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Dr. Ian Marnane,
EPA,
Headquarters, PO Box 3000,
Johnstown Castle Estate,
Co. Wexford.

Your ref: W0231-01

Re: Waste Licence Application Ref: W0231-01, Fingal Landfill.

December 19th 2006.

Dear, Dr. Marnane,

I have examined the borehole logs that you sent me from the landfill site, and surrounding area, and can confirm that the descriptions for most of them are consistent with the geology depicted on Sheet 13 in our 1:100,000 Bedrock geology map series. There are a few of the logs that suggest to me that a boundary might be shifted by a small amount. In general, however, the logs are not detailed enough in description to distinguish between the Lucan, Naul and Loughshinny formations which are all quite similar and closely related in terms of deposition. I have made some specific comments below.

HR04 This borehole plots within the area on the map shown as Walshestown Fm. The thick sequence of dark grey fine to medium grained limestone interbedded with siltstone suggests to me that it might fit better within the underlying Loughshinny Fm. This would necessitate moving the adjacent (approximately) NE-SW fault about 100m southeastwards. Having said that, it should be noted that the geology depicted on Sheet 13 is registered to the 1:100,000 topographic base and has not been fitted to the 1:50,000 OSi topographic base. We have seen elsewhere that there can be discrepancies of up to 120m between positions of boundaries on the two bases. This comment applies to all the other borehole positions commented on here. I am not personally familiar with this area but note that the Walshestown Fm is reported to contain calcareous mudstone and some interbedded limestone.

ER10, ER9, ER7, SHR03a, SHR02, I am a little surprised to see such long intervals of mudstone plotting within the Lucan Formation, which is more commonly associated with dark grey earthy limestones and interbedded calcareous shales. All these mudstones are very weathered and not intact and in all probability the limestone/calcareous element have weathered away. The logs do not indicate whether the mudstones are calcareous or not as is common in the Lucan Formation (maybe this was not recorded). Two of them are near a prominent N-S fault (ER07 and SHR02), which might account for the weathering. Also thick intervals of mudstone are not unknown in the Lucan Formation from the Navan area (up to 25m thick). However, they might fit better within the Loughshinny Formation. Shales are better developed within the higher parts of the Loughshinny Formation at Loughshinny. At times the ratio of shale to limestone may be exaggerated by decalcification of the latter (Nolan S. 1986 PhD thesis); Matley and Vaughan (1906) also noted that decalcification had occurred at Loughshinny within the Loughshinny Formation. If these boreholes are representative of the Loughshinny

Formation, I cannot see any particular reason why the trace of the Naul Formation should not pass south of Nevitt in the area around Johnstown. There are no outcrops to constrain its presence one way or the other. Such an alternative interpretation would decrease the amount of throw on the N-S fault and perhaps concur more closely with the evidence from the site investigation.

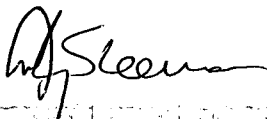
ER01, SHR01 both boreholes plot within the area mapped as the Loughshinny Fm and the same comments (for ER10,.... SHR02) regarding weathering and the calcareous nature of the mudstones (or not) apply here to the substantial thicknesses of mudstone. In other parts of Sheet 13 there is a Donore Fm mapped lying between the Loughshinny Fm and the Balrickard Fm, which consists mainly of interbedded shale and subordinate limestone. It has not been recognized in this area separately, but these boreholes perhaps suggest its presence. It makes little practical difference to the overall picture.

HR06 This borehole plots within the Balrickard Fm but consists entirely of grey to fine grained limestone, which sounds more like Loughshinny Fm. This only requires shifting the boundary between the two formations marginally (about 35m to the NW) adjacent to the borehole. The other boundary of the Balrickard should then be shifted a similar amount to the NW into what is shown as Walshestown.

It should be noted that there is relatively poor outcrop control on the formation boundaries in this area. Therefore any additional information is likely to shift boundaries a little. The Lucan, Naul and Loughshinny formations are also quite similar only differing slightly in proportions of limestones and (calcareous) mudstones, which makes it very difficult in small outcrops to distinguish one from another. As I mentioned above, the level of detail in the logs supplied does not make it possible to give any definitive answer to your question concerning changes to our map, but my comments above offer an alternative interpretation of the detail consistent with your site investigation information. It makes no practical difference to the overall picture of the geology or its influence on groundwater. Any minor lithological differences between the different formations, as far as the groundwater behavior is concerned, are likely to be negligible; the groundwater behavior is far more likely to be affected by faulting, and fracturing of the rocks by joints.

I hope that these comments are useful to you.

Yours sincerely,



Dr. Andrew Sleeman PGeo
Head of Bedrock Mapping Section