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Our Ref: GRM/P10350/LR.01

Date: 31st May 2024

FAO Andrew Black
Urban Group (York) Ltd.
By Email Only

RE: Planning Response to Proposed Development at Cliff Hill, Cumberworth Lane, Denby Dale

The following document has been prepared for the planning committee in response to queries related to the drill and grout treatment works and Ground Stabilisation Remedial Strategy prepared by GRM Development Solutions (ref GRM/P10350/MRS.1 Rev A, dated July 2023).

GRM have been made aware of the specific queries below:

1. How much material would be removed from the site
2. How much material would be imported into the site (as grouting or other material)
3. How the above operations would be carried out
4. How environmental impacts would be mitigated
5. Assurance in respect of the risk associated with combustible material being left on site

The responses below are based on information pertained within the Ground Stabilisation Remedial Strategy document and information from the Rogers Geotechnical Services Phase I Geo-Environmental Report (ref: C2206/22/E/3401, May 2022).

How much material would be removed from the site?

Based on the information to date an extraction area of approximately 4500m² is anticipated. The boreholes have identified the un-named seam as being between 1m and 2m thick, both in-tact and worked. Assuming an average seam thickness of 1.4m, an extraction area of 4500m², and assuming 30% of the seam has been worked, **approximately 4400m³ is anticipated to be extracted**. This figure is likely to change as works progress and more information becomes available.

Please refer to page 7 of the Ground Stabilisation Remedial Strategy.

How much material would be imported into the site (as grouting or other material)?

The remedial strategy document and proposed treatment grid (attached), highlights approximately 300no primary holes and an additional 250no secondary holes. The treatment holes are anticipated to be c.20m deep. Using an approximate volume of 3m³ of grout per treatment hole a **volume of 1650**



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tonnes has been calculated. This volume will consist of a mix of pulverised fuel ash (PFA), Ordinary Portland Cement (OPC) and sand. This figure is likely to change as works progress and more information becomes available. A more refined estimate may be calculated following additional borehole investigations.

How the above operations would be carried out?

A proposed treatment grid has been produced, based on zoning the development into risk categories. Gardens and areas of public open space are considered to be at low risk and no treatment boreholes have been proposed in these areas. Estate roads are considered to be moderate risk with 6m primary treatment holes being completed, additional treatment holes may be required subject to grout takes. Residential dwellings have been assigned a high risk and will be treated on a primary 6m and secondary 3m treatment grids. The proposed treatment grid has been appended to this document.

Large tracked rotary rigs (similar in size to some 360 excavators) are used to drill the treatment holes. A mixing plant is used to prepare the grout. Rubber grout pipes will be linked from the mixing plant and the grout injected into the ground methodically at each treatment borehole position.

The specifics for drill and grout treatment are included in pages 5 and 6 of the Ground Stabilisation Remedial Strategy and are summarised below:

- Depths of the target seams are to be established through ground investigation. Treatment is not required where the seam is covered in competent rock, which is at least 10 times the thickness of the worked seam.
- Primary grouting holes are drilled on a 6m grid with secondary holes below and in the immediate surrounds of proposed new structures on an approximate 3m grid.
- Grout is pressure injected to the depth of the coal workings via a temporary steel casing socketed into the rockhead.
- A grout mix of cement (OPC) and pulverised fuel ash (PFA) would be used. If excessive voiding is encountered, the use of sand will be included in the grout mix as a filler.
- Tertiary holes may be required to check and prove grouting success.
- Grout is injected into the treatment holes and pressurised to the surface, to ensure full depth reinstatement.

How environmental impacts would be mitigated?

Suitable method statements will be required for the works and should include an Environment Construction Management Plan for the drilling and grouting works. This will highlight methods to mitigate against any potentially contaminated works on site, including:

- Preventing run off of liquid grout outside of the site boundary.
- Having a single area for material storage.
- Preparing a suitable area for grout mixing.
- Maintaining equipment to prevent grout leaks etc.

GRM have been made aware of other environmental reports that are included on the planning website, including noise assessments, transport etc.

Assurance in respect of the risk associated with combustible material being left on site

No combustible materials will be left on site with respect to the drill and grout treatment works once the works have finished (fuel bowsers etc).

Leaving coal insitu (not excavated) is not considered to be a risk by GRM as long as at least 0.5m of natural ground is between the top of the seam and the base of any foundation. GRM have been made aware that Kirklees' guidance is to maintain 1m cover and this will be maintained across the development.

We trust this is suitable for your current requirements, should you require any further information or would like any clarification of the points raised please do not hesitate to contact us.

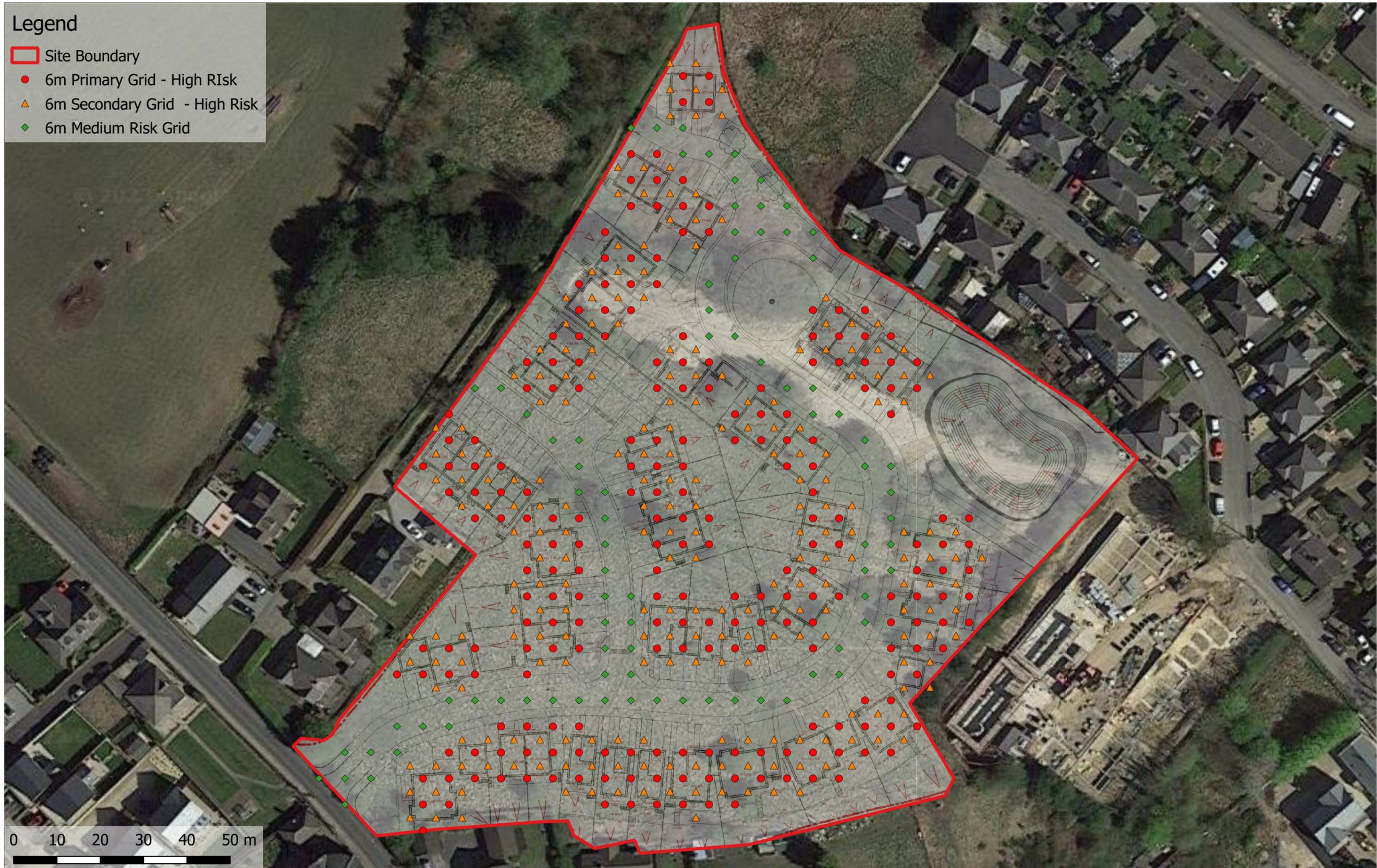
Yours sincerely,
for GRM Development Solutions Ltd

Russell Hurcombe
Senior Engineering Geologist *MGeoSci (Hons) FGS MIMMM*



Legend

-  Site Boundary
-  6m Primary Grid - High Risk
-  6m Secondary Grid - High Risk
-  6m Medium Risk Grid



NOTES:
- Based on 6m primary grid with 3m centres under plots

CLIENT:	Urban Group (York) Ltd
PROJECT:	Cliff Hill, Cumberworth Lane, Denby Dale, Huddersf
TITLE:	Proposed Drill and Grout Treatment Grid

PROJECT No:	P10350	DATE:	July 2023	DESIGN/DRAWN:	RDH
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