

**St Helens Council  
Environmental Health Division  
Planning Consultation  
Response - Contaminated Land Section**

To: Jennifer Bolton

Date: 18<sup>th</sup> February 2020

From: Christopher Culley

Tel: 01744 676397

Planning App No: P/2020/0061/HYBR

Proposals: see text

Our Ref: 035446

Location: South of M62 Bold St Helens

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Jen,

Further to your consultation I have reviewed the following report submitted in support of the application;

- WSP, Ground Gas Assessment (Addendum) 14<sup>th</sup> February 2020

The ground gas assessment has been submitted since my previous consultation response of 6<sup>th</sup> February. Having reviewed the report I would comment as follows;

Elevated carbon dioxide concentrations have been encountered in some wells in addition to some extremely high flow rates on certain monitoring rounds. The elevated carbon dioxide levels and highly elevated flow rates are associated with wells installed in the sandstone bedrock and have only been observed during periods of falling barometric pressure. The consultants have discounted the ground gas results from BH8A03 and BH8B03 as anomalous and 'not representative of the ground gas regime within the sandstone'.

I would suggest that the high flow rates observed in these boreholes are due to barometric pumping effects due to the confining nature of the low permeability Glacial Till over the more porous sandstone bedrock. The effect has been observed due to the deeper wells having breached the overlying Glacial Till. During barometric pumping as soon as atmospheric pressure falls below pressure in the ground/ borehole high positive flow will begin to be observed. The negative flow rates observed in a number of the wells are likely as a result of a rising pressure trend and an atmospheric pressure above that of the ground/ borehole which results in the effect being reversed.

Whilst I would agree that the results are anomalous in that they do not fit with the rest of the data it is still relevant information that warrants consideration in the context of the conceptual site model.

I would recommend that the consultants provide some further consideration and discussion in their report of the effects of barometric pumping. If there is any requirement to understand the extent of this in more detail then the deployment of a continuous monitoring device in one of the relevant boreholes may be worth some consideration. However, the key points should be ensuring that (1) the thickness and permeability of the overlying Glacial Till is properly understood throughout the site (2) the foundation solution is understood and the extent to which foundations will 'breach' the Glacial Till is considered (3) any boreholes that extend into the sandstone, or a significant distance into the Glacial Till are grouted up so as to prevent them acting as preferential migration pathways.

I would recommend that the report is revised to include a consideration of the above points prior to the application being determined. Alternatively, it may be possible to attach pre-commencement planning conditions requiring the ground gas risk assessment to be finalised.

Regards,

**Christopher Culley**  
**Contaminated Land Officer**

