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Date: 15.12.2025
Project No: GEO2025-7009
Project Title: Coal Mining Risk Assessment (CMRA) for Coach Road, Whitehaven

Introduction:

Geo Environmental Engineering Ltd (GEO) were commissioned by Recoup Capital Limited ('the client'), to provide an updated Coal Mining Risk Assessment (CMRA) for a parcel of derelict undeveloped land located adjacent to Coach Road in Whitehaven, Cumbria, to facilitate proposals to redevelop the site for residential purposes in the near future.

The site will be developed for a residential end use, comprising 35 no. semi-detached houses with driveways, private gardens, estate road infrastructure and public open space / SUDs areas. A copy of the proposed development layout plan is attached with this report.

Site Location:

The site is located off Coach Road, opposite Whitehaven Bowling Club and Whitehaven Football Club, in the Cumbrian town of Whitehaven, as indicated on the site location plan attached to this report. Access to the site is gained from Coach Road, which forms the site's southern boundary.

- National Grid Reference: 297380, 517470
- Post Code: CA28 9DF

Regulatory and Geological Review:

A CMRA was previously completed for site back in 2014 by REC Limited, and recourse should be made to this previous assessment and ground investigation works as part of this report.

A geological review of the site has been undertaken using information provided on published geological maps (BGS Sheet NX91NE, 1:10,000 scale, Solid and Drift Edition, dated 1998), and this indicates the conjectured sub-crop of the Main (CUMN) coal seam below the southeastern portion of the site, trending in a general north-south direction and dipping the west below the site. The Main coal seam is recorded to exist up to 4m in thickness below this part of Whitehaven. The Main is underlain in turn by the Yard coal seam (aka Metal – YRD), which is conjectured to subcrop to the east of the site also dipping to the west. The Yard coal seam is locally recorded up to 2m in thickness.

The Bannock coal seam (BNOK) is conjectured to subcrop to the west of the site, dipping west away from the site. The Bannock coal seam is recorded to exist up to 2.5m in thickness.

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The conjecture position of the Raven Hill Fault is recorded to cross the northern portion of the site and is shown to be downthrown to the north by 60m. The fault has locally displaced the subcropping coal seams, and to the north of the fault the Bannock coal seam has been displaced to the east.

According to the Mining Remediation Authority (MRA), the southern eastern and central portion of the site is shown to lie within a Development High Risk Area (DHRA) associated with the conjectured subcrop position of the Main coal seam. However, the MRA does not record the presence of either known recorded or probable unrecorded shallow coal workings below this portion of the site associated with the Main coal seam.

The MRA records a second DHRA across the northwestern portion of the site, presumed to be associated with the Bannock coal seam, and indicates that known recorded shallow workings underlie the site at this location.

As part of this updated assessment, a Consultants Coal Mining Report was procured from the MRA, and a copy of this is attached with this report.

The information contained within the Consultants Coal Mining Report indicates that shallow workings (15m bgl) exist within the Bannock coal seam (aka Brick) below the site with an extraction thickness of 1.82m. Further workings are recorded within the Main coal seam at a depth of 58m bgl with an extraction thickness of 1.80m.

Based on the depth of the workings and the extraction thickness, we do not believe that the workings within the Main coal seam represent a risk to the site, unlike the Bannock. The recorded separation between the workings in the two seams (43m) appears to roughly correlate between the bed separation anticipated for these seams in this area of Whitehaven (c.40m).

Ground investigation works were previously completed by REC in 2014, and drift was recorded to depths of between 9.50m and 16.00m bgl. A thin coal seam (0.50m thick) was recorded in one borehole only at a depth of 14m. No evidence of coal workings, in the form of voids, broken ground or soft ground, was recorded in the 3 no. boreholes sunk across the site to depths of at least 30m bgl. However, due to limited site access and ground restrictions it is possible that the rotary boreholes did not target the right areas of the site, i.e. the northwestern corner, which is where the MRA infer that known shallow recorded workings exist within the Bannock / Brick coal seam below the site. As such, it was recommended by REC that additional rotary boreholes should be drilled to further investigate areas of the site that were previously unavailable.

Whilst the MRA have suggested that their records indicate known recorded shallow workings exist below the northwestern portion of the site, as a matter of course GEO has procured a copy of the mine abandonment plan for the Bannock / Brick coal seam, to identify the extent of the workings below the site to further aid targeted investigation works.

Based on the plan provided, GEO has approximately overlaid the site boundary based on the geographical features included on the plan. An extract of the plan can be found on the following page (Figure 1), and this suggests that potential workings exist along and below the western boundary of the site. This appears to be contrary to the indicative information provided by the MRA. The plan would also suggest that the subcrop position of the Bannock / Brick is located further to the east than indicated on geological maps. In addition, it is possible that the depth of the recorded workings within the Bannock / Brick coal seam exist at a greater depth than indicated by the MRA.

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When considering Figure 1 and the proposed development layout, properties located nearest to the western boundary may be at risk from land instability should void migration reach the surface.

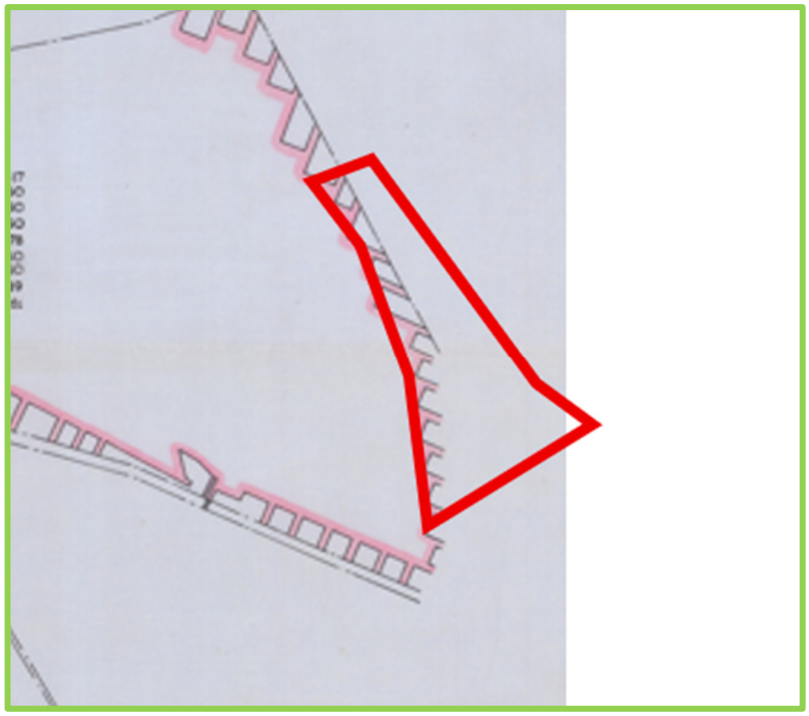

Figure 1 – Extract of Bannock / Brick Mine Abandonment Plan with site boundary (approx.)

Summary:

In summary:

- Information supplied by the MRA is contradictory in relation to their Consultants Coal Mining Report, Mine Abandonment Plans and the BGS Geological Plan, with none of those data sources corroborated by the findings of the 2014 REC investigation.
- Therefore, some uncertainty exists as to the risks associated with the legacy of coal mining below the development area and whether any risk exists to the proposed development.

As a result of the conflicting information and resulting uncertainty, it is recommended that targeted intrusive investigation works are undertaken prior to the development commencing, in the form of rotary boreholes (at least 5 no.), should be undertaken targeting the northwestern portion of the site and western site boundary to determine the ground conditions with greater certainty and the level of risk posed to the site from known subjacent coal workings. These rotary boreholes are necessary to determine if the site requires remedial measures to stabilise the ground prior to development commencing (e.g., pressure grouting).

General Comments:

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/ or other key stakeholders, including warranty providers in order to seek their approval of the findings prior to undertaking any site works or development on site.

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If there are any queries, please do not hesitate to contact Geo Environmental Engineering Ltd.

Yours Faithfully

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