

ARROW 8 – Arrow Comments on Q1.8 in the Second round of written questions

Submission on behalf of Arrow

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Case No: WS010003

Arrow ref: 10024954

2nd September 2014

The SoCG between the EA and the applicant stipulates three requirements to be included in the Development Consent Order:

1) The first requirement restricts the depth of the excavation, and stipulates that “No excavation shall take place below 48 metres AOD”. I understand that the applicant was previously required by the Mineral Planning Authority to work the current landfill void deeper than planned, owing to an obligation to win mineral where it was encountered. If the applicant is under a similar obligation, it is highly plausible that there will be a requirement to extend the base of the excavation to the base of the mineral seam.

I note that the shafts are to be sealed below 48 m OD, and that the shaft cap is to withstand a hydrostatic head of 15 m, i.e. a total head of 63 m OD. Groundwater levels measured in the Coal Measures at the site are generally of the order of 64 m OD, and the full range of seasonal variation (i.e. high winter groundwater levels) has not been observed at the proposal site. Groundwater heads acting on the cap would therefore be at least 1 m higher than the design containment head. This suggested containment head of 15 m is considered insufficient and should be increased.

2) The second requirement effectively places a restriction zone 25 m around the shafts, within which no excavation can take place until the shafts have been adequately sealed and capped. This is intended to leave a sufficient barrier of un-worked ground in-situ around the shaft to act as a barrier against uncontrolled or excessive flow of water to or from the mine workings.

I note that the Coal Measures are heavily fractured and faulted, and that evidence from the site indicates that the Glacial Till also has some water bearing sand partings. I consider that there is a high risk of large inflows to the excavation, and that the proposed buffer zone of 25 m will not mitigate this risk, particularly if the excavation enters the Coal Measures. Ideally, excavations should not commence until the mine shafts have been treated, or unless quantitative assessment is

undertaken to demonstrate a safe working distance from the shafts, or a safe depth of excavation above the base of the Glacial Till.

I also note that whilst the shafts may be the most significant feature linking the development with flooded mine workings in the Rushy Park and Arley Mine Seams, there may be several other features linking shallower flooded mine workings with the development area. Calculations of groundwater inflow to the development (reference our recent Hydrogeological Assessment of Whitemoss Landfill on behalf of Arrow, July 2014) indicate that large volumes (3,000 – 17,000 m³/d) of groundwater may flow into the void, and the proposed Requirements do nothing to address the risk that the development will not be able to adequately manage the volume of groundwater inflow. It is usual for a Mineral Planning Application and associated dewatering operation to quantify the water balance for the site and the likely dewatering volumes and impacts. As the DCO will be the instrument by which this Mineral Planning Application is regulated, this work should appropriately be included in this application, and the lack of such work is considered a significant deficiency.

There remains some ambiguity as to how the shafts will be treated above the cap at 48 m OD. If the shafts are open above this elevation, they will contain groundwater with a head of c. 64 m OD which will create nuisance at best and serious inundation at worst, as ground around them is excavated. Confirmation is sought that they will be grouted to surface prior to excavation.

3) The third requirement deals with the monitoring requirements associated with dewatering activities. Elsewhere in their correspondence the EA make it clear that the Development Consent Order is the instrument by which dewatering activities will be regulated, and that monitoring requirements under the DCO might differ from those under the Environmental Permitting Regime. We would concur, specifically with the usual requirement under Mineral Planning Applications to provide a comprehensive water features survey and dewatering impact assessment, along with a monitoring programme that allows the water balance for the site to be quantified. This would include incident rainfall, monitored at the site, groundwater abstraction volumes (irrespective of their eventual discharge location), groundwater levels (frequently monitored using loggers to provide greater resolution than manual monitoring), surface water flows and any discharges to groundwater, surface water or sewer.