

09 February 2026

Orion Homes Limited  
5 Benton Office Park  
Bennett Avenue  
Wakefield  
WF4 5RA

For the attention of Candy Day

**Re: 2025/92161 Whitehall Road West, Birkenshaw Planning Comments**

Dear Candy,

Following your enquiry, please see below a summary of the investigations undertaken to date at Whitehall Road West in response to the letter received from Kirklees Council (Ref. WK202536791) dated 26<sup>th</sup> November 2025.

***Background***

The following previous reports have been previously produced for the site and should be read in conjunction with this statement:

- RSK Environment Ltd 'Site Investigation' (Ref. 350520-R01 (00)) dated November 2022.
- ARP Geotechnical Ltd 'Combined Stage 1/Stage 2 Geo-Environmental Report (Ref. ORH/20r1) dated 11<sup>th</sup> August 2023.
- Groundtech Consulting Ltd 'Coal Mining Risk Assessment' (Ref. GRO-24208-5354) dated 16 August 2024.

The comments from Kirklees relate to elevated arsenic concentrations recorded by RSK in the topsoil in the southern area of the site which require further assessment, the combustion and ground gas risk from shallow coal seams and the requirements for a complete site wide Conceptual Site Model (CSM). The comments are summarised below:

1. The reports previously submitted cover the northern and southern areas of the site respectively in isolation and have not characterised the site as a whole.
2. The report by RSK concluded that further sampling is necessary to fully investigate the exceedances for arsenic across the site, Kirklees do not accept the report authors description of the "slight exceedances" of Generic Assessment Criteria values (GAC), given that only 4 topsoil samples were submitted for analysis, with 3 of them exceeding values. Thus, the CSM for the site is not complete.
3. Although shallow coal has been identified at site from borehole and trial pit records, the combustion risk has not been fully addressed in relation to services, site levels and foundation depths have not been fully discussed in relation to gas risk and no detailed information has been given to explain if trial pits and rotary boreholes that penetrated the shallow coal layers on site have been safely backfilled.

Minimal historical development was identified on the site during the Phase I by RSK and the site was encountered to comprise topsoil overlying weathered bedrock deposits during both phases of investigation by RSK and ARP.

***Elevated Arsenic***

The previous investigation by RSK identified elevated concentrations of Arsenic in 3 of the 4 samples of topsoil screened from across the southern site area and the later investigation by ARP recorded no elevated concentrations of arsenic in the eight samples screened from the northern area of the site. The elevated concentrations of arsenic

recorded by RSK were recorded at concentrations of 47mg/kg, 41mg/kg and 37mg/kg when compared to the screening value of 37mg/kg for residential end use with plant uptake.

In order to produce a site wide Conceptual Site Model (CSM) the results recorded must be considered a whole dataset and statistical analysis in accordance with CL:AIRE, 2020 "*Professional Guidance: Comparing Soil Contamination with a Critical Concentration*" has been undertaken by Groundtech Consulting to assess the results. Analysis was carried out on the 12 samples of topsoil obtained during the investigations by RSK Environment and ARP based on the observations and descriptions during the Ground Investigation. Based on the borehole and trial pit logs from the previous investigations it is considered that the topsoil recorded by RSK and ARP is the same soil population.

The aim of the statistical analysis was to determine the probability that the true mean lies below the critical concentration' with a level of confidence greater than 95%.

The statistical analysis for arsenic shows that the Confidence interval (17.92mg/kg to 34.03mg/kg) is less than the Critical Concentration (37.0mg/kg) for residential end use with plant uptake with a confidence level of 95%, meaning that the true mean also lies below the critical concentration and no further action is required with respect to arsenic for the natural topsoil at the site.

On commencement of the enabling phase the topsoil is to be stripped and stockpiled separately from the remainder of the material and it considered that sufficient dilution will occur of the arsenic concentrations further reducing the risk to site end users. No further action is considered to be necessary with respect the arsenic within the topsoil based on the chemical testing undertaken to date and topsoil is considered to be suitable for reuse onsite within private garden areas.

Validation of the cover systems placed in private garden areas including chemical and depth validation is to be undertaken following placement in accordance with YALPAG and a validation frequency of 1 per 2 plots is proposed at present. If the chemical testing is to be undertaken in stockpile form this will be undertaken at a frequency of 1 per 250m<sup>3</sup> for the site won topsoil with a minimum of 5 samples tested.

Based on the statistical analysis undertaken on the results previously recorded the risk to Human Health across the entire site area from contaminated soils is considered to be Low. No significant source of contamination has been recorded and the statistical analysis has determined that no further action is required with respect to the elevated arsenic recorded by RSK.

#### *Risk from Combustibility of Shallow Coal*

The previous investigations undertaken at the site have identified shallow Coal seams in the trial pitting exercises from depths of between 0.8m begl and 3.1m begl which ranged in thickness to between 0.2m and 0.4m.

The combustibility of the coal seams was assessed as part of the Coal Mining Risk Assessment by Groundtech Consulting. Any excavated coal is to be treated as combustible and consideration into the prevention of ignition should be undertaken during groundworks in accordance with CIRIA C758. This will include deepening through coal for foundations when encountered and placing sufficient clay cover system in gardens to isolate for lifetime of development.

Ground gas monitoring undertaken at the site to date has placed the site within Characterisation Situation 1 (CS1) where no gas precaution measures are required, based on the monitoring results undertaken to date we would agree with this classification. Suspended floor slabs will be adopted for the proposed dwellings which will incorporate gas protection measures into the construction of the properties which provides an additional layer of confidence.

In order to fully assess that the risk from mine gas has been assessed appropriately, the CL:AIRE Good Practice for Risk Assessment for Coal Mine Gas Emissions, 2021 guidance document has been used to adopt a multiple lines of evidence approach that covers not only the guidance in BS 8485 but also oxygen depletion and emissions through voids and fractured rock.

The Decision Support Tool for Mine Gas Risk Assessments has been used to aid the mine gas assessment which classed the site as being a *Moderate* Risk Zone. This is based on the adit lying between 20m and 50m from the site boundary.

During the gas monitoring undertaken during the previous investigations a maximum positive flow rate of 0.2l/hr was recorded in the locations and no depleted oxygen levels were recorded during the monitoring periods, therefore indicating that no voids or fractured rock is present beneath the site and depleted air is not migrating upwards.

The Coal Authority Interactive Map viewer shows that the site does not lie within a Development High Risk Area and no past or probable shallow coal mine workings are indicated to be present beneath the site. The gas monitoring results show there is not sufficient evidence to require increasing the site to a CS2 classification. Hydrogen sulphide was been recorded at a maximum concentration of 1ppm which is considered to be negligible and not pose a risk to the development and carbon monoxide has been recorded at a maximum concentration of 23ppm during the monitoring.

At these concentrations carbon monoxide is not considered a risk based on Table D.1 of BS 8576:2013 where the minimum concentration that symptoms would be observed is 35ppm. Natural soils produce carbon monoxide as a result of chemical oxidation of small quantities of organic matter. It is regularly detected in natural soils and unless there is an external source such as a smouldering landfill it does not pose a risk to development. The production is transient and is probably dependent on rainfall. The carbon monoxide sensor on the most commonly used gas meters is also cross sensitive with hydrogen.

No risk from the accumulation of permanent ground gases is considered to exist.

We trust the enclosed meets your requirements, if you have any queries, please do not hesitate to contact the undersigned.

Yours Sincerely  
**For Groundtech Consulting Limited**

**Jamie Parr**  
Senior Consulting Engineer  
**Groundtech Consulting Ltd**  
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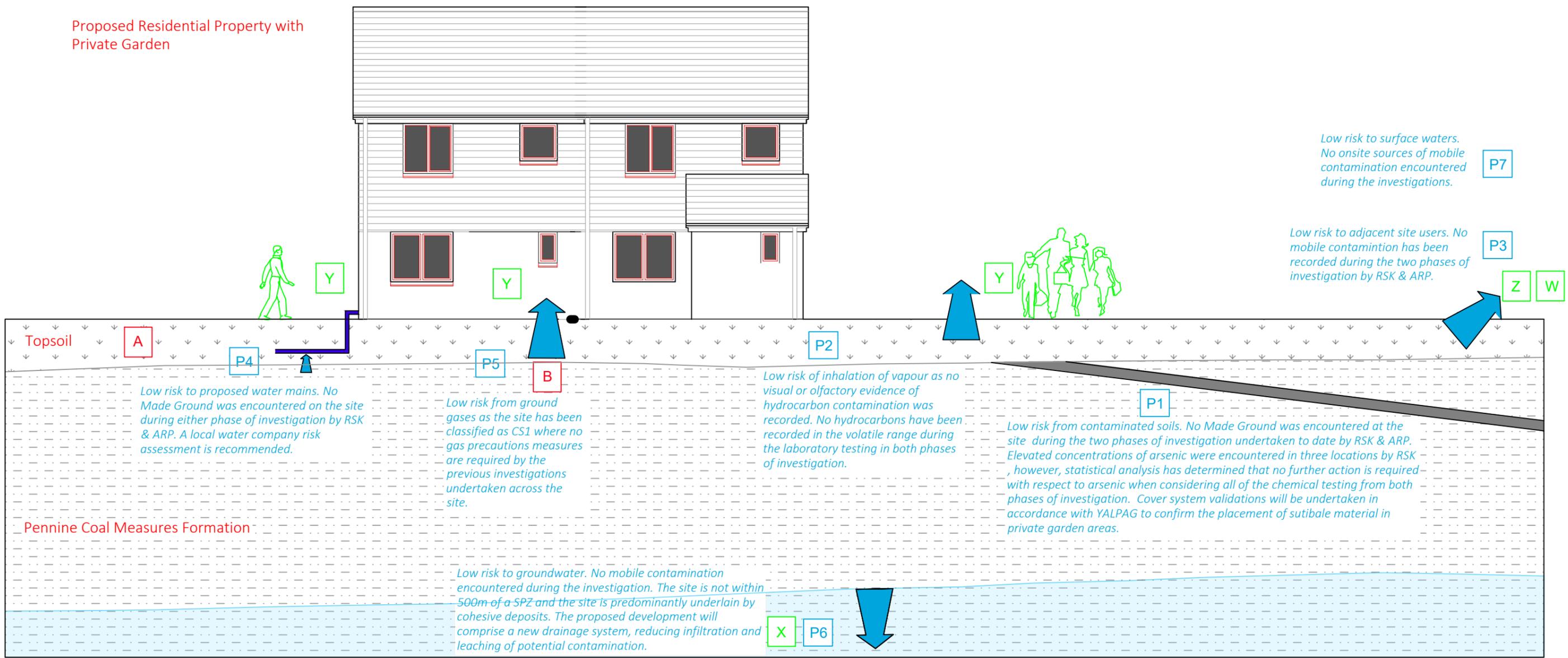
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*GRO-24205-P04 - Revised Illustrative Conceptual Site Model (CSM)*

SOURCES	
A.	Contaminated soils / Made Ground and Topsoil.
B.	Ground gas.

POLLUTION LINKAGES	
P1.	Ingestion of soil and dust.
P2.	Inhalation of vapour.
P3.	Inhalation of soil dust by adjacent site users.
P4.	Attacking of potable water supply pipe.
P5.	Migration and accumulation of ground gas in internal places.
P6.	Impaction of groundwater from soil contamination.
P7.	Migration of soil and groundwater contamination impacting surface waters.

RECEPTORS	
W.	Nearest watercourse
X.	Groundwater within the underlying Secondary A Aquifer.
Y.	Site end users.
Z.	Adjacent site users.



	CLIENT	ORION HOMES	DATE	FEBRUARY 2026	<table border="1"> <tr> <td>Rev.</td> <td>Details</td> <td>Date</td> </tr> </table>	Rev.	Details	Date	Status		Notes
	Rev.	Details	Date								
	PROJECT TITLE	WHITEHALL ROAD WEST, BIRKENSHAW	SCALE	NTS		Preliminary					
	PLAN TITLE	ILLUSTRATIVE REVISED CSM	PLAN NUMBER	GRO-24208-P04		Draft					
				Issued	●						
				For Comment							
				Approved							

