale works uses *Cemfuel.* Seven other cement and lime kilns in the UK burn secondary liquid fuels and several others burn tyres (Waste Strategy 2000 - Doc CD/52).

30.17 The contents of *Cemfuel and Profuel* are described in p5.6. They are prepared to specifications set by the EA to ensure emissions comply with the Authorization

conditions (Dot CC/8 - table 8). Some objectors argued that *Cemfuel* should be re-cycled or burnt in hazardous waste incinerators. However, many of the solvents that make up the calorific value of *Cemfuel* are miscible with water and it seems likely that further solvent recovery would be complex. Some solvents are probably already the residues of previous recycling. Doc EA/30 - (Substitute Liquid Fuels (SLF) Used in Cement Kilns Life Cycle Analyses) advises that re-cycling is not necessarily environmentally preferable to the SLF route and that the SLF option is preferable to hazardous waste incineration for most parameters.

30.18 I observed the *Cemfuel* delivery, storage and sampling procedures at Ketton and Ribblesdale and found that storage tanks and delivery pipework were protected by adequate bunds and that there was no noticeable odour from the storage areas. The Ribblesdale tank farm area also utilized stainless steel pipework to guard against corrosion and erosion. In my view, the tank mixing, circulating and sampling procedure at Ribblesdale ensured a homogenous sample, which could be analysed and checked against the supplier's batch analyses before the tank contents were burned. This had major advantages over the pumped Ketton sampling procedure, where analytical results were also delayed beyond the point where the *Cemfuel* batch might have already been used (p 17.6) before they became available. The Ketton procedure is currently proposed for the Kiln 4 project (Dot CC/7), but this would be subject to the EAW IPPC requirements.

30.19 I have considered the potential for batches of *Cemfuel* to contain toxic organic chemicals such as dioxins, PCB's or pesticide residues, either from the UK or, as indicated by CANK (p17.5), imported as waste from elsewhere. The system adopted at Ribblesdale, which links supplier batches with a sealed delivery, should prevent illegal shipments of waste being introduced between the supplier and delivery (Dot CC/55). Small quantities of more toxic and persistent organic substances could be present in carbon cartridges for example, as suggested by Phoenix (p18.32), but in my view only in inconsequential amounts, which would be destroyed on passing through the kiln. It would still be possible for batches of *Cemfuel* from the supplier to contain more significant levels of substances not listed in or outside of the specification, although this could be further guarded against by random testing by CCL and the EAW.

30.20 If, despite these safeguards, toxic and stable organic compounds were burnt as ***Cemfuel,*** I believe the high gas temperature of 2000°C and long residence time of 6.5 seconds (Doc CC/7) would be sufficient to destroy virtually all of the organic matter. Indeed, evidence was given at the Inquiry that PCB and dioxin contaminated poultry had been preferentially disposed of by this route by the Belgium Government (Doc CC/45). Furthermore, an adequate quality control procedure for ***Cemfuel,*** including sampling and analytical protocols to ensure compliance with the fuel specification, is part of the existing IPC Authorizations at Ketton and Ribblesdale (Doc CD/62-66) and would likely be part of the future IPPC Permit requirement for Kiln 4. The EA has also adopted its own substitute fuel protocol for use on cement and lime kilns (Doc EA/25).

30.21 Objectors argued that the use of alternative fuels at Padeswood would increase the levels of pollutants, including toxic metals and dioxins, emitted from the chimney-stack (p 17.16) and within fugitive dust emissions (p17.17). I have examined the CCL data for the ***Cemfuel*** and ***Profuel*** trials at Ketton in order to help assess the

likely impact of these fuels on emissions from Kiln 4. I have found no evidence that the emissions are likely to contain significantly increased levels of gaseous pollutants (other than CO in Kiln 8) (Appendix 1 - table (b)). The use of alternative fuels has been shown at Ketton to reduce the level of NO_x in the emissions by 45% (Doc CC/7F). The predicted higher levels of sulphur dioxide in emissions from Kiln 4 are due to higher levels of sulphur compounds in the limestone and shale at Padeswood, but I note the 90% reduction from existing levels from Kilns 1, 2 and 3 due to the change in process. CO and VOC levels are expected to be lower from Kiln 4 due to improvements to the calciner design and the lower organic content of the limestone (Doc CC/8C).

30.22 As the main source of metals in the emissions is the raw materials, it is these which largely influence the differences in emission levels from plant to plant (p5.12). At the Inquiry CCL claimed that the use of alternative fuels made no difference to the levels of metals emitted (Doc CC/7F). However, CANK submitted evidence that there would be an increase in metals input into the kiln if alternative fuels were used (Doc CAM/5 vo1.3 - Appendix D). The apparent high levels of metals emitted during the Westbury tyre burning monitoring (Doc CAM/18) is unexpected and has been challenged by the Applicant who pointed out a number of errors (Doc CC/13F). In my opinion, doubt must remain about the validity of this data and its relevance to Kiln 4.

30.23 From Appendix 1 table (b) there does seem to be a small increase in the volatile metals (mercury, cadmium and thallium) emitted from Kiln 8 at Ketton when ***Cemfuel/Profuel*** was used compared with coal only, although this was not very significant and the reverse was true for Kiln 7. If there were higher levels of refractory metals in the alternative fuels than in coal then I would expect that these would preferentially be retained in the cement product and the CKD (p17.17). Increased levels of zinc from used tyres might be an example of this. The EA would be able to control the level of metals in these alternative fuels if necessary by adjusting the permitted levels in the specification (Doc CC/7).

30.24 Higher levels of lead can be expected to be emitted from Kiln 4 than the Ketton kilns because of the high lead content of the limestone in the area and not because of lead in the ***Cemfuel*** (Doc CC/7). Even so, like the other metals, I would expect this to be much lower than the existing emissions with the difference again being found in the product and the CKD. This is largely because the improved dust abatement equipment on Kiln 4 would reduce the amount of particulates emitted and hence the proportion of the metals contained in those particles.

30.25 P5.13 explains how dioxins and furans are persistent chlorinated organic compounds formed in parts of the kiln system at temperatures between 250 and 400°C. Minimising the residence time in this temperature window should control the amount of the compounds released (Doc CC/7). CCL claims such control is particularly difficult in the current dry kiln process at Padeswood, hence the high dioxin levels recorded (Doc CC/7). But Kiln 4 would be equipped with a gas-conditioning tower to rapidly quench exhaust gases to a temperature below 250°C. From Appendix 1 table (b) dioxins' levels can be seen to be slightly higher at Ketton when using alternative fuels compared with coal and similar levels would be expected from Kiln 4. The higher 0.1mg/Nm^3 figure quoted relates to the equipment supplier's process guarantee.

Nevertheless, I note the figures represent a 90% reduction of emission of dioxins from the existing Padeswood site.

30.26 CANK and TCC cited a recent draft research document by the US EPA (Exposure and Human Health Reassessment of 2, 3, 7, 8 - Tetrachlorodibenzo -p-Dioxin (TCDD) and Related Compounds - EPA/600/P-00/001Ab) (Cam/3 vol.3 - ref 6) that appeared to show that substantially higher levels of dioxins were emitted from US cement kilns burning hazardous wastes than from those that were not (p17.13 and p21.5). Closer examination of the research indicates that the most significant factor in the increased levels appears to be whether or not the plants were fitted with devices to rapidly cool the exhaust gases to below 450°F (232°C), as proposed for Kiln 4.

30.27 TCC was concerned about the possibility of the formation of brominated dioxins as a result of the presence in waste of bromine compounds as fire retardants (p21.6). I acknowledge that the analytical procedures and standards used omitted other halogenated dioxins and that these might not be detected as a result. But I note other halogens in addition to chlorine are controlled in both the *Cemfuel* and *Profuel* specifications (Doc CC/8 - table 8). Nevertheless, there does seem to be a lack of data on the significance of other halogenated dioxins in emissions and I consider that monitoring for these compounds should take place as part of the Environmental Monitoring Scheme. Subject to the results EAW should acquire information on the potential significance of this as part of the IPPC process.

30.28 CANK further argued that many of the pollutant emission limits for Kiln 4 specified by the Applicant depended upon equipment suppliers' process guarantees and that these might not be valid for the use of alternative fuels. Particular difficulty might arise with handling systems for *Cemfuel, Profuel* and chipped tyres (p17.12). I believe the Applicant would be able to rely on experience gained at Ketton and Ribblesdale for the design of *Cemfuel* lancers for Kiln 4, but I agree that no detailed specification appears to be available for solid waste handling. There may also be difficulties in obtaining homogeneous samples of *Profuel* and hence in ensuring it meets its EA specification. However, I see no reason why these aspects should present insurmountable difficulties and CCL has listed procedures to tackle potential problems (Doc CC/55). The Company may need to investigate the types of handling systems used by other successful users of solid waste fuel and I note, for example, that Blue Circle burns chipped tyres at its Cauldon cement works (Doc CC/7).

30.29 I have also taken note of Doc EA/29 - (Solid Waste Derived Fuels for use in Cement and Lime Kilns - an International Perspective), which considers "the process conditions of cement kilns make them potentially well suited to the combustion of certain solid wastes". The same document records that, "it is easy to control the feed rate of [shredded] tyres" and that, "there is no overall increase in emissions when burning tyres, but a significant reduction in emissions of certain pollutants, particularly NO_x". Waste Strategy 2000 also points out the need to eliminate the disposal of tyres to landfill by 2006 as required by the Landfill Directive and anticipates the continued growth of tyre derived fuel in cement kilns, as a particularly notable feature.

30.30 The introduction of solid waste fuel into the kiln at the calciner stage was questioned by objectors because of the low oxygen levels there and the need for a concentration of

6% to comply with the HWID (p.20.10). To my mind this is a matter for CCL and the EAW to resolve although I note that at Ketton, as well as reduced NO_x levels, the low levels of volatile organic compounds (VOC) indicated that almost complete combustion of organic matter was occurring (Appendix 1- table (e)).

30.31 There was another difference of opinion about whether the use of alternative fuels would increase or decrease the amount of CKD produced. CANK thought that CKD waste would be increased (p17.19). The Applicant claimed that it would be considerably reduced because of the introduction of pulverised fuel ash (PFA) to partly replace shale (Doc CCr7A) in the process and the incorporation of non-combustible component of the fuel into the clinker. I was not convinced by CANK's evidence on this (Doc CAM/5 vo1.2/3). Moreover, although the minimisation of waste is desirable and part of the IPPC procedure that EAW will follow, it seems to me that the difference in quantities of waste involved would not have any great effect on the assessment of the pollution impact of the new kiln.

30.32 As to the suggestion that there is no incentive to maintain fuel efficiency when burning waste fuel (p17.5), this is also a matter the EA would be able to control because energy efficiency is part of the PPC Regulation requirements. I note though that the replacement of fossil fuels by waste is in itself energy efficient.

The ability of CCL and the EAW to protect the environment

The Applicant's track record

30.33 One of the principal concerns of many objectors was the existing track record of CCL in complying with regulatory standards, both at Padeswood and elsewhere (p17.3, p18.9, p20.4, p23.3, and p27.1). In particular, there was no dispute that the Applicant had self-reported over 250 unauthorised emissions at Padeswood over the past four years and nearly double that at Ribblesdale over a shorter period. The Company has also been successfully prosecuted by the EA on five occasions over the past four years, for breaches of its Authorizations at Padeswood and Ribblesdale (Doc CC/33). This is a poor environmental performance by any standard and I agree with CANK that the standard of housekeeping (Doc CAM/9) has been a contributory factor. The dust leaking from the kiln seals during the site visit (p20.3), which was due to the need to slow the kiln because of wet coal, may be an example of that.

30.34 As I have said, the most frequent complaint has been about dust emissions (p30.8). Even so, the Company has made considerable reductions in these emissions in recent years, reducing the kiln releases to 10% of the 1974 levels (Doc CC/4). If Kiln 4 goes ahead the emissions are expected to fall still further to 1 % of the 1974 level. Many of the unauthorised emissions of dust are due to CO 'trips' in the Electrostatic Precipitators. These have been dramatically reduced from 55 in 1997 to none for the first of nine months of 2000 (Doc CC/4). Nevertheless, I acknowledge other complaints still occur.

30.35 I recognise that further major progress in the reduction of unauthorised emissions can only come about by large-scale capital investment in refurbishment or replacement of the existing plant (Doc CC/4). But, to me, there remains the suspicion that this may have been taken as an excuse for shortfalls in maintenance and good practice in recent

years. It is clear that the Company needs to do better than it has in the past. Nevertheless, I acknowledge the Padeswood Works certification to ISO 14001 - Environmental Management System in 1999 and the improvement in the environmental performance that should come with that award whether or not the new kiln is built.

The effectiveness of the Environment Agency

30.36 The EA has been criticized by many at the Inquiry for being under resourced and its pollution control regime ineffectual (p 17.7. p 18.12, p20.4 and p25.3) in protecting the public. Mr. Ellis (p25.2) quoted a 1997 House of Commons Environment Committee Report that criticized its handling of the introduction of ***Cemfuel*** at Ribblesdale. As far as this proposal is concerned I consider the EAW has provided a considerable amount of information for this case, going beyond my expectations for a neutral party at a planning inquiry. It has an officer, Mr. Morris, working full time on the planning application and the connecting Permit (p13.11). I note also the fact that a substantial improvement in emissions to air from CCL Padeswood is a major requirement in the Local Environment Agency Plan - The Dee Action Plan (Doc EA/40).

30.37 The EA has prosecuted CCL at Padeswood twice (Doc EA/27) and has also issued an enforcement notice. However, it prefers to have a proactive and detailed dialogue to secure environmental improvements (Doc EA/19) and has listed a number already achieved by this means and others that are planned (Doc EA/3). CANK believed that the prosecutions did not go far enough and that EAW should have enforced the enclosure of the limestone store and reductions in dioxins, for instance (p 17.9).

30.38 I agree that EAW appears to have been slow to react on the reductions of dioxins and that further efforts should be made on both of these issues within the current IPC regime. For existing processes such as this the practice is for the EA to grant authorizations which contain a programme of improvement conditions and to set a timetable within which the necessary upgrading will be completed (Doc EA/3). This is something which EAW say is already established at Padeswood for a number of issues including those raised by LANK. However, to me the new IPPC Regulations appear stricter than the existing regime and seem more likely to secure the necessary improvements in air quality whether or not Kiln 4 is approved.

The health risk from dioxins and metals

30.39 Dioxins are a group of fat-soluble long-lived compounds that tend to persist in the environment and accumulate within the human body. The WHO has determined that 2, 3, 7, 8 - Tetrachlorodibenzo-p-Dioxin is a human carcinogen (Doc PH/1). Other dioxins may also be carcinogenic. The most important route for human exposure to dioxins arises from their presence in food. Fatty foods and milk are important sources in the diet (Doc JWE/16). The WHO recommended Tolerable Daily Intake (TDI) is 1-4pg TEQ/kg body weight/day including dioxin-like PCB's, and this is close to the 0.9 - 3.Opg I - TEQ/kg body weight/day found in consumers within the EU (Compilation of EU Dioxin Exposure and Health Data - European Commission DG Environment 1999 (Doc JWE/16)).

30.40 The Committee on Toxicity of Chemicals in Food, Consumer Products, and the Environment (COT) has noted that although the estimated dietary exposure to toddlers does not exceed the current higher UK TDl, 50% of toddlers will exceed the upper value of the WHO TD1 (Doc PH/1). However, no intervention with respect to diet of toddlers is recommended because milk, the main source is so important to this age group. COT also noted that dioxins and PCB levels in the UK diet have declined substantially since 1982 (Doc PH/1).

30.41 CANK and Phoenix quoted EA data in describing the Padeswood site as the 11b highest emitter of dioxins of any prescribed process in England and Wales (p17.9 and 18.34). CCL data show that this is mainly attributable to the long dry kiln process, which was introduced in 1967 (Tables 10.7-10.8 - Doc. CC/8). I have already explained that the replacement of the existing kilns by Kiln 4 would bring about a 90% reduction in dioxin releases from the site (p30.25). CCL further predicts that the dioxins emission levels associated with Kiln 4 would be 18,000 times less than the WHO standard (Doc CC/26), but this fact ignores the persistence of dioxins in the soil and subsequent uptake and accumulation by animals and plants.

30.42 P5.12 explains how trace metals present in the raw materials and fuel can be emitted from the kiln. Appendix 1-table (a) shows the existing metal releases from the Padeswood site together with the expected levels from Kiln 4. It can be seen that these are expected to decrease by 67% on average. Some of the metals are extremely toxic elements that can also accumulate in the human body. Only lead has a defined limit in the NAQS 2000. Environmental Assessment levels (EAL) have been established for the remaining metals (Doc EA/10 - Technical Guidance Note E1). Doc CC/25 and table (e) in Appendix 1 compare predicted maximum ground level concentrations for Kiln 4 from the modelling exercise with EAL's. It can be seen that in all cases expected concentrations are a small fraction of the EAL.

30.43 In my opinion, the persistence of dioxins and stability of metals and their ability to accumulate in the human body could be of particular importance. For instance, milk produced from dairy herds within the area might be consumed locally along with other dairy products, meat, and vegetables, fish and eggs produced in the same area.

30.44 Dr Kelly (Doc CC/13 and p9.9) carried out a mufti-pathway exposure modelling exercise for metals and dioxins, for a hypothetical resident consuming only local products from the estimated most exposed area. The results indicated the lifetime increased risk of developing cancer from air pollutants caused by Kiln 4, for this unlikely individual, to be about 10% of the US threshold of 1 chance in 100,000. This is a very low risk factor equivalent to a lifetime increase of about 0.00001 % in the risk of the hypothetical individual. Dioxins were the greater contributor. Mercury was seen to be the greatest non-cancer risk, but again the risk was low, bearing in mind that mercury was stated not to be present in the raw materials and the fact that the estimate is taken from the expected emission limit rather than the likely emission value (Doc CC/7F).

30.45 I have also examined data from soil surveys around Padeswood in order to assess the impact of the existing emission. These indicate that dioxins and metals levels were within the normal range for rural soils and below that usually found in urban areas (Doc EA/3 -Annex 4 and Doc. CC/14 - table 5.2). Only Spon Farm in the EAW survey

had levels above the rural average (see also p29.64). No local information is available for dioxins or metals in milk, but a MAFF survey at Ribblesdale (Doc CC/14 - table 5.5) did not reveal any significantly higher levels of dioxins or metals in cows milk than in other rural areas.

30.46 From the evidence I have heard, I do not consider there would be a significant health risk from dioxins or metals emissions from the proposed kiln. Nevertheless, milk and milk products are an important source of nutrients for a large part of the population. Cows graze relatively large areas and any dioxins or other persistent organic compounds present on the grass would concentrate in the milk fat. Some metals may also be accumulated in this way. I therefore consider that a survey of milk for dioxins including brominated dioxins, other persistent organic compounds and metals should be carried out by CCL as part of its Environmental Monitoring Scheme (Doc CD/6). This could be required by a suitable planning condition.

30.47 No suitable continuous measurement technique is available for dioxin and metals measurement in kiln gases (p18.36) and their measurement in milk would help offset the low sampling frequency used, which I believe is mainly due to the complexity and cost of such monitoring.

The health risks from gaseous emissions

30.48 None of the evidence I have heard has convinced me that emissions of $N0_2$ and SO_2 from Kiln 4 would cause contravention of the NAQS 2000 objectives to protect human health for these parameters (Appendix 1 - tables (c) and- (d)), including vulnerable groups (p25. l). The same was not true for the emissions from the existing kilns. From this data I could not rule out the possibility of an existing localised health effect in the surrounding area of the Padeswood site (but see p30.58). However, I believe any effect would be remedied by the construction of the new kiln.

The health risk from particulates

30.49 The maximum expected contribution of Kiln 4 to ground level concentrations of PM_{10} particulates from the modelling exercise is predicted to be 0.1 μm^3 as a 90.4^{th} percentile concentration and $0.025\mu/m^3$ as an annual average (Appendix 1-tables (c) and (d)). This should be compared with background levels of $17\text{-}20\mu/m^3$. The corresponding NAQS 2000 objectives are 50 and $40\mu/m^3$ respectively. The short-term standard was exceeded on 4-10 days in N. Wales in 1996, but improvements to vehicle emissions and industry are expected to reduce that to 2-4 days by 2005 (Doc CC/10).

30.50 The predicted emissions from Kiln 4 are modest levels compared with background particulate levels and I consider they would make a negligible contribution to the health risk associated with background particulates. However, they do not include the often greater, but more localised effect associated with fugitive emissions of dust. CANK has made an assessment of the effect of this (Doc Cam/4 vol. 2), using a range of particle sizes between PM_5 and PM_{100}. This showed that such releases could have an affect at a distance of 500m or beyond the site boundary. Nonetheless, these are transitory unauthorised releases that would be minimised by the project.

30.51 CANK and Phoenix drew attention to the potential emerging health risks from ultrafine particles ($PM_{0.2}$), particularly those with a high metal content (p17.17 and p18.46), which might pass through the bag filters, used to filter kiln emissions. These can enter deep into the lungs where there is no efficient mechanism to remove them. CANK claimed in CAM/3 vo1.2 that there are no safe limits for these particles and pointed to research showing a correlation between fine particle air pollution and human deaths, reported from the USA and studies showing up to that 3% of all deaths in the US are caused by air pollution from combustion sources every year (Doc CAM/3 vol.2 - ref 19). And a more recent study in Europe attributed up to 6% of all deaths to fine particle inhalation (Doc CAM/3 vo1.3 - ref24). I note that the research referred to the measurement of $PM_{2.5}$ and PM_{10} particles respectively and not ultrafine particles. The European study found that about half of all mortality caused by air pollution was attributable to motorized traffic (see also 30.57).

30.52 Similarly, CANK's claim that CKD from the new kiln would be a particular problem in this respect is not borne out by the evidence from reference 9 in CAM/3 vol. 3. This states that CKD from precalciner dry kilns is of a larger particle size than that from wet kilns and long dry kilns. Moreover, vehicle emissions are thought to be the major source of ultrafine particles in the UK (Doc PH/1). Nevertheless, I acknowledge that enough is not known about the health risk from ultrafine particles from industrial sources generally.

30.53 Whilst it is certain that the measurement of PM_{10} particulates from cement kilns will include both $PM_{2.5}$ and $PM_{0.2}$ components I have seen no measurements of the percentage of either of the latter two in emissions from the existing kilns or that anticipated from Kiln 4. In any case, the Expert Panel on Air Quality Standards (EPAQS) has decided not to adopt a standard for smaller particles, at least for the time being, relying instead on the correlation between PM_{10} measurement and $PM_{2.5}$ (NAQS 2000 - Doc EA/17). From the evidence I have heard and bearing in mind the small effect on ground level concentrations of PM_{10} particles predicted for Kiln 4, together with the anticipated further reduction in fugitive emissions, I do not consider that there would be any significant increased health risk from particulate emissions from the proposed kiln. Indeed the risk would be substantially less than the existing risk.

The evidence for increased cancer risks

30.54 Dr Howard on behalf of CANK had carried out a study that indicated an apparent higher than expected increased cancer rate in Mold and inferred that the Padeswood cement works might be the cause (Doc CAM/3 vol. 2). This work had been shown to be in error by the Welsh Cancer Intelligence and Surveillance Unit (WCISU) (Doc PH/6). Dr Roberts carried out his own study in collaboration with WCISU and found that over a ten year period cancer rates in two zones of 2 and 5kms radii around the cement works were normal, with no evidence of a cluster (Doc PH/6 and p14.4).

30.55 Dr Howard in turn criticized this work (Doc CAM/3 vol.6) and then used similar data to Dr Roberts for two new hypotheses that seemed to provide statistical evidence of an increased incidence of mortality from lung cancer in wards close to Padeswood and in the upper River Alyn basin around the Padeswood site. He suggested that an inversion layer in the valley (Doc CAM/ 3 vo1.4 and p17.21) might trap pollutants and cause

this effect. This work has again been criticized by WCISU (Doc PH/8 and PH/10) and by Dr Roberts of the NWHA at the Inquiry. CCL also claimed that the formation of an inversion layer in the shallow valley was unlikely (Doc CC/58).

30.56 Both Dr Howard's more recent study and Dr Roberts study are still subject to peer review. In particular, Dr Howard's findings are contradicted by WCISU and the results must be considered preliminary. I have therefore given them little weight in this report. Furthermore, there has been no previously documented evidence of increased rates of lung cancer around cement works and Dr Kelly in her mufti-pathway exposure modelling (Doc CC/13) emphasized the very low risk of developing cancer from emissions from Kiln 4 (p9.9-10 and p29.50). Neither, in my opinion, does the available dioxins and metals data in soils indicate increased levels that could point to a lung cancer risk from the existing Works. Bearing in mind the expected large reduction in pollution loads from Kiln 4 compared to the existing kilns I have no reason to believe that there would be any measurable risk of lung cancer arising from the proposed development. Rather, there would be a reduced risk because of it.

The evidence for non-cancer risks

30.57 Dr Roberts and Phoenix quoted a 1998 COMEAP report (Doc PH/1 and p18.21) quantifying the effects of air pollution on health in the UK. It appears that sulphur dioxide and particulates continue to have very small effects on population health at low concentrations and that around 3% of deaths in urban areas in the UK may be brought forward by background levels, and episodes, of particle and sulphur dioxide pollution.

30.58 I have seen no documented information on non-cancer health effects associated with the existing cement works at Padeswood. However, Dr Roberts said during cross-examination that the NWHA is examining local health data to assess whether there is evidence of increased levels of non-cancer related illnesses in the area surrounding the site (p17.20). Even if this data had been available for the Inquiry, I believe its usefulness in assessing the effect of the new kiln is open to question. This is because the likely exceedence of the NAQS 2000 short-term standards for $S0_2$ and $N0_2$ from the existing site could give rise to increased levels of reported respiratory illnesses that would not be reflected in levels likely to be associated with emissions from the new kiln (p30.48).

The need for a risk assessment

30.59 The NWHA was unequivocal in its assessment of the minimal risk to health from authorized emissions from Kiln 4 (p14.12). However, the NWHA accepted, as I do, that there is no lower threshold in air pollution terms below which sulphur dioxide and particulates for instance, have a zero health effect. Deaths of people suffering from respiratory diseases may be brought forward by days or weeks by background levels and episodes of particle and sulphur dioxide pollution (Doc PH/1).

30.60 TCC had claimed that, based on research work by ENTEC on the DETR Regulatory and Environmental Impact Assessment of the Proposed Waste Incineration Directive (REIA), there could be as many as 2 deaths brought forward per annum from the expected emissions from Kiln 4 (p21.9). Earlier calculations had suggested a much

higher figure but had been found to be in error (Doc TCC/ 1). However, the REIA document only claims an accuracy of an order of magnitude. In any case TCC has used the data to show an adverse health effect from the Kiln 4, rather than the benefit of reducing emissions from incinerators generally as the REIA had intended (Doc TCC/3). In my opinion, if the correct approach had been followed then the potential benefits of replacing the old kilns with Kiln 4 would have been seen. I am not convinced that the statistics can be extrapolated in the way TCC has done to predict the health effect from emissions from a new source (Kiln 4) or that the assertion constitutes a proper risk assessment of this project. Neither do I accept the TCC comparison of deaths "brought forward" by a few hours or days of individuals who are already seriously ill, with the risk of healthy people dying from rail travel.

30.61 Nevertheless, it is clear that zero risk does not exist for any project. We cannot live in a totally risk-free environment but we can try to manage risk. For instance, the design of new roads takes account of the risk of accidents from junctions, but cannot practicably allow for zero accidents. Travellers embark on a journey knowing there is a small risk of an accident and death but trust that this will be minimised by safety standards incorporated in the design of the road network. In the case of this project, risk would be managed by designing the scheme to comply with national and international air quality standards aimed at protecting public health and the environment. It might also be necessary for the EAW to require that a detailed risk assessment be carried out before finalising the emission limits for the new kiln to ensure that the health risk remains tolerable.

The need for a local health study

30.62 Phoenix and CANK have called for the participation of the public in a detailed local health study to be carried out before planning permission is considered (p17.21 and p18.18-20). An HIA of the project has already been carried out by the NWHA for FCC. This assessment has been updated for this Inquiry (Doc PH/1) and I heard at the Inquiry that further work is under way to examine local health records for non-cancer effects and for the peer review of the cancer studies. Apart from these investigations, I agree with the NWHA (p14.5) that no other immediate work is necessary in this respect (subject to the survey to establish dioxin and metal levels in cows' milk in the area). Although the results of this further work would be too late to include in the assessment of this planning application (p17.23), this is not essential as it could still be fed into, and play a part in, the IPPC process that EAW is undertaking. This is because the EAW would be able to deal with any effects observed, as part of the IPPC procedure. I believe that this would be a sensible approach.

Public anxiety and health risk

30.63 Many of those who gave evidence (p17.2, 18.7, 18.23-25, 21.7, 22.12, 23.4 and 26.1) raised the question of public concern and anxiety about the proposed development. The NWHA agreed that public anxiety was understandable and that anxiety can have a detrimental effect on health (Doc PH/1). LANK referred to *Newport BC v SOS for Wales and Browning Ferris (1998) Env LR174* (p17.2) that public anxiety is a material planning condition. It was claimed that public concern and anxiety stemmed from the Applicant's track record, the proposed use of *Cemfuel* and other waste fuels and the resources and effectiveness of the EAW.

30.64 The local survey (p19.5) carried out by Mrs. Jones had also demonstrated the considerable concern that there would be harm to human health as a result of the proposed development. She referred to R *v Tandridge* District *Council [2000] JIPL 604* where it was held that objectively unjustified fears in a locality can, in some circumstances be a legitimate factor for a local planning authority to take into account when deciding a planning application. However, I note that the weight to be given to these fears is principally a matter for the authority (p19.4).

30.65 Section 4.8 of Planning Policy Guidance (Wales)(PGWPP) states that *"local opposition or support for a proposal is not, on its own, a ground for refusing or granting a planning permission; and .....it is for the local planning authority to decide whether, ... the perceived fears are of such limited weight that a refusal of planning permission on those grounds would be unreasonable.* In this case I consider there is a genuine public concern and that this is a material consideration even though there is as yet no evidence that any anxiety caused is manifesting itself in physical ill health.

30.66 In *Gateshead MBC -v- SSE AC 1994 JPEL 1995* pp432-440 it was established that where two statutory controls overlapped (i.e. planning control and IPC), a planning judgement had to be reached on particular facts and circumstances. The decision-maker had to make a judgement on whether uncertainties remained to an extent that justified refusal of planning permission or, alternatively, the pollution control authority could address them. PGWPP emphasizes that planning authorities should operate on the basis that the relevant control regimes would be properly applied and enforced by other agencies. This echoes previous advice in PPG23.

30.67 I acknowledge that residents are anxious because of the past poor performance of the works, their fear of undefined hazardous waste disposal on the site and their lack of confidence in the pollution control and area health authorities (p 17.2-17.10). I believe that their concern also stems from a lack of understanding of the technology involved in the process. I understand their anxiety, but I have to say that I find it unjustified for the reasons I have explained on the public health issue. The circumstances were fully aired at the Inquiry. I am satisfied that, although fears exist, they are not well founded. I do not consider this fear to be sufficient reason to refuse planning permission. I believe that, if the development is allowed, and with appropriate regulation by the EAW, the major improvements in air quality that would arise would ultimately make residents less anxious than they are now. The Company open door policy would also help in this respect (Doc CC/30).

Conclusion on the first issue

30.68 Overall, my assessment of the health risk of the proposed development is broadly in line with the conclusions of the NWHA (p14.12) in that I have found no evidence that the local population is likely to suffer any harmful effects from emissions from the proposed kiln.

30.69 I have considered whether local and national planning policies I have identified in Section 6 would be contravened by the public health aspects of this proposal. I find that it would comply with policies AS and H11 of the CSPFA and policies GENT, CONS14, EMP6 and EMP8 of the SPSA. It would also comply with policies aimed at

protecting public health, in emerging plans. The proposed development would be compatible with national policies on air, including the objectives of NAQS 2000 in that measures are proposed to ensure that emissions comply with the health based standards it contains.

30.70 This leads me to the conclusion on the first main issue that potential emissions from the proposed development would not have a materially harmful effect upon public health.

Issue 2- The impact of the proposal on the environment

30.71 Turning to the second main issue, the Environmental Statement (ES) (Doc CD/2 and 3) addresses the environmental impact of the project with regard to releases to the atmosphere, land and water, together with an ecological assessment (p8.1-5). Objectors thought that the ES was deficient in respect of the impact of air pollution on fragile ecosystems, including Natura 2000 sites and listed species under the Habitats Directive (p18.5). In particular, it was claimed that no consideration had been given to any impact on Buckley Common, which is a candidate SAC, about lkm from the Padeswood works (p18.27). There was also concern about alleged pollution of the Black Brook downstream of the site, groundwater in the vicinity of the waste disposal sites and the effect of the project on badgers, great crested newts, and other wildlife in the area (p18.30 and p20.7). I have considered each aspect in turn. .

Ecology

30.72 I consider that most of the shortcomings in the emissions to air data in the ES have been overcome by the information provided to the Inquiry. In my view, there is no doubt that emissions to air from Kiln 4 would represent a considerable improvement over that from the existing kilns. It follows therefore, that the impact on the environment from these emissions would be significantly less than the current impact (see Appendix 1- tables (c) and (d)).

30.73 No nearby *Natura 2000* sites were identified by the objectors and no evidence was presented describing the sensitive species which might be at risk on Buckley Common or the chemicals relevant to this risk. Phoenix (p 18.27) used the EAW surveys (Doc EA/3 Annex 2-4) on dioxins, metals and air pollution to try to paint a picture of existing damage to the Common (site 7 Spon Green Farm was said to be the Common). But although there were elevated levels of furans, zinc, lead and arsenic there compared with neighbouring sites surveyed, only zinc was above 'trigger levels' of concern. Neither was there any specific evidence that the Padeswood Works was the source of the elevated levels recorded. However, in view of the Phoenix interpretation of the dioxin data (p18.35), I agree the contamination warrants further investigation. This could be conditioned as part of the proposed Environmental Monitoring Scheme (Doc CD/6).

30.74 Conversely, the EAW air quality monitoring survey (Doc. EA/3 - Annex 2) demonstrated a clear correlation between short-term peaks of $S0_2$ at Pen-y-ffordd about l km to the east, with wind direction and the Padeswood Works. This was not so marked with $N0_2$ and PM_{10} levels, and traffic, domestic heat sources and a nearby generator were thought to be significant contributors to the peaks recorded for these

pollutants. All three parameters remained within the NAQS 2000 human health standards during the 7-month survey.

30.75 Phoenix claims that, if the project went ahead, NO, levels locally were likely to exceed the WHO 40ppb (75 $\mu g/m^3$) 4 hour limit for sensitive vegetation (p 18.42-44) and that unidentified *Natura 2000* sites would not be protected. But this seems unrealistic in the light of the expected 60% reduction in NO_x from vehicle exhausts from 1995 to 2005 (NAQS 2000) and the modelling exercises that have forecasted significant reductions in NO_x levels from Kiln 4 compared with the current kilns.

30.76 Only the WHO 4hour standard for NO_x was exceeded (briefly) at Pen-y-ffordd in the EAW survey. Even so, the existing Works might well cause local exceedence of the NAQS 2000 annual mean objectives to protect vegetation of $30\mu g/m^3$ and $20\mu g/m^3$ for NO_x and SO_2 respectively, as well as this WHO short term standard. However, in my view, none of these standards were likely to be exceeded when Kiln 4 became operational, irrespective of the fact that the objective might not apply within 5km of the Works (p 18.44).

30.77 Far from damaging sensitive vegetation, I have no doubt that the kiln would provide substantial relief from any stress that might currently be occurring. Furthermore, an EAW survey (Doc. EA/3 - Annex 3) had, in any case, identified the main sources of stress to lichen flora as alkaline dust particles and not NO_x or $S0_2$, The Applicant has also claimed that there are no nearby Habitats Directive sites and I have no documented evidence to the contrary (Doc CC/63). In addition, CCW were consulted on the planning application for the new kiln and had said no statutory designated sites of ecological interest would be affected (Doc FCC/25). CCW had not objected in principle to the development subject to various investigational requirements (Doc FCC/26). Nevertheless, if CCW felt that Habitat Directive or *Natura 2000* sites were likely to be affected by aerial emissions then the EAW would be able to address this in the IPPC Permit, although the need for this seems unlikely.

30.78 The allegation that wildlife in the area would be harmed by this proposal is also not substantiated by the available evidence. The supplementary ES (Doc CD/5) confirmed badger activity adjacent to the site and a sett close to the site boundary. It also acknowledged the existence of great crested newts in the vicinity in many ponds within 2km of the site. But there was no suggestion that the site itself was essential to the continued presence of these species in the area or that the proposed development would have an unacceptable impact on their habitat. Indeed, the evidence is that there would be a considerable improvement in air quality. As to water voles and otters, from my inspection the watercourse close to the site appeared to be an unsuitable habitat for these creatures, because of its shallow nature and lack of food sources. But, they may well be present in the Black Brook and River Alyn downstream.

30.79 It seems to me that protection of wildlife in the area can be ensured by a suitable planning condition requiring the Applicant to carry out surveys and any necessary protection measures in liaison with the Council and CCW.

Pollution of Controlled Waters

30.80 I have considered the possibility that water pollution could occur from operations on the Padeswood site as a result of deposition from aerial releases from the Works, site drainage following rain, and leakages or spillages of fuel. I have also looked for any evidence of water pollution as a result of leachate from the existing Padeswood landfill site and that from the disposal of CKD at the Cefn Mawr Landfill.

30.81 The receiving watercourse for the consented site drainage, cooling water and wheel wash discharges from the Padeswood site is a tributary of the Black Brook (Doc CD/2). Where this watercourse merges with the Black Brook, about 0.5km downstream of the site, it is classified as River Ecosystem Class RE2, in the national water quality classification system, indicating a watercourse of good quality (Doc EA/32).

30.82 Closer to the Works routine chemical analyses of samples from the tributary by CCL, their consultants and the EAW (ES and Doc EA/32) all confirm the basic moderate quality of the watercourse and do not indicate any serious cause for concern from discharges from the site. Biological monitoring (Doc EA/32) indicates that the stream has now recovered from the effects of a heavy fuel oil spillage from the Works in February 2000. Nevertheless, the chemical analyses verify my own observations on the site visit that occasional unsatisfactory increases in suspended solids can occur as a result of discharges from the consented outlets and run-off from the site and raw material and coal storage areas.

30.83 Clearly, future pollution from liquid fuel spillages or suspended solids run-off into the watercourse from the site as a whole, both during any future construction work and beyond, should be minimized. In my opinion, this could be achieved by the construction of suitable sumps and oil traps, together with a surface water collection and settlement lagoon with an oil boom on the outlet, as proposed by the Company for Kiln 4 in Doc CC/56. By the use of inlet and outlet control valves this lagoon could also be made to contain the water miscible fraction of *Cemfuel* in the event of a spillage or pipeline rupture. This would obviate the need for a buffer zone as requested by Phoenix (p18.30). This could be required to be carried out as a planning condition. I note that the use of detritus traps and oil interceptors are part of the suggested conditions.

30.84 The ES (Doc CD/2) confirms that the watercourse is also affected to a degree by leachate from the licensed waste disposal site on the Works, which has been used to dispose of CKD, refractory bricks and other waste materials. The increases in pH and concentrations of potassium and ammonia in the watercourse are indicative of this (p5.15). The much higher levels of potassium, chloride and ammonia and the presence of traces of arsenic, copper, chromium, vanadium and lead in boreholes on the waste disposal site are indicative of leachate from CKD at the site. Temporary collection of the leachate from the site and recycling over the licensed area is now being undertaken to minimize any impact on the watercourse.

30.85 The Company proposes a permanent solution as part of the development by creating a domed profile of the site to maximize surface run-off and returning the leachate to the kiln line or sewer (ES - Doe CD/2). I consider this proposal to be a satisfactory

solution to the leachate problem, although care will be needed to avoid contaminated discharges when the northern area of the landfill site is removed to cater for the new kiln.

30.86 I also believe significant pollution of the minor aquifer within the coal measures beneath the site, which supplies local abstractions, is unlikely because of the overlying clay tills which encourage leachate to escape to the surface waters adjacent to the site (ES-Doc CD/2). Nevertheless, it would be useful to confirm this by off-site monitoring of groundwater and I believe that this should also be carried out as part of the Environmental Monitoring Scheme.

30.87 CKD is now disposed of in the Cefn Mawr Landfill at Pant-y-Buarth Quarry. Boreholes drilled to a depth of 60m in these limestone workings have not penetrated the groundwater table (Doc EA/32). However, old lead mineworkings leading to the Milwyr Tunnel, which is used by Welsh Water as a water source, are thought to be located at a greater depth close to the quarry (Doc EA/35). The limestone here is likely to be permeable and on my site visit I could see fissures in the neighbouring quarry walls. As part of the risk assessment of the landfill the EAW is to ask the Applicant to consider the prospect of contamination of the water source by metals leaching from the deposited CKD (Doc EA/35). Raised concentrations of some of the metals of concern were found in a leachate test conducted by CCL (Doc CC/47), but because of the expected low levels of metals in the leachate and the high dilution factor, the EAW believes any effect is likely to be inconsequential (Doc EA/32).

30.88 I consider the EAW should also consider the implications of the Groundwater Directive on this disposal option because of the requirement that list 1 substances should be prevented from entering groundwater. As the disposal of only 5,000 tonnes per annum of CKD are thought to be required, alternative landfill options are likely to be acceptable in the event of this site proving unsuitable.

30.89 I was surprised by the lack of monitoring for toxic substances by both CCL and the EAW in the Black Brook at Padeswood and off-site groundwaters around Padeswood and Cefn Mawr Landfills (Doc EA/35). I agree that the available evidence indicates low concentrations of toxic elements in leachate from CKD in the Padeswood landfill site (ES Doc CD/2) and the dilution factor in all cases is likely to result in only low levels of metals being recorded. Nevertheless, there is the possibility of additional metals and dioxin like compounds being washed into the Black Brook as surface run-off from the area. In my view, the expected low levels of metals and dioxins in the Black Brook downstream of the Works needs to be verified by a monitoring strategy for this watercourse and its sediments that provides the necessary assurances to users of the receiving waters. I consider that this should be carried out as part of the Environmental Monitoring Scheme to be undertaken by CCL and required by a planning condition.

Conclusion on the second issue

30.90 Notwithstanding these monitoring requirements, in the absence of any significant ecological threat or risk of pollution of controlled waters, I consider that the proposal would comply with the local and national planning policies outlined in Section 6 that seek to conserve and protect the environment.

30.91 In the circumstances, I have come to the conclusion on the second main issue that the proposed development would not have a materially harmful effect on the environment surrounding the site.

Other matters

European Convention of Human Rights (ECHR)

30.92 Objectors claimed that approval of the proposed development would be contrary to Section 6(1) of the Human Rights Act 1998, which makes it unlawful for a public authority (including the NAW) to act in a way which is incompatible with a Convention right.

Article 8- respect for private and family life, and home

30.93 Representations were made to the effect that the rights of nearby residents, under Article 8 of the Convention, would be violated if the appeal were allowed (p21.1l and p25.9). No individuals were named but, in any case, I do not consider the representations to be well founded because the degree of interference to surrounding properties would be insufficient to give rise to a violation of any rights under the Article. This is because I have already concluded that there would be no material harm to public health and the environment from the proposed development. Furthermore, emissions from the Works would be controlled by the EAW under the Pollution Prevention and Control Regulations 2000 and the 1999 Pollution Prevention and Control Act.

Article 2 - right to life

30.94 Secondly, TCC further alleged that individuals' rights under Article 2 of the Convention would be violated if the development were allowed (p21.11). This Article states that *"everyone's right to life shall be protected by law ..... " Again,* no individuals were named, instead the allegation centres on the comparison the NWHA made of the risk to public health from the proposed development against other risks (Doc PH/1). I have discussed this comparison in p30.60-61 and conclude that the EAW would be able to ensure that the health risk remained tolerable.

30.95 For this reason I do not therefore consider that there would be any unacceptable risk to human life from the proposed development or that any violation of Article *2* of the ECHR would occur.

The" fall back" position

30.96 I have considered the 'fall back' position should permission be refused for the proposed development. The existing cement works at Padeswood is more than 50 years old and emissions from the Works will, if they continue at the current levels, cause contravention of the NAQS *2000* objectives for $N0_2$ and $S0_2$ that apply from *2005.* Fugitive dust and other unauthorised emissions are also a continuing source of complaint, which would be difficult to rectify with the current plant (Doc CC/7).

30.97 The EAW is already pressing for improvements to the Works to reduce the levels of dioxins and dust emitted for instance (Doc EA/3) and further work is proposed. But I agree with CCL that significant improvements to emissions from the plant to meet the NAQS objectives can only come about by major capital investment (Doc CC/7). These will almost certainly be required in the longer term as part of a new IPPC Permit, which will become necessary for existing cement works in June - August *2001* (Doc EA/22).

30.98 The use of alternative fuels would help reduce $N0_2$ levels, but even so, the Appellant estimates that capital costs of £25m might be necessary to meet future emission standards, together with a similar amount at Ribblesdale. These costs are of the same order as are predicted for the Kiln 4 project (Doc CC/7). Even then, the process may not be considered BAT by the EAW. These improvements would deliver no gains in energy efficiency (in fact the reverse is likely to be the case) or reductions in carbon dioxide releases. In these circumstances, the Appellant claims it is unlikely that the site would remain financially viable and the closure of the Works and consequent redundancies would be inevitable (Doc CC/1 A). I have no reason to doubt that this is the true position or that the wet kilns at Ribblesdale would be similarly affected. In this respect I note that MPG10 considers cement manufacturing as being of *major importance* to the national economy.

30.99 If the Works closes any replacement industry using prescribed processes on the site would need to meet the strict provisions of IPPC from the outset. Subject to controlled emissions from any new process source the local residents would benefit from the cleaner air that they seek, but at the expense of the demise of the cement industry locally.

31. **COMMENTS UPON PLANNING CONDTI70NS**

31.1 A comprehensive list of planning conditions and their reasons was submitted by FCC (Doc FCC/14). The list included conditions proposed by EAW (Doc EA/3 - Annex 1) and I take it that this signals the intention of the EAW not to seek to include such conditions in any IPPC Permit issued for the development. The Applicant's comments on the conditions are set out in Doc CC/61. The CANK objector group made comments on the conditions in Doc CAM/37. Further proposed conditions were submitted by Cheshire County Council (p15.1-6), Chester City Council (p16.6), Phoenix (p18.49) and Doddleston Parish Council (p22.13). The Inspector has proposed further conditions in Chapter 36 of his report. I have considered appropriate planning conditions in the light of the conditions suggested at the Inquiry and Circular 35/95, should the NAW decide to grant planning permission for the development.

31.2 Draft condition 10 (as amended) refers to an Environmental Monitoring (not Management) Scheme to be approved by the Council. The proposed CCL Environmental Monitoring Scheme is set out in Doc CD/6. I agree with the proposal to continue the current programme of measurement of dust deposition, SO_2 and $N0_2$ and trace metals, and the monitoring of river water quality and the air quality effects on flora. I also agree with the proposal to provide an air quality monitoring station in the vicinity of the Works and the soil-testing programme for dioxins and metals.

31.3 In addition, I consider further monitoring should be undertaken by CCL as part of the monitoring scheme to be approved by the Council in condition 10. This should also include baseline surveys of metals and dioxins and other persistent organic compounds (including brominated dioxins) in the Black Brook and its sediments downstream of the Works (p30.89), groundwater surrounding the existing waste disposal site at Padeswood (p30.86), and milk produced within 5km of the Works (p30.46). Special arrangements for this latter survey may need to be made with the Food Standards Agency and MAFF. The surveys should be repeated as necessary thereafter at the behest of the FCC as part of the proposed Environmental Monitoring Scheme. More detailed monitoring and investigation of the contaminated soil at Site 7 - Spon Green Farm in the EAW survey (p30.73) should be undertaken as part of the same Scheme. The results of the surveys should be assessed by the Flintshire County Council in consultation with the EAW and the NWHA, and fed into the IPPC process.

31.4 The reason for the monitoring condition is to provide further reassurance to the local community, and the regulators that the environmental and public health risks from emissions from the site is minimal and to provide a base line for future monitoring to be determined as part of the IPPC Permit.

31.5 In my view, the programme in Doc CD/6 with the additions proposed above would obviate the need for the monitoring programme proposed by Cheshire County Council and answer criticism of the condition by CANK in CAM/37. I do not consider that the additional monitoring should be taken to mean that the ES is deficient as CANK has claimed.

31.6 I have considered the other planning conditions proposed by FCC (Doc FCC/14). Conditions 11, 12, 13, 20, 21 and 22 concern issues in my brief. Conditions 11 and 12 concern risk assessment during the construction phase and contaminated land proposals that are required by the EAW to prevent pollution of water resources. I have no observation to make on these conditions, other than to support them.

31.7 I agree that a scheme for the disposal of foul and surface waters (condition 13), together with oil interceptors, sediment traps and bund walls (conditions 20, 21 and 22) would be necessary in order to protect the water resources of the area. I do not accept that some sediment pollution of the Black Brook during the construction phase is inevitable (ES-Doc CD/2). P30.83 of my report outlines the need for a surface water collection and settlement lagoon with oil boom and outlet and inlet control valves to minimise the risk of water pollution from sediment and fuel spillages. This could be incorporated into the surface water disposal scheme to be approved by FCC.

31.8 As to the other conditions suggested by other parties and interested persons, I consider it unnecessary to require data on emissions to be supplied to Cheshire County Council because the information is available via a public register. Steam plumes should be reduced significantly as a result of the development. A HIA has already been carried out by the NWHA. The use of SCR technology and ESP's are a matter for the Environment Agency to determine under IPPC, as are the emission limits. I believe the other points raised duplicate other proposed conditions, are unnecessary, or are not planning matters.

31.9 Finally, I also consider the following condition should be imposed to ensure the protection of wildlife in the area (p30.79). "Before the development hereby approved is commenced, a study shall be undertaken to define the habitats of any protected species of wildlife and details of measures to safeguard such species during and after operations on the site shall be submitted to and approved in writing by the Council. All approved safeguarding measures shall be implemented in accordance with a programme of implementation also to be approved in writing by the Council".

32. SUMMARY OF CONCLUSIONS

32.1 From the evidence I have heard I consider the proposed scheme would result in a substantial reduction in emissions from the current works that could only otherwise be practicably achieved by the closure of the Works. As a result, subject to normal background air quality being maintained, the scheme should enable the quality of the air surrounding the site to comply with the objectives of the Air Quality Strategy of England, Scotland, Wales and Northern Ireland for key pollutants.

32.2 I found no evidence that there would be any significant increase in toxic emissions from Kiln 4 as a result of using the alternative fuels proposed. I believe the use of these fuels would not contravene national or local policies for waste or the precautionary principle.

32.3 I have reached the same conclusion as the NWHA that the clear balance of evidence is that the health risks, including those to vulnerable groups, are well within tolerable limits as established by national and international standards. The proposal would therefore comply with local planning policies aimed at protecting public health.

32.4 As a consequence of the minimal risk to health, I do not consider there would be any violation of Articles 2 and 8 of the European Convention of Human Rights as a result of the development.

32.5 I have considered the potential environmental impact of the proposed development and, subject to the monitoring and environmental protection measures outlined, I believe there would be no significant ecological threat or risk of pollution of controlled waters. It would therefore comply with the objectives of local and national environmental planning policies outlined in Section 6 of this report.

32.6 It cannot be said that the environmental submissions overall are deficient to the extent that a decision on the planning application should not be made in this case.

32.7 Overall, I have reached the conclusion that potential emissions from the proposed development would not have a materially harmful effect upon public health or on the environment surrounding the site. Accordingly, I have found no compelling planning objection to the proposal for these issues.

32.8 I have considered all other matters raised in the representations, but find nothing to override the considerations that have led to my conclusions.

David Tester
Assessor

APPENDIX 1

Key Tables:

(a) l l.lb of Doc CC/7F,
(b) Table from Doc CC/8C
(c) G14 and (d) G15 of Doc CC/11

(e) Table from Doc. CC/25

(listed separately on disc - to be inserted in hard copies in p82-86).

APPENDIX 1- table (a)

Table 11.1 b Summary of emission reductions - Fuel mix A in Kiln 4, Kilns 1,2,3 operating at capacity of 500,000 tonnes per ear and kiln 4 operating at capacity of 750,000 tonnes per year.						
Substance	As Existing K1,2,3 kg/t clinker coal/petcoke	K4 kg/t clinker Fuel mix A	Change in releases kg/t clinker	Existing K1,2,3 kg/year coal/petcoke	K4 kg/year Fuel mix A	Change releases kg/year
Particulate matter#	0.127	0.05	-60.6%	63.5 t	36.8 t	-40.9%
Sulphur Dioxide	8.46	0.5	-94.1 %	4230 t	375 t	-91.1%
Oxides of Nitrogen	4.72	1.25	-73.5%	2360 t	938 t	-60.3%
Carbon monoxide	1.96	0.75	-61.7%	980 t	563 t	-42.6%
Carbon Dioxide	1026	776	-24.4%	513,000 t	582,000 t	+13.5%
Carbon dioxide (inc C02 Neutrality)	1026	569	-44.5%	513,000 t	427,000 t	-16.8%
Mercury#	1.75E-5	3.6E-6	-79.4%	9 kg	3 kg	-69.1%
Cadmium	1.39E-05	3.7E-6	-73.5%	7 kg	3 kg	-60.2%
Thallium	3.67E-5	7.8E-6	-78.7%	18 kg	6 kg	-68.0%
Group II metals	5.06E-5	1.15E-5	-78.2%	25 kg	9 kg	-67.3%
Lead	2.35E-3	5.0E-4	-78.6%	1180 kg	379 kg	-67.9%
Other Group III metals#	2.54E-4	4.4E-5	-78.7%	127 kg	40 kg	-69.8%
Total Group III metals	2.6E-3	5AE-4	-79.1	1307 kg	419 kg	-67.8%
Dioxins and Furans	4.0E-9	0.25E-9	-93.4%	2030 mg	184 mg	-90.6%
VOC	1.39	0.03	-97.8%	695 t	22.5 t	-96.8%
Bypass dust*	9.25	5.37	-41.9%	4,625 t	4,026 t	-13.0%

kiln 4 data includes clinker cooler emissions. Mass emissions of metals rounded to the nearest kg, Fuel mix A is 15% coal/petcoke blend, 24% Cemfuel, 46% Profuel, and 15% tyres source IPC stage 2 BPEO table 6.2.1
Group II metals Cd and TI, Group III metals As, Sb, Cr, Co, Cu, Pb, Ni, Mn, Sn, V
* Requested by CANK 15/12/00

APPENDIX 1- table (b)

Summary of emissions and ground level concentrations for kiln 4 with Occupational exposure limits and Environmental Assessment Levels					
Substance	Occupational exposure limit mg/m3	EQS or EAL μg/m3	Predicted emission* mg/Nm3	Predicted ground level concentration # Pg/ m3	Predicted GLC as a fraction of EAL
Hg	0.025 (25	1	0.0015 (1.5)	4.4 (0.0000044	0.0000044
Cd	0.025 (25)	0.005	0.0013 (1.3)	4.0 (0.000004)	0.0008
TI	0.1 (100)	1	0.0032 (3.2)	9.6 (0.0000096	0.0000096
As	0.1 (100)	0.2	0.003 (3)	88 (0.000088	0.00044
Sb	-	5	0.0001 (0.1)	0.4 (0.0000004)	0.00000008
Co	0.1 (100)	0.2	0.002 (2)	6 (0.000006)	0.00003
Cr (111)	0.5 (500)	5	0.006 (6)	18 0.000018)	0.0000036
Cu	0.2 (200)	10	0.0005 (0.5)	1.6 0.0000016)	0.00000016
Pb(31/12/04)	0.15 (150)	0.5	0.13 (130)	390 (0.00039	0.00078
Pb(31/12/08)	0.15 (150)	0.25	0.13 (130)	390 0.00039)	0.00156
Ni	0.1 (100)	0.2	0.0005 (0.5)	16 (0.000016)	0.00008
Mn	1 (1000)	1	0.001 (1)	2.8 (0.0000028)	0.0000028
Sn	0.1 (100)	20	0.0006 (0.6)	1.6 (0.0000016)	0.00000008
V	-	1	0.0004 (0.4)	1.2 (0.0000012)	0.0000012

Notes:
1. Figures in () represent values converted to -Ig/m3
2. "' see table C8 in CC/11
3. #see table G12 in CC/11

APPENDIX 1- table (c)

Table G14 Summary of Key Dispersion Modelling Results (Long term average)

Prescribed Substance	Maximum Contribution from the new kiln (μg m-3) *(As modelled)*	Maximum Contribution from Existing Works (μg m-3) *(As modelled)*	Existing Ambient Concentration (μg m-3) (As *estimated)*	*Assessment Criterion* (μg m-3)
Nitrogen Dioxide	1.5	17	10-20	40
Sulphur Dioxide	0.6	24	5-10	50
Particulate Matter	0.03	0.5	17-20	40
Carbon Monoxide	3.6	6	200	*None*
Metals (Group I, Hg)	4.4 (pg m-3)	38 (pg m-3)	unknown	*None*
Metals (Group II, Cd, TI)	14 (pg m-3)	183 (pg m-3)	unknown	*None*
Metals (Group III,10 others)	670 (pg m-3)	9,995 (pg m-3)	unknown	*None*
Dioxins (I-TEQ)	0.0003 (pg m-3)	0.0094 (pg m-3)	unknown	*None*

Notes: (1)Concentrations for metals based on anticipated emission rates for Kiln 4 (as estimated by lain Walpole), not the one to be set by the Authorisation. This allows a fair comparison with the concentrations for the existing works using actual emission 1999.

(2)The dioxin concentration for Kiln 4 is based on an emission concentration of 0.1 ng Nm-3. The concentration for the ex works is based on reported emissions data for 1999.

APPENDIX 1- table (d)

Table G15 Summary of Key Dispersion Modelling Results (Short term average)

Pollutant	Maximum Contribution from new kiln (μg m-3)	Contribution from Existing Works (μg m-3)	Assessment Criterion (μg m-3)
Nitrogen Dioxide	35	500-700	287 (maximum 1 hr)
	25	350-450	200 (99.8th %ile of hourly means
Sulphur Dioxide	10	550-650	350 (99.7th %ile of1 hr means
	3	250-500	125 (99.2th %ile of 24 hr means)
Carbon Monoxide	60	50	30,000 (maximum 8 hour mean)
PM_{10}	0.1	2	50 (90.4th %ile of 24 hr means

Notes: (1) Values for the works contributions to concentrations of individual substances are given as the appropriate temporal statistic to allow direct comparison with the assessment criterion. For example, the $S0_2$ concentration shown for Kiln 4 is 10 μg m-3, which is the 99.7th percentile concentration, i.e. that which is exceeded for 24 hours in a year.

(2) All values have been presented as 'rounded' numbers, based on the range of values given in Appendix G. The intention is to be accurate, rather than precise.

APPENDIX 1- table (e)

Table showing a comparison of Padeswood kiln 4 **predicted emissions and Kelton kiln 8emissions**

Substance	Ketton kiln 8 /CemfueUProfuel	K4 predicted emission limit mg/Nm3	Ketton kiln 8 emissions, Fuel mix A mg/Nm3	Ketton kiln 8 coal coal only mg/Nm3mg/Nm3
Particulate matter#	50	10	45.5	25.9
Sulphur Dioxide #	600	200	30.6	12.0
Oxides of Nitrogen #	1500	500	1131	626
Carbon monoxide #	1000	300	694	1033
Mercury	0.1	0.0015	0.0020	0.0024
Group 11 metals	0.1	0.0055	0.0053	0.0257*
Group III metals	1.0	0.233	0.0638	0.04674
Dioxins and Furans	0.1	0.1	0.003	0.0075
Ng/Nm3 TEQ				
VOC #	100	12	19	24.8

All emission limits and values are reported corrected to dry basis 11 % Oxygen

continuous monitoring in place, limits given are daily averages

*note there was one emission result for thallium which is included in this mean value which is considered to be unrepresentative as it was 0.22 mg/Nm3, two orders of magnitude higher than the other 11 results. The mean excluding this value was 0.0066 mg/Nm3

Fuel mix A is 15% coal/petcoke blend, 24% Cemfuel, 46% Profuel and 15% tyres.

APPENDIX 2

ABBREVIATIONS USED THROUGHOUT THE TEXT OF THE REPORT

(p.16.2)	A reference to source material elsewhere in the report
AERMOD	Dispersion model made available through US Environment Protection Agency
ADLP	Alyn and Deeside Local Plan
ADMSv3	UK Atmospheric Dispersion Modelling System version 3 (or 2 or 2.2)
AONB	Area of Outstanding Natural Beauty
Applicant:	Castle Cement: the company making the planning application to develop the site at Padeswood, Mold
BAT	Best Available Technology
BATNEEC	Best Available Technology not Entailing Excessive Cost
BREF note	European Commission Reference Document on Best Available Techniques for Integrated Pollution Prevention and Control
BPEO	Best Practicable Environmental Option
CANK	Campaign Against the New Kiln Objector Group
CCL	Castle Cement Ltd
CCW	Countryside Council for Wales
Cemfuel	A liquid fuel used in the kilns derived from the processing of waste material
Circular	A DETR or Welsh Office Circular normally with its number e.g. 10/2000
CKD	Cement Kiln Dust
COMAH	Control of Major - Accidents Hazards Regulations 1999
COMARE	Committee on Medical Aspects of Radiation in the Environment
COMEAP	Committee on the Medical Effects of Air Pollutants
COT	Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment
Council:	Flintshire County Council

CPRW	Campaign for the Protection of Rural Wales
CSPFA	Clwyd Structure Plan First Alteration
DETR	Department of the Environment Transport and the Regions
Doe	A document number in the series of documents held in the inquiry library
DPH	Director of Public Health
EA	Environment Agency
EAW	Environment Agency (Wales)
EAL	Environment Assessment Levels
ECHR	European Convention on Human Rights
EIA	Environment Impact Assessment
EIAD	Environmental Impact Assessment Directive
EQS	Environment Quality Standard
ES	Environmental Statement
ESP	Electrostatic Precipitator
FCC:	Flintshire County Council
FGP	Flintshire Green Party
GB	Green Belt
HIA	Health Impact Assessment
HSC	Hazardous Substance Consent
HSE	Health and Safety Executive
HWID	Hazardous Waste Incineration Directive
IPC	Integrated Pollution Control
IPPC	Integrated Pollution Prevention and Control
I-TEQ	International Toxic Equivalent
K4	Kiln 4 (or K1 for Kiln 1 etc)

Ketton	The Castle Cement works at Ketton
LAAPC	Local Authority Air Pollution Control
MO	Meteorological Office
MPG	Mineral Planning Guidance
Natura 2000	Community wide network of Special Areas of Conservation
NAQS 2000	Air Quality Strategy for England, Scotland, Wales and Northern Ireland
NAW	National Assembly for Wales
NOx	Oxides of Nitrogen (eg Nitrogen Dioxide)
NWHA:	North Wales Health Authority
OPC	Ordinary Portland Cement
PGWPP:	Planning Guidance Wales Planning Policy First Revision
Phoenix	The Phoenix Coalition Objector Group
PM_{10}	Particles in the air with a size equal to or less than 10 microns
$PM_{2.5}$	Particles in the air with a size equal to or less than 2.5 microns
ppb	Parts per Billion
ppm	Parts Per Million
$\mu g/m^3$	micrograms per cubic metre (of air)
mg/m^3	milligrams per cubic metre (of air)
PFA	Pulverised Fuel Ash
Profuel	A solid fuel used in the kiln derived from the processing of waste material
Ribblesdale	The Castle Cement works at Ribblesdale
RPG	Regional Planning Guidance
SAC	Special Area of Conservation
SCR	Selective catalytic reduction
SNCR	Selective non-catalytic reduction

SLF	Secondary Liquid Fuel
SPSA	Structure Plan Second Alteration
SO,	Oxides of Sulphur (eg Sulphur Dioxide)
TAN	Technical Advice Note issue by the NAW to accompany PGWPP
TEQ	Toxic Equivalent
TCC	Trefnu Cymunedol Cymru - Wales Broad based Organisation
TCPA	The Town and Country Planning Act of 1990
TDI	Tolerable Daily Intake
tpa	Tonnes per annum
UFP	Ultra fine particles
WCISU	Welsh Cancer Intelligence and Surveillance Unit
WCR	Welsh Cancer Registry
WFD	Waste Framework Directive
WHO	World Health Organisation
WMLR	Waste Management Licensing Regulations

APPENDIX 3

List of Documents

Inquiry Procedure Documents

IPD/1	Notification of Inquiry
IPD/2	Letter of Notification of Inquiry
IPD/3	Attendance Sheets
IPD/4	Inquiry Programme

Core Documents

(To reduce expense documents marked * not photocopied as they are available nationally or duplicated in the evidence of other groups)

CD/1	Planning application for Kiln 4 dated 7th January 1999 (reference 99/0/24)
CD/2	Environmental Statement and Non-Technical Summaries dated 7th January 1999
CD/3	Letter from Castle Cement to Flintshire County Council enclosing Supplementary Environmental Statement and replacement Non-Technical Summaries, dated 25th June 1999
CD/4	Amendment to planning application for Kiln 4 dated 23rd December 1999
CD/5	Addendum to Non-Technical Summaries dated 23rd December 1999
CD/6	Padeswood Kiln 4 Project: Environmental Monitoring Scheme (2 March 2000)
CD/7	Padeswood Kiln 4 Project: An Examination of Means of Disposal of Final Kiln Residues (Cement Kiln Dust) (2nd March 2000)
CD/8	Padeswood Kiln 4 Project: Dust Control Within the Works
CD/9	Report to the Special Meeting of the Planning Committee of Flintshire County Council held on 2nd February 2000
CD/10	Minutes of the Special Meeting of the Planning Committee of Flintshire County Council held on 2nd February 2000
CD/11	Report to the meeting of the Planning Committee of Flintshire County Council held on 23rd May 2000
CD/12	Minutes of the meeting of the Planning Committee of Flintshire County Council held on 23rd May 2000

CD/13	Conditions to be attached to planning permission for the proposed development approved by the Planning Committee of Flintshire County Council on 23rd May 2000
CD/14	The Delyn Local Plan
CD/15	The Clwyd County Structure Plan, First Alteration (31 October 1991)
CD/16	The Alyn & Deeside Local Plan (published in March 1994) and Proposed Modifications (published in January 1997)
CD/17	The Structure Plan Second Alteration: Flintshire Edition (published in January 1997)
CD/18	The Draft North Flintshire Local Plan (October 1997) and proposed modifications (February 1999)
CD/19	Flintshire Unitary Development Plan Pre-Deposit Consultation Draft (May 2000)
CD/20	Planning Guidance (Wales): Planning Policy April 1999
CD/21	Minerals Planning Guidance (Wales) Consultation Draft (November 1999)
CD/22	Minerals Policy Guidance Note 10: Provision of Raw Material for the Cement Industry
CD/23	Planning Policy Guidance Note No 10: Planning and Waste Management (September 1999)
CD/24	Air Quality Strategy for England, Scotland, Wales and Northern Ireland (CM 4548, January 2000)
CD/25	The Welsh Air Quality Forum (2000) The Fourth Annual Report
CD/26	CRE Air Quality Monitoring in Padeswood, North Wales - 16 February to 25 April 2000 (Contract No. 8698-3)
CD/27	BREF note of Best Available Techniques in the Cement and Lime Manufacturing Industries (March 2000) – IPTS
CD/28	The Environment Agency (1998) Limit Settling for Oxides of Nitrogen and Sulphur Dioxide: Castle Cement at Padeswood (Report No. RTST/98/1)
CD/29	Guidance Note El on Best Practicable Option Assessment Methodology – The Environment Agency (April 1997)
CD/30	Castle Cement Integrated Pollution Control Application - Stage 1, January 1999

CD/31	Castle Cement Integrated Pollution Control Application - Stage 2, June 1999
CD/32	Castle Cement Integrated Pollution Control Application - Stage 3, June 2000
CD/33	Castle Cement IPC application response to Schedule 1 Notice, July 2000
CD/34	Off Site Planting Assessment - RPS (13 September 1999)
CD/35	County Intelligence Report (October 1997)
CD/36	Flintshire Economic Issues and Strategy Proposals
CD/37	All Fire Up: Burning Hazardous Wastes in Cement Kilns – Environmental Toxicology International (ETI 1992) ISDN 0-963 1944-1-0
CD/38	Better Health, Better Wales': Developing Health Impact Assessment in Wales -National Assembly for Wales (NAW 1999a)
CD/39	The Health of North Wales : Annual Report to the Director of Public Health 1999 -North Wales
CD/40	Technical Guidance 300 : Review Assessment Selection and Use of Dispersion Models - UK Department of the Environment, Transport and The Regions (UK DETR 2000b) LAQM (TG300) - August 2000
CD/41	Cancer Incidence Near Municipal Solid Waste Incinerators in Great Britain – UK Department of Health (UK DOH 2000b) COC/00/S 1
CD/42	Statement on Dietary Exposure to Dioxins and Dioxin-Like PCB - UK Department of Health (UK DOH 2000d) - Committee on Toxicity of Chemicals in Food, Consumer Products and Environment (COT) - August 2000
CD/43	COM Statement on TODD (2, 3, 7, 8 - Tetrachlorodibenzo-p-dioxin) - UK Department of Health (UK DOH 1999a) - Committee on Mutagenicity of Chemicals in Food, Consumer Products and the Environment (COM) - COM/99/S2
CD/44	Statement by the Committee on the Medical Effects of Air Pollutants on the Possible Health Effects of Air Pollutants in the Clitheroe Area - UK Department of Health (UK DOH 1998) November 1998
CD/45	Dioxins and Polychlorinated Biphenyls in Foods and Human Milk - UK Ministry of Agriculture, Fisheries and Food (UK MAFF 1997b) - Food Surveillance Information Sheet No. 105 - June 1997

CD/46	Guidelines on Investigating the Health Impact on Emissions to Air from Local Industry: A Consultation Document - Draft - UK Department of Health (UK DOH 2000c) COMEAP. DOH Air and Noise Pollution Unit - February 2000
CD/47	Guidelines for Environmental Risk Assessment and Management: Revised Departmental Guidance - UK DETR, Environment Agency and Institute for Environment and Health August 2000
CD/48*	Circular 15/88 Town and Country Planning (assessment of Environmental Effects Regulations 1988)
CD/49*	DETR Circular 2/99: Environmental Impact Assessment
CD/50*	Directive on Hazardous Waste (91/689/EEC)
CD/51 *	Directive on Incineration of Hazardous Waste (94/67 EEC)
CD/52*	Waste Strategy (January 2000) published by DETR
CD/53*	Planning Policy Guidance Note 23 for England "Planning and Pollution Control"
CD/54*	11th Report of the House of Lords Select Committee on the European Communities "Waste Incineration" (1999)
CD/55*	Clwyd County Council: Clwyd Landscape Assessment (April 1995)
CD/56*	Welsh Development Agency: "Landscapes Working for Wales - A Landscape Strategy for Flintshire". (April 1996)
CD/57	Letter from Norton Rose dated 14th September 2000 to the Planning Inspectorate enclosing a planning submission drawing schedule and schedule of building function and finish.
CD/58	The Landscape Institute and the Institute of Environmental Assessment: "The Guidelines for Landscape and Visual Impact Assessment" (1995)
CD/59*	The Landscape Institute Advice Note 01/99
CD/60*	IPC Guidance Note S2 3.01: "Cement Manufacture, Lime Manufacture and Associated Processes".
CD/61	IPC Authorisation for Padeswood Variation BH 3738
CD/62	IPC Authorisation for Ribblesdale Al 2813
CD/63	IPC Authorisation for Ribblesdale Variation BE 7516 (31st August 1999)
CD/64	IPC Authorisation for Ketton: AT 5060

CD/65	IPC Authorisation for Ketton Variation BI 040 8 (27th June 2000)
CD/66	IPC Authorisation for Ketton Section 11(7) Notice in connection with Authorisation A1 0560. (14th November 1996)
CD/67*	Part IV The Environment Act 1995. Local Air Quality Management. Review and Assessment: Pollutant Specific Guidance. LAQM.TG (00). Department of the Environment, Transport and the Regions. National Assembly for Wales. Scottish Executive. Consultation Draft - December 1999.
CD/68*	QUARG (1996) "Airborne Particulate Matter in the United Kingdom " Third Report of the Quality of Urban Air Review Group. Department of the Environment. (May 1996)
CD/69	Cement Kiln Dust Analysis Cefn Mawr Quarry - Geochem Analytical Services Report Ref 99/0793/02/01.
CD/70	Emergency Procedures at Padeswood

Castle Cement Documents

CC/1	Peter Welter - Proof of Evidence - Castle Cement's Corporate Strategy
CC/lA	Peter Welter - Statement of Clarification on the future of Padeswood
CC/1B	Additional Information for Padeswood Kiln 4 Inquiry Derivation of Kiln Annual Capacity
CC/2	Peter Welter - Appendices to Proof of Evidence
CC/2A	Extract from Cement Data Book
CC/2B	Dimensions of Preheater Towers and Chimneys shown in Peter Weller's Proof of Evidence
CC/2C	Structure of Shareholdings - Heidelberger Zement
CC/2D	Graph showing variation of thermal efficiency versus kiln production
CC/3	Peter Weller - Summary of Proof of Evidence
CC/4	Tony Allan - Proof of Evidence - Employment and History
CC/4B	Charitable donations Budget Padeswood Works 1992 – 2000
CC/4C	Letters to former and current Employees encouraging support of project
CC/4D	Letter to Environment Agency from A T Allan regarding Enforcement Notice under s13 EPA
CC/4E	Distribution Personnel Note
CC/4F	Letter from Tony Allan to Councillor Darlington dated 5th December 2000
CC/5	Tony Allan - Appendices to proof of Evidence
CC/6	Tony Allan - Summary Proof of Evidence
CC/7	lain Walpole - Proof of Evidence - Process Description and Environmental Performance
CC/7A	Rebuttal by lain Walpole of Proofs of Evidence of Ian Rogerson and Malcolm Pratt
CC/7B	Tables l l.la - 11.1 d (dated 2/11/00)
CC/7C	Letter to Environment Agency dated 24th October 2000 from Castle Cement amending Table 7.3 in the IPC Stage 3 application

CC/7D	Revised Tables 11.1 a - 11. l d (to incorporate request from the Assessor to record lead separately) dated 5 December 2000
CC/7E	NOx Graph 1998 and 1999
CC/7F	Revised Tables 11.1 a - 11.1 d (in response to request from CANK to show cement kiln dust)
CC/8	lain Walpole - Appendices to Proof of Evidence
CC/8A	Revised Table 9.1 from the Appendices to lain Walpole's Proof of Evidence
CC/8B	Table comparing Padeswood, Kiln 4 predicted emissions and Ketton, Kiln 8 emissions
CC/8C	Additional Information for Padeswood, Kiln 4 Public Inquiry - emissions comparison between Ketton, Kiln 8 and the proposed Kiln 4
CC/9	lain Walpole - Summary Proof of Evidence
CC/10	Roger Barrowcliffe - Proof of Evidence - Air Quality
CC/l0A	Rebuttal by Roger Barrowcliffe
CC/11	Roger Barrowcliffe - Appendices to proof of evidence
CC/11A	Revised Figure Hl produced by Roger Barrowcliffe
CC/11B	Revised Figure H2 produced by Roger Barrowcliffe
CC/11 C	Revised Table B2 from Roger Barrowcliffe's Appendices
CC/11D	Additional Information (bound document) sent to the programme officer on 14/11/00 CC/11E Amendment to Table B2
CC/12	Roger Barrowcliffe - Summary Proof of Evidence
CC/13	Dr.KathrynKelly-Proof of Evidence-Health
CC/13A	Rebuttal by Kathryn Kelly of Dr Howard Evidence
CC/13B	Dioxin Source Apportionment Graph produced by Dr K Kelly during XX
CC/13C	Scenario A Mass-based total particle deposition (produced by Dr K Kelly during XX)
CC/13D	Scenario B Area based total particle deposition (produced by Dr K Kelly during XX)

CC/13E	Scenario C Mass based total particle deposition (produced by Dr K Kelly during XX)
CC/13F	Dr K Kelly Note to Blue Circle Tyre Data (Produced by Dr K Kelly during XX)
CC/14	Dr. Kathryn Kelly - Appendices to Proof of evidence CC/14A Table 6.5 revised
CC/14B	Results of mufti-pathway risk modelling (separate binder), modelling data behind Dr K Kelly's table 6.4 - 6.6 sent to programme officer on 14/11/00
CC/14C	Information requested by Ms Mary Homer on milk at Clitheroe - MAFF food surveillance sheet dated October 1994. NB Circulated to Inspector, Ms Mary Homer & Programme Officer
CC/14D	Information on children ref A2 (memo from Dr K Kelly to CC relating to child exposure in MAFF info sheet on metals in milk)
CC/14E	Postcode Table
CC/14F	Additional Comments on Dr K Kelly Table 6.6 CC/14
CC/15	Dr. Kathryn Kelly-Summary proof of evidence
CC/16	Stephen Salt - Proof of Evidence - Planning Policy
CC/16A	Planning application documentation agreed statement (sent to Programme Officer on 9/11/00) and planning submission drawing schedule
CC/17	Stephen Salt - Appendices to Proof of Evidence
CC/18	Stephen Salt - Summary Proof of Evidence
CC/19	Hal Moggridge - Proof of Evidence - Landscape/Visual
CC/19A	Rebuttal by Hal Moggridge (CANK's evidence) and (Phoenix's evidence)
CC/19C	HM7.1, HM7.2, HM7.4 (part of document CC/19) Architectural Views of Padeswood Works Kiln 4 Development
CC/19D	1:10,000 OS Map without any information added
CC/19E	Integrated Viewpoint Locations - Sheets 1-3 and 2 page schedule supplied by Colvin & Moggridge
CC/19F	Revised Sheet 2 and schedule produced by Hal Moggridge
CC/19G	Photo of Eaton Hall produced by Hal Moggridge during XX
CC/19H	Rebuttal of CPRW Proof - Merfyn Williams by Hal Moggridge

CC/20	Hal Moggridge - Appendices to Proof of Evidence
CC/21	Hal Moggridge - Summary Proof of Evidence
CC/22	Ian Turvey - Proof of Evidence – Transportation
CC/22A	Rebuttal by Ian Turvey of Phoenix Coalition Group - Transport
CC/22B	Clarification Statement by Ian Turvey on Transport with reference to table I in Appendix B of CC/23 and the table following paragraph 19 of Ian Turvey's Rebuttal Proof, plus appendix CC/22C Second Rebuttal by Ian Turvey of Phoenix Coalition Group – Transport
CC/23	Ian Turvey - Appendices to Proof of Evidence
CC/'23A	Clinker Deliveries to Padeswood
CC/23B	Fax sent from Norton Rose to Graham Booth dated 27 November 2000 providing annual clinker production figures at Padeswood 1995 - 1999 (inclusive)
CC/23C	Traffic Tables from Ian Turvey
CC/23D	Revised traffic tables from Ian Turvey (replacing CC23C) following request by Inspector that tables 3A and 3B be amended to show junction split and HGV split dated 18 December 2000
CC/23E	Revised traffic tables from Ian Turvey (replacing CC/23C) following request by Inspector that tables 3A and 3B amended to show junction split and HGV split dated 18/12/00
CC/24	Ian Turvey - Summary Proof of Evidence
CC/25	Comparative values of relevant exposure limits/standard to Kiln 4 emissions and predicted maximum ground level concentrations
CC/26	Dioxin exposure from Kiln 4 compared to World Health Organisation Recommendation
CC/27	Additional Information for the Padeswood Kiln 4 Public Inquiry (first heading 'Profuel')
CC/28	R v Durham County Council and another, ex pane Lowther - (QBD, 21 June 2000)
CC/29	Briefing Note for Ketton visit
CC/30	Publication dates of open door at Ribblesdale, Padeswood and Ketton, together with back copies
CC/31	Map of viewpoints of Ketton Works produced by Hal Moggidge

CC/32	Briefing Notes Rugby Cement - New Bilton Works, Rugby, Warwickshire
CC/33	List of all prosecutions Castle Cement has had within the last five years
CC/34	Note prepared by Stephen Salt regarding waste disposal licence/waste management licence
CC/35	Document illustrating unsubstantiated claims made by Phoenix Group
CC/36	Cross examination note supporting documentation for Ms Mary Homer
CC/37	Variation of emissions on Ketton Kiln 8
CC/38	Additional information to Padeswood Kiln 4 Inquiry - 15 December 2000
CC/39	Fabriclean Pulse - Jet fabric filters and Pulse - Jet fabric filter reference list
CC/40	Assessment of noise and ground borne vibration from the Castle Cement Works
CC/41	Views of Ketton Cement Works
CC/42	Aberthaw Cement Works Site Plan
CC/43	Photo Sheet of Aberthaw Cement Works Power Station - F50
CC/44	Three A4 size photos of Aberthaw
CC/45	Note and documentation discrediting evidence produced by Dodleston & District Parish Council
CC/46	Additional Information for Padeswood, Kiln 4 - Public Inquiry - Company Employment
CC/47	Note Re Pant-y-Buarth Waste Disposal
CC/48	Opening Statement on behalf of Castle Cement
CC/49	Additional Information for the Padeswood, Kiln 4 Public Inquiry - Slites Kiln 8 - run hours
CC/50	Corrigendum to the reports to DETR in 1999 on the proposed waste incineration Directive (Enter - Annex E and letter from Mr Michael Meacher MP to Greenpeace stamped 10 November 2000)
CC/51	Rebuttal on behalf of Castle Cement Limited to the evidence produced by the Flintshire Green Party (excluding Mary Homer's evidence)
CC/52	Heights of typical coal fired power stations and Aberthaw and some medieval towers in Northern Europe

CC/53	Note of Clarification regarding Sampling for Toxic Substances in and near Padeswood 1992 – 2000
CC/54	Response by Castle Cement Limited to evidence of Ms Mary Horner for Flintshire Green Party
CC/55	Company Procedure Note
CC/56	Draft Process Description Agreed Statement
CC/57	Response to comments made by Mr Arnold Woolley
CC/58	A note on the meteorological aspects of the supplementary proof of Dr. Howard
CC/59	Final Process Description agreed statement
CC/60	Photographs taken from Mrs Mia Jones' Viewpoints Using F50
CC/61	Comments by Castle Cement Limited on CAM 37
CC/62	Briefing Note for Ribblesdale Site Visit
CC/63	Closing Submission

Flintshire County Council's Documents

FCC/IA	Proof of Evidence - Mr. C. Thomas
FCC/1B	Proof of Evidence - Mr. D. Heggarty
FCC/1C	Summary Proof of Evidence - Mr. C. Thomas
FCC/1	Report by RPS Consultants - A Review of Environmental Information in Respect of Padeswood Kiln 4 Project
FCC/2	Report to Planning Committee on 2nd February 2000
FCC/3	Minutes of Planning Committee of 2nd February 2000
FCC/4	Report to Planning Committee on 23rd May 2000
FCC/5	Minutes of Planning Committee of 23rd May 2000
FCC/6	Extracts of CADW Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales
FCC/7	Pathway to Prosperity - A New Economic Agenda for Wales - Welsh Office 1998
FCC/8	Proposals for a National Economic Development Strategy - Wales European Task Force July 1999
FCC/9	Flintshire Economic Development Plan 1999/2000
FCC/10	Flintshire Annual Budget 1999/2000
FCC/11	Service Delivery Plans - Flintshire County Council - February 1996
FCC/12	Flintshire Strategic Partnership for Economic Development - Discussion Paper -Meridien PURE Ltd. June 2000
FCC/13	betterwales.com - National Assembly for Wales Draft Strategic Plan, March 2000
FCC/14	Schedule of Draft Conditions
FCC/15	Resolution of Cheshire County Council Planning Committee (arising out of the evidence of Chester City Councillor Mrs Mia Jones)
FCC/16	Letter to Mrs Gilly Boyd of Phoenix from North Wales Tourism dated 12th October 2000 (arising out of the re-examination of David Heggarty)
FCC 17	Vacancy Duration by Occupation (information provided by the Employment Service) (arising out of the cross-examination of David Heggarty by Councillor Mrs Mia Jones).

FCC 18 Welsh Index of Deprivation 2000 Map 8 and List of Most Deprived Electoral Division deciles (arising out of the cross-examination of David Heggarty and requested by the Inspector).

FCC 19 Assisted Areas - Flintshire as designated by the Secretary of State for Wales and the National Assembly with effect from 27th July 2000 (arising out of the cross-examination of David Heggarty and requested by the Inspector).

FCC 20 Average gross weekly earnings of full-time employees by gender, April 19.98 and streamlined analyses for full-time employees of both sexes (information provided by CELTEC based on Office of National Statistics New Earnings Survey 1999) (arising out of the evidence of David Heggarty and requested by the Inspector [cross-refer to para. 6.6 of proof of A.T. Allan for Castle Cement]).

FCC 21 Note regarding assumptions made by Flintshire County Council as highway authority concerning plant capacity (arising out of the cross-examination of Christopher Thomas by CANK).

FCC/22 Amended Appendix E to the report to the Planning Committee on 2nd February 2000 (FCC/2), as referred to in proof of Christopher Thomas

FCC/23 Opening Submission on behalf of the County Council

FCC/24 Closing Submissions of the County Council

FCC/25 Countryside Council For Wales Letter dated 4th March 1999 (requested by Inspector)

FCC/26 Countryside Council For Wales (CCW) Letter dated 29th July 1999 (requested by Inspector)

Environment Agency Documents

EA/1	Statement of Case of the Environment Agency
EA/2	Summary Proof of Evidence of James Irvin Morris
EA/3	Proof of Evidence of James Irvin Morris
EA/4	Integrated Pollution Control: A Practical Guide
EA/5	Deleted - Now EA/8
EA/6	The Environment Agency and Sustainable Development DETR November 1996
EA/7	Environmental Protection (prescribed Processes and Substances) Regulations 1991 SI No 472
EA/8	Cement Manufacturing, Lime Manufacture and Associated Process IPC Guidance Note S2 3.01
EA/9	The Chief Inspector's Guidance to Inspectors - Process Evidence Note IPR 3/1 Cement Manufacture and Associated Process
EA/10	Technical Guidance Note (Environmental) El - Best Practicable Environmental Option Assessments for Integrated Pollution Control
EA/11	Environmental Monitoring Strategy - Ambient Air - Technical Guidance Note M8
EA/12	Monitoring Methods for Ambient Air - Technical Guidance Note M9
EA/13	Hazardous Waste Incineration Direction 1998
EA/14	Directive 94/67/EEC
EA/15	Municipal Waste Incineration Directions 1991
EA/16	Air Quality (Wales) Regulations 2000 No 1940
EA/17	Air Quality Strategy for England, Scotland, Wales and Northern Ireland – Working together for Clean Air
EA/18	Environmental Protection (Applications, Appeals and Registers) Regulations 1991, SI No 507
EA/19	Environment Agency's Prosecution and Enforcement Policy
EA/20	Pollution Prevention and Control Regulations 2000 (SI 1973)
EA/21	Directive 96/61 /EEC

EA/22	Integrated Pollution Prevention and Control: A Practical Guide
EA/23	BREF Note - European Commission Reference Document on Best Available Techniques in the Cement and Lime Manufacturing Industries - Dated March 2000
EA/24	Memorandum of Understanding between Environment Agency and Department of Health
EA/25	Substitute Fuels Protocol
EA/26	Environmental Protection Act 1990. Variation Notice & Introductory Note A10349
EA/27	Summary of Enforcement Action
EA/28	Supplementary Proof of Evidence of James Irvin Morris - October 2000
EA/29	Solid Waste Derived Fuels for use in Cement and Lime Kilns - An International Perspective
EA/30	Substitute Liquid Fuels (SLF) used in Cement Kilns - Life Cycle Analysis. Technical Report P274
EA/31	International Use of Substitute Liquid Fuels (SLF) Used for burning in Cement Kilns Technical Report P282
EA/32	Second Supplementary proof of evidence of James Irvin Morris - October 2000
EA/33	Environment Agency Wales - Memorandum of Conviction 26/10/00
EA/34	Notification of Unauthorised Release of Heavy Fuel Oil - Castle Cement 24-2-00
EA/35	Further Information required by Inspector
EA/36	Letter from Environment Agency to DETR
EA/37	Letter from Environment Agency to Alex Tovey
EA/38	Consultation document produced by Environment Agency - IPC Application (June 1999)
EA/39	Addendum Consultation Document etc (August 2000)
EA/40	Dee Action Plan
EA/41	Response to Ms Mary Homer's questions
EA/42	Environment Agency Opening Statement
EA/43	Environment Agency Closing Statement

Health Anthorit3i's Documents

PH/I Proof of Evidence of Dr R J Roberts - September 2000

PH/2 Summary Proof of evidence by Dr R J Roberts - September 2000

PH/3 Observed and expected rates of selected cancers around Padeswood

PH/4 Excel tables relating to PH3 (submitted 20/10/2000)

PH/5 COMARE Statement of the Incidence of Childhood Cancer in Wales

PH/6 Supplementary evidence - Observed and expected rates of selected cancers around Padeswood Cement Works

PH/7 Replacement Table 1 for PH6 (amended 28/11/00)

PH/8 Critical Peer Review Comments on the Report: - Mortality from lung cancer in the wards adjoining and surrounding Castle Cement works at Padeswood

PH/9 Minutes of Meeting held to discuss alleged Cancer cluster. 8/12/00

PH/10 Welsh Cancer and Intelligence Unit - Letter to Dr Howard 5/12/00

PH/11 North Wales Health Authority - Letter to Mr J Moritz of Wake Dyne Lawton - 29/11 /00

PH/12 Closing Statement

PH/13 Ring Binder of References (Inquiry Library only)

CANK's Documents

CAM/1Derek Lovejoy Partnership (Ian Reid) - Landscape and Visual Issues

Volume 1 - Summary Proof

Volume 2 - Proof of Evidence

Volume 2a - Corrected paragraph 7.4 reflecting terms of Appendix 6

Volume 3 - Appendices

Volume 4 - Plans and Photos

CAM/2 Derek Lovejoy Partnership (Ian Reid) - Planning Issues

Volume 1 - Summary Proof

Volume 2 - Proof of Evidence

CAM/3 University of Liverpool (Dr. Howard) - Fetal Toxicology

Volume I - Summary Proof

Volume 2 - Proof of Evidence

Volume 3 - (one copy only with Assessor - later transferred to NAW)

Volume 4 - Supplementary proof of evidence

Volume 5 - Figures and appendix to supplementary proof of evidence (Vol 4)

Volume 6 - Supplementary Proof of Evidence

Volume 7 - Amendment to CAM3/Vol4

Volume 8 - A considered response to the 'Critical Peer Review Comments'

Volume 8a - Table - Lung Cancer Mortality risks (wards)

Volume 9 - Letter - University of Illinois at Chicago dated December 5th 2000

CAM/4 ENTEC : Northwich (Malcolm Pratt) - Air Quality

Volume 1 - Summary Proof

Volume 2 - Proof of Evidence

Volume 3 - Tables & Appendices

CAM/5 ENTEC : Northumbria (Ian Rogerson) - Cement Manufacturing Process

Volume 1 - Summary Proof

Volume 2 - Proof of Evidence

Volume 3 - Proof of Evidence

CAM/6 CANK: Chairman (Arnold Wooley)

Volume 1 - Summary Proof

Volume 2 - Proof of Evidence

Volume 3 - Appendices

Volume 4 - Video

Volume 5 - Dust Samples

CAM/7	Notice of unauthorised emissions (EA - CC) dated 08/10/99
CAM/8	List of 250 unauthorised releases during the last 4 years
CAM/9	Letter addressed to Tony Allen from the EA dated 09/06/97
CAM/10	Opening Statement by Tom Hill
CAM/11	17/10/00 Letter from CERC stating effects of streamline dispersion
CAM/12	Table 7.3 from IPC application dated 31/05/00 showing metals input
CAM/13	Letter from CC to B. Booth of the E.A. dated 17/5/00 (Pub Reg Info)
CAM/14	Conference paper by R. Barrowcliffe and D. J. Harvey
CAM/15	Texas Air Quality Control Board letter dated August 1992
CAM/16	ENDS report 307 for August 2000 re: dioxin emissions
CAM/17	Letter dated March 24th 1994 from Jo Ann Wiersema of the TACB
CAM/18	Reports produced by EA re: test on fuel types dated 21/03/00
CAM/19	Map outlining three suggested CANK viewpoints
CAM/20	NWHA Correspondence to Ms E Parke dated 13, 14 & 22 Sept. 2000.
CAM/21	Air Quality Management article dated October 2000, Issue 58
CAM/22	Wiltshire NHS 1/1 1/00 correspondence re: tyre-burning at Westbury
CAM/23	Agreed Statement relating to Air Quality matters (MP, RB & IW)
CAM/24	ADAS Analysis of AW's Dust/limestone analysis sample dated 21/9/00
CAM/25	6 Photos included in AW's Proof showing dust deposits on cars
CAM/26	Summary of 9,000 name CANK Petition
CAM/27	Extract from Buckley Town Council's response to NWHA's June 2000 Consultation Document
CAM/28	Tables outlining: Variation of recorded or calculated main stack gas flows (1) and Alkali metal content on meal (2).
CAM/29	Castle Cement response to CAM 28 after discussion with 1. Rogerson
CAM/30	A3 DLP map showing geographical originating sites of Inputs to proposed Kiln

CAM/31 A3 DLP map - Survey of Land Uses within 4 km of Castle Cement, Padeswood

CAM/32 News release by Flintshire County Council 8/11100 - Major Jobs Boots for Flintshire

CAM/33 Flintshire County Council - Letter to members of Council 18/8/00 - Flintshire - Assisted Areas Designation

CAM/34 Newspaper article entitled 'Castle fined after hot-dust accident'

CAM/35 Fax from CC to J. Morris of the EA dated 29/05/00 re: an unauthorised release and including a Schedule 2 Notice

CAM/36 Newspaper Article 'Toxic waste smugglers target Britain' by John Ungoed-Thomas

CAM/37 Comments on Draft Planning Conditions on behalf of CANK

CAM/38 Note prepared by Ian Rogerson to answer the question raised by the Assessor on 12th December 2000, to explain the Mass Balances contained in Appendix D to CAM 5 Vol 3

CAM/39 Note from Ian Rogerson on behalf of CANK responding to Document CC/55 submitted by Castle Cement, "Cement Plant Fault Handling Procedures"

CAM/40 Closing Submission

Phoenix's Documents

PCG/1 Proof of Evidence - Issue 1 - Introduction & Public Concern

PCG/2 Proof of Evidence - Issue 2 - Visual Impact

PCG/3 Proof of Evidence - Issue 3 – Health

PCG/4 Proof of Evidence - Issue 4 – Transport

PCG/5 Proof of Evidence - Issue 5 – Waste

PCG/6 Proof of Evidence - Issue 6 – Employment

PCG/7 Summary Proof of Evidence

PCG/8 Appendix 1.7 - Press Cuttings following Planning Approval

PCG/9 Appendix 1.6 - Letters from the Public Registered before 2nd February 2000

PCG/10 Appendix 1.29, 1.30 & 1.31 - Pollution of Black Brook

PCG/11 Appendix 1.1, 1.17, 1.21, 1.22 & 1.25 - Press Evidence of Public Concern

PCG/12	Appendix 1.24, 1.26, 1.27x, 1.27b, 1.28a & 1.28b - Castle Cement Emissions
Track	Record
PCG/13	Appendix 1.18, 1.19 & 1.20 - Report on the analysis of PCCD/PCDF and heavy metals in footpaths and soil samples related to the Byker Incinerator.
PCG/14	Appendix 1.16 - Nation-wide Public Concern Justified
PCG/15	Appendix 1.14, 1.15 & 1.16 - Letters from Business, Farmers and Food Manufacturers
PCG/16	Appendix 1.12 - Letters & Forms from Residents
PCG/17	Appendix 1.11 & 1.13 - Letters from Residents Groups and Community Councils
PCG/18	Revised Proof of evidence for Transport document PCG/4
PCG/19	The Guardian Nov 2000 - watchdog admits ignorance of incinerator health risks
PCG/20	300 pro-forma letters from residents
PCG/21	478 Call in letters
PCG/22	Letter to Ms. L. Eagle of the Environment Agency dated 27/6/00 re: IPC application
PCG/23	Zone of Visual Influence and AONB Map
PCG/24	Supplementary Information required by Inspector for Zone of Visual Impact and AONB Map
PCG/25	White Horse News, 23/11/00 - Tyre Burning Row (submitted for Flints. Green Party)
PCG/26	Environment Planning & Transport Committee 15/11/00
PCG/27	Official Journal of the European Communities (2000/C 25/02) Nov 1999 including COMA-H Tables, Session Document dated 1st March & updated Directive 2000/76/EC dated 4th December
PCG/28	Hazardous Industry Classification and Implications - Dr. M. Walks
PCG/29	Figure 2.4 - Percentage of Residents of Working Age with a limiting long term illness by Electoral Ward in Wales
PCG/30	AO Plan to show mine workings and nearby houses (Drwg. Ref. 04/782 la)
PCG/31	Photo showing plume direction changes

PCG/32 Letter from Dr. Roberts to Phoenix

PCG/33 CCW Letter March 1999 - Error in letter on EA Public register

PCG/34 Peak Associates Document (as referred to in PCG/12)

PCGI35 Closing Submission

Flintshire Green Party Documents

FGP/1

1.1 Outline statement

1.2 Report to Planning Committee 2/2/2000

1.3 Final Commentary

FGP/2 (Planning)

2.1 Cement Kilns are totally unsuited to safe incineration of chemical waste

2.2 Her Majesty's Inspectorate of Pollution - Letter to Castle Cement dated 13/11/92

2.3 Friend of the Earth – I.P.C. at Castle Cement, Clitheroe

2.4 Letter from Richard C Rogers to Cllr K Armstrong Braun dated 10/8/99

2.5 Meachers cop-out Waste Strategy raises threat of new waste incinerators around UK, say Green Party

2.6 Letter from Mr. Shone to Cllr. Armstrong-Braun dated 1402000

2.7 Final PPC Consultation confirms further delays to phase-in schedule

2.8 Recycling of used tyres

2.9 Report of Municipal Waste Incineration

FGP/3

3.1 Tyndlewoods Bundle

FGP/4 (Waste)

4.1

4.2 Extracts from Demos "Creating Wealth from Waste"

4.3 BBC Panorama: Rubbish

4.4 Waste Materials that can be utilised as a fuels source for Cement Kilns (ERA tech Group)

4.5 Waste: The Options - Option 4 : Burn it - Incineration

FGP/5 (Waste Disposal)

5.1 A Charter for Health Waste Disposal

FGP/6 (Health)

6.1 Dr D Van Steenis - Some Public Health Relevant Issues

6.2 Dr D Van Steenis - Report on Assessment of the effect on the health of local residents of burning Cemfuel and other combustible waste.

6.3 BBC News Online: Health: Medical Notes

6.4 Extract from The Guardian 18/5/00 - Dioxins from waste burning and industry far more dangerous than was thought.

6.5 Dioxins in Cement Kilns

6.6. Continuous Radiation and Environmental Monitoring System March 2000

6.7 Classification of Carcinogens

6.8 Industrial Air Pollution and the Country Doctor

6.9 Toxic Detective - Inter-view with Dr D Van Steenis

6.10 Anonymous Letter received from Penyffordd Resident on 25ffi October

6.11 HEI Statement - Synopsis of the Particle Epidemiology Re-analysis Project

6.12 Comments on Dr Roberts' Report

FGP/7 (Legal)

7.1 Teletext Information - Page 132 July 29th 2000

7.2 The National Assembly for Wales - 31/1/2000. Appeal by Messrs Waste Hygenics – Land at Gaerwen Industrial Estate, Gaerwen, Anglesey

7.3 Judgement of the Court of Justice of the EuropeanCommunities 15/6/2000

7.4 Solarec - The Cemfuel Programme

7.5 Official Complaint to Trading Standards 10/10/2000

7.6 Castle Cement's Judicial Review - Legal standing of the word *"Cemfuel "*

7.7 Environment Agency Wales - Letter dated 23/7/99

7.8 Friends of the Earth dated 22/2/99 - Padeswood Fined £6000

7.9 Extract of Norton Rose Document - 4 September 2000

7.10 Castle Cement/Padeswood Cement Kiln - Review relating to 1999 prosecution

7.10 Report by Peak Associates - March 2000

7.12 Annex to National Assembly for Wales letter ref PP145-98-001 dated 31st January 2000

7.13 Letter to Planning Inspectorate from Flintshire Green Party dated 27/10/2000.

7.14 Welsh Office dated 21 st December 1992 - Land at Bannel Bridge, Bannel Lane, Buckley

7.15 Opencast Coal Act 1958 - applications and Appeal by the British Coal Corporation

7.16 Letter from Wales Green Party 12/11/200

7.17 Complaint to European Commission 6/11/2000

7.17 Photographs to show problem areas along stream by Castle Cement

7.19 Notice of Modification of Waste Management Licence

7.20 EA/Inspector Conspiracy Notes

7.21 Burning of Hazardous Waste 27/12/2000

FGP/8 (Ms M Homer's Evidence)

8.1 Are you prepared to receive your share - Objections to the Planning Application for the New Kiln at Padeswood (published by Mary Homer 17/9/2000)

8.2 Okopol - Expertise on the Environmental Risks Associated with the Co-Incineration of Wastes in the Cement Kiln

8.3 Objections to the Planning Application for the New Kiln at Padeswood by Castle Cement

8.4 Cost in Lives - to Cllr. K. Armstrong Braun dated 07/09/2000

8.5 Okopol - Economic evaluation of dust abatement techniques in the European Cement Industry

8.6 Supplementary evidence by Ms M V Homer

8.7 Video evidence by Ms M V Horner

FGP/9 (General)

9.1 Daily Post 2/2/2000 - Incinerator dumped

9.2 Sunday Mirror 23/7/00 - Incinerators double a child's cancer risk.

9.3 The Guardian 1/11/2000 - MP's accuse Whitehall of cover-up on incinerators

9.4 The Observer 29/10/00 - Toxic Fumes

9.5 Environment Agency Consultation Feed Back

9.6 Kiln Objections: Facts or Simply Unfounded Fear 1/12/00 Chester Chronicle

9.7 Kiln Hazard - 23/11/00 - (Chester) Standard

9.8 Kiln Plans are Straight Bananas 24/11/00 - The Chronicle

9.9 Kiln Rage - 12/10/00 - Flintshire Mail

9.10 New Row Over Kiln Go Ahead - Oct 2000 - Evening Leader

9.11 Landscape is not enough - 8/12/00 - The Western Mail

FGP/10 (Closing)

10.1 Final Submission

Documents of Councillor Ms Mia Jones

MJ/1 Proof of Evidence

MJ/2 Appendices to Proof of Evidence

MJ/3 Summary Proof of Evidence

MJ/4 Duke of Beaufort, Duke of Westminster & Eaton Hall extract

MJ/S Dodleston Ward Surveys (131)

MJ/6 Newspaper Article - Cement Firm Fined £18,000 for accident

MJ/7 Letter to Inspector Re: Accompanied Site Visit 31.10.00

MJ/8 Dodleston Parish Council Minutes - Requested by Inspector during Cross Examination

MJ/9 Closing Submission

Documents of Dodleston & District Parish Council

DPC/la	Proof of Evidence
DPC/1	EPA Workshop Lists Major Sources of Dioxin
DPC/2	Myths and Facts about protecting Human Health and the Environment: The Real Story about Burning Hazardous Waste in Cement Kilns
DPC/3	Sources of New "Monster" Incinerators planned
DPC/4	Why Friends of the Earth opposes Incineration
DPC/S	Health Alert June 14, 1997
DPG6	Incineration, Co-Incineration and Health
DPC/7	EPA Links Dioxin to Cancer –
DPC/8	BBC News Online - Dioxins http://news2.thls.bbc.co.uk/hi/english/health/medical-notes/newsid-358000/358889.stm
DPC/9	Dioxin in Breast Milk Raises New Health Concerns
DPC/10	Unravelling the toxicity of dioxins
DPC/10	Draft Guidelines on investing the health impact of emissions to air from local industry: A Consultation Document. Air and Noise Pollution Unit, Room 679D, Department of Health, 80 London Road, London SE16LW
DPC/12	Dioxin cost Belgium almost $1 bn http:Hlists.essential.org/dioxin-1/msgol0l I.html
DPC/13	List of substances to be monitored (Normal Local Authority Duty to Review)
DPC/14	List of substances to be monitored (additional to normal duty requirements
DPC/1S	Questionnaires completed by local doctors
DPC/16	Questionnaires completed by local farmers
DPC/17	Closing Statement

Documents of Mr John W. Ellis

JWE/la	Proof of Evidence
JWE/1	Letter from Mr D M Davies - Flintshire County Council
JWE/2	Castle Cement - Environmental Monitoring Document
JWE/3	The Guardian report of 8.2.99, Emission of Cancer causing Chemicals and the Perpetrators
JWE/4	House of commons report, "The Environmental Impact of Cement Manufacture" Environment Committee, 26 February 1997.
JWE/5	The Guardian Report of 23.4.97 on the Performance of the Environment Agency and based on JWE/4 above
JWE/6	Report to the House of Lords on the subject of Waste Incineration by Dr D Van Steenis
JWEl7	House of Commons Report on the Environment Agency published on 3 May 2000, 2 Documents, Evidence and Proceedings
JWE/8	The Guardian Report of 20.5.00 based on JWE/7 above.
JWE/9	National Assembly Document - Refusing Planning Permission for an Incinerator on Anglesey dated 31 January 2000.
JWE/10	Royal Commission Report on Environmental Pollution
JWE/11	Castle Cement Mail-Shot on the subject of Secondary Liquid Fuel.
JWE/12	Sulphur Dioxide Profile from the Irving Sax, Dangerous Properties of Industrial Chemicals
JWE/13	North Wales Health Authority Report of 20 December 1999
JWE/14	Dr C V Howard's response to JWE/13
JWE/15	World Health Organisation - Air Quality Report and Guidelines – Europe
JWE/16	EU Dioxin Exposure and Health Data - October 1999
JWE/17	U.S. Environmental Protection Agency Report, Dioxin is a Human Carcinogen.
JWE/18	Bristol Based Planning Inspectorate Letter, Human Rights Act 1998

Documents of Mr J K Shanklin

JKS/1 Statement by Mr J K Shanklin, read out at Inquiry on 17/10/00

Documents Ms L Thomas

LT/1 Statement by Ms L Thomas, read out at Inquiry 20/10/00

Documents of Mr D N Hughes

DNH/1 Penyfford Residents Liaison Committee 28/3/95 Leeswood Community Council

Documents of Councillor Canton Jones

LCC/1 Statement by Councillor Canton Jones, read out at Inquiry 25/10/00 (evening session)

Documents of TCC (Wales Broad Based Organisation).

TCC/1 Proof of Evidence by Alan Watson

TCC/2 Appendices to Proof of Evidence by Alan Watson

TCC/3 Appendix 2 - Benefit Analysis Calculations

TCC/4 References from Proof of Evidence by Alan Watson

TCC/5 Statement by Dr. Shah - read out at Inquiry 1/11/00

TCC/6 Closing Submission

TCC/7 IOM Report - Towards assessing and costing the health impacts of ambient particulate air pollution in the UK

Documents of CPRW

CPRW/1 Proof of Evidence of Mr Merfyn Williams

Documents of Councillor D Darlington

DD/la Proof of Evidence

DD/1 Tables to show objectors and supporters to the application & summary of figures

DD/2 Letter dated 1/10/00 to Chief Planing Officer & reply dated 13/10/00 from Chief Planning Officer re: Traffic

DD/4 Figures to show HGV vehicles in and out

DD/S Letter from Welsh Office 21/12/92 & Policies

DD/6	News Release from Flintshire County Council - 8/11/00
DD/7	Press Statement - Bae Systems - Grant Announcement
DD/8	Letter from Flintshire County Council (Chief Executive) 18/8/00 - Flintshire – Assisted Areas designation
DD/9	Graph to show GDP per head
DD/10	Graph to show activity rates (ages 16+)
DD/10a	Unemployment: Local Area Data
DD/11	The Distribution of Deprivation to wards