

TECHNICAL NOTE

Job Name: Docksway Disposal Site
Job No: 14739
Note No: DP001
Date: 14th June 2016
Prepared By: Kate Riley
Subject: **Draft Permit Review – Inclinerometers**

Introduction

Newport City Council (NCC) as the operator of Docksway Disposal Site, has submitted a significant variation application for the existing Environmental Permit, EPR/DP3733BK. The application was submitted to Natural Resources Wales (NRW) on the 14th May 2015, and a draft permit was received from NRW on 31st May 2016, followed by an amended version on the 8th June 2016.

The draft permit has been reviewed by PBA on behalf of NCC and a formal response has been prepared accordingly. This technical note describes our formal response and reasoning in relation to the requirement in the draft permit for the installation, monitoring and reporting of 3 inclinometers to be installed within the separation bund that will be constructed between the non-hazardous waste and the Stable Non-Reactive Hazardous Waste (SNRHW).

Formal Response

PBA, on behalf our Client NCC, object to the requirement for inclinometers within the separation bund, on the basis that this requirement is disproportionate and unnecessary both in terms of the requirements and costs associated with both the installation, but also the ongoing monitoring and reporting, and with reference to the specified objective.

Background and Reasoning

In support of the permit revision application, the Stability Risk Assessment (SRA) for the site was reviewed and revised and submitted with the application. The revised SRA included an assessment of the Asbestos Sub-Cell Stability, and this considered the three potential scenarios under which the separation bund could be constructed, as described in Chapter 14 of the revised SRA.

A Schedule 5 Notice and accompanying letter was received by NCC on 4th January 2016 (nearly 8 months after the application was received by NRW). The Schedule 5 Notice requested additional information to be submitted to demonstrate the medium to long term deformation behaviour of the separation bund between the non-hazardous waste and the SNRHW. Within the Schedule 5 notice it is stated that the stability of the proposed separation bund,

*‘.....will need to be supported with appropriate evidence. This evidence should comprise a finite element deformation stability analysis using proprietary software such as Plaxis, Phase or Flac. The analysis should aim to quantify deformation in section (conventional 2D analysis) but should also consider the system holistically, so that the full consequence of deformation can be considered. **Please provide a revised SRA supported by appropriate modelling to consider post construction deformation of the separation structure in a fully justified numerical analysis.**’*

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The specified requirements of the Schedule 5 notice do not make any reference to the requirement for the installation of inclinometers following the completion of the numerical analysis.

Following an initial period of discussion with Mr Ewan Thomas, the numerical analysis was undertaken and submitted to NRW in response to the requirements of the Schedule 5 Notice, and in direct consultation with Ewan Thomas. The parameters used within the numerical analysis have been fully justified and can be considered to be conservative. The results of the numerical modelling indicated that the *maximum* horizontal displacement of the separation bund was indicated to be 0.5m, and that in consideration of the minimum thickness of the bund being 2m, the numerical analysis was indicating that the separation bund would meet the required objective to create physical separation between the non-hazardous and SNRH wastes in the medium and long term, by a very generous margin.

A further period of discussion was held between PBA and Ewan Thomas following a request by Ewan for additional information in support of our response to the Schedule 5 Notice – this included plots of the deformation in the separation bund and clarification of parameters and calculations in the SRA.

There had been no discussion, at any point during the Schedule 5 Notice process, of the requirement for inclinometers to be installed within the separation bund, after the completion of the numerical analysis. We could have been made aware of this requirement on the 4th January 2016.

On the basis that the requirement for the numerical analysis was to demonstrate the long term effectiveness of the bund at physically separating the two wastes, and that the analysis indicates that in the worst case there will only be a maximum of 0.5m horizontal displacement of the minimum 2m wide bund – there is no appropriate justification for imposing the additional costly requirement relating to inclinometers, on our Client.

Further to this, the Schedule 5 Notice states that the reason for the numerical modelling is to demonstrate the medium to long term deformation of the separation bund, however Table S3.10 in the draft permit requires that the inclinometers are installed after the first 1-3 lifts of the separation bund and that monitoring should commence immediately following construction. This effectively means that data capture and reporting will also include short term deformations of the bund which were not part of the original Schedule 5 Notice.

It is unreasonable for reasons of practicality to request the progressive installation and monitoring of inclinometers within the separation bund between two active waste cells. This will be an incredibly busy area of the site and it will be costly and impractical to protect the instruments from damage during the day to day activities on the site, transport and plant operations etc. The data that would be obtained from instruments installed shortly after the first few lifts of the bund will also be questionable at best – as there will be no fixed datum from which to refer all data – as the bund will be subject to ongoing 'lifts'. The overarching principle behind obtaining meaningful data from inclinometers is the fixed datum from where all future measurements are taken.

A literature review has been undertaken and we have been unable to find any published technical papers, references in text books, or case histories in the use of inclinometers in this specific requirement, and therefore conclude that the application in this instance is untried and untested in this particular situation. It is unreasonable for our Client to bear the costs of what appears to us to be a 'research project', rather than straight forward application of a tried, tested and useful monitoring technique.

We have made attempts to understand this new last minute requirement for inclinometers in the separation bund, by direct engagement with Ewan Thomas, and we attach our email correspondence dated 8th June 2016. In the email we have stated that our intention was to challenge the requirement for inclinometers based on the lack of justification provided and requested that Ewan provide guidance to us following his indication (by telephone) that '*the inclinometers are a NRW/EA requirement*'. You will note from the correspondence that we have not been provided with any such justification.

Following this correspondence, and before we had submitted our formal response, we received a further email from NRW (attached email from Saul White dated 10th June 2016), in which it is stated



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that 'we have assessed the information and decided that the inclinometers are required in the permit and will remain'. The email goes on to state that 'LFD1 outlines Internal separation of cells, also referred to as internal lining system. Therefore confirming limited deformation in separation wall & that it performs as it was intended to is both essential and consistent...'

In LFD1, Paragraph 2.12 (Internal separation) states that 'This separation does not have to be compliant with the engineering requirements of the Directive..'. Paragraph 2.17 also states that '...the key points to be considered for landfill separation are;

- the stability and durability of any engineered structure which separates landfills...'

In consideration of the above statements and requirements – we consider that these have been fully met by the numerical analysis carried out for the Docksway site. There is no requirement in LFD 1 for specific site monitoring in relation to deformation of internal separation and therefore the requirement in the Docksway draft permit for inclinometers is unjustified and inappropriate.

We understand that Mr Ewan Thomas is an external consultant to NRW and not a NRW employee. He has his own company, 'Geotechnology', that provides external consultancy advice to NRW. His role in the decision making process is unclear to us. We are unclear whether NRW has the in-house expertise in this technical specialism to know whether Mr Thomas's advice is appropriate.

Conclusion

We respectfully request that the requirement for the inclinometers in the separation bund at the Docksway site is withdrawn.