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18th June 2021

Re. Reports G21073 (Phase 1) and G21103 (Phase 2) – Proposed Development Land at Dearne Grange Farm, Cumberworth HD8 8YA

Further to my earlier response of 7th June 2021, I offer the following additional information regarding the ground gas risk assessment for the above site.

Previously, we received comments from a planning officer regarding a possible gas risk from a potential landfill site within 250m of the proposed development.

In the absence of any further information or records of any landfill activity, my earlier response had assumed the officer was referring to the large quarry to the north. This earlier response showed that the quarry to the north could not pose any potential gas risk to the site.

Further information has now been provided by the officer (Natalie Heaney, Senior Technical Officer at Kirklees Council) and evidently Kirklees Council have a record of a landfill to the southwest of the site which was not returned by the environmental search report used for the phase 1 desk study. This location is shown on the plan provided by the officer which is reproduced on the following page.

The desk study report searched for records of the following, finding none within 250m of the site:

- Active or recent landfills.
- Historical landfills (BGS records).
- Historical landfills (local authority / mapping records).
- Historical landfills (Environment Agency / Natural Resources Wales records).
- Historical Waste Sites.
- Licenced Waste Sites.

Additionally, no relevant records were discovered from the following, though certain features were present within 250m:

- BGS Artificial ground mapping.
- Mining / ground working records.

Local Authority Information:

The area marked “71/22” is the area in question.

No information has been provided as to why this area is suspected to comprise infilled ground and/or a contamination risk and, together with the absence of any related environmental search results, no features are shown in this location on the historical map record.

It is difficult to understand why this area has been flagged as it appears to have never been quarried or infilled. There is also no obvious evidence in the current topography to suggest that the ground has been altered.

Extracts of Google Streetview Imagery have been presented on the following page to illustrate this.

As such, the first point to raise regards the validity of this information: How reliable is this record? What is the origin of this record? Are there any further details or evidence to support the suggestion that this area is a potential contamination/gas source? If there has been some illegal activity, then this would be expected to have been discovered by the environmental datasearch in the form of pollution incidents or similar.

Regardless, even if there has been some infilling activity in this area it is impossible to conclude that it could pose any risk to the proposed development for two reasons; 1) the topography, and 2) the geology.

Looking south towards suspect area (circled):

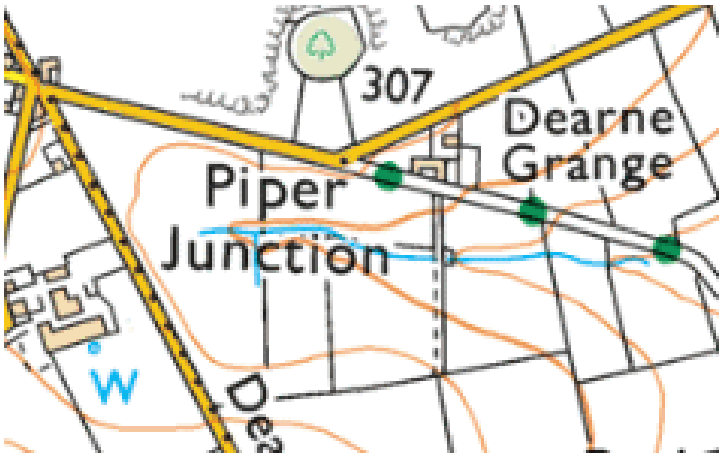
Looking east towards suspect area (circled):

Looking southwest from development site entrance towards suspect area (circled):

1. Topography

The topography would suggest that there is no feasible pathway to the development site:

- The distance from the site illustrated by the 3rd image on the previous page highlights how unlikely the potential for lateral gas migration to the site is.
- The clear drop in elevation to the stream from both the north and south sides suggest that there is no possible pathway for gas migration. Even if the steep south bank of the stream (visible in the first photo) comprises artificially raised ground, this would require the ground gas to migrate down-over and then laterally >200m to the study site. Clearly this is impossible, and it is much more likely that it would rise to surface close to source, or potentially remain at the source.
- It is highly unlikely, however, that this comprises raised ground because the feature does not match the area highlighted on the local authority plan presented earlier, and also appears to have been present on the earliest OS maps.
- Additionally, the small valley between the identified possible infilled ground and the study site is highlighted very well by the contours on the current OS map:

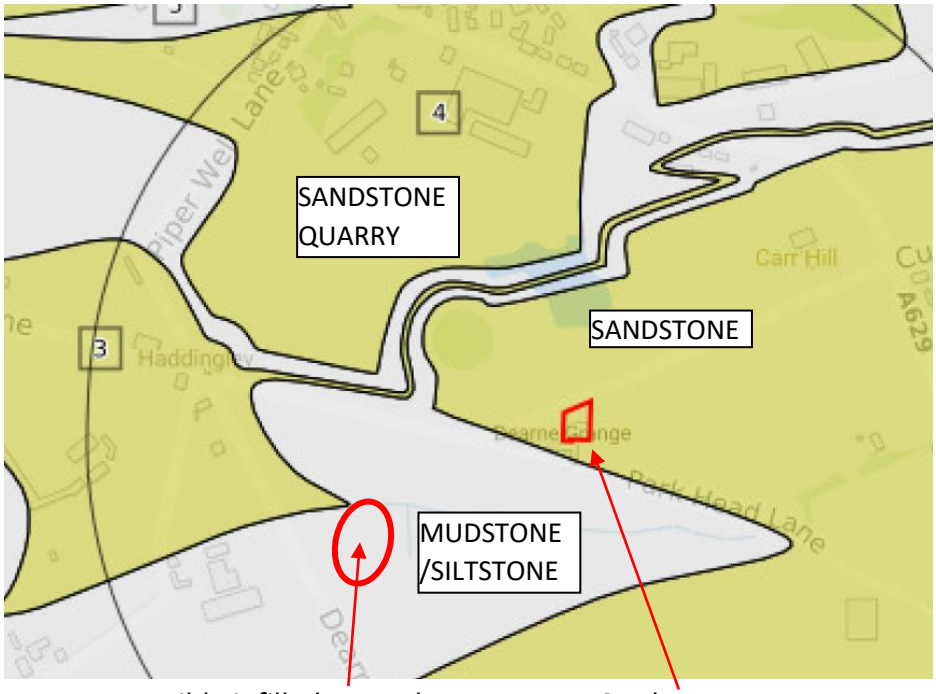


2. Geology

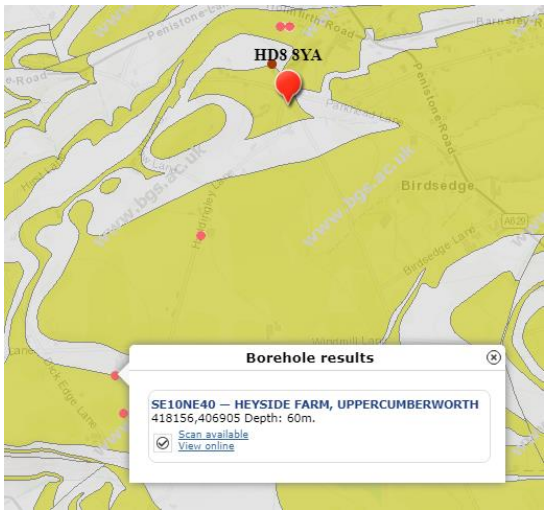
Further to the topography being prohibitive to any meaningful risk of gas migration through both distance and elevation, the geology would also be expected to prevent any risk to the study site:

- The BGS maps the area in question, and the area between that location and the study site, to be underlain by mudstone or siltstone with no overlying superficial deposits. As such, no pathway would be expected to be possible through this impermeable or low permeability rock. The BGS map is reproduced on the following page for reference (as presented in the desk study report).
- The presence of the (green) sandstone to the north of the study site approximately matches the footprint of the large quarry, suggesting that the mapping is accurate. Mudstone would most likely have marked the extent of the quarrying activity if sandstone was the extracted material.
- This also further supports the theory that the area in question to the southwest has not been quarried and infilled.
- The rock in the grey mapped areas is more likely to be mudstone than siltstone given the findings of a borehole record to the south in the same stratum, further suggesting extremely low permeability and negligible potential for gas migration. This borehole found mudstone and sandstone with no siltstone strata.

BGS map extract:



Borehole record close to sandstone/mudstone boundary:



Description of strata	Thickness	Depth
	m	m
FILL	0-50	0-50
CLAY	2-10	2-60
GREY MUDSTONE	1-20	3-80
SANDSTONE, MUDSTONE BANDS	25-60	29-40
GREY MUDSTONE, SANDSTONE BANDS	30-60	60-00

Given the information provided here it is clear that, even if the area in question is in fact host to infilled ground, there is no feasible migration pathway by which generated gas could pose any significant risk to the proposed development.

Further to this, we have seen no evidence to suggest that there is in fact any infilled ground in the identified location, but this is not especially relevant given the arguments set out above.

Therefore, the previous ground gas risk assessment remains appropriate and correct, and no feasible potential gas risk exists at the study site.

I trust this additional information is sufficient to allow the discharge of the relevant planning condition(s).

Kind regards,

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