



GB Card & PARTNERS

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Our reference: GB/661
Please reply to: Tim New/Geoff Card

Dear Mr Philip

Proposed development at Centre 27, off Bankwood Way, Birstall, Batley Planning Application Ref: 2021/62/92528/E Coal mining risk assessment

We write in response to the letter from Sirius Geotechnical Limited (Sirius), dated 28 October 2021, regarding their coal mining risk assessment for the proposed development at Centre 27, off Bankwood Way, Birstall (the Site). We have reviewed the letter and appendices and largely agree with the site characterisation and setting as described. With regard to the Sirius recommendations, we make the following comments:

1. **Proposed foundations.** We recommend that the proposed building development is founded on soil cement columns that penetrate a minimum of 0.5m into the underlying Pennine Lower Coal Measures Formation (PLCMF). At this proposed founding depth, the foundation will be below the Flockton Thin and First Brown Metal coal seams. In our opinion there is no requirement to pressure grout any loose or fissured ground as the process of installing soil cement columns will fill any loose or voided ground that might exist. Similarly, the same process will be undertaken beneath roads and drainage infrastructure. In addition, a reinforced granular mattress is to be placed beneath buildings, roads and hardstanding. The purpose of this mattress is to further spread load from the structure or pavement onto the improved and treated ground. Furthermore, the mattress will be designed to span any loose or voided ground that might migrate to shallow depth for whatever reason. This is a technique we have designed and has been adopted successfully elsewhere in similar ground conditions.
2. **Ground gas.** The proposed ground gas recommendation is for buildings to be designed to *Characteristic situation CS4* in accordance with BS8485:2015+A1:2019¹. This assessment is based on a worst credible approach and is conservative. The Made Ground and waste deposits are some 30 to 50 years old and as such the majority of degradable waste within these materials will have significantly reduced and hence also reduced the

¹ BS8485:2015+A1:2019. *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings.* BSI.



potential for any significant ground gas generation. In our opinion there is no requirement to undertake further ground gas monitoring unless it is intended to reduce the *Characteristic Situation* and scope of ground gas protection measures.

Please do not hesitate to contact us should you have any questions or require further assistance.

Yours sincerely

Redacted

Dr Geoffrey B Card, Managing Director
GB Card & Partners