



Report

**80061155-SBG-WOODG-NA-
RP-I-00001
CONTAMINATED LAND
PRELIMINARY RISK
ASSESSMENT ADDENDUM
WOODGATE HILL WTW
COMPOUND**

STRABAG UK LIMITED

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UNCONTROLLED WHEN PRINTED

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1. INTRODUCTION

1.1. UPDATE AND ADDENDUM POST CONSULTATION WITH CONTAMINATED LAND OFFICER BURY COUNCIL

The following information provides an update to the previous submission in relation to discharge of Condition 7 and Condition 8 of Planning Application 66947 and in response to Bury Council reference CL1148.130726.1. and the following recommendations.

The site is to be developed in 5 phases. Phase 1 comprises enabling and site establishment works; substantive excavation works commence in Phase 2.

- Condition 7 (Pre-commencement: Site Characterisation and Remediation Strategy) – Additional site investigation works are proposed. We have also recommended that additional mapping and aerial imagery be sought to inform the PRA and proposed site investigations as well as clarification as to whether the potential mines gas risk has been considered and an assessment of radon. As such, there is insufficient information to recommend the discharge of this condition at this stage. It is recommended that the applicant or their consultant contacts this Section at the earliest opportunity to resolve the outstanding issues promptly given the proposed start of works in Q3 2026.
- Condition 8 (Prior to first use: Remediation Verification) – Not relevant to consider at this stage.

It is noted that Phase 5 comprises site reinstatement works which includes topsoil replacement. There is no specific condition for the validation of imported topsoil, and it is not a remedial action for this development. As such should topsoil be imported as part of the reinstatement works, it is recommended that it be suitably tested to demonstrate that the soil is suitable for use and free of contaminants. Advice on soil testing can be found in our Developers Guide.

And to address the following outstanding information

1.1.1. OUTSTANDING INFORMATION

In order for this Section to be satisfied that this development does not pose a risk to human health or the environment, the following information needs to be submitted to the Council for approval:

- (i) Revised conceptual site model to include assessment of areas of potential infill associated with quarrying and a former cover reservoir and the potential for mines gas and radon risks.
- (ii) *A site investigation and risk assessment report for the proposed additional investigation works. Factual information on the additional geotechnical investigations should also be provided.*
- (iii) *A detailed remediation strategy and validation plan should the findings of (ii) warrant it.*

- (iv) *A materials management plan, as the CL:AIRE Definition of Waste Code of Practice is to be used.*
- (v) *After completion of site works, should remedial actions be required, a verification report is required to validate that the work undertaken conforms to the remediation proposals received and agreed by this Section.*

It is also recommended that should topsoil be imported to site, it should be appropriately tested to demonstrate it is suitable for use. Whilst not related to a condition, this Section would appreciate the reports of this being submitted for info.

1.2. DISCHARGE OF PHASE 5 REVISION

Post discussions with the Bury Contaminated Land Officer, the Environment Agency and CL:AIRE representatives we would like to discharge **Condition 7** with respect to **Phase 1** to the end of **Phase 2 only** and for the scope provided within **Table 1.1** below.

Table 1. 1 Scope of works

Construction Phase	Works
Phase 1 - Enabling and Site Establishment Works Anticipated start of works Q3 2026	• Temporary haul roads and footpaths formation • Water Attenuation Lagoons formation • Setup of temporary mobile welfares • Setup of drainage and wastewater treatment system • Setup of temporary generators area (use until mains connection) • Setup of wastewater treatment plant • Partial site access haul road and footway construction works • Site entrance junction construction works • Topsoil removing • Temporary security setup • Erection of temporary fence line (e.g. Heras fence) • Concrete testing building
Phase 2 - Commencement of Substantive Excavation Works Anticipated start of works Q4 2026	• Site compounds re-profiling • Site access haul road and footpath construction works • Sheet piling earthworks for ground stabilization • Facilities foundation hardstanding construction • Lay in required utilities services (e.g. water, gas, telecom) • Site security system setup (e.g. fence line, turnstile gates) • Construction of footings and foundation slabs

Construction Phase	Works
	• Substation connection and commissioning • LV distributor and commissioning • Welfares facilities and site car parking construction • Site storage and workshops area formation • Crawler and mobile cranes setup • Setup of grout slurry batching plant • Setup of piling casing storage area • Setup of reinforcement cages storage area

1.3. CLARIFICATION IN RESPECT TO CONDITION 8

Condition 8 (Prior to first use: Remediation Verification) – Not relevant to consider at this stage.

It is noted that Phase 5 comprises site reinstatement works which includes topsoil replacement. There is no specific condition for the validation of imported topsoil, and it is not a remedial action for this development. As such should topsoil be imported as part of the reinstatement works, it is recommended that it be suitably tested to demonstrate that the soil is suitable for use and free of contaminants. Advice on soil testing can be found in our Developers Guide.

Phase 3 to Phase 5 works (**Table 1.2**) are to be discharged at a future time, importation of clean soils will form part of CL:AIRE DoWCoP declarations.

Table 1.2 Phases 3-5 works to be discharged at a future date

Construction Phase	Works
Phase 3 - Shaft / Portal & Tunnelling Works Anticipated start of works Q3 2027	• Secant piles construction works • Capping beam construction works • Shafts excavation & spray concrete lining construction works • Shaft bottom permanent structure construction works • TBM breaks through reception shaft • Dismantling of TBM components within the reception shaft • Lifting and extraction of TBM parts • Handling and disposal of waste materials (slurry, lubricants, debris) • Loading TBM components onto transport vehicles for removal from the site. • Post-retrieval inspection of the reception shaft to confirm structural stability.
Phase 4 - Shaft / Portal & Tunnelling Works Anticipated start of works Q3 2027	• New built tunnel rinsing works • Site and UU facilities relocation works (If required) • Siphon Pipelines Connection Works • Surface permanent structures preparation works
Phase 5 - Site Reinstatement Works Anticipated start of works Q1 2032	• Tunnel support services dismantling works • Shaft permanent structures construction works • Surface permanent works (e.g. boundary treatment) • Site re-landscaping works • Permanent road modification works • Site permanent security setup • Construction site equipment and facilities demobilisation • Topsoil replacement • Vegetation plantation for reinstating

Discussions with the Environment Agency and CL:AIRE are currently ongoing to agree upon an initial MMP covering Phase 1 and 2 construction works under a two stage declaration for long term stockpiling of site won clean material. All material stored onsite will be tested prior to stockpiling conservatively using a potential end use of Public Open Space - Park (POSpark), although current end use is unknown. Material will also be retested prior to final placement. Any deteriorated topsoil due to long term storage will be removed from site by licenced waste contractor or reused as a subsoil for fill where appropriate. Materials are to be tested per 1000m³

1.3.1. PUBLIC PARKLAND (POSPARK)

An area of open space, the site is likely to be maintained by United Utilities in the long-term. The site may, in the future, provide for some recreational purposes for example dog walking. It is assumed that tracking back of soils into places of residence will be negligible.

1.4. CL:AIRE GENERIC ASSESSMENT CRITERIA (GAC)

Sample are to be assessed using CL:AIRE Generic Assessment Criteria (GAC) following

CL:AIRE, The Soil Generic Assessment Criteria for Human Health Risk Assessment.

Contaminated Land: Applications in the Real Environment. 2009. Assessment Criteria (GAC) in accordance with the CLEA software and for a further 35 contaminants sometimes encountered on land affected by contamination. Examples are provided below as **Figure 1**.

Parameter	Residential			Commercial			Altoiment			Public Open Space near Residential land (POS _{res})			Public Park Land (POS _{pub})			Source
	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	
	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	1-6% SOM	
Metals/Metalloids ⁽¹⁾																
Antimony (inorganic)	27		40			640			49			70			170	DEFRA CABL ⁽²⁾
Beryllium	1.7		1.7			12			35			22			63	LOMCEH ⁽³⁾
Boron	290		11,000			240,000			45			21,000			46,000	LOMCEH ⁽³⁾
Cadmium ⁽⁴⁾	22		190			410			3.9			220			690	DEFRA CABL ⁽²⁾
Chromium (III)	910		910			8,000			18,000			1,600			33,000	LOMCEH ⁽³⁾
Chromium (VI) ⁽⁵⁾	21		21			49			170			21			250	DEFRA CABL ⁽²⁾
Copper	2,400		7,100			68,000			620			12,000			44,000	LOMCEH ⁽³⁾
Lead ⁽⁶⁾	2,300		310			80			90			600			1,300	DEFRA CABL ⁽²⁾
Mercury (inorganic)	40		56			1,100			19			120			240	LOMCEH ⁽³⁾
Nickel	130		180			960			63			290			900	LOMCEH ⁽³⁾
Selenium	250		430			12,000			88			1,100			1,800	LOMCEH ⁽³⁾
Vanadium	410		1,300			9,000			91			2,000			6,000	LOMCEH ⁽³⁾
Zinc	3,700		40,000			730,000			620			81,000			170,000	LOMCEH ⁽³⁾
Other Inorganics																
pH	<5		<5			<5			<5			<5			<5	-
Total Sulphate			2400			2400			2400			2400			2400	BRE (2005) ⁽⁷⁾
Water-Soluble Sulphate	0.5g/l		0.5g/l			0.5g/l			0.5g/l			0.5g/l			0.5g/l	BRE (2005) ⁽⁷⁾
Parameter	Residential			Commercial ⁽⁸⁾			Altoiment			Public Open Space near Residential land (POS _{res})			Public Park Land (POS _{pub})			
	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	With Plant Uptake		Without Plant Uptake	
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	
Organics ⁽⁹⁾																
Aromaphthene	200	490	1,080	2,000	3,600	5,200	75,000	92,000	100,000	34	85	202	15,000	15,000	29,000	30,000
Benzo(a)pyrene	170	400	900	2,000	3,600	5,200	76,000	92,000	100,000	28	68	160	15,000	15,000	29,000	30,000
Anthracene	2,300	5,400	10,700	30,000	34,000	36,000	520,000	530,000	540,000	380	947	2,230	74,000	74,000	150,000	150,000
Benzo(a)anthracene	7.5	11	13	12	14	15	170	170	180	2.9	6.5	13	29	29	49	56
Benzo(b)fluoranthene	2.5	2.7	3	3.2	3.2	3.2	35	35	36	3.7	3.7	5.7	5.7	5.7	11	12
Benzo(k)fluoranthene	2.6	3.3	3.7	3.9	4	4	44	45	45	1	2.2	3.9	7.1	7.2	13	15
Benzo(g,h,i)perylene	315	340	350	360	360	360	3,300	4,000	4,000	290	440	440	440	440	1,400	1,500
Benzo(a)fluoranthene	77	93	100	110	110	110	1,200	1,200	1,200	37	76	129	190	190	370	410
Chrysene	15	22	27	30	31	32	350	350	350	4.1	8.5	19	57	57	83	110
Dibenz(a,h)anthracene	0.26	0.28	0.30	0.31	0.32	0.33	3.5	3.6	3.6	0.37	0.44	0.57	0.57	0.57	1.1	1.4
Fluoranthene	280	560	680	1,600	1,600	1,600	23,000	23,000	23,000	52	127	288	3,100	3,100	6,300	6,400
Fluorene	165	390	850	2,200	3,400	4,200	60,000	67,000	70,000	27	67	158	9,900	9,900	20,000	20,000
Indeno(1,2,3-cd)pyrene	27	36	41	45	46	46	500	510	510	9.5	21	40	62	62	100	190
Naphthalene	1	2.3	5.5	1	2.4	6	190	260	600	4	9.8	23	4900	4900	1200	1900
Phenanthrene	95.0	220	440	1,300	1,400	1,500	22,000	22,000	23,000	15	38	80	3,100	3,100	6,200	6,300
Pyrene	620	1,200	2,000	3,700	3,800	3,800	54,000	54,000	55,000	111	271	620	7,400	7,400	15,000	15,000
Aliphatic EC 5-8 (benzene)	24	40	80	24	40	80	2,400	4,000	8,000	750	1,750	3,900	570,000	590,000	600,000	95,000
Aliphatic EC 9-14 (toluene)	52	110	250	52	110	250	5,200	11,000	25,000	2,304	5,360	13,000	600,000	610,000	150,000	220,000
Aliphatic EC 15-19	13	30	70	13	30	70	1,300	3,000	7,000	321	770	1,700	13,000	13,000	14,000	18,000
Aliphatic EC 20-24	60	150	360	60	150	360	6,000	15,000	32,000	2,153	4,300	7,150	13,000	13,000	21,000	24,000
Aliphatic EC 25-29	800	1,800	2,600	800	1,800	2,600	42,000	72,000	90,000	18,800	42,400	73,200	13,000	13,000	25,000	28,000
Aliphatic EC 30-34	41,000	69,000	94,000	41,000	69,000	94,000	146,000	160,000	180,000	240,000	260,000	280,000	250,000	250,000	450,000	480,000
Aliphatic EC 35-44	41,000	69,000	94,000	41,000	69,000	94,000	146,000	160,000	180,000	240,000	260,000	280,000	250,000	250,000	450,000	480,000

Parameter	Residential						Commercial ¹⁾						Abolishment			Public Open Space near Residential land (POS _{res})			Public Park Land (POS _{pub})		
	With Plant Uplifts			Without Plant Uplifts																	
	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM	1% SOM	2.5% SOM	6% SOM			
Organics contd./¹⁾																					
Aromatic EC >5-7	80	110	240	155	300	630	15,000	28,000	55,000	12	25	57	56,000	56,000	56,000	76,000	84,000	92,000	CLEAR/OMC/IEH		
Aromatic EC >7-8	100	240	550	370	800	1,800	33,000	68,000	130,000	21	50	117	56,000	56,000	56,000	87,000	95,000	100,000	CLEAR/OMC/IEH		
Aromatic EC >8-10	20	50	110	20	53	125	2,000	5,000	120,000	8.6	21	50	5,000.0	5,000	5,000	7,200.0	8,500	9,300	CLEAR/OMC/IEH		
Aromatic EC >10-12	63	150	340	120	280	650	11,000	22,000	31,000	12.5	31	74	5,000.0	5,000	5,000	9,200.0	9,700	10,000	CLEAR/OMC/IEH		
Aromatic EC >12-16	140	320	660	1,100	1,900	2,300	35,000	37,000	38,000	23	57	134	5,100	5,100	5,000	10,000	10,000	10,000	CLEAR/OMC/IEH		
Aromatic EC >16-21	260	540	930	1,800	1,900	1,900	28,000	28,000	28,000	47	117	260	3,800	3,800	3,800	7,800	7,700	7,800	CLEAR/OMC/IEH		
Aromatic EC >21-35	1,100	1,400	1,700	1,900	1,900	1,900	28,000	28,000	28,000	370	820	1,500	3,800	3,800	3,800	7,800	7,800	7,900	CLEAR/OMC/IEH		
Aromatic EC >35-44	1,100	1,400	1,700	1,900	1,900	1,900	28,000	28,000	28,000	370	820	1,500	3,800	3,800	3,800	7,800	7,800	7,900	CLEAR/OMC/IEH		
Benzene	0.06	0.13	0.30	0.16	0.30	0.64	15	28	57	0.016	0.033	0.073	72	72	73	90	100	110	CLEAR/OMC/IEH		
Toluene	104	240	550	370	830	1800	33,000	68,000	130,000	22	50	117	56,000	56,000	56,000	87,000	95,000	100,000	CLEAR/OMC/IEH		
Ethylbenzene	30	62	150	34	81	190	3,200	7,000	16,000	16	38	91	24,000	24,000	25,000	1,700	22,000	27,000	CLEAR/OMC/IEH		
p-xylene	30	70	170	40	90	200	3,700	8,000	19,000	28	67	160	41,000	42,000	43,000	17,000	24,000	33,000	CLEAR/OMC/IEH		
m-xylene	30	70	160	34	80	190	3,400	8,000	18,000	30	74	170	41,000	42,000	43,000	17,000	24,000	32,000	CLEAR/OMC/IEH		
o-xylene	30	70	160	33	80	190	3,200	8,000	17,000	28	69	160	41,000	42,000	43,000	17,000	23,000	31,000	CLEAR/OMC/IEH		

Figure 1 – Example Generic Assessment Criteria for Soil

2. LCRM STAGE 1 - SITE CHARACTERISATION AND RISK ASSESSMENT

2.1. 'UNDERTAKE AN INVESTIGATIVE TRIAL PIT AT THE HISTORIC FEATURE LOCATION TO CONFIRM NO RISK OF CONTAMINATION AND COMMUNICATE THESE FINDINGS TO THE LPA.'

'The historic land use referred to as an animal pen from the undated historical map is shown to be a covered reservoir on mapping from c1937. Post war mapping of this area is incomplete, but we have reviewed aerial imagery. In c1940 the adjacent quarry depression and raised area of the reservoir is apparent. Aerial imagery from 1979 and subsequent imagery indicates that this land is now flat which indicates potential for infill. It is recommended that the applicant contacts this Section regarding obtaining the mapping and aerial imagery prior to planning and undertaking the proposed site investigation works in this area Once this information had been considered the consultant should advise whether one trial pit in this location is sufficient.'

Image 1 - Historic structure indicated 1888-1914

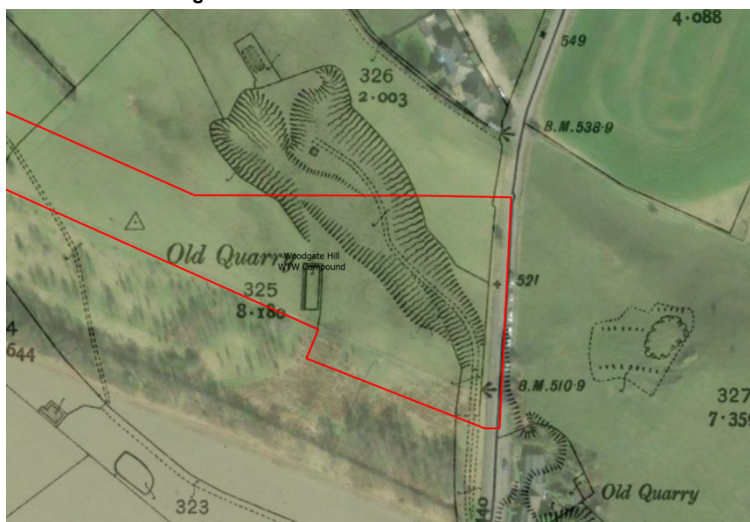
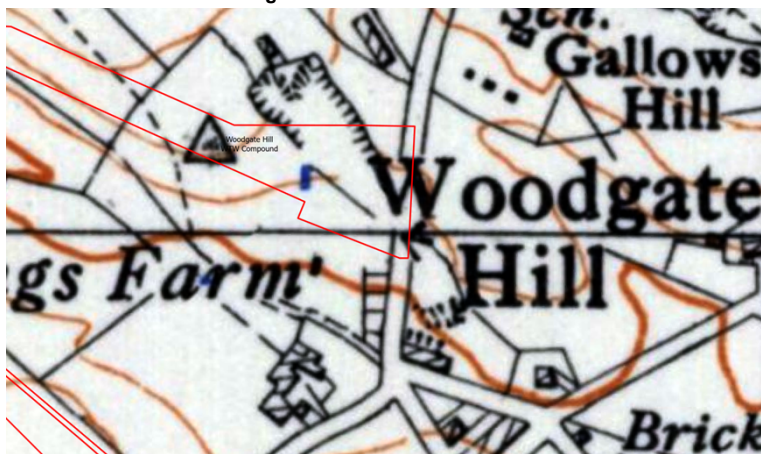


Image 2 - 2nd Land utilisation survey 1958 - 1974



Image 3 – OS 1:25000 1937 - 1961



An initial intrusive study was undertaken on 22/4/26 to identify the unknown feature present on historic mapping. The survey was undertaken post consultation with respect to archaeological conditions at the site, no features were identified and there was no requirement for a watching brief.

A trial trench was cut through the feature to 1.2m BGL to identify the structure and any contaminants present. Samples for WAC were undertaken, results are provided as **Attachment A**.

The structure comprised locally lined stone blocks at an average depth of 1.2m there were no contaminants present within or external to the structure. Surface infill comprised topsoil and subsoil with no odour or water observed. Images are provided below.



Image 5 and 5 Trial trench sections



Images 6 and 7 potential stone capping

2.2. FUTURE WORKS

Post discussions with the Contaminated Land Officer and further studies of historic mapping the initial trial trenching and investigations appear likely to have uncovered the cover layer for the potential reservoir.

STRABAG UK LTD are therefore proposing a second round of investigation comprising excavation or borehole drilling of the stone layer found during excavations (methods currently being determined) to confirm whether the stonework forms a capping layer over a covered reservoir and further assess the feature.

3. PRIVATE WATER SUPPLIES

'This Section was contacted regarding Private Water Supply locations within a 250m buffer around the redline boundary. These would be potential receptors, and whilst likely to be discounted within the qualitative assessment of the conceptual site model should have been included.'

A comprehensive study of Private Water Supplies (PWS) was undertaken for the site as part of original planning proposals. PWS within 500m (please see **Figure 2** below) were assessed as of moderate to negligible risk. A WR32 Water abstraction: application for a consent to investigate a groundwater source was undertaken during May 2026 for a step test well located at the proposed shaft site. This application included a WR36 risk assessment to include all PWS and surface water features within 500m of the site, please see **Attachment B**.

All water features in the survey were assessed as of negligible risk. All PWS within 250m of the compounds and shaft locations are monitored via live data collation or via manual measurement and observations throughout all construction works under the Private Water Supply Management Plan (PWSMP). A contingency replacement supply and tankered potable water is in place for any landowner who may lose supply as part of construction activities. PWS are included within the CSM provided in **Section 8**.

Figure 2 - PWS within 500m of Woodgate Hill Compound



4. RADON

'Radon is also not considered within the conceptual model. It is noted from the proposed general arrangements plan, that the proposed kiosk and valve house as well as an underground chamber are located within a Class 3 radon area. Whilst radon classification is based on residential end use the potential for radon risk to site workers should be considered. UKHSA provides advice on risks of radon in the workplace.'

Although SUK are proposing to discharge Phases 1 and 2 only the following information is seen as relevant to the consultation response above.

The shaft excavation compound and associated works lie in a Class 3 radon area. Given that the geographic area has a 3-5% estimate to be at or above the UK radon Action Level of 200 Becquerels per cubic metre (Bq/m³) for residential end use measures for the protection of Human Health are required.

4.1. SHAFT EXCAVATIONS AND TUNNELLING OPERATIONS

During shaft and tunnelling operations radon will be monitored by standard methods used by STRABAG UK LTD excavation teams. Due to blown ventilation during both shaft and tunnel works exceedance in radon targets of >100 Bq/m³ is unlikely to occur.

4.1.1. METHODOLOGY

Methodologies for monitoring will be compliant with the Ionising Radiations Regulations 2017(IRR17).

Monitoring for Radon will be undertaken during shaft and tunnel construction works to identify a baseline for radon. Public Health England radon detectors will be installed every 1km for tunnel baselines and every 50m for shaft excavations. Once a baseline is identified values will be considered against the risk to workers at an action level of 300 Bq/m³.

Where baseline are >300 Bq/m³ additional ventilation or reduced duration of works will be implemented to achieve a Target Level of <100 Bq/m³. An example of historic sampling is provided in **Figure 3** below.

Figure 3 – Example of historic radon monitoring applied on the Woodsmith Tunnelling Project, North Yorkshire

18 August 2021

Strabag AG - UK Branch
Redcar
North Yorkshire
TS10 4RG

PHE id: 1562746 PHE Batch: OCC1726 Client building ref:

Detector Number	Detector Position	Date Issued	Date Returned	As measured Bq m ⁻³	Annual Average Bq m ⁻³
08415299	Ring 1	09/04/2021	29/07/2021	11	14
08415115	Ring 666	09/04/2021	29/07/2021	11	14
08415170	Ring 1334	09/04/2021	29/07/2021	19	24
08415237	Ring 2000	09/04/2021	29/07/2021	17	22
08415253	Ring 2666	09/04/2021	29/07/2021	<10	<10
08415133	Ring 3335	09/04/2021	29/07/2021	13	17
08415272	Ring 4002	09/04/2021	29/07/2021	<10	13
08415206	Ring 4662	09/04/2021	29/07/2021	13	16
08415138	Ring 5334	09/04/2021	29/07/2021	<10	12
08415123	Ring 5998	09/04/2021	29/07/2021	16	20
08415179	Ring 6664	09/04/2021	29/07/2021	<10	<10
08415347	Ring 7332	09/04/2021	29/07/2021	<10	<10
08415112	Ring 8002	09/04/2021	29/07/2021	13	16
08415178	Ring 8616	09/04/2021	29/07/2021	<10	11
08415258	Ring 9334	09/04/2021	29/07/2021	<10	<10
08415213	Tbm Build	09/04/2021		N/R	N/R
08415184	Tbm Bridge	09/04/2021	29/07/2021	<10	<10
08415146	Tbm Grout Pump Operator	09/04/2021	29/07/2021	<10	11
08415297	Tbm Canteen	09/04/2021	29/07/2021	<10	<10
08415153	Tbm Conveyor Extension	09/04/2021	29/07/2021	<10	<10

Regulations

The Ionising Radiations Regulations 2017 (IRR17) apply where there is work in an atmosphere where the radon level is greater than 300 Bq m⁻³ (becquerels per cubic metre of air) as an annual average. Where the IRR17 applies, employers are required to take action to control the resulting exposures. Radon levels in buildings typically follow a clear seasonal pattern (higher in winter, lower in summer), so seasonal correction factors are used to estimate the annual average concentration that indicates whether the Regulations apply.

5. SITE INVESTIGATION AND RISK ASSESSMENT

'A site investigation and risk assessment has not yet been completed.'

It is noted within the Materials Management Plan that:

SUK are currently undertaking further Ground Investigations including shallow boreholes and trial pits to support further characterisation of the site geology and shallow materials. Locations of existing boreholes and further investigation to be carried out are shown in Figure 4.2. Soil and leachate testing in line with BS 1377:2022 will be carried out to confirm the nature of proposed excavated materials.'

'This information should also be provided to inform the geo-environmental assessment. It is assumed that a watching brief for unexpected contamination will be carried out during these works.'

Works have now been completed SUK are awaiting sample results these will be forwarded to the CLO on receipt.

6. SITE INVESTIGATIONS

6.1. HISTORIC TRIAL PITTING

All historic investigation works and future investigation works are undertaken in line with Borehole Sites and Operations Regulations 1995, BS 8576:2013. Operations include the monitoring of five gases (CO, CH₄, CO₂, O₂, H₂S) during drilling activities. All Boreholes are permitted by Mine Remediation Authority Permitting, a copy of MRA permits is available on request.

Historic trial pitting and boreholes was undertaken during 2021 for BHs 56, 57, 58A, 102, 111, 112A, WS001, WS002 and WS003 see **Figure 4** below. Borehole log information for surface profiles is found within **Table 6.1**.

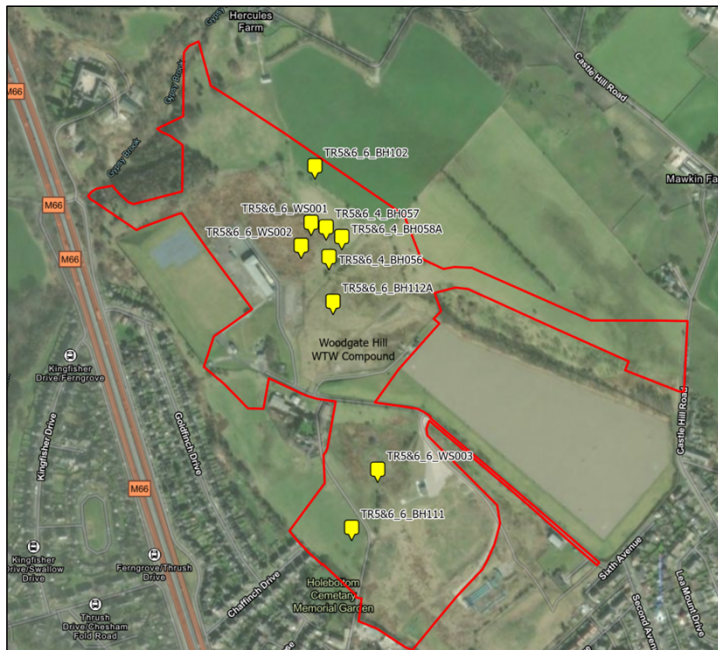


Figure 4 Historic trial pitting

6.2. DEEP INVESTIGATIONS SPRING 2026

Additional ground investigations were undertaken during spring 2026 for BHs 61405, 61406, 61407 and 61408 see **Figure 5** below, borehole log information is provided in **Table 6.3**. Full Geotechnical reports can be provided on request.



Figure 5 Deep Ground Investigations

6.3. PACKAGE 3 INVESTIGATIONS

The wider site survey for Package 3 commenced in late May 2026 see **Figure 6**. SUK are currently awaiting results of analysis and logging. All information will be forwarded to the CLO on receipt.



Figure 6: Package 3 soil sample locations

6.4. INTERPRETATION OF HISTORIC GI AND LIDAR DATASETS

The following section assesses current information in relation to topsoil, subsoils and made ground located across the Woodgate Hill site.

6.4.1. MADE GROUND (POOR TOPSOIL <0.25M)

Made ground was observed at BH056, BH057, BH058, BH112, WS001, BH61406, BH61407, and BH61408. The made ground profile was also determined from Lidar imagery 2021 National datasets 0.5m (**Figure 7**) for the Site which concurs with geotechnical investigations. Lidar imagery indicates that the Site has undergone significant changes from reservoir construction to quarrying of material. Made ground is associated in the centre of the site, indicated grey on the image below. Areas of predominantly undeveloped and natural ground are indicated in green, see **Figure 8**.



Figure 7 – Lidar imagery of the site identifying areas of made ground.

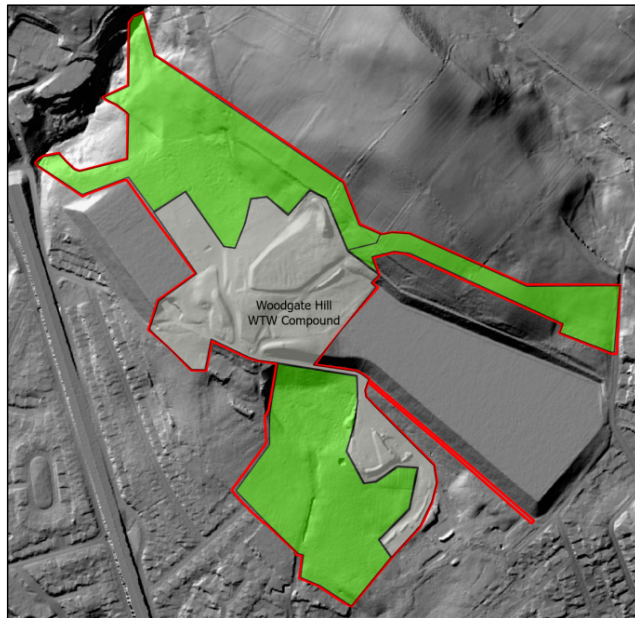


Figure 8 - Lidar Image indicating made ground (grey) and undeveloped land (green).

Table 6.1 Historic Borehole surface logging

Trial Hole Reference	Topsoil Depth (mm)	Subsoil Depth (mm)	Peat (mm)
Historic BH102	300	1200	N/A
Historic BH111	500	3000	N/A
BH61405	500	Made Ground	N/A
Historic BH056	250	Made Ground	N/A
Historic BH057	Made Ground	Made Ground	N/A
Historic BH058	Made Ground	Made Ground	N/A
Historic BH112	Made Ground	Made Ground	N/A
Historic WS001	Made Ground	Made Ground	N/A
BH61406	200	Made Ground	N/A
BH61407	200	Made Ground	N/A
Historic WS003	300	450	1050

Historic and previous site information from Historic BH056, BH057, BH058, BH102, BH111, BH112, WS001 and WS003 is provided as below in **Table 6.2**.

Table 6.2 Description of Strata from Borehole logs for the Historic Ground Investigation

Borehole / Trial Pit ID	Description of Strata	Thickness	Depths (BGL)
BH056	TOPSOIL: Light brown slightly clayey sandy angular to subangular fine to coarse gravel of sandstone and mudstone with frequent rootlets (1mm - 2mm). Sand is fine to coarse.	0.25m	0-0.25m
	MADE GROUND: Brown and dark grey slightly clayey slightly sandy angular to rounded fine to coarse gravel sized fragments of mudstone, sandstone and coal. Sand sized fragments are fine to coarse.	0.5m	0.25-0.75m
	MADE GROUND: Dark brown mottled orangish brown slightly sandy clayey angular to subangular tabular fine to coarse gravel sized fragments of mudstone and sandstone with a low cobble content of angular mudstone. Sand sized fragments are fine to coarse. Cobble sized fragments are subangular of sandstone.	0.75m	0.75-1.5m
BH057	MADE GROUND: Dark brown slightly sandy slightly gravelly clay with abundant rootlets (1-3mm). Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of sandstone and mudstone.	0.27m	0-0.27m
	MADE GROUND: Brown mottled orangish brown and grey slightly sandy slightly gravelly clay. Sand sized fragments are fine to coarse. Gravel sized fragments are angular to subangular fine to coarse of sandstone and mudstone.	2.23	0.27-2.5m

Borehole / Trial Pit ID	Description of Strata	Thickness	Depths (BGL)
BH058	MADE GROUND: Brown slightly sandy slightly gravelly clay with abundant rootlets. Gravel is subangular to rounded fine to coarse of sandstone and mudstone. Sand is fine to coarse.	0.25m	0-0.25m
	MADE GROUND: Brown slightly sandy slightly gravelly clay. Sand sized fragments are fine to coarse. Gravel sized fragments are angular to subangular fine to coarse of sandstone and mudstone.	0.50m	0.25-0.75m
	MADE GROUND: Greenish brown mottled orangish brown slightly sandy slightly gravelly clay. Sand sized fragments are fine to coarse. Gravel sized fragments are subangular to subrounded fine to medium of mudstone, coal and ceramic.	0.65m	0.75 - 1.4m
BH102	TOPSOIL: Very soft brown clay. (Driller's description)	0.3m	0-0.3m
	Soft to firm gravelly brown CLAY. (Driller's description)	1.2m	0.3-1.5m
BH111	TOPSOIL: Turf over brown clay. (Driller's description)	0.5m	0-0.5m
	Brown CLAY. (Driller's description)	3m	0.5-3.50m
BH112	MADE GROUND: Dark grey slightly sandy slightly gravelly clay with rare rootlets (<1mm x <100mm) and organic odour. Sand sized fragments are fine. Gravel sized fragments are angular to subrounded fine to coarse of coal, mudstone, brick, clinker and plastic.	3.1m	
WS001	MADE GROUND: Dark brown slightly sandy clay with frequent rootlets (<1mm x 60mm). Sand sized fragments are fine.	0.15m	0-0.15m
	MADE GROUND: Dark brown slightly sandy slightly gravelly clay with rare rootlets (<1mm x 40mm). Sand sized fragments are fine. Gravel sized fragments are subangular to subrounded fine to coarse of sandstone and mudstone.	1.05m	0.15-1.2m
WS003	TOPSOIL: Soft dark brown slightly sandy slightly gravelly clay with rare rootlets (<0.5mm x 20mm). Sand is fine. Gravel is subangular to subrounded fine to coarse of sandstone.	0.3m	0-0.3m
	Soft dark brown slightly sandy gravelly CLAY. Sand is fine. Gravel is subangular to subrounded fine to coarse of sandstone.	0.45m	0.3-0.75m
	Dark brown pseudo fibrous PEAT.	1.05m	0.75-1.8m

Data in respect to Deep Ground Investigation Boreholes for tunnel alignment (Package 1 Ground Investigations) for BH61405, BH61406, BH61407 and BH61408 is provided in **Table 6.3**

Commented [CE1]: Package 1 means nothing to anyone reading this doc. Perhaps call April/May 2026 Investigations or something more descriptive

Table 6.3 Description of Strata from Borehole logs for the Ground Investigation Package 1

Borehole / Trial Pit ID	Description of Strata	Thickness	Depths (BGL)
BH61405	TOPSOIL: Dark brown slightly sandy gravelly clay with frequent rootlets (<1mm Diameter by up to 100mm in length). Gravel is angular to rounded fine to coarse of sandstone, siltstone and mudstone.	0.5m	0-0.5m
	MADE GROUND: Dark greyish brown slightly sandy gravelly clay with a low cobble content. Sand is fine to coarse. Gravel sized fragments are angular to subangular fine to coarse of sandstone siltstone and mudstone. Cobble sized fragments are angular to subrounded of sandstone.	0.5m	0.5-1.0m
	MADE GROUND: Dark brown sandy gravelly clay with a low cobble content. Sand is fine to coarse. Gravel sized fragments are angular to subangular fine to coarse of sandstone, siltstone and mudstone with rare brick. Cobble sized fragments are angular to subrounded of sandstone.	0.5m	1.0-1.5m
BH61406	TOPSOIL: Dark brown slightly sandy slightly gravelly clay. Sand is fine to coarse. Gravel is angular to rounded fine to coarse of sandstone, siltstone, mudstone and brick.	0.2m	0-0.2m
	MADE GROUND: Dark greyish brown slightly sandy gravelly clay with low cobble content. Sand is fine to coarse. Gravel sized fragments are angular to subangular fine to coarse of sandstone, siltstone, mudstone and brick. Cobble sized fragments are angular of sandstone.	0.35m	0.2-0.55m
	MADE GROUND: Greyish brown slightly sandy gravelly clay. Sand is fine to coarse. Gravel sized fragments are angular to subangular fine to coarse of sandstone, mudstone and siltstone.	0.95m	0.55-1.5m
BH61407	TOPSOIL: Dark brown clayey, fine to medium sand sized fragments with frequent rootlets (<1mm-2mm diameter and up to 50mm in length).	0.2m	0-0.2m
	MADE GROUND : Dark greyish brown slightly gravelly clay. Gravel sized fragments are angular to rounded fine to coarse of sandstone siltstone mudstone and brick	0.35m	0.2-0.55m
	MADE GROUND : Dark brownish grey clayey sandy angular to subangular fine to coarse gravel sized fragments of mudstone with low cobble content. Sand is fine to coarse. Cobble sized fragments are angular of mudstone and siltstone.	2.05m	0.55-2.6m
BH61408	TOPSOIL: Greyish brown sandy clay. Sand is fine to coarse	0.2m	0-0.2m
	MADE GROUND: Dark grey to grey gravelly clay. Gravel sized fragments are angular fine to medium of mudstone and sandstone.	0.4m	0.2-0.6m

Borehole / Trial Pit ID	Description of Strata	Thickness	Depths (BGL)
	MADE GROUND	0.6m	0.6-1.2m

7. MATERIALS MANAGEMENT PLAN

'It is noted that within the Waste Management Plan, a sampling and testing regime is set out for excavated material from the Phase 1 & 2 works to ensure material is suitable for reuse. Further chemical testing will be undertaken as part of the restoration phase of works. To confirm suitability for re-use the materials will be tested against the criteria for CLEA Public Open Space 2 (POS2) or similar. It is recommended that the results of the sampling and testing regime be submitted once completed for information alongside any information relating to the off-site disposal of materials.'

Detailed within **Section 1**.

8. PRELIMINARY CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) for Woodgate Hill is provided in **Attachment C**. This CSM is the current understanding of site risks to Human Health changes to the CSM may occur as additional information comes to light in future Phases and from further works including such as ground investigations or construction activities.

9. ADDITIONAL INFORMATION

'It is noted that the development site falls within a Development High Risk Area for mining. This aspect is not considered within the PRA and conceptual model development with regards potential risks to mines gas. Reference is made to geological gas potential, which is assessed as low, but it is unclear whether the potential for mines gas is considered within this assessment. Confirmation is sought regarding the potential risk of mines gas. A Final Mining Risk Assessment was submitted to support the application and The Coal Authority concurred with the recommendations of the report and recommended a condition for site investigations to establish the risks posed to the development by past coal mining activity. This is condition 28 in the approval and is considered within discharge application 73125. The Coal Authority recommended the partial discharge of the conditions, specific to Phases 1 and 2 at the Woodgate Hill WTW Compound only.'

Works are currently underway to facilitate an updated Mining Risk Assessment for the Mine Remediation Authority for the proposed shaft and Tunnel at Woodgate Hill. Once completed this information along with an associated risk assessment and where appropriate amended CSM will be forwarded to the CLO to discharge conditions for Phase 3. An initial risk assessment is provided in **Attachment D**.

10. ATTACHMENTS

ATTACHMENT A – TRIAL TRENCH WAC ANALYSIS

ATTACHMENT B – WATER FEATURES SURVEY RESULTS

ATTACHMENT C – CONCEPTUAL SITE MODEL

ATTACHMENT D – PRELIMINARY RISK ASSESSMENT

10.1. ATTACHMENT A – TRIAL TRENCH WAC ANALYSIS

10.2. ATTACHMENT B – WATER FEATURES SURVEY RESULTS

10.3. ATTACHMENT C – CONCEPTUAL SITE MODEL

10.4. ATTACHMENT D – PRELIMINARY RISK ASSESSMENT