

REPORT TO  
THE ENVIRONMENTAL PROTECTION AGENCY  
ON  
THE ORAL HEARING OF THE OBJECTIONS TO THE  
PROPOSED DECISION  
IN RESPECT OF  
THE WASTE LICENCE APPLICATION FOR  
A RESIDUAL LANDFILL AT TOOREEN SOUTH, COOM  
(HUDSON), COOM (FITZGERALD), GLASHABOY  
NORTH, BOTTLEHILL CO. CORK.

REG. NO. 161-1  
November 2003

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Paul Johnston

The oral hearing was held in Mallow, Co.Cork on  
10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup>, 16<sup>th</sup>, 17<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup> and 20<sup>th</sup> December 2002 and  
6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> January 2003

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## Summary

### **Acknowledgements**

I should like particularly to thank Mr. Tadhg O'Mahony, as assistant to the Chair, for his support and cooperation during and after the hearing. I should also like to acknowledge and thank Ms Yvonne Clooney, Ms Sonja Smith and Ms. Ana Bolger for their patience and courtesy which they extended to all parties and the excellent and professional administrative support services they provided to all parties over the duration of the Oral Hearing in the Mallow Park Hotel, Mallow Co. Cork. I should also like to acknowledge the staff at the Mallow Park Hotel for ensuring the venue laid out as required on a daily basis and for accommodating the hearing extending late into the evening on several occasions.

I also acknowledge the professional and courteous manner in which the various parties represented themselves during the course of the hearing which extended well into the evening on a number of occasions in particular over the closing days of the hearing.

## 1.0 SUMMARY

On 1<sup>st</sup> August 2001, Cork County Council made an application to the Environmental Protection Agency (the Agency), for a waste licence for the following waste activities (*as described in the application*) at , Tooreen South, Coom (Hudson), Coom (Fitzgerald), Glashaboy North, Bottlehill Co. Cork.

### **Third Schedule of the Waste Management Act 1996**

- ***Class 4: The collection and pumping of leachate to leachate holding tanks and tankering to an approved wastewater treatment plant and the collection and discharge of surface water via sedimentation tanks, oil interceptors and surface water lagoons to adjacent streams***
- ***Class 5: Principal Activity: The construction of a landfill in eight distinct lined phases, the placement of a top cover of low permeability soil on completion of landfilling at each phase, the collection and flaring of landfill gas and final shaping of the waste mound and planting***
- ***Class 13: The temporary storage of baled waste at the baled marshalling yard in sealed containers prior to haulage by off road haulage trucks to the working face of the landfill***

### **Fourth Schedule of the Waste Management Act 1996**

- ***Class 4: The utilisation of material reclaimed from construction and demolition of waste for the construction of the landfill for instance as daily landfill cover, road, drainage construction etc.***

The Principal Activity applied for was Class 5 of the Third Schedule as outlined above

This Application was to establish a residual landfill at Tooreen South, Coom (Hudson), Coom (Fitzgerald), Glashaboy North, Bottlehill Co. Cork, for the disposal of residual, non-hazardous municipal waste. The proposed development is within a large Coillte operated commercial forestry (comprising some 825 h in total) and is situated approximately 11.5 km southeast of Mallow, 12 km and 22km respectively north of Blarney and Cork City, 3.3 km south east of Burnfort village and 3.6 km east of the main Cork to Mallow road, the N20, in the townlands of Tooreen South, Coom (Hudson), Coom (Fitzgerald), Glashaboy North, and Bottlehill, Co. Cork.

The proposed residual landfill is designed to receive between 189,000 tonnes and 218,000 tonnes of waste per annum for disposal over the first four years of operation, rising to a proposed maximum of 336,000 tonnes per annum in year 19-20. The total capacity of the facility is estimated to be approximately 5,391,600 tonnes of waste with an estimated operational life of 20 years. The residual landfill is proposed on a 98.48 hectare site within the Bottlehill commercial forestry plantation of which the proposed landfill footprint will comprise some 45.8 hectares. A further 33 ha will be required for a clay borrow area within the commercial forestry plantation with an additional 4.48 ha required for the improvement of site roads and the main site entrance. The landfill and associated landfill activities would be accessed directly from the N20 National Primary road via a preferred route to the county road adjoining the facility, the L6957-0 (local designation)

A total of 74 submissions were received during the assessment of the Application by the Agency. A Proposed Decision to grant a waste licence was issued by the Agency on July 23<sup>rd</sup>, 2002. The Proposed Decision is contained in Appendix A of this report.

Nine (9) valid objections to the Proposed Decision were received by the Agency from the following parties:

Mr. Paul Buckley  
Ms Nora Doherty, Secretary, Bottlehill Environmental Alliance  
Mr Sean O'Leary, Chairman North Cork IFA  
Ms Mary Condon  
Mr Jeremiah Curtin  
Ms Kay O'Connell  
Mr Tim Lucey, Cork County Council (The applicant).  
Mr Diarmuid Cronin Chairperson  
Mr Joe Sherlock TD MCC

The full text of these objections is contained in Appendix B of this report. Three valid submissions on objections were received from Mr Tim Lucey, Cork County Council, Mr Diarmuid Cronin, Carrignabhear, Co. Cork and MS Nora Doherty, Bottlehill Environmental Alliance. The full text of these submissions is contained in Appendix C of this report.

Five requests for an oral hearing were received by the Agency (Appendix B). At a meeting of the Agency in November 2002, it was agreed to hold such a hearing and I was appointed to conduct the Oral Hearing. The Agency also appointed Mr. Tadhg O'Mahony to assist me. The letters of appointment are contained in Appendix D of this report. Other correspondence is included in Appendix E.

The Oral Hearing was held in Mallow, Co. Cork on 10th, 11th, 12th, 13th, 16th, 17th, 18th, 19th and 20th December 2002 and 6th, 7th, 8th and 9<sup>th</sup> January 2003.

This is my report on the oral hearing of the objections to the Proposed Decision (PD). All written material, drawings and videos submitted to the Oral Hearing are contained within Appendix F of this report.

I recommend that a waste licence not be granted to Cork County Council for the following waste activities at Bottlehill, Co. Cork:

Third Schedule of the Waste Management Act 1996

<b>Class 4.</b>	<b>Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons:</b> This activity is limited to the collection and storage of leachate in a lagoon prior to tankering off-site for treatment; the collection and discharge of stormwater to and from surface water lagoons, via oil interceptors and settlement tanks; the collection and discharge of clean surface water runoff via surface water lagoons.
<b>Class 5.</b>	<b>Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment.</b> This is the principal activity. This activity is limited to the following: the construction of the landfill in distinct phases consisting of cells with a lining system consisting of HDPE and low permeability clay; landfilling into these phases; capping of these cells and phases, once filled; landfill gas collection, flaring and utilization; and landscaping and restoration of the site.
<b>Class 13.</b>	<b>Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.</b> This activity is limited to the temporary storage of baled waste at the baled waste marshalling yard in sealed containers prior to haulage to the working face of the landfill.

Fourth Schedule of the Waste Management Act 1996

<b>Class 4.</b>	<b>Recycling or reclamation of other inorganic materials:</b> This activity is limited to the use of recycled construction and demolition waste as cover and /or construction material at the site.
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I recommend that the waste licence for this facility should not be granted for the reasons set out in Section 3.0, Recommendations, of this report.

## **2.0 ORAL HEARING**

### **2.1 OPENING OF ORAL HEARING**

I opened the Oral Hearing by introducing myself, Mr. Tadhg O'Mahony and Mr. Barry Doyle (EPA –Legal Adviser ) and presented our letters of appointment. I stated that Mr. Tadhg O'Mahony and I carried out a visit to the facility in question on 28<sup>th</sup> November 2002 and then gave a short summary of the waste licence application. I listed the objectors to the Proposed Decision (PD), noted the parties present and confirmed their receipt of the objections. At this point I asked all parties whether they intended to call witnesses and requested that a list of witnesses be provided to the chair and that where possible, a copy of the written evidence be provided. I explained that anyone presenting oral evidence would be open to cross examination.

Mr David Holland BL represented the applicant, Cork County Council (CCC), Mr. Joe Noonan BL represented the Bottlehill Environmental Alliance (BEA). All parties either called experts to speak on their behalf or presented their evidence themselves.

I suggested that, following an initial presentation from the applicant in which the main characteristics of the application be set out, the objections would be addressed on a topic-by-topic basis. The order of presentation based on 'topics' was discussed and agreed prior to the presentation of evidence. The agreed running order was as follows: Hydrology (including hydrogeology, water analysis, gas emissions, restoration/aftercare); Ecology; Health and safety; Visual amenity (including landscape, archaeology, buffer zones and forestry); agriculture and land use; Nuisance (noise, dust and roads); Socio-economic issues and tourism; and Waste acceptance. This was, however, revised with agreement during the hearing. All written material presented at the Oral Hearing are provided in Appendix F (Documents 1 to 87 inclusive) of this report. The content of these written submissions was fully taken into account in the preparation of this report although direct reference to a document is only made where appropriate.

Following my opening remarks, Mr. David Holland (representing the applicant, CCC) outlined what he described as the position in law in relation to an Oral Hearing stating that an Oral Hearing was not to decide whether development should take place. He stated that we are here to address the objections and not the generality of the proposal. In relation to the sequence of evidence, Mr. Holland suggested that the objectors outline their points in the first instance and these then be responded to by the applicant. I advised Mr. Holland that the oral hearing must take into account and be related to the overall characteristics of the proposed development and that it might expedite matters if the applicant provided an outline of the proposal in the first instance.

Mr. Noonan (Bottlehill Environmental Alliance – BEA) expressed agreement with the approach I suggested and stated that it made legal and common sense to address the objections in the context of the council's proposals. Mr. Noonan at this point suggested that the legal basis for the hearing may merit some discussion at the outset. Mr. Noonan specifically referred to the EIA Directive and asked whether the EPA considers itself as being a body responsible for undertaking an EIA. Mr. Noonan

referred to what he described as the ‘Aidan O’Brien case’ the outcome of which was that the issue of the EIA/EIS went to a judicial review because the EIA Directive had not been fully complied with. Mr. Noonan related this case to the Bottlehill Proposed Decision based on what he felt was an inadequate EIA/EIS process, stating that the development apparently did not require planning permission. Mr. Noonan put it to the Chair as to whether the EPA had the power to undertake an EIA of the proposal. I advised Mr. Noonan that this issue must be addressed to the Board and that the focus of the oral hearing is to hear the objections to a proposed waste licence. I added that the EPA had already effectively adjudicated on the EIA issue as part of the process for a waste licence application..

In response to Mr Noonan’s remarks and my assesment, Mr. Holland agreed that the oral hearing related to objections to the waste licence, adding that he would not make comment on the issue immediately. Mr. Holland did, however, state that while planning was not part of the objections to the waste licence, the county council does intend to go through Part X of the Planning and Development Act .

Before the Council’s opening statement, I confirmed that an opportunity for questioning would follow such a statement.

## **2.2 PRESENTATIONS OF EVIDENCE**

The evidence as presented during the hearing is documented for the most part under the topics/ subject areas agreed in advance. For the opening statements made and for evidence for which it was not possible to follow this format, the issues raised are outlined as presented and where possible in summary form.

### **2.2.1 OPENING STATEMENTS**

#### **Opening statement by Mr David Holland on behalf the applicant, Cork County Council (CCC)**

Mr. Holland in his Opening Statement on behalf of Cork County Council set the proposed development in the context of EU Waste Management Law, National Waste Policy, the Cork Regional Waste Management Strategy, Cork County Council and Cork City Council Waste Management Plans. Below is a summary of the issues raised in Mr. Holland’s Opening Statement. This Opening Statement in its entirety is set out in Document No.1 (doc1), entitled *Opening Statement on behalf of Cork County Council*.

Mr. Holland set out the Cork County Council and Cork City Council Waste Management Plans in the context of the obligations related to the Waste Management Act, 1996 and, where appropriate, relates these to specific actions as set out in the Plan in question. He included specific reference to Action 27 of the Plan *which provides for the development of a Waste Recovery Facility (WRF) in co-operation with Cork City Council which will serve both Cork County and City*. In this regard, Mr. Holland set out what such a facility would provide, namely :



- The active segregation of a number of waste streams
- Their more effective recovery and disposal
- The separation of a wet organic fraction, dry recyclables, metals, residual waste for landfill
- Baling and compaction facility to provide for the bulk haulage of the recovered /residual components
- Composting of the separate Wet Organic Fraction.

Mr. Holland explained that the envisaged site at Kinsale Road did not become available and outlined that Cork County Council has now identified an alternative site at Carrigtohill and added that negotiations with the preferred tenderer had commenced and that a contract was to be signed shortly. He further added that issues relating to planning and licensing will have to be progressed.

Mr. Holland alluded to the Waste Management Plan including a large number of aspects other than just landfill and added that the City Plan mirrors these objectives. He concluded that there will be a continued reliance on landfilling.

Mr. Holland read into the record the remainder of his Opening Statement including the section entitled, 'The Principle of a Cork Regional Landfill' in which he concluded that *there will remain a quantity of waste that will still require disposal to landfill. He added that it is estimated that for a 20-year lifespan, a total of approximately 5,400,00 tonnes of waste will have to be consigned to landfill stating that this equates to a void space requirement of approximately 6,980,000m<sup>3</sup>.* He concluded under this section that it was therefore desirable, inevitable and urgent that new provision be made for this landfill capacity.

Mr. Holland went on to describe the site selection process – he stated that the comparison of Bottlehill with other sites is not part of the function of this hearing, expanding that the EIS requirements only oblige the applicant to set out alternatives in outline. He added that the submitted objections do not recommend alternative sites and commented that either the Bottlehill site is suitable for landfill or not, not what other sites are suitable. Mr.Holland went on to describe the site selection process the council went through, explaining that in 1999 a Consultative Forum was set up to represent a wide cross section of the community.

He explained that the three shortlisted sites were subjected to a comparative analysis and stated that the choice of Bottlehill was not on technical/economic grounds but was made on environmental grounds. He added that on technical and economic grounds there was a marginal preference (for the proposed facility) while on environmental grounds it was the best choice clearly.

Mr. Holland outlined his interpretation of the purpose of an oral hearing stating that no matters are to be considered other than those in the objections. He added that the hearing was not for the consideration of all issues arising in the application. He highlighted that while the hearing is to be without undue formality that is not the same as 'informal'. He reiterated that the oral hearing is to conduct a hearing of objections. He added that the expertise of Cork County Council, P.J.Tobin & Co./TES Consulting Engineers (TES) and Mr Kevin Cullen of White Young Green (KTC) and others will be available to assist in the hearing.

Mr. Holland then outlined the main aspects of the waste licence application and the main characteristics of the proposal as set out in Doc1:Opening Statement on behalf of Cork County Council - including site location, principal activity, ancillary activities, waste acceptance (baled waste, unbaled waste and inert waste, prohibited wastes, size of facility/landfill capacity and associated clay borrow area, landfill design criteria, operation closure and restoration of the landfill.

Mr .Holland highlighted an aspect of the waste licence application which he stated needed clarification and confirmed that Mallow Town Council (UDC) is the Sanitary Authority responsible for the sewage treatment works to which leachate from the landfill will be tankered. He explained that in due course control will pass to Cork County Council and that this had been expected by 2003, adding that this had now been deferred and stated that it is now set in time, in accordance with S.I. 250 of 2002. He confirmed that the effective Sanitary Authority for the purpose of the waste licence application will be Cork County Council adding that this will be in place by the time the facility is constructed.

Mr. Holland concluded his opening statement by reiterating *that the landfill at Bottlehill is consistent with European and national law and policy adding that it is a necessary solution to an urgent waste management problem which Cork County and City Councils are legally obliged to resolve on foot of Waste Management Plans which the Authority (EPA) is legally obliged to have regard.*

Mr. Holland's final remarks outlined *that the proposed landfill complies with all relevant environmental requirements and in particular*, he added that the Authority (sic) can be satisfied that the grant of an appropriately conditioned licence will be consistent with the Waste Management Act 1996 in general and Section 40(4) in particular in that:

- Emissions will not contravene any relevant standard;
- BATNEEC will be used to prevent, or eliminate emissions or, where impractical, to limit abate or reduce them; and,
- The landfill will not cause danger to health or harm to the environment to a significant extent –*that being the definition of environmental pollution laid down by the act.*

### **Opening statements by Mrs Kathleen Curtin, objector on behalf of Mr Jeremiah Curtin.**

Note : **The Curtin family, Glashaboy & Carrignavar; the Cahill family, Bottlehill & Burnfort; the Geaney family, Glashaboy East & Carrignanvar; the O'Connell family, Bottlehill & Burnfort; and the Carey family, Bottlehill & Burnfort were parties to the objection signed in the first instance by Mr. Jeremiah Curtin.**

### **Mrs Kathleen Curtin Opening Statement (Doc2)**

Mrs .Curtin explained that her family's main concerns related to farming and the impact of the proposed development on farming. She highlighted her/their concerns as follows: Quality of Life, Water Quality, Devaluation of Property, Road

Infrastructure, Birds, Flies and Vermin and the Hen Harrier. She pointed out that the reason that the proposed sites at Grenagh and Watergrasshill were not selected was because of the occurrence of the hen harrier.

Mrs Curtin expressed concern with the impact of traffic on their own lives and those of their children. On the issue of the impact on water quality, she explained that the majority of the water supplies for properties on the perimeter of Bottlehill forest were sourced by shallow wells. She described how after the wettest November in 100 years, there had been problems in dealing with excess waters. In the context of the proposed landfill, Mrs Curtin questioned whether the surface water management proposed by the applicant can deal with this. She highlighted the need for clean unpolluted water for dairy, beef and sheep enterprises.

On the subject of devaluation of property, she commented that there would be no demand for land where farming practices cannot be maintained. She stated that she disagreed with the description of the land as marginal in the EIS.

In relation to road infrastructure, Mrs Curtin described the access to the site as substandard adding that there had been no work by the County Council to improve the road. She further commented that the use of specified access roads was not guaranteed.

She highlighted the issue of the impact on cattle movements, which she explained occur between February and November, due to the fragmented nature of farm holdings, adding that there had been no consultation on this matter.

### **Consultation Issue raised during Opening Statements:**

On the issue of consultation, Mrs Curtin was asked by Mr Fergal Duff, expert witness for BEA whether she has been involved in the decision in relation to the proposals before the hearing, to which she responded 'no'. Mr Duff cited an International Union for the Conservation of Nature (IUCN) document which refers to the involvement of the local community, adding that the local community should be involved in project development. He highlighted that the question is, were the community involved in the decision process? On this issue, Mr David Holland responded on behalf of the applicant, that Bottlehill Environmental Alliance did not take up the invitation, although they explained that they were not approached by the Council directly. On the topic of consultation, Mr Diarmuid Cronin, Chairperson of Carraignabhfeair Environmental Committee (CEC) on behalf of Carraignabhfeair Community Council added that they had had no communication from Cork County Council either in relation to the construction of the landfill.

On the topic of vermin, Mrs Curtin raised the issue of the potential for dangerous substances to be moved onto adjoining farm land by birds, highlighting in this context, the potential for the spread of salmonella and coliform infections.

On the subject matter of the hen harrier, Mrs Curtin stated that the hen harrier is a protected species and commented that according to the 'Inspectors Report', training was to be given to site personnel on how to deal with birds.

Mrs Curtin concluded her opening statement by stating that the goal posts were now changed, explaining that unbaled waste was now proposed, adding that this had not previously been proposed. She highlighted that there was no Materials Recovery Facility in place and questioned how the proposed development could take place in this case.

**Opening statement by Mr. John Cahill, objector.**

Mr. Cahill explained that he had been farming in the area for the last 35 years and emphasized that farms in the area were fragmented and that movement of cattle on the road was an issue. He raised the question as to what the county council would do if the ‘superdump’ was to go out of business or, indeed, not go into business.

Mr. Cahill in response to questions from the Chair, explained that his water supply came from a dammed stream within the wood (Bottlehill Wood) and confirmed that he did not have a shortage at present. Mr. Cahill confirmed that he had 100-150 cattle.

On the issue of his land holding and the nature of the movement of his cattle, Mr. Cahill was asked by the Chair and Mr. Holland to identify on a map where his land holding was and to identify the routes used by his cattle. This document was later produced and redrawn by CCC (doc 26).

**Opening statement by Mr. Joe Sherlock TD, MCC, objector.**

Mr. Sherlock thanked the Chair for the opportunity to make his submission. Mr. Sherlock raised the issue of whether the proposal was sustainable development. He stated that Cork County Council had voted in a change to the County Development Plan in order to allow a residual, non-hazardous landfill and stressed that this was the purpose of the proposals, not for the disposal of other commercial and industrial waste.

Mr. Sherlock referred to a number of the issues in relation to the proposed development including ecology, groundwater, and surface water. He referred to the Waste Management Plan and, in particular, the proposed network of ‘Bring sites’ to be developed and asked that the Council to describe where they are in this regard. He highlighted the distance/proximity of the proposed landfill to residential property and also referred to the proximity of the Toor River and Fulacht fiadh.

He commented that there was no report from Duchas in relation to the hen harrier, adding that the hen harrier is protected by EU legislation. He raised the issue of heavy traffic and added there was potential for dust, dirt and also visual intrusion associated with the proposal.

On the issue of the Mallow Waste Water Treatment Plant, Mr Sherlock referred to the capacity of the treatment plant in the context of recent projected increases in the population. He commented that the potential for groundwater pollution exists and added that the Proposed Decision does not indicate that there is no risk of environmental/ groundwater pollution.

In his summary, Mr Sherlock highlighted the issues in the context of the proposed landfill as the hen harrier which he commented is protected under the Natural Habitats Regulations, the impact on humans, the proximity of residential dwellings, the road network and the associated traffic generation. He commented that national policy promoted regionalization and asked whether Bottlehill should bear the full responsibility for waste generation in the Cork region adding, in this regard, that the Bottlehill residents were not the main producers of waste. He stressed the application of the ‘Precautionary Principle’, pointing in this context to the strong evidence of groundwater vulnerability and other characteristics of the site.

In the context of waste management in the county, Mr Sherlock suggested that the council should look at some form of sub- regionalization.

#### **Points of clarification on Mr Sherlock's Opening Statement**

On the issue of the conflict between residual waste and the Waste Management Plan, Mr. Sherlock questioned that if Bottlehill is a residual landfill, how can industrial and commercial waste be accepted if it is not segregated. He explained that his understanding was that only separated domestic waste was to be accepted at the landfill. Mr. Sherlock commented to Mr David Holland that he was aware that there were proposals to expand Mallow Sewage Treatment Works (MSTW), adding that this will only cater for the expected increase in population for Mallow and that using the facility for the treatment of leachate will put increased pressure on the loading. Mr. Sherlock commented that whether the capacity of Mallow STW was adequate to deal with leachate from landfill was a matter for conjecture.

#### **Items raised for clarification before expert evidence was given by the various parties:**

1. Boundary of Mr. Cahill's property. In response to the Chair, Mr Cahill was to clarify. A drawing was subsequently provided by BEA on behalf of Mr. John Cahill (doc6) and Mrs Kathleen Curtin and Mr John Geaney identified land ownership boundaries on it. Mr. Holland, on behalf of the applicant, requested that all interested parties be provided with a copy. Cross examination on this issue was deferred until a copy of the land ownership map be made available to all parties.
2. The requirement for planning permission for the proposed development was raised by Mr Diarmuid Cronin, Chairperson CEC. CCC was to clarify the position. Mr Holland then stated that a Part X (of the Planning and Development Act) process was currently being progressed for the proposed landfill. On this matter, the Chair clarified that planning was a different matter and was for another authority to adjudicate on.
3. Procedure for presentation of evidence and subsequent cross examination of witnesses – Chair ruled and agreed that evidence to be presented and following completion of evidence, cross examination could follow in each case. It was agreed that the applicant would put forward their expert witnesses in the first instance.
4. The running order for presentation of evidence on a topic basis was agreed as follows:
  - Hydrology- Hydrogeology, Water Analysis, Gas Emissions, Restoration and Aftercare.
  - Ecology.
  - Health and Safety.
  - Visual amenity: Landscape, Archaeology Buffer Zones, Forestry.
  - Agriculture/ Landuse.
  - Noise, Dust and Roads.
  - Socio-Economic issues and Tourism.
  - Waste Acceptance.

The above sequence was adhered to where possible, however, due to the length of the evidence, availability of expert witnesses and parties to the objections, the sequence was revised as necessary, subject to agreement in order to accommodate all parties.

## 2.2.2 HYDROLOGY

The hydrological concerns raised by objectors in connection with the proposed issuing of a waste licence can be summarized under the following headings :

1. Inadequate characterization of the hydrological and hydrogeological regime.
2. Potential contamination of both surface and groundwaters from leachate escaping from the landfill
3. Adequacy of the proposed containment design
4. Impact of construction (landfill and borrow pit) on the hydrology.
5. Discharge of leachate to the environment via the Mallow Sewage Treatment Works (STW)

In essence, these issues relate to the same problem, that of determining emissions of of leachate and drainage waters into the hydrological environment. They were treated during the hearing, mainly in the week of 10 December 2002, and were primarily related to analyses of the EIS and supplementary material, which formed the basis for the arguments. Taking these in order –

### **Inadequate characterization of the hydrological and hydrogeological regime:**

The characterization of the hydrological and hydrogeological regime was undertaken by K.T.Cullen &Co. Ltd (KTC) and by TES Consulting Engineers/Grontmij Consulting Engineers (TES), whose representatives presented the information on behalf of the applicants, Cork County Council (CCC). Evidence was presented by Mr Kevin Cullen (KTC), Mr Hans Geusebroek, Mr Geert Notenboom, Mr Damien Grennan and Mr Eamon Waldron (TES) and by Mr Edmund Flynn, (CCC).

The evidence presented was largely drawn from the published EIS volumes II and III, sections of which were read at the hearing.

The site within which the landfill is proposed is 137ha in area of which the footprint of the landfill occupies 45.8ha and a clay borrow pit, 33ha. The whole site is situated on a thin (0-4m) overburden of glacial clay-rich till over Devonian age red sandstones and mudstone. The upland site is on an anticlinal ridge running approximately east-west, the elevation of which is between 240 and 280m OD. As such, hydrologically, the site occupies a central position at the convergence of the headwaters of three surface water catchments and it is also a recharge zone for a ‘locally important aquifer (L1)’ (GSI, 1999). The three surface water catchments are the tributaries of the Glashaboy to the south, the Leapford stream and tributaries of the Rivers Martin and Clyda to the west and the Coom and Toor Rivers to the east and north which are tributaries of the Bride. The landfill itself is located between the Coom and Toor Rivers and wholly within their surface water catchment area. The borrow pit is to the southeast and situated downgradient, on the south bank of the Coom River.

The hydrological effects of the proposed development relate to two problems. Firstly, surface water runoff will be caused by the works associated with the landfill as well as the landfill itself – ie the water running off the newly constructed surfaces such as roads, the surface of the covered waste (although later vegetated) and the exposed excavation faces in the borrow pit. Secondly, any leachate escaping from the landfill

either by accident or leakage may be liable to reach groundwater and ultimately contaminate a nearby stream or well. In order to assess these impacts, it is normal practice as part of the EIS to investigate the hydrological regime sufficiently to establish the flows and risks involved and to design effective mitigation measures, as necessary, for a waste licence.

The hydrological regime is composed of the relevant flows within the hydrological cycle, including precipitation, evapotranspiration, streamflows, groundwater levels and flows as well as related parameters which may affect the operation of a landfill such as windspeed and direction and temperature. Characterization of the regime requires sampling on a frequent enough basis, geographically and in time, so as to be able to assess the relevant impacts of the proposed development. Many objections related to the inadequacy of this characterization process (Messrs Bennet and Pollard, BEA, Mr Tom Murray, BEA, Mrs Kathleen Curtin, Ms Mary Condon and particularly Mr Noonan, BEA who felt that the inadequacy was such as to make any environmental assessment invalid).

On-site monitoring of surface water hydrology and hydrometeorology was restricted to two streamflow monitoring sites at which weirs were installed and two sets (May and December 2000) of 'grab' samples of stream water from eight sites (16 samples in total) which were analysed for hydrochemistry. Under Article 16(1) of the Waste Management (Licensing) Regulations, two further surface water samples were taken, for hydrochemical analysis, on streams close to the landfill footprint. Ecological analysis of stream waters was made on the basis of one sampling at each of four sites on the stream network. All other estimates of climate and surface hydrological regime were inferred from data from the nearest established observation sites (principally Cork airport).

The flows at the two stream gauging sites, downgradient of the landfill footprint, one at Raheen on the Coom and the other at Blackbog on the Toor. The EIS provided only two months (May-July, 2001) of water *level* data from these sites but, as the EPA have adopted and rated these stations (18103 and 18104 respectively), discharge records from June 2001 to September 2002 were provided at the hearing (25). Nevertheless, no attempt was provided by the applicant, in response to objections, to relate the inevitable changes in drainage/runoff flows from the proposed development to the regime in the streams other than to indicate settlement lagoons would be provided with sufficient residence time for silt removal, prior to discharge (Mr Eamonn Waldron, TES). The streams, as might be expected on a peat covered upland site, show a very flashy regime in response to rainfall with 15-minute peak flows apparently as high as 17 cubic metres per second (cumecs) in the Coom and 3.6 cumecs in the Toor although averages for the same day are lower (2.6 and 1.5 cumecs respectively). No corresponding rainfall values were available.

Given the nature of this flow regime, sampling for surface water hydrochemistry is also likely to be problematic. Several objections (Messrs Bennet and Pollard, BEA, Mr Tom Murray, BEA, Mrs Kathleen Curtin, Ms Mary Condon and Mr Joe Noonan, BEA were made as to the adequacy of this chemical sampling (18 samples in all from 10 sites). The data provided was very variable ('noisy') with apparently anomalous values in chloride and faecal coliform counts as well as breaches of MAC values for ammonia and aluminium. The applicant, in response, conceded that this sampling regime would be inadequate to describe baseline conditions for the site (Mr Damien Grehan, TES and Mr David Holland, CCC) but felt further monitoring could be



conditioned as part of a license. Nevertheless, such data as were available were generally consistent with a thin peat-covered upland on a siliceous sandstone bedrock. Climate data (including rainfall, windspeed, humidity, temperature and evaporation) were not measured on site and this omission was raised by a number of objectors but particularly by the BEA (Messrs Pollard and Bennet and Mr Joe Noonan) in the context that the operating conditions for the landfill could not be properly quantified in what was seen as an environmentally sensitive site. Rainfall was estimated by applying an orographic factor to rainfall at Glenville (approximately 10 km to the east but at a 100m lower elevation). Mean rainfall was estimated as 1504mm/yr but no analysis of extremes was provided although BEA (Messrs Bennet and Pollard) in their submission estimated, for example, the 24hr - 5yr return period rainfall as 56mm. The difficulty as stated by Mr Aidan Murphy of MetEireann (14A) is that local topography will have a strong influence and, as Glenville is to a certain extent in the shadow of the uplands to the west and north, there may be considerable uncertainty in the estimation of the rainfall regime by simple transference. Moreover, it was understood at the hearing that the rainfall station at Glenville had been closed so would no longer be available for correlation.

Potential evapotranspiration at the site was estimated in terms of a percentage of rainfall based on monthly measurement records at Cork airport. No other correction was made for elevation or wind speed. The importance of these data lies in their use in the estimations of leachate generation and the calculation of consequent input rates to Mallow Sewage Treatment Works. As evapotranspiration amounts to 46% of annual rainfall at Cork airport (EIS), the climatic regime at the site assumes some importance. In this context, windspeed is a critical factor which may also affect dust movement and operational conditions for the site (reference made by a number of objectors, including BEA, Mr Shane Bennet). Again, the windspeed for the site is based on data from Cork airport, corrected for elevation and land 'roughness'. It is difficult to ascertain the degree of confidence in such data transference but the mean windspeed on the site is estimated 'conservatively' as 8.23m/s (18mph) and at the extreme, a windspeed of 12.4m/s (28mph) is exceeded 15% of the time. The implications for this calculation lie in the possible initiation of dust or litter movement, often assumed to occur at a nominal 5m/s. It is not possible to corroborate these figures without site specific data.

The groundwater regime had a considerably stronger level of investigation on site, as shown in the EIS although objections were made as to the adequacy of the analysis of the measurements made. The 'locally important aquifer' is the Ballytrasna formation which is mainly fractured mudstone with some sandstone (fractures oriented typically north-south with a sub-vertical attitude). The groundwater regime is defined by the water table, its depth below surface, its conformance with the surface topography and the typical thickness of subsoil cover. Recharge rates as well as the hydraulic conductivity of both bedrock and overburden need to be estimated. Hydrochemistry of the groundwaters forms an important part of the baseline data. Such is the receiving environment for possible leakage/infiltration from the landfill operation.

KTC and TES conducted the groundwater investigations on behalf of CCC. Across the whole 137ha site, 24 rotary-drilled boreholes, 16 shallow boreholes, 9 window-sampling boreholes, 83 trial pits and 9 trenches were constructed for sampling purposes. Of these, 7 boreholes, 7 trenches and 13 trial pits were on the footprint of the landfill itself. Water levels were measured in these holes and a 'water table' map prepared as shown in the EIS. As noted in an objection (Messrs Bennet and Pollard,

BEA), nothing more was made of these levels. No groundwater hydrographs were recorded or attempts made to assess recharge. The applicant's response (KTC) was that measurements had been made of the hydraulic conductivity of both overburden and aquifer bedrock and that was sufficient for assessing groundwater movement and potential dilution rates.

Evidence presented (KTC) during the hearing, mainly derived from the EIS, showed that the subsoil thickness across the site was very variable, ranging from 0.3 to 6.85 m although one borehole (MW10) returned 24m thickness in the area of the borrow pit. A thin (generally less than 1m) skin of blanket peat covered the subsoil. Under the footprint of the landfill, subsoil thickness averaged 2.5m but ranged from 0.6 to 4.4m. Equally variable was the depth to water level below ground level which ranged from artesian conditions to 19.4m below ground level (MW12). Again, under the landfill footprint itself, depths to water ranged from 0.3 to 17.2m. As pointed out by the applicants (KTC) this pattern might be expected in association with a highly weathered sandstone surface containing near vertical fracturing. Water levels may be controlled by water held in the subsoils or weathered zone or by the presence of deeper fracturing. Some boreholes were productive (MW5 in the middle of the site and MW22 which apparently lost circulation in highly weathered rock at the eastern end of the landfill footprint) and others 'had moderate yields' (MW9 and MW11 in the centre of the site. This situation is also consistent with the Geological Survey of Ireland's tentative designation of the aquifer as being 'moderately productive in local zones' (GSI, 1999).

The borrow pit, which is an integral part of the proposed landfill operation, is scheduled to provide approximately 1.5 million cubic metres (Mr Eamonn Waldron, TES and EIS) of subsoil material for use in lining, capping and construction of the landfill facility. Only one borehole (MW10) appears to have penetrated the depths of likely excavation in this area and reached bedrock - water levels in the borehole rose to 3.7 m below ground level. The behaviour of the groundwater regime under excavation was raised by the Chair and by Mr Shane Bennet (BEA), who pointed out anomalies in the water levels, but apparently the regime in this area was not analysed. Determination of hydraulic conductivities were carried out on five 'undisturbed U100' samples and on thirteen recompacted samples taken from bulk samples under the footprint. These were tested in a soil mechanics laboratory and all gave results below  $10^{-9}$  m/s, the threshold for use as landfill liner material under the EU Landfill Directive (1999). However no estimates of recharge were made from which natural, *in situ* infiltration rates could be determined. One pumping test was undertaken on borehole MW5, the deepest borehole on the site at 60m, which was pumped at 600 cubic metres per minute for 24 hours. Although the data were presented (KTC) in the EIS and raised at the hearing (KTC), no analysis was undertaken on the basis (in response to a question from Mr Shane Bennet, BEA and the Chair) that conventional pumping test analysis would not apply to fractured media such as occurred here. Nevertheless, it was noted that water level responses were recorded almost immediately in the adjacent shallow borehole (MW5s, 3.3m deep), much less strongly in boreholes MW2 and MW3, each just under 30m deep and about 400m away, and not at all in borehole MW9, also about 400m away but on the other side of the Coom River. No inferences were drawn from these responses.

Considerable debate ensued during the hearing (Mr Shane Bennet and Mr Tom Murray, BEA, Ms Mary Condon) as to the likely travel times in the groundwater zone between any possible leachate emission and the ultimate receptor (the stream – the

Toor or Coom). Despite the caveats raised by the applicant (KTC), Bennet (BEA) analysed the pumping test data using conventional methods and determined hydraulic conductivity values consistent with values determined from packer tests conducted by the applicant (KTC) on the boreholes on the landfill footprint. Depending on how the calculations were carried out, groundwater velocities for contaminants, in the aquifer rock, of the order of 100m/year were given by both parties (KTC and Mr Shane Bennet). Data was not available, however, to determine individual velocities in fractures, the apertures of which were said to be the ‘thickness of a hand’ (KTC). Ultimately, however, determination of the groundwater regime is required for assessing the likely possible impact on water supplies, usually domestic wells but also including sources for public supplies such as group water schemes. This concern was expressed in almost every objection to the proposed development and its waste license. Objectors included Mrs Kathleen Curtin, Ms Mary Condon, Mr Joe Cahill, Mr Denis Carey, Mr Vincent Twomey, Mrs Nora Doherty, John Geaney all of whom have wells in the vicinity of the landfill site, albeit at varying distances from it (Doc. 6). Although a well survey was undertaken by the applicant, indicating some 40 domestic and farm wells lie within 1km of the forestry site at Bottlehill, no map of the locations was provided. Some 34 of these wells had measured or estimated water levels but none were incorporated into any regional groundwater map. During the hearing, a map was developed (on TES drawing no. 0013011/01/505 –doc.6) by the objectors (BEA) showing the locations of the nearest wells to the landfill footprint. Six wells were within or close to 1km from the landfill footprint – those owned by the families of Barrett, Doherty, Forde, Buckley, McSweeney and Carey – but all were to the north and northwest of the footprint. The closest well was that of McSweeney, 70m from the edge of the footprint, although the well was said to be used only for cattle. The only larger abstraction is the Bottlehill Group Water Scheme to the southwest of the site but some 2.2 km from the proposed landfill footprint and the source protection area appears to be well outside the catchment in which the landfill is located. The principal response to these objections (KTC) lay in the determination of the form of the groundwater catchments and the consequent directions of groundwater flow. If these are known, the potential risks to a water supply can be determined, notwithstanding the travel times involved. KTC argued that the landfill footprint falls entirely within the surface catchment of the Toor/Coom stream system and that the groundwater table contours indicate that the groundwater morphology conforms to the topographic catchment. Nevertheless, there are almost no boreholes with measurable water levels shown outside the relevant catchment divide to confirm this hypothesis. Moreover, the shape of the groundwater catchment suggested by the contours indicates that, in places, there may be deeper zones of permeability (especially at the eastern end of the footprint) driving the groundwater flow rather than only the streams, which may be perched in places. Nevertheless, the broad conceptualisation would appear to be correct, that the groundwater flow is to the east, towards the Toor River.

The groundwater chemistry was challenged by a number of objectors (Mr Tom Murray, and Mr Shane Bennet, BEA, Ms Mary Condon) on the grounds of inadequacy for a baseline study. Only four boreholes were sampled once for major ion chemistry in the EIS and these were supplemented by one sample from each of five further boreholes under Article 16(1) of the Waste Management (Licensing) Regulations. These nine samples produced isolated anomalies in pH and sulphate concentrations (MW9), and in aluminium (MW4 and MW2), as described in the

evidence of Mr Damien Grehan (TES). The applicant concurred (KTC and Mr David Holland, CCC) in the limitations of the sampling, suggesting that at least two further rounds of sampling be undertaken before any development was started.

### **Potential contamination of both surface and groundwaters from leachate escaping from the landfill**

The general objective behind the proposed landfill design is that of ‘containment’ – that is, that any leachate generated by landfill processes and climate would be contained as far as possible and removed for treatment off-site. Nevertheless, there was general consensus among the parties (Mr Hans Geusebroek and Mr Geert Notenboom (TES), Mr Joe Noonan, Mr Tom Murray, Mr Shane Bennet, Mr Richard Pollard (BEA), Mr Denis Carey and Ms Mary Condon) at the hearing that emission of leachate from a landfill during operation and after closure was a possibility and had to be allowed for in the design. While some form of composite liner forms the main barrier to leakage from a landfill (EPA Landfill Manual guidelines), any residual leakage from the liner system will be an inevitable discharge to the natural receiving environment, normally groundwater. Where and how the groundwaters intersect with the surface waters is an outcome of the process of characterizing the hydrological regime.

By the nature of a *proposed* development, there can be no measurements of leachate quality from waste that has not yet been placed and, therefore, reliance is placed on measurements from elsewhere, ie on ‘typical leachate composition’ as provided in the EIS and drawn from the EPA Landfill Manuals. Moreover, estimates of leakage rates from liner systems inevitably must be based on historical measurements from elsewhere, enhanced by locally based hydraulic calculations. While there was general acceptance of the risk of leakage, Mr Joe Noonan (BEA) pointed out the consequent anomaly of the licence condition requiring no discharge to groundwater. Mr David Holland (CCC) responded that there was no deliberate discharge to groundwater but that the level of leakage expected would be readily treated by natural attenuation. In a worst case scenario of a major leak, the velocities of movement in the groundwater would allow for remediation measures (such as grouting and interception by pumping) to be undertaken.

Ms Mary Condon suggested that monitoring for leakage would be inadequate and that trace organic compounds in particular would escape detection. Mr Hans Geusebroek agreed with Ms Condon’s proposition that BOD alone would be an insufficient indicator of such contamination. Mr David Holland (CCC), in response, suggested that conditions for monitoring would conform to EPA guidelines and any conditions in a Waste Licence. Mr Damien Grehan (TES) provided analyses of two samples of water from the headwaters of the Coom and Toor rivers near the footprint of the proposed landfill showing no detectable concentrations of a selection of volatile organic compounds (provided under Article 16(1) of the Waste Management (Licensing) Regulations).

Concern was expressed as to the degree of attenuation to be expected (Mr Shane Bennet and Mr Richard Pollard (BEA), Mr Denis Carey and Ms Mary Condon) particularly in the light of the Geological Survey of Ireland response matrix for landfills under the guidelines for groundwater protection. The response for a proposed landfill development on an “extremely vulnerable, locally important aquifer,

moderately productive in local zones” is designated as R2<sup>2</sup>. This designation deems a landfill to be acceptable subject to guidance in the EPA Landfill Design Manual and conditions in a waste licence but “special attention should be given to checking for the presence of high permeability zones. If such zones are present then the landfill should only be allowed if it can be proven that the risk of leachate movement to these zones is insignificant. Special attention must be given to existing wells down-gradient of the site and to the projected future development of the aquifer”. Mr David Holland (CCC) and Mr Kevin Cullen (KTC) stated that these guidelines had been adhered to and that, by any conservative calculation, risks to down-gradient targets were minimal. Nevertheless, the primary control on leachate emissions remained on the integrity of the liner system.

### **Adequacy of the proposed containment design**

The design of the containment system was presented at the hearing by Mr Hans Geusebroek of TES/Grontmij consulting engineers on behalf of CCC. With some fourteen years of experience in liner and capping design in the Netherlands, Mr Geusebroek agreed with the design of both liner and capping systems set out in the EPA Proposed Decision (PD) for a Waste Licence but with two exceptions. While the basal liner proposed in the EIS consisted of 1250mm of clay (from the borrow pit) covered by an HDPE synthetic geomembrane, the PD had replaced the top 250mm of clay with a ‘bentomat’, a sandwich of bentonite clay mixture between two geotextiles which is said to be 0.6m thick ‘under load’. Preference was for the clay and HDPE only system partly because of the difficulty in achieving a good ‘seal’ or “intimate contact” between the bentomat layer and the HDPE above. No evidence was provided as to advantages of either system. However, Mr Geusebroek also expressed an opinion that the two HDPE liner sandwiching a clay layer, as used in the USA, would be better from the leak detection point of view.

The capping system as set out in condition 4.3 of the PD includes a 0.6m thick clay layer or, alternatively, a bentomat. Mr Geusebroek, on behalf of the applicant, suggested that an LLDPE geomembrane would be a more suitable alternative. It is more reliable as a containment device (especially in the context of gas) and is more flexible in settlement. The utility of the LLDPE system would also depend on waste type but it was Mr Geusebroek’s understanding (under questioning from Mr Tom Murray, BEA) that the waste to be deposited at the Bottlehill site would be residual, ie separated, with the organic content minimized. Mr Geusebroek also suggested that while the waste should be covered as soon as practicable (for gas containment), the final cover should be delayed for perhaps two years (compared to the PD condition of twelve months) as settlement would likely take that long.

Objections (Mrs Kathleen Curtin, Mr Joe Cahill, BEA) centred on whether the leachate would spill from the cells, given the weather conditions of the site. Mr Geusebroek responded that while weather was an issue in the operation of a landfill at the site, the liner came 5m up the bunds of the cells and there was adequate hydraulic capacity under normal management to contain any impacts from weather. Durability of the liners was questioned by a number of objectors (Ms Mary Condon, Mr Richard Pollard, Mrs Kathleen Curtin and Mr Joe Noonan, BEA) and evidence was provided by the applicant of work done in the USA on establishing long durability of HDPE membranes, both chemically and in ageing (doc 14). However, the risks of leakage

are more commonly associated with physical impacts such as tearing, puncturing and stretching, particularly during the construction phase. Mr Geusebroek indicated that experience in the Netherlands showed that leakage from excavation of old landfills was still likely to be much less than expected (doc 27).

Restoration was also treated by Mr Geusebroek on behalf of the applicant and, in response to questioning, he felt that a variety of landuses could be entertained on closure, including forestry. Mrs Kathleen Curtin and Mr Joe Cahill questioned the possibility of tree roots penetrating the capping system but Mr Geusebroek felt that the capping system would be able to accommodate trees without damage to the integrity of the cap.

The integrity of the containment also depended on slope stability at the margins of the landfill. The maximum elevation difference of the landfill above ground level is approximately 40m, from the natural land surface in the northeast corner to the top of the settled landfill (drawing 0013011/01/523). The mean height of the landfill, as designed, is of the order of 25m with side slopes of 1:3 (18°). While the land surface in the vicinity of the footprint is relatively flat, the gradient at the eastern end of the site is 2.4° towards the Toor river. With the ground having to be made up (no excavation) particularly at the eastern end of the site, there is a possible issue in slope stability. In response to questions from the Chair, Mr Geusebroek indicated that no such slope stability had been undertaken but, in later answers to questions from Mr David Holland (CCC), he stated that geotechnical analysis should be carried out. Mitigating measures could be taken such as a berm part way up the slope of the landfill, to set back part of the slope and drainage maintenance would be important.

Mr Geusebroek also dealt briefly with issues of odour on behalf of the applicant. Questioned by Mrs Kathleen Curtin and Ms Mary Condon, Mr Geusebroek indicated that because of the elevated site and likely weather conditions, odour nuisance was not likely to be a problem and model studies on the four phases of development had confirmed this view.

### **Impact of construction (landfill and borrow pit) on the hydrology**

The principal impacts on the hydrology of the site are twofold : increased surface water drainage flows and associated increases in silt and suspended sediment content compared to the natural drainage situation. Mr Eamonn Waldron (TES) dealt with these issues on behalf of the applicant (doc 33). The approach to these problems, as described by Mr Eamonn Waldron, rested on regulation by lagoon, both at the landfill site and the borrow pit. Road drainage would also be controlled through lagoons. These would be lined with clay and an HDPE geomembrane, although to a lesser specification than for the landfill itself. These would discharge to the local watercourses, the Toor river tributary for the landfill and the Coom for the borrow pit. Although the lagoons were designed for volumes of runoff corresponding to a worst case rainfall of 88.7mm in a day (approximately equating to a return period of 50 years, based on the extrapolated record from Glenville), they have been essentially designed with silt entrapment as the objective rather than flow regulation per se. Concern was expressed by David Lee (BEA), on behalf of angling interests, that the silt entrapment would not be sufficient but Mr Eamonn Waldron responded that the ponds had been designed for the settlement of silt, meaning particle sizes between 2 and 63 µm. As pointed out by Mr Tom O'Byrne (ecologist, BEA) finer suspended

particle sizes could still represent a threat to downstream pristine conditions in the receiving streams in terms of nutrient loading. He further suggested that constructed wetlands could serve as a polishing treatment downstream of the lagoons provided they were working to specification. CCC (Mr David Holland) agreed. In response to questions from Mr Joe Noone and David Lee (BEA) regarding detention or residence times, Mr Eamonn Waldron indicated that, for the design flows, both the surface loading rates (0.009 cm/s) of the lagoons, as well as the residence times (5-7 hrs), would be 2 to 3 times the normally acceptable standards for sedimentation lagoons. The volume of the lagoons at the landfill would be 1100 m<sup>3</sup>. Monitoring of the water quality entering the stormwater lagoons is regulated by condition 6.4.3 of the PD and trigger levels for discharge are to be set in agreement with the EPA. Moreover, there is a contingency freeboard volume in the lagoons to allow for overflow from the landfill drainage, even if outlets have to be closed.

In response to questions from the Chair, Mr Eamonn Waldron stated that the lagoons have not been evaluated for a role in flow regulation. Rates of release from the lagoons, from the point of view of possible impacts on the flows in the receiving streams, have not been established. Considerable discussion (between Messrs Bennet and Pollard, BEA and Mr David Holland) also took place on the likely extension of the headwaters of the receiving streams (Toor and Coom) in the vicinity of the landfill footprint, especially during wet periods. The incisement of the streams into the land surface as exhibited by the topographic contours appeared to indicate possible extension in wet conditions but these may be enhanced by forestry-related drainage works. Mr Eamonn Waldron also indicated that forestry drainage could also be utilized as interception trenches for surface drainage.

### **Discharge of leachate to the environment via the Mallow Sewage Treatment Works (MSTW)**

The design of the leachate management programme for the landfill envisages control of leachate levels within the landfill and disposal of the surplus leachate to a waste water treatment works at Mallow (MSTW). Mr Joe Sherlock TD initially raised the issue of the possible lack of capacity of MSTW to receive up to 253 m<sup>3</sup> per day by tanker from Bottlehill landfill. Mr Ned Flynn (CCC), County Engineer, gave evidence that, although MSTW is currently overloaded at times (resulting in occasional exceedances of allowable concentrations of BOD, COD and suspended solids in discharges to the Blackwater, doc 17), plans for expansion are already in hand. The new plant will double capacity, at which time it will be able to receive leachate from the landfill. Councillor Willis (Mallow UDC) gave evidence that the new plant will take 2 years to build although there was some concern that increased housing forecast for Mallow might mean that the new capacity would again be exceeded within a few years, notwithstanding the loading from the leachate deliveries. In response to a question from Ms Mary Condon regarding what trace compounds were measured at the works, Dr Mary Stack, Executive Scientist, CCC gave evidence that a programme for monitoring a range of compounds was in hand for the county. Operating under the Urban Waste Water and Dangerous Substances Directives, the county is developing its analytical capacity. Phosphorous and nitrate levels are now measured monthly at MSTW but full compliance with MAC levels is not foreseen before 2008. Annual measurements of concentrations of three VOCs (Volatile Organic Compounds) and two pesticides are being undertaken but much of the

analysis has to be sourced externally. Oestrogen compounds are not being assessed. It is likely that reliance will be placed on ‘indicator parameters when assessing the quality of discharge waters, as determined by the EPA and using US EPA guidelines. Questions to Mr Ned Flynn from Mr Joe Noonan, Mr Shane Bennet and Mr Richard Pollard, BEA, reiterated concerns as to the capacity of the MSTW to receive the leachate from the proposed landfill on a continuing basis while complying with the standards for discharge to the Blackwater river. Mr David Holland (CCC) responded that it was incumbent on the County Council to do so under the relevant Directives and regulations.

### **2.2.3 ECOLOGY**

Given the importance of the relationship between the proposed landfill and the existing ecology of the site, this section of the report is presented in some detail, on the basis of the chronological order of the evidence heard.

Mr Paul Murphy gave evidence as an expert witness on ecology on behalf of the applicant. Mr Murphy is Operational Manager with Natura (Environmental Consultants) Ltd, is a member of the Institute of Ecology and Environmental Management and of the Institute of Fisheries Management. Mr Murphy specialises in nature conservation management including ecological survey and landuse mapping and has over fifteen years of experience.

Natura were employed by Tobin Environmental Services Consulting Engineers (TES) to assess the flora and fauna of the Bottlehill site. The brief included a survey of the flora and fauna of the Bottlehill site, a description of hen harrier breeding sites, a survey of alternative breeding sites for the hen harrier and recommendations for management of the hen harrier at Bottlehill. An additional survey of the hen harrier breeding sites was reported in July 2002.

A synopsis of Mr Murphy’s evidence, entitled Brief of Evidence – Paul Murphy, is included in Document No.34 (doc34) – Appendix G of this report. Mr Murphy’s written evidence refers specifically to the following :

- The objections submitted by MrTom O’Byrne and Associates (Appendix C of the BEA objection, Appendix B of this report) and the Bottlehill Environmental Alliance;
- The impact of the proposed landfill on the existing environment;
- Information on the local hen harrier population and the impact of the proposed landfill and alternative breeding sites for hen harriers in the area.
- Environmental management recommendations for the site with particular reference to hen harriers.

Below is presented an account of the main issues raised in the oral evidence as presented by Mr Murphy in response to questions from Mr Holland. This is followed by the responses by Mr .Murphy to questions put to him by the various parties to the objection. Where appropriate in the evidence and in responses to questioning, headings have been used to indicate the particular aspect of the ecology of the site being addressed.



## **Ecological value of site**

Mr Murphy outlined his assessment of the ecological value of the area in question, describing the area of Bottlehill as comprising coniferous forest. He considered the site to be of low to moderate ecological value and added that other such similar sites are found elsewhere in the county. He explained that the surrounding area comprises pasture and is common and widespread with nothing rare or unusual. He added that there was a small area of cut away bog at the site but this has now been planted.

### **Water Features:**

#### **River Bride /Bunglanna Proposed Designation/ Water Quality**

Mr Murphy explained that the Bride is a salmonid water and is under consideration for designation as a Special Area of Conservation (SAC) due to the presence of the salmon. Mr Murphy stated that there has been no designation to date and it is not clear how far the proposed area was from the proposed site at Bottlehill. However, Mr Murphy indicated that the section of river Bride proposed for designation (as a candidate SAC) is approximately 5 km downstream of the site. He added that the proposed SAC designation will include the main channel of the river which may be closer to the footprint of the landfill. He further explained that the area within the River Bride, which is proposed as an NHA, is some 4-4.5 km to the east of the site.

Mr Murphy commented that with effective surface water management, there would be no significant impact on water quality in the Bride. He stated that this was considered in the EIS. He described water quality (in the River Bride) as exceedingly good, “as good as it goes”. He stated that given the designation as a salmonid river and proposed designation as an SAC – if leachate/silt were to reach the river, this would be a considerable and significant impact on the watercourse. He explained that with mitigation measures as described by Mr Eamonn Waldron (TES), he was fully satisfied that water quality and salmonids would not be compromised.

### **Hen Harrier:**

#### **Hen Harrier occurrence on the site and Current Protection Status**

Mr Murphy confirmed that monitoring of the site has indicated the hen harrier has nested on the site for the last three years.

Mr Murphy explained that the hen harrier is internationally very rare and is listed in Annex I of the EU Birds Directive. He added that there are approximately 130 pairs in Ireland, with the south west of the country being the stronghold of the species. He stated that the hen harrier nests on elevated sites in open moorland and, more recently, in open coniferous plantation.

Mr Murphy described the presence of the hen harrier on the site as not being unusual because of increase in forestry cover.

He explained that the nesting site the hen harrier uses is a pre-thicket coniferous plantation in which the conifers have not yet closed the canopy. He commented that typical vegetation you might have without the coniferous plantation would be heather

and purple moor grass. He added that as the canopy closes, the hen harrier would find it unattractive/ unsuitable and would move elsewhere. He remarked that this is a necessity of the hen harrier's lifestyle.

### **Frequency of movement of hen harrier:**

On the subject of the movement of the hen harrier, Mr Murphy explained that, generally, hen harriers stay close to a limited area and move as conditions dictate. He stated that within the Bottlehill site there are conditions which would appear to be suitable for the hen harrier and the Nagle Mountains to the north are also known to have suitable hen harrier habitat.

He commented that the hen harrier probably moves every 2-3 years, 3-4 years and possibly five, if a forestry production site, adding that the frequency of movement would depend on density of planting and the application of fertiliser.

### **Impact of the landfill on the hen harrier:**

Mr Murphy explained that the question of the effect on the Hen harrier of the creation of a landfill was put to Duchas during the EIS consultation. He further explained that during the EIS preparation, 12 potentially suitable hen harrier sites were identified from aerial photography and added that three of these locations were found to be prime habitats – these are shown in Figure 14 – entitled Ecological Features at Bottlehill Co. Cork, referred to in the EIS. Mr Murphy stated that all three sites are quite suitable for alternative hen harrier nest locations. He added that Natura had entered into consultation with Duchas and Coillte in relation to this matter and that it had been agreed that 10% of land within the Bottlehill area would be maintained for management of the hen harrier as part of ongoing management of forestry.

Mr Murphy explained that forestry management practices involve felling trees at different times, which generates habitat types suitable for hen harriers. He described a typically suitable habitat for hen harriers as open heathland on elevated sites. He remarked also that the hen harrier has been heavily persecuted.

Mr Murphy commented that the hen harrier will nest in areas that are forested for the first time and also areas that have been clear-felled and replanted which provides a lot more suitable habitats for hen harriers. He added that hen harriers are also known to nest on trees.

**Impact of the tree felling programme** – as outlined in Drawing 0013011/01/514 of the EIS - on the movement of hen harrier within Bottlehill Wood, Mr Murphy explained that there will always be always be some sites that will have tree felling.

### **Original Site Survey – Occurrence of hen harrier/impact of landfill on the hen harrier**

Mr Murphy confirmed that the hen harrier was not identified in the original survey of the site and explained that hen harriers are very secretive birds. He stated that the current nesting site is not likely to be maintained due to disturbance levels associated with the landfill site. However, he commented that alternative sites to the east and north of the nesting site would offer suitable alternative nesting sites. He added that there is no reason to believe the hen harrier would move from the area. He felt that within Bottlehill Wood, the population of hen harriers could be maintained, with the landfill in place.

Mr Murphy explained that mitigation measures will include the restriction of construction activity during the breeding season from mid April to mid July, the fencing off of the landfill footprint outside of the breeding season and a restriction on the use of herbicides. (Note the mitigation measures proposed are outlined in full in Document 34 entitled Brief of Evidence –Paul Murphy).

In response to the specific question put to him as to whether the presence of a landfill is likely to have a significant impact on the hen harrier, Mr Murphy responded that with the proposed mitigation measures in place, the alternative nesting sites should provide suitable conditions for the species.

**Impact on the hen harrier of the use of a falcon in the control of birds:**

On the issue of the impact on the hen harrier of the use of a falcon in the control of birds, Mr .Murphy said that there is unlikely to be any serious impact on hen harriers, adding that if hen harriers were present they would have the upper hand. Mr Murphy explained that in the wild, hen harriers and peregrine falcons will have ‘a level of interaction and where they conflict, there will be a brief skirmish followed by a stand-off situation’.

**Presence of otter on site:**

On whether the presence of single otter at the site, near a small reservoir used for fire control purposes, is a serious impediment to development, Mr Murphy explained that there were not sufficient, permanent waterbodies to support otters. He added that the operation of a landfill would not be a problem commenting that otters are primarily nocturnal and would be confined to waterways.

**Potential for presence of vermin and the attraction of birds and other animals:**

On the issue of the vermin, Mr Murphy stated that there is potential for a serious scavenging problem. He added that the removal of biowaste would remove the attractiveness of the site for birds, foxes and other small animals by rendering the site unsuitable as it would not be a food source.

**Nutrient enrichment of water courses:**

On the concerns expressed by Mr O’Byrne regarding possible nutrient enrichment of water courses, Mr .Murphy described the soils on site as nutrient deficient. Given provision of a surface water retention pond any nutrients would not be significant. ‘I don’t envisage any change in nutrient status downstream of the site’

**Response by Mr Murphy to questions from Mr Tom O’Byrne:**

According to Mr O’Byrne, if the development goes ahead, the hen harriers will not hang on. He added that the presence of the hen harrier is related to the diversity of birds and any change would be a change for life, pushing birds out of the area?

In response, Mr Murphy explained that the footprint of the landfill in the context of Bottlehill Wood is less than 10% of the total area of the wood including the borrow pit (which amounts to 5%). The variation in the site is due to forestry management practices in place. The forestry in its entirety is at various stages of coniferous

plantation- mature, semi-mature, thicket, pre-thicket and clear-fell. He added that there is sufficient variation that will always provide suitable habitat. He stated that the site does not contain floristic diversity. He commented that there is a small area of bog to the north. Mr Murphy described most of the site as comprising re-growth following clear felling. He remarked that the cuckoo will still be heard in Bottlehill.

In his line of questioning Mr O'Byrne remarked that the small bird population would be devastated, adding that, from his own experience, the hen harrier does not tolerate human beings. He stated that the protection of birds suggests that their habitats should not be encroached upon.

Mr O'Byrne outlined a number of the species present on the site, including cuckoo, and much invertebrate life for insectivorous birds. He added that there is a huge amount of sustainable/suitable diversity that has developed and chosen to live there.

### **Use of constructed wetland for surface run-off**

Mr Murphy responded that he could not deny that constructed wetlands have a great capacity to draw down nutrients and to trap sediment. He added that he would have no objection to a constructed wetland and that this would be a further check that what had been designed, is adequate. He qualified his comments by stating that he felt that what has been designed is adequate.

Note: In response to the specific issue of the provision of a constructed wetland, according to Mr David Holland (CCC), having consulted with their engineer, the applicant would have no resistance to a constructed wetland if conditioned.

### **Impact on the hen harrier**

Mr O'Byrne felt that the hen harrier is unlikely to tolerate any interference in the area. In response, Mr Murphy explained that he had consulted with Duchas experts in relation to the hen harrier and had not met with any concern. He stated that he is satisfied that the landfill, with mitigation measures in place, would not impact the hen harrier adversely. He added that the proof of this would be 5 years hence.

### **Vermin/ fly control measures**

On the issue of fly control measures, Mr O'Byrne commented that where avifauna are present they are dependent on insects. He stated that rats by their nature are attracted to landfills and highlighted the potential for ground nesting species to be affected by rodents and also the potential effects from the flying of falcons.

On the issue of fly control measures and the use of rodenticides, Mr Murphy explained that their use will be restricted. Where necessary, he added, warfarin would be preferred as it reduces the risks of bio-accumulation.

### **Impact on the hen harrier of bird control measures - flying of a falcon**

On the issue of the likely effect of the use of falcons, Mr Murphy explained that falcons will only be brought in on occasion, will be non-resident and will not nest on the site. He added that his personal observations indicated that where a peregrine falcon and hen harrier are present, there will be a brief tussle and the birds will part.

Note Condition 7.6 prohibits the use of birds of prey unless otherwise agreed with the Agency.

Mr O'Byrne remarked that one of the reasons the hen harrier is present is because the site is not suitable for gulls and crows. He commented that it is very hard to argue for putting a landfill on this pristine area, stating that it is very difficult to sanitise the proposals. He added that the birds are protected by law (Wildlife Act) and that birds need a hunting habitat also.

In response to Mr O'Byrne's remarks, Mr Murphy stated that the site is a highly managed landuse and will continue to be a suitable habitat for small birds. He repeated that the landfill area will be only 10% of site. He added that the work they had undertaken in identifying alternative nesting sites has been agreed with Duchas and stated it is likely that the mitigation areas for hen harrier will be habituated.

### **Co-existence of hen harrier and development**

When asked whether he knew of areas where development and hen harriers continue to co-exist, Mr Murphy referred to windfarms where the birds are known to co-exist. He stated that he didn't know of any landfill where hen harriers co-exist. He added that he had observed the hen harrier and stated that typically the birds range offsite to feed. He further commented that Duchas and others acknowledge that hen harriers do have a wide range. Mr Murphy stated that the site at Bottlehill, at present, is suitable for another 1-2 years and the hen harrier would then move to one of the other areas identified. Mr O'Byrne agreed with this suggestion.

Mr O'Byrne stated that hen harriers are indicator species and otters are also indicator species and that their presence indicates that there's food supply in the area. He reiterated earlier remarks that he would find it difficult to locate a dump on this area.

Mr Murphy explained that the otter spraint found was by a reservoir within the site. He added that none of the small watercourses on the site were sufficiently large to support a significant population of fish and concluded that otters are not resident at the facility site. Mr O'Byrne agreed with this assessment but stated otters must move up the river. Mr Murphy agreed that this is the case adding that the mitigation measures will ensure protection of watercourses.

Mr David Holland referred Mr Murphy to Condition 5.13.2 of the Proposed Decision in relation to the restriction on tree felling. He explained that where there are no specific objections highlighted during the hearing, the objection will be as per the written objection. He referred specifically to the objection imposing restrictions on the timing of tree felling and stated that there is no correct time and tree felling does not impact on birds anyway.

Mr Murphy explained that the restriction on tree felling during the period from May to July should be subject to approval by the Department of Marine and Natural Resources. He added that from late February to late May is the breeding period for all birds and based on this, he commented that birds would not then be affected.

On the issue of tree felling, Mr Holland responded that tree felling is a highly mechanical, noisy activity and hen harriers have become habituated to this. Mr Murphy was in agreement with this assessment.

## **Biodiversity**

Mr Joe Noonan (BEA) explained the issue of ecology would be addressed under two areas- ecology and biodiversity.

Mr Holland questioned relevance of biodiversity as an issue for consideration as it is not in the objection by BEA. The Chair stated that a complete discussion on biodiversity not appropriate but acknowledged that the two areas are linked.

### **Response by Mr Murphy to questions from Mr Fergal Duff (BEA) Hen Harrier – threatened Species**

Mr Duff suggested that there will be an impact on biodiversity due to a landfill requirements and the status of the hen harrier as a threatened species is related primarily to a loss of habitat.

On the issue of the impact on biodiversity and the status of the hen harrier as a threatened species, Mr Murphy explained that the hen harrier is listed in Annex I of the Birds Directive and has a limited distribution in a European context. He added that in Ireland also, there is a limited distribution 120–130 pairs. On why the hen harrier is a threatened species, he explained that it is generally a heathland species, although more recently associated with the pre-thicket stage of coniferous plantations, adding that the meadow pipit is primary prey. In the context of the hen harrier, Mr Murphy did not agree with Mr Duff's contention that the loss of hen harrier habitat is recognised as the main cause for loss of the species. The hen harrier is a threatened species because of limited habitat due to loss of habitat and other causes. He argued that in several countries/counties where the hen harrier was previously abundant, the population has declined even though the habitat remains. He added that throughout Ireland there is a large supply of potentially suitable habitat. He further commented that research has not correlated the availability of habitat with abundance of hen harrier and that intensive agriculture and commercial forestry are among the main reasons for loss of the species.

### **Application of Precautionary principle**

Mr Duff put it to Mr Murphy that there is an argument for a requirement to apply the Precautionary Principle since:

- the proposed landfill location is ideal for the hen harrier
- there is no reason to assume the alternative nesting sites are suitable
- it is not a foregone conclusion that the hen harrier will continue to exist at the site and
- there is a deficiency of knowledge on hen harrier and its behaviour

Mr Duff added that, if there is an element of uncertainty why take the risk?

When asked by Mr Holland to clarify the definition of the Precautionary Principle, Mr Duff referred to the definition in Global Biodiversity Assessment (which he has referenced in his own written evidence, Doc 40a).

### **Site Suitability**

On the issue of the application of the Precautionary Principle as put forward by Mr Duff, Mr Murphy replied that within the context of investigations undertaken, an assessment was made of the suitability of other sites in the Bottlehill area as potential nesting places for the hen harrier and he added that such sites were identified for suitability as nesting habitat.

### **Protection/ Current Status/Recovery of hen harrier**

Mr Duff asked, if the site were not an ideal site, whether he thought the locating of a landfill on this habitat was the best way to promote the restoration of this threatened species (hen harrier).

In response, Mr Murphy explained that the issue of the hen harrier had been brought to light by the proposed landfill development at Bottlehill and this had brought a greater awareness of the issue by Coillte. He added that the management of a coniferous plantation is important for the conservation of the hen harrier in such an environment.

When asked whether the Bottlehill forestry plantation is contributing to the ongoing occurrence of the hen harrier in Bottlehill, Mr Murphy explained that the proposals outlined for the Coillte estate at Bottlehill are for the conservation of the hen harrier and these proposals are to the satisfaction of Duchas.

On whether the location of a landfill at this site promotes the recovery of threatened species, Mr Murphy replied that the landfill is not being proposed to protect the hen harrier and he stated that they had undertaken an assessment and applied appropriate mitigation measures.

### **Ecosystem management approach**

When asked whether he had adopted an ecosystem management approach in his survey, Mr Murphy explained that the usage of the entire Bottlehill area and its surroundings by the hen harrier was looked at. He added that they had investigated all aspects of the ecosystem and in designing mitigation measures they took all aspects of the ecosystem into account.

### **Bunglanna NHA**

On the subject of the proposed Bunglanna NHA and what the normal best practice would be when an NHA is so close to the proposed site, Mr Murphy outlined that the primary approach would be to find out why the site was designated as an NHA, assess the impacts directly or indirectly and determine if the impact is likely to be significant, assess the potential for mitigation measures and then determine whether such mitigation is feasible. Mr Murphy explained that Bunglanna River is some 2 km to the east of the site. He stated that the site is designated on the basis that it is woodland and added that there would be no impact from the proposed development on this woodland.

### **Buffer area - ecological corridor**

On whether the application of a buffer area and an ecological corridor are normal practice, Mr .Murphy explained that in the context of conservation areas in Ireland

there is no standard approach for the introduction of buffer zones or establishing ecological corridors. He stated that for the Bunglanna, a normal buffer would be in the order of 500m –1000m. The significance of this in the context of the hen harrier was not addressed. He concluded that in this context, the impact of the development on the proposed NHA is not an issue.

When asked whether the National Biodiversity Plan was taken into account in the assessment, Mr Murphy explained that in the preparation of the ecological assessment they had complied with the EIA Regulations and EIA Guidance. He added that he was fully assured, they had met any statutory requirements. The Chair intervened to clarify to Mr Duff that the National Biodiversity Plan (NBD) was published in 2002, relevant in the context of the Bottlehill EIS having been prepared in July 2001.

Mr Murphy stated that currently, there is no statutory requirement for taking the NBD into account, adding that, hopefully, there will be. He explained that they had taken into account the rarity of the species at a national level, and that they had proposed mitigation measures in consultation with Duchas and that Duchas are in agreement with these.

When asked to expand on his comment regarding the limited biodiversity value of the Bottlehill area, Mr Murphy replied that what we are talking about is a monoculture of coniferous plantation.

### **Extent of baseline investigations**

When asked to describe how the ecological survey was undertaken, Mr Murphy outlined the survey method as follows:

- Mapping of the site from aerial photography
- Determination of habitat composition within the site.
- Undertaking of field visits to describe the plant communities and
- Assessment of faunal activity.

He explained that the assessment was based on accumulated knowledge of species in such environments. He added that he was satisfied that the range of species and habitats within Bottlehill is of low to moderate value at a local level.

### **Hen harrier as a keystone species**

Mr Duff remarked that it was a habitat survey that was undertaken by Mr Murphy and not an ecological survey and questioned what keystone species were identified? Mr Murphy replied that the ecological survey was not limited and that he followed EIA regulations and EPA Guidelines. He stated that this approach is satisfactory to describe habitats. He explained that the ecological assessment included flora, fauna and other interactions. He confirmed that the hen harrier is a keystone species (the only keystone species identified) and that the importance of this species had been taken into account.



On whether the loss of the keystone species would cause ripple effect, Mr Murphy stated there would not be any other impacts on other species within the site if the hen harrier was absent.

Mr Duff provided a definition of keystone species as a “species whose loss from an ecosystem will cause a disproportionate impact on other species”. Mr Murphy commented that on the basis of this definition, there is no keystone species present on the site.

Mr Duff commented that the hen harrier is a secretive species and asked what other species are important for the hen harrier and whether Mr Murphy had watched the hen harrier hunt?

Mr Murphy replied that the primary species the hen harrier preys upon is the meadow pipit. He explained that the hen harrier hunts by buoyant flight at low level over open moorland through young coniferous forest plantation and heather.

Mr Duff asked whether heather was a keystone species in the context of the hen harrier liking hunting in heather. He further commented that the presence of the hen harrier suggests other species are present also and asked Mr Murphy whether he recognised any other keystone species. Are otter and deer keystone species?

In response Mr Murphy stated he would not consider heather a keystone species, adding that heathland is one of the habitats within which the hen harrier occurs. He explained that no heathland within the site will be affected. He confirmed he did not recognise any keystone species within the site. He stated that the otter was a species in transit through the site adding that the otter has adapted very well to disturbance by man. Irrespective of the protection status of the otter, he reiterated that it is only transient through the site.

When put to him whether he was taking a pro-active role in protecting biodiversity, Mr Murphy explained that their survey was not limited and that it was extensive and adequate to assess the impact of the landfill. In response to queries about being pro-active in order to enhance biodiversity, Mr Murphy stated that while the proposal does not set out to enhance biodiversity, there are detailed mitigation measures.

In assessing the impact of the development, Mr Duff remarked that he was surprised that Mr Murphy did not adopt the ecosystem management approach and asked whether he had consulted with the locals, as the survey seemed to be mostly desk-based?

Mr Murphy confirmed that they did consult with Duchas. He explained that sometimes they consult with locals but added that they can get erroneous information this way. He confirmed that the site was visited in February, March 2000, and May and July 2001.

When put to him that ‘surely in your discussions with Duchas, he had taken into account the National Biodiversity Plan’, Mr Murphy explained that the National Biodiversity Plan was published in 2002 and could not have been taken into account in an EIS prepared in 2001. He added that Duchas would, however, have been aware of the National Biodiversity Plan.

On the issue of the fencing in of the landfill, Mr Murphy confirmed that the fencing in of the landfill would not have any impact on wildlife.

### **Landfill in conflict with protection of area - Tanzania example**

Mr Duff cited an international example of possible conflict between landfill development and nature conservation and put it to Mr Murphy that, were the Tanzanian government to put a landfill on the Ngorogoro Crater (a world heritage site), whether the Tanzanians would be up in arms. He further remarked that in this context would there be any difference in the protection of the rhinoceros and the hen harrier?

In response to this scenario, Mr Murphy explained that he was familiar with the site in Tanzania and aware of the crater. He stated that there were leaps of difference between Bottlehill and the Ngorogoro Crater. He commented that the issue of the hen harrier had been fully recognised and had been satisfactorily addressed in the proposed mitigation measures and they have complied with any actions in the National Biodiversity Plan. He concluded by stating that they had complied with the obligations under the relevant statutory instruments.

### **Questions from Mr Joe Noonan, BEA to Mr .Paul Murphy for CCC.**

#### **Is there anything from Duchas in the EIS, ‘green-lighting’ the proposal?**

We have consulted with Duchas, but cannot say we have verified approval but have some level of proof that Duchas have agreed to the mitigation measures as outlined in the EIS and to the recommendations for the management of Bottlehill woodland so as to maintain its suitability for the conservation of Bottlehill site.

#### **What is the nature of the proof?**

Mr Murphy was to confirm by fax or email the outcome of consultations or contacts with Duchas

#### **Proposed designation of the Nagles as a Special Protection Area (SPA) under the Birds Directive?**

This proposed designation, as Mr Murphy understood from discussion with Duchas, may have the northern part of the proposed landfill on the periphery.

Mr Noonan provided a map of the proposed area (Document no. 35 - Letter received from Duchas 24 April 2002). Note this letter from Duchas is addressed to the Heritage Officer, Cork County Council – Ms. Sharon Casey- and, in summary, outlines that Duchas is currently examining the need for designation of SPAs in respect of the hen harrier at locations in Co. Cork. Five upland areas under consideration for designation are listed, including the Nagles, Co. Cork. Duchas specifically advise in their letter that:

”Any forestry or windfarm development in open, unplanted moorland areas and in some afforested areas of the uplands listed above would be liable to impact on Hen Harriers.” It should be noted that on an internal accompanying compliments slip form, Sharon Casey to “Declan”, is dated 30/04/01, and has date stamps of 02 May 2002 and 22 May 2002 – and, as the Duchas letter is dated 24 April 2002 and date- stamped

on receipt by Cork County Council as 24 April 2002, it may be assumed that the earlier date on the internal compliments slip is incorrect.

Mr Noonan asked if the drawing showing Protestant Hill could be shown on the screen. Mr Noonan stated that, from the drawing, it would appear that Bottlehill Wood is within the proposed SPA.

MrMurphy agreed.

The Chair asked if the proposed landfill boundary could be superimposed on the map of the proposed SPA.

Mr Noonan referred Mr Murphy to Section 5.2 of the objection by BEA –A comment by Cork County Council’s heritage expert on the hen harrier with reference to Planning Application Reg. No. N/01/G6654. Mr Noonan read out the contents of paragraph 1 of the letter from Sharon Casey. Mr Murphy was asked if would take issue with the contents of this paragraph under the heading of the Hen Harrier.

Mr Murphy stated he would not take issue except for the suggested reduction in the bird’s breeding and feeding habitats.

Mr Murphy said that he was fully aware, from discussions with Oscar Merne and David Norris of Duchas, that there is no conclusive evidence that reduction of breeding habitat is the sole reason for the reduction in the number of hen harriers.

Mr Noonan commented that Mr Murphy disagreed with the Heritage Officer on this issue.

**Your first survey of Bottlehill did not identify the hen harrier.**

The hen harrier was first recorded in June 2000.

Mr Noonan put the question to Mr Murphy that because hen harrier had not been spotted during the Site Selection process – In Table 4.5.1 Ecological Value of three sites in Vol. IV : Conclusions and Recommendations of Site Selection - the comment under presence of rare species is ‘low/absent’. Was this a consequence of the absence of the hen harrier?

Correct; at that stage we had not recorded the species on the site.

**Is it true that detailed assessment was only on three sites and each of these sites was owned by Coillte?**

Yes

**Ecology Section of the EIS: Section 4.6.2.1: Mitigation by Avoidance - Designated Areas. Who undertook selection of the location for development?**

The selection was not undertaken by NATURA. We were involved in the assessment of the three sites being considered and matricing of these sites.

The line of questioning regarding the site selection process was objected to by Mr Holland. Chair stressed that we are trying to focus on the Decision for a specific site. Mr .Noonan –stated that leaving aside the issue of planning , it is our submission that EPA must consider whether the site selected is an appropriate site at all. Mr Noonan said EPA must consider appropriateness of the site. Mr Holland agreed that of course

the EPA must consider the appropriateness of the site, in the context of the waste licensing legislation

**Mr Noonan questioned Natura's/Mr Murphy's involvement in the selection of the site.**

We were asked to advise on the site selection from three sites. Ecological status alone was not the only basis for the site selection.

**In the light of the material now before us, is the text of line 1 – Section 4.6.2.1 : Designated Areas - true?**

At present, as Bottlehill is now being considered as a proposed SPA, this would render the sentence in line 1, paragraph 1, Section 4.6.2.1, as erroneous. We were not aware of the proposed designation at the time. The designation of an area as an SPA does not preclude development.

**Were you actually looking for the hen harrier at Bottlehill?**

I am fully aware of the distribution of the hen harrier and fully aware that the Nagles are a stronghold. I was fully aware that the hen harrier occurs in the area. They were high on our agenda.

**You were not quite clear regarding the National Biodiversity Plan, whether you considered it appropriate or whether you should have complied with it.**

I believe that the approach adopted was in accordance with what is required under generalities of the Biodiversity Plan. There is no statutory basis for this plan.

**Otter:**

**Is there reason to assess transient species (albeit ANNEX II species) of the Habitats Directive?**

My knowledge of the species leads me to consider that the species is not resident. The proposed development would not impact on it in any way.

**On the basis of that comment did you make any mention of the otter in the EIS?**

We did.

**What were the limitations to your survey? You are familiar with screening and scoping. Would you agree that this concept entails talking to people?**

The present habitat has the potential for the occurrence of species. The scope is to assess the impact of the development on species of ecological value. It is not essential as ecological consultants that we would consult with locals. We have found that information thus collected cannot be adjudged to have scientific standing

**Requirement of Art. 25 of the EIA Regulations was read out for Mr Murphy. He was asked if he thought an ecological consultant could fulfill the requirement of Art. 25 without speaking to locals?**

I am not familiar with specifics of Art. 25.

**By not consulting, is that not a gross derogation of your responsibilities in EIA?**

I believe we complied with our requirement to undertake an Ecological Impact Assessment and this process has been accepted over the last 10 years. In general, as

practitioners, we avoid consultation with the local community. We do, however, consult local knowledge, including local wildlife rangers whose information is accurate and unbiased.

**Did you consult with Seamus Crowley and Eva Sweeney?**

I met with Seamus Crowley on site and also with Eva Sweeney.

**Are you dismissive of local input?**

Information at local level cannot always be relied upon and does not assist in the assessment of ecological impacts. The information provided can be unreliable.

**You seem to be happy to rely on verbal discussion with individuals from Duchas?**

Mr Holland interjected, stating that he had to defend his witness on ecology. The human being issue has not been addressed by Mr Murphy and he should not be subject to the mode of questioning being pursued.

Mr Noonan referred to Section 4.6, Page 237 of the EIS at which point he was interrupted by the Chair who stated that we did not want to get involved in a legal submission on the EIS.

Mr Noonan responded that the PD will be impacting on the environment and wants to establish if the Article was complied with. The Chair advised that there is a need to focus on specific questions. Mr Noonan stated that has to ask questions related to the adequacy of the EIS to substantiate arguments being made.

The Chair requested Mr Noonan that reference to the EIA issue be put in a legal submission. Mr Noonan stated that he needs to raise the issue now in case Mr Holland shoots down the issue in legal submission because it was not raised. Mr Holland stated that had no desire to close down Mr Noonan's comments regarding the EIS.

Ms Mary Condon- asked if EIA has to be approved. The Chair stated that this is a matter for the Board of the Agency but there was no formal approval process, as such. Mr Holland explained that on receipt of EIS, Board has powers to request further information, where information was not up to scratch. The Board asked for further information in this case.

Ms. Condon asked where she came into the equation and asked if she was not insignificant relative to others. Mr Holland responded explaining the opportunities for making of submissions on the waste licence application.

**Natura correspondence with Duchas**

Mr Murphy advised that had he had some reference to memos. He referred to a memo of meeting between Richard Nairn, Natura and Duchas, 19.07.00 (Document 36-Memo of Meetings. A copy of this memo and all relevant correspondence with Duchas was requested by Mr Noonan during the EIA).

Mr Holland asked whether, following that date, any Duchas official had objected to the siting of the landfill. Mr Murphy responded, 'no'. Mr Holland asked if Mr Murphy knew for certain that information provided in relation to consultation with Duchas was comprehensive. Mr Murphy advised that he had provided everything in relation to correspondence with Duchas regarding Bottlehill.

Mr Holland sought clarification that initially there was no sign of the hen harrier and which was subsequently found by Natura during site investigations. Mr Murphy stated that the hen harrier was not found by Duchas in the 1998/1999 survey.

Ms Mary Condon commented, in relation to consultations with the Department of Arts, Heritage, Gaeltacht and the Islands, that she had attempted to contact many state agencies and had been told by state bodies that policy in Ireland is not to attend EPA hearings.

**Mr Noonan: Cross-examination of Mr Murphy on vermin control**

Mr Murphy said that the organic content of refuse will be extremely low although there will be a certain amount of contamination. The working face will be covered at the end of the working day. This will minimise the attractiveness of the site for gulls, corvids et al. Other measures may also be required to reduce the attractiveness of the site, for example, the use of bird control measures such as the use of birds of prey. Where there is a need to use a rodenticide, Warfarin is proposed. All methods of pest control will need to be investigated.

The use of fencing set in the ground will prevent access by foxes to the landfill.

**Would you agree with the principle of a reduction in organic waste going to landfill.**

Yes. That is the basis on which the EIS was prepared.

Mr Noonan commented that because we both share agreement regarding the reduction of organic waste, there is a concern that there also be clarity with respect to the perception of the local authority on the issue - that there is no slippage between solely residual waste and the condition of the licence enforcing such a condition/requirement.

**Three sites looked at were all upland sites. Were there any lowland sites?**

Elevation varied; the lowest was at a level of 80m asl.

**Was there any assessment of the likely fate of flying vermin being eliminated by rodenticide?**

The use of rodenticides is for rats. There is no means of chemical control proposed for birds. Bird control is to be achieved by a combination of :

- Minimisation of biodegradable waste
- Deposit of waste in baled form
- Use of cover material

Use of netting will also be considered with the use of a falcon.

**So we are agreeing that limiting the organic fraction of waste is important for bird control?**

Yes.

**Questions from Ms Mary Condon to Mr Paul Murphy**

I read in the EIS that insecticides, pesticides and rodenticides will be used. I took pesticides as bird control.

This is not the case. Proposed rodent control is by a combination of measures – refer to Section 4.6.2.2 of the EIS. This control would include rapid compaction of waste, tight packing of baled waste, and regular covering of waste. Warfarin is recommended for rodents, it breaks down quickly and is no ecological threat. Warfarin will only be used when necessary as an alternative to other measures of pest control which will be investigated.

**There is no clear outline of the pesticides to be used. What insecticides, pesticides will be used? Can rodents be kept out of the landfill?**

Measures described will reduce any nuisance from rats and other rodents. Rodents are ubiquitous members of our native fauna.

**How effective will the cover be?**

The reduction of the quantity of biodegradable waste will reduce the number of rodents.

Mr Holland referred to the Section of the EIS relating to waste quantities and Table 3.1.2 in particular. The organic element of waste will be for the most part removed and will reduce the attractiveness of the waste for rodents. The average quantity of putrescible waste will be approximately 25.7%. This is the waste that would be attractive to rodents.

**How low would organic content of waste be?**

Mr Holland referred to Table 3.1.2 of the EIS.

**The inspector’s report (PD) states that prior to the commencement of acceptance of waste, proposals for vermin control are to be agreed. What insecticides and pesticides will be used? Reference was made to Cork County Council using anaesthetics to control birds. “I will have birds dying on my property. Our farm is a wildlife preserve, I am a member of an animal care organisation, and I tend to injured birds”.**

The use of pesticides for the control of birds, while not stated in the EIS, does not refer to their use for birds. It would be unacceptable under the management regime proposed to use pesticides for bird control. The measures outlined in relation to the management of birds is adequate for vermin and fly control.

The Chair referred Ms. Condon to Condition 7.6 of the Proposed Decision in relation to bird control measures and Mr Holland referred Ms Condon to Condition 11.5.1 regarding vermin and fly control.

**Does a sleep-inducing compound come under the definition of a pesticide. Cork County Council do use this method to control birds. We don’t want birds dying on our property.**

Sleep inducing compounds are not included in the definition of pesticides.

What may be suggested here is botulism. In warm weather, the prevalence of this disease increases. The use of pesticides for bird control is generally accepted to be unacceptable practice. Were such measures used, drowsy symptoms would not be evident.

**So you’re saying the birds on my farm are suffering from botulism.**

I am not familiar with the bird control measures employed by Cork County Council.

**Could some birds ingest rodenticides and die?**

Placement of bait would not be for non-target species. There is very little possibility of any vermin, having ingested Warfarin, surviving to the forest boundary.

**You're saying insecticide won't react on birds?**

I am not familiar with the method of application but would assume it would be applied so as to have minimum dispersal beyond landfill boundary.

**What about high winds?**

Standard practice would be to stop application when wind speed exceeds 4m/s.

**Is it fair not to have information on pesticides and insecticides being used on landfill and also a statement in relation to the use of sleep inducing compounds?**

This is a matter for the Council. The Chair reiterated Mr Murphy's response. Mr Holland stated that appropriate measures will be taken to minimise and eliminate possible bioaccumulation of any '-cides', insecticides, pesticides, rodenticides. It may not be possible to eliminate it. The Council is amenable to the idea that it will provide information of these pesticides and insecticides that it is proposed to use on the landfill.

**Further questions from Mr Noonan to Mr Murphy**

**You stated that you are quite certain that there is some level of proof that Duchas is agreeable to mitigation measures. Mr Noonan went through Documents 35 and 36 provided by Mr Murphy in relation to consultations with Duchas. On this basis, these documents do not constitute such agreement.**

These are not the full record of consultations. There were various consultations with Duchas at different levels – local wildlife ranger, regional manager. Mr Murphy also referred to the absence of any objections to the proposed development from Duchas.

**Is there anything else on your files to give further information in relation to the agreement of Duchas to the mitigation measures proposed?**

Having looked through my files - no.

**Mr Noonan produced the note by Mr Nairn, giving his account of discussion with Mr Oscar Merne, Duchas.**

Mr Murphy agreed with the contents.

**Mr Noonan asked about compliance with National Biodiversity Plan Guidelines – 1995.**

This is not a statutory requirement.

**Concerning wind speed at the facility, Condition 11.5.1 of the PD requires details which should be considered prior to the issue of a licence. The containment of spray from a facility 30m high, with high winds has not been considered in the EIS.**

I'm aware that there are concerns regarding wind drift.



**Do you understand concern arising from a condition which doesn't give specific information on the nature of vermin control. Under the condition, no one can know? Do you think the condition is sufficiently vague not to be made known?**

It is clear that Warfarin is proposed. Best practice would be employed on site.

**The site is a windy site and best practice would indicate that windspeed is a problem.**

The site is not unduly high and also is in a basin. Fly nuisance is normally limited to warm weather. The application of insecticide would be on a small scale as the extent of the site exposed at any one time would be small.

**Have you studied meteorological data for the site?**

I have an understanding of the site, not specifically meteorological data. I was on site between May and August.

**Did you say birds will only be a problem during warm weather.**

No, this statement related to insects. Bird problem is an issue over a large part of the year. The measures imposed at the site will be sufficient.

Mr Noonan referred to specific objection by Bottlehill Environmental Alliance to Condition 11.4.3 of the PD in relation to the Operation Of The Landfill In Adverse Weather Conditions.

**Questions from the Chair to Mr Murphy:**

**You mentioned proposals to designate the Nagles Mountains as an SPA – is this afforded same protection as if the site was designated as an SPA. Is the designation tentative or proposed?**

The proposed sites are focusing on key areas in the southwest. Boundaries are tentative. This is not a proposal to designate all sites as provisionally indicated by Duchas. The designation of the site as an SPA does not preclude development within the SPA. What is critical is that the integrity of the site is not compromised by development. Had site been designated when the issue was being dealt with would not have prevented selection of Bottlehill as a proposed site and would have been subject to the same level of investigation.

**Was the inclusion of Bottlehill Wood within the proposed designation based on Natura's investigations?**

Yes

**Has the site been designated and what is the likely timescale for designation.**

The site has not been designated. It is at an early stage of designation process. For SACs (Special Areas of Conservation), once they are proposed, they have protection. For SPAs, it could take up to 2 plus years before a list forwarded to Europe.

**Are you aware of a proposal for the management of the Hen harrier?**

Some debate followed regarding the provision of a Management Plan and its relevance to Hearing. Assistant Chair stated that it would be useful if it were specific to the site and if Coillte, Duchas or the applicant were responsible for implementation of the plan. Mr Murphy stated that the plan is a Coillte Management Plan but the applicant has input.

Mr Noonan asked in connection with this whether Duchas would appear to have known in advance of the presence of the hen harrier.

Mr David Holland stated Duchas were aware of the presence of the hen harrier on the proposed site of the facility and yet did not make any submissions in this regard.

**Questions of clarification form Mr Holland to Mr Murphy in relation to issues raised in cross examination.**

**Do you make a distinction between Nagle Mountains and Bottlehill Wood for the purposes of reference to the hen harrier?**

Yes.

**You observed that the proposed footprint of the landfill and clay borrow area is approximately 15% of the site. This represents a vastly smaller area of the proposed SPA.**

Yes.

**Given the Dept. of Arts, Heritage, Gaeltacht and the Islands' reasoning for including Bottlehill Wood in the proposed Spa is due to the presence of the hen harrier, you were aware of the presence of the hen harrier?**

Yes

**If the occurrence of an SPA was a requirement for EIS, this would be addressed in the same manner as the ecological assessment undertaken.**

Yes

**The proposal is to plant heather at the site.**

This is characteristic of one of areas where the hen harrier nests.

**If this was followed through, there may be some means of adding to possible areas for the hen harrier.**

If retained as open heather, it would be very valuable.

**With reference to the letter of the heritage officer referred to on page 9 of the BEA objection, the first point of the paragraph purports to set out her view but her objection in the end is to do with the insufficiency of the EIS.**

**Have you complied with the requirements set out in Ms Casey's letter? Were these complied with in your own assessment of the proposals?**

Yes.

**In looking for alternative suitable nesting sites for the hen harrier, were there any suitable sites within landfill footprint or clay borrow area?**

As potential nesting habitat, no.

.

**With respect to the application of the Precautionary Principle, is there a risk in this case?**

Yes, to hen harrier.

**This measure is to be undertaken once the risk is recognised. Are your proposals in accordance with precautionary principle?**

Yes

**Proximity Principle?**

On a regional level the presence of a single pair of hen harriers on Bottlehill has significance. However, we have provided for the continued use of the area by hen harriers. In terms of the regional value as a landfill site, a coniferous plantation is more preferable than a coastal estuary.

**The proper disposal of waste is important for the human environment?**

Yes.

**If there were no such plan, the ecological status of region would be diminished?**

Yes.

**Landfills are part of a Waste Management Strategy. Does landfill make a contribution to the preservation of the ecological integrity of regions and humans' experience of this?**

Yes

**The use of such a mix in establishing the ecological status of an area, may produce detrimental localised effects. There is a compromise between ecological principles and local impacts. The provision of a landfill is a contribution to the overall ecological diversity of region?**

Yes.

**Additional questions from Ms Condon to Mr Murphy**

**What measures will be used for bird control?**

I am not aware as this will be addressed by Mr Grehan (TES).

**Are there implications of proposed heather planting on monitoring activities of burrowing animals? If heather is to be used to plant the top of the cap, how will the activities of burrowing animals be monitored?**

The capping will have an overlay of soils adequate for the establishment of vegetation. It is recognised that it may not be suitable for vegetation which will compromise the lining. A depth of soil of 1m is adequate to establish heather.

The chair explained to Ms, Condon that Mr Geusebrook was present in relation to the capping system. Mr Holland explained that concern regarding damage to the liner system was in the context of tree fall and if trees are not used, risk is absent.

**Ms Condon persisted with the line of questioning and stated that it will not be possible to see damage to a liner with heather planted. The attractiveness of the site for burrowing would attract rabbits and badgers.**

On the off chance the site will have animals with potential for burrowing, galvanised steel mesh within liner system would prevent animals reaching liner.

**This galvanised steel can break down.**

There is potential for the use of a geomat which will last longer than 30 years.

The Chair explained to Ms Condon that the composition of the cap had been explained already at some length. Mr David Holland said the EIS and the PD provides for layers of protection in the capping layer. The proposals in the EIS are more detailed than in the PD.

Despite comments from the Chair and Mr Holland contesting that the issue was dealt with including a reference to the presence of a drainage layer, Ms. Condon was not satisfied with the response.

**Ms. Condon asked if it would be possible to monitor burrowing animals?**

I am satisfied that firstly the suitability of the site for burrowing mammals is low and secondly that the layers in the capping would render it unsuitable for burrowing animals. If there were burrowing, there would be no problem in identifying presence of a burrow. In heather, it is quite easy to identify the tracks of small mammals.

**If gorse establishes, will there be a greater problem?**

All succession will lead to woodland eventually. It is prudent to maintain the succession at a stage where low lying vegetation predominates. If maintained as a heathland, monitoring of burrowing activity is not an issue.

Ms. Condon still maintained that it would be difficult to locate burrows in vegetated areas. Reference was also made to leachate and associated damage to the liner.

The Chair stated that her point was noted and that these issues had already been addressed.

### **Presentation by Mr Tom O'Byrne, Ecologist, Objector (BEA)**

Mr O'Byrne stated that he was involved in ecological consultancy and had many years experience of study in this area. He outlined his international experience with IUCN, CSIRO and other agencies. He has also been 15 years producing TV programmes on ecological matters. Mr O'Byrne's written evidence is attached as Appendix B – Flora and Fauna Study of Bottlehill of the objection by Bottlehill Environmental Alliance.

Based on his written evidence, Mr O'Byrne described his assessment of the ecological value of the Bottlehill area and the likely impact of the proposed landfill on species and habitats. Particular reference was made to the hen harrier and the likely impact of the proposed landfill on its continued presence in Bottlehill.

Mr O'Byrne stated that Bottlehill is an area of high altitude comprising rotational forestry - which suits the hen harrier. Mr O'Byrne referred to the variety of herbs and trees, caterpillars (99 species, 15 species of small birds). Mr O'Byrne stated that, while not a huge diversity, there is a plenty of what is suitable for the birds living there such as willow and birch, and tufts of heather. Mr O'Byrne stated that so many

invertebrates bring in small birds such as the chaffinch. The cuckoo comes there for the same reason. He added that Bottlehill is one of these places which by virtue of its position, with little human presence, species like the hen harrier occurring in the area, indicating that the pyramid of life below is a statement of fact. The hen harrier is transitional and shy and doesn't care for intrusion.

Mr O'Byrne described Bottlehill Wood as a remnant habitat, which, while not valuable for agriculture, or having great diversity, does provide food for a range of species. He stated that the hen harrier is not very common. We should enhance what remaining habitat we have, if recreational habitat species are to come back. Mr O'Byrne stated he disagreed with Mr Murphy's assessment of the ecology. He referred to an area in Blarney which was recently referred to in an EIS as low or medium ecological value – Clogheen Fen - now has 93 species in residence, three quarters of a mile of lake, with otters and fish. It is also an area of study for paleontology. Mr O'Byrne outlined the details of enhancement works introduced at this site. He stated that calling Bottlehill a place of medium to low ecological value is not fair, as species are fairly rare. Species are in Bottlehill because they like the habitat.

Mr O'Byrne remarked that a lot of countries now do not have any landfills and all waste is processed. Mr O'Byrne stated that due to disturbance of transport in and out of the site reduces the chances of having a quiet habitat in the vicinity of a dump.

Mr O'Byrne stated that there will still be organic waste in the landfill and there will be an increased number of foxes, and rodents will reside in the banks. From a hen harrier point of view, the greater number of foxes will be a threat to nesting species. All corvids are nest robbers which can take eggs and this will impact on the suitability of the area for birds.

#### Leachate Management-Potential Impact on water quality

Mr O'Byrne referred to the possibility of a leachate tanker driver strike and the possibility of leachate going into the river. Specific objections on ecological grounds are also set out in the objections to the Proposed Decision received by the Agency. These are listed below and have been taken into account in setting out the recommendations in Section 3 of this report.

There are eight streams including the Blackwater which could be impacted. 'We would hope that everything goes well but if a problem occurs, what happens?' Mr O'Byrne commented on the possible use of constructed wetlands in the context of such an occurrence.

Mr O'Byrne stated that the use of a falconer/falcon for bird control will cause problems for the hen harrier. The use of organophosphate for fly control will have an impact on the insectivorous birds and the hen harrier, through the foodchain. The use of Warfarin or similar compounds will have potential impact on the foodchain also. Mr O'Byrne referred to chlorosis and stated that gulls can travel some distance from the landfill and die a slow death. Cats eating birds may also die.

Flies will be an issue in summer and warm weather although flies are not seen as a huge problem. In trying to cater for the hen harrier and its habitat the hope is to keep people away. Birds don't like disturbance and won't nest in other adjacent areas. He

added that the existing nest site is not likely to be overgrown in the next few years. As vegetation is clear felled, hen harriers will move to other suitable area - they will move once vegetation grows up. The foodchain in these areas is long - the number of caterpillars alone indicates importance for hen harriers.

### **Otters**

Mr O'Byrne stated that otters are fully protected and because they habitat and reside in the system, de facto, the habitat is suitable.

### **Response to questions from the Chair**

**In your evidence you stated that increasing forestry would drive the hen harrier out because they wouldn't have an appropriate habitat. If forestry is managed such that open areas are maintained, do you see the hen harrier surviving?**

If a bird as precious as this is pushed out, this is a sign of things to come.

**Given that there are alternative nesting sites, do you see the hen harrier and development co-existing.**

Yes, if suitable site prepared and at suitable distance from the landfill and if it had ideal conditions – food.

### **Do these conditions arise at Bottlehill with screening provided?**

That's a concern. Mr O'Byrne stated that in his opinion the site was not ideal unless a large element of screening was used. The site is not big enough in context that other activities are going on. It is not only the dump which is an issue, the digging out of the clay area is also a concern. Mr O'Byrne added that the hen harrier likes space.

### **Responses to questions form Mr Holland**

#### **Hen harrier and alternative nesting sites?**

Mr O'Byrne stated that he has looked at other landfills on behalf of local communities but had not been involved in the preparation of an EIS for landfills. In response to a question in relation to not having ever advocated a site as suitable for landfill, Mr O'Byrne stated he hadn't but would prefer a low lying area. He also remarked that he had seen sites before landfill had been constructed. In response to a question suggesting that he had a reluctance to accept the necessity for landfilling, he responded by stating that we haven't organised ourselves properly so as to have no alternative to landfill. Mr O'Byrne responded to the proposition that new landfills will have to be built somewhere by stating that he would like to think otherwise, however, he did accept the proposition.

Mr O'Byrne accepted that as everywhere is a habitat and as landfills will happen, every landfill will be on some habitat or another. He did remark that an elevated site would not be suitable.

Mr O'Byrne agreed, with the inclusion of the cuckoo as rare species, that only one other rare species occurs on the site under the Habitats/Birds Directive and other than that, the habitat in its entirety is typical of man-made coniferous forestry.

#### **Human presence**

Mr O'Byrne explained that he visited the site over a six month period between summer and autumn. In relation to the presence of tourists in the wood he explained

that while a few people may go for a walk in the wood, it is relatively undisturbed. The presence of the hen harrier indicates that the area is not disturbed. Mr O'Byrne agreed that the site is an actively managed commercial forestry with typical associated activities. He stated that there is a small number of people with loud machinery. In the middle of Sitka Spruce there is a quiet environment. When clear-felled, this area can be colonised. In responding to the Mr Holland's statement that tree felling is a noisy activity and obvious to anyone in the vicinity, Mr O'Byrne stated that the hen harrier would welcome a new area being exposed. When posed with the question that as the hen harrier is currently living within a highly mechanised and noisy environment, it may also be able to live within a noisier environment such as a landfill, Mr O Byrne responded that harvesting is once-off activity, while landfill is ongoing with persistent traffic/vehicular movements, lighting and a gas flare - a lot of disturbance.

Mr O'Byrne agreed that hen harriers will leave the site in 2-3 years and stated that this would be dependent on the emergence of vegetation.

Mr O'Byrne acknowledged the professionalism of Mr Murphy in actually identifying various alternative nesting sites. He agreed that the only suitable nesting sites were those identified by Mr Murphy. He added that these were too close to the edge of the wood. When put to Mr O'Byrne that there are not likely to be any other sites available apart from those sites identified, he added, 'apart from the landfill'. In response to further questioning on the matter of the alternative nesting sites in 2 -3 years time, Mr O'Byrne stated that it may be more than 2-3 years and it is hard to know where birds will choose. While there are sites further away, they may not be where the hen harrier chooses. We will see if that is the case if the proposal goes ahead.

Mr O'Byrne agreed that Mr.Murphy had undertaken his assessment on a proper ecological basis. When put to Mr O'Byrne that there were no alternative sites for the hen harrier other than the three identified, Mr O'Byrne stated that the three positions suggested are in the light of the landfill being present. Mr O'Byrne agreed that, in 3-5 years time, the hen harriers will move anyway. With the landfill in place, however, he commented that this would not be the same because all of the alternative sites are too close to any landfill and related activities. Mr O'Byrne agreed when it was put to him that the only issue with the 3 alternative sites is that they are too close to the landfill. He stated that hen harriers do not like to be too close to trees. The primary issue is a combination of the sites being close to the edge of the wood and also close to the landfill and borrow area.

This part of questioning was concluded by Mr Holland stating that there was a professional difference of opinion between Mr Murphy and Mr O'Byrne. Mr O'Byrne did agree when it was put to him that Mr Murphy's view is legitimate.

### **Vermin control**

Mr O'Byrne agreed that vermin and vermin control will be a problem wherever landfill is put and there is no reason for the problem to be any greater or worse at Bottlehill and he stated that landfills attract these animals. He stated that on some landfills, distress calls are used. This wouldn't help here. Mr O'Byrne did not respond when it was put to him that the measures taken to control vermin at Bottlehill would be as effective as elsewhere. Mr Noonan (BEA) interjected to request from CCC details of the measures proposed. When it was put to Mr O'Byrne that the problem with vermin at Bottlehill, was not likely to be any more serious than

elsewhere and that the impact on humans would be the main concern, he stated that increased risk to the eggs of ground nesting birds would be a problem. He agreed that there was no reason to believe the problem would be any worse at Bottlehill than elsewhere.

In response to a reiterated comment that the site is not a habitat populated by rare or special species, and that the area is a typical man made forestry and not a cause of concern that can't be met with appropriate mitigation measures, Mr O'Byrne stated that it is an accident, the way things have happened, for it to be suitable for the hen harrier at Bottlehill .

Mr O'Byrne stated in response to a comment that, apart from the hen harrier the remainder of the habitat is not unique, that at that altitude the habitat is a remnant habitat, adding that we're grazing most other areas. Because the area is not encroached upon it is a suitable habitat for the hen harrier.

### **Risk of Spillage of leachate**

In relation to Mr O'Byrne's concern regarding the possible danger of spillage of leachate, when asked if he had considered the proposed plan for leachate and whether he knew where lagoons and leachate tanks were situated, he gave a negative response. He went on to say that he was speaking of a worst-case scenario. If leachate is drawn off from the landfill, it is not a problem. It will cause a problem downstream if not drawn off. When it was put to Mr O'Byrne that what he was suggesting was speculation based on no assessment, he responded that a spillage might possibly happen.

### **Use of organophosphates to control flies**

Mr Holland clarified the position that the use of organophosphates was no longer being practised. Mr O'Byrne asked if Phenitron had not been suggested, to which Mr Murphy remarked this wasn't stated in his submission.

### **Responses to questions from Mr Noonan**

Mr Noonan referred to the suggestion that there was a legitimate difference of opinion in relation to the possibility for suitable alternative sites for hen harrier habitat in Bottlehill and asked Mr O'Byrne to describe the habitat. Mr O'Byrne stated that Bottlehill is difficult terrain comprising coniferous plantation. Mr O'Byrne agreed that Coillte are continuing to cut away the forestry.

Mr Holland commented on this matter, that in the absence of the landfill can we not say that there would in due course be potential for hen harrier habitat, in a number of years. In response to this, Mr Noonan stated that the difference in opinion is related to the current situation not a future scenario. When asked in relation to this question, that since time evicts the hen harrier anyway, whether it was his view that if nature does this, it is acceptable but if man does so, it is not, Mr O'Brien stated that the birds are dependent on the processes involved - eg tree felling



## **Response to questions from Mr Tadhg O'Mahony**

### **Importance of Bottlehill as host to a single pair of hen harriers**

In response to whether the proposed management of the forestry site was acceptable, Mr O'Byrne stated that it would be acceptable if there were specific input from an ecologist, a landscape expert and a Duchas biologist. It would be acceptable if this could be guaranteed.

When asked if the forestry harvesting methods applied at Bottlehill Wood are different to those at other sites, Mr O'Byrne replied that they are not different except for the practice of leaving an open area in the centre. Apart from the presence of the hen harrier, Mr O'Byrne agreed that the site is not any different to other commercial sites. Mr O'Byrne stated that for the sake of the hen harrier, he would move the landfill site further to the edge of the wood.

## **Presentation by Mr Fergal Duff –**

### **Expert Witness on Ecology and Biodiversity) – on behalf of BEA.**

Mr Duff has worked with the United Nations Environment Program for 15 years and was on the Peer Review Group for National Biodiversity Projects. Mr Duff has managed Global Biodiversity projects and has represented the Norwegian Government on Biodiversity issues. See also Mr Duff's own account of his experience provided in the last page of his written evidence (doc40). Mr Duff stated he had recently moved to Glenville from Co. Meath due, as he stated, to proposals to construct an incinerator and landfill in the area.

Mr Duff referred to the degradation of the ecosystem as being caused by the removal of material or the landfilling of material. He went on to state that communication must be life blood of the Biodiversity Assessment process.

Mr Duff relied on his written evidence - Document No.40a - in presenting his concerns in relation to the proposed development. The basis of Mr Duff's objection was his belief that the construction of a landfill of the scale and the type proposed by Cork County Council, would constitute a significant threat to the environment and would contravene the Convention on Biological Diversity (CBD), a legally binding agreement to which Ireland is a party.

Mr Duff defined Biological Diversity or Biodiversity – as the term given to the variety of life on Earth. Mr Duff in his presentation referred to the 1992 Earth Summit in Rio de Janeiro where he stated that world leaders agreed on a comprehensive strategy for “sustainable development” – meeting our needs while ensuring that we leave a healthy and viable world for future generations. He stated one of the key agreements adopted at Rio was the Convention on Biological Diversity. He stated that the convention established three main goals: the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits from the use of genetic resources.

Mr Duff focussed particularly on the Convention on Biological Diversity and its requirements in the context of the proposed development and the Waste Management Plan for County Cork, the EPA's decision to grant a licence and the adequacy of the EIS prepared in support of the waste licence application.

In the context of the Waste Management Plan for County Cork, Mr Duff states that it purports to be borne out of the goal for Sustainability and to be guided by the Dept. of

Environment publication, Sustainable Development – A Strategy for Ireland. Mr Duff stressed that in this respect, the Waste Management Plan is in accordance with the first two parts of the CBD objectives –i.e. the conservation of biological diversity (Articles 6-9, 11-14 of CBD)) and the sustainable use of biological resources (Articles 6,10-13). Mr Duff stated that paragraph 1.1 stipulates that the Plan is guided by the following principles, namely:

Polluter pays Principle  
Proximity Principle  
Precautionary Principle  
Principle of Shared Responsibility

In the above context Mr Duff states that, it is therefore surprising that the EPA propose to grant a licence for a landfill facility at Bottlehill as this would contravene the spirit of not only the Cork County Waste Management Plan, and the CBD, which is an international legally binding agreement, but also much of what is written in chapter four of the publication, Local Authorities- more Than Service Providers.

Mr Duff's presentation subsequently went into the reasons why the proposed facility would contravene the CBD with particular reference to the following articles of the Convention:

Article 8(c) through to Article 8(l) inclusive, articles 10 (a–e) inclusive, articles 14(a) and 14 (b) plus the last paragraph of the preamble of the CBD. The written argument in relation to the proposal in the context of these articles is set out in Mr .Duff's written evidence (Doc40). Summarised below are those points made in relation to specific aspects of the proposal :

*ARTICLE 8 (c)*

*Regulate or manage biological resources important for the conservation of biological diversity whether within or outside protected areas with a view to ensuring their conservation and sustainable use*

Mr Duff states that the scope of this paragraph is very wide as “ regulate or manage” implies control of all activities that could affect the resources concerned. Mr Duff stated that the term ‘use’ is obviously included, but so also are habitat destruction, pollution and other impacts not specific to that resource which would be the case in Bottlehill.

*Article 8 (d) Promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings.*

Mr Duff states that under this paragraph parties are asked to encourage the protection of ecosystems and species. He states that rather than doing this, the proposals look for ways to mitigate damage, for example, to the hen harrier, a threatened species. Mr Duff stated that the EIS does not adhere to this paragraph and highlights the following: :

Section 2.7 of the EIS presents a limited ecological survey touching on some of the components of the ecosystem without an in depth investigation of its structure and function;

No assessment is made of how the integrity of the ecosystem will be maintained if the landfill is to proceed;

It appears that there is no concern about the resilience of the ecosystem or any detailed species diversity and genetic diversity.

Mr .Duff stated that conserving ecosystem functions and integrity is a fundamental vehicle for sustainable development. He states that ecosystems are functional systems comprising living and non-living components. These components and the interrelationships between them comprise the ecosystem's structure and function. In the context of the Bottlehill situation, Mr Duff lists what some of the functions and services could include: soil and watershed protection, microclimate stabilisation, groundwater recharge and discharge, water quality and quantity, water purification, energy storage, carbon uptake and storage benefits, carbon dioxide removal , fuel products, timber products, non-timber products, wildlife resources, biodiversity conservation, fish nurseries, agricultural products, historical and cultural values, national heritage, educational and scientific interest, aesthetic and recreational value. He goes onto to state that healthy ecosystems are a fundamental requirement for sustainable development and biological diversity. Biological resources support human livelihoods and makes it possible to be flexible, as it is only partly about ecosystems and must take into account socio-economic factors and allow for the participation of stakeholders. He stated that such an approach could be applied to the Bottlehill project. Mr.Duff noted that socio-economic factors were not taken into account in this project. Mr Holland, on behalf of the applicant, objected to this assertion.

Mr Duff quoted from IUCN (International Union for the Conservation of Nature) – lessons from around the world:

Ecosystem-based management attempts to regulate the use of ecosystems so that we can benefit from them while at the same time modifying the impacts on them so that the basic ecosystem functions are preserved.

He concluded his reference to this section by stating that :

All proposed projects must ensure that the goods and services provided by the ecosystem are available on a sustainable basis. Until this can be guaranteed, the precautionary principle should be applied.

*Article 8 (e) Promote environmentally sound and sustainable development in areas adjacent to protected areas with a view to furthering the protection of these areas.*

In relation to this Article, Mr Duff stated the requirements of this article are not undertaken in relation to Bottlehill and that the construction of a landfill of such proportions can hardly be construed as environmentally sound development.

*Article 8 (f) Rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, inter alia, through the development and implementation of plans or other management strategies.*

In relation to this Article, Mr Duff stated that to bring areas that have been affected by humans back to productivity and to secure the survival of the biodiversity that remains, damaging external influences like pollution (super dump) or excessive and inappropriate use (monoculture conifer plantations) first have to be stopped. Mr Duff went on to state that in the case of Bottlehill, the Irish authorities are obliged to restore and rehabilitate Bottlehill and promote the recovery of threatened species such as the hen harrier, not to further degrade the area and adjacent proposed designated areas and further threaten the hen harrier.

*Article 8 (j) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant of the conservation and sustainable use of biological diversity and promote their wider application with the approval and the involvement of the holders of such knowledge, innovations and practises and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practises.*

In relation to this article, Mr Duff stated that traditional and local communities have much to contribute to the conservation of biological diversity. He adds that local communities should be able to continue their lifestyles without hindrance and it should be noted that most of these communities cannot continue such practises in isolation from the land and from the biological resources they need.

***ARTICLE 8 (l) Where a significant adverse effect on biological diversity has been determined pursuant to Article 7 (relates to Identification and Monitoring) regulate or manage the relevant processes and categories of activities.***

***Mr Duff sees that many factors lead to significant adverse effects on biological diversity including pollution from landfills, the building of transport links, plantation forestry. He refers to existing international agreements on may of thee activities such as the Climate Convention, the Montreal Protocol on substances that deplete the ozone layer, the convention on long range transboundary air pollution and the various conventions on the pollution of the sea.***

*Article 10 – Sustainable Use of Components of Biological Diversity*

***ARTICLE 10 (a) integrate the consideration of the conservation of biological resources into national decision-making.***

Mr Duff stated that this is not being undertaken. He stated that this was important, since at times government policies such as a land clearance for landfills, or roads may not be compatible with the principle of sustainable use. He went on to state that in such cases it may be assumed that the CBD requires governments to reconsider such policies.

***Article 10 (b) Adopt measures relating to the use of biological resources to avoid or minimise adverse impacts on biological diversity.***

Mr Duff stated that in combination with Article 8(c) this, in effect, means that States have to regulate and manage the suite of all their biological resources so that (a) it is sustainable and (b) does not harm other elements of biodiversity.

***Article 10 (c) Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with sustainable use requirements.***

Mr Duff commented that virtually all communities that embody traditional lifestyles depend on biological resources for their survival

***Article 10 (d) Support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced.***

Mr Duff stated that it is recognised in this paragraph that it is usually local communities which actually manage wild populations and have the capacity to restore ecosystems and species to former levels.

*Article 10 (e) Encourage co-operation between governmental authorities and the private sector in developing methods for sustainable uses of biological resources.*

*Article 14 Impact assessment and minimising adverse effects*

*Article 14 1(a) introduces appropriate procedures requiring environmental impact assessment of its proposed projects that are likely to have significant effects on biological diversity with a view to avoiding or minimising such effect and where appropriate allow for public participation in such procedures.*

Mr Duff stated that Paragraph 1(a) applies to all parties. Parties without procedures requiring EIA for their proposed projects which are likely to cause significant adverse effects on biological diversity can be required to introduce them. Mr Duff states that such procedures are without question appropriate in this case, as Ireland is required by European Directive to undertake an EIA.

Mr Duff asked where is the EIA for the proposed Bottlehill project and what procedures if any are in place for undertaking EIAs.

He stated that there is merely an EIS which to some extent appears to be based on rather limited surveys rather than full-scale assessments and studies. Mr Duff quoted from section 2.7.3.4 of the EIS in which he stated it is stipulated that “Due to the limitations of the survey conducted, it was not possible to determine a full list of birds and mammals utilizing the site at Bottlehill.” Mr Duff went on to state that it is not clear how the true cost is calculated.

Landfilling will be estimated by taking externalities into account as referred to in Section 3.5.1 of the Waste Management Plan.

Mr Duff asked what were the terms of reference for the surveys undertaken.

He stressed that three purposes of an EIA in relation to Biological Diversity would need to be identified in advance. These include

- What aspects of the project are likely to have adverse effects on biological diversity at the genetic species and ecosystem levels;
- What steps could be taken to avoid or minimise adverse effects; and,
- Whether the proposed project complies with existing legislation

Mr Duff pointed out the importance of site selection for biodiversity conservation and the difficulty in reducing effects of a project on biodiversity compared with other environmental effects such as air or water pollution. Mr Duff commented that avoiding a particular site is the only sure way of minimising adverse effects on biodiversity.

Mr Duff in his evidence stated that an EIA's objectives are twofold:

To provide the decision maker with information on a proposed project's effects; and,  
To produce environmentally sound projects whenever possible.

He highlighted the importance of EIA being started early in the design stage of the project so that it can influence all the stages in the project- i.e needs identification, pre-feasibility study, feasibility study appraisal and approval. The need for a feedback mechanism to ensure deficiencies are corrected and an audit following completion of the project to ensure full application of the provisions agreed. He stressed the importance of public participation in the EIA process can ensure many of these aspects. Mr Duff stated that completion of an EIA late in the design stage of the project adds unnecessary costs to the project as a decision to redesign or not to proceed may have been taken.

*ART 14 (B) Introduce appropriate arrangements to ensure that the environmental consequences of its programmes and policies that are likely to have significant adverse impacts on biological diversity are duly taken into account.*

In this regard, Mr Duff stated that the EU has developed its approach in relation to this paragraph and asked how Ireland is following this in relation to EU Directive 97/11/EC. Mr Duff stated that Mr David Malone will raise this question on behalf of BEA. (Note – Mr Malone did not provide oral evidence during the course of the oral hearing)

Mr Duff referred in detail to the guiding principles which he referred to previously namely:

- The Polluter Pays Principle
- The Proximity Principle
- The Precautionary Principle
- The Principle of Shared Responsibility;

*The Polluter Pays Principle:*

Mr Duff in his statement concluded that it was clear in this instance that the polluter is not penalised. He stated that such a situation is unethical, inequitable and unsustainable and states that he believed this will have the opposite effect to cultivating awareness and promoting minimisation.

*Proximity Principle:*

In relation to the Proximity Principle in the context of the proposals at Bottlehill, Mr Duff concluded by stating that it is clear that much of the waste generated in the Cork Region is not generated in Bottlehill. He stated that it is unethical, inequitable and unsustainable to expect Bottlehill to be burdened with a landfill of such proportions. Mr Duff does not accept that it is not possible to have a number of landfills and have local areas responsible for dealing with their own waste. He stated it would seem pointless transporting waste from all over the county to Bottlehill.

*Precautionary Principle:*

Mr Duff referred to Mr Holland's opening statement in which he said that the precise formulation of the Precautionary Principle is a matter of some debate. Mr Duff provides the definition of the Precautionary Principle as provided in "The Global Biodiversity Assessment:

"If the costs of current activities are uncertain, but are potentially both high and irreversible, the precautionary principle holds that society should take action before the uncertainty is resolved."

Mr Duff states that this should apply to the hen harrier at Bottlehill. He went on to say that there is an element of uncertainty here in relation to the hen harrier relocating. Mr Duff expands on the definition of costs as provided in the Global Biodiversity Assessment Section 12.2.2 Pages 836 and 837.

The Chair, asked Mr Duff at this point if he was saying that the proposed landfill is not sustainable to which he responded, 'yes'.

Mr Duff stated that it is precisely the non-application of the Precautionary Principle that is resulting in the unprecedented destruction of biodiversity and is threatening our very existence.

Mr Duff went on to quote from E.O.Wilson (doc44), Diversity of Life on the relationship between biodiversity and humanity and the importance of keystone species in ecosystems;. He goes on to comment on the ongoing and accelerated rate of ecological destruction since the UNCED in Rio 1992.

Mr Duff concluded under the topic of the precautionary principle by stating that the true costs of the proposed facility are uncertain, including externalities (as defined in Para 3.5.1 of the Cork County Waste Management Plan) and therefore the Precautionary Principle should be applied in order to reverse the proposed decision issued on 23 July 2002, viz. Waste Licence Register No. 161-1

Mr, Duff referred to Mr Holland's opening statement in which he stated that Mr Holland informed the hearing that the application of the precautionary principle would bring an end to life. Mr Holland interjected at this point stating that Mr Duff had warped what he had said and that this was a disgrace. (Note: Mr Duff subsequently withdrew this comment and resubmitted the relevant page/ section of his written evidence to reflect this)

#### *The Principle of Shared Responsibility*

Mr Duff stated that the introduction of an ecosystem-based management approach would go a long way towards making this principle a reality.

He outlined how this would be achieved:

- By encouraging a flexible approach , in order to adapt to changing situations and conditions,
- Allowing for a comprehensive rather than sectoral approach to the conservation and sustainable use of biological resources;
- Ensuring that economic, social and cultural factors affecting communities are considered together with ecological issues when dealing with ecosystem management projects; and
- Allowing for public and community participation at all stages of project development and implementation

Mr Duff posed the question as to whether or not we in Ireland already aspire to this approach. He quoted from the publication, Local Authorities – More Than Service Providers (doc44) and also Chapter 2, Para 2.2 of the National Biodiversity Plan which he states is unambiguous with regard to the need to protect our biodiversity.

Mr Duff ended his evidence on a poetic note which he hoped would put the importance of biodiversity into perspective as :

*This we know  
All things are connected  
like the blood  
which unites one family.....*

*Whatever befalls the earth,  
befalls the sons and daughters of the earth,  
Man did not weave the web of life;  
He is merely a strand in it,  
Whatever he does to the web  
He does to himself.*

(Ted Perry inspired by Chief Seattle- taken from the Web of Life, Capra ,1997).  
He went on to quote the following :

*Man has not inherited the Earth from his fathers ,  
It is from his children*

Mr .Duff summarised the main points of his evidence as follows:

He was speaking on behalf of Bottlehill by saying that a decision to grant a licence would be in contravention of the :

- The Convention on Biological Diversity
- The National Biodiversity Plan
- The Cork Waste Management Plan

He stated that he is not disagreeing with Irish policy but disagrees with the way it is being implemented.

## **2.2.4 ROADS, ACCESS AND ENVIRONMENTAL NUISANCE**

The issues associated with roads and access as raised in objections to the waste licence and considered at the hearing may be summarized under two headings:

1. Safety
2. Environmental nuisance (noise, odour and dust)

### **Safety**

Most of the objections associated with routes to and from the forestry site have arisen with respect to the preferred ‘designated’ route from the main N20 Cork-Mallow road along secondary county roads to the entrance to the Bottlehill forestry site. Upgraded roadways within the forestry site will add 3.1 km to the distance to the landfill entrance. The preferred route, 3.6 km long, from the junction with the N20 to the forestry entrance, follows four different numbered county roads and involves two T-junctions and a cross roads, at each of which traffic has to yield right-of-way. There is a modest gradient approaching two of these junctions. Within 250m of the junction with the N20 there is also a sharp S-bend. The total route from the N20 to the landfill site involves a rise in elevation of 135m. Mr John Laphorne (CCC) gave evidence on the (re-)design of the road infrastructure based on the EIS and a number of objections (BEA, CEC) raised. The essence of the evidence was, firstly, that the N20 junction would be upgraded slightly in line with NRA practice and the recommendations of a Road Safety Audit prepared at the time of the hearing (doc32), December 2002. Secondly Mr Laphorne recommended (doc26) that the county road access route be widened to the NRA recommended width of 10m (6m carriageway+ 2x2m verges) for HCV trucks to pass safely. However, he also proposed in the “short term” that the road be widened to 5.5m between fences, ie with no verges as this could be achieved readily, without issues of land acquisition, over 85% of the route. The road would also be strengthened as appropriate for HCV traffic. The predicted traffic volumes arising from the proposed landfill, at least on the initial part of the route, would



increase by approximately 50% although the figures presented in the EIS did not take account of construction traffic or leachate tankers.

In response to the issue of animal traffic raised by Mr Sean O’Leary, Irish Farmers’ Association (doc64) and Mr Joe Cahill (particularly in relation to daily movements of dairy cattle to his farm near Daly’s Cross), CCC proposed a corridor (doc26) alongside the road, using compulsory purchase as necessary, to accommodate animal movements safely. The length of road affected by this proposal is 1.1km. Mr Cahill (doc31) expressed doubts that such a plan could be executed successfully without damaging relations with his neighbours.

Messrs Diarmuid Cronin, Frank Jordan and Michael Collins, CEC, raised questions to Mr Laphorne and in their own evidence (doc30) as to why much of the necessary information regarding traffic was not available in the EIS, particularly relating to the safety of the N20 junction, the movement of animals and the detail of mitigation measures. Mr Laphorne indicated that the basic information was in the EIS. Mr Joe Sherlock TD pointed out the closeness of some of the dwellings to the proposed route, particularly near the N20 junction where the road was narrowest in the vicinity of the S-bend and could not be readily widened. It was noteworthy that the Road Safety Audit (doc32), prepared for the junction with the N20, also stated that the county road leading away from the junction “appears to be narrow, and unlikely to be able to carry two-way heavy vehicle traffic”. Mr Laphorne acknowledged this problem and said that the issue would need further investigation.

Mr John O’Riordan, BEA, Mr Diarmuid Cronin, CEC and Mr Joe Sherlock TD also raised questions as to the practicality of constraining landfill traffic to using the preferred route. Mr Laphorne indicated CCC would look at an automatic clocking and logging system similar to the one in use at the Kill landfill in Co. Kildare, which requires vehicles carrying baled waste to follow a particular route. Nevertheless, concern was expressed as to whether private contractors could be required to conform to such a plan. In conclusion, Mr Laphorne, in response to questioning by Mr David Holland (CCC), stated that the N20 junction was adequate as it was, since there had been no difficulties since it was built 10 years ago. Although additional noise and diesel emissions could be expected from HCVs on negotiating junctions on the access route, and particularly on gradients, such increases would not be excessive.

### **Environmental nuisance (noise, odour and dust)**

Noise emissions were dealt with by Mr Dermot Maloney on behalf of CCC (doc61) and analyses were made of likely increases in noise levels at the nearest dwelling to the landfill (550m distance) and along the proposed haul route from the N20 junction. With respect to activity on the landfill, predictions of corresponding noise levels at the nearest dwelling at a nominal 550m range never exceeded the standard criterion of  $L_{eq} = 55\text{dBA}$  over a 16-hour period under EPA guidelines for such activities. In response to objections from BEA, Mr Maloney indicated that these predictions would also apply to activities in the borrow pit.

The criterion adopted for traffic noise is 68dBA (18 hour  $L_{10}$ , the noise exceeded 10% of the time), which has been used in the UK since 1973. In intermittent traffic situations, the 18-hour  $L_{10}$  is equivalent to the 18-hour  $L_{eq}$ , the continuous equivalent noise level, although Mr Maloney admitted in response to questions from Mr Joe Noonan, BEA, that this criterion may be inappropriate here as it was developed for

semi-urban situations in the UK. Measured noise levels along the haul route were 27-30dBA (12-hour L<sub>90</sub>). Predicted noise levels during the proposed landfill operation were 62dBA initially and 63dBA (18-hour L<sub>10</sub>) at the end of the landfill operation. Although below the stated criterion, these levels do have “the potential for some localized disturbance along the transport route between the N20 and the landfill site”. Moreover, Mr Maloney agreed with Mr Noonan regarding the EPA view of noise levels over 60dBA as possibly affecting physical and psychological health but that it would “depend on the situation”. People become inured to traffic noise particularly as it has become part of ‘normal life’. Nevertheless, in response to a question from Mr Noonan, Mr Maloney stated that the position of measurement for such traffic noise was 10m back from the edge of the road and he agreed several houses on the haul route were, in fact, probably closer to the road than 10m. Individual trucks could also yield peak noise levels of 90dBA in passing a given location. In a concluding response to Mr David Holland (CCC), Mr Maloney agreed that 68dBA (18-hour L<sub>10</sub>) could provide a threshold level for mitigation action. Later evidence from Dr Martin Hogan, an occupational physician (for CCC), suggested that ‘community’ noise above 60dBA could be considered an annoyance rather than a health hazard. Significant problems could be expected to occur above 80dBA.

Mr Damien Grehan (TES) gave evidence on behalf of the applicant with respect to possible odour nuisance arising from the proposed landfill. Given the likely meteorological conditions, the slightly undulating topography and the distance to the nearest house being some 700m, nuisance from odour and dust was not an issue. In the circumstances, it was felt that any odour and dust modelling would not be worthwhile. Questions from Mr Joe Noonan (BEA) concerning controls for wind-blown litter elicited the response that nets would be used as necessary. Mr Grehan stated that either complete cover nets, 8-10m high or ‘fence netting’ up to 5m high would be used depending on conditions. Mr Noonan suggested that, in the light of a lack of site-specific meteorological data, the efficacy of these measures, especially up to 27m above present ground level, could not be assessed. Mr Grehan also stated that specific assessment of dust emissions from the borrow pit had not been undertaken either.

## **2.2.5 WASTE ACCEPTANCE**

Ms Katherine Walshe, Director of Environment, CCC gave evidence on the strategy underlying the calculation of waste arrivals projected for the proposed landfill facility. Supporting evidence was given by Mr Damien Grehan (TES) and Mr Michael O’Brien (Cork City Council) on behalf of the applicant. By definition, the waste licence application applies to ‘residual waste’, a term derived from the EU Landfill Directive (1999) which requires all waste to undergo some form of ‘treatment’ prior to landfill disposal. Such treatment has been interpreted to imply (EIS) that residual waste is that waste which remains “following the implementation of the various waste recycling and recovery systems and facilities”. In practice, this has meant that treatment is some form of waste separation, particularly involving the removal of organic waste (paper and putrescible/biodegradable fractions), glass, metals and some plastics. It was stated that this separation may be achieved partly at source (curbside collections or through ‘bring’ sites) or by routing waste through a Waste Recovery

Facility (WRF). Two of these have been proposed for Cork although only one is in the process of being built (Carrigtwohill). Several objectors (Mr Joe Noonan, BEA, Mr Joe Sherlock TD, Ms Mary Condon, John O’Riordan, BEA (doc84A)) referred to ongoing confusion as to exactly what was intended for deposition at the site. One letter from the Cathaoirleach of Cork County Council to Ms Lesley Colley of Burnfort (doc82, 8<sup>th</sup> August 2002) indicated that “only waste which has been sent firstly to an MRF, will be sent to Bottlehill”. Ms Walshe clarified the situation in confirming this position but indicated that material to be landfilled at Bottlehill would also include inert and other wastes which could not be routed through a mechanical separation facility by the nature of the waste. A letter from Mr Declan Daly (Chief Environmental Officer, CCC) to Mr Vincent Twomey (tabled by Mr John O’Riordan, BEA) (doc79, 8<sup>th</sup> March 2000) expanded on this concept by stating that “the waste which will be landfilled at the proposed landfill site will include materials which cannot be recycled or recovered in the separation and composting processes. It would be impractical to provide you with a comprehensive list of the component fractions of this residue.....” but the following list “gives some indication of the types of waste involved. Plastics, residual glass and metals, ash, non-recyclable packaging, paper, bulky wastes, carpets, furniture and other household wastes, timber, crockery, industrial non-hazardous wastes, insulation materials, construction and demolition wastes”. In this context, the definition of residual waste is, of necessity, subjective and may explain the concerns raised by several objectors (Mr Joe Noonan, BEA) and confirmed by Ms Walshe and Mr Grehan for CCC that the percentage of organic waste in the waste being landfilled towards the end of the life of the landfill will be similar to that at the beginning (around 30%). Nevertheless, the projected waste quantities to be landfilled at Bottlehill assume a significant degree of separation (60% in the long run) but Mr Michael O’Brien of Cork City Council gave evidence as to the current practice in the city where significant proportions of Construction and Demolition Waste (forming up to 50% of total arisings) have been separated for recycling and some 25% of domestic waste is already subject to separate collections at source.

A second area of concern voiced by a number of objectors (Mr Joe Sherlock TD, Mrs Kathleen Curtin and Mr Joe Noonan, BEA) was in the proportion of waste in baled form. It was understood by many of the objectors that all the waste was to be baled although this was not stated in the EIS or PD. Senator Paul Bradford gave evidence on behalf of Mr Joe Sherlock TD and BEA that he understood that all waste for Bottlehill would be routed through the MRF and baled except for minor amounts of inert, ‘untreatable waste’. Mr David Holland (CCC) reiterated figures in the EIS that on average, 60% of the waste would be (wire-) baled and the rest (40%) loose. Hence there was a need for two operating faces at the landfill.

There remained considerable uncertainty in the prediction of the likely composition of the waste to be deposited at the proposed facility. Although the facility has been designed for an ultimate capacity of approximately 5 million tonnes of waste, the annual rates of deposition are also subject to considerable uncertainty as they are partly based on short historical records of waste arisings, starting in 1997.

## **2.3 LEGAL SUBMISSIONS AND CLOSING STATEMENTS**

The closing statement /legal submissions were presented on the 8<sup>th</sup>/9<sup>th</sup> January 2003 except for the closing statement by Mr Diarmuid Cronin, CarriagnabhFear Environmental Committee which was presented on the morning of 6<sup>th</sup> of January at the request of Mr Cronin and agreed by the various parties to the hearing.

### **Closing Statement by Mr Diarmuid Cronin on behalf of CarraignabhFear Environmental Committee (CEC)**

Mr Cronin explained how he had presented his evidence under five topics and provided a brief review of main issues raised therein. Mr Cronin's closing statement is set out in Document 54C.

#### **Health**

On the subject of health, Mr Cronin stated that he still maintained that the SASHU report is a significant report and should be taken into account by landfill developers. He added that if a landfill licence were to be granted, they recommend that a 2km exclusion zone be included as a condition of the licence.

Mr Cronin stated that the EIS and the Inspector's report in relation to health was inadequate.

#### **Roads**

On the issue of roads, Mr Cronin stated that the EIS was totally inadequate regarding road design and safety. Mr Cronin highlighted that the CEC had advised the EPA regarding their concerns and added that the EPA did not follow up through Article 16 action and that their concern was only addressed following involvement by the NRA. Mr Cronin recommends, in the context of what he described as an inadequate EIS on Road Safety and Design and an inadequate appraisal of the EIS by the EPA, that the Chairperson recommend to the Board of the EPA that a waste licence be refused.

#### **Consultation**

Mr Cronin stated that CEC were never consulted since October 1999 regarding the Bottlehill landfill site. He added that because the application has not met the requirements of the Landfill Manual in respect of consultations (Section 3.4 –3.6), the Chairperson should recommend to the Board of the EPA that a waste licence be refused.

#### **Tourism**

Mr Cronin contended that Bottlehill has more to offer society as a tourist attraction rather than as a landfill. Mr Cronin recommended on the basis of this and of the inadequacy of the EIS and the inadequacy of the EPA's assessment of the EIS, that the Chairperson recommend to the Board of the EPA that a waste licence be refused.

#### **Landscape**

Mr Cronin described Bottlehill as a unique landscape and of high amenity adding that Bottlehill has more to offer society as an area of high amenity than as a landfill. Mr Cronin again recommended, on the basis of the above, and the inadequacy of the EIS and the inadequacy of the EPA's assessment of the EIS, that the Chairperson recommend to the Board of the EPA that a waste licence be refused.

Mr Cronin concluded by thanking a number of people:

- His wife, Brid Murphy Cronin for typing and editing material for the Oral Hearing;
- Mr Michael Collins, Chairperson of CarraignabhFear Community Council for his support and encouragement.
- Fellow members of the Environmental Committee – past and present who did a lot of work on the ground.
- Fellow objectors, Cork County Council, Vice Chairperson, and Chairperson for the courteous manner in which proceedings were addressed.

Mr Holland, on behalf of Cork County Council reciprocated the thanks to Mr Cronin for the courteous manner of addressing objections. The Chairperson also reiterated this.

### **Closing Statement/Legal Submission by Mr David Holland on behalf of the applicant, Cork County Council**

Mr Holland set out his closing statement / legal submission as set out in Document 86 entitled:

“Closing Submission on behalf of Cork County Council” as set out in that document (Appendix G).

Mr Holland stated at the outset that it is not proposed to rehearse, save where necessary, the legal issues treated in the applicant’s Opening Statement (i.e Document 1: entitled “Opening Statement on behalf of Cork County Council”) adding that they are incorporated by reference. He specified that in particular, reference is made to remarks made under the following headings:

- EU Waste Management Law
- National Policy
- Cork Regional Waste Management Strategy
- Cork County Council and Cork City Council Waste Management Plans.

Mr Holland further explained that neither was it proposed to rehearse the exhaustive evidence tendered at the hearing.

Mr Holland described the propose project as one designed to improve environmental quality in Cork- explaining that it forms part of an extensive plan, the basis of which is environmental consciousness/awareness, to ensure proper disposal of waste in County Cork.

### **Scope of the Hearing**

Mr Holland submitted that this hearing is a hearing of objections-

The substance of the issues raised was wide ranging. In this regard Mr Holland submitted that he is entitled to address the proper scope of the hearing, adding that when this was first raised he said the issue was a matter for legal submission.

Now the hearing was a *fait accompli* and we have heard the evidence. Mr Holland urged the Chair to hear only such evidence as has a bearing on the Proposed Decision.

In the context of what comprises an objection Mr Holland highlighted Section 42 (4)(d) of the Waste Management Act 1996 as underlined in Page 2 of his evidence :

Section 42 (4) An objection shall:

.....

(d) state in full the grounds of objection and the reasons, considerations and arguments on which they are based.

Mr Holland added that in terms of fundamental fairness, trial by ambush discredited a hearing. Regulations sought to apply a more structured approach.

Mr Holland submitted that it was suggested by Mr Noonan that it was open to the Chair to allow information in under Article 26 and 27 of the Waste Management (Licensing) Regulations 2000 and stated that this is untenable and undermines the scheme of the objection procedure. On the matter of who is entitled to execute the powers provided for by Articles 26 and 27, Mr Holland states that under Articles 26 and 27, it is the power of the Agency not the Chair.

Mr Holland reiterated that it is inadmissible at the Oral Hearing to introduce new:

- subject matter of objection
- grounds of objection
- reasons of objection
- considerations of objection
- arguments of objection

Mr Holland stated that the only legal objection flagged in the Bottlehill Environmental Alliance Objection was Mr Malone's objection. In this context, he submitted that legal objections can only be made insofar as they have already appeared in the relevant submissions, adding that these can only relate to grounds of legal objection which have arisen by closing date for objections.

### **Use of wrong Application Form**

Mr Holland addressed the issue of the use of the wrong application form and stated that this was flagged early on in the hearing but the reasons, grounds, considerations and arguments only emerged today. He submitted that simply in law, it is too late to make an objection.

Mr Holland stated that the issue here is: 'was there an omission?' and he submitted there was none. He added that the checklist was no more than that used to prompt an applicant. He suggested that the question was not whether or not a box was ticked but whether information is in the application in substance.

### **Landfill Directive**

On the subject matter of the Landfill Directive and its associated targets, Mr Holland submitted that it is not Cork County Council's responsibility to achieve the targets set out in the Directive. He added it is a national target – in due course, the state may impose requirements on Cork County Council.

He further stated that the achievement of targets is nothing to do with landfill – it is to do with other matters.

He suggested that, while the waste licensing process might be one of the consequences of the Landfill Directive, what is relevant is the issue of its design and operation. One cannot say that the construction of a landfill is part of a target to reduce waste going to landfill. He added that such a landfill must have regard to the Waste Management Plan. The criteria for the granting of a licence includes due regard to the definition of potential environmental pollution.

### **EIS**

Mr Holland made specific reference to Articles 8 and 9 of the EIA Directive 85/337 as amended by Directive 97/11. On Article 8 he referred to the requirement to integrate the concepts of EIS, EIA and development consent and stated that the Directive permits integration of these concepts in the waste management and planning codes, which require full consideration of all relevant information.

### **Adequacy of EIS**

*Screening* - On the issue of screening, Mr Holland submitted that as an EIS has been prepared, screening is not relevant.

*Scoping*- Mr Holland set out that scoping is a procedure whereby the likely issues of importance are identified at the start of the preparation of the EIS.

### **Agency Guidelines on information to contained in EISs**

Mr Holland submitted that the Draft Guidelines and Advice Notes should be taken as 'Draft'.

### **European Communities (Environmental Impact Assessment) (Amendment ) Regulations 1989.**

Mr Holland referred to Article 25(1) and the Second Schedule of the EIA Regulations and noted that the Regulations prescribed the content of the EIS – but not its form.

In the context of the relevance of the oral hearing in elaborating on EIS, Mr Holland makes specific reference to *Excerpts from the Judgement of McKechnie, J*, in *Kenny v An Bord Pleanala (No10)[2001] 1 IR 565* and the *Leave to appeal to the Supreme Court - Kenny v An Bord Pleanala (No2)[2001] 1 IR 704* - In this case reference is made to a number of legal cases/ references including *Galligan on Irish Planning Law and Procedure*. With reference to the above, Mr Holland submitted that it is the Agency's role to determine the technical aspects of the EIS.

### **Nature of the Decision making Process**

Mr Holland in summary under this heading commented that the EIS is not the be all and end all of the licensing process and that there are many other aspects.

### **Habitats Directive**

On the topic of the Habitats Directive, Mr Holland submitted that the Bottlehill Environmental Alliance (BEA) objection was not specific. He further added that it cannot be suggested that the treatment of the hen harrier was deficient, referring in this context to the evidence of Mr Paul Murphy.

### **1992 Rio Convention on Biological Diversity**

In the context of the Rio Convention on Biological Diversity, Mr Holland submitted that the EPA is not entitled to consider the evidence on this subject (*as the Convention is nowhere mentioned in the objection submitted by BEA*). Mr Holland made specific reference to Article 29.6 of the Constitution of Ireland: “*No International agreement shall be part of the domestic law of the State save as may be determined by the Oireachteas*”. Mr Holland further submitted on this subject, that even if the Biological Diversity Convention expresses itself in relation to imposing a requirement, it wouldn't be of consequence under the Constitution of Ireland.

Mr Holland referred to the Convention having been incorporated in the “EU Biodiversity Action Plans” and also to the adoption by the EU of the EIA Directive 85/337 relating to matters covered by the Convention. He added in this respect that the adoption of the Habitats Directive furthered the cause (*i.e. furthered the objectives of the Convention*).

He submitted that it is the Directive (*i.e. Habitats Directive*) and not the Convention which has force at EU law. Mr Holland added that he was not aware that the Biological Diversity Convention was part of EU law.

### **Public Consultation**

Mr Holland commented in relation to public consultation that it may be that the objectors dislike the way consultation was undertaken. He submitted that it was clear that the consultation entered into by the council were fully in accordance with and satisfied the Directive. Mr Holland added that consultation did occur though it was at times somewhat abortive.

### **Types of waste to be deposited –Waste Recovery facility**

Mr Holland submitted in the context of the types of waste to be accepted and the treatment facilities from which waste will come, that the question as to how the permitted waste types will be generated is not critical adding that what was critical was what will go into the site and whether will result in environmental pollution.

Mr Holland commented that Section 40 (4) of the Act arose again and again and refers to the obligation placed on the Agency under Section 40(4) (b) to consider whether or not pollution will occur on the basis that the activity will be carried on in accordance with the conditions of the licence.

Mr Holland submitted in the context of Section 40(4)(b) that the Agency is obliged to have faith in its own procedures.



## **Road works**

Mr Holland outlines that the applicant is being required to demonstrate legal entitlement to widen the approach road to the site from the N20 , within its existing fence lines. Mr Holland submitted that this was apparent in the application, the EIS and the Proposed Decision.

He added that the objection is misconceived, highlighting that, although the power to widen the road is not the concern of the Agency, if the works were not undertaken, the applicant cannot engage in the licensed activity.

Mr Holland referred to the assertion by Chief Justice Keane (Keane on Local Government) and a statement by Sauvain (Highway Law 2nd Ed.) on the subject of the road widening proposal and the legal entitlement of undertaking such works. Mr Holland also referred to Section 24 of the Local Government Act 1925 and S13(2) of the Roads Act 1993 in the context of the duty of the county council with respect to maintenance and construction of county and main roads.

Mr Holland commented that it may appear that maintenance is excluded from the Roads Act but that widening is defined in the 1925 Local Government Act as a particular form of improvement. He added that in the Roads Act there is reference to improvement and submitted that this, by inference, includes road widening.

Mr Holland concluded his statement/legal submission by submitting that the hearing has served to confirm that the licence sought should be granted.

## **Legal Submission by Mr Joe Noonan on behalf of Bottlehill Environmental Alliance**

Mr Noonan set out his legal submission under a number of subject areas with the main focus being on the (in)adequacy of the EIS and whether the Agency Guidelines were adhered to concerning information to be contained in Environmental Impact Statements. The full text of the submission is included as Document No.87 (this was subsequently typed and is presented in types form as Document No.87b).

### **EIA and Planning Requirement and role of Agency in EIA**

Mr Noonan stated that there was no planning requirement at time of application. Council did not see the process as an EIA process.

Landfill of this nature is required to undergo an EIA because it is in excess of 25,000 tonnes. He stated that the difficulty is the cart is before the horse – planning would be expected first.

He submitted that the planning authority usually would consider an EIA then would the process would fall to the EPA. Because this hasn't happened, there has been persistent difficulty – the Waste Management Act cites the EIA Directive - in the early part of Act, the European Community Directives are referred to. The long title of the Act refers to giving effect to certain Acts. The Act sets out that an EIA be undertaken and an EIS to be prepared – the content is set out in the Regulations.

On reviewing the waste licence application, a box was seen ticked, stating no planning application – thus, there was no reason to believe any other body was engaging in any scrutiny. Our preparation was on the basis that the Agency was the agency to take on the mantle of EIA. Mr Noonan submitted that he wrote to Agency to confirm whether it saw its function as undertaking an EIA. Chair indicated on 12.12.02 that responsibility was a matter for the Board. On 19 December 2002, a reply was received from the Agency. Receipt of the Report from the Oral Hearing will discharge its duties. The letter did not resolve the question.

Mr Noonan expressed some puzzlement at the reference to the '97 Regulations and 2000 Regulations in Agency correspondence. He further stated this may be the only chance to be heard – the case couldn't have been put more eloquently than by Mary Condon.

He submitted that if the 1995 Guidelines regarding Investigations for Landfills acknowledged the existence of EIA Regulations, this added to the confusion.

### **Wrong Application Form used on foot of the wrong regulations**

Comments were made on Mr Holland's legal submission with respect to specific issues not being mentioned in objections.

The EPA has grown out of concern regarding Cork Harbour and the chemical industry in early 90s.

Mr Noonan submitted that the EPA has far reaching powers. Courts very slow to overturn findings of the EPA. He acknowledged that the EPA does very good work around the country. EPA has immunity if it make a wrong decision. EPA has wide discretion in existing as experts. He submitted that courts wouldn't listen to him for a

minute just because I say Agency only had certain information – courts will say, if needed, Agency would get the relevant information.

Mr Noonan suggested that as private citizens, his clients had wrestled on their own with limited input from consultants. His first issue was that if the EPA didn't spot an error of this magnitude regarding the wrong application form, it is only right that BEA be allowed to raise the issue. Mr Noonan stated that he rejects the submission by Mr Holland regarding use of the application form.

### **Scope of Hearing**

Mr Noonan stated that it would have helped if a definitive ruling regarding the scope of the hearing could have been made. Perhaps we could have had the EPA counsel here for longer. Consequently, we are grappling with different expectations of the hearing and we are now uncertain as to who does the EIA and whether an EIA has been undertaken by now.

### **Division of responsibilities between An Bord Pleanala and the EPA**

Mr Noonan submitted that we are in the middle of split here, in trying to decide with whom to raise planning or environmental issues. If the application now goes to An Bord Pleanala under Part X, it is quite possible that the Board, if it gets a Part X, will look at the Oral Hearing and form a view that this forms an EIA. The Board should not be allowed take this view if an EIA is not undertaken. Mr Noonan asked for this to be clarified by the Agency at this late stage adding that it would have helped if it were known where the EIA issue was - we asked for an adjournment and for a ruling before resuming.

### **Nature of EIA and EIA Guidance**

The guidance documents set out what an EIA is – the key is 'Systematic Analysis' – which is exactly the point. Mr Noonan outlined the very clear and thorough set of Guidelines issued by the Agency last March. (Mr Holland intervened at this point stating that this document was only in draft form previously – there was no change in principle between these and final guidelines).

Mr Noonan went through the EPA Guidelines (Guidelines on Information to be contained in Environmental Impact Statements (March 2002) and referred to specific parts thereof. In going through the Guidelines, Mr Noonan quoted directly from the relevant sections:

*Page VIII Legal Requirement* – the Irish EIA system is integrated. Mr Noonan submitted that we are not in an integrated system. He referred to the requirements of the Habitats Regulations and also the UN Convention on Biological Diversity adding that it is clear that the Biodiversity issue is to be addressed. The UN Convention is the peak of a hierarchy, with the EU below this. It was particularly beneficial to have Mr Duff present for the clients. Mr Noonan submitted that he rejected any contention that biodiversity shouldn't be taken in to account.

Mr Noonan referred to the system of disclosures or liabilities. While there may be some overlap, it must be ensured that nothing is missed – this is reflected in the EIA procedure.

*Page 3 of Guidance document* sets out relevant headings. Mr Noonan submitted that it was also worth noting the text with respect to direct and indirect impacts, commenting that none of the issues should be excluded under the risk of invalidating the process.

*Section 2.2.4 - Public Consultation* – Mr Noonan submitted that the core objective is that the public is made fully aware prior to a decision. He referred to the roles of the different parties., early involvement and provision of information.

*Section 2.4.2 Health and Safety - how to evaluate risks.*

On the subject of *Options*, Mr Noonan stated they are areas that you contend are not for consideration and submitted that this is part of the EIA process. Mr Noonan referred to methods, scoping and monitoring.

Under *EIS Preparation Section 3.2*, Mr Noonan referred to the *Preamble and what it might contain*. He stated that there was no preamble in the EIS here – it was not a fatal flaw but it would have been useful.

### **Description of Proposed Development**

It is one of two foundations on which the EIA is based – the *Guidelines* acknowledges the level of detail will vary according to the sensitivity of the existing environment and the potential of the project for significant effects and it highlights that the focus of the EIS may change.

### **Alternatives Examined**

Mr Noonan described the necessity to look at alternatives and referred to the summary report of the Site Selection process. The Deciding body/competent authority must have sufficient information before it selects.

### **Description of risk of accidents**

Mr Noonan submitted that their case was that there was no assessment of risk and accidents - i.e mitigation measures that will not fail.

### **Related Infrastructure**

*Para 3. 2.4. Existing Environment-* an accurate description is necessary to predict the likely significant impacts of development. It is important that the methodology used is documented, ie a systematic description of the environment.

General Methodology – this referred to the methodology in the context of ensuring identification and evaluation of the likely significant effects. A systematic description including context, character, significance, sensitivities was required. What changes could significantly alter the character of environment - would disturbance cause nesting birds to leave?

The focus should be on effects – both significant and likely?

*Human Beings-P.21.* Mr Noonan outlined the range of topics – economic activity and social pattern (discussed by Mary Condon), land-use, employment, and socio-economic effects addressed by David Moore. Information regarding population trend

was wrong - it is not going down. Relying on the opposite assumption, the EIS came to a conclusion. Thus, if the data is not there, a conclusion cannot be made reliably. If it is not known who's there and what they're engaging in, how can impacts be identified. Mr Noonan referred to Ms Condon in this context.

*Likely Significant Impacts* - concentration should be on terms such as likely, significant, credible, duration etc.

*Likelihood of impact* – ‘probable’ and ‘likely’ implies ‘planned to take place’ and ‘can be reasonably foreseen’. Mr Noonan referred to the provision for prevention of abnormal conditions with respect to the likelihood of occurrence. Such assessment can be based on experience elsewhere. In this context, Mr Noonan referred to Mr Grehan’s comments with respect to odour. Such assessment is usually undertaken where a worst case situation applies. Mr Noonan commented that Mr Barnes was the only person who looked at a worst case.

In a worst case scenario, impacts that could arise must be considered to impose significant threats to the environment.

*Prediction of impacts* – Mr Noonan went through the types of impacts under the this heading, indicating that the risk or likelihood of occurrence must be assessed in each case.

*Page 26 Mitigation-* Mitigation by avoidance is the most effective means of mitigation. Mr Noonan used as an example, *a smaller size of landfill*. Mr Noonan read specific text from this section and commented that the council heard only during Oral Hearing of Mr Cahill’s need to take cattle along the preferred route.

*Sample Impact Evaluation Checklist- Figure 7 Page 27 of Guidelines*

In the context of the *Sample Impact Evaluation Checklist* - Mr Noonan commented that there was no systematic approach undertaken in respect of the EIA by sub-consultants.

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Mr Noonan stated that the EIA was the task of a competent authority. He commented on Article 3 of the EIA Directive and submitted that the scheme envisaged in the Directive – that a competent authority undertake the assessment. He suggested that the Irish Regulations effectively shunted that to the applicant. Ireland was brought to EU Court regarding the incorrect implementation of Article 3.

Under the EIA Directive in Ireland, it is, in this case, the role of the EPA to undertake the assessment. He stated that what we have now is an ‘EIS’ - qualifying that with the comment “what claims to be an EIS”. This is why a rigorous approach set out in legislation is required.

The reason that the EPA is bound to undertake the EIA are partly derived from the Simmenthal/Factor Tame case. It’s local, national legislation which is subject to EU legislation - if national legislation is weaker than the EU legislation, the state body must recognise community legislation to give effect to the superior European

legislation. This particularly answers Mr Holland's view that we are restricted to dealing with issues under Waste Management Act.

Dr. Hogan in evidence on health and safety relied on controls being observed and complied with – in respect of relying on the EIS. He said if the EIS is absent, the basis for his opinion goes. He didn't consider failure of controls but acknowledged that failure of controls would close the project down. Mr Noonan submitted that such a situation is not wanted - the purpose of the EIA is to avoid this situation.

### **Socio –Economic**

Under this topic, in the context of EIA, Mr Noonan refers to the difficulties in respect of knowing the number of houses affected by the landfill site.

### **Ecology: Paul Murphy's Evidence**

It was the view of Mr Murphy that it was not necessary to talk to local people – he was willing to speak to Duchas but not to Ms Sharon Casey (Heritage Officer Cork County Council). There were no surveys of ecology at night.

He was aware that there was going to be a designation as an SPA, which would stop at the northern boundary of the site. However, this view was subsequently changed when my clients produced map –the source of the information was local.

Mr Noonan stated that the hen harrier was no.3 in the Agency's report on Biodiversity. He reiterated Mr Duff's comment that the hen harrier was a keystone species.

### **Water Issues**

Mr Noonan countered Dr Hogan's statement that the landfill behaved like a large septic tank. The attenuation properties of the soil had not been properly evaluated.

Mr Bennet , a mild individual – had been alarmed as a hydrogeologist, when he stated it was almost criminal to locate a landfill at this location. The same term was used Fergal Duff in ecological evidence.

### **Alternatives**

Landfill is needed but not at this scale.

Mr Noonan submitted that the Cork region has targets but these should not be independent of national targets. If EU regulations apply, all local authorities must abide by them in a binding and legally effective manner. If continued dependence on landfill at the rate indicated is sanctioned by the granting of this licence, that will be in a real sense, a form of collusion by the Agency with questionable legality.

### **Waste management licensing criteria**

Mr Noonan suggested the variety of ways in which activity must be considered if undertaken in accordance with the licence – he termed this 'assumed compliance'.

Such activity, if carried on in accordance with the conditions, will not cause environmental pollution.

Mr Noonan referred to environmental pollution as defined in the Waste Management Act:

*“.....Which would endanger human health or harm the environment, and in particular:*

- a) create a risk to waters, the atmosphere, land, soil, plants or animals,*
- b) create a nuisance through noise, odours or litter, or*
- c) adversely affect the countryside or places of special interest.”*

Mr Noonan submitted that the Agency should not grant a licence – the council’s interpretation should not be taken – if it cannot devise a licence which will not permit environmental pollution.

### **Noise**

Where levels are above Agency recommended levels, the indication was that someone has to take the impact.

### **Fit and Proper Person**

Such a term, in the legal sense, was said not to apply if a local authority is involved. Mr Noonan claimed this gives the local authority a privileged position in this respect.

### **Compliance**

Mr Noonan referred to Ms Mary Stack’s evidence in respect of water quality compliance at Waste Water Treatment Plants. Mr Noonan said he had much respect for Ms Mary Stack and said the information given was very clear.

The effect of her evidence was that the council will comply with whatever conditions are set. Mr Noonan then questioned the meaning of compliance – his view was that it should be 100 percent of the time however realistic that might be.

Mr Noonan said that if there is leeway in respect of compliance, then it should be built into the licence.

He claimed that our dilemma is based on the fact that the council does not comply in operating existing Waste Water Treatment Plants so expectation is hard to base on that.

On the subject of compliance in the UK, as reported, Mr Noonan stated that surveys showed 66% of landfills were ‘out of compliance’, although 80% were ‘very close to compliance’ – that illustrates the dilemma.

### **Landscape**

Mr Noonan stated that landscape was the only subject where a worst case scenario was treated.

### **Road**

Mr Noonan submitted that he had been told by clients that ‘someone will die at the junction’ of the N20 and the preferred route.

Mr Laphorne worked hard to address some of the issues – but he gave evidence with reference to a Safety Audit undertaken by two people who couldn’t address the issues adequately when the brief was limited.

Mr Noonan re-iterated his clients' view that the secondary, preferred route to the landfill was a recipe for choking traffic given even the widened dimensions of the carriageway.

**Legal issues regarding the road:**

Mr Noonan submitted that it was his view that it was not Cork County Council's right to acquire land owned by residents adjacent to the roadway. He referred to property rights and the definition of 'road' in the 1993 Roads Act. He also referred to the case of *Murphy v Wicklow County Council*. Mr Noonan submitted that he thought that the issue regarding the road *is* a matter open to the hearing, especially if the proposed route is not feasible or viable.

**Concluding Remarks**

In his concluding remarks, Mr Noonan referred to the applicant's own objection in which he stated they had raised the following :

Installation of a water scheme;

Testing and payment for water testing

Future conditions – Mr Noonan was concerned at the number and nature of conditions left aside for future agreement between the Agency and the Council. People had been left out of the process. He asked that this aspect be revisited in some respect.

In respect of personal responsibility for health, Mr Noonan felt that the Health Board have a responsibility but the Health Board say it is the Agency. He stated that everyone 'runs' from health – for the objectors, this is where it starts and ends. " Environment is nothing if we don't consider human health."

Mr Noonan stated that his submission was that it is unsafe to proceed to a decision yet.

He stated that it was not a valid application- the wrong form was used. In the form used, reference to the 2000 Regulations was apparent.

Changes were substantial between 1997 and 2000 Regulations. His view was unarguable that this was a major problem and he submitted that this was not a valid application.

The objectors have stated that the decision is premature as there is no proper EIS.

There is not available a Waste Water Treatment Plant with sufficient capacity for the leachate.

It was unclear whether an EIA actually exists.

The Agency was being asked to sanction hen harrier habitat destruction and reduction of waste targets.



Therefore, Mr Noonan asked Agency not to sanction the proposed development (PD).

The “*No risk, no worry*” philosophy is not appropriate because this assumes mitigation measures will never fail. Mr Noonan quoted the story of the Titanic and stated that his father wouldn’t watch the film because locals had died - crews never trained because the Titanic ‘wouldn’t sink’.

**Mr Noonan’s closing remarks were taken from, as he advises, Ellen Mc Arthur, the lone sailor:**

*“... bad things happen...”.*

He stated that the people he represented would share Ms McArthur’s character adding that Mrs Curtin and Ms. Condon would have time for her.

**Mr Noonan stated that people have faith in the EPA** and asked whether the EPA could consider defraying some of the costs of the local community in attending the Oral Hearing and making objections.

### **Closing Statement by Mr Joe Sherlock T.D.**

Mr Sherlock stated at the outset that he was interested in this matter for some time adding that he was delighted when the oral hearing was granted. Mr Sherlock stated that the manner in which the hearing was conducted provided greater opportunity for people to state their case.

Mr Sherlock stated that the main issue that will arise from the evidence is that – can you determine if the development is a sustainable development. He added that we cannot allow the landfilling by this generation to impact on future generations?

Mr Sherlock referred to noise, dust and emissions from traffic adding that the size of waste disposals vehicles was not conducive to roads in Bottlehill.

Mr Sherlock commented that Mrs Curtin, Mr Cahill and Ms Condon had made submissions on agricultural land. He stated that he would rely on the EU Directives regarding distances of landfill from residential property, and regarding geology and hydrogeology adding that our natural heritage needs to be taken into account.

Mr Sherlock contended that in Cork which has three large divisions, the opportunity for three smaller facilities to be developed is possible.

### **Response by Mr Holland to legal submission of Mr Noonan**

Before making a response to Mr Noonan's legal submission/closing statement, Mr Holland asked that if anyone were not in agreement with him making such a submission could they say so. In the absence of any objection in this regard, Mr Holland proceeded with his statement which focussed exclusively on Mr Noonan's legal submission/closing statement.

Mr Holland commented that he would cherish hearing Mr Noonan quoting Ronald Reagan as an authority on anything. He added that he appreciated Mr Noonan referred to the Titanic in an illustrative way but argued that the underlying inference is for never doing anything with any degree of risk. He further added that this was a misconception of what the Precautionary principle involves.

### **Application invalid because of application form**

Mr Holland stated that he observed in his perusal that the application isn't made in accordance with any Regulations - commenting that it is made pursuant to the Act and is valid. He added that whether it complied with the Regulations was a different matter - this is a substantive issue regarding information in the Act as against the Regulations.

### **Compliance with Conditions of licence**

Mr Holland stated he doesn't accept the suggestion that Cork County Council in some way was untrustworthy or cannot be relied upon to comply with conditions of a licence. Mr Holland added that if that argument were put forward - consider section 40(4) - it is effectively saying that one could forget about Cork C.C. ever getting a licence for any facility. This would be a recipe for disaster as this licence would fall as would any other licence. He concluded on this subject that if this assertion were correct, a solution must lie elsewhere.

### **Roads**

Mr Holland stated that Chief Justice Keane's text is based on Irish law - the Murphy case cited is the Glen of the Downs case. He added that the point was that the scheme needed to compulsorily purchase land to construct the road. The modern practice is to use Compulsory Purchase Orders (CPO).

Mr Holland compared the Glen of the Downs case and said it was not relevant to the case in hand. He also made reference to a case involving Dublin County Council in the context of roads.

Mr Holland commended Mr Noonan in his presentation.

### **Definition of Environmental Pollution**

Mr Holland emphasised in the context of the definition of environmental pollution that concepts of likelihood and significance were crucial. In relation to Section 40(4) (b), Waste Management Act, Mr Holland stated that if his interpretation were incorrect, the Agency must impose conditions and assume they will fail- and to what degree they will fail- remarking that this would be a bizarre situation.

### **Planning Process**

Mr Holland stated that the planning situation was not set out in the licence application. He contended that the question (with respect to planning status) was not a statutory requirement and doesn't undermine the application.

Mr Holland stated that Mr Noonan's proposition is based on a particular order of events with respect to planning and added that nothing in either statute specifies that the order of events be followed. Mr Holland further added that because of changes in legislation the situation has evolved.

### **EIA/EIS**

Mr Holland stated that Mr Noonan said that the EIA should have been undertaken at the site selection stage (possibly all 3 sites). He felt that if that were the case, it would be untenable. Mr Noonan confirmed that he had not made this assertion.

David Holland suggested that Mr Noonan made a plea when he had got the benefit of legal objection advice realising the objection had to be expanded. Mr Holland stated that time to get advice is before making the objection. Mr Holland added that the Act states that you must set out objection- if too late, it remains too late.

Mr Holland stated that Mr Noonan said that we cannot proceed, on assumption that An Bord Pleanala will not undertake its role to the full. Mr Holland added in this regard that An Bord Pleanala's statutory duties stayed the same.

### **Avoidance**

Mr Holland referred to arguments in Mr Noonan's submission in relation to avoidance and that avoidance would consist of a smaller landfill with smaller environmental effects- and stated:

- that it was difficult to imagine how this was a problem – ie the relation between waste quantities and environmental pollution;
- this licence is for fixed limit – a finite number of years.
- if the waste going to landfill were below that estimated, would the suggestion be that the quantity of environmental damage is related to the quantity of waste?

### **Targets**

Mr Holland stated that in the context of targets, the Directive is with reference to states, not to councils. A sensible view of targets must be taken nationally. He added that the state will in due course impose these on council. He added on this issue that it should not be suggested that the council defer planning until the target is met.

Mr Holland stated that it is his submission that Regulations 'carry' the Directive and that he doesn't see a conflict between the Directive and the Regulations.

Mr Holland further submitted that the EPA can be confident that in complying with the Regulations, they are complying with Directive.

Mr Holland concluded by thanking all for patience and courtesy and also thanked the objectors for the courteous and civil way they vented their objections. He further thanked the Chair and assistant Chair.

I explained that it wouldn't be the Chair and Assistant Chair who make the decision but rather the Closing remarks from Mr Noonan

Mr Noonan thanked Chair and assistant Chair and administrative staff .

**Closing remarks from Mrs. Curtin**

Mrs Curtin extended her gratitude to the two EPA girls , the Chair and assistant Chair, Mr Holland and Mr Noonan.

**Closing of Hearing by Chair**

I acknowledged the closing statement of gratitude from the various parties.  
Board of the Agency.

I reciprocated the sentiments of gratitude expressed by the parties and acknowledged the very civilised and cordial manner in which the hearing proceeded. I declared the hearing closed at 00:30 on 9<sup>th</sup> January 2003

Note it is estimated that during the closing submissions there were in the order of 26 in attendance at the Hearing inclusive of the Chair and Assistant Chair and Agency personnel, Ms Yvonne Clooney and Ms. Sonja Smith.

### **3.0 RECOMMENDATIONS**

- 1. The hearing was run in accordance with a series of topics chosen on the basis of objections received.**
- 2. The running order for presentation of evidence on a topic basis was as follows:**
  - **Hydrogeology- Hydrology, Water Analysis, Gas Emissions, Restoration and Aftercare.**
  - **Ecology.**
  - **Health and Safety.**
  - **Visual – Landscape, Archaeology, Buffer Zones, Forestry.**
  - **Agriculture/ Landuse.**
  - **Noise, Dust and Roads.**
  - **Socio-economic aspects and Tourism.**
  - **Waste Acceptance.**

**The above sequence was adhered to where possible. However, duration of the evidence, availability of expert witnesses and parties to the objections, the sequence was revised as necessary, subject to agreement, to accommodate all parties.**

#### **1. Hydrology and hydrogeology : liquid and gaseous emissions**

The elevation of the proposed landfill site is approximately 260m above sea level. The site to which the waste licence application is related is approximately 136 ha in area including a borrow pit for the supply of lining and cover material. The site would occupy some 15% of the forestry area in which it is situated. The area generally is upland moorland peat on which the forestry has been developed. The topography is gently undulating on a plateau with relatively steep slopes down to lower grassland agriculture. In summary, the site is on an elevated forested plateau. The geology is mainly fractured Old Red Sandstone at very shallow depth and which is classified as a locally important aquifer, moderately productive in local zones. Pumping and packer tests on site appeared to confirm this diagnosis. The plateau/upland is also the surface headwater source for three catchments and the landfill footprint lies in the source area for two tributaries of the River Bride.

In this context, the hydrology is a key element of the emissions assessment for the proposed landfill. In particular, the rainfall and wind regime is a vital aspect of that assessment. Many of the objections at the oral hearing were directed at the lack of site-specific hydrological information on which to make such an assessment. While boreholes for site investigation were drilled on site, little surface water hydrological information was collected and analysed and no climatic data. A critical emission from the landfill and borrow pit

operation, in the context of discharge to local streams, is surface storm water drainage combined with the sediment and chemical load it may carry. Although sufficient storage has been designed for storm water retention on site, the criticality of the sediment and chemical loads even in the clay particle size fraction, need re-analysis so that a full flow routing may be undertaken to demonstrate that physico-chemical loads on the receiving streams fall within acceptable limits, particularly during wet periods. Flow management on the discharge streams is equally as important as the sediment loads carried. The applicant agreed that the construction of a wetland for assisting in filtering nutrients and sediment from surface water flows would be an additional risk reduction measure worth taking.

Climate data extrapolated from other stations such as Cork airport is really not sufficient when it is known that local topography, especially in an upland area, can affect hydrometeorological measurements significantly. Attempts were made to uprate data from other stations but no site calibration of these upratings were undertaken. There is no doubt this is a wet and windy site and will present operational difficulties to a landfilling process, especially at elevated levels. Restrictions will be necessary to prescribe appropriate operating conditions. A weather station should be installed as a priority.

In summary, the hydrology of the site represents significant pathways for emissions to reach surface or groundwater receptors. As the response matrix for landfills on this class of aquifer in an extremely vulnerable situation implies, there is a significant risk to groundwater. However, if there is no other choice of site, then the approach is one of mitigating that risk as much as possible. The protection is then mainly afforded by the lining and containment system in the landfill: the 1250mm of borrowed clay covered by an HDPE geomembrane might offer slight advantages in terms of long term integrity over the 1000mm, bentomat layer and HDPE geomembrane originally set out in the PD. Post-closure, on an elevated site, this landfill will need very long term maintenance and management.

In mitigating the same hydrological risks, the proposed licence conditions also constrained the construction of the landfill base at or above the current ground level. As the ground surface is undulating with gradients over 2 degrees in places, significant filling to formation level may be required (maximum elevation difference between ground level and the top of the finished landfill is approximately 40m, although the mean height of the landfill itself is around 24m. With slopes of the waste set at 1:3, it was acknowledged by the applicant that slope stability could be an issue, especially in wet conditions. Geotechnical analyses would be a necessary and ongoing requirement for construction and maintenance phases of the landfill and should be carried out for the worst conditions.

The most serious shortfall in hydrological data was in the borrow pit area – only one deep borehole penetrating the aquifer, for a quarrying operation aimed at excavating 1.5 Mtonnes of clay material. Anomalous values of water levels demand that the borrow pit be proven in much more detail to ensure both material is available for construction and that the groundwater can be controlled.

In short, the hydrological assessment in the EIS was seriously deficient although a ‘worst case’ approach was used for design purposes. However,

provided the hydrological and hydrometeorological regime can be confirmed on site, including a full delineation of the surface and groundwater catchments involved, and the operational difficulties of a wet and windy site are accepted, the site could be engineered to contain and manage the relevant emissions – ie capping, lining and leachate/gas/stormwater emission control.

## 2. Ecology

The ecology of the area, on the basis of extensive evidence presented is diverse and has developed in relationship with the forestry plantation development. However, the ‘keystone’ species found on the site is the hen harrier, a relatively rare bird of prey.

The hen harrier (*Circus cyaneus*) is protected under the of Council Directive on the Conservation of Wild Birds (79/409/EEC hereafter referred to as the Birds Directive) it is listed in Annex I of the Directive. The hen harrier also a Red Data Book listed species in Ireland its RDB category is endangered and its status in Ireland rare (Whilde, A 1993). The new Irish Red List (species of high interest) comprises 18 species which includes the hen harrier. The hen harrier is also afforded protection under the Wildlife Act 1976

Article 4 Paragraphs 1 and 4 of the Birds Directive stipulates the following Paragraph 1:

The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.

*In this connection, account shall be taken of :*

*Species in danger of extinction;*

*Species vulnerable to specific changes in their habitat;*

*Species considered rare because of small populations or restricted local distributions;*

*other species requiring particular attention for reasons of the specific nature of their habitat.*

*In Paragraph 1 it is further required that:*

*Member states shall classify in particular the most suitable territories in number and size as special protection areas for the conservation of these species, taking into Account their protection requirements in the geographical sea and land areas where this Directive applies*

*Paragraph 4: In respect of the protection areas referred to in Paragraph 1 and 2 above, Member states shall take appropriate steps to avoid pollution or deterioration of habitats any disturbances affecting the birds inso far as these would be significant having regard to the objectives of this Article.*

*Paragraph 4 further specifies that: Member states shall also strive to avoid pollution or deterioration of habitats.*

With respect to the requirement to classify in particular the most suitable territories in number and size as Special Protection Areas (SPAs) for the conservation of these species, the Site Designations and Plans Unit of Duchas –The Heritage Service/ National Parks and Wildlife Divisions (now Dept of the Evironment) have in

accordance with the requirements of Article 4 of the Birds Directive commenced a process of identification and selection of Special Protection Areas for the Hen Harrier. The list of nine sites currently under consideration for designation includes five sites in Co. Cork and included are the Nagles in Co Cork. This information was not available at the time of preparing the EIS and the waste licence application although it was discussed in detail at the oral hearing.

The most recent estimate of the breeding hen harrier population in Ireland based on a comprehensive survey of the main breeding areas undertaken during 1998-1999 and 2000 confirmed the occurrence of 102 breeding pairs of hen harriers with a further probable or possible 27 pairs. (Norris, D.W, Marsh, J, McMahon, D.; Oliver, J.; Irish Birds, Vol. 7, No.1 Pages 1-10 2002). The authors reported that there was no discernible change in distribution of the hen harrier since the 1998-1991 Breeding Atlas and hen harriers appeared to occupy all suitable habitat. Of the population of 102 breeding pairs 7 confirmed pairs were recorded in the Nagles. Thus approximately 7% of the confirmed breeding pairs occur in the Nagles. The Nagles are along with the Ballyhoura Mountains the fourth most populated locality for breeding hen harriers in the country. In the above mentioned survey nests were found to be located in a variety of habitats most commonly in young second- rotation conifer plantations. The report includes the high rate of reoccupation of known nest areas among the factors which suggest a healthy breeding population which is limited by the breeding capacity of its range.

The proposed landfill and associated borrow area at Bottlehill is situated in the southwestern section of the boundary under consideration for designation as SPA. No formal notification has yet been published in relation to the proposed designations and identification and examination of the sites under consideration is currently underway before the formal designation process.

The ecological surveys confirmed the presence of a breeding pair of hen harriers and a nesting site of the hen harrier within the landfill facility boundary. The nesting site is in the southeastern corner of the landfill between the landfill footprint and the facility boundary.

In Section 2.7.1 of the EIS it is stated that the Hen harrier is one of the rarest bird species breeding in Ireland and Europe. The applicant has recognised in Section 46. of the EIS - Ecology -4.6.1 –Potential Impacts that “... the proposed development is likely to have a significant negative impact on breeding hen harriers as a result of disturbance during the construction and operation of the landfill and the loss of breeding and feeding territory”. Other impacts highlighted included the likely significant threat to the hen harriers and other predatory species due to the use of rodenticides, the increase in the presence of certain species typically associated with landfills. The applicant has in the EIS , Section 46.2 acknowledged.. “the importance of the site for breeding hen harrier” and has examined and proposed mitigation measures to minimise any potential impacts on the hen harrier.

In the EIS it is stated that the location of the development has been selected to avoid impacts on any designated areas and sites of high ecological value. While the proposed development has avoided areas, which are designated it is now clear from the evidence presented at the Oral Hearing that the proposed landfill site and extensive areas surrounding the site are being considered for designation as an SPA



due to the importance of the Nagles as a breeding and hunting ground for hen harriers. Further, during the ecological surveys it became clear that the hen harrier was nesting in close proximity to the proposed landfill footprint and actually within the facility boundary.

It is acknowledged that the applicant and their consultants have outlined mitigation measures to mitigate against the potential significant impact of the proposed development including:

- The identification and management of alternative nesting sites in the vicinity of the landfill
- Management of these sites in order to enhance their potential value for hen harrier
- Avoidance of application of herbicides , pesticides and fungicides in the potential nest site areas particularly during the breeding season
- Avoidance of application of fertilisers in the potential nest site areas in order to maintain the habitat conditions for hen harriers
- Possible elective removal of trees to maintain the pre- thicket plantation habitat
- Avoidance of construction activities during the breeding season (March through to August) or while the hen harriers are on site
- Confining the activity zone of the landfill to the active phase of there landfill (Note the orientation of the site is such that there will always be activity at the nearest point of the facility of the nesting site).
- Efforts will be made to minimise threats of disturbance (use of loud / heavy machinery) during the breeding season ( this could in effect mean that the facility would need to shut down during the breeding season)
- Phasing of tree felling so as to maintain cover for hen harriers and undertaking tree felling in specific areas outside of the breeding season
- Measures for the control of the numbers of gulls and corvids attracted to the site- it is predicted in the EIS that the presence of falcons for the control of birds will not impact on hen harriers although contrary views were expressed during the hearing.

However, it is my view that, based on the evidence presented at the oral hearing that the activities associated with a landfilling operation are not compatible with the appropriate habitat and ranging of the hen harrier. Given the scale of the operations and the habits of the hen harrier, the local mitigating measures suggested would not likely be a solution.

The applicant advised during the course of the hearing that Coillte had developed/ are in the process of developing a management plan for the hen harrier within Bottlehill Wood. It is recognized that the hen harrier occurs at Bottlehill within a commercial forestry operation which, while this activity has its own associated disturbances, the hen harrier has to date co-existed with the forestry.

In summary, it is my view that the likely impact of the proposed landfill facility and its associated construction and working will introduce an activity the impact of which on the hen harrier population is not comparable with that of a forestry operation. The mode of operation of a landfill facility will involve daily continuous movement of waste vehicles and leachate tankers to and from the facility along with the deposition and compaction of waste, subsequent daily placement of cover and the ultimate capping and restoration of the facility. These activities will bring a completely different range of pressures to bear in terms of significance and temporal duration compared to a commercial forestry. These activities, in addition to site development and construction activities, are also likely to give rise to significant impacts on the habitat and existing and future nesting site(s) of the hen harrier.

As pointed out previously the hen harrier is afforded protection under the Birds Directive (it is an Annex I species). In accordance with Article 4 of the Birds Directive EU member states are required to ensure that

“... the species mentioned in Annex I are the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution.”

While the statutory authority is currently considering the Nagles mountains including Bottlehill Wood for designation as a Special Protection Area, The Nagles have not to date (18.06.03 ) been formally proposed as an SPA nor has the formal notification and consultation procedures commenced. As the Nagles support a total of 7 breeding pairs of hen harriers and in particular as one of these breeding pairs nests in the pre-thicket area immediately adjacent to the proposed footprint it is likely that the inclusion of the Bottlehill Wood area within the boundary of any proposed SPA relating specifically to the hen harrier is likely to be given consideration . Notwithstanding this situation, in the event that the Bottlehill area were to be excluded from any likely future SPA boundary, in accordance with Article 4 of the Birds Directive, EU member states are required to

‘take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds ( i.e.. Annex I species) in so far as these would be significant having regard to the objectives of this Article’ (i.e Article 4).

Article 4 also requires that... outside these protection areas, that member states “... strive to avoid pollution or deterioration of habitats. Section 19 and Section 22 of the Wildlife act 1976 (as amended by the Wildlife Amendment act 2000) also provides for protection of the hen harrier.

In my view, in light of the conservation status of the hen harrier and the requirement for this species to be protected under the Birds Directive and also the Wildlife Act 1976(as amended by the Wildlife Amendment Act 2000), it is not possible to reconcile the development of a landfill in Bottlehill with the national and EU requirements to protect the hen harrier and its associated habitat. Unlike for the hydrology of the site, mitigation measures compatible with landfilling and maintenance of the hen harrier habitat are not realistically feasible, given the evidence presented at the hearing.

### **3. Visual/amenity/tourism**

While the area is scenic and attractive for many recreational purposes, evidence at the hearing was that such tourist use was not extensive at the moment and that, were the landfill to go ahead, the precautions of screening and siting as indicated in the proposed decision (PD) would be adequate to minimize intrusion. Although the completed landform of the landfill will be at least 10m above the forestry canopy, visual impact would be largely confined to long views from the east and southeast. Considerations of effects on local landuse and agriculture indicated that a properly run landfill operation would not constitute a significant risk at this location.

### **4. Noise, dust and roads**

The site is sufficiently remote from habitation that the effects of noise and dust under prescribed operating conditions would not constitute a nuisance. However, the chosen local road for access from the N20 to the site is very narrow and has significant gradients. Noise and dust to residents along this road will be significant which has been acknowledged by the applicant. Upgrading of the road has been promised by the applicant to a carriageway with passing places but the proximity of four of the eleven houses along the initial part of the route, from Lissavoura Cross means noise will remain a significant effect. Traffic levels will rise by some 50% and most of the increase will be heavy HCVs. The PD condition to carry out road modifications before landfilling were to start needs more specific conditioning in the light of the evidence presented at the hearing. The NRA design width of 6m with a verge of 2m on either side would need to be implemented immediately for safety in vehicles passing and to accommodate pedestrians. A partial re-routing of the road close to the junction with the N20 should be considered to enable the widening and remove one of the worst right angle bends on the route. The applicant also agreed and would need to be conditioned to facilitate cattle movements on the road by constructing an animal path alongside the road for a distance of 1000m, land acquisition permitting.

### **5. Waste Acceptance**

The most significant issue with respect to the proposed waste licence is the nature of the waste and its volumes. The application is for residual waste, and, as indicated at the hearing, for both baled and loose waste. The meaning of *residual* was sought during the hearing but it appears that the intention is that (as in the Landfill Directive) any form of *treatment* will result in 'residual waste'. However, treatment may be as little as partial separation or a combination of more complex separation and processing operations. While the stated intention of the applicant is to route all the county's domestic and commercial waste to Bottlehill via 'treatment stations or MRFs' at strategic locations, none of these are yet in place. The loose waste component (approximately 40% of the total waste input) is derived from waste that 'cannot be dealt with practically by the separation facility or is inert'. Moreover, having effectively two operating faces (baled and loose waste) in the landfill throughout the life of the site is neither good operating practice nor good risk management, especially in a hydrologically sensitive environment. The projected waste volumes also indicate that there is likely to be as much organic waste dumped per year at the end of the life of the landfill as at the beginning, notwithstanding the

legislative requirement to separate out organic waste and to reduce the volumes landfilled in the medium term – the proportions of organic waste may be improving but the absolute tonnage amounts are predicted to remain relatively stable. Thus, there will be ongoing, long term leachate and gas management problems. The long term sustainability of such a waste management solution at this site remains in question.

In short, if this site is to operate under a licence consistent with current waste management practice, it should *only* be baled waste and also truly ‘treated’ (ie fully/practically separated waste) having passed through an appropriate facility. This constraint will also control the number and types of vehicle going to the landfill and will facilitate necessary controls on the route to be taken by the vehicles.

In summary, the site is not good hydrologically for a landfill, although engineering and operating controls could make it operable, if not cost-effective. Ecologically however, the landfill will represent an unacceptable intrusion on the surrounding conditions, particularly in relation to the hen harrier. The nature of the waste to be accepted at the landfill, were it to operate should be consistent with current waste management requirements, as indicated in the county waste management plan – ie truly residual waste, preferably in baled form and with a significantly reducing organic content.