

Notice of request for more information

The Environmental Permitting (England & Wales) Regulations 2016


Red Industries RM Ltd
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Berkeley Court
Borough Road
Newcastle Under Lyme
ST5 1TT


Application number: EPR/DP3734DC/V003

The Environment Agency, in exercise of its powers under paragraph 4 of Part 1 of Schedule 5 of the above Regulations, requires you to provide the information detailed in the attached schedule. The information is required in order to determine your application for a permit duly made on 29/10/20.

Send the information to either the email or postal address below by 14/04/2021. If we do not receive this information by the date specified then we may treat your application as having been withdrawn or it may be refused. If this happens you may lose your application fee.

Email address: psc@environment-agency.gov.uk



Name	Date
	03/03/2021

Authorised on behalf of the Environment Agency

Notes

These notes do not form part of this notice.

Please note that we charge £1,200 where we have to send a third or subsequent information notice in relation to the same issue. We consider this to be the first notice on the issues covered in this notice.

The notes in italics that appear after information requests in the attached schedule do not form part of the notice. The notes are intended to assist you in providing a full response.

Schedule

Task ID	Start	End
1	0	15
2	0	25
3	0	10
4	0	85
5	0	95
6	0	30
7	10	85
8	10	80
9	15	55
10	15	38
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Stability Risk Assessment (SRA)

9. Site conceptual model [Sections 1.2.1 to 1.2.8]

a] Please give actual specifications of the components of the landfill infrastructure that were constructed by referring to the information in CQA validation reports, which should be listed and referenced in the SRA.

Reason

Specifications of the landfill infrastructure constructed often vary slightly from those given in the conceptual design presented in the original permit application. Therefore it is important that information from the CQA process is used to confirm the actual specifications of the various components.

b] Clarify the types of waste placed in each cell, and account for this in the waste parameters in SRA 2.4 Table 2 / Table SRA4, Table SRA4a, and take account of the differences in waste properties in the settlement calculations.

Reason

It is not clear that consideration has been given to compressibility, consolidation and settlement of the different waste types placed in different cells. This is important since this would affect the amount of differential settlement across the landfill. In turn this needs to be taken into account in the assessment of the integrity of the new capping system.

c] Basal Lining System Model [Section 1.2.6]

Correct the statement:

'Previous reports (Reference 1) indicate that a minimum 3.0m thick low permeability clay (AEGB) basal liner was placed at the site to a level of 2.0m above the base of the cells.'

Reason

The thickness of the AEGB is not clear, the statement is contradictory and does not make sense.

10. Scope of modelling

a] Clarify whether or not it was your intention to determine the strains in the basal and side slope lining system in assessing the factors of safety for the proposed capping system, and on the basis of your answer revise the stability risk assessment.

Reason

It is not clear whether or not the statement is correct in section 2.3 para.1 'finite element analyses has been used to determine the strains in the mineral component of the basal and side-slope lining system, and for the calculation of factors of safety', since these factors were discounted during the risk screening. On the other hand if you meant to determine the side slope strains because of the effect these may have on cap stability and integrity, please amend your report accordingly.

b] Clarify the proposed design (with detailed cross-sections and map of cap layout) where the LLDPE cap would tie into the steeper clay cap section in the south west of the landfill. Model and assess the stability and integrity at this boundary.

Reason

The area in question has not been assessed in the SRA and the reason for excluding it is not clear. Potentially the area where the two capping systems are joined is a zone of weakness where differential strains may be greatest. This requires assessment.

11. Geotechnical parameters selected for analysis [SRA 2.4, 2.5]

We need you to clarify and confirm the values for each of the geological and geosynthetic parameters in the tables represent the conservative mean for each parameter [or using EC 7 terminology, characteristic values].

We note that for waste properties you have referred to the information in R&D P1-385 TR1, and request that you clarify that the properties you have used represent the different waste types permitted for disposal at the landfill.

Reason

Parameter values that are used in the model need to represent the range of properties that geological and geosynthetic materials display. This may be achieved from measured values of the parameter to derive the conservative mean value, or the characteristic value if using the EC7 partial factors approach. It is not clear that the values in the tables represent these. For example Equation 7.4 in R&D P1-385 TR1 provides a method of calculating these from a parameter dataset. MSW waste properties are highly variable due to its heterogeneity but also then vary spatially in 3D and with time in the landfill; therefore the variety of waste types including SNRHW deposited at the landfill introduces greater variability. This needs to be taken into

account. Also it is apparent that due to the waste being placed in 2m lifts, it will not be compacted adequately as compared with if it were placed in 0.5m lifts. [e.g. see P1-385 TR1 section 8.2.4, Table 8.2].

12. Interface properties [SRA Table SRA 6, Table SRA 7]

Clarify which properties you have assigned to the interfaces by presenting a sectional drawing. Clarify how you have derived the interface properties for the two surfaces input to PLAXIS paying particular attention to the residual strengths, since they are higher than we would expect and therefore not conservative.

Reason

It is not clear how you have derived the interface input parameters, and the properties you have listed appear to be too high, particularly for residual strength. Because PLAXIS 2D models just two interfaces for one geosynthetic it is important that the model limitations and the assumptions are fully understood and clear about the difference between the proposed cap design and the modelled scenario.

13. Model selection, scenarios and analysis [section 3]

a) Describe and explain how the PLAXIS model you have used to simulate conditions accounts for:

- plasticity in elastoplastic behaviour of the components
- secondary settlement which is time dependent due to, for example, waste degradation
- parallel saturation ratio [PSR]

b) Assess the effects on the capping system by incorporating the groundwater drainage system beneath the sidewall lining system, which will provide preferential pathways for groundwater potentially under artesian pressure under the side slope lining.

c) We require an assessment of the effects of differential settlement on capping stability, tension in the capping system components and its integrity. This must also take into account the different waste types in different cells. Please also compare the total settlement derived from your model results with measurements of settlement observed at similar landfills where we would expect to see around at least 20% settlement.

d) Assess the stability of the capping system during construction due to construction traffic loading.

e) You also need to provide us with a stability analysis of the effects of landfill gas pressure on the underside of the cap.

Reason

Fig SRA 2 presents conceptual model idealised sections of the main features of the landfill, but do not show the groundwater drainage system. This is considered to be an important feature of the landfill engineering and when groundwater is no longer pumped it will rebound. The groundwater is the drainage blanket will provide a preferential pathway for artesian rebound up the sides of the landfill beneath the lining. The possibility of this occurring needs to be accounted for.

Effects of construction loading, gas pressure, and settlement caused by differences in waste composition, and time dependent waste degradation do not appear to have been taken into account in the analysis of the capping system stability and integrity. This is required. [Note Table SRA 9 needs to be correctly labelled – is it presenting results for Model 2 ?]. Please refer to capping guidance available at GOV.UK [Design and build your landfill site - Landfill operators: environmental permits - Guidance - GOV.UK \(www.gov.uk\)](https://www.gov.uk/guidance/design-and-build-your-landfill-site-landfill-operators-environmental-permits-guidance).

14. ICoP variation

a) Provide Appendix 2 as referred to in the Annual Environmental Monitoring Report dated January 2020 submitted on 22 October 2020.

b) Provide ICoP data interpretation and statistical analysis showing how the outlier test was undertaken to standardise the data and establish the background gas concentration.

Reason

Appendix 2 was missing from the submission of 22 October 2020. Electronic copies of data was provided but this did not include analysis showing how the outlier test was undertaken to standardise the data.

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