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Environment Section,  
Wicklow County Council,  
County Buildings,  
Wicklow.  
04 March 2005

Office of Licensing and Guidance,  
E.P.A.,  
PO Box 3000,  
Johnstown Castle Estate,  
Co. Wexford.

**Re: Brownfield Restoration Ltd., licence application reference 204-1**

Dear Sirs,

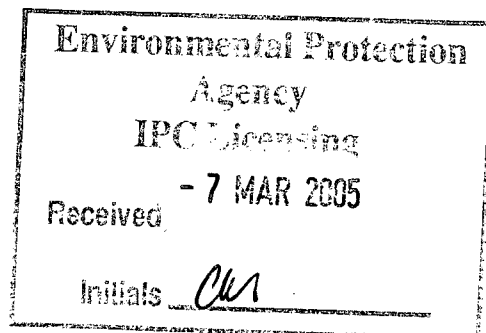
Brownfield Restoration Ireland Limited made a submission to the EPA in January 2005. Since then, Wicklow County Council has carried out an investigation of the site following complaints from local residents regarding the removal of sands and gravels.

Wicklow County Council now wished to make a further submission to the EPA in respect of this application for a waste licence. The submission illustrates the recent activity on the site and identifies relevant technical inaccuracies and inadequacies in the EIS and relates these to the suitability of the site for use as a commercial landfill.

Attached is a document containing further analysis of the Brownfield Restoration (Ireland) Ltd proposal.

Yours sincerely,

Michael Nicholson,  
Director of Service  
Environmental and Water Services.



All correspondence should be addressed to the Senior Executive Officer, Environmental Services

Seoltar gach comhfhreagras chuig Príomhfheidmeannach na Seirbhísí Comhshaoil



**SUBMISSION**

BY

**WICKLOW COUNTY COUNCIL**

**SUBMITTED TO THE ENVIRONMENTAL PROTECTION AGENCY**

**04 MARCH 2005**

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**WASTE LICENCE APPLICATION Ref. No 204-1**  
**AND**  
**SUPPORTING ENVIRONMENTAL IMPACT STATEMENT**  
**BROWNFIELD RESTORATION (IRELAND) LIMITED**  
**RELATING TO**  
**JOHN O'REILLY SAND AND GRAVEL QUARRY**  
**WHITESTOWN LOWER**  
**DONARD Co WICKLOW**

**WICKLOW COUNTY COUNCIL**  
**COUNTY BUILDINGS**  
**WICKLOW TOWN**  
**CO WICKLOW**

## **INTRODUCTION**

This document has been prepared in response to the submission by Brownfield Restoration (Ireland) Limited of additional information to the EPA in January 2005 and from recent site inspections of the illegal waste landfill at the site formerly known as John O'Reilly Sand and Gravel Quarry, Whitestown Lower, Donard, Co Wicklow. These inspections were made in response to complaints from local residents to Wicklow County Council concerning the removal of significant amounts of sand and gravel from the quarry in recent months and the concern that this intensive activity could alter the environmental risk parameters associated with the site.

The technical assessment has now been incorporated into this submission in the context of a critique of the EIS documents (Volumes I, II and III) prepared by Brownfield Restoration (Ireland) Limited for a Proposed Integrated Waste Management Facility at the site.

The submission illustrates the recent activity on the site and identifies relevant technical inaccuracies and inadequacies in the EIS and have related these to the suitability of the site for use as a commercial landfill.

In summary the findings are:

- The applicant has not adequately addressed the baseline conditions and risks associated with the existing waste deposits;
- The applicant cannot therefore address the potential risks associated with the proposed integrated waste management facility;
- The inaccurate information provided in the EIS could lead to an incorrect decision being made with regards to the suitability of the site for use as a landfill and award of a waste license.

## **RECENT ACTIVITY ON THE SITE**

Officials from Wicklow County Council conducted a site inspection on 20 January 2005.

The following was noted:

- Extensive extraction of sand and gravel has been conducted at the site.

- The extraction has occurred in areas of the quarry where no waste was found during the investigation.
- The areas where the waste bodies are located have not been interfered with.

The annotated aerial photograph below of the site shows the newly worked areas at the site.



Photo 1: The purple annotation outlines the area where recent extraction has occurred, significantly changing the topography of the quarry. This photograph dates from the discovery of the landfill in 2001.



Photo 2: View of the site from the N81 entrance where once there was a roadway leading to the house (evident in Photo 1) now there is a 10-metre drop.



Photo 3: New excavations close to the N81 boundary.

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## TECHNICAL ASSESSMENT

Relevant technical inaccuracies and inadequacies in the EIS are discussed under the following 12 headings:

- ✓ The suitability of the site for a landfill has not been proven in terms of the Response Matrix for Landfills.
- ✓ A Flood Risk Assessment has not been undertaken.
- ✓ Proximity could potentially impact the cSAC.
- ✓ Unsuitable Ecological Mitigation Measures.
- ✓ Baseline hydrogeological and hydrological conditions at the site (source, pathways and receptors) have not been adequately assessed.
- ✓ Lack of data means a safe base level for the landfill cannot be determined.
- ✓ It is unclear how the proposed development may alter groundwater levels and flow.
- ✓ The nature and volumes of waste have not been adequately characterised.
- ✓ Inadequate Leachate Generation and Management Assessment.
- ✓ Inadequate Landfill Gas Risk Assessment.
- ✓ Scale of the proposed landfill and impact on the landscape.
- ✓ Lack of details relating to the proposed composting facility.

Arising from these discussions this submission concludes and recommends as follows:

As baseline conditions at the site have not been fully assessed at the site for >18 months, and ground conditions have recently been significantly altered due to removal of materials from site, it is recommended that a full groundwater, surface water and landfill gas/vapour monitoring programme is reinstated at the site.

The adoption of this programme will allow baseline conditions to be re-evaluated, prior to assessing the risks posed by a proposed commercial landfill on an active floodplain and cSAC.

### **1. The suitability of the site for a landfill has not been proven in terms of the Response Matrix for Landfills.**

The classification of the aquifer and vulnerability status has significant implications for the Response Matrix for Landfills (Groundwater Protection Schemes, DELG, EPA and GSI, 1999) assigned to the site. The additional information that has been added to the EIS indicates that

the gravel overburden beneath the site is not classified as an aquifer. However, the bedrock aquifer under the landfill footprint, was provisionally classified by the GSI in December 2004, as L1 (moderately productive only in local zones) with a high (H) vulnerability. Based on this information, ERM Ltd (Consultants to BRI Ltd) has changed the Response Matrix for the site from R2<sup>2</sup> to R2<sup>1</sup>. However, because of the reduction in thickness of sand and gravel deposits to less than 3m in some areas due to quarrying, Wicklow County Council believe that a vulnerability of extreme (E) should still be assigned to the site. This would result in a rating and sensitivity of the site of R2<sup>1</sup> - Acceptable subject to guidance in EPA Landfill Design or conditions of the waste licence:

- *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.*
- *Groundwater control measures such as cut-off walls or interceptor drains may be necessary to control high water table or the head of leachate may be required to be maintained at a lower level than the water table depending on site conditions.*

No work has been undertaken in the EIS to test for the presence of high permeability zones beneath the site and no assessment has been made of the projected future development of the aquifer. Seasonal groundwater monitoring has not been undertaken at the site therefore the requirement for groundwater control measures cannot be determined. Without this data, the EIS has failed to demonstrate that the site is suitable for landfill construction.

## **2. A Flood Risk Assessment has not been undertaken.**

Figure 6 in the EIS illustrates the proposed layout for the integrated waste management facility. The limits of the proposed engineered residual waste disposal area, along with a number of manmade structures such as surface water management ponds, are all located on the floodplain. The presence of floodplain alluvial deposits beneath the waste in this area of the site (Zone B) has been established by previous work by Wicklow County Council. Flooding of this area could result in erosion of the existing waste deposits or jeopardise the integrity and functioning of any proposed engineering structure which has not been adequately designed. The potential flood risks posed to the site have not been addressed by the applicant in the EIS.

### **3. Proximity could potentially impact the cSAC.**

The Carrigower River and its adjacent floodplain are now included in the River Slaney cSAC and are of international importance, particularly due to the presence of salmonoid spawning habitat and otter activity. Previous drilling undertaken by Wicklow county Council indicates that the waste in Zone B has been deposited directly onto the floodplain. The proposed development plan illustrates that Phase 2 will remain in this area of the floodplain and as such, given that the designation includes the Carrigower Floodplain, this area of the development will operate within the cSAC. Any flooding of this area of the development could lead to erosion of the waste or compromise the integrity of the engineered structure and could detrimentally and directly impact the water quality in the Carrigower River. The cSAC boundary lies immediately adjacent to Phase 3 and Phase 4 of the development, and any uncontrolled run-off from these areas could also have a detrimental effect on water quality.

It should be noted that Policy HL4 within Wicklow County Development Plan (Review of County Development Plan 1999 and preparation of County Development Plan 2004 – 2010) indicates that *'the Council will ensure that any development proposal in the vicinity of, or affecting in any way a designated area, provides sufficient information to show how its proposals will impact upon the designated area, and will include proposals for appropriate amelioration. The Council will discourage proposals for development that would interfere with natural floodplains and the Council recognises that a high quality natural environment is needed to protect and enhance groundwater resources, and to ensure a high quality water supply for the future. In all such cases, the Council shall consult with the National Parks and Wildlife Section of the Department of the Environment, Heritage and Local Government (DOEHLG).'*

The EIS does not provide sufficient information to show that the landfill development proposals will not impact upon the designated area, particularly where development is proposed on the floodplain itself.

### **4. Unsuitable Ecological Mitigation Measures.**

One of the mitigation measures proposed in the EIS is to plant a natural willow wood on the floodplain as *'movement of leachate, if any, would occur on the surface layer of the water table and would therefore be available to tree roots'*. The EIS has not adequately characterised either the shallow hydrogeology or the nature of the leachate at the site in order to make such a claim. Neither has the EIS presented any scientific evidence to illustrate how and at what rate the willow trees would take up contaminants, and as such this proposal cannot be considered as a valid mitigation measure.



The EIS indicates that approximately 50 sand-martin burrows and a badger sett were identified within the extent of the existing sand and gravel quarry. Proposed mitigation measures include undertaking all backfilling (and presumably excavation) activities outside the sand-martin breeding season (no indication is given as to when the season is) and that if occupied prior to construction, the badgers would be suitably relocated by a specialist. It has now been established that substantial quarrying activities have continued on site since completion of the EIS. With such changes to baseline conditions, it is possible that the sand-martin burrows and badger sett may have already been disturbed by these activities.

**5. Baseline hydrogeological and hydrological conditions at the site (source, pathways and receptors) have not been adequately assessed.**

Groundwater contaminant distribution across the site has not been adequately assessed for a number of reasons:

- Only three down gradient wells were analysed for the full chemical indicator suite.
- Only one sampling round was undertaken.
- No duplicate/field blank samples were taken.
- The screened section of the five newly installed monitoring wells has been cross-completed across the shallow sand and gravel deposits and the top of the bedrock. Full sampling of the wells (some of which are immediately adjacent to the waste bodies) has not been performed since their installation.
- The five newly installed monitoring wells were analysed for ammoniacal nitrogen only.

In terms of best practice in hydrogeological assessments for such a proposed development, the EIS has not provided enough information to adequately assess baseline aquifer parameters at the site. The calculations provided in the EIS assume the presence of one groundwater bearing unit only. Wicklow County Council have identified three groundwater bearing units on site (sand and gravel deposits; alluvial deposits and fractured bedrock) and each unit will have different aquifer parameters and resulting calculations. No results for hydraulic conductivity testing have been presented in the EIS, and no longer-duration pumping tests appear to have been undertaken to determine aquifer parameters for the different groundwater bearing units, and hence calculate more realistic values for hydraulic conductivity, transmissivity, groundwater velocity, travel time and groundwater flux values. As the baseline hydrogeological conditions have not been adequately described, the potential impacts of any future leakage cannot therefore be properly assessed.

The surface water ditches which drain the floodplain are likely to act as one of the main active pathways to transport contaminants from the source (site) to the nearby sensitive receptor (river). However, the EIS has failed to assess the baseline quality and seasonal flow conditions in these ditches. One set of samples only have been taken from the River and no flow monitoring has been undertaken. These data are inadequate to make comments regarding the baseline conditions of the River.

In addition, ignoring the ditches as pathways for contaminant transfer to the river means that the risk assessment overestimates the travel time for contaminated groundwater to reach the river.

**6. Lack of data means a safe base level for the landfill cannot be determined.**

The EIS indicates that the base level will be dictated by the water table level, and the need to create a positive grade for leachate to gravity-drain towards the sump. However, no seasonal monitoring of groundwater levels has been undertaken, therefore seasonal fluctuations in groundwater level have not been determined and a safe base level cannot be determined. Furthermore, as indicated in Point 2 above, no flood risk assessment has been undertaken for the site, therefore safe base levels cannot be accurately set for Phase 2 of the proposed development (Zone B where the waste has been deposited directly onto the floodplain).

**7. It is unclear how the proposed development may alter groundwater levels and flow.**

It is indicated in Section 2.7.3 of the EIS that the landfill formation contours will be selected to leave a minimum of 1 m of soil above the groundwater table. However Section 3.7.3 of the EIS contradicts this by indicating that '*changes are likely in the static water table elevation in the vicinity of the pit due to the truncation of permeable sand lenses by the landfill*' and further in Section 3.7.4 that the following mitigation measure will be required '*a high permeability drainage layer will be installed outside and beneath the landfill liner to allow groundwater from truncated sand and gravel layers to flow beneath the landfill without significant obstruction*'. Therefore it is not clear whether the landfill will intersect the groundwater surface at some locations on site and if so, whether dewatering will be required during construction/operation. No indication is given of the impact that dewatering works/on-site pumping would have on the groundwater flow regime on-site and to off-site receptors.

### **8. The nature and volumes of waste have not been adequately characterised.**

The EIS indicates that a total of 67 trial pits were excavated across waste Zones A, B, C and the raised grassland area. The characterisation of the nature of the waste has however been undertaken through chemical analysis of only 11 soil samples. Five samples were taken from the waste body in Zone A, which has an estimated surface area of 10,300 m<sup>2</sup> (67,000 m<sup>3</sup>/90,000 tonnes). One sample was taken from waste body in Zone B, which has an estimated surface area of 8,550 m<sup>2</sup> (38,000 m<sup>3</sup>/55,000 tonnes) and five samples were taken from the waste body in Zone C, which has an estimated surface area of 11,300 m<sup>2</sup> (74,000 m<sup>3</sup>/95,000 tonnes). One sample only was taken from beneath each of the waste zones to assess the level of current contamination. Such sampling frequencies are inadequate to even assess the suitability of acceptance of this material into an inert C&D type landfill in Ireland (acceptance requires an absolute minimum of 1 sample per 7500 tonnes). Also, samples were predominantly taken from around the edge of the waste and not in the centre where waste thicknesses and leachate build up are likely to be greatest.

The EIS states that no evidence of hazardous or household waste material was detected during the site investigation. Previous WCC investigations on site have however identified the presence of waste which originated in identified hospitals in some areas of the site, therefore hazardous wastes are known to exist on site. The possible presence of such materials and the potential risks associated with them has not been addressed in the EIS.

### **9. Inadequate Leachate Generation and Management Assessment.**

The EIS indicates that the run-off from the Resource Recovery Building will not be dealt with as leachate since contact times will be short. However any run-off from this area will be contaminated and there is no mention of a purpose built integral leachate/run-off management system within the RRB. The EIS simply indicates that run-off will be '*handled appropriately*' and '*directed to a holding pond in the Proposed Phase 5*'. No indication of what happens to it once it reaches the holding pond is given or whether the capacity of the holding pond is adequate, particularly following extreme rainfall events.

The values of parameters and the equation used to calculate the leachate generation values provided in Section 2.8.2.4 are not clear, hence annual leachate volumes cannot be validated. Recommendations for water balance/leachate generation calculations provided in the EPA nationally adopted guidance manual for Landfill Site Design (EPA, 2000) have not been

referenced and do not appear to have been included in the calculations. In particular, infiltration rates for the various stages of landfill completion and relationships between absorbtive capacity and waste density have not been clearly defined.

With regards to the proposed future treatment of leachate at Wicklow County Council's wastewater treatment facility in Baltinglass, the EIS provides no indication of how the proposed leachate volumes in m<sup>3</sup> relate to the existing and future capacity of the wastewater treatment plant, which are generally expressed in Population Equivalent (P.E). The nature of the leachate (*i.e.* BOD5 characteristics) will change over the lifetime of the landfill. The EIS does not provide any indication of how the changing characteristics of the leachate will impact on the annual capacity of the treatment plant. Neither has the EIS provided any evidence to illustrate that the plant at Baltinglass will be capable of adequately treating the leachate within the facility.

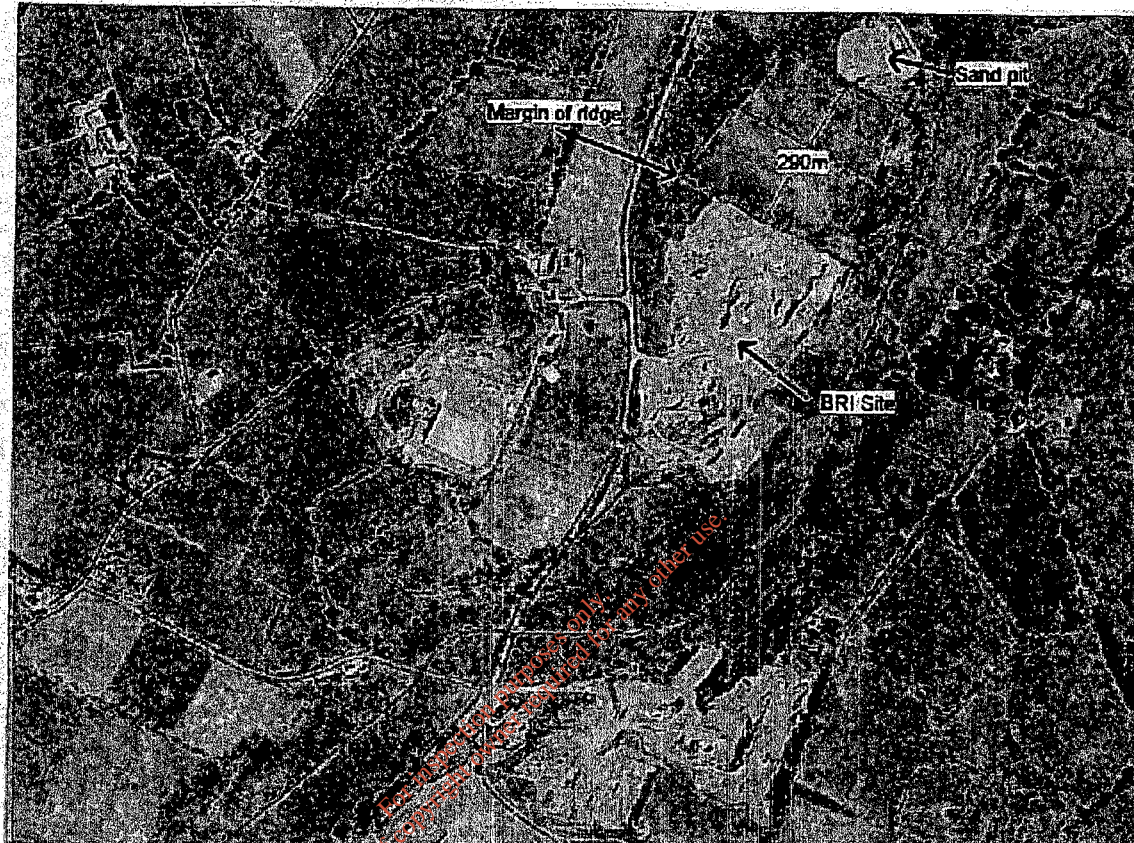
#### **10. Inadequate Landfill Gas Risk Assessment.**

A landfill gas risk assessment has been undertaken in section 2.15.3 of the EIS with regards to potential emissions. However, this section deals only with emissions from a controlled operational landfill and does not address the current gas generation conditions and the potential uncontrolled emissions that are likely to occur during the remediation phase of work. In particular this assessment does not address the potential for trace gases to pose a risk and no baseline monitoring of trace gases has been undertaken to date.

#### **11. Scale of the proposed landfill and impact on the landscape.**

Wicklow County Council is concerned with the scale of the proposed landfill and the selection of the intended restoration elevation. The site of the proposed integrated landfill is part of a sand/gravel ridge that extends for 0.9km NNE-SSW. The BRI site occupies the southern 450m part of this ridge. There is a second smaller sand pit located at the northern end of the ridge with a 290m section of undeveloped sand/gravel between the two pits. The BRI proposal for the site plans to create a large landfill facility with an estimated volume for residual waste to be deposited at the site of 920,000m<sup>3</sup> (EIS, Vol.1, Section 2, page 12 of 47). This essentially involves the replacement of the sand/gravel that has been extracted from the pit with a body of waste that will rise to approximately the same elevation of the undeveloped sand/gravel ridge. At some stage in the future, the undeveloped sand/gravel deposit may be exploited and in that instance, the BRI proposal would result in a dome of waste rising above the surrounding topography. Wicklow County Council believes that the restoration of the BRI

Limited sand/gravel pit should result in a grassland and hedgerow surface that slopes eastwards from the western margin of the site to the current elevation on the eastern margin of the sandpit.



## 12. Lack of details relating to the proposed composting facility

One of the main components of the proposed integrated waste management facility is the composting of up to 10,000 tonnes per annum of biodegradable organic wastes. The composting process will comprise 2 weeks composting in a continuous flow in-vessel system followed by 3 months maturing or curing of the composting material outdoors in windrows. Further details of the proposed composting operation are required. These include:

- The EIS proposes to treat source separated organic wastes (Section 1.4, page 3 of 11). These wastes will include food wastes and green wastes (Appendix 3, Section 2.2.1). However, the EIS further states that the waste streams that could be managed at the BRI Facility includes "source separated dry recyclables and/or organic wastes that would arise in west Wicklow if suitable collection and programmes are introduced as envisaged County Wicklow Waste Management Plan 2000-2004" (Section 2.2, page 2 of 47). Source separated organic waste are not currently

collected in west Wicklow but this position may change in the future. Is it planned to treat household or commercial food waste or both and will the composting facility be built if source separated household waste is not available?

- Details are required with regard to the initial handling of the organic waste in the Resource Recovery Building. These include the control of odours and contaminated water from the waste, the operational procedures of the picking line, and the temporary storage of the waste during the blending of the waste with amendment material.
- There are insufficient details provided relating to the curing or maturing phase of the composting process. Details are required with regard to the size of the windrows, the turning frequency, leachate collection system, the control of odours, dust and bioaerosol emissions and the screening of the final product.

**ENDS**

04 March 2005

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Mr Michael Nicholson  
Director of Service  
Environmental and Water Services  
Wicklow County Council  
Aras An Chontae  
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8th March 2005

204-1

Waste Licence Application re: Brownfield Restoration Ireland Ltd at Whitestown Lower, Co Wicklow.

Dear Mr Nicholson

I am to refer to your letter of 04/03/2005, received on 22/02/2005, in relation to an application for a waste licence reference number 204-1, by Brownfield Restoration Ireland Ltd, in respect of a facility at Brownfield Restoration Ireland Ltd, Whitestown Lower, Co Wicklow.

I am to advise that your letter will be treated as a submission and will be taken into account when determining the application, in accordance with the Waste Management Acts, 1996 to 2003, and Article 15 of the relevant Waste Management (Licensing) Regulations, which provides as follows:

Extract from the Waste Management (Licensing) Regulations.

Submissions to the Agency regarding applications.

15. For the purpose of section 40(2)(b) of the Act, a person may make a written submission to the Agency in relation to -

- (i) an application, and
- (ii) such plans, documents and other information and particulars, including an environmental impact statement, as are submitted by the applicant in accordance with articles 12, 13, 14 and 15, and the Agency shall not give notice of a proposed decision under section 42(2) of the Act before the expiry of a period of one month following the date of a relevant -


- (a) acknowledgement in accordance with article 14(2)(a), or
- (b) notice in accordance with article 16(2)(a), or
- (c) acknowledgement in accordance with article 16(4), whichever such date is the later.

The application and associated correspondence, including the acknowledgements and notifications referred to in Article 15 above, are available on the public file relating to the application as they arise and that file may be inspected by any person during office hours at the Agency's headquarters. A copy of the file is also available for inspection at the Agency's Headquarters in Wexford and at the offices of Wicklow County Council. Copy extracts from the file will be supplied by the Agency to any person, on request, subject to payment of the reasonable cost of making the copy.

You are advised to refer to the public file for information on the progress of the application. The Agency will write to you to inform you of its proposed decision on the application in due course.

Please direct any further correspondence in relation to this matter to Administration, Office of Licensing & Guidance, Environmental Protection Agency, Headquarters, P.O. Box 3000, Johnstown Castle Estate, County Wexford.

Yours sincerely,

  
Tracey Berney  
Programme Officer  
Office of Licensing & Guidance

