

Sub. 85

Catherine O'Keeffe

From: John Shortt [john.shortt@cycle.ie]
Sent: 17 March 2007 15:00
To: Ian Marnane
Subject: Fw: Objection to EPA Mar 12
Attachments: Objection to EPA Mar 12.doc; Paul Ashley Mar 07,2007.pdf

PLEASE CONFIRM RECEIPT...

----- Original Message -----

From: John Shortt
To: i.marnane@epa.ie
Sent: Saturday, March 17, 2007 12:13 AM
Subject: Fw: Objection to EPA Mar 12

----- Original Message -----

From: John Shortt
To: i.marnane@epa.ie
Sent: Thursday, March 15, 2007 3:36 PM
Subject: Objection to EPA Mar 12

Ian
Submission for and on behalf of Nevitt Lusk Action Group

Regards
John

on behalf of the Nevitt Lusk Action Group

Nevitt
Lusk
Co. Dublin.

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Nevitt Lusk Action Group

Submission in objection to the application of Fingal County Council for Planning permission and a waste license in Nevitt Lusk.

Dear Sirs

On behalf of Nevitt Lusk Action Group I hereby append a letter dated March 7, 2007 from our Consultants Mott MacDonald as a submission in support of our objection to the above subject proposed Landfill.

The letter is from Dr Paul Ashley and in summary demonstrates the following key points:

- The complexity of the hydro geological profile of the site
- The inadequacy of RPS investigations and their inability to demonstrate how they can achieve at least 10m of low permeability overburden after landfill excavation and construction.
- The inadequacy of the EIS which has resulted in the EIS document being an unsound representation of the facts and in addition undermining the basis upon which the planning and waste license process can make objective decisions.
- The arrogance of RPS and Fingal County Council, expressed by their refusal to carry out the requested mod flow analysis of the potential major water resource contained in the aquifer underlying the site.

As a local community group which has been subjected to the tyranny of Fingal County Council over the past number of years and who have made every effort to evaluate and understand the technical issues of such a large development we wish to put on record that we have absolutely no confidence in RPS or Fingal County Council to successfully implement or manage a project of this scale.

The attitude of RPS in their responses and inconsistency in their evidence has totally undermined the EIS principles and purpose. It is clearly not acceptable to the public and community who are being threatened with eviction from their homes and farms to have decisions based upon RPS misrepresentations and incomplete analysis. It is clear that RPS and Fingal Co. Co. are refusing and have no intention of providing the necessary data and analysis upon which sound judgements can be made. We call on the EPA to reject the waste license application and restore credibility in the EIS process.

We now have 3 independent eminent Hydro Geologists who have made submissions in objection to the proposed landfill and as there is clear consistency in their analysis and hypotheses. All 3 consultants cannot be wrong and we hereby call on the EPA to reject the Fingal County Council application.

For and on behalf of Nevitt Lusk Action Group

John Shortt

March 15, 2007

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Our ref: JHP/RPA/219714BA01/1/AC
Your ref:

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7 March 2007

Dear John

Ref.: Proposed Fingal Landfill

I have reviewed the documents sent to me by Mr Boyle with a letter dated 20th February 2007, together with the various submissions from the applicants and third parties. I have given my comments below, and I understand you may submit them to the EPA.

- (a) You asked me to comment in particular on the groundwater contours and flow patterns beneath the landfill footprint as shown, for example, in the RPS drawing M10235 for 18th September 2006, in its "Replies to Request for Further Information", January 2007.

The obvious feature in need of explanation is the sudden change in hydraulic gradient on the western edge of the footprint, where bedrock groundwater levels drop from 50 mOD to 32 mOD over a short distance, and then flatten out. RPS states (section V of its "Response") that this is not caused by discharge of groundwater to surface water, on the grounds that the stream draining this area was dry in July 2006. RPS concludes that the cause is a change in aquifer transmissivity to the south east. There would need to be an increase in aquifer transmissivity of about 20 times to cause this change in gradient. While such an explanation is possible, RPS has not made a quantitative assessment of which explanation is more likely i.e.

- RPS has not estimated how much groundwater would have to be discharged to the stream to cause the sharp change in gradient, and whether this is a likely amount.
- RPS has not calculated the change in permeability in the bedrock aquifer which would cause the sharp change in gradient, nor whether such a change in permeability is consistent with the available information on the bedrock geology.
- Such issues are best evaluated by means of a groundwater computer simulation model, as the EPA has requested, which we have always urged RPS to employ, and which RPS declines to do.

- (b) You also asked me to consider the latest water level data in relation to the vulnerability of the underlying gravel beds to pollution. The water level data for September and December 2006 are broadly consistent with previous water level data, and clearly show the abrupt change in the



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groundwater hydraulic gradient (discussed above); the areas where the groundwater levels in the drift are similar to or slightly higher than those in the underlying gravel (the smaller, north-western part of the footprint); and the areas where there is a steep downward gradient from the drift to the underlying gravels (the larger part of the footprint, in the centre and south).

In my review of the EIS I discussed the potential for downward migration of leachate contaminants from the landfill to the underlying gravel, and I made an estimate of the possible rate of downward flow and dilution in the aquifer. RPS has criticised my calculations (RPS "Response", section VII), but has only provided partial calculations of its own: of leakage across the liner, and of horizontal groundwater flow – no calculations of vertical flow in the drift have been made.

My purpose in showing these calculations was to demonstrate that such a quantitative assessment was possible and to encourage RPS to do the same. No such calculations were made of this vitally important matter in the EIS and have only been made as a partial response to the EPA's request for such information.

RPS's statements regarding vertical gradients in its "Response", section VII are misleading by implying that the downward hydraulic gradients between the drift and the bedrock in the south are only outside the landfill footprint. Firstly, such a comment would certainly apply to its own reference to upward hydraulic gradients around SHR2, which is well outside the footprint. Secondly, a comparison of water levels in the drift boreholes BSA4, ES5, ES7, ES8, GR1, GR2, GR5 and the bedrock boreholes AGB2, ER8, ER9, ER10, ER12 and SHR3 shows a steep downward gradient within the central and southern landfill footprint (though with some inconsistencies).

I maintain the opinion expressed in my review of the EIS that there is potential for loss of leachate contaminants from the landfill, and for downward movement to the gravel and bedrock aquifer. I am pleased that RPS has now made a calculation of the possible loss of leachate from the landfill, although it only covers a part of the pathway from landfill to groundwater.

- **RPS should now prepare a comprehensive water balance for the landfill, taking account of rainfall, infiltration, leachate production rates, pumping of leachate and loss through the liner, and covering landfill construction, operation and aftercare. This would demonstrate whether its proposed leachate management strategy is feasible.**
- **RPS's assessment of drift lithology and hydrogeology is still sketchy. It should make a comprehensive calculation of the rate of downward movement through the drift across the landfill, using a site specific model, taking account of measurements of drift permeability and vertical hydraulic gradients at different locations. This would demonstrate how the leachate lost from the landfill would disperse in the groundwater system, and allow estimates to be made of the likely concentrations of leachate contaminants in the landfill.**

Most of the comments made in my letter to you on 15th November 2006 also stand. I have revised some of them below to take account of the later submissions to the EPA by RPS and Kevin Cullen:

- (c) It now appears to be accepted by all parties that there is an extensive gravel stratum directly overlying the bedrock across much of the footprint of the proposed landfill. Although RPS suggests the "gravel" in some boreholes may be weathered bedrock, the overall picture remains of a significantly transmissive layer underlying much of the landfill footprint.
- **I remain of the same opinion as Kevin Cullen, that the area beneath and near the proposed landfill has potential for water resource development. RPS state that Fingal County**

Council would not wish to develop this aquifer. This is, of course, irrelevant: private individuals and organisations may wish to develop the aquifer for water supply, irrigation or industrial use.

(d) I note that the EPA has requested RPS to prepare a revised plan view of the bedrock geology, which it has declined to do.

- **Whether the "gravel" is classified as weathered bedrock or true gravel I agree with the EPA's view: the characteristics of both shallow and deep geological strata at the site must be critical to deciding the suitability of the location of a landfill, and I am surprised that RPS and Fingal County Council are unwilling to provide such straightforward information.**

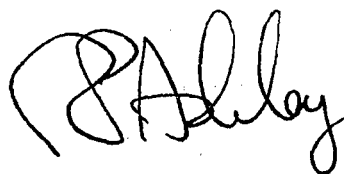
(e) The geological cross sections provided by RPS are too small and at an inappropriate scale to show the thickness of low-permeability overburden that would remain above the gravel and bedrock after construction of the landfill.

- **RPS should provide cross sections and contour plans at suitable scales that demonstrate its assertion that at least 10 m of low permeability overburden would remain after landfill excavation and construction.**

In summary:

- Overall, I note that the EPA is requesting RPS to provide the same level of detailed analysis of the regional and local hydrogeology and of its proposals that we have requested, and that should automatically be expected in an EIS and waste licence application for a landfill on this scale. It is disappointing that such information was not provided much earlier.
- I agree with Kevin Cullen, that the gravel aquifer beneath the landfill has potential for development as a water resource, which would be precluded by constructing the landfill. It should not be relevant whether the supplies are developed by a public body for public supplies, or by a private individual or organisation for personal, agricultural or industrial use.

Yours sincerely



Dr Paul Ashley