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Reference: Denby/L03/jh

JGC (1980) Ltd
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For the attention of: Mr N Sykes

Dear Nick

Cliff Hall, Denby Dale - Review of Documents Relating to Ground Investigation and Remediation.

RSK Geosciences have been requested to undertake a Peer Review of ground investigation reports and a treatment specification for the proposed residential site at Cliff Hall, Denby Dale.

The reviewer and author of this letter is an Associate Director and Team Leader for RSK Geosciences, with 25 year's experience relating to site investigation and remediation mainly within Yorkshire and the North East.

Reports Reviewed

The following reports downloaded form the Kirklees planning portal have been reviewed.

1. ARC Environmental, Phase 1 Desk Top Study and Coal Mining Risk Assessment, Ref 21-79 dated 9th September 2021.
2. RGS Phase 2 Geo-Environmental Report, Ref C2206/22/E/3401, dated 25th May 2022.
3. RGS Gas Monitoring Letter, Ref C2206/2/E/3228, dated 15th July 2022.
4. GRM Ground Stabilisation Remedial Strategy, Ref GRM/P10350/MRS 1 Rev A, dated July 2023.
5. GRM Planning Response to Proposed Development at Cliff Hall, Ref GRM/P10350, dated 31st May 2024.

The following includes a summary of the findings of each report.

ARC Phase 1 DTS and CMRA – 9th September 2021

The ARC Phase 1 desk top study report (DTS) is a standard review of the site's environmental setting, historical use and contains a preliminary conceptual model. The Phase 1 concludes that the site is at low risk from soil and groundwater contamination, this is mainly due to the site having no previous development.

The Coal Mining Risk Assessment (CMRA) identifies three mine entries and shallow mine workings within the site.

The DTS and CMRA concludes that ground investigation works are required within the site to identify the extent of shallow mine workings and to locate the three mine entries. In addition, ground investigation is required to determine shallow ground conditions to confirm land quality, ground gas regime and provide geotechnical design information.

The ARC DTS and CMRA report has been produced in accordance with regulatory guidance relating to Phase 1 Preliminary Risk Assessment and Coal Authority relating to Coal Mining Risk Assessment.

RGS Phase 2 Geoenvironmental Report – 25th May 2022

The RGS ground investigation comprised a series of trial pits, dynamic sampling boreholes, rotary openhole boreholes, trial trenching and a GPS survey. The investigation scope is in accordance with the recommendations made within the Arc DTS and CMRA.

Some localised made ground was encountered within the site. Laboratory analysis of the made ground and shallow soils concluded that the site is free from contamination and is suitable for residential development. No soil remediation works are required at this site.

The mining investigation identified the presence of shallow workings below the site. Three mine entries were located during the investigation works. No mines gas was detected during the mining investigation.

The site is classed as high risk with respect to instability from shallow mine workings and will require remedial action (drilling and grouting) to make the site suitable for development. Alternatively shallow mine workings could be removed as part of an earthworks exercise, with ground levels reduced to suitable development levels.

The RGS scope of works are in accordance with relevant British Standards and authoritative technical guidance. The assessment of the contamination status of the site is in line with the technical approach presented in Land Contamination Risk Management (LCRM) (Environment Agency, 2023) and in general accordance with BS 10175: 2011 + A2 2017 (BSI, 2017). It is also compliant with relevant planning policy and guidance (i.e. National Planning Policy Framework).

The scope of the RGS intrusive investigation has been designed in line with the recommendations of BS5930:2015+A1:2020 Code of practice for ground investigations (BSI, 2020), which maintains compliance with BS EN 1997-1 and 1997-2 and their related standards. It has also been developed in general accordance with BS 10175: 2011 + A2 2017.

RGS Ground Gas Monitoring 15th July 2022

Six rounds of gas monitoring have been undertaken over three months. The ground gas risk assessment indicates the site would be classed as CS2, due to the presence of slightly elevated carbon dioxide. Gas protection measures would be required within new houses at the site.

The RGS ground gas assessment has been undertaken in general accordance with BS8576: 2013 and BS 8485:2015+A1:2019.

GRM Ground Stability Remedial Strategy July 2023

The GRM remedial strategy summarises the finding of the GRS Phase 2 SI report and provides a strategy for stabilising shallow mine workings at the site.

Proposed finished levels in the centre of the site are lower than existing ground levels, earthworks are required to achieve desired ground levels. The earthworks to achieve proposed finished levels will also remove the coal seam and associated voided ground which as a consequence will remove the instability risk from underground workings. Due to the removal of coal as part of the earthworks an incidental coal license will need to be obtained from the Coal Authority.

Outside the areas of earthworks, shallow mine workings will require drilling and pressure grouting to stabilise the ground. The GRS strategy includes a provisional treatment specification for drilling and grouting works, this will be agreed with the Coal Authority prior to works commencing.

Three mine entries are known to be located within the site. The GRS strategy includes treatment details (grouting and capping) for the mine entries.

Ground gas monitoring will be required during the drilling and grouting works. On completion of the treatment works, any risk from gas migration will be reduced to negligible, as all pathways will be filled.

Further site investigation is proposed by GRS to refine the treatment specification, though this can be undertaken as part of the drilling and grouting works.

The requirements for the GRM treatment of shallow workings are in general accordance with CIRIA C758D (2019).

GRM Planning Response Letter 31st May 2024

Following a deferral in planning process, GRS have produced a letter to provide more treatment and technical information, after planning committee comments.

The letter answers all the committee comments using information provided in previous investigation reports and specifications. No new information is provided within the GRS letter.

RSK agree with the comments provided by GRM within their response letter.

Summary of Planning Consultations

A review of planning documents indicates that the Coal Authority (the statutory consultee for mining) do not object to the proposed development. All specifications and validation of treatment will be required to be approved by the Coal Authority before the site is occupied, by means of additional planning conditions.

Kirklees Council accept the recommendations within the RGS reports regarding site contamination and ground gas, although further gas monitoring is required as part of the drilling and grouting works. If coal is left near to the surface, it will require isolating beneath a minimum 1m thickness of inert material, and inert service trenches are required.

Adjacent Development Sites

Land off Wood Nook (Planning Ref 2018/70/93710/E) located 50m west of the site encountered similar ground conditions to Cliff Hall. On the adjacent Wood Nook site shallow underground workings and two mine entries were present within the site. Treatment on the Wood Nook site included drilling and grouting and the capping of mine shafts, which is similar to that proposed on the Cliff Hall site. The site was treated successfully and has been occupied for several years.

Land of Leak Hall Road (Planning Ref 2020/70/91506/E) located immediately to the east of the site also contains very similar ground conditions to Cliff Hall. Mining features included four mine entries and shallow underground mine workings. It was recommended that treatment by drilling and grouting of the shallow mine workings be undertaken to stabilise the site. Prior to the treatment works commencing the Leak Hall site had been cut and terraced to development levels, it is believed that during these works the entrances to a number of adits were removed. Treatment of the site was undertaken in 2020 and the site is now occupied.

Conclusion

Ground investigation reports demonstrate the site is not contaminated and this has been accepted by the contaminated land team at Kirklees Council.

The site has a coal mining legacy, which has been investigated, with shallow mine workings and mine entries proved within the site. A treatment plan has been proposed, the concept of which has been reviewed by the Coal Authority, who have no objection to the proposed development.

Treatment of shallow workings will be undertaken by drilling and grouting, which has been undertaken on many development sites within West Yorkshire. With respect to earthworks to lower site levels, a surplus of material will be created within the site that will require export off site, this will include coal. The removal of the coal and other material is a standard earthworks exercise to enable design levels to be achieved. Where coal is left insitu, it will be covered with at least 1m of inert material, as recommended by Kirklees.

The cut and fill earthworks will be undertaken with regulated environmental controls relating to noise, dust, surface water runoff, vibration and traffic movements. The environmental controls are detailed in the Construction Environmental Management Plan (CEMP), which has been submitted to planning and is considered by RSK to be suitable for the site. The use of a CEMP, which is standard on all development sites, ensures that we have planning conditions that control the site conditons to ensure that the correct measures are put in place throughout the entirety of the construction process.

Other sites in the immediate vicinity of Cliff Hall had similar ground conditions as a result of shallow mining. These nearby sites have been successfully treated, using the same treatment methods as proposed at Cliff Hall, to allow residential development.

In summary, site investigation works to date have been able to demonstrate that the site is suitable for residential development, albeit further investigations works are required which can be undertaken during the enabling earthworks and drilling and grouting stabilisation works.

Whilst we appreciate the request by 3rd parties that the developers confirm the specific amount of material which is required to be taken from the site, we share the view that this is something that cannot be fully quantified until work commences on site. This is the same position with all development sites, not just those underlain by coal. But what we can confirm is that the processes which have been proposed for the groundworks and treatment at the Cliff Hill site is in full accordance with the required regulations outlined in CIRIA C758D (2019), Construction Procedures for Earthworks BS EN 16907-3:2018 and guidance in NHBC Chapter 4.6. This will ensure that there are no adverse environmental impacts throughout the construction process. The adjacent development sites have followed the same process that is being proposed here. Which is direct evidence of the robustness of the measures which are proposed to be put in place at the Cliff Hill site.

Please contact the undersigned if you require any further information.

Yours sincerely
On behalf of RSK Environment Limited

John Harrison
Associate Director