EPR/JP3342YM - Pollington Schedule 5 Response (18/03/2025)

Ref	Environment Agency Query	Response
1	**Conceptualisation** Provide evidence on how the imported cohesive material as waste to be used for the geological barrier, meets the requirement "have a pollution potential less than, or equal to, the natural quality of the surrounding geology" Landfill operators: environmental permits - Landfills for inert waste - Guidance - GOV.UK	This is noted and understood. Any cohesive material to be used as geological barrier will be imported and constructed in line with site's CQA Plan. For information, we have undertaken environmental testing of the natural sand strata and attach for information only. These will support any risk assessment, along with suitable mudstone and clay natural sources in the surrounding area, to finalise a geological barrier specification.
2	**Existing and additional groundwater monitoring wells** Review the proposed Groundwater monitoring wells at the perimeter of the site. Proposals must be provided for the construction of additional groundwater monitoring wells that will be outside of the proposed waste mass. The monitoring boreholes must meet the requirements of the monitor groundwater section of Landfill operators: environmental permits – Monitor and report your performance – Guidance – GOV.UK and LFTGN2. Proposal must include the decommissioning of boreholes below the waste mass to prevent a preferential pathway.	Please see drawing 163407/D/006 Rev. B. BH204 is outside of the waste mass and will be retained. The remaining three existing boreholes (BH201-BH203) will be retained for monitoring up to four months prior to filling the waste mass. Any of the existing boreholes which would extend through more than 1 m of restoration soils as part of the final restoration of the site will be replaced prior to filling in that location. The new replacement boreholes will be monitored for 3 months before waste is deposited to obtain an appropriate baseline. Proposed locations for the new gas and groundwater perimeter wells, located outside of the waste mass, are shown in drawing 163407/D/006 Rev. B. These are indicative only and will be subject to detailed design and placement. These will be subject to a CQA Plan and validation report, in liaison with the local EA team.
3	**Gas risk assessment** Evaluate the location of perimeter gas monitoring locations against the high risk receptors.	Please see drawing 163407/D/006 Rev. B. BH201-BH204, or the replacement gas and groundwater perimeter wells for BH201-203 once they have been decommissioned, will be used for perimeter gas monitoring. Two additional gas perimeter boreholes are proposed in proximity to the residential sensitive receptor however these will only be constructed post-restoration (once the area is accessible).

		Additionally, the Operator proposes to construct an in-waste gas borehole (GS09) from the base of the infilling up along with the waste, in order to monitor the source gas risk.
4	**Landfill Gas Monitoring** Revise the proposed gas monitoring and Action Plan to reflect the requirements of LFTGN03	Please find updated Landfill Gas Risk Assessment, specifically Table 4. In line with LFTGN03 guidance, new inert landfills ought not to pose a landfill gas hazard. The emphasis in the risk assessment should, therefore, be placed on the Waste Acceptance Procedures and particularly the waste characterisation and compliance monitoring measures introduced to ensure that only inert waste is deposited at the site. These measures are in place through adherence of the Operational Plan. Therefore, the landfill gas source should be negligible. However, it is recognised that the south eastern perimeter is in close proximity to residential receptors and therefore, the following additional controls are in place: GS09 (south eastern in-waste gas well) will be constructed at the beginning of infilling to measure source gas risk. This will be monitored quarterly at the same time as the 4 perimeter wells. It is noted that the action limits have been replaced by compliance limits. This has been reflected in the Gas Risk Assessment. After completion of the restoration phase, gas monitoring will continue to be conducted quarterly. To note, the frequency may be increased at the discretion of the operator in order to obtain sufficient data to support a surrender application.
5	**Gas Action Plan monitoring** Revise the Gas Action Plan to appropriately investigate exceedances *Reason: Gas action plan Table 5 indicates that following an exceedance, the first action is to monitor weekly for a month. This suggests that there could be a lag of 4 weeks prior to the next stage of checking infrastructure and verification of concentration model. This is not considered sufficiently robust given the close proximity of residential properties 6-18m from the site boundary.*	Please find updated Landfill Gas Risk Assessment Table 5 has been updated to include a check of the gas infrastructure at the first weekly monitoring round after an exceedance has been identified. The conceptual model will also be verified during the month of weekly monitoring, not afterwards.

6	**Stability Risk Assessment** Confirm how the assessment of the E-W restoration profile takes into account the engineered infill and the potential for silt layers within this. Confirm how the discharge to ground from the soakaway is taken into account within the risk assessment models.	Please find Technical Note from ASL regarding the stability query.
7	**Hydrogeological risk assessment** The following queries require clarification: • The hydraulics – the applicants models seem to suggest a change in leakage at circa 950 years – this is unrelated to any management or duration of filling input parameters and cannot be reproduced by the EA.	The issue with the model hydraulics has been discussed further with GOT and also through correspondence with WSP (formerly Golders). The recommendations of fixing the leachate head for 20,000 years and setting the leachate head to zero have both been examined and give the same outcome. The model has been revised and the HRA updated as R2.
	• Rogue load assessment - This appears to suggest that there is a discernible release of arsenic at the monitoring point - this is not discussed within the application.	The rogue load assessment has been revisited in HRA R2.
	• Rogue load concentrations: the EA provided a copy of typical rogue load concentrations; however alternative values have been modelled. There is no discussion of how the rogue load concentrations relate to the proposed waste streams	This has been discussed further with GOT. We did not have the proposed inert landfill source term when the HRA models were first produced in 2021. Following our discussions the source term has been updated to include ammoniacal nitrogen, benzene and TPH in the diesel range, to reflect potential rogue loads which could be accepted on site.
	• Source term: absence of ammoniacal nitrogen and selection of phenol over other more persistent organic substance is not justified in relation to the waste streams proposed - see Question 9 below.	Please see answer above.
	• Sensitivity analysis - EA consider this assessment has been limited to 1m change in water levels and minor change in hydraulic conductivity. The sensitivity of the unsaturated zone should consider potential changes in the groundwater abstraction regime and the effect on the unsaturated.	A series of further sensitivity models have been run and these include a reduction in the thickness of the unsaturated zone from 5m to 1m to reflect some cessation in groundwater abstraction.
	• Confirm if the model is sensitive to the assumed infiltration through the waste mass. Parameterisation – provide justification to the different ranges of hydraulic conductivity used for the unsaturated and saturated aquifer.	The model has been run with a 40% increase in infiltration. The only exceedance of the EAL is for ammoniacal nitrogen. This is discussed within the revised HRA. The source concentration has been assumed to be 10 x UKDWS. There is less potential for dilution when rainfall infiltration increases and ammoniacal nitrogen has relatively low attenuation potential, therefore, it is the parameter most sensitive to this change. The resulting concentration increases from 0.37 to 0.49 mg/l. It is noted, however, that although the model looks at impact in the mixing zone, the mixing zone thickness is less than 10% of

		the full aquifer thickness, therefore, there would be less impact on the aquifer as a whole. The hydraulic conductivity of the saturated aquifer is based on data from the abstraction borehole adjacent to the site, refer to section 3.2.2 of the HRA and also the BGS interquartile data for the Sherwood Sandstone aquifer north region (BGS Major Aquifers publication, 1997). The likely hydraulic conductivity of the unsaturated zone is also discussed in section 3.2.2 of the HRA.
	• The model results state that the leakage is greater than 10% of the aquifer flow. Provide further evaluation of the aquifer properties as conceptually the leakage from the site would not be expected to be greater than 10% of the aquifer flow.	This has been discussed further with GOT. A manual sense check is provided within the updated HRA. It is acknowledged that potential leakage through the base of the landfill, if all effective rainfall infiltrated the site, would exceed 10% of the likely aquifer flow in the 15m thickness of mixing zone assumed within the model. However, this is less than 10% of the full thickness of the aquifer.
7	**Waste Streams** Provide further information on the source and testing of the waste streams 17 05 08, 19 02 06, 19 12 09, 19 12 12, 19 13 02 listed in Schedule 2.1 Table 2.1 of the Operational Procedures.	Please find updated section 3.21 of the Operational Plan. No 19 02 06, 19 12 09 or 19 13 02 will be imported to site until suitable testing is provided to confirm acceptance and ensure the waste type is suitable for the site. Level 2 testing will be a minimum of 3 tests per year. In addition, Level 2 testing will be requested of the waste producer every 5,000 m^3 per waste stream to determine ongoing compliance. This is in addition to the Level 3 validation testing undertaken by the Operator, as presented in Table 4.1. In the event there is a non-conformance, the material will be segregated and taken to the Quarantine Area. We have removed 17 05 08 and 19 12 12 from the list of proposed EWC codes. Compositional rationale is provided below for each higher risk code noted by the EA. <u>19 02 06</u> The silt/clay from a soil washing facility is a non-standard waste type in line with EA guidance however it is a cohesive, low permeability mineral material. The facilities are off site sources and are becoming increasingly

		prevalent in operation across the UK. The materials input is washed construction soils and stones and construction-based mineral wastes only. The primary use of water is to provide a physical wet sorting process in order to produce a range of aggregates and engineering soils. The silt/clay is one of the material types produced by the process. Typical potential contaminants of concern are: hydrocarbons, metals and asbestos fibre as these are potential contaminants of concern within the original construction-based mineral wastes. These parameters would be part of the initial classification and then compliance with Table 3.2 of the Operational Plan. <u>19 12 09</u> This will be mineral-based materials only consisting of aggregate from waste treatment sites only. This will be composed of inert by default materials only. This will not include soils from waste treatment facilities. Contaminants are similar to that above and testing will be completed as per WM3 to prove it's non-hazardous. The material types are considered inert by default (mineral-based concrete, brick, tile). <u>19 13 02</u> Soils from soil remediation activities, typically undertaken on brownfield construction sites with mobile plant licences. This will consist of inert brick, concrete, tile mixed with treated subsoils. Contaminants are similar to that above and testing in line with Operational Plan to prove it's compliant to WM3 and the inert landfill criteria.
8	**Public water supply abstraction** Provide an assessment of the risks to groundwater should the public supply abstract cease.	The updated HRA models a reduction in the unsaturated zone thickness from 5 to 1m. This would bring groundwater levels to -1m AOD. The impact and the likelihood of this impact are discussed within the updated HRA.
9	**Priority substances** Explain how phenol is an appropriate parameter for waste stream you anticipate being deposited at this site and why ammoniacal nitrogen has not been included.	The model has been updated to include NH4, TPH and benzene as discussed above.