

Hydrogeological Risk Assessment

NRW Query: *You need to provide further justification for the proposed chloride trigger level (500 mg/l).*

Response:

Chloride trigger level (500 mg/l) – Currently approved trigger levels vary considerably between boreholes in close proximity. To simplify assessment whilst remaining protective of the environment, the Variation has sought to limit the number of different trigger levels for the same parameter. In the case of Chloride, a higher trigger level could be technically justified given the dilution groundwater will receive as it enters surface water throughout the annual cycle. However, rather than suggesting a trigger level based on a four-fold uplift of the surface water EQS of 250mg/l, to add a further element of protection a lower trigger level of 500mg/l is suggested. Further, the groundwater control level of 250mg/l provides an additional mechanism for prompt intervention whilst taking into account groundwater chemistry variations.

The approach taken to setting the trigger and control levels is considered to be conservative as higher values could be technically justified but have not been proposed. If considered helpful, we would welcome opportunity of discussing the approach and revised values to ensure all parties are content with the measures adopted.

NRW Query: *Please could you also provide details on excluding hazardous substances from trigger and control levels.*

Hazardous substances – Up until 2017 several of the substances for which trigger levels have been set were classified as hazardous substances. Subsequent monitoring has revealed little overall change in leachate chemistry with it being characterised by elevated concentrations of a relatively small number of key parameters often found in non-hazardous landfill leachate with typically low or absent levels of hazardous substances analysed. The currently available data indicates that hazardous substances are not persistently present at sufficiently high concentration to warrant detailed modelling and therefore establishment of trigger levels. Non-hazardous pollutants and hazardous substances do however remain embedded in the monitoring programme to ensure that this position is regularly assessed and can be evaluated during HRAR. As stated in the Variation, in this context, the analytical schedule and the evaluation of Trigger and Control levels should not be viewed as fixed. For this reason, the conceptual site model and analytical schedule will need to be subject to future review and potential modification. In response to the annual screening of leachate for hazardous substances, new substances may be added to the monitoring suites. Although trigger levels are not set for substances currently classified as hazardous, the parameters selected are the same as those previously approved and their environmental behaviour

and fate is very similar to other substances currently classified as hazardous but not present at elevated concentrations.

In relation to both of the above queries, the reader should note that as part of the Variation a review of the HRA is suggested in two years following implementation of some of the new measures suggested. This is much sooner than would typically be the case and has been suggested because we appreciate that the system is dynamic and assumptions and modelling need to be validated. In this context, there will be scope and mechanisms for future changes to be made. We would be happy to discuss any aspect at any juncture.