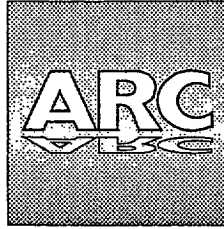


Appendix 1: Response to Issues Raised By
Appellants in Relation to the
Photomontages.

Prepared By ARC

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Robert Kelly Esq
Indaver Ireland
Haddington Terrace
Dunlaoghaire
County Dublin

5th October 2001

Re: Proposed Management Facility at Carranstown, County Meath

Dear Mr Kelly

You have asked ARC Digital to comment on the contents of appeals to an Bord Pleanála against the proposed facility at Carranstown, County Meath. You have asked us to comment specifically on what the appellants claim in relation to the visibility and visual impact of the proposed development.

In presenting photomontages from some 23 locations around the development, ARC used two different conventions depending on whether the development would be visible or not. In locations where from which the development was found to be visible, ARC showed the development as it would actually appear, rendering the digital model ARC had prepared to show the proposed colours of cladding etc in the photomontage. In locations where the development was found not to be visible, ARC showed the location of the hidden development as a red outline. This red outline shows the size and location of the proposed development hidden by landform intervening between the camera position and the development. Where there is a red outline in the photomontages, the development would not be visible.

It would appear that a number of the appellants have mistakenly assumed that where a red outline is shown the proposed development would be visible. This is not so. For clarity it is perhaps useful to state that, from ARC's analysis the proposed facility would **not** be visible from The Lower Boyne Valley, Newgrange, Brú na Boinne, Dowth or from Tullyallen to the north. The proposed facility is clearly not actually in the Boyne Valley, as has been alleged by one objector.

The location of the proposed development is on low ground on the west side of the R152. The general ground level at the proposed development ranges from 30 metres (OD) to 36 metres (OD). The model ARC used in preparing the photomontages has the top of the stack at 70.3 metres (OD). There is high ground to the north and west of the proposed facility, and this high ground intervenes between the development and the Lower Boyne Valley. There are high points to the north at 85 metres, 95 metres and 104 metres. At Redmountain to the west, the portion of the ridge which is above 100 metres is about 1.5 kilometres long and rises to 121 metres at its highest point. The highest point in that area of



the Boyne Valley containing megalithic remains is the top of the tumulus at Dowth, and is at 73 metres. The top of the Newgrange tumulus is at 57 metres and Brú na Boinne is at the floor of the river valley which falls to below 10 metres (OD). Redmountain intervenes between all these sites and the proposed development.

ARC has prepared two sections showing the relationship between the proposed facility and both Newgrange and Dowth and indicating that the development will not be visible from either.

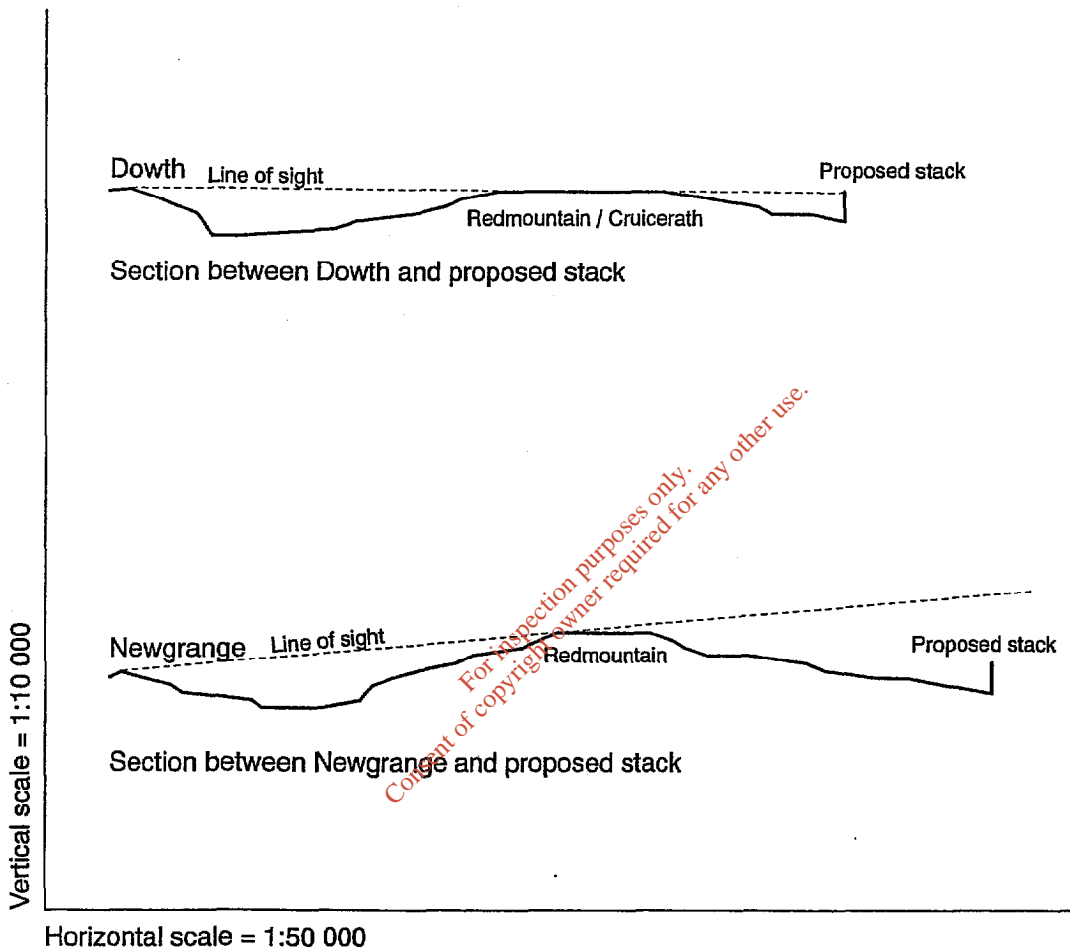
It is noted that one objector claims that no consideration was given to the north side of the Boyne Valley or from the Drogheda Western Bypass Motorway. In the case of the former, a view was submitted from the highest point of the northern side of the Boyne Valley at Dowth, showing that the proposed development would not be visible from there. In the latter, the motorway referred to does not exist at present, but views were submitted from the roads immediately east and west of the proposed road, which would be representative of views from the area of the proposed motorway.

It is noted that one objector claims that no photomontages were done from near houses in the area. This is not true. Most of the 23 photomontages done were near houses and a would be representative of visibility and visual impacts from houses.

Yours Sincerely

W. H. Hastings FRIAI

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Response to Appeals - Visual / Landscape Items

Stephen Ward

- An architectural description of all buildings on the proposed site is given in Section 3 of the Visual Impact and Landscape Section of the EIS attachments document.

"The following building structures will form part of the proposal:-

- 'Bring Bank' Recycling Area
- Administration Building
- Warehouse Building
- Security / Entrance Building
- Waste to Energy Building
- Pumphouse
- Utilities Area

Most of the proposed ancillary developments are of a relatively small scale which will have little significant visual impact from outside the site boundary. Drawing Nos. 2666-49-DR-004 and 2666-49-DR-005 Landscape Sections taken through the site show the comparative size and height of the proposed development.

The element that will have the most significant impact will be the Waste to Energy Plant, which with the other proposed developments is described in the following sections. The locations of these buildings and facilities are shown in Drawing No. 2666-49-DR-003 Landscape Plan.

3.1 Bring Bank Area

The proposed Bring Bank will be located at the front of the facility. It consists of a loop access road with covered lay-down areas to both sides. The lay-down areas will accommodate containers each receiving a different category of recyclable waste.

A Security/Information Building will be located at the entrance to the Bring Bank area. The building measures 4m x 7m on plan with a parapet height of approximately 4.5m. The building will be faced externally with colour coated profiled metal cladding.

A series of open sided roof structures will provide cover to the waste containers. The high point of these mono pitch structures will be approx. 5m above ground level. The roofs will be of metal decking with a 'green organic' system as a roof covering.

3.2 Administration Building

The proposed Administration Building will be located approx. 50m to the North of the site boundary with the Public Road. The building measures 35m x 11m on plan with a parapet height of approx. 9m above a ground floor level of 35m OD. The building will be finished externally in a mix of stone cladding, timber cladding, and painted plaster.

The building will accommodate the administrative and public functions of the facility.

3.3 Warehouse Building

The proposed Warehouse Building will be located approx. 80m to the north of the site boundary with the public road. The building measure 42m x 18m on plan, with a parapet height of approx. 10.5m above a ground floor level of 33.8m O.D. The building will be finished externally in colour coated profiled metal cladding. It will provide storage and workshop facilities to the development.

A driver reception and security annex is located adjacent to the Warehouse Building. This measures 18m x 5m on plan with parapet height of 5m. This building will be finished externally in colour coated profiled metal cladding.

Response to Appeals - Visual / Landscape Items

3.4 Waste to Energy Plant

This is a building measuring approx. 130m x 80m on plan located 160m to the north of the site boundary with the public road. The highest parapet level will be 30.45 m above ground floor level of 30.3 O.D. The building has been located to take maximum advantage of the natural fall of ground in order to minimise the overall height. The height and foot print are dictated by process functions. No roof – top plant will be located on this building and it will present a clean parapet roof line.

A single stack with a height of 40m above ground floor level of 30.30 O.D. will be located in the north eastern sector of the building. Certain climatic conditions will cause a vapour plume to become visible. As this will only occur during cold weather, with low wind speeds, the visual impact will be minimal.

The structure of the proposed building will be a structural steel frame supporting steel and concrete floors. The building will be clad externally in a mix of profiled and flat metal cladding with an elevational pattern of texture and colour designed to reduce the scale and bulk of the building.

The overall shape is built up by a series of 'cubes' and 'blocks' arranged according to plan layout to create planes of light and shade. Smooth and textured, wall cladding will be used to reinforce this shade difference.

Externally the colours of the cladding will be a mix of greens, browns and greys which will be positioned to break the scale and form of the building and help blend it against the background when viewed from the high ground to the south.

The impact of the building when viewed from the local road network will be lessened by its position at the rear of the site along with the proposed siting of the Administration Building and Warehouse Buildings which due to their varying heights and locations will form a series of visual steps, reducing the Waste to Energy Plant down to a more human scale when viewed from the main entrance. Ground modelling and structural planting will also form part of this visual screening. See Landscape Site Sections Drawing Nos. 2666-49-DR-004 and 2666-49-DR-005.

3.5 Pumphouse

The pumphouse will be located north of the Waste to Energy Plant adjacent to the water storage tank. The building will be 20 m x 10 m on plan with a parapet height of 8m, above a ground floor level of 30.85m O.D."

- Accurate photomontages illustrating the visual impact of the proposed development from the surrounding areas are included in the Visual Impact and Landscape Section of the EIS attachments document.
- Removal of existing hedgerow boundary on site frontage with main road and details of replacement landscape works are included in Section 4.3 of the Visual Impact and Landscape Section of EIS attachments document:-

"4.3 Landscape Concept

A planted 3m high berm will be created along the eastern site boundary and along the site boundary with the main road.

Sections of the existing hedgerow, to the east and west of the proposed site entrance will have to be removed to create adequate sight lines and to allow for the construction of deceleration lanes. These areas will be replaced by 3m high earth berms planted with a mix of shrub, saplings and semi-mature trees.

In addition to this screen planting, the monopitch roofs over the bring bank areas will be surfaced in an organic "green roof" system. These roofs will provide slopes of maintenance free vegetation consisting mainly of lichens, moss and other ground cover plants.

Response to Appeals - Visual / Landscape Items

A 2m high palisade security fence will be located within this perimeter planted zone.

The careful siting of these visual layers adjacent to the public road will minimise the impact of the Waste to Energy building and should, with time, render it unnoticeable to passing traffic.

Land adjacent to the gas main way-leave will be landscaped with hardwood woodland planting thereby creating a planted zone of a scale and density which will have a significant beneficial impact both on the local and overall landscape vistas.

Shrubs such as *Rubus Tricolor*, Hawthorn etc., will be used to re-create a natural boundary ditch to the open end of the gas main way leave.

Existing hedgerows to the northern, eastern and western boundaries will be thickened with Hawthorn and Blackthorn and Holly. A 2m high chainlink fence will be provided to the plant side of these boundaries.

This woodland concept of planting large quantities of saplings during the early stages of the construction period provides a nursery of trees on site that can be relocated replanted as part of an on-going landscape development programme."

- Impact of lighting from 24 hour operation - the impact of external site lighting will be minimised by using light fittings with a high cut off value as mentioned in Paragraph. 3.6 of the Landscape and Visual Section of the EIS attachment document:-

"3.6 Lighting

Plant lighting will be provided throughout the facility to operational and safety standards. Exterior light fittings will be specified where possible with a high cut-off value to minimise light spread."

- Ground filling of the site has been kept to a minimum as indicated on drawings. This ensures that the existing topography of the site is retained, thereby allowing the larger structures to be built on areas of lower ground.
- A survey of existing trees and hedgerows is contained on the Flora & Fauna Section, Attachment 10, of the EIS attachment document.

Thomas Burke

- The views from Bellewstown Ridge are dealt with in the photomontage section of the EIS attachments document.

John Rodgers

- The photomontages included with the EIS indicate that the proposed facility will **not** be visible from Dowth. Photomontages which show a red outline of the buildings indicate that the proposed development is hidden from view by intervening land forms.

An Taisce: John O'Sullivan

- The proposed facility will not be visible from Dowth. The view from Bellewstown Ridge are dealt with in the photomontage section of the EIS.

O'Neill (No Incineration Alliance)

- Topography of Site and visual intrusion. The visual impact of the proposed development is dealt with in Section 6 of the Visual Impact and Landscape Section of the EIS:-

Response to Appeals - Visual / Landscape Items

"6.0 VIEWS

The proposed development will be situated in a landscape area of visual quality "VQ11, Rural and Agricultural" as defined in the Meath Co. Council Draft Development Plan 2000 - Area of Visual Quality Map.

"A number of specific views in this area are identified in the Draft Development Plan 2000 - Navan Area Amenity Map". All of the identified views, with the exception of the view from Bellewstown Ridge, look northward into the Boyne Valley and as such are not visible from the proposed development and will not visually impact on these views.

The view from Bellewstown Ridge looks northward over the proposed site. However, the view is panoramic and the proposed development forms a very small proportion of the total view and is located in the far middle distance.

It is considered therefore, that the visual impact, while negative when viewed from locations on the Ridge, will not be significant.

The Meath County Development Plan 1994 - Heritage and Views Map also listed the following views in the area of the proposed development; Views No.'s V5, V6, V7, V8, V13 and V 16.

Again, only V16, the view northward from Bellewstown Ridge is affected by the proposed development and as stated previously, the visual impact, when viewed in context with Platin Cement Works is considered slight.

There will be glimpsed and open views of the development from the adjacent road network and from houses in the immediate vicinity of the site. However, the creation of planted berms and large areas of woodland planting will effectively screen the large building structures.

A colour scheme has been formulated for the entire development which will be implemented by cladding buildings, tanks etc. in a range of patterns and colours chosen to minimise their impact on the landscape. The use of a mix of green, brown and grey panels, along with relief features such as, staircases, stepped ancillary blocks, glazing and louvres, will assist in reducing the visual mass of the proposed structures.

The photomontage views accompanying this text are incorporated in the Appendix of this EIS document. These views clearly illustrate the effectiveness of the building colour scheme when combined with the proposed landscaping works."

- Landscape works including berming, screen and woodland planting of up to 50,000 indigenous trees is described in Section 4 landscaping, of the Visual Impact and Landscape Section of the EIS.
- The site is classified as V.Q. 11 in the Co. Development Plan Area of Visual Quality Map. This visual quality category represents the largest category of land use in the County, see attached key from Development Plan.
- Inadequacy of EIS. The subject site is incorrectly indicated on the site location map on page 6 of the EIS document.
- Landscape Protection. The proposed development is not located in any of the areas of high amenity listed in Section 2.8.4 page 27 of the County Development Plan. Only one listed view, that from Bellewstown Ridge, will be affected. The impact of this view is dealt with in Section 5 of the Visual Impact and Landscape Section of the EIS attachment document:-

Response to Appeals - Visual / Landscape Items

"5.0 VISUAL IMPACTS OF THE PROPOSED DEVELOPMENT AND MITIGATION MEASURES

5.1 The impact of the proposed development on the landscape character would depend upon the degree of vulnerability of the existing landscape and its ability to accommodate change. The significance of the change will be assessed on the existing character and also on the values attached to the landscape and its importance within a national or regional context.

The landscape of this part of county Meath is a rolling, agricultural landscape, noted by good quality farmland.

As described previously, the landscape may be divided into three distinct local character areas.

The site occurs within a lowland, undulating landscape. This type of landscape has a semi-enclosed character by virtue of its topography and vegetation. Thus it has a high ability to absorb new development when viewed from within the landscape. The Boyne valley is another landscape character unit and is visually enclosed and distinct from the lowland, agricultural landscape. The other landscape character type is Bellewstown ridge which is open, allowing 360 degree panoramic views. This ridge would be considered visually vulnerable with a low tolerance to change and a low ability to accommodate new development.

Thus while the site is located within a landscape with a high visual absorption capability, and low vulnerability, it may be viewed from other vulnerable landscape areas with a low visual absorption capability, such as the ridge at Bellewstown.

The significance of the change would be most apparent from elevated vantage points such as Red Mountain and Bellewstown Ridge. However, the character of the landscape and views from these areas are already influenced by Platin Cement Factory which is visually dominant due to its height and scale and also the associated open quarry of Premier Periclase, which lends an industrial quality to the landscape. The proposed power generation plant, if constructed will increase this perception. Within this context, the development would thus represent a cumulative impact, whereby there would be an increase in the perceived industrial character of the locality.

It is considered that the visual impact while negative when viewed from these locations will not be significant, as the proposed development will be viewed in the distance and against the background of the existing Platin Cement works installation with its high rise structures, stacks and open quarry rock faces.

5.2 Considerable research has been undertaken over the past half century into techniques for blending large installations into the landscape. The most effective methods involve the use of Disruptive Patterns and Materials. This is a combination of irregular patterns and colours based on shapes and tones occurring in the local landscape. It has been used successfully on recent projects in Ireland. This technique will be applied to the Waste to Energy Building to reduce its apparent height and mass, by using:-

- A carefully selected colour scheme to disrupt building outlines
- Panels of smooth and profiled wall cladding.
- Relief features, including stepping of plan and elevation lines.

5.3 The construction phase of the project will have a high negative impact due to stripping of top soil, alteration of ground levels and construction of buildings and ancillary developments. However, due to the construction schedule this visual impact is considered short term."

**MEATH COUNTY COUNCIL
DRAFT COUNTY
DEVELOPMENT PLAN 2000**

RURAL DETAIL MAP

AREA OF VISUAL QUALITY MAP

Area's of Visual Quality

- Area VQ1: The Coastal Zone
- Area VQ2: Lower Boyne Valley
- Area VQ3: River Valleys
- Area VQ4: The Royal Canal Corridor
- Area VQ5: Slieve Na Calliagh uplands
- Area VQ6: Lough Sheelin Environs
- Area VQ7: Upland Agricultural Area
- Area VQ8: North Meath Lakelands
- Area VQ9: The Tara and Dunsany District
- Area VQ10: Bogland Area's
- Area VQ11: Rural and Agricultural

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Appendix 2: Response to Issues Raised By
Appellants in Relation to Visual Impact.

Prepared By Wilson Associates

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Appendix 3: Response to Issues Raised By Appellants in Relation to Flora and Fauna and Particularly the Peregrine Falcons.

Prepared By Biosphere Environmental

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Biosphere Environmental Services

29 La Touche Park, Greystones, Co. Wicklow

Tel/Fax (01) 2875249 Mobile 087 2309906 E-mail maddenb@eircom.net



For attention of:
Mr Robert Kelly,
Indavar Ireland,
4 Haddington Terrace,
Dun Laoghaire,
Co Dublin.

20th August 2001

Re. Waste Management Facility, Carranstown - Peregrine Query

Dear Mr Kelly,

In regards to the information you supplied re. a nesting pair of Peregrines at the quarry within the Platin Cement Facility the following is some background information on the status of Peregrines in Ireland and an assessment of potential impacts by the proposed development.

Status and distribution of Peregrines in Ireland

After a dramatic decline between the 1940s and 1970s because of contamination by organo-chlorine insecticides, the Peregrine population has recovered well in Ireland. A national census in 1991 estimated 350-355 occupied territories in the Republic (Norriss 1995).

Traditionally, Peregrines have been associated with upland sites and coastal cliffs. In recent years, however, they have nested increasingly in quarries (both active and disused) and between 1993 and 1995 it was estimated that 65 quarries were occupied by Peregrines in the Republic (Moore et al 1997). Furthermore, Peregrines are increasingly nesting on man-made structures, such as churches, towers and large industrial buildings. A national survey planned for 2001 (but postponed due to Foot & Mouth) anticipated that the proportion of the national population nesting in quarries and on man-made structures would have increased since the 1991 (Madden, unpublished).

Occupation of the quarry at the Platin Cement Works is not unexpected and this is one of several quarries occupied by Peregrines in the Drogheda area.

Potential impacts on Peregrines by the proposed Carranstown development

A pair of Peregrines reportedly nests on the southern wall of the quarry, a distance of several hundred metres from the proposed development and separated by the railway track.

/continued

In general, when assessing impacts by proposed developments on nesting Peregrines one needs to consider several principal issues as follows:

1. Direct physical disturbance to the nest site
2. Indirect disturbance to the breeding birds (by way of increased levels of human activity, increased noise, etc)
3. Reduction in feeding habitat of the birds or prey numbers

On point 1, it is clear that there would be no direct physical interference with the nest site due to the proposed Carranstown development.

On point 2, none of the construction activities, including noise from construction traffic etc., would be expected to cause any indirect disturbance to the birds. Note that the birds at the quarry are already in an environment where there is regular human activity and, presumably, at times high noise levels. Similarly, during the operational phase the breeding birds would not be expected to be disturbed by activities within the proposed development.

On point 3, the proposed development will result in the loss of several hectares of agricultural land. A nesting pair of Peregrines would be expected to have a territory of several square kilometres, depending on productivity of habitats present. The feeding range of the pair of Peregrines at Platin is not known but it is likely to include the more productive coastal strip and especially the Boyne Estuary. The loss of a relatively small area of agricultural land (which is not optimum feeding habitat) would not be expected to have any significant impact on the feeding success of the birds.

In conclusion, it is considered that the proposed development at Carranstown would not have any significant impacts on the nesting Peregrines at the quarry at the Platin Cement Works.

References cited

Madden, B. (2001) Survey instructions for the Peregrine Survey 2001. Unpublished.

Moore, N.P., Kelly, P.F., Lang, F.A., Lynch, J.M., & Langton, S.D. (1997) The Peregrine in quarries: current status and factors influencing occupancy in the Republic of Ireland. *Bird Study* 44: 176-181.

Norriss, D.W. (1995) The 1991 survey and weather impacts on the Peregrine breeding population in the Republic of Ireland. *Bird Study* 42: 20-30

Biosphere Environmental Services

29 La Touche Park, Greystones, Co. Wicklow

Tel/Fax (01) 2875249 Mobile 087 2309906 E-mail maddenb@eircom.net



For attention of:
Mr Robert Kelly,
Indavar Ireland,
4 Haddington Terrace,
Dun Laoghaire,
Co Dublin.

Re. Waste Management Facility, Carranstown Possible Impacts on Habitats in Surrounding Areas

Dear Mr Kelly,

In regards to the query re. possible impacts on habitats within the path of the air emission plume, I can confirm that there are no habitats of significant conservation importance within this area. The habitats present are predominantly pasture grassland, arable land and hedgerows, all widespread habitats of low conservation value.

The nearest site of conservation importance is Duleek Common Natural Heritage Area (site code 1578) which lies approximately 2 km to the south-west of the proposed development site. This is shown by the air dispersion modelling analysis (carried out by Project Management Ltd.) to be outside of the range of the air emission plume. Two further sites of conservation importance are located along the Rover Boyne, the Boyne River Islands Candidate Special Area of Conservation (site code 1862) and Dowth Wetlands Natural Heritage Area (site code 1862). Both of these sites are situated approximately 4 km north-north-west of the proposed development site and are also outside of the range of the air emission plume.

Re. possible impacts on the common species of flora and fauna within the path of the air emission plume, I note that studies carried out by Project Management Ltd. show that all the maximum predicted ground level concentrations of emissions were found to be below Irish and EU air quality standard limits and WHO guideline values. Furthermore, the cumulative emissions from the waste to energy plant and the two other developments in the vicinity did not cause the maximum predicted ground level concentrations of emissions to reach air quality standard limit values and guidelines. As the projected emissions will be well within national and international limit values, I would consider that there would be no significant impacts by air emissions on the flora and fauna within the general area.

Prepared by Dr Brian Madden

8th October 2001

Biosphere Environmental Services

29 La Touche Park, Greystones, Co. Wicklow

Tel/Fax (01) 2875249 Mobile 087 2309906 E-mail maddenb@eircom.net



For attention of:
Mr Robert Kelly,
Indavar Ireland,
4 Haddington Terrace,
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Co Dublin.

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Re. possible impacts on the common species of flora and fauna within the path of the air emission plume, I note that studies carried out by Project Management Ltd. show that all the maximum predicted ground level concentrations of emissions were found to be below Irish and EU air quality standard limits and WHO guideline values. Furthermore, the cumulative emissions from the waste to energy plant and the two other developments in the vicinity did not cause the maximum predicted ground level concentrations of emissions to reach air quality standard limit values and guidelines. As the projected emissions will be well within national and international limit values, I would consider that there would be no significant impacts by air emissions on the flora and fauna within the general area.

Prepared by Dr Brian Madden
8th October 2001

Appendix 4: Response to Issues Raised By
Appellants in Relation to Traffic.

Prepared By Atkins McCarthy

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WASTE MANAGEMENT FACILITY, CO. MEATH

RESPONSE TO THIRD PARTY APPEALS TO AN BORD PLEANALA

ROAD AND TRAFFIC ISSUES

The roads and traffic issues raised in the third party appeals to An Bord Pleanala have been addressed in the EIS - Traffic Impact Assessment, Traffic Impact Assessment - Additional Information, Response to Request for Further Information and Planning Conditions Nos. 7, 8, 9 and 10 of the Notification of Decision to Grant Permission issued by Meath County Council.

A schedule of the contents of the EIS-Traffic Impact Assessment and Traffic Impact Assessment-Additional Information, Response to Request for Further Information are detailed hereunder.

EIS - Traffic Impact Assessment

- 1.0 Introduction
- 2.0 Methodology
- 3.0 Forecasting Methods
- 4.0 Description of Development
- 5.0 Existing Road Network
- 6.0 Existing (2000) Traffic Flows
- 7.0 Characteristics of this Proposal
- 8.0 Parking
- 9.0 Operational Traffic Generation
- 10.0 Traffic Distribution
- 11.0 Access to Site
- 12.0 Plan Year (2004) Traffic Flows
- 13.0 Likely Effects of this Proposal when Operational
- 14.0 Avoidance, Remedial or Reductive Measures
- 15.0 Construction Traffic
- 16.0 Adjacent Proposed Development

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***Traffic Impact Assessment - Additional Information
Response to Request for Further Information from Meath County Council dated 14th
March 2001***

- 1.0 Introduction
- 2.0 Level of Service (LOS)
- 3.0 Recorded 2001 traffic flows
- 4.0 Predicted 2004 traffic flows without the proposed development
- 5.0 Predicted 2020 traffic flows without the proposed development
- 6.0 Predicted 2004 and 2020 Annual Average Daily Traffic (AADT) volumes without the proposed development
- 7.0 Predicted AADT volumes generated by the proposed development
- 8.0 Predicted peak hour traffic flows generated by the proposed development
- 9.0 Predicted volume/capacity ratios on the R152 and R150 at LOS C and LOS D with and without the proposed development
- 10.0 Future local road network junction arrangements
- 11.0 Analysis of 2004 junction operations with and without the proposed development
- 12.0 Analysis of 2020 junction operations with and without the proposed development
- 13.0 Conclusions

A summary of Planning Conditions 7, 8, 9 and 10 issued by Meath County Council is as follows:

- Condition No. 7: Design details of the proposed new junction of the waste management facility access road with the R152.
- Condition No. 8: Traffic Management Plan for the control and operation of the proposed new junction during the construction phase.
- Condition No. 9: Alterations to public roads.
- Condition No. 10: Contribution to the expenditure to be incurred in the improvements and alterations to public roads by the Council to serve the development.

Tolling of M1 Northern Motorway Scheme

Currently there are no definitive plans to introduce tolling on the M1 Northern Motorway.

No evidence has been provided by the Appellants that the introduction of tolling on the M1 would result in significant diversion of trips to an alternative route, which would result in increased journey time, increased journey length, reduced average journey travel speed and increased accident probability.

Transportation of Waste by Rail

There are no proposals to transport waste to the proposed development by rail. Such a proposal would not necessarily result in a reduction in traffic volumes on the northeast region road network, as traffic generated by waste transportation would be centralised at the rail collection locations.

Existing Design Capacity of the R152

The existing design capacity of the R152 was determined on the basis of site specific data in accordance with the procedures provided by the design guidelines, as detailed in Section 2.6 of the Traffic Impact Assessment-Additional Information.

Existing R152 Road Pavement

No site specific site investigation data has been provided by the Appellants in relation to the existing R152 road pavement. This issue is addressed in Planning Conditions No. 7 and No. 10.

LOS on the R152 during 2004 and 2020 with and without the Proposed Development

The proposed development would not reduce the level of service on the R152. During both the 2004 and 2020 peak hours, it is predicted that the R152, immediately north of the proposed development would operate in excess of its estimated design capacity at LOS C and within capacity at LOS D, both with and without the proposed development, as detailed in Section 9.0 of the Traffic Impact Assessment - Additional Information.

Appendix 5: Response to Issues Raised By
Appellants in Relation to Waste
Management in Other Countries.

Prepared By Indaver Ireland

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Indaver Ireland, Carranstown Waste Management Facility – Reply to Waste Management comparisons in other countries.

Background:

The following document will address the issue of waste management strategies in other countries as raised in certain appeals to An Bord Pleanala regarding the decision of Meath Co. Co. to grant planning permission for Indaver Ireland to construct a Waste Management Facility at Carranstown Co. Meath.

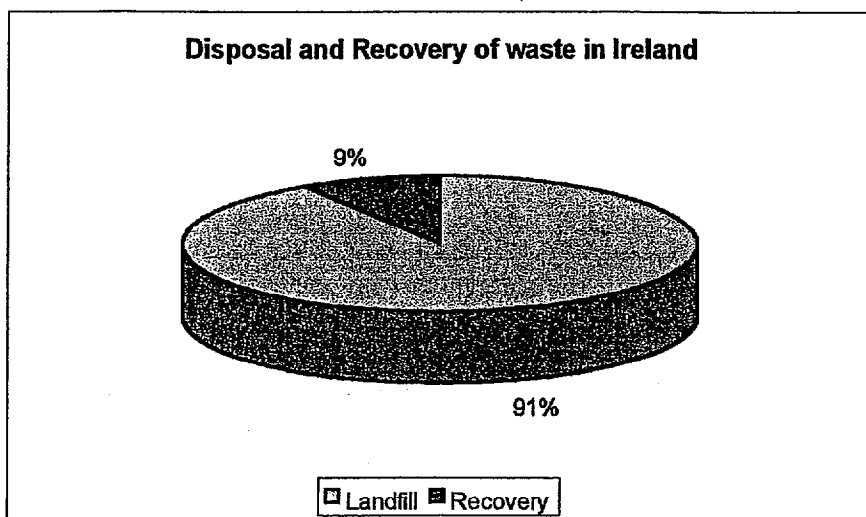
This document does not address each appeal on a case-by-case basis but instead comment is made on all points raised through an overall discussion. All countries mentioned in the appeals are discussed.

The proposed waste management facility will consist of a Community Recycling Park, a Materials Recycling Facility and a Waste-to-Energy plant.

The information supplied in this document intends to address the often misguided and misinformed facts circulated with regard to waste management strategies in other countries, and especially the impact of incineration on recycling/ recovery levels.

Ireland:

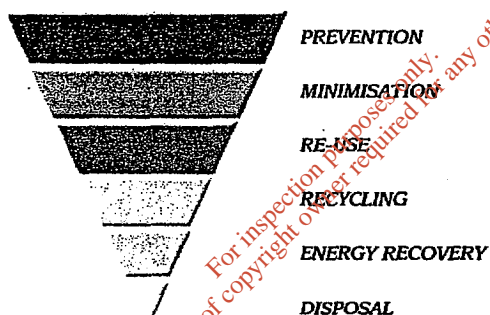
Irish waste management practise relies heavily on landfill. The most recent data available¹ states that in 1998 ca. 81% of collected commercial waste and ca. 97% of collected domestic waste, was landfilled. In total almost 8.8 million tonnes of waste was sent to landfill in 1998¹. A total of 9% of the waste arising in 1998 was recovered; this places a demand on landfill that is unsustainable.



The Irish Government policy document on waste management "Changing Our Ways" produced by the Department of the Environment and Local Government in 1998 states "It is evident that undue reliance on landfill cannot continue to be the basis of modern waste infrastructure"². It further states that "In general, materials recycling and WTE Incineration are fully compatible in an integrated approach to waste management. While landfill disposal of residues will always be required, mass burn WTE is effective in diverting over 70% of municipal waste away from landfill and, if properly controlled, has a considerably lower environmental impact than landfill"

The 1996 Waste Management Act provides for the regulation and control of recovery and disposal of waste in Ireland. The Act requires the Environmental Protection Agency to licence all significant waste disposal and recovery activities. As a direct result of this licensing system many small landfill sites have been closed down due to their inadequate pollution abatement systems and as a result of the costs involved in preparing and complying with a Waste licence.

WASTE HIERARCHY



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The Waste Management (Planning) Regulations, 1997 legally obliges local authorities to prepare Waste Management Plans. Typically, the plans are based on 15 –20 year strategies that set out policies and implementation measures over this period, however legislation requires that the plans be reviewed at least every five years. In most cases in Ireland, local authorities have grouped together to prepare Regional plans. The proposed facility, which includes a Community Recycling Park, a Materials Recycling Facility and a Waste to Energy Plant, is to be located within the North East Region. The North-East Waste Management Plan as adopted includes thermal treatment as one part of the integrated waste management policy for the region.

*The North East Region is made up of Counties Meath, Louth, Cavan and Monaghan.

Belgium:

In the Flanders region of Belgium a recycling rate of almost 60% was achieved in 2000, this represents one of the highest recycling levels in Europe. The amount of waste sent to landfill in the seven previous years up to 2000 fell by 35%. The waste

management policy that was responsible for achieving these levels included the provision for the collection of recyclables both from door-to-door and from recycling parks, the construction of materials recycling facilities, the introduction of composting, and the banning of untreated waste to landfill.

The Flemish authorities recognise that there is also a requirement for the incineration of residual waste in their waste management policy. In Flanders they currently incinerate 1.2 million tonnes per annum of residual waste yet they have one of the highest recycling rates in the world. This is proof that incineration need not destroy the recycling market and can coexist with recycling provided the correct capacity is chosen.

Germany

Germany has one of the most developed waste management infrastructures in Europe. The German federal government have in place an integrated waste management policy that has achieved recycling rates of almost 50%. These recycling rates have also been achieved by a high participation rate by members of the community. Like Flanders, the German policy also includes incineration as part of the integrated waste management policy.

New Zealand:

The submission that there is an absence of incineration in New Zealand is incorrect. There are currently twenty-four small incinerators in operation; of this total only two of these plants are fitted with gas cleaning⁴. The New Zealand Government identified the major industrial emitters of dioxins to air as uncontrolled landfill fires.

France, Belgium, Holland, Germany, Italy and Portugal: Portugal:

Concerns were raised in relation to the impact of tourism as a result of the proposed facility. Currently, Portugal incinerates bio-medical hospital waste, this amounts to approx. 14,000 tonnes / annum⁵.

There were over 300 incinerators in France, a large number of which were small-scale plants. A significant percentage of these plants operated with only rudimentary gas cleaning equipment⁶. A number of older incinerators in France have been closed and new modern waste- to- energy plants have been built to replace them. Portugal and France are still regarded as a prime holiday destination.

Incineration capacity in Holland is the second largest in Europe – Denmark having the biggest capacity⁷. Incineration accounts for 40% of the municipal waste treatment in Holland, this coupled with high composting and recycling rates allows the Dutch to landfill approx. only 10 % of the municipal waste produced.

Frost and Sullivan international market consultants confirm in their referenced report that new modern incinerators are being built in almost every country in Europe. An example of this is the recently commissioned third line in Indaver's Incinerator in Beveren, Flanders.

Canada:

The vast undeveloped areas and disused mines available in Canada traditionally provided the country with sufficient landfill requirements. In 1989, the provinces agreed to a policy for the diversion from landfill of 50% of the waste generated by 2000. The waste diversion policy was required due to the large number of open fires on landfill sites, contamination of ground and surface water and problems resulting from vermin.

In 1996 Nova Scotia, the local government initially agreed to construct a new incinerator as part of the diversion policy, however this plan was rejected on financial grounds. There are currently two incinerators in operation in Nova Scotia, the larger of the two is situated in Cape Breton and treats 50,000 tonnes/annum of municipal and medical waste. The second incinerator in this state is located at Halifax airport and is used to treat waste arriving on international flights.

U.S.A.

Since the mid 1980's almost 75% of municipal landfills in the USA have closed, these have been replaced by energy-from-waste plants and recycling schemes⁶. There are approx. 140 incinerators in 32 states; these plants treat more than 100,000 tonnes of municipal waste per day. The quantity of waste incinerated has steadily increased over the past number of years: 2.5 million tonnes in 1980, 7.5 million tonnes in 1985, 29.5 million tonnes 1990 and 33.5 million tonnes in 1995⁶. Over the last number of years there has been no additional incineration plants built in the USA due in part to the low cost of landfill at approx. \$30 /tonne.

Australia:

All eight states of Australia have developed strategies for the management of waste. The majority of states have developed waste strategies focused on the diversion of waste from landfills owing to the fact that landfill space is rapidly diminishing. Materials recovery, reuse and recycling are the cornerstones of all the policies³.

In Canberra, the "No Waste by 2010" has programme has been actively promoting waste minimisation and recycling. The initiatives employed in this policy include provision of separate recycling bins with compartments, promotion of composting and public information programmes. In a report carried out by the Environment Commissioner for the Australian Capital Territories (ACT), it was acknowledged that recycling had reduced the total amount of waste going to landfill. However it was

found that the domestic waste stream in 1997-1998, was as high as it had been in 1993- 1994 before the introduction of recycling. The Environment Commissioner stated that there did not appear to be a comprehensive acceptance of the “no waste” concept by the community.

Most states in Australia have medical waste incinerators that are operated by large waste companies. The burning of household waste by members of the public is banned in cities and populated areas⁶.

Woolongong in New South Wales have recently commissioned a 150,000 tonne per annum Thermal Treatment Plant and other states are now considering the development of their own Thermal Treatment Plants⁸.

1. National Waste Database – Environmental Protection Agency, 1998
2. “Changing our ways...” – Dept. of Environment and Local Government, 1998
3. Frost & Sullivan – European Waste to Energy Plants Markets – 1999
4. D.O.E., New Zealand, Cabinet paper on persistent organ chlorines and an appraisal of the environmental and health risks from dioxin and dioxin-like PCB's, 2000. www.govt.nz
5. Dispersion of toxins-Annex, Wolfgang Jenseit, Oko Institut e.V., Meeting of the working group “Statistics of the Environment” Sub Group “Integrated Emissions Statistics”, Joint Eurostat/EFTA Group, Meeting of 14 and 15 Feb. 2000.
6. Environmental Resources Management, Eaton House, Wallbrook Court, North Hinksey Lane, Oxford OX2 0QS.
7. Environmental Protection Agency – 2000
8. Website: <http://www.wollongong.nsw.gov.au/services/waste/energy.html>

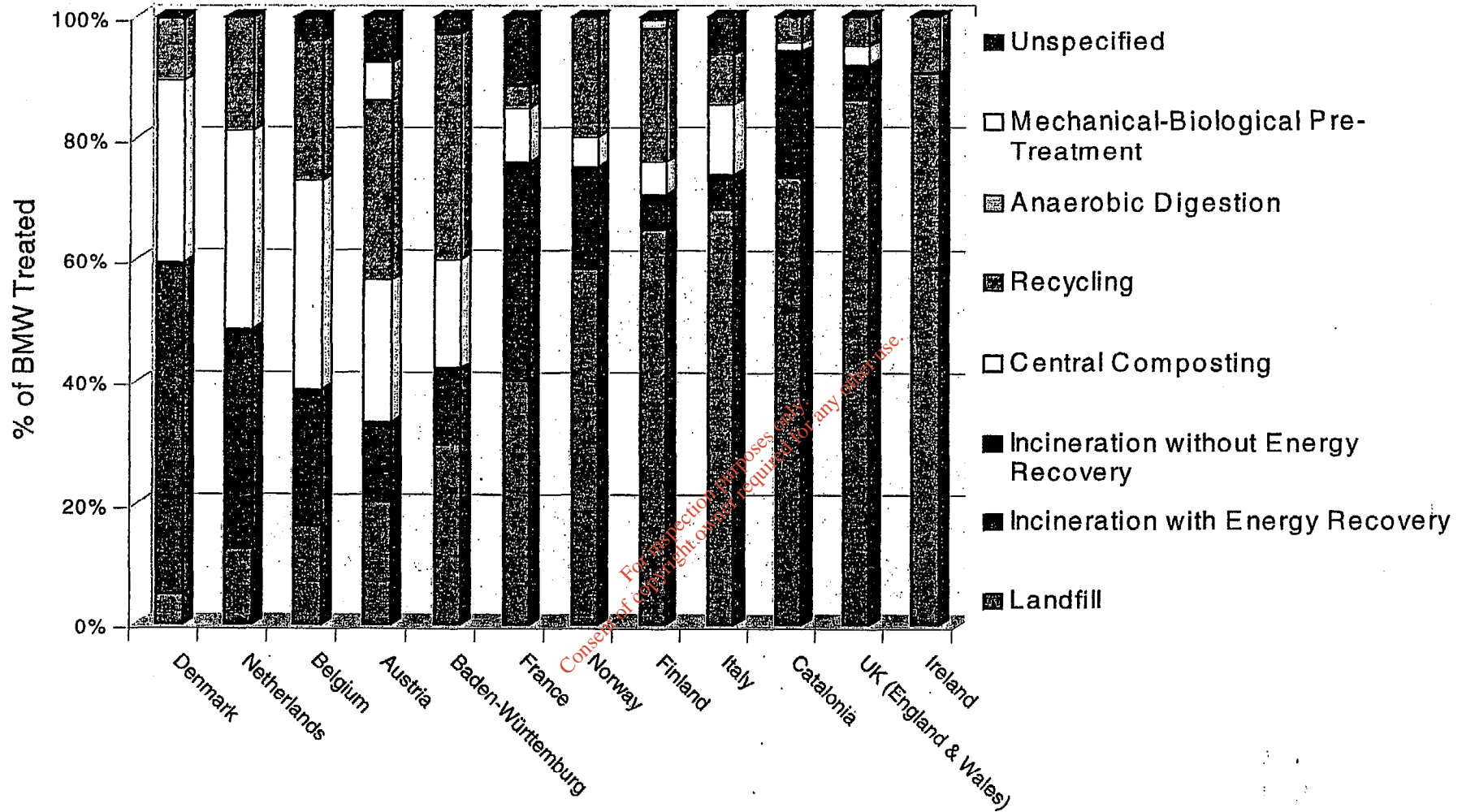


Figure 2.9 – Waste Management strategies for Biodegradable Municipal Waste (BMW) in European Countries

Appendix 6: A Copy of the WHO pamphlet on Incineration.

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Appendix 6: A Copy of the WHO pamphlet on Incineration.

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Appendix 7: Copy of an Article by Frost & O'Sullivan,
Titled 'The Waste to Energy Market in
Europe'

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1

Executive Summary

INTRODUCTION TO THE EUROPEAN WASTE-TO-ENERGY PLANTS MARKET

Overview

A total of approximately 40 million tonnes of municipal solid waste (MSW) was thermally treated in Europe in 1998 in a total of around 295 waste-to-energy plants. This value is expected to rise to almost 62.8 million tonnes in the period from 1999 to 2006, with the total installed base of plants expected to rise to 474. This information is shown in Figure 1-1, along with the breakdown of these plants into grate systems, fluidised bed systems and pyrolysis and gasification plants.

FIGURE 1-1

Total Waste-to-Energy Plants Market: Expected Plant Installations and Capacity Expansion (Europe), 1996-2006

Plants/Capacity	Number/Tonnage
Existing plants in 1998	295
Grate (mass burn incineration) plants to be installed 1996-2006	104
Fluidised bed incineration plants to be installed 1996-2006	35
Pyrolysis and gasification plants to be installed 1996-2006	40
Total plants to be installed 1996-2006	179
Expected existing plants in 2006	474
Existing capacity in 1998	40 million tonnes per year
Capacity added 1999-2006	22.8 million tonnes per year
Expected capacity in 2006	62.8 million tonnes per year

Note: All figures are rounded. Source: Frost & Sullivan

- Scandinavia (Denmark, Finland, Norway and Sweden)
- Southern Europe (Greece, Portugal and Spain)
- Central and Eastern Europe (CEE—Bulgaria, the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia)

Market revenues include only the combustion unit of the plant (grate, gasification chamber, pyrolysis reactor or otherwise) and the boiler unit. Frost & Sullivan has not included air pollution control (APC) equipment, turbines, civil engineering costs, automation and control equipment or any other ancillary costs. Furthermore, the revenues generated from the sale of the plant are allocated to the market in the year that the plant is commissioned. Although this may not be a fully accurate depiction of the timing of financial transfers and payments, Frost & Sullivan thinks this methodology gives the best representation of the market trends.

IDENTIFICATION OF CHALLENGES

Following Frost & Sullivan's market engineering methodology, the first stage of the process is to identify the most important challenges that companies in the marketplace are facing. The addressing of the challenges then forms the basis of the research and direction of the analysis.

The key challenges include:

- Newly consolidated large competitors threaten remaining companies
- Oversupply leaves poor performers struggling to survive
- Severe price erosion decimates profit margins
- Operation contracts offer competitive advantages
- Manufacturers that fail to form relationships with engineering contractors are forecast to lose market share
- Export markets offer better growth potential
- Sporadic orders create fixed-cost nightmare
- Technologies focus on efficiency and price-performance ratio
- Lack of public relations (PR) activities leave projects susceptible to massive local objections
- Limited technology range impedes potential for unlicensed manufacturers

FIGURE 1-2

Total Waste-to-Energy Plants Market: Percent of Revenues by Product Type (Europe), 1996-2006

Year	Grate (%)	Fluidised Bed (%)	P&G (%)
1996	97.2	2.8	0.0
1997	97.0	3.0	0.0
1998	85.4	4.6	10.0
1999	80.3	8.3	11.4
2000	54.1	17.4	28.5
2001	54.9	9.3	35.8
2002	46.4	11.7	41.9
2003	65.8	28.5	5.6
2004	71.9	13.9	14.2
2005	38.5	31.0	30.6
2006	50.9	18.5	30.6

Key: Grate = Mass Burn Incineration
 Fluidised Bed = Fluidised Bed Incineration
 P&G = Pyrolysis and Gasification

Note: All figures are rounded. Source: Frost & Sullivan

Drivers and Restraints

MARKET DRIVERS

The main five driving factors behind the European waste-to-energy plants market are:

- Continued preference for pre-treatment of wastes
- National bans on landfilling without pre-treatment
- Clamp-downs on illegal practices
- Rising waste volumes and increasing personal consumption
- Rising calorific value of "waste" after separation and recycling

These drivers are discussed overleaf.

Rising Calorific Value of "Waste" After Separation and Recycling

Growing levels of waste separation and recycling across Europe are leading to slight but significant increases in the calorific value of the "waste" materials that are left for thermal treatment. As a result, the treatment of RDF is becoming more widespread, thus raising the efficiency of thermal treatment as well as making it a more appealing option from an environmental viewpoint. Furthermore, as well as driving the overall waste-to-energy industry, this is improving the feasibility of the more widespread use of fluidised bed plants because such technologies are generally only suitable for RDF treatment.

Additional Drivers

In addition to those mentioned above, Frost & Sullivan has identified a further ten primary drivers of the waste-to-energy industry. These are:

- Combining of waste types for integrated thermal treatment
- Legislative backing for waste hierarchy
- Electricity market deregulation
- EU "proximity principle"
- EU intention to divert 25 to 30 percent of waste to combustion by the end of 2010
- Inclusion of waste-to-energy electricity in renewables orders
- Ban on trans-frontier waste shipments
- Waste recovery targets and government recycling initiatives
- Thermal Treatment Becoming the Favoured Option for Segregated Material Unable to Find Markets for Re-Use
- EU enlargement

Competitive Pricing Strategies

Throughout Europe, the supply of waste-to-energy plants, and all associated components, is an extremely competitive business. Indeed, in most countries, each new tender attracts a large number of bidders, with price emerging as a primary driver of competition. In recent years, this has slashed profit margins in the industry, thus restraining the generation of market revenues.

Heavy Financial Obligations to Meet Capacity Requirements

In spite of widespread commitments from European governments and stimulation from the EU, the speed at which landfilling of MSW can be phased out is frequently restricted by the inability of end-users (generally municipalities or authorities) to meet the financial obligations. The investments associated with facilities and plants for thermal treatment can be considerable and often act as the key reason behind long delays and inconsistencies in demand for plants.

Additional Restraints

Further restraining factors include:

- Ash residues being targeted as a major disposal problem
- Rising air pollution control costs in the wake of tightening emissions limits
- Pressure from environmental groups
- Regional failure to adopt waste management plans
- Unregulated local waste dumping
- Proposed directive to limit dioxin emissions
- "Not-in-my-back-yard" (NIMBY) syndrome
- Inconsistent demand in the marketplace
- Co-incineration of wastes
- Waste minimisation strategies

Restraints

- Susceptibility of grate plants to rising costs of air pollution control systems
- Opposition from environmental pressure groups to plants with low energy conversion efficiencies
- Large number of moving parts in the grate furnace

FLUIDISED BED PLANTS MARKET

The fluidised bed plants market includes all waste-to-energy plants that treat MSW using fluidised bed boiler systems. This incorporates:

- Circulating fluidised bed (CFB) plants
- Bubbling fluidised bed (BFB) plants
- Stationary fluidised bed (SFB) plants

For the incineration of MSW, the fluidised bed plants market has developed much later than the grate plants market and, as a result, currently accounts for a much smaller share of the overall waste-to-energy plants market. Indeed, Frost & Sullivan's estimates suggest a total market value of \$60.9 million for the circulating fluidised bed boiler market for 1999. This represents an estimated 16.3 percent of the total European market for waste-to-energy plants, a value forecast to rise above 30 percent in later years.

Drivers

- Growing instances of integrated waste management plants that make RDF available
- Growing waste separation at source through selective collection
- Rising awareness among end-users of fluidised bed waste treatment
- Generally lower emissions of dioxins and other pollutants
- Lower susceptibility of fluidised bed plants to rising costs of APC

Drivers

- Research and development investment and technological development
- Rising calorific value of waste after separation and recycling
- Benefits from the recovery of gas and char
- Potential economical and environmental benefits
- Leverage of experience gained in associated markets
- High electricity prices and deregulation of electricity industry
- Flexibility of the process in terms of both fuel type and the reduced need for long-term waste supply contracts to fill the capacity

Restraints

- Lack of commercially available pyrolysis and gasification technologies for MSW treatment
- Lack of suitability for larger annual waste throughputs (generally unsuitable for above 200,000 tonnes per year)
- Limited understanding of potential end users
- Frequent requirement for the pre-treatment of the waste to create high calorific value waste for treatment
- Market dominance of competing technologies

Analysis by Geographic Region

Figure 1-3 displays Frost & Sullivan's projected trends by geographic region for the total European market for waste-to-energy plants for the period from 1996 to 2006. This plainly shows the recent dominance of the German market, where heavy investment in recent years has resulted from the nationwide preference for thermal waste treatment. In future, however, the share of the German market is expected to drop with the capacity requirements for thermal treatment being largely met. Moreover, Frost & Sullivan also expects a growing proportion of contracts, and hence revenues, in other more dynamic countries/regions, especially the United Kingdom, Italy and France.

Indeed, the French market is expected to be particularly prevalent between 2000 and 2003, thus reflecting France's ongoing dedication to decentralised thermal waste treatment. France also needs to upgrade or replace a number of its older incinerator plants. The forecast rise in significance of the United Kingdom and Republic of Ireland market reflects the need to

The CEE market offers strong future potential because of its current lack of installed capacity, although this potential is expected to remain largely unrealised until beyond the end of the forecast period. The CEE market is thus expected to be relatively stagnant until around 2003, when a number of projects are forecast to lead to the steady rise in significance of the CEE region.

Competitive Analysis

The supply of technologies to the waste-to-energy industry can essentially be divided into three main tiers:

- Technology suppliers. These include Alstom, Martin, CNIM, Lurgi Entsorgung, ABB Enertech, Ansaldo Vølund, Steinmüller, Kvaerner Pulping, Foster Wheeler and Deutsche Babcock (now Borsig Power)
- Licensees, some of which may also supply their own technologies in addition to those of their licensors. These include Inor (VonRoll), Fisia Italimpianti (Kobe Steel), TPOL Technopetrol (Martin), Promacon (PKA), Lurgi (Ebara) and CNIM (Martin).
- Turnkey package suppliers, several of which may also be technology suppliers or licensees.

Frost & Sullivan has estimated the total number of market participants (technology suppliers) to be approximately 45 companies. However, the market concentration is high, with the three leading companies accounting for around 40 percent of the total installed capacity between 1997 and 1999. Furthermore, market concentration is currently rising because of the overall degree of consolidation that is occurring.

Indeed, while a huge number of mergers and acquisitions have taken place since the early to mid-1990s, the period from 1998 to 1999 witnessed perhaps the most significant merger activities of recent years, with the formation of two consolidated giants: ABB Alstom Power and Babcock Borsig Power. This is also likely to act as a stimulant to further merger and acquisition activities as competitors seek to expand in this way and secure their positions in the market.

Competitive Strategies

The strategic measures that are implemented by companies in order to make them successful in this market must address a number of different issues and challenges. The most important strategies that Frost & Sullivan has identified, analysed and discussed in this report include:

- Strategies that address market consolidation
 - Mergers and acquisitions
 - Working partnerships and joint ventures
- Strategies that address oversupply
 - Raising efficiency/competitiveness
 - Product range*
 - Additional services*
 - Customer services*
 - Targeting emerging market segments*
 - Focusing on new markets
 - Geographical expansion*
 - Market diversification*
- Strategies that address price erosion and narrow margins
 - Pricing advantage
- Strategies to address operation contracts
- Strategies to address relationships with contractors
- Strategies to address export opportunities
- Strategies to address fixed cost problems
- Strategies to address product efficiency
- Strategies to address public relations activities
- Strategies to address limited technology range

Appendix 8: Response to Issues Raised By
Appellants in Relation to the Legal
Status of Indaver Ireland.

Prepared By Reddy Charlton McKnight

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Reddy Charlton McKnight

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Email rcmck@rcmck.com

Web www.rcmck.com

OUR REF: PK/MF

YOUR REF:

10 October, 2001

Indaver Ireland,
1, Haddington Terrace,
Dun Laoghaire,
Co. Dublin

**Re: Indaver NV
First party observations to Third Party Appeal relating
to decision by Meath County Council to issue a Notification
of Decision to Grant Permission for the development of
Waste Management Facility at Carranstown, Duleek, Co. Meath**

Dear Sirs,

You have asked us to comment on certain of the legal issues raised by third party appeals in relation to the above decision.

Indaver NV is a company registered in Belgium in the Antwerp trade register, Registration No. 254.912. That Company has established a branch in Ireland and accordingly it is registered as an external company pursuant to the European Communities (Branch Disclosures) Regulations 1993 under register number E4443. In this regard we rely upon form F12 filed in the Companies Office (a copy of which is attached to this letter) from which it is apparent that the name of the Branch is Indaver Ireland. It is apparent from an examination of the records in the Companies Registration Office that all necessary formalities in connection with the registration of the company as a branch in this jurisdiction have been properly fulfilled.

This firm acted in the acquisition by our Clients of an option to purchase the property which is the subject matter of the above application. The terms of that Option Agreement are of course confidential but we can confirm that the Option Agreement gives our Clients sufficient interest in the property to make that application.

Certain of the third parties have raised the issue of the legal capacity of the Company to make the application. Indaver Ireland is the name of the branch established by the Indaver NV in Ireland.

Partners: Gérard Charlton B.A., John McKnight B.A., LL.B., Ronan O Siachain B.C.L., Thomas G. Marren B.C.L.,
Paul M. Keane M.A., LL.M., A.I.T.I., Dominic O'Dowd B.C.L., Fergal McKnight B.A., LL.B., R.T.M.A.
Solicitors: Louis J. Dockery B.A., D.L.S., R.T.M.A., Robert McDwyer B.C.L., H.D.B.S., Damien A. Mannion, B.A., LL.B.
Consultants: Gearoidin Charlton B.C.L., Christopher B. Hogarty Office Manager: Noel Dunne

Associate Offices in Athens Beirut Brussels Cairo Hamburg Helsinki Lisbon London Luxembourg
Paris Rotterdam Tel Aviv Tortola (British Virgin Islands) Zurich.

Indaver Ireland is not a separate legal company but the name of the branch of Indaver NV in this jurisdiction. A translation of the Articles of Association of the company has been filed in the Irish Companies Office in conjunction with the filing of the F12. Article III of those Articles set out the corporate objects of the Company. The following is the relevant extract from Article III:-

“The object of the company, both in Flanders and elsewhere, for its own account and for the account of third parties, alone, in collaboration with or through the intermediary of third parties is:-

- An integrated approach to waste disposal with a view to both recovery and treatment;
- Ecologically and economically responsible, disposal, recycling and treatment of waste;”

There then follows further elaboration of the objects of the company.

Article III also specifies that “the company can carry out all kinds of commercial, industrial, financial, moveable and immovable operations that are directly or indirectly related to its object, or are of a nature to promote it.”

We are advised by the Corporate Legal Counsel of Indaver NV that the company has full legal capacity to make the application and to carry out the works referred to in the application.

Yours sincerely,


REDDY CHARLTON McKNIGHT

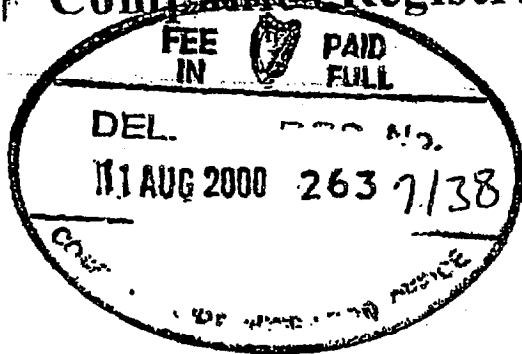
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Handwritten: No Fee

Companies Registration Office

Registered No. E 4443



F12

Registration Fee Stamp To be affixed above

Companies Acts, 1963 to 1990
European Communities (Branch Disclosures) Regulations, 1993

Companies incorporated in EC countries

RETURN, pursuant to European Communities (Branch Disclosures) Regulations, 1993, by-

Insert Name and legal form of Company **INDAVER NV PLC**

Place of Registration of Company **POLDERVLIETWEG** Country **BELGIUM**

Registered No. of Company **254912**

Name of Branch (if different from Company name) **INDAVER IRELAND**

Address of Branch **4 HADDINGTON TCE DUNLAOGHAIRE CO. DUBLIN**

Activities of Branch **SEE ATTACHED**

C.R.O.
10 JUL 2000

Presented for filing:

- (A) A Certified Copy of the Charter, Statutes or Memorandum and Articles of the Company, or other instrument constituting or defining the constitution of the Company, or where Regulation 15 is applied complete the section of this Form headed "Regulation 15 statement";
- (B) A copy of the certificate of incorporation of the company;
- (C) Copies of the latest accounting documents as required by Regulation 4(2)(i).

If these documents at (A), (B) and (C) are not written in the Irish or English language a certified translation thereof is required.

Presenter's Name **ROBERT REID INDAVER IRELAND**

Address **4 HADDINGTON TERRACE, DUNLAOGHAIRE, CO. DUBLIN**

Telephone Number **01-2145830**

Reference **RAR**

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List of and particulars respecting Persons authorised to represent the Company at the date of this return pursuant to Regulation 4(2)(f) or where Regulation 15 is applied complete the section of this form headed "Regulation 15 Statement".

Surname *Note 1* AHERN Forename *Note 1* JOHN
Former surnames *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* DIRECTOR Date of Birth Day 27 Month 08 Year 1958
Usual residential address *Note 4* Nationality IRISH
EDERNISH, MILITARY ROAD, KILLINEY, CO.DUBLIN

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* GREEN Forename *Note 1* DESMOND
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* CEO Date of Birth Day 29 Month 05 Year 1939
Usual residential address *Note 4* Nationality IRISH
LISMARA, KILMORE AVE. KILLINEY, CO.DUBLIN

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* O'SULLIVAN Forename *Note 1* EOIN
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* DIRECTOR Date of Birth Day 29 Month 08 Year 1939
Usual residential address *Note 4* Nationality IRISH
34 COWPER ROAD, DUBLIN 6

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* BURKE Forename *Note 1* LAURA
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* OPERATIONS MANAGER Date of Birth Day 19Month 08Year 1970
Usual residential address *Note 4* Nationality IRISH
12 REDFORD RISE, GREYSTONES, CO WICHLOW

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* ANSOMS Forename *Note 1* RONALD
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* GENERAL MANAGER Date of Birth Day 14Month 06Year 1951
Usual residential address *Note 4* Nationality BELGIAN
KEIENVENSTRAAT 28, 2990 WUJUSTWEZEL, BELGIUM

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* EX Forename *Note 1* GUIDO
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* TECHNICAL MANAGER Date of Birth Day 22Month 01Year 1946
Usual residential address *Note 4* Nationality BELGIAN
VAN DE WILLEI 180, 2930 BRASSCHAAT, BELGIUM

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to activities of branch FULL
 - b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY
-

List of and particulars respecting Persons authorised to represent the Company at the date of this return pursuant to Regulation 4(2)(f) or where Regulation 15 is applied complete the section of this form headed "Regulation 15 Statement".

Surname *Note 1* DE BRUYKER Forename *Note 1* PAUL
Former surnames *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* SALES MANAGER Date of Birth Day 30 Month 08 Year 1959
Usual residential address *Note 4* Nationality BELGIAN
HEIRBAAN 317, 2920 HAMME, BELGIUM

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* DECORTE Forename *Note 1* MICHEL
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* FINANCIAL MANAGER Date of Birth Day 21 Month 09 Year 1955
Usual residential address *Note 4* Nationality BELGIAN
ASTERLAAN 15, 2950 KAPellen, BELGIUM

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* Forename *Note 1*
Former surname *Note 2* Former forename *Note 2*
Business occupation *Note 3* Date of Birth Day Month Year
Usual residential address *Note 4* Nationality

Other directorships (in Ireland and elsewhere) *Note 5*

- a) State the extent of the authorised person's powers in relation to the activities of branch
- b) State whether the authorised person can represent the company alone or jointly with any other person(s)

List of and particulars respecting Persons authorised to represent the Company at the date of this return pursuant to Regulation 4(2)(f) or where Regulation 15 is applied complete the section of this form headed "Regulation 15 Statement".

Surname *Note 1* AHERN Forename *Note 1* JOHN
Former surnames *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* DIRECTOR Date of Birth Day 27 Month 08 Year 1958
Usual residential address *Note 4* Nationality IRISH
EDERNISH, MILITARY ROAD, KILLINEY, CO.DUBLIN

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* GREEN Forename *Note 1* DESMOND
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* CEO Date of Birth Day 29 Month 05 Year 1939
Usual residential address *Note 4* Nationality IRISH
LISMARA, KILMORE AVE. KILLINEY, CO.DUBLIN

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

Surname *Note 1* O'SULLIVAN Forename *Note 1* EOIN
Former surname *Note 2* NONE Former forename *Note 2* NONE
Business occupation *Note 3* DIRECTOR Date of Birth Day 29 Month 08 Year 1939
Usual residential address *Note 4* Nationality IRISH
34 COWPER ROAD, DUBLIN 6

Other directorships (in Ireland and elsewhere) *Note 5* SEE ATTACHED

- a) State the extent of the authorised person's powers in relation to the activities of branch FULL
- b) State whether the authorised person can represent the company alone or jointly with any other person(s) JOINTLY

List of persons resident in the State authorised to accept service of process on behalf of the Company and any notices required to be served on the Company - Regulation 4 (2)(g).

Name JOHN AHERN

Name DESMOND GREEN

Address EDERNISH, MITTARY RD. KILLINEY Address LISMARA, KILMORE AVE. KILLINEY

List of persons resident in the State responsible for ensuring compliance with these Regulations -- Regulation 4 (2)(h).

Name JOHN AHERN

Name DESMOND GREEN

Address EDERNISH, MITTARY RD. KILLINEY Address LISMARA, KILMORE AVE. KILLINEY

I hereby consent to act in this capacity

I hereby consent to act in this capacity

Signature

John Ahern
Date 5/7/00

Signature

Date

Desmond Green
Date 6/7/00

Regulation 15 Statement

The information detailed as follows

Insert details of information

is not returned with this Form because it has already been returned on pursuant to (2) in respect of (3) (1)

- (1) Insert date of return of information.
- (2) Insert legislative provision under which it was returned (Part XI of the Companies Act, 1963 or the European Communities (Branch Disclosures) Regulations, 1993).
- (3) Insert name of branch or place of business in respect of which the information was previously disclosed, together with registered number.

Signature of a person authorised under Regulation 4(2)(h) of the European Communities (Branch Disclosures) Regulations, 1993.

John Ahern

Date 8/8/00

Notes

"Director" includes any person who occupies the position of a director by whatever name called and any person in accordance with whose directions or instructions the directors of the company are accustomed to act.

- (1) (a) Insert full name (initials will not suffice).
(b) In the case of a body corporate, the corporate name.
- (2) Former forename" and "former surname" do not include:-
 - (a) in the case of a person usually known by a title different from his surname, the name by which he was known by which he was known previous to the adoption of or succession to the title; or
 - (b) in the case of any person, a former forename or surname where that name or surname was changed or disused before the person bearing the name attained the age of eighteen years or has been changed or disused for a period of not less than twenty years; or
 - (c) in the case of a married woman the name or surname by which she was known previous to marriage.
- (3) Where no Business occupation, state "none". Do not leave blank.
- (4) In the case of a body corporate the registered or principal office.
- (5) Company Name, Number and Country of Incorporation.

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Activities of Branch

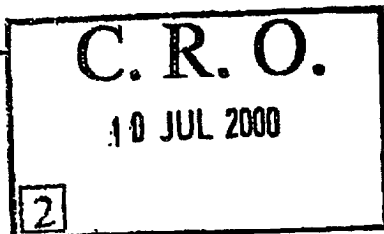
The object of the Branch, for its own account and the account of third parties, alone, in collaboration with or through the intermediary of third parties, is:

- an integrated approach to waste disposal with a view to both recovery and treatment;
- ecologically and economically responsible disposal, recycling and treatment of waste.
- to conduct studies into the disposal, transport, recycling, recovery treatment and incineration of waste;
- to provide advice and/or support for the building, construction and/or exploitation of plants in general and waste-treatment plants in particular;
- to act as general contractor for construction work, redevelopment and other work, including complete or partial execution of completion work, and the coordination of work carried out by the subcontractors;
- commercialisation of the end products, derivatives, by-products and/or materials released by the treatment process;
- commercialisation of acquired know-how;
- commercialisation of all activities connected with the above;
- transport under its own name or for the account of third parties.

The Branch can carry out all kinds of commercial, industrial, financial, movable and immovable operations that are directly or indirectly related to its object or are of a nature to promote it.

The Branch can by means of subscription, contribution, merger, collaboration, financial intervention or otherwise acquire a participation or interest in all existing or yet to be formed companies, enterprises, activities and associations in Ireland or abroad without distinction. The Branch can manage, give a certain value to, and turn these interests into cash, and also directly or indirectly participate in the management, control and liquidation of the companies, enterprises, activities and associations in which it has an interest or participation.

The Branch can stand surety or give a guarantee to the same companies, enterprises, activities and associations, act as their agent or representative, allow them advances, grant them credit, provide them with mortgage or other securities.



IRISH BRANCH OTHER DIRECTORSHIPS (E/2)

	Number	Incorporation City	Country
Ronald Ansoms			
Homabel N.V.	113,182	Kortrijk	Belgium
Destructo N.V.	91,299	Kortrijk	Belgium
Filtratec S.A.	61,967	Nivelles	Belgium
Recysol B.V.B.A.	319,265	Antwerpen	Belgium
Sleco N.V.	194,104	Gent	Belgium
Amstutz AG	CH-020.3.901.255-2	Zurich	Switzerland
Sibag AG	CH-100.3.008.484-8	Luzern	Switzerland
Savagi AG	CH-400.3.017.418-9	Aargau	Switzerland
Schmucki AG	CH-020.3.923.357-7	Zurich	Switzerland
Minchem	59,667	Dublin	Ireland

Paul De Bruycker			
Aroc-NL B.V.	34128565	Amsterdam	The Netherlands
BUT N.V.	81405	Mechelen	Belgium
Ecolube Recycling N.V.	82512	Turnhout	Belgium
Homabel N.V.	113,182	Kortrijk	Belgium
Destructo N.V.	91,299	Kortrijk	Belgium
Filtratec S.A.	61,967	Nivelles	Belgium
Indaver Relight N.V.	331269	Antwerpen	Belgium
Recygom S.A.	64,608	Verviers	Belgium
Recysol B.V.B.A.	319,265	Antwerpen	Belgium
Indaver Logistics N.V.	57996	Mechelen	Belgium
Amstutz AG	CH-020.3.901.255-2	Zurich	Switzerland
Sibag AG	CH-100.3.008.484-8	Luzern	Switzerland
Savagi AG	CH-400.3.017.418-9	Aargau	Switzerland
Schmucki AG	CH-020.3.923.357-7	Zurich	Switzerland
Orka N.V.	52,722	Dendermonde	Belgium
Minchem	59,667	Dublin	Ireland

Guido Ex			
Aroc-NL B.V.	34128565	Amsterdam	The Netherlands
Indaver Relight N.V.	331269	Antwerpen	Belgium
Minchem	59,667	Dublin	Ireland

Michel Decorte			
Homabel N.V.	113,182	Kortrijk	Belgium
Destructo N.V.	91,299	Kortrijk	Belgium
Filtratec S.A.	61,967	Nivelles	Belgium
Hooge Maey C.V.	1865	Antwerpen	Belgium
Recysol B.V.B.A.	319,265	Antwerpen	Belgium
Sleco N.V.	194,104	Gent	Belgium
Uwe-Eco Ochrona Srodowiska - Technika sp.z.o.o.	1548	Opole	Poland
Indaver Logistics N.V.	57996	Mechelen	Belgium
WDS N.V. (Watco Decontamination Services)	591,606	Brussel	Belgium
Amstutz AG	CH-020.3.901.255-2	Zurich	Switzerland
Sibag AG	CH-100.3.008.484-8	Luzern	Switzerland
Savagi AG	CH-400.3.017.418-9	Aargau	Switzerland
Schmucki AG	CH-020.3.923.357-7	Zurich	Switzerland
Minchem	59,667	Dublin	Ireland

List of Directorships

Desmond J. Green

Company	Number
MinChem Environmental Services Limited	59,667
Green Technology Limited	181,991
Green Technology (R & D) Limited	131,096
Earlow Limited	142,891
Techinvest Limited	104,202

John Ahern

Company	Number
MinChem Environmental Services Limited	59,667

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Laura Burke

Company	Number
None	

Eoin O' Sullivan

Company	Number
Earlow Limited	142,891

Appendix 9: Response to Issues Raised By Appellants in Relation Perceived Health Impacts.

Prepared By Indaver Ireland

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Indaver Ireland, Carranstown Waste Management Facility – Reply to health and agricultural concerns raised in appeals to An Bord Pleanala.

Background:

The following document will address the health and agricultural concerns raised in certain appeals to An Bord Pleanala regarding the decision of Meath Co. Co. to grant planning permission for Indaver Ireland to construct a Waste Management Facility at Carranstown Co. Meath.

This document does not address each appeal on a case-by-case basis but instead comment is made on all points raised through an overall discussion.

The proposed waste management facility will consist of a Community Recycling Park, a Materials Recycling Facility and a Waste-to-Energy Plant. It is the flue gas emissions from the Waste-to-Energy Plant and especially the dioxin content of these emissions that have been raised as issues in the appeals.

The information supplied in this document also intends to address the often misguided and misinformed facts circulated with regard to the rate of dioxin emissions from modern Waste-to-Energy facilities and the effects of these emissions on the environment.

Dioxins and Furans:

Chemically, dioxins refer to a large group of structurally similar compounds that include both dioxins and furans. Dioxins consist of 75 individual compounds and furans include 135 different compounds. Of the 75 individual dioxins only 7 of these are considered toxic, similarly of the 135 furans only 10 are thought to have dioxin like toxicity. The most toxic and the most researched dioxin is 2,3,7,8- tetra-chloro-dibenzo-dioxin; this compound is used as a reference for which the toxicity of the other compounds are referenced.

Dioxins have always being present as a by-product of the combustion of wood and coal, their formation in the temperature range of between 200^o C and 800^o C corresponds to the “low temperature” burning range often occurring in domestic home heating and from back garden/ forest fires. A European Dioxin Inventory Study in 2000 demonstrates that 25 grams I-TEQ of dioxin was produced in Ireland and of this 22 grams came from non-industrial sources, primarily home heating and transport¹.

Industrial sources have since the end of the 19th Century also contributed to the production of dioxins; such industries include, the production of steel/ copper, the incineration of waste and coal/ oil power plants. Early waste incineration plants provided little or no means for the cleaning of gases produced during combustion and as a result elevated levels of dioxins and other gases were emitted from these facilities for many years. Increased levels of environmental awareness coupled with a greater

knowledge of the impacts of dioxins on the environment forced many of these dated incinerators to close.

Today, these old incineration plants have been replaced by modern Waste-to-Energy facilities that are capable of meeting stringent emission limits complying to new legislation (EU 2000/76) whilst also providing energy recovery from the waste material. Because of the advances in technology new Waste-to-Energy facilities are located in both urban and rural areas. Indeed, according to the World Health Organisation (WHO), modern incinerators may be permitted at distances as low as 300 –500 meters from residential areas³.

The reduction in the number of old plants has been offset by the increased capacity of the new Waste-to-Energy facilities, incineration capacity in Europe has increased from 32.7 million tonnes per year in 1996 to 46.7 tonnes per year in 2000². This value is expected to rise to almost 62.8 million tonnes per annum by 2006, with the total installed base of plants expected to rise to 474².

Modern incineration plants are required to operate under strict emission limits, in Europe the directive for waste incineration (2000/76/EC) has lowered the emission limit for dioxins to 0.1 nanogram/m³.

The new incineration Directive (EU 2000/76) will reduce emissions of dioxins and furans from incinerators in the European Union from an annual 2,400 grams in 1995 (out of approximately 5749 grams total dioxin emissions) to 10 grams after full implementation in 2005, or less than 0.1% of total dioxin emissions⁴.

The proposed Waste-to-Energy Plant at Carranstown will operate at a level 90% lower than the new emission limit for dioxin i.e. 0.01 ng/m³. For a one-year period the total dioxin emissions from the proposed facility will amount to approximately 0.01 gram I-TEQ, using a two-stage dioxin removal process.

More than 1,500 similar Waste-to-Energy Plants would be required to match the yr. 2000 dioxin production in Ireland from home heating and cars – Ireland needs 7 or 8 Waste-to-Energy Plants to manage our residual waste properly.

Human Health:

Dioxins and Furans are considered biologically stable; this results in these compounds bio-accumulating and increasing in concentration as they pass through the food chain. The main exposure therefore to humans of dioxins arises from food ingestion⁵. The majority of toxicologists are of the opinion that the entry of dioxins and furans into the environment and subsequently into the human food chain needs to be reduced as a precautionary measure.

The largest human exposure to dioxins occurred during an industrial accident in Seveso, Italy in 1976. During this incident over 5,000 people were exposed to approx. 3 kilograms of dioxin and of this 193 displayed symptoms of Choroacne, a skin

condition associated with dioxin exposure. There have being no linked fatalities as a result of this exposure and in addition, no other noticeable effects were observed⁶.

Cancer levels in Seveso have been studied and are, on average, lower than those witnessed during a similar study carried out in an industrial location in Germany⁷.

However, the World Health Organisation has determined that dioxins are hazardous substances, and have recommended a tolerable daily intake (TDI) of 1- 4 picogram TEQ/ kg of body weight*. In 1997 the International Agency for Research on Cancer (IARC) classified dioxin as a known human carcinogen, it also stated that the compound does not affect genetic material and there is a level below which cancer risk is negligible. The USEPA has stated that the risk of developing cancer from dioxin exposure may be as high as 1 in 100 for individuals that eat a high proportion of fatty foods, however members of the Peer group established to examine this claim have stated that this statistic was alarmist and unsubstantiated.

The new EU directive (2000/76/EC) takes into account recent studies on dioxins and their effects and the WHO recommendations

The World Health Organisation have stated that 'The incineration of waste is an hygienic method of reducing its volume and weight which also reduces its potential to pollute'. "In general, properly equipped and operated waste incinerators need not pose any threat to human health, and compared to the direct land filling of untreated wastes, may have a smaller environmental impact"³

Occupational Exposures

Good occupational health can be ensured in Waste-to-Energy facilities by observing standard working practises. There are no critical occupational health aspects in waste incineration, which do not also apply to other waste management functions. When correctly maintained and operated, incineration is not believed to pose an increased threat to health for workers³.

* It may noted that the current recommended T.D.I. for dioxins also includes dioxin- like PCB's in the calculation.

Agricultural Concerns:

Incineration plants are in operation throughout the world, with over 300 in Europe alone². The location of these facilities varies from industrialised to urban areas and into rural areas. WTE plants are located in Paris, Vienna, Monaca, Hamburg, Zurich, and Gien to name but a few. The occurrence of these plants throughout mainland Europe and the U.S. is such that incineration plants are frequently situated close to agricultural areas.

There is no known case in Europe whereby a food producer has had their produce refused by any food processing company or outlet as a result of the proximity of the producer to a modern incineration plant. In addition, there is no known policy in place by any food processing company or outlet stating that produce originating from lands

located close to a modern incineration plant is to be refused acceptance by virtue of their origin.

There are six waste incinerators currently operating in Ireland. The Environmental Protection Agency has recently issued a report entitled "Dioxin levels in the Irish environment"; this report details the level of dioxins measured in cow's milk* taken at 25 locations throughout the country and in the vicinity of the incinerators in yr. 2000. The results of this report can be compared to a similar study also undertaken by the EPA in 1995. It is to be recorded that dioxin levels in the milk have fallen by approx. 16 per cent in the five- year period⁸, this reduction is in line with similar reductions in Europe.

In Belgium over 3 billion dollars worth of damage was caused to the food industry following the deliberate mixture of dioxin-like PCB's with animal foodstuffs. Incineration was used to dispose of the contaminated material that arose during this episode. Indaver's incineration plants were used for the destruction of this material. Dioxin levels in the vicinity were monitored throughout this process and there was no increase in levels recorded.

It has been stated that Ireland will be agriculturally uncompetitive as compared to New Zealand if incineration is introduced as a waste management option. There are currently six hazardous waste incinerators operating in Ireland without adverse affect on agriculture⁸. In addition, the New Zealand government recently produced a report⁹ on dioxin production in their country. The report states that the major emitters of dioxins to the environment are uncontrolled landfill fires. The report states, "It is clear that landfill fires do occur at an unacceptable rate in New Zealand". The report also advises that there are currently 24 small incineration plants in the country and only two of these are fitted with gas cleaning. The emission of dioxins in New Zealand is estimated at between 14 and 51 grams I-TEQ/yr, as compared to dioxins emissions in Ireland of between 25 and 39 grams I-TEQ/year.

* The EPA regards cow's milk as the best indicator of the presence of dioxins in the environment.

Conclusion:

Dioxins and Furans are persistent toxic chemicals that are produced during the combustion process of many industrial and non-industrial activities. The largest producer of dioxin in Ireland is from domestic heating and traffic.

Old style Incineration plants produced dioxins and emitted these to the environment with little or no gas cleaning. Modern plants employ sophisticated treatment techniques to clean the flue gases in order to meet the latest emission limits. In addition modern plants recover the energy produced from combustion to generate electricity and community heating.

Dioxins enter the human body mainly through ingestion. High levels of dioxin exposure have caused case of Chloroacne, however there have been no recorded cases of fatalities as a result of incineration emissions.

There is no evidence of food companies or outlets boycotting food produce arising from locations close to incineration plants. Dioxin levels in cow's milk in Ireland has reduced by 16% between 1995 and 2000, during this time there were six incinerator plants in operation in Ireland.

New Zealand is considered a similar country in many ways to Ireland including it's agricultural produce, there are currently 24 small incinerators in New Zealand and this has not effected the image of this country's produce.

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References:

1. European Dioxin Inventory – Stage II, Final Report Vol.3- Ireland, 2000.
2. Frost & Sullivan – European Waste to Energy Plants Markets – 1999
3. Waste Incineration – Environmental health planning pamphlet series 6, World Health Organisation 1996.
4. E.U.- Sixth Environmental Action Committee 2001.
5. W.H.O. – Assessment of the health risks of dioxins-re-evaluation of the Tolerable Daily Intake (TDI), 1998.
6. The Consumers Good Chemical Guide ISBN 0-552-14435-5
7. W.H.O.- Dioxins and there effects on human health – June 1999.
8. E.P.A.- Dioxin Levels in the Irish Environment, April 2001.
9. D.O.E., New Zealand, Cabinet paper on persistent organ chlorines and an appraisal of the environmental and health risks from dioxin and dioxin-like PCB's, 2000

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Appendix 10: Extract from the Outline Specification
for the Proposed Development.

Prepared By Project Management

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4.7.2 Foul Drainage

Foul water from the toilet, changing and kitchen areas will discharge through a new drainage system into a on site Effluent treatment system and then percolated through perforated pipes.

A percolation test has been made for the proposed percolation area. The water table at the site is not high and would not cause a problem for percolation. However, the T value obtained was greater than 50, which means that the test has failed according to EPA guidelines. This is due to the presence of clays beneath the site which had become highly saturated due to the recent rain storms.

Suitable material will be imported to build a percolation area according to the EPA Guidelines. A reserve percolation area will be provided in the event of the main area malfunctioning in the future.

4.7.3 Trade Effluent Drainage

There will be no trade effluent from the site.

4.7.4 Land Drainage

The existing land drains will be retained and any existing ditch currently running through the proposed location of a building or road will be piped or diverted. Some of the land drains will discharge into the surface water drainage system.

4.7.5 Fire Main

A fire main system will be installed to connect the buildings with the fire fighting pump house and the water storage tank. The water storage tank will have 2000m³ capacity, two thirds of which, approximately 1300m³, will be continuously reserved for the fire system. This water will be supplied from the underlying site aquifer.

4.7.6 Process Water Supply

Process water will be supplied from the from the rainwater storage tank and site aquifer. The approximate requirement of water is 15m³ per hour.

4.7.7 Potable Water

Potable water will be supplied from the Public Water Mains, which runs along the R152. Potable water will be supplied for domestic use only



GC40/3/01 (20)

Setting standards
in analytical science

Facsimile Cover Sheet

To: **Laura Burke
Indaver
Fax: 00353 1280 7865**

From: **Ian M Pheby**
Phone: **020-8943 7622**
Date: **26 September 2001**
Email: **imp@lgc.co.uk**

Laboratory of the
Government Chemist
Queens Road
Teddington
Middlesex
TW11 0LY
Tel: 44(0)20 8943 7000
Fax: 44(0)20-8043 2767

No. Pages **1**
(Including this page):

cc:

Laura,

I refer to your FAX dated 25 September 2001 regarding bottom ash, boiler ash and flue gas cleaning residue from an incinerator.

Based upon the submitted information, we consider that each of the above is 'non-hazardous' for international transport by sea, and not subject to the provisions of ADR.

You will be invoiced for the usual fee (£100 - no VAT) under separate cover for this work.

Ian M Pheby
Head of International Transport

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If this message is not received clearly please phone/fax the number above

analysis • consultancy • validation • research

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LGC (Teddington) Limited trading as the Laboratory of the Government Chemist and LGC

Analysis Boiler Ash and Flue Gas cleaning residue

	Bottom Ash	Boiler Ash	Flue Gas cleaning residue
	mg/kg Dry Matter	mg/kg Dry Matter	mg/kg Dry Matter
Cr	320	910	150
Zn	4660	7440	8592
Cu	2000	680	370
Ni	300	560	60
Cd	not detected	not detected	not detected
As	not detected	not detected	not detected
Pb	2200	1720	2480
Hg	not detected	not detected	not detected
Sb (2)	90	not detected	430
Ba (2)	1400	2100	not detected
Co (2)	490	90	not detected
Mo (2)	60	90	not detected
Se (2)	not detected	not detected	not detected
Sn (2)	230	270	590
V (2)	not detected	not detected	not detected
Dioxin/ Furan	5 pg/TEQ/g	216 pgTEQ/g	653 pgTEQ/g
Water	14.50%		

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MET ÉIREANN
The Irish Meteorological Service

Glasnevin Hill,
Dublin 9, Ireland.

Cnoc Ghlas Naíon,
Baile Átha Cliath 9, Éire.

Tel: +353-1-806 4200
Fax: +353-1-806 4247

19th July 2002

**Robert Kelly,
Indaver Ireland,
4, Haddington Terrace,
Dun Laoghaire,
Co. Dublin**

Robert,

Further to your fax transmission of the 19th of July 2002, please find enclosed the rainfall return periods for Duleek, Co. Meath.

I trust this is satisfactory. An invoice for €53 with respect to this data will follow shortly.

Regards

A handwritten signature in black ink that reads 'Annmarie Hickey'.

Annmarie Hickey

Climate Enquiries Office
Met Eireann
(phone +353-1-8064260, Fax +353-1-8064216)
Met Eireann's website is at www.met.ie

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Extreme Rainfall Return Periods

Location: Duleek, Co. Meath
 Average Annual Rainfall: 811

Maximum rainfall (mm) of indicated duration expected in the indicated return period.

Duration	Return Period (years)							
	1/2	1	2	5	10	20	50	100
1 min				1.7	2.0	2.4	3.0	3.4
2 min				2.9	3.4	4.1	5.1	5.8
5 min				5.1	6.1	7.4	9.3	10.7
10 min				7.3	8.8	10.7	13.7	15.8
15 min	4.5	5.7	6.4	9.0	11.1	13.6	17.6	21
30 min	6.0	7.7	8.5	11.9	14.7	17.9	23	27
60 min	8.0	10.1	11.3	15.4	18.9	23	29	34
2 hour	10.7	13.2	14.8	19.7	24	28	35	41
4 hour	14.7	18.0	19.8	26	30	35	43	50
6 hour	17.7	21.5	24	31	36	42	50	58
12 hour	22.8	27	30	39	45	52	63	71
24 hour	28	34	37	47	55	63	75	85
48 hour	35	42	46	57	66	75	89	100
96 hour								

Notes: Larger margins of error for 1, 2, 5 and 10 minute values and for 100 year return periods

M560: 15.4

M52d: 54

M560/m52d: 0.29